# ADVISORY PLAN COMMISSION AGENDA

Brownsburg Advisory Plan Commission Meetings are live-streamed and archived.

**FEBRUARY 23, 2026**

**6:00 PM**

**TOWN COUNCIL MEETING ROOM 61 N. GREEN ST., BROWNSBURG, INDIANA 46112**

A. **CALL TO ORDER BY PRESIDING OFFICER**

B. **MOMENT OF SILENCE & PLEDGE OF ALLEGIANCE**

C. **ELECTION OF OFFICERS**

1. **2026 PRESIDENT (PRESIDED BY PREVIOUS YEAR PRESIDENT)**
2. **2026 VICE PRESIDENT (PRESIDED BY 2026 PRESIDENT)**
3. **2026 RECORDING SECRETARY**
4. **MEMBER APPOINTMENT TO THE BZA**

D. **APPROVAL OF PREVIOUS MEETING(S) MINUTES**

1. **DECEMBER 17, 2025 - REGULAR MEETING**

   Documents:

   APC_MINUTES_12-17-25.PDF

E. **APPROVAL OF FINDINGS OF FACT AND REPORTS OF DETERMINATION**

1. **PCPP-25-4 KARAM CONVENIENCE CENTER PRIMARY PLAT**

   Documents:

   FOF_PCPP-25-4.PDF

2. **PSDP-25-9 PROJECT FALCON DEVELOPMENT PLAN REVIEW**

   Documents:

   FOF_PSDP-25-9.PDF

3. **CASES WITH A '*' NEXT TO THE CASE NUMBER HAVE BEEN ADDED FROM THE CANCELLED JANUARY 26TH MEETING**

F. **HEARING OF REQUESTS FOR CONTINUANCES**

1. **PSDP-25-12* KARAM CONVENIENCE CENTER DEVELOPMENT PLAN REVIEW**

A request to approve a Development Plan Review for Karam Convenience Center (Lot 1). The site is located at the southeast corner of the intersection of Northfield Drive and N CR 625 E.

Parcel(s): 32-07-03-300-022.000-016

Represented by: Donald Fisher, Insight Engineering

**CONTINUANCE REQUESTED BY THE PETITIONER**

## G. DEVELOPMENT PLAN APPROVAL REQUESTS

1. **PSDP-23-21* LION'S TRANS INC. DEVELOPMENT PLAN REVIEW**

A request to approve a Development Plan Review for construction of a 2,860 sq. ft. over the road truck maintenance building and a 900 sq. ft. office building to serve Lions Trans Inc. with associated parking and utilities. The project is located at 4005 N CR 1000 E.

Parcel(s): 32-08-17-365-002.000-016

Represented by: Brian Moench, Moench Engineering

**THIS CASE WAS CONTINUED BY THE APC AT THE DECEMBER 17, 2025 MEETING**

Documents:

G.1.A NEWEST CIVIL LANDSCAPE LIGHTING PLAN.PDF
G.1.B STAFF REPORT_PSDP-23-21.PDF
G.1.C ARCHITECTURAL DETAILS.PDF
G.1.D TECH_REVIEW_PSDP-23-21.PDF
G.1.E LIONS_TRUCKING_CONSENT_FORM.PDF
G.1.F TECH RESPONSE LETTER.PDF
G.1.G DRAINAGE REPORT.PDF
G.1.H CIVIL, LIGHTING, LANDSCAPE PLAN SET (BEFORE CONTINUANCE).PDF
G.1.I_OM_MANUAL_12.19.25_.PDF
G.1.J DRAINAGE TECHNICAL REPORT.PDF
G.1.K NEWEST OM MANUAL FEB 4 26.PDF

2. **PSDP-25-11* QUIKTRIP LANDSCAPE PLAN DEVELOPMENT PLAN REVIEW**

A request to approve a Development Plan Review change for the QuikTrip landscape plan to allow the 2025 Unified Development Ordinance standards to apply instead of the previous ordinance when the Development Plan Review was originally approved in 2024.

Parcel(s): 32-08-18-115-006.000-016

Represented by: Dillon Reynolds, SpaceCo Engineering

Documents:

G.2.A PSDP-25-11 STAFF REPORT.PDF
G.2.B REVISED LANDSCAPE PLAN_REV1.PDF
G.2.C ORIGINAL LANDSCAPE PLAN.PDF
G.2.D TECH REVIEW COMMENTS.PDF
G.2.E TECH COMMENT RESPONSE LETTER.PDF
G.2.F QT 7263 PROPERTY OWNER CONSENT 12.05.2025.PDF
G.2.G REVISED LANDSCAPE PLAN_OLD.PDF

3. **PSDP-26-1 HEARTLAND DENTAL DEVELOPMENT PLAN REVIEW**

A request to approve a Development Plan Review for the construction of a ~4,285 sq. ft. Heartland Dental office with associated sidewalks, parking area, landscaping, and utilities. The project is in Outlot A of the new Meijer development along E. 56th St.

Parcel(s): 32-08-06-311-006.000-016

Represented by: Jillian Richardson, Woolpert Inc.

Documents:

G.4.A STAFF REPORT_PSDP-26-1.PDF
G.4.B TECH_REVIEW_PSDP-26-1.PDF
G.4.CTECH RESPONSE LETTER.PDF
G.4.D STORMWATER MANAGEMENT SUMMARY.PDF
G.4.E PROPERTY OWNER CONSENT FORM.PDF
G.4.F O M MANUAL.PDF
G.4.G HEARTLAND DENTAL CIVIL- LIGHTING -LANDSCAPE PLANS.PDF
G.4.H ARCHITECTURAL DETAILS.PDF

## H. OLD BUSINESS

1. **NONE**

## I. CONTINUED PUBLIC HEARINGS

1. **PCPP-25-3* HAWK'S LANDING PRIMARY PLAT**

A request to approve a primary plat for Hawk's Landing subdivision. The site includes 105 single-family units with their associated roadways and is located along N SR 267 and E 800 N behind Connection Pointe Christian Church.

Parcel(s): 32-02-34-275-002.000-026, 32-02-34-100-012.000-001, 32-02-34-100-013.000-001

Represented by: Lindsey Phipps, David Weekley Homes

**ADVERTISED PUBLIC HEARING**

Documents:

I.1.A FINAL_TRAFFIC_STUDY_NOVEMBER_2025.PDF
I.1.B UPDATED PLAT.PDF
I.1.C HAWKS LANDING TIS CROSSROAD REVIEW.PDF
I.1.D UPDATED LETTER_OF_INTENT.PDF
I.1.E TRAFFIC STUDY JULY 2024.PDF

I.1.F TECH_REVIEW_PCPP-25-3.PDF
I.1.G EXECUTED MOU_COUNTY COMMISSIONERS - WEEKLEY HOMES LLC.PDF
I.1.H LOT WIDTH EXHIBIT.PDF
I.1.I ORDINANCE NO. 2021-30.PDF
I.1.J STAFF REPORT_PCPP-25-3 REV. 1-20-26.PDF

## J. NEW PUBLIC HEARINGS

### 1. PCPP-25-5* PROMENADE, SECTION 3 PRIMARY PLAT

A request to approve a primary plat for Promenade, Section 3. The 7.99-acre parcel will add 20 single-family homes to the existing PUD. The site is located just west of and adjoins the existing Promenade subdivision.

Parcel(s): 32-07-24-300-001.000-016

Represented by: Melissa Garrard, Pulte Homes

**ADVERTISED PUBLIC HEARING**

Documents:

J.1.A PRIMARY PLAT.PDF
J.1.B RECORDED-COMMITMENTS-DANIELS (PROMENADE EXT)-EXECUTED1.PDF
J.1.C OWNER-CONSENT-FORM-DANIELS (2).PDF
J.1.D TECH_REVIEW_PCPP-25-5.PDF
J.1.E TECH RESPONSE LETTER.PDF
J.1.F DRAINAGE REPORT 12.08.25.PDF
J.1.G STAFF REPORT_PCPP-25-5.PDF

### 2. PCZT-25-5* WESTBRANCH PUD (SIGNAGE) ZONING TEXT AMENDMENT

A request to amend a section of the Westbranch Planned Unit Development Ordinance to allow a permanent sign on the leasing clubhouse.

Represented by: Justin Mitchell, Buckingham Companies

**ADVERTISED PUBLIC HEARING**

Documents:

J.2.A PCZT-25-5 WESTBRANCH PUD TEXT AMENDMENT.PDF
J.2.B OWNER CONSENT FORM.PDF
J.2.C LEGAL DESCRIPTION.PDF
J.2.E PROPOSED AMENDED TEXT.PDF
J.2.F UDO SECTION 5.66 AND 5.69.PDF
J.2.G LOCATION MAP.PDF
J.2.H MICROSOFT WORD - EX. D TA STATEMENT O F INTENT AND PROJECT DESCRIPTION 08.29.23.PDF

## K. COMMUNICATIONS AND COMMITTEE REPORTS

### 1. NONE

L. **MISCELLANEOUS BUSINESS**

1. **NONE**

M. **ADMINISTRATIVE FILINGS**

1. **APLA-25-3 OI LAND VENTURES ADMINISTRATIVE PLAT***
2. **CPSP-24-7 CENTENNIAL, SECTION 1 LOT ADJUSTMENT***
3. **APLA-26-1 HEARTLAND DENTAL LOT SPLIT**

N. **CASES FILED FOR FUTURE MEETINGS**

1. **PSDP-26-2 Reserve At Ronald Reagan Infrastructure DPR**
2. **CPSP-26-1 Reserve At Ronald Regan, Lot 1 Secondary Plat**
3. **CPSP-26-2 Promenade, Sec. 3 Secondary Plat**
4. **PSDP-26-3 Compass & Key Industrial Park DPR**
5. **PSDP-26-4 Dutch Bro's Coffee DPR**
6. **PCMA-26-1 Auburn Ridge West Rezone (AG To R1&R2)**
7. **PCMA-26-2 Brownsburg Street & Police Dept. Rezone (Bowman Property Annexation)**

O. **ADJOURNMENT**

## Advisory Plan Commission

- Brett Scowden, President
  Term: 2023-2026
  Appointed by: Town Council President
- Cindy Hohman
  Term: 2026-2029
  Appointed by: Town Council
- Thomas Kleyle
  Term: 2026-2029
  Appointed by: Town Council President
- Richard Miller
  Term: 2023-2026
  Appointed by: Town Council President
- Shawn Pabst
  Term: 2026-2029
  Appointed by: Town Council
- Scott Doehrman
  Term: 2025-2028
  Appointed by: Town Council
- Jeff Humphreys
  Term: 2024-2027
  Appointed by: Town Council President

The Town of Brownsburg acknowledges its responsibility to comply with the Americans With Disabilities Act of 1990. In order to assist individuals with disabilities who require special services (i.e. sign interpretive services, alternative audio/visual devices, and amanuenses) for participation in or access to town sponsored public programs, services, and/or meetings, the town requests that individuals makes requests for these services two business days ahead of the scheduled program, service, and/or meeting. To make arrangements, contact the Development Services Department at (317) 852-1128.

TOWN OF Brownsburg

**ADVISORY PLAN COMMISSION**
**Minutes**

**Brownsburg Town Hall**
**61 North Green Street**
**Brownsburg, Indiana 46112**

**December 17, 2025**

The Brownsburg Advisory Plan Commission was convened at 6:00 PM with a moment of silence and the Pledge of Allegiance. A determination of quorum was found.

| | |
|---|---|
| Members Present: | Scott Doehrman, Kent Fillinger, Jeff Humphreys, Richard Miller, Shawn Pabst, Brett Scowden- Board President and Matt Simpson. |
| Members Absent: | None |
| Also Present: | Steven Fletcher- Development Service Director, Kevin Tolloty -Senior Planner, Lauren Bouslog -Associate Planner, Elizabeth Bentz-Williams – AICP Consultant and Paola Ranney, Administrative Assistant. |

## C. APPROVAL OF PREVIOUS MEETING MINUTES

1. November 24, 2025 - Regular Meeting

   **Motion:** Jeff Humphreys made a motion to **APPROVE** the November 24, 2025, regular meeting minutes, seconded by Matt Simpson, motion carried 7 In Favor/ 0 Opposed/ 0 Abstained.

## D. APPROVAL OF FINDINGS OF FACT AND REPORTS OF DETERMINATION

1. PSDP-25-8 BROWNSBURG HIGH SCHOOL EAST ATHLETIC EXPANSION DEVELOPMENT PLAN REVIEW

2. PCVA-25-1 PROJECT TAHOE STREET VACATION PLAT VACATION

   **Motion:** Jeff Humphreys made a motion to **APPROVE** the Findings of Fact and Reports of Determination FOR the above cases, seconded by Shawn Pabst, motion carried 7 (In Favor/ 0 Opposed/ 0 Abstained.

   **Motion:** Brett Scowden made a motion to **APPROVE** the amending of the agenda to move the 2026 APC Meetings and PCZT-25-4 to immediately follow before any other business, seconded by Jeff Humphreys, motion carried 7 In Favor/ 0 Opposed/ 0 Abstained.

## E. COMMUNICATIONS AND COMMITTEE REPORTS

Report from Director of Development Services

Proposed 2026 APC Meeting Dates

Motion: Jeff Humphreys made a motion to **APPROVE** 2026 proposed APC Meeting Dates, seconded by Matt Simpson, motion carried 7 In Favor/ 0 Opposed / 0 Abstained.

**F.** PCZT-25-4 BRENTWOOD PUD (LOT COVERAGE) ZONING TEXT AMENDMENT

A request to amend a section of the Brentwood Planned Unit Development Ordinance to allow 55% lot coverage instead of the current 45% maximum.

**ADVERTISED PUBLIC HEARING OPENED AT 6:04PM**

Applicant stepped up to the stand and stated they wish to withdraw their case.

**ADVERTISED PUBLIC HEARING CLOSED AT 6:05PM**

## G. HEARING OF REQUESTS FOR CONTINUANCES

1. PCPP-25-3 HAWK'S LANDING PRIMARY PLAT

A request to approve a primary plat for Hawk's Landing subdivision. The site includes 105 single-family units with their associated roadways and is located along N SR 267 and E 800 N behind Connection Pointe Christian Church.

PARCEL(S): 32-02-34-275-002.000-026, 32-02-34-100-012.000-001, 32-02-34-100-013.000-001

Applicant, Lindsay Phipps, would like to request a continuance.

**ADVERTISED PUBLIC HEARING OPENED AT 6:07PM**

At the time this case will recess and continue on January 26. 2026

## F. DEVELOPMENT PLAN APPROVAL REQUESTS

1. PSDP-25-9 PROJECT FALCON DEVELOPMENT PLAN REVIEW

A request to approve a Development Plan Review for construction of a two story, 371,724 sq. ft. headquarters facility that will include office space, lab space, and production with associated parking and utilities. The project is located in the Ronald Reagan Logistics Park – Phase 2.

Parcel(s): 32-08-07-305-002.000-016

Lauren Bouslog presented. She discussed reasoning and logistics for the request.

Lauren and the Board discussed storm water approval.

Applicant, Dillon Reynolds, stepped up to the stand.

**Motion:** Jeff Humphreys made a motion to **APPROVE** CASE PSDP-25-9 with staff recommendations, seconded by Richard Miller, motion carried 7 In Favor/ 0 Opposed/ 0 Abstained.

2. PSDP-23-21 LION'S TRANS INC. DEVELOPMENT PLAN REVIEW

A request to approve a Development Plan Review for construction of a 2,860 sq. ft. over the road truck maintenance building and a 900 sq. ft. office building to serve Lions Trans Inc. with associated parking and utilities. The project is located at 4005 N CR 1000 E.

Parcel(s): 32-08-17-365-002.000-016

Lauren Bouslog presented. She discussed reasoning and logistics for the request.

Applicant was a "No Show".

**Motion:** Shawn Pabst made a motion to continue CASE PSDP-23-21 until January 26, 2026, seconded by Jeff Humphreys, motion carried 7 In Favor/ 0 Opposed/ 0 Abstained.

## G. OLD BUSINESS

1. None

## H. CONTINUED PUBLIC HEARINGS

1. None

## J. NEW PUBLIC HEARINGS

2. PCPP-25-4 KARAM CONVENIENCE CENTER PRIMARY PLAT

A request to approve a primary plat for Karam Convenience Center. The 11.28-acre parcel would be separated into two lots. The site is located at the southeast corner of the intersection of Northfield Drive and N CR 625 E.
Parcel(s): 32-07-03-300-022.000-016

**ADVERTISED PUBLIC HEARING OPENED AT 6:18PM**

Lauren Bouslog presented. She discussed reasoning and logistics for the request.
Lauren and the Board discussed entrances.
Mr. Don Fisher, applicant, stepped up to the stand. Mr. Fisher and the Board discussed design criteria, slow down lanes, light pollution, CR 625 and detention area.

**ADVERTISED PUBLIC HEARING CLOSED AT 6:30PM**

**Motion:** Jeff Humphreys made a motion to **APPROVE** PCPP-25-4, with staff conditions, seconded by Kent Fillinger, motion carried 7 In Favor/ 0 Opposed / 0 Abstained.

## K. MISCELLANEOUS BUSINESS

1. None

## L. ADMINISTRATIVE FILINGS

1. PSDP-22-29 WESTWIND APARTMENTS DPR

## N. CASES FILED FOR FUTURE MEETINGS

1. PSDP-25-10 McDonald's Restaurant DPR
2. PSDP-25-11 QuikTrip Landscape Plan DPR
3. PSDP-25-12 Karam Convenience Center DPR
4. PCPP-25-5 Promenade, Sec. 3 Primary Plat
5. PCZT-25-5 Westbranch PUD (Sign Standards) Zoning Text Amendment
6. APLA-25-3 OI Land Ventures Administrative Plat

## O. ADJOURNMENT

**Motion:** Matt Simpson made a motion to **ADJOURN**. Meeting adjourned at **6:34PM**.

_____

Brett Scowden, President

ATTEST: _____

Steven Fletcher, Development Services Director

TOWN OF Brownsburg

ADVISORY PLAN COMMISSION

DOCKET NO.
**PCPP-25-4**
IN THE MATTER OF:
**KARAM CONVENIENCE CENTER**

## FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER

In compliance with the Unified Development Ordinance of the Town of Brownsburg (the "Ordinance"), the Advisory Plan Commission (the "Commission") held a public hearing pursuant to notice at 6:00 p.m. on December 17, 2025, to hear Docket No. PCPP-25-4, an application for Primary Plat approval dividing 11.28 acres into 2 lots to be known as KARAM CONVENIENCE & RETAIL CENTER. Applicant Donald Fisher, Insight Engineering, appeared and presented testimony and evidence in support of the application.

## FINDINGS OF FACT

The Commission, having this matter presented at a public hearing on December 17, 2025, having considered the arguments of the applicant, and being duly advised in the premises, now finds and makes the following Findings of Fact:

(1) The real estate subject to the application is identified as part of Indiana Parcel Number(s), 32-07-03-300-022.000-016.

(2) The real estate to which the application is addressed is within the Town of Brownsburg, Hendricks County, Indiana, and is subject to the terms and provisions of the Town of Brownsburg Municipal Code and the Unified Development Ordinance.

(3) That KARAM PROPERTIES LLC is/are the owner(s) of the real estate subject to the application.

(4) The real estate to which the application is addressed is currently zoned C3.

(5) The Applicant has requested Primary Plat approval dividing 11.28 acres into 2 lots to be known as KARAM CONVENIENCE & RETAIL CENTER.

(6) The Department of Development Services submitted a Project Synopsis to the Commission, dated December 3, 2025, which included the following recommendations:

1. All remaining technical review comments will be addressed prior to stamping the Primary Plat.

2. The final plat shall be recorded in the Office of the Recorder of Hendricks County prior to issuance of any building permits.

3. The approval of the Findings of Fact and Report of Determination by the Plan Commission.

4. The addition of a sidewalk along the northern end of the parcel along Northfield Drive that is required per the Brownsburg Transportation Plan.

## CONCLUSIONS OF LAW

Based upon the above Findings of Fact, the Commission does now conclude:

(1) The subdivision is consistent with the *Brownsburg Comprehensive Plan.*

(2) The subdivision satisfies the prerequisites, minimum development requirements and design standards for the applicable subdivision type in *Article 6: Subdivision Types*.

(3) The subdivision satisfies the applicable design standards in *Article 7: Design Standards*.

(4) The subdivision satisfies all other applicable provisions of the Unified Development Ordinance.

(5) The subdivision satisfies the construction requirements of the *Brownsburg Construction Standards*.

## ORDER

Based upon the foregoing Findings of Fact and Conclusions of Law, the Commission does now **APPROVE** the Primary Plat requested by Donald Fisher, Insight Engineering, known as Docket No. PCPP-25-4.

_____
Brett Scowden, President

ATTEST:

_____
Steve Fletcher- Development Services Director

TOWN OF Brownsburg

ADVISORY PLAN COMMISSION

DOCKET NO.
**PSDP-25-9**
IN THE MATTER OF:
**PROJECT FALCON**

## FINDINGS OF FACT & REPORT OF DETERMINATION

The Brownsburg Advisory Plan Commission held a hearing for docket PSDP-25-9 Project Falcon located on Parcel No(s): 32-08-07-305-002.000-016 on December 17, 2025.

This Report of Determination is based, in whole or in part, on the Applicant's Development Plan Review Application, submitted on October 28, 2025 and the same is hereby incorporated herein, by reference.

Staff prepared a Project Synopsis, dated December 02, 2025, and the same is incorporated herein, by reference.

After hearing a presentation from the Applicant the Commission voted 7 in favor, 0 against and 0 abstained, on a motion to **APPROVE** the Development Plan Review subject to the following:

1. The approval of Findings of Fact and Report of Determination.
2. The stamping of the construction plans by the Director.
3. The completion of any outstanding TECH comments.

The Commission took the following into consideration when making their decision on this above referenced proposal:

(1) The development plan is consistent with the Brownsburg Comprehensive Plan.

(2) The development plan satisfies the development requirements of Article 2: Zoning Districts.

(3) The development plan satisfies the standards of Article 5: Development Standards.

(4) The development plan satisfies any other applicable provisions of the Unified Development Ordinance.

(5) The development plan satisfies any provision related to a development's design, especially street layout, street features, pedestrian facilities, drainage, and utility installation as outlined in the Unified Development Ordinance.

(6) The development plan satisfies the construction requirements of the Brownsburg Standard Details.

(7) The development plan satisfies the intent of the architectural guidelines.

_____
Brett Scowden, President

ATTEST:

_____
Steve Fletcher- Development Services Director

# Lions Trans Inc. Maintenance Building
# 4005 N. County Road 1000E
# Brownsburg, Indiana 46112

## Owner:

Malhi Kulwinder & Jigna Shah Jtsur
7631 E. US Hwy 36
Avon, Indiana 46123
Phone: 317-989-1580

## Civil Engineer:

Moench Engineering, P.C.
4000 Clarks Creek Road
Plainfield, Indiana 46168
Phone: (317) 837-2767
Fax: (317) 837-7266

## Jurisdictional Contact:

Town of Brownsburg Development Services
61 N. Green St.
Brownsburg, Indiana 46112
Phone: (317) 852-1128

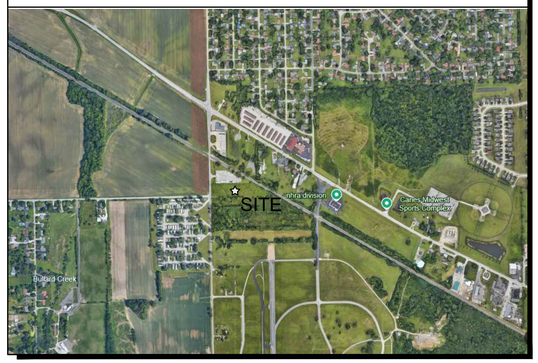
| INDEX OF DRAWINGS | |
|---|---|
| SHT. | TITLE |
| | CIVIL DRAWINGS |
| C000 | COVER SHEET |
| D101 | OFFSITE DEMOLITION PLAN |
| C101 | OVERALL SITE PLAN |
| C201 | SITE PLAN |
| C301A | GRADING PLAN (EAST) |
| C301B | GRADING PLAN (WEST) |
| C301C | PIPE PROFILE PLAN (WEST) |
| C301D | PIPE PROFILE PLAN (EAST) |
| C302 | EROSION CONTROL PLAN |
| C303 | STORM WATER POLLUTION PREVENTION PLAN |
| C401 | UTILITY PLAN |
| C402 | SANITARY FORCE MAIN PLAN & PROFILE |
| C501-502 | SECTIONS AND DETAILS |
| L101 | LANDSCAPE PLAN |
| LT101 | SITE LIGHTING PLAN |

| SITE ANALYSIS TABLE | |
|---|---|
| ZONING | MS |
| BUILDING TYPE | (1) OFFICE, (2) SHOP/GARAGE |
| NUMBER OF BUILDINGS | 2 |
| BUILDING HEIGHT | 30'-9" |
| TOTAL PARCEL | 3.07 Acres |
| TOTAL DISTURBED AREA | 2.60 Acres |
| TOTAL PARKING REQUIRED | N/A |
| PARKING RATIO | 1.1 space / employee & 1 visitor space / 10 employee spaces |
| TRUCK PARKING SPACES PROVIDED (10.5'x70') | 31 |
| STANDARD (9.5' x 18') SPACES | 4 |
| HANDICAPPED SPACES | 1 |
| TOTAL SPACES PROVIDED | 36 |
| TOTAL BUILDING SQUARE FOOTAGE | 3760 s.f. |

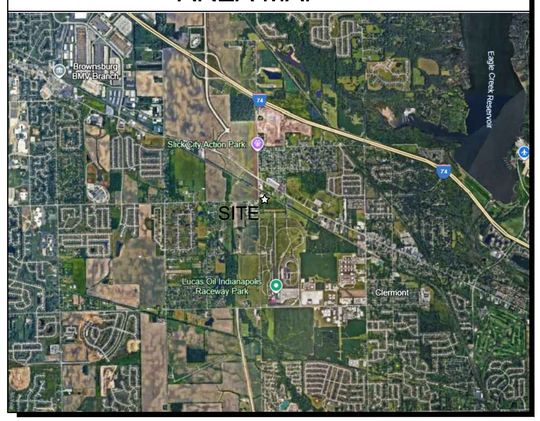
| LOT COVERAGE | | | |
|---|---|---|---|
| | AREA (ft²) | ACRES | PERCENT |
| ASPHALT | 83,071 | 1.907 | 62% |
| BUILDINGS | 3,760 | 0.086 | 2.8% |
| SIDEWALK | 716 | 0.016 | 0.5% |
| IMPERV. (TOTAL) | 87,547 | 2.01 | 65.4% |
| PERVIOUS | 46,327 | 1.06 | 34.6% |
| LOT TOTAL | 133,874 | 3.07 | 100% |

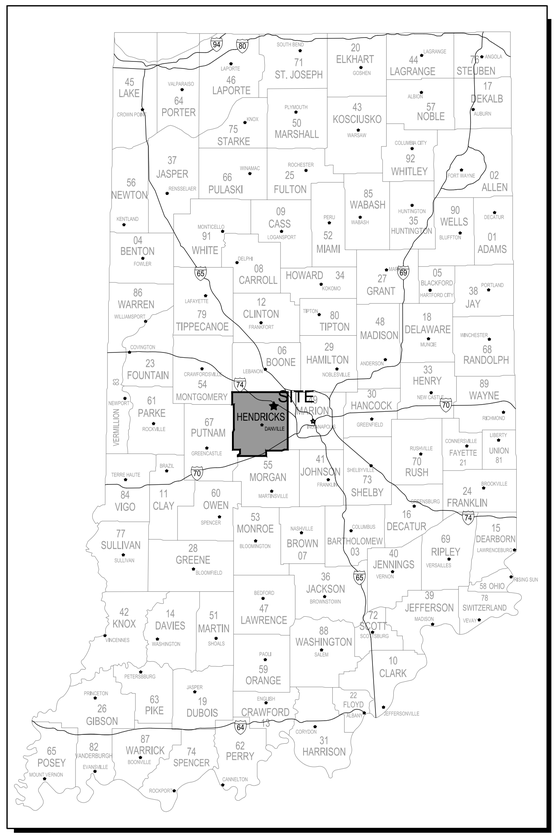
SUBJECT SITE:
SITE LOCATED IN LINCOLN TOWNSHIP
HENDRICKS COUNTY, INDIANA
(39°49'21" N and 86°20'42" W)

VICINITY MAP




AREA MAP





Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


LIONS TRANS INC. (BROWNSBURG)
4005 N CR 1000 E
BROWNSBURG, IN 46122

COVER SHEET

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER

| REVISIONS: | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C000 |

## PROTECTION AND DEMOLITION NOTES:

TREE REMOVAL AND PROTECTION:

1. TREES SHALL BE REMOVED FROM THE PROJECT ONLY WHERE THE AREA IS TO BE OCCUPIED BY ROAD, SURFACED AREAS, OR DRAINAGE SWALES.

2. TREES SHALL BE REMOVED FROM THE PROJECT SITE WHERE THEY INTERFERE DIRECTLY WITH THE PLACEMENT OF STORM OR SANITARY SEWERS AND THAT SUCH EXCAVATION WILL BE FATAL TO TREES.

3. THE CONTRACTOR SHALL ENDEAVOR TO SAVE AND PROTECT TREES OF VALUE AND WORTH WHICH DO NOT IMPAIR CONSTRUCTION OF IMPROVEMENTS AS DESIGNATED. IN THE EVENT CUT OR FILL EXCEEDS 0.5 FEET OVER THE ROOT AREA, THE DEVELOPER SHALL BE CONSULTED WITH RESPECT TO PROTECTIVE MEASURES TO BE TAKEN, IF ANY, TO PRESERVE SUCH TREES.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE METHOD FOR PROTECTION OF TOPS, TRUNKS AND ROOTS OF EXISTING TREES ON THE PROJECT SITE THAT ARE TO REMAIN. EXISTING TREES SUBJECT TO CONSTRUCTION DAMAGE SHALL BE BOXED, FENCED OR OTHER MATERIAL AND EQUIPMENT SHALL NOT BE STOCKPILED OR STORED WITHIN THE SPREAD OF BRANCHES. BRANCHES WHICH NEED TO BE REMOVED OR ARE BROKEN SHALL BE NEATLY TRIMMED AND SCARS SHALL BE COVERED WITH TREE PAINT.

CLEARING AND GRUBBING:

1. CLEARING AND GRUBBING SHALL CONSIST OF CUTTING, REMOVING AND SATISFACTORY DISPOSING OF ALL TREES, BRUSH, PROJECTING ROOTS, STUMPS, RUBBISH, BROKEN PAVEMENT, BROKEN CONCRETE, FENCING (AS DESIGNATED) AND OTHER MATERIALS ON THE PROJECT SITE AND WITHIN THE BOUNDARY AS SHOWN ON THE CONSTRUCTION DOCUMENTS AND / OR DESIGNATED BY THE CONSTRUCTION LIMITS.

2. ALL "UNSUITABLE MATERIAL" FROM CLEARING OPERATIONS SHALL BE REMOVED TO DISPOSAL AREAS AS DIRECTED BY GENERAL CONTRACTOR.

STRIPPING OF TOPSOIL:

1. THE CONTRACTOR SHALL VERIFY THAT ALL TOPSOIL HAS BEEN REMOVED IN THE AREAS TO BE OCCUPIED BY ROADS, WALKS AND DESIGNATED BUILDING AREAS. TOPSOIL SHALL BE REMOVED TO A DEPTH OF SIX (6) INCHES OR DEEPER, IF NECESSARY, TO REMOVE ORGANIC MATTER WHERE REQUIRED.

2. TOPSOIL SHALL BE KEPT SEPARATED FROM SUITABLE FILL MATERIALS AND SHALL NOT BE USED AS FILL UNDER PAVEMENT, BUILDING AREAS AND / OR FUTURE STRUCTURAL AREAS.

3. TOPSOIL SHALL BE STORED AT A LOCATION WHERE IT DOES NOT INTERFERE WITH CONSTRUCTION OPERATIONS AS DIRECTED BY THE GENERAL CONTRACTOR.

4. TOPSOIL SHALL BE REASONABLY FREE FROM SUBSOIL DEBRIS AND STONES.

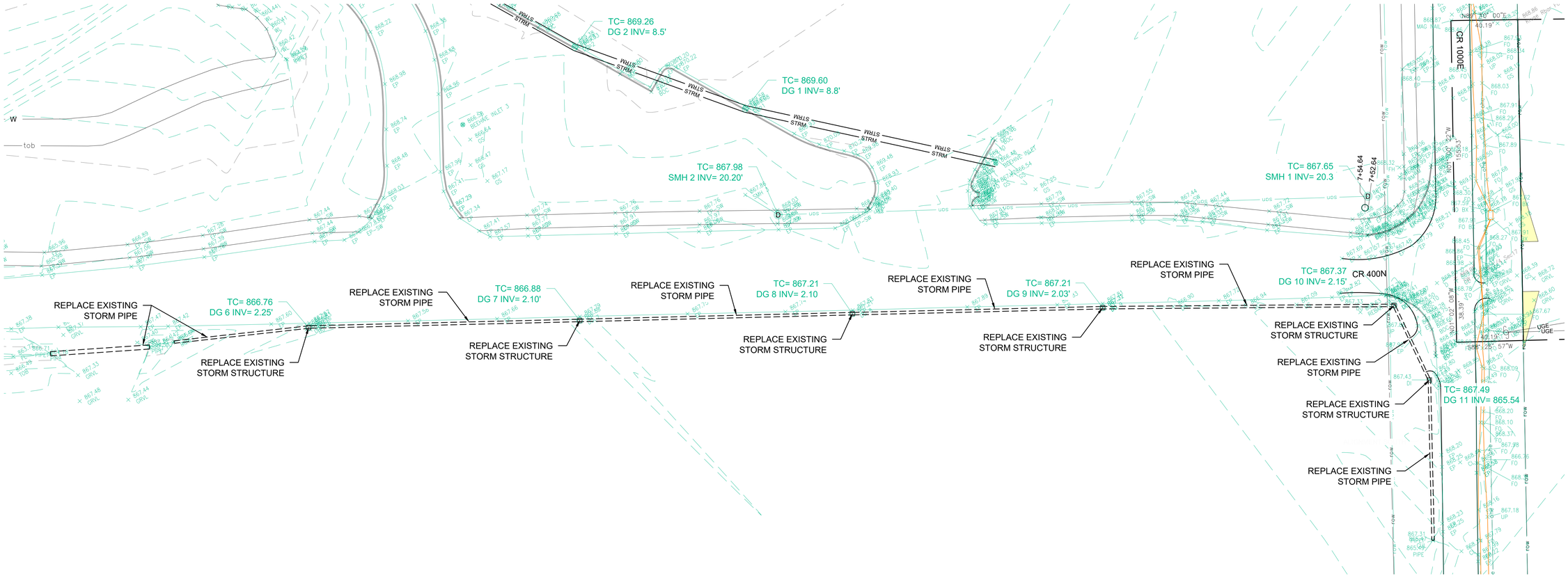
DEMOLITION:

1. ALL MATERIAL AS A RESULT OF THE GENERAL DEMOLITION SHALL BE THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR'S LUMP SUM BID PRICE FOR THE DEMOLITION SHALL TAKE INTO ACCOUNT THE SALVAGEABLE VALUE OF MATERIALS AND SAID BID PRICE SHALL REFLECT SAID DRAWINGS.

2. THE CONTRACTOR SHALL OBTAIN FROM ALL APPLICABLE GOVERNMENT AUTHORITIES NECESSARY PERMITS REQUIRED. A COPY OF SUCH PERMITS TO BE FURNISHED TO THE OWNER PRIOR TO COMMENCEMENT OF ANY WORK HEREIN.

STONE REMOVAL:

1. EXISTING STONE SURFACE TO BE REMOVED, STOCKPILED AND REDISTRIBUTED AFTER NEW GRADES ARE COMPLETED.




OFFSITE DEMOLITION PLAN

SCALE: 1" = 30'

Indiana 811
Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

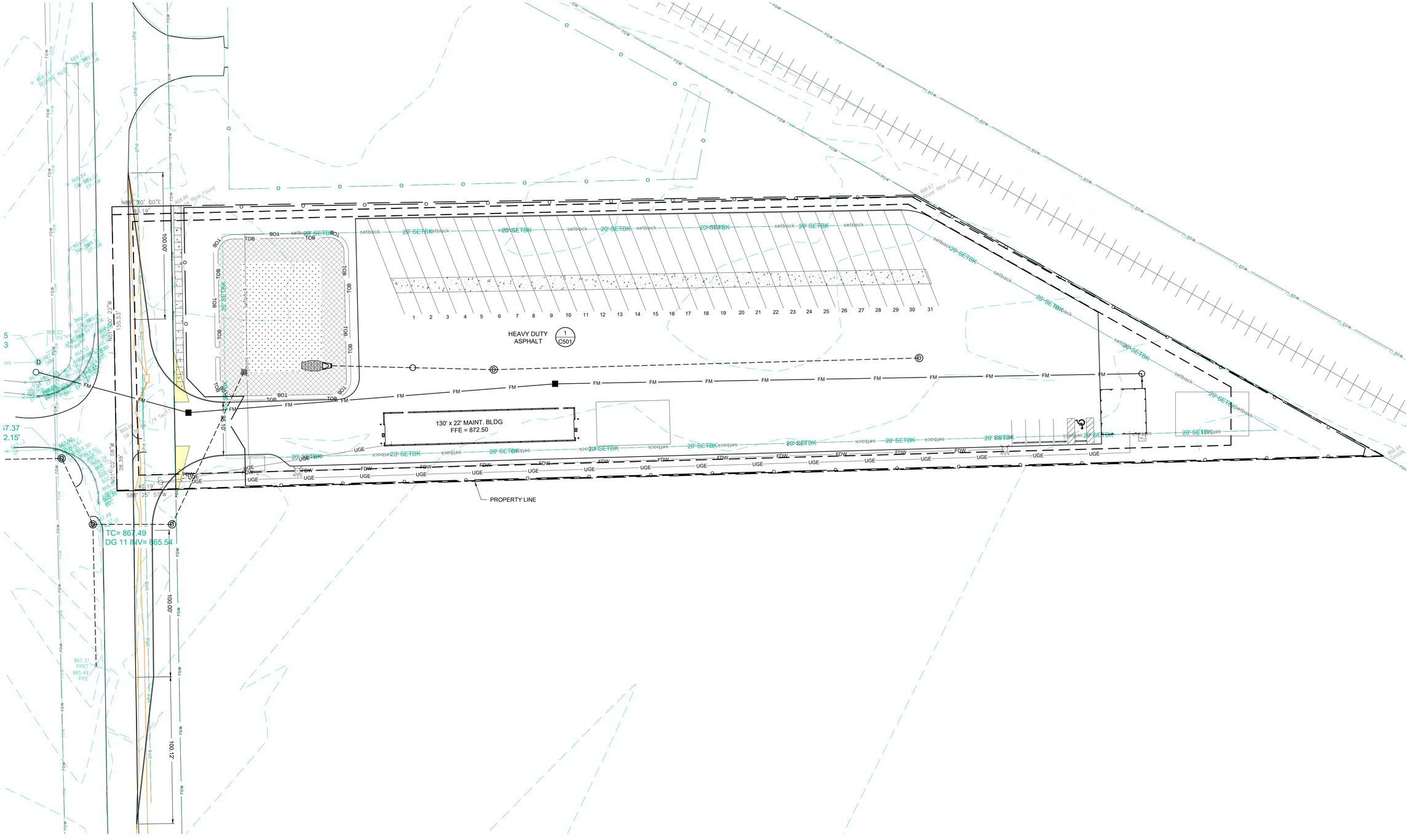
OFFSITE DEMOLITION PLAN

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | D101 |




## OVERALL SITE PLAN

SCALE: 1" = 30'

GRAPHIC SCALE: 1" = 30'

Know what's below. Call before you dig.


Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

OVERALL SITE PLAN

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C101 |

## LEGAL DESCRIPTION

LEGAL DESCRIPTION:
Per Instrument No. 202121241 SUR filed in the Office of the Recorder in Hendricks County, Indiana, and described as follows:

Addresses and Parcel Numbers:
4005 N C.R. 1000 E., Brownsburg, IN 46112
#32-08-17-365-002.000-016

The following represents a modernized legal description of a tract of land, as described in Instrument #1998-04591 in the Office of the Recorder of Hendricks County, Indiana and being located in the Southwest Quarter of Section 17 and the Northwest Quarter of Section 20 both in Township 16 North, Range 2 East of the Second Principal Meridian, Hendricks County, Indiana. Said tract being more particularly bound and described as follows, to-Wit:

East line of the Southwest quarter of Section 17 as being North 01 degrees 22 minutes 53 seconds West, deed, measured North 01 degrees 00 minutes 22 seconds West and all other bearings being relative thereto.

Beginning at a Hendricks County Aluminum monument found marking the Southwest corner of the Southwest quarter Section 17, Township 16 North, Range 2 East of the Second Principal Meridian, Hendricks County, Indiana; thence running North on and along the West line of the Southwest quarter of Section 17 bearing North 01° 22' 53" West 155.58 feet, deed, and measured North 01° 00' 22" West 155.53 feet to a point on said West line, marking the Northeast corner of the National Hot Rod Association tract as referenced in the caption; thence running East on and along the North line of the National Hot Rod Association bearing North 88° 42' 57" East 546.58 feet, deed, and measured North 89° 10' 00" East a distance of 40.19 feet to a found 5/8" rebar with Kruse Consulting cap affixed and the *Point of Beginning* of this description; thence continuing North 89° 10' 00" East a distance of 508.15 feet to a found 5/8" rebar with Kruse Consulting cap affixed marking the intersection with the Southwesterly Right-of-Way of the CSX Railroad; thence running Southeasterly on and along the CSX Railroad Right-of-Way and traveling into the Northwest quarter of Section 20 bearing South 61° 12' 10" East 366.62 feet, deed, and measured South 60° 46' 15" East a distance of 365.01 feet to a found 5/8" rebar with Gaston cap marking the Northeast corner of Lot 1 in Villa Farms Subdivision, as per plat thereof recorded in Plat Book 3, page 134 in the Office of the Recorder of Hendricks County, Indiana; thence running West on and along the North line of said Lot 1 in Villa Farms Subdivision bearing South 88° 25' 57" West 863.49 feet (plat for Villa Farms shows this line to be 860.54 feet), calculated to be 823.52 feet to a point marking the intersection with the East right-of-way of N. CR. 1000 E; thence North 01° 02' 08" East, on and along said right-of-way, 38.39 feet; thence North 01° 00' 22" East 155.02 feet to the *Point of Beginning*. Containing 2.895 acres, more or less, subject to all easements and rights-of-way of record.

Dedicated Right-of-Way:
Beginning at a Hendricks County Aluminum monument found marking the Southwest corner of the Southwest quarter Section 17, Township 16 North, Range 2 East of the Second Principal Meridian, Hendricks County, Indiana, and the *Point of Beginning* of this description; thence running North on and along the West line of the Southwest quarter of Section 17 bearing North 01° 22' 53" West 155.58 feet, deed, and measured North 01° 00' 22" West 155.53 feet to a point on said West line, marking the Northeast corner of the National Hot Rod Association tract as referenced in the caption; thence running East on and along the North line of the National Hot Rod Association bearing North 88° 42' 57" East, deed, and measured North 89° 10' 00" East a distance of 40,19 feet to a found 5/8" rebar with Kruse Consulting cap affixed, marking the intersection with the east right-of-way line of N. CR 1000 E.; thence South 01° 00' 22" East 155.02 feet on and along said right-of-way; thence South 01° 02' 08" East 38.39 feet on and along said right-of-way, traveling into the Northwest quarter of Section 20; thence South 88° 25' 57" West 40,19 feet to a point on the West line of the Northwest quarter of Section 20; thence North 01° 02' 08" West on and along aforementioned West line, 38.39 feet to the *Point of Beginning* of this Dedicated Right-of-Way description. Containing 0.179 acres, more or less.

## LINETYPE LEGEND:

- (SF) = SILT FENCE
- x x x = BARB WIRE FENCE
- o o o = CHAIN-LINK FENCE
- H H H = WOOD FENCE
- W = WATER LINE
- STRM = STORM SEWER LINE
- SAN = SANITARY SEWER LINE
- GAS = GAS LINE
- UGE = UNDERGROUND ELECTRIC LINE
- OHE = OVERHEAD ELECTRIC LINE
- COMM = COMMUNICATION LINE
- T = TELEPHONE LINE
- UTELE = UNDERGROUND TELEPHONE LINE
- FO = FIBER OPTIC LINE
- W = FIRE DEPARTMENT WATER SUPPLY
- 35' ESMT = 35' EASEMENT LINE
- 30' ESMT = 30' EASEMENT LINE
- 25' ESMT = 25' EASEMENT LINE
- 20' ESMT = 20' EASEMENT LINE
- 15' ESMT = 15' EASEMENT LINE
- 10' ESMT = 10' EASEMENT LINE
- 5' ESMT = 5' EASEMENT LINE
- ESMT = EASEMENT LINE
- SWALE = SWALE LINE
- EOW = EDGE OF WATER
- 35' SETBK = 35' SETBACK LINE
- 30' SETBK = 30' SETBACK LINE
- 25' SETBK = 25' SETBACK LINE
- 20' SETBK = 20' SETBACK LINE
- 15' SETBK = 15' SETBACK LINE
- 10' SETBK = 10' SETBACK LINE
- 5' SETBK = 5' SETBACK LINE
- SETBACK = SETBACK LINE
- ROW = RIGHT-OF-WAY LINE
- = PROPERTY BOUNDARY
- UD = SWALE UNDERDRAIN
- CABLE = CABLE TV LINE
- FL> = FLOW LINE

## SYMBOL LEGEND:

- = STORM SEWER END SECTION
- = SANITARY SEWER CLEANOUT
- C.O. = CLEANOUT
- = MANHOLE
- = CATCH BASIN
- = CATCH BASIN
- = CURB INLET
- = FIRE HYDRANT
- = PRESSURE RELIEF VALVE
- WV = WATER VALVE
- W = WATER WELL
- GV = GAS VALVE
- = LIGHT POLE
- = UTILITY POLE
- IRF = PROPERTY CORNER IRF = IRON ROD FOUND RBF = REBAR FOUND
- RBF
- = SURVEY POINT (SECTION CORNER)
- BM = BENCHMARK
- = SOIL BORING
- 741.25 = NEW GRADE ELEVATION
- x741.25 = EXISTING GRADE ELEVATION
- = STRAW BALE DAM
- = ROCK DAM
- = SIGN
- STOP = STOP SIGN
- = HANDICAP SIGN
- ENTER ONLY = ENTER ONLY SIGN
- EXIT ONLY = EXIT ONLY SIGN
- DO NOT ENTER = DO NOT ENTER SIGN
- = EVERGREEN TREE
- = DECIDUOUS TREE
- = BUSH
- = TEMPORARY CONSTRUCTION ENTRNACE
- = GRASS PERMANENT SEEDING
- = EROSION CONTROL BLANKET ON ALL SLOPES 3:1 OR GREATER

## SITE NOTES:

HANDICAP RAMP CONSTRUCTION NOTES:

1. ALL HANDICAP RAMPS SHALL MEET THE REQUIREMENTS OF THE AMERICAN DISABILITIES ACT. THE MOST RECENT INDOT STANDARD SPECIFICATIONS AND THE GOVERNING JURISDICTIONS MOST RECENT STANDARDS. CURB SWIPES REQUIRED FOR HANDICAP RAMPS SHALL BE PROVIDED AT TIME OF INITIAL CONSTRUCTION.

2. MINIMUM WIDTH OF CURB RAMP SHALL BE 4 FEET NOT INCLUDING FLARES. MAXIMUM SLOPE OF RAMPS SHALL BE 12:1

3. HANDICAP RAMPS ARE TO BE LOCATED AS SHOWN ON PLANS.

4. TYPE 'E' RAMPS SHALL BE PROVIDED AT THE CENTERLINE OF RADIUS AT ALL CORNERS OF EVERY STREET INTERSECTION WHERE THERE IS AN EXISTING OR PROPOSED SIDEWALK AND CURB. IN CASE OF "T"-INTERSECTION, A TYPE 'C' RAMP SHALL BE PROVIDED ADJACENT TO EACH CORNER RAMP. TYPE 'C' RAMPS ALSO SHALL BE PROVIDED AT WALK LOCATIONS AT MID-BLOCK IN VICINITY OF HOSPITALS, MEDICAL CENTERS OR ATHLETIC STADIUMS. THE USE OF DETAILS CONTRARY TO THOSE SHOWN HEREIN SHALL REQUIRE THE PRIOR WRITTEN APPROVAL OF THE GOVERNING JURISDICTION.

5. SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING TRANSVERSE TO THE SLOPE OF THE RAMP.

6. RAMPS SHALL BE PROVIDED WHERE THE DRIVEWAY CURB EXTENDS ACROSS THE SIDEWALK.

7. CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON ALL RAMPS WITH NO BREAKS IN GRADE.

8. DRAINAGE STRUCTURES SHALL NOT BE PLACED IN LINE WITH THE RAMPS EXCEPT WHERE EXISTING DRAINAGE STRUCTURES ARE BEING UTILIZED IN THE NEW CONSTRUCTION. LOCATION OF THE RAMPS SHALL TAKE PRECEDENCE OVER LOCATION OF DRAINAGE STRUCTURES.

9. THE NORMAL GUTTER LINE PROFILE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.

10. EXPANSION JOINTS FOR THE RAMP SHALL BE A MAXIMUM 1/2" WIDE. THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

11. CROSSWALK AND STOP LINE MARKING, IF USED, SHALL BE LOCATED TO STOP TRAFFIC SHORT OF ALL RAMP CROSSINGS.

12. SLOPE OF RAMP MAY BE WARPED WHEN FILED CONDITIONS WARRANT AND WHEN APPROVED BY THE GOVERNING JURISDICTION.

## LOT COVERAGE

| | ACRES | PERCENT |
|---|---|---|
| ASPHALT | 1.845 | 60% |
| BUILDINGS | 0.086 | 2.8% |
| SIDEWALK | 0.016 | 0.5% |
| PERVIOUS | 1.123 | 36.6% |
| TOTAL LOT | 3.07 | 100% |

## SITE NOTES:

GENERAL NOTES:

1. REFER TO THE INDIANA DEPARTMENT OF TRANSPORTATION (INDOT) STANDARD SPECIFICATIONS, LATEST EDITION, FOR BASIC MATERIALS AND CONSTRUCTION METHODS. THE SECTIONS BELOW FOR VARIOUS ITEMS ARE TO CLARIFY THE INTENT OF THE REQUIREMENTS FOR THIS PROJECT. PLEASE NOTE THAT OTHER SECTIONS OF THE INDOT STANDARD SPECIFICATIONS MAY ALSO BE APPLICABLE.

2. ALL RADII SHELL BE 5 FOOT UNLESS NOTED OTHERWISE ON PLANS.

3. CONTRACTOR TO VERIFY EXACT LOCATION AND INVERT OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.

4. STORM SEWER PIPE OF OTHER MATERIAL OR MATERIAL NOT MEETING THESE SPECIFICATIONS SHALL REQUIRE THE PRIOR WRITTEN APPROVAL OF THE ENGINEER.

5. THE CONTRACTOR SHALL SUBMIT INFORMATION TO THE APPROPRIATE JURISDICTIONAL CONTACT SHOWING CONFORMANCE WITH THESE SPECIFICATIONS UPON REQUEST.

6. NOTICE SHALL BE POSTED NEAR THE MAIN ENTRANCE OF THE PROJECT SITE CONTAINING ALL DOCUMENTATION LISTED IN IDEM CSGP SECTION 3.3(a)(13)(A).

PAVEMENT CONSTRUCTION:

1. THE INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, LATEST EDITION, SHALL APPLY TO WORKMANSHIP AND MATERIALS IN CONSTRUCTION OF SUBGRADE, PAVEMENT, CURBS AND WALKS.

A) PREPARE THE SUBGRADE IN ACCORDANCE WITH INDOT SECTION 207. NO TRAFFIC WILL BE PERMITTED ON THE PREPARED SUBGRADE PRIOR TO PAVING.

B) BITUMINOUS PAVEMENT IN ACCORDANCE WITH INDOT SECTION 403.

C) FINISHING EARTH GRADED SHOULDERS, DITCHES AND SLOPES IN ACCORDANCE WITH INDOT SECTION 208.

CONCRETE PAVEMENT AND WALKS:

1. SEE DETAIL FOR TYPE AND DETAILS.

2. CONCRETE SHALL BE READY MIXED PORTLAND CEMENT AND WATER CONFORMING TO ASTM C-150. AGGREGATES SHALL CONFORM TO ASTM C-33. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS SHALL BE 4000 P.S.I. WHERE REQUIRED, REINFORCEMENT SHALL BE WELDED STEEL WIRE FABRIC CONFORMING TO ASTM A-185.

3. ALL EXTERIOR CONCRETE SHALL CONTAIN 6% ± 1% AIR ENTRAINMENT.

APPLICATION:

A) PLACE CONCRETE ONLY ON A MOIST, COMPACT SUBGRADE OR BASE FREE FROM LOOSE MATERIAL. PLACE NO CONCRETE ON MUDDY OR FROZEN SUBGRADE IN ACCORDANCE WITH INDOT SECTION 604 AND 605.

B) CONCRETE SHALL BE DEPOSITED SO AS TO REQUIRE AS LITTLE REHANDLING AS PRACTICAL. WHEN CONCRETE IS TO BE PLACED AT AN ATMOSPHERIC TEMPERATURE OF 35 DEGREES OR LESS, PARAGRAPH 702.10 OF THE INDOT SPECIFICATIONS SHALL APPLY.

C) EXCEPT AS OTHERWISE SPECIFIED, CURE ALL CONCRETE BY ONE OF THE METHODS DESCRIBED IN INDOT SECTION 501.17.

PARKING LOT STRIPING:

1. PAINT MATERIAL SHALL COMPLY WITH FEDERAL SPECIFICATION TT-P-115A FOR TRAFFIC PAINT WITHOUT GLASS SPHERES. (COLOR BY OWNER SELECTION).

2. SUBCONTRACTOR TO PERFORM ALL FIELD LAYOUT WORK NECESSARY TO ACHIEVE STRAIGHT AND TRUE LINES. ASPHALT MUST BE CLEANED WITH POWER BROOM AND HAND BROOM TO REMOVE LOOSE MATERIAL BEFORE STRIPING. THE SUBCONTRACTOR IS TO PROVIDE BARRIERS TO PREVENT MARRING OF LINES BY VEHICLES UNTIL PAINT HAS DRIED. STRIPING PAINT SHALL BE APPLIED AT THE MINIMUM RATE OF ONE GALLON PER 100 SQUARE FEET OF PAINT (BASED ON 39% SOLIDS) AT A WIDTH OF 4 INCHES.

STREET PAVEMENT NOTES:

1. MATERIALS AND CONSTRUCTION FOR STREETS, WALKS, CURBS AND STORM WATER SEWERS SHALL CONFORM TO THE REQUIREMENTS OF THE INDIANA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS" LATEST PRINTED EDITION UNLESS SHOWN OR NOTED OTHERWISE.

2. PAVEMENT COMPOSITION NOTED ON DETAIL IS THE MINIMUM REQUIREMENT FOR STREET CLASSES 1, 2, 3, 4 AND 5, WITH A GOOD SUB-GRADE SOIL CLASSIFICATION. PAVEMENT COMPOSITION FOR OTHER CLASSES OF STREET SHALL BE DESIGNED WITH CONSIDERATION GIVEN TO THE TRAFFIC VOLUME, SUB-GRADE SOIL EVALUATION AND TYPE OF PAVEMENT MATERIAL TO BE USED.

3. THE SUB-GRADE MUST BE PROOF ROLLED BY THE CONTRACTOR USING A FULLY LOADED TRI-AXLE DUMP TRUCK, MINIMUM LOAD OF 20 TONS

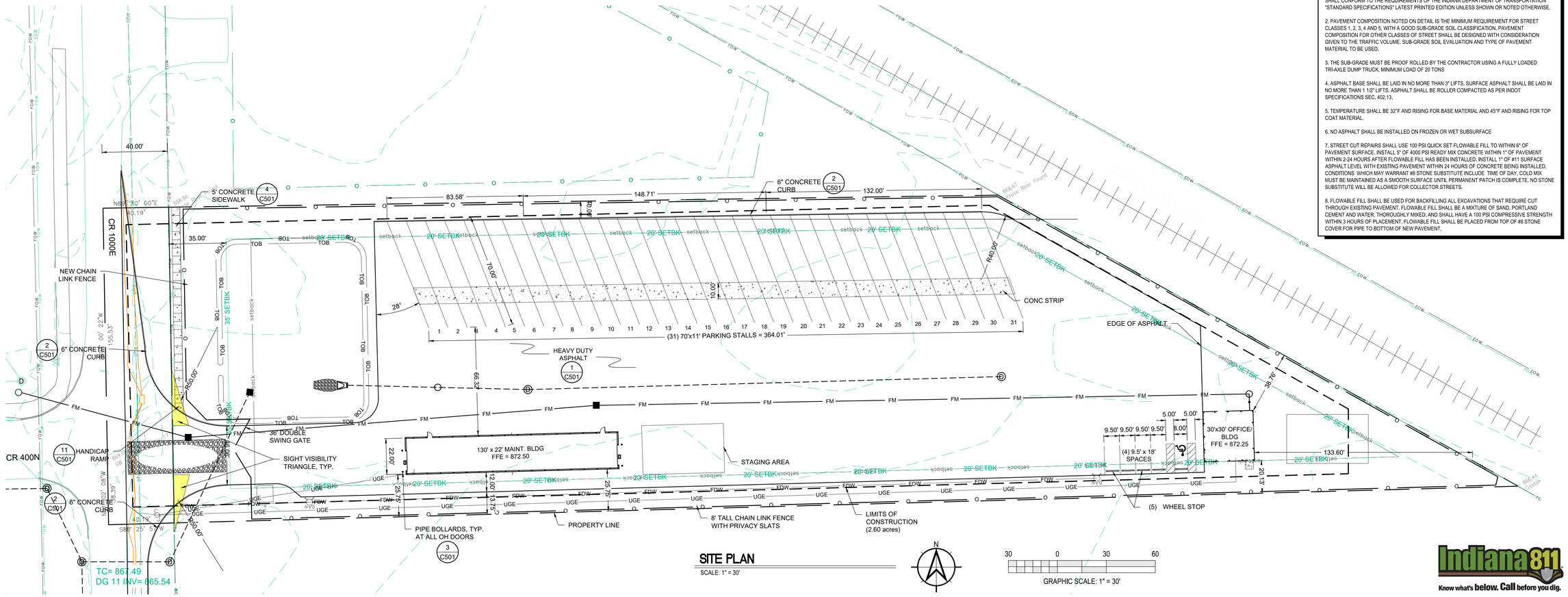
4. ASPHALT BASE SHALL BE LAID IN NO MORE THAN 3" LIFTS. SURFACE ASPHALT SHALL BE LAID IN NO MORE THAN 1 1/2" LIFTS. ASPHALT SHALL BE ROLLER COMPACTED AS PER INDOT SPECIFICATIONS SEC. 402.13.

5. TEMPERATURE SHALL BE 32°F AND RISING FOR BASE MATERIAL AND 45°F AND RISING FOR TOP COAT MATERIAL.

6. NO ASPHALT SHALL BE INSTALLED ON FROZEN OR WET SUBSURFACE

7. STREET CUT REPAIRS SHALL USE 100 PSI QUICK SET FLOWABLE FILL TO WITHIN 6" OF PAVEMENT SURFACE. INSTALL 5" OF 4000 PSI READY MIX CONCRETE WITHIN 1" OF PAVEMENT WITHIN 2-24 HOURS AFTER FLOWABLE FILL HAS BEEN INSTALLED. INSTALL 1" OF #11 SURFACE ASPHALT LEVEL WITH EXISTING PAVEMENT WITH 24 HOURS OF CONCRETE BEING INSTALLED. CONDITIONS WHICH MAY WARRANT #8 STONE SUBSTITUTE INCLUDE TIME OF DAY, COLD MIX MUST BE MAINTAINED AS A SMOOTH SURFACE UNTIL PERMANENT PATCH IS COMPLETE. NO STONE SUBSTITUTE WILL BE ALLOWED FOR COLLECTOR STREETS.

8. FLOWABLE FILL SHALL BE USED FOR BACKFILLING ALL EXCAVATIONS THAT REQUIRE CUT THROUGH EXISTING PAVEMENT. FLOWABLE FILL SHALL BE A MIXTURE OF SAND, PORTLAND CEMENT AND WATER, THOROUGHLY MIXED, AND SHALL HAVE A 100 PSI COMPRESSIVE STRENGTH WITHIN 3 HOURS OF PLACEMENT. FLOWABLE FILL SHALL BE PLACED FROM TOP OF #8 STONE COVER FOR PIPE TO BOTTOM OF NEW PAVEMENT.




## SITE PLAN

SCALE: 1" = 30'

N

30 0 30 60

GRAPHIC SCALE: 1" = 30'

Indiana 811 Know what's below. Call before you dig.


Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

SITE PLAN

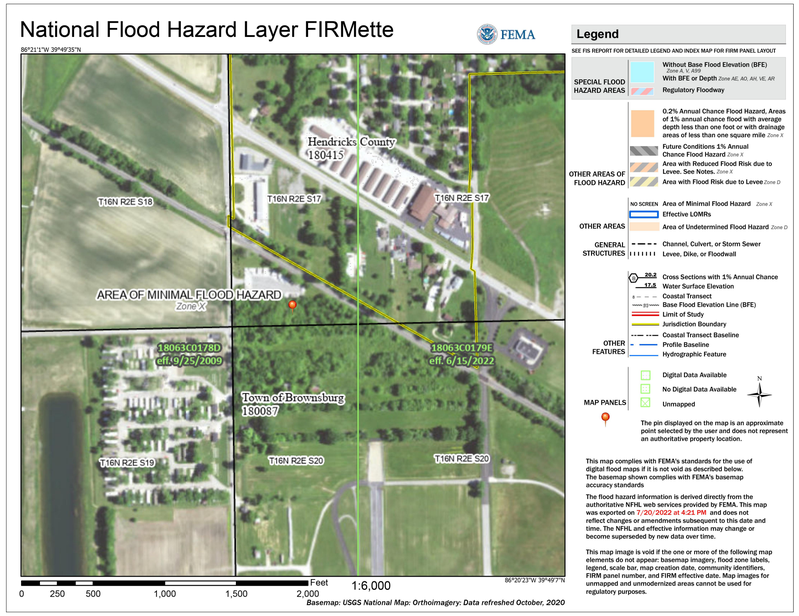
BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

Brian E. Moench

### REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C201 |







## Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| YbvA | Brookston silty clay loam-Urban land complex, 0 to 2 percent slopes | 1.8 | 53.2% |
| YcIA | Crosby silt loam, fine-loamy subsoil-Urban land complex, 0 to 2 percent slopes | 1.5 | 46.8% |
| **Totals for Area of Interest** | | **3.3** | **100.0%** |

## FLOOD ZONE DESIGNATION:

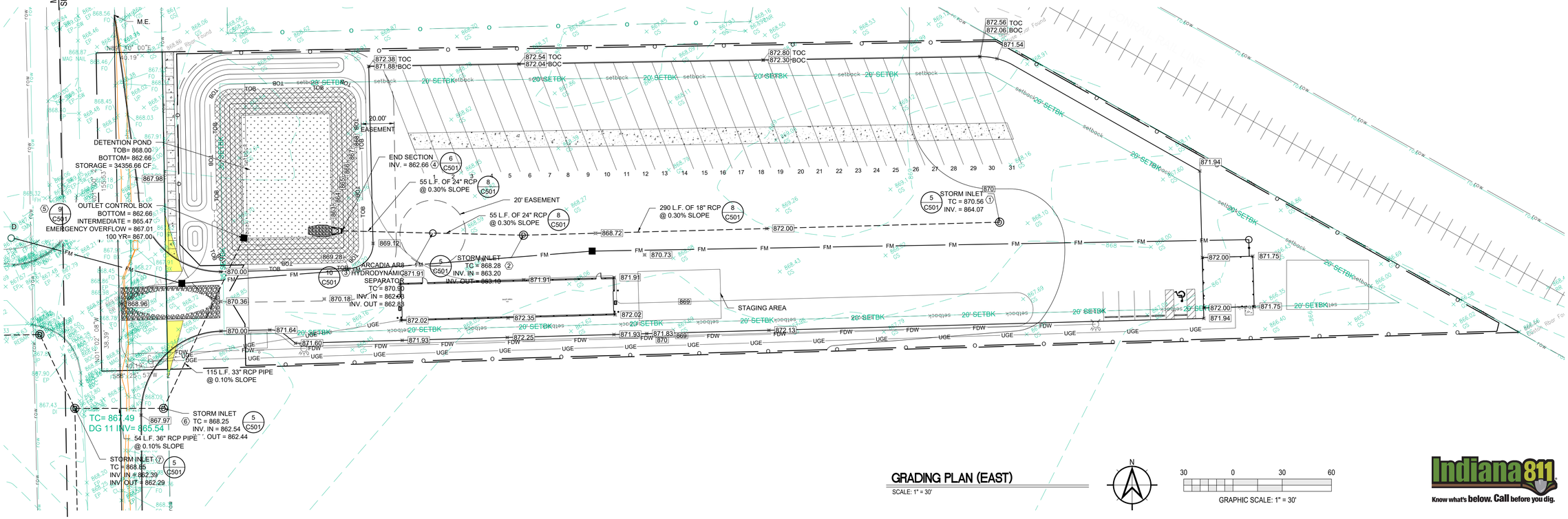
THIS LOT LIES ENTIRELY IN FLOOD HAZARD ZONE "X" AS SCALES FROM THE FLOOD INSURANCE RATE MAP (FIRM) FOR:

HENDRICKS COUNTY, INDIANA

| | |
|---|---|
| COMMUNITY NAME: | TOWN OF BROWNSBURG |
| COMMUNITY NUMBER: | 180087 |
| PANEL NUMBER: | C0179E |
| DATED: | JUNE 15, 2022 |

## STAGE STORAGE TABLE

| ELEV | AREA (sq. ft.) | DEPTH (ft) | AVG END INC. VOL. (cu. ft.) | AVG END TOTAL VOL. (cu. ft.) | CONIC INC. VOL. (cu. ft.) | CONIC TOTAL VOL. (cu. ft.) |
|---|---|---|---|---|---|---|
| 862.660 | 4,044.91 | N/A | N/A | 0.00 | N/A | 0.00 |
| 863.000 | 4,312.07 | 0.340 | 1420.69 | 1420.69 | 1420.44 | 1420.44 |
| 864.000 | 5,146.08 | 1.000 | 4729.07 | 6149.76 | 4722.93 | 6143.37 |
| 865.000 | 6,051.22 | 1.000 | 5598.65 | 11748.41 | 5592.54 | 11735.92 |
| 866.000 | 7,016.36 | 1.000 | 6533.79 | 18282.20 | 6527.84 | 18263.76 |
| 867.000 | 8,038.03 | 1.000 | 7527.19 | 25809.39 | 7521.41 | 25785.17 |
| 868.000 | 9,116.26 | 1.000 | 8577.15 | 34386.54 | 8571.50 | 34356.66 |




## GRADING PLAN (EAST)

SCALE: 1" = 30'

GRAPHIC SCALE: 1" = 30'

## GRADING NOTES:

GENERAL GRADE NOTES:

1. REFER TO THE INDIANA DEPARTMENT OF TRANSPORATION (INDOT) STANDARD SPECIFICATIONS, LATEST EDITION, FOR BASIC MATERIALS AND CONSTRUCTION METHODS. THE SECTION BELOW FOR VARIOUS ITEMS ARE TO CLARIFY THE INTENT OF THE REQUIREMENTS FOR THIS PROJECT, PLEASE NOTE THAT OTHER SECTIONS OF THE INDOT STANDARD SPECIFICATIONS MAY ALSO BE APPLICABLE.

2. FILL MATERIAL SHALL CONSIST OF EARTH OBTAINED FROM CUT AREAS, BORROW PITS OR OTHER APPROVED SOURCES. EARTH SHALL BE FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES AND LARGE ROCKS. THE FILL MATERIAL SHALL BE PLACED IN LAYERS NOT TO EXCEED SIX INCHES FOLLOWING COMPACTION. PROPER MOISTURE CONTENT OF FILL MATERICAL WILL BE SUCH TO ACHIEVE SPECIFIED COMPACTION DENSITY. ALL FILL BENEATH PAVED AREAS, FLOOR SLABS AND FURTURE BUILDINGS SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY PER ASTM D-1557. FIELD COMPACTING TEST SHALL BE RUN ON EACH LIFT, IN FILL SECTIONS, AND THE REQUIRED COMPACTION ON EACH LIFT SHALL BE IN ACCORDANCE WITH INDOT SECTION 211.

3. MAXIMUM LAWN SLOPE IS 3:1.

4. THE CONTRATOR SHALL CONTACT ALL UTILITY COMPANIES TO LOCATE MAINS, CONDUITS, SERVICE LINES, ETC. IN THE AFFECTED CONSTRUCTION AREA EXISTING UTILITY STRUCTURES ARE SHOWN HERE IN ACCORDANCE WITH AVAILABLE INFORMATION. THE LOCATION AND PROTECTION OF UTILITY STRUCTURES, THEIR SUPPORT AND MAINTENANCE DURING CONSTRUCTION (IN COOPERATION WITH APPLICABLE UTILITY COMPANY) IS THE EXPRESSED RESPONSIBILITY OF THE CONTRACTOR.

5. ALL SPOT ELEVATIONS ARE TO FINISHED GRADE.

6. ALL EXISTING MANHOLE CASTINGS TO BE ADJUSTED TO FINISH GRADE.

7. COMPACT "B" BORROW BACK FILL REQ'D. OVER ALL UTILITIES IN PAVED AREAS.

8. DISTURBED AREAS TO BE GRADED TO FINAL GRADE AND RECEIVE A MIN OF 4" TOPSOIL

9. STABILIZATION MUST BE INITIATED BY END OF THE 7TH DAY THE AREA IS LEFT IDLE AND STABILIZATION SHALL BE COMPLETED WITHIN 14 DAYS AFTER INITIATION.

10. FINAL STABILIZATION IS ACHIEVED WHEN ALL LAND DISTURBING ACTIVITIES HAVE BEEN COMPLETED AND A UNIFORM PERENNIAL VEGATATIVE COVER WITH DENSITY OF 70% ON ALL UNPAVED SURFACES.

11. WATER SHOULD BE PUMPED THROUGH BMP AND INTO THE DETENTION POND.

REINFORCED CONCRETE PIPE:

1. REINFORCED CONCRETE PIPE SHALL BE CLASS III, IV OR V AS SPECIFIED IN ASTM C-76.

2. REINFORCED ELLIPTICAL CONCRETE PIPE SHALL BE CLASS HE-III OR HE-IV AS SPECIFIED IN ASTM C-507.

3. LIFT HOLES ARE NOT ALLOWED FOR PIPE LESS THAN 24 INCHES IN DIAMETER. A MAXIMUM OF TWO LIFT HOLES ARE ALLOWED FOR PIPE 24 INCHES IN DIAMETER OR LARGER. LIFT HOLES SHALL BE REPAIRED ACCORDING TO MOST RECENT INDOT STANDARD SPECIFICATIONS.

4. FITTINGS AND SPECIALTIES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS FOR THE TYPE OF PIPE BEING USED.

5. EACH PIPE SECTION SHALL BE MARKED WITH DATE OF MANUFACTURE, SIZE AND CLASS OF PIPE, SPECIFICATION DESIGNATION, MANUFACTURER AND PLANT IDENTIFICATION.

6. PIPE SHALL BE FURNISHED WITH A BELL OR GROOVE ON ONE END OF A UNIT OF PIPE AND A SPIGOT OR TONGUE ON THE ADJACENT END OF THE ADJOINING PIPE. ALL JOINTS SHALL HAVE A GROOVE ON THE SPIGOT FOR PLACEMENT OF A RUBBER "O-RING" OR PROFILE GASKET IN ACCORDANCE WITH ASTM C-443. THE GASKET SHALL BE A CONTINUOUS RING WHICH FITS SNUGLY INTO THE ANNULAR SPACE BETWEEN THE OVERLAPPING SURFACES OF THE ASSEMBLED PIPE JOINT.

## EMERGENCY SPILLWAY DETAIL




Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

GRADING PLAN (EAST)

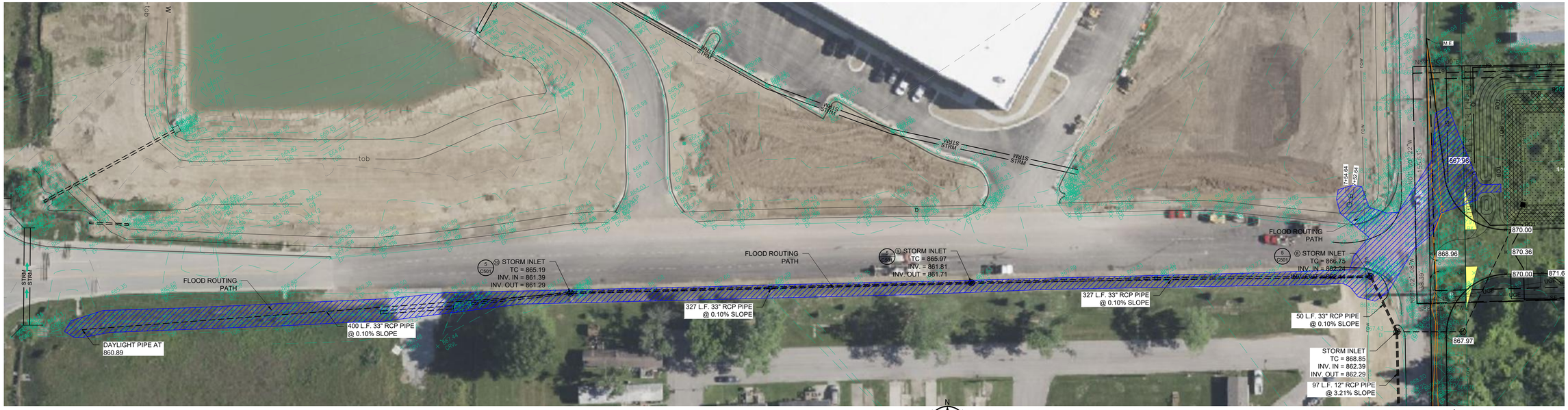
BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER
Susan E. Neal

## REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C301A |

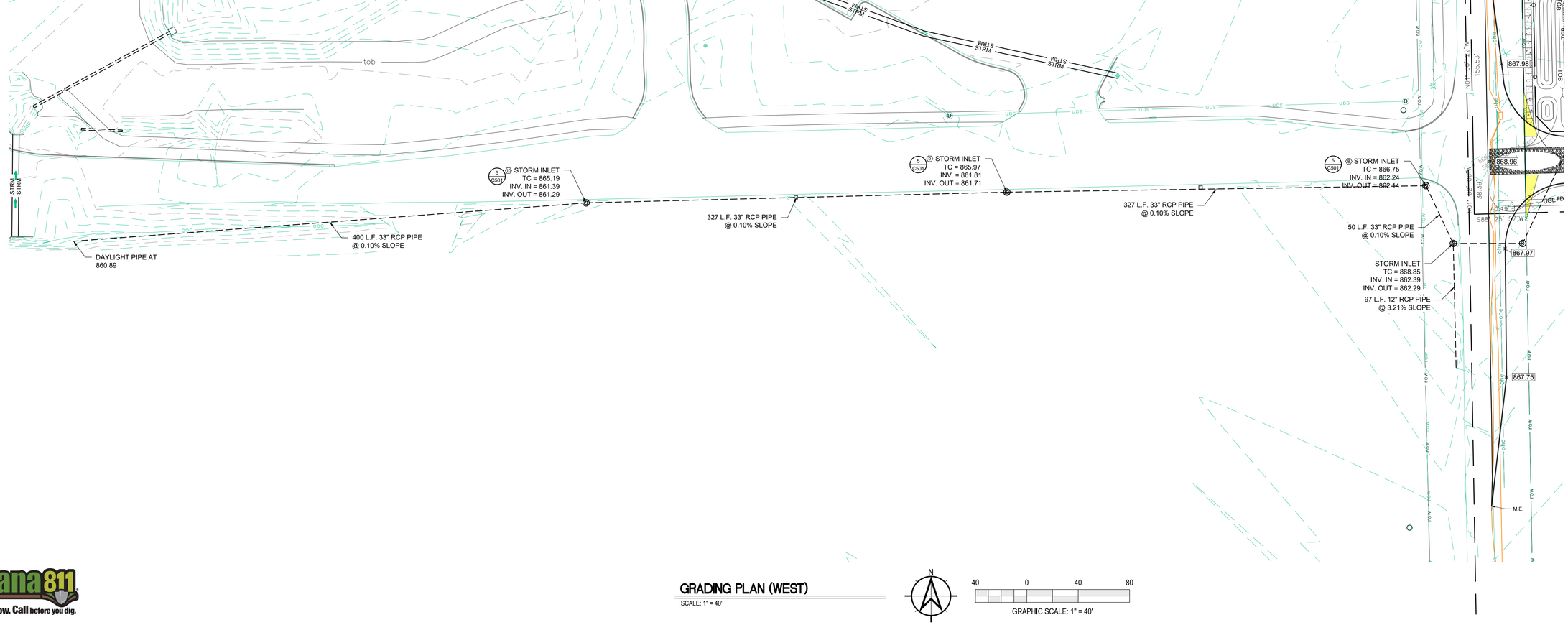
Indiana 811
Know what's below. Call before you dig.




## FLOOD ROUTING PATH

SCALE: 1" = 40'

GRAPHIC SCALE: 1" = 40'




## GRADING PLAN (WEST)

SCALE: 1" = 40'

GRAPHIC SCALE: 1" = 40'

Indiana 811
Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

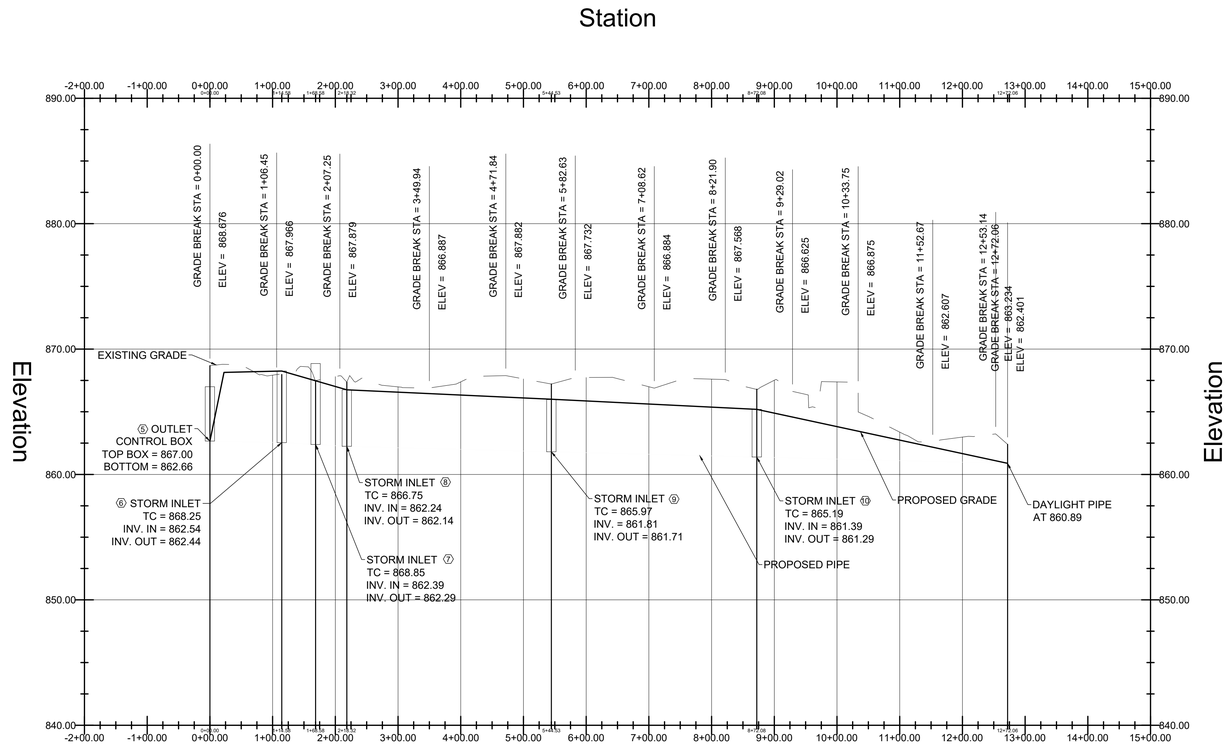
GRADING PLAN (WEST)

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

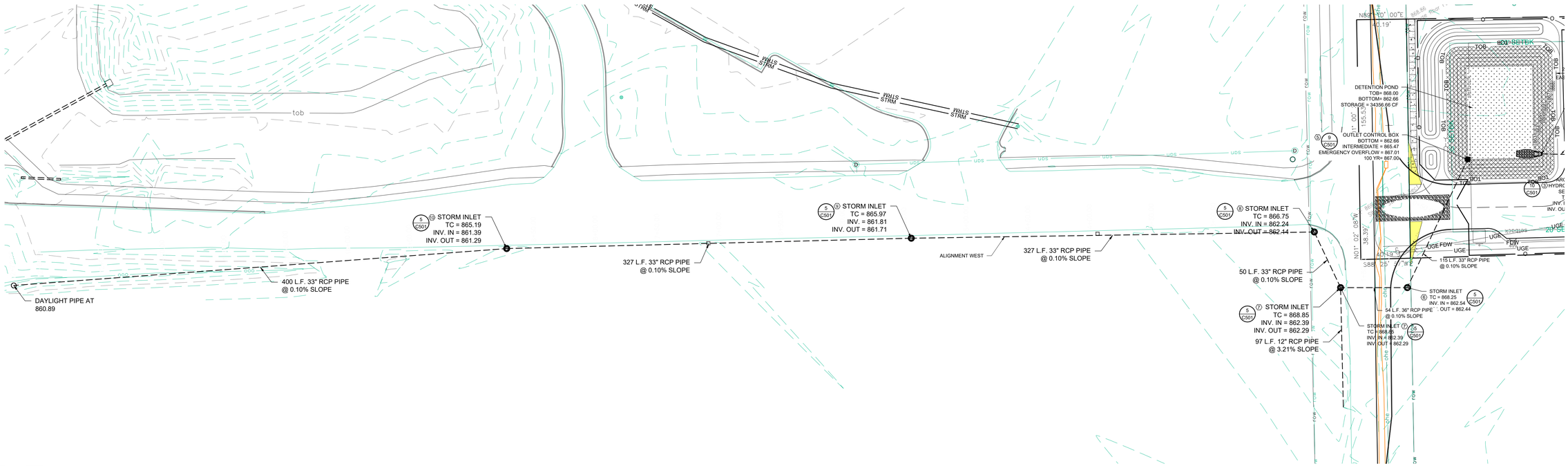
| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C301B |




## PIPE PROFILE VIEW
## ALIGHTNMENT WEST

NOT TO SCALE




## ALIGHTNMENT WEST

SCALE: 1" = 40'

GRAPHIC SCALE: 1" = 40'

Indiana 811
Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

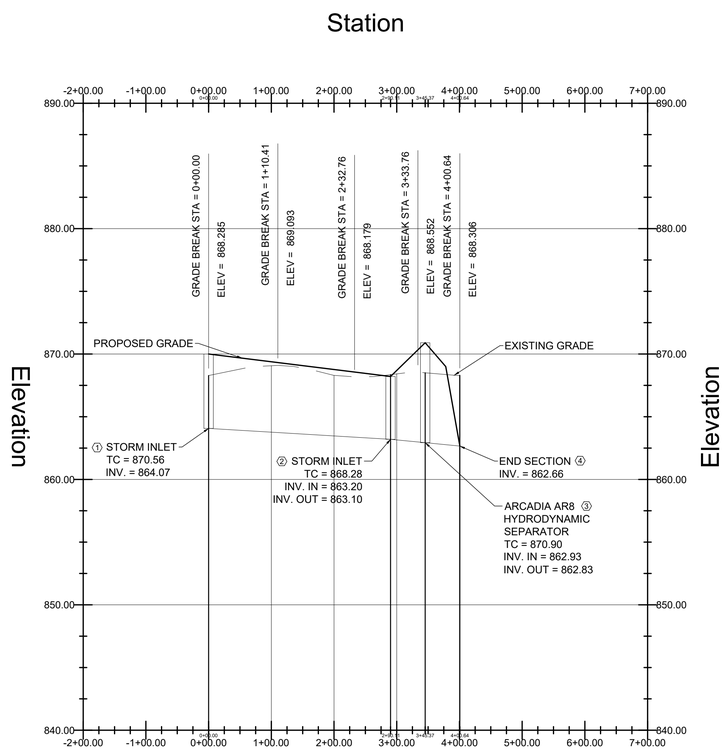
PIPE PROFILE PLAN (WEST)

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER
Brian E. Moench

REVISIONS:

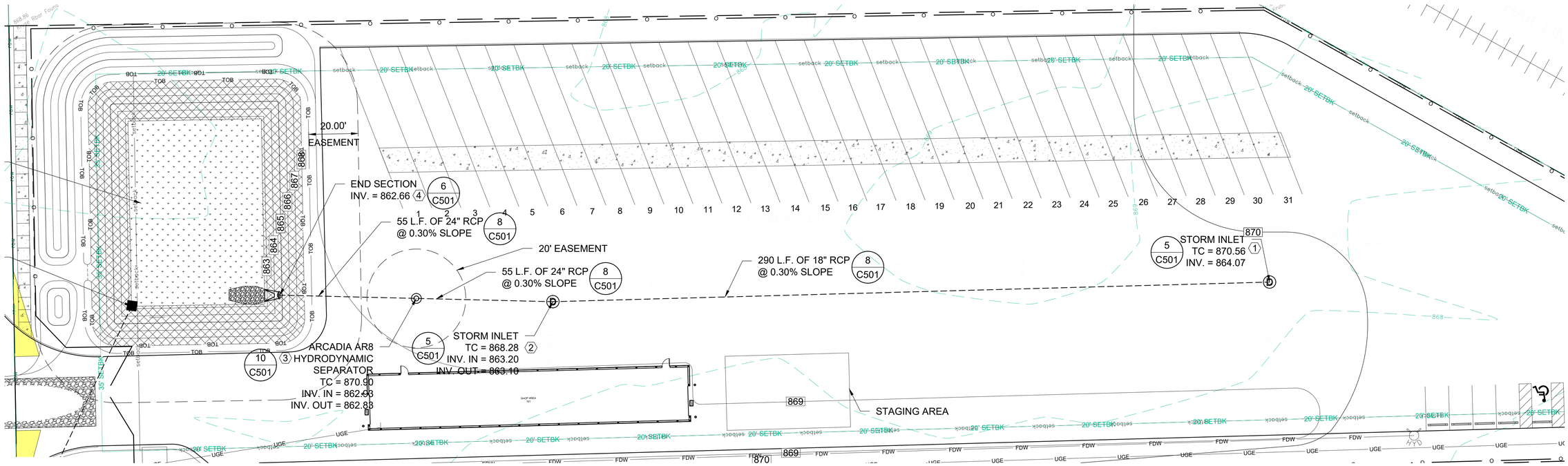
| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C301C |




## PIPE PROFILE VIEW
## ALIGHTNMENT EAST

NOT TO SCALE




## ALIGHTNMENT EAST

SCALE: 1" = 20'

N

40 0 40 80

GRAPHIC SCALE: 1" = 40'

Indiana 811
Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

PIPE PROFILE PLAN (EAST)

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C301D |

## SEASONAL SOIL PROTECTION CHART

| STABILIZATION PRACTICE | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. | OCT. | NOV. | DEC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PERMANENT SEEDING | | A | | | * | /// | /// | /// | *// | | | |
| DORMANT SEEDING | B | | | | | | | | | | B | |
| TEMPORARY SEEDING | | C | E | | * | /// | /// | /// | *D | | | |
| SODDING | | F** | | | * | /// | /// | /// | * | | | |
| MULCHING | G | | | | | | | | | | | |

A = KENTUCKY BLUEGRASS 100 LBS/ACRE; CREEPING RED FESCUE 100 LBS/ACRE; PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYEGRASS 20 LBS/ACRE FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

B = KENTUCKY BLUEGRASS 120 LBS/ACRE; CREEPING RED FESCUE 120 LBS/ACRE; PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYEGRASS 30 LBS/ACRE FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

C = SPRING OATS 3 BUSHELS/ACRE
FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

D = WHEAT OR RYE 2 BUSHELS/ACRE
FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

E = ANNUAL RYEGRASS 40 LBS/ACRE (1 LB/1000 SQ. FT.)
FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE. APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

F = SOD

G = STRAW MULCH 2 TONS/ACRE

* / I / * = IRRIGATION NEEDED DURING JUNE, JULY, AUGUST AND/OR SEPTEMBER  ** = IRRIGATION NEEDED FOR 2 WEEKS AFTER SUPPLYING SOD

## INSTALLATION SCHEDULE:

| CONSTRUCTION PHASE: | CONSTRUCTION SCHEDULE: |
|---|---|
| PRE-CONSTRUCTION ACTIONS (EVALUATION/PROTECTION OF IMPORTANT SITE CHARACTERISTICS) | BEFORE CONSTRUCTION, EVALUATE, MARK AND PROTECT IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, UNIQUE AREAS (e.g., WETLANDS) TO BE PRESERVED, ON SITE SEPTIC SYSTEM ABSORPTION FIELDS IF APPLICABLE, AND VEGETATION SUITABLE FOR FILTER STRIPS, ESPECIALLY IN PERIMETER AREAS. |
| CONSTRUCTION ACCESS (CONSTRUCTION ENTRANCES, CONSTRUCTION ROUTES, EQUIPMENT PARKING AREAS) | STABILIZE BARE AREAS IMMEDIATELY WITH GRAVEL AND TEMPORARY VEGETATION AS WORK TAKES PLACE. |
| SEDIMENT BARRIERS AND TRAPS (BASIN TRAPS, SILT FENCES, OUTLET PROTECTION) | INSTALL PRINCIPAL BASINS AFTER CONSTRUCTION SITE IS ASSESSED. INSTALL ADDITIONAL RUNOFF CONTROL MEASURES DURING GRADING AS NEEDED. |
| RUNOFF CONVEYANCE SYSTEM (STABILIZED STREAM-BANKS, STORM DRAINS, INLET AND OUTLET PROTECTIONS, WATER QUALITY STRUCTURES) | WHERE NECESSARY, STABILIZE STREAMBANKS AS EARLY AS POSSIBLE. INSTALL PRINCIPLE CONVEYANCE SYSTEM WITH RUNOFF CONTROL MEASURES. INSTALL REMAINDER OF SYSTEM AFTER GRADING. |
| LAND CLEARING AND GRADING (CUTTING/FILLING/GRADING, DRAINS, SEDIMENT TRAPS, BARRIERS, DIVERSIONS, SURFACE ROUGHENING) | BEGIN MAJOR CLEARING AND GRADING AFTER INSTALLING THE KEY SEDIMENT AND RUNOFF MEASURES. CLEAR BORROW AND DISPOSAL AREAS AS NEEDED. INSTALL ADDITIONAL CONTROL MEASURES AS GRADING PROGRESSES. |
| SURFACE STABILIZATION (TEMPORARY AND PERMANENT SEEDING, MULCHING, SODDING, RIPRAP) | APPLY TEMPORARY OR PERMANENT STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS WHERE WORK IS DELAYED OR COMPLETED. |
| BUILDING CONSTRUCTION (BUILDINGS, UTILITIES, PAVING) | INSTALL NECESSARY EROSION AND SEDIMENT CONTROL PRACTICES AS WORK TAKES PLACE. |
| LANDSCAPING & FINAL STABILIZATION (TOP SOILING, TREES AND SHRUBS, PERMANENT SEEDING, MULCHING, SODDING, RIPRAP) | STABILIZE ALL OPEN AREAS, INCLUDING BORROW AND SPOIL AREAS. REMOVE TEMPORARY CONTROL MEASURES AND STABILIZE. |

## RESPONSIBLE PARTY FOR EROSION CONTROL

COMPANY: LIONS TRAN INC.
NAME: MALHI KULWINDER
ADDRESS: 7655 E. US HWY 36
AVON, INDIANA 46123
PHONE: 317-989-1580

## EROSION CONTROL NOTES:

SOIL EROSION CONTROL SUMMARY:

1. CONTRACTOR SHALL INSTALL SODDING, INLET PROTECTION, AND FILTERS AS SHOWN.

2. MASS GRADE THE SITE (SIDES OF SWALES, MOUNDS AND PONDS TO BE SODDED OR SEEDED AND MULCHED IMMEDIATELY UPON COMPLETION). TEMPORARY SEEDING SHALL BE RECOMMENDED FOR ALL SWALES AND DISTURBED AREAS THAT CANNOT BE FINAL SEEDED WITHIN A TIME PERIOD THAT WILL PREVENT SOIL EROSION, FOR TEMPORARY SEEDING THE CONTRACTOR SHALL UTILIZE A FAST GROWING SEED OF EITHER OATS, ANNUAL RYE GRASS, WHEAT OR RYE DEPENDING UPON TIME OF YEAR. DISTURBED AREAS SHOULD BE KEPT TO A MINIMUM AT ALL TIMES.

3. CONTRACTOR SHALL CONTROL MUD ACCUMULATION ON ALL STREETS SURROUNDING THE PROJECT BY INSTALLING STONE SURFACE AT ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC LEAVES THE SITE. DUST SHALL BE KEPT TO A MINIMUM BY UTILIZING SPRINKLING, CALCIUM CHLORIDE, VEGETATIVE COVER, SPRAY ON ADDITIVES OR OTHER APPROVED METHODS.

4. MAINTAIN ALL FILTERS DURING CONSTRUCTION TO PREVENT ANY BLOCKAGES FROM ACCUMULATED SEDIMENT. ADDITIONAL SEEDING MAY BE REQUIRED DURING CONSTRUCTION AS SPECIFIED BY ENGINEER OR SOIL CONSERVATION SERVICE, RIPRAP SHALL BE PLACED IN AREAS OF HIGH VELOCITY STREAM FLOW (MINIMUM SIZE 1/3 CU.FT.). PAYMENT FOR ADDITIONAL RIPRAP NOT SHOWN ON PLANS AND SEEDING SHALL BE ON A UNIT BASIS.

5. CONTRACTOR SHALL INSTALL ALL STORM SEWER INLET FILTERS AS STORM SEWER SYSTEM IS INSTALLED.

6. ALL PROPOSED STREET AREAS TO BE PAVED AS SOON AS POSSIBLE AFTER SUBGRADE IS PREPARED.

7. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROLS ONLY WHEN THERE IS SUFFICIENT GROWTH OF GROUND COVER TO PREVENT FURTHER EROSION.

8. ALL SWALES SHALL BE SEEDED AND SODDED (AS INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN) IMMEDIATELY AFTER FINAL GRADING.

9. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE INDIANA HANDBOOK FOR EROSION CONTROL IN DEVELOPING AREAS, MOST RECENT EDITION.

MAINTENANCE:

INSPECT PERIODICALLY, ESPECIALLY AFTER STORM EVENTS, UNTIL THE STAND IS SUCCESSFULLY ESTABLISHED. (CHARACTERISTICS OF A SUCCESSFUL STAND INCLUDE: VIGOROUS DARK GREEN OR BLUISH-GREEN SEEDLINGS; UNIFORM DENSITY WITH NURSE PLANTS, LEGUMES, AND GRASSES WELL INTER-MIXED; GREEN LEAVES; AND THE PERENNIALS REMAINING GREEN THROUGHOUT THE SUMMER, AT LEAST AT THE PLANT BASE.)

PLAN TO ADD FERTILIZER THE FOLLOWING GROWING SEASON ACCORDING TO SOIL TEST RECOMMENDATIONS.

REPAIR DAMAGED, BARE, OR SPARSE AREAS BY FILLING ANY GULLIES, RE-FERTILINZING, OVER- OR RE-SEEDING, AND MULCHING.

IF PLANT COVER IS SPARSE OR PATCHY, REVIEW THE PLANT MATERIALS CHOSEN, SOIL FERTILITY, MOISTURE CONDITION, AND MULCHING AFTER RE-PREPARING THE SEEDBED.

IF VEGETATION FAILS TO GROW, CONSIDER SOIL TESTING TO DETERMINE ACIDITY OR NUTRIENT DEFICIENCY PROBLEMS. (CONTACT YOUR SWCD OR COOPERATIVE EXTENSION OFFICE FOR ASSISTANCE.)

IF ADDITIONAL FERTILIZATION IS NEEDED TO GET A SATISFACTORY STAND, DO SO ACCORDING TO SOIL TEST RECOMMENDATIONS.

EROSION CONTROL NOTES:

PRIOR TO ANY WORK BEING DONE, A TEMPORARY CONSTRUCTION ENTRANCE AND SILT FENCING SHALL BE INSTALLED.

AFTER COMPLETION OF A STORM STRUCTURE, THE CURB INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY.

UPON COMPLETION OF SWALES AND SIDE SLOPES, CONTRACTOR SHALL INSTALL THE EROSION CONTROL BLANKETS.

ALL AREAS NOT DENOTING PERMANENT SEEDING OR FIBER BLANKETS SHALL BE TEMPORARILY SEEDED.

THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR KEEPING THE EXISTING ROADWAYS CLEAR OF DIRT AND DEBRIS.

ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY INSPECTOR AS CONDITIONS WARRANT.

EROSION PROTECTION DURING CONSTRUCTION AND SEEDING:

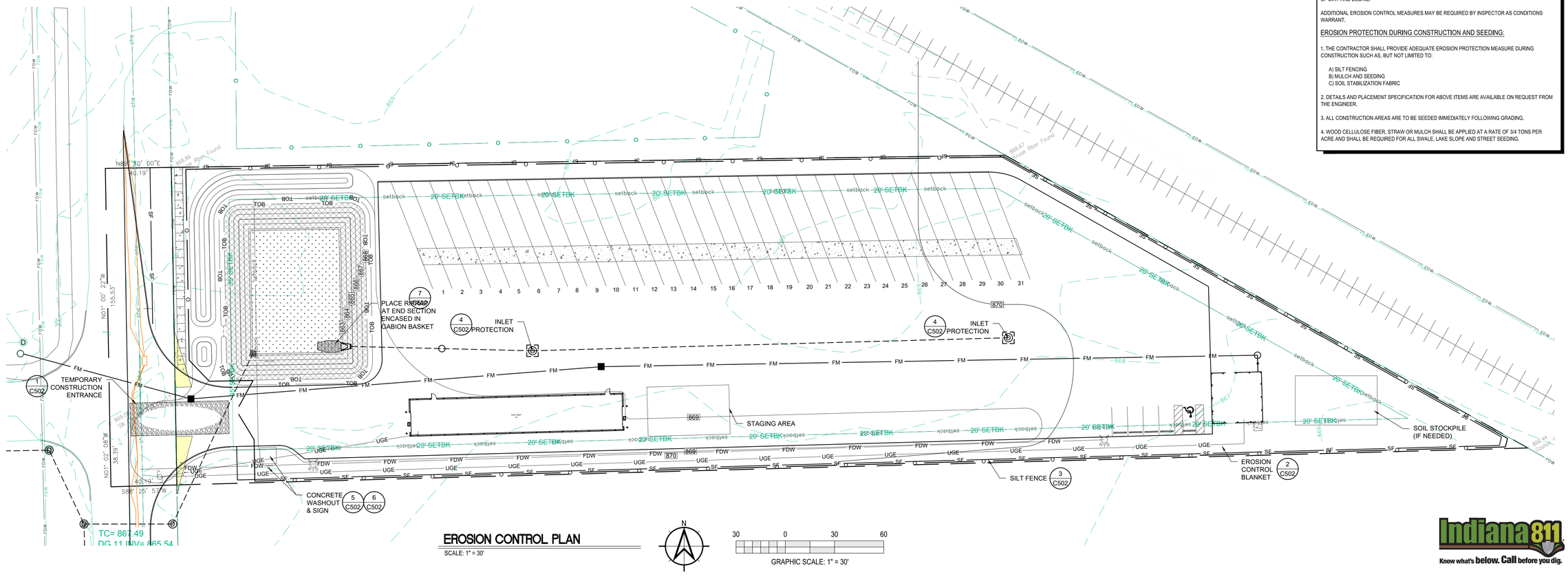
1. THE CONTRACTOR SHALL PROVIDE ADEQUATE EROSION PROTECTION MEASURE DURING CONSTRUCTION SUCH AS, BUT NOT LIMITED TO:

A) SILT FENCING
B) MULCH AND SEEDING
C) SOIL STABILIZATION FABRIC

2. DETAILS AND PLACEMENT SPECIFICATION FOR ABOVE ITEMS ARE AVAILABLE ON REQUEST FROM THE ENGINEER.

3. ALL CONSTRUCTION AREAS ARE TO BE SEEDED IMMEDIATELY FOLLOWING GRADING.

4. WOOD CELLULOSE FIBER, STRAW OR MULCH SHALL BE APPLIED AT A RATE OF 3/4 TONS PER ACRE AND SHALL BE REQUIRED FOR ALL SWALE, LAKE SLOPE AND STREET SEEDING.




## EROSION CONTROL PLAN

SCALE: 1" = 30'

Indiana 811 Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

EROSION CONTROL PLAN

BRYAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C302 |

# Construction Storm Water General Permit Index Sheet

| SECTION | TITLE | SHEET |
|---|---|---|
| A1 | Index of the location of required plan elements in the construction plan | C000 |
| A2 | A vicinity map depicting the project site location in relationship to recognizable local landmarks, towns, and major roads | C000 |
| A3 | Narrative of the nature and purpose of the project | C303 |
| A4 | Latitude and longitude to the nearest fifteen (15) seconds | C000 |
| A5 | Legal description of the project site | C201 |
| A6 | 11x17-inch plat showing building lot numbers/ boundaries and road layout/names | C303 |
| A7 | Boundaries of the one hundred (100) year flood plains, floodway fringes, and floodways | C301 |
| A8 | Land use of all adjacent properties | C303 |
| A9 | Identification of a U.S. EPA approved or established TMDL | C303 |
| A10 | Name(s) of the receiving water(s) | C303 |
| A11 | Identification of discharges to a water on the current 303(d) list of impaired waters and the pollutant(s) for which it is impaired | C303 |
| A12 | Soils map of the predominate soil types | C301 |
| A13 | Identification and location of all known wetlands, lakes, and water courses on or adjacent to the project site (construction plan, existing site layout) | C303 |
| A14 | Identification of any other state or federal water quality permits or authorizations that are required for construction activities | C303 |
| A15 | Identification and delineation of existing cover, including natural buffers | C301 |
| A16 | Existing site topography at an interval appropriate to indicate drainage patterns | C301 |
| A17 | Location(s) where run-off enters the project site | C301 |
| A18 | Location(s) where run-off discharges from the project site prior to land disturbance | C301 |
| A19 | Location of all existing structures on the project site | N/A |
| A20 | Existing permanent retention or detention facilities, including manmade wetlands, designed for the purpose of storm water management | N/A |
| A21 | Locations where storm water may be directly discharged into ground water, such as abandoned wells, sinkholes, or karst features | C303 |
| A22 | Size of the project area expressed in acres | C000 |
| A23 | Total expected land disturbance expressed in acres | C000 |
| A24 | Proposed final topography | C301 |
| A25 | Locations and approximate boundaries of all disturbed areas | C201 |
| A26 | Locations, size, and dimensions of all storm water drainage system such as culverts, storm water sewer, and conveyance channels | C301 |
| A27 | Locations of specific points where storm water and non-storm water discharges will leave the project site | C301 |
| A28 | Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, and common areas | C201 |
| A29 | Location of all on-site and off-site soil stockpiles and borrow areas | C302 |
| A30 | Construction support activities that are expected to be part of the project | N/A |
| A31 | Location of any in-stream activities that are planned for the project including, but not limited to, stream crossings and pump arounds | N/A |
| B1 | Description of the potential pollutant generating sources and pollutants, including all potential non-storm water discharges | C303 |
| B2 | Stable construction entrance locations and specifications | C302 |
| B3 | Specifications for temporary and permanent stabilization | C302 |
| B4 | Sediment control measures for concentrated flow areas | C301 |
| B5 | Sediment control measures for sheet flow areas | C302 |
| B6 | Run off control measures | C302 |
| B7 | Storm water outlet protection location and specifications | C302/501 |
| B8 | Grade stabilization structure locations and specifications | N/A |
| B9 | De-watering applications and management methods | C303 |
| B10 | Measures utilized for work within water bodies | N/A |
| B11 | Maintenance guidelines for each proposed storm water quality measure | C303 |
| B12 | Planned construction sequence that describes the implementation of storm water quality measures in relation to land disturbance | C303 |
| B13 | Provisions for erosion and sediment control on individual residential building lots regulated under the proposed project | N/A |
| B14 | Material handling and spill prevention and spill response plan meeting the requirements in 327 IAC 2-6.1 | C303 |
| B15 | Material handling and storage procedures associated with construction activity | C303 |
| C1 | Description of pollutants and their sources associated with the proposed land use | C303 |
| C2 | Description of proposed post-construction storm water measures | C303 |
| C3 | Plan details for each storm water measures | C301/501 |
| C4 | Sequence describing storm water measure implementation | C303 |
| C5 | Maintenance guidelines for proposed post-construction storm water measures | C303 |
| C6 | Entity that will be responsible for operation and maintenance of the post-construction storm water measures | C302 |

NOTES:
"NA" - NON APPLICABLE

## Construction Storm Water General Permit Notes Section A

**A1 - Index of the location of required plan elements in the construction plan:**

An index addressing the required elements within the drawing set is on C000 - Cover Sheet.

**A2 - A vicinity map depicting the project site location in relationship to recognizable local landmarks, towns, and major roads:**

A map showing the project in relationship to other areas of the county is on C000 - Cover Sheet.

**A3 - Narrative of the nature and purpose of the project:**

The project consists of the development of a new heavy duty asphalt parking lot with 36 truck and trailer stalls, a 2860 sq. ft. maintenance building, and 900 sq. ft. office building w/ employee parking. The site is located at 4005 North County Road 1000E in Brownsburg, Indiana 46112. Associated with the new improvements will be storm water management system consisting of overland flow, storm inlets, and retention/percolation basin with outlet control. (Shown on C303 - Construction Storm Water General Permit Notes).

**A4 - Latitude and Longitude:**

The latitude is 39°49'21"N and longitude is 86°20'42.19"W. (Shown on C000 - Cover Sheet)

**A5 - Legal description of the project site:**

A legal description of the overall parcel is on C201 - Site Plan

**A6 - 11 x 17-inch plat showing building lot numbers/boundaries and road layout/names:**

An 11x17 in. plan showing the overall property and new improvements is attached to this narrative.

**A7 - Boundaries of the one hundred (100) year floodplains, floodway fringes, and floodways:**

The 100 year floodway and floodway fringe is on C301 - Grading Plan and is based on best available information from the Indiana Department of Natural Resources.

**A8 - Land use of all adjacent properties:**

North - Commercial
South - Undeveloped/Woods
East - Railroad/Commercial
West - Residential/Agricultural
(Shown on C303 - Stormwater Pollution Prevention Plan)

**A9 - Identification of a U.S. EPA approved or established TMDL:**

Site to discharge stormwater into ground via percolation basin or through evaporation. Any dicharge via the emergency spillway will likely evaporate/percolate prior to being received by White Lick Creek (INW01D2_05) which is EPA 303d listed, but has no established TMDL (Shown on C304 - Construction Storm Water General Permit Notes)

**A10 - Name(s) of the receiving water(s):**

Receiving water is White Lick Creek (INW01D2_05) - (Shown on C303 - Stormwater Pollution Prevention Plan)

**A11 - Identification of discharges to a water on the current 303(d) list of impaired waters and the pollutant(s) for which it is impaired:**

The impaired condition of White Lick Creek is due to presence of Escherichia Coli (E. coli) (Noted on C304 - Construction Storm Water General Permit Notes)

**A12 - Soils map of the predominate soil types:**

The soils on this property are predominantly Brookston Silty Clay Loam-Urban Land Complex and Crosby Silt Loam.
Brookston Silty Clay Loam features wetness as the main limitation affecting use and management of this soil type. Crosby Silt Loam features slow permeability and available water capacity is high with moderate content of organic matter.

Both soils are fair to poor for use as subgrade material as well as shear strength, compaction, and stability, medium to high compressibility, moderate to low shrink-swell potential, subject to frost heave, and seasonal high water table. A soils map is on C301 - Grading Plan.

**A13 - Identification and location of all known wetlands, lakes, and water courses on or adjacent to the project site (construction plan, existing site layout)**

There are no known water courses on or adjacent to this site.

**A14 - Identification on any other state or federal water quality permits or authorizations that are required for construction activities:**

This phase of the project scope will not require any additional federal or state water permits as noted on C304 - Construction Storm Water General Permit Notes.

## Construction Storm Water General Permit Notes Section A (cont'd)

**A15 - Identification and delineation of existing cover, including natural buffers:**

The site is almost entirely covered with thick/heavy vegetation and trees with partial remnants of an existing gravel drive. The delineation of the various surface coverage is on C301 - Grading Plan.

**A16 - Existing site topography at interval appropriate to indicate drainage patterns:**

The existing site topography is largely flat with minor relief at the southeast of the site. The existing and proposed contours are on C301 - Grading Plan.

**A17 - Location(s) where run-off enters the project site:**

As referenced above, the topography in this area is largely flat resulting in little to no potential for run-off entering the site from adjacent property. The existing contours are on C301 - Grading Plan.

**A18 - Location(s) where run-off discharges from the project site prior to land disturbances:**

The existing site topography is largely flat with minor relief at the southeast of the site. The existing contours are on C301 - Grading Plan.

**A19 - Location(s) of all existing structures on the project site:**

The existing site is a vacant lot with no existing structures as depicted on C301 - Grading Plan.

**A20 - Existing permanent retention or detention facilities, including manmade wetlands, designed for the purpose of stormwater management:**

There are no existing retention facilities on site as depicted on C301 - Grading Plan.

**A21 - Locations where storm water may be directly discharged into ground water, such as abandoned wells, sinkholes, or karst features:**

There are no locations on property where storm water may directly discharge into the groundwater as illustrated on C301 - Grading Plan.

**A22 - Size of the project expressed in acres:**

The total project are if 3.07 acres as noted on C000 - Cover Sheet.

**A23 - Total expected land disturbance expressed in acres:**

The total disturbed area is 2.60 acres as noted on C000 - Cover Sheet.

**A24 - Proposed final topography:**

The final topography is on C301 - Grading Plan and is illustrated as spot elevations and contours.

**A25 - Locations and approximate boundaries of all disturbed areas:**

The total disturbed area is 2.60 acres as noted on C000 - Cover Sheet and shown as the Limits of Construction on C201 - Site Plan.

**A26 - Locations, size and dimensions of all stormwater drainage systems such as culverts, stormwater sewer, and conveyance channels:**

The stormwater is conveyed by overland flow, underground storm pipes, and retention pond. These are shown on C301 - Grading Plan.

**A27 - Locations of specific points where stormwater and non-stormwater discharges will leave the project site:**

Stormwater discharge from the site will be via an emergency spillway from the retention pond at the east end of the site and sanitary discharge will be via a pump and force main at the west end of the site.(Shown on C301 - Grading Plan & C402 Sanitary Force Main Plan & Profile.

**A28 - Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, and common areas:**

All the surface improvements including buildings, impervious areas, new surface finishes, etc. are on C201 - Site Plan for horizontal notations and C301 - Grading Plan for elevations.

**A29- Location of all on-site and off-site soil stockpiles and borrow areas:**

The soil storage area will be on site located at the east end of the site (west of the pond). All soil will be placed in the final location or hauled off upon completion of construction as shown on C302 - Erosion Control Plan.

**A30- Construction support activities that are expected to be part of the project**

Any construction support area will be within the limits of disturbance and used as directed by the contractor. Since they are within the limits of disturbance, there will be no impact sensitive areas.

**A31- Location of any on-stream activities that are planned for the project including, but not limited to, stream crossings and pump arounds:**

There are no in stream activities associated with this project.

## Construction Storm Water General Permit Notes Section B

**B1- Description of the potential pollutant generating sources and pollutants, including all potential non-storm water discharges:**

1. Concrete Washout Area: Specific concrete washout area shall be established and labeled.
   a) The specific concrete wash out will be in a provided lined roll off box at a specific location near the entrance to the job site.
   b) The lined roll off box will be placed on stable soil with a stone approach.
   c) Once the lined roll off box is full, it will be removed from the site and discarded as clean fill once solid. A new lined roll off box will replace the one removed.
2. Construction Mobile Equipment Fluid
   a) All fueling of equipment will be managed and completed on a stone surface.
   b) Daily observation of all equipment for inspection of leaks or potential leaks of any fluids.
   c) Any observed fluid leaks are to be handled immediately with the equipment being moved to a stable stone surface and placed out of operation until maintenance is completed.
   d) Spill kits are to be utilized once the equipment is moved to the stable stone surface to prevent leakage from penetrating the ground or impacting storm water runoff.
3. Construction Material Waste
   a) All material waste is to be placed in provided roll off boxes as it is generated.
   b) Full roll off boxes are to be removed and properly disposed of in a licensed facility.
   c) No debris is to be stored on the ground surface at any time.
   These items are noted on C303 - Stormwater Pollution Prevention Plan.

**B2- Stable construction entrance locations and specifications:**

A stable construction entrance consisting of compacted subgrade, filter fabric and #2 stone is to be used for all construction traffic entering / exiting the site. The stone surface is to be maintained with new stone as necessary to maintain a solid drive surface. The location of the temporary construction entrance is shown on C302 for plan view and Sheet C502 for detail.

**B3- Specifications for temporary and permanent stabilization:**

The provisions for temporary stabilization during construction as well as permanent stabilization are included in the drawing set. The information contains specific stabilization techniques for the conditions of the site as well as timing of installation.

For temporary construction stabilization, it is the Contractor responsibility to maintain the stabilization during the construction duration and until permanent stabilization is installed.

For permanent stabilization, it is expected installation to occur immediately after final grading of the soil surface. Permanent stabilization is to be maintained by the Owner until 75% effective cover is established on the soil surface.

The stabilization is noted on C302 - Erosion Control Plan.

**B4- Sediment control measures for concentrated flow areas:**

The concentrated flow is protected at the pond inlet with riprap of minimum size being 6 inches and at the emergency spillway with stone dam as shown on C301 - Grading Plan and details on C501 & C502 - Sections and Details.

**B5- Sediment control measures for sheet flow areas:**

Sediment control for sheet flow is handled at the project perimeter with silt fence. (Shown on C302 - Erosion Control Plan).

**B6- Run-off control measures:**

Sediment control for sheet flow is handled at the project perimeter with silt fence. (Shown on C302 - Erosion Control Plan).

**B7- Stormwater outlet protection location and specifications:**

The concentrated flow is protected at the pond outlet with the previously mentioned rock dam as shown on C302 - Erosion Control Plan.

**B8- Grade stabilization structure locations and specifications:**

The grade on the site is largely flat and remain so post construction. There are no stabilization structures planned for this project as illustrated on C301 - Grading Plan.

**B9- Dewatering applications and management methods:**

Any dewatering required will be directed to the low area of the site (east) where it can percolate into existing soil. The use of sump pumps can be used to dewater where necessary. (Noted C303 - Stormwater Pollution Prevention Plan)

**B10- Measures utilized for work within waterbodies:**

This is not applicable to this project. (Noted C303 - Stormwater Pollution Prevention Plan)

**B11- Maintenance guidelines for each proposed stormwater quality measure:**

Silt fence both surrounding the site and at each protected inlet is to be inspected weekly and after storm events. Breaks, tears, or damaged silt fence is to be replaced immediately. Erosion control blankets are to be inspected weekly and after storm events. Damaged areas are to be repaired by re-securing displaced matting, replacing torn areas, and or removing debris to ensure vegetation growth. Concrete washouts are to be inspected daily to ensure there are no tears, structural damage, or leaks. Damaged concrete washouts are to be repaired.

**B12- Planned construction sequence that describes the implementation of stormwater quality measures in relation to land disturbance:**

The construction sequence for installation of the erosion control measures and stormwater pollution prevention devices are detailed on C302 - Erosion Control Plan. A pre-construction meeting is to be scheduled with the Town of Brownsburg a minimum of 48 hours prior to the start of construction. Per the IDEM CSGP Section 6.4(a)(9)(B) a notice of termination shall be verified by the local MS4 before submittal to IDEM. The town of Brownsburg shall be contacted prior to filing of the Notice of Termination to verify eligibility, for termination of permit coverage.

**B13- Provisions for erosion and sediment control on individual residential building lots regulated under the proposed project:**

Not applicable to this project. (Noted C303 - Stormwater Pollution Prevention Plan)

**B14- Material handling and spill prevention and spill response plan meeting the requirements in 327 IAC 2-6.1:**

The potential materials on site that could cause a spill response include fuels, petroleum fluids or other liquids as part of the construction equipment on site. If a spill occurs, immediate determination of the extent and emergency response requirements should be determined. Immediate containment of the spill with onsite spill kits should be completed. Once the spill is contained, contact is to be made to the Indiana Dept. of Environmental Mgmt., Office of Land Quality, Emergency Response Section: 1-888-233-7745 for in-state calls (toll free) within two hours of the spill. The contact should include the likelihood of damage to the waterways of the State of Indiana. This information is noted on C303 - Stormwater Pollution Prevention Plan.

**B15- Material handling and storage procedures associated with construction activity:**

All construction debris and wastes are to be loaded directly into provided roll off boxes for proper disposal off site. In no terms is debris or waste to be stored on site awaiting disposal or burned on property. Liquid wastes such as concrete wash out is to be disposed in the appropriate concrete wash out lined roll off boxes as provided. This includes any mortar/masonry/concrete grout material. Once these containers are full, they are to be removed from the site and disposed of in a licensed facility. Roll off boxes are to be rotated empty for full boxes for the entire project duration.

## Construction Storm Water General Permit Notes Section C

**C1- Description of pollutants and their sources associated with the proposed land use:**

The post construction land use will have potential contaminants such as fuels, oils, grease, tires and other mobile equipment fluids. All materials, including mobile equipment will be stored on impervious surfaces during non-use or operation. (Noted on C303 - Stormwater Pollution Prevention Plan)

**C2- Description of proposed post-construction stormwater measures:**

The post construction contaminants are minimized by impervious surfaces being directed to a hydrodynamic separator designed to collect sediment and pollutants prior to entering the bioretention pond. This helps alleviate any debris that may overtop the emergency spillway. (Noted C303 - Stormwater Pollution Prevention Plan)

**C3- Plan details for each stormwater measure:**

The post construction stormwater measures is primarily a hydrodynamic separator and bioretention pond as shown on C301 - Grading Plan and L101 - Landscape Plan.

**C4- Sequence describing stormwater measure implementation:**

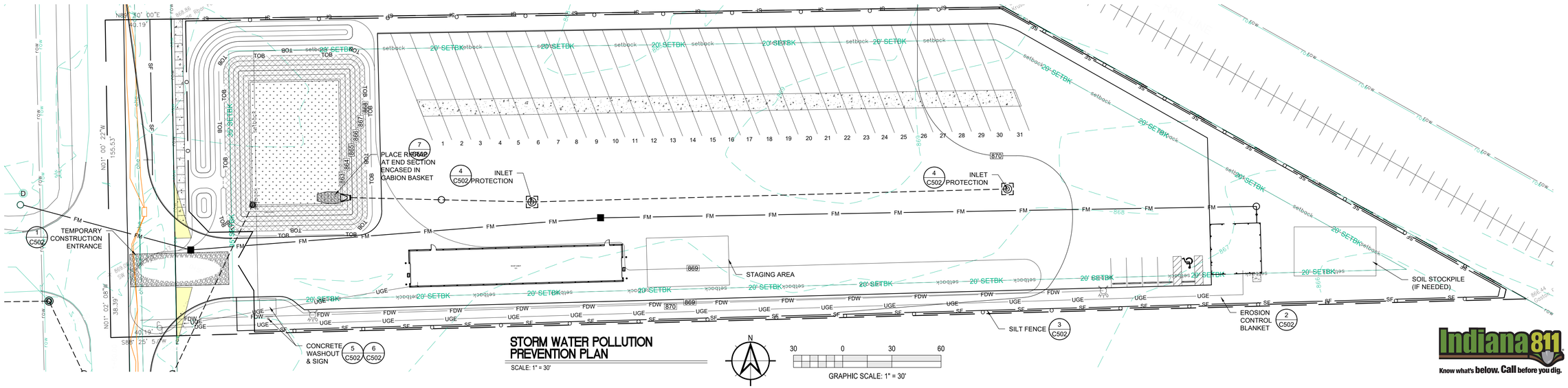
The sequence of installation for the post construction stormwater measure is part of construction sequencing shown C302 - Erosion Control Plan.

**C5- Maintenance guidelines for proposed post-construction stormwater measures:**

An operations and maintenance manual are part of the submittal information under separate documentation.

**C6- Entity that will be responsible for operation and maintenance of the post-construction stormwater measures:**

The responsible person for the post construction stormwater measures is the property owner as noted on C302 - Erosion Control Plan.




## STORM WATER POLLUTION PREVENTION PLAN

SCALE: 1" = 30'

GRAPHIC SCALE: 1" = 30'

Indiana 811 Know what's below. Call before you dig.


Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

STORM WATER POLLUTION PREVENTION PLAN

BRYAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

Bryan E. Moench

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C303 |

## SYMBOL LEGEND:

- = STORM SEWER END SECTION
- = SANITARY SEWER CLEANOUT
- C.O. = CLEANOUT
- = MANHOLE
- = CATCH BASIN
- = CATCH BASIN
- = CURB INLET
- = FIRE HYDRANT
- = PRESSURE RELIEF VALVE
- WV = WATER VALVE
- W = WATER WELL
- GV = GAS VALVE
- = LIGHT POLE
- = UTILITY POLE
- IRF = IRON ROD FOUND
- RBF = REBAR FOUND
- = PROPERTY CORNER
- = SURVEY POINT (SECTION CORNER)
- BM = BENCHMARK
- = SOIL BORING
- D = STORM INLET

- 741.25 = NEW GRADE ELEVATION
- x 741.25 = EXISTING GRADE ELEVATION
- = STRAW BALE DAM
- = ROCK DAM
- = SIGN
- STOP = STOP SIGN
- = HANDICAP SIGN
- ENTER ONLY = ENTER ONLY SIGN
- EXIT ONLY = EXIT ONLY SIGN
- DO NOT ENTER = DO NOT ENTER SIGN
- = EVERGREEN TREE
- = DECIDUOUS TREE
- = BUSH
- = TEMPORARY CONSTRUCTION ENTRNACE
- = GRASS PERMANENT SEEDING
- = EROSION CONTROL BLANKET ON ALL SLOPES 3:1 OR GREATER

## LINETYPE LEGEND:

- (SF) = SILT FENCE
- x x x = BARB WIRE FENCE
- o o o = CHAIN-LINK FENCE
- H H H = WOOD FENCE
- W = WATER LINE
- STRM = STORM SEWER LINE
- SAN = SANITARY SEWER LINE
- GAS = GAS LINE
- UGE = UNDERGROUND ELECTRIC LINE
- OHE = OVERHEAD ELECTRIC LINE
- COMM = COMMUNICATION LINE
- T = TELEPHONE LINE
- UTELE = UNDERGROUND TELEPHONE LINE
- FO = FIBER OPTIC LINE
- W = FIRE DEPARTMENT WATER SUPPLY
- 35' ESMT = 35' EASEMENT LINE
- 30' ESMT = 30' EASEMENT LINE
- 25' ESMT = 25' EASEMENT LINE
- 20' ESMT = 20' EASEMENT LINE
- 15' ESMT = 15' EASEMENT LINE
- 10' ESMT = 10' EASEMENT LINE
- 5' ESMT = 5' EASEMENT LINE
- ESMT = EASEMENT LINE
- 0000 = SWALE LINE
- ○○○ = EDGE OF WATER
- 35' SETBK = 35' SETBACK LINE
- 30' SETBK = 30' SETBACK LINE
- 25' SETBK = 25' SETBACK LINE
- 20' SETBK = 20' SETBACK LINE
- 15' SETBK = 15' SETBACK LINE
- 10' SETBK = 10' SETBACK LINE
- 5' SETBK = 5' SETBACK LINE
- SETBACK = SETBACK LINE
- ROW = RIGHT-OF-WAY LINE
- = PROPERTY BOUNDARY
- UD = SWALE UNDERDRAIN
- CABLE = CABLE TV LINE
- FL> = FLOW LINE
- TOB TOB = TOP OF BANK

## UTILITY CONTACT INFORMATION

| WATER COMPANY: | |
|---|---|
| NAME: | CITIZENS ENERGY |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (317) 924-3311 |
| E-MAIL: | --- |
| **SANITARY SEWER COMPANY:** | |
| NAME: | HENDRICKS CO. REGIONAL SEWER DIST. |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (317) 745-4928 |
| E-MAIL: | --- |
| **ELECTRIC COMPANY:** | |
| NAME: | DUKE ENERGY |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (317) 745-5473 |
| E-MAIL: | --- |
| **GAS COMPANY:** | |
| NAME: | VECTREN |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (800) 227-1376 |
| E-MAIL: | --- |
| **TELEPHONE COMPANY:** | |
| NAME: | AT&T |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (317) 272-6450 |
| E-MAIL: | --- |

## UTILITY NOTES:

SANITARY GENERAL SPECIFICATIONS:

1. (A) 100 PSI FLOWABLE FILL SHALL BE REQUIRED FOR ROAD CROSSINGS UNDER EXISTING PAVEMENT AND WITHIN FIVE (5) FEET OF THE PAVEMENT EDGE. STREET CUT REPAIRS SHALL USE 100 PSI FLOWABLE FILL TO WITHIN 6" OF PAVEMENT SURFACE. INSTALL 5" OF 4000 PSI READY MIX CONCRETE WITHIN 1" OF PAVEMENT 2-24 HOURS AFTER FLOWABLE FILL HAS BEEN INSTALLED. INSTALL 1" OF #11 SURFACE ASPHALT LEVEL WITH EXISTING PAVEMENT WITHIN 24 HOURS ON CONCRETE INSTALLATION.

(B) FLOWABLE FILL SHALL BE A MIXTURE OF SAND, PORTLAND CEMENT AND WATER, THOROUGHLY MIXED, AND SHALL HAVE 100 PSI COMPRESSIVE STRENGTH WITHIN 3 HOURS OF PLACEMENT. FLOWABLE FILL SHALL BE PLACED FROM TOP OF #8 STONE PIPE COVER TO BOTTOM OF NEW PAVEMENT.

(C) IN LOCATIONS OF NEW DEVELOPMENT, WHERE UTILITIES ARE INSTALLED PRIOR TO ROAD CONSTRUCTION, TRENCH BACKFILL UNDER FUTURE ROAD SHALL BE ENTIRELY #8 CRUSHED STONE FROM MANHOLES.

2. ALL OSHA SAFETY STANDARDS SHALL BE STRICTLY ENFORCED FOR PROTECTION OF WORKERS.

3. NO SEWER SYSTEM CONSTRUCTION MAY BEGIN UNTIL APPROVAL FROM I.D.E.M.

4. ONE SET OF I.D.E.M. APPROVED PLANS SHALL BE ON THE JOB SITE AT ALL TIMES

POLYVINYL CHLORIDE (P.V.C.) PIPE:

1. PIPE DIAMETERS OF 10 INCHES THROUGH 15 INCHES SHALL MEET OR EXCEED ALL THE REQUIREMENTS OF ASTM D-3034, AND SHALL HAVE A MINIMUM CELL CLASSIFICATION OF 12454-C, REFERENCE SHOULD BE MADE TO ASTM D-1784 FOR A SUMMARIZATION OF CELL CLASS PROPERTIES. PIPE DIAMETERS GREATER THAN 15 INCHES SHALL MEET OR EXCEED ALL REQUIREMENTS OF ASTM F-679, AND SHALL HAVE A MINIMUM CELL CLASSIFICATION OF 12454-C, P.V.C. RIBBED SEWER PIPE SHALL MEET OR EXCEED ALL REQUIREMENTS OF ASTM F-794 AND SHALL HAVE A MINIMUM CELLL CLASSIFICATION OF 12454.

2. THE MINIMUM WALL THICKNESS FOR PIPES OF 10 INCHES THROUGH 15 INCHES IN DIAMETER SHALL CONFORM TO SDR-35, TYPE PSM, AS SPECIFIED IN ASTM D-3034. THE MINIMUM WALL THICKNESS FOR PIPE DIAMETERS GREATER THAN 15 INCHES SHALL CONFORM TO T-1 AS SPECIFIED IN ASTM F-679. P.V.C. PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 46 POUNDS PER SQUARE INCH FOR EACH DIAMETER WHEN MEASURED AT FIVE PERCENT DEFLECTION AND TESTED IN ACCORDANCE WITH ASTM D-2412.

3. PIPE JOINTS SHALL HAVE A BELL WALL, GASKET GROOVE AND SPIGOT WHICH IS INTERGRAL WITH THE PIPE. THE ASSEMBLY OF JOINTS SHALL BE IN ACCORDANCE WITH THE PIPE MANUFACTURERS' RECOMMENDATIONS AND ASTM D-3212. NO SOLVENT CEMENT JOINTS SHALL BE ALLOWED. GASKET MATERIAL SHALL BE CONSTRUCTED OF STYRENE BUTADIENE OR BUTYL RUBBER AND MEET THE REQUIREMENTS OF ASTM F-477.

4. EACH PIPE SECTION SHALL BE MARKED WITH THE NAME OF THE MANUFACTURER, TRADEMARK OR TRADEMANE, NOMINAL PIPE SIZE, PRODUCTION / EXTRUSION CODE, MATERIAL AND CELL CLASS DESIGNATION AND ASTM NUMBER.

5. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM RECOMMENDED PRACTICE D-2321.

SANITARY SEWER NOTES:

1. 10 STATES STANDARDS AND INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT REQUIREMENTS SHALL BE MET OR EXCEEDED FOR ALL DESIGN, MATERIALS AND CONSTRUCTION METHODS.

2. SANITARY SEWER MANHOLES SHALL BE MONOLITHIC PRECAST SECTIONS, INCLUDING THE BOTTOM SECTION. ALL SECTIONS SHALL BE PRECAST CONCRETE IN ACCORDANCE WITH ASTM C-478. ALL MANHOLE INLET CONNECTIONS SHALL BE LOCK JOINT FLEXIBLE SLEEVES CONFORMING TO ASTM C-923. ONLY PRECAST CONCRETE RINGS SHALL BE ALLOWED FOR CASTING RISERS. ALL MANHOLES, GRADE RINGS AND CASTING SHALL BE SEALED TO PREVENT INFILTRATION.

3. MANHOLE INVERTS SHALL BE SHAPED FOR FLOW CHANNELS WITH CONCRETE AND SMOOTHLY FINISHED BY A SEMI CIRCULAR SECTION CONFORMING TO THE INSIDE DIAMETER OF THE CONNECTING SEWERS. NO BRICK, ROCK OR SAND FILLERS WILL BE ALLOWED.

4. ALL MANHOLE COVERS SHALL BE TRAFFIC BEARING, NON-ROCKING DESIGN WITH NON-PENETRATING PICK HOLES.

5. SANITARY SEWERS SHALL BE POLYVINYL CHLORIDE (PVC) SDR 35 MEETING ASTM D3034 SPECIFICATIONS. ALL SEWER MAINS SHALL HAVE A MINIMUM DIAMETER OF 8", ALL PIPE SPECIFIED SHALL SUPPORT ANTICIPATED LOADS.

6. ALL JOINTS SHALL BE PUSH-ON TYPE (SLIP SEAL) OR SOLVENT WELD.

7. BEDDING FOR PVC PIPE SHALL CONFORM TO BEDDING CLASSES I, II OF III, AS DESCRIBED IN ASTM D2321, FLEXIBLE SEWER PIPE INSTALLATION REQUIREMENTS.

## UTILITY NOTES (cont'd):

8. ALL SEWER PIPE SHALL BE LAID USING PIPE LASER EQUIPMENT FOR BOTH VERTICAL AND HORIZONTAL ALIGNMENT.

9. MINIMUM ALLOWABLE COVER SHALL BE 5'-0" OVER TOP OF PIPE.

10. ALL SEWER MAINS SHALL BE DEFLECTION TESTED WITH AN 11 POINT, 5% MANDREL AFTER COMPACTED AGGREGATE IS IN PLACE FOR ALL STREETS. FLEXIBLE PIPE WILL BE TESTED AFTER BACKFILL HAS BEEN IN PLACE FOR AT LEAST 30 DAYS. ALL PVC PIPE FAILING THE MANDREL TEST SHALL BE REROUNDED IN PLACE OR AN ALTERNATE METHOD APPROVED BY THE GOVERNING JURISDICTION IF REPAIR REQUIRED, SEWER SHALL BE RETESTED 30 DAYS AFTER REPAIR IS COMPLETE.

11. ALL SEWER MAINS SHALL BE LAMPED AT THE TIME THE MANDREL TEST IS CONDUCTED, ALL MAINS SHALL BE TRUE TO ALIGNMENT AND GRADE.

12. ALL SEWER MAINS AND LATERAL CONNECTIONS SHALL BE AIR TESTED IN ACCORDANCE WITH UNI-BELL UNI-B-6-85, MINIMUM TIME FOR THE AIR TEST SHALL BE FOR A 1.0 PSIG PRESSURE DROP. ALL SECTIONS FAILING AIR TEST SHALL BE REPAIRED AND RETESTED.

13. ALL SERVICE WYE BRANCHES SHALL BE INSTALLED AT THE TIME OF THE SEWER MAIN INSTALLATION. NO DIRECT TAPS WILL BE ALLOWED ON NEW MAIN CONSTRUCTION. NO VERTICAL CONNECTIONS WILL BE ALLOWED.

14. A SEPARATE (6" MINIMUM) SERVICE SHALL BE PROVIDED FOR EACH UNIT SERVED APPROXIMATELY SIX (6) FEET TO THE RIGHT OF THE LOT CENTERLINE, NO WYE'S SHALL BE ALLOWED, INCLUDING CONDOMINIUMS.

15. THE MAXIMUM ALLOWABLE VERTICAL DISTANCE BETWEEN ANY INFLUENT LINE AND THE EFFLUENT MAIN SHALL BE 6' FOR TYPE 'A' AND 'C' MANHOLES. ANY DISTANCE GREATER THAN 6" SHALL REQUIRE A TYPE 'B' MANHOLE.

16. WHERE A SEWER EXTENSION OR IMPROVEMENT CONNECTS TO A EXISTING SEWER OR MANHOLE, IT MUST BE LOCATED IN A STREET, ROAD OR HIGHWAY R/W AND NOT LOCATED IN SUCH A MANNER WHERE IT WILL CUT THROUGH LOTS OR DEVELOPMENTS.

17. ALL EXTENSIONS SHALL BE INSTALLED AT MINIMUM GRADES.

CONCRETE MANHOLE NOTES:

1. ALL MANHOLES SHALL BE NEGATIVE AIRE PRESSURE (VACUUM) TESTED AS PER ASTM C1244-93 STANDARD METHOD.

2. NO MANHOLES SHALL BE MORE THAN 14' FROM BACK OF CURB.

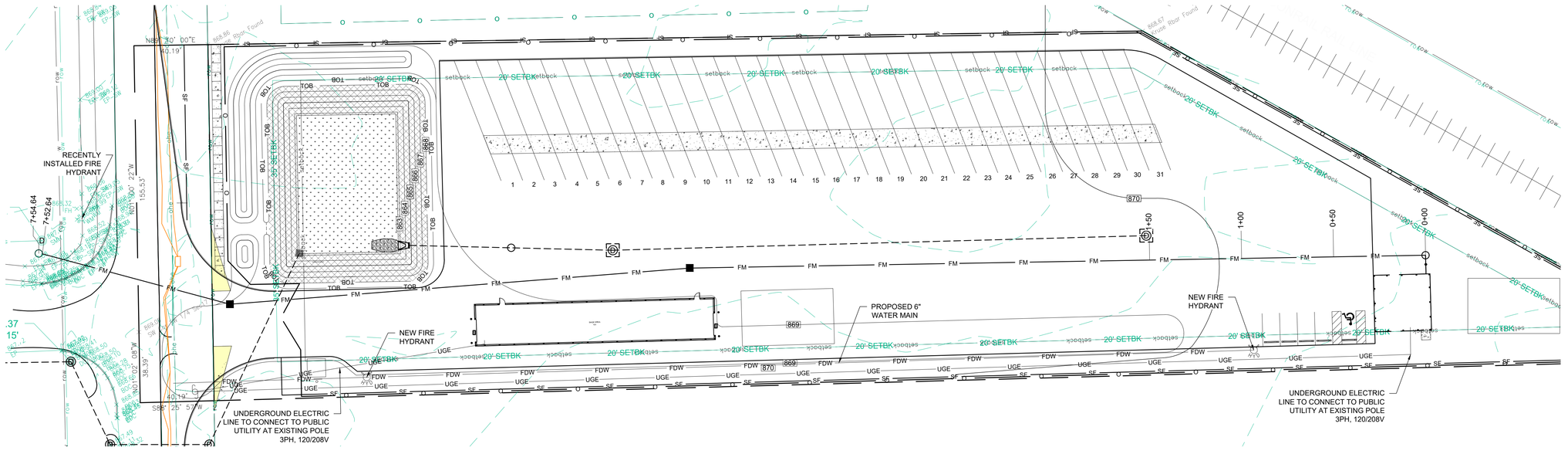
3. NO MANHOLE SHALL BE LOCATED IN ANY BACKYARD OR SIDE YARD. THEY MUST BE LOCATED IN THE FRONT YARD OR FRONT LOT THAT IS FRONTING A STREET.

4. ALL JOINTS IN MANHOLES SHALL BE SEALED TO PREVENT INFILTRATION BY USING A RUBBER 'O-RING' GASKET AND A 1/2" EXTRUDABLE PERFORMED GASKET BETWEEN ALL PRECAST SECTIONS.

5. ANNULAR SPACE AROUND SANITARY SEWER AT POINT OF ENTRANCE INTO THE MANHOLE SHALL BE GROUTED COMPLETELY AROUND SANITARY SEWER, INSIDE AND OUTSIDE TO INSURE SMOOTH TRANSITION.

6. WHEN CONNECTING A NEW SEWER INTO AN EXISTING MANHOLE, THE EXISTING MANHOLE SHALL BE BROUGHT UP TO MEET PRESENT STANDARDS.

7. SECTION JOINTS ON PRECAST CONCRETE MANHOLES SHALL BE SEALED WITH BLACK TAR MASTIC 6" ABOVE AND 6" BELOW JOINT, ON MANHOLE EXTERIOR.




## UTILITY PLAN

SCALE: 1" = 30'

N

30 0 30 60

GRAPHIC SCALE: 1" = 30'

Indiana 811 Know what's below. Call before you dig.


Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

UTILITY PLAN

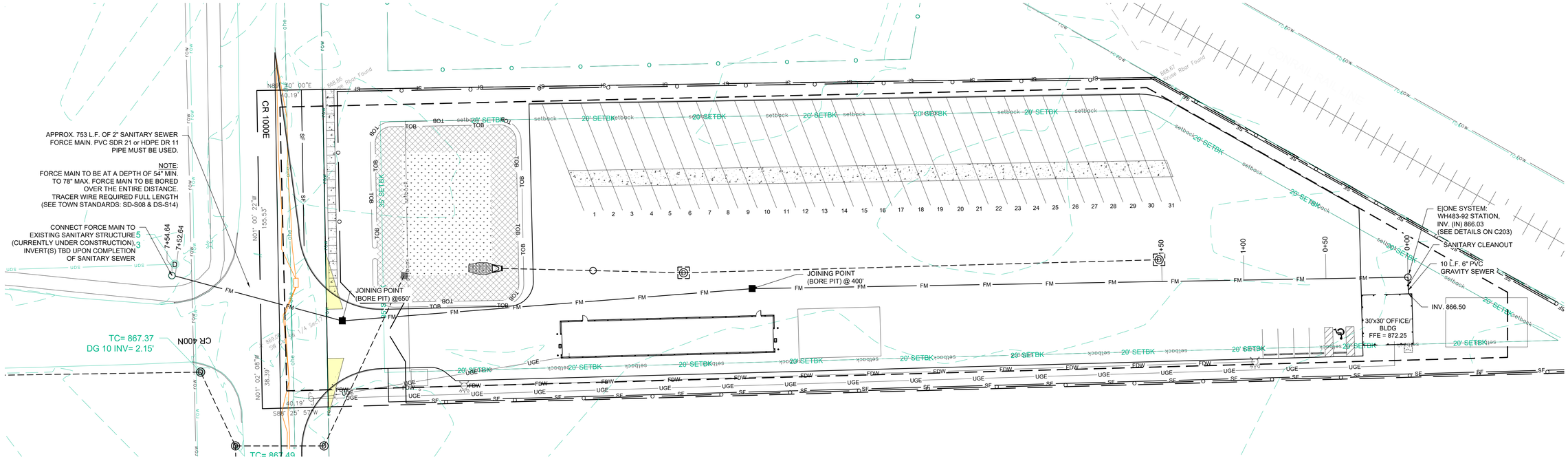
BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

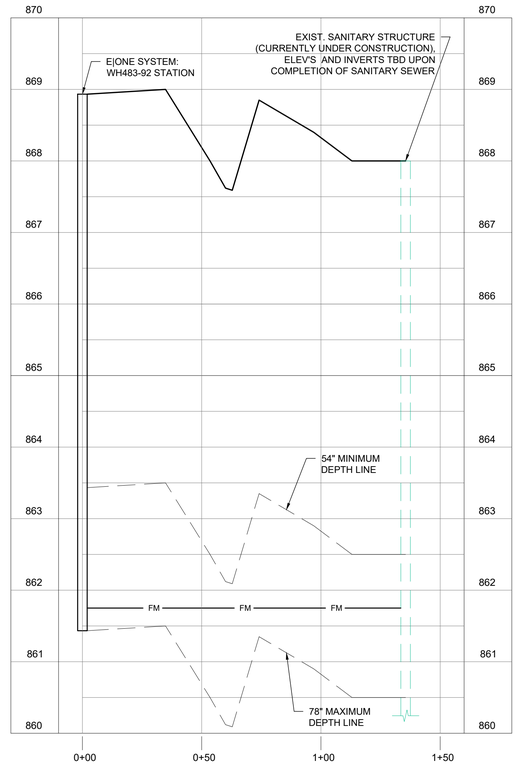
Brian E. Moench

## REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C401 |




## FORCE MAIN PLAN + PROFILE

SCALE: Horz.: 1" = 30', Vert.: 1" = 10'

GRAPHIC SCALE: 1" = 30'


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

SANITARY FORCE MAIN PLAN & PROFILE

BRYAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

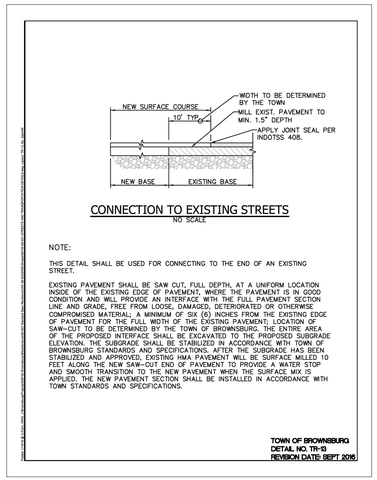
Bryan E. Moench

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| | | |
| | | |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C402 |


Indiana 811 Know what's below. Call before you dig.




## CONNECTION TO EXISTING STREETS
NO SCALE

NOTE:

THIS DETAIL SHALL BE USED FOR CONNECTING TO THE END OF AN EXISTING STREET.

EXISTING PAVEMENT SHALL BE SAW CUT, FULL DEPTH, AT A UNIFORM LOCATION INSIDE OF THE EXISTING EDGE OF PAVEMENT, WHERE THE PAVEMENT IS IN GOOD CONDITION AND WILL PROVIDE AN INTERFACE WITH THE FULL PAVEMENT SECTION LINE AND GRADE, FREE FROM LOOSE, DAMAGED, DETERIORATED OR OTHERWISE COMPROMISED MATERIAL. A MINIMUM OF SIX (6) INCHES FROM THE EXISTING EDGE OF PAVEMENT FOR THE FULL WIDTH OF THE EXISTING PAVEMENT; LOCATION OF SAW-CUT TO BE DETERMINED BY THE TOWN OF BROWNSBURG. THE ENTIRE AREA OF THE PROPOSED INTERFACE SHALL BE EXCAVATED TO THE PROPOSED SUBGRADE ELEVATION. THE SUBGRADE SHALL BE STABILIZED IN ACCORDANCE WITH TOWN OF BROWNSBURG STANDARDS AND SPECIFICATIONS. AFTER THE SUBGRADE HAS BEEN STABILIZED AND APPROVED, EXISTING HMA PAVEMENT WILL BE SURFACE MILLED 10 FEET ALONG THE NEW SAW-CUT END OF PAVEMENT TO PROVIDE A MATER STOP AND SMOOTH TRANSITION TO THE NEW PAVEMENT WHEN THE SURFACE MIX IS APPLIED. THE NEW PAVEMENT SECTION SHALL BE INSTALLED IN ACCORDANCE WITH TOWN STANDARDS AND SPECIFICATIONS.

**TOWN OF BROWNSBURG**
**DETAIL NO. TR-13**
**REVISION DATE: SEPT 2016**

## HANDICAP RAMP
NOT TO SCALE — 11 / C501

SECTION 02504 – ADJACENT ROADWAY IMPROVEMENTS

PART 1 - GENERAL

1.01 Roadways adjacent to proposed developments shall conform to the following requirements and standards.

A. Adjacent Roadway Improvements

1. Developers shall be responsible for improvements to the existing roadway(s) that front their property. These improvements shall include, but are not limited to, the following items:
   a. Construction of acceleration lanes, deceleration lanes, and passing blisters for each entrance or street intersection as indicated in the Standard Details.
   b. In order to construct adequate acceleration lanes, deceleration lanes, and passing blisters, right-of-way shall be obtained which has a width consistent with the most current accepted Thoroughfare Plan.
   c. The existing roadway along the development frontage shall be widened to match the width requirements based on the functional classification of the roadway as defined by the Thoroughfare Plan. Once widened, the entire roadway fronting the development shall be resurfaced for consistency.
2. Additional improvements may be required depending on field conditions and as determined by the Town of Brownsburg.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

PART 4 - FIGURES

4.01 Associated Standard Details

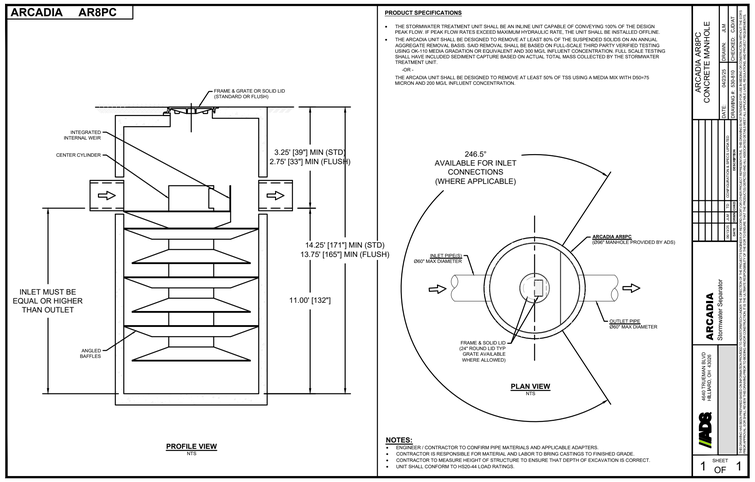
| Detail No. | Description |
|---|---|
| TR-01 | Concrete Chair Back Curb & Gutter |
| TR-02 | Concrete Roll Curb & Gutter |
| TR-03 | Driveway Curb Cut |
| TR-04 | Curb Inlet Detail |
| TR-05 | Concrete Center Curb |
| TR-09 | Concrete Driveway |
| TR-13 | Connection to Existing Streets |
| TR-14 | Widening Detail |
| TR-16 | Minimum Entrance Requirements |



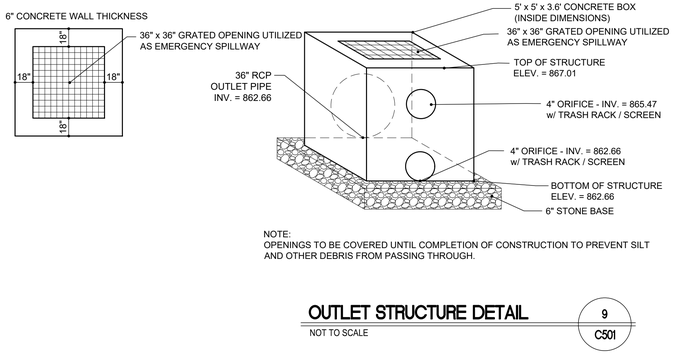
| | |
|---|---|
| TR-17 | Roadway Improvements at New Development Entrances |
| RS-01 | Typical Cross Sections – Primary Arterials A1 and A2 |
| RS-02 | Typical Cross Sections – Primary Arterials B1 and B2 |
| RS-03 | Typical Cross Sections – Primary Arterials C1 and C2 |
| RS-04 | Typical Cross Sections – Secondary Arterials 1 and 2 |
| RS-05 | Typical Cross Sections – Collectors 1 and 2 |
| RS-06 | Typical Cross Sections – Neighbor Collectors 1 and 2 |
| RS-07 | Typical Cross Sections – Local 1 (No Parking), Local 2 (Parking Both Sides) and Local 3 (Parking One Side) |
| RS-08 | Typical Trail Cross Section |
| RS-09 | Typical Cross Section – Local Street with Roadside Ditch |
| RS-10 | Typical Cross Sections – Local Alternatives |

END OF SECTION 02504



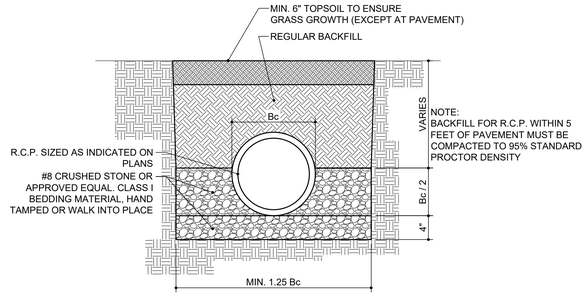


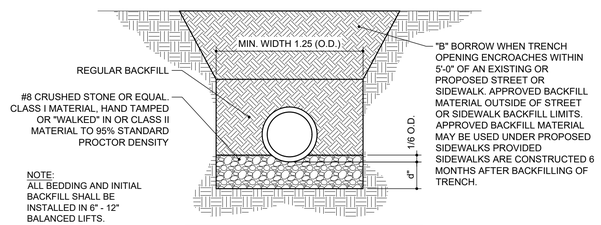

## ARCADIA AR8 HYDRODYNAMIC SEPARATOR DETAIL
NOT TO SCALE — 10 / C501




NOTE:
OPENINGS TO BE COVERED UNTIL COMPLETION OF CONSTRUCTION TO PREVENT SILT AND OTHER DEBRIS FROM PASSING THROUGH.

## OUTLET STRUCTURE DETAIL
NOT TO SCALE — 9 / C501



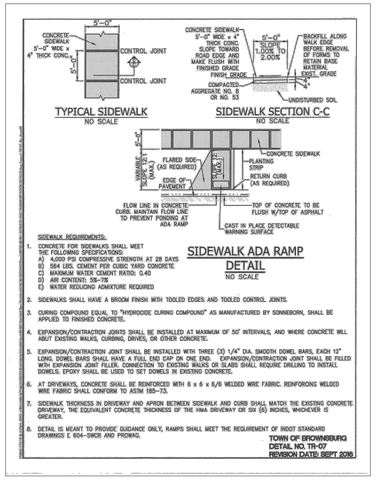

NOTE:
ALL BEDDING AND INITIAL BACKFILL SHALL BE INSTALLED IN 6" - 12" BALANCED LIFTS.

Bc = OUTSIDE DIAMETER
D = INSIDE DIAMETER
d = DEPTH OF BEDDING MATERIAL BELOW PIPE

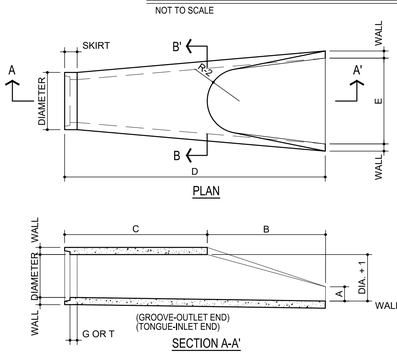
A MIN. 9" CLEARANCE SHALL BE PROVIDED ON EACH SIDE OF THE INSTALLED PIPE

| PIPE SIZE (D) | 27" OR LESS | 30" TO 60" | 66" AND UP |
|---|---|---|---|
| BEDDING BELOW THE PIPE BARREL 6" MINIMUM | 3" | 4" | 6" |

## R.C.P. PIPE TRENCH DETAIL
NOT TO SCALE — 8 / C501



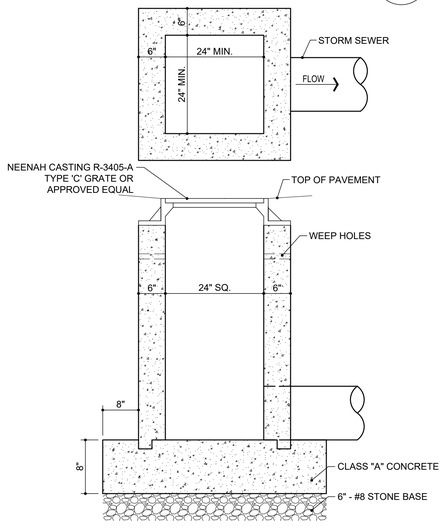

## HANDICAP RAMP
NOT TO SCALE — 7 / C501



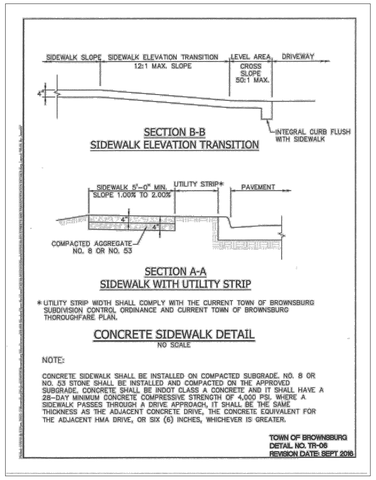

| SIZE SCHEDULE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DIA. | WALL | G or T | WT. SEC | A | B | C | D | E | DIA.+1 | R-1 | R-2 | SKIRT |
| 12 | 2 | 1~8 | 530 | 4 | 24 | 48~1 | 72~1 | 24 | 13 | 10~1 | 9 | 3~8 |
| 15 | 2~4 | 2 | 740 | 6 | 27 | 46 | 73 | 30 | 16 | 12~8 | 11 | 3~8 |
| 18 | 2~8 | 2~8 | 990 | 9 | 27 | 46 | 73 | 36 | 19 | 15~8 | 12 | 4 |
| 21 | 2~∞ | 2~4 | 1280 | 9 | 35 | 38 | 73 | 42 | 22 | 16~2 | 13 | 4 |
| 24 | 3 | 2~8 | 1520 | 9~8 | 43~8 | 30 | 73~8 | 48 | 25 | 16~q | 14 | 4~8 |

NOTE: MANUFACTURER OF END SECTION IS IN ACCORDANCE WITH APPLICABLE PORTIONS OF A.S.T.M. SPECIFICATION C76.

## CONCRETE END SECTION
NOT TO SCALE — 6 / C501




## TYPA 'E' MODIFIED STORM CATCHBASIN
3/4" = 1'-0" — 5 / C501



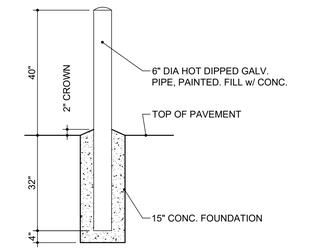

## CONCRETE SIDEWALK DETAIL
NO SCALE

NOTE:

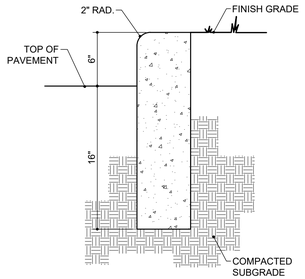
CONCRETE SIDEWALK SHALL BE INSTALLED ON COMPACTED SUBGRADE. NO. 8 OR NO. 53 STONE SHALL BE INSTALLED AND COMPACTED ON THE APPROVED SUBGRADE. CONCRETE SHALL BE INDOT CLASS A CONCRETE AND IT SHALL HAVE A 28-DAY MINIMUM CONCRETE COMPRESSIVE STRENGTH OF 4,000 PSI. WHERE A SIDEWALK PASSES THROUGH A DRIVE APPROACH, IT SHALL BE THE SAME THICKNESS AS THE ADJACENT CONCRETE DRIVE. THE CONCRETE EQUIVALENT FOR THE ADJACENT HMA DRIVE, OR SIX (6) INCHES, WHICHEVER IS GREATER.

**TOWN OF BROWNSBURG**
**DETAIL NO. TR-06**
**REVISION DATE: SEPT 2016**

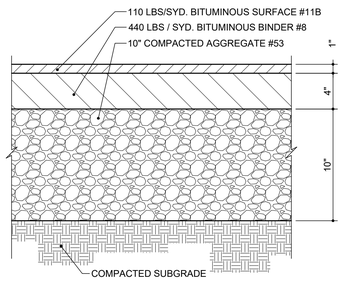
## CONCRETE SIDEWALK
NOT TO SCALE — 4 / C501




## PIPE BOLLARD
1/2" = 1'-0" — 3 / C501




## STRAIGHT CURB
1 1/2" = 1'-0" — 2 / C501




## HEAVY DUTY ASPHALT
1 1/2" = 1'-0" — 1 / C501

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

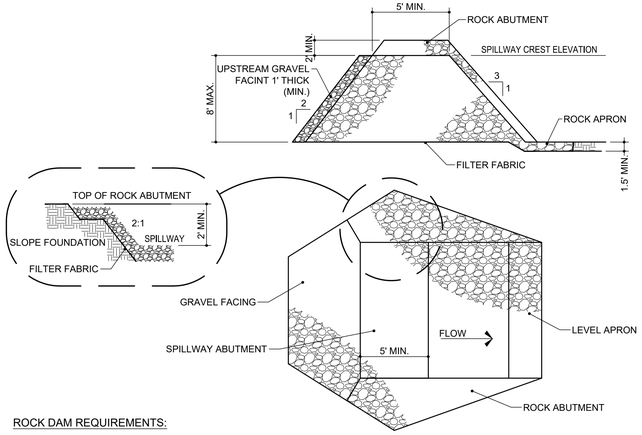
LIONS TRANS INC. (BROWNSBURG)
4005 N CR 1000 E
BROWNSBURG, IN 46122

SECTIONS AND DETAILS

BRIAN EDWARD MOENCH — REGISTERED — No. PE9500048 — STATE OF INDIANA — PROFESSIONAL ENGINEER

| REVISIONS: | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C501 |




## ROCK DAM REQUIREMENTS:

1. CONTRIBUTING DRAINAGE AREA: 50 ACRES MAXIMUM

2. DESIGN LIFE: LIMITED TO 3 YRS.

3. SEDIMENT STORAGE: 1,800 CU.FT./ACRE DISTURBED (MINUMUM) MEASURED 1 FT. BELOW SPILLWAY CREST.

4. BASIN SHAPE: MINIMUM 2:1 LENGTH-TO-WIDTH RATIO.

5. BASIN AREA: VARIABLE; THE LARGER THE SURFACE AREA THE GREATER THE TRAPPING EFFICIENCY.

6. DAM CREST HEIGHT: LIMITED TO 8 FT.

7. SPILLWAY CAPACITY: PEAK RUNOFF FROM A 10-YR. FREQUENCY, 24-HR. DURATION STORM EVENT, A MAXIMUM FLOW DEPTH OF 1 FT. AND MINIMUM FREEBOARD OF 1 FT. (ENTIRE LENGTH OF DAM BETWEEN ROCK ABUTMENTS MAY SERVE AS SPILLWAY.)

8. DAM DIMENSIONS: TOP WIDTH, 5 FT. MINIMUM; SIDE SLOPES, 2:1 OR FLATTER UPSTREAM, 3:1 OR FLATTER DOWNSTREAM.

9. EARTH ABUTMENTS: SMOOTH, STABLE, 2:1 OR FLATTER SLOPES.

10. ROCK ABUTMENTS (TO PROTECT EARTH ABUTMENTS): EXTENDED ALONG DOWNSTREAM FACE TO TOE OF DAM AND AT LEAST 1 FT. HIGHER THAN SPILLWAY FACE AT ALL POINTS, 2 FT. ABOVE SPILLWAY CREST, AND 1 FT. THICK, WITH 2:1 OR FLATTER SIDE SLOPES.
11. OUTLET PROTECTION: ROCK APRON, 1-1/2 FT. THICK (MINIMUM), ZERO GRADE, WITH LENGTH EQUAL TO HEIGHT OF DAM OR EXTENDED TO STABLE GRADE, WHICHEVER IS GREATER.

12. ROCK MATERIAL: INDOT REVETMENT RIPRAP.

13. PROTECTION FROM PIPING: GEOTEXTILE FABRIC FOR SEPARATION AND FILTRATION COVERING ENTIRE FOUNDATION, INCLUDING EARTH ABUTMENTS AND APRON.

14. BASIN DE-WATERING: THROUGH A 1 FT. THICK LAYER OF INDOT CA NO. 5 STONE ON UPSTREAM FACE OF THE DAM.

INSTALLATION

SITE PREPARATION:

1. DIVERT RUNOFF FROM UNDISTURBED AREAS AWAY FROM THE ROCK DAM AND BASIN AREA.

2. EXCAVATE THE FOUNDATION FOR THE APRON, USING IT AS A TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION OF THE DAM.

3. CLEAR AND GRUB THE AREA UNDER THE DAM, REMOVING AND PROPERLY DISPOSING OF ALL ROOT MAT, BRUSH, AND OTHER DEBRIS.

4. GRADE THE EARTH ABUTMENTS NO STEEPER THAN 2:1.

DAM AND BASIN CONSTRUCTION

1. EXCAVATE A CUTOFF TRENCH AT THE CENTER LINE OF THE DAM, EXTENDING ALL THE WAY UP THE EARTH ABUTMENTS, AND BACKFILL WITH COMPACTED EARTH FILL.

2. SMOOTH THE DAM FOUNDATION.

3. COVER THE ENTIRE FOUNDATION, INCLUDING BOTH EARTH ABUTMENTS, WITH GEOTEXTILE FABRIC, MAKING SURE THE UPSTREAM STRIPS OVERLAP THE DOWNSTREAM STRIPS AT LEAST 1 FT.

4. CONSTRUCT THE DAM TO PLANNED DIMENSIONS.

5. ONCE THE DAM IS IN PLACE, CLEAR THE SEDIMENT BASIN AREA, PROPERLY DISPOSING OF THE CLEARED MATERIAL.

6. SET A MARKER STAKE TO INDICATE THE CLEANOUT ELEVATION (I.E., POINT AT WHICH THE BASIN IS 50% FULL OF SEDIMENT).

7. DIVERT CONSTRUCTION SITE RUNOFF FLOW INTO THE UPPER END OF THE BASIN USING TEMPORARY DIVERSIONS.

8. STABILIZE ALL DISTURBED AREAS EXCEPT THE LOWER HALF OF THE BASIN.

SAFETY PRECAUTIONS:

1. BECAUSE SEDIMENT BASINS THAT IMPOUND WATER ARE HAZARDOUS, (A) BE SURE SIDE SLOPES ARE 2:1 OR FLATTER, (B) FENCE WITH WARNING SIGNS IF TRESPASSING IS LIKELY, (C) DE-WATER THE BASIN BETWEEN STORM EVENTS, AND (D) FOLLOW ALL STATE AND LOCAL IMPOUNDMENT SITE REQUIREMENTS.

MAINTENANCE

1. INSPECT THE ROCK DAM AND BASIN AFTER EACH STORM EVENT.

2. REMOVE SEDIMENT WHEN IT ACCUMULATES TO HALF THE DESIGN VOLUME (MARKED BY A STAKE).

3. CHECK THE DAM AND ABUTMENTS FOR EROSION, PIPING, OR ROCK DISPLACEMENT, AND REPAIR IMMEDIATELY.

4. IF THE BASIN DOES NOT DRAIN BETWEEN STORMS, REPLACE THE STONE ON THE UPSTREAM FACE OF THE DAM.

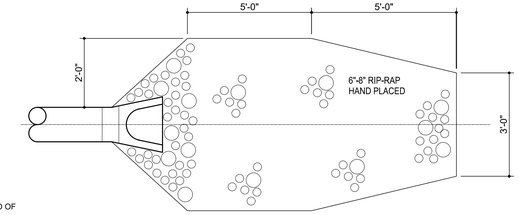
5. IF THE BASIN DRAINS TOO RAPIDLY FOLLOWING A STORM (I.E., LESS THAN 6 HRS.), ADD INDOT CA NO. 5 GRAVEL ON THE UPSTREAM FACE OF THE DAM.

6. ONCE THE CONTRIBUTING ŷŷŷŷŷŷŷŷDRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, (A) REMOVE WATER AND SEDIMENT FROM THE BASIN;

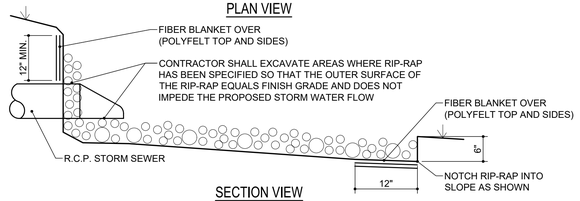
(B) REMOVE THE DAM, DISPOSING OF THE ROCK IN DESIGNATED DISPOSAL AREAS; (C) SMOOTH THE SITE TO BLEND WITH THE SURROUNDING AREA; AND (D) STABILIZE.

COMMON CONCERNS:
FAILURE FROM PIPING ALONG ABUTMENTS-BECAUSE THE FILTER MATERIAL WAS NOT PROPERLY INSTALLED OR THE EARTH ABUTMENTS ARE TOO STEEP. STONE DISPLACEMENT FROM FACE OF DAM-BECAUSE STONE SIZE IS TOO SMALL OR THE FACE IS TOO STEEP. EROSION BELOW DAM BECAUSE THE APRON WAS NOT EXTENDED TO STABLE GRADE. EROSION OF ABUTMENTS DURING SPILLWAY FLOW-BECAUSE THE ROCK ABUTMENT IS NOT HIGH ENOUGH. SEDIMENT CARRIED THROUGH SPILLWAY-BECAUSE THE DRAINAGE AREA IS TOO LARGE; TO SOLVE, DIVERT RUNOFF FROM THE UNDISTURBED AREA AWAY FROM THE BASIN. SEDIMENT LOSS THROUGH DAM-BECAUSE THE LAYER OF AGGREGATE ON THE UPSTREAM FACE IS NOT THICK ENOUGH OR IS TOO COARSE TO RESTRICT FLOW THROUGH THE DAM.

## ROCK DAM
NOT TO SCALE — 8 — C502




PLAN VIEW




SECTION VIEW

## RIP-RAP REQUIREMENTS:

CONTRIBUTING DRAINAGE AREA: 100 ACRES MAXIMUM.

CAPACITY: PEAK RUNOFF FROM 10-YR. FREQUENCY, 24-HR. DURATION STORM EVENT.

APRON: DESIGN DEPENDS ON CHANNEL DEFINITION, BUT IS LONG ENOUGH TO DISSIPATE RUNOFF ENERGY, SET ON ZERO GRADE, STRAIGHT AND ALIGNED WITH THE RECEIVING STREAM. (IF SITE CONDITIONS REQUIRE A CURVE, SET IT NEAR THE UPSTREAM END.)

FOUNDATION: GEOTEXTILE FABRIC FOR STABILIZATION AND FILTRATION OR WELL-GRADED GRAVEL FILTER LAYER AT LEAST 6 IN. THICK.

MATERIAL: HARD, ANGULAR, AND HIGHLY WEATHER-RESISTANT RIPRAP STONE OF 6 - 8 INCHES IN SIZE.

THICKNESS: 12 IN. MINIMUM OR TWO TIMES THE D 50 STONE DIAMETER,wHICHEVER IS GREATER.

## INSTALLATION:

1. EXCAVATE THE APRON AREA SUBGRADE BELOW DESIGN ELEVATION TO ALLOW FOR THICKNESS OF THE FILTER (OR GRAVEL LAYER) AND THE RIPRAP. (THIS OVER-EXCAVATION GREATLY INCREASES THE AMOUNT OF SPOIL.)

2. COMPACT ANY FILL USED IN THE SUBGRADE TO THE DENSITY OF THE SURROUNDING UNDISTURBED MATERIAL, AND SMOOTH ENOUGH TO PROTECT FABRIC FROM TEARING.

3. PLACE THE GEOTEXTILE FABRIC (OR GRAVEL LAYER) ON THE COMPACTED AND SMOOTHED FOUNDATION. IF MORE THAN ONE FABRIC PIECE IS NEEDED, THE UPSTREAM PIECE SHOULD OVERLAP THE DOWNSTREAM PIECE BY AT LEAST 1 FT.

4. INSTALL THE RIPRAP TO THE LINES AND ELEVATIONS SHOWN IN THE DESIGN. IF THE CHANNEL IS POORLY DEFINED, THE FINAL CROSS-SECTION SHOULD BE LEVEL OR SLIGHTLY DEPRESSED IN THE MIDDLE; IF WELL DEFINED, THE FILTER (OR GROUND LAYER) AND RIPRAP SHOULD EXTEND TO THE TOP OF THE BANK.

5. IF THE GEOTEXTILE FABRIC TEARS WHEN PLACING TH RIPRAP, REPAIR IMMEDIATELY BY LAYING AND STAPLING A PIECE OF FABRIC OVER THE DAMAGE AREA, OVERLAPPING THE UNDAMAGED AREAS BY AT LEAST 12 INCHES.

6. MAKE SURE THE TOP OF THE RIPRAP APRON IS LEVEL WITH OR SLIGHTLY BELOW THE RECEIVING STREAM. (RIPRAP SHOULD NOT RESTRICT THE CHANNEL OR PRODUCE AN OVERFALL.)

7. BLEND THE RIPRAP SMOOTHLY TO THE SURROUNDING GRADE.

8. STABILIZE ALL DISTURBED AREAS IMMEDIATELY FOLLOWING INSTALLATION.

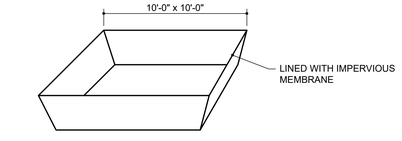
## MAINTENANCE:

* INSPECT ROCK CHUTES AFTER STORM EVENTS FOR STONE DISPLACEMENT AND FOR EROSION AT THE SIDES AND ENDS OF THE APRON.
* MAKE NEEDED REPAIRS IMMEDIATELY; USE APPROPRIATE SIZE STONE; AND DO NOT PLACE THEM ABOVE FINISHED GRADE.

## COMMON CONCERNS:

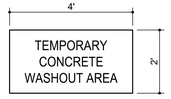
FOUNDATION NOT EXCAVATED DEEP ENOUGH OR WIDE ENOUGH--RIPRAP RESTRICTS THE FLOW CROSS SECTION, RESULTING IN EROSION AROUND THE APRON AND SCOUR HOLES AT THE OUTLET.
RIPRAP APRON ON ZERO GRADE--

## RIP-RAP DETAIL
NOT TO SCALE — 7 — C502



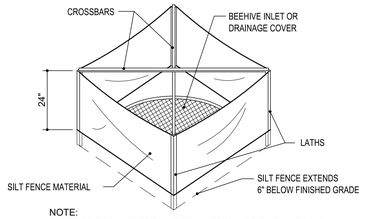

NOTE:
1. A LINED ROLLOFF DUMPSTER OR CONTAINER TO BE USED IN LIEU OF A CONSTRUCTED WASHOUT BASIN.

## CONCRETE WASHOUT BASIN
NOT TO SCALE — 6 — C502



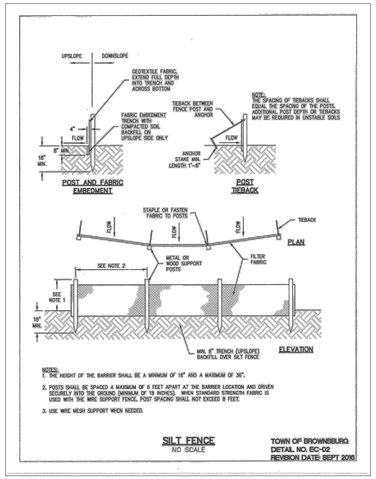

NOTES:
1. SIGN TO BE POSTED THROUGHOUT CONSTRUCTION ACTIVITY.
2. SIGN TO BE MADE OF SEMI-PERMANENT MATERIAL, i.e. WOOD.

## CONCRETE WASHOUT SIGN
NOT TO SCALE — 5 — C502

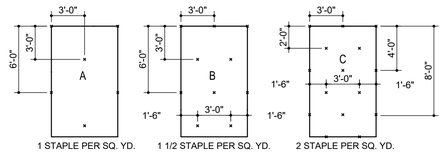



NOTE:
1. SEE SILT FENCE DETAIL FOR MATERIAL SPECIFICATIONS.
2. SILT FENCE SHALL BE PREASSEMBLED BY SUPPLIER.

## SILT FENCE INLET PROTECTION DETAIL
NOT TO SCALE — 4 — C502

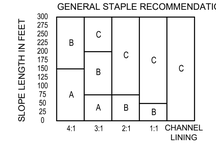



## SILT FENCE DETAIL
NOT TO SCALE — 3 — C502

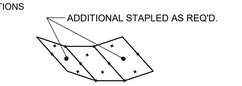



1 STAPLE PER SQ. YD. | 1 1/2 STAPLE PER SQ. YD. | 2 STAPLE PER SQ. YD.

GENERAL STAPLE RECOMMENDATIONS




SLOPE GRADIENT




CHANNEL LININGS UTILIZE STAPLE PATTERN "C" WITH ADDITIONAL STAPLES ON SIDE SLOPES.

## NOTES:
1. STAPLE PATTERNS APPLY TO ALL NORTH AMERICAN GREEN EROSION BLANKETS.

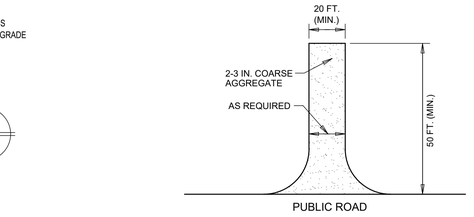
2. STAPLE PATTERNS MAY VARY DEPENDING UPON SOIL TYPE AND AVERAGE ANNUAL RAINFALL.

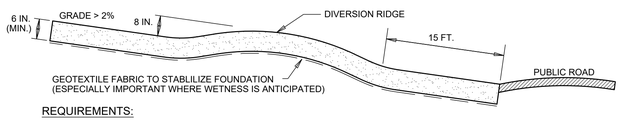
3. AT SLOPE LENGTHS GREATER THAN 300 FEET OR WHERE DRAINAGE OVER LARGE AREAS IS DIRECTED ONTO BLANKETS, STAPLE PATTERN "C" SHOULD BE UTILIZED.

4. CHANNEL LININGS REQUIRE A 2' (MIN.) OVERLAP AT LONGITUDINAL JOINTS AND SIDE SLOPES REQUIRE A 6" (MIN.) OVERLAP. WHERE OVERLAPS OCCUR, THE UPSTREAM BLANKET SHALL OVERLAP THE DOWNSTREAM.

5. NORTH AMERICAN GREEN S150BN TO BE USED FOR EROSION CONTROL BLANKETS.

## EROSION CONTROL BLANKET STAPLE PATTERN
NOT TO SCALE — 2 — C502




## REQUIREMENTS:

Material: 2-3 in. washed stone (INDOT CA No.2) over a stable foundation.

Thickness: 6 in. minimum

Width: 12 ft. minimum or full width of entrance/exit roadway, whichever is greater.

Length: 50 ft. minimum. The length can be shorter for small sites such as for an individual home.

Washing facility (optional): Level area with 3 in washed stone minimum or a commercial rack, and waste water diverted to a sediment trap or basin.

Geotextile fabric underliner: May be used under wet conditions or for soils within a high seasonal water table to provide greater bearing strength.

## INSTALLATION:

1. Avoid locating on steep slopes or at curves in public roads.

2. Remove all vegetation and other objectionable material from the foundation area, and grade and crown for positive drainage.

3. If slope towards the road exceeds 2%, construct a 6-8 in.-high water bar (ridge) with 3:1 side slopes across the foundation area about 15 ft. from the entrance to divert runoff away from the road.

4. Install pipe under the pad if needed to maintain proper public road drainage.

5. If wet conditions are anticipated, place geotextile fabric on the graded foundation to improve stability.

6. Place stone to dimensions and grade shown in the erosion control plan, leaving the surface smooth and sloped for drainage.

7. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin.

## MAINTENANCE:

* Inspect entrance drive and sediment disposal area weekly and after storm events or heavy use.
* Reshape pad as needed for drainage and runoff control.
* Topdress with clean stone as needed.
* Immediately remove mud and sediment tracked or washed onto public roads by brushing or sweeping. Flushing should only be used if the water is conveyed into a sediment trap or basin.
* Repair any broken road pavement immediately.

## COMMON CONCERNS:

Inadequate runoff control--results in sediment washing onto road.
Stone too small, pad too thin, or geotextile fabric absent--results in ruts and a muddy condition as stone is pressed into the soil: add more stone.
Pad too short for heavy construction traffic--extend the pad beyond the 50-ft. length as needed.
Pad not flared sufficiently at road entrance--results in mud being tracked onto the road and possible damage to the road edge: widen stone entrance and repair road damage.
Unstable foundation--use geotextile fabric under th pad and/or improve foundation drainage.

## TEMPORARY CONSTRUCTION ENTRANCE
NOT TO SCALE — 1 — C502

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

LIONS TRANS INC. (BROWNSBURG)
4005 N CR 1000 E
BROWNSBURG, IN 46122

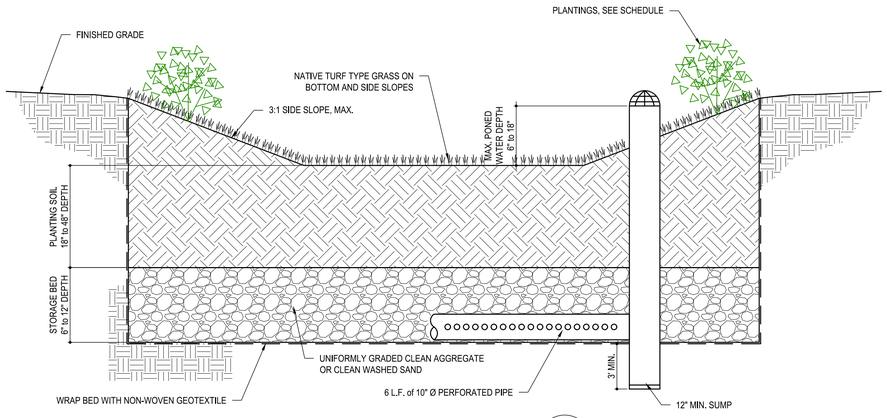
SECTIONS AND DETAILS

BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER
Susan E. Neal

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| | | |
| | | |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C502 |




## BIORETENTION AREA

NOT TO SCALE

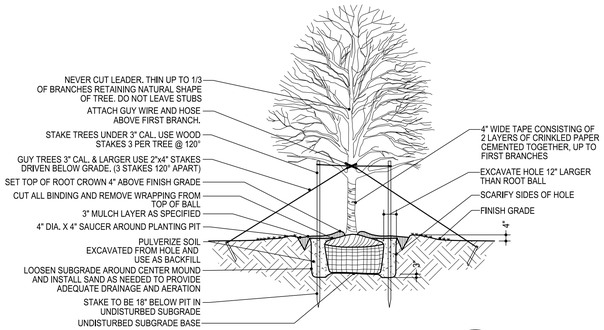
4
L101




## SHRUB AND SMALL TREE PLANTING DETAIL

NOT TO SCALE

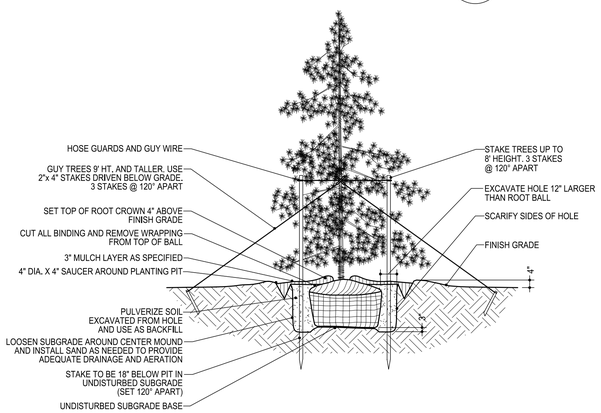
3
L101




## SHADE TREE PLANTING DETAIL

NOT TO SCALE

2
L101



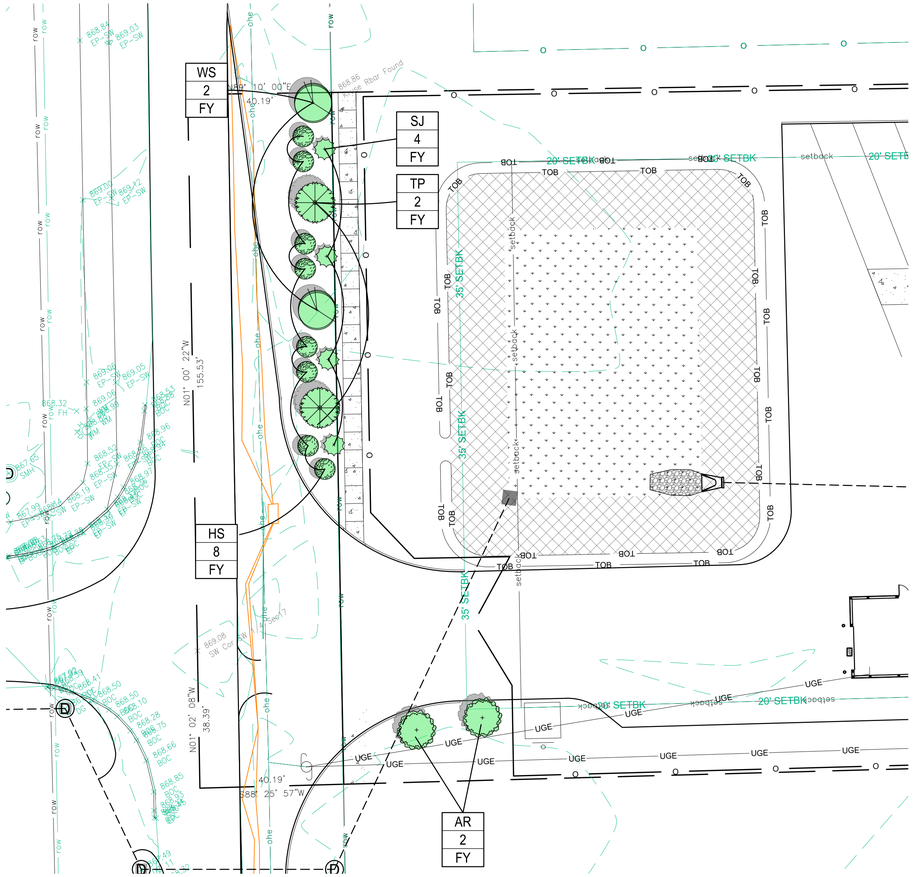

## EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

1
L101

## PLANTING SCHEDULE

| LEGEND | KEY | QTY | BOTANICAL NAME | COMMON NAME | SIZE / COND | REMARKS | HEIGHT / SPREAD | QTY REQ'D |
|---|---|---|---|---|---|---|---|---|
| | WS | 2 | Wisteria sinensis | Blue Chinese Wisteria Tree | #1 Container / --- | Ornamental Deciduous | 10-15 ft / 10-12 ft | 1.25 |
| | AR | 2 | Acer Rubrum | Red / Sugar Maple | #5 Container / --- | Canopy Deciduous | 40-50 ft / 30-40 ft | 2 |
| | TP | 2 | Thuja plicata x standishii | Thuja Green Giant | 24" height / --- | EVERGREEN | 30-40 ft / 8-10 ft | 1.5 |
| | HS | 8 | Hibiscus syriacus ' Red Heart' Hibiscus syriacus 'Notwoodone' Hibiscus syriacus 'JWNWOOD4' | Red Heart Rose of Sharon Lavender Chiffon Rose of Sharon Pink Chiffon Rose of Sharon | #3 Container / --- | DECIDUOUS SHRUB | 8-12 ft / 6-10 ft | 10 |
| | NOTE: Assorted mix of Hibiscus Plants in each grouping. | | | | | | | |
| | SJ | 4 | Spiraea nipponica 'Snowmound' Spiraea Japonica 'Neon Flash' Spiraea Japonica 'Matgold' | Snowmound Spirea Neon Flash Spirea Rainbow Fizz Spirea | #1 container / --- | DECIDUOUS SHRUB | 2-7 ft / 3-7 ft | |
| | NOTE: Assorted mix of Spirea Plants in each grouping. | | | | | | | |




## LANDSCAPE PLAN

SCALE: 1" = 20'

N

20 0 20 40

GRAPHIC SCALE: 1" = 20'

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

LANDSCAPE PLAN

BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

| REVISIONS: | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | L101 |

LITHONIA LIGHTING

Catalog Number:
Notes:
Type:

## FEATURES & SPECIFICATIONS

**INTENDED USE** — Provides a maintenance-free emergency illumination for the rated wattage upon loss of AC power to meet code-required emergency lighting. Ideal for applications requiring low profile, emergency code for fewer mounting heights.

**CONSTRUCTION** — The housing is standard white, or optional black, thermoplastic with a compact and low profile design with all-inclusive lamp, reflector and lens assembly. It is 30% flame rated and impact-resistant.

**OPTICS** — The typical life of the LED is 10 years. One, 0.37W white LED per lamp head.

**ELECTRICAL** — Dual-voltage 120/277 standard.

Bi-color LED status indicator for battery condition. (Green-normal, Red-check battery).

One and a half watts of remote capacity available with REM option.

BATTERY: 3.6V maintenance-free, rechargeable, nickel-cadmium.

**INSTALLATION** — Wall mount and ceiling mount. Surface mount back plate fits most industry-standard size junction boxes and snaps into place.

**LISTINGS** — UL Listed. Meets all applicable requirements for: UL 924, NFPA 101 (Lumen Life Safety Code), NFPA 70 — NEC (National Electrical Code) Article 700.12F and/or 1600.9 (2012), CEC Title 24, Part 12, Subpart B and 2016 Federal Energy Standard 10FR Pa 1064 P. (10FR Pa 40 P.C.) listed standard.

**WARRANTY** — 5 year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty-terms-and-conditions

**NOTE:** Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

† Small Battery Chargers Certified in the US Title 20 Appliance Efficiency Database.

Lithonia Lighting Basics™

Low Profile Emergency Light

# EU2L

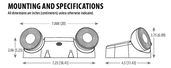




LISTED · IBC · ENERGY STAR 2.0 · FC

## MOUNTING AND SPECIFICATIONS

All dimensions are inches (centimeters) unless otherwise indicated.




Specifications

Length: 7.38 (19)
Depth: 2.75 (6.99)
Height: 4.5 (11.43)
Weight: 0.7 lbs. (.32 kg)



## EU2L Low Profile Emergency Light

CS CONTRACTOR SELECT — Looking for Contractor Select readily available configurations? Check out the Contractor Select product guide at www.lithonia.acuitybrands.com

MATERIAL INFORMATION

Example: EU2L B

| Series | | Housing Color | | Options | |
|---|---|---|---|---|---|
| EU2L | Emergency Light | (Blank) | White | (Blank) | Not Required |
| | | B | Black | REM | Remote Capacity |

**BATTERY CAPACITY AND LOADING**

| Battery | Total Capacity | Maximum# Remote Lamp Heads* |
|---|---|---|
| 3.6V | 2W | 2 - 0W W SGL RD NLH |
| | | 1 - 0W W T RD NLH |
| | | 1 - 0W GY SGL WP SQW12 |
| | | 2 - 0W GY SGL WP RD W12 |
| | | 1 - 0W GY T WP RD W12 |

* These are in addition to the lamp heads on the product.
** See spec sheet for alternate side options

**ELECTRICAL SPECIFICATIONS**

| Description | Supply Voltage | Input Wattage | | | Input Amps | | |
|---|---|---|---|---|---|---|---|
| | | 120 | 208 | 277 | 120 | 208 | 277 |
| Standard (No options) | 120/277 | .55 | N/A | .57 | .45 | N/A | .05 |
| Remote Capacity Option (REM) | 120/277 | .52 | N/A | .60 | .07 | N/A | .07 |

Accessories: Order as separate catalog number.

| | |
|---|---|
| EBLW SGL RD | Single, indoor remote head, round, ivory white, .75W, 3.6V voltage input.* |
| EBLW T RD | Twin, indoor remote head, round, ivory white, 1.5W, 3.6V voltage input.* |
| EBLW GY SGL WP SQ | Single, weather-proof remote head, square, gray, 1W, 3.6V CD voltage sensing.* |
| EBLW SGL WP RD W12 | Single, LED weather-proof head, round, gray, 0.75W, 3.6V input.* |
| EBLW GY T WP RD W12 | Twin, LED weather-proof head, round, gray, 1.5W, 3.6V input.* |
| ELA WH2 | Wiresguard, 85-1/8" W x 9-3/4" H x 9" D (back mount only). Easy specification! ELA WH. |

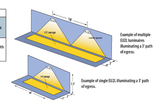
Accessories Notes:
1. See spec sheet EBL remote head for additional entering options

## SPACING GUIDELINES

Maximum Spacing Guidelines - EU2L*

| Mounting Height | Illumination Level | Single Luminaire | | Multiple Luminaires | | Application Notes |
|---|---|---|---|---|---|---|
| | | I' Path of Egress | 4' Path of Egress | I' Path of Egress | 4' Path of Egress | |
| 33' | 91 Avg | 14' | 18' | 18' | 14' | "180' Corridor 9' wide, and 9' high with 0.5 Avg/Min uniformity" |

Notes:
1. Also meets the additional illumination requirements of NFPA 101 51C minimum and maximum ratio of 40:1




Example of multiple EU2L luminaires illuminating a 2' path of egress.

Example of single EU2L illuminating a 1' path of egress.

LITHONIA LIGHTING



EMERGENCY One Lithonia Way, Conyers, GA 30012 Phone: 800-705-SERV (7378) www.lithonia.com TechSupport-EmergencyUtility@acuitybrands.com

© 2019-2023 Acuity Brands Lighting, Inc. All rights reserved. Rev. 12/15/23

CONTRACTOR SELECT

Catalog Number:
Notes:
Type:

Contractor Select™

# OLWP

## LED Wall Pack

Customize the color temperature and of effortlessly automate your wall pack for dusk-to-dawn operation with the CLWP Wall Pack. Featuring switchable CCT (3000/4000K/5000K) and a selectable photocell, the CLWP Wall Pack is designed to deliver years of maintenance-free general illumination for residential outdoor applications such as driveways, entryways, patios, and other outdoor areas that require consistent and reliable lighting performance.



**FEATURES:**

- Switchable CCT (3000/4000K)
- Selectable ON/OFF photocell for dusk-to-dawn or switched operation
- Cast aluminum construction for durability
- Impact-resistant polycarbonate diffuser

DLC · DLC PREMIUM · DARK SKY COMPLIANT · 5 YEAR WARRANTY

| Catalog Number | UPC | Description | Lumens | Input Watts | CCT | CRI | Voltage | Back-to-Back Mount Specification | Finish |
|---|---|---|---|---|---|---|---|---|---|
| OLWP LED 5WW2 120 PE DDB | 0078728372522 | OLWP LED Wall Pack | 1,400 | 18.3 | 3000K/4000K/5000K | 80 | 120 | Increased Clearance, Selectable On/Off Sensor | Dark Bronze |



LITHONIA LIGHTING

CONTRACTOR SELECT

## Specifications

**INTENDED USE:**
The CLWP provides years of maintenance-free general illumination for commercial or residential outdoor applications such as driveways, patios, loading areas and warehouses.

**CONSTRUCTION:**
Rugged cast aluminum, corrosion-resistant rear housing. Impact resistant polycarbonate front cover/diffuser resists fading and cracking. Driver operates at 120V. Operating temperature -40°C to 40°C.

**OPTICS:**
High-performance LEDs maintain 70% of light output at 50,000 hours of service. (LED lifespan based on IESNA LM-80-08 results and calculated per IESNA TM-21-11 methodology.). Lenses are engineered for superior lighting distribution, uniformity and fixture spacing. See Lighting Performance Table for specific fixture performance.

**INSTALLATION:**
Designed for wall mounting more than 4' above the ground. Mounts to a recessed junction box (by others).

**LISTINGS:**
UL Listed for U.S. and Canadian safety standards for wet locations.

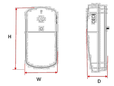
**WARRANTY:**
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty-terms-and-conditions

**Note:** Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

## Dimensions

### Specifications

**Width:** 5.35" (13.6 cm)
**Height:** 10.5" (26.4 cm)
**Depth:** 3" (7.7 cm)
**Weight:** 1.54 lbs (0.70 kg)




One Lithonia Way, Conyers, GA 30012 | 1-800-705-7378 | www.lithonia.com
© 2013-2020 Acuity Brands Lighting, Inc. All rights reserved. Rev. 10/14/20



# LUMINAIRE SCHEDULE

| SYMBOL | QTY. | LABEL | ARRANGEMENT | DESCRIPTION | MOUNTING HEIGHT | LUX | WATTS |
|---|---|---|---|---|---|---|---|
| | 3 | A | SINGLE | LITHONIA RADB LED - P1 | 41.50 INCHES | 34.5 | 5 |
| WP | 2 | B | SINGLE | LITHONIA OLWP LED SWW2 120 PE DDB | 16 FEET | 160 | 18.5 |
| | 2 | B | SINGLE | LITHONIA EU2L | 7.5 FEET | 10.76 | .33 (LED) |

## LIGHTING LEGEND

- 60 LUX
- 30 LUX
- 20 LUX
- 5 LUX
- 1 LUX




## SITE LIGHTING PLAN

SCALE: 1" = 30'

GRAPHIC SCALE: 1" = 30'

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

SITE LIGHTING PLAN

BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

Susan E. Moench

## REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | LT101 |

Indiana 811 Know what's below. Call before you dig.

# Advisory Plan Commission

## Town of Brownsburg

**Assigned Staff:** Lauren Bouslog, Planner I

**Report Date: 12/2/2025**

**Request Type:** Development Plan Review

### General Information

| | |
|---|---|
| **CASE NUMBER** | PSDP-23-21 |
| **APPLICANT** | Brian Moench, Moench Engineering |
| **LOCATION** | 4005 N CR 1000 E, 32-08-17-365-002.000-016 |
| **PARCEL SIZE** | 2.96 acres |

### Cross References

| | |
|---|---|
| **Previous APC Cases** | N/A |
| **Relevant BZA Cases** | N/A |
| **Other** | The site was annexed into the Town of Brownsburg under Ord. No. 2011-07 in 2011. |

### Attachments

| | |
|---|---|
| ☒ | Tech Review |
| ☒ | Site Plan/Civil |
| ☒ | Landscape Plan |
| ☒ | Architectural Plans |
| ☒ | Other: Lighting Plan |

**Site and Zoning Map:**






## Project and Site Background:

This development plan review is for a 2,860 sq.ft. over the road truck maintenance building and a 900 sq. ft. office building to serve Lion's Trans Inc. The use would fall under Vehicle/Equipment Services – Heavy. The site has one access point off of N CR 1000 E. The proposed access drive lines up across from E CR 400 N. The site does not have any previous variances. The initial application for this project was uploaded on April 24, 2023, but never went before the Advisory Plan Commission.

## Technical Review:

The TECH review for this project took place on November 6, 2025. Development Services commented that a lighting spec sheet needs added for the outdoor lighting and the light output needs shown in lux on the lighting plan. Pole, wall, or ground mounted fixtures must be full-cutoff fixtures. Landscape tables need to be provided that show the calculations of required versus provided landscaping (onsite landscaping requirements, any applicable buffer planting requirement, etc.) A sidewalk needs added to side of CR 1000 E and material percentages for each façade need added to the architectural detail submittal with details for the office on the site, not just the maintenance building. The Wastewater Department commented that the site is outside of Brownsburg's sanitary service area. The Stormwater O & M appears to be the drainage report. A Stormwater O & M will need to be provided indicating the property owner is responsible for stormwater system maintenance. The Street Department commented that radiuses need to be shown at entrances and a TR-13 connection to the existing street needs to be added as well. The Fire Territory commented that the utility plan does not show any fire hydrants. The east end of the maintenance building is approximately 300 feet from the front of the property. IN Fire Code 675 IAC 22-2.5 states that where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 400 feet (122 m) from a hydrant on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains shall be provided. The applicant's revised plan uploaded on 10/7/25 includes an office building at the east end of the property that was not included in the original submission. The new building is more than 700 feet from the hydrant shown on CR 1000 E. A private fire main and hydrant will be required within 400 feet of all points on the exterior of buildings per IFC 507.5.1.

## Traffic Study:

A traffic study was not required for this project.

## Criteria:

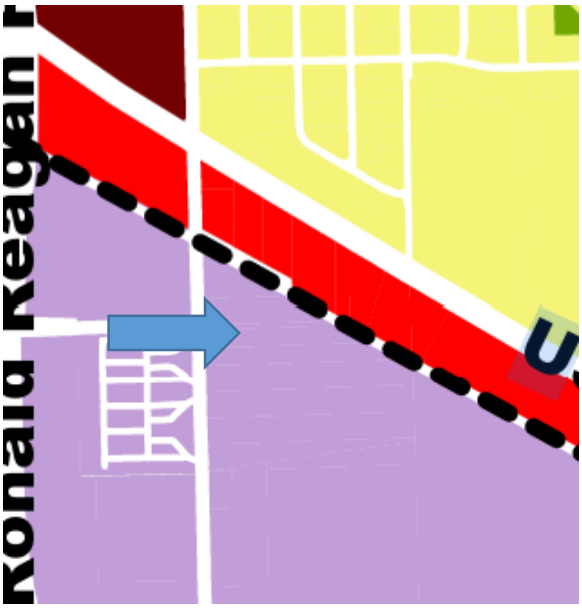
*Pursuant to Chapter 8 of the Brownsburg Unified Development Ordinance the Advisory Plan Commission shall make findings of fact on the following criteria:*

1) The Development Plan is consistent with the **Comprehensive Plan**.

   Future Land Use Map Link: https://www.brownsburg.org/DocumentCenter/View/1068/2021-Future-Land-Use-Map-PDF

   a) The Future Land Use Map notes the site as being used for flex/ light industrial. Flex space is a permitted use in an MS district as well as light manufacturing. The Comprehensive Plan notes that motorsport related development may be suited to a commercial retail space, an office, or require large flex spaces that may feature loading docks or vehicle bays. These may be suited in

either commercial or industrial employment areas. This project's proposed use is in line with the Future Land Use Map and the MS district.




*Based on the above information, staff believes this criterion has been met.*

2) The Development Plan complies with applicable development requirements and standards of **CHAPTER 2 – ZONING DISTRICTS, CHAPTER 3 – PERMITTED USES,** and/or the PUD Ordinance.

https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=14

a) The project meets the minimum front setback of 35', the minimum side setback of 20', and the minimum rear setback of 20'. Maximum lot coverage is 80% in an MS district, this project is only 65.4%. The maintenance building on the site is 30'-9" tall, which is under the maximum height allowed for a primary structure (65'). However, to date no elevations of the office building have been submitted, to review for compliance.

*Based on the above information, staff believes this criterion has not been met.*

3) The Development Plan complies with applicable standards found in **CHAPTER 5: SITE DEVELOPMENT** and/or the PUD Ordinance.

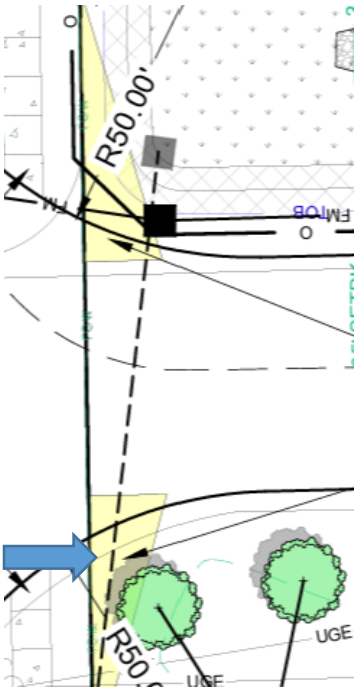
https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=101

a) *Landscaping*: The applicant has added the planting quantity that was required along with the provided landscaping amounts to their planting schedule per Development Services TECH review comments. This standard has been met.

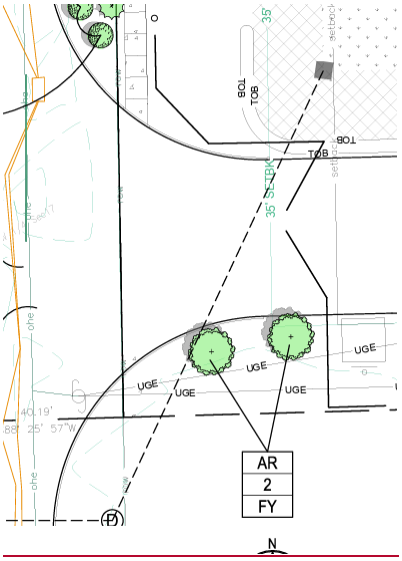
b) *Lighting*: The maximum light trespass allowed for an MS zoned district is 30 lux, the proposal does not exceed this by the property line.

c) *Parking*: The applicant provided 36 truck parking spaces, 4 standard spaces, and 1 ADA handicap space for a total of 40 spaces that meets the parking standards.

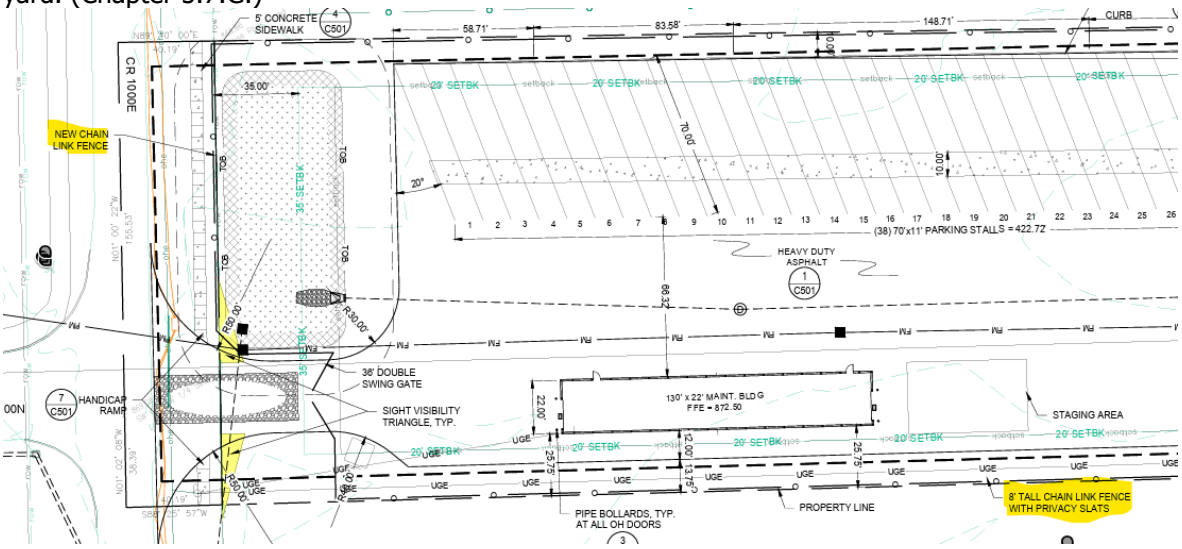
d) *Vision Clearance Triangle*: The VCT's are labeled on their Civil and Landscape Plan submittal. There is a red/ sugar maple (canopy, deciduous tree) that has a listed height on the planting schedule of 40-50 ft and a spread of 30-40 ft that is in violation of Chapter 5.16.B. Vertical Area on page 142 of the UDO. 'Landscaping shall be permitted to be placed or to project into the vision clearance triangle between the heights of two feet and nine feet above the crown of the adjacent roadway.' The proposed tree would exceed this requirement and therefore need to be moved back to the east out of the VCT. The proposed fence on the north side of the access drive (shown below) is within the applicant's vision clearance triangle.




Since the continuance on December 17th, 2025, the applicant has resubmitted the landscape plans. This led to a deletion of the vision clearance triangles from the new landscape plan shown below). The triangles will need added to the new landscape plan.




e) *Other*: The applicant has marked an 8' tall chain link fence with privacy slats around the perimeter of the property and a chain link fence in the front yard. There is a 36' double swing gate that leads into the property off the access point from CR 1000 E. Chain link is a prohibited material for a vehicle/ equipment services – heavy use. Permitted materials consist of wood, brick, masonry, or other similar durable materials. The fence or wall must be constructed high enough to conceal vehicles, equipment, or parts located on the lot. (Chapter 3.5.P. of the UDO) Non-residential fences and walls are also not permitted in front yards, only in the side or rear yard. (Chapter 5.7.G.)




*Based on the above information, staff believes this criterion has not been met.*

4) <u>The Development Plan complies with any **other applicable provisions** of this Ordinance or **Overlay Standards.**</u>

a) No special provisions that relate to the plat are noted for this site.

b) Overlay districts are not applicable to this project.

*Based on the above information, staff believes this criterion has been met.*

5) Satisfies any provision related to a development's design as found in **CHAPTER 7 – SUBDIVISION REGULATIONS** and/or the PUD Ordinance.

https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=168

a) The project meets the standards for setbacks, lot coverage, and height. Easements are shown and labeled on the plat. A sidewalk has been added along the west side of the property that fronts CR 1000 E to satisfy the Brownsburg Transportation Plan requirements.

*Based on the above information, staff believes this criterion has been met.*

**6)** The Development Plan satisfies the construction requirements of the **Brownsburg Construction Standards and Specifications.**

a) The applicant has been coordinating with Wessler Engineering and the Wastewater Department to find a solution for the discharge from the post developed property since it is limited by the receiving conveyance (detention on-site or increasing capacity downstream were mentioned as being appropriate solutions). The design requirements in Chapter 151 (Stormwater Management) must be met. No waivers have been requested. If the applicant can meet the design requirements, then no waiver is needed. TECH review comments will need to be completed before permitting and the completion of the comments will be added as a condition for approval.

*Based on the above information, staff believes this criterion has not been met.*

## Recommendations:

*The Advisory Plan Commission may request conditions and commitments related to the project and criteria. Conditions or commitments must be made as part of the motion.*

***Based on the information provided and the criteria responses, staff recommends a motion to***

| | |
|---|---|
| ☐ | Approve PSDP-23-21 as presented. |
| ☒ | Approve PSDP-23-21 with the following staff conditions:<br>1. The approval of Findings of Fact and Report of Determination.<br>2. The stamping of the construction plans by the Director.<br>3. The completion of any outstanding TECH comments.<br>4. The removal of the fence from the front yard and change the material from chain link to a permitted material. (Options listed in Chapter 3.5.P.4.d. of the UDO)<br>5. The removal of the red/sugar maple tree from the vision clearance triangle on the south side of the access road. |
| ☐ | Deny PSDP-23-21 based on the following criteria: |

Moench
Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

# LIONS TRAN INC. (Brownsburg)

4005 N. CR. 1000 E.
BROWNSBURG, INDIANA 46122

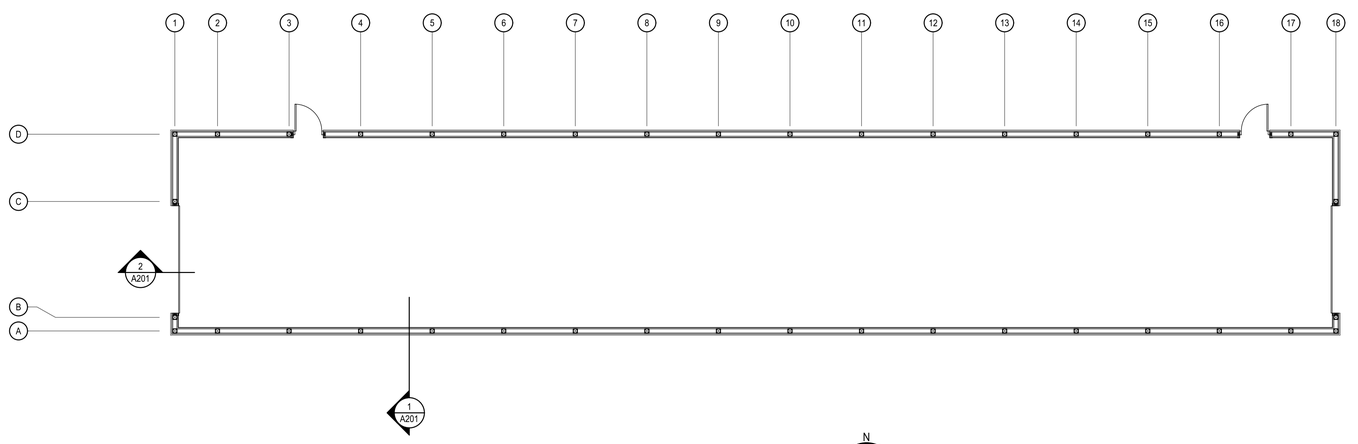
ARCHITECTURAL SITE PLAN and FLOOR PLAN

PRELIMINARY SET

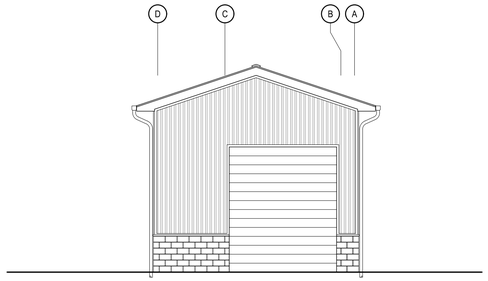
REVISIONS:

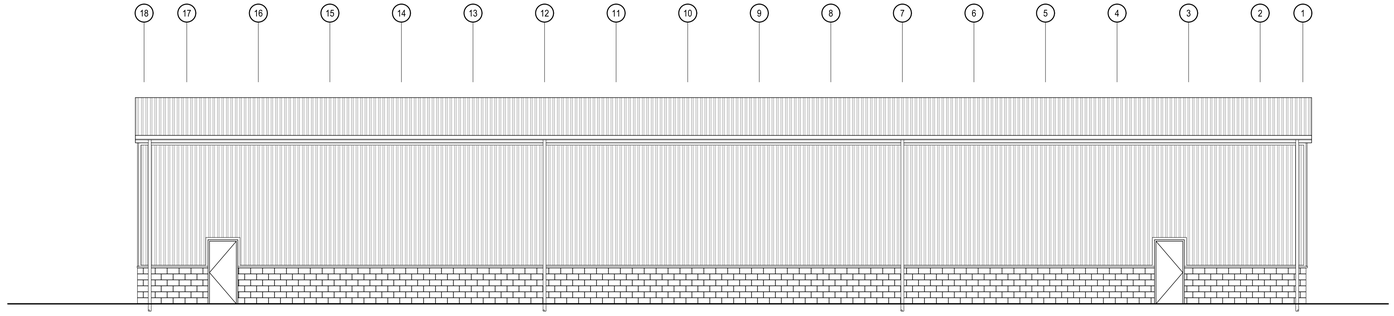
| | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

| | |
|---|---|
| DRAWN BY: | SRJ |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 05/22/2023 |
| SHEET NUMBER: | A100 |



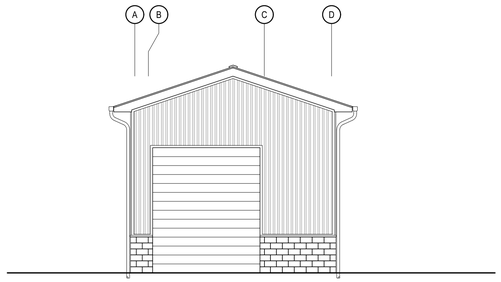

**FLOOR PLAN**
1/8" = 1'-0"

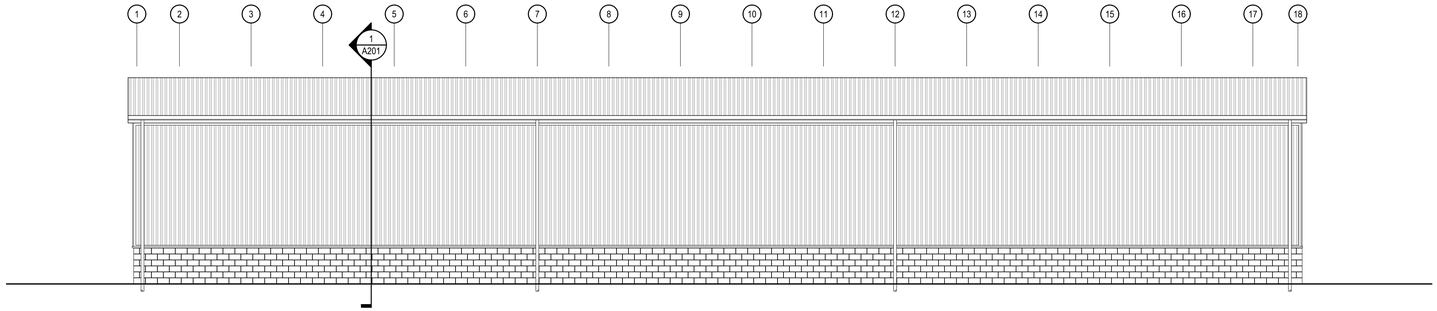



WEST ELEVATION
1/8" = 1'-0"
4
A101

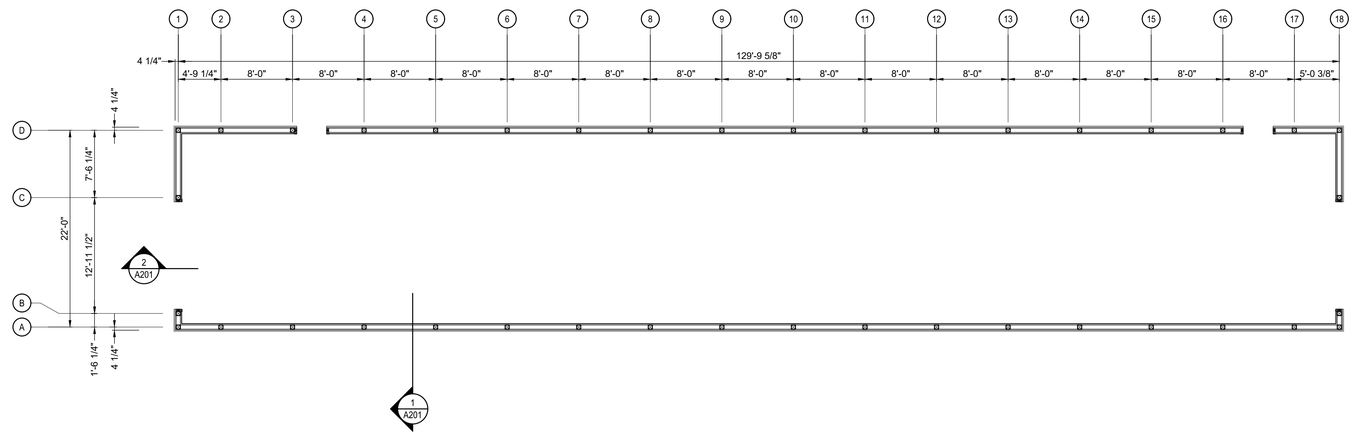
NORTH ELEVATION
1/8" = 1'-0"
3
A101




EAST ELEVATION
1/8" = 1'-0"
5
A101

SOUTH ELEVATION
1/8" = 1'-0"
2
A101




ROOF FRAMING PLAN
1/8" = 1'-0"




Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

LIONS TRAN INC. (Brownsburg)
4005 N. CR. 1000 E.
BROWNSBURG, INDIANA 46122

BUILDING ELEVATIONS AND ROOF FRAMING PLAN

PRELIMINARY SET

REVISIONS:

| | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

| | |
|---|---|
| DRAWN BY: | SRJ |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 05/22/2023 |
| SHEET NUMBER: | A101 |

# Advisory Plan Commission
# TECHNICAL REVIEW COMMITTEE

TOWN OF Brownsburg
61 North Green Street | Brownsburg, Indiana 46112
Tel 317.852.1128 | Fax 317.852.1134

Project Name: Lions Trucking DPR
Record Number: PSDP-23-21
TECH Meeting Date: November 6, 2025

The following Technical Review Committee ("TECH") members provided comments for the project as detailed below:

Development Services
- ☐ Jenna Wertman, AICP, Director
- ☒ Lauren Bouslog, Associate Planner
- ☐ Steve Fletcher, Building Commissioner
- ☐ Frank Wise, Senior Building Inspector

Town Administration
- ☐ Debbie Cook, Town Manager
- ☐ Aaron Kaytar, Capital Projects & Procurement Manager
- ☐ Ethan Pierce, Economic Development Manager

Water Department
- ☐ Frank Monts, Superintendent

Wastewater Department
- ☒ Kathy Dillon, Water Utilities Director
- ☐

Street Department
- ☒ Aaron Love, Superintendent
- ☐ Matt Griner, Asst. Superintendent

Parks Department
- ☐ Amber Lane, Director
- ☐

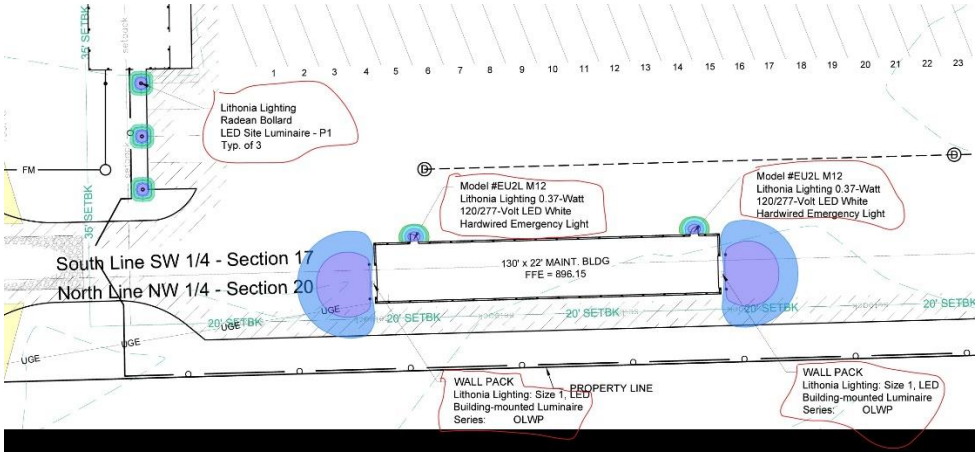
Fire Territory
- ☒ Paul Hudson, Fire Marshal
- ☐ Jeff Schlageter, Deputy Fire Marshal

Police Department
- ☐ Joe Grimes, Chief
- ☐ Pat Bullock, Captain
- ☐ Bryan Fultz, Major

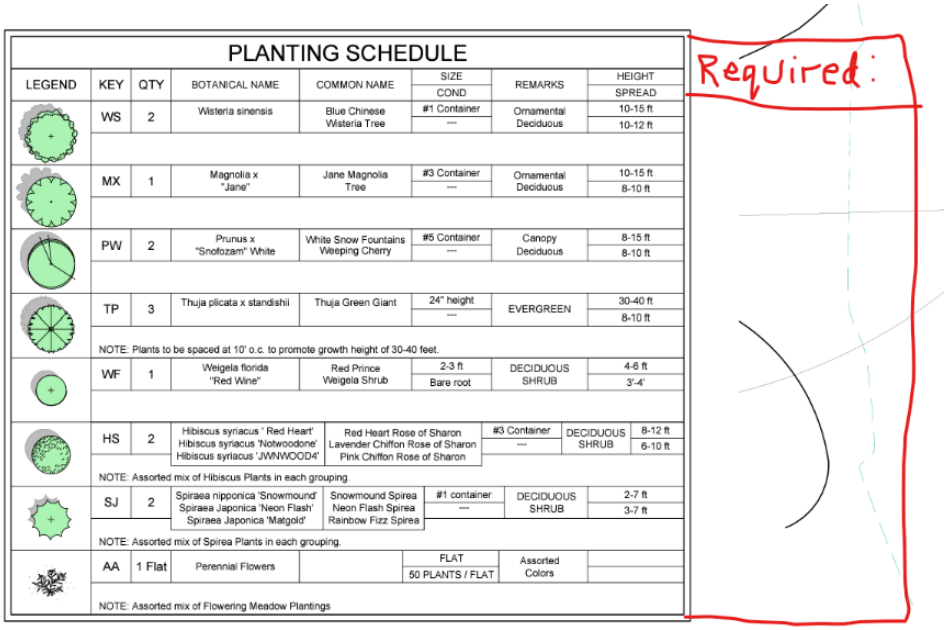
External Agencies
- ☐ Regan Huff, BCSC
- ☐ Dave Gaston, P.S., Hend. Co. Surveyor
- ☐ John Ayers, Hendricks Co. Engineer
- ☐ Mary Atkins, Wessler Engineering
- ☐ Angie DeKemper, CountryMark
- ☐ Gerry Jones, Vectren

## 1) DEVELOPMENT SERVICES

a) Add a lighting spec sheet for your outdoor lighting. We also need the light output shown in lux. Since this is an MS zoned district, the allowable light at the property line is 30 lux. Pole, wall, or ground mounted fixtures must be full-cutoff fixtures.




b) Provide landscape tables that show the calculations of required versus provided landscaping (onsite landscaping requirements, any applicable buffer planting requirement, etc.) You only have provided currently, see pic below.



PLANTING SCHEDULE

| LEGEND | KEY | QTY | BOTANICAL NAME | COMMON NAME | SIZE / COND | REMARKS | HEIGHT / SPREAD |
|---|---|---|---|---|---|---|---|
| | WS | 2 | Wisteria sinensis | Blue Chinese Wisteria Tree | #1 Container / --- | Ornamental Deciduous | 10-15 ft / 10-12 ft |
| | MX | 1 | Magnolia x "Jane" | Jane Magnolia Tree | #3 Container / --- | Ornamental Deciduous | 10-15 ft / 8-10 ft |
| | PW | 2 | Prunus x "Snofozam" White | White Snow Fountains Weeping Cherry | #5 Container / --- | Canopy Deciduous | 8-15 ft / 8-10 ft |
| | TP | 3 | Thuja plicata x standishii | Thuja Green Giant | 24" height / --- | EVERGREEN | 30-40 ft / 8-10 ft |
| NOTE: Plants to be spaced at 10' o.c. to promote growth height of 30-40 feet. | | | | | | | |
| | WF | 1 | Weigela florida "Red Wine" | Red Prince Weigela Shrub | 2-3 ft / Bare root | DECIDUOUS SHRUB | 4-6 ft / 3'-4' |
| | HS | 2 | Hibiscus syriacus ' Red Heart' / Hibiscus syriacus 'Notwoodone' / Hibiscus syriacus 'JWNWOOD4' | Red Heart Rose of Sharon / Lavender Chiffon Rose of Sharon / Pink Chiffon Rose of Sharon | #3 Container / --- | DECIDUOUS SHRUB | 8-12 ft / 6-10 ft |
| NOTE: Assorted mix of Hibiscus Plants in each grouping. | | | | | | | |
| | SJ | 2 | Spiraea nipponica 'Snowmound' / Spiraea Japonica 'Neon Flash' / Spiraea Japonica 'Matgold' | Snowmound Spirea / Neon Flash Spirea / Rainbow Fizz Spirea | #1 container / --- | DECIDUOUS SHRUB | 2-7 ft / 3-7 ft |
| NOTE: Assorted mix of Spirea Plants in each grouping. | | | | | | | |
| | AA | 1 Flat | Perennial Flowers | | FLAT / 50 PLANTS / FLAT | Assorted Colors | |
| NOTE: Assorted mix of Flowering Meadow Plantings | | | | | | | |

Required:

d) Do you plan on putting a dumpster that would require a trash receptacle screen on all sides (wall or fence) by the new truck maintenance building? If so, it would need to be a similar material that complements the new building's facade, be placed on a paved surface and be accessible by gates.

e) A sidewalk is required on this side of CR 1000 E.

f) Add material percentages for each facade to your architectural detail submittal and include architectural details for the office on the site, not just the maintenance building.

**2) BUILDING**

a) None

**3) CAPITAL PROJECTS**

a) None

**4) ECONOMIC DEVELOPMENT**

a) None

**5) WATER**

a) None

**6) WASTEWATER**

a) This is outside of Brownsburg's Sanitary service area.

b) The Stormwater O&M appears to be the drainage report. A Stormwater O&M will need to be provided indicating the Property owner is responsible for the Stormwater system maintenance.

**7) STREET/PUBLIC WORKS**

a) Show radiuses at the entrance

b) TR-13 connection to existing street as well as add 02504

c) Check on transportation plan for sidewalks needed and add as necessary.

**8) PARKS**

a) None

**9) FIRE TERRITORY**

a) Utility plan does not show any fire hydrants. East end of maintenance building is approximately 300 feet from the front of the property.
**IN Fire Code 675 IAC 22-2.5**

**507.5 Fire hydrant systems.**

**507.5.1 Where required.** Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 400 feet (122 m) from a hydrant on a fire apparatus access road, as measured by an *approved* route around the exterior of the facility or building, on-site fire hydrants and mains shall be provided.

ACTION REQUIRED: Produce exhibit showing compliance with IFC 507.5.1. A private hydrant may be required.

b) Site analysis table on sheet C000 lists 1 building with a square footage of 2080 $ft^2$. Following sheets show 2 buildings with a total square footage of 3760 $ft^2$.
**675 IAC 12-6-7 (b) (1)** Plans shall be sufficiently clear and complete to show in detail that the proposed work will comply with the rules of the commission.

ACTION REQUIRED: Submit corrected sheets

c) Revised plan uploaded on 10/7/25 includes a building at the east end of the property that was not included in the original submission. New building is more than 700 feet from the hydrant shown on CR 1000 E. Please note my previous comment re: private fire main and hydrant. A private hydrant will be required within 400 feet of all points on the exterior of buildings per IFC 507.5.1.

**10) POLICE**

a) None

**11) STORMWATER**

a) See attached

**12) BROWNSBURG COMMUNITY SCHOOL CORPORATION**

a) None

**13) HENDRICKS COUNTY SURVEYOR**

a) None

**14) HENDRICKS COUNTY ENGINEER**

a) None

**15) COUNTRYMARK**

a) None

*Please provide a written response to this report addressing each issue and, if necessary, indicate where on the revised plans the modification has been made.*

**16) VECTREN**

a) None

TOWN OF Brownsburg

**Construction/ Stormwater Pollution Prevention Plan Technical Review**
**Town of Brownsburg Stormwater Management Ordinance**
https://codelibrary.amlegal.com/codes/brownsburg/latest/brownsburg_in/0-0-0-26557
**IDEM Construction Stormwater General Permit:**
https://www.in.gov/idem/stormwater/construction-land-disturbance-permitting/
(INRA00000 effective 12/18/2021)

## Construction/Stormwater Pollution Prevention Plan Technical Review and Comment

**Project Name:** Lion Trans Inc. Maintenance Building
**Scope of Project:** Parking Lot and Maintenance Building
**Location of Project:** 4005 N. County Road 1000E
**County(ies):** Hendricks
**Latitude:** 39°49'20.98" N **Longitude:** 86°20'42.20" W

**Plan Submittal Date:** **October 7, 2025**
**Plan Review Date:** **November 4, 2025**

**Plan Preparer:** Brian Moench **Affiliation:** Moench Engineering, P.C.
**Address:** 4000 Clarks Creek Road
**City:** Plainfield **State:** IN **Zip:** 46168
**Phone:** (317) 837-2767 **Cell Phone:** NA **Email:**

**Project Site Owner:** Malhi Kulwinder & Jigna Shah Jtsur **Company Name (if applicable):**
**Address:** 7631 E. US Hwy 36
**City:** Avon **State:** IN **Zip:** 46123
**Phone:** 317-989-1580 **Cell Phone:** **Email:**

**Plan Reviewer:** Mary Atkins, PE, CPESC **Affiliation:** Wessler Engineering **On behalf of:** Town of Brownsburg
**Assisted By:** Michaela Tauil, CPESC
**Address:** 6219 South East Street
**City:** Indianapolis, IN **State:** IN **Zip:** 46227
**Phone:** 317-788-4551 **Cell Phone:** **Email:** MaryA@wesslerengineering.com

| **Plan Review Status:** | | |
|---|---|---|
| ☐ | **Plan is Adequate** | A comprehensive plan review has been completed and it has been determined that the plan satisfies the minimum requirements of the Town of Brownsburg Stormwater Management Ordinance and Construction Standards, and the Construction Stormwater General Permit INRA00000 (Effective 12-18-2021). |
| ☐ | **Preliminary Review** | A comprehensive review will not be completed at this time. The plan review authority reserves the right to perform a comprehensive review at a later date, and revisions may be required at that time. |
| ☐ | **Conditional Acceptance** | Acceptance of the plan is conditional. The conditional acceptance is contingent upon addressing the issues identified in the comment sections. |
| ☒ | **Plan is Deficient** | Significant deficiencies were identified and must be addressed. Refer to the comment sections. |

| **Action:** | |
|---|---|
| ☐ | **Submit a Notice of Intent:** Submit the Notice of Intent (NOI) online through the IDEM Regulatory ePortal. It is required to upload a copy of this review form when submitting the NOI through the IDEM Regulatory ePortal: (https://stormwater.idem.in.gov/ncore/external/home) |
| ☒ | **Do not file a Notice of Intent or commence land-disturbing activities:** Deficiencies must be adequately addressed and an acceptable plan review completed. |
| ☒ | **Comments:** Refer to Plan Review Comments Sections of this document. |
| ☒ | **Revisions:** Update and submit the revised Construction/Stormwater Pollution Prevention Plan as indicated below. |
| | ☒ Update and submit a complete plan set that addresses plan deficiencies. |
| | ☒ Update and submit a document (narrative and/or plan sheets) that address plan deficiencies. |
| | ☐ Update and submit a complete plan set that addresses plan deficiencies. A comprehensive plan review will not be completed. |

## Plan Review Information

- *The technical review and comment is intended to evaluate the completeness of the Construction/Stormwater Pollution Prevention Plan for the project. The Plan submitted was not reviewed for the adequacy of engineering design. All measures included in the plan, as well as those recommended in the comments should be evaluated as to their feasibility by a qualified individual with structural measures designed by a qualified engineer. The Plan has not been reviewed for other local, state, or federal permits that may be required to proceed with this project.*
- *Construction activities and unforeseen weather conditions may affect the performance of the erosion and sediment control system, individual measures, or the effectiveness of the plan. The plan must be a flexible document, with provisions to modify or substitute measures as necessary to ensure compliance.*

**Priority Site Information:**

| | | | |
|---|---|---|---|
| ☐ | **Nature and Extent of Construction** | ☐ | **Close Proximity to Wetlands** |
| ☐ | **Close Proximity to Sensitive Area** | ☐ | **Potential for Direct Runoff to Receiving Waters** |
| ☐ | **Steep Topography on Proposed Construction Site** | ☒ | **Not a Priority Site** |

## Section A: Construction Plan Elements

| Adequate | Deficient | NA | A | *The construction plan elements include general information associated with the project site that are critical for the evaluation of the stormwater pollution prevention plan component. This information includes, but is not limited to an index, resource information, reference maps, grading information, project layout and design, and drainage plan* |
|---|---|---|---|---|
| ☒ | ☐ | ☐ | **1** | Index of the location of required plan elements in the construction plan |
| ☒ | ☐ | ☐ | **2** | A vicinity map depicting the project site location in relationship to recognizable local landmarks, towns, and major roads |
| ☒ | ☐ | ☐ | **3** | Narrative of the nature and purpose of the project |
| ☒ | ☐ | ☐ | **4** | Latitude and longitude to the nearest fifteen (15) seconds |
| ☒ | ☐ | ☐ | **5** | Legal description of the project site |
| ☒ | ☐ | ☐ | **6** | 11 X 17-inch plat showing building lot numbers/boundaries and road layout/names |
| ☒ | ☐ | ☐ | **7** | Boundaries of the one hundred (100) year floodplains, floodway fringes, and floodways |
| ☒ | ☐ | ☐ | **8** | Land use of all adjacent properties |
| ☒ | ☐ | ☐ | **9** | Identification of a U.S. EPA approved or established TMDL |
| ☒ | ☐ | ☐ | **10** | Name(s) of the receiving water(s) |
| ☒ | ☐ | ☐ | **11** | Identification of discharges to a water on the current 303d list of impaired waters and the pollutant(s) for which it is impaired |
| ☒ | ☐ | ☐ | **12** | Soil map of the predominant soil types |
| ☒ | ☐ | ☐ | **13** | Identification and location of all known wetlands, lakes and water courses on or adjacent to the project site (construction plan, existing site layout) |
| ☒ | ☐ | ☐ | **14** | Identification of any other state or federal water quality permits or authorizations that are required for construction activities– required 50-foot natural buffer |
| ☒ | ☐ | ☐ | **15** | Identification and delineation of existing cover, including natural buffers |
| ☒ | ☐ | ☐ | **16** | Existing topography at a contour interval appropriate to indicate drainage patterns |
| ☒ | ☐ | ☐ | **17** | Location(s) of where run-off enters the project site |
| ☒ | ☐ | ☐ | **18** | Location(s) of where run-off discharges from the project site prior to land disturbance. Erosion measures required at the discharge point. |
| ☒ | ☐ | ☐ | **19** | Location of all existing structures on the project site |
| ☒ | ☐ | ☐ | **20** | Existing permanent retention or detention facilities, including manmade wetlands, designed for the purpose of stormwater management |

| | | | | |
|---|---|---|---|---|
| ☒ | ☐ | ☐ | **21** | Locations where stormwater may be directly discharged into ground water, such as abandoned wells, sinkholes, or karst features |
| ☒ | ☐ | ☐ | **22** | Size of the project area expressed in acres |
| ☒ | ☐ | ☐ | **23** | Total expected land disturbance expressed in acres |
| ☒ | ☐ | ☐ | **24** | Proposed final topography |
| ☒ | ☐ | ☐ | **25** | Locations and approximate boundaries of all disturbed areas |
| ☒ | ☐ | ☐ | **26** | Location, size, and dimensions of all stormwater drainage systems, such as culverts, storm sewers, and conveyance channels |
| ☒ | ☐ | ☐ | **27** | Locations of specific points where stormwater and non-stormwater discharges will leave the project site |
| ☒ | ☐ | ☐ | **28** | Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, and common areas |
| ☒ | ☐ | ☐ | **29** | Location of all on-site soil stockpiles and borrow areas |
| ☒ | ☐ | ☐ | **30** | Construction support activities that are expected to be part of the project |
| ☒ | ☐ | ☐ | **31** | Location of any in-stream activities that are planned for the project including, but not limited to stream crossings and pump arounds |

**Section A – Comments:**

- 

| **Section B: Stormwater Pollution Prevention Plan – Erosion and Sediment Control/Project Site Management** | | | | |
|---|---|---|---|---|
| **Adequate** | **Deficient** | **NA** | **B** | *The construction component of the Stormwater Pollution Prevention Plan includes stormwater quality measures to address erosion, sedimentation, and other pollutants associated with land disturbance and construction activities. Proper implementation of the plan, maintenance of measures, and administering a self-monitoring program is required to manage the project site to minimize the discharge of sediment and other pollutants. Construction activities and unforeseen weather conditions may affect the performance of the erosion and sediment control system, individual measures, or the effectiveness of the plan. The plan must be a flexible document, with provisions to modify or substitute measures as necessary to ensure compliance.* |
| ☒ | ☐ | ☐ | **1** | Description of the potential pollutant generating sources and pollutants, including all potential non-stormwater discharges |
| ☒ | ☐ | ☐ | **2** | Stable construction entrance locations and specifications. Plan to clear tracking of sediments on road. Dust suppression plan. |
| ☐ | ☒ | ☐ | **3** | Specifications for temporary and permanent stabilization. Include seeding and mulching plan and 70% coverage requirement for final stabilization. Include 7-day stabilization requirement. |
| ☒ | ☐ | ☐ | **4** | Sediment control measures for concentrated flow areas (sediment basins if used have specific requirements) |
| ☒ | ☐ | ☐ | **5** | Sediment control measures for sheet flow areas |
| ☐ | ☐ | ☒ | **6** | Run-off control measures |
| ☐ | ☒ | ☐ | **7** | Stormwater outlet protection locations and specifications |
| ☐ | ☐ | ☒ | **8** | Grade stabilization structure locations and specifications |
| ☐ | ☒ | ☐ | **9** | Dewatering applications and management methods |
| ☐ | ☐ | ☒ | **10** | Measures utilized for work within waterbodies |
| ☐ | ☒ | ☐ | **11** | Maintenance guidelines for each proposed temporary stormwater quality measure |
| ☐ | ☒ | ☐ | **12** | Planned construction sequence describing the relationship between implementation of stormwater quality measures in relation to land disturbance |
| ☐ | ☐ | ☒ | **13** | Provisions for erosion and sediment control on individual building lots regulated under the proposed project |
| ☒ | ☐ | ☐ | **14** | Material handling and spill prevention and spill response plan meeting the requirements in 327 IAC 2-6.1 |

| | | | | |
|---|---|---|---|---|
| ☒ | ☐ | ☐ | **15** | Material handling and storage procedures associated with construction activity. Management of waste materials and dumpsters for runoff and wind. Concrete washout management. Fueling areas. Equipment washing. Application of pesticides, herbicides, insecticides and fertilizers. Disposal of hazardous waste. Washing of paint or grout applicators. |

**Section B – Comments:**

- General: Per Section 3.3(a)(13), notice shall be posted near the main entrance of the project site containing all documentation listed in Section 3.3(a)(13)(A). Include a note in the plans specifying this requirement.
- B3: Per Town of Brownsburg Construction Standards 02101, prior to seeding, disturbed areas must be graded to final grade and receive a minimum of four (4) inches of topsoil. A note should be added to the Plan Sheets specifying this requirement.
- B3: Include a note that stabilization must be initiated by the end of the seventh day the area is left idle and stabilization shall be completed within 14 days after initiation per the requirements of the Construction Stormwater General Permit.
- B3: Per the CSGP Section 3.4(b), final stabilization of a project site is achieved when all land disturbing activities have been completed and a uniform perennial vegetative cover with a density of seventy percent has been established on all unpaved disturbed areas.
- B7: Per the Town of Brownsburg Construction Standards 02101, Section 2.01(F) Riprap placed for pipe and outfall protection shall be contained in a gabion basket. Please update plans to include gabion baskets for rip rap outlet protection.
- B9: Include a detail and/or specifications for dewatering in the event that it becomes necessary during construction activities It is recommended that a dewatering bag detail be provided, or otherwise note that sediment laden water shall be directed to an appropriate sediment control measure or a series of control measures that minimizes the discharge of the sediment.
- B11: Section B11 of the SWPPP should be in reference to erosion and sediment control measures proposed for use during construction. Provide specific maintenance guidelines in the SWPPP or with the construction details for the erosion control blanket, inlet protection, concrete washout and silt fence.
- B12: Per Town of Brownsburg Construction Standards 01010, a pre-construction meeting must be scheduled with the Town a minimum of 48-hours prior to the start of construction. A note should be added to the plan sheets specifying this requirement.
- B12: Include a note on the plans stating the following: per the IDEM CSGP Section 6.4(a)(9)(B) a notice of termination shall be verified by the local MS4 before submittal to IDEM. The Town of Brownsburg shall be contacted prior to filing of the NOT to verify eligibility for termination of permit coverage.

## Section C: Stormwater Pollution Prevention Plan – Post-Construction

| Adequate | Deficient | NA | C | *The post-construction component of the Stormwater Pollution Prevention Plan includes the implementation of stormwater quality measures to address pollutants that will be associated with the final project land use. Post-construction stormwater measures should be functional upon completion of the project. Long term functionality of the measures is critical to their performance and should be monitored and maintained.* |
|---|---|---|---|---|
| ☒ | ☐ | ☐ | **1** | Description of pollutants and their sources associated with the proposed land use |
| ☒ | ☐ | ☐ | **2** | Description of proposed post-construction stormwater measures including stormwater detention and water quality treatment according to the local ordinance (refer also to separate technical review comments) |
| ☒ | ☐ | ☐ | **3** | Plan details for each stormwater measure |
| ☒ | ☐ | ☐ | **4** | Sequence describing stormwater measure implementation |
| ☐ | ☒ | ☐ | **5** | Maintenance guidelines for proposed post-construction stormwater measures. Operation and Maintenance (O&M) Manual. |
| ☒ | ☐ | ☐ | **6** | Entity that will be responsible for operation and maintenance of the post-construction stormwater measures |

**Section C – Comments:**

- General: Ensure stormwater measures meet all of the Town of Brownsburg ordinances and standards. Refer to the Stormwater Review Comments.
- O&M Manual: The O&M Manual refers to Hendrick's County and County review officials however the Town of Brownsburg is the regualtory authority. Update throughout.
- O&M Manual: Per the Town of Brownsburg Stormwater Management Ordinance, the O&M manual shall include a site plan that depicts the stormwater runoff flow direction, drainage patterns and the flood routing path of the project site. This information was not provided in the site map; provide accordingly.
- O&M Manual: In one of the site maps provided, clearly callout the location of the bioretention area to be inspected by the owner.
- O&M Manual: The Operation, Maintenance and Inspection checklist provided is for a swale and not a biortention area. Provide a checklist that is applicable to the practice used on this project.
- O&M Manual: The function of a bioretention basin is impacted by the vegetation. Include guidance in the manual on dealing with invasives and how to reseed properly if areas become bare or vegetation needs replaced.

## TOWN OF BROWNSBURG STORMWATER/DRAINAGE PLAN REVIEW

CO Comment Originator
CR Comment Respondee

**NAME OF PROJECT: Lion's Trucking**
**DESIGN PACKAGE: Development**
**DESIGNER: Moench Engineering**

| | | Wessler - Reviewer to complete | | Designer to complete | |
|---|---|---|---|---|---|
| No. | PAGE/SHEET REFERENCE | CO | COMMENT | CR | RESPONSE |
| 1 | Forebay | RS | Per Ch 151.21 C.1.h. The Town does not allow the use of forebays. Refer to Ch 151.23 for WQ guidance. | | |
| 2 | Easements | RS | The drainage easement around the retention pond appears to overlap into the ROW. | | |
| 3 | Flood Routing | RS | Evaluate stormwater ponding and overflow path routing for Ch. 151.21 I. Show the ponded areas as hatched on the construction plans with peak elevation listed. Indicate the overland flow path. The flood route conditions assume the storm network is full/clogged and flow must travel overland. | | |
| 4 | Pipe Cover | RS | Minimum 2 feet cover is required. | | |
| 5 | Emergency Spillway | RS | The report states that the crest for ES is 867.89 (0.11 ft below TOB). However, the plans show ES crest at 866.58 and TOB at 867.58. Where is the E.S. located - show on the plans. | | |
| 6 | Inlets | RS | The inlet calcs under 50% clogged conditions do not show depth of ponding at the inlets. Max allowed is 6 inches. | | |
| 7 | Pond | RS | Will this function as a dry pond? Dry ponds require an underdrain. Refer to the Town's construction detail EW-04 for applicable items to show on the plans for ponds. | | |
| 8 | Force Main | RS | A new force main appears to be planned along the edge of the pond. Verify that all local and state setback requirements are met. | | |
| 9 | Concrete Apron | RS | Is this designed to convey stormwater? | | |
| 10 | Impervious Surface Area | RS | Provide the total amount of impervious surface area in square feet for the completed project on the title sheet of the construction plans. In addition to the total, provide a breakdown of total compacted gravel, total concrete/asphalt and total building footprint (in square feet). This is used for stormwater utility billing. | | |
| 11 | Adequate outlet | RS | Include analysis of the downstream receiving storm pipe to show it has adequate capacity for the release from the pond. | | |
| 12 | PreCast Message | RS | All storm grate castings shall be pre-cast with a pollution prevention message. | | |
| 13 | HGL | RS | Include 10 year HGL calcs in the drainage report showing that the HGL remains below the crown of the pipe. | | |

## TOWN OF BROWNSBURG STORMWATER/DRAINAGE PLAN REVIEW

CO Comment Originator
CR Comment Respondee

**NAME OF PROJECT: Lion's Trucking**
**DESIGN PACKAGE: Development**
**DESIGNER**: **Moench Engineering**

| | | Wessler - Reviewer to complete | | Designer to complete | |
|---|---|---|---|---|---|
| No. | PAGE/SHEET REFERENCE | CO | COMMENT | CR | RESPONSE |
| 14 | Construction Details | RS | If not using the Town's standard details, verify that all applicable requirements from the Town's standard details are reflected in the details used on the plans. e.g. Missing toewall on the outlet end section detail (minimum 36" for incoming to ponds), missing details required by EW-04, etc. | | |
| 15 | Report | RS | Must be prepared by licensed P.E. or P.L.S. List who prepared the report. | | |
| 16 | Detention Sizing | RS | Use the TR-55 method. CN for proposed conditions shall be the next less infiltrating class for soils. e.g. HSG C soil must be HSG D soil in the calculation. Minimum Tc to be used for detention sizing is 30 minutes. | | |
| 17 | Downspouts/ Sumps | RS | Verify that downspouts (and sumps if applicable) tie directly into the storm sewer system and do not allow overland flow. | | |
| 18 | Pipe Profile | RS | Include pipe profile on the construction plans. A minimum one tenth drop is required in structures. | | |

**These comments should not be construed as a comprehensive list of comments, and the reviewer may make additional comments based on subsequent submittals**

# ADVISORY PLAN COMMISSION

## DEVELOPMENT PLAN REVIEW

**AFFIDAVIT & CONSENT OF PROPERTY OWNER**

That I/we Malhi Kulwinder & Jigna Shah after first being duly sworn, depose and say:

That I am/we are the owner(s) of the Real Estate located at: (Legal and/or common address)
4005 N County Road 1000 E, Brownsburg IN 46112

Parcel Number(s): 32-08-17-365-002.000-016

That I/we have read and examined the application for Development Plan Review, and I/we are familiar with its contents.

That I/we have no objections to, and consent to such request as set forth in the application.

Signature of Affiant

Jigna Shah
Print Name

STATE OF Indiana )
) SS:
COUNTY OF Hendricks )

BEFORE ME, the undersigned, a Notary Public in and for said County and State, personally appeared Jigna Shah, who acknowledged the execution of the above and foregoing instrument to its voluntary act and deed on the 15th day of March, 2023.

January 19, 2031
Commission Expiration Date

Notary

Morgan
County of Residence

Lindsay E. Moore
Printed Name

LINDSAY E. MOORE
Notary Public - Seal
Morgan County - State of Indiana
Commission Number NP0746207
My Commission Expires Jan 19, 2031

**MOENCH ENGINEERING, P.C.**
A Professional Corporation

4000 Clarks Creek Road, Plainfield, IN 46168, Telephone: 317-837-2767, Fax: 317-837-7266

17 December 2025

The Town of Brownsburg
Attn: Technical Review Committee
Advisory Plan Commission
61 North Green Street
Brownsburg, IN 46112

Re: Lions Trucking DPR
4005 N County Road E, Brownsburg, IN 46122
PSDP-23-21

Dear Technical Review Committee,

We are pleased to provide you with our responses to your Vendor Comments sent in an email dated November 6, 2025. The responses provided will follow the same numbering scheme found in the comment email.

1) **Development Services**
   a. A lighting spec sheet can be found on Sheet LT101. A lighting legend in lux can be found here.
   b. The planting schedule found on Sheet L101 shows the required landscaping quantity.
   c. A dumpster is not planned next to the new truck maintenance building.
   d. A sidewalk is shown on sheet C201.
2) **Wastewater**
   a. Noted
   b. O&M Manual has been updated and attached.
3) **Street Department**
   a. Radii have been labeled at entrances per sheet C201.
   b. The plans have been revised to include an acceleration lane and entrance lane. A passing blister was not reasonable due to the intersection west of the entrance to the property.
   c. See Section 1 response d.

4) **Fire Territory**
   a. The drawings have been revised to show a private fire main and hydrant within 400 feet of the building at the east end of the property as per IFC 507.5.1
   b. The site analysis table and following sheets fixed to match.
   c. A private hydrant is shown on sheet C401.
5) **Section A Comments**
   a. No Comments
6) **Section B Comments**
   a. This requirement has been noted in the plans.
   b. A note specifying this requirement has been added.
   c. Stabilization note made.
   d. Noted
   e. Gabion baskets have been added for riprap outlet protection.
   f. Dewatering details have been added.

g. Section B 11 has been updated to be more specific.
h. A note about the pre-construction meeting has been added.
i. The note has been added.

**7) <u>Section C Comments</u>**

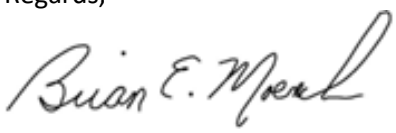
a. See next section.
b. The O&M Manual has been updated accordingly.
c. The noted items have been provided in the O&M Manual.
d. Noted
e. The inspection checklist has been updated.
f. Guidance added.

**8) <u>Town of Brownsburg Stormwater/Drainage Plan Review</u>**

a. The Water Quality items have been updated. An ADS Arcadia AR8 hydrodynamic separator has been included for water quality measures.
b. This has been addressed in the pond design.
c. Emergency Overflow information can be found in section **<u>4.1 Detention Pond and Outlet Structure</u>** of the TIR.
d. Pipe cover requirement of 2 feet has been met, see **APPENDIX B** for pipe cover calculations.
e. The emergency spillway has been updated. The outlet structure has an opening on the top that conveys 125% of the 100-year storm.
f. All inlets were calculated for 6" of ponding. The calculations can be found in **APPENDIX B**.
g. The pond is a dry pond. An underdrain will be utilized.
h. Verified.
i. No, this is used to support semi-trucks.
j. This has been added to the title sheet.
k. The downstream pipe system has been redesigned to handle on site drainage.
l. Noted
m. Pipe Calculations can be found in **APPENDIX B**.
n. Details have been updated and addressed.
o. Noted
p. Detention sizing method is described in the **Proposed Conditions** section of the Technical Information Report. Hydrographs can be seen in **APPENDIX A** for the relevant storm.
q. Verified
r. A pipe profile has been added.

Please let us know if you have any questions.

Regards,



Brian E. Moench
Moench Engineering P.C.
317.837.2767

MOENCH ENGINEERING, P.C.
A Professional Corporation
4000 Clarks Creek Road, Plainfield, IN 46168, Telephone: 317-837-2767, Fax: 317-837-7266

# Lions Trans INC.
# 4005 N CR 1000 E
# Brownsburg, Indiana 46112

# Drainage Narrative and Calculations

## October 3, 2025

Revision 0

Moench Engineering, P.C.
4000 Clarks Creek Road
Plainfield, Indiana 46168

Table of Contents

**Drainage Narrative** ..... 3
**1.0 Project Scope** ..... 3
**2.0 Rainfall Information** ..... 3
**3.0 Existing Conditions** ..... 4
**4.0 Proposed Conditions** ..... 4
**4.1 Stormwater Conveyance** ..... 5
**4.2 Detention Pond and Outlet Structure** ..... 6
**5.0 Summary** ..... 7
**Appendix A – Rational Equation Hydrographs** ..... 8
**Appendix B – Pipe and Orifice Calculations** ..... 30
**Appendix C – Water Quality Calculations** ..... 34
**Appendix D – Stage Storage/Discharge Table** ..... 36
**Appendix E – Existing Watershed** ..... 38
**Appendix F – Proposed Watershed** ..... 40

# Drainage Narrative

## 1.0 Project Scope

The proposed project involves the development of a truck maintenance facility that will include 42 stalls for truck and trailer parking, a 900 square foot office building (30 ft × 30 ft), and a 2,860 square foot maintenance building (130 ft × 22 ft) located along the southern boundary of the property. In addition, a detention pond will be constructed to manage and control stormwater runoff generated by the site improvements.

The project site is located at 4005 N CR 1000 E, Brownsburg, Indiana 46112. The parcel is not currently subject to zoning restrictions. The proposed development will result in approximately 2 acres of land disturbance. Stormwater from the site will discharge to the existing offsite storm sewer network located along CR 400 N, which ultimately conveys flow to a tributary downstream of the property.

## 2.0 Rainfall Information

Table 1. Rainfall Intensities (Hendricks County 2016)

| **Rainfall Intensities for Various Return Periods and Storm Durations** | | | | | | |
|---|---|---|---|---|---|---|
| *Duration* | *Intensity (Inches/Hour)* | | | | | |
| | *Return Period (Years)* | | | | | |
| | 2 | 5 | 10 | 25 | 50 | 100 |
| 5 min | 5.57 | 6.7 | 7.58 | 8.76 | 9.68 | 10.6 |
| 10 min | 4.35 | 5.2 | 5.85 | 6.7 | 7.34 | 7.98 |
| 15 min | 3.54 | 4.26 | 4.8 | 5.52 | 6.06 | 6.61 |
| 30 min | 2.37 | 2.92 | 3.33 | 3.89 | 4.33 | 4.77 |
| 1 hr | 1.46 | 1.83 | 2.12 | 2.53 | 2.85 | 3.19 |
| 2 hr | 0.851 | 1.08 | 1.25 | 1.51 | 1.72 | 1.95 |
| 3 hr | 0.603 | 0.762 | 0.893 | 1.08 | 1.24 | 1.41 |
| 6 hr | 0.359 | 0.455 | 0.535 | 0.65 | 0.747 | 0.853 |
| 12 hr | 0.211 | 0.263 | 0.306 | 0.368 | 0.418 | 0.473 |
| 24 hr | 0.126 | 0.155 | 0.178 | 0.21 | 0.236 | 0.262 |

Table 2. Rainfall Depths (Hendricks County 2016)

| **Rainfall Depths for Various Return Periods** | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Duration* | *Depth (Inches)* | | | | | | |
| | *Return Period (Years)* | | | | | | |
| | 1 | 2 | 5 | 10 | 25 | 50 | 100 |
| 24 Hrs. | 2.51 | 3.02 | 3.72 | 4.28 | 5.04 | 5.66 | 6.3 |

The resulting intensity is then used in the Rational Method equation to determine peak runoff:

$$Q = CiA$$

Rainfall intensity and depth data used in the hydrologic analyses were obtained from the Hendricks County Stormwater Technical Standards Manual (2016). These values form the basis for both Rational Method peak runoff calculations and hydrograph development for the project's watershed, ensuring consistency with county stormwater design requirements.

## 3.0 Existing Conditions

The project site is currently an undeveloped grassy area with scattered overgrowth. Land use surrounding the parcel includes residential properties to the south, agricultural land and manufactured homes to the west, minor commercial development to the north beyond the highway, and railroad tracks to the east.

The existing watershed area encompasses approximately 3.02 acres, consisting entirely of pervious cover. Under current conditions, stormwater runoff generally drains to the east and south.

Runoff coefficients (C values) were assigned based on land cover characteristics in accordance with the *Hendricks County Stormwater Technical Standards Manual* (Hendricks County 2016). A value of C = 0.20 was applied for pervious land cover. Using the Rational Method, the time of concentration (tc) was calculated to be 52.0 minutes for the site. The corresponding peak flow rates for existing conditions are summarized below:

Table 3. Existing Conditions

| Return Period | 2-year | 5-year | 10-year | 25-year | 50-year | 100-year |
|---|---|---|---|---|---|---|
| **Runoff** | 0.979 cfs | 1.223 cfs | 1.411 cfs | 1.676 cfs | 1.882 cfs | 2.099 cfs |

## 4.0 Proposed Conditions

As outlined in the project scope, the proposed development consists of a truck maintenance facility including 42 stalls for truck and trailer parking, a 900 square foot office building (30 ft × 30 ft), and a 2,860 square foot maintenance building (130 ft × 22 ft).

Under proposed conditions, the total site area remains 3.02 acres, consisting of approximately 1.02 acres of pervious surface, 1.91 acres of impervious asphalt pavement, and 0.09 acres of roof area.

Hydrologic analysis was performed using the Rational Method. The time of concentration (tc) was calculated to be 9 minutes. Runoff coefficients (C values) were assigned based on land cover characteristics consistent with the *Hendricks County Stormwater Technical Standards Manual* (Hendricks County 2016). Values applied include C = 0.20 for pervious surfaces, C = 0.93 for asphalt pavement, and C = 0.95 for roof areas. The weighted C value was calculated as follows:

$$\frac{(1.02\ acres\ \times 0.20) + (1.91\ acres\ \times 0.93) + (0.09\ acres\ \times 0.95)}{3.02\ acres} = 0.68$$

The resulting peak runoff flow rates for the proposed site conditions are summarized below:

Table 4. Proposed Conditions

| Return Period | 2-year | 5-year | 10-year | 25-year | 50-year | 100-year |
|---|---|---|---|---|---|---|
| **Watershed A** | 9.293 cfs | 11.23 cfs | 12.69 cfs | 14.63 cfs | 16.13 cfs | 17.61 cfs |

The runoff flowrates increased due to the addition of pervious surface and removal of impervious surface. The percentage increase is as follows:

Table 5. Percentage Increase in Runoff

| Return Period | 2-year | 5-year | 10-year | 25-year | 50-year | 100-year |
|---|---|---|---|---|---|---|
| **% Increase** | 849% | 818% | 799% | 773% | 757% | 739% |

Stormwater runoff from the proposed improvements will be conveyed to the northwest corner of the site, where a retention pond will be constructed to provide the required storage volume. The post-development peak discharge was limited by restricting the 0-10 year storms to 0.2 cfs per acre of the site (0.604 cfs) and the 11–100-year storms to 0.4 cfs per acres of the site (1.208 cfs). These values produced more restrictive conditions compared to the proposed 100-year peak flow to the existing 10-year peak flow. This analysis determined a required detention volume of 8,826 cubic feet. To meet this requirement, a 9,522 cubic foot retention pond will be installed in the northeast corner of the site.

## 4.1 Stormwater Conveyance

Stormwater runoff generated from the proposed improvements will be collected and conveyed to the site's retention facility. The grading plan directs surface runoff by sheet flow and shallow swales to a series of inlets along the eastern and central portions of the property. These inlets are connected by a storm sewer system that conveys flow westward to the retention pond located in the northwest corner of the site.

- Inlet 1: Connects to 290 linear feet (LF) of 18-inch RCP at a 0.37% slope, discharging into Inlet 2.
- Inlet 2: Connects to 165 LF of 24-inch RCP at a 0.50% slope, discharging directly into the retention pond.

Inlet capacity was then checked using the orifice flow equation, incorporating the reduced effective open area (50% of manufacturer-provided open area). This ensures the inlet can maintain adequate capacity under both design flow and partial clogging conditions, in compliance with the requirements of the Manual. The discharge coefficient, C, will be 0.60, gravity acceleration, g, is 32.2 ft/sec2, and ponding height, h is 0.5 ft, and the 10-year flow will be used. The orifice equation is as follows:

Inlet Structure 1:

$$Q = CA\sqrt{2gh}$$

$$5.08\ cfs = (0.6)A\sqrt{2(32.2\ ft/\sec^2)\ 0.5\ ft}$$

$$A = 1.49\ ft^2$$

$$2A = 3.0\ ft^2\ (Clogging\ Condition)$$

Inlet Structure 2 :

$$Q = CA\sqrt{2gh}$$

$$5.69\ cfs = (0.6)A\sqrt{2(32.2\ ft/\sec^2)\ 0.5\ ft}$$

$$A = 1.67\ ft^2$$

$$2A = 3.3\ ft^2\ (Clogging\ Condition)$$

To capture and convey runoff from the site into Inlet Structure 1, a square Neenah Grate Inlet 3287-5 (3.2 square feet of opening area) or equivalent will be installed. To capture and convey runoff from the site into Inlet Structure 2, a square Neenah Grate Inlet 3808-1 (5.2 square feet of opening area) or inlet with 3.3 square foot or greater opening should be installed. Calculations verifying pipe capacity and inlet capture are provided in Appendix B.

A forebay should be installed at the pond inlet for water quality treatment, capturing sediment and floatables before flows enter the main basin. The required volume is 726 cubic feet, with supporting calculations in Appendix B.

## 4.2 Detention Pond and Outlet Structure

The detention pond is equipped with a multi-stage outlet box designed to restrict discharge per Hendricks County release requirements:

- Low-flow outlet: 4-inch diameter orifice at pond bottom, sized for the 2-year storm (0.604 cfs).
- Intermediate outlet: 5-inch diameter orifice at Elev. 867.00 ft, passing flows up to the 100-year storm (1.208 cfs).
- Overflow weir: Crest at Elev. 867.89 ft (0.11 ft below TOB), conveying emergency flows ≥100-year (17.61 cfs). The required outlet area calculations are as follows:

$$Q = CA\sqrt{2gh}$$

$$17.61\ cfs\ (100\ year\ peak\ flow) = (0.6)A\sqrt{2(32.2\ ft/\sec^2)\ 0.5\ ft}$$

$$A = 10.67\ ft^2$$

The pipe leaving the detention pond is sized to handle this 100-year flow, assuming a slope of 0.30%, a Manning's n of 0.013, the minimum diameter will be determined using Manning's Equation as follows:

$$Q\ (Volumetric\ Flow) = \frac{1.49}{Manning's\ n} * (Area) * (Hydraulic\ Radius)^{2/3}\sqrt{Slope}$$

$$17.61\ cfs = \frac{1.49}{0.013} * \left(\frac{\pi D^2}{4}\right) * (D/4)^{2/3}\sqrt{0.0030}$$

$$D = 27\ inches$$

Under the assumed conditions, the minimum discharge pipe diameter is 27 inches. The outlet pipe network extends west from the detention pond and connects to the existing storm sewer system along CR 400 N. This existing network serves as the only feasible drainage outlet from the property and conveys stormwater offsite toward the unnamed tributary downstream.

The stormwater management system—including inlets, storm sewers, forebay, detention pond, multi-stage outlet structure, and downstream piping—is designed to control post-development flows in compliance with Hendricks County Stormwater Standards.

**5.0 Summary**

The proposed development at 4005 N CR 1000 E, Brownsburg, Indiana will consist of a truck maintenance facility including 42 truck/trailer parking stalls, a 900 square foot office building, and a 2,860 square foot maintenance building. The project will disturb approximately 2 acres and convert a predominantly pervious 3.02-acre parcel into a mix of impervious asphalt, building roof, and limited vegetated cover. Hydrologic analysis using rainfall data from the Hendricks County Stormwater Technical Standards Manual (2016) indicates a significant increase in runoff under proposed conditions, with the 100-year peak flow rising from 2.10 cfs to 17.61 cfs.

To mitigate this increase, a comprehensive stormwater management system has been designed. Runoff will be collected by inlets and storm sewers, routed through a forebay for pretreatment, and detained within a pond sized to provide 9,522 cubic feet of storage volume. A multi-stage outlet structure will restrict discharges to 0.604 cfs for the 2- through 10-year storms and 1.208 cfs for the 11- through 100-year storms, meeting Hendricks County release rate requirements. The system reduces post-development peak discharge to below pre-development rates, providing both quantity control and water quality treatment.

# Appendix A – Rational Equation Hydrographs

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Rational | 0.979 | 1 | 52 | 3,056 | ------ | ------ | ------ | Existing |
| 2 | Rational | 9.293 | 1 | 9 | 5,018 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

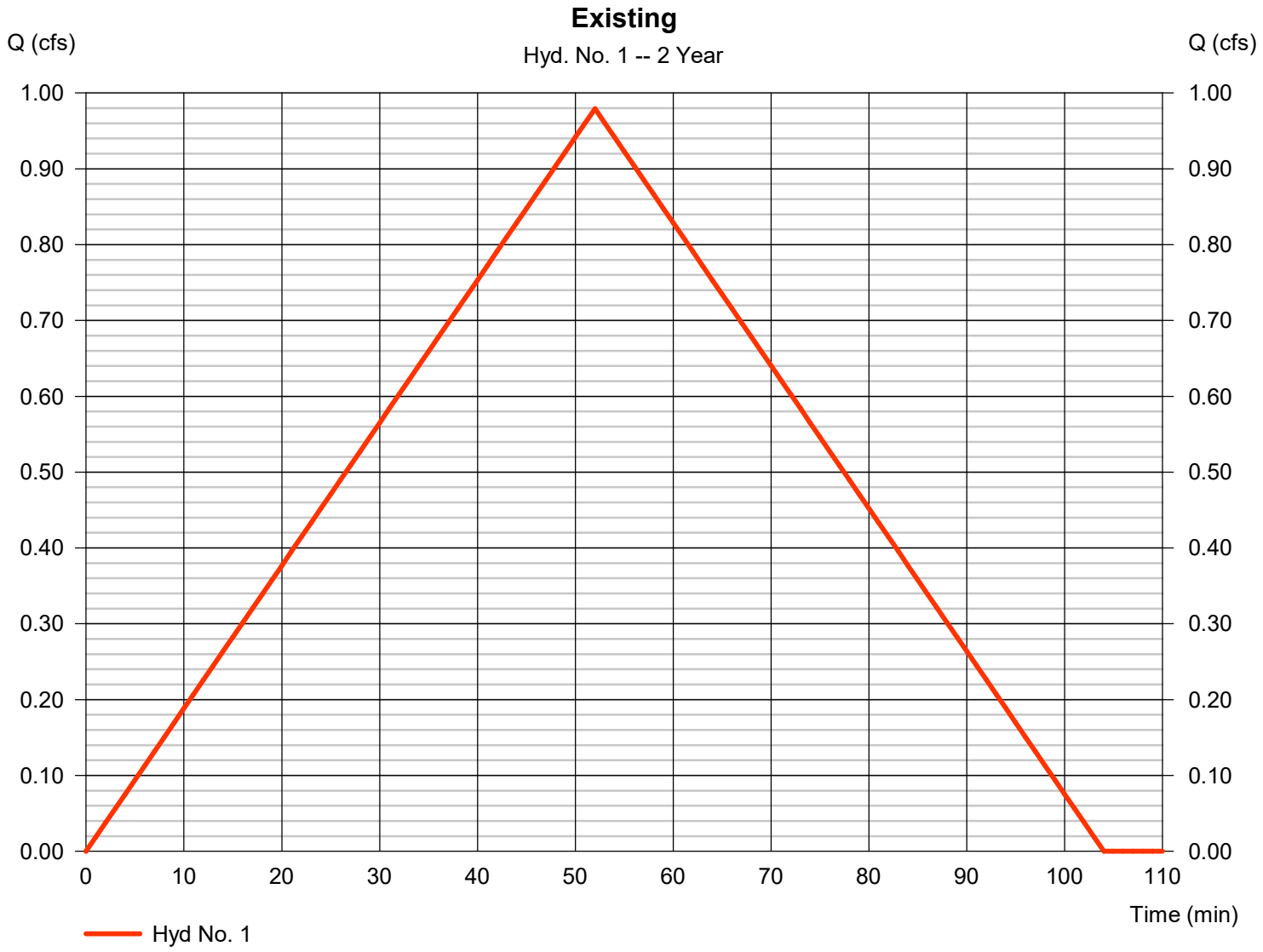
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 3 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Rational | Peak discharge | = | 0.979 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 52 min |
| Time interval | = | 1 min | Hyd. volume | = | 3,056 cuft |
| Drainage area | = | 3.020 ac | Runoff coeff. | = | 0.2* |
| Intensity | = | 1.622 in/hr | Tc by TR55 | = | 52.00 min |
| IDF Curve | = | Lions Trucking IDF.IDF | Asc/Rec limb fact | = | 1/1 |

* Composite (Area/C) = [(3.020 x 0.20)] / 3.020



# TR55 Tc Worksheet



## Hyd. No. 1

Existing

| Description | A | | B | | C | | Totals |
|---|---|---|---|---|---|---|---|
| **Sheet Flow** | | | | | | | |
| Manning's n-value | = 0.170 | | 0.011 | | 0.011 | | |
| Flow length (ft) | = 300.0 | | 0.0 | | 0.0 | | |
| Two-year 24-hr precip. (in) | = 3.02 | | 0.00 | | 0.00 | | |
| Land slope (%) | = 0.41 | | 0.00 | | 0.00 | | |
| **Travel Time (min)** | **= 50.60** | **+** | **0.00** | **+** | **0.00** | **=** | **50.60** |
| **Shallow Concentrated Flow** | | | | | | | |
| Flow length (ft) | = 70.00 | | 0.00 | | 0.00 | | |
| Watercourse slope (%) | = 0.41 | | 0.00 | | 0.00 | | |
| Surface description | = Unpaved | | Paved | | Paved | | |
| Average velocity (ft/s) | =1.03 | | 0.00 | | 0.00 | | |
| **Travel Time (min)** | **= 1.13** | **+** | **0.00** | **+** | **0.00** | **=** | **1.13** |
| **Channel Flow** | | | | | | | |
| X sectional flow area (sqft) | = 0.00 | | 0.00 | | 0.00 | | |
| Wetted perimeter (ft) | = 0.00 | | 0.00 | | 0.00 | | |
| Channel slope (%) | = 0.00 | | 0.00 | | 0.00 | | |
| Manning's n-value | = 0.015 | | 0.015 | | 0.015 | | |
| Velocity (ft/s) | =0.00 | | | | | | |
| | | | 0.00 | | | | |
| | | | | | 0.00 | | |
| Flow length (ft) | ({0})0.0 | | 0.0 | | 0.0 | | |
| **Travel Time (min)** | **= 0.00** | **+** | **0.00** | **+** | **0.00** | **=** | **0.00** |

**Total Travel Time, Tc ..... 52.00 min**

# Hydrograph Report

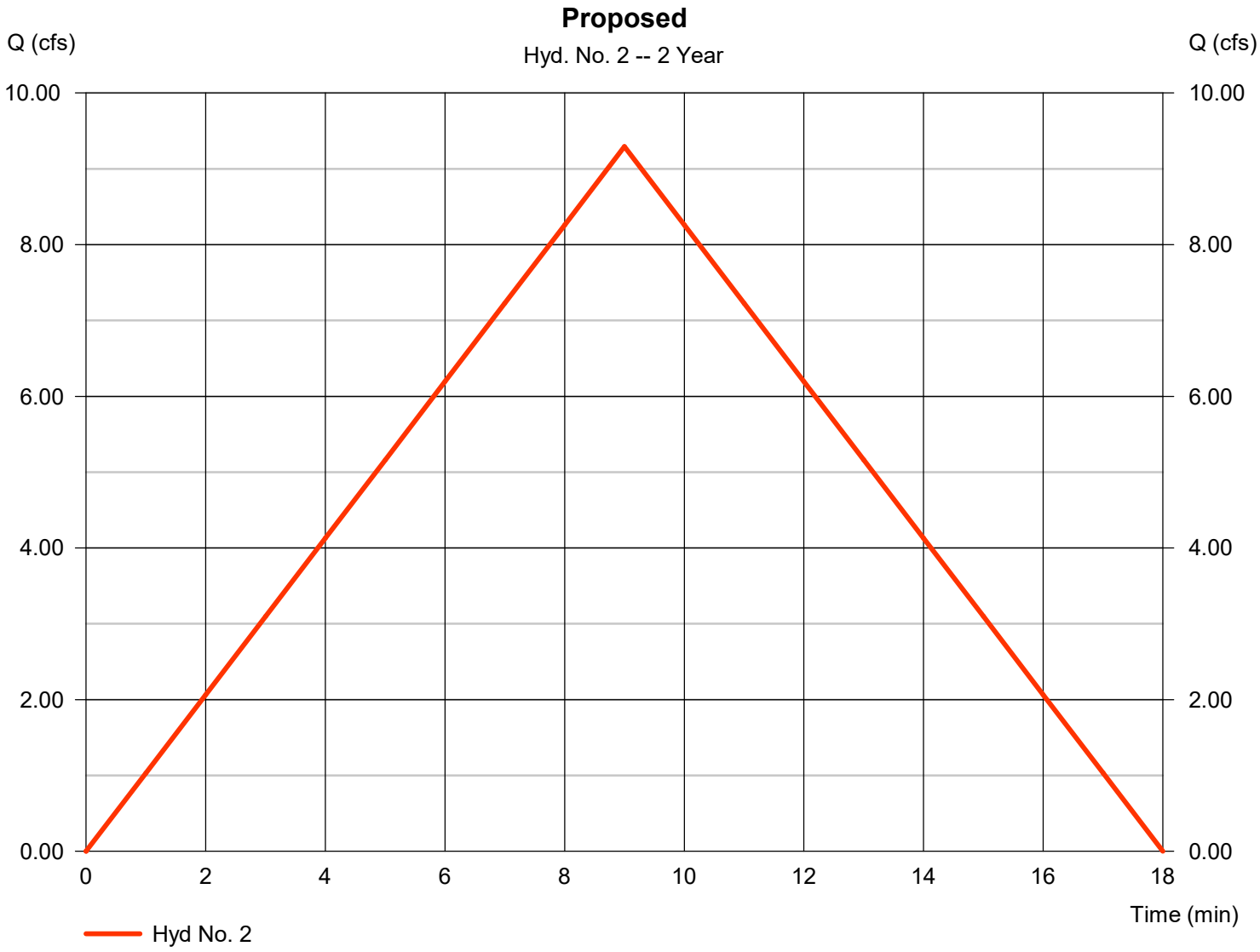
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 3 / 2025

## Hyd. No. 2

Proposed

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Rational | Peak discharge | = | 9.293 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 9 min |
| Time interval | = | 1 min | Hyd. volume | = | 5,018 cuft |
| Drainage area | = | 3.020 ac | Runoff coeff. | = | 0.68* |
| Intensity | = | 4.525 in/hr | Tc by TR55 | = | 9.00 min |
| IDF Curve | = | Lions Trucking IDF.IDF | Asc/Rec limb fact | = | 1/1 |

* Composite (Area/C) = [(1.020 x 0.20) + (1.910 x 0.93) + (0.090 x 0.95)] / 3.020



# TR55 Tc Worksheet



## Hyd. No. 2

Proposed

| Description | A | | B | | C | | Totals |
|---|---|---|---|---|---|---|---|
| **Sheet Flow** | | | | | | | |
| Manning's n-value | = 0.011 | | 0.011 | | 0.011 | | |
| Flow length (ft) | = 300.0 | | 0.0 | | 0.0 | | |
| Two-year 24-hr precip. (in) | = 3.02 | | 0.00 | | 0.00 | | |
| Land slope (%) | = 0.37 | | 0.00 | | 0.00 | | |
| **Travel Time (min)** | **= 5.90** | **+** | **0.00** | **+** | **0.00** | **=** | **5.90** |
| **Shallow Concentrated Flow** | | | | | | | |
| Flow length (ft) | = 242.00 | | 0.00 | | 0.00 | | |
| Watercourse slope (%) | = 0.37 | | 0.00 | | 0.00 | | |
| Surface description | = Paved | | Paved | | Paved | | |
| Average velocity (ft/s) | =1.24 | | 0.00 | | 0.00 | | |
| **Travel Time (min)** | **= 3.26** | **+** | **0.00** | **+** | **0.00** | **=** | **3.26** |
| **Channel Flow** | | | | | | | |
| X sectional flow area (sqft) | = 0.00 | | 0.00 | | 0.00 | | |
| Wetted perimeter (ft) | = 0.00 | | 0.00 | | 0.00 | | |
| Channel slope (%) | = 0.00 | | 0.00 | | 0.00 | | |
| Manning's n-value | = 0.015 | | 0.015 | | 0.015 | | |
| Velocity (ft/s) | =0.00 | | | | | | |
| | | | 0.00 | | | | |
| | | | | | 0.00 | | |
| Flow length (ft) | ({0})0.0 | | 0.0 | | 0.0 | | |
| **Travel Time (min)** | **= 0.00** | **+** | **0.00** | **+** | **0.00** | **=** | **0.00** |

**Total Travel Time, Tc ..... 9.00 min**

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Rational | 1.223 | 1 | 52 | 3,816 | ------ | ------ | ------ | Existing |
| 2 | Rational | 11.23 | 1 | 9 | 6,063 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

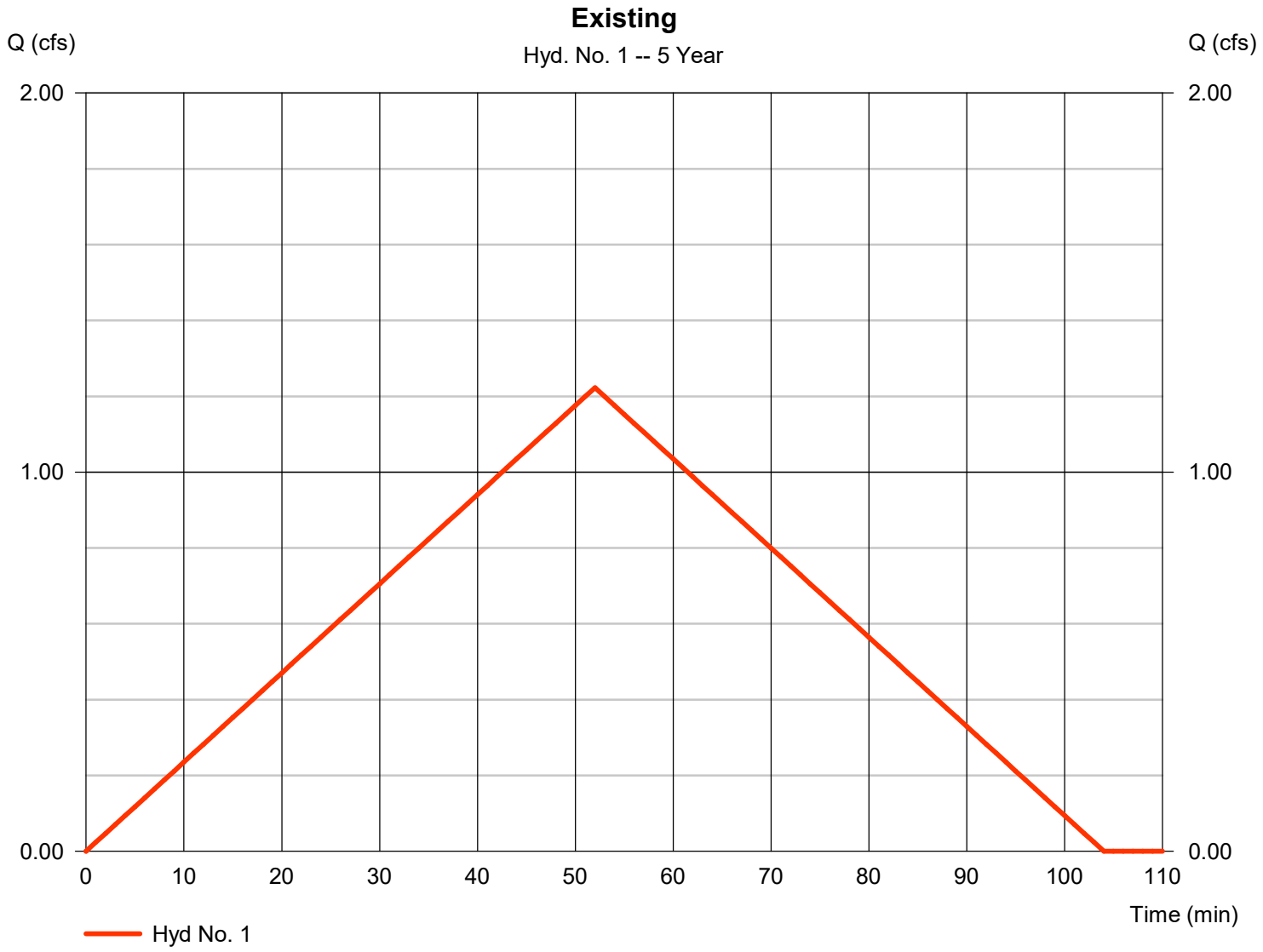
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 3 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Rational | Peak discharge | = | 1.223 cfs |
| Storm frequency | = | 5 yrs | Time to peak | = | 52 min |
| Time interval | = | 1 min | Hyd. volume | = | 3,816 cuft |
| Drainage area | = | 3.020 ac | Runoff coeff. | = | 0.2* |
| Intensity | = | 2.025 in/hr | Tc by TR55 | = | 52.00 min |
| IDF Curve | = | Lions Trucking IDF.IDF | Asc/Rec limb fact | = | 1/1 |

* Composite (Area/C) = [(3.020 x 0.20)] / 3.020



# Hydrograph Report

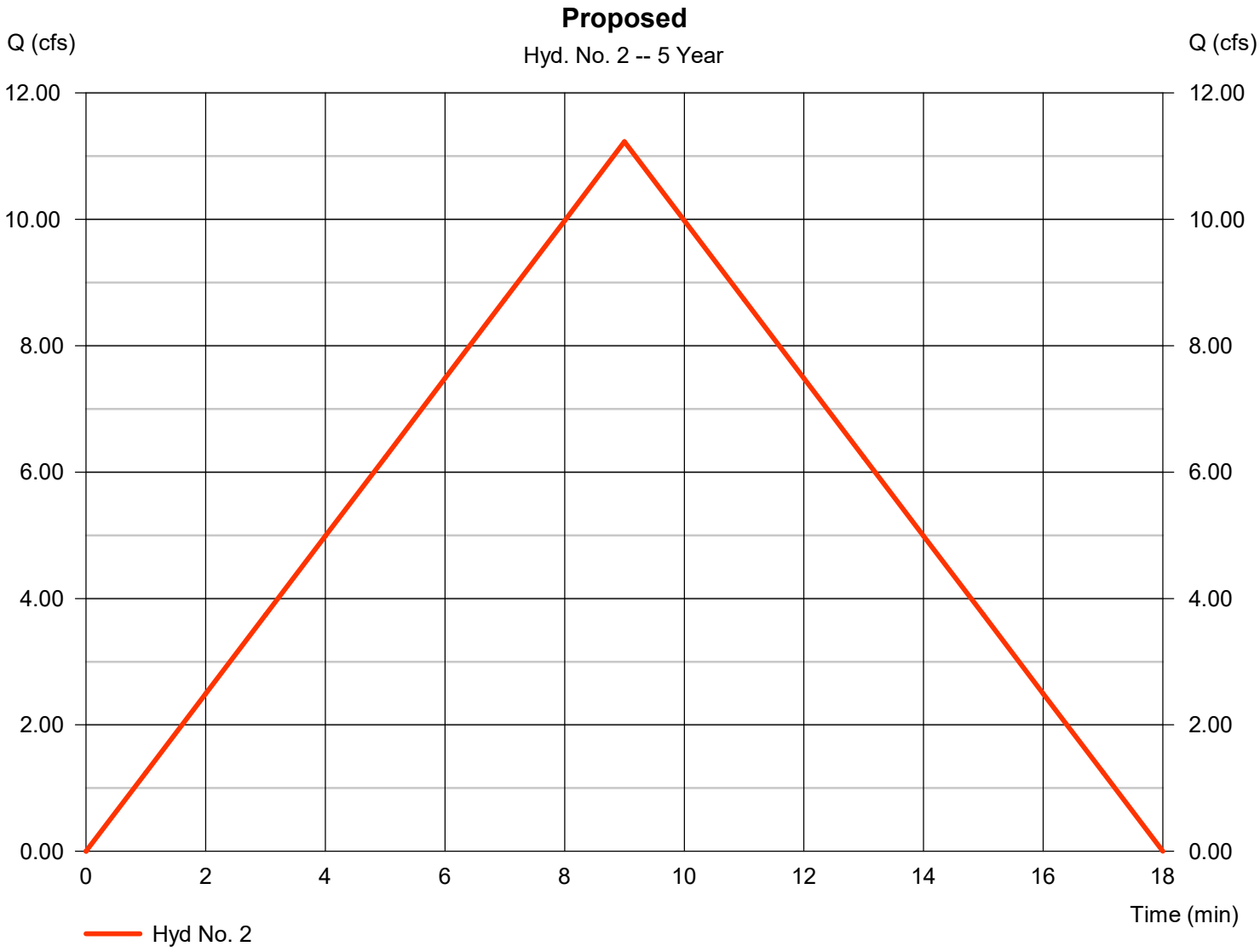
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 3 / 2025

## Hyd. No. 2

Proposed

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Rational | Peak discharge | = | 11.23 cfs |
| Storm frequency | = | 5 yrs | Time to peak | = | 9 min |
| Time interval | = | 1 min | Hyd. volume | = | 6,063 cuft |
| Drainage area | = | 3.020 ac | Runoff coeff. | = | 0.68* |
| Intensity | = | 5.468 in/hr | Tc by TR55 | = | 9.00 min |
| IDF Curve | = | Lions Trucking IDF.IDF | Asc/Rec limb fact | = | 1/1 |

* Composite (Area/C) = [(1.020 x 0.20) + (1.910 x 0.93) + (0.090 x 0.95)] / 3.020



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Rational | 1.411 | 1 | 52 | 4,403 | ------ | ------ | ------ | Existing |
| 2 | Rational | 12.69 | 1 | 9 | 6,850 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

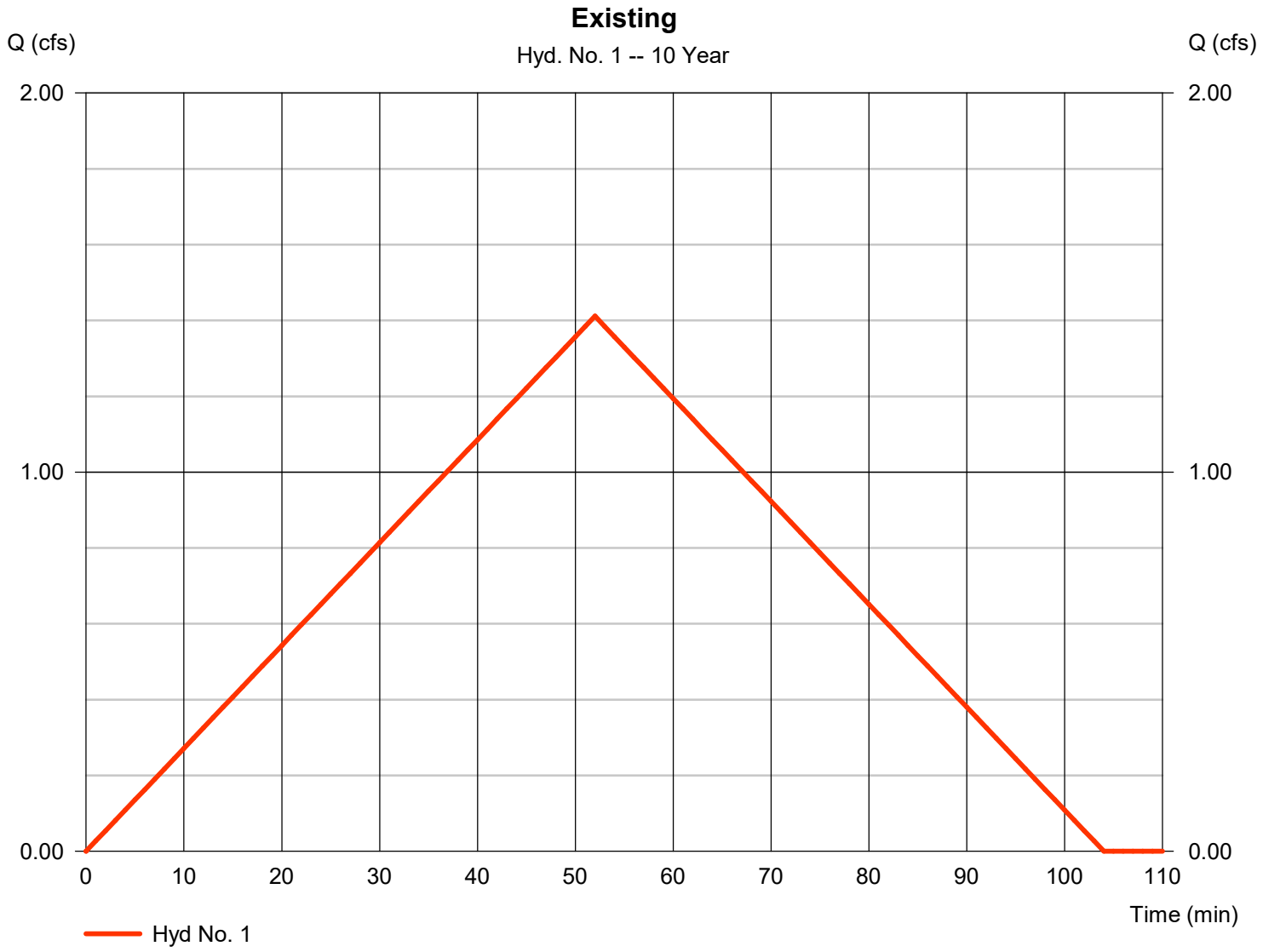
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 3 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Rational | Peak discharge | = | 1.411 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 52 min |
| Time interval | = | 1 min | Hyd. volume | = | 4,403 cuft |
| Drainage area | = | 3.020 ac | Runoff coeff. | = | 0.2* |
| Intensity | = | 2.337 in/hr | Tc by TR55 | = | 52.00 min |
| IDF Curve | = | Lions Trucking IDF.IDF | Asc/Rec limb fact | = | 1/1 |

* Composite (Area/C) = [(3.020 x 0.20)] / 3.020



# Hydrograph Report

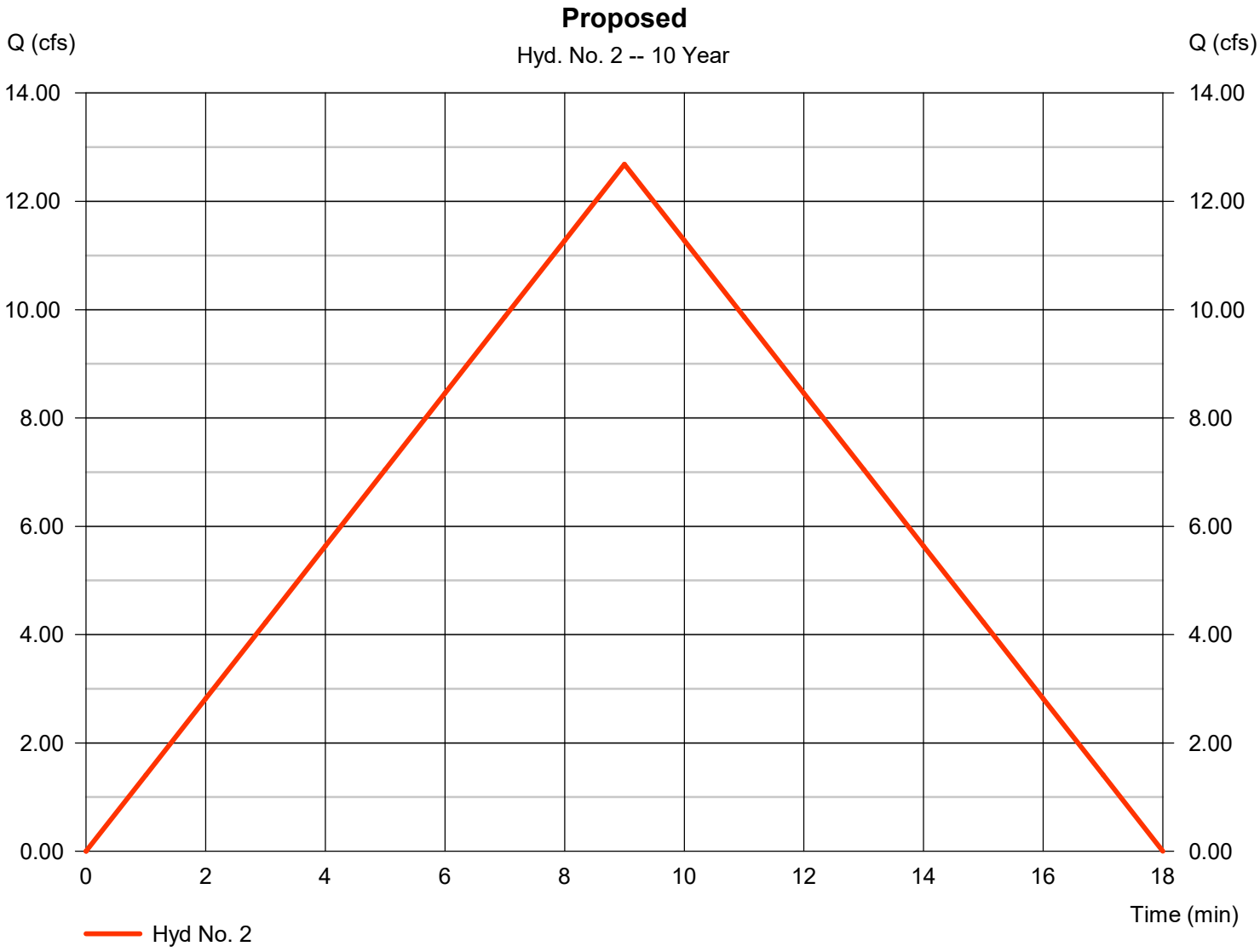
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 3 / 2025

## Hyd. No. 2

Proposed

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Rational | Peak discharge | = | 12.69 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 9 min |
| Time interval | = | 1 min | Hyd. volume | = | 6,850 cuft |
| Drainage area | = | 3.020 ac | Runoff coeff. | = | 0.68* |
| Intensity | = | 6.177 in/hr | Tc by TR55 | = | 9.00 min |
| IDF Curve | = | Lions Trucking IDF.IDF | Asc/Rec limb fact | = | 1/1 |

* Composite (Area/C) = [(1.020 x 0.20) + (1.910 x 0.93) + (0.090 x 0.95)] / 3.020



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Rational | 1.676 | 1 | 52 | 5,228 | ------ | ------ | ------ | Existing |
| 2 | Rational | 14.63 | 1 | 9 | 7,898 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

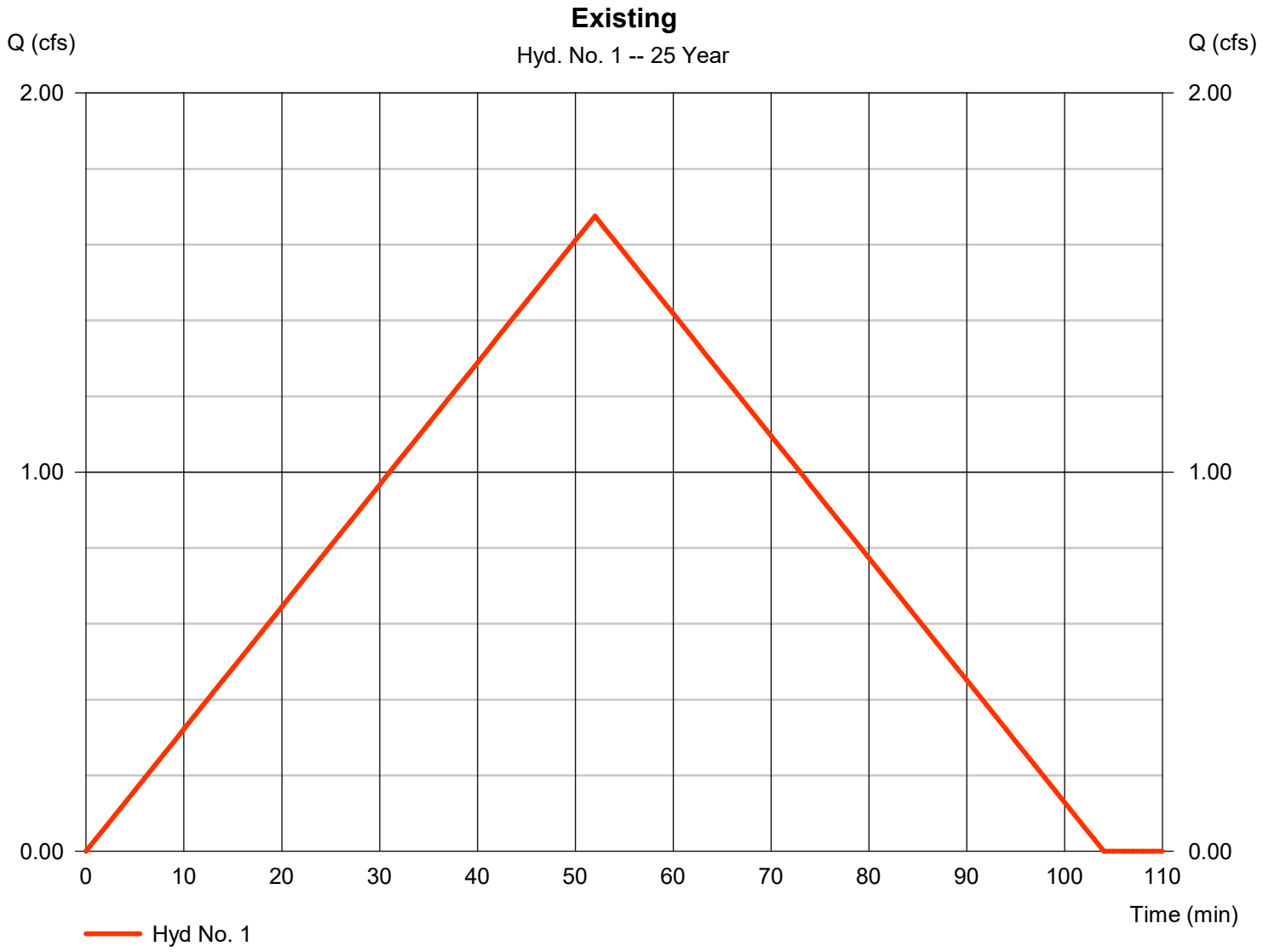
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 3 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Rational | Peak discharge | = | 1.676 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 52 min |
| Time interval | = | 1 min | Hyd. volume | = | 5,228 cuft |
| Drainage area | = | 3.020 ac | Runoff coeff. | = | 0.2* |
| Intensity | = | 2.774 in/hr | Tc by TR55 | = | 52.00 min |
| IDF Curve | = | Lions Trucking IDF.IDF | Asc/Rec limb fact | = | 1/1 |

* Composite (Area/C) = [(3.020 x 0.20)] / 3.020



# Hydrograph Report

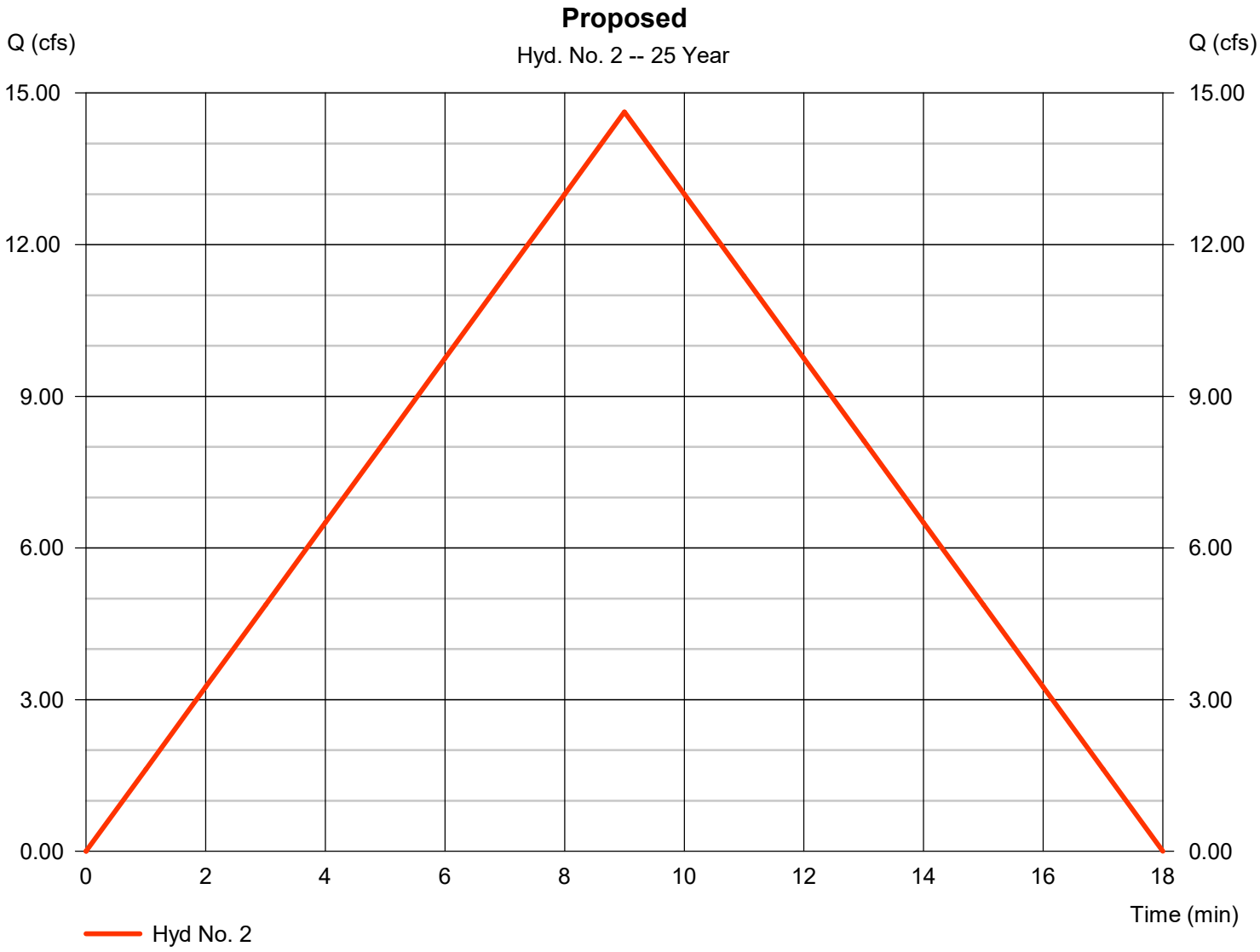
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 3 / 2025

## Hyd. No. 2

Proposed

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Rational | Peak discharge | = | 14.63 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 9 min |
| Time interval | = | 1 min | Hyd. volume | = | 7,898 cuft |
| Drainage area | = | 3.020 ac | Runoff coeff. | = | 0.68* |
| Intensity | = | 7.122 in/hr | Tc by TR55 | = | 9.00 min |
| IDF Curve | = | Lions Trucking IDF.IDF | Asc/Rec limb fact | = | 1/1 |

* Composite (Area/C) = [(1.020 x 0.20) + (1.910 x 0.93) + (0.090 x 0.95)] / 3.020



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Rational | 1.882 | 1 | 52 | 5,873 | ------ | ------ | ------ | Existing |
| 2 | Rational | 16.13 | 1 | 9 | 8,713 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

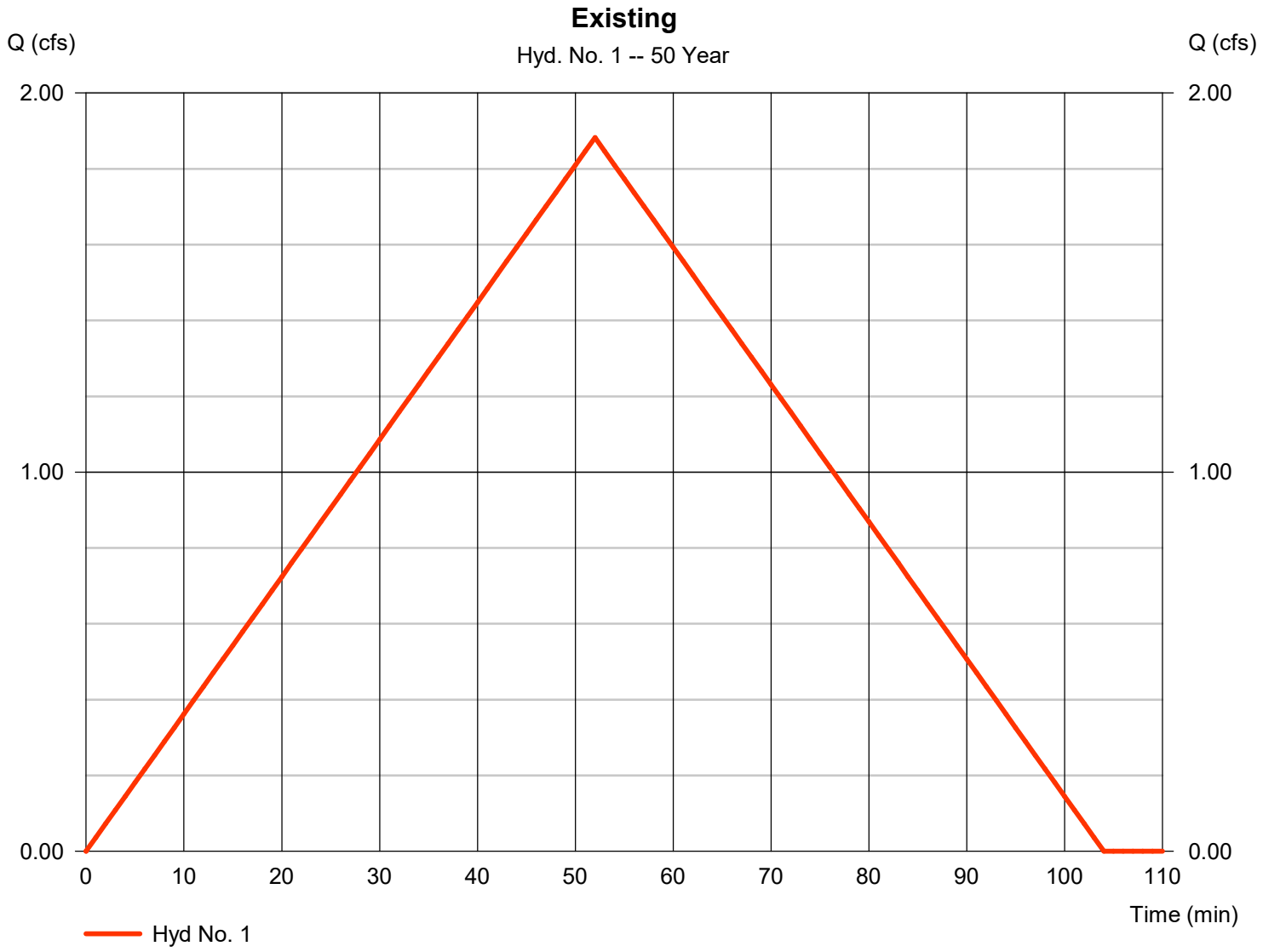
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 3 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Rational | Peak discharge | = | 1.882 cfs |
| Storm frequency | = | 50 yrs | Time to peak | = | 52 min |
| Time interval | = | 1 min | Hyd. volume | = | 5,873 cuft |
| Drainage area | = | 3.020 ac | Runoff coeff. | = | 0.2* |
| Intensity | = | 3.117 in/hr | Tc by TR55 | = | 52.00 min |
| IDF Curve | = | Lions Trucking IDF.IDF | Asc/Rec limb fact | = | 1/1 |

* Composite (Area/C) = [(3.020 x 0.20)] / 3.020



# Hydrograph Report

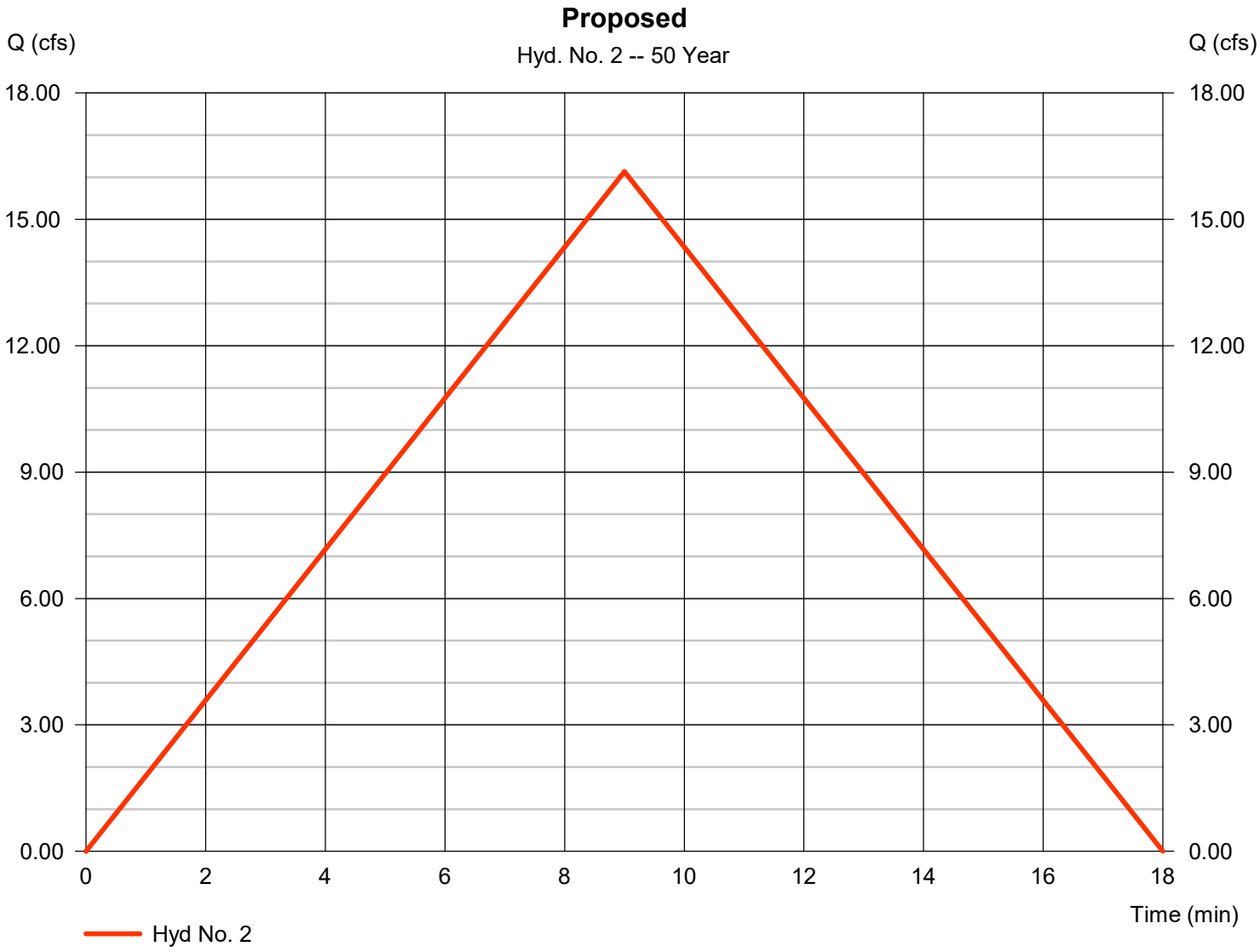
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 3 / 2025

## Hyd. No. 2

Proposed

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Rational | Peak discharge | = | 16.13 cfs |
| Storm frequency | = | 50 yrs | Time to peak | = | 9 min |
| Time interval | = | 1 min | Hyd. volume | = | 8,713 cuft |
| Drainage area | = | 3.020 ac | Runoff coeff. | = | 0.68* |
| Intensity | = | 7.857 in/hr | Tc by TR55 | = | 9.00 min |
| IDF Curve | = | Lions Trucking IDF.IDF | Asc/Rec limb fact | = | 1/1 |

* Composite (Area/C) = [(1.020 x 0.20) + (1.910 x 0.93) + (0.090 x 0.95)] / 3.020



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Rational | 2.099 | 1 | 52 | 6,549 | ------ | ------ | ------ | Existing |
| 2 | Rational | 17.61 | 1 | 9 | 9,511 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

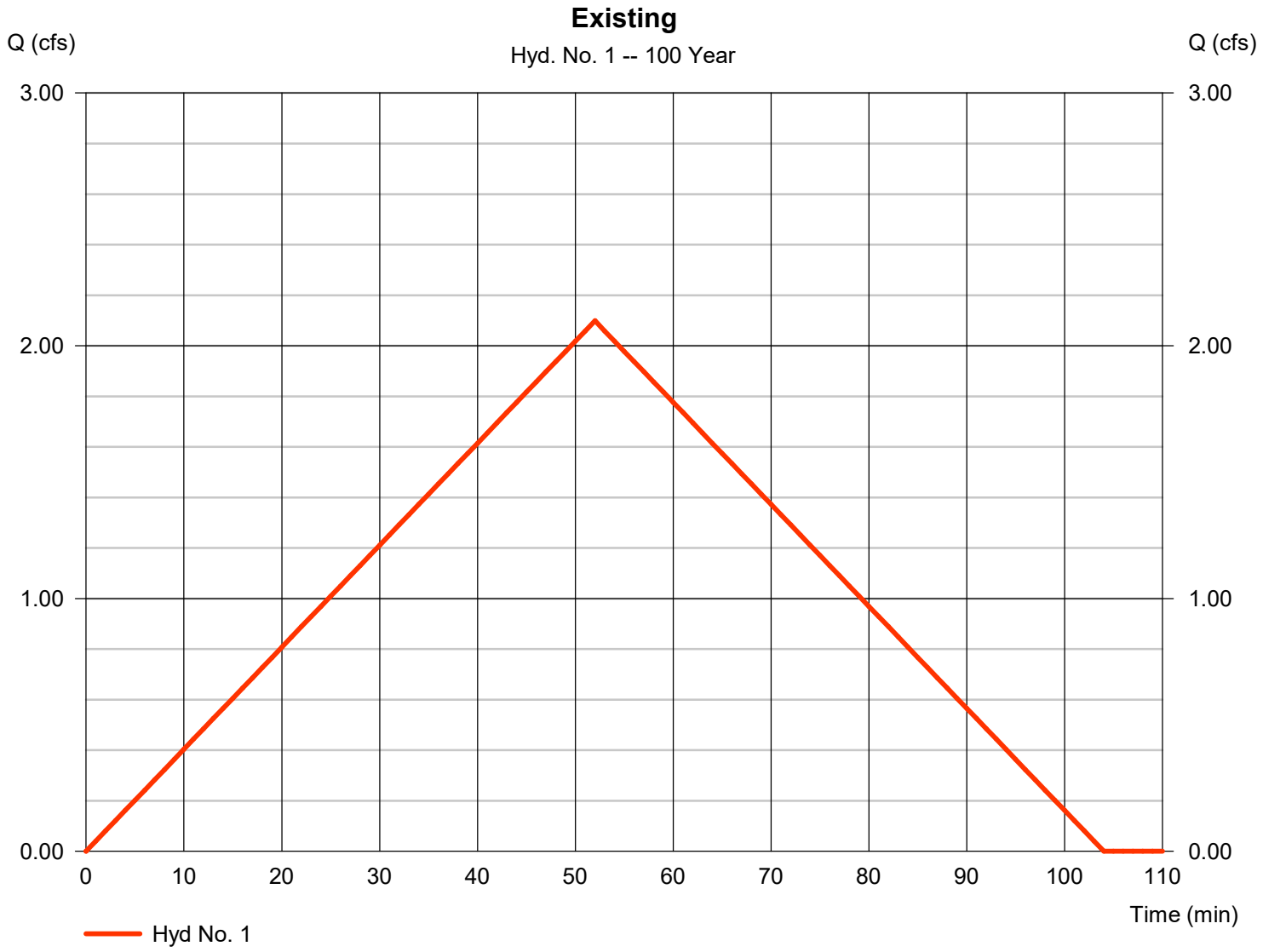
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 3 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Rational | Peak discharge | = | 2.099 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 52 min |
| Time interval | = | 1 min | Hyd. volume | = | 6,549 cuft |
| Drainage area | = | 3.020 ac | Runoff coeff. | = | 0.2* |
| Intensity | = | 3.475 in/hr | Tc by TR55 | = | 52.00 min |
| IDF Curve | = | Lions Trucking IDF.IDF | Asc/Rec limb fact | = | 1/1 |

* Composite (Area/C) = [(3.020 x 0.20)] / 3.020



# Hydrograph Report

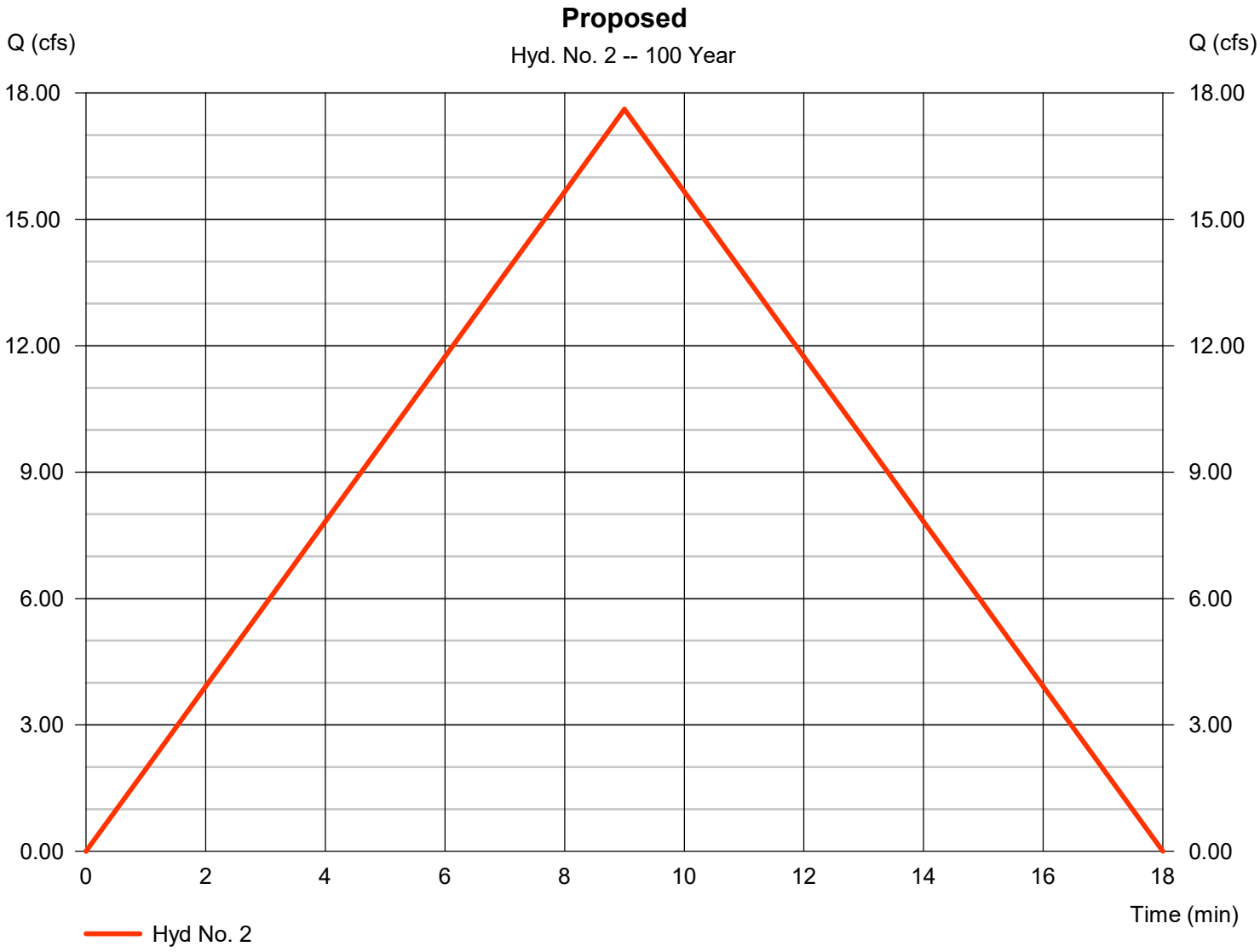
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 3 / 2025

## Hyd. No. 2

Proposed

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Rational | Peak discharge | = | 17.61 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 9 min |
| Time interval | = | 1 min | Hyd. volume | = | 9,511 cuft |
| Drainage area | = | 3.020 ac | Runoff coeff. | = | 0.68* |
| Intensity | = | 8.577 in/hr | Tc by TR55 | = | 9.00 min |
| IDF Curve | = | Lions Trucking IDF.IDF | Asc/Rec limb fact | = | 1/1 |

* Composite (Area/C) = [(1.020 x 0.20) + (1.910 x 0.93) + (0.090 x 0.95)] / 3.020



# Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 3 / 2025

| Return Period (Yrs) | Intensity-Duration-Frequency Equation Coefficients (FHA) | | | |
|---|---|---|---|---|
| | B | D | E | (N/A) |
| 1 | 0.0000 | 0.0000 | 0.0000 | -------- |
| 2 | 56.8128 | 9.8000 | 0.8624 | -------- |
| 3 | 0.0000 | 0.0000 | 0.0000 | -------- |
| 5 | 61.0581 | 9.5000 | 0.8270 | -------- |
| 10 | 58.2090 | 8.5000 | 0.7837 | -------- |
| 25 | 54.0065 | 7.2000 | 0.7275 | -------- |
| 50 | 53.5558 | 6.6000 | 0.6986 | -------- |
| 100 | 50.0862 | 5.6000 | 0.6582 | -------- |

File name: Lions Trucking IDF.IDF

### Intensity = B / (Tc + D)^E

| Return Period (Yrs) | Intensity Values (in/hr) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 min | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 5.56 | 4.33 | 3.56 | 3.04 | 2.66 | 2.37 | 2.14 | 1.95 | 1.80 | 1.67 | 1.56 | 1.46 |
| 3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 6.69 | 5.23 | 4.33 | 3.72 | 3.27 | 2.92 | 2.65 | 2.42 | 2.24 | 2.08 | 1.95 | 1.83 |
| 10 | 7.57 | 5.91 | 4.90 | 4.22 | 3.71 | 3.33 | 3.03 | 2.78 | 2.57 | 2.40 | 2.25 | 2.12 |
| 25 | 8.75 | 6.82 | 5.66 | 4.88 | 4.32 | 3.89 | 3.55 | 3.27 | 3.04 | 2.84 | 2.68 | 2.53 |
| 50 | 9.66 | 7.52 | 6.26 | 5.41 | 4.80 | 4.33 | 3.96 | 3.66 | 3.41 | 3.19 | 3.01 | 2.85 |
| 100 | 10.59 | 8.21 | 6.84 | 5.93 | 5.27 | 4.77 | 4.37 | 4.05 | 3.78 | 3.56 | 3.36 | 3.19 |

Tc = time in minutes. Values may exceed 60.

Precip. file name: Z:\21346 - Lions Tran Inc (Bburg) Maintenance Building\Design\Drainage\Lions Trucking Precip.pcp

| Storm Distribution | Rainfall Precipitation Table (in) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1-yr | 2-yr | 3-yr | 5-yr | 10-yr | 25-yr | 50-yr | 100-yr |
| SCS 24-hour | 2.51 | 3.02 | 0.00 | 3.72 | 4.28 | 5.04 | 5.66 | 6.30 |
| SCS 6-Hr | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-1st | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-2nd | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-3rd | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-4th | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-Indy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Custom | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# Appendix B – Pipe and Orifice Calculations

MOENCH ENGINEERING, P.C.

STORM SEWER DESIGN - RATIONAL METHOD

10-YEAR RAINFALL INTENSITY:HENDRICKS CNTY DCAM EQUATION MANNING ROUGHNESS COEFFICIENT = 0.013 RCP

**PROJ.:** 21346 **DATE:** 9/30/2025

**DESC:** Lion Trans Inc. **ENGR:** C. Brown

| LINE DESIG. | FROM STR. NO. | TO STR. NO. | PIPE LENGTH (FT) | C | A (ACRE) | C x A | SUM OF CA | Tc (MIN) | Tcum (MIN) | I (IN/HR) | Q (CFS) | PIPE DIA. (IN) | PIPE GRADE (%) | PIPE CAP. (CFS) | FULL VEL. (FPS) | TRAV. TIME (MIN) | RIM ELEV. UPSTM. | RIM ELEV. DNSTM. | INVERT ELEV. UPSTM. | INVERT ELEV. DNSTM. | PIPE COVER UPSTM. | PIPE COVER DNSTM. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| New Line | INLET1 | INLET2 | 290 | 0.72 | 1.27 | 0.91 | 0.91 | 5.0 | 5.00 | 5.57 | 5.081 | 18 | 0.37 | 6.390 | 3.62 | 1.3 | 870.56 | 869.99 | 868.06 | 866.99 | 0.79 | 1.29 |
| | INLET2 | END3 | 165 | 0.67 | 1.75 | 1.17 | 2.08 | 5.0 | 6.34 | 5.17 | 10.770 | 24 | 0.50 | 15.996 | 5.09 | 0.5 | 869.99 | | 866.99 | 866.16 | 0.75 | |

**Calculations for Outlet Orifice Size**

Q=Cd*Ao*SQRT(2*g*h)

Ao = Area of Orifice, Cd = Coefficient of Orifice, Q = Flow, g = gravity constant, h = height of water abov

We know Q, and need to solve for Ao

Ao = Q/(Cd*SQRT(2*g*h))

| INLET 1 | | | INLET 2 | | |
|---|---|---|---|---|---|
| Q = | 5.081 | | Q = | 5.689 | |
| Cd = | 0.6 | | Cd = | 0.6 | |
| g = | 32.2 | | g = | 32.2 | |
| h = | 0.5 | | h = | 0.5 | |
| Ao = | 1.49 | Square Feet | Ao = | 1.67 | Square Feet |

solving for d in circular pipe: d=SQRT(4*Ao/*pie)*

| | | |
|---|---|---|
| d = | 1.38 | feet |
| **d =** | **16.55** | **inches (Pipe diameter in inches)** |

**Calculations for Outlet Orifice Size**

Q=Cd*Ao*SQRT(2*g*h)

Ao = Area of Orifice, Cd = Coefficient of Orifice, Q = Flow, g = gravity constant, h = height of water abov

We know Q, and need to solve for Ao

Ao = Q/(Cd*SQRT(2*g*h))

| | | |
|---|---|---|
| Q = | 17.61 | |
| Cd = | 0.62 | |
| g = | 32.2 | |
| h = | 0.11 | |
| Ao = | 10.67 | Square Feet |

solving for d in circular pipe: d=SQRT(4*Ao/*pie)*

| | | |
|---|---|---|
| d = | 3.69 | feet |
| **d =** | **44.24** | **inches (Pipe diameter in inches)** |

# Appendix C – Water Quality Calculations

# Water Quality Calculations

Project Name: Lion's Trucking
Project Job #: 21346

*Water Quality Volume*

WQv = ((P)(Rv)(A))/12

P= 1" of Rainfall
Rv = Volumetric Flow Rate = 0.05 + 0.009 (I)
I = percent of impervious area
A = Area in acres

| | | | |
|---|---|---|---|
| Total Site (acres) | 3.02 | Percent -Impervious Area (%) | 66.23 |
| Total Impervious Area (acres) | 2 | Volumetric Flow Rate | 0.65 |
| Prop. Time of Conc. (min) | 9.00 | Water Quality Volume (ac-ft) | 0.16 |
| | | Water Quality Volume (ft3) | **7082.13** |
| *Forebay Volume is included in overall req. volume | | Forebay (ac-ft) | 0.02 |
| | | Forebay (ft3) | **726.00** |

*Water Quality Curve Number*

$$\text{WQ Curve Number} = \frac{1000}{[10+5P+10Qa- 10*(\text{sqrt}(Qa^2+1.25*Qa*P))]}$$

P = 1" (rainfall for water quality storm event)
Qa = runoff volume, in inches = 1" * Rv = Rv (inches)
Rv = volumetric runoff coefficient

WQ Curve Number = 96.22 * Check with CBBEL WQ-CN Graph

*Water Quality Runoff Rate* TR-20 Method * Design Criteria different for City of Indianapolis

| | Input Data | * Indy |
|---|---|---|
| Dimensionless Hydrograph: | SCS Type II Distribution | Huff 1st quartile |
| Curve Number: | 96.22 | 98 |
| Area: | 3.02 | 3.02 |
| Rainfall: | 1.00 | 0.30 |
| Time of Concentration: | 9.00 | 9.00 |

*Area for TR-20 calculated runoff* * Utilize Peak Discharge for WQ Structure BMP

SCS Method

Given Input Data:

- Description ..... Water Quality
- Drainage area ..... 1.5540 ac
- Runoff curve number, CN ..... 97
- Time of concentration, Tc ..... 5.0000 min
- Dimensionless Hydrograph ..... scsdim
- Rainfall ..... 1.0000 in
- Distribution Curve ..... tr20t2: Type 2, 24 hrs

Computed Results:

- **Peak discharge, qp ..... 1.5871 cfs**
- Peak Time, Tp ..... 717.5407 min
- Peak rate factor ..... 484
- Constant, K ..... 0.7500
- Runoff Volume ..... 0.6923 in
- ..... 1.0849 cfs-hrs
- ..... 0.0897 acft

Req. AquaShield Aqua-Swirl (per City of Indy WQ Flowrate Standards in Stormwater Manual) **AS-10**

# Appendix D – Stage Storage/Discharge Table

# Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Friday, 10 / 3 / 2025

## Pond No. 1 - Pond

### Pond Data

**Contours -**User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 866.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 866.00 | 3,900 | 0 | 0 |
| 1.00 | 867.00 | 4,754 | 4,320 | 4,320 |
| 2.00 | 868.00 | 5,664 | 5,202 | 9,522 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 5.00 | 4.00 | Inactive | Inactive |
| **Span (in)** | = 5.00 | 4.00 | 24.00 | 0.00 |
| **No. Barrels** | = 1 | 1 | 1 | 0 |
| **Invert El. (ft)** | = 866.00 | 867.00 | 867.89 | 0.00 |
| **Length (ft)** | = 2.00 | 2.00 | 2.00 | 0.00 |
| **Slope (%)** | = 0.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .013 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | No | No | No |

### Weir Structures

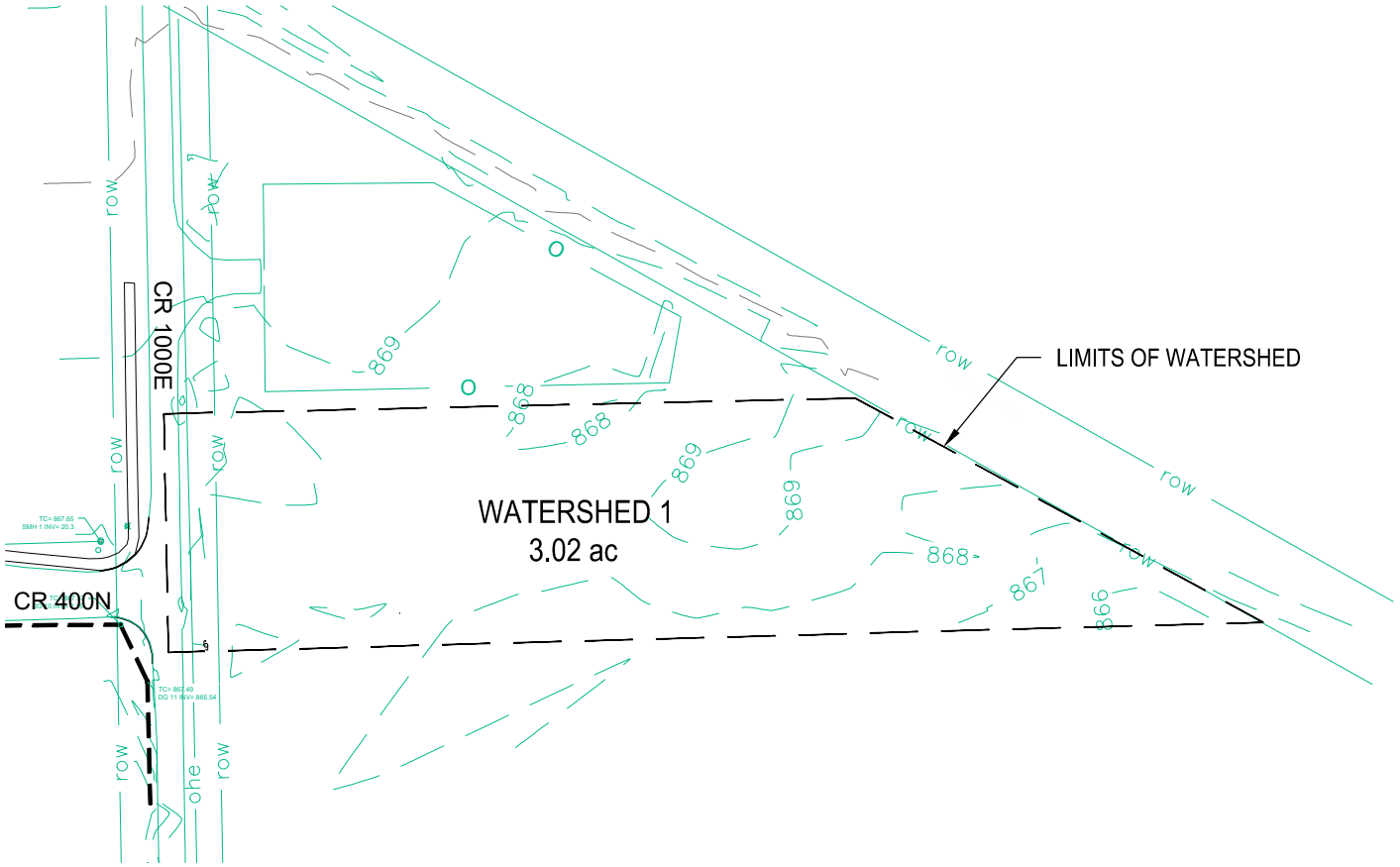
| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | Inactive | Inactive | Inactive | 0.00 |
| **Crest El. (ft)** | = 867.89 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 2.60 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Broad | --- | --- | --- |
| **Multi-Stage** | = No | No | No | No |
| **Exfil.(in/hr)** | = 0.000 (by Wet area) | | | |
| **TW Elev. (ft)** | = 0.00 | | | |

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

### Stage / Storage / Discharge Table

| Stage ft | Storage cuft | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PrfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | User cfs | Total cfs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0 | 866.00 | 0.00 | 0.00 | 0.00 | --- | 0.00 | --- | --- | --- | --- | --- | 0.000 |
| 1.00 | 4,320 | 867.00 | 0.58 ic | 0.00 | 0.00 | --- | 0.00 | --- | --- | --- | --- | --- | 0.584 |
| 2.00 | 9,522 | 868.00 | 0.88 ic | 0.38 ic | 0.00 | --- | 0.00 | --- | --- | --- | --- | --- | 1.262 |

# Appendix E – Existing Watershed




N

150 0 150 300

GRAPHIC SCALE: 1" = 150'

| NOTE |
| --- |
| PERVIOUS SURFACE = 2.97 ac (131,401 sf) |
| IMPERVIOUS SURFACE = 0.05 ac (2,144 sf) |

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH MOENCH ENGINEERING, P.C. NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF MOENCH ENGINEERING, P.C. ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

Lion Transfer Inc.
4005 N. County Road 1000 E
Brownsbburg, Indiana 46122
Hendricks County, Lincoln Township

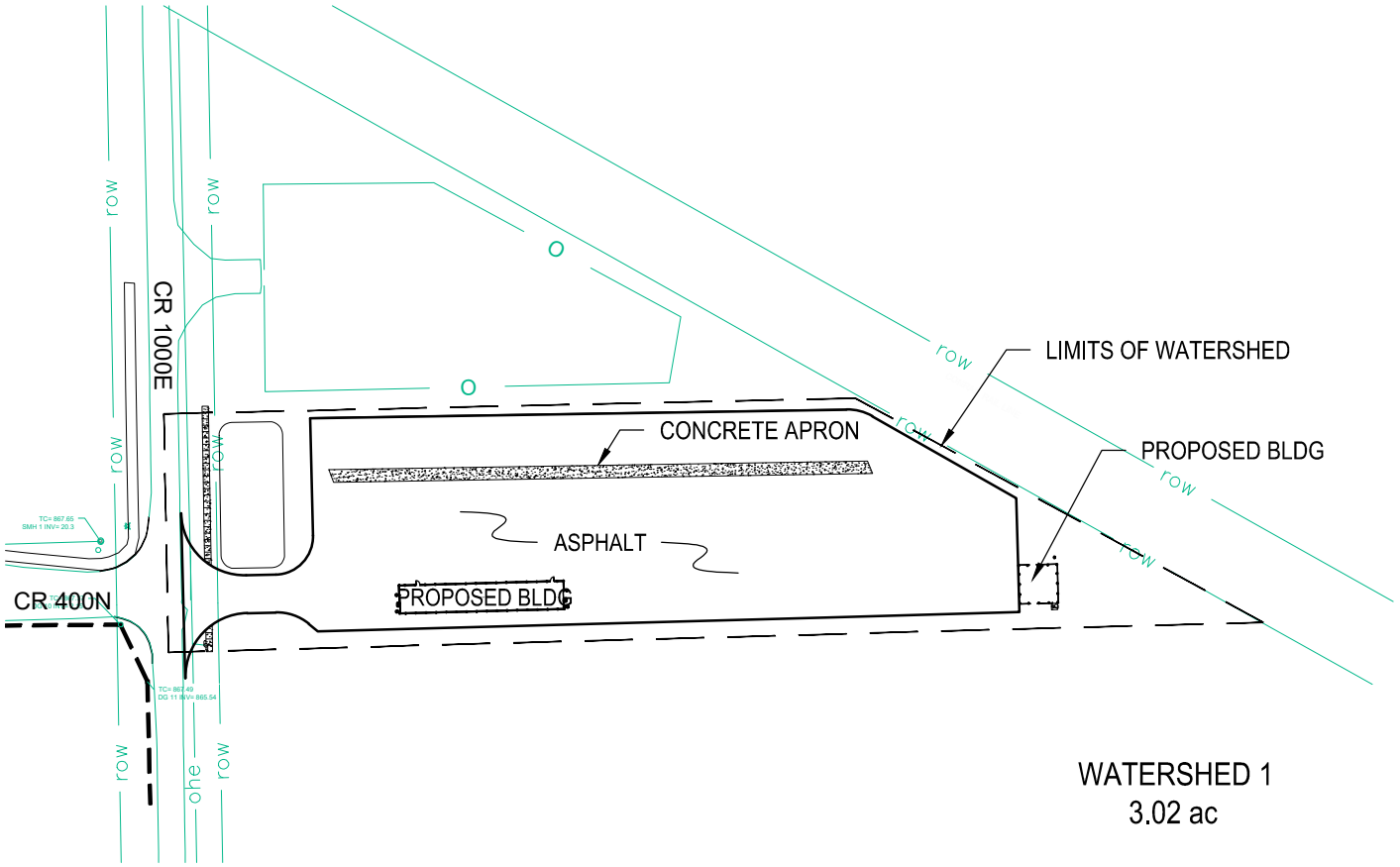
EXISTING WATERSHED MAP

Drawn By: JBF
Checked By: BEM
Project No. 21346
Date: 6/20/24

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
Phone (317) 837-2767

Sheet Number:
WSE

# Appendix F – Proposed Watershed




N

150 0 150 300

GRAPHIC SCALE: 1" = 150'

| NOTE |
|---|
| PERVIOUS SURFACE = 0.77 ac (33,488 sf) |
| IMPERVIOUS SURFACE = 2.17 ac (94,492 sf) |
| IMPERVIOUS ROOF AREA = 0.08 ac (3,760 sf) |

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH MOENCH ENGINEERING, P.C. NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF MOENCH ENGINEERING, P.C. ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

Lion Transfer Inc.
4005 N. County Road 1000 E
Brownsbburg, Indiana 46122
Hendricks County, Lincoln Township

PROPOSED WATERSHED MAP

Drawn By: JBF
Checked By: BEM
Project No. 21346
Date: 6/20/24

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
Phone (317) 837-2767

Sheet Number:
WSP

# Lions Trans Inc. Maintenance Building
# 4005 N. County Road 1000E
# Brownsburg, Indiana 46112

## Owner:

Malhi Kulwinder & Jigna Shah Jtsur
7631 E. US Hwy 36
Avon, Indiana 46123
Phone: 317-989-1580

## Civil Engineer:

Moench Engineering, P.C.
4000 Clarks Creek Road
Plainfield, Indiana 46168
Phone: (317) 837-2767
Fax: (317) 837-7266

## Jurisdictional Contact:

Town of Brownsburg Development Services
61 N. Green St.
Brownsburg, Indiana 46112
Phone: (317) 852-1128

## INDEX OF DRAWINGS


| SHT. | TITLE |
|---|---|
| | CIVIL DRAWINGS |
| C000 | COVER SHEET |
| C201 | SITE PLAN |
| C301 | GRADING PLAN |
| C302 | EROSION CONTROL PLAN |
| C303 | STORM WATER POLLUTION PREVENTION PLAN |
| C401 | UTILITY PLAN |
| C402 | SANITARY FORCE MAIN PLAN & PROFILE |
| C501-502 | SECTIONS AND DETAILS |
| L101 | LANDSCAPE PLAN |
| LT101 | SITE LIGHTING PLAN |


| SITE ANALYSIS TABLE | |
|---|---|
| ZONING | MS |
| BUILDING TYPE | (1) OFFICE, (2) SHOP/GARAGE |
| NUMBER OF BUILDINGS | 2 |
| BUILDING HEIGHT | 30'-9" |
| TOTAL PARCEL | 3.07 Acres |
| TOTAL DISTURBED AREA | 2.60 Acres |
| TOTAL PARKING REQUIRED | N/A |
| PARKING RATIO | 1.1 space / employee & 1 visitor space / 10 employee spaces |
| TRUCK PARKING SPACES PROVIDED (10.5'x70') | 36 |
| STANDARD (9.5' x 18') SPACES | 4 |
| HANDICAPPED SPACES | 1 |
| TOTAL SPACES PROVIDED | 40 |
| TOTAL BUILDING SQUARE FOOTAGE | 3760 s.f. |

LOT COVERAGE

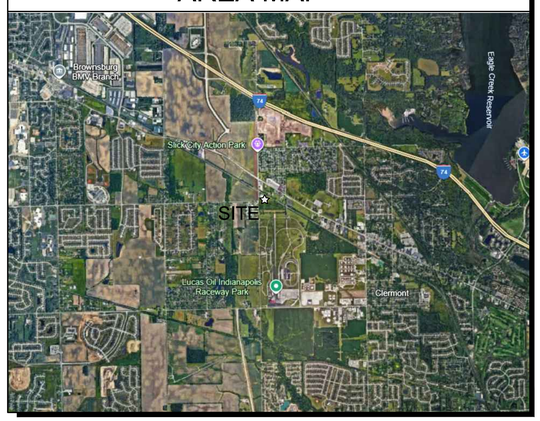
| | AREA (ft²) | ACRES | PERCENT |
|---|---|---|---|
| ASPHALT | 83,071 | 1.907 | 62% |
| BUILDINGS | 3,760 | 0.086 | 2.8% |
| SIDEWALK | 716 | 0.016 | 0.5% |
| IMPERV. (TOTAL) | 87,547 | 2.01 | 65.4% |
| PERVIOUS | 46,327 | 1.06 | 34.6% |
| LOT TOTAL | 133,874 | 3.07 | 100% |

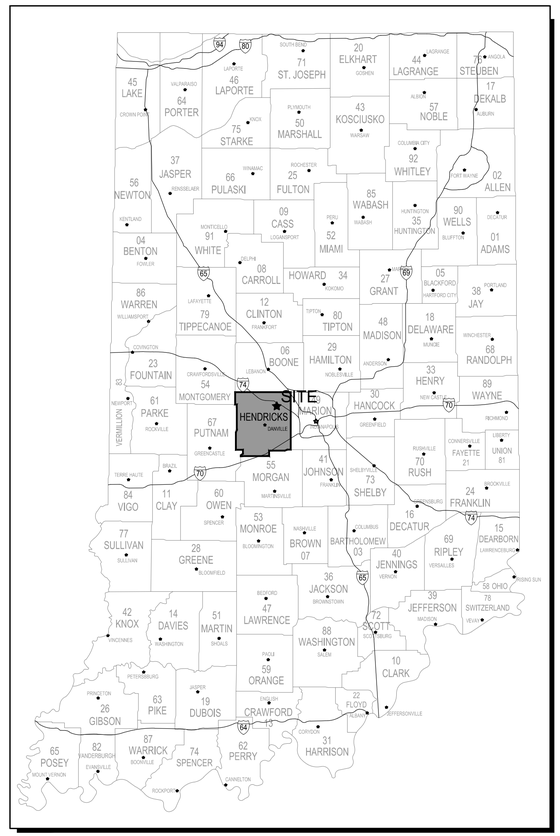
SUBJECT SITE:
SITE LOCATED IN LINCOLN TOWNSHIP
HENDRICKS COUNTY, INDIANA
(39°49'21" N and 86°20'42" W)

VICINITY MAP




AREA MAP





Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


LIONS TRANS INC. (BROWNSBURG)
4005 N CR 1000 E
BROWNSBURG, IN 46122

COVER SHEET

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER
Susan E. Moench

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C000 |

## LEGAL DESCRIPTION

LEGAL DESCRIPTION:
Per Instrument No. 202121241 SUR filed in the Office of the Recorder in Hendricks County, Indiana, and described as follows:

Addresses and Parcel Numbers:
4005 N C.R. 1000 E., Brownsburg, IN 46112
#32-08-17-365-002.000-016

The following represents a modernized legal description of a tract of land, as described in Instrument #1998-04591 in the Office of the Recorder of Hendricks County, Indiana and being located in the Southwest Quarter of Section 17 and the Northwest Quarter of Section 20 both in Township 16 North, Range 2 East of the Second Principal Meridian, Hendricks County, Indiana. Said tract being more particularly bound and described as follows, to-Wit:

East line of the Southwest quarter of Section 17 as being North 01 degrees 22 minutes 53 seconds West, deed, measured North 01 degrees 00 minutes 22 seconds West and all other bearings being relative thereto.

Beginning at a Hendricks County Aluminum monument found marking the Southwest corner of the Southwest quarter Section 17, Township 16 North, Range 2 East of the Second Principal Meridian, Hendricks County, Indiana; thence running North on and along the West line of the Southwest quarter of Section 17 bearing North 01° 22' 53" West 155.58 feet, deed, and measured North 01° 00' 22" West 155.53 feet to a point on said West line, marking the Northeast corner of the National Hot Rod Association tract as referenced in the caption; thence running East on and along the North line of the National Hot Rod Association bearing North 88° 42' 57" East 546.58 feet, deed, and measured North 89° 10' 00" East a distance of 40.19 feet to a found 5/8" rebar with Kruse Consulting cap affixed and the *Point of Beginning* of this description; thence continuing North 89° 10' 00" East a distance of 508.15 feet to a found 5/8" rebar with Kruse Consulting cap affixed marking the intersection with the Southwesterly Right-of-Way of the CSX Railroad; thence running Southeasterly on and along the CSX Railroad Right-of-Way and traveling into the Northwest quarter of Section 20 bearing South 61° 12' 10" East 366.62 feet, deed, and measured South 60° 46' 15" East a distance of 365.01 feet to a found 5/8" rebar with Gaston cap marking the Northeast corner of Lot 1 in Villa Farms Subdivision, as per plat thereof recorded in Plat Book 3, page 134 in the Office of the Recorder of Hendricks County, Indiana; thence running West on and along the North line of said Lot 1 in Villa Farms Subdivision bearing South 88° 25' 57" West 863.49 feet (plat for Villa Farms shows this line to be 860.54 feet), calculated to be 823.52 feet to a point marking the intersection with the East right-of-way of N. CR. 1000 E; thence North 01° 02' 08" East, on and along said right-of-way, 38.39 feet; thence North 01° 00' 22" East 155.02 feet to the *Point of Beginning*. Containing 2.895 acres, more or less, subject to all easements and rights-of-way of record.

Dedicated Right-of-Way:
Beginning at a Hendricks County Aluminum monument found marking the Southwest corner of the Southwest quarter Section 17, Township 16 North, Range 2 East of the Second Principal Meridian, Hendricks County, Indiana, and the *Point of Beginning* of this description; thence running North on and along the West line of the Southwest quarter of Section 17 bearing North 01° 22' 53" West 155.58 feet, deed, and measured North 01° 00' 22" West 155.53 feet to a point on said West line, marking the Northeast corner of the National Hot Rod Association tract as referenced in the caption; thence running East on and along the North line of the National Hot Rod Association bearing North 88° 42' 57" East, deed, and measured North 89° 10' 00" East a distance of 40,19 feet to a found 5/8" rebar with Kruse Consulting cap affixed, marking the intersection with the east right-of-way line of N. CR 1000 E.; thence South 01° 00' 22" East 155,02 feet on and along said right-of-way; thence South 01° 02' 08" East 38.39 feet on and along said right-of-way, traveling into the Northwest quarter of Section 20; thence South 88° 25' 57" West 40.19 feet to a point on the West line of the Northwest quarter of Section 20; thence North 01° 02' 08" West on and along aforementioned West line, 38.39 feet to the *Point of Beginning* of this Dedicated Right-of-Way description. Containing 0.179 acres, more or less.

## LINETYPE LEGEND:

| | |
|---|---|
| (SF) | = SILT FENCE |
| X | = BARB WIRE FENCE |
| o | = CHAIN-LINK FENCE |
| H | = WOOD FENCE |
| W | = WATER LINE |
| STRM | = STORM SEWER LINE |
| SAN | = SANITARY SEWER LINE |
| GAS | = GAS LINE |
| UGE | = UNDERGROUND ELECTRIC LINE |
| OHE | = OVERHEAD ELECTRIC LINE |
| COMM | = COMMUNICATION LINE |
| T | = TELEPHONE LINE |
| UTELE | = UNDERGROUND TELEPHONE LINE |
| FO | = FIBER OPTIC LINE |
| W | = FIRE DEPARTMENT WATER SUPPLY |
| 35' ESMT | = 35' EASEMENT LINE |
| 30' ESMT | = 30' EASEMENT LINE |
| 25' ESMT | = 25' EASEMENT LINE |
| 20' ESMT | = 20' EASEMENT LINE |
| 15' ESMT | = 15' EASEMENT LINE |
| 10' ESMT | = 10' EASEMENT LINE |
| 5' ESMT | = 5' EASEMENT LINE |
| ESMT | = EASEMENT LINE |
| OOO | = SWALE LINE |
| ooo | = EDGE OF WATER |
| 35' SETBK | = 35' SETBACK LINE |
| 30' SETBK | = 30' SETBACK LINE |
| 25' SETBK | = 25' SETBACK LINE |
| 20' SETBK | = 20' SETBACK LINE |
| 15' SETBK | = 15' SETBACK LINE |
| 10' SETBK | = 10' SETBACK LINE |
| 5' SETBK | = 5' SETBACK LINE |
| SETBACK | = SETBACK LINE |
| ROW | = RIGHT-OF-WAY LINE |
| — — — | = PROPERTY BOUNDARY |
| UD | = SWALE UNDERDRAIN |
| CABLE | = CABLE TV LINE |
| FL> | = FLOW LINE |

## SYMBOL LEGEND:

= STORM SEWER END SECTION
= SANITARY SEWER CLEANOUT
C.O. = CLEANOUT
= MANHOLE
= CATCH BASIN
= CATCH BASIN
= CURB INLET
= FIRE HYDRANT
= PRESSURE RELIEF VALVE
WV = WATER VALVE
W = WATER WELL
GV = GAS VALVE
= LIGHT POLE
= UTILITY POLE
IRF
RBF
= PROPERTY CORNER
IRF = IRON ROD FOUND
RBF = REBAR FOUND
= SURVEY POINT
(SECTION CORNER)
BM = BENCHMARK
= SOIL BORING

741.25 = NEW GRADE ELEVATION
×741.25 = EXISTING GRADE ELEVATION
= STRAW BALE DAM
= ROCK DAM
= SIGN
STOP = STOP SIGN
= HANDICAP SIGN
ENTER ONLY = ENTER ONLY SIGN
EXIT ONLY = EXIT ONLY SIGN
DO NOT ENTER = DO NOT ENTER SIGN
= EVERGREEN TREE
= DECIDUOUS TREE
= BUSH
= TEMPORARY CONSTRUCTION ENTRNACE
= GRASS PERMANENT SEEDING
= EROSION CONTROL BLANKET ON ALL SLOPES 3:1 OR GREATER

## SITE NOTES:

HANDICAP RAMP CONSTRUCTION NOTES:

1. ALL HANDICAP RAMPS SHALL MEET THE REQUIREMENTS OF THE AMERICAN DISABILITIES ACT. THE MOST RECENT INDOT STANDARD SPECIFICATIONS AND THE GOVERNING JURISDICTIONS MOST RECENT STANDARDS. CURB SWIPES REQUIRED FOR HANDICAP RAMPS SHALL BE PROVIDED AT TIME OF INITIAL CONSTRUCTION.

2. MINIMUM WIDTH OF CURB RAMP SHALL BE 4 FEET NOT INCLUDING FLARES. MAXIMUM SLOPE OF RAMPS SHALL BE 12:1

3. HANDICAP RAMPS ARE TO BE LOCATED AS SHOWN ON PLANS.

4. TYPE 'E' RAMPS SHALL BE PROVIDED AT THE CENTERLINE OF RADIUS AT ALL CORNERS OF EVERY STREET INTERSECTION WHERE THERE IS AN EXISTING OR PROPOSED SIDEWALK AND CURB. IN CASE OF "T"-INTERSECTION, A TYPE 'C' RAMP SHALL BE PROVIDED ADJACENT TO EACH CORNER RAMP. TYPE 'C' RAMPS ALSO SHALL BE PROVIDED AT WALK LOCATIONS AT MID-BLOCK IN VICINITY OF HOSPITALS, MEDICAL CENTERS OR ATHLETIC STADIUMS. THE USE OF DETAILS CONTRARY TO THOSE SHOWN HEREIN SHALL REQUIRE THE PRIOR WRITTEN APPROVAL OF THE GOVERNING JURISDICTION.

5. SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING TRANSVERSE TO THE SLOPE OF THE RAMP.

6. RAMPS SHALL BE PROVIDED WHERE THE DRIVEWAY CURB EXTENDS ACROSS THE SIDEWALK.

7. CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON ALL RAMPS WITH NO BREAKS IN GRADE.

8. DRAINAGE STRUCTURES SHALL NOT BE PLACED IN LINE WITH THE RAMPS EXCEPT WHERE EXISTING DRAINAGE STRUCTURES ARE BEING UTILIZED IN THE NEW CONSTRUCTION. LOCATION OF THE RAMPS SHALL TAKE PRECEDENCE OVER LOCATION OF DRAINAGE STRUCTURES.

9. THE NORMAL GUTTER LINE PROFILE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.

10. EXPANSION JOINTS FOR THE RAMP SHALL BE A MAXIMUM 1/2" WIDE. THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

11. CROSSWALK AND STOP LINE MARKING, IF USED, SHALL BE LOCATED TO STOP TRAFFIC SHORT OF ALL RAMP CROSSINGS.

12. SLOPE OF RAMP MAY BE WARPED WHEN FILED CONDITIONS WARRANT AND WHEN APPROVED BY THE GOVERNING JURISDICTION.

## LOT COVERAGE

| | ACRES | PERCENT |
|---|---|---|
| ASPHALT | 1.845 | 60% |
| BUILDINGS | 0.086 | 2.8% |
| SIDEWALK | 0.016 | 0.5% |
| PERVIOUS | 1.123 | 36.6% |
| TOTAL LOT | 3.07 | 100% |

## SITE NOTES:

GENERAL NOTES:

1. REFER TO THE INDIANA DEPARTMENT OF TRANSPORTATION (INDOT) STANDARD SPECIFICATIONS, LATEST EDITION, FOR BASIC MATERIALS AND CONSTRUCTION METHODS. THE SECTIONS BELOW FOR VARIOUS ITEMS ARE TO CLARIFY THE INTENT OF THE REQUIREMENTS FOR THIS PROJECT. PLEASE NOTE THAT OTHER SECTIONS OF THE INDOT STANDARD SPECIFICATIONS MAY ALSO BE APPLICABLE;

2. ALL RADII SHELL BE 5 FOOT UNLESS NOTED OTHERWISE ON PLANS.

3. CONTRACTOR TO VERIFY EXACT LOCATION AND INVERT OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.

4. STORM SEWER PIPE OF OTHER MATERIAL OR MATERIAL NOT MEETING THESE SPECIFICATIONS SHALL REQUIRE THE PRIOR WRITTEN APPROVAL OF THE ENGINEER.

5. THE CONTRACTOR SHALL SUBMIT INFORMATION TO THE APPROPRIATE JURISDICTIONAL CONTACT SHOWING CONFORMANCE WITH THESE SPECIFICATIONS UPON REQUEST.

PAVEMENT CONSTRUCTION:

1. THE INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, LATEST EDITION, SHALL APPLY TO WORKMANSHIP AND MATERIALS IN CONSTRUCTION OF SUBGRADE, PAVEMENT, CURBS AND WALKS.

A) PREPARE THE SUBGRADE IN ACCORDANCE WITH INDOT SECTION 207. NO TRAFFIC WILL BE PERMITTED ON THE PREPARED SUBGRADE PRIOR TO PAVING.

B) BITUMINOUS PAVEMENT IN ACCORDANCE WITH INDOT SECTION 403.

C) FINISHING EARTH GRADED SHOULDERS, DITCHES AND SLOPES IN ACCORDANCE WITH INDOT SECTION 208.

CONCRETE PAVEMENT AND WALKS:

1. SEE DETAIL FOR TYPE AND DETAILS.

2. CONCRETE SHALL BE READY MIXED PORTLAND CEMENT AND WATER CONFORMING TO ASTM C-150. AGGREGATES SHALL CONFORM TO ASTM C-33. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS SHALL BE 4000 P.S.I. WHERE REQUIRED, REINFORCEMENT SHALL BE WELDED STEEL WIRE FABRIC CONFORMING TO ASTM A-185,

3. ALL EXTERIOR CONCRETE SHALL CONTAIN 6% ± 1% AIR ENTRAINMENT.

APPLICATION:

A) PLACE CONCRETE ONLY ON A MOIST, COMPACT SUBGRADE OR BASE FREE FROM LOOSE MATERIAL. PLACE NO CONCRETE ON MUDDY OR FROZEN SUBGRADE IN ACCORDANCE WITH INDOT SECTION 604 AND 605.

B) CONCRETE SHALL BE DEPOSITED SO AS TO REQUIRE AS LITTLE REHANDLING AS PRACTICAL. WHEN CONCRETE IS TO BE PLACED AT AN ATMOSPHERIC TEMPERATURE OF 35 DEGREES OR LESS, PARAGRAPH 702.10 OF THE INDOT SPECIFICATIONS SHALL APPLY.

C) EXCEPT AS OTHERWISE SPECIFIED, CURE ALL CONCRETE BY ONE OF THE METHODS DESCRIBED IN INDOT SECTION 501.17.

PARKING LOT STRIPING:

1. PAINT MATERIAL SHALL COMPLY WITH FEDERAL SPECIFICATION TT-P-115A FOR TRAFFIC PAINT WITHOUT GLASS SPHERES. (COLOR BY OWNER SELECTION).

2. SUBCONTRACTOR TO PERFORM ALL FIELD LAYOUT WORK NECESSARY TO ACHIEVE STRAIGHT AND TRUE LINES. ASPHALT MUST BE CLEANED WITH POWER BROOM AND HAND BROOM TO REMOVE LOOSE MATERIAL BEFORE STRIPING. THE SUBCONTRACTOR IS TO PROVIDE BARRIERS TO PREVENT MARRING OF LINES BY VEHICLES UNTIL PAINT HAS DRIED. STRIPING PAINT SHALL BE APPLIED AT THE MINIMUM RATE OF ONE GALLON PER 100 SQUARE FEET OF PAINT (BASED ON 39% SOLIDS) AT A WIDTH OF FOUR INCHES.

STREET PAVEMENT NOTES:

1. MATERIALS AND CONSTRUCTION FOR STREETS, WALKS, CURBS AND STORM WATER SEWERS SHALL CONFORM TO THE REQUIREMENTS OF THE INDIANA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS" LATEST PRINTED EDITION UNLESS SHOWN OR NOTED OTHERWISE.

2. PAVEMENT COMPOSITION NOTED ON DETAIL IS THE MINIMUM REQUIREMENT FOR STREET CLASSES 1, 2, 3, 4 AND 5, WITH A GOOD SUB-GRADE SOIL CLASSIFICATION. PAVEMENT COMPOSITION FOR OTHER CLASSES OF STREET SHALL BE DESIGNED WITH CONSIDERATION GIVEN TO THE TRAFFIC VOLUME, SUB-GRADE SOIL EVALUATION AND TYPE OF PAVEMENT MATERIAL TO BE USED.

3. THE SUB-GRADE MUST BE PROOF ROLLED BY THE CONTRACTOR USING A FULLY LOADED TRI-AXLE DUMP TRUCK, MINIMUM LOAD OF 20 TONS

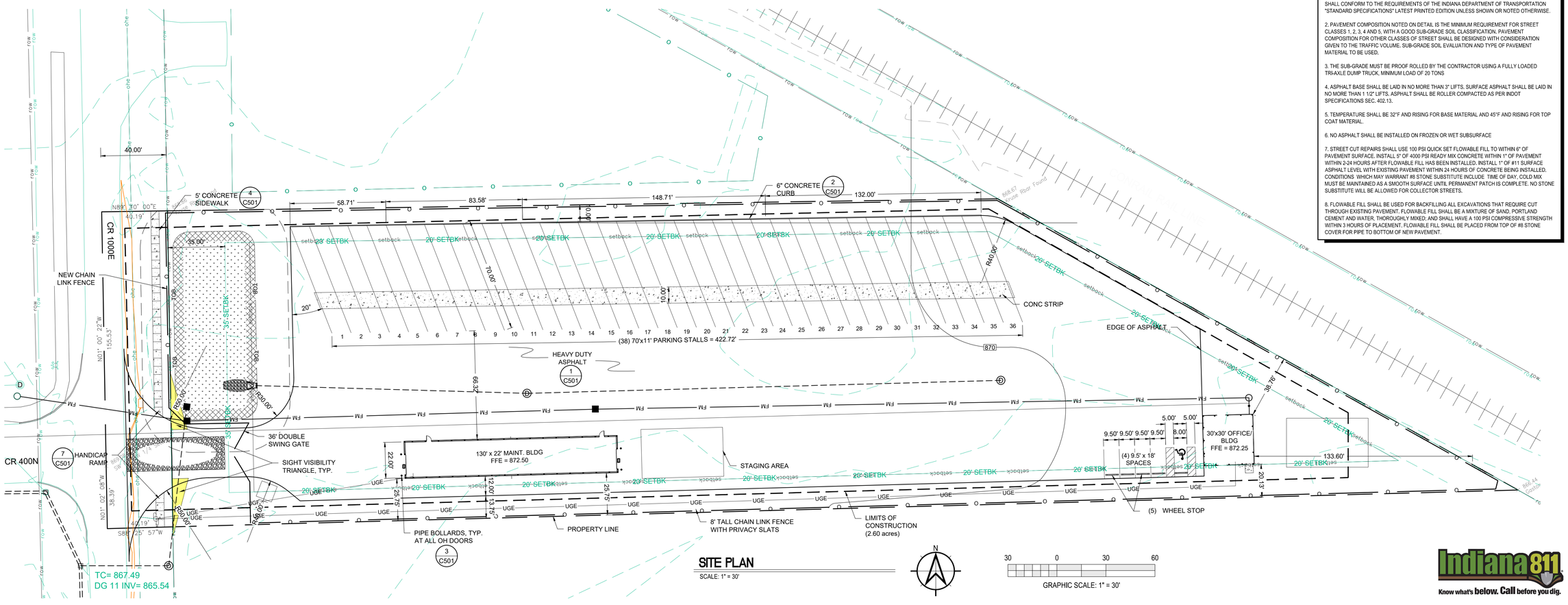
4. ASPHALT BASE SHALL BE LAID IN NO MORE THAN 3" LIFTS. SURFACE ASPHALT SHALL BE LAID IN NO MORE THAN 1 1/2" LIFTS, ASPHALT SHALL BE ROLLER COMPACTED AS PER INDOT SPECIFICATIONS SEC. 402.13.

5. TEMPERATURE SHALL BE 32°F AND RISING FOR BASE MATERIAL AND 45°F AND RISING FOR TOP COAT MATERIAL.

6. NO ASPHALT SHALL BE INSTALLED ON FROZEN OR WET SUBSURFACE

7. STREET CUT REPAIRS SHALL USE 100 PSI QUICK SET FLOWABLE FILL TO WITHIN 6" OF PAVEMENT SURFACE. INSTALL 5" OF 4000 PSI READY MIX CONCRETE WITHIN 1" OF PAVEMENT WITHIN 2-24 HOURS AFTER FLOWABLE FILL HAS BEEN INSTALLED. INSTALL 1" OF #11 SURFACE ASPHALT LEVEL WITH EXISTING PAVEMENT WITHIN 24 HOURS OF CONCRETE BEING INSTALLED. CONDITIONS WHICH MAY WARRANT #8 STONE SUBSTITUTE INCLUDE TIME OF DAY, COLD MIX MUST BE MAINTAINED AS A SMOOTH SURFACE UNTIL PERMANENT PATCH IS COMPLETE. NO STONE SUBSTITUTE WILL BE ALLOWED FOR COLLECTOR STREETS.

8. FLOWABLE FILL SHALL BE USED FOR BACKFILLING ALL EXCAVATIONS THAT REQUIRE CUT THROUGH EXISTING PAVEMENT. FLOWABLE FILL SHALL BE A MIXTURE OF SAND, PORTLAND CEMENT AND WATER, THOROUGHLY MIXED; AND SHALL HAVE A 100 PSI COMPRESSIVE STRENGTH WITHIN 3 HOURS OF PLACEMENT. FLOWABLE FILL SHALL BE PLACED FROM TOP OF #8 STONE COVER FOR PIPE TO BOTTOM OF NEW PAVEMENT.




## SITE PLAN

SCALE: 1" = 30'

GRAPHIC SCALE: 1" = 30'

Indiana 811 Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

SITE PLAN

BRIAN EDWARD MOENCH — REGISTERED — No. PE9500048 — STATE OF INDIANA — PROFESSIONAL ENGINEER
Brian E. Moench

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C201 |

# National Flood Hazard Layer FIRMette




*Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020*

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- SPECIAL FLOOD HAZARD AREAS: Without Base Flood Elevation (BFE) — Zone A, V, A99; With BFE or Depth — Zone AE, AO, AH, VE, AR; Regulatory Floodway
- OTHER AREAS OF FLOOD HAZARD: 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile — Zone X; Future Conditions 1% Annual Chance Flood Hazard — Zone X; Area with Reduced Flood Risk due to Levee. See Notes. — Zone X; Area with Flood Risk due to Levee — Zone D
- OTHER AREAS: NO SCREEN — Area of Minimal Flood Hazard — Zone X; Effective LOMRs; Area of Undetermined Flood Hazard — Zone D
- GENERAL STRUCTURES: Channel, Culvert, or Storm Sewer; Levee, Dike, or Floodwall
- OTHER FEATURES: 20.2 Cross Sections with 1% Annual Chance; 17.5 Water Surface Elevation; Coastal Transect; Base Flood Elevation Line (BFE); Limit of Study; Jurisdiction Boundary; Coastal Transect Baseline; Profile Baseline; Hydrographic Feature
- MAP PANELS: Digital Data Available; No Digital Data Available; Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/20/2022 at 4:21 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

## FLOOD ZONE DESIGNATION:

THIS LOT LIES ENTIRELY IN FLOOD HAZARD ZONE "X" AS SCALES FROM THE FLOOD INSURANCE RATE MAP (FIRM) FOR:

HENDRICKS COUNTY, INDIANA

| | |
|---|---|
| COMMUNITY NAME: | TOWN OF BROWNSBURG |
| COMMUNITY NUMBER: | 180087 |
| PANEL NUMBER: | C0179E |
| DATED: | JUNE 15, 2022 |

## Soil Map—Hendricks County, Indiana




Natural Resources Conservation Service — Web Soil Survey, National Cooperative Soil Survey — 5/12/2023 Page 1 of 3

## Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| YbvA | Brookston silty clay loam-Urban land complex, 0 to 2 percent slopes | 1.8 | 53.2% |
| YclA | Crosby silt loam, fine-loamy subsoil-Urban land complex, 0 to 2 percent slopes | 1.5 | 46.8% |
| **Totals for Area of Interest** | | **3.3** | **100.0%** |

## GRADING NOTES:

GENERAL GRADE NOTES:

1. REFER TO THE INDIANA DEPARTMENT OF TRANSPORATION (INDOT) STANDARD SPECIFICATIONS, LATEST EDITION, FOR BASIC MATERIALS AND CONSTRUCTION METHODS. THE SECTION BELOW FOR VARIOUS ITEMS ARE TO CLARIFY THE INTENT OF THE REQUIREMENTS FOR THIS PROJECT, PLEASE NOTE THAT OTHER SECTIONS OF THE INDOT STANDARD SPECIFICATIONS MAY ALSO BE APPLICABLE.

2. FILL MATERIAL SHALL CONSIST OF EARTH OBTAINED FROM CUT AREAS, BORROW PITS OR OTHER APPROVED SOURCES. EARTH SHALL BE FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES AND LARGE ROCKS. THE FILL MATERIAL SHALL BE PLACED IN LAYERS NOT TO EXCEED SIX INCHES FOLLOWING COMPACTION. PROPER MOISTURE CONTENT OF FILL MATERICAL WILL BE SUCH TO ACHIEVE SPECIFIED COMPACTION DENSITY. ALL FILL BENEATH PAVED AREAS, FLOOR SLABS AND FURTURE BUILDINGS SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY PER ASTM D-1557, FIELD COMPACTING TEST SHALL BE RUN ON EACH LIFT, IN FILL SECTIONS, AND THE REQUIRED COMPACTION ON EACH LIFT SHALL BE IN ACCORDANCE WITH INDOT SECTION 211.

3. MAXIMUM LAWN SLOPE IS 3:1.

4. THE CONTRATOR SHALL CONTACT ALL UTILITY COMPANIES TO LOCATE MAINS, CONDUITS, SERVICE LINES, ETC, IN THE AFFECTED CONSTRUCTION AREA EXISTING UTILITY STRUCTURES ARE SHOWN HERE IN ACCORDANCE WITH AVAILABLE INFORMATION. THE LOCATION AND PROTECTION OF UTILITY STRUCTURES, THEIR SUPPORT AND MAINTENANCE DURING CONSTRUCTION (IN COOPERATION WITH APPLICABLE UTILITY COMPANY) IS THE EXPRESSED RESPONSIBILITY OF THE CONTRACTOR.

5. ALL SPOT ELEVATIONS ARE TO FINISHED GRADE.

6. ALL EXISTING MANHOLE CASTINGS TO BE ADJUSTED TO FINISH GRADE.

7. COMPACT "B" BORROW BACK FILL REQ'D. OVER ALL UTILITIES IN PAVED AREAS.

REINFORCED CONCRETE PIPE:

1. REINFORCED CONCRETE PIPE SHALL BE CLASS III, IV OR V AS SPECIFIED IN ASTM C-76,

2. REINFORCED ELLIPTICAL CONCRETE PIPE SHALL BE CLASS HE-III OR HE-IV AS SPECIFIED IN ASTM C-507,

3. LIFT HOLES ARE NOT ALLOWED FOR PIPE LESS THAN 24 INCHES IN DIAMETER, A MAXIMUM OF TWO LIFT HOLES ARE ALLOWED FOR PIPE 24 INCHES IN DIAMETER OR LARGER. LIFT HOLES SHALL BE REPAIRED ACCORDING TO MOST RECENT INDOT STANDARD SPECIFICATIONS.

4. FITTINGS AND SPECIALTIES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS FOR THE TYPE OF PIPE BEING USED.

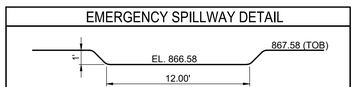
5. EACH PIPE SECTION SHALL BE MARKED WITH DATE OF MANUFACTURE, SIZE AND CLASS OF PIPE, SPECIFICATION DESIGNATION, MANUFACTURER AND PLANT IDENTIFICATION.

6. PIPE SHALL BE FURNISHED WITH A BELL OR GROOVE ON ONE END OF A UNIT OF PIPE AND A SPIGOT OR TONGUE ON THE ADJACENT END OF THE ADJOINING PIPE. ALL JOINTS SHALL HAVE A GROOVE ON THE SPIGOT FOR PLACEMENT OF A RUBBER "O-RING" OR PROFILE GASKET IN ACCORDANCE WITH ASTM C-443. THE GASKET SHALL BE A CONTINUOUS RING WHICH FITS SNUGLY INTO THE ANNULAR SPACE BETWEEN THE OVERLAPPING SURFACES OF THE ASSEMBLED PIPE JOINT.

## STAGE STORAGE TABLE

| ELEV | AREA (sq. ft.) | DEPTH (ft) | AVG END INC. VOL. (cu. ft.) | AVG END TOTAL VOL. (cu. ft.) | CONIC INC. VOL. (cu. ft.) | CONIC TOTAL VOL. (cu. ft.) |
|---|---|---|---|---|---|---|
| 866.000 | 3,900.27 | N/A | N/A | 0.00 | N/A | 0.00 |
| 867.000 | 4,753.94 | 1.000 | 4327.10 | 4327.10 | 4320.07 | 4320.07 |
| 868.000 | 5,664.16 | 1.000 | 5209.05 | 9536.15 | 5202.41 | 9522.48 |

## EMERGENCY SPILLWAY DETAIL




(NOT TO SCALE)




## GRADING PLAN

SCALE: 1" = 30'

N

30 0 30 60

GRAPHIC SCALE: 1" = 30'

Indiana 811 — Know what's below. Call before you dig.


Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

GRADING PLAN

BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

Brian E. Moench

## REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C301 |

## SEASONAL SOIL PROTECTION CHART

| STABILIZATION PRACTICE | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. | OCT. | NOV. | DEC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PERMANENT SEEDING | | A | | | * | /// | /// | /// | *// | | | |
| DORMANT SEEDING | B | | | | | | | | | | B | |
| TEMPORARY SEEDING | | C | E | | * | /// | /// | /// | * D | | | |
| SODDING | | F** | | | * | /// | /// | /// | * | | | |
| MULCHING | G | | | | | | | | | | | |

A = KENTUCKY BLUEGRASS 100 LBS/ACRE; CREEPING RED FESCUE 100 LBS/ACRE; PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYEGRASS 20 LBS/ACRE FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

B = KENTUCKY BLUEGRASS 120 LBS/ACRE; CREEPING RED FESCUE 120 LBS/ACRE; PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYEGRASS 30 LBS/ACRE FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

C = SPRING OATS 3 BUSHELS/ACRE
FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

D = WHEAT OR RYE 2 BUSHELS/ACRE
FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

E = ANNUAL RYEGRASS 40 LBS/ACRE (1 LB/1000 SQ. FT.)
FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE. APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

F = SOD

G = STRAW MULCH 2 TONS/ACRE

* / / / * = IRRIGATION NEEDED DURING JUNE, JULY, AUGUST AND/OR SEPTEMBER  ** = IRRIGATION NEEDED FOR 2 WEEKS AFTER SUPPLYING SOD

## INSTALLATION SCHEDULE:

| CONSTRUCTION PHASE: | CONSTRUCTION SCHEDULE: |
|---|---|
| PRE-CONSTRUCTION ACTIONS (EVALUATION/PROTECTION OF IMPORTANT SITE CHARACTERISTICS) | BEFORE CONSTRUCTION, EVALUATE, MARK AND PROTECT IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, UNIQUE AREAS (e.g., WETLANDS) TO BE PRESERVED, ON SITE SEPTIC SYSTEM ABSORPTION FIELDS IF APPLICABLE, AND VEGETATION SUITABLE FOR FILTER STRIPS, ESPECIALLY IN PERIMETER AREAS. |
| CONSTRUCTION ACCESS (CONSTRUCTION ENTRANCES, CONSTRUCTION ROUTES, EQUIPMENT PARKING AREAS) | STABILIZE BARE AREAS IMMEDIATELY WITH GRAVEL AND TEMPORARY VEGETATION AS WORK TAKES PLACE. |
| SEDIMENT BARRIERS AND TRAPS (BASIN TRAPS, SILT FENCES, OUTLET PROTECTION) | INSTALL PRINCIPAL BASINS AFTER CONSTRUCTION SITE IS ASSESSED. INSTALL ADDITIONAL RUNOFF CONTROL MEASURES DURING GRADING AS NEEDED. |
| RUNOFF CONVEYANCE SYSTEM (STABILIZED STREAM-BANKS, STORM DRAINS, INLET AND OUTLET PROTECTIONS, WATER QUALITY STRUCTURES) | WHERE NECESSARY, STABILIZE STREAMBANKS AS EARLY AS POSSIBLE. INSTALL PRINCIPLE CONVEYANCE SYSTEM WITH RUNOFF CONTROL MEASURES. INSTALL REMAINDER OF SYSTEM AFTER GRADING. |
| LAND CLEARING AND GRADING (CUTTING/FILLING/GRADING, DRAINS, SEDIMENT TRAPS, BARRIERS, DIVERSIONS, SURFACE ROUGHENING) | BEGIN MAJOR CLEARING AND GRADING AFTER INSTALLING THE KEY SEDIMENT AND RUNOFF MEASURES. CLEAR BORROW AND DISPOSAL AREAS AS NEEDED. INSTALL ADDITIONAL CONTROL MEASURES AS GRADING PROGRESSES. |
| SURFACE STABILIZATION (TEMPORARY AND PERMANENT SEEDING, MULCHING, SODDING, RIPRAP) | APPLY TEMPORARY OR PERMANENT STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS WHERE WORK IS DELAYED OR COMPLETED. |
| BUILDING CONSTRUCTION (BUILDINGS, UTILITIES, PAVING) | INSTALL NECESSARY EROSION AND SEDIMENT CONTROL PRACTICES AS WORK TAKES PLACE. |
| LANDSCAPING & FINAL STABILIZATION (TOP SOILING, TREES AND SHRUBS, PERMANENT SEEDING, MULCHING, SODDING, RIPRAP) | STABILIZE ALL OPEN AREAS, INCLUDING BORROW AND SPOIL AREAS. REMOVE TEMPORARY CONTROL MEASURES AND STABILIZE. |

## RESPONSIBLE PARTY FOR EROSION CONTROL

COMPANY: LIONS TRAN INC.
NAME: MALHI KULWINDER
ADDRESS: 7655 E. US HWY 36
AVON, INDIANA 46123
PHONE: 317-989-1580

## EROSION CONTROL NOTES:

SOIL EROSION CONTROL SUMMARY:

1. CONTRACTOR SHALL INSTALL SODDING, INLET PROTECTION, AND FILTERS AS SHOWN.

2. MASS GRADE THE SITE (SIDES OF SWALES, MOUNDS AND PONDS TO BE SODDED OR SEEDED AND MULCHED IMMEDIATELY UPON COMPLETION). TEMPORARY SEEDING SHALL BE RECOMMENDED FOR ALL SWALES AND DISTURBED AREAS THAT CANNOT BE FINAL SEEDED WITHIN A TIME PERIOD THAT WILL PREVENT SOIL EROSION. FOR TEMPORARY SEEDING THE CONTRACTOR SHALL UTILIZE A FAST GROWING SEED OF EITHER OATS, ANNUAL RYE GRASS, WHEAT OR RYE DEPENDING UPON TIME OF YEAR. DISTURBED AREAS SHOULD BE KEPT TO A MINIMUM AT ALL TIMES.

3. CONTRACTOR SHALL CONTROL MUD ACCUMULATION ON ALL STREETS SURROUNDING THE PROJECT BY INSTALLING STONE SURFACE AT ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC LEAVES THE SITE. DUST SHALL BE KEPT TO A MINIMUM BY UTILIZING SPRINKLING, CALCIUM CHLORIDE, VEGETATIVE COVER, SPRAY ON ADDITIVES OR OTHER APPROVED METHODS.

4. MAINTAIN ALL FILTERS DURING CONSTRUCTION TO PREVENT ANY BLOCKAGES FROM ACCUMULATED SEDIMENT. ADDITIONAL SEEDING MAY BE REQUIRED DURING CONSTRUCTION AS SPECIFIED BY ENGINEER OR SOIL CONSERVATION SERVICE. RIPRAP SHALL BE PLACED IN AREAS OF HIGH VELOCITY STREAM FLOW (MINIMUM SIZE 1/3 CU.FT.). PAYMENT FOR ADDITIONAL RIPRAP NOT SHOWN ON PLANS AND SEEDING SHALL BE ON A UNIT BASIS.

5. CONTRACTOR SHALL INSTALL ALL STORM SEWER INLET FILTERS AS STORM SEWER SYSTEM IS INSTALLED.

6. ALL PROPOSED STREET AREAS TO BE PAVED AS SOON AS POSSIBLE AFTER SUBGRADE IS PREPARED.

7. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROLS ONLY WHEN THERE IS SUFFICIENT GROWTH OF GROUND COVER TO PREVENT FURTHER EROSION.

8. ALL SWALES SHALL BE SEEDED AND SODDED (AS INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN) IMMEDIATELY AFTER FINAL GRADING.

9. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE INDIANA HANDBOOK FOR EROSION CONTROL IN DEVELOPING AREAS, MOST RECENT EDITION.

MAINTENANCE:

INSPECT PERIODICALLY, ESPECIALLY AFTER STORM EVENTS, UNTIL THE STAND IS SUCCESSFULLY ESTABLISHED. (CHARACTERISTICS OF A SUCCESSFUL STAND INCLUDE: VIGOROUS DARK GREEN OR BLUISH-GREEN SEEDLINGS; UNIFORM DENSITY WITH NURSE PLANTS, LEGUMES, AND GRASSES WELL INTER-MIXED; GREEN LEAVES; AND THE PERENNIALS REMAINING GREEN THROUGHOUT THE SUMMER, AT LEAST AT THE PLANT BASE.)

PLAN TO ADD FERTILIZER THE FOLLOWING GROWING SEASON ACCORDING TO SOIL TEST RECOMMENDATIONS.

REPAIR DAMAGED, BARE, OR SPARSE AREAS BY FILLING ANY GULLIES, RE-FERTILINZING, OVER- OR RE-SEEDING, AND MULCHING.

IF PLANT COVER IS SPARSE OR PATCHY, REVIEW THE PLANT MATERIALS CHOSEN, SOIL FERTILITY, MOISTURE CONDITION, AND MULCHING AFTER RE-PREPARING THE SEEDBED.

IF VEGETATION FAILS TO GROW, CONSIDER SOIL TESTING TO DETERMINE ACIDITY OR NUTRIENT DEFICIENCY PROBLEMS. (CONTACT YOUR SWCD OR COOPERATIVE EXTENSION OFFICE FOR ASSISTANCE.)

IF ADDITIONAL FERTILIZATION IS NEEDED TO GET A SATISFACTORY STAND, DO SO ACCORDING TO SOIL TEST RECOMMENDATIONS.

EROSION CONTROL NOTES:

PRIOR TO ANY WORK BEING DONE, A TEMPORARY CONSTRUCTION ENTRANCE AND SILT FENCING SHALL BE INSTALLED.

AFTER COMPLETION OF A STORM STRUCTURE, THE CURB INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY.

UPON COMPLETION OF SWALES AND SIDE SLOPES, CONTRACTOR SHALL INSTALL THE EROSION CONTROL BLANKETS.

ALL AREAS NOT DENOTING PERMANENT SEEDING OR FIBER BLANKETS SHALL BE TEMPORARILY SEEDED.

THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR KEEPING THE EXISTING ROADWAYS CLEAR OF DIRT AND DEBRIS.

ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY INSPECTOR AS CONDITIONS WARRANT.

EROSION PROTECTION DURING CONSTRUCTION AND SEEDING:

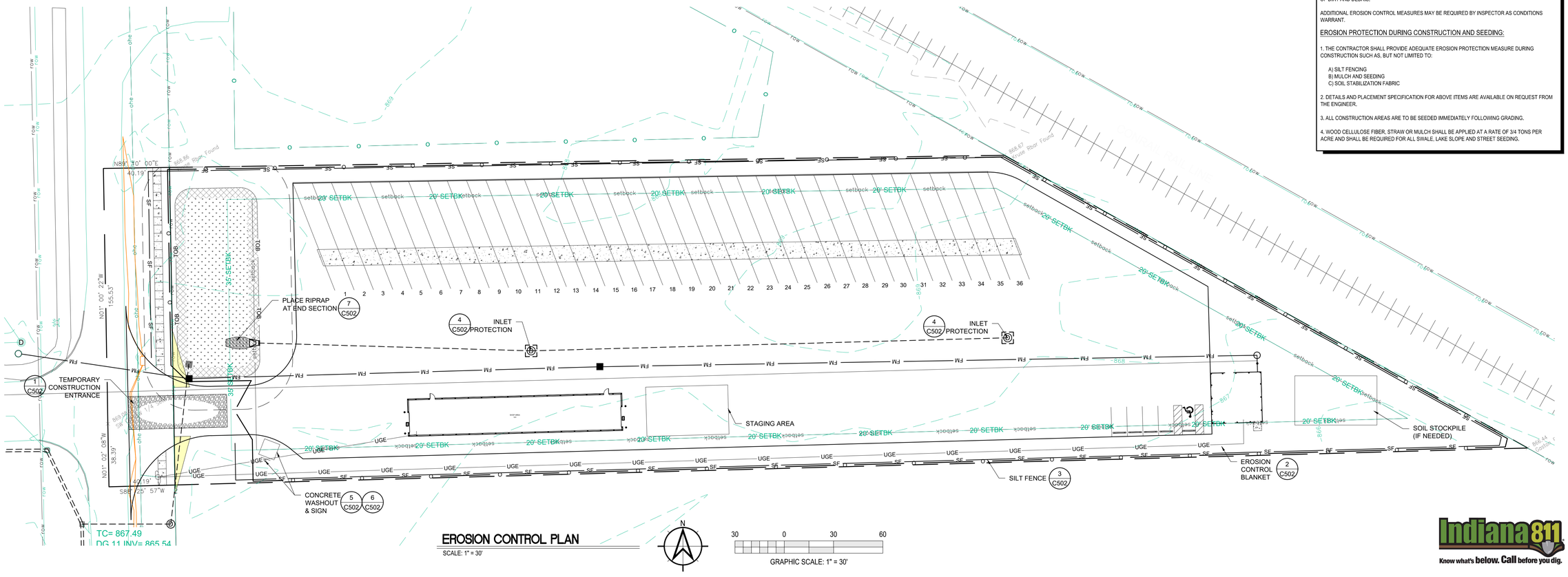
1. THE CONTRACTOR SHALL PROVIDE ADEQUATE EROSION PROTECTION MEASURE DURING CONSTRUCTION SUCH AS, BUT NOT LIMITED TO:

A) SILT FENCING
B) MULCH AND SEEDING
C) SOIL STABILIZATION FABRIC

2. DETAILS AND PLACEMENT SPECIFICATION FOR ABOVE ITEMS ARE AVAILABLE ON REQUEST FROM THE ENGINEER.

3. ALL CONSTRUCTION AREAS ARE TO BE SEEDED IMMEDIATELY FOLLOWING GRADING.

4. WOOD CELLULOSE FIBER, STRAW OR MULCH SHALL BE APPLIED AT A RATE OF 3/4 TONS PER ACRE AND SHALL BE REQUIRED FOR ALL SWALE, LAKE SLOPE AND STREET SEEDING.




## EROSION CONTROL PLAN

SCALE: 1" = 30'

GRAPHIC SCALE: 1" = 30'

30 0 30 60

Indiana 811 Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

EROSION CONTROL PLAN

BRYAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C302 |

## Construction Storm Water General Permit Index Sheet

| SECTION | TITLE | SHEET |
|---|---|---|
| A1 | Index of the location of required plan elements in the construction plan | C000 |
| A2 | A vicinity map depicting the project site location in relationship to recognizable local landmarks, towns, and major roads | C000 |
| A3 | Narrative of the nature and purpose of the project | C303 |
| A4 | Latitude and longitude to the nearest fifteen (15) seconds | C000 |
| A5 | Legal description of the project site | C201 |
| A6 | 11x17-inch plat showing building lot numbers/ boundaries and road layout/names | C303 |
| A7 | Boundaries of the one hundred (100) year flood plains, floodway fringes, and floodways | C301 |
| A8 | Land use of all adjacent properties | C303 |
| A9 | Identification of a U.S. EPA approved or established TMDL | C303 |
| A10 | Name(s) of the receiving water(s). | C303 |
| A11 | Identification of discharges to a water on the current 303(d) list of impaired waters and the pollutant(s) for which it is impaired | C303 |
| A12 | Soils map of the predominate soil types | C301 |
| A13 | Identification and location of all known wetlands, lakes, and water courses on or adjacent to the project site (construction plan, existing site layout) | C303 |
| A14 | Identification of any other state or federal water quality permits or authorizations that are required for construction activities | C303 |
| A15 | Identification and delineation of existing cover, including natural buffers | C301 |
| A16 | Existing site topography at an interval appropriate to indicate drainage patterns | C301 |
| A17 | Location(s) where run-off enters the project site | C301 |
| A18 | Location(s) where run-off discharges from the project site prior to land disturbance | C301 |
| A19 | Location of all existing structures on the project site | N/A |
| A20 | Existing permanent retention or detention facilities, including manmade wetlands, designed for the purpose of storm water management | N/A |
| A21 | Locations where storm water may be directly discharged into ground water, such as abandoned wells, sinkholes, or karst features | C303 |
| A22 | Size of the project area expressed in acres | C000 |
| A23 | Total expected land disturbance expressed in acres | C000 |
| A24 | Proposed final topography | C301 |
| A25 | Locations and approximate boundaries of all disturbed areas | C201 |
| A26 | Locations, size, and dimensions of all storm water drainage system such as culverts, storm water sewer, and conveyance channels | C301 |
| A27 | Locations of specific points where storm water and non-storm water discharges will leave the project site | C301 |
| A28 | Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, and common areas | C201 |
| A29 | Location of all on-site and off-site soil stockpiles and borrow areas | C302 |
| A30 | Construction support activities that are expected to be part of the project | N/A |
| A31 | Location of any in-stream activities that are planned for the project including, but not limited to, stream crossings and pump arounds | N/A |
| B1 | Description of the potential pollutant generating sources and pollutants, including all potential non-storm water discharges | C303 |
| B2 | Stable construction entrance locations and specifications | C302 |
| B3 | Specifications for temporary and permanent stabilization | C302 |
| B4 | Sediment control measures for concentrated flow areas | C301 |
| B5 | Sediment control measures for sheet flow areas | C302 |
| B6 | Run off control measures | C302 |
| B7 | Storm water outlet protection location and specifications | C302/501 |
| B8 | Grade stabilization structure locations and specifications | N/A |
| B9 | De-watering applications and management methods | C303 |
| B10 | Measures utilized for work within water bodies | N/A |
| B11 | Maintenance guidelines for each proposed storm water quality measure | C303 |
| B12 | Planned construction sequence that describes the implementation of storm water quality measures in relation to land disturbance | C303 |
| B13 | Provisions for erosion and sediment control on individual residential building lots regulated under the proposed project | N/A |
| B14 | Material handling and spill prevention and spill response plan meeting the requirements in 327 IAC 2-6.1 | C303 |
| B15 | Material handling and storage procedures associated with construction activity | C303 |
| C1 | Description of pollutants and their sources associated with the proposed land use | C303 |
| C2 | Description of proposed post-construction storm water measures | C303 |
| C3 | Plan details for each storm water measures | C301/501 |
| C4 | Sequence describing storm water measure implementation | C303 |
| C5 | Maintenance guidelines for proposed post-construction storm water measures | C303 |
| C6 | Entity that will be responsible for operation and maintenance of the post-construction storm water measures | C302 |

NOTES:
"NA" - NON APPLICABLE

## Construction Storm Water General Permit Notes Section A

**A1 - Index of the location of required plan elements in the construction plan:**

An index addressing the required elements within the drawing set is on C000 - Cover Sheet.

**A2 - A vicinity map depicting the project site location in relationship to recognizable local landmarks, towns, and major roads:**

A map showing the project in relationship to other areas of the county is on C000 - Cover Sheet.

**A3 - Narrative of the nature and purpose of the project:**

The project consists of the development of a new heavy duty asphalt parking lot with 36 truck and trailer stalls, a 2860 sq. ft. maintenance building, and 900 sq. ft. office building w/ employee parking. The site is located at 4005 North County Road 1000E in Brownsburg, Indiana 46112. Associated with the new improvements will be storm water management system consisting of overland flow, storm inlets, and retention/percolation basin with outlet control. (Shown on C303 - Construction Storm Water General Permit Notes).

**A4 - Latitude and Longitude:**

The latitude is 39°49'21"N and longitude is 86°20'42.19"W. (Shown on C000 - Cover Sheet)

**A5 - Legal description of the project site:**

A legal description of the overall parcel is on C201 - Site Plan

**A6 - 11 x 17-inch plat showing building lot numbers/boundaries and road layout/names:**

An 11x17 in. plan showing the overall property and new improvements is attached to this narrative.

**A7 - Boundaries of the one hundred (100) year floodplains, floodway fringes, and floodways:**

The 100 year floodway and floodway fringe is on C301 - Grading Plan and is based on best available information from the Indiana Department of Natural Resources.

**A8 - Land use of all adjacent properties:**

North - Commercial
South - Undeveloped/Woods
East - Railroad/Commercial
West - Residential/Agricultural
(Shown on C303 - Stormwater Pollution Prevention Plan)

**A9 - Identification of a U.S. EPA approved or established TMDL:**

Site to discharge stormwater into ground via percolation basin or through evaporation. Any dicharge via the emergency spillway will likely evaporate/percolate prior to being received by White Lick Creek (INW01D2_05) which is EPA 303d listed, but has no established TMDL (Shown on C304 - Construction Storm Water General Permit Notes)

**A10 - Name(s) of the receiving water(s):**

Receiving water is White Lick Creek (INW01D2_05) - (Shown on C303 - Stormwater Pollution Prevention Plan)

**A11 - Identification of discharges to a water on the current 303(d) list of impaired waters and the pollutant(s) for which is it impaired:**

The impaired condition of White Lick Creek is due to presence of Escherichia Coli (E. coli)
(Noted on C304 - Construction Storm Water General Permit Notes)

**A12 - Soils map of the predominate soil types:**

The soils on this property are predominantly Brookston Silty Clay Loam-Urban Land Complex and Crosby Silt Loam.
Brookston Silty Clay Loam features wetness as the main limitation affecting use and management of this soil type. Crosby Silt Loam features slow permeability and available water capacity is high with moderate content of organic matter.

Both soils are fair to poor for use as subgrade material as well as shear strength, compaction, and stability, medium to high compressibility, moderate to low shrink-swell potential, subject to frost heave, and seasonal high water table. A soils map is on C301 - Grading Plan.

**A13 - Identification and location of all known wetlands, lakes, and water courses on or adjacent to the project site (construction plan, existing site layout)**

There are no known water courses on or adjacent to this site.

**A14 - Identification on any other state or federal water quality permits or authorizations that are required for construction activities:**

This phase of the project scope will not require any additional federal or state water permits as noted on C304 - Construction Storm Water General Permit Notes.

## Construction Storm Water General Permit Notes Section A (cont'd)

**A15 - Identification and delineation of existing cover, including natural buffers:**

The site is almost entirely covered with thick/heavy vegetation and trees with partial remnants of an existing gravel drive. The delineation of the various surface coverage is on C301 - Grading Plan.

**A16 - Existing site topography at interval appropriate to indicate drainage patterns:**

The existing site topography is largely flat with minor relief at the southeast of the site. The existing and proposed contours are on C301 - Grading Plan.

**A17 - Location(s) where run-off enters the project site:**

As referenced above, the topography in this area is largely flat resulting in little to no potential for run-off entering the site from adjacent property. The existing contours are on C301 - Grading Plan.

**A18 - Location(s) where run-off discharges from the project site prior to land disturbances:**

The existing site topography is largely flat with minor relief at the southeast of the site. The existing contours are on C301 - Grading Plan.

**A19 - Location(s) of all existing structures on the project site:**

The existing site is a vacant lot with no existing structures as depicted on C301 - Grading Plan.

**A20 - Existing permanent retention or detention facilities, including manmade wetlands, designed for the purpose of stormwater management:**

There are no existing retention facilities on site as depicted on C301 - Grading Plan.

**A21 - Locations where storm water may be directly discharged into ground water, such as abandoned wells, sinkholes, or karst features:**

There are no locations on property where storm water may directly discharge into the groundwater as illustrated on C301 - Grading Plan.

**A22 - Size of the project expressed in acres:**

The total project are if 3.07 acres as noted on C000 - Cover Sheet.

**A23 - Total expected land disturbance expressed in acres:**

The total disturbed area is 2.60 acres as noted on C000 - Cover Sheet.

**A24 - Proposed final topography:**

The final topography is on C301 - Grading Plan and is illustrated as spot elevations and contours.

**A25 - Locations and approximate boundaries of all disturbed areas:**

The total disturbed area is 2.60 acres as noted on C000 - Cover Sheet and shown as the Limits of Construction on C201 - Site Plan.

**A26 - Locations, size and dimensions of all stormwater drainage systems such as culverts, stormwater sewer, and conveyance channels:**

The stormwater is conveyed by overland flow, underground storm pipes, and retention pond. These are shown on C301 - Grading Plan.

**A27 - Locations of specific points where stormwater and non-stormwater discharges will leave the project site:**

Stormwater discharge from the site will be via an emergency spillway from the retention pond at the east end of the site and sanitary discharge will be via a pump and force main at the west end of the site.(Shown on C301 - Grading Plan & C402 Sanitary Force Main Plan & Profile.

**A28 - Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, and common areas:**

All the surface improvements including buildings, impervious areas, new surface finishes, etc. are on C201 - Site Plan for horizontal notations and C301 - Grading Plan for elevations.

**A29- Location of all on-site and off-site soil stockpiles and borrow areas:**

The soil storage area will be on site located at the east end of the site (west of the pond). All soil will be placed in the final location or hauled off upon completion of construction as shown on C302 - Erosion Control Plan.

**A30- Construction support activities that are expected to be part of the project**

Any construction support area will be within the limits of disturbance and used as directed by the contractor. Since they are within the limits of disturbance, there will be no impact sensitive areas.

**A31- Location of any on-stream activities that are planned for the project including, but not limited to, stream crossings and pump arounds:**

There are no in stream activities associated with this project.

## Construction Storm Water General Permit Notes Section B

**B1- Description of the potential pollutant generating sources and pollutants, including all potential non-storm water discharges:**

1. Concrete Washout Area: Specific concrete washout area shall be established and labeled.
   a) The specific concrete wash out will be in a provided lined roll off box at a specific location near the entrance to the job site.
   b) The lined roll off box will be placed on stable soil with a stone approach.
   c) Once the lined roll off box is full, it will be removed from the site and discarded as clean fill once solid. A new lined roll off box will replace the one removed.
2. Construction Mobile Equipment Fluid
   a) All fueling of equipment will be managed and completed on a stone surface.
   b) Daily observation of all equipment for inspection of leaks or potential leaks of any fluids.
   c) Any observed fluid leaks are to be handled immediately with the equipment being moved to a stable stone surface and placed out of operation until maintenance is completed.
   d) Spill kits are to be utilized once the equipment is moved to the stable stone surface to prevent leakage from penetrating the ground or impacting storm water runoff.
3. Construction Material Waste
   a) All material waste is to be placed in provided roll off boxes as it is generated.
   b) Full roll off boxes are to be removed and properly disposed of in a licensed facility.
   c) No debris is to be stored on the ground surface at any time.
   These items are noted on C303 - Stormwater Pollution Prevention Plan.

**B2- Stable construction entrance locations and specifications:**

A stable construction entrance consisting of compacted subgrade, filter fabric and #2 stone is to be used for all construction traffic entering / exiting the site. The stone surface is to be maintained with new stone as necessary to maintain a solid drive surface. The location of the temporary construction entrance is shown on C302 for plan view and Sheet C502 for detail.

**B3- Specifications for temporary and permanent stabilization:**

The provisions for temporary stabilization during construction as well as permanent stabilization are included in the drawing set. The information contains specific stabilization techniques for the conditions of the site as well as timing of installation.

For temporary construction stabilization, it is the Contractor responsibility to maintain the stabilization during the construction duration and until permanent stabilization is installed.

For permanent stabilization, it is expected installation to occur immediately after final grading of the soil surface. Permanent stabilization is to be maintained by the Owner until 75% effective cover is established on the soil surface.
The stabilization is noted on C302 - Erosion Control Plan.

**B4- Sediment control measures for concentrated flow areas:**

The concentrated flow is protected at the pond inlet with riprap of minimum size being 6 inches and at the emergency spillway with stone dam as shown on C301 - Grading Plan and details on C501 & C502 - Sections and Details.

**B5- Sediment control measures for sheet flow areas:**

Sediment control for sheet flow is handled at the project perimeter with silt fence. (Shown on C302 - Erosion Control Plan).

**B6- Run-off control measures:**

Sediment control for sheet flow is handled at the project perimeter with silt fence. (Shown on C302 - Erosion Control Plan).

**B7- Stormwater outlet protection location and specifications:**

The concentrated flow is protected at the pond outlet with the previously mentioned rock dam as shown on C302 - Erosion Control Plan.

**B8- Grade stabilization structure locations and specifications:**

The grade on the site is largely flat and remain so post construction. There are no stabilization structures planned for this project as illustrated on C301 - Grading Plan.

**B9- Dewatering applications and management methods:**

Any dewatering required will be directed to the low area of the site (east) where it can percolate into existing soil. (Noted C303 - Stormwater Pollution Prevention Plan)

**B10- Measures utilized for work within waterbodies:**

This is not applicable to this project. (Noted C303 - Stormwater Pollution Prevention Plan)

**B11- Maintenance guidelines for each proposed stormwater quality measure:**

The stormwater quality is by a bioretention pond that is to be cleaned of trash, mowed, trimmed and monitored regularly to maintain proper function of the pond. (C301 - Grading Plan)

**B12- Planned construction sequence that describes the implementation of stormwater quality measures in relation to land disturbance:**

The construction sequence for installation of the erosion control measures and stormwater pollution prevention devices are detailed on C302 - Erosion Control Plan.

**B13- Provisions for erosion and sediment control on individual residential building lots regulated under the proposed project:**

Not applicable to this project. (Noted C303 - Stormwater Pollution Prevention Plan)

**B14- Material handling and spill prevention and spill response plan meeting the requirements in 327 IAC 2-6.1:**

The potential materials on site that could cause a spill response include fuels, petroleum fluids or other liquids as part of the construction equipment on site. If a spill occurs, immediate determination of the extent and emergency response requirements should be determined. Immediate containment of the spill with onsite spill kits should be completed. Once the spill is contained, contact is to be made to the Indiana Dept. of Environmental Mgmt., Office of Land Quality, Emergency Response Section: 1-888-233-7745 for in-state calls (toll free) within two hours of the spill. The contact should include the likelihood of damage to the waterways of the State of Indiana. This information is noted on C303 - Stormwater Pollution Prevention Plan.

**B15- Material handling and storage procedures associated with construction activity:**

All construction debris and wastes are to be loaded directly into provided roll off boxes for proper disposal off site. In no terms is debris or waste to be stored on site awaiting disposal or burned on property. Liquid wastes such as concrete wash out is to be disposed in the appropriate concrete wash out lined roll off boxes as provided. This includes any mortar/masonry/concrete grout material. Once these containers are full, they are to be removed from the site and disposed of in a licensed facility. Roll off boxes are to be rotated empty for full boxes for the entire project duration.

## Construction Storm Water General Permit Notes Section B

**C1- Description of pollutants and their sources associated with the proposed land use:**

The post construction land use will have potential contaminants such as fuels, oils, grease, tires and other mobile equipment fluids. All materials, including mobile equipment will be stored on impervious surfaces during non-use or operation. (Noted on C303 - Stormwater Pollution Prevention Plan)

**C2- Description of proposed post-construction stormwater measures:**

The post construction contaminants are minimized by impervious surfaces being directed to a bioretention pond designed to collect sediment and pollutants prior to any discharge that may overtop the emergency spillway. (Noted C303 - Stormwater Pollution Prevention Plan)

**C3- Plan details for each stormwater measure:**

The post construction stormwater measures is primarily a bioretention pond as shown on C301 - Grading Plan and L101 - Landscape Plan.

**C4- Sequence describing stormwater measure implementation:**

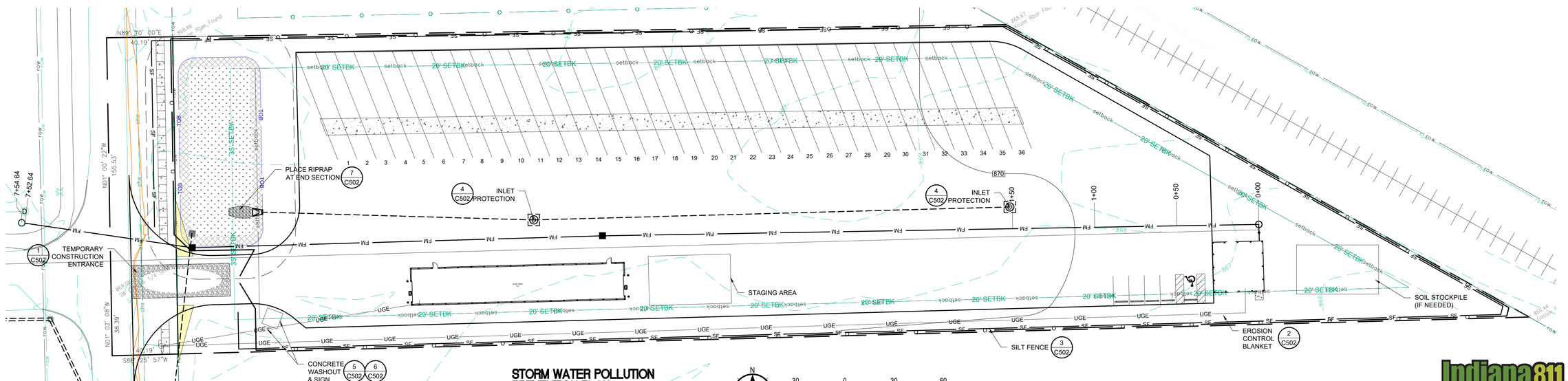
The sequence of installation for the post construction stormwater measure is part of construction sequencing shown C302 - Erosion Control Plan.

**C5- Maintenance guidelines for proposed post-construction stormwater measures:**

An operations and maintenance manual are part of the submittal information under separate documentation.

**C6- Entity that will be responsible for operation and maintenance of the post-construction stormwater measures:**

The responsible person for the post construction stormwater measures is the property owner as noted on C302 - Erosion Control Plan.




## STORM WATER POLLUTION PREVENTION PLAN

SCALE: 1" = 30'

N

30 0 30 60

GRAPHIC SCALE: 1" = 30'

Indiana 811
Know what's below. Call before you dig.


Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

STORM WATER POLLUTION PREVENTION PLAN

BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER
Brian E. Moench

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C303 |

## UTILITY CONTACT INFORMATION

| WATER COMPANY: | |
|---|---|
| NAME: | CITIZENS ENERGY |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (317) 924-3311 |
| E-MAIL: | --- |

| SANITARY SEWER COMPANY: | |
|---|---|
| NAME: | HENDRICKS CO. REGIONAL SEWER DIST. |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (317) 745-4928 |
| E-MAIL: | --- |

| ELECTRIC COMPANY: | |
|---|---|
| NAME: | DUKE ENERGY |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (317) 745-5473 |
| E-MAIL: | --- |

| GAS COMPANY: | |
|---|---|
| NAME: | VECTREN |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (800) 227-1376 |
| E-MAIL: | --- |

| TELEPHONE COMPANY: | |
|---|---|
| NAME: | AT&T |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (317) 272-6450 |
| E-MAIL: | --- |

## UTILITY NOTES:

SANITARY GENERAL SPECIFICATIONS:

1. (A) 100 PSI FLOWABLE FILL SHALL BE REQUIRED FOR ROAD CROSSINGS UNDER EXISTING PAVEMENT AND WITHIN FIVE (5) FEET OF THE PAVEMENT EDGE. STREET CUT REPAIRS SHALL USE 100 PSI FLOWABLE FILL TO WITHIN 6" OF PAVEMENT SURFACE. INSTALL 5" OF 4000 PSI READY MIX CONCRETE WITHIN 1" OF PAVEMENT 2-24 HOURS AFTER FLOWABLE FILL HAS BEEN INSTALLED. INSTALL 1" OF #11 SURFACE ASPHALT LEVEL WITH EXISTING PAVEMENT WITHIN 24 HOURS ON CONCRETE INSTALLATION.

(B) FLOWABLE FILL SHALL BE A MIXTURE OF SAND, PORTLAND CEMENT AND WATER, THOROUGHLY MIXED, AND SHALL HAVE 100 PSI COMPRESSIVE STRENGTH WITHIN 3 HOURS OF PLACEMENT. FLOWABLE FILL SHALL BE PLACED FROM TOP OF #8 STONE PIPE COVER TO BOTTOM OF NEW PAVEMENT.

(C) IN LOCATIONS OF NEW DEVELOPMENT, WHERE UTILITIES ARE INSTALLED PRIOR TO ROAD CONSTRUCTION, TRENCH BACKFILL UNDER FUTURE ROAD SHALL BE ENTIRELY #8 CRUSHED STONE FROM MANHOLES.

2. ALL OSHA SAFETY STANDARDS SHALL BE STRICTLY ENFORCED FOR PROTECTION OF WORKERS.

3. NO SEWER SYSTEM CONSTRUCTION MAY BEGIN UNTIL APPROVAL FROM I.D.E.M.

4. ONE SET OF I.D.E.M. APPROVED PLANS SHALL BE ON THE JOB SITE AT ALL TIMES

POLYVINYL CHLORIDE (P.V.C.) PIPE:

1. PIPE DIAMETERS OF 10 INCHES THROUGH 15 INCHES SHALL MEET OR EXCEED ALL THE REQUIREMENTS OF ASTM D-3034, AND SHALL HAVE A MINIMUM CELL CLASSIFICATION OF 12454-C, REFERENCE SHOULD BE MADE TO ASTM D-1784 FOR A SUMMARIZATION OF CELL CLASS PROPERTIES. PIPE DIAMETERS GREATER THAN 15 INCHES SHALL MEET OR EXCEED ALL REQUIREMENTS OF ASTM F-679, AND SHALL HAVE A MINIMUM CELL CLASSIFICATION OF 12454-C, P.V.C. RIBBED SEWER PIPE SHALL MEET OR EXCEED ALL REQUIREMENTS OF ASTM F-794 AND SHALL HAVE A MINIMUM CELLL CLASSIFICATION OF 12454.

2. THE MINIMUM WALL THICKNESS FOR PIPES OF 10 INCHES THROUGH 15 INCHES IN DIAMETER SHALL CONFORM TO SDR-35, TYPE PSM, AS SPECIFIED IN ASTM D-3034. THE MINIMUM WALL THICKNESS FOR PIPE DIAMETERS GREATER THAN 15 INCHES SHALL CONFORM TO T-1 AS SPECIFIED IN ASTM F-679. P.V.C. PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 46 POUNDS PER SQUARE INCH FOR EACH DIAMETER WHEN MEASURED AT FIVE PERCENT DEFLECTION AND TESTED IN ACCORDANCE WITH ASTM D-2412.

3. PIPE JOINTS SHALL HAVE A BELL WALL, GASKET GROOVE AND SPIGOT WHICH IS INTERGRAL WITH THE PIPE. THE ASSEMBLY OF JOINTS SHALL BE IN ACCORDANCE WITH THE PIPE MANUFACTURERS' RECOMMENDATIONS AND ASTM D-3212. NO SOLVENT CEMENT JOINTS SHALL BE ALLOWED. GASKET MATERIAL SHALL BE CONSTRUCTED OF STYRENE BUTADIENE OR BUTYL RUBBER AND MEET THE REQUIREMENTS OF ASTM F-477.

4. EACH PIPE SECTION SHALL BE MARKED WITH THE NAME OF THE MANUFACTURER, TRADEMARK OR TRADEMANE, NOMINAL PIPE SIZE, PRODUCTION / EXTRUSION CODE, MATERIAL AND CELL CLASS DESIGNATION AND ASTM NUMBER.

5. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM RECOMMENDED PRACTICE D-2321.

SANITARY SEWER NOTES:

1. 10 STATES STANDARDS AND INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT REQUIREMENTS SHALL BE MET OR EXCEEDED FOR ALL DESIGN, MATERIALS AND CONSTRUCTION METHODS.

2. SANITARY SEWER MANHOLES SHALL BE MONOLITHIC PRECAST SECTIONS, INCLUDING THE BOTTOM SECTION. ALL SECTIONS SHALL BE PRECAST CONCRETE IN ACCORDANCE WITH ASTM C-478. ALL MANHOLE INLET CONNECTIONS SHALL BE LOCK JOINT FLEXIBLE SLEEVES CONFORMING TO ASTM C-923. ONLY PRECAST CONCRETE RINGS SHALL BE ALLOWED FOR CASTING RISERS. ALL MANHOLES, GRADE RINGS AND CASTING SHALL BE SEALED TO PREVENT INFILTRATION.

3. MANHOLE INVERTS SHALL BE SHAPED FOR FLOW CHANNELS WITH CONCRETE AND SMOOTHLY FINISHED BY A SEMI CIRCULAR SECTION CONFORMING TO THE INSIDE DIAMETER OF THE CONNECTING SEWERS. NO BRICK, ROCK OR SAND FILLERS WILL BE ALLOWED.

4. ALL MANHOLE COVERS SHALL BE TRAFFIC BEARING, NON-ROCKING DESIGN WITH NON-PENETRATING PICK HOLES.

5. SANITARY SEWERS SHALL BE POLYVINYL CHLORIDE (PVC) SDR 35 MEETING ASTM D3034 SPECIFICATIONS. ALL SEWER MAINS SHALL HAVE A MINIMUM DIAMETER OF 8", ALL PIPE SPECIFIED SHALL SUPPORT ANTICIPATED LOADS.

6. ALL JOINTS SHALL BE PUSH-ON TYPE (SLIP SEAL) OR SOLVENT WELD.

7. BEDDING FOR PVC PIPE SHALL CONFORM TO BEDDING CLASSES I, II OF III, AS DESCRIBED IN ASTM D2321, FLEXIBLE SEWER PIPE INSTALLATION REQUIREMENTS.

## UTILITY NOTES (cont'd):

8. ALL SEWER PIPE SHALL BE LAID USING PIPE LASER EQUIPMENT FOR BOTH VERTICAL AND HORIZONTAL ALIGNMENT.

9. MINIMUM ALLOWABLE COVER SHALL BE 5'-0" OVER TOP OF PIPE.

10. ALL SEWER MAINS SHALL BE DEFLECTION TESTED WITH AN 11 POINT, 5% MANDREL AFTER COMPACTED AGGREGATE IS IN PLACE FOR ALL STREETS. FLEXIBLE PIPE WILL BE TESTED AFTER BACKFILL HAS BEEN IN PLACE FOR AT LEAST 30 DAYS. ALL PVC PIPE FAILING THE MANDREL TEST SHALL BE REROUNDED IN PLACE OR AN ALTERNATE METHOD APPROVED BY THE GOVERNING JURISDICTION IF REPAIR REQUIRED, SEWER SHALL BE RETESTED 30 DAYS AFTER REPAIR IS COMPLETE.

11. ALL SEWER MAINS SHALL BE LAMPED AT THE TIME THE MANDREL TEST IS CONDUCTED. ALL MAINS SHALL BE TRUE TO ALIGNMENT AND GRADE.

12. ALL SEWER MAINS AND LATERAL CONNECTIONS SHALL BE AIR TESTED IN ACCORDANCE WITH UNI-BELL UNI-B-6-85. MINIMUM TIME FOR THE AIR TEST SHALL BE FOR A 1.0 PSIG PRESSURE DROP. ALL SECTIONS FAILING AIR TEST SHALL BE REPAIRED AND RETESTED.

13. ALL SERVICE WYE BRANCHES SHALL BE INSTALLED AT THE TIME OF THE SEWER MAIN INSTALLATION. NO DIRECT TAPS WILL BE ALLOWED ON NEW MAIN CONSTRUCTION. NO VERTICAL CONNECTIONS WILL BE ALLOWED.

14. A SEPARATE (6" MINIMUM) SERVICE SHALL BE PROVIDED FOR EACH UNIT SERVED APPROXIMATELY SIX (6) FEET TO THE RIGHT OF THE LOT CENTERLINE. NO WYE'S SHALL BE ALLOWED, INCLUDING CONDOMINIUMS.

15. THE MAXIMUM ALLOWABLE VERTICAL DISTANCE BETWEEN ANY INFLUENT LINE AND THE EFFLUENT MAIN SHALL BE 6' FOR TYPE 'A' AND 'C' MANHOLES. ANY DISTANCE GREATER THAN 6" SHALL REQUIRE A TYPE 'B' MANHOLE.

16. WHERE A SEWER EXTENSION OR IMPROVEMENT CONNECTS TO A EXISTING SEWER OR MANHOLE, IT MUST BE LOCATED IN A STREET, ROAD OR HIGHWAY R/W AND NOT LOCATED IN SUCH A MANNER WHERE IT WILL CUT THROUGH LOTS OR DEVELOPMENTS.

17. ALL EXTENSIONS SHALL BE INSTALLED AT MINIMUM GRADES.

CONCRETE MANHOLE NOTES:

1. ALL MANHOLES SHALL BE NEGATIVE AIRE PRESSURE (VACUUM) TESTED AS PER ASTM C1244-93 STANDARD METHOD.

2. NO MANHOLES SHALL BE MORE THAN 14' FROM BACK OF CURB.

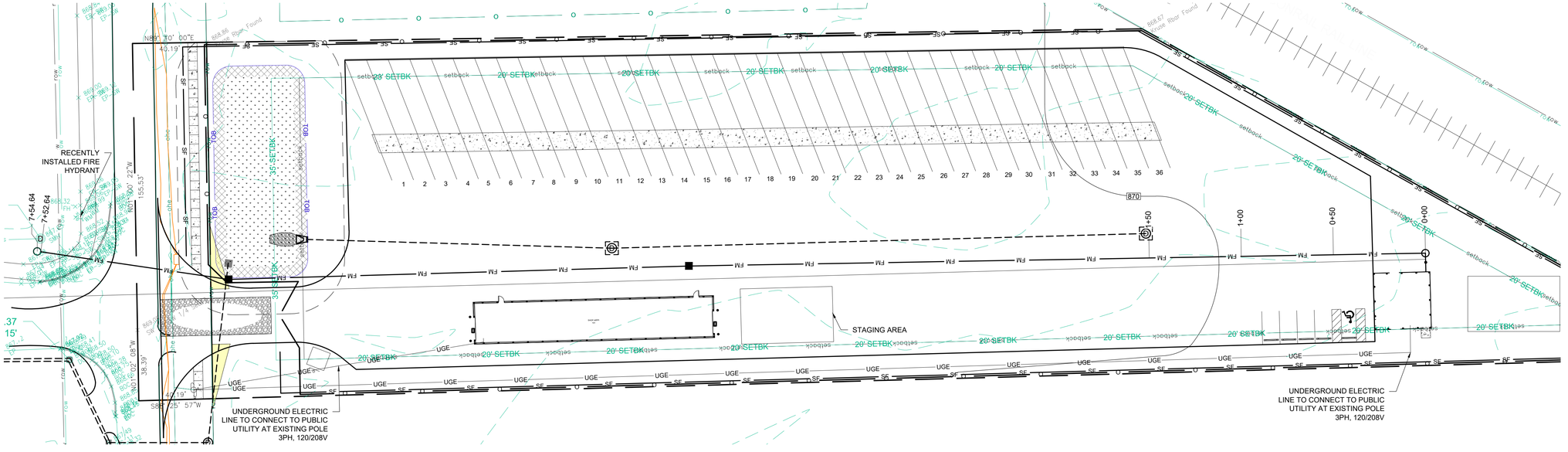
3. NO MANHOLE SHALL BE LOCATED IN ANY BACKYARD OR SIDE YARD. THEY MUST BE LOCATED IN THE FRONT YARD OR FRONT LOT THAT IS FRONTING A STREET.

4. ALL JOINTS IN MANHOLES SHALL BE SEALED TO PREVENT INFILTRATION BY USING A RUBBER 'O-RING' GASKET AND A 1/2" EXTRUDABLE PERFORMED GASKET BETWEEN ALL PRECAST SECTIONS.

5. ANNULAR SPACE AROUND SANITARY SEWER AT POINT OF ENTRANCE INTO THE MANHOLE SHALL BE GROUTED COMPLETELY AROUND SANITARY SEWER, INSIDE AND OUTSIDE TO INSURE SMOOTH TRANSITION.

6. WHEN CONNECTING A NEW SEWER INTO AN EXISTING MANHOLE, THE EXISTING MANHOLE SHALL BE BROUGHT UP TO MEET PRESENT STANDARDS.

7. SECTION JOINTS ON PRECAST CONCRETE MANHOLES SHALL BE SEALED WITH BLACK TAR MASTIC 6" ABOVE AND 6" BELOW JOINT, ON MANHOLE EXTERIOR.




## UTILITY PLAN

SCALE: 1" = 30'

N

30 0 30 60

GRAPHIC SCALE: 1" = 30'

Indiana 811
Know what's below. Call before you dig.


Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

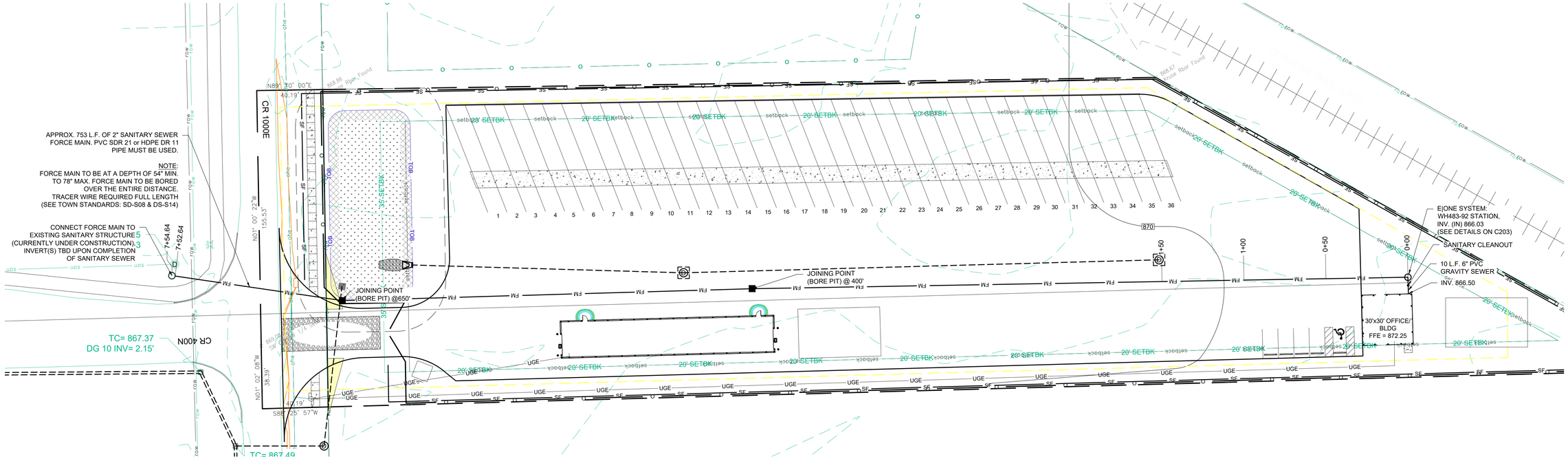
UTILITY PLAN

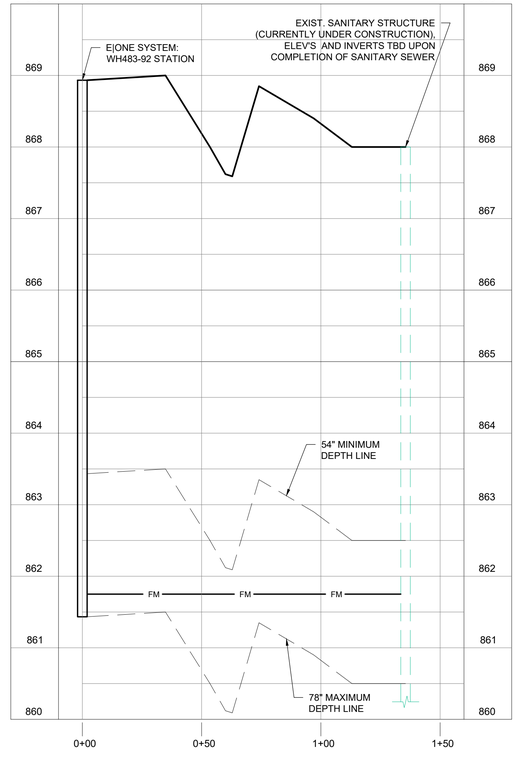
BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

Brian E. Moench

| REVISIONS: | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C401 |




**FORCE MAIN PLAN + PROFILE**

SCALE: Horz.: 1" = 30', Vert.: 1" = 10'

N

30 0 30 60

GRAPHIC SCALE: 1" = 30'

Indiana 811 Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH MOENCH ENGINEERING, P.C. NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF MOENCH ENGINEERING, P.C. ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

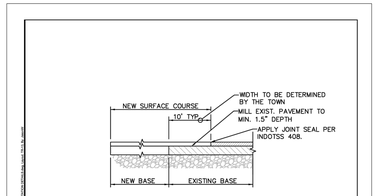
## SANITARY FORCE MAIN PLAN & PROFILE

BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C402 |




## CONNECTION TO EXISTING STREETS
NO SCALE

NOTE:

THIS DETAIL SHALL BE USED FOR CONNECTING TO THE END OF AN EXISTING STREET.

EXISTING PAVEMENT SHALL BE SAW CUT, FULL DEPTH, AT A UNIFORM LOCATION INSIDE OF THE EXISTING EDGE OF PAVEMENT, WHERE THE PAVEMENT IS IN GOOD CONDITION AND WILL PROVIDE AN INTERFACE WITH THE FULL PAVEMENT SECTION LINE AND GRADE, FREE FROM LOOSE, DAMAGED, DETERIORATED OR OTHERWISE COMPROMISED MATERIAL. A MINIMUM OF SIX (6) INCHES FROM THE EXISTING EDGE OF PAVEMENT FOR THE FULL WIDTH OF THE EXISTING PAVEMENT; LOCATION OF SAW-CUT TO BE DETERMINED BY THE TOWN OF BROWNSBURG. THE ENTIRE AREA OF THE PROPOSED INTERFACE SHALL BE EXCAVATED TO THE PROPOSED SUBGRADE ELEVATION. THE SUBGRADE SHALL BE STABILIZED IN ACCORDANCE WITH TOWN OF BROWNSBURG STANDARDS AND SPECIFICATIONS. AFTER THE SUBGRADE HAS BEEN STABILIZED AND APPROVED, EXISTING HMA PAVEMENT WILL BE SURFACE MILLED 10 FEET ALONG THE NEW SAW-CUT END OF PAVEMENT TO PROVIDE A WATER STOP AND SMOOTH TRANSITION TO THE NEW PAVEMENT WHEN THE SURFACE MIX IS APPLIED. THE NEW PAVEMENT SECTION SHALL BE INSTALLED IN ACCORDANCE WITH TOWN STANDARDS AND SPECIFICATIONS.

TOWN OF BROWNSBURG
DETAIL NO. TR-13
REVISION DATE: SEPT 2016

## HANDICAP RAMP
NOT TO SCALE

9 / C501

SECTION 02504 – ADJACENT ROADWAY IMPROVEMENTS

PART 1 - GENERAL

1.01 Roadways adjacent to proposed developments shall conform to the following requirements and standards.

A. Adjacent Roadway Improvements

1. Developers shall be responsible for improvements to the existing roadway(s) that front their property. These improvements shall include, but are not limited to, the following items:
   a. Construction of acceleration lanes, deceleration lanes, and passing blisters for each entrance or street intersection as indicated in the Standard Details.
   b. In order to construct adequate acceleration lanes, deceleration lanes, and passing blisters, right-of-way shall be obtained which has a width consistent with the most current accepted Thoroughfare Plan.
   c. The existing roadway along the development frontage shall be widened to match the width requirements based on the functional classification of the roadway as defined by the Thoroughfare Plan. Once widened, the entire roadway fronting the development shall be resurfaced for consistency.
2. Additional improvements may be required depending on field conditions and as determined by the Town of Brownsburg.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

PART 4 - FIGURES

4.01 Associated Standard Details

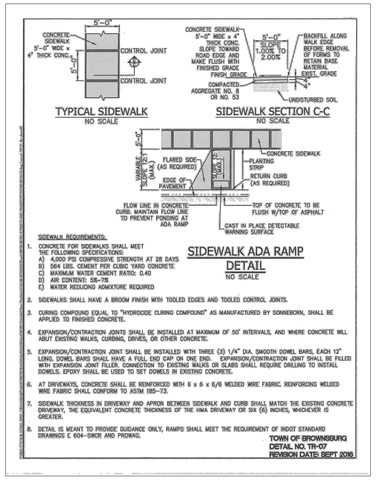
| Detail No. | Description |
|---|---|
| TR-01 | Concrete Chair Back Curb & Gutter |
| TR-02 | Concrete Roll Curb & Gutter |
| TR-03 | Driveway Curb Cut |
| TR-04 | Curb Inlet Detail |
| TR-05 | Concrete Center Curb |
| TR-09 | Concrete Driveway |
| TR-13 | Connection to Existing Streets |
| TR-14 | Widening Detail |
| TR-16 | Minimum Entrance Requirements |

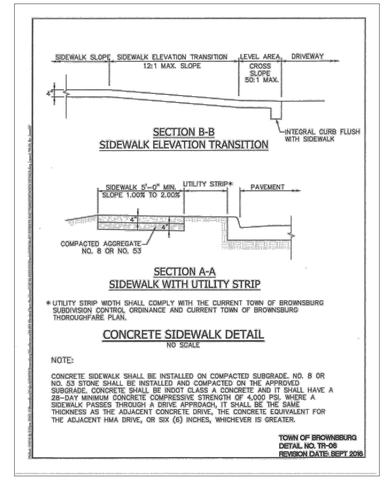


| | |
|---|---|
| TR-17 | Roadway Improvements at New Development Entrances |
| RS-01 | Typical Cross Sections – Primary Arterials A1 and A2 |
| RS-02 | Typical Cross Sections – Primary Arterials B1 and B2 |
| RS-03 | Typical Cross Sections – Primary Arterials C1 and C2 |
| RS-04 | Typical Cross Sections – Secondary Arterials 1 and 2 |
| RS-05 | Typical Cross Sections – Collectors 1 and 2 |
| RS-06 | Typical Cross Sections – Neighbor Collectors 1 and 2 |
| RS-07 | Typical Cross Sections – Local 1 (No Parking), Local 2 (Parking Both Sides) and Local 3 (Parking One Side) |
| RS-08 | Typical Trail Cross Section |
| RS-09 | Typical Cross Section – Local Street with Roadside Ditch |
| RS-10 | Typical Cross Sections – Local Alternatives |

END OF SECTION 02504

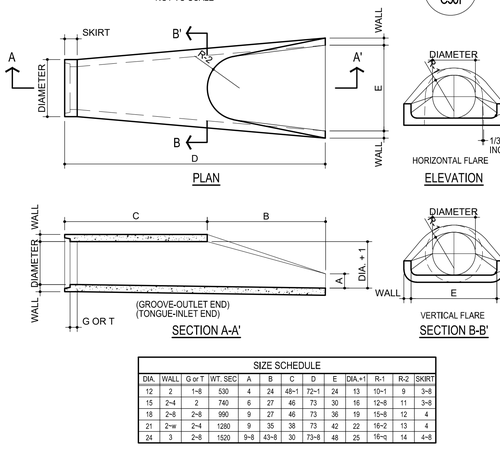





## HANDICAP RAMP
NOT TO SCALE

7 / C501

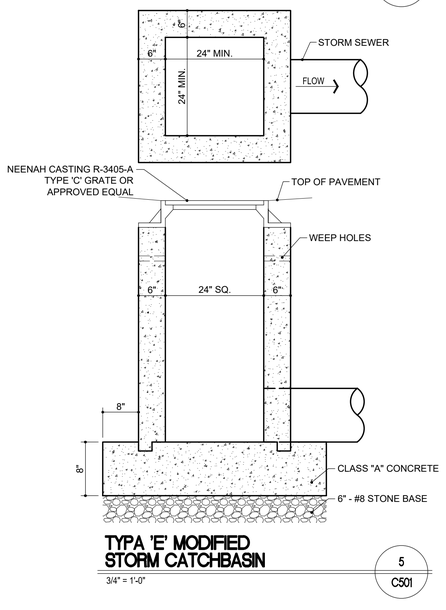



| SIZE SCHEDULE | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIA. | WALL | G or T | WT. SEC | A | B | C | D | E | DIA.+1 | R-1 | R-2 | SKIRT |
| 12 | 2 | 1~8 | 530 | 4 | 24 | 48~1 | 72~1 | 24 | 13 | 10~1 | 9 | 3~8 |
| 15 | 2~4 | 2 | 740 | 6 | 27 | 46 | 73 | 30 | 16 | 12~8 | 11 | 3~8 |
| 18 | 2~8 | 2~8 | 990 | 9 | 27 | 46 | 73 | 36 | 19 | 15~8 | 12 | 4 |
| 21 | 2~w | 2~4 | 1280 | 9 | 35 | 38 | 73 | 42 | 22 | 16~2 | 13 | 4 |
| 24 | 3 | 2~8 | 1520 | 9~8 | 43~8 | 30 | 73~8 | 48 | 25 | 16~q | 14 | 4~8 |

NOTE: MANUFACTURER OF END SECTION IS IN ACCORDANCE WITH APPLICABLE PORTIONS OF A.S.T.M. SPECIFICATION C76.

## CONCRETE END SECTION
NOT TO SCALE

6 / C501




NOTE:
ALL BEDDING AND INITIAL BACKFILL SHALL BE INSTALLED IN 6" - 12" BALANCED LIFTS.

Bc = OUTSIDE DIAMETER
D = INSIDE DIAMETER
d = DEPTH OF BEDDING MATERIAL BELOW PIPE

A MIN. 9" CLEARANCE SHALL BE PROVIDED ON EACH SIDE OF THE INSTALLED PIPE

| PIPE SIZE (D) | 27" OR LESS | 30" TO 60" | 66" AND UP |
|---|---|---|---|
| BEDDING BELOW THE PIPE BARREL 6" MINIMUM | 3" | 4" | 6" |

## R.C.P. PIPE TRENCH DETAIL
NOT TO SCALE

8 / C501

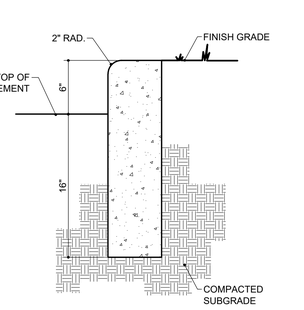



## TYPA 'E' MODIFIED STORM CATCHBASIN
3/4" = 1'-0"

5 / C501

## CONCRETE SIDEWALK
NOT TO SCALE

4 / C501




## PIPE BOLLARD
1/2" = 1'-0"

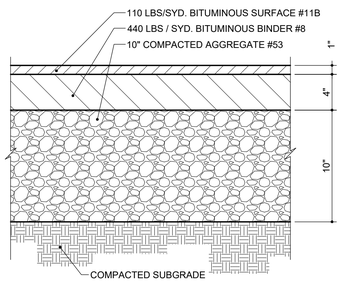
3 / C501




CURB SHALL HAVE 1/2" EXPANSION JOINTS @ 48'-0" MAX. AND @ ENDS OF RADII. CONTROL JOINTS SHALL BE PLACED @ 10'-0 MAX. UNLESS OTHERWISE NOTED.

## STRAIGHT CURB
1 1/2" = 1'-0"

2 / C501




## HEAVY DUTY ASPHALT
1 1/2" = 1'-0"

1 / C501

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

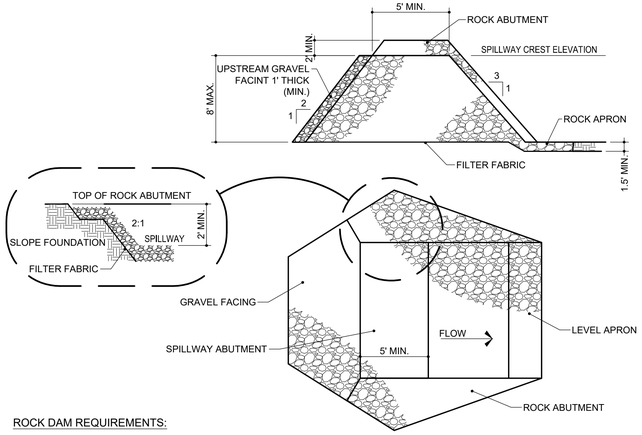
# LIONS TRANS INC. (BROWNSBURG)
4005 N CR 1000 E
BROWNSBURG, IN 46122

SECTIONS AND DETAILS

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER
Brian E. Moench

| REVISIONS: | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C501 |




## ROCK DAM REQUIREMENTS:

1. CONTRIBUTING DRAINAGE AREA: 50 ACRES MAXIMUM

2. DESIGN LIFE: LIMITED TO 3 YRS.

3. SEDIMENT STORAGE: 1,800 CU.FT./ACRE DISTURBED (MINUMUM) MEASURED 1 FT. BELOW SPILLWAY CREST.

4. BASIN SHAPE: MINIMUM 2:1 LENGTH-TO-WIDTH RATIO.

5. BASIN AREA: VARIABLE; THE LARGER THE SURFACE AREA THE GREATER THE TRAPPING EFFICIENCY.

6. DAM CREST HEIGHT: LIMITED TO 8 FT.

7. SPILLWAY CAPACITY: PEAK RUNOFF FROM A 10-YR. FREQUENCY, 24-HR. DURATION STORM EVENT, A MAXIMUM FLOW DEPTH OF 1 FT. AND MINIMUM FREEBOARD OF 1 FT. (ENTIRE LENGTH OF DAM BETWEEN ROCK ABUTMENTS MAY SERVE AS SPILLWAY.)

8. DAM DIMENSIONS: TOP WIDTH, 5 FT. MINIMUM; SIDE SLOPES, 2:1 OR FLATTER UPSTREAM, 3:1 OR FLATTER DOWNSTREAM.

9. EARTH ABUTMENTS: SMOOTH, STABLE, 2:1 OR FLATTER SLOPES.

10. ROCK ABUTMENTS (TO PROTECT EARTH ABUTMENTS): EXTENDED ALONG DOWNSTREAM FACE TO TOE OF DAM AND AT LEAST 1 FT. HIGHER THAN SPILLWAY FACE AT ALL POINTS, 2 FT. ABOVE SPILLWAY CREST, AND 1 FT. THICK, WITH 2:1 OR FLATTER SIDE SLOPES.
11. OUTLET PROTECTION: ROCK APRON, 1-1/2 FT. THICK (MINIMUM), ZERO GRADE, WITH LENGTH EQUAL TO HEIGHT OF DAM OR EXTENDED TO STABLE GRADE, WHICHEVER IS GREATER.

12. ROCK MATERIAL: INDOT REVETMENT RIPRAP.

13. PROTECTION FROM PIPING: GEOTEXTILE FABRIC FOR SEPARATION AND FILTRATION COVERING ENTIRE FOUNDATION, INCLUDING EARTH ABUTMENTS AND APRON.

14. BASIN DE-WATERING: THROUGH A 1 FT. THICK LAYER OF INDOT CA NO. 5 STONE ON UPSTREAM FACE OF THE DAM.

INSTALLATION

SITE PREPARATION:

1. DIVERT RUNOFF FROM UNDISTURBED AREAS AWAY FROM THE ROCK DAM AND BASIN AREA.

2. EXCAVATE THE FOUNDATION FOR THE APRON, USING IT AS A TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION OF THE DAM.

3. CLEAR AND GRUB THE AREA UNDER THE DAM, REMOVING AND PROPERLY DISPOSING OF ALL ROOT MAT, BRUSH, AND OTHER DEBRIS.

4. GRADE THE EARTH ABUTMENTS NO STEEPER THAN 2:1.

DAM AND BASIN CONSTRUCTION

1. EXCAVATE A CUTOFF TRENCH AT THE CENTER LINE OF THE DAM, EXTENDING ALL THE WAY UP THE EARTH ABUTMENTS, AND BACKFILL WITH COMPACTED EARTH FILL.

2. SMOOTH THE DAM FOUNDATION.

3. COVER THE ENTIRE FOUNDATION, INCLUDING BOTH EARTH ABUTMENTS, WITH GEOTEXTILE FABRIC, MAKING SURE THE UPSTREAM STRIPS OVERLAP THE DOWNSTREAM STRIPS AT LEAST 1 FT.

4. CONSTRUCT THE DAM TO PLANNED DIMENSIONS.

5. ONCE THE DAM IS IN PLACE, CLEAR THE SEDIMENT BASIN AREA, PROPERLY DISPOSING OF THE CLEARED MATERIAL.

6. SET A MARKER STAKE TO INDICATE THE CLEANOUT ELEVATION (I.E., POINT AT WHICH THE BASIN IS 50% FULL OF SEDIMENT).

7. DIVERT CONSTRUCTION SITE RUNOFF FLOW INTO THE UPPER END OF THE BASIN USING TEMPORARY DIVERSIONS.

8. STABILIZE ALL DISTURBED AREAS EXCEPT THE LOWER HALF OF THE BASIN.

SAFETY PRECAUTIONS:

1. BECAUSE SEDIMENT BASINS THAT IMPOUND WATER ARE HAZARDOUS, (A) BE SURE SIDE SLOPES ARE 2:1 OR FLATTER, (B) FENCE WITH WARNING SIGNS IF TRESPASSING IS LIKELY, (C) DE-WATER THE BASIN BETWEEN STORM EVENTS, AND (D) FOLLOW ALL STATE AND LOCAL IMPOUNDMENT SITE REQUIREMENTS.

MAINTENANCE

1. INSPECT THE ROCK DAM AND BASIN AFTER EACH STORM EVENT.

2. REMOVE SEDIMENT WHEN IT ACCUMULATES TO HALF THE DESIGN VOLUME (MARKED BY A STAKE).

3. CHECK THE DAM AND ABUTMENTS FOR EROSION, PIPING, OR ROCK DISPLACEMENT, AND REPAIR IMMEDIATELY.

4. IF THE BASIN DOES NOT DRAIN BETWEEN STORMS, REPLACE THE STONE ON THE UPSTREAM FACE OF THE DAM.

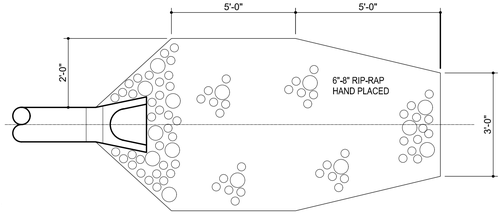
5. IF THE BASIN DRAINS TOO RAPIDLY FOLLOWING A STORM (I.E., LESS THAN 6 HRS.), ADD INDOT CA NO. 5 GRAVEL ON THE UPSTREAM FACE OF THE DAM.

6. ONCE THE CONTRIBUTING ŷŷŷŷŷŷŷŷDRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, (A) REMOVE WATER AND SEDIMENT FROM THE BASIN;

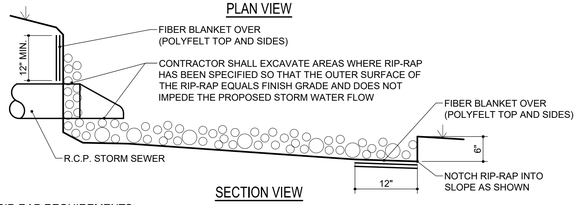
(B) REMOVE THE DAM, DISPOSING OF THE ROCK IN DESIGNATED DISPOSAL AREAS; (C) SMOOTH THE SITE TO BLEND WITH THE SURROUNDING AREA; AND (D) STABILIZE.

COMMON CONCERNS:
FAILURE FROM PIPING ALONG ABUTMENTS-BECAUSE THE FILTER MATERIAL WAS NOT PROPERLY INSTALLED OR THE EARTH ABUTMENTS ARE TOO STEEP. STONE DISPLACEMENT FROM FACE OF DAM-BECAUSE STONE SIZE IS TOO SMALL OR THE FACE IS TOO STEEP. EROSION BELOW DAM BECAUSE THE APRON WAS NOT EXTENDED TO STABLE GRADE. EROSION OF ABUTMENTS DURING SPILLWAY FLOW-BECAUSE THE ROCK ABUTMENT IS NOT HIGH ENOUGH. SEDIMENT CARRIED THROUGH SPILLWAY-BECAUSE THE DRAINAGE AREA IS TOO LARGE; TO SOLVE, DIVERT RUNOFF FROM THE UNDISTURBED AREA AWAY FROM THE BASIN. SEDIMENT LOSS THROUGH DAM-BECAUSE THE LAYER OF AGGREGATE ON THE UPSTREAM FACE IS NOT THICK ENOUGH OR IS TOO COARSE TO RESTRICT FLOW THROUGH THE DAM.

**ROCK DAM** 8 / C502
NOT TO SCALE




PLAN VIEW




SECTION VIEW

## RIP-RAP REQUIREMENTS:

CONTRIBUTING DRAINAGE AREA: 100 ACRES MAXIMUM.

CAPACITY: PEAK RUNOFF FROM 10-YR. FREQUENCY, 24-HR. DURATION STORM EVENT.

APRON: DESIGN DEPENDS ON CHANNEL DEFINITION, BUT IS LONG ENOUGH TO DISSIPATE RUNOFF ENERGY, SET ON ZERO GRADE, STRAIGHT AND ALIGNED WITH THE RECEIVING STREAM. (IF SITE CONDITIONS REQUIRE A CURVE, SET IT NEAR THE UPSTREAM END.)

FOUNDATION: GEOTEXTILE FABRIC FOR STABILIZATION AND FILTRATION OR WELL-GRADED GRAVEL FILTER LAYER AT LEAST 6 IN. THICK.

MATERIAL: HARD, ANGULAR, AND HIGHLY WEATHER-RESISTANT RIPRAP STONE OF 6 - 8 INCHES IN SIZE.

THICKNESS: 12 IN. MINIMUM OR TWO TIMES THE D 50 STONE DIAMETER,wHICHEVER IS GREATER.

## INSTALLATION:

1. EXCAVATE THE APRON AREA SUBGRADE BELOW DESIGN ELEVATION TO ALLOW FOR THICKNESS OF THE FILTER (OR GRAVEL LAYER) AND THE RIPRAP. (THIS OVER-EXCAVATION GREATLY INCREASES THE AMOUNT OF SPOIL.)

2. COMPACT ANY FILL USED IN THE SUBGRADE TO THE DENSITY OF THE SURROUNDING UNDISTURBED MATERIAL, AND SMOOTH ENOUGH TO PROTECT FABRIC FROM TEARING.

3. PLACE THE GEOTEXTILE FABRIC (OR GRAVEL LAYER) ON THE COMPACTED AND SMOOTHED FOUNDATION. IF MORE THAN ONE FABRIC PIECE IS NEEDED, THE UPSTREAM PIECE SHOULD OVERLAP THE DOWNSTREAM PIECE BY AT LEAST 1 FT.

4. INSTALL THE RIPRAP TO THE LINES AND ELEVATIONS SHOWN IN THE DESIGN. IF THE CHANNEL IS POORLY DEFINED, THE FINAL CROSS-SECTION SHOULD BE LEVEL OR SLIGHTLY DEPRESSED IN THE MIDDLE; IF WELL DEFINED, THE FILTER (OR GROUND LAYER) AND RIPRAP SHOULD EXTEND TO THE TOP OF THE BANK.

5. IF THE GEOTEXTILE FABRIC TEARS WHEN PLACING TH RIPRAP, REPAIR IMMEDIATELY BY LAYING AND STAPLING A PIECE OF FABRIC OVER THE DAMAGE AREA, OVERLAPPING THE UNDAMAGED AREAS BY AT LEAST 12 INCHES.

6. MAKE SURE THE TOP OF THE RIPRAP APRON IS LEVEL WITH OR SLIGHTLY BELOW THE RECEIVING STREAM. (RIPRAP SHOULD NOT RESTRICT THE CHANNEL OR PRODUCE AN OVERFALL.)

7. BLEND THE RIPRAP SMOOTHLY TO THE SURROUNDING GRADE.

8. STABILIZE ALL DISTURBED AREAS IMMEDIATELY FOLLOWING INSTALLATION.

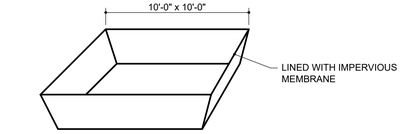
## MAINTENANCE:

* INSPECT ROCK CHUTES AFTER STORM EVENTS FOR STONE DISPLACEMENT AND FOR EROSION AT THE SIDES AND ENDS OF THE APRON.
* MAKE NEEDED REPAIRS IMMEDIATELY; USE APPROPRIATE SIZE STONE; AND DO NOT PLACE THEM ABOVE FINISHED GRADE.

## COMMON CONCERNS:

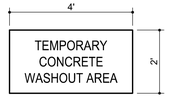
FOUNDATION NOT EXCAVATED DEEP ENOUGH OR WIDE ENOUGH--RIPRAP RESTRICTS THE FLOW CROSS SECTION, RESULTING IN EROSION AROUND THE APRON AND SCOUR HOLES AT THE OUTLET.
RIPRAP APRON ON ZERO GRADE--

**RIP-RAP DETAIL** 7 / C502
NOT TO SCALE



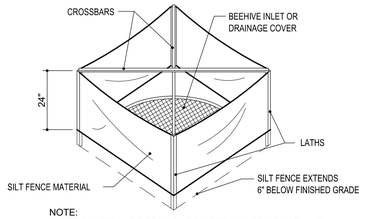

NOTE:
1. A LINED ROLLOFF DUMPSTER OR CONTAINER TO BE USED IN LIEU OF A CONSTRUCTED WASHOUT BASIN.

**CONCRETE WASHOUT BASIN** 6 / C502
NOT TO SCALE



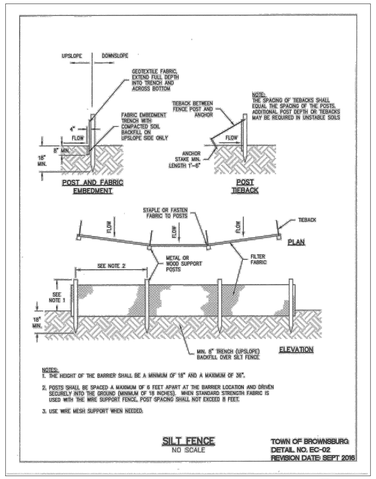

NOTES:
1, SIGN TO BE POSTED THROUGHOUT CONSTRUCTION ACTIVITY,
2. SIGN TO BE MADE OF SEMI-PERMANENT MATERIAL, i.e. WOOD.

**CONCRETE WASHOUT SIGN** 5 / C502
NOT TO SCALE

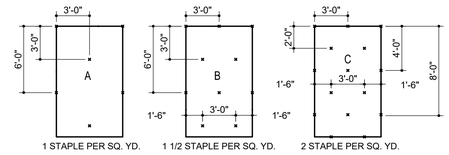



NOTE:
1. SEE SILT FENCE DETAIL FOR MATERIAL SPECIFICATIONS.
2. SILT FENCE SHALL BE PREASSEMBLED BY SUPPLIER.

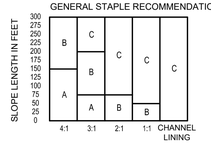
**SILT FENCE INLET PROTECTION DETAIL** 4 / C502
NOT TO SCALE



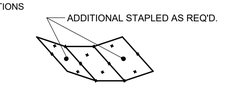

**SILT FENCE DETAIL** 3 / C502
NOT TO SCALE




GENERAL STAPLE RECOMMENDATIONS




SLOPE GRADIENT




CHANNEL LININGS UTILIZE STAPLE PATTERN "C" WITH ADDITIONAL STAPLES ON SIDE SLOPES.

## NOTES:

1. STAPLE PATTERNS APPLY TO ALL NORTH AMERICAN GREEN EROSION BLANKETS.

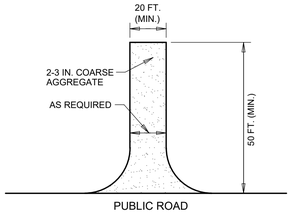
2. STAPLE PATTERNS MAY VARY DEPENDING UPON SOIL TYPE AND AVERAGE ANNUAL RAINFALL.

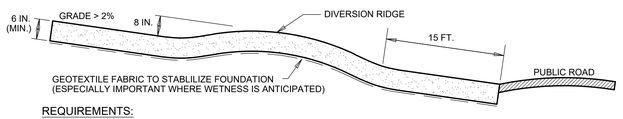
3. AT SLOPE LENGTHS GREATER THAN 300 FEET OR WHERE DRAINAGE OVER LARGE AREAS IS DIRECTED ONTO BLANKETS, STAPLE PATTERN "C" SHOULD BE UTILIZED.

4. CHANNEL LININGS REQUIRE A 2' (MIN.) OVERLAP AT LONGITUDINAL JOINTS AND SIDE SLOPES REQUIRE A 6" (MIN.) OVERLAP. WHERE OVERLAPS OCCUR, THE UPSTREAM BLANKET SHALL OVERLAP THE DOWNSTREAM.

5. NORTH AMERICAN GREEN S150BN TO BE USED FOR EROSION CONTROL BLANKETS.

**EROSION CONTROL BLANKET STAPLE PATTERN** 2 / C502
NOT TO SCALE




## REQUIREMENTS:

Material: 2-3 in. washed stone (INDOT CA No.2) over a stable foundation.

Thickness: 6 in. minimum

Width: 12 ft. minimum or full width of entrance/exit roadway, whichever is greater.

Length: 50 ft. minimum. The length can be shorter for small sites such as for an individual home.

Washing facility (optional): Level area with 3 in washed stone minimum or a commercial rack, and waste water diverted to a sediment trap or basin.

Geotextile fabric underliner: May be used under wet conditions or for soils within a high seasonal water table to provide greater bearing strength.

## INSTALLATION:

1. Avoid locating on steep slopes or at curves in public roads.

2. Remove all vegetation and other objectionable material from the foundation area, and grade and crown for positive drainage.

3. If slope towards the road exceeds 2%, construct a 6-8 in.-high water bar (ridge) with 3:1 side slopes across the foundation area about 15 ft. from the entrance to divert runoff away from the road.

4. Install pipe under the pad if needed to maintain proper public road drainage.

5. If wet conditions are anticipated, place geotextile fabric on the graded foundation to improve stability.

6. Place stone to dimensions and grade shown in the erosion control plan, leaving the surface smooth and sloped for drainage.

7. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin.

## MAINTENANCE:

* Inspect entrance drive and sediment disposal area weekly and after storm events or heavy use.
* Reshape pad as needed for drainage and runoff control.
* Topdress with clean stone as needed.
* Immediately remove mud and sediment tracked or washed onto public roads by brushing or sweeping. Flushing should only be used if the water is conveyed into a sediment trap or basin.
* Repair any broken road pavement immediately.

## COMMON CONCERNS:

Inadequate runoff control--results in sediment washing onto road.
Stone too small, pad too thin, or geotextile fabric absent--results in ruts and a muddy condition as stone is pressed into the soil: add more stone.
Pad too short for heavy construction traffic--extend the pad beyond the 50-ft. length as needed.
Pad not flared sufficiently at road entrance--results in mud being tracked onto the road and possible damage to the road edge: widen stone entrance and repair road damage.
Unstable foundation--use geotextile fabric under th pad and/or improve foundation drainage.

**TEMPORARY CONSTRUCTION ENTRANCE** 1 / C502
NOT TO SCALE

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

LIONS TRANS INC. (BROWNSBURG)
4005 N CR 1000 E
BROWNSBURG, IN 46122

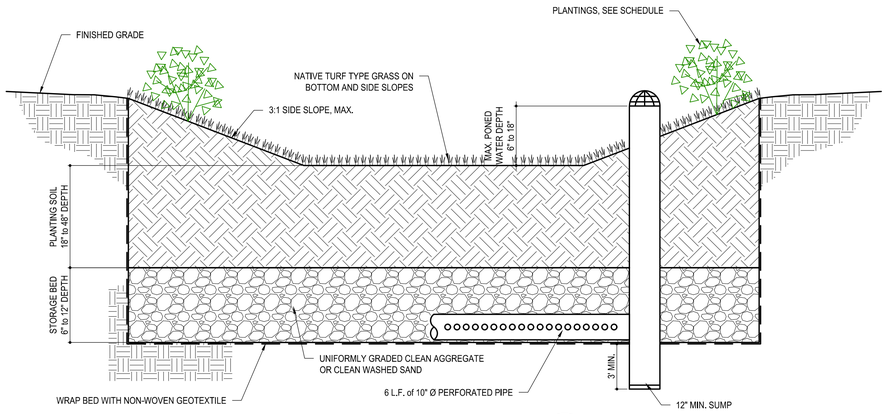
SECTIONS AND DETAILS

BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER
Brian E. Moench

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| | | |
| | | |

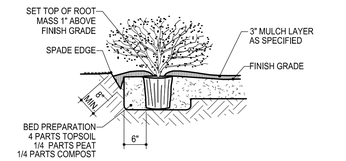
| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C502 |




## BIORETENTION AREA

NOT TO SCALE

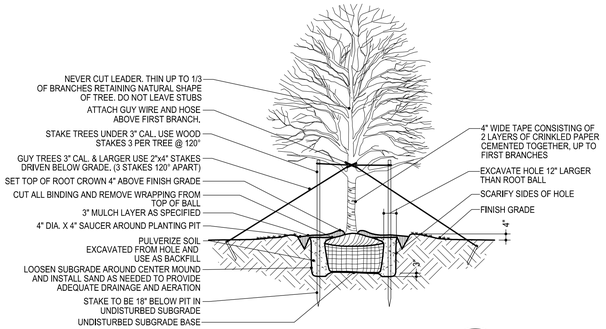
4 / L101




## SHRUB AND SMALL TREE PLANTING DETAIL

NOT TO SCALE

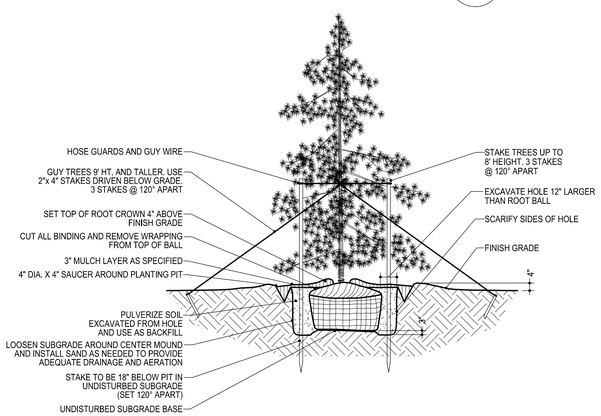
3 / L101




## SHADE TREE PLANTING DETAIL

NOT TO SCALE

2 / L101



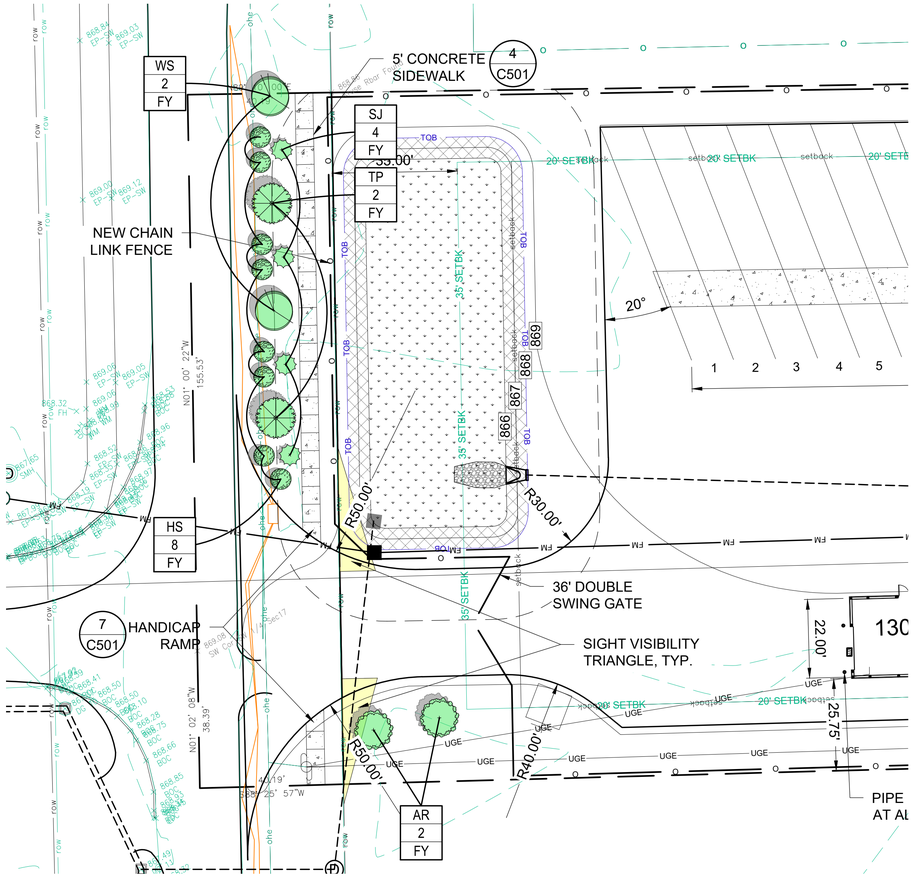

## EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

1 / L101

## PLANTING SCHEDULE

| LEGEND | KEY | QTY | BOTANICAL NAME | COMMON NAME | SIZE / COND | REMARKS | HEIGHT / SPREAD | QTY REQ'D |
|---|---|---|---|---|---|---|---|---|
| | WS | 2 | Wisteria sinensis | Blue Chinese Wisteria Tree | #1 Container / --- | Ornamental Deciduous | 10-15 ft / 10-12 ft | 1.25 |
| | AR | 2 | Acer Rubrum | Red / Sugar Maple | #5 Container / --- | Canopy Deciduous | 40-50 ft / 30-40 ft | 2 |
| | TP | 2 | Thuja plicata x standishii | Thuja Green Giant | 24" height / --- | EVERGREEN | 30-40 ft / 8-10 ft | 1.5 |
| | HS | 8 | Hibiscus syriacus ' Red Heart' / Hibiscus syriacus 'Notwoodone' / Hibiscus syriacus 'JWNWOOD4' | Red Heart Rose of Sharon / Lavender Chiffon Rose of Sharon / Pink Chiffon Rose of Sharon | #3 Container / --- | DECIDUOUS SHRUB | 8-12 ft / 6-10 ft | 10 |
| | NOTE: Assorted mix of Hibiscus Plants in each grouping. | | | | | | | |
| | SJ | 4 | Spiraea nipponica 'Snowmound' / Spiraea Japonica 'Neon Flash' / Spiraea Japonica 'Matgold' | Snowmound Spirea / Neon Flash Spirea / Rainbow Fizz Spirea | #1 container / --- | DECIDUOUS SHRUB | 2-7 ft / 3-7 ft | |
| | NOTE: Assorted mix of Spirea Plants in each grouping. | | | | | | | |




## LANDSCAPE PLAN

SCALE: 1" = 20'

GRAPHIC SCALE: 1" = 20'


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

LANDSCAPE PLAN

BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | L101 |

| Catalog Number | |
|---|---|
| Notes | |
| Type | |

**Lithonia Lighting Basics™**

**Low Profile Emergency Light**

# EU2L



## FEATURES & SPECIFICATIONS

**INTENDED USE** — Provides a minimum of 90 minutes illumination for the solid wattage upon loss of AC power to meet code required emergency lighting, ideal for applications requiring low profile, emergency light with maximum mounting height.

**CONSTRUCTION** — The housing is standard white, or optional black, thermoplastic with a compact and low profile design and all-inclusive easy reflector and lens assembly. It is UV stabilized and impact-resistant.

**OPTICS** — The typical 60-lm of life LED is 70 years. One, 0.72W white LED per lamp head.

**ELECTRICAL** — Dual-voltage 120/277 standard.

Bi-color LED status indicator for battery condition. (Green-normal, Red-check battery).

One watt x half watts of remote capacity available with NEMA option.

**BATTERY:** 3.6V maintenance-free, rechargeable, nickel-cadmium.

**INSTALLATION** — Wall mount and ceiling mount. Surface mount back plate fits most industry-standard size junction boxes and snaps into place.

**LISTINGS:** CSA certified to meet applicable requirements for UL 924, NFPA 101 (current Life Safety Code), NFPA 70 (NEC), California Energy Commission Title 20 section 1605.3 (B)(2), FCC Title 47, Part 15, Subpart B and EN55, Indoor damp location 32°F to 104°F (-10°C to 40°C) listed standard.

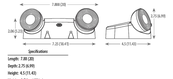
**WARRANTY** — 5-year limited warranty. This is the sole warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty-terms-and-conditions

**NOTE:** Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

† Small Battery Chargers Certified in the CA Title 20 Appliance Efficiency Database.

## MOUNTING AND SPECIFICATIONS

**All dimensions are inches (centimeters) unless otherwise indicated.**




**Specifications**

Length: 7.88 (20)
Depth: 2.75 (6.99)
Height: 4.5 (11.43)
Weight: 0.7 lbs. (.32kg)



| Catalog Number | |
|---|---|
| Notes | |
| Type | |

Contractor Select™

# OLWP

## LED Wall Pack

Customize the color temperature and effortlessly automate your wall pack for dusk-to-dawn operation with the CLWP Wall Pack. Featuring switchable CCT (3000K/4000K/5000K) and a selectable photocell, the CLWP Wall Pack is designed to deliver years of maintenance-free general illumination for residential outdoor applications such as driveways, entryways, patios, and other outdoor areas that require consistent and reliable lighting performance.



**FEATURES:**

- Switchable CCT (3000/4000K)
- Selectable ON/OFF photocell for dusk-to-dawn or switched operation
- Cast aluminum construction for durability
- Impact resistant polycarbonate diffuser

| Catalog Number | UPC | Description | Lumens | Input Watts | CCT | CRI | Voltage | Finish |
|---|---|---|---|---|---|---|---|---|
| OLWP LED 5WSW2 120 PE DDB | 19397286727252 | OLWP LED Wall Pack | 1,400 | 16.3 | 3000/4000/5000K | 80 | 120 | Dark Bronze |



# RADEAN Bollard

## LED Site Luminaire

| Catalog Number | |
|---|---|
| Notes | |
| Type | |

Hit the 'Tab' key or mouse over this page to see all interactive elements.



**Specifications**

**Diameter:** D = 8.25" (20.96cm)
**Height:** H = 41.5" Standard (105.41cm)
**Weight (max.):** 208lbs (94.57kg)







## Introduction

The Radean LED Bollard is an award-winning, energy-saving, long-life solution designed to perform the way a bollard should.

The Radean LED Bollard's rugged construction, durable finish and long-lasting LEDs will provide years of maintenance-free service.

## Ordering Information

**EXAMPLE:** RADB LED P4 30K SYM MVOLT BTS BCCDNATXD DBLXD

**RADB LED**

| Series | Performance Package | Color temperature | Distribution | Voltage | Control options | Shipped installed | Side Top | Tall Top | Finish |
|---|---|---|---|---|---|---|---|---|---|
| RADB LED | P1 | 27K 2700 K | ASY Asymmetric [1] | MVOLT [2] | PE Photocontrol, universal voltage | BTS Side Top, painted to match shaft [3] | BTSDNDXD Dark bronze | BTT Tall Top, painted to match shaft [3] | DNDXD Dark bronze |
| P2 | 30K 3000 K | SYM Symmetric [1] | 347 [2] | DMG 0-10V dimming driver from driver to luminaire [4] | BTSDNBXD Dark bronze, white [3] | BTTDNBXD Dark bronze, white [3] | DNBXD Natural aluminum |
| P3 | 35K 3500 K | | 480 [2] | | BTSDNGXD Dark bronze, black textured [3] | BTTDNGXD Dark bronze, black textured [3] | DNGXD Black |
| P4 | 40K 4000 K | | 277 [2] | ETH Emergency battery backup (Other options available in Q-Tek [5] catalog) [4] | BTSDNDXD Dark bronze, dark bronze [3] | BTTDNDXD Dark bronze, dark bronze [3] | DNDXD Dark bronze |
| P5 | 50K 5000 K | | 347 [2] | | BTSDNMXD Dark bronze, natural aluminum [3] | BTTDNMXD Dark bronze, natural aluminum [3] | DNMXD Natural aluminum |
| | | | 480 [2] | SND Sensor/dimmer [4] | BTSDNWXD Dark bronze, white textured [3] | BTTDNWXD Dark bronze, white textured [3] | DNWXD Textured white |
| | | | | PIR Motion sensor for dusk to dawn [4,6] | | | |

| Finish (required) | White options | Finish (required) |
|---|---|---|
| **Deep Crown** | **Flat Crown** | DBLXD Dark bronze |
| NLC Deep crown, painted to match shaft [7] | FLT Flat crown, painted to match shaft [7] | DBLBD Black |
| BCCDNBXD Deep crown, white [7] | BCTDNBXD Flat crown, black textured [7] | DNADD Natural aluminum |
| BCCDNGXD Deep crown, black textured [7] | BCTDNGXD Flat crown, black textured [7] | DWHXD White |
| BCTDNLBXD Deep crown, dark bronze textured [7] | BCTDNDXD Flat crown, dark bronze [7] | DBTXD Textured dark bronze |
| BCCDNDXD Deep crown, dark bronze [7] | BCTDNKXD Flat crown, dark bronze [7] | DBLBXD Textured black |
| BCCDNMXD Deep crown, natural aluminum [7] | BCTDNMXD Flat crown, natural aluminum [7] | DNATXD Textured natural aluminum |
| BCCDNWXD Deep crown, white [7] | BCTDNWXD Flat crown, white [7] | DWHGXD Textured white |
| BCCDNLBXD Deep crown, white textured [7] | BCTDNWGXD Flat crown, white textured [7] | |

**Accessories**

Ordered and shipped separately.

| | | |
|---|---|---|
| EGSSXD U | Anchor bolts (4) | Base cover with bolt caps |
| EGSSXD SSXDD U | Replacement anchor bolt covers (specify finish) (4) | Emergency test styles |

**NOTES**

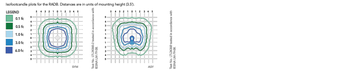
1 ASY only available in SYM distribution.
2 MVOLT fits only two illuminated quadrants shown at higher drive currents to generate similar lumens. 347 and 480 not available with PIR.
3 BTS not available with 30SW or 40SW.
4 PE only available with MVOLT.
5 PE, PIR and PIR1 not available with BTS.
6 ETH1 and PIR only available in full height. Not available with HVG, HVB or HVBL.
7 PIR not available with ETH.
8 Not available with 50K or 5000K.
9 Architectural and custom colors available (additional leadtimes and cost may apply).
10 Not available with 50K, HVB and HVBL. Not available with 5000K.


© 2012-2022 Acuity Brands Lighting, Inc. All rights reserved.

## Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's RADEAN Bollard homepage.

Isofootcandle plots for the RADB. Distances are in units of mounting height (0.31).




## FEATURES & SPECIFICATIONS

**INTENDED USE**
The combination illumination and maintenance-free performance of the Radean LED Bollard is ideal for illuminating building entryways, walking paths and pedestrian plazas, as well as any other location requiring a low-mounting-height light source.

**CONSTRUCTION**
One-piece extruded aluminum shaft with thick side walls for extreme durability and heat dissipation. Shaft is 8.25" (20.96cm) in diameter and 41.5" (105.41cm) high with washers and 0.313" (7.95cm) bolt circle template ensure stability. Overall height is 42" standard.

**FINISH**
Exterior parts are protected by a zinc-infused super-durable TGIC thermoset powder coating that provides 5 times the amount of zinc required for comparable protection for extension of glow and luster. A tightly controlled multi-stage process ensures a minimum 3-mil thickness for a finish that can withstand the elements without cracking or peeling. Available in both textured and non-textured finishes.

**OPTICS**
The optical distributions are available: asymmetrical and symmetrical. IP66-sealed LED light engine provides smoothly graduated illumination. Light engines are available in 2700K, 3000K, 3500K, 4000K or 5000K.

**ELECTRICAL**
Light engine consist of high-efficacy LEDs mounted to metal-core circuit boards to provide long life and consistent performance. 50,000 hours at 25°C (77°F). Class 2 electronic drivers are designed for an expected life of 100,000 hours with >.1% failure rate. Electrical components are mounted on a removable power tray.

**LISTINGS**
CSA certified to U.S. and Canadian standards. Light engines are IP66-rated. Rated for -40°C minimum ambient. Emergency battery backup rated for -10°C minimum ambient. International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color or less. U.S. Patent No. D912,863.

**BUY AMERICAN ACT**
This product is assembled in the USA and meets the Buy American(t) government procurement requirements under FAR, DFARS and DOT regulations. Please refer to www.acuitybrands.com/buy-american for additional information.

**WARRANTY**
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty-terms-and-conditions

**Note:** Actual performance may differ as a result of end-user environment and application and color.
All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.


© 2012-2022 Acuity Brands Lighting, Inc. All rights reserved.

# EU2L Low Profile Emergency Light

Looking for Contractor Select-readily available configurations? Check out our Contractor Select page at www.lithonia.com/contractorselect

**MATERIAL INFORMATION** — **Example:** EU2L B

| Series | Housing Color | Options |
|---|---|---|
| EU2L Emergency Light | (Blank) White<br>B Black | (Blank) Not Required<br>RCM Remote Capacity |

**BATTERY CAPACITY AND LOADING**

| Battery | Total Capacity | Maximum# Remote Lamp Heads* |
|---|---|---|
| 3.6V | 2W | 2 - 0W W/ ELI RCM/2<br>1 - 0W W/1 RCM/2<br>1 - 0W (0.5ELI W/1 Q/2ELI)<br>2 - 0W (0.5ELI W/1 RCM/2)<br>1 - 0W (1/1 W/1 RCM/2) |

* These are in addition to the lamp heads on the product.
† See datasheet for alternate cable options

**ELECTRICAL SPECIFICATIONS**

| Description | Supply Voltage | Input Wattage | | | Input Amps | | |
|---|---|---|---|---|---|---|---|
| | | 120 | 208 | 277 | 120 | 208 | 277 |
| Standard (No options) | 120/277 | .55 | N/A | .51 | .05 | N/A | .05 |
| Remote Capacity Option (RCM) | 120/277 | .72 | N/A | .68 | .07 | N/A | .07 |

**Accessories** Order as separate catalog number.

| | |
|---|---|
| EBE W SQ 90 | Single, indoor remote head, round, ivory white, 270K, 3.6V wattage input.† |
| EBE W T90 | Twin, indoor remote head, round, ivory white, 1.2W, 3.6V wattage input.† |
| EBE GT SQ WP SQ | Single, weather-proof remote head, square, gray, 70K, 3.6V CTV wattage sensing.† |
| EBE GT SQ WP RD WE2 | Single, LED weather-proof head, round, gray, 0.75W, 3.6V input.† |
| EBE GT WP RD WE2 | Twin, LED weather-proof head, round, gray, 1.2W, 3.6V input.† |
| ELA WE2 | Wiregaurd 55-1/8" W X 55-1/8" H X 5" Deck mount only). See specsheet ELA WE. |

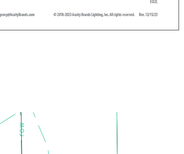
**Accessories Notes:**
1. See spec sheet EBE remote head for additional ordering options

## SPACING GUIDELINES

**Maximum Spacing Guidelines - EU2L***

| Mounting Height | Illumination Level | Single Luminaire: 1 Path of Egress | Single Luminaire: 2 Path of Egress | Multiple Luminaires: 1 Path of Egress | Multiple Luminaires: 2 Path of Egress | Application Notes |
|---|---|---|---|---|---|---|
| 7.5' | 1FC Avg | 14' | 10' | 18' | 14' | 100' Center Width, and 7' High with REFRESH Reflectance** |

Notes:
1. Also meets the additional illumination requirements of NFPA 101: 1FC minimum and max/min ratio ratio of 40:1.





© 2019-2022 Acuity Brands Lighting, Inc. All rights reserved. Rev. 12/15/20

| Catalog Number | |
|---|---|
| Notes | |
| Type | |

Contractor Select™

# OLWP

## LED Wall Pack

## Specifications

**INTENDED USE:**
The CLWP provides years of maintenance-free general illumination for commercial or residential outdoor applications such as driveways, patios, loading areas and warehouses.

**CONSTRUCTION:**
Rugged cast aluminum, corrosion-resistant rear housing. Impact resistant polycarbonate front cover/diffuser resists fading and cracking. Driver operates at 120V. Operating temperature -40°C to 40°C.

**OPTICS:**
High-performance LEDs maintain 70% of light output at 50,000 hours of service. (LED lifespan based on IESNA LM-80-08 results and calculated per IESNA TM-21-11 methodology.). Lenses are engineered for superior lighting distribution, uniformity and fixture spacing. See Lighting Performance Table for specific fixture performance.

**INSTALLATION:**
Designed for wall mounting more than 4' above the ground. Mounts to a recessed junction box (by others).

**LISTINGS:**
UL Listed to U.S. and Canadian safety standards for wet locations.

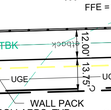
**WARRANTY:**
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty-terms-and-conditions

**Note:** Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

## Dimensions

### Specifications

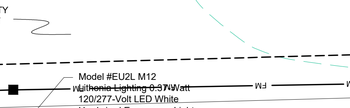
**Width:** 5.35" (13.6 cm)
**Height:** 10.5" (26.6 cm)
**Depth:** 3" (7.7 cm)
**Weight:** 1.54 lbs (0.70 kg)





One Lithonia Way, Conyers, GA 30012 | 1-800-705-7378 | www.lithonia.com
© 2012-2023 Acuity Brands Lighting, Inc. All rights reserved. Rev. 12/16/22

## Options




## Performance Data

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Actual performance may differ as a result of end-user environment and application. Actual wattage may differ by +/-10% when operating between 120-480V +/-10%.

**Performance Data**
**DNAXD Finish***

| Light Engine | Performance Package | System Watts | 3000K Lumens | B | U | G | LPW | 4000K Lumens | B | U | G | LPW | 5000K Lumens | B | U | G | LPW | AMBER Lumens | B | U | G | LPW | 3500K Lumens | B | U | G | LPW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Symmetric (Single magnify) | P1 | 5 | 345 | 0 | 0 | 0 | 66 | 362 | 0 | 0 | 0 | 69 | 376 | 0 | 0 | 0 | 71 | 300 | 0 | 0 | 0 | 73 | 352 | 0 | 0 | 0 | 73 |
| | P2 | 7 | 470 | 0 | 0 | 0 | 65 | 493 | 0 | 0 | 0 | 68 | 511 | 0 | 0 | 0 | 70 | 409 | 0 | 0 | 0 | 72 | 479 | 0 | 0 | 0 | 72 |
| | P3 | 13 | 1006 | 1 | 0 | 0 | 77 | 1068 | 1 | 0 | 0 | 81 | 1112 | 1 | 0 | 0 | 83 | 1142 | 1 | 0 | 0 | 86 | 1196 | 1 | 0 | 0 | 85 |
| | P4 | 19 | 1468 | 1 | 0 | 0 | 79 | 1524 | 1 | 0 | 0 | 83 | 1585 | 1 | 0 | 0 | 86 | 1635 | 1 | 0 | 0 | 87 | 1676 | 1 | 0 | 0 | 88 |
| | P5 | 32 | 2314 | 1 | 0 | 0 | 72 | 2408 | 1 | 0 | 0 | 75 | 2484 | 1 | 0 | 0 | 77 | 2631 | 1 | 0 | 0 | 79 | 2541 | 1 | 0 | 0 | 79 |
| Typeview (Double magnify) | P1 | 5 | 353 | 0 | 0 | 0 | 68 | 370 | 0 | 0 | 0 | 71 | 384 | 0 | 0 | 0 | 73 | 444 | 0 | 0 | 0 | 84 | 396 | 0 | 0 | 0 | 82 |
| | P2 | 8 | 504 | 0 | 0 | 0 | 70 | 473 | 0 | 0 | 0 | 72 | 527 | 0 | 0 | 0 | 73 | 608 | 0 | 0 | 0 | 85 | 496 | 0 | 0 | 0 | 81 |
| | P3 | 13 | 958 | 0 | 0 | 0 | 76 | 985 | 0 | 0 | 0 | 78 | 1007 | 0 | 0 | 0 | 75 | 1055 | 0 | 0 | 0 | 77 | 1058 | 0 | 0 | 0 | 77 |
| | P4 | 19 | 1333 | 0 | 0 | 0 | 71 | 1390 | 0 | 0 | 0 | 75 | 1430 | 0 | 0 | 0 | 76 | 1459 | 0 | 0 | 0 | 76 | 1544 | 0 | 0 | 0 | 80 |
| | P5 | 32 | 2102 | 0 | 0 | 0 | 66 | 2195 | 0 | 0 | 0 | 69 | 2265 | 0 | 0 | 0 | 71 | 2348 | 0 | 0 | 0 | 73 | 2341 | 0 | 0 | 0 | 73 |

*Note: Lumen output varies based on finish. Silver color shown, for black (bronze) or white (bone) photometry, see specific photometric files downloadable from www.acuitybrands.com.

**Projected LED Lumen Maintenance**

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate L87, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other ambient temperature conditions, see our Lumen Maintenance Factors table.

| | 25,000 | 50,000 | 75,000 | 100,000 |
|---|---|---|---|---|
| P1 | 0.94 | 0.89 | 0.85 | 0.80 |
| P2 | 0.94 | 0.89 | 0.85 | 0.80 |
| P3 | 0.94 | 0.89 | 0.85 | 0.80 |
| P4 | 0.94 | 0.89 | 0.85 | 0.80 |
| P5 | 0.94 | 0.89 | 0.85 | 0.80 |

**Lumen Ambient Temperature (LAT) Multipliers**

Use these factors to determine relative lumen output for average temperatures from 0-40°C (32-104°F).

| Ambient | LAT Factor |
|---|---|
| 0 | 1.04 |
| 5 | 1.04 |
| 10 | 1.03 |
| 15 | 1.02 |
| 20 | 1.01 |
| 25 | 1.00 |
| 30 | 0.99 |
| 35 | 0.98 |
| 40 | 0.97 |

**Electrical Load**

| | Current (Amps) | | | | | | Current (Amps) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Watts (120V) | Watts (277V) | 120 V | 208 V | 240 V | 277 V | Watts (120V) | Watts (277V) | 120 V | 208 V | 240 V | 277 V |
| P1,ST | 5 | 5 | 0.045 | 0.029 | 0.025 | 0.021 | 5 | 5 | 0.042 | 0.027 | 0.023 | 0.019 |
| P2,ST | 8 | 10 | 0.072 | 0.042 | 0.035 | 0.038 | 10 | 14 | 0.093 | 0.054 | 0.047 | 0.049 |
| P3,ST | 14 | 15 | 0.130 | 0.069 | 0.061 | 0.057 | 15 | 15 | 0.131 | 0.067 | 0.057 | 0.060 |
| P4,ST | 19 | 19 | 0.186 | 0.098 | 0.079 | 0.070 | 23 | 23 | 0.209 | 0.110 | 0.093 | 0.083 |
| P1,TW | 5 | 6 | 0.044 | 0.031 | 0.025 | 0.022 | 5 | 5 | 0.043 | 0.027 | 0.023 | 0.019 |
| P2,TW | 9 | 10 | 0.074 | 0.043 | 0.043 | 0.039 | 10 | 13 | 0.092 | 0.053 | | |
| P3,TW | 14 | 15 | 0.131 | 0.069 | 0.061 | 0.057 | 15 | 15 | 0.131 | 0.067 | 0.057 | 0.060 |
| P4,TW | 19 | 19 | 0.172 | 0.092 | 0.076 | 0.067 | 23 | 23 | 0.203 | 0.105 | 0.089 | 0.080 |
| P5,TW | 31 | 31 | 0.267 | 0.157 | 0.126 | 0.148 | 35 | 36 | 0.309 | 0.179 | | |


© 2012-2022 Acuity Brands Lighting, Inc. All rights reserved.

# LUMINAIRE SCHEDULE

| SYMBOL | QTY. | LABEL | ARRANGEMENT | DESCRIPTION | MOUNTING HEIGHT | LUX | WATTS |
|---|---|---|---|---|---|---|---|
| | 3 | A | SINGLE | LITHONIA RADB LED - P1 | 41.50 INCHES | 34.5 | 5 |
| WP | 2 | B | SINGLE | LITHONIA OLWP LED SWW2 120 PE DDB | 16 FEET | 160 | 18.5 |
| | 2 | B | SINGLE | LITHONIA EU2L | 7.5 FEET | 10.76 | .33 (LED) |

## LIGHTING LEGEND

- 60 LUX
- 30 LUX
- 20 LUX
- 5 LUX
- 1 LUX




## SITE LIGHTING PLAN

SCALE: 1" = 30'

Indiana 811 Know what's below. Call before you dig.

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-7767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

SITE LIGHTING PLAN

BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER
Brian E. Moench

| REVISIONS: | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | LT101 |

# Operations and Maintenance Manual

# Lion Trans Inc.

# 4005 N County Road 1000 E
# Brownsburg, Indiana 46112

# Best Management Practices
# For
# Storm Water Quality

# December 19th, 2025

**Owner:**

**Malhi Kulwinder & Jigna Shah Jtsur**

**7631 E US Hwy 36**

**Avon, Indiana 46123**

**Owner Information:**

| | |
|---|---|
| Name: | Malhi Kulwinder & Jigna Shah Jtsur |
| Address: | 7631 E US Hwy 36<br>Avon, Indiana 46123 |
| Telephone: | (317) 989-1580 |
| Contact Person: | Jigna Shah Jtsur |
| Contact Email: | janh505969@gmail.com |

**BMP Site Drawings:**

See Appendix

**Responsible Party Required Periodic Inspections:** See Appendix B for Tabular Inspection Schedule

It is the responsibility of the Responsible Party to inspect the installed infrastructure to determine if it is functioning as designed quarterly and after each major rainfall event.

**Town Performed Periodic Inspections:**

Town officials shall inspect the storm water improvement system installed annually. Inspections shall be based on the Town of Brownsburg Ordinances. The Responsible Party shall be responsible for the annual inspection fees and subsequent money spent in maintaining the best management practices as determined by the Town's review official.

**Required Perform Maintenance:**

If determined by the Town's inspection, the Responsible Party must complete any maintenance of the best management practices within the given specified timeframe. If maintenance activities are not completed, then the reserves the right to complete the maintenance activity and back charge the Responsible Party accordingly.

**Routine Maintenance:**

It is the responsibility of the Responsible Party to maintain the on-site and adjacent offsite drainage infrastructure. The routine maintenance includes mowing the grassy areas to a height between 4 to 6 inches. It is also the responsibility of the Responsible Party to keep all shrubbery and trees from growing in the right-of-way. The area must be kept clean of all litter and debris as well. Regarding soil within the yard area, if standing water is witnessed in excess for 48 hours after a storm event, the soil must be inspected for reasons of preventing absorption and/or decreasing permeability (i.e. compaction, debris, etc.) The soil needs to be tilled and/or inspected if immediate attention doesn't rectify the situation. During tilling of the soil, mindfulness needs to be kept of the sub-surface drains to prevent damage (i.e. removal or crushing). The soil must maintain a minimum permeability value of fc > 0.50 inches per hour. The sufficient proposed replacement soil such as Urban Land Fox Complex, 0 to 2% slope has sufficient permeability qualities to meet standards, if required.

**Remedial Maintenance:**

The responsibility of maintaining the installed infrastructure is the responsibility of the Responsibility Party. This includes replacing any damaged pipe, concrete structure, curb/gutters, etc. to maintain the function of the infrastructure as originally designed.

**Sediment Removal:**

Sediment removal from gutter of adjacent curbs.

**Statement of Town's Right of Access:**

With the location of the access easement, Town officials have the right to enter the property and check the best management practices at their discretion.

**Responsible Party for BMP Maintenance:**

It is the sole responsibility of the Owner to maintain the best management practices after initial installation. This includes all costs and scheduling associated with the maintenance of BMP. The Owner is required to keep records of all inspection and maintenance activities and will self-certify that inspection and maintenance have been performed according to the Operations and Maintenance Manual, when requested by the city.

Responsible Party: _____

Printed Name of Responsible Party: _____

Date: _____

# APPENDICES

# APPENDIX A
# BMP DRAWINGS

# Lions Trans Inc. Maintenance Building
# 4005 N. County Road 1000E
# Brownsburg, Indiana 46112

## Owner:

Malhi Kulwinder & Jigna Shah Jtsur
7631 E. US Hwy 36
Avon, Indiana 46123
Phone: 317-989-1580

## Civil Engineer:

Moench Engineering, P.C.
4000 Clarks Creek Road
Plainfield, Indiana 46168
Phone: (317) 837-2767
Fax: (317) 837-7266

## Jurisdictional Contact:

Town of Brownsburg Development Services
61 N. Green St.
Brownsburg, Indiana 46112
Phone: (317) 852-1128

## INDEX OF DRAWINGS


| SHT. | TITLE |
|---|---|
| | CIVIL DRAWINGS |
| C000 | COVER SHEET |
| D101 | OFFSITE DEMOLITION PLAN |
| C101 | OVERALL SITE PLAN |
| C201 | SITE PLAN |
| C301A | GRADING PLAN (EAST) |
| C301B | GRADING PLAN (WEST) |
| C302 | EROSION CONTROL PLAN |
| C303 | STORM WATER POLLUTION PREVENTION PLAN |
| C401 | UTILITY PLAN |
| C402 | SANITARY FORCE MAIN PLAN & PROFILE |
| C501-502 | SECTIONS AND DETAILS |
| L101 | LANDSCAPE PLAN |
| LT101 | SITE LIGHTING PLAN |
| | |

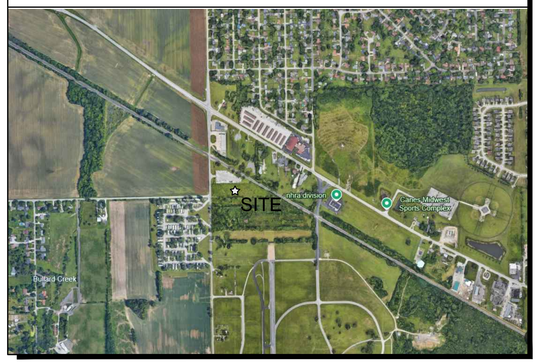

| SITE ANALYSIS TABLE | |
|---|---|
| ZONING | MS |
| BUILDING TYPE | (1) OFFICE, (2) SHOP/GARAGE |
| NUMBER OF BUILDINGS | 2 |
| BUILDING HEIGHT | 30'-9" |
| TOTAL PARCEL | 3.07 Acres |
| TOTAL DISTURBED AREA | 2.60 Acres |
| TOTAL PARKING REQUIRED | N/A |
| PARKING RATIO | 1.1 space / employee & 1 visitor space / 10 employee spaces |
| TRUCK PARKING SPACES PROVIDED (10.5'x70') | 33 |
| STANDARD (9.5' x 18') SPACES | 4 |
| HANDICAPPED SPACES | 1 |
| TOTAL SPACES PROVIDED | 38 |
| TOTAL BUILDING SQUARE FOOTAGE | 3760 s.f. |

LOT COVERAGE

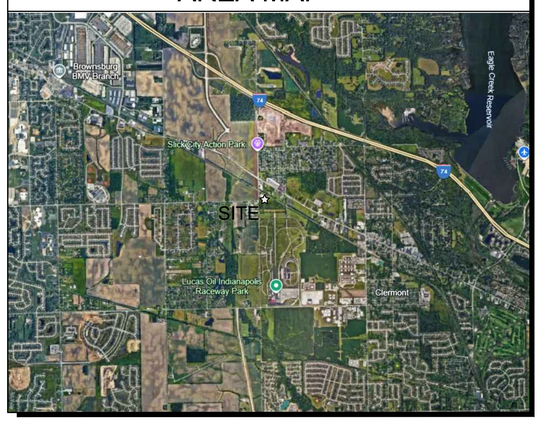
| | AREA ($ft^2$) | ACRES | PERCENT |
|---|---|---|---|
| ASPHALT | 83,071 | 1.907 | 62% |
| BUILDINGS | 3,760 | 0.086 | 2.8% |
| SIDEWALK | 716 | 0.016 | 0.5% |
| IMPERV. (TOTAL) | 87,547 | 2.01 | 65.4% |
| PERVIOUS | 46,327 | 1.06 | 34.6% |
| LOT TOTAL | 133,874 | 3.07 | 100% |

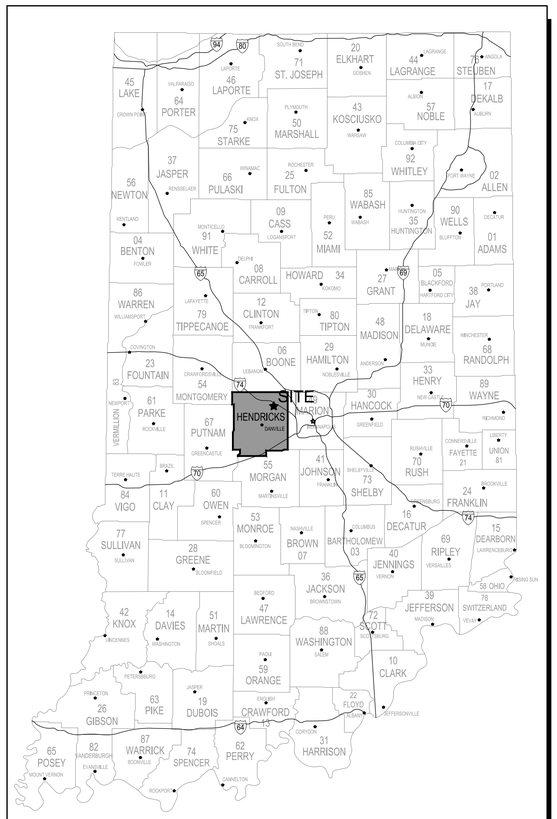
SUBJECT SITE:
SITE LOCATED IN LINCOLN TOWNSHIP
HENDRICKS COUNTY, INDIANA
(39°49'21" N and 86°20'42" W)

VICINITY MAP




AREA MAP




Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*


THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


LIONS TRANS INC. (BROWNSBURG)
4005 N CR 1000 E
BROWNSBURG, IN 46122
COVER SHEET

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| 6 | REVISED per TOWN COMMENTS | 11/06/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C000 |

## PROTECTION AND DEMOLITION NOTES:

TREE REMOVAL AND PROTECTION:

1. TREES SHALL BE REMOVED FROM THE PROJECT ONLY WHERE THE AREA IS TO BE OCCUPIED BY ROAD, SURFACED AREAS, OR DRAINAGE SWALES.

2. TREES SHALL BE REMOVED FROM THE PROJECT SITE WHERE THEY INTERFERE DIRECTLY WITH THE PLACEMENT OF STORM OR SANITARY SEWERS AND THAT SUCH EXCAVATION WILL BE FATAL TO TREES.

3. THE CONTRACTOR SHALL ENDEAVOR TO SAVE AND PROTECT TREES OF VALUE AND WORTH WHICH DO NOT IMPAIR CONSTRUCTION OF IMPROVEMENTS AS DESIGNATED. IN THE EVENT CUT OR FILL EXCEEDS 0.5 FEET OVER THE ROOT AREA, THE DEVELOPER SHALL BE CONSULTED WITH RESPECT TO PROTECTIVE MEASURES TO BE TAKEN, IF ANY, TO PRESERVE SUCH TREES.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE METHOD FOR PROTECTION OF TOPS, TRUNKS AND ROOTS OF EXISTING TREES ON THE PROJECT SITE THAT ARE TO REMAIN. EXISTING TREES SUBJECT TO CONSTRUCTION DAMAGE SHALL BE BOXED, FENCED OR OTHER MATERIAL AND EQUIPMENT SHALL NOT BE STOCKPILED OR STORED WITHIN THE SPREAD OF BRANCHES. BRANCHES WHICH NEED TO BE REMOVED OR ARE BROKEN SHALL BE NEATLY TRIMMED AND SCARS SHALL BE COVERED WITH TREE PAINT.

CLEARING AND GRUBBING:

1. CLEARING AND GRUBBING SHALL CONSIST OF CUTTING, REMOVING AND SATISFACTORY DISPOSING OF ALL TREES, BRUSH, PROJECTING ROOTS, STUMPS, RUBBISH, BROKEN PAVEMENT, BROKEN CONCRETE, FENCING (AS DESIGNATED) AND OTHER MATERIALS ON THE PROJECT SITE AND WITHIN THE BOUNDARY AS SHOWN ON THE CONSTRUCTION DOCUMENTS AND / OR DESIGNATED BY THE CONSTRUCTION LIMITS.

2. ALL "UNSUITABLE MATERIAL" FROM CLEARING OPERATIONS SHALL BE REMOVED TO DISPOSAL AREAS AS DIRECTED BY GENERAL CONTRACTOR.

STRIPPING OF TOPSOIL:

1. THE CONTRACTOR SHALL VERIFY THAT ALL TOPSOIL HAS BEEN REMOVED IN THE AREAS TO BE OCCUPIED BY ROADS, WALKS AND DESIGNATED BUILDING AREAS. TOPSOIL SHALL BE REMOVED TO A DEPTH OF SIX (6) INCHES OR DEEPER, IF NECESSARY, TO REMOVE ORGANIC MATTER WHERE REQUIRED.

2. TOPSOIL SHALL BE KEPT SEPARATED FROM SUITABLE FILL MATERIALS AND SHALL NOT BE USED AS FILL UNDER PAVEMENT, BUILDING AREAS AND / OR FUTURE STRUCTURAL AREAS.

3. TOPSOIL SHALL BE STORED AT A LOCATION WHERE IT DOES NOT INTERFERE WITH CONSTRUCTION OPERATIONS AS DIRECTED BY THE GENERAL CONTRACTOR.

4. TOPSOIL SHALL BE REASONABLY FREE FROM SUBSOIL DEBRIS AND STONES.

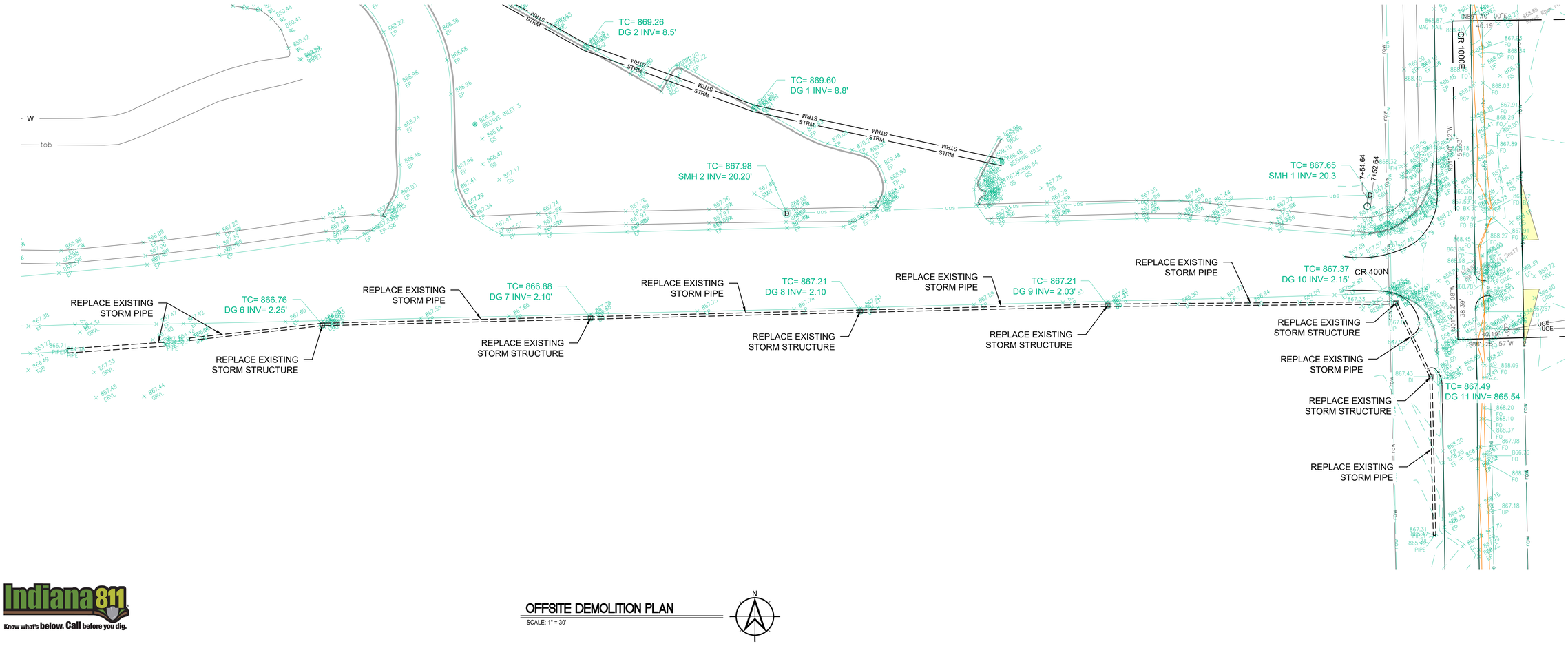
DEMOLITION:

1. ALL MATERIAL AS A RESULT OF THE GENERAL DEMOLITION SHALL BE THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR'S LUMP SUM BID PRICE FOR THE DEMOLITION SHALL TAKE INTO ACCOUNT THE SALVAGEABLE VALUE OF MATERIALS AND SAID BID PRICE SHALL REFLECT SAID DRAWINGS.

2. THE CONTRACTOR SHALL OBTAIN FROM ALL APPLICABLE GOVERNMENT AUTHORITIES NECESSARY PERMITS REQUIRED. A COPY OF SUCH PERMITS TO BE FURNISHED TO THE OWNER PRIOR TO COMMENCEMENT OF ANY WORK HEREIN.

STONE REMOVAL:

1. EXISTING STONE SURFACE TO BE REMOVED, STOCKPILED AND REDISTRIBUTED AFTER NEW GRADES ARE COMPLETED.




OFFSITE DEMOLITION PLAN

SCALE: 1" = 30'

Indiana 811
Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

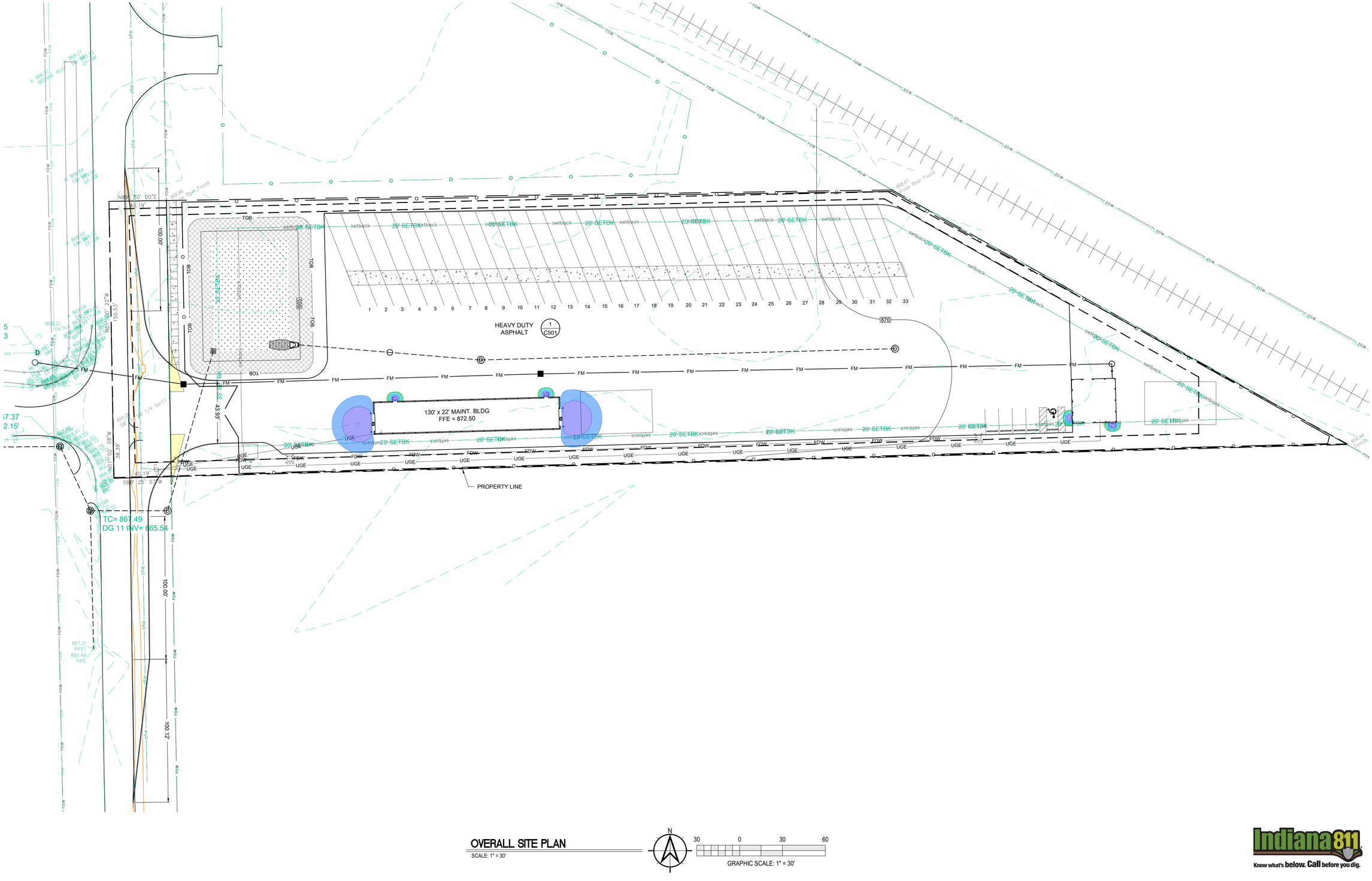
OFFSITE DEMOLITION PLAN

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| 6 | REVISED per TOWN COMMENTS | 11/06/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | D101 |




## OVERALL SITE PLAN

SCALE: 1" = 30'

N

30 0 30 60

GRAPHIC SCALE: 1" = 30'

Indiana 811
Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

OVERALL SITE PLAN

BRYAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| 6 | REVISED per TOWN COMMENTS | 11/06/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C101 |

## LEGAL DESCRIPTION

LEGAL DESCRIPTION:
Per Instrument No. 202121241 SUR filed in the Office of the Recorder in Hendricks County, Indiana, and described as follows:

Addresses and Parcel Numbers:
4005 N C.R. 1000 E., Brownsburg, IN 46112
#32-08-17-365-002.000-016

The following represents a modernized legal description of a tract of land, as described in Instrument #1998-04591 in the Office of the Recorder of Hendricks County, Indiana and being located in the Southwest Quarter of Section 17 and the Northwest Quarter of Section 20 both in Township 16 North, Range 2 East of the Second Principal Meridian, Hendricks County, Indiana. Said tract being more particularly bound and described as follows, to-Wit:

East line of the Southwest quarter of Section 17 as being North 01 degrees 22 minutes 53 seconds West, deed, measured North 01 degrees 00 minutes 22 seconds West and all other bearings being relative thereto,

Beginning at a Hendricks County Aluminum monument found marking the Southwest corner of the Southwest quarter Section 17, Township 16 North, Range 2 East of the Second Principal Meridian, Hendricks County, Indiana; thence running North on and along the West line of the Southwest quarter of Section 17 bearing North 01° 22' 53" West 155.58 feet, deed, and measured North 01° 00' 22" West 155.53 feet to a point on said West line, marking the Northeast corner of the National Hot Rod Association tract as referenced in the caption; thence running East on and along the North line of the National Hot Rod Association bearing North 88° 42' 57" East 546.58 feet, deed, and measured North 89° 10' 00" East a distance of 40.19 feet to a found 5/8" rebar with Kruse Consulting cap affixed and the *Point of Beginning* of this description; thence continuing North 89° 10' 00" East a distance of 508.15 feet to a found 5/8" rebar with Kruse Consulting cap affixed marking the intersection with the Southwesterly Right-of-Way of the CSX Railroad; thence running Southeasterly on and along the CSX Railroad Right-of-Way and traveling into the Northwest quarter of Section 20 bearing South 61° 12' 10" East 366.62 feet, deed, and measured South 60° 46' 15" East a distance of 365.01 feet to a found 5/8" rebar with Gaston cap marking the Northeast corner of Lot 1 in Villa Farms Subdivision, as per plat thereof recorded in Plat Book 3, page 134 in the Office of the Recorder of Hendricks County, Indiana; thence running West on and along the North line of said Lot 1 in Villa Farms Subdivision bearing South 88° 25' 57" West 863.49 feet (plat for Villa Farms shows this line to be 860.54 feet), calculated to be 823.52 feet to a point marking the intersection with the East right-of-way of N. CR. 1000 E; thence North 01° 02' 08" East, on and along said right-of-way, 38.39 feet; thence North 01° 00' 22" East 155.02 feet to the *Point of Beginning*. Containing 2.895 acres, more or less, subject to all easements and rights-of-way of record.

Dedicated Right-of-Way:
Beginning at a Hendricks County Aluminum monument found marking the Southwest corner of the Southwest quarter Section 17, Township 16 North, Range 2 East of the Second Principal Meridian, Hendricks County, Indiana, and the *Point of Beginning* of this description; thence running North on and along the West line of the Southwest quarter of Section 17 bearing North 01° 22' 53" West 155.58 feet, deed, and measured North 01° 00' 22" West 155.53 feet to a point on said West line, marking the Northeast corner of the National Hot Rod Association tract as referenced in the caption; thence running East on and along the North line of the National Hot Rod Association bearing North 88° 42' 57" East, deed, and measured North 89° 10' 00" East a distance of 40,19 feet to a found 5/8" rebar with Kruse Consulting cap affixed, marking the intersection with the east right-of-way line of N. CR 1000 E.; thence South 01° 00' 22" East 155.02 feet on and along said right-of-way; thence South 01° 02' 08" East 38.39 feet on and along said right-of-way, traveling into the Northwest quarter of Section 20; thence South 88° 25' 57" West 40,19 feet to a point on the West line of the Northwest quarter of Section 20; thence North 01° 02' 08" West on and along aforementioned West line, 38.39 feet to the *Point of Beginning* of this Dedicated Right-of-Way description. Containing 0.179 acres, more or less.

## LINETYPE LEGEND:

| | |
|---|---|
| (SF) | = SILT FENCE |
| x x x | = BARB WIRE FENCE |
| o o o | = CHAIN-LINK FENCE |
| H H H | = WOOD FENCE |
| W | = WATER LINE |
| STRM | = STORM SEWER LINE |
| SAN | = SANITARY SEWER LINE |
| GAS | = GAS LINE |
| UGE | = UNDERGROUND ELECTRIC LINE |
| OHE | = OVERHEAD ELECTRIC LINE |
| COMM | = COMMUNICATION LINE |
| T | = TELEPHONE LINE |
| UTELE | = UNDERGROUND TELEPHONE LINE |
| FO | = FIBER OPTIC LINE |
| W | = FIRE DEPARTMENT WATER SUPPLY |
| 35' ESMT | = 35' EASEMENT LINE |
| 30' ESMT | = 30' EASEMENT LINE |
| 25' ESMT | = 25' EASEMENT LINE |
| 20' ESMT | = 20' EASEMENT LINE |
| 15' ESMT | = 15' EASEMENT LINE |
| 10' ESMT | = 10' EASEMENT LINE |
| 5' ESMT | = 5' EASEMENT LINE |
| ESMT | = EASEMENT LINE |
| ooo | = SWALE LINE |
| ooo | = EDGE OF WATER |
| 35' SETBK | = 35' SETBACK LINE |
| 30' SETBK | = 30' SETBACK LINE |
| 25' SETBK | = 25' SETBACK LINE |
| 20' SETBK | = 20' SETBACK LINE |
| 15' SETBK | = 15' SETBACK LINE |
| 10' SETBK | = 10' SETBACK LINE |
| 5' SETBK | = 5' SETBACK LINE |
| SETBACK | = SETBACK LINE |
| ROW | = RIGHT-OF-WAY LINE |
| | = PROPERTY BOUNDARY |
| UD | = SWALE UNDERDRAIN |
| CABLE | = CABLE TV LINE |
| FL> | = FLOW LINE |

## SYMBOL LEGEND:

- = STORM SEWER END SECTION
- = SANITARY SEWER CLEANOUT
- C.O. = CLEANOUT
- = MANHOLE
- = CATCH BASIN
- = CATCH BASIN
- = CURB INLET
- = FIRE HYDRANT
- = PRESSURE RELIEF VALVE
- WV = WATER VALVE
- W = WATER WELL
- GV = GAS VALVE
- = LIGHT POLE
- = UTILITY POLE
- IRF = PROPERTY CORNER (IRF = IRON ROD FOUND, RBF = REBAR FOUND)
- RBF
- = SURVEY POINT (SECTION CORNER)
- BM = BENCHMARK
- = SOIL BORING
- 741.25 = NEW GRADE ELEVATION
- x741.25 = EXISTING GRADE ELEVATION
- = STRAW BALE DAM
- = ROCK DAM
- = SIGN
- STOP = STOP SIGN
- = HANDICAP SIGN
- ENTER ONLY = ENTER ONLY SIGN
- EXIT ONLY = EXIT ONLY SIGN
- DO NOT ENTER = DO NOT ENTER SIGN
- = EVERGREEN TREE
- = DECIDUOUS TREE
- = BUSH
- = TEMPORARY CONSTRUCTION ENTRNACE
- = GRASS PERMANENT SEEDING
- = EROSION CONTROL BLANKET ON ALL SLOPES 3:1 OR GREATER

## SITE NOTES:

HANDICAP RAMP CONSTRUCTION NOTES:

1. ALL HANDICAP RAMPS SHALL MEET THE REQUIREMENTS OF THE AMERICAN DISABILITIES ACT. THE MOST RECENT INDOT STANDARD SPECIFICATIONS AND THE GOVERNING JURISDICTIONS MOST RECENT STANDARDS. CURB SWIPES REQUIRED FOR HANDICAP RAMPS SHALL BE PROVIDED AT TIME OF INITIAL CONSTRUCTION.

2. MINIMUM WIDTH OF CURB RAMP SHALL BE 4 FEET NOT INCLUDING FLARES. MAXIMUM SLOPE OF RAMPS SHALL BE 12:1

3. HANDICAP RAMPS ARE TO BE LOCATED AS SHOWN ON PLANS.

4. TYPE 'E' RAMPS SHALL BE PROVIDED AT THE CENTERLINE OF RADIUS AT ALL CORNERS OF EVERY STREET INTERSECTION WHERE THERE IS AN EXISTING OR PROPOSED SIDEWALK AND CURB. IN CASE OF "T"-INTERSECTION, A TYPE 'C' RAMP SHALL BE PROVIDED ADJACENT TO EACH CORNER RAMP. TYPE 'C' RAMPS ALSO SHALL BE PROVIDED AT WALK LOCATIONS AT MID-BLOCK IN VICINITY OF HOSPITALS, MEDICAL CENTERS OR ATHLETIC STADIUMS. THE USE OF DETAILS CONTRARY TO THOSE SHOWN HEREIN SHALL REQUIRE THE PRIOR WRITTEN APPROVAL OF THE GOVERNING JURISDICTION.

5. SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING TRANSVERSE TO THE SLOPE OF THE RAMP.

6. RAMPS SHALL BE PROVIDED WHERE THE DRIVEWAY CURB EXTENDS ACROSS THE SIDEWALK.

7. CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON ALL RAMPS WITH NO BREAKS IN GRADE.

8. DRAINAGE STRUCTURES SHALL NOT BE PLACED IN LINE WITH THE RAMPS EXCEPT WHERE EXISTING DRAINAGE STRUCTURES ARE BEING UTILIZED IN THE NEW CONSTRUCTION. LOCATION OF THE RAMPS SHALL TAKE PRECEDENCE OVER LOCATION OF DRAINAGE STRUCTURES.

9. THE NORMAL GUTTER LINE PROFILE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.

10. EXPANSION JOINTS FOR THE RAMP SHALL BE A MAXIMUM 1/2" WIDE. THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

11. CROSSWALK AND STOP LINE MARKING, IF USED, SHALL BE LOCATED TO STOP TRAFFIC SHORT OF ALL RAMP CROSSINGS.

12. SLOPE OF RAMP MAY BE WARPED WHEN FILED CONDITIONS WARRANT AND WHEN APPROVED BY THE GOVERNING JURISDICTION.

## LOT COVERAGE

| | ACRES | PERCENT |
|---|---|---|
| ASPHALT | 1.845 | 60% |
| BUILDINGS | 0.086 | 2.8% |
| SIDEWALK | 0.016 | 0.5% |
| PERVIOUS | 1.123 | 36.6% |
| TOTAL LOT | 3.07 | 100% |

## SITE NOTES:

GENERAL NOTES:

1. REFER TO THE INDIANA DEPARTMENT OF TRANSPORTATION (INDOT) STANDARD SPECIFICATIONS, LATEST EDITION, FOR BASIC MATERIALS AND CONSTRUCTION METHODS. THE SECTIONS BELOW FOR VARIOUS ITEMS ARE TO CLARIFY THE INTENT OF THE REQUIREMENTS FOR THIS PROJECT. PLEASE NOTE THAT OTHER SECTIONS OF THE INDOT STANDARD SPECIFICATIONS MAY ALSO BE APPLICABLE;

2. ALL RADII SHELL BE 5 FOOT UNLESS NOTED OTHERWISE ON PLANS.

3. CONTRACTOR TO VERIFY EXACT LOCATION AND INVERT OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.

4. STORM SEWER PIPE OF OTHER MATERIAL OR MATERIAL NOT MEETING THESE SPECIFICATIONS SHALL REQUIRE THE PRIOR WRITTEN APPROVAL OF THE ENGINEER.

5. THE CONTRACTOR SHALL SUBMIT INFORMATION TO THE APPROPRIATE JURISDICTIONAL CONTACT SHOWING CONFORMANCE WITH THESE SPECIFICATIONS UPON REQUEST.

PAVEMENT CONSTRUCTION:

1. THE INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, LATEST EDITION, SHALL APPLY TO WORKMANSHIP AND MATERIALS IN CONSTRUCTION OF SUBGRADE, PAVEMENT, CURBS AND WALKS.

A) PREPARE THE SUBGRADE IN ACCORDANCE WITH INDOT SECTION 207. NO TRAFFIC WILL BE PERMITTED ON THE PREPARED SUBGRADE PRIOR TO PAVING,

B) BITUMINOUS PAVEMENT IN ACCORDANCE WITH INDOT SECTION 403,

C) FINISHING EARTH GRADED SHOULDERS, DITCHES AND SLOPES IN ACCORDANCE WITH INDOT SECTION 208.

CONCRETE PAVEMENT AND WALKS:

1. SEE DETAIL FOR TYPE AND DETAILS.

2. CONCRETE SHALL BE READY MIXED PORTLAND CEMENT AND WATER CONFORMING TO ASTM C-150. AGGREGATES SHALL CONFORM TO ASTM C-33. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS SHALL BE 4000 P.S.I WHERE REQUIRED, REINFORCEMENT SHALL BE WELDED STEEL WIRE FABRIC CONFORMING TO ASTM A-185.

3. ALL EXTERIOR CONCRETE SHALL CONTAIN 6% ± 1% AIR ENTRAINMENT.

APPLICATION:

A) PLACE CONCRETE ONLY ON A MOIST, COMPACT SUBGRADE OR BASE FREE FROM LOOSE MATERIAL. PLACE NO CONCRETE ON MUDDY OR FROZEN SUBGRADE IN ACCORDANCE WITH INDOT SECTION 604 AND 605.

B) CONCRETE SHALL BE DEPOSITED SO AS TO REQUIRE AS LITTLE REHANDLING AS PRACTICAL. WHEN CONCRETE IS TO BE PLACED AT AN ATMOSPHERIC TEMPERATURE OF 35 DEGREES OR LESS, PARAGRAPH 702.10 OF THE INDOT SPECIFICATIONS SHALL APPLY.

C) EXCEPT AS OTHERWISE SPECIFIED, CURE ALL CONCRETE BY ONE OF THE METHODS DESCRIBED IN INDOT SECTION 501.17.

PARKING LOT STRIPING:

1. PAINT MATERIAL SHALL COMPLY WITH FEDERAL SPECIFICATION TT-P-115A FOR TRAFFIC PAINT WITHOUT GLASS SPHERES. (COLOR BY OWNER SELECTION).

2. SUBCONTRACTOR TO PERFORM ALL FIELD LAYOUT WORK NECESSARY TO ACHIEVE STRAIGHT AND TRUE LINES. ASPHALT MUST BE CLEANED WITH POWER BROOM AND HAND BROOM TO REMOVE LOOSE MATERIAL BEFORE STRIPING. THE SUBCONTRACTOR IS TO PROVIDE BARRIERS TO PREVENT MARRING OF LINES BY VEHICLES UNTIL PAINT HAS DRIED. STRIPING PAINT SHALL BE APPLIED AT THE MINIMUM RATE OF ONE GALLON PER 100 SQUARE FEET OF PAINT (BASED ON 39% SOLIDS) AT A WIDTH OF FOUR INCHES.

STREET PAVEMENT NOTES:

1. MATERIALS AND CONSTRUCTION FOR STREETS, WALKS, CURBS AND STORM WATER SEWERS SHALL CONFORM TO THE REQUIREMENTS OF THE INDIANA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS" LATEST PRINTED EDITION UNLESS SHOWN OR NOTED OTHERWISE.

2. PAVEMENT COMPOSITION NOTED ON DETAIL IS THE MINIMUM REQUIREMENT FOR STREET CLASSES 1, 2, 3, 4 AND 5, WITH A GOOD SUB-GRADE SOIL CLASSIFICATION. PAVEMENT COMPOSITION FOR OTHER CLASSES OF STREET SHALL BE DESIGNED WITH CONSIDERATION GIVEN TO THE TRAFFIC VOLUME, SUB-GRADE SOIL EVALUATION AND TYPE OF PAVEMENT MATERIAL TO BE USED.

3. THE SUB-GRADE MUST BE PROOF ROLLED BY THE CONTRACTOR USING A FULLY LOADED TRI-AXLE DUMP TRUCK, MINIMUM LOAD OF 20 TONS

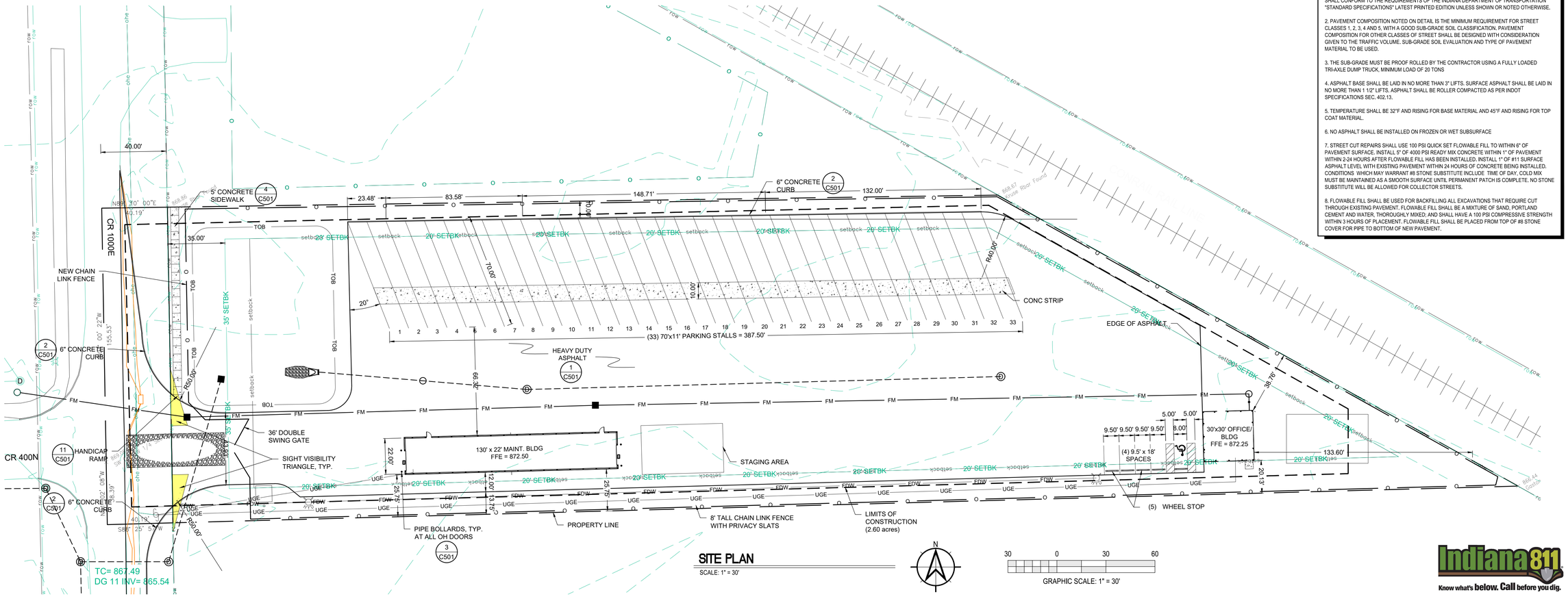
4. ASPHALT BASE SHALL BE LAID IN NO MORE THAN 3" LIFTS. SURFACE ASPHALT SHALL BE LAID IN NO MORE THAN 1 1/2" LIFTS. ASPHALT SHALL BE ROLLER COMPACTED AS PER INDOT SPECIFICATIONS SEC. 402.13..

5. TEMPERATURE SHALL BE 32°F AND RISING FOR BASE MATERIAL AND 45°F AND RISING FOR TOP COAT MATERIAL.

6. NO ASPHALT SHALL BE INSTALLED ON FROZEN OR WET SUBSURFACE

7. STREET CUT REPAIRS SHALL USE 100 PSI QUICK SET FLOWABLE FILL TO WITHIN 6" OF PAVEMENT SURFACE. INSTALL 5" OF 4000 PSI READY MIX CONCRETE WITHIN 1" OF PAVEMENT WITHIN 2-24 HOURS AFTER FLOWABLE FILL HAS BEEN INSTALLED. INSTALL 1" OF #11 SURFACE ASPHALT LEVEL WITH EXISTING PAVEMENT WITHIN 24 HOURS OF CONCRETE BEING INSTALLED. CONDITIONS WHICH MAY WARRANT #8 STONE SUBSTITUTE INCLUDE TIME OF DAY, COLD MIX MUST BE MAINTAINED AS A SMOOTH SURFACE UNTIL PERMANENT PATCH IS COMPLETE. NO STONE SUBSTITUTE WILL BE ALLOWED FOR COLLECTOR STREETS.

8. FLOWABLE FILL SHALL BE USED FOR BACKFILLING ALL EXCAVATIONS THAT REQUIRE CUT THROUGH EXISTING PAVEMENT. FLOWABLE FILL SHALL BE A MIXTURE OF SAND, PORTLAND CEMENT AND WATER, THOROUGHLY MIXED, AND SHALL HAVE A 100 PSI COMPRESSIVE STRENGTH WITHIN 3 HOURS OF PLACEMENT. FLOWABLE FILL SHALL BE PLACED FROM TOP OF #8 STONE COVER FOR PIPE TO BOTTOM OF NEW PAVEMENT.




SITE PLAN
SCALE: 1" = 30'

N

30 0 30 60
GRAPHIC SCALE: 1" = 30'

Indiana 811
Know what's below. Call before you dig.


Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

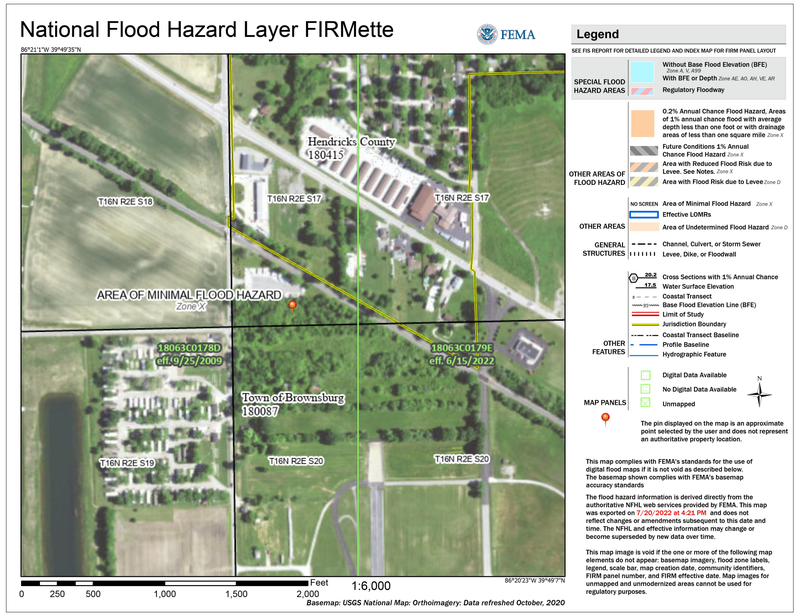
SITE PLAN

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| 6 | REVISED per TOWN COMMENTS | 11/06/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C201 |










## Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| YbvA | Brookston silty clay loam-Urban land complex, 0 to 2 percent slopes | 1.8 | 53.2% |
| YclA | Crosby silt loam, fine-loamy subsoil-Urban land complex, 0 to 2 percent slopes | 1.5 | 46.8% |
| **Totals for Area of Interest** | | **3.3** | **100.0%** |

## GRADING NOTES:

GENERAL GRADE NOTES:

1. REFER TO THE INDIANA DEPARTMENT OF TRANSPORATION (INDOT) STANDARD SPECIFICATIONS, LATEST EDITION, FOR BASIC MATERIALS AND CONSTRUCTION METHODS. THE SECTION BELOW FOR VARIOUS ITEMS ARE TO CLARIFY THE INTENT OF THE REQUIREMENTS FOR THIS PROJECT, PLEASE NOTE THAT OTHER SECTIONS OF THE INDOT STANDARD SPECIFICATIONS MAY ALSO BE APPLICABLE.

2. FILL MATERIAL SHALL CONSIST OF EARTH OBTAINED FROM CUT AREAS, BORROW PITS OR OTHER APPROVED SOURCES. EARTH SHALL BE FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES AND LARGE ROCKS. THE FILL MATERIAL SHALL BE PLACED IN LAYERS NOT TO EXCEED SIX INCHES FOLLOWING COMPACTION. PROPER MOISTURE CONTENT OF FILL MATERICAL WILL BE SUCH TO ACHIEVE SPECIFIED COMPACTION DENSITY. ALL FILL BENEATH PAVED AREAS, FLOOR SLABS AND FURTURE BUILDINGS SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY PER ASTM D-1557, FIELD COMPACTING TEST SHALL BE RUN ON EACH LIFT, IN FILL SECTIONS, AND THE REQUIRED COMPACTION ON EACH LIFT SHALL BE IN ACCORDANCE WITH INDOT SECTION 211.

3. MAXIMUM LAWN SLOPE IS 3:1.

4. THE CONTRATOR SHALL CONTACT ALL UTILITY COMPANIES TO LOCATE MAINS, CONDUITS, SERVICE LINES, ETC, IN THE AFFECTED CONSTRUCTION AREA EXISTING UTILITY STRUCTURES ARE SHOWN HERE IN ACCORDANCE WITH AVAILABLE INFORMATION. THE LOCATION AND PROTECTION OF UTILITY STRUCTURES, THEIR SUPPORT AND MAINTENANCE DURING CONSTRUCTION (IN COOPERATION WITH APPLICABLE UTILITY COMPANY) IS THE EXPRESSED RESPONSIBILITY OF THE CONTRACTOR.

5. ALL SPOT ELEVATIONS ARE TO FINISHED GRADE.

6. ALL EXISTING MANHOLE CASTINGS TO BE ADJUSTED TO FINISH GRADE.

7. COMPACT "B" BORROW BACK FILL REQ'D. OVER ALL UTILITIES IN PAVED AREAS.

8. DISTURBED AREAS TO BE GRADED TO FINAL GRADE AND RECEIVE A MIN OF 4" TOPSOIL

9. STABILIZATION MUST BE INITIATED BY END OF THE 7TH DAY THE AREA IS LEFT IDLE AND STABILIZATION SHALL BE COMPLETED WITHIN 14 DAYS AFTER INITIATION.

10. FINAL STABILIZATION IS ACHIEVED WHEN ALL LAND DISTURBING ACTIVITIES HAVE BEEN COMPLETED AND A UNIFORM PERENNIAL VEGATATIVE COVER WITH DENSITY OF 70% ON ALL UNPAVED SURFACES.

11. WATER SHOULD BE PUMPED THROUGH BMP AND INTO THE DETENTION POND.

REINFORCED CONCRETE PIPE:

1. REINFORCED CONCRETE PIPE SHALL BE CLASS III, IV OR V AS SPECIFIED IN ASTM C-76.

2. REINFORCED ELLIPTICAL CONCRETE PIPE SHALL BE CLASS HE-III OR HE-IV AS SPECIFIED IN ASTM C-507.

3. LIFT HOLES ARE NOT ALLOWED FOR PIPE LESS THAN 24 INCHES IN DIAMETER. A MAXIMUM OF TWO LIFT HOLES ARE ALLOWED FOR PIPE 24 INCHES IN DIAMETER OR LARGER. LIFT HOLES SHALL BE REPAIRED ACCORDING TO MOST RECENT INDOT STANDARD SPECIFICATIONS.

4. FITTINGS AND SPECIALTIES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS FOR THE TYPE OF PIPE BEING USED.

5. EACH PIPE SECTION SHALL BE MARKED WITH DATE OF MANUFACTURE, SIZE AND CLASS OF PIPE, SPECIFICATION DESIGNATION, MANUFACTURER AND PLANT IDENTIFICATION.

6. PIPE SHALL BE FURNISHED WITH A BELL OR GROOVE ON ONE END OF A UNIT OF PIPE AND A SPIGOT OR TONGUE ON THE ADJACENT END OF THE ADJOINING PIPE. ALL JOINTS SHALL HAVE A GROOVE ON THE SPIGOT FOR PLACEMENT OF A RUBBER "O-RING" OR PROFILE GASKET IN ACCORDANCE WITH ASTM C-443. THE GASKET SHALL BE A CONTINUOUS RING WHICH FITS SNUGLY INTO THE ANNULAR SPACE BETWEEN THE OVERLAPPING SURFACES OF THE ASSEMBLED PIPE JOINT.

## FLOOD ZONE DESIGNATION:

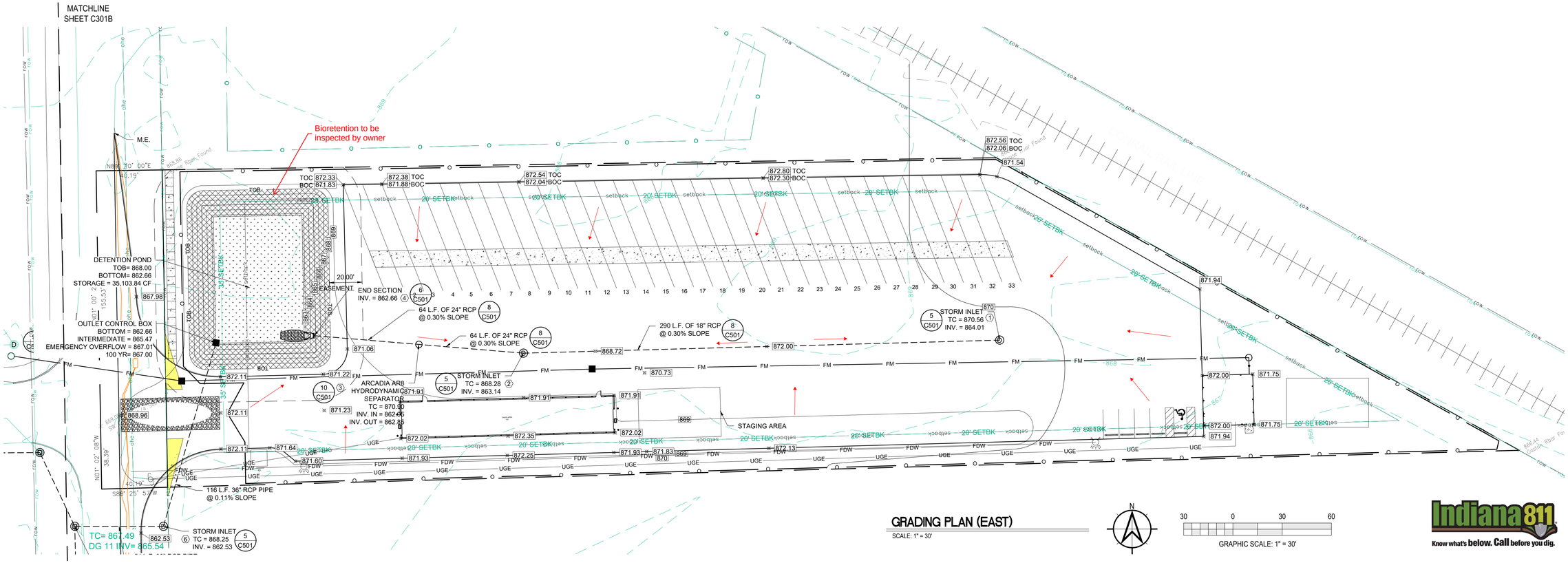
THIS LOT LIES ENTIRELY IN FLOOD HAZARD ZONE "X" AS SCALES FROM THE FLOOD INSURANCE RATE MAP (FIRM) FOR:

HENDRICKS COUNTY, INDIANA

| | |
|---|---|
| COMMUNITY NAME: | TOWN OF BROWNSBURG |
| COMMUNITY NUMBER: | 180087 |
| PANEL NUMBER: | C0179E |
| DATED: | JUNE 15, 2022 |

## STAGE STORAGE TABLE

| ELEV | AREA (sq. ft.) | DEPTH (ft) | AVG END INC. VOL. (cu. ft.) | AVG END TOTAL VOL. (cu. ft.) | CONIC INC. VOL. (cu. ft.) | CONIC TOTAL VOL. (cu. ft.) |
|---|---|---|---|---|---|---|
| 862.660 | 3,978.76 | N/A | N/A | 0.00 | N/A | 0.00 |
| 863.000 | 4,250.00 | 0.340 | 1398.89 | 1398.89 | 1398.64 | 1398.64 |
| 864.000 | 5,096.00 | 1.000 | 4673.00 | 6071.89 | 4666.61 | 6065.24 |
| 865.000 | 6,013.14 | 1.000 | 5554.57 | 11626.46 | 5548.25 | 11613.49 |
| 866.000 | 6,990.27 | 1.000 | 6501.70 | 18128.16 | 6495.58 | 18109.07 |
| 867.000 | 8,023.94 | 1.000 | 7507.10 | 25635.27 | 7501.16 | 25610.23 |
| 868.000 | 9,114.16 | 1.000 | 8569.05 | 34204.31 | 8563.26 | 34173.50 |




## GRADING PLAN (EAST)

SCALE: 1" = 30'

GRAPHIC SCALE: 1" = 30'

Indiana 811 Know what's below. Call before you dig.

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

LIONS TRANS INC. (BROWNSBURG)
4005 N CR 1000 E
BROWNSBURG, IN 46122

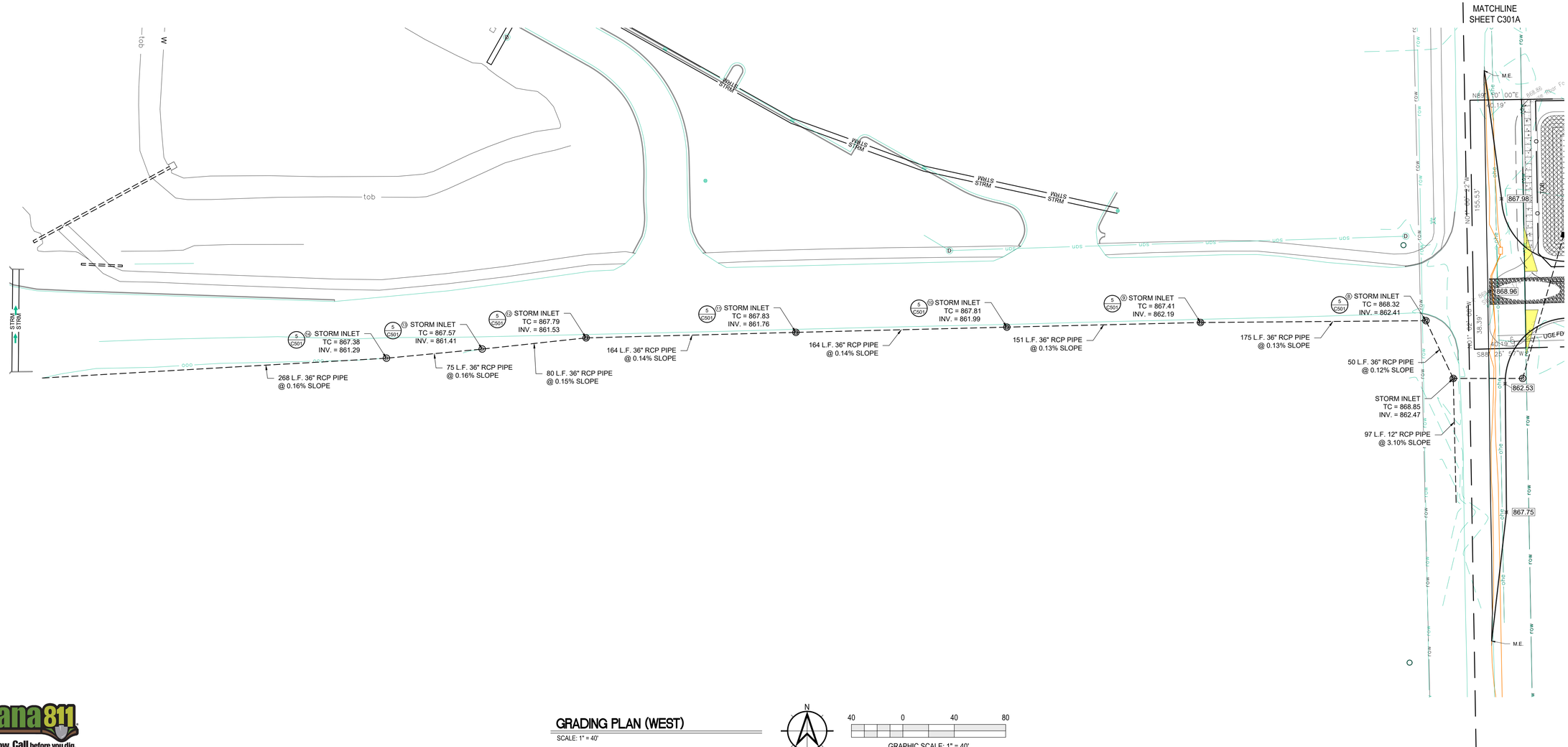
GRADING PLAN (EAST)

BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| 6 | REVISED per TOWN COMMENTS | 11/06/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C301A |




## GRADING PLAN (WEST)

SCALE: 1" = 40'

N

40 0 40 80

GRAPHIC SCALE: 1" = 40'

Indiana 811
Know what's below. Call before you dig.


Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

GRADING PLAN (WEST)

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| 6 | REVISED per TOWN COMMENTS | 11/06/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C301B |

## SEASONAL SOIL PROTECTION CHART

| STABILIZATION PRACTICE | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. | OCT. | NOV. | DEC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PERMANENT SEEDING | | A | | | * | /// | /// | /// | *// | | | |
| DORMANT SEEDING | B | | | | | | | | | | B | |
| TEMPORARY SEEDING | | C | E | | * | /// | /// | /// | * D | | | |
| SODDING | | F** | | | * | /// | /// | /// | * | | | |
| MULCHING | G | | | | | | | | | | | |

A = KENTUCKY BLUEGRASS 100 LBS/ACRE; CREEPING RED FESCUE 100 LBS/ACRE: PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYEGRASS 20 LBS/ACRE FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

B = KENTUCKY BLUEGRASS 120 LBS/ACRE; CREEPING RED FESCUE 120 LBS/ACRE: PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYEGRASS 30 LBS/ACRE FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

C = SPRING OATS 3 BUSHELS/ACRE
FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

D = WHEAT OR RYE 2 BUSHELS/ACRE
FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

E = ANNUAL RYEGRASS 40 LBS/ACRE (1 LB/1000 SQ. FT.)
FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE. APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

F = SOD

G = STRAW MULCH 2 TONS/ACRE

* / / / * = IRRIGATION NEEDED DURING JUNE, JULY, AUGUST AND/OR SEPTEMBER  ** = IRRIGATION NEEDED FOR 2 WEEKS AFTER SUPPLYING SOD

## INSTALLATION SCHEDULE:

| CONSTRUCTION PHASE: | CONSTRUCTION SCHEDULE: |
|---|---|
| PRE-CONSTRUCTION ACTIONS (EVALUATION/PROTECTION OF IMPORTANT SITE CHARACTERISTICS) | BEFORE CONSTRUCTION, EVALUATE, MARK AND PROTECT IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, UNIQUE AREAS (e.g., WETLANDS) TO BE PRESERVED, ON SITE SEPTIC SYSTEM ABSORPTION FIELDS IF APPLICABLE, AND VEGETATION SUITABLE FOR FILTER STRIPS, ESPECIALLY IN PERIMETER AREAS. |
| CONSTRUCTION ACCESS (CONSTRUCTION ENTRANCES, CONSTRUCTION ROUTES, EQUIPMENT PARKING AREAS) | STABILIZE BARE AREAS IMMEDIATELY WITH GRAVEL AND TEMPORARY VEGETATION AS WORK TAKES PLACE. |
| SEDIMENT BARRIERS AND TRAPS (BASIN TRAPS, SILT FENCES, OUTLET PROTECTION) | INSTALL PRINCIPAL BASINS AFTER CONSTRUCTION SITE IS ASSESSED. INSTALL ADDITIONAL RUNOFF CONTROL MEASURES DURING GRADING AS NEEDED. |
| RUNOFF CONVEYANCE SYSTEM (STABILIZED STREAM-BANKS, STORM DRAINS, INLET AND OUTLET PROTECTIONS, WATER QUALITY STRUCTURES) | WHERE NECESSARY, STABILIZE STREAMBANKS AS EARLY AS POSSIBLE. INSTALL PRINCIPLE CONVEYANCE SYSTEM WITH RUNOFF CONTROL MEASURES. INSTALL REMAINDER OF SYSTEM AFTER GRADING. |
| LAND CLEARING AND GRADING (CUTTING/FILLING/GRADING, DRAINS, SEDIMENT TRAPS, BARRIERS, DIVERSIONS, SURFACE ROUGHENING) | BEGIN MAJOR CLEARING AND GRADING AFTER INSTALLING THE KEY SEDIMENT AND RUNOFF MEASURES. CLEAR BORROW AND DISPOSAL AREAS AS NEEDED. INSTALL ADDITIONAL CONTROL MEASURES AS GRADING PROGRESSES. |
| SURFACE STABILIZATION (TEMPORARY AND PERMANENT SEEDING, MULCHING, SODDING, RIPRAP) | APPLY TEMPORARY OR PERMANENT STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS WHERE WORK IS DELAYED OR COMPLETED. |
| BUILDING CONSTRUCTION (BUILDINGS, UTILITIES, PAVING) | INSTALL NECESSARY EROSION AND SEDIMENT CONTROL PRACTICES AS WORK TAKES PLACE. |
| LANDSCAPING & FINAL STABILIZATION (TOP SOILING, TREES AND SHRUBS, PERMANENT SEEDING, MULCHING, SODDING, RIPRAP) | STABILIZE ALL OPEN AREAS, INCLUDING BORROW AND SPOIL AREAS. REMOVE TEMPORARY CONTROL MEASURES AND STABILIZE. |

## RESPONSIBLE PARTY FOR EROSION CONTROL

COMPANY: LIONS TRAN INC.
NAME: MALHI KULWINDER
ADDRESS: 7655 E. US HWY 36
AVON, INDIANA 46123
PHONE: 317-989-1580

## EROSION CONTROL NOTES:

SOIL EROSION CONTROL SUMMARY:

1. CONTRACTOR SHALL INSTALL SODDING, INLET PROTECTION, AND FILTERS AS SHOWN.

2. MASS GRADE THE SITE (SIDES OF SWALES, MOUNDS AND PONDS TO BE SODDED OR SEEDED AND MULCHED IMMEDIATELY UPON COMPLETION). TEMPORARY SEEDING SHALL BE RECOMMENDED FOR ALL SWALES AND DISTURBED AREAS THAT CANNOT BE FINAL SEEDED WITHIN A TIME PERIOD THAT WILL PREVENT SOIL EROSION, FOR TEMPORARY SEEDING THE CONTRACTOR SHALL UTILIZE A FAST GROWING SEED OF EITHER OATS, ANNUAL RYE GRASS, WHEAT OR RYE DEPENDING UPON TIME OF YEAR. DISTURBED AREAS SHOULD BE KEPT TO A MINIMUM AT ALL TIMES.

3. CONTRACTOR SHALL CONTROL MUD ACCUMULATION ON ALL STREETS SURROUNDING THE PROJECT BY INSTALLING STONE SURFACE AT ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC LEAVES THE SITE. DUST SHALL BE KEPT TO A MINIMUM BY UTILIZING SPRINKLING, CALCIUM CHLORIDE, VEGETATIVE COVER, SPRAY ON ADDITIVES OR OTHER APPROVED METHODS.

4. MAINTAIN ALL FILTERS DURING CONSTRUCTION TO PREVENT ANY BLOCKAGES FROM ACCUMULATED SEDIMENT. ADDITIONAL SEEDING MAY BE REQUIRED DURING CONSTRUCTION AS SPECIFIED BY ENGINEER OR SOIL CONSERVATION SERVICE. RIPRAP SHALL BE PLACED IN AREAS OF HIGH VELOCITY STREAM FLOW (MINIMUM SIZE 1/3 CU.FT.). PAYMENT FOR ADDITIONAL RIPRAP NOT SHOWN ON PLANS AND SEEDING SHALL BE ON A UNIT BASIS.

5. CONTRACTOR SHALL INSTALL ALL STORM SEWER INLET FILTERS AS STORM SEWER SYSTEM IS INSTALLED.

6. ALL PROPOSED STREET AREAS TO BE PAVED AS SOON AS POSSIBLE AFTER SUBGRADE IS PREPARED.

7. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROLS ONLY WHEN THERE IS SUFFICIENT GROWTH OF GROUND COVER TO PREVENT FURTHER EROSION.

8. ALL SWALES SHALL BE SEEDED AND SODDED (AS INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN) IMMEDIATELY AFTER FINAL GRADING.

9. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE INDIANA HANDBOOK FOR EROSION CONTROL IN DEVELOPING AREAS, MOST RECENT EDITION.

MAINTENANCE:

INSPECT PERIODICALLY, ESPECIALLY AFTER STORM EVENTS, UNTIL THE STAND IS SUCCESSFULLY ESTABLISHED. (CHARACTERISTICS OF A SUCCESSFUL STAND INCLUDE: VIGOROUS DARK GREEN OR BLUISH-GREEN SEEDLINGS; UNIFORM DENSITY WITH NURSE PLANTS, LEGUMES, AND GRASSES WELL INTER-MIXED; GREEN LEAVES; AND THE PERENNIALS REMAINING GREEN THROUGHOUT THE SUMMER, AT LEAST AT THE PLANT BASE.)

PLAN TO ADD FERTILIZER THE FOLLOWING GROWING SEASON ACCORDING TO SOIL TEST RECOMMENDATIONS.

REPAIR DAMAGED, BARE, OR SPARSE AREAS BY FILLING ANY GULLIES, RE-FERTILINZING, OVER- OR RE-SEEDING, AND MULCHING.

IF PLANT COVER IS SPARSE OR PATCHY, REVIEW THE PLANT MATERIALS CHOSEN, SOIL FERTILITY, MOISTURE CONDITION, AND MULCHING AFTER RE-PREPARING THE SEEDBED.

IF VEGETATION FAILS TO GROW, CONSIDER SOIL TESTING TO DETERMINE ACIDITY OR NUTRIENT DEFICIENCY PROBLEMS. (CONTACT YOUR SWCD OR COOPERATIVE EXTENSION OFFICE FOR ASSISTANCE.)

IF ADDITIONAL FERTILIZATION IS NEEDED TO GET A SATISFACTORY STAND, DO SO ACCORDING TO SOIL TEST RECOMMENDATIONS.

EROSION CONTROL NOTES:

PRIOR TO ANY WORK BEING DONE, A TEMPORARY CONSTRUCTION ENTRANCE AND SILT FENCING SHALL BE INSTALLED.

AFTER COMPLETION OF A STORM STRUCTURE, THE CURB INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY.

UPON COMPLETION OF SWALES AND SIDE SLOPES, CONTRACTOR SHALL INSTALL THE EROSION CONTROL BLANKETS.

ALL AREAS NOT DENOTING PERMANENT SEEDING OR FIBER BLANKETS SHALL BE TEMPORARILY SEEDED.

THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR KEEPING THE EXISTING ROADWAYS CLEAR OF DIRT AND DEBRIS.

ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY INSPECTOR AS CONDITIONS WARRANT.

EROSION PROTECTION DURING CONSTRUCTION AND SEEDING:

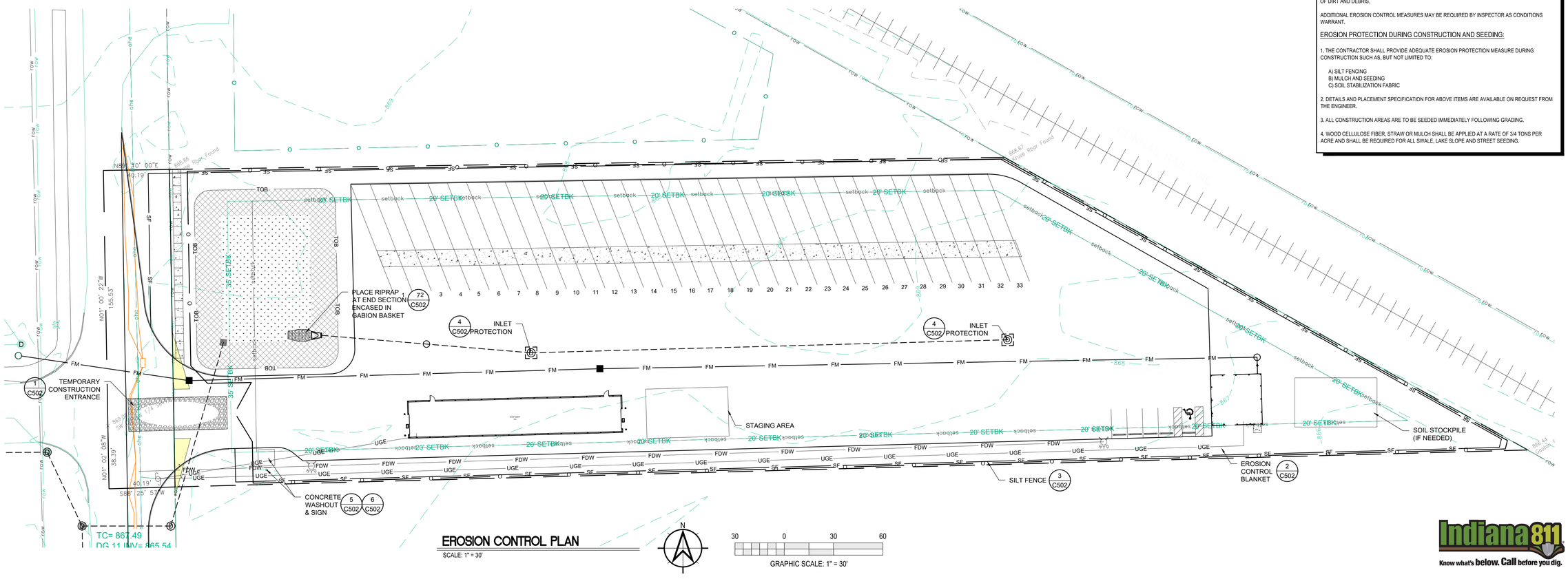
1. THE CONTRACTOR SHALL PROVIDE ADEQUATE EROSION PROTECTION MEASURE DURING CONSTRUCTION SUCH AS, BUT NOT LIMITED TO:

A) SILT FENCING
B) MULCH AND SEEDING
C) SOIL STABILIZATION FABRIC

2. DETAILS AND PLACEMENT SPECIFICATION FOR ABOVE ITEMS ARE AVAILABLE ON REQUEST FROM THE ENGINEER.

3. ALL CONSTRUCTION AREAS ARE TO BE SEEDED IMMEDIATELY FOLLOWING GRADING.

4. WOOD CELLULOSE FIBER, STRAW OR MULCH SHALL BE APPLIED AT A RATE OF 3/4 TONS PER ACRE AND SHALL BE REQUIRED FOR ALL SWALE, LAKE SLOPE AND STREET SEEDING.




## EROSION CONTROL PLAN

SCALE: 1" = 30'

Indiana 811 Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

EROSION CONTROL PLAN

BRYAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

### REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| 6 | REVISED per TOWN COMMENTS | 11/06/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C302 |

## Construction Storm Water General Permit Index Sheet

| SECTION | TITLE | SHEET |
|---|---|---|
| A1 | Index of the location of required plan elements in the construction plan | C000 |
| A2 | A vicinity map depicting the project site location in relationship to recognizable local landmarks, towns, and major roads | C000 |
| A3 | Narrative of the nature and purpose of the project | C303 |
| A4 | Latitude and longitude to the nearest fifteen (15) seconds | C000 |
| A5 | Legal description of the project site | C201 |
| A6 | 11x17-inch plat showing building lot numbers/ boundaries and road layout/names | C303 |
| A7 | Boundaries of the one hundred (100) year flood plains, floodway fringes, and floodways | C301 |
| A8 | Land use of all adjacent properties | C303 |
| A9 | Identification of a U.S. EPA approved or established TMDL | C303 |
| A10 | Name(s) of the receiving water(s). | C303 |
| A11 | Identification of discharges to a water on the current 303(d) list of impaired waters and the pollutant(s) for which it is impaired | C303 |
| A12 | Soils map of the predominate soil types | C301 |
| A13 | Identification and location of all known wetlands, lakes, and water courses on or adjacent to the project site (construction plan, existing site layout) | C303 |
| A14 | Identification of any other state or federal water quality permits or authorizations that are required for construction activities | C303 |
| A15 | Identification and delineation of existing cover, including natural buffers | C301 |
| A16 | Existing site topography at an interval appropriate to indicate drainage patterns | C301 |
| A17 | Location(s) where run-off enters the project site | C301 |
| A18 | Location(s) where run-off discharges from the project site prior to land disturbance | C301 |
| A19 | Location of all existing structures on the project site | N/A |
| A20 | Existing permanent retention or detention facilities, including manmade wetlands, designed for the purpose of storm water management | N/A |
| A21 | Locations where storm water may be directly discharged into ground water, such as abandoned wells, sinkholes, or karst features | C303 |
| A22 | Size of the project area expressed in acres | C000 |
| A23 | Total expected land disturbance expressed in acres | C000 |
| A24 | Proposed final topography | C301 |
| A25 | Locations and approximate boundaries of all disturbed areas | C201 |
| A26 | Locations, size, and dimensions of all storm water drainage system such as culverts, storm water sewer, and conveyance channels | C301 |
| A27 | Locations of specific points where storm water and non-storm water discharges will leave the project site | C301 |
| A28 | Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, and common areas | C201 |
| A29 | Location of all on-site and off-site soil stockpiles and borrow areas | C302 |
| A30 | Construction support activities that are expected to be part of the project | N/A |
| A31 | Location of any in-stream activities that are planned for the project including, but not limited to, stream crossings and pump arounds | N/A |
| B1 | Description of the potential pollutant generating sources and pollutants, including all potential non-storm water discharges | C303 |
| B2 | Stable construction entrance locations and specifications | C302 |
| B3 | Specifications for temporary and permanent stabilization | C302 |
| B4 | Sediment control measures for concentrated flow areas | C301 |
| B5 | Sediment control measures for sheet flow areas | C302 |
| B6 | Run off control measures | C302 |
| B7 | Storm water outlet protection location and specifications | C302/501 |
| B8 | Grade stabilization structure locations and specifications | N/A |
| B9 | De-watering applications and management methods | C303 |
| B10 | Measures utilized for work within water bodies | N/A |
| B11 | Maintenance guidelines for each proposed storm water quality measure | C303 |
| B12 | Planned construction sequence that describes the implementation of storm water quality measures in relation to land disturbance | C303 |
| B13 | Provisions for erosion and sediment control on individual residential building lots regulated under the proposed project | N/A |
| B14 | Material handling and spill prevention and spill response plan meeting the requirements in 327 IAC 2-6.1 | C303 |
| B15 | Material handling and storage procedures associated with construction activity | C303 |
| C1 | Description of pollutants and their sources associated with the proposed land use | C303 |
| C2 | Description of proposed post-construction storm water measures | C303 |
| C3 | Plan details for each storm water measures | C301/501 |
| C4 | Sequence describing storm water measure implementation | C303 |
| C5 | Maintenance guidelines for proposed post-construction storm water measures | C303 |
| C6 | Entity that will be responsible for operation and maintenance of the post-construction storm water measures | C302 |

NOTES:
"NA" - NON APPLICABLE

## Construction Storm Water General Permit Notes Section A

**A1 - Index of the location of required plan elements in the construction plan:**

An index addressing the required elements within the drawing set is on C000 - Cover Sheet.

**A2 - A vicinity map depicting the project site location in relationship to recognizable local landmarks, towns, and major roads:**

A map showing the project in relationship to other areas of the county is on C000 - Cover Sheet.

**A3 - Narrative of the nature and purpose of the project:**

The project consists of the development of a new heavy duty asphalt parking lot with 36 truck and trailer stalls, a 2860 sq. ft. maintenance building, and 900 sq. ft. office building w/ employee parking. The site is located at 4005 North County Road 1000E in Brownsburg, Indiana 46112. Associated with the new improvements will be storm water management system consisting of overland flow, storm inlets, and retention/percolation basin with outlet control. (Shown on C303 - Construction Storm Water General Permit Notes).

**A4 - Latitude and Longitude:**

The latitude is 39°49'21"N and longitude is 86°20'42.19"W. (Shown on C000 - Cover Sheet)

**A5 - Legal description of the project site:**

A legal description of the overall parcel is on C201 - Site Plan

**A6 - 11 x 17-inch plat showing building lot numbers/boundaries and road layout/names:**

An 11x17 in. plan showing the overall property and new improvements is attached to this narrative.

**A7 - Boundaries of the one hundred (100) year floodplains, floodway fringes, and floodways:**

The 100 year floodway and floodway fringe is on C301 - Grading Plan and is based on best available information from the Indiana Department of Natural Resources.

**A8 - Land use of all adjacent properties:**

North - Commercial
South - Undeveloped/Woods
East - Railroad/Commercial
West - Residential/Agricultural
(Shown on C303 - Stormwater Pollution Prevention Plan)

**A9 - Identification of a U.S. EPA approved or established TMDL:**

Site to discharge stormwater into ground via percolation basin or through evaporation. Any dicharge via the emergency spillway will likely evaporate/percolate prior to being received by White Lick Creek (INW01D2_05) which is EPA 303d listed, but has no established TMDL (Shown on C304 - Construction Storm Water General Permit Notes)

**A10 - Name(s) of the receiving water(s):**

Receiving water is White Lick Creek (INW01D2_05) - (Shown on C303 - Stormwater Pollution Prevention Plan)

**A11 - Identification of discharges to a water on the current 303(d) list of impaired waters and the pollutant(s) for which is it impaired:**

The impaired condition of White Lick Creek is due to presence of Escherichia Coli (E. coli) (Noted on C304 - Construction Storm Water General Permit Notes)

**A12 - Soils map of the predominate soil types:**

The soils on this property are predominantly Brookston Silty Clay Loam-Urban Land Complex and Crosby Silt Loam.
Brookston Silty Clay Loam features wetness as the main limitation affecting use and management of this soil type. Crosby Silt Loam features slow permeability and available water capacity is high with moderate content of organic matter.

Both soils are fair to poor for use as subgrade material as well as shear strength, compaction, and stability, medium to high compressibility, moderate to low shrink-swell potential, subject to frost heave, and seasonal high water table. A soils map is on C301 - Grading Plan.

**A13 - Identification and location of all known wetlands, lakes, and water courses on or adjacent to the project site (construction plan, existing site layout)**

There are no known water courses on or adjacent to this site.

**A14 - Identification on any other state or federal water quality permits or authorizations that are required for construction activities:**

This phase of the project scope will not require any additional federal or state water permits as noted on C304 - Construction Storm Water General Permit Notes.

## Construction Storm Water General Permit Notes Section A (cont'd)

**A15 - Identification and delineation of existing cover, including natural buffers:**

The site is almost entirely covered with thick/heavy vegetation and trees with partial remnants of an existing gravel drive. The delineation of the various surface coverage is on C301 - Grading Plan.

**A16 - Existing site topography at interval appropriate to indicate drainage patterns:**

The existing site topography is largely flat with minor relief at the southeast of the site. The existing and proposed contours are on C301 - Grading Plan.

**A17 - Location(s) where run-off enters the project site:**

As referenced above, the topography in this area is largely flat resulting in little to no potential for run-off entering the site from adjacent property. The existing contours are on C301 - Grading Plan.

**A18 - Location(s) where run-off discharges from the project site prior to land disturbances:**

The existing site topography is largely flat with minor relief at the southeast of the site. The existing contours are on C301 - Grading Plan.

**A19 - Location(s) of all existing structures on the project site:**

The existing site is a vacant lot with no existing structures as depicted on C301 - Grading Plan.

**A20 - Existing permanent retention or detention facilities, including manmade wetlands, designed for the purpose of stormwater management:**

There are no existing retention facilities on site as depicted on C301 - Grading Plan.

**A21 - Locations where storm water may be directly discharged into ground water, such as abandoned wells, sinkholes, or karst features:**

There are no locations on property where storm water may directly discharge into the groundwater as illustrated on C301 - Grading Plan.

**A22 - Size of the project expressed in acres:**

The total project are if 3.07 acres as noted on C000 - Cover Sheet.

**A23 - Total expected land disturbance expressed in acres:**

The total disturbed area is 2.60 acres as noted on C000 - Cover Sheet.

**A24 - Proposed final topography:**

The final topography is on C301 - Grading Plan and is illustrated as spot elevations and contours.

**A25 - Locations and approximate boundaries of all disturbed areas:**

The total disturbed area is 2.60 acres as noted on C000 - Cover Sheet and shown as the Limits of Construction on C201 - Site Plan.

**A26 - Locations, size and dimensions of all stormwater drainage systems such as culverts, stormwater sewer, and conveyance channels:**

The stormwater is conveyed by overland flow, underground storm pipes, and retention pond. These are shown on C301 - Grading Plan.

**A27 - Locations of specific points where stormwater and non-stormwater discharges will leave the project site:**

Stormwater discharge from the site will be via an emergency spillway from the retention pond at the east end of the site and sanitary discharge will be via a pump and force main at the west end of the site.(Shown on C301 - Grading Plan & C402 Sanitary Force Main Plan & Profile.

**A28 - Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, and common areas:**

All the surface improvements including buildings, impervious areas, new surface finishes, etc. are on C201 - Site Plan for horizontal notations and C301 - Grading Plan for elevations.

**A29- Location of all on-site and off-site soil stockpiles and borrow areas:**

The soil storage area will be on site located at the east end of the site (west of the pond). All soil will be placed in the final location or hauled off upon completion of construction as shown on C302 - Erosion Control Plan.

**A30- Construction support activities that are expected to be part of the project**

Any construction support area will be within the limits of disturbance and used as directed by the contractor. Since they are within the limits of disturbance, there will be no impact sensitive areas.

**A31- Location of any on-stream activities that are planned for the project including, but not limited to, stream crossings and pump arounds:**

There are no in stream activities associated with this project.

## Construction Storm Water General Permit Notes Section B

**B1- Description of the potential pollutant generating sources and pollutants, including all potential non-storm water discharges:**

1. Concrete Washout Area: Specific concrete washout area shall be established and labeled.
   a) The specific concrete wash out will be in a provided lined roll off box at a specific location near the entrance to the job site.
   b) The lined roll off box will be placed on stable soil with a stone approach.
   c) Once the lined roll off box is full, it will be removed from the site and discarded as clean fill once solid. A new lined roll off box will replace the one removed.
2. Construction Mobile Equipment Fluid
   a) All fueling of equipment will be managed and completed on a stone surface.
   b) Daily observation of all equipment for inspection of leaks or potential leaks of any fluids.
   c) Any observed fluid leaks are to be handled immediately with the equipment being moved to a stable stone surface and placed out of operation until maintenance is completed.
   d) Spill kits are to be utilized once the equipment is moved to the stable stone surface to prevent leakage from penetrating the ground or impacting storm water runoff.
3. Construction Material Waste
   a) All material waste is to be placed in provided roll off boxes as it is generated.
   b) Full roll off boxes are to be removed and properly disposed of in a licensed facility.
   c) No debris is to be stored on the ground surface at any time.
   These items are noted on C303 - Stormwater Pollution Prevention Plan.

**B2- Stable construction entrance locations and specifications:**

A stable construction entrance consisting of compacted subgrade, filter fabric and #2 stone is to be used for all construction traffic entering / exiting the site. The stone surface is to be maintained with new stone as necessary to maintain a solid drive surface. The location of the temporary construction entrance is shown on C302 for plan view and Sheet C502 for detail.

**B3- Specifications for temporary and permanent stabilization:**

The provisions for temporary stabilization during construction as well as permanent stabilization are included in the drawing set. The information contains specific stabilization techniques for the conditions of the site as well as timing of installation.

For temporary construction stabilization, it is the Contractor responsibility to maintain the stabilization during the construction duration and until permanent stabilization is installed.

For permanent stabilization, it is expected installation to occur immediately after final grading of the soil surface. Permanent stabilization is to be maintained by the Owner until 75% effective cover is established on the soil surface.
The stabilization is noted on C302 - Erosion Control Plan.

**B4- Sediment control measures for concentrated flow areas:**

The concentrated flow is protected at the pond inlet with riprap of minimum size being 6 inches and at the emergency spillway with stone dam as shown on C301 - Grading Plan and details on C501 & C502 - Sections and Details.

**B5- Sediment control measures for sheet flow areas:**

Sediment control for sheet flow is handled at the project perimeter with silt fence. (Shown on C302 - Erosion Control Plan).

**B6- Run-off control measures:**

Sediment control for sheet flow is handled at the project perimeter with silt fence. (Shown on C302 - Erosion Control Plan).

**B7- Stormwater outlet protection location and specifications:**

The concentrated flow is protected at the pond outlet with the previously mentioned rock dam as shown on C302 - Erosion Control Plan.

**B8- Grade stabilization structure locations and specifications:**

The grade on the site is largely flat and remain so post construction. There are no stabilization structures planned for this project as illustrated on C301 - Grading Plan.

**B9- Dewatering applications and management methods:**

Any dewatering required will be directed to the low area of the site (east) where it can percolate into existing soil. (Noted C303 - Stormwater Pollution Prevention Plan)

**B10- Measures utilized for work within waterbodies:**

This is not applicable to this project. (Noted C303 - Stormwater Pollution Prevention Plan)

**B11- Maintenance guidelines for each proposed stormwater quality measure:**

The stormwater quality is by a bioretention pond that is to be cleaned of trash, mowed, trimmed and monitored regularly to maintain proper function of the pond. (C301 - Grading Plan)

**B12- Planned construction sequence that describes the implementation of stormwater quality measures in relation to land disturbance:**

The construction sequence for installation of the erosion control measures and stormwater pollution prevention devices are detailed on C302 - Erosion Control Plan.

**B13- Provisions for erosion and sediment control on individual residential building lots regulated under the proposed project:**

Not applicable to this project. (Noted C303 - Stormwater Pollution Prevention Plan)

**B14- Material handling and spill prevention and spill response plan meeting the requirements in 327 IAC 2-6.1:**

The potential materials on site that could cause a spill response include fuels, petroleum fluids or other liquids as part of the construction equipment on site. If a spill occurs, immediate determination of the extent and emergency response requirements should be determined. Immediate containment of the spill with onsite spill kits should be completed. Once the spill is contained, contact is to be made to the Indiana Dept. of Environmental Mgmt., Office of Land Quality, Emergency Response Section: 1-888-233-7745 for in-state calls (toll free) within two hours of the spill. The contact should include the likelihood of damage to the waterways of the State of Indiana. This information is noted on C303 - Stormwater Pollution Prevention Plan.

**B15- Material handling and storage procedures associated with construction activity:**

All construction debris and wastes are to be loaded directly into provided roll off boxes for proper disposal off site. In no terms is debris or waste to be stored on site awaiting disposal or burned on property. Liquid wastes such as concrete wash out is to be disposed in the appropriate concrete wash out lined roll off boxes as provided. This includes any mortar/masonry/concrete grout material. Once these containers are full, they are to be removed from the site and disposed of in a licensed facility. Roll off boxes are to be rotated empty for full boxes for the entire project duration.

## Construction Storm Water General Permit Notes Section B

**C1- Description of pollutants and their sources associated with the proposed land use:**

The post construction land use will have potential contaminants such as fuels, oils, grease, tires and other mobile equipment fluids. All materials, including mobile equipment will be stored on impervious surfaces during non-use or operation. (Noted on C303 - Stormwater Pollution Prevention Plan)

**C2- Description of proposed post-construction stormwater measures:**

The post construction contaminants are minimized by impervious surfaces being directed to a bioretention pond designed to collect sediment and pollutants prior to any discharge that may overtop the emergency spillway. (Noted C303 - Stormwater Pollution Prevention Plan)

**C3- Plan details for each stormwater measure:**

The post construction stormwater measures is primarily a bioretention pond as shown on C301 - Grading Plan and L101 - Landscape Plan.

**C4- Sequence describing stormwater measure implementation:**

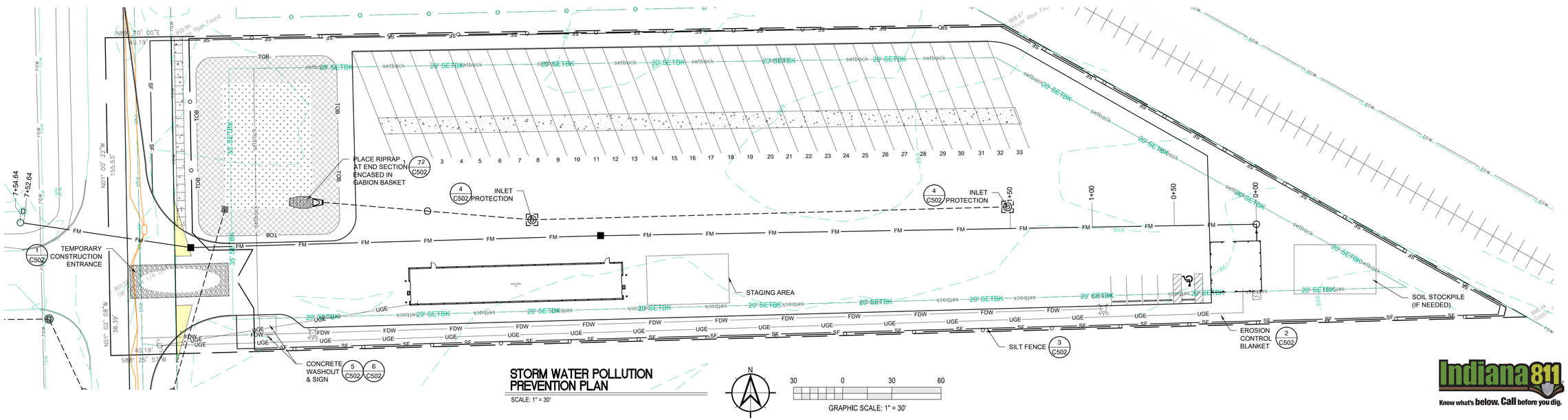
The sequence of installation for the post construction stormwater measure is part of construction sequencing shown C302 - Erosion Control Plan.

**C5- Maintenance guidelines for proposed post-construction stormwater measures:**

An operations and maintenance manual are part of the submittal information under separate documentation.

**C6- Entity that will be responsible for operation and maintenance of the post-construction stormwater measures:**

The responsible person for the post construction stormwater measures is the property owner as noted on C302 - Erosion Control Plan.




## STORM WATER POLLUTION PREVENTION PLAN

SCALE: 1" = 30'

GRAPHIC SCALE: 1" = 30'


Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

STORM WATER POLLUTION PREVENTION PLAN

BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER
Brian E. Moench

| REVISIONS: | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| 6 | REVISED per TOWN COMMENTS | 11/06/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C303 |


Indiana 811
Know what's below. Call before you dig.

## UTILITY CONTACT INFORMATION

| WATER COMPANY: | |
|---|---|
| NAME: | CITIZENS ENERGY |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (317) 924-3311 |
| E-MAIL: | --- |

| SANITARY SEWER COMPANY: | |
|---|---|
| NAME: | HENDRICKS CO. REGIONAL SEWER DIST. |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (317) 745-4928 |
| E-MAIL: | --- |

| ELECTRIC COMPANY: | |
|---|---|
| NAME: | DUKE ENERGY |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (317) 745-5473 |
| E-MAIL: | --- |

| GAS COMPANY: | |
|---|---|
| NAME: | VECTREN |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (800) 227-1376 |
| E-MAIL: | --- |

| TELEPHONE COMPANY: | |
|---|---|
| NAME: | AT&T |
| CONTACT NAME: | --- |
| PHONE NUMBER: | (317) 272-6450 |
| E-MAIL: | --- |

## UTILITY NOTES:

SANITARY GENERAL SPECIFICATIONS:

1. (A) 100 PSI FLOWABLE FILL SHALL BE REQUIRED FOR ROAD CROSSINGS UNDER EXISTING PAVEMENT AND WITHIN FIVE (5) FEET OF THE PAVEMENT EDGE. STREET CUT REPAIRS SHALL USE 100 PSI FLOWABLE FILL TO WITHIN 6" OF PAVEMENT SURFACE. INSTALL 5" OF 4000 PSI READY MIX CONCRETE WITHIN 1" OF PAVEMENT 2-24 HOURS AFTER FLOWABLE FILL HAS BEEN INSTALLED. INSTALL 1" OF #11 SURFACE ASPHALT LEVEL WITH EXISTING PAVEMENT WITHIN 24 HOURS ON CONCRETE INSTALLATION.

(B) FLOWABLE FILL SHALL BE A MIXTURE OF SAND, PORTLAND CEMENT AND WATER, THOROUGHLY MIXED, AND SHALL HAVE 100 PSI COMPRESSIVE STRENGTH WITHIN 3 HOURS OF PLACEMENT. FLOWABLE FILL SHALL BE PLACED FROM TOP OF #8 STONE PIPE COVER TO BOTTOM OF NEW PAVEMENT.

(C) IN LOCATIONS OF NEW DEVELOPMENT, WHERE UTILITIES ARE INSTALLED PRIOR TO ROAD CONSTRUCTION, TRENCH BACKFILL UNDER FUTURE ROAD SHALL BE ENTIRELY #8 CRUSHED STONE FROM MANHOLES.

2. ALL OSHA SAFETY STANDARDS SHALL BE STRICTLY ENFORCED FOR PROTECTION OF WORKERS.

3. NO SEWER SYSTEM CONSTRUCTION MAY BEGIN UNTIL APPROVAL FROM I.D.E.M.

4. ONE SET OF I.D.E.M. APPROVED PLANS SHALL BE ON THE JOB SITE AT ALL TIMES

POLYVINYL CHLORIDE (P.V.C.) PIPE:

1. PIPE DIAMETERS OF 10 INCHES THROUGH 15 INCHES SHALL MEET OR EXCEED ALL THE REQUIREMENTS OF ASTM D-3034, AND SHALL HAVE A MINIMUM CELL CLASSIFICATION OF 12454-C, REFERENCE SHOULD BE MADE TO ASTM D-1784 FOR A SUMMARIZATION OF CELL CLASS PROPERTIES. PIPE DIAMETERS GREATER THAN 15 INCHES SHALL MEET OR EXCEED ALL REQUIREMENTS OF ASTM F-679, AND SHALL HAVE A MINIMUM CELL CLASSIFICATION OF 12454-C. P.V.C. RIBBED SEWER PIPE SHALL MEET OR EXCEED ALL REQUIREMENTS OF ASTM F-794 AND SHALL HAVE A MINIMUM CELLL CLASSIFICATION OF 12454.

2. THE MINIMUM WALL THICKNESS FOR PIPES OF 10 INCHES THROUGH 15 INCHES IN DIAMETER SHALL CONFORM TO SDR-35, TYPE PSM, AS SPECIFIED IN ASTM D-3034. THE MINIMUM WALL THICKNESS FOR PIPE DIAMETERS GREATER THAN 15 INCHES SHALL CONFORM TO T-1 AS SPECIFIED IN ASTM F-679. P.V.C. PIPE SHALL HAVE A MINIMUM PIPE STIFFNESS OF 46 POUNDS PER SQUARE INCH FOR EACH DIAMETER WHEN MEASURED AT FIVE PERCENT DEFLECTION AND TESTED IN ACCORDANCE WITH ASTM D-2412.

3. PIPE JOINTS SHALL HAVE A BELL WALL, GASKET GROOVE AND SPIGOT WHICH IS INTERGRAL WITH THE PIPE. THE ASSEMBLY OF JOINTS SHALL BE IN ACCORDANCE WITH THE PIPE MANUFACTURERS' RECOMMENDATIONS AND ASTM D-3212. NO SOLVENT CEMENT JOINTS SHALL BE ALLOWED. GASKET MATERIAL SHALL BE CONSTRUCTED OF STYRENE BUTADIENE OR BUTYL RUBBER AND MEET THE REQUIREMENTS OF ASTM F-477.

4. EACH PIPE SECTION SHALL BE MARKED WITH THE NAME OF THE MANUFACTURER, TRADEMARK OR TRADEMANK, NOMINAL PIPE SIZE, PRODUCTION / EXTRUSION CODE, MATERIAL AND CELL CLASS DESIGNATION AND ASTM NUMBER.

5. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM RECOMMENDED PRACTICE D-2321.

SANITARY SEWER NOTES:

1. 10 STATES STANDARDS AND INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT REQUIREMENTS SHALL BE MET OR EXCEEDED FOR ALL DESIGN, MATERIALS AND CONSTRUCTION METHODS.

2. SANITARY SEWER MANHOLES SHALL BE MONOLITHIC PRECAST SECTIONS, INCLUDING THE BOTTOM SECTION. ALL SECTIONS SHALL BE PRECAST CONCRETE IN ACCORDANCE WITH ASTM C-478. ALL MANHOLE INLET CONNECTIONS SHALL BE LOCK JOINT FLEXIBLE SLEEVES CONFORMING TO ASTM C-923. ONLY PRECAST CONCRETE RINGS SHALL BE ALLOWED FOR CASTING RISERS. ALL MANHOLES, GRADE RINGS AND CASTING SHALL BE SEALED TO PREVENT INFILTRATION.

3. MANHOLE INVERTS SHALL BE SHAPED FOR FLOW CHANNELS WITH CONCRETE AND SMOOTHLY FINISHED BY A SEMI CIRCULAR SECTION CONFORMING TO THE INSIDE DIAMETER OF THE CONNECTING SEWERS. NO BRICK, ROCK OR SAND FILLERS WILL BE ALLOWED.

4. ALL MANHOLE COVERS SHALL BE TRAFFIC BEARING, NON-ROCKING DESIGN WITH NON-PENETRATING PICK HOLES.

5. SANITARY SEWERS SHALL BE POLYVINYL CHLORIDE (PVC) SDR 35 MEETING ASTM D3034 SPECIFICATIONS. ALL SEWER MAINS SHALL HAVE A MINIMUM DIAMETER OF 8", ALL PIPE SPECIFIED SHALL SUPPORT ANTICIPATED LOADS.

6. ALL JOINTS SHALL BE PUSH-ON TYPE (SLIP SEAL) OR SOLVENT WELD.

7. BEDDING FOR PVC PIPE SHALL CONFORM TO BEDDING CLASSES I, II OF III, AS DESCRIBED IN ASTM D2321, FLEXIBLE SEWER PIPE INSTALLATION REQUIREMENTS.

## UTILITY NOTES (cont'd):

8. ALL SEWER PIPE SHALL BE LAID USING PIPE LASER EQUIPMENT FOR BOTH VERTICAL AND HORIZONTAL ALIGNMENT.

9. MINIMUM ALLOWABLE COVER SHALL BE 5'-0" OVER TOP OF PIPE.

10. ALL SEWER MAINS SHALL BE DEFLECTION TESTED WITH AN 11 POINT, 5% MANDREL AFTER COMPACTED AGGREGATE IS IN PLACE FOR ALL STREETS. FLEXIBLE PIPE WILL BE TESTED AFTER BACKFILL HAS BEEN IN PLACE FOR AT LEAST 30 DAYS. ALL PVC PIPE FAILING THE MANDREL TEST SHALL BE REROUNDED IN PLACE OR AN ALTERNATE METHOD APPROVED BY THE GOVERNING JURISDICTION IF REPAIR REQUIRED, SEWER SHALL BE RETESTED 30 DAYS AFTER REPAIR IS COMPLETE.

11. ALL SEWER MAINS SHALL BE LAMPED AT THE TIME THE MANDREL TEST IS CONDUCTED. ALL MAINS SHALL BE TRUE TO ALIGNMENT AND GRADE.

12. ALL SEWER MAINS AND LATERAL CONNECTIONS SHALL BE AIR TESTED IN ACCORDANCE WITH UNI-BELL UNI-B-6-85. MINIMUM TIME FOR THE AIR TEST SHALL BE FOR A 1.0 PSIG PRESSURE DROP. ALL SECTIONS FAILING AIR TEST SHALL BE REPAIRED AND RETESTED.

13. ALL SERVICE WYE BRANCHES SHALL BE INSTALLED AT THE TIME OF THE SEWER MAIN INSTALLATION. NO DIRECT TAPS WILL BE ALLOWED ON NEW MAIN CONSTRUCTION. NO VERTICAL CONNECTIONS WILL BE ALLOWED.

14. A SEPARATE (6" MINIMUM) SERVICE SHALL BE PROVIDED FOR EACH UNIT SERVED APPROXIMATELY SIX (6) FEET TO THE RIGHT OF THE LOT CENTERLINE. NO WYE'S SHALL BE ALLOWED, INCLUDING CONDOMINIUMS.

15. THE MAXIMUM ALLOWABLE VERTICAL DISTANCE BETWEEN ANY INFLUENT LINE AND THE EFFLUENT MAIN SHALL BE 6' FOR TYPE 'A' AND 'C' MANHOLES. ANY DISTANCE GREATER THAN 6" SHALL REQUIRE A TYPE 'B' MANHOLE.

16. WHERE A SEWER EXTENSION OR IMPROVEMENT CONNECTS TO A EXISTING SEWER OR MANHOLE, IT MUST BE LOCATED IN A STREET, ROAD OR HIGHWAY R/W AND NOT LOCATED IN SUCH A MANNER WHERE IT WILL CUT THROUGH LOTS OR DEVELOPMENTS.

17. ALL EXTENSIONS SHALL BE INSTALLED AT MINIMUM GRADES.

CONCRETE MANHOLE NOTES:

1. ALL MANHOLES SHALL BE NEGATIVE AIRE PRESSURE (VACUUM) TESTED AS PER ASTM C1244-93 STANDARD METHOD.

2. NO MANHOLES SHALL BE MORE THAN 14' FROM BACK OF CURB.

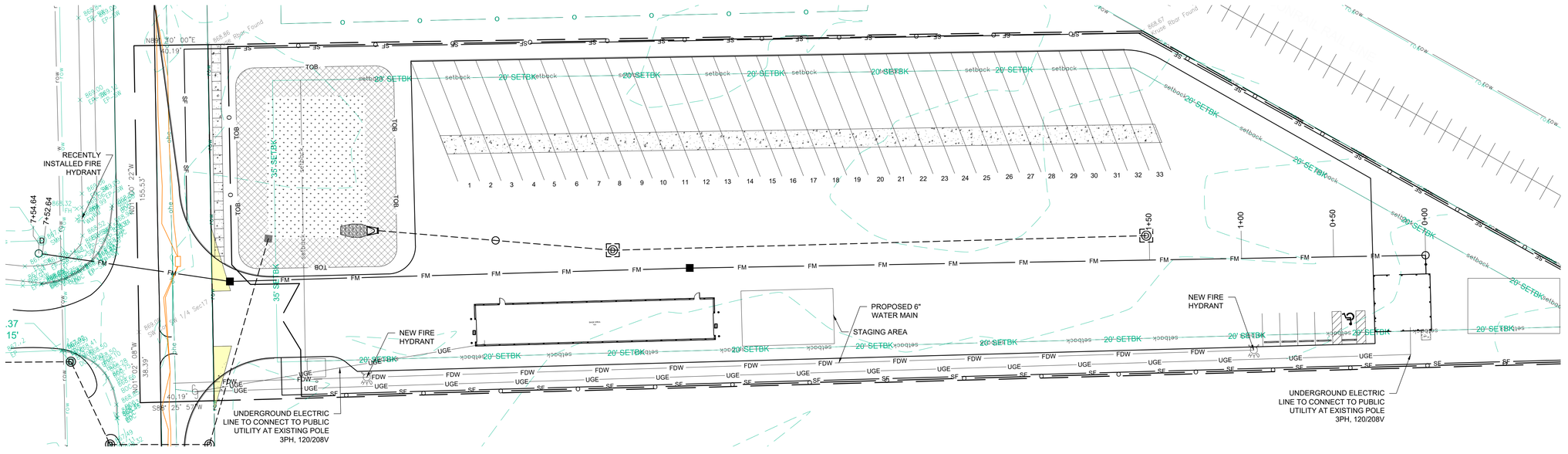
3. NO MANHOLE SHALL BE LOCATED IN ANY BACKYARD OR SIDE YARD. THEY MUST BE LOCATED IN THE FRONT YARD OR FRONT LOT THAT IS FRONTING A STREET.

4. ALL JOINTS IN MANHOLES SHALL BE SEALED TO PREVENT INFILTRATION BY USING A RUBBER 'O-RING' GASKET AND A 1/2" EXTRUDABLE PERFORMED GASKET BETWEEN ALL PRECAST SECTIONS.

5. ANNULAR SPACE AROUND SANITARY SEWER AT POINT OF ENTRANCE INTO THE MANHOLE SHALL BE GROUTED COMPLETELY AROUND SANITARY SEWER, INSIDE AND OUTSIDE TO INSURE SMOOTH TRANSITION.

6. WHEN CONNECTING A NEW SEWER INTO AN EXISTING MANHOLE, THE EXISTING MANHOLE SHALL BE BROUGHT UP TO MEET PRESENT STANDARDS.

7. SECTION JOINTS ON PRECAST CONCRETE MANHOLES SHALL BE SEALED WITH BLACK TAR MASTIC 6" ABOVE AND 6" BELOW JOINT, ON MANHOLE EXTERIOR.




## UTILITY PLAN

SCALE: 1" = 30'

N

30 0 30 60

GRAPHIC SCALE: 1" = 30'

Indiana 811
Know what's below. Call before you dig.


Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

UTILITY PLAN

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER
Brian E. Moench

| REVISIONS: | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| 6 | REVISED per TOWN COMMENTS | 11/06/25 |
| | | |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C401 |

APPROX. 753 L.F. OF 2" SANITARY SEWER FORCE MAIN. PVC SDR 21 or HDPE DR 11 PIPE MUST BE USED.

NOTE:
FORCE MAIN TO BE AT A DEPTH OF 54" MIN. TO 78" MAX. FORCE MAIN TO BE BORED OVER THE ENTIRE DISTANCE. TRACER WIRE REQUIRED FULL LENGTH (SEE TOWN STANDARDS: SD-S08 & DS-S14)

CONNECT FORCE MAIN TO EXISTING SANITARY STRUCTURE (CURRENTLY UNDER CONSTRUCTION), INVERT(S) TBD UPON COMPLETION OF SANITARY SEWER

7+54.64

7+52.64

CR 1000E

CR 400N

TC= 867.37
DG 10 INV= 2.15'

TC= 867.49

JOINING POINT (BORE PIT @ 450')

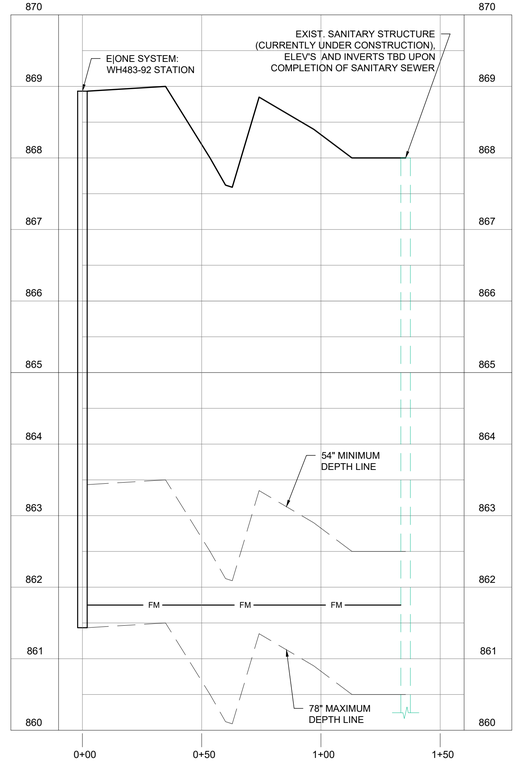
JOINING POINT (BORE PIT @ 400')

E|ONE SYSTEM: WH483-92 STATION, INV. (IN) 866.03 (SEE DETAILS ON C203)

SANITARY CLEANOUT

10 L.F. 6" PVC GRAVITY SEWER @ 2% INV. 866.50

30'x30' OFFICE/ BLDG FFE = 872.25




## FORCE MAIN PLAN + PROFILE

SCALE: Horz.: 1" = 30', Vert.: 1" = 10'

N

30 0 30 60

GRAPHIC SCALE: 1" = 30'

Indiana 811 Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

SANITARY FORCE MAIN PLAN & PROFILE

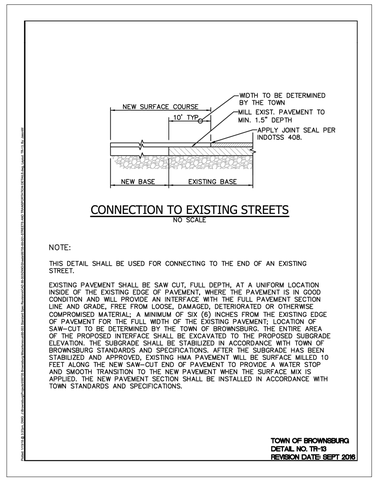
BRYAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

Bryan E. Moench

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| 6 | REVISED per TOWN COMMENTS | 11/06/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C402 |




## CONNECTION TO EXISTING STREETS
NO SCALE

NOTE:

THIS DETAIL SHALL BE USED FOR CONNECTING TO THE END OF AN EXISTING STREET.

EXISTING PAVEMENT SHALL BE SAW CUT, FULL DEPTH, AT A UNIFORM LOCATION INSIDE OF THE EXISTING EDGE OF PAVEMENT, WHERE THE PAVEMENT IS IN GOOD CONDITION AND WILL PROVIDE AN INTERFACE WITH THE FULL PAVEMENT SECTION LINE AND GRADE, FREE FROM LOOSE, DAMAGED, DETERIORATED OR OTHERWISE COMPROMISED MATERIAL. A MINIMUM OF SIX (6) INCHES FROM THE EXISTING EDGE OF PAVEMENT FOR THE FULL WIDTH OF THE EXISTING PAVEMENT; LOCATION OF SAW-CUT TO BE DETERMINED BY THE TOWN OF BROWNSBURG. THE ENTIRE AREA OF THE PROPOSED INTERFACE SHALL BE EXCAVATED TO THE PROPOSED SUBGRADE ELEVATION. THE SUBGRADE SHALL BE STABILIZED IN ACCORDANCE WITH TOWN OF BROWNSBURG STANDARDS AND SPECIFICATIONS. AFTER THE SUBGRADE HAS BEEN STABILIZED AND APPROVED, EXISTING HMA PAVEMENT WILL BE SURFACE MILLED 10 FEET ALONG THE NEW SAW-CUT END OF PAVEMENT TO PROVIDE A MATER STOP AND SMOOTH TRANSITION TO THE NEW PAVEMENT WHEN THE SURFACE MIX IS APPLIED. THE NEW PAVEMENT SECTION SHALL BE INSTALLED IN ACCORDANCE WITH TOWN STANDARDS AND SPECIFICATIONS.

**TOWN OF BROWNSBURG**
**DETAIL NO. TR-13**
**REVISION DATE: SEPT 2016**

## HANDICAP RAMP
NOT TO SCALE — 11 / C501

SECTION 02504 – ADJACENT ROADWAY IMPROVEMENTS

PART 1 - GENERAL

1.01 Roadways adjacent to proposed developments shall conform to the following requirements and standards.

A. Adjacent Roadway Improvements

1. Developers shall be responsible for improvements to the existing roadway(s) that front their property. These improvements shall include, but are not limited to, the following items:
   a. Construction of acceleration lanes, deceleration lanes, and passing blisters for each entrance or street intersection as indicated in the Standard Details.
   b. In order to construct adequate acceleration lanes, deceleration lanes, and passing blisters, right-of-way shall be obtained which has a width consistent with the most current accepted Thoroughfare Plan.
   c. The existing roadway along the development frontage shall be widened to match the width requirements based on the functional classification of the roadway as defined by the Thoroughfare Plan. Once widened, the entire roadway fronting the development shall be resurfaced for consistency.
2. Additional improvements may be required depending on field conditions and as determined by the Town of Brownsburg.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

PART 4 - FIGURES

4.01 Associated Standard Details

| Detail No. | Description |
|---|---|
| TR-01 | Concrete Chair Back Curb & Gutter |
| TR-02 | Concrete Roll Curb & Gutter |
| TR-03 | Driveway Curb Cut |
| TR-04 | Curb Inlet Detail |
| TR-05 | Concrete Center Curb |
| TR-09 | Concrete Driveway |
| TR-13 | Connection to Existing Streets |
| TR-14 | Widening Detail |
| TR-16 | Minimum Entrance Requirements |



| | |
|---|---|
| TR-17 | Roadway Improvements at New Development Entrances |
| RS-01 | Typical Cross Sections – Primary Arterials A1 and A2 |
| RS-02 | Typical Cross Sections – Primary Arterials B1 and B2 |
| RS-03 | Typical Cross Sections – Primary Arterials C1 and C2 |
| RS-04 | Typical Cross Sections – Secondary Arterials 1 and 2 |
| RS-05 | Typical Cross Sections – Collectors 1 and 2 |
| RS-06 | Typical Cross Sections – Neighbor Collectors 1 and 2 |
| RS-07 | Typical Cross Sections – Local 1 (No Parking), Local 2 (Parking Both Sides) and Local 3 (Parking One Side) |
| RS-08 | Typical Trail Cross Section |
| RS-09 | Typical Cross Section – Local Street with Roadside Ditch |
| RS-10 | Typical Cross Sections – Local Alternatives |

END OF SECTION 02504



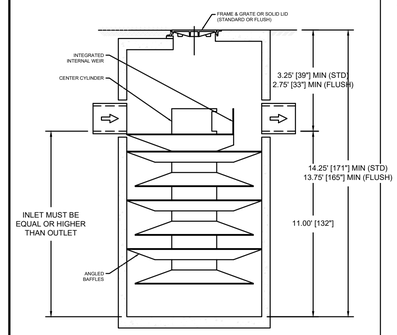
**ARCADIA AR8PC**

**PRODUCT SPECIFICATIONS**

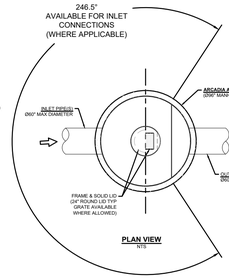
- THE STORMWATER TREATMENT UNIT SHALL BE AN INLINE UNIT CAPABLE OF CONVEYING 100% OF THE DESIGN PEAK FLOW IF PEAK FLOW RATES EXCEED MAXIMUM HYDRAULIC RATE. THE UNIT SHALL BE INSTALLED OFFLINE.
- THE ARCADIA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 80% OF THE SUSPENDED SOLIDS ON AN ANNUAL AGGREGATE REMOVAL BASIS. SAID REMOVAL SHALL BE BASED ON FULL-SCALE THIRD PARTY VERIFIED TESTING USING OK-110 MEDIA GRADATION OR EQUIVALENT AND 300 MG/L INFLUENT CONCENTRATION. FULL SCALE TESTING SHALL BE PERFORMED PROTOCOL ADOPTED SEDIMENT CAPTURE BASED ON ACTUAL TOTAL MASS COLLECTED BY THE STORMWATER TREATMENT UNIT.

-OR-

THE ARCADIA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS USING A MEDIA MIX WITH D50=75 MICRON AND 200 MG/L INFLUENT CONCENTRATION




PROFILE VIEW
N.T.S.




PLAN VIEW
N.T.S.

**NOTES:**
- ENGINEER / CONTRACTOR TO CONFIRM PIPE MATERIALS AND APPLICABLE ADAPTERS.
- CONTRACTOR IS RESPONSIBLE FOR MATERIAL AND LABOR TO BRING CASTINGS TO FINISHED GRADE.
- CONTRACTOR TO MEASURE HEIGHT OF STRUCTURE TO ENSURE THAT DEPTH OF EXCAVATION IS CORRECT.
- UNIT SHALL CONFORM TO H20-44 LOAD RATINGS.

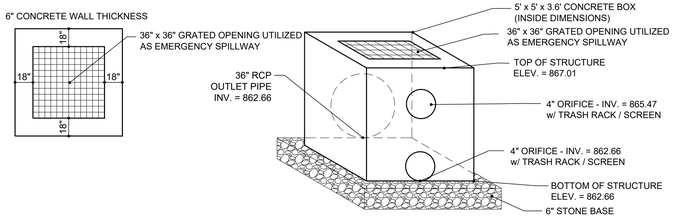
ARCADIA AR8PC CONCRETE MONOLITH

ARCADIA Stormwater Separator

ADS ADVANCED DRAINAGE SYSTEMS

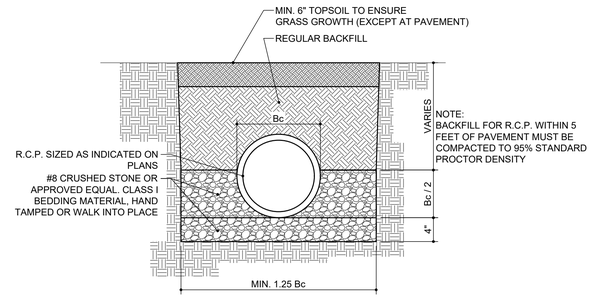
1 SHEET OF 1

## ARCADIA AR8 HYDRODYNAMIC SEPARATOR DETAIL
NOT TO SCALE — 10 / C501

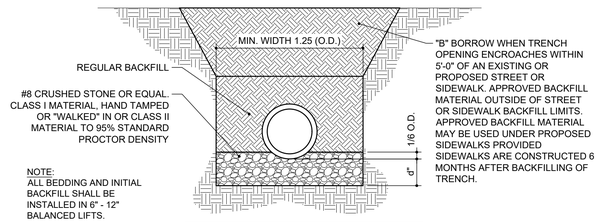



NOTE:
OPENINGS TO BE COVERED UNTIL COMPLETION OF CONSTRUCTION TO PREVENT SILT AND OTHER DEBRIS FROM PASSING THROUGH.

## OUTLET STRUCTURE DETAIL
NOT TO SCALE — 9 / C501




NOTE:
BACKFILL FOR R.C.P. WITHIN 5 FEET OF PAVEMENT MUST BE COMPACTED TO 95% STANDARD PROCTOR DENSITY




"B" BORROW WHEN TRENCH OPENING ENCROACHES WITHIN 5'-0" OF AN EXISTING OR PROPOSED STREET OR SIDEWALK. APPROVED BACKFILL MATERIAL OUTSIDE OF STREET OR SIDEWALK BACKFILL LIMITS. APPROVED BACKFILL MATERIAL MAY BE USED UNDER PROPOSED SIDEWALKS PROVIDED SIDEWALKS ARE CONSTRUCTED 6 MONTHS AFTER BACKFILLING OF TRENCH.

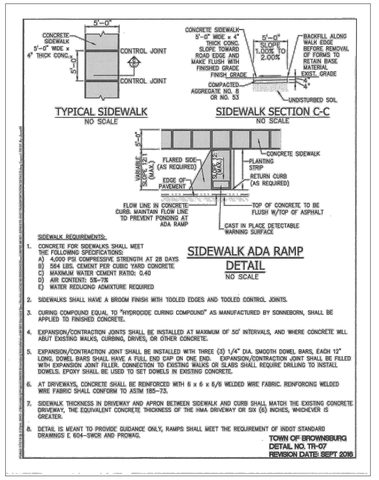
NOTE:
ALL BEDDING AND INITIAL BACKFILL SHALL BE INSTALLED IN 6" - 12" BALANCED LIFTS.

Bc = OUTSIDE DIAMETER
D = INSIDE DIAMETER
d = DEPTH OF BEDDING MATERIAL BELOW PIPE

A MIN. 9" CLEARANCE SHALL BE PROVIDED ON EACH SIDE OF THE INSTALLED PIPE

| PIPE SIZE (D) | 27" OR LESS | 30" TO 60" | 66" AND UP |
|---|---|---|---|
| BEDDING BELOW THE PIPE BARREL 6" MINIMUM | 3" | 4" | 6" |

## R.C.P. PIPE TRENCH DETAIL
NOT TO SCALE — 8 / C501

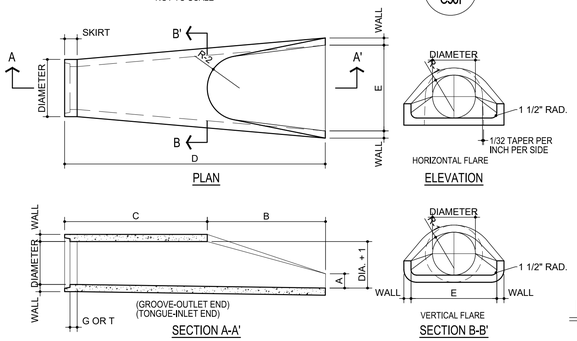



SIDEWALK REQUIREMENTS:
1. CONCRETE FOR SIDEWALKS SHALL MEET THE FOLLOWING SPECIFICATIONS:
   A) 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS
   B) 564 LBS. CEMENT PER CUBIC YARD CONCRETE
   C) MAXIMUM WATER CEMENT RATIO: 0.40
   D) AIR CONTENT: 5%~7%
   E) WATER REDUCING ADMIXTURE REQUIRED
2. SIDEWALKS SHALL HAVE A BROOM FINISH WITH TOOLED EDGES AND TOOLED CONTROL JOINTS.
3. CURING COMPOUND EQUAL TO "HYDROCIDE CURING COMPOUND" AS MANUFACTURED BY SONNEBORN, SHALL BE APPLIED TO FINISHED CONCRETE.
4. EXPANSION/CONTRACTION JOINTS SHALL BE INSTALLED AT MAXIMUM OF 50' INTERVALS, AND WHERE CONCRETE WILL ABUT EXISTING WALKS, CURBING, DRIVES, OR OTHER CONCRETE.
5. EXPANSION/CONTRACTION JOINT SHALL BE INSTALLED WITH THREE (3) 1/4" DIA. SMOOTH DOWEL BARS, EACH 12" LONG. DOWEL BARS SHALL HAVE A FULL END CAP ON ONE END. EXPANSION/CONTRACTION JOINT SHALL BE FILLED WITH EXPANSION JOINT FILLER. CONNECTION TO EXISTING WALKS OR SLABS SHALL REQUIRE DRILLING TO INSTALL DOWELS. EPOXY SHALL BE USED TO SET DOWELS IN EXISTING CONCRETE.
6. AT DRIVEWAYS, CONCRETE SHALL BE REINFORCED WITH 6 x 6 x 6/6 WELDED WIRE FABRIC. REINFORCING WELDED WIRE FABRIC SHALL CONFORM TO ASTM 185–73.
7. SIDEWALK THICKNESS IN DRIVEWAY AND APRON BETWEEN SIDEWALK AND CURB SHALL MATCH THE EXISTING CONCRETE DRIVEWAY, THE EQUIVALENT CONCRETE THICKNESS OF THE HMA DRIVEWAY OR SIX (6) INCHES, WHICHEVER IS GREATER.
8. DETAIL IS MEANT TO PROVIDE GUIDANCE ONLY, RAMPS SHALL MEET THE REQUIREMENT OF INDOT STANDARD DRAWINGS E 604–SWDS AND PROWAG.

## SIDEWALK ADA RAMP DETAIL
NO SCALE

**TOWN OF BROWNSBURG**
**DETAIL NO. TR-07**
**REVISION DATE: SEPT 2016**

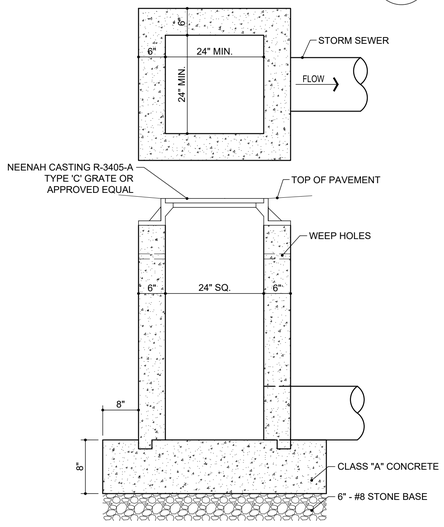
## HANDICAP RAMP
NOT TO SCALE — 7 / C501



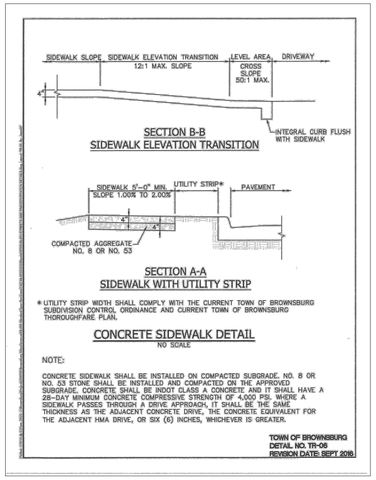

| SIZE SCHEDULE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DIA. | WALL | G or T | WT. SEC | A | B | C | D | E | DIA.+1 | R-1 | R-2 | SKIRT |
| 12 | 2 | 1~8 | 530 | 4 | 24 | 48~1 | 72~1 | 24 | 13 | 10~1 | 9 | 3~8 |
| 15 | 2~4 | 2 | 740 | 6 | 27 | 46 | 73 | 30 | 16 | 12~8 | 11 | 3~8 |
| 18 | 2~8 | 2~8 | 990 | 9 | 27 | 46 | 73 | 36 | 19 | 15~8 | 12 | 4 |
| 21 | 2~∞ | 2~4 | 1280 | 9 | 35 | 38 | 73 | 42 | 22 | 16~2 | 13 | 4 |
| 24 | 3 | 2~8 | 1520 | 9~8 | 43~8 | 30 | 73~8 | 48 | 25 | 16~q | 14 | 4~8 |

NOTE: MANUFACTURER OF END SECTION IS IN ACCORDANCE WITH APPLICABLE PORTIONS OF A.S.T.M. SPECIFICATION C76.

## CONCRETE END SECTION
NOT TO SCALE — 6 / C501




## TYPA 'E' MODIFIED STORM CATCHBASIN
3/4" = 1'-0" — 5 / C501




* UTILITY STRIP WIDTH SHALL COMPLY WITH THE CURRENT TOWN OF BROWNSBURG SUBDIVISION CONTROL ORDINANCE AND CURRENT TOWN OF BROWNSBURG THOROUGHFARE PLAN.

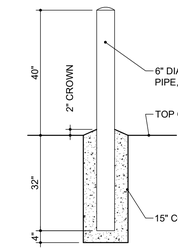
## CONCRETE SIDEWALK DETAIL
NO SCALE

NOTE:

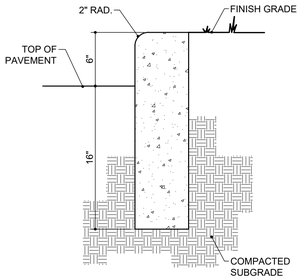
CONCRETE SIDEWALK SHALL BE INSTALLED ON COMPACTED SUBGRADE. NO. 8 OR NO. 53 STONE SHALL BE INSTALLED AND COMPACTED ON THE APPROVED SUBGRADE. CONCRETE SHALL BE INDOT CLASS A CONCRETE AND IT SHALL HAVE A 28-DAY MINIMUM CONCRETE COMPRESSIVE STRENGTH OF 4,000 PSI. WHERE A SIDEWALK PASSES THROUGH A DRIVE APPROACH, IT SHALL BE THE SAME THICKNESS AS THE ADJACENT CONCRETE DRIVE. THE CONCRETE EQUIVALENT FOR THE ADJACENT HMA DRIVE, OR SIX (6) INCHES, WHICHEVER IS GREATER.

**TOWN OF BROWNSBURG**
**DETAIL NO. TR-06**
**REVISION DATE: SEPT 2016**

## CONCRETE SIDEWALK
NOT TO SCALE — 4 / C501

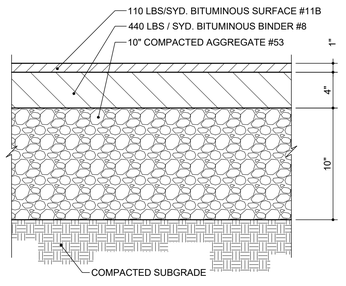



## PIPE BOLLARD
1/2" = 1'-0" — 3 / C501




CURB SHALL HAVE 1/2" EXPANSION JOINTS @ 48'-0" MAX. AND @ ENDS OF RADII. CONTROL JOINTS SHALL BE PLACED @ 10'-0 MAX. UNLESS OTHERWISE NOTED.

## STRAIGHT CURB
1 1/2" = 1'-0" — 2 / C501




## HEAVY DUTY ASPHALT
1 1/2" = 1'-0" — 1 / C501

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

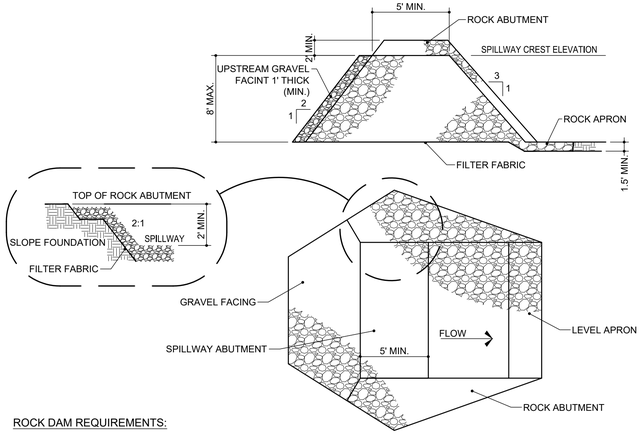
# LIONS TRANS INC. (BROWNSBURG)
4005 N CR 1000 E
BROWNSBURG, IN 46122

SECTIONS AND DETAILS

BRIAN EDWARD MOENCH — REGISTERED — No. PE9500048 — STATE OF INDIANA — PROFESSIONAL ENGINEER

| REVISIONS: | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| 6 | REVISED per TOWN COMMENTS | 11/06/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C501 |




## ROCK DAM REQUIREMENTS:

1. CONTRIBUTING DRAINAGE AREA: 50 ACRES MAXIMUM

2. DESIGN LIFE: LIMITED TO 3 YRS.

3. SEDIMENT STORAGE: 1,800 CU.FT./ACRE DISTURBED (MINUMUM) MEASURED 1 FT. BELOW SPILLWAY CREST.

4. BASIN SHAPE: MINIMUM 2:1 LENGTH-TO-WIDTH RATIO.

5. BASIN AREA: VARIABLE; THE LARGER THE SURFACE AREA THE GREATER THE TRAPPING EFFICIENCY.

6. DAM CREST HEIGHT: LIMITED TO 8 FT.

7. SPILLWAY CAPACITY: PEAK RUNOFF FROM A 10-YR. FREQUENCY, 24-HR. DURATION STORM EVENT, A MAXIMUM FLOW DEPTH OF 1 FT. AND MINIMUM FREEBOARD OF 1 FT. (ENTIRE LENGTH OF DAM BETWEEN ROCK ABUTMENTS MAY SERVE AS SPILLWAY.)

8. DAM DIMENSIONS: TOP WIDTH, 5 FT. MINIMUM; SIDE SLOPES, 2:1 OR FLATTER UPSTREAM, 3:1 OR FLATTER DOWNSTREAM.

9. EARTH ABUTMENTS: SMOOTH, STABLE, 2:1 OR FLATTER SLOPES.

10. ROCK ABUTMENTS (TO PROTECT EARTH ABUTMENTS): EXTENDED ALONG DOWNSTREAM FACE TO TOE OF DAM AND AT LEAST 1 FT. HIGHER THAN SPILLWAY FACE AT ALL POINTS, 2 FT. ABOVE SPILLWAY CREST, AND 1 FT. THICK, WITH 2:1 OR FLATTER SIDE SLOPES.
11. OUTLET PROTECTION: ROCK APRON, 1-1/2 FT. THICK (MINIMUM), ZERO GRADE, WITH LENGTH EQUAL TO HEIGHT OF DAM OR EXTENDED TO STABLE GRADE, WHICHEVER IS GREATER.

12. ROCK MATERIAL: INDOT REVETMENT RIPRAP.

13. PROTECTION FROM PIPING: GEOTEXTILE FABRIC FOR SEPARATION AND FILTRATION COVERING ENTIRE FOUNDATION, INCLUDING EARTH ABUTMENTS AND APRON.

14. BASIN DE-WATERING: THROUGH A 1 FT. THICK LAYER OF INDOT CA NO. 5 STONE ON UPSTREAM FACE OF THE DAM.

INSTALLATION

SITE PREPARATION:

1. DIVERT RUNOFF FROM UNDISTURBED AREAS AWAY FROM THE ROCK DAM AND BASIN AREA.

2. EXCAVATE THE FOUNDATION FOR THE APRON, USING IT AS A TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION OF THE DAM.

3. CLEAR AND GRUB THE AREA UNDER THE DAM, REMOVING AND PROPERLY DISPOSING OF ALL ROOT MAT, BRUSH, AND OTHER DEBRIS.

4. GRADE THE EARTH ABUTMENTS NO STEEPER THAN 2:1.

DAM AND BASIN CONSTRUCTION

1. EXCAVATE A CUTOFF TRENCH AT THE CENTER LINE OF THE DAM, EXTENDING ALL THE WAY UP THE EARTH ABUTMENTS, AND BACKFILL WITH COMPACTED EARTH FILL.

2. SMOOTH THE DAM FOUNDATION.

3. COVER THE ENTIRE FOUNDATION, INCLUDING BOTH EARTH ABUTMENTS, WITH GEOTEXTILE FABRIC, MAKING SURE THE UPSTREAM STRIPS OVERLAP THE DOWNSTREAM STRIPS AT LEAST 1 FT.

4. CONSTRUCT THE DAM TO PLANNED DIMENSIONS.

5. ONCE THE DAM IS IN PLACE, CLEAR THE SEDIMENT BASIN AREA, PROPERLY DISPOSING OF THE CLEARED MATERIAL.

6. SET A MARKER STAKE TO INDICATE THE CLEANOUT ELEVATION (I.E., POINT AT WHICH THE BASIN IS 50% FULL OF SEDIMENT).

7. DIVERT CONSTRUCTION SITE RUNOFF FLOW INTO THE UPPER END OF THE BASIN USING TEMPORARY DIVERSIONS.

8. STABILIZE ALL DISTURBED AREAS EXCEPT THE LOWER HALF OF THE BASIN.

SAFETY PRECAUTIONS:

1. BECAUSE SEDIMENT BASINS THAT IMPOUND WATER ARE HAZARDOUS, (A) BE SURE SIDE SLOPES ARE 2:1 OR FLATTER, (B) FENCE WITH WARNING SIGNS IF TRESPASSING IS LIKELY, (C) DE-WATER THE BASIN BETWEEN STORM EVENTS, AND (D) FOLLOW ALL STATE AND LOCAL IMPOUNDMENT SITE REQUIREMENTS.

MAINTENANCE

1. INSPECT THE ROCK DAM AND BASIN AFTER EACH STORM EVENT.

2. REMOVE SEDIMENT WHEN IT ACCUMULATES TO HALF THE DESIGN VOLUME (MARKED BY A STAKE).

3. CHECK THE DAM AND ABUTMENTS FOR EROSION, PIPING, OR ROCK DISPLACEMENT, AND REPAIR IMMEDIATELY.

4. IF THE BASIN DOES NOT DRAIN BETWEEN STORMS, REPLACE THE STONE ON THE UPSTREAM FACE OF THE DAM.

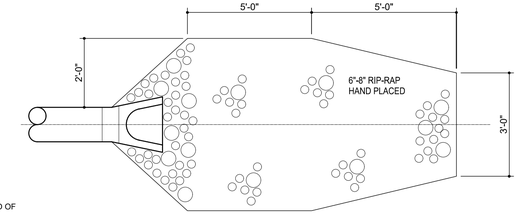
5. IF THE BASIN DRAINS TOO RAPIDLY FOLLOWING A STORM (I.E., LESS THAN 6 HRS.), ADD INDOT CA NO. 5 GRAVEL ON THE UPSTREAM FACE OF THE DAM.

6. ONCE THE CONTRIBUTING ŷŷŷŷŷŷŷŷDRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, (A) REMOVE WATER AND SEDIMENT FROM THE BASIN;

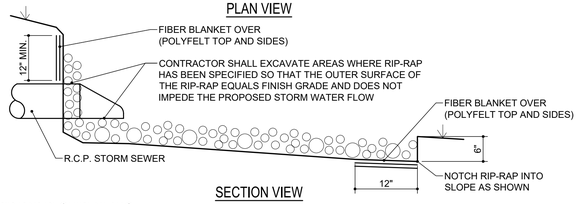
(B) REMOVE THE DAM, DISPOSING OF THE ROCK IN DESIGNATED DISPOSAL AREAS; (C) SMOOTH THE SITE TO BLEND WITH THE SURROUNDING AREA; AND (D) STABILIZE.

COMMON CONCERNS:
FAILURE FROM PIPING ALONG ABUTMENTS-BECAUSE THE FILTER MATERIAL WAS NOT PROPERLY INSTALLED OR THE EARTH ABUTMENTS ARE TOO STEEP. STONE DISPLACEMENT FROM FACE OF DAM-BECAUSE STONE SIZE IS TOO SMALL OR THE FACE IS TOO STEEP. EROSION BELOW DAM BECAUSE THE APRON WAS NOT EXTENDED TO STABLE GRADE. EROSION OF ABUTMENTS DURING SPILLWAY FLOW-BECAUSE THE ROCK ABUTMENT IS NOT HIGH ENOUGH. SEDIMENT CARRIED THROUGH SPILLWAY-BECAUSE THE DRAINAGE AREA IS TOO LARGE; TO SOLVE, DIVERT RUNOFF FROM THE UNDISTURBED AREA AWAY FROM THE BASIN. SEDIMENT LOSS THROUGH DAM-BECAUSE THE LAYER OF AGGREGATE ON THE UPSTREAM FACE IS NOT THICK ENOUGH OR IS TOO COARSE TO RESTRICT FLOW THROUGH THE DAM.

## ROCK DAM
NOT TO SCALE — 8 — C502




PLAN VIEW




SECTION VIEW

## RIP-RAP REQUIREMENTS:

CONTRIBUTING DRAINAGE AREA: 100 ACRES MAXIMUM.

CAPACITY: PEAK RUNOFF FROM 10-YR. FREQUENCY, 24-HR. DURATION STORM EVENT.

APRON: DESIGN DEPENDS ON CHANNEL DEFINITION, BUT IS LONG ENOUGH TO DISSIPATE RUNOFF ENERGY, SET ON ZERO GRADE, STRAIGHT AND ALIGNED WITH THE RECEIVING STREAM. (IF SITE CONDITIONS REQUIRE A CURVE, SET IT NEAR THE UPSTREAM END.)

FOUNDATION: GEOTEXTILE FABRIC FOR STABILIZATION AND FILTRATION OR WELL-GRADED GRAVEL FILTER LAYER AT LEAST 6 IN. THICK.

MATERIAL: HARD, ANGULAR, AND HIGHLY WEATHER-RESISTANT RIPRAP STONE OF 6 - 8 INCHES IN SIZE.

THICKNESS: 12 IN. MINIMUM OR TWO TIMES THE D 50 STONE DIAMETER,wHICHEVER IS GREATER.

## INSTALLATION:

1. EXCAVATE THE APRON AREA SUBGRADE BELOW DESIGN ELEVATION TO ALLOW FOR THICKNESS OF THE FILTER (OR GRAVEL LAYER) AND THE RIPRAP. (THIS OVER-EXCAVATION GREATLY INCREASES THE AMOUNT OF SPOIL.)

2. COMPACT ANY FILL USED IN THE SUBGRADE TO THE DENSITY OF THE SURROUNDING UNDISTURBED MATERIAL, AND SMOOTH ENOUGH TO PROTECT FABRIC FROM TEARING.

3. PLACE THE GEOTEXTILE FABRIC (OR GRAVEL LAYER) ON THE COMPACTED AND SMOOTHED FOUNDATION. IF MORE THAN ONE FABRIC PIECE IS NEEDED, THE UPSTREAM PIECE SHOULD OVERLAP THE DOWNSTREAM PIECE BY AT LEAST 1 FT.

4. INSTALL THE RIPRAP TO THE LINES AND ELEVATIONS SHOWN IN THE DESIGN. IF THE CHANNEL IS POORLY DEFINED, THE FINAL CROSS-SECTION SHOULD BE LEVEL OR SLIGHTLY DEPRESSED IN THE MIDDLE; IF WELL DEFINED, THE FILTER (OR GROUND LAYER) AND RIPRAP SHOULD EXTEND TO THE TOP OF THE BANK.

5. IF THE GEOTEXTILE FABRIC TEARS WHEN PLACING TH RIPRAP, REPAIR IMMEDIATELY BY LAYING AND STAPLING A PIECE OF FABRIC OVER THE DAMAGE AREA, OVERLAPPING THE UNDAMAGED AREAS BY AT LEAST 12 INCHES.

6. MAKE SURE THE TOP OF THE RIPRAP APRON IS LEVEL WITH OR SLIGHTLY BELOW THE RECEIVING STREAM. (RIPRAP SHOULD NOT RESTRICT THE CHANNEL OR PRODUCE AN OVERFALL.)

7. BLEND THE RIPRAP SMOOTHLY TO THE SURROUNDING GRADE.

8. STABILIZE ALL DISTURBED AREAS IMMEDIATELY FOLLOWING INSTALLATION.

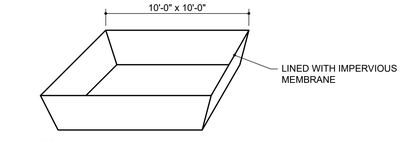
## MAINTENANCE:

* INSPECT ROCK CHUTES AFTER STORM EVENTS FOR STONE DISPLACEMENT AND FOR EROSION AT THE SIDES AND ENDS OF THE APRON.
* MAKE NEEDED REPAIRS IMMEDIATELY; USE APPROPRIATE SIZE STONE; AND DO NOT PLACE THEM ABOVE FINISHED GRADE.

## COMMON CONCERNS:

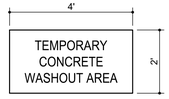
FOUNDATION NOT EXCAVATED DEEP ENOUGH OR WIDE ENOUGH--RIPRAP RESTRICTS THE FLOW CROSS SECTION, RESULTING IN EROSION AROUND THE APRON AND SCOUR HOLES AT THE OUTLET.
RIPRAP APRON ON ZERO GRADE--

## RIP-RAP DETAIL
NOT TO SCALE — 7 — C502



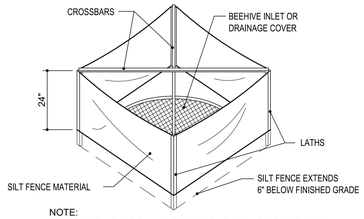

NOTE:
1. A LINED ROLLOFF DUMPSTER OR CONTAINER TO BE USED IN LIEU OF A CONSTRUCTED WASHOUT BASIN.

## CONCRETE WASHOUT BASIN
NOT TO SCALE — 6 — C502



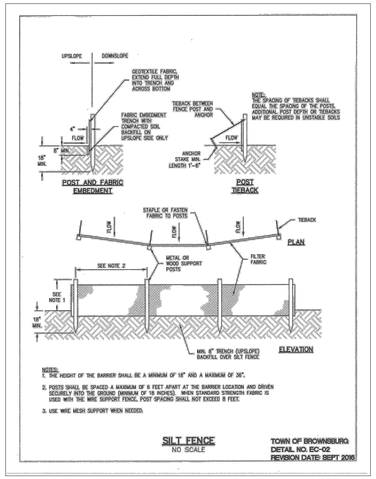

NOTES:
1. SIGN TO BE POSTED THROUGHOUT CONSTRUCTION ACTIVITY.
2. SIGN TO BE MADE OF SEMI-PERMANENT MATERIAL, i.e. WOOD.

## CONCRETE WASHOUT SIGN
NOT TO SCALE — 5 — C502

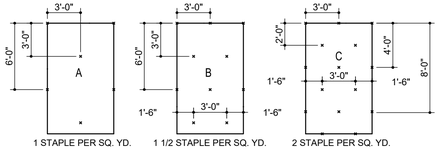



NOTE:
1. SEE SILT FENCE DETAIL FOR MATERIAL SPECIFICATIONS.
2. SILT FENCE SHALL BE PREASSEMBLED BY SUPPLIER.

## SILT FENCE INLET PROTECTION DETAIL
NOT TO SCALE — 4 — C502

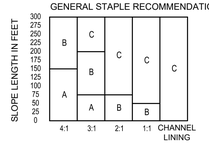



## SILT FENCE DETAIL
NOT TO SCALE — 3 — C502

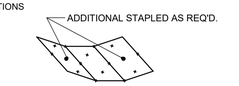



1 STAPLE PER SQ. YD. | 1 1/2 STAPLE PER SQ. YD. | 2 STAPLE PER SQ. YD.

GENERAL STAPLE RECOMMENDATIONS




SLOPE GRADIENT




CHANNEL LININGS UTILIZE STAPLE PATTERN "C" WITH ADDITIONAL STAPLES ON SIDE SLOPES.

## NOTES:
1. STAPLE PATTERNS APPLY TO ALL NORTH AMERICAN GREEN EROSION BLANKETS.

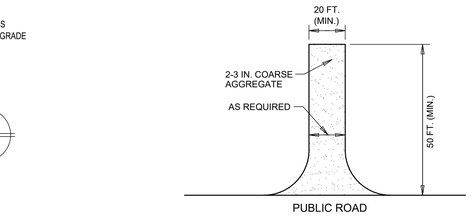
2. STAPLE PATTERNS MAY VARY DEPENDING UPON SOIL TYPE AND AVERAGE ANNUAL RAINFALL.

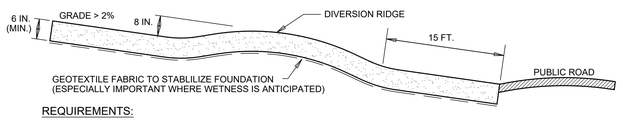
3. AT SLOPE LENGTHS GREATER THAN 300 FEET OR WHERE DRAINAGE OVER LARGE AREAS IS DIRECTED ONTO BLANKETS, STAPLE PATTERN "C" SHOULD BE UTILIZED.

4. CHANNEL LININGS REQUIRE A 2' (MIN.) OVERLAP AT LONGITUDINAL JOINTS AND SIDE SLOPES REQUIRE A 6" (MIN.) OVERLAP. WHERE OVERLAPS OCCUR, THE UPSTREAM BLANKET SHALL OVERLAP THE DOWNSTREAM.

5. NORTH AMERICAN GREEN S150BN TO BE USED FOR EROSION CONTROL BLANKETS.

## EROSION CONTROL BLANKET STAPLE PATTERN
NOT TO SCALE — 2 — C502




## REQUIREMENTS:

Material: 2-3 in. washed stone (INDOT CA No.2) over a stable foundation.

Thickness: 6 in. minimum

Width: 12 ft. minimum or full width of entrance/exit roadway, whichever is greater.

Length: 50 ft. minimum. The length can be shorter for small sites such as for an individual home.

Washing facility (optional): Level area with 3 in washed stone minimum or a commercial rack, and waste water diverted to a sediment trap or basin.

Geotextile fabric underliner: May be used under wet conditions or for soils within a high seasonal water table to provide greater bearing strength.

## INSTALLATION:

1. Avoid locating on steep slopes or at curves in public roads.

2. Remove all vegetation and other objectionable material from the foundation area, and grade and crown for positive drainage.

3. If slope towards the road exceeds 2%, construct a 6-8 in.-high water bar (ridge) with 3:1 side slopes across the foundation area about 15 ft. from the entrance to divert runoff away from the road.

4. Install pipe under the pad if needed to maintain proper public road drainage.

5. If wet conditions are anticipated, place geotextile fabric on the graded foundation to improve stability.

6. Place stone to dimensions and grade shown in the erosion control plan, leaving the surface smooth and sloped for drainage.

7. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin.

## MAINTENANCE:

* Inspect entrance drive and sediment disposal area weekly and after storm events or heavy use.
* Reshape pad as needed for drainage and runoff control.
* Topdress with clean stone as needed.
* Immediately remove mud and sediment tracked or washed onto public roads by brushing or sweeping. Flushing should only be used if the water is conveyed into a sediment trap or basin.
* Repair any broken road pavement immediately.

## COMMON CONCERNS:

Inadequate runoff control--results in sediment washing onto road.
Stone too small, pad too thin, or geotextile fabric absent--results in ruts and a muddy condition as stone is pressed into the soil: add more stone.
Pad too short for heavy construction traffic--extend the pad beyond the 50-ft. length as needed.
Pad not flared sufficiently at road entrance--results in mud being tracked onto the road and possible damage to the road edge: widen stone entrance and repair road damage.
Unstable foundation--use geotextile fabric under th pad and/or improve foundation drainage.

## TEMPORARY CONSTRUCTION ENTRANCE
NOT TO SCALE — 1 — C502

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

LIONS TRANS INC. (BROWNSBURG)
4005 N CR 1000 E
BROWNSBURG, IN 46122

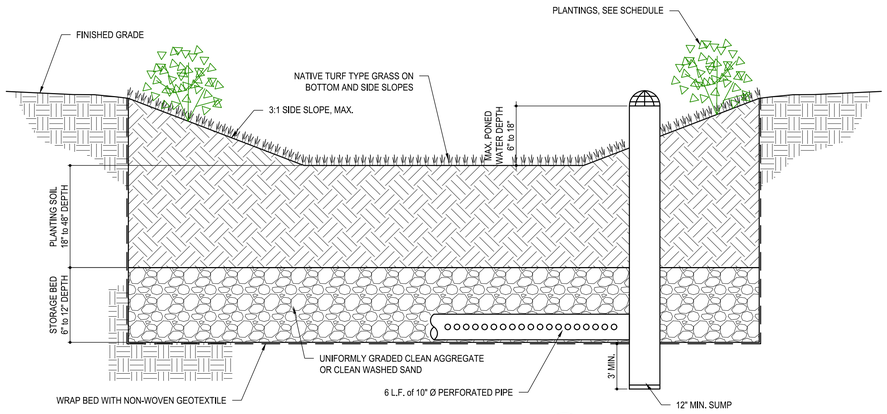
SECTIONS AND DETAILS

BRIAN EDWARD MOENCH REGISTERED No. PE9300048 STATE OF INDIANA PROFESSIONAL ENGINEER
Susan E. Neal

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| 6 | REVISED per TOWN COMMENTS | 11/06/25 |
| | | |

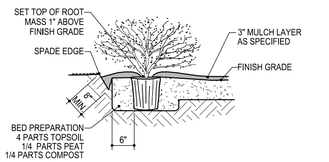
| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C502 |




## BIORETENTION AREA

NOT TO SCALE

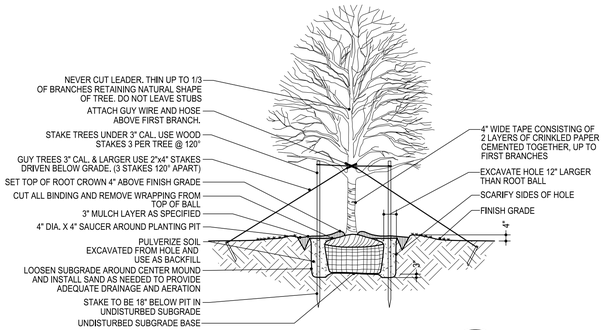
4
L101




## SHRUB AND SMALL TREE PLANTING DETAIL

NOT TO SCALE

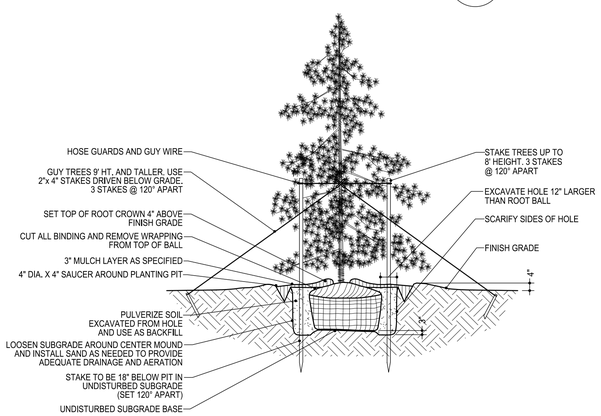
3
L101




## SHADE TREE PLANTING DETAIL

NOT TO SCALE

2
L101



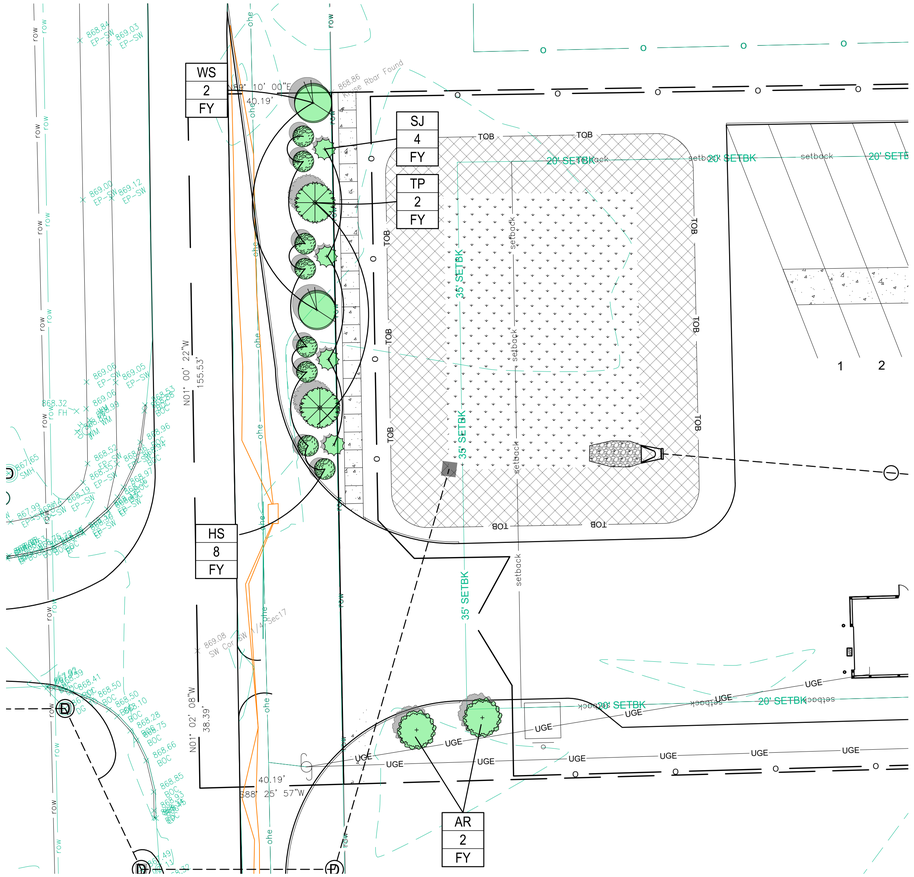

## EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

1
L101

## PLANTING SCHEDULE

| LEGEND | KEY | QTY | BOTANICAL NAME | COMMON NAME | SIZE / COND | REMARKS | HEIGHT / SPREAD | QTY REQ'D |
|---|---|---|---|---|---|---|---|---|
| | WS | 2 | Wisteria sinensis | Blue Chinese Wisteria Tree | #1 Container / --- | Ornamental Deciduous | 10-15 ft / 10-12 ft | 1.25 |
| | AR | 2 | Acer Rubrum | Red / Sugar Maple | #5 Container / --- | Canopy Deciduous | 40-50 ft / 30-40 ft | 2 |
| | TP | 2 | Thuja plicata x standishii | Thuja Green Giant | 24" height / --- | EVERGREEN | 30-40 ft / 8-10 ft | 1.5 |
| | HS | 8 | Hibiscus syriacus ' Red Heart' Hibiscus syriacus 'Notwoodone' Hibiscus syriacus 'JWNWOOD4' | Red Heart Rose of Sharon Lavender Chiffon Rose of Sharon Pink Chiffon Rose of Sharon | #3 Container / --- | DECIDUOUS SHRUB | 8-12 ft / 6-10 ft | 10 |
| | NOTE: Assorted mix of Hibiscus Plants in each grouping. | | | | | | | |
| | SJ | 4 | Spiraea nipponica 'Snowmound' Spiraea Japonica 'Neon Flash' Spiraea Japonica 'Matgold' | Snowmound Spirea Neon Flash Spirea Rainbow Fizz Spirea | #1 container / --- | DECIDUOUS SHRUB | 2-7 ft / 3-7 ft | |
| | NOTE: Assorted mix of Spirea Plants in each grouping. | | | | | | | |




## LANDSCAPE PLAN

SCALE: 1" = 20'

N

20 0 20 40

GRAPHIC SCALE: 1" = 20'


Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

LANDSCAPE PLAN

BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

Susan E. Moench

| REVISIONS: | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| 6 | REVISED per TOWN COMMENTS | 11/06/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | L101 |

LITHONIA LIGHTING

Catalog Number:
Notes:
Type:

## FEATURES & SPECIFICATIONS

**INTENDED USE** — Provides a maintenance-free emergency illumination for the rated wattage upon loss of AC power to meet code-required emergency lighting. Ideal for applications requiring low profile, emergency path for fewer mounting heights.

**CONSTRUCTION** — The housing is standard white, or optional black, thermoplastic with a compact and durable design with all-inclusive being reflector and lens assembly. It is 30% flame rated and impact-resistant.

**OPTICS** — The typical life of the LED is 10 years. One, 0.37W white LED per lamp head.

**ELECTRICAL** — Dual-voltage 120/277 standard.

Bi-color LED status indicator for battery condition. (Green-normal, Red-check battery).

One and a half watts of remote capacity available with REM option.

BATTERY: 3.6V maintenance-free, rechargeable, nickel-cadmium.

**INSTALLATION** — Wall mount and ceiling mount. Surface mount back plate fits most industry-standard size junction boxes and snaps into place.

**LISTINGS** — UL Listed. Meets all applicable requirements for: UL 924, NFPA 101 (Lumen Life Safety Code), NFPA 70 — NEC (National Electrical Code) Article 700.12F and/or 1600.9 (2012), CEC Title 24, Part 12, Subpart B and 2016 Federal Energy Standard 10FR Pa 1064Y. (10°C to 40°C) listed standard.

**WARRANTY** — 5 year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

**NOTE:** Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

† Small Battery Chargers Certified in the US Title 20 Appliance Efficiency Database.

Lithonia Lighting Basics™

Low Profile Emergency Light

# EU2L

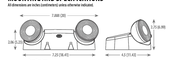






## MOUNTING AND SPECIFICATIONS

All dimensions are inches (centimeters) unless otherwise indicated.




Specifications

Length: 7.38 (19)
Depth: 2.75 (6.99)
Height: 4.5 (11.43)
Weight: 0.7 lbs. (.32 kg)



CONTRACTOR SELECT

LITHONIA LIGHTING

Catalog Number:
Notes:
Type:

Contractor Select™

# OLWP

## LED Wall Pack

Customize the color temperature and of effortlessly automate your wall pack for dusk-to-dawn operation with the CLWP Wall Pack. Featuring LatchLight (CT,DD,DE,DDB,DDBXD) and a selectable photocell, the CLWP Wall Pack is designed to deliver years of maintenance-free general illumination for residential outdoor applications such as driveways, entryways, patios, and other outdoor areas that require consistent and reliable lighting performance.

**FEATURES:**

- Switchable CCT(30/40/50K)
- Selectable ON/OFF photocell for dusk-to-dawn or switched operation
- Cast aluminum construction for durability
- Impact-resistant polycarbonate diffuser



| Catalog Number | UPC | Description | Lumens | Input Watts | CCT | CRI | Voltage | Back-Box Room Illumination | Finish |
|---|---|---|---|---|---|---|---|---|---|
| OLWP LED 5WW2 120 PE DDB | 19397285972522 | OLWP LED Wall Pack | 1,400 | 18.3 | 3000/4000/5000K | 80 | 120 | Activated Standard, Selectable On/120P | Dark Bronze |



CONTRACTOR SELECT

LITHONIA LIGHTING

## Specifications

**INTENDED USE:**
The CLWP provides years of maintenance-free general illumination for commercial or residential outdoor applications such as driveways, patios, loading areas and warehouses.

**CONSTRUCTION:**
Rugged cast aluminum, corrosion-resistant rear housing. Impact resistant polycarbonate front cover/diffuser resists fading and cracking. Driver operates at 120V. Operating temperature -40°C to 40°C.

**OPTICS:**
High-performance LEDs maintain 70% of light output at 50,000 hours of service. (LED lifespan based on IESNA LM-80-08 results and calculated per IESNA TM-21-11 methodology.). Lenses are engineered for superior lighting distribution, uniformity and fixture spacing. See Lighting Performance Table for specific fixture performance.

**INSTALLATION:**
Designed for wall mounting more than 4' above the ground. Mounts to a recessed junction box (by others).

**LISTINGS:**
UL Listed for U.S. and Canadian safety standards for wet locations.

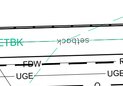
**WARRANTY:**
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

**Note:** Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

## Dimensions

### Specifications

**Width:** 5.35" (13.6 cm)
**Height:** 10.5" (26.4 cm)
**Depth:** 3" (7.7 cm)
**Weight:** 1.54 lbs (0.70 kg)






## EU2L Low Profile Emergency Light

CS CONTRACTOR SELECT — Looking for Contractor Select readily available configurations? Check out the Contractor Select Express™ portal. Sign in or go to www.contractorselect.com

**MATERIAL INFORMATION** — Example: EU2L B

| Series | | Housing Color | | Options | |
|---|---|---|---|---|---|
| EU2L | Emergency Light | (Blank) | White | (Blank) | Not Required |
| | | B | Black | REM | Remote Capacity |

**BATTERY CAPACITY AND LOADING**

| Battery | Total Capacity | Maximum# Remote Lamp Heads* |
|---|---|---|
| 3.6V | 2W | 2 - 0W 1W SQ, RD NEMA |
| | | 1 - 0W 1W MR NEMA |
| | | 1 - 0W (0.5)SQ, MP (0.5)RD |
| | | 2 - 0W (0.5)SQ, MP RD NEMA |
| | | 1 - 0W (0.5)W MP RD NEMA |

* These are in addition to the lamp heads on the product.
** See spec sheet for alternate side options

**ELECTRICAL SPECIFICATIONS**

| Description | Supply Voltage | Input Wattage | | | Input Amps | | |
|---|---|---|---|---|---|---|---|
| | | 120 | 208 | 277 | 120 | 208 | 277 |
| Standard (No options) | 120/277 | .15 | N/A | .37 | .45 | N/A | .05 |
| Remote Capacity Option (REM) | 120/277 | .52 | N/A | .60 | .07 | N/A | .07 |

**Accessories:** Order as separate catalog number.

| | |
|---|---|
| EBLW SQ, RD | Single, indoor remote head, round, ivory white, .75W, 3.6V voltage input.* |
| EBLW TSQ | Twin, indoor remote head, round, ivory white, 1.5W, 3.6V voltage input.* |
| EBLW SQ, WP SQ | Single, weather-proof remote head, square, gray, 1W, 3.6V (3V voltage sensing. * |
| EBLW SQ, WP RD W2 | Single, LED weather-proof head, round, gray, 0.75W, 3.6V input.* |
| EBLW SQ, WP RD W12 | Twin, LED weather-proof head, round, gray, 1.5W, 3.6V input.* |
| ELU WH2 | Wiregaurd 35 1/8" W x 5 3/4" H x 9" D (back mount only). Easy specification! ELA WH. |

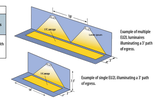
**Accessories Notes:**
1. See spec sheet EBL remote head for additional entering options

## SPACING GUIDELINES

Maximum Spacing Guidelines - EU2L*

| Mounting Height | Illumination Level | Single Luminaire | | Multiple Luminaires | | Application Notes: |
|---|---|---|---|---|---|---|
| | | 1' Path of Egress | 4' Path of Egress | 1' Path of Egress | 4' Path of Egress | |
| 7.5' | 10 Avg | 14' | 18' | 18' | 14' | 180° Corridor 9' wide, and 9' high with 90° Corner reflectance |

Notes:
1. Also meets the additional illumination requirements of NFPA 101 5'4" minimum and maximum ratio of 40:1




Example of multiple EU2L luminaires illuminating a 2' path of egress.

Example of single EU2L illuminating a 1' path of egress.


© 2019-2020 Acuity Brands Lighting, Inc. All rights reserved. Rev. 12/13/20

# LUMINAIRE SCHEDULE

| SYMBOL | QTY. | LABEL | ARRANGEMENT | DESCRIPTION | MOUNTING HEIGHT | LUX | WATTS |
|---|---|---|---|---|---|---|---|
| | 3 | A | SINGLE | LITHONIA RADB LED - P1 | 41.50 INCHES | 34.5 | 5 |
| WP | 2 | B | SINGLE | LITHONIA OLWP LED SWW2 120 PE DDB | 16 FEET | 160 | 18.5 |
| | 2 | B | SINGLE | LITHONIA EU2L | 7.5 FEET | 10.76 | .33 (LED) |

## LIGHTING LEGEND

- 60 LUX
- 30 LUX
- 20 LUX
- 5 LUX
- 1 LUX

Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

SITE LIGHTING PLAN




SITE LIGHTING PLAN

SCALE: 1" = 30'

N

30 0 30 60

GRAPHIC SCALE: 1" = 30'

BRYAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

Bryan E. Moench

## REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| 6 | REVISED per TOWN COMMENTS | 11/06/25 |
| | | |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | LT101 |

Indiana 811 Know what's below. Call before you dig.

# Appendix B

| Inspection Schedule | | | |
|---|---|---|---|
| **Inspection Frequency** | **Maintenance Item** | **Maintenance Follow-up** | **Action Taken** |
| Annual & Post Major Storm Event | | Vegetation | Routine mowing to a minimum 3 in. |
| | | Erosion on Embankment | Erosion Control Measure will be repaired immediately |
| | | Animal Burrows | Burrows should be removed at the time of routine mowing |
| | | Drains Clear & Functioning | Drains shall be inspected to ensure positive drainage |
| | | Leaks or Seeps | Leaks shall be repaired immediately to ensure positive flow |
| | | Slope Protection Failure | Erosion Control Measure will be repaired immediately |
| | | Obstructions | Obstructions shall be removed during routine mowing |
| Annual & Post Major Storm Event | | Outlet Pipe Blocked | Outlet shall be cleared of debris immediately upon finding |
| | | Debris Removed from Trash Guard | Obstructions shall be removed during routine mowing |
| | | Sediment Build-up | Sediment shall be removed at a depth of 2 inches |
| | | Pipe Condition | Pipes shall be inspected and repaired if needed |
| | | Outfall Channel Function | Erosion Control Measure will be repaired immediately |
| Monthly | | Sediment Build-up | Sediment shall be removed at a depth of 2 inches |
| Monthly | Miscellaneous | Erosion at Outfalls | Erosion Control Measure will be repaired immediately |
| | | Encroachment into Easements | Encroachments shall be removed from all easements |
| | | Complaints from Surrounding Owners | Complaints shall be heard and considered |
| | | Public Hazards | All hazards to public safety shall be removed immediately |
| Quarterly / Major Storm Event | Impervious Surfaces | Drainage Flow to Collection Point | Remove obstructions |
| Quarterly / Major Storm Event | Swales | Drainage Flow | Remove obstructions |
| Quarterly / Major Storm Event | Storm Pipes / Cleanouts | Pipe Blockage | Remove obstructions / Flush |

# APPENDIX C
# BMP CHECKLIST

**Pond/Basin Slope Inspection and Maintenance**

**Date**

**Lion Trans Inc.**

Time / Weather: _____

Precipitation Amount / Site Condition: _____

Inspector Name: _____

| Item | Condition when Maintenance is Required | Maintenance Required? (Y/N) | Comments | Expected Maintenance Results | Initials |
|---|---|---|---|---|---|
| Trash and Debris | Trash and debris has accumulated in pond. | | | Trash and debris to be removed from pond. | |
| Erosion | Erosion of the pond's side slopes and/or scouring of the pond's bottom, that exceeds 6-inches, or where continued erosion is prevalent. | | | Slope Stabilized using proper erosion control measures and repair methods. | |
| Bank Stabilization | Bank destabilized by burrowing animal(s). | | | Remove burrowing animals and repair holes in embankment | |
| Sediment Accumulation in the Pond Bottom | Sediment accumulations in pond bottom that exceeds the depth of sediment zone. | | | Sediment removed from pond bottom | |
| Rip Rap | Vegetative growth on rip rap lined channel or missing rocks and soil is exposed | | | Remove vegetative growth on rip rap and replace rocks to design specifications | |
| End Section | End section is blocked / obstructed by trash / debris, sediment or vegetation | | | Trash, debris, sediment, or vegetation to be removed from end section | |
| Outlet Structure | Outlet structure is blocked / obstructed by trash, debris, sediment or vegetation | | | Trash, debris, sediment, or vegetation to be removed from outlet structure | |

| Additional Comments and Observations | Initials |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

# Arcadia™
# Maintenance Guide

One of Arcadia's advantages is the ease of maintenance. Like any system that collects pollutants, the Arcadia hydrodynamic separator must be regularly maintained for continued effectiveness. Maintenance is a simple procedure performed using a vacuum truck or similar equipment. The system is designed to minimize the volume of water lost during routine maintenance, reducing disposal costs.

Contractors can access the pollutants stored in the manhole through the manhole cover. This allows them to gain vacuum hose access to the bottom of the manhole to remove sediment and trash. There is no confined space entry necessary for inspection or maintenance.

The entire maintenance procedure typically takes 2 to 4 hours, depending on the system's size, the amount of captured material, and the vacuum truck's capacity.

Local regulations may apply to the maintenance procedure. Safe and legal disposal of pollutants is the responsibility of the maintenance contractor. Maintenance should be performed only by a qualified contractor.

## Inspection and Cleaning Cycle

Periodic inspection is necessary to determine the need for and frequency of maintenance. Inspections should begin as soon as construction is complete and then on an annual basis ongoing. Under normal use, the system will need to be cleaned every 1-3 years.

Sites that have excessive oil, fuel or sediment runoff may shorten the maintenance cycle. Periodic inspection is important.

## Determining When to Clean

To determine the sediment depth, the maintenance contractor should lower a stadia rod into the manhole until it reaches the top of the captured sediment. Mark this spot on the rod, then continue pushing the rod through the sediment until it reaches the bottom of the sump. Next, mark the second spot on the rod then compare the two markings to determine the depth of the captured sediment.

Maintenance should occur when the sediment has reached a depth of 18" (450 mm).

ADS®

**adspipe.com**

800-821-6710

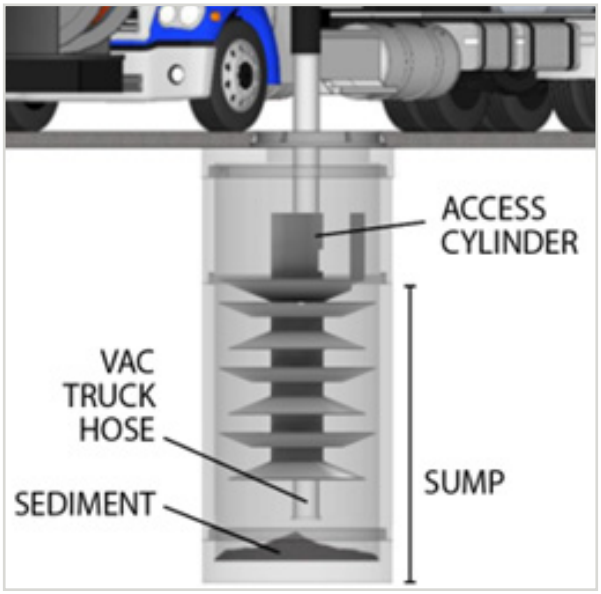
## Arcadia Storage Capacities

| Model | Manhole Diameter in (mm) | Total System Volume Gallons (Liters) | Treatment Chamber Capacity Gallons (Liters) | Standard Sediment Capacity (18" depth) Yards$^3$ (m$^3$) | NJDEP Sediment Capacity (50% of Standard Depth) Yards$^3$ (m$^3$) |
|---|---|---|---|---|---|
| AR3 | 36 (914) | 242 (917) | 203 (767) | 0.39 (0.30) | 0.19 (0.15) |
| AR4 | 48 (1219) | 635 (2402) | 564 (2135) | 0.70 (0.53) | 0.35 (0.27) |
| AR5 | 60 (1524) | 991 (3753) | 881 (3336) | 1.09 (0.83) | 0.55 (0.42) |
| AR6 | 72 (1829) | 1428 (5404) | 1269 (4804) | 1.57 (1.20) | 0.79 (0.60) |
| AR8 | 96 (2438) | 4136 (15656) | 3854 (14588) | 2.79 (2.14) | 1.40 (1.07) |
| AR10 | 120 (3048) | 7931 (30022) | 7490 (28354) | 4.36 (3.34) | 2.18 (1.67) |

## Maintenance Procedures

1. Remove the manhole cover to provide access to the pollutant storage. Pollutants are stored in the sump, below the unit assembly. Access this area through the access cylinder (larger than 10" (254 mm) diameter for all sizes).
2. Use a vacuum truck or other similar equipment to remove all water, debris, oil and sediment. See Figure 1.
3. Use a high pressure hose to clean the manhole of all remaining sediment and debris. Then, use the vacuum truck to remove the water.
4. Fill the clean manhole with water until the level reaches the invert of the outlet pipe.
5. Replace the manhole cover.
6. Dispose of the polluted water, oil, sediment and trash at an approved facility.
    a. Local regulations prohibit the discharge of solid material into the sanitary system. Check with the local sewer authority for authorization to discharge the liquid.
    b. Some localities treat the pollutants as leachate. Check with local regulators about disposal requirements.
    c. Additional local regulations may apply to the maintenance procedure.

**Figure 1**




ADS "Terms and Conditions of Sale" are available on the ADS website, www.adspipe.com
The ADS logo, the Green Stripe and BayFilter are registered trademarks of Advanced Drainage Systems, Inc.
© 2025 Advanced Drainage Systems, Inc. MG 1.21 05/25 AB

**adspipe.com**
800-821-6710

MOENCH ENGINEERING, P.C.
A Professional Corporation
4000 Clarks Creek Road, Plainfield, IN 46168, Telephone: 317-837-2767, Fax: 317-837-7266

# Lions Trans INC.
# 4005 N CR 1000 E
# Brownsburg, Indiana 46112

# Drainage Narrative and Calculations

## December 19, 2025

Revision 1

Moench Engineering, P.C.
4000 Clarks Creek Road
Plainfield, Indiana 46168

Table of Contents

**Drainage Narrative** ..... 3
**1.0 Project Scope** ..... 3
**2.0 Rainfall Information** ..... 3
**3.0 Existing Conditions** ..... 5
**4.0 Proposed Conditions** ..... 5
**4.1 Detention Pond and Outlet Structure** ..... 6
**4.2 On-Site Stormwater Conveyance** ..... 7
**4.3 Off Site Drainage Improvements Along CR 400 N** ..... 8
**5.0 Summary** ..... 9
**Appendix A – Huff Distribution Hydrographs** ..... 10
**Appendix B – Pipe, Orifice, and Inlet Calculations** ..... 62
**Appendix C – Water Quality Calculations** ..... 67
**Appendix D – Stage Storage/Discharge Table** ..... 69
**Appendix E – Existing Watershed** ..... 73
**Appendix F – Proposed Watershed** ..... 75

# Drainage Narrative

## 1.0 Project Scope

The proposed project involves the development of a truck maintenance facility that will include 42 stalls for truck and trailer parking, a 900 square foot office building (30 ft × 30 ft), and a 2,860 square foot maintenance building (130 ft × 22 ft) located along the southern boundary of the property. In addition, a detention pond will be constructed to manage and control stormwater runoff generated by the site improvements. The project scope will also include off site drainage improvements along County Road 400 North to accommodate discharge from our property.

The project site is located at 4005 N CR 1000 E, Brownsburg, Indiana 46112. The parcel is not currently subject to zoning restrictions. The proposed development will result in approximately 2 acres of land disturbance. Stormwater from the site will discharge to the existing offsite storm sewer network located along CR 400 N, which ultimately conveys flow to Bullard Creek west of the site.

All stormwater management facilities for the proposed development were designed in accordance with the Town of Brownsburg Stormwater Standards and the Brownsburg Stormwater Management Ordinance. The standards were used to establish allowable post-development release rates, minimum storm durations, detention storage requirements, outlet structure sizing, and downstream conveyance criteria.

## 2.0 Rainfall Information

Table 1. Rainfall Intensities (Hendricks County 2016)

| **Rainfall Intensities for Various Return Periods and Storm Durations** | | | | | | |
|---|---|---|---|---|---|---|
| *Duration* | *Intensity (Inches/Hour)* | | | | | |
| | *Return Period (Years)* | | | | | |
| | 2 | 5 | 10 | 25 | 50 | 100 |
| 5 min | 5.57 | 6.7 | 7.58 | 8.76 | 9.68 | 10.6 |
| 10 min | 4.35 | 5.2 | 5.85 | 6.7 | 7.34 | 7.98 |
| 15 min | 3.54 | 4.26 | 4.8 | 5.52 | 6.06 | 6.61 |
| 30 min | 2.37 | 2.92 | 3.33 | 3.89 | 4.33 | 4.77 |
| 1 hr | 1.46 | 1.83 | 2.12 | 2.53 | 2.85 | 3.19 |
| 2 hr | 0.851 | 1.08 | 1.25 | 1.51 | 1.72 | 1.95 |
| 3 hr | 0.603 | 0.762 | 0.893 | 1.08 | 1.24 | 1.41 |
| 6 hr | 0.359 | 0.455 | 0.535 | 0.65 | 0.747 | 0.853 |
| 12 hr | 0.211 | 0.263 | 0.306 | 0.368 | 0.418 | 0.473 |
| 24 hr | 0.126 | 0.155 | 0.178 | 0.21 | 0.236 | 0.262 |

Table 2. Rainfall Depths (NOAA Atlas 14)

**PDS-based precipitation frequency estimates with 90% confidence intervals (in inches)[1]**

| Duration | Average recurrence interval (years) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 5 | 10 | 25 | 50 | 100 | 200 | 500 | 1000 |
| 5-min | **0.386** (0.348-0.428) | **0.460** (0.415-0.509) | **0.551** (0.497-0.611) | **0.623** (0.559-0.689) | **0.717** (0.640-0.794) | **0.792** (0.700-0.879) | **0.865** (0.758-0.961) | **0.941** (0.817-1.05) | **1.04** (0.892-1.18) | **1.12** (0.945-1.27) |
| 10-min | **0.600** (0.541-0.666) | **0.718** (0.647-0.795) | **0.857** (0.773-0.950) | **0.962** (0.863-1.06) | **1.10** (0.978-1.22) | **1.20** (1.06-1.33) | **1.30** (1.14-1.45) | **1.40** (1.22-1.57) | **1.54** (1.31-1.73) | **1.63** (1.38-1.85) |
| 15-min | **0.735** (0.664-0.816) | **0.878** (0.792-0.972) | **1.05** (0.949-1.17) | **1.18** (1.06-1.31) | **1.36** (1.21-1.50) | **1.49** (1.31-1.65) | **1.62** (1.42-1.80) | **1.75** (1.52-1.95) | **1.92** (1.64-2.16) | **2.04** (1.72-2.31) |
| 30-min | **0.973** (0.878-1.08) | **1.17** (1.06-1.30) | **1.44** (1.30-1.60) | **1.64** (1.48-1.82) | **1.91** (1.71-2.12) | **2.12** (1.88-2.36) | **2.34** (2.05-2.60) | **2.55** (2.21-2.85) | **2.84** (2.42-3.20) | **3.06** (2.58-3.47) |
| 60-min | **1.19** (1.07-1.32) | **1.44** (1.30-1.60) | **1.81** (1.63-2.00) | **2.09** (1.88-2.31) | **2.48** (2.21-2.75) | **2.80** (2.48-3.11) | **3.12** (2.74-3.47) | **3.46** (3.00-3.86) | **3.93** (3.35-4.42) | **4.30** (3.62-4.87) |
| 2-hr | **1.39** (1.26-1.55) | **1.69** (1.52-1.88) | **2.12** (1.91-2.36) | **2.48** (2.22-2.75) | **2.97** (2.64-3.30) | **3.38** (2.98-3.75) | **3.82** (3.32-4.24) | **4.28** (3.66-4.76) | **4.92** (4.13-5.52) | **5.45** (4.50-6.16) |
| 3-hr | **1.48** (1.34-1.65) | **1.79** (1.62-1.99) | **2.26** (2.04-2.51) | **2.64** (2.37-2.93) | **3.19** (2.83-3.53) | **3.64** (3.20-4.04) | **4.13** (3.59-4.58) | **4.64** (3.98-5.18) | **5.39** (4.51-6.06) | **6.00** (4.93-6.79) |
| 6-hr | **1.76** (1.59-1.95) | **2.13** (1.93-2.36) | **2.69** (2.43-2.99) | **3.15** (2.83-3.49) | **3.82** (3.39-4.22) | **4.38** (3.84-4.84) | **4.98** (4.31-5.52) | **5.63** (4.79-6.25) | **6.57** (5.46-7.35) | **7.35** (5.97-8.28) |
| 12-hr | **2.08** (1.89-2.30) | **2.51** (2.28-2.78) | **3.12** (2.84-3.45) | **3.63** (3.28-4.01) | **4.34** (3.88-4.79) | **4.93** (4.36-5.43) | **5.55** (4.86-6.12) | **6.20** (5.36-6.88) | **7.13** (6.03-7.97) | **7.88** (6.54-8.87) |
| 24-hr | **2.48** (2.30-2.68) | **2.97** (2.76-3.21) | **3.65** (3.39-3.95) | **4.19** (3.88-4.52) | **4.92** (4.54-5.31) | **5.51** (5.06-5.94) | **6.11** (5.59-6.59) | **6.72** (6.12-7.26) | **7.57** (6.82-8.20) | **8.24** (7.37-8.94) |
| 2-day | **2.89** (2.69-3.10) | **3.46** (3.22-3.72) | **4.22** (3.93-4.54) | **4.82** (4.48-5.18) | **5.63** (5.21-6.04) | **6.27** (5.78-6.74) | **6.92** (6.36-7.44) | **7.59** (6.93-8.17) | **8.50** (7.70-9.18) | **9.20** (8.27-9.97) |
| 3-day | **3.08** (2.89-3.30) | **3.68** (3.45-3.94) | **4.48** (4.19-4.79) | **5.09** (4.76-5.44) | **5.93** (5.53-6.34) | **6.59** (6.12-7.04) | **7.26** (6.72-7.76) | **7.94** (7.32-8.50) | **8.87** (8.11-9.51) | **9.59** (8.72-10.3) |
| 4-day | **3.28** (3.09-3.49) | **3.91** (3.69-4.17) | **4.73** (4.46-5.04) | **5.36** (5.04-5.71) | **6.23** (5.84-6.63) | **6.91** (6.46-7.35) | **7.60** (7.09-8.08) | **8.30** (7.70-8.83) | **9.24** (8.53-9.84) | **9.97** (9.17-10.6) |
| 7-day | **3.88** (3.64-4.13) | **4.61** (4.33-4.91) | **5.53** (5.19-5.88) | **6.26** (5.87-6.65) | **7.25** (6.78-7.70) | **8.03** (7.49-8.52) | **8.82** (8.21-9.36) | **9.62** (8.92-10.2) | **10.7** (9.88-11.4) | **11.5** (10.6-12.3) |
| 10-day | **4.42** (4.16-4.70) | **5.24** (4.94-5.58) | **6.25** (5.89-6.66) | **7.06** (6.64-7.52) | **8.15** (7.65-8.67) | **9.00** (8.43-9.58) | **9.87** (9.22-10.5) | **10.7** (10.0-11.4) | **11.9** (11.0-12.7) | **12.8** (11.8-13.7) |
| 20-day | **6.02** (5.70-6.40) | **7.12** (6.73-7.56) | **8.39** (7.92-8.90) | **9.38** (8.84-9.94) | **10.7** (10.1-11.3) | **11.7** (11.0-12.4) | **12.7** (11.9-13.5) | **13.7** (12.8-14.5) | **15.0** (14.0-16.0) | **16.0** (14.8-17.1) |
| 30-day | **7.43** (7.03-7.86) | **8.75** (8.28-9.26) | **10.2** (9.62-10.8) | **11.3** (10.6-11.9) | **12.7** (12.0-13.4) | **13.8** (13.0-14.6) | **14.9** (13.9-15.7) | **15.9** (14.9-16.8) | **17.3** (16.1-18.3) | **18.3** (17.0-19.4) |
| 45-day | **9.40** (8.92-9.91) | **11.0** (10.5-11.6) | **12.7** (12.0-13.4) | **14.0** (13.2-14.7) | **15.6** (14.7-16.4) | **16.8** (15.9-17.7) | **18.0** (17.0-19.0) | **19.1** (18.0-20.2) | **20.6** (19.3-21.7) | **21.6** (20.2-22.8) |
| 60-day | **11.3** (10.7-11.9) | **13.2** (12.5-13.9) | **15.1** (14.3-15.9) | **16.5** (15.7-17.4) | **18.4** (17.4-19.3) | **19.8** (18.7-20.8) | **21.1** (19.9-22.2) | **22.3** (21.0-23.5) | **23.9** (22.4-25.2) | **25.0** (23.5-26.4) |

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Rainfall intensity and depth data used in the hydrologic analyses were obtained from Chapter 2 of the *Hendricks County Stormwater Technical Standards Manual* (2016). These values form the basis for both Rational Method peak runoff calculations and hydrograph development for the project's watershed, ensuring consistency with county stormwater design requirements.

However, per the Brownsburg Stormwater Management Ordinance (2024), storage volumes for detention ponds shall be calculated based on NRCS TR-55 time of concentration and curve number calculation methodologies.

## 3.0 Existing Conditions

The project site is currently an undeveloped grassy area with scattered overgrowth. Land use surrounding the parcel includes residential properties to the south, warehouse and manufactured homes to the west, minor commercial development to the north beyond the highway, and railroad tracks to the east.

The existing watershed area encompasses 3.02 acres, consisting entirely of pervious cover. Under current conditions, stormwater runoff generally drains to the east and south.

Runoff Curve Numbers (CN) were assigned based on existing land cover conditions in accordance with the Hendricks County Stormwater Technical Standards Manual (2016) and the Brownsburg Stormwater Management Ordinance (2024). A CN value of 84 was used for areas classified as fair-condition grass on Hydrologic Soil Group D soils. For the existing conditions analysis, the critical storm event was identified as the 2-hour storm. Using the Huff First Quartile distribution for the 2-hour duration, the time of concentration (Tc) for the site was calculated to be 47.0 minutes. The corresponding peak flow rates for the existing conditions are summarized below:

Table 3. Existing Conditions

| Return Period | 2-year | 10-year | 25-year | 100-year |
|---|---|---|---|---|
| **Runoff** | 1.172 cfs | 2.497 cfs | 3.430 cfs | 5.175 cfs |

## 4.0 Proposed Conditions

As outlined in the project scope, the proposed development consists of a truck maintenance facility including 42 stalls for truck and trailer parking, a 900 square foot office building (30 ft × 30 ft), and a 2,860 square foot maintenance building (130 ft × 22 ft).

Under proposed conditions, the total site area remains 3.02 acres, consisting of approximately 1.02 acres of pervious surface, 1.91 acres of impervious asphalt pavement, and 0.09 acres of roof area.

For the proposed conditions analysis, the critical storm event was identified as the 30-minute storm. Using the Huff First Quartile distribution for the 30-minute duration, the time of concentration (tc) was calculated to be 9.2 minutes. Curve Numbers (CN) were assigned based on land cover characteristics consistent with the Hendricks County Stormwater Technical Standards Manual (2016) and the Brownsburg Stormwater Management Ordinance (2024). Values applied include CN= 84 for land classified as fair condition grass cover hydrologic soil group D, CN = 98 for asphalt pavement and roof areas. The weighted CN value was calculated as follows:

$$\frac{(1.02\ acres\ \times 84) + (1.91\ acres\ \times 98) + (0.09\ acres\ \times 98)}{3.02\ acres} = 93$$

The resulting peak runoff flow rates for the proposed site conditions are summarized below:

Table 4. Proposed Conditions

| Return Period | 2-year | 10-year | 25-year | 100-year |
|---|---|---|---|---|
| **Runoff** | 5.733 cfs | 9.947 cfs | 12.50 cfs | 16.74 cfs |

The runoff flowrates increased due to the addition of pervious surface and removal of impervious surface. The percentage increase is as follows:

Table 5. Percentage Increase in Runoff

| Return Period | 2-year | 10-year | 25-year | 100-year |
|---|---|---|---|---|
| **% Increase** | 389% | 298% | 264% | 223% |

Stormwater runoff from the proposed improvements will be conveyed into inlets and piped to the northwest corner of the site, where a retention pond will be constructed to provide the required storage volume.

## 4.1 Detention Pond and Outlet Structure

The post-development peak discharge was limited by restricting the 0–10-year storm events to a release rate of 0.2 cfs per acre (0.604 cfs for the site) and the 11–100-year storm events to 0.4 cfs per acre (1.208 cfs for the site). These allowable release rates are more restrictive than the proposed 100-year peak inflow when compared to the existing 10-year conditions, ensuring that post-development discharges do not exceed pre-development rates.

In accordance with the Brownsburg Stormwater Management Ordinance detention standards, “The storm duration shall be equal to or greater than the site time of concentration but shall not be less than thirty (30) minutes.” (2024). Therefore, the time of concentration for the proposed conditions was set to 30 minutes, and the maximum required storage was determined to take place during the 6-hour storm. The detention sizing analysis used the 6-hour storm to calculate the required storage volume for the site.

This analysis determined a required detention volume of 33,478 cubic feet. To meet this requirement, a 34,170-cubic-foot retention pond will be constructed in the northwest corner of the site. The detention pond will be equipped with a multi-stage outlet structure designed to limit discharge rates. A summary of the outlet structure components is provided in Table 6, with supporting calculations included in Appendix B.

Table 6. Outlet Structure Summary

| Outlet | Bottom | Intermediate | Emergency Overflow |
|---|---|---|---|
| Size | $4"\ Diameter$ | $4"\ Diameter$ | $3'x\ 3'w/mesh$ |
| Invert El. (ft) | 862.66 | 865.47 | 867.01 |
| Peak Outflow (cfs) | 0.70 | 1.23 | $\geq 20.93\ (125\%\ 100\ year\ peak)$ |

Per the Town of Brownsburg Stormwater Standards, the minimum allowable orifice diameter is 4 inches; therefore, a 4-inch orifice is utilized for the outlet structure. Due to this minimum size requirement, the resulting discharge rates from the orifice slightly exceed the calculated allowable release rates. However, the post-development discharge rates remain below the corresponding existing peak flow rates.

## 4.2 On-Site Stormwater Conveyance

Stormwater runoff generated from the proposed improvements will be collected and conveyed to the site's retention facility. The grading plan directs surface runoff by sheet flow and shallow swales to a series of inlets along the eastern and central portions of the property. These inlets are connected by a storm sewer system that conveys flow westward to the retention pond located in the northwest corner of the site.

- Inlet 1: Connects to 290 linear feet (LF) of 18-inch RCP at a 0.30% slope, discharging into Inlet 2.
- Inlet 2: Connects to 64 LF of 24-inch RCP at 0.30% into the Arcadia AR8, which the discharges into 64 LF of 24" RCP at 0.30% into the pond

Inlet capacity was then checked using the orifice flow equation, incorporating the reduced effective open area (50% of manufacturer-provided open area). This ensures the inlet can maintain adequate capacity under both design flow and partial clogging conditions, in compliance with the requirements of the Manual. The discharge coefficient, C, will be 0.60, gravity acceleration, g, is 32.2 ft/sec2, and ponding height, h is 0.5 ft, and the 10-year flow will be used. The orifice equation is as follows:

Inlet Structure 1:

$$Q = CA\sqrt{2gh}$$

$$5.08\ cfs = (0.6)A\sqrt{2(32.2\ ft/\sec^2)\ 0.5\ ft}$$

$$A = 1.49\ ft^2$$

$$2A = 3.0\ ft^2\ (Clogging\ Condition)$$

Inlet Structure 2 :

$$Q = CA\sqrt{2gh}$$

$$5.69\ cfs = (0.6)A\sqrt{2(32.2\ ft/\sec^2)\ 0.5\ ft}$$

$$A = 1.67\ ft^2$$

$$2A = 3.3\ ft^2\ (Clogging\ Condition)$$

To capture and convey runoff from the site into Inlet Structure 1, a square Neenah Grate Inlet 3287-5 (3.2 square feet of opening area) or equivalent will be installed. To capture and convey runoff from the site into Inlet Structure 2, a square Neenah Grate Inlet 3808-1 (5.2 square feet of opening area) or inlet with 3.3 square foot or greater opening should be installed. Calculations verifying pipe capacity and inlet capture are provided in Appendix B.

For water quality treatment, a hydrodynamic separator will be installed downstream of Inlet 2 to remove sediment and floatable pollutants prior to discharge into the detention basin. The required treatment flow rate is 10.70 cfs. An ADS Arcadia ARC8 unit is proposed, as it has a rated flow capacity of 13.48 cfs. Calculations can be found in Appendix C.

## 4.3 Off Site Drainage Improvements Along CR 400 N

The existing downstream pipe network is not adequate to convey the required discharge from the site and is therefore proposed to be redesigned to accommodate existing flows in addition to 125 percent of the site's 100-year peak discharge.

The pipe conveying flow from the detention pond was sized to safely pass the 100-year design flow under the assumed conditions of a 0.11 percent slope and a Manning's roughness coefficient (n) of 0.013. The minimum required pipe diameter was calculated using Manning's Equation, as shown below:

$$Q\ (Volumetric\ Flow) = \frac{1.49}{Manning's\ n} * (Area) * (Hydraulic\ Radius)^{2/3}\sqrt{Slope}$$

$$20.93\ cfs = \frac{1.49}{0.013} * \left(\frac{\pi D^2}{4}\right) * (D/4)^{2/3}\sqrt{0.0011}$$

$$D = 35.26\ inches$$

Based on this analysis, a 36-inch diameter pipe is required and will be utilized.

The outlet pipe network extends west from the detention pond and connects to the storm sewer system along CR 400 N. This existing network is made up of 18-inch pipe at various slopes. As part of the proposed improvements, the existing downstream pipes will be replaced with 36-inch RCP. Regrading will occur along the full length of the alignment, and existing drainage structures will be upsized to accommodate the larger pipe diameter. A summary of the proposed downstream pipe network is provided in Table 7. Hydraulic calculations accounting for combined offsite flows and proposed site discharge are included in Appendix B.

Table 7. Pipe Network

| Location | Length (ft) | Diameter (in) | Grade (%) | Invert Upstream | Invert Downstream |
|---|---|---|---|---|---|
| South to INL7 | 97 | 12 | 3.10 | 865.49 | 862.47 |
| INL7 TO INL8 | 50 | 36 | 0.12 | 862.47 | 862.41 |
| INL8 TO INL9 | 175 | 36 | 0.13 | 862.41 | 862.19 |
| INL9 TO INL10 | 151 | 36 | 0.13 | 862.19 | 861.99 |
| INL10 TO INL11 | 164 | 36 | 0.14 | 861.99 | 861.76 |
| INL11 TO INL12 | 164 | 36 | 0.14 | 861.76 | 861.53 |
| INL12 TO INL13 | 80 | 36 | 0.15 | 861.53 | 861.41 |
| INL13 TO INL14 | 75 | 36 | 0.16 | 861.41 | 861.29 |
| INL14 to Ronald Reagan | 268 | 36 | 0.16 | 861.29 | 860.86 |

The complete stormwater management system—including inlets, storm sewers, detention pond, multi-stage outlet structure, and downstream piping—has been designed to control post-development runoff in compliance with the Town of Brownsburg Stormwater Standards.

## 5.0 Summary

The proposed development at 4005 N CR 1000 E, Brownsburg, Indiana will consist of a truck maintenance facility including 42 truck/trailer parking stalls, a 900 square foot office building, and a 2,860 square foot maintenance building. The project will disturb approximately 2 acres and convert a predominantly pervious 3.02-acre parcel into a mix of impervious asphalt, building roof, and limited vegetated cover. Hydrologic analysis using rainfall data from the Hendricks County Stormwater Technical Standards Manual (2016) indicates a significant increase in runoff under proposed conditions, with the 100-year peak flow rising from 2.10 cfs to 17.61 cfs.

To mitigate this increase, a comprehensive stormwater management system has been designed. Runoff will be collected by inlets and storm sewers, routed through a hydrodynamic separator to remove sediment , and detained within a pond sized to provide 34,170 cubic feet of storage volume. A multi-stage outlet structure will restrict discharges using minimum allowable orifice sizes. The system reduces post-development peak discharge to below pre-development rates, providing both quantity control and water quality treatment.

# Appendix A – Huff Distribution Hydrographs

# 30-minute storm

# Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Inflow hyd(s) | Peak Outflow (cfs) | | | | | | | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-yr | 2-yr | 3-yr | 5-yr | 10-yr | 25-yr | 50-yr | 100-yr | |
| 1 | SCS Runoff | ------ | ------- | 0.931 | ------- | ------- | 2.007 | 2.725 | ------- | 3.949 | Existing |
| 2 | SCS Runoff | ------ | ------- | 5.733 | ------- | ------- | 9.947 | 12.50 | ------- | 16.74 | Proposed |

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 0.931 | 1 | 44 | 2,545 | ------ | ------ | ------ | Existing |
| 2 | SCS Runoff | 5.733 | 1 | 14 | 6,429 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

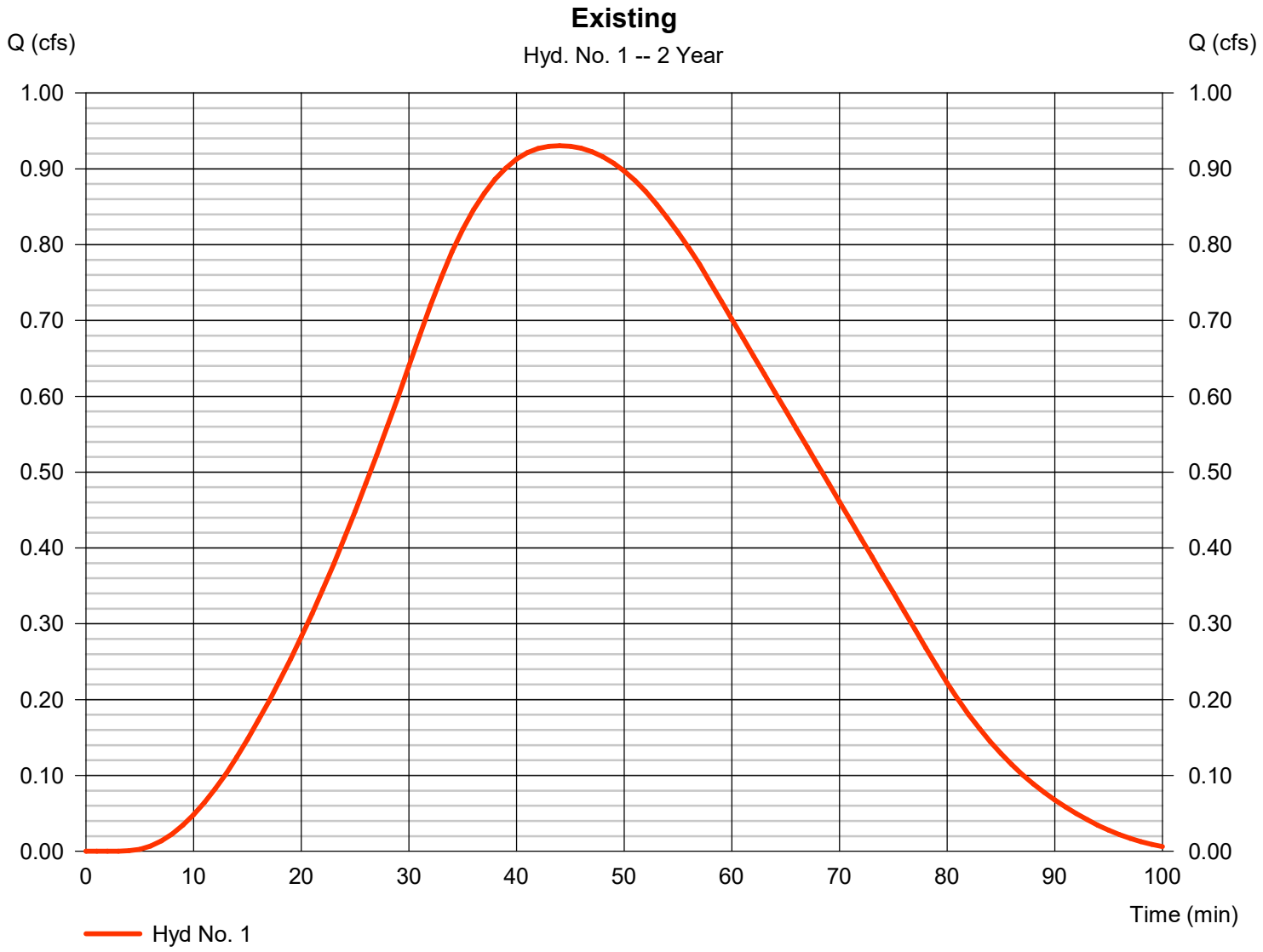
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Hydrograph type | = SCS Runoff | Peak discharge | = 0.931 cfs |
| Storm frequency | = 2 yrs | Time to peak | = 44 min |
| Time interval | = 1 min | Hyd. volume | = 2,545 cuft |
| Drainage area | = 3.020 ac | Curve number | = 84* |
| Basin Slope | = 0.0 % | Hydraulic length | = 0 ft |
| Tc method | = TR55 | Time of conc. (Tc) | = 47.00 min |
| Total precip. | = 1.17 in | Distribution | = Huff-1st |
| Storm duration | = 0.50 hrs | Shape factor | = 484 |

* Composite (Area/CN) = [(3.020 x 84)] / 3.020



# TR55 Tc Worksheet



## Hyd. No. 1

Existing

| Description | A | | B | | C | | Totals |
|---|---|---|---|---|---|---|---|
| **Sheet Flow** | | | | | | | |
| Manning's n-value | = 0.150 | | 0.011 | | 0.011 | | |
| Flow length (ft) | = 300.0 | | 0.0 | | 0.0 | | |
| Two-year 24-hr precip. (in) | = 3.01 | | 0.00 | | 0.00 | | |
| Land slope (%) | = 0.41 | | 0.00 | | 0.00 | | |
| **Travel Time (min)** | **= 45.86** | **+** | **0.00** | **+** | **0.00** | **=** | **45.86** |
| **Shallow Concentrated Flow** | | | | | | | |
| Flow length (ft) | = 70.00 | | 0.00 | | 0.00 | | |
| Watercourse slope (%) | = 0.41 | | 0.00 | | 0.00 | | |
| Surface description | = Unpaved | | Paved | | Paved | | |
| Average velocity (ft/s) | =1.03 | | 0.00 | | 0.00 | | |
| **Travel Time (min)** | **= 1.13** | **+** | **0.00** | **+** | **0.00** | **=** | **1.13** |
| **Channel Flow** | | | | | | | |
| X sectional flow area (sqft) | = 0.00 | | 0.00 | | 0.00 | | |
| Wetted perimeter (ft) | = 0.00 | | 0.00 | | 0.00 | | |
| Channel slope (%) | = 0.00 | | 0.00 | | 0.00 | | |
| Manning's n-value | = 0.015 | | 0.015 | | 0.015 | | |
| Velocity (ft/s) | =0.00 | | | | | | |
| | | | 0.00 | | | | |
| | | | | | 0.00 | | |
| Flow length (ft) | ({0})0.0 | | 0.0 | | 0.0 | | |
| **Travel Time (min)** | **= 0.00** | **+** | **0.00** | **+** | **0.00** | **=** | **0.00** |

**Total Travel Time, Tc ..... 47.00 min**

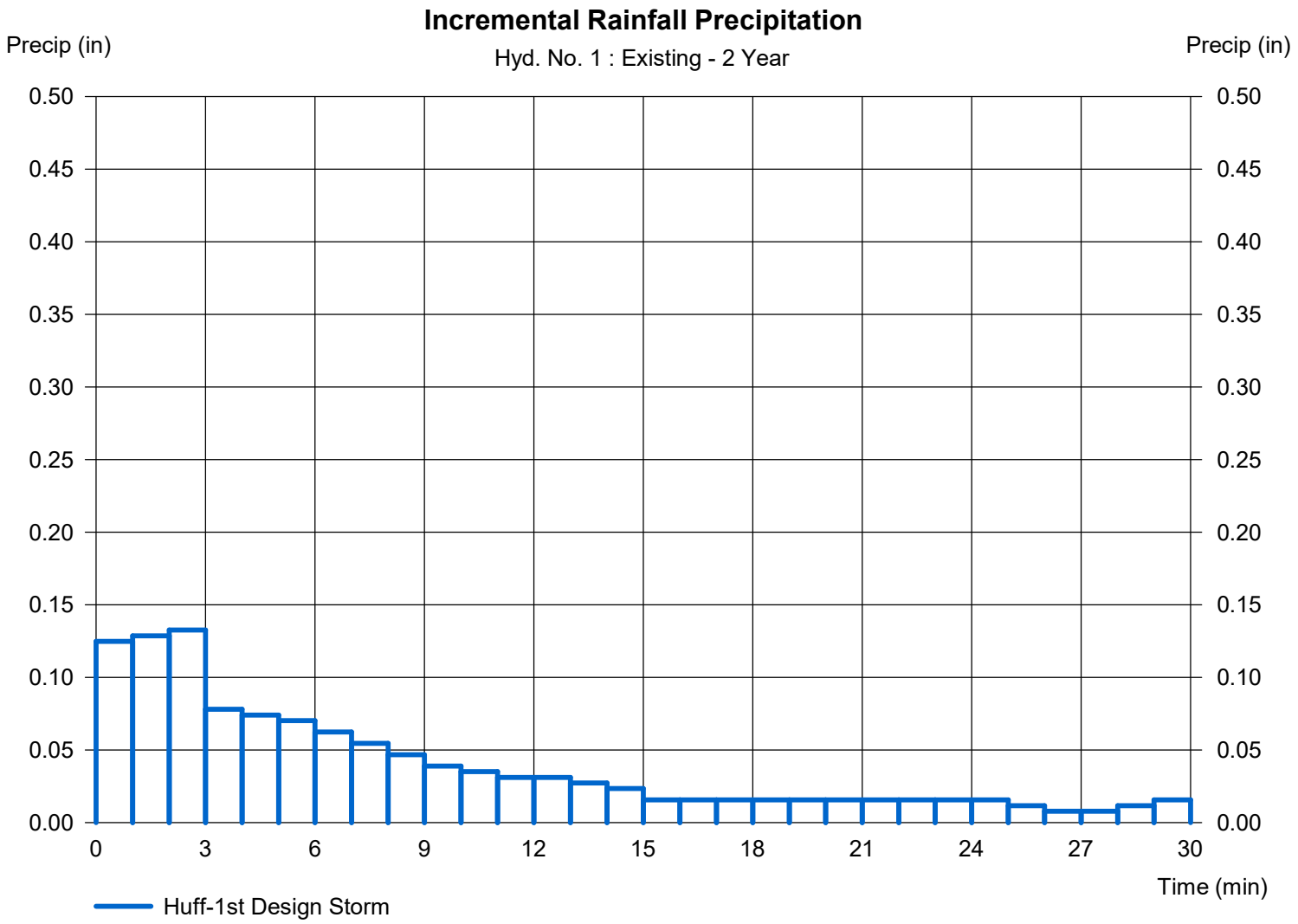
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Storm Frequency | = 2 yrs | Time interval | = 1 min |
| Total precip. | = 1.1700 in | Distribution | = Huff-1st |
| Storm duration | = 0.50 hrs | | |



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 2.007 | 1 | 42 | 5,513 | ------ | ------ | ------ | Existing |
| 2 | SCS Runoff | 9.947 | 1 | 13 | 10,847 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

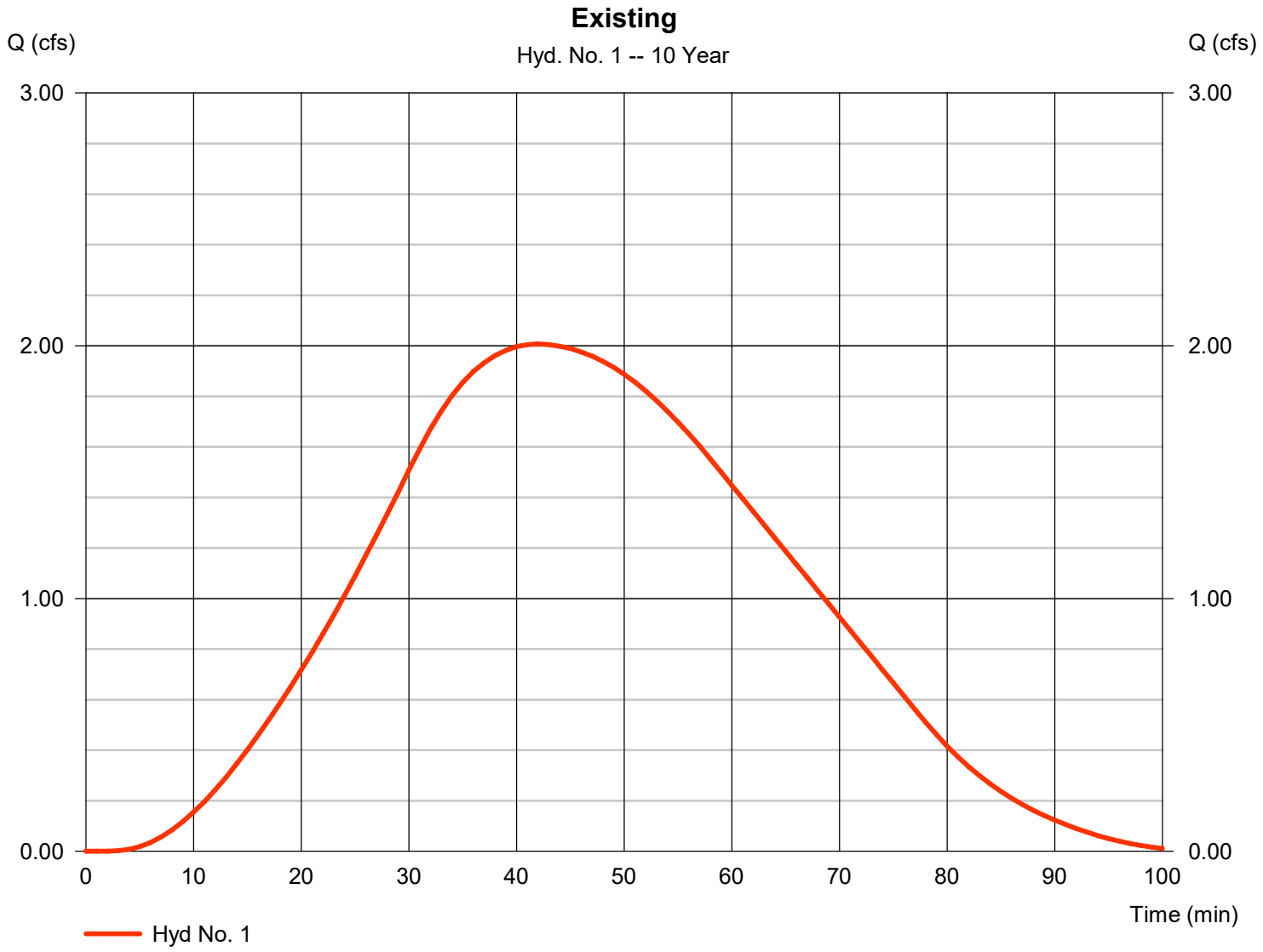
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 2.007 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 42 min |
| Time interval | = | 1 min | Hyd. volume | = | 5,513 cuft |
| Drainage area | = | 3.020 ac | Curve number | = | 84* |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 47.00 min |
| Total precip. | = | 1.64 in | Distribution | = | Huff-1st |
| Storm duration | = | 0.50 hrs | Shape factor | = | 484 |

* Composite (Area/CN) = [(3.020 x 84)] / 3.020



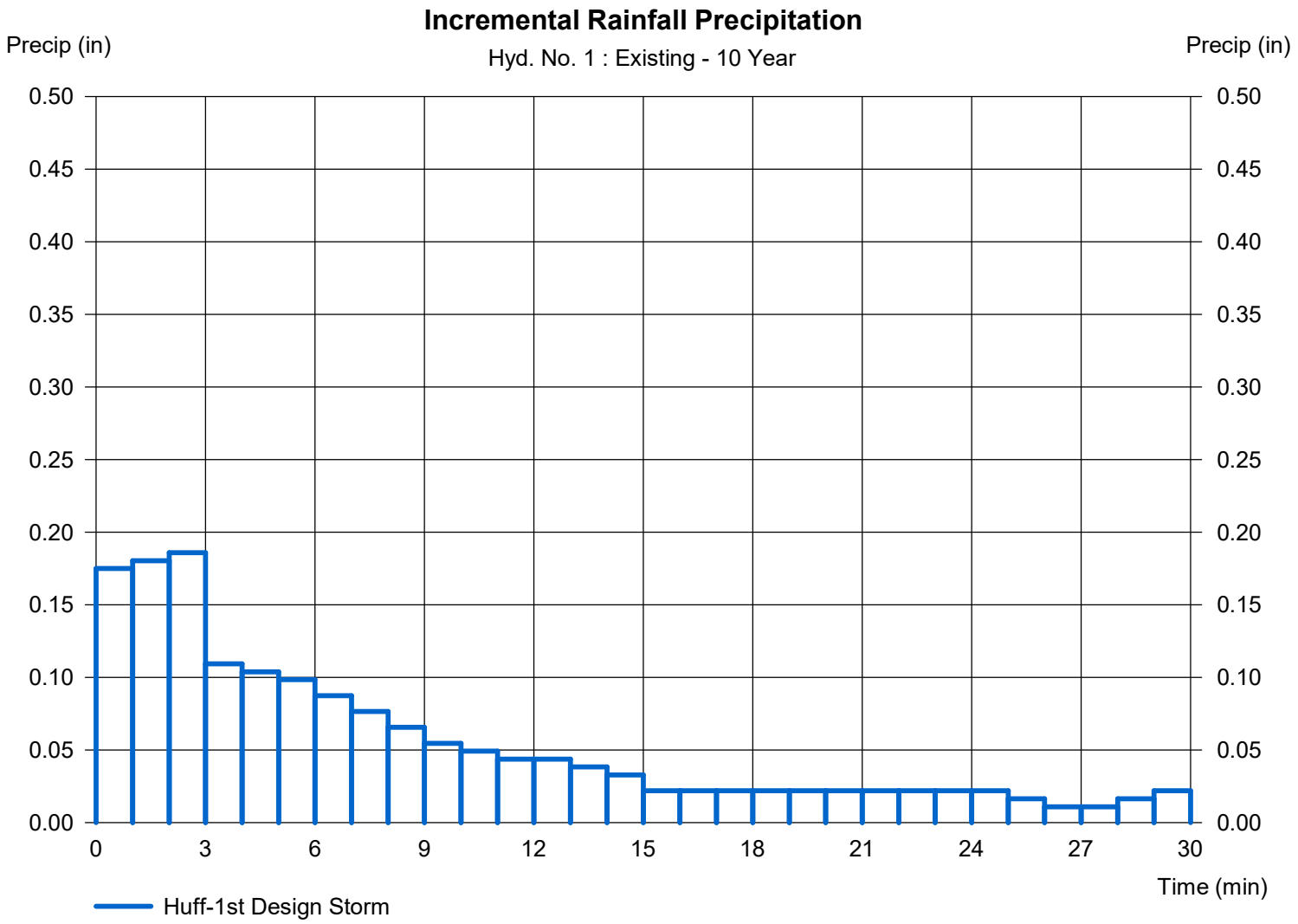
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Storm Frequency | = 10 yrs | Time interval | = 1 min |
| Total precip. | = 1.6400 in | Distribution | = Huff-1st |
| Storm duration | = 0.50 hrs | | |



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 2.725 | 1 | 41 | 7,491 | ------ | ------ | ------ | Existing |
| 2 | SCS Runoff | 12.50 | 1 | 13 | 13,509 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

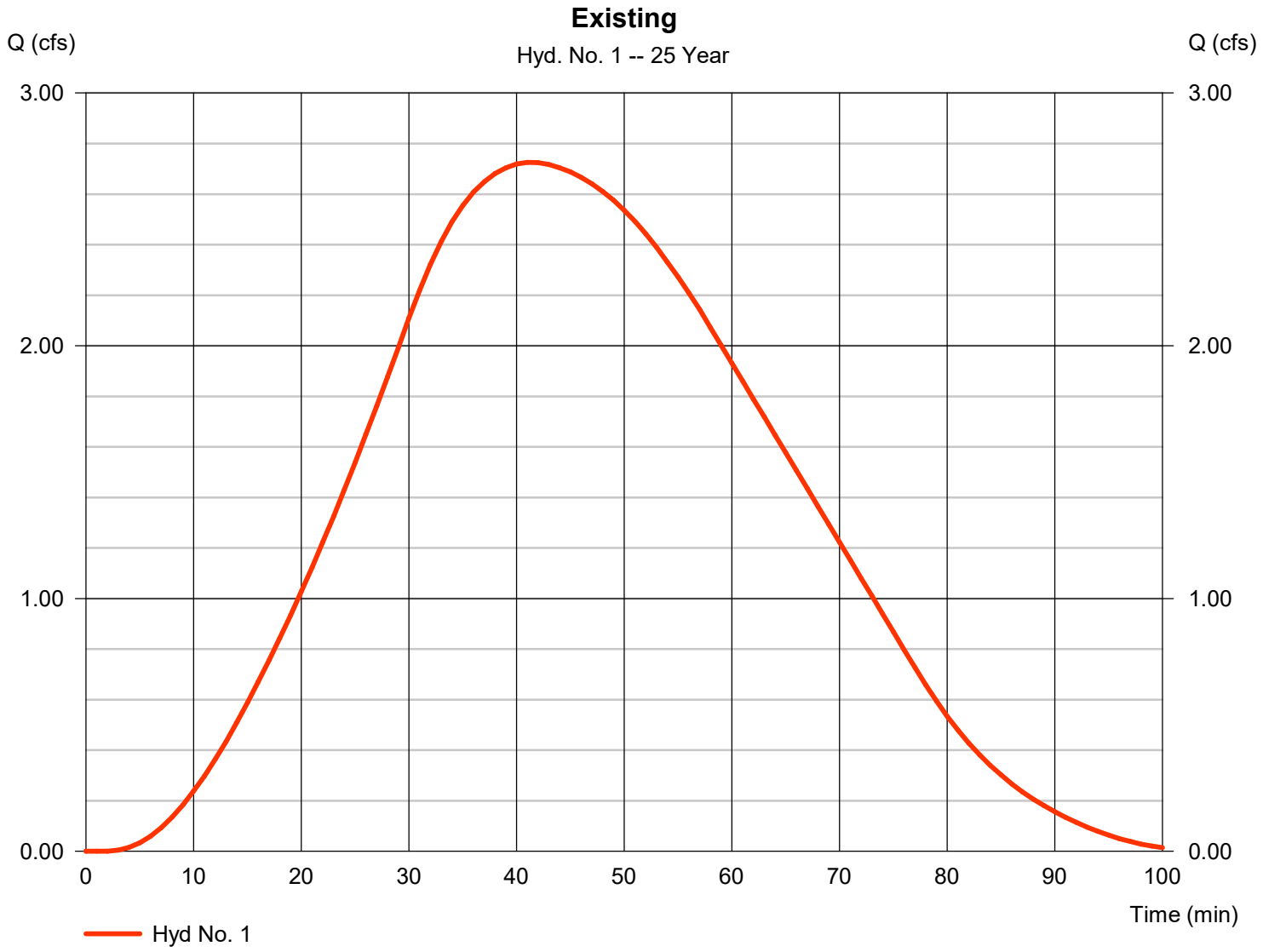
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 2.725 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 41 min |
| Time interval | = | 1 min | Hyd. volume | = | 7,491 cuft |
| Drainage area | = | 3.020 ac | Curve number | = | 84* |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 47.00 min |
| Total precip. | = | 1.91 in | Distribution | = | Huff-1st |
| Storm duration | = | 0.50 hrs | Shape factor | = | 484 |

* Composite (Area/CN) = [(3.020 x 84)] / 3.020



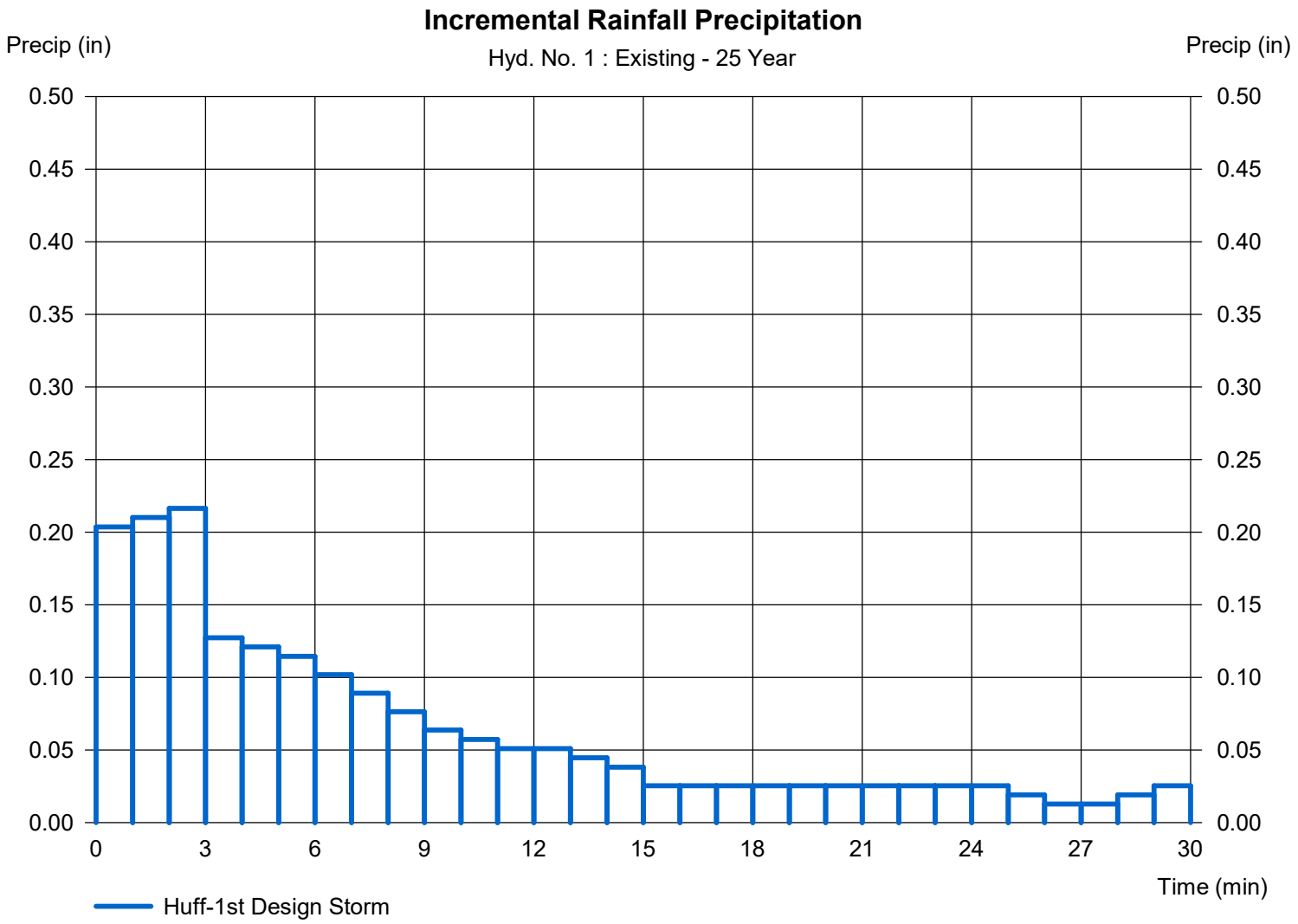
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Storm Frequency | = 25 yrs | Time interval | = 1 min |
| Total precip. | = 1.9100 in | Distribution | = Huff-1st |
| Storm duration | = 0.50 hrs | | |



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 3.949 | 1 | 41 | 10,851 | ------ | ------ | ------ | Existing |
| 2 | SCS Runoff | 16.74 | 1 | 12 | 17,862 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

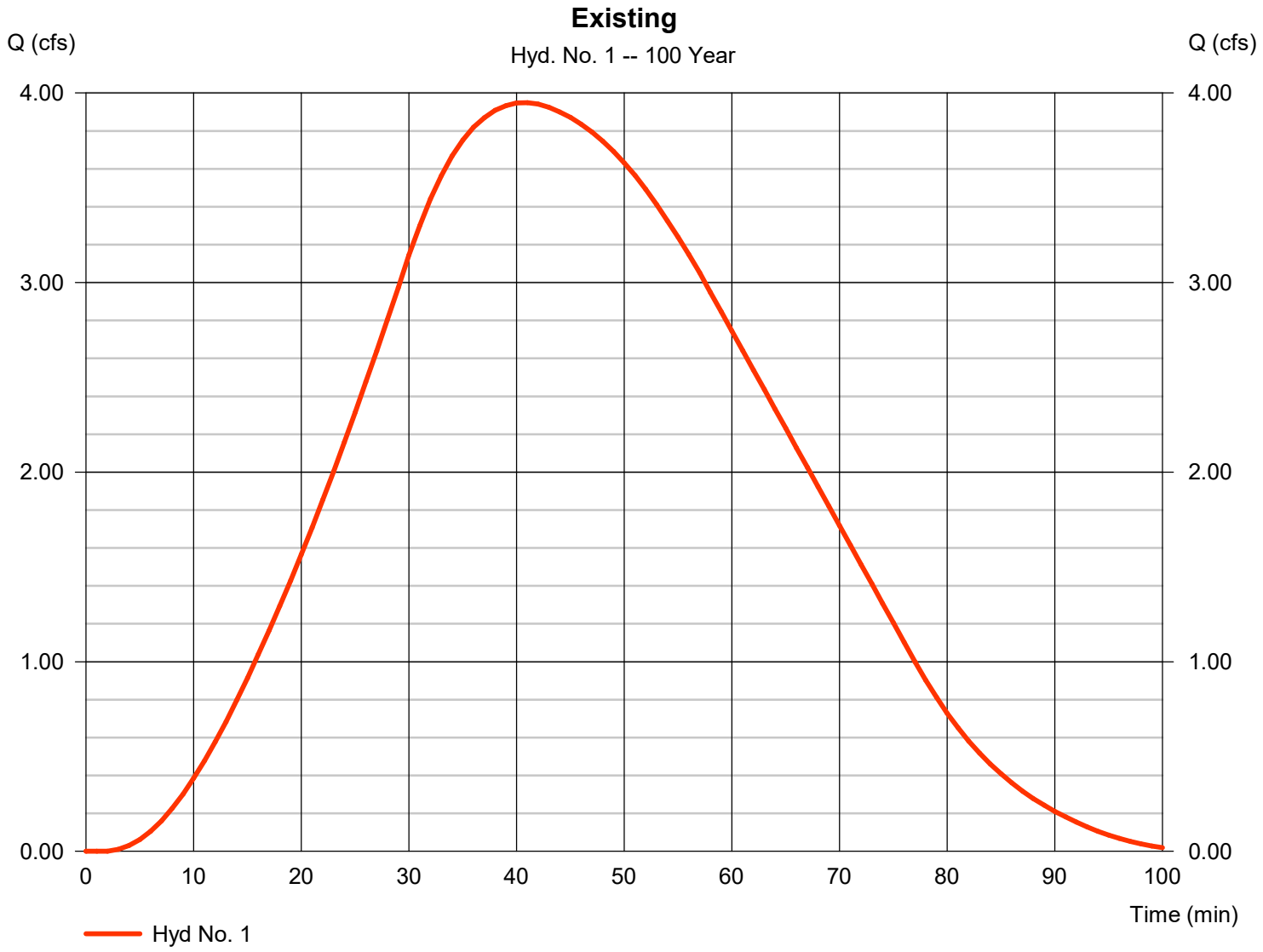
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Hydrograph type | = SCS Runoff | Peak discharge | = 3.949 cfs |
| Storm frequency | = 100 yrs | Time to peak | = 41 min |
| Time interval | = 1 min | Hyd. volume | = 10,851 cuft |
| Drainage area | = 3.020 ac | Curve number | = 84* |
| Basin Slope | = 0.0 % | Hydraulic length | = 0 ft |
| Tc method | = TR55 | Time of conc. (Tc) | = 47.00 min |
| Total precip. | = 2.34 in | Distribution | = Huff-1st |
| Storm duration | = 0.50 hrs | Shape factor | = 484 |

* Composite (Area/CN) = [(3.020 x 84)] / 3.020



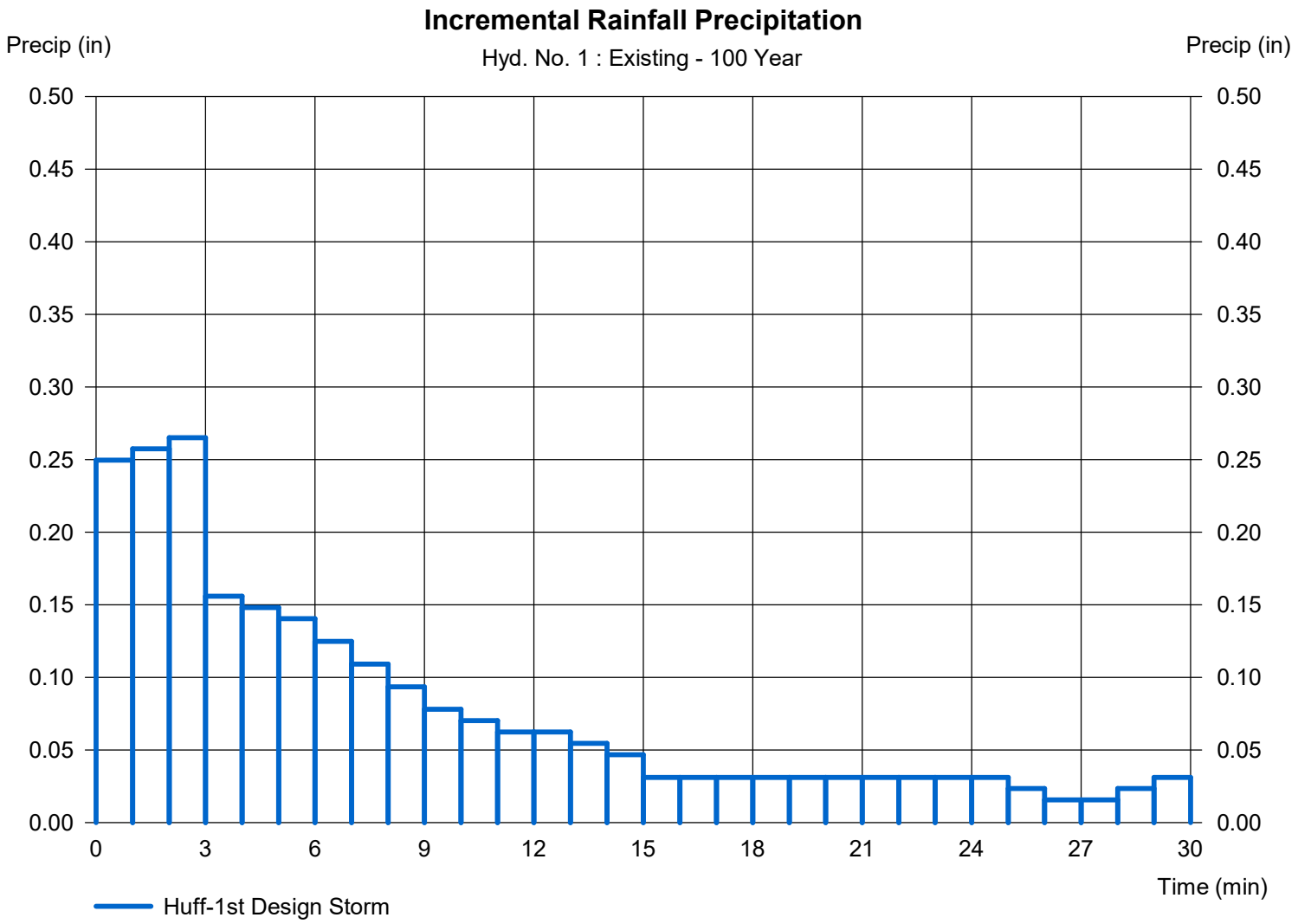
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Storm Frequency | = 100 yrs | Time interval | = 1 min |
| Total precip. | = 2.3400 in | Distribution | = Huff-1st |
| Storm duration | = 0.50 hrs | | |



# Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

| Return Period (Yrs) | Intensity-Duration-Frequency Equation Coefficients (FHA) | | | |
|---|---|---|---|---|
| | B | D | E | (N/A) |
| 1 | 0.0000 | 0.0000 | 0.0000 | -------- |
| 2 | 56.8128 | 9.8000 | 0.8624 | -------- |
| 3 | 0.0000 | 0.0000 | 0.0000 | -------- |
| 5 | 61.0581 | 9.5000 | 0.8270 | -------- |
| 10 | 58.2090 | 8.5000 | 0.7837 | -------- |
| 25 | 54.0065 | 7.2000 | 0.7275 | -------- |
| 50 | 53.5558 | 6.6000 | 0.6986 | -------- |
| 100 | 50.0862 | 5.6000 | 0.6582 | -------- |

File name: Lions Trucking IDF.IDF

### Intensity = B / (Tc + D)^E

| Return Period (Yrs) | Intensity Values (in/hr) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 min | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 5.56 | 4.33 | 3.56 | 3.04 | 2.66 | 2.37 | 2.14 | 1.95 | 1.80 | 1.67 | 1.56 | 1.46 |
| 3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 6.69 | 5.23 | 4.33 | 3.72 | 3.27 | 2.92 | 2.65 | 2.42 | 2.24 | 2.08 | 1.95 | 1.83 |
| 10 | 7.57 | 5.91 | 4.90 | 4.22 | 3.71 | 3.33 | 3.03 | 2.78 | 2.57 | 2.40 | 2.25 | 2.12 |
| 25 | 8.75 | 6.82 | 5.66 | 4.88 | 4.32 | 3.89 | 3.55 | 3.27 | 3.04 | 2.84 | 2.68 | 2.53 |
| 50 | 9.66 | 7.52 | 6.26 | 5.41 | 4.80 | 4.33 | 3.96 | 3.66 | 3.41 | 3.19 | 3.01 | 2.85 |
| 100 | 10.59 | 8.21 | 6.84 | 5.93 | 5.27 | 4.77 | 4.37 | 4.05 | 3.78 | 3.56 | 3.36 | 3.19 |

Tc = time in minutes. Values may exceed 60.

Precip. file name: Z:\21346 - Lions Tran Inc (Bburg) Maintenance Building\Design\Drainage\Lions_Huff30min.pcp

| Storm Distribution | Rainfall Precipitation Table (in) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1-yr | 2-yr | 3-yr | 5-yr | 10-yr | 25-yr | 50-yr | 100-yr |
| SCS 24-hour | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| SCS 6-Hr | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-1st | 0.00 | 1.17 | 0.00 | 0.00 | 1.64 | 1.91 | 0.00 | 2.34 |
| Huff-2nd | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-3rd | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-4th | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-Indy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Custom | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# Hydrograph Return Period Recap 2-hour storm

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Inflow hyd(s) | Peak Outflow (cfs) | | | | | | | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-yr | 2-yr | 3-yr | 5-yr | 10-yr | 25-yr | 50-yr | 100-yr | |
| 1 | SCS Runoff | ------ | ------- | 1.172 | ------- | ------- | 2.497 | 3.430 | ------- | 5.175 | Existing |
| 2 | SCS Runoff | ------ | ------- | 2.918 | ------- | ------- | 5.120 | 6.552 | ------- | 9.088 | Proposed |

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 1.172 | 1 | 68 | 5,870 | ------ | ------ | ------ | Existing |
| 2 | SCS Runoff | 2.918 | 1 | 44 | 11,331 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

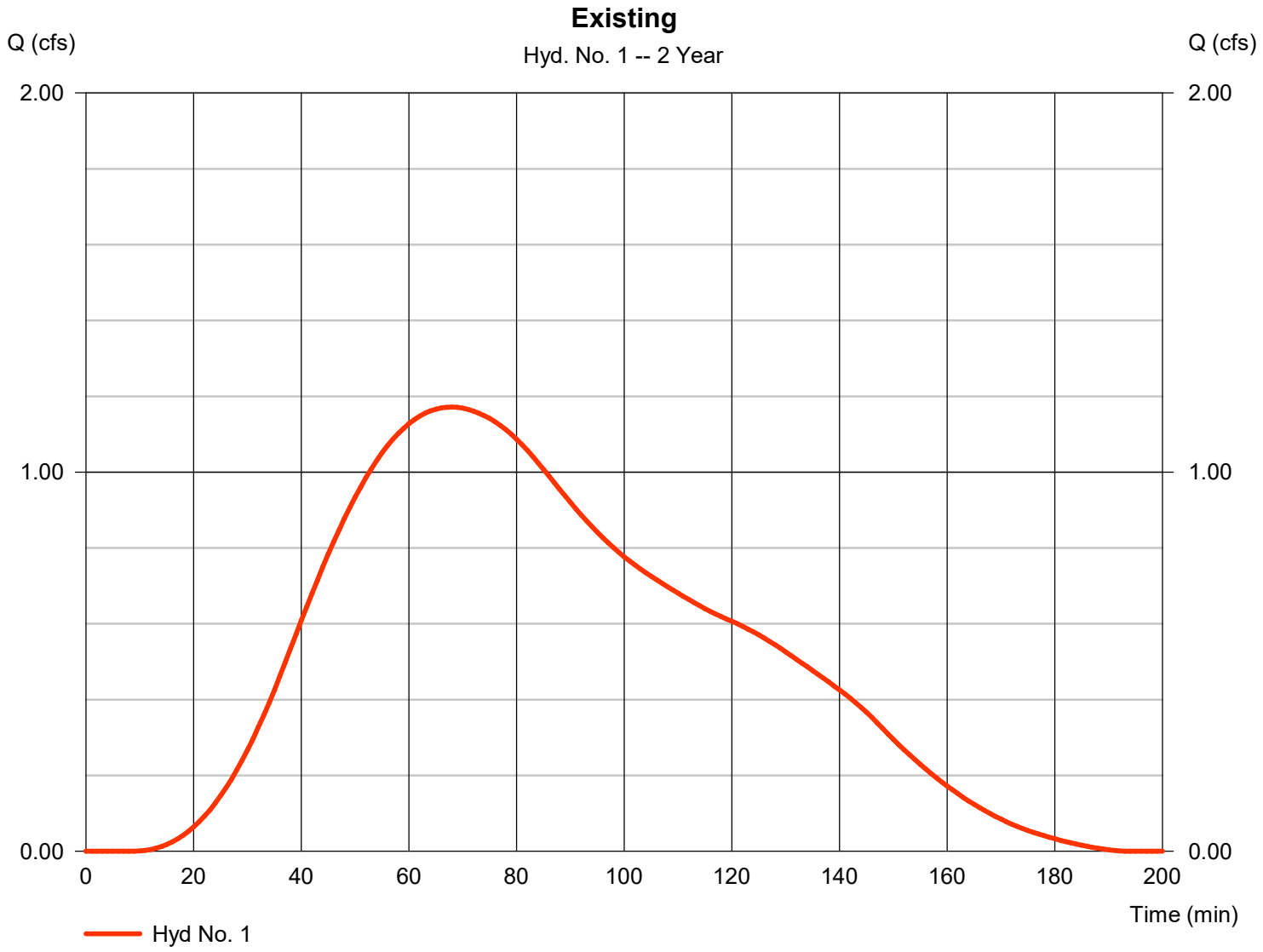
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 1.172 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 68 min |
| Time interval | = | 1 min | Hyd. volume | = | 5,870 cuft |
| Drainage area | = | 3.020 ac | Curve number | = | 84* |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 47.00 min |
| Total precip. | = | 1.69 in | Distribution | = | Huff-1st |
| Storm duration | = | 2.00 hrs | Shape factor | = | 484 |

* Composite (Area/CN) = [(3.020 x 84)] / 3.020



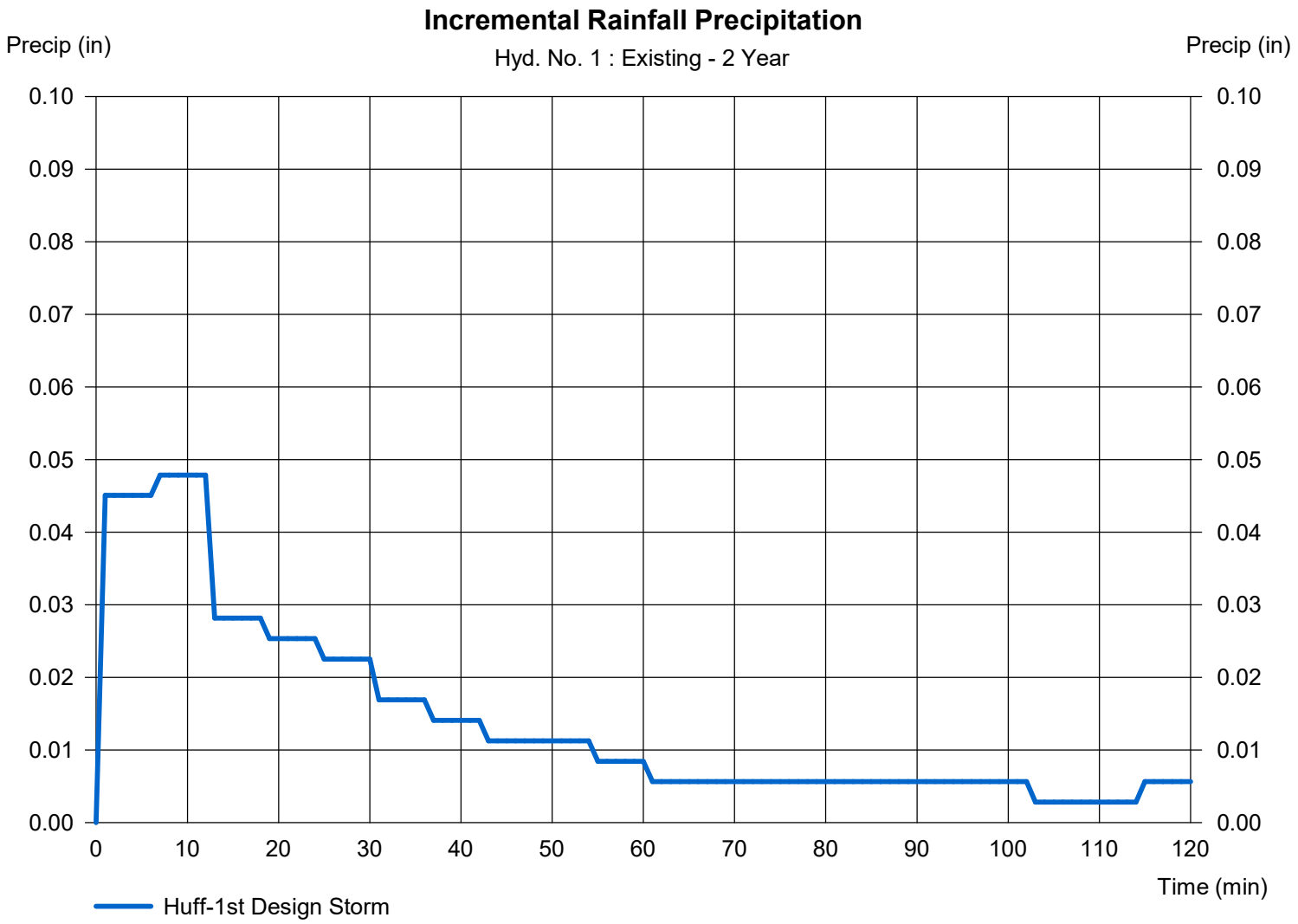
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Storm Frequency | = 2 yrs | Time interval | = 1 min |
| Total precip. | = 1.6900 in | Distribution | = Huff-1st |
| Storm duration | = 2.00 hrs | | |



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 2.497 | 1 | 63 | 12,116 | ------ | ------ | ------ | Existing |
| 2 | SCS Runoff | 5.120 | 1 | 42 | 19,296 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

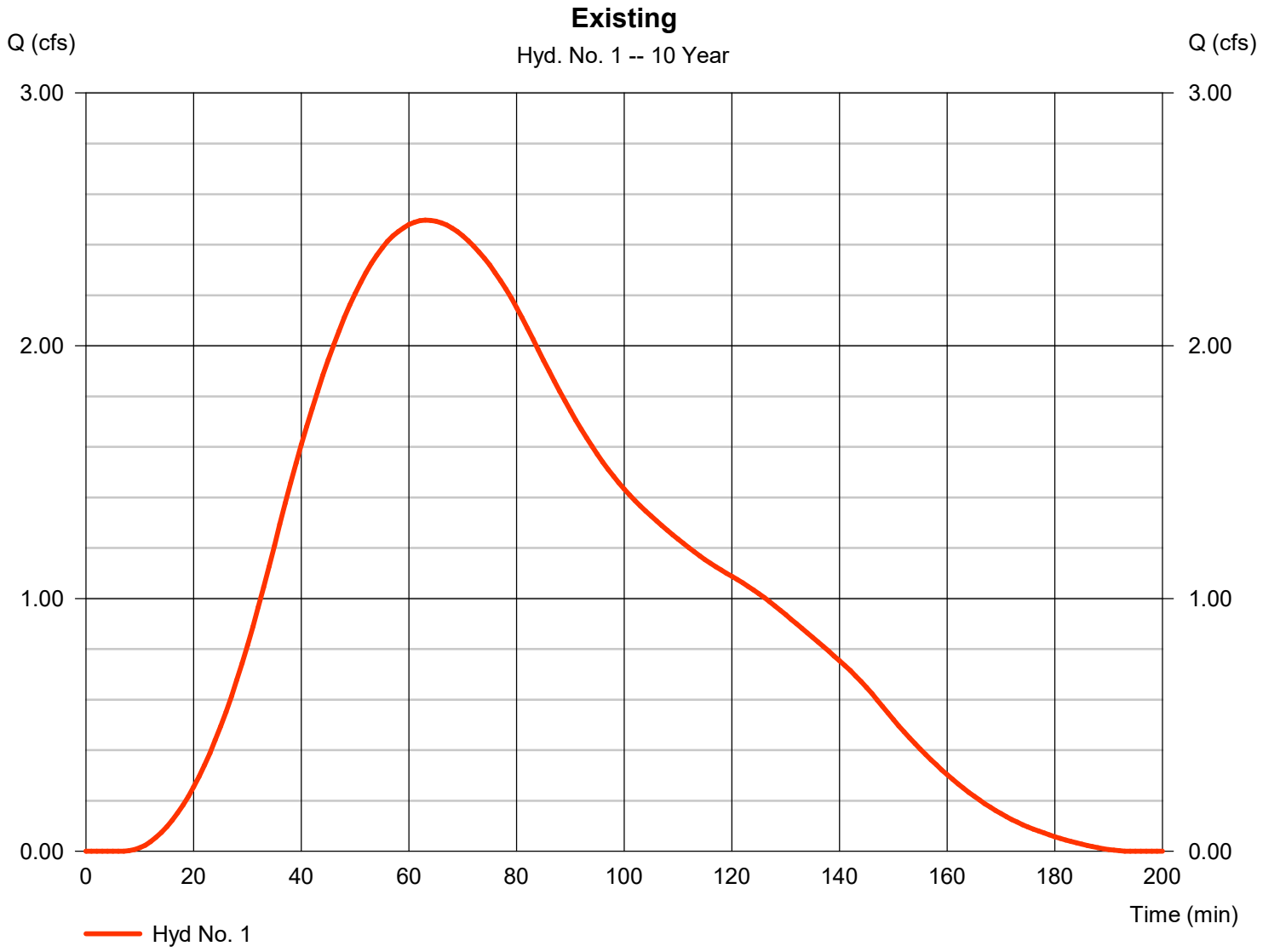
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 2.497 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 63 min |
| Time interval | = | 1 min | Hyd. volume | = | 12,116 cuft |
| Drainage area | = | 3.020 ac | Curve number | = | 84* |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 47.00 min |
| Total precip. | = | 2.48 in | Distribution | = | Huff-1st |
| Storm duration | = | 2.00 hrs | Shape factor | = | 484 |

* Composite (Area/CN) = [(3.020 x 84)] / 3.020



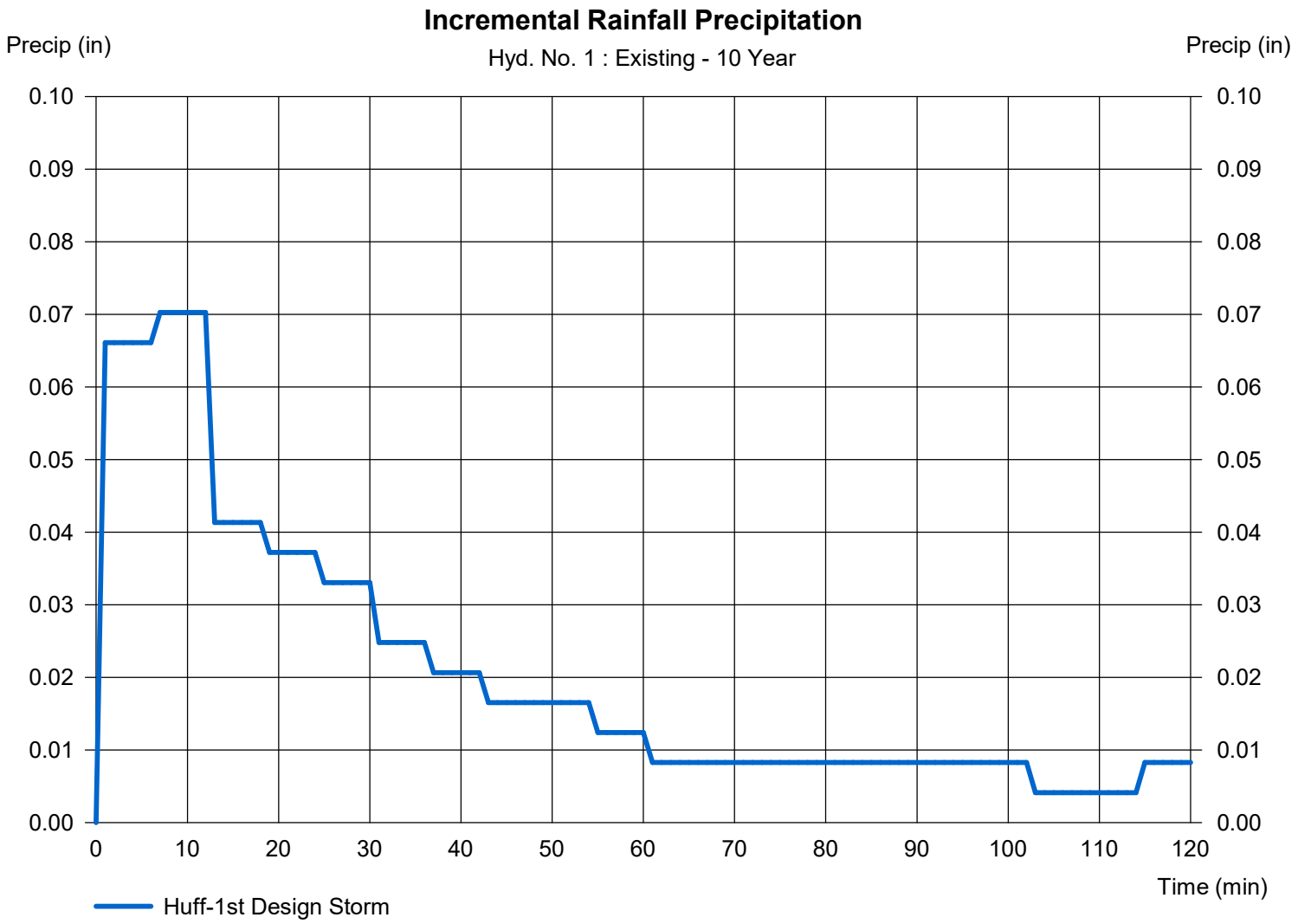
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Storm Frequency | = 10 yrs | Time interval | = 1 min |
| Total precip. | = 2.4800 in | Distribution | = Huff-1st |
| Storm duration | = 2.00 hrs | | |



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 3.430 | 1 | 62 | 16,424 | ------ | ------ | ------ | Existing |
| 2 | SCS Runoff | 6.552 | 1 | 41 | 24,395 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

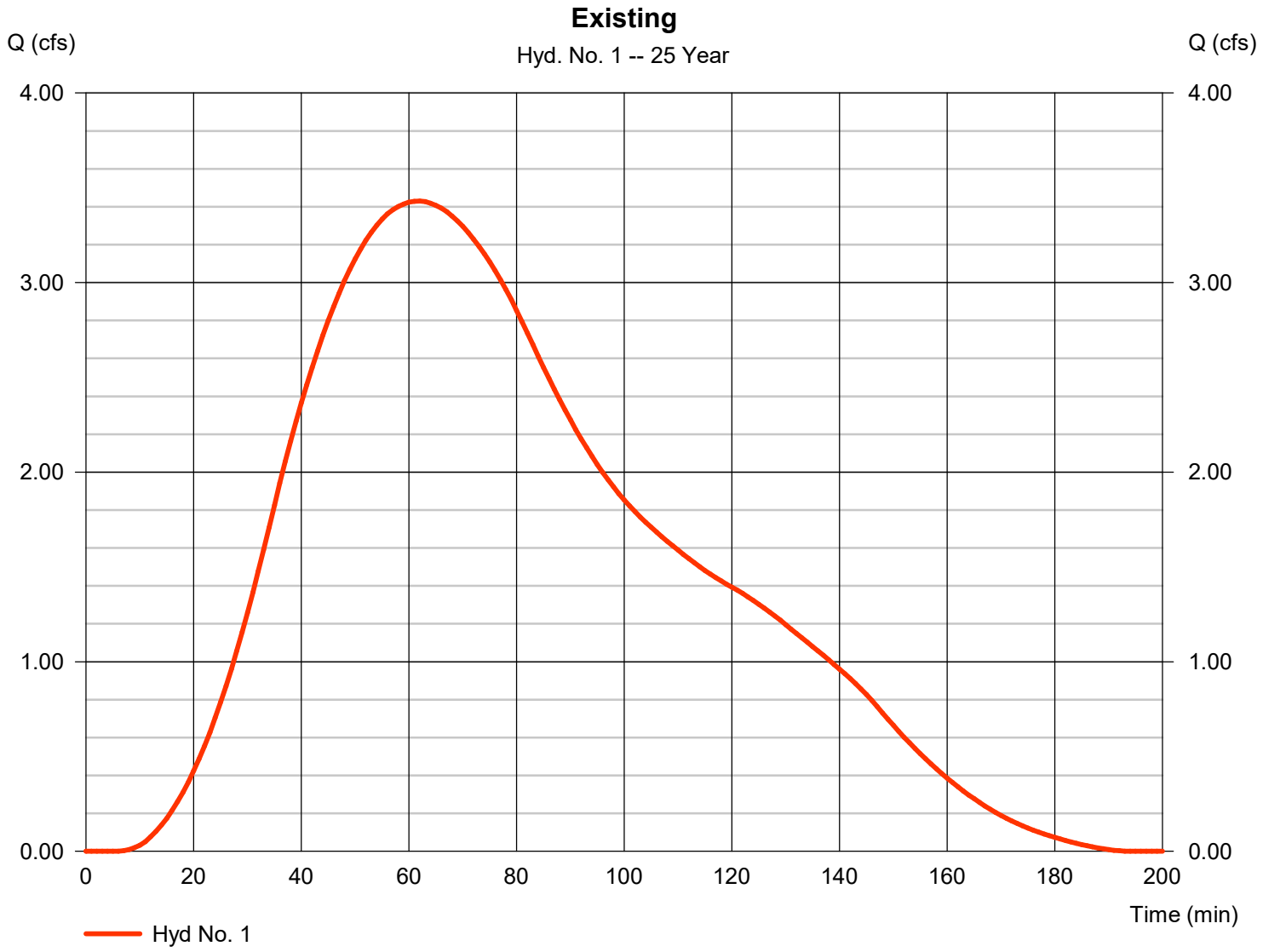
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 3.430 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 62 min |
| Time interval | = | 1 min | Hyd. volume | = | 16,424 cuft |
| Drainage area | = | 3.020 ac | Curve number | = | 84* |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 47.00 min |
| Total precip. | = | 2.97 in | Distribution | = | Huff-1st |
| Storm duration | = | 2.00 hrs | Shape factor | = | 484 |

* Composite (Area/CN) = [(3.020 x 84)] / 3.020



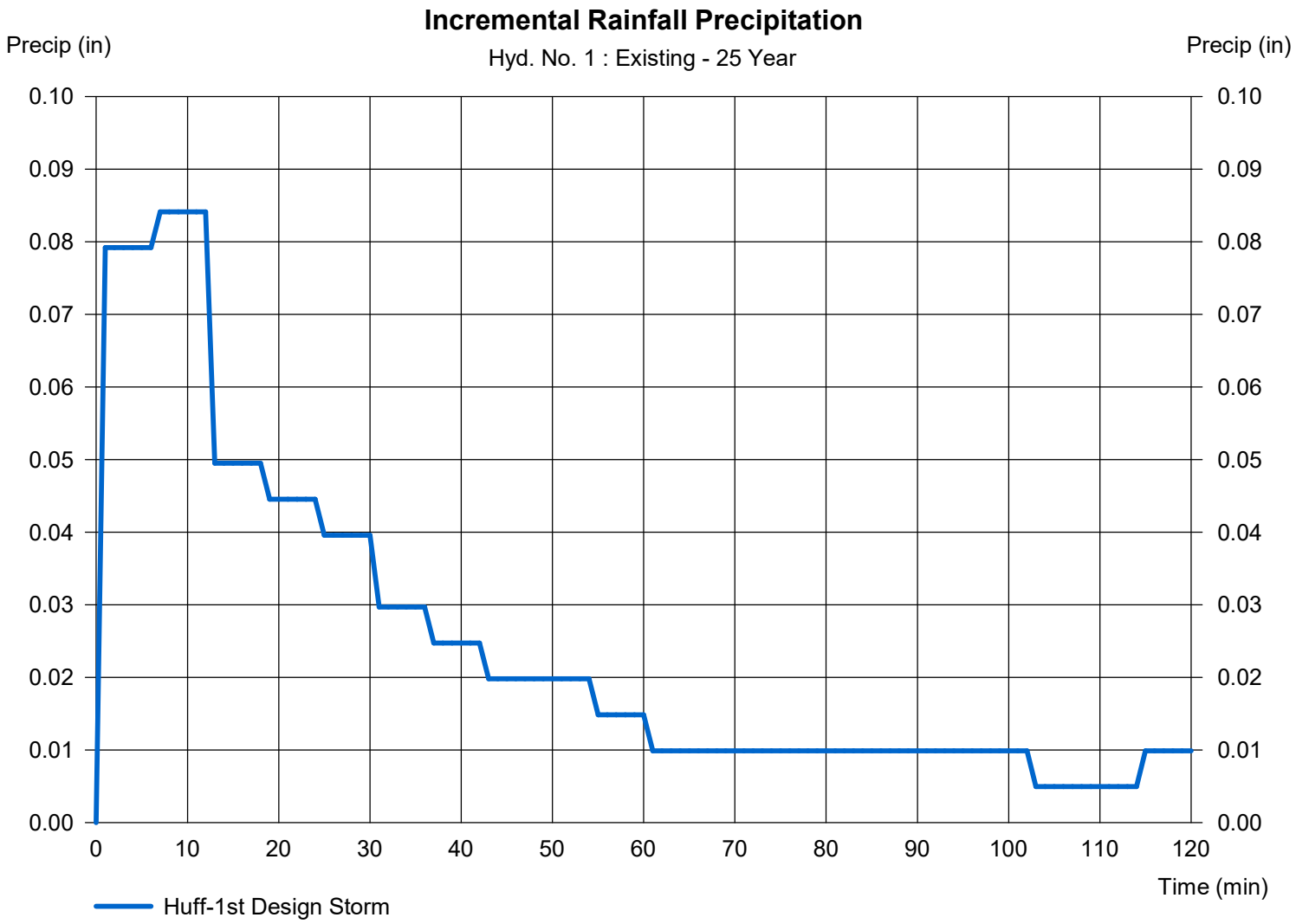
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Storm Frequency | = 25 yrs | Time interval | = 1 min |
| Total precip. | = 2.9700 in | Distribution | = Huff-1st |
| Storm duration | = 2.00 hrs | | |



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 5.175 | 1 | 60 | 24,367 | ------ | ------ | ------ | Existing |
| 2 | SCS Runoff | 9.088 | 1 | 40 | 33,345 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

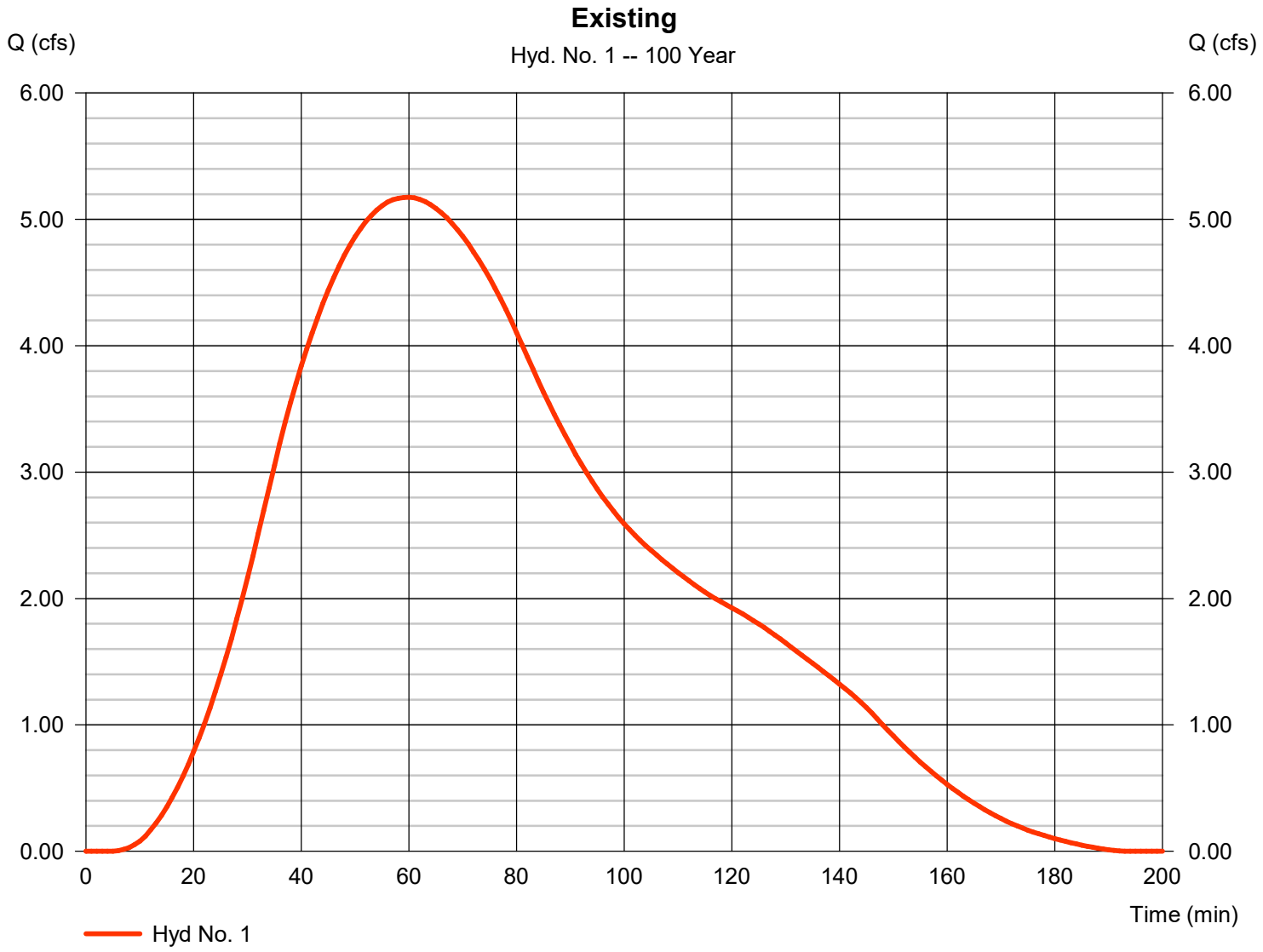
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 5.175 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 60 min |
| Time interval | = | 1 min | Hyd. volume | = | 24,367 cuft |
| Drainage area | = | 3.020 ac | Curve number | = | 84* |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 47.00 min |
| Total precip. | = | 3.82 in | Distribution | = | Huff-1st |
| Storm duration | = | 2.00 hrs | Shape factor | = | 484 |

* Composite (Area/CN) = [(3.020 x 84)] / 3.020



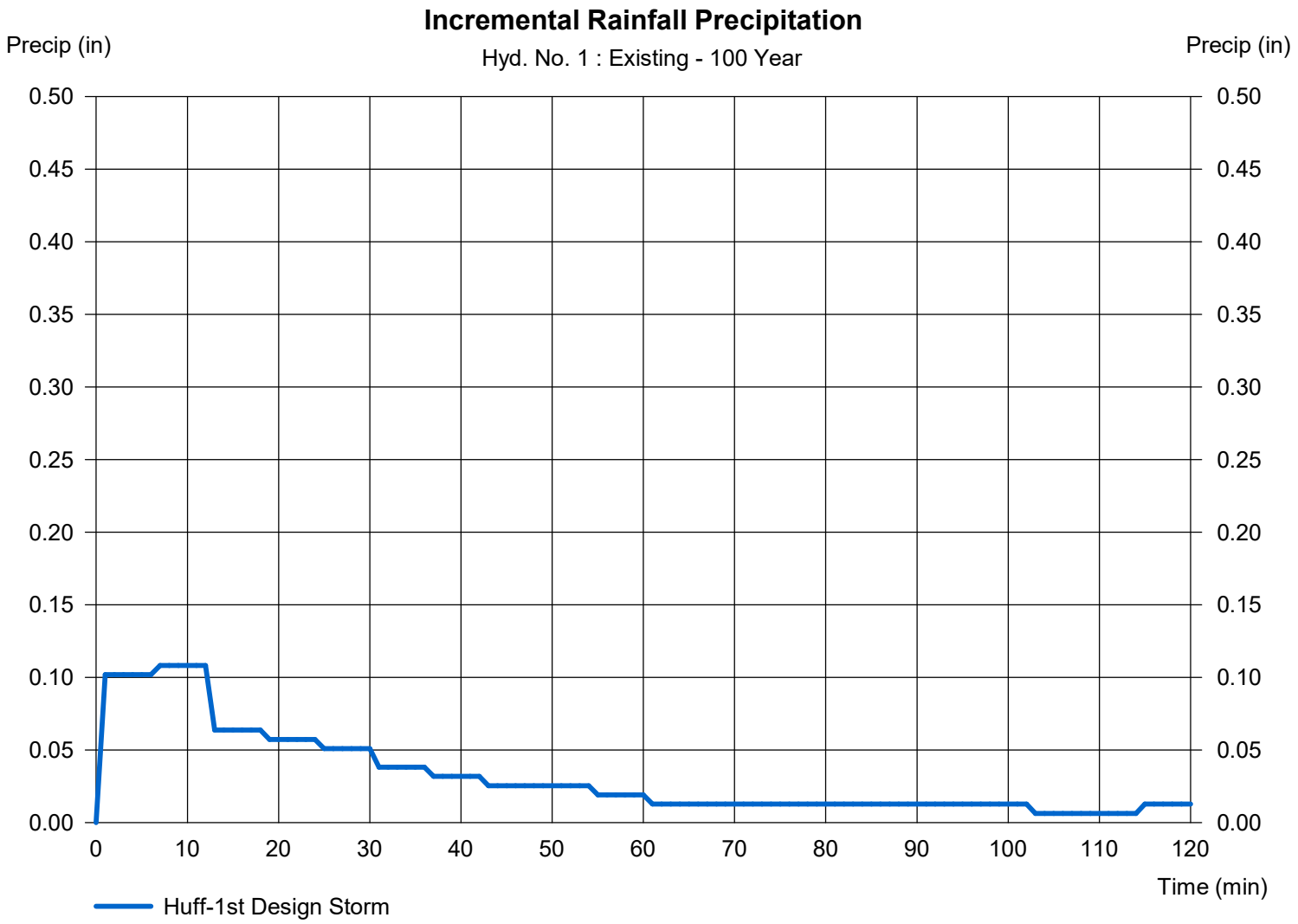
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Storm Frequency | = 100 yrs | Time interval | = 1 min |
| Total precip. | = 3.8200 in | Distribution | = Huff-1st |
| Storm duration | = 2.00 hrs | | |



# Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

| Return Period (Yrs) | Intensity-Duration-Frequency Equation Coefficients (FHA) | | | |
|---|---|---|---|---|
| | B | D | E | (N/A) |
| 1 | 0.0000 | 0.0000 | 0.0000 | -------- |
| 2 | 56.8128 | 9.8000 | 0.8624 | -------- |
| 3 | 0.0000 | 0.0000 | 0.0000 | -------- |
| 5 | 61.0581 | 9.5000 | 0.8270 | -------- |
| 10 | 58.2090 | 8.5000 | 0.7837 | -------- |
| 25 | 54.0065 | 7.2000 | 0.7275 | -------- |
| 50 | 53.5558 | 6.6000 | 0.6986 | -------- |
| 100 | 50.0862 | 5.6000 | 0.6582 | -------- |

File name: Lions Trucking IDF.IDF

### Intensity = B / (Tc + D)^E

| Return Period (Yrs) | Intensity Values (in/hr) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 min | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 5.56 | 4.33 | 3.56 | 3.04 | 2.66 | 2.37 | 2.14 | 1.95 | 1.80 | 1.67 | 1.56 | 1.46 |
| 3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 6.69 | 5.23 | 4.33 | 3.72 | 3.27 | 2.92 | 2.65 | 2.42 | 2.24 | 2.08 | 1.95 | 1.83 |
| 10 | 7.57 | 5.91 | 4.90 | 4.22 | 3.71 | 3.33 | 3.03 | 2.78 | 2.57 | 2.40 | 2.25 | 2.12 |
| 25 | 8.75 | 6.82 | 5.66 | 4.88 | 4.32 | 3.89 | 3.55 | 3.27 | 3.04 | 2.84 | 2.68 | 2.53 |
| 50 | 9.66 | 7.52 | 6.26 | 5.41 | 4.80 | 4.33 | 3.96 | 3.66 | 3.41 | 3.19 | 3.01 | 2.85 |
| 100 | 10.59 | 8.21 | 6.84 | 5.93 | 5.27 | 4.77 | 4.37 | 4.05 | 3.78 | 3.56 | 3.36 | 3.19 |

Tc = time in minutes. Values may exceed 60.

Precip. file name: Z:\21346 - Lions Tran Inc (Bburg) Maintenance Building\Design\Drainage\Lions_Huff2hr.pcp

| Storm Distribution | Rainfall Precipitation Table (in) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1-yr | 2-yr | 3-yr | 5-yr | 10-yr | 25-yr | 50-yr | 100-yr |
| SCS 24-hour | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| SCS 6-Hr | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-1st | 0.00 | 1.69 | 0.00 | 0.00 | 2.48 | 2.97 | 0.00 | 3.82 |
| Huff-2nd | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-3rd | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-4th | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-Indy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Custom | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# 6-hour storm

# Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Inflow hyd(s) | Peak Outflow (cfs) | | | | | | | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-yr | 2-yr | 3-yr | 5-yr | 10-yr | 25-yr | 50-yr | 100-yr | |
| 1 | SCS Runoff | ------ | ------- | 0.834 | ------- | ------- | 1.723 | 2.383 | ------- | 3.633 | Existing |
| 2 | SCS Runoff | ------ | ------- | 1.738 | ------- | ------- | 3.209 | 4.233 | ------- | 6.057 | Proposed |

# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 0.834 | 1 | 105 | 9,219 | ------ | ------ | ------ | Existing |
| 2 | SCS Runoff | 1.738 | 1 | 56 | 15,722 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

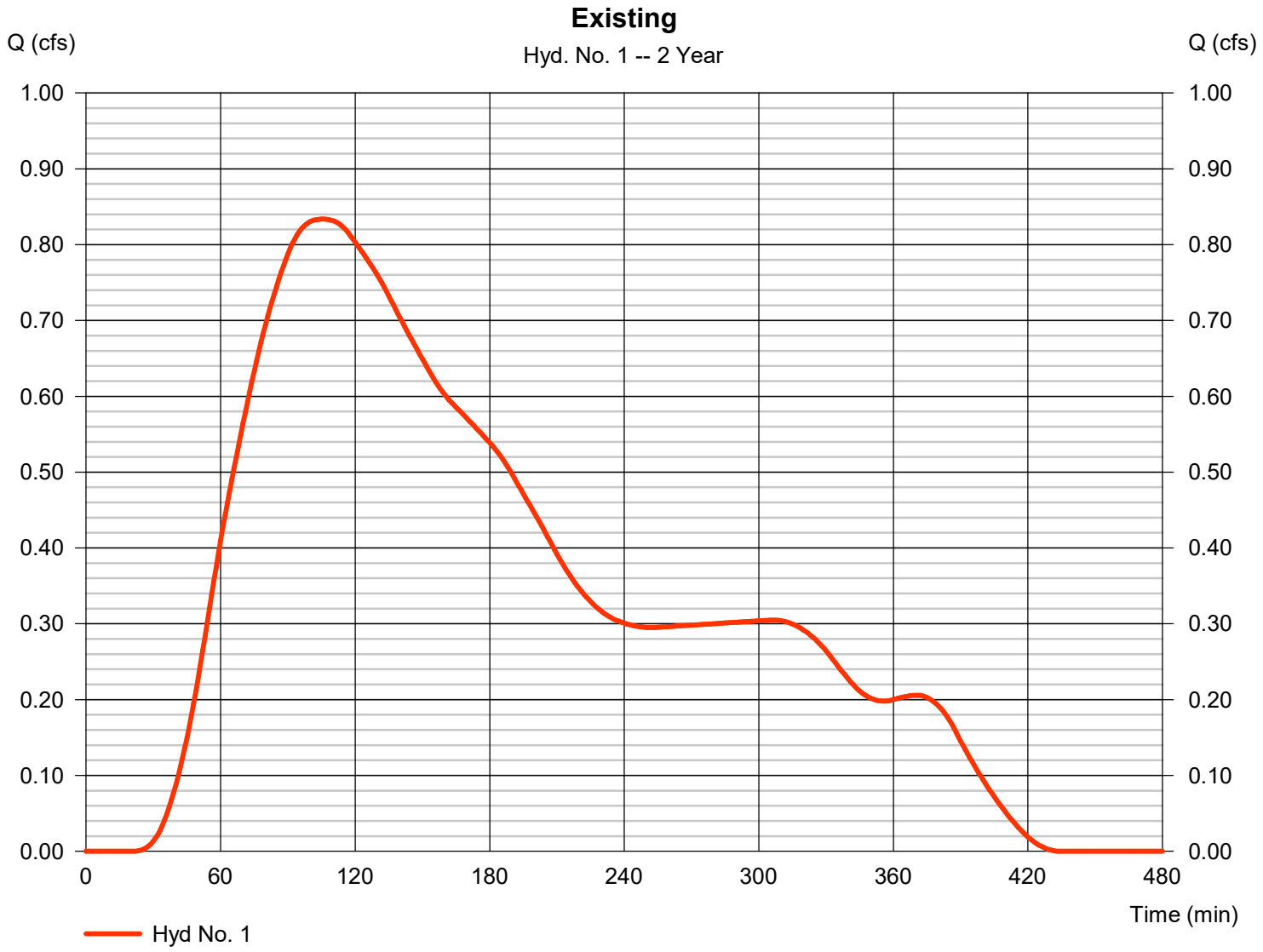
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Hydrograph type | = SCS Runoff | Peak discharge | = 0.834 cfs |
| Storm frequency | = 2 yrs | Time to peak | = 105 min |
| Time interval | = 1 min | Hyd. volume | = 9,219 cuft |
| Drainage area | = 3.020 ac | Curve number | = 84* |
| Basin Slope | = 0.0 % | Hydraulic length | = 0 ft |
| Tc method | = TR55 | Time of conc. (Tc) | = 47.00 min |
| Total precip. | = 2.13 in | Distribution | = Huff-1st |
| Storm duration | = 6.00 hrs | Shape factor | = 484 |

* Composite (Area/CN) = [(3.020 x 84)] / 3.020



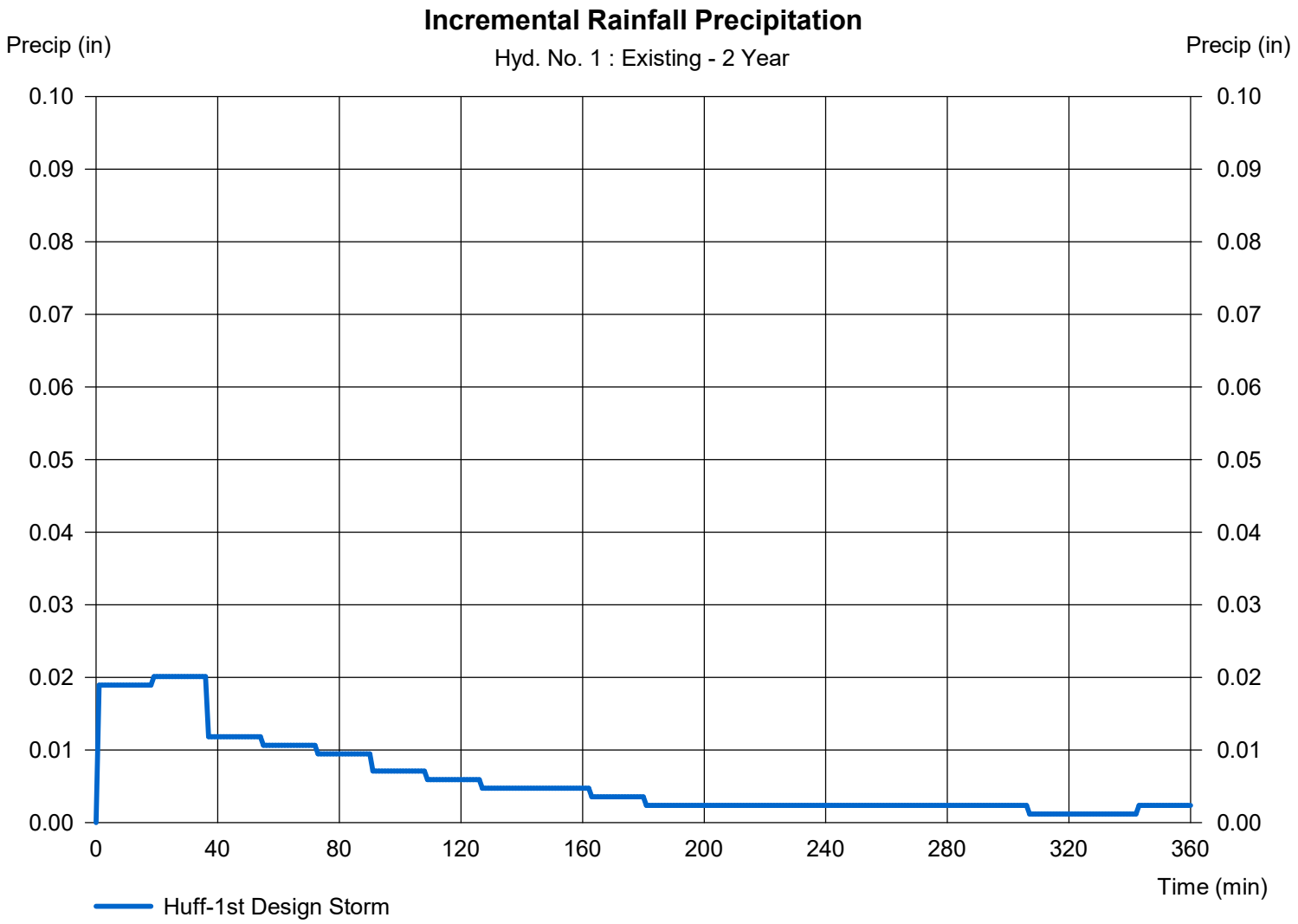
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Storm Frequency | = 2 yrs | Time interval | = 1 min |
| Total precip. | = 2.1300 in | Distribution | = Huff-1st |
| Storm duration | = 6.00 hrs | | |



# Hydrograph Report

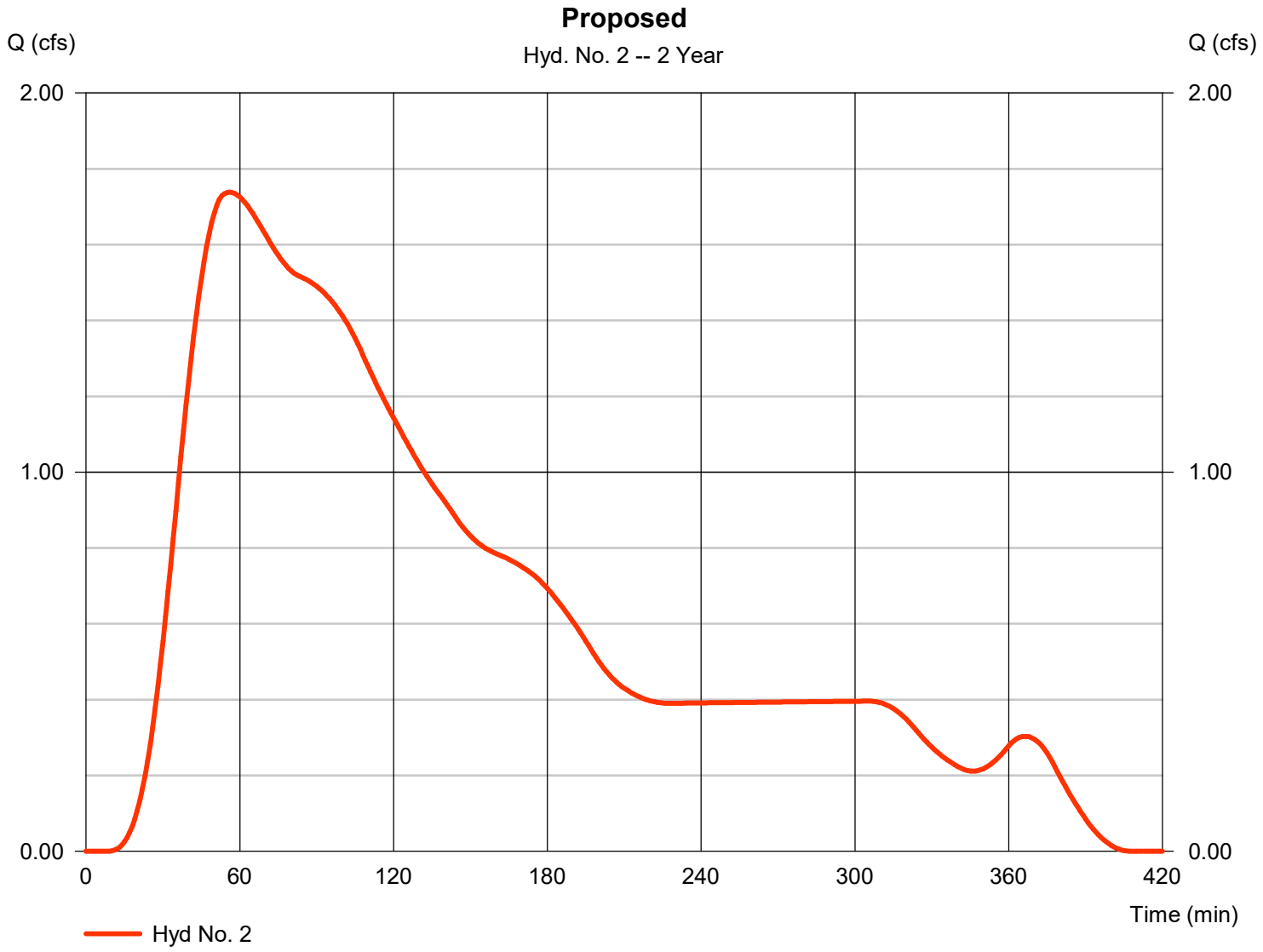
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 2

Proposed

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 1.738 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 56 min |
| Time interval | = | 1 min | Hyd. volume | = | 15,722 cuft |
| Drainage area | = | 3.020 ac | Curve number | = | 93* |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | User | Time of conc. (Tc) | = | 30.00 min |
| Total precip. | = | 2.13 in | Distribution | = | Huff-1st |
| Storm duration | = | 6.00 hrs | Shape factor | = | 484 |

* Composite (Area/CN) = [(1.020 x 84) + (1.910 x 98) + (0.090 x 98)] / 3.020



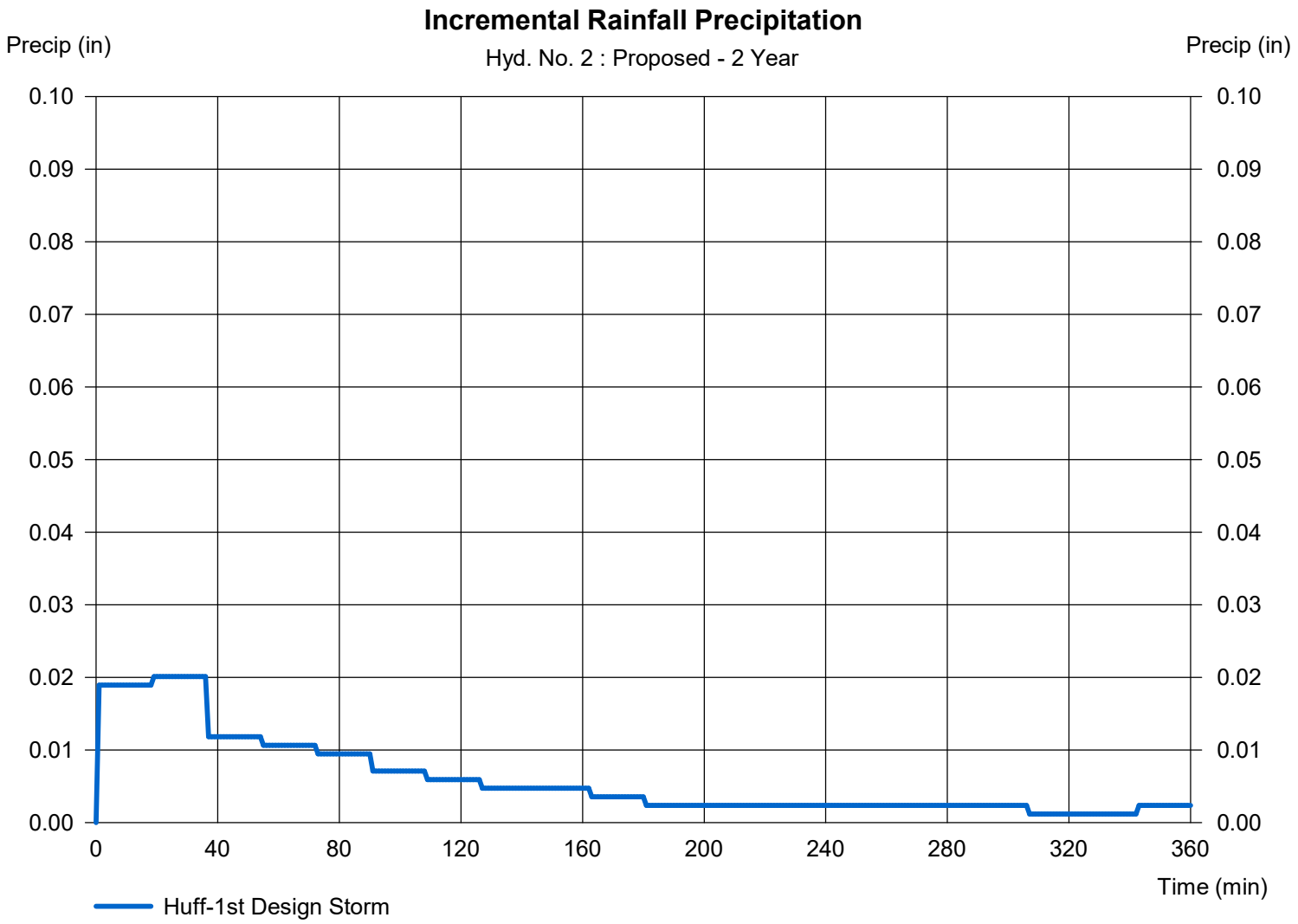
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 2

Proposed

| | | | |
|---|---|---|---|
| Storm Frequency | = 2 yrs | Time interval | = 1 min |
| Total precip. | = 2.1300 in | Distribution | = Huff-1st |
| Storm duration | = 6.00 hrs | | |



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 1.723 | 1 | 93 | 18,064 | ------ | ------ | ------ | Existing |
| 2 | SCS Runoff | 3.209 | 1 | 52 | 26,284 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

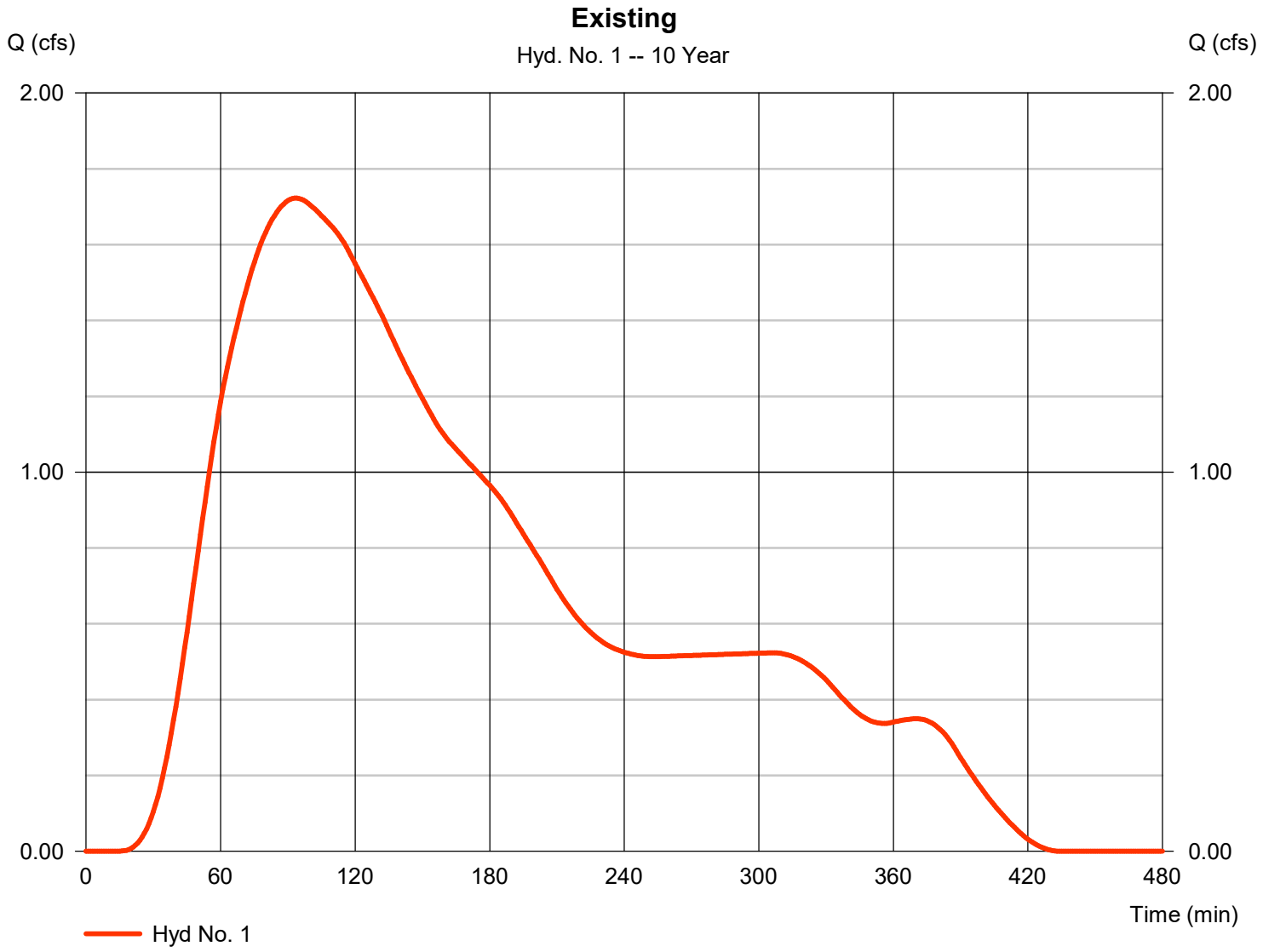
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 1.723 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 93 min |
| Time interval | = | 1 min | Hyd. volume | = | 18,064 cuft |
| Drainage area | = | 3.020 ac | Curve number | = | 84* |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 47.00 min |
| Total precip. | = | 3.15 in | Distribution | = | Huff-1st |
| Storm duration | = | 6.00 hrs | Shape factor | = | 484 |

* Composite (Area/CN) = [(3.020 x 84)] / 3.020



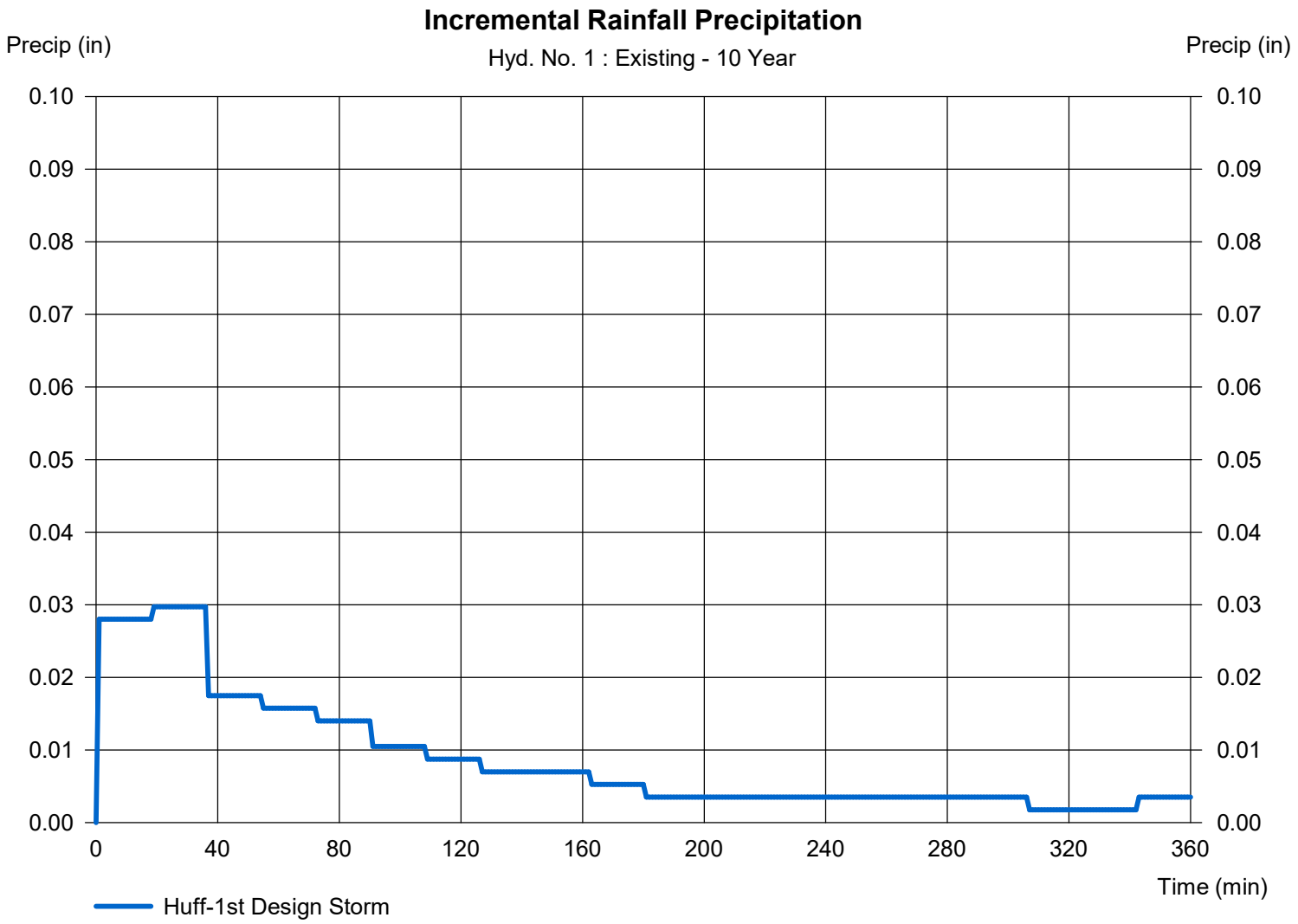
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Storm Frequency | = 10 yrs | Time interval | = 1 min |
| Total precip. | = 3.1500 in | Distribution | = Huff-1st |
| Storm duration | = 6.00 hrs | | |



# Hydrograph Report

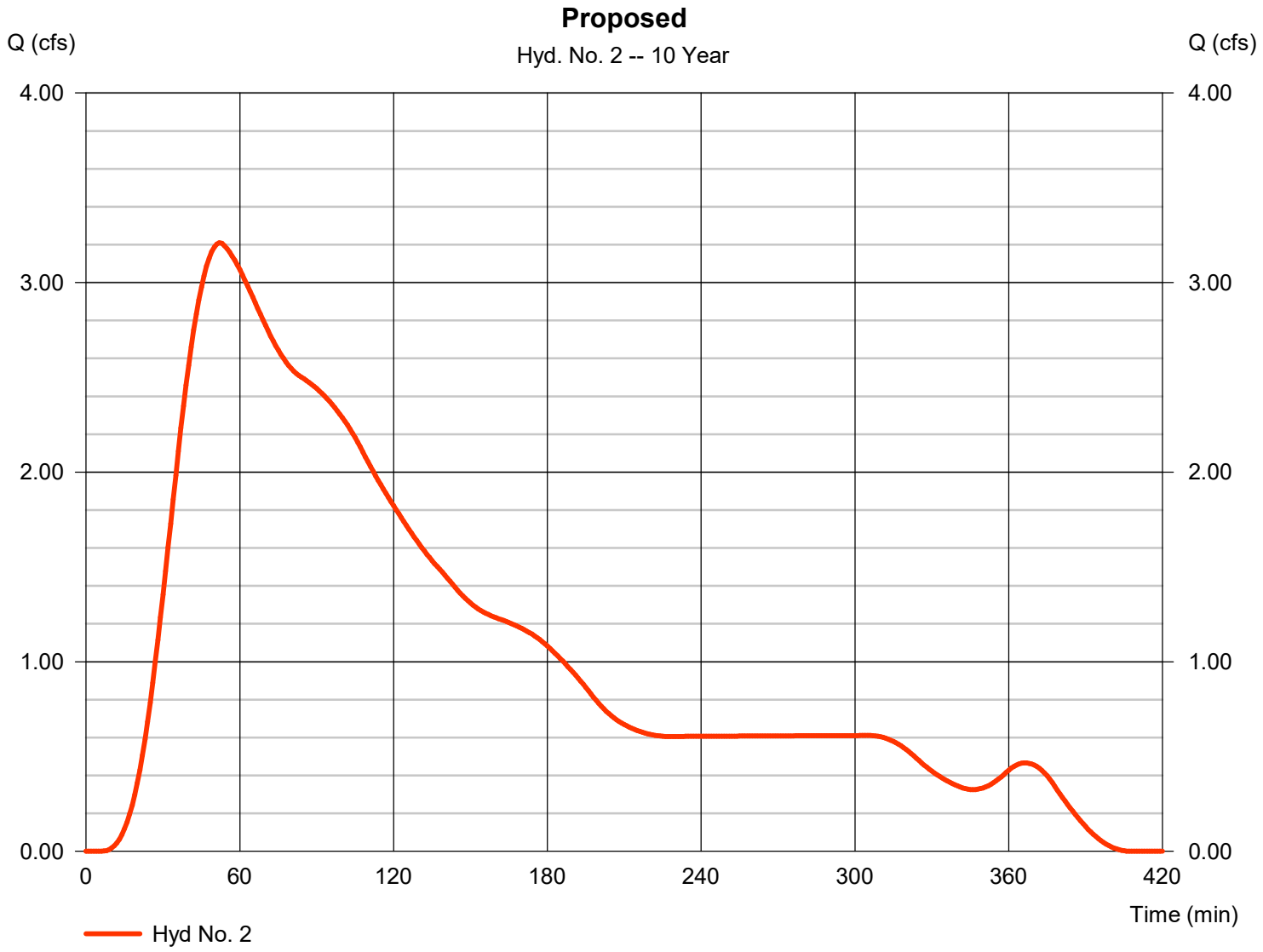
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 2

Proposed

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 3.209 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 52 min |
| Time interval | = | 1 min | Hyd. volume | = | 26,284 cuft |
| Drainage area | = | 3.020 ac | Curve number | = | 93* |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | User | Time of conc. (Tc) | = | 30.00 min |
| Total precip. | = | 3.15 in | Distribution | = | Huff-1st |
| Storm duration | = | 6.00 hrs | Shape factor | = | 484 |

* Composite (Area/CN) = [(1.020 x 84) + (1.910 x 98) + (0.090 x 98)] / 3.020



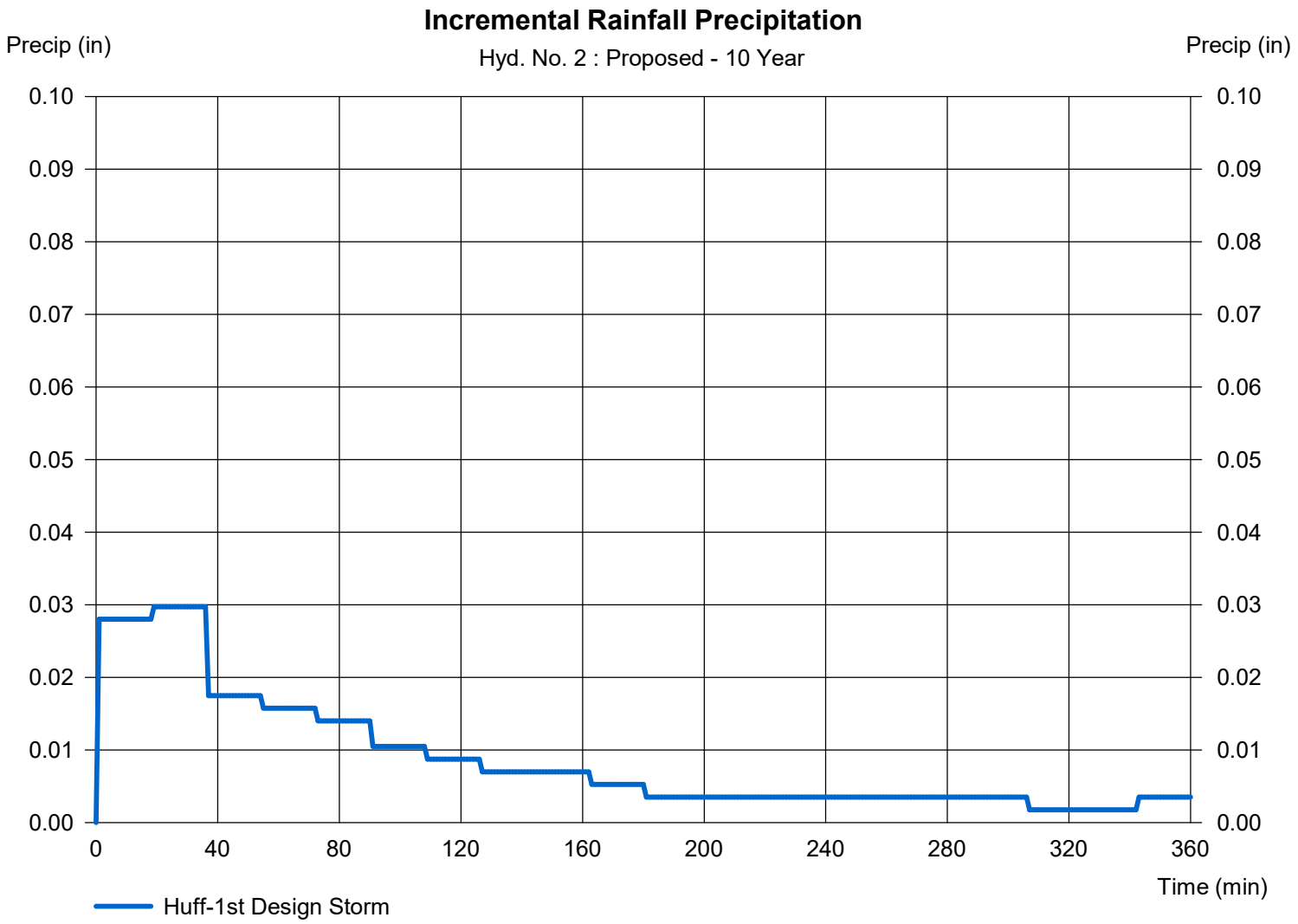
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 2

Proposed

| | | | |
|---|---|---|---|
| Storm Frequency | = 10 yrs | Time interval | = 1 min |
| Total precip. | = 3.1500 in | Distribution | = Huff-1st |
| Storm duration | = 6.00 hrs | | |



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 2.383 | 1 | 90 | 24,371 | ------ | ------ | ------ | Existing |
| 2 | SCS Runoff | 4.233 | 1 | 51 | 33,377 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

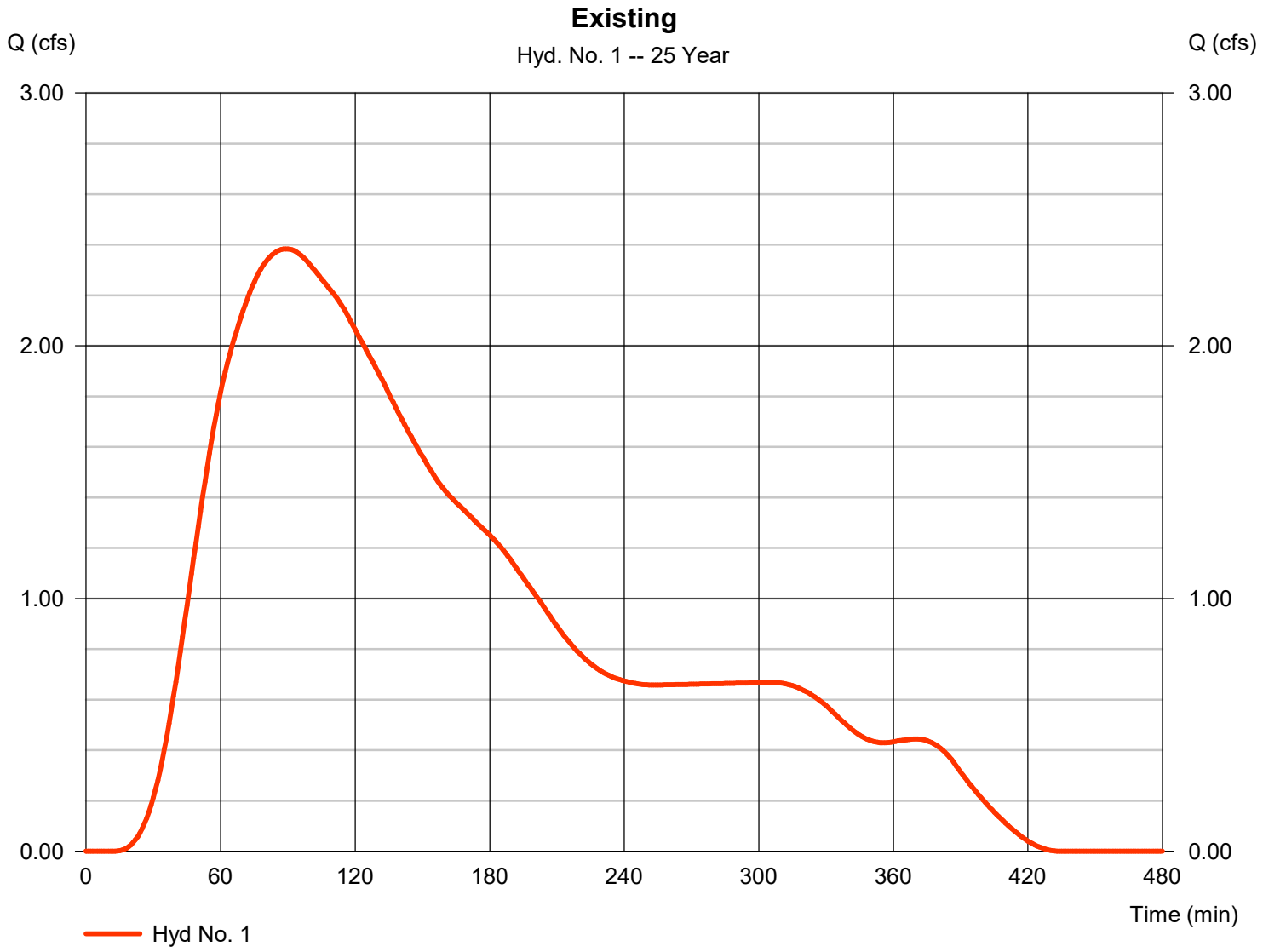
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 2.383 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 90 min |
| Time interval | = | 1 min | Hyd. volume | = | 24,371 cuft |
| Drainage area | = | 3.020 ac | Curve number | = | 84* |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 47.00 min |
| Total precip. | = | 3.82 in | Distribution | = | Huff-1st |
| Storm duration | = | 6.00 hrs | Shape factor | = | 484 |

* Composite (Area/CN) = [(3.020 x 84)] / 3.020



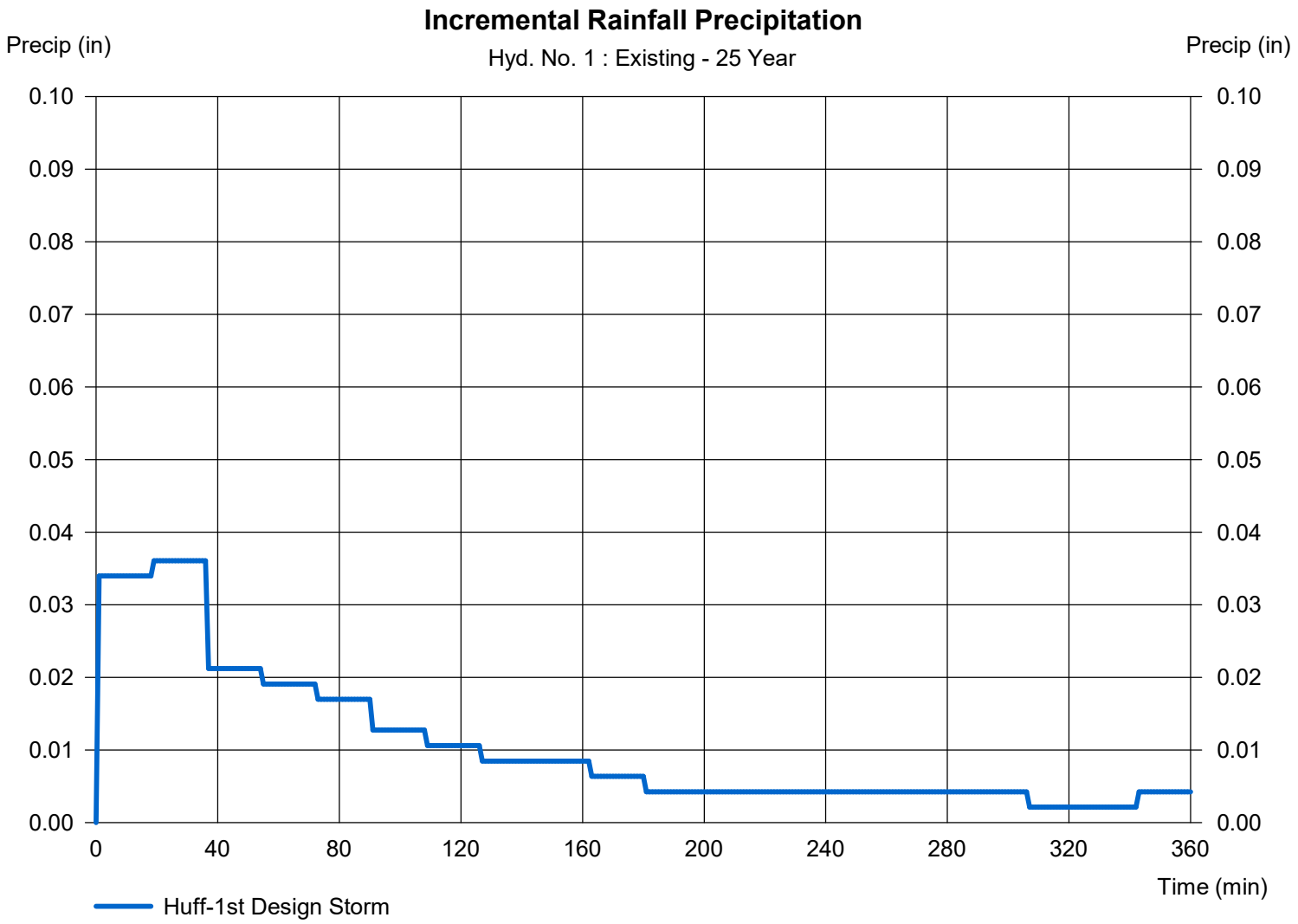
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Storm Frequency | = 25 yrs | Time interval | = 1 min |
| Total precip. | = 3.8200 in | Distribution | = Huff-1st |
| Storm duration | = 6.00 hrs | | |



# Hydrograph Report

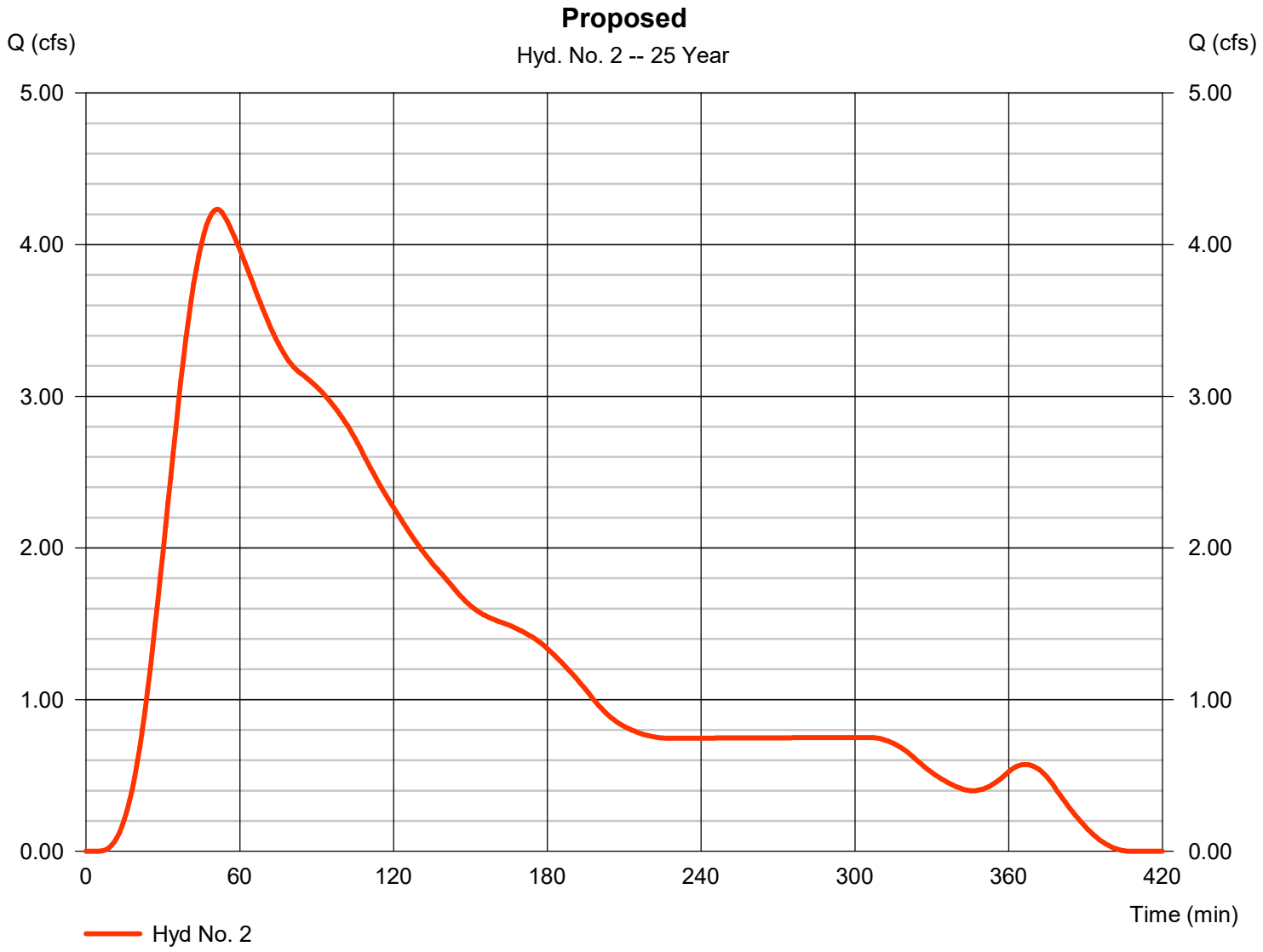
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 2

Proposed

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 4.233 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 51 min |
| Time interval | = | 1 min | Hyd. volume | = | 33,377 cuft |
| Drainage area | = | 3.020 ac | Curve number | = | 93* |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | User | Time of conc. (Tc) | = | 30.00 min |
| Total precip. | = | 3.82 in | Distribution | = | Huff-1st |
| Storm duration | = | 6.00 hrs | Shape factor | = | 484 |

* Composite (Area/CN) = [(1.020 x 84) + (1.910 x 98) + (0.090 x 98)] / 3.020



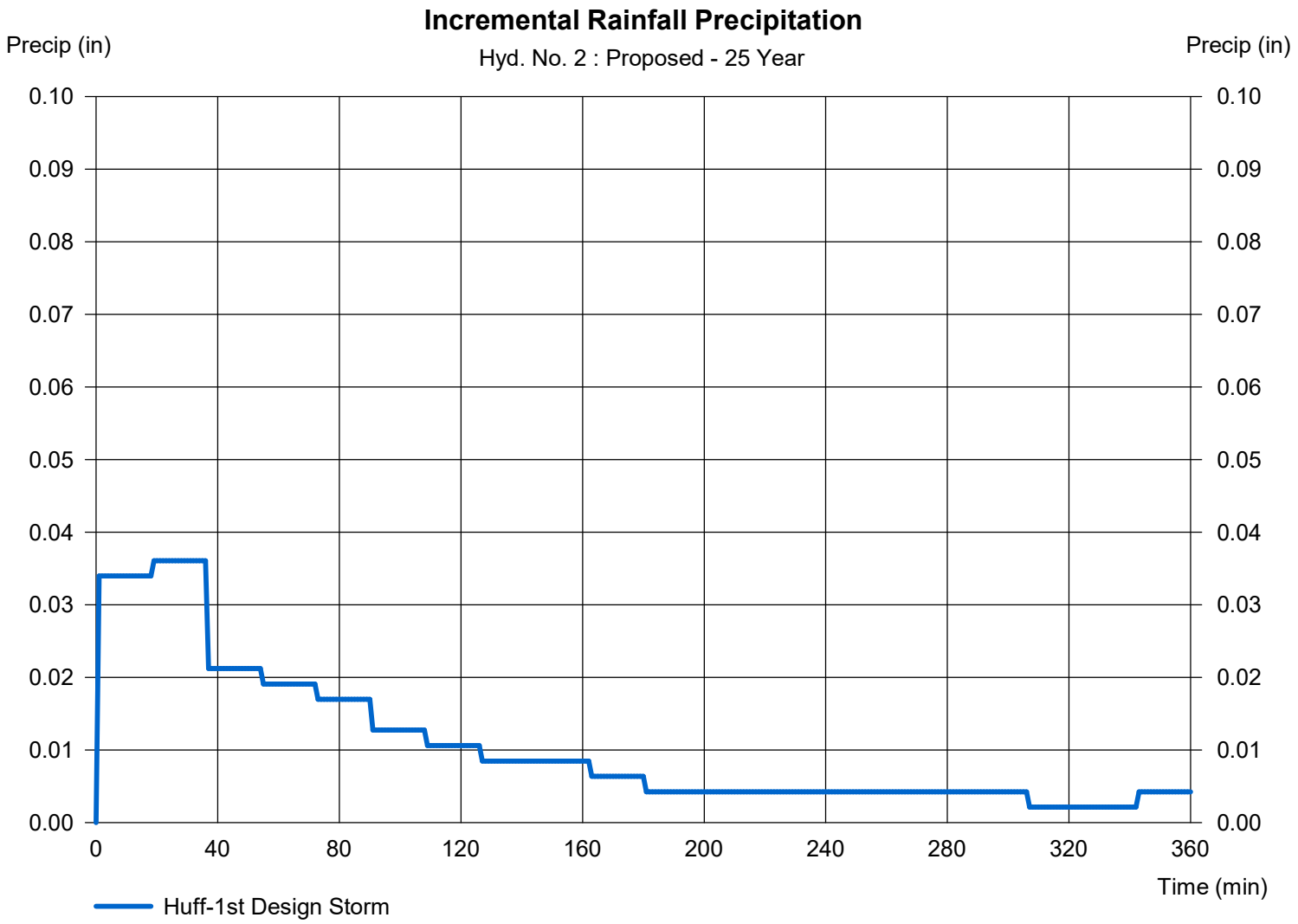
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 2

Proposed

| | | | |
|---|---|---|---|
| Storm Frequency | = 25 yrs | Time interval | = 1 min |
| Total precip. | = 3.8200 in | Distribution | = Huff-1st |
| Storm duration | = 6.00 hrs | | |



# Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

| Hyd. No. | Hydrograph type (origin) | Peak flow (cfs) | Time interval (min) | Time to Peak (min) | Hyd. volume (cuft) | Inflow hyd(s) | Maximum elevation (ft) | Total strge used (cuft) | Hydrograph Description |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SCS Runoff | 3.633 | 1 | 83 | 35,809 | ------ | ------ | ------ | Existing |
| 2 | SCS Runoff | 6.057 | 1 | 50 | 45,800 | ------ | ------ | ------ | Proposed |

# Hydrograph Report

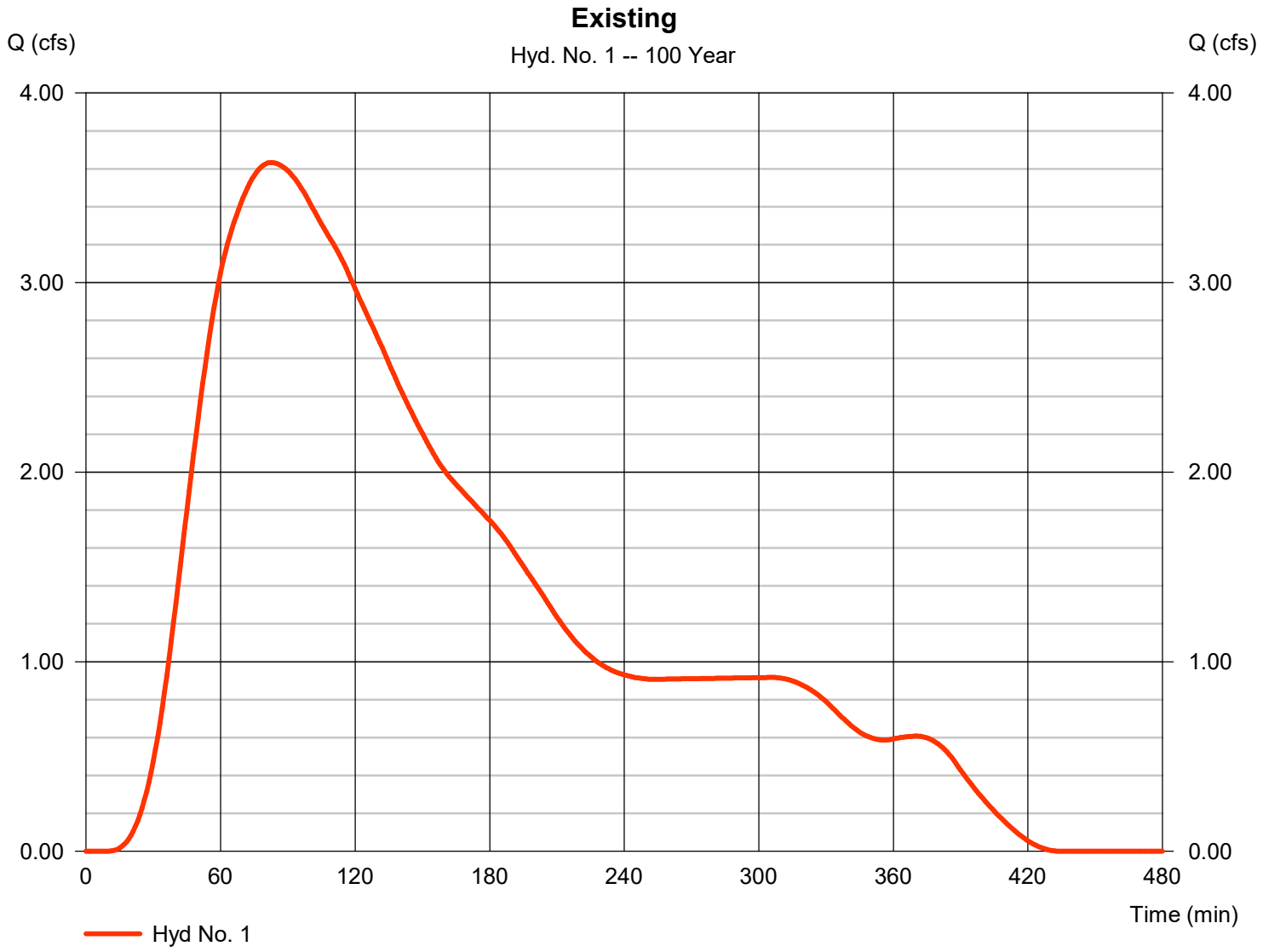
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 3.633 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 83 min |
| Time interval | = | 1 min | Hyd. volume | = | 35,809 cuft |
| Drainage area | = | 3.020 ac | Curve number | = | 84* |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | TR55 | Time of conc. (Tc) | = | 47.00 min |
| Total precip. | = | 4.98 in | Distribution | = | Huff-1st |
| Storm duration | = | 6.00 hrs | Shape factor | = | 484 |

* Composite (Area/CN) = [(3.020 x 84)] / 3.020



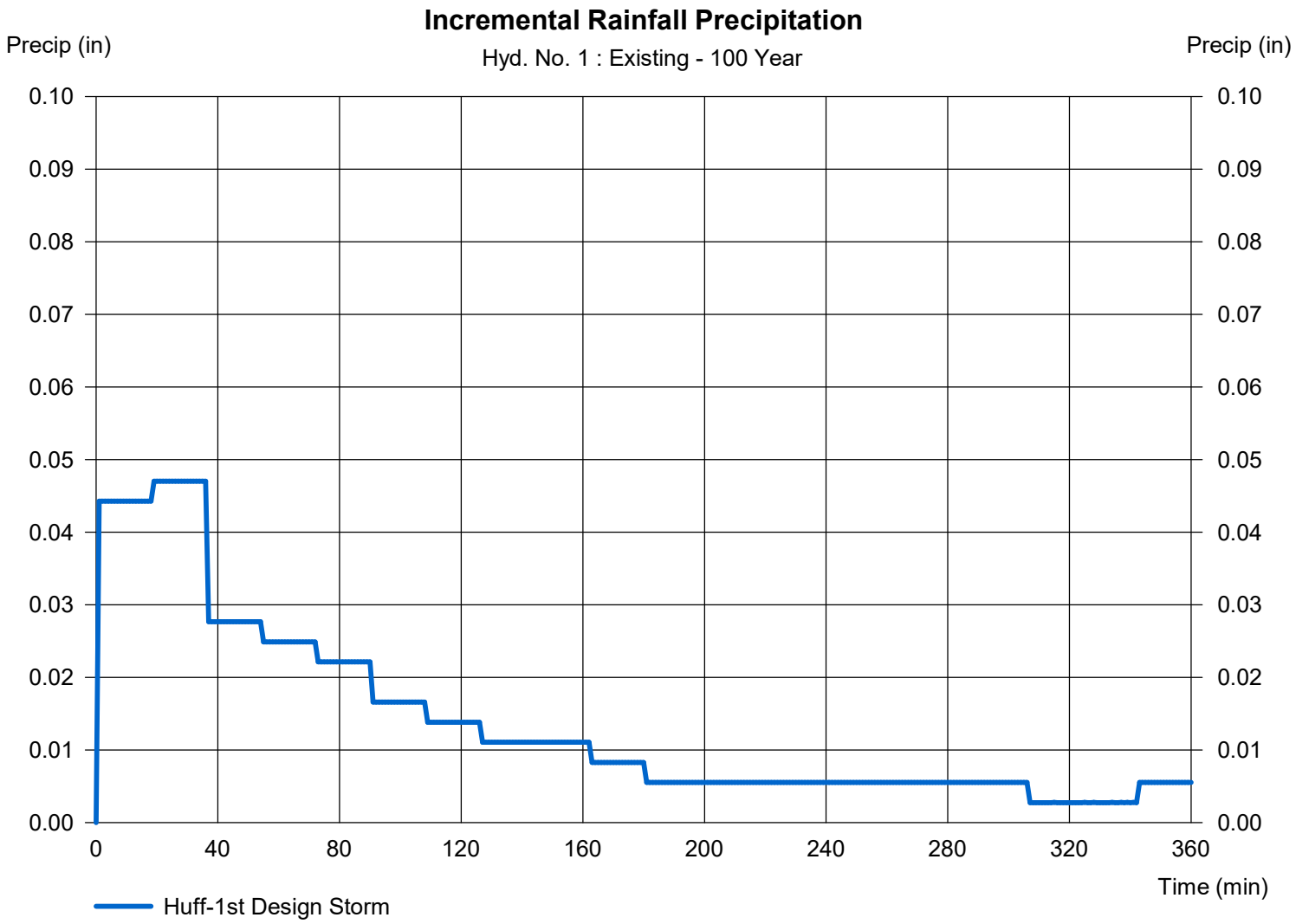
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 1

Existing

| | | | |
|---|---|---|---|
| Storm Frequency | = 100 yrs | Time interval | = 1 min |
| Total precip. | = 4.9800 in | Distribution | = Huff-1st |
| Storm duration | = 6.00 hrs | | |



# Hydrograph Report

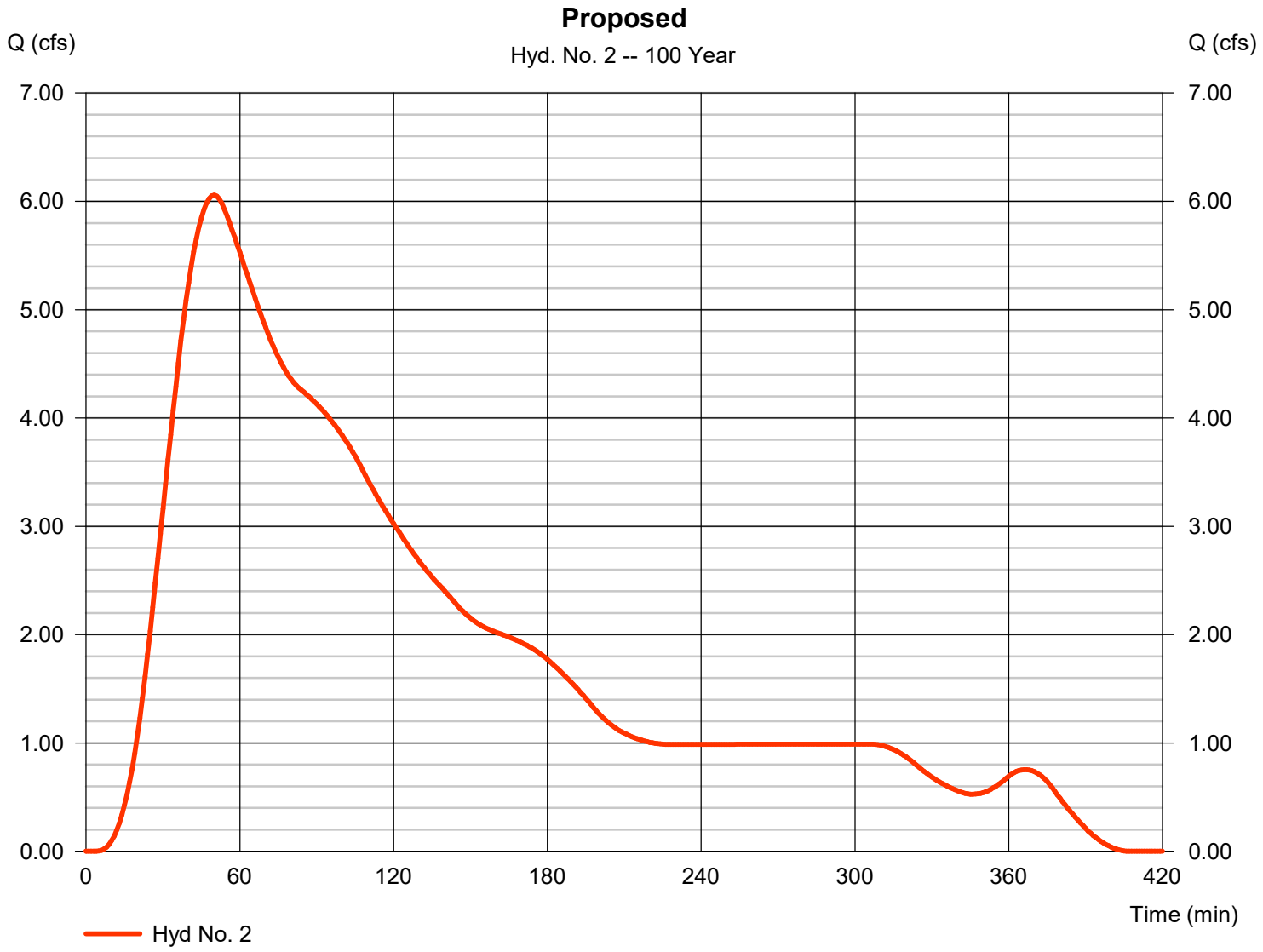
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 2

Proposed

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 6.057 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 50 min |
| Time interval | = | 1 min | Hyd. volume | = | 45,800 cuft |
| Drainage area | = | 3.020 ac | Curve number | = | 93* |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | User | Time of conc. (Tc) | = | 30.00 min |
| Total precip. | = | 4.98 in | Distribution | = | Huff-1st |
| Storm duration | = | 6.00 hrs | Shape factor | = | 484 |

* Composite (Area/CN) = [(1.020 x 84) + (1.910 x 98) + (0.090 x 98)] / 3.020



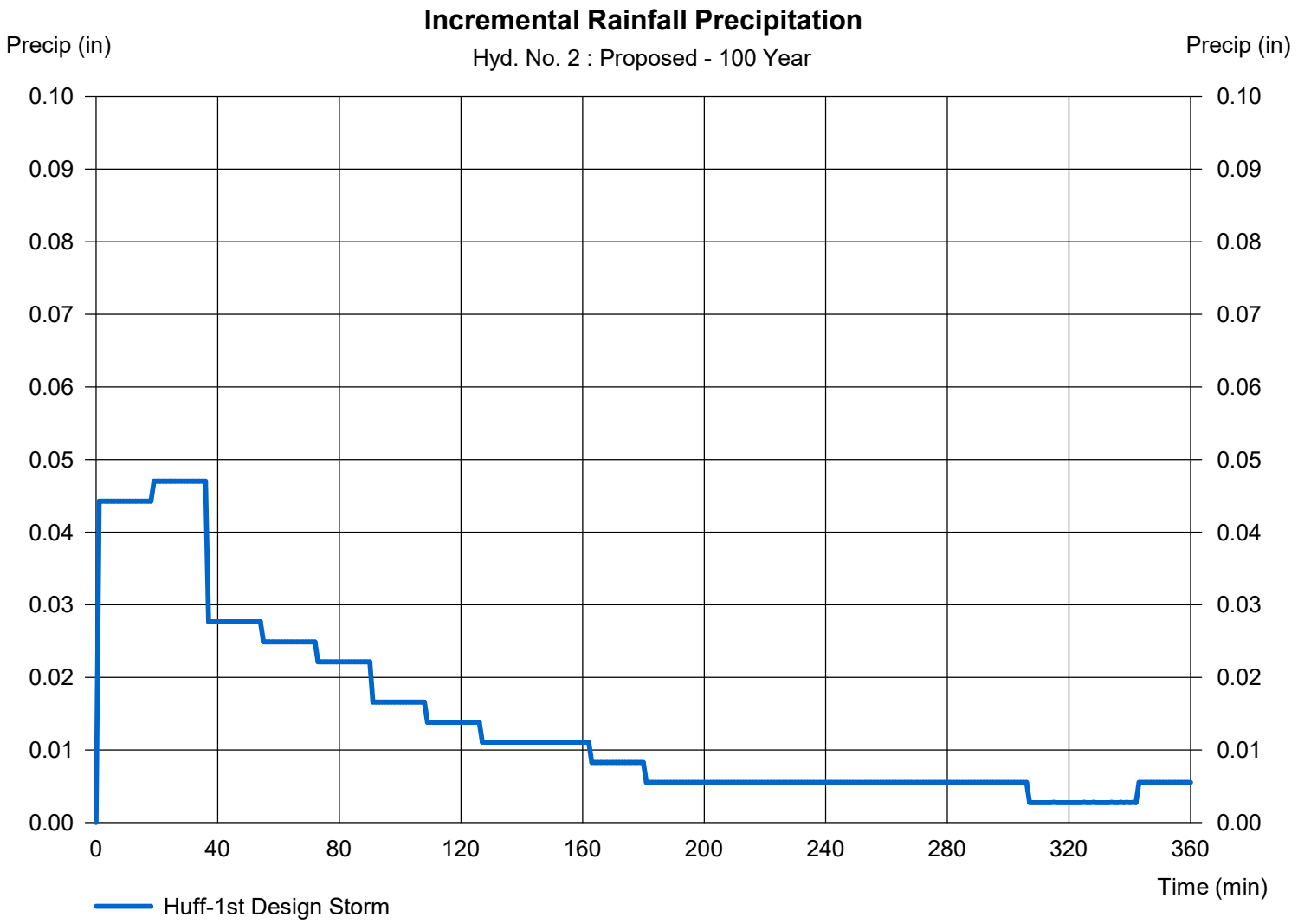
# Precipitation Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Hyd. No. 2

Proposed

| | | | |
|---|---|---|---|
| Storm Frequency | = 100 yrs | Time interval | = 1 min |
| Total precip. | = 4.9800 in | Distribution | = Huff-1st |
| Storm duration | = 6.00 hrs | | |



# Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

| Return Period (Yrs) | Intensity-Duration-Frequency Equation Coefficients (FHA) | | | |
|---|---|---|---|---|
| | B | D | E | (N/A) |
| 1 | 0.0000 | 0.0000 | 0.0000 | -------- |
| 2 | 56.8128 | 9.8000 | 0.8624 | -------- |
| 3 | 0.0000 | 0.0000 | 0.0000 | -------- |
| 5 | 61.0581 | 9.5000 | 0.8270 | -------- |
| 10 | 58.2090 | 8.5000 | 0.7837 | -------- |
| 25 | 54.0065 | 7.2000 | 0.7275 | -------- |
| 50 | 53.5558 | 6.6000 | 0.6986 | -------- |
| 100 | 50.0862 | 5.6000 | 0.6582 | -------- |

File name: Lions Trucking IDF.IDF

### Intensity = B / (Tc + D)^E

| Return Period (Yrs) | Intensity Values (in/hr) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 min | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 5.56 | 4.33 | 3.56 | 3.04 | 2.66 | 2.37 | 2.14 | 1.95 | 1.80 | 1.67 | 1.56 | 1.46 |
| 3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 6.69 | 5.23 | 4.33 | 3.72 | 3.27 | 2.92 | 2.65 | 2.42 | 2.24 | 2.08 | 1.95 | 1.83 |
| 10 | 7.57 | 5.91 | 4.90 | 4.22 | 3.71 | 3.33 | 3.03 | 2.78 | 2.57 | 2.40 | 2.25 | 2.12 |
| 25 | 8.75 | 6.82 | 5.66 | 4.88 | 4.32 | 3.89 | 3.55 | 3.27 | 3.04 | 2.84 | 2.68 | 2.53 |
| 50 | 9.66 | 7.52 | 6.26 | 5.41 | 4.80 | 4.33 | 3.96 | 3.66 | 3.41 | 3.19 | 3.01 | 2.85 |
| 100 | 10.59 | 8.21 | 6.84 | 5.93 | 5.27 | 4.77 | 4.37 | 4.05 | 3.78 | 3.56 | 3.36 | 3.19 |

Tc = time in minutes. Values may exceed 60.

Precip. file name: Z:\21346 - Lions Tran Inc (Bburg) Maintenance Building\Design\Drainage\Lions_Huff6hr.pcp

| Storm Distribution | Rainfall Precipitation Table (in) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1-yr | 2-yr | 3-yr | 5-yr | 10-yr | 25-yr | 50-yr | 100-yr |
| SCS 24-hour | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| SCS 6-Hr | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-1st | 0.00 | 2.13 | 0.00 | 0.00 | 3.15 | 3.82 | 0.00 | 4.98 |
| Huff-2nd | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-3rd | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-4th | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Huff-Indy | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Custom | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# Appendix B – Pipe,  Orifice, and Inlet Calculations

MOENCH ENGINEERING, P.C.

STORM SEWER DESIGN - RATIONAL METHOD

10-YEAR RAINFALL INTENSITY:HENDRICKS CNTY DCAM EQUATION  MANNING ROUGHNESS COEFFICIENT = 0.013 RCP

**PROJ.:** 21346 **DATE:** 12/19/2025

**DESC:** Lion Trans Inc. **ENGR:** **C. Brown**

| LINE DESIG. | FROM STR. NO. | TO STR. NO. | PIPE LENGTH (FT) | C | A (ACRE) | C x A | SUM OF CA | Tc (MIN) | Tcum (MIN) | I (IN/HR) | Q (CFS) | PIPE DIA. (IN) | PIPE GRADE (%) | PIPE CAP. (CFS) | PIPE % FLOW | FULL VEL. (FPS) | EXTRA CAP. (CFS) | TRAV. TIME (MIN) | RIM ELEV. UPSTM. | RIM ELEV. DNSTM. | INVERT ELEV. UPSTM. | INVERT ELEV. DNSTM. | PIPE COVER UPSTM. | PIPE COVER DNSTM. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| New Line | INLET1 | INLET2 | 290 | 0.72 | 1.27 | 0.91 | 0.91 | 5.0 | 5.00 | 5.57 | 5.081 | 18 | 0.30 | 5.753 | 88.315 | 3.26 | 0.67 | 1.5 | 870.56 | 869.99 | 864.01 | 863.14 | 4.84 | 5.14 |
| | INLET2 | AR8 | 64 | 0.67 | 1.75 | 1.17 | 2.08 | 5.0 | 6.48 | 5.13 | 10.686 | 24 | 0.30 | 12.391 | 86.237 | 3.94 | 1.71 | 0.3 | 869.99 | 870.90 | 863.14 | 862.95 | 4.60 | 5.70 |
| | AR8 | END | 64 | | | | | | | | 10.686 | 24 | 0.30 | 12.391 | 86.241 | 3.94 | 1.70 | 0.3 | 870.90 | NA | 862.85 | 862.66 | 5.80 | NA |

# Inlet Calculations

**Calculations for Outlet Orifice Size**

Q=Cd*Ao*SQRT(2*g*h)

Ao = Area of Orifice, Cd = Coefficient of Orifice, Q = Flow, g = gravity constant, h = height of water abov

We know Q, and need to solve for Ao

Ao = Q/(Cd*SQRT(2*g*h))

| INLET 1 | | | INLET 2 | | |
|---|---|---|---|---|---|
| Q = | 5.081 | | Q = | 5.689 | |
| Cd = | 0.6 | | Cd = | 0.6 | |
| g = | 32.2 | | g = | 32.2 | |
| h = | 0.5 | | h = | 0.5 | |
| Ao = | 1.49 | Square Feet | Ao = | 1.67 | Square Feet |

# Outlet Structure Calculations

**Calculations for Outlet Orifice Size**

Q=Cd*Ao*SQRT(2*g*h)

Ao = Area of Orifice, Cd = Coefficient of Orifice, Q = Flow, g = gravity constant, h = height of water above invert of orifice.

We know A, need to find Q

| 2-Year | | | 10-Year | | |
|---|---|---|---|---|---|
| A = | 0.087266 | | A = | 0.087266 | |
| Cd = | 0.6 | | Cd = | 0.6 | |
| g = | 32.2 | | g = | 32.2 | |
| h = | 1.65 | | h = | 2.81 | |
| Q = | 0.54 | Cubic Feet per Second | Q = | 0.70 | Cubic Feet per Second |
| solving for d in circular pipe: d=SQRT(4*Ao/*pie*) | | | solving for d in circular pipe: d=SQRT(4*Ao/*pie*) | | |
| d = | 0.33 | feet | d = | 0.33 | feet |
| **d =** | **4.00** | **inches (Pipe diameter in inches)** | **d =** | **4.00** | **inches (Pipe diameter in inches)** |

| 25-Year | | | 100-year | | |
|---|---|---|---|---|---|
| A = | 0.087266 | | A = | 0.087266 | |
| Cd = | 0.6 | | Cd = | 0.6 | |
| g = | 32.2 | | g = | 32.2 | |
| h = | 0.59 | | h = | 1.54 | |
| Q = | 0.32 | Cubic Feet per Second | Q = | 0.52 | Cubic Feet per Second |
| solving for d in circular pipe: d=SQRT(4*Ao/*pie*) | | | solving for d in circular pipe: d=SQRT(4*Ao/*pie*) | | |
| d = | 0.33 | feet | d = | 0.33 | feet |
| **d =** | **4.00** | **inches (Pipe diameter in inches)** | **d =** | **4.00** | **inches (Pipe diameter in inches)** |
| Qtotal = | 1.03 | Cubic Feet per Second | Qtotal = | 1.23 | Cubic Feet per Second |
| | Qtotal= Q10-year+Q25-year | | | Qtotal= Q10-year+Q100-year | |

| Emergency | | |
|---|---|---|
| Q = | 20.93 | |
| Cd = | 0.6 | |
| g = | 32.2 | |
| h = | 0.99 | |
| Ao = | 4.37 | Square Feet |
| solving for d in circular pipe: d=SQRT(4*Ao/*pie*) | | |
| d = | 1.38 | feet |
| **d =** | **16.55** | **inches (Pipe diameter in inches)** |

MOENCH ENGINEERING, P.C.

STORM SEWER DESIGN - RATIONAL METHOD

MANNING ROUGHNESS COEFFICIENT = 0.013 RCP

**PROJ.:** 21346 **DATE:** 12/19/2025

**DESC:** Lion Trans Inc. **ENGR:** C. Brown

| LINE DESIG. | FROM STR. NO. | TO STR. NO. | PIPE LENGTH (FT) | C | A (ACRE) | C x A | SUM OF CA | Tc (MIN) | Tcum (MIN) | I (IN/HR) | Q (CFS) | PIPE DIA. (IN) | PIPE GRADE (%) | PIPE CAP. (CFS) | PIPE % FLOW | FULL VEL. (FPS) | EXTRA CAP. (CFS) | TRAV. TIME (MIN) | RIM ELEV. UPSTM. | RIM ELEV. DNSTM. | INVERT ELEV. UPSTM. | INVERT ELEV. DNSTM. | PIPE COVER UPSTM. | PIPE COVER DNSTM. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NEW LINE | INV | INL6 | 116 | | | | | | | | 20.930 | 36 | 0.11 | 22.121 | 94.614 | 3.13 | 1.19 | 0.6 | na | 868.25 | 862.66 | 862.53 | na | 2.38 |
| | INL6 | INL7 | 54 | | | | | | | | 20.930 | 36 | 0.11 | 22.121 | 94.614 | 3.13 | 1.19 | 0.3 | 868.25 | 868.85 | 862.53 | 862.47 | 2.38 | 3.04 |
| | INL7 | INL8 | 50 | 0.43 | 0.17 | 0.07 | 0.07 | 5.0 | 5.00 | 7.56 | 21.482 | 36 | 0.12 | 23.105 | 92.977 | 3.27 | 1.62 | 0.3 | 868.85 | 868.32 | 862.47 | 862.41 | 3.04 | 2.57 |
| | INL8 | INL9 | 175 | 0.60 | 0.10 | 0.06 | 0.13 | 5.0 | 5.25 | 7.46 | 21.929 | 36 | 0.13 | 24.048 | 91.185 | 3.40 | 2.12 | 0.9 | 868.32 | 868.41 | 862.41 | 862.19 | 2.57 | 2.89 |
| | INL9 | INL10 | 151 | 0.65 | 0.13 | 0.08 | 0.22 | 5.0 | 6.11 | 7.11 | 22.483 | 36 | 0.13 | 24.048 | 93.491 | 3.40 | 1.57 | 0.7 | 868.41 | 867.81 | 862.19 | 861.99 | 2.89 | 2.49 |
| | INL10 | INL11 | 164 | 0.71 | 0.14 | 0.10 | 0.32 | 5.0 | 6.85 | 6.84 | 23.105 | 36 | 0.14 | 24.956 | 92.581 | 3.53 | 1.85 | 0.8 | 867.81 | 867.83 | 861.99 | 861.76 | 2.49 | 2.74 |
| | INL11 | INL12 | 164 | 0.71 | 0.14 | 0.10 | 0.42 | 5.0 | 7.63 | 6.58 | 23.677 | 36 | 0.14 | 24.956 | 94.874 | 3.53 | 1.28 | 0.8 | 867.83 | 867.79 | 861.76 | 861.53 | 2.74 | 2.93 |
| | INL12 | INL13 | 80 | 0.71 | 0.09 | 0.06 | 0.48 | 5.0 | 8.40 | 6.34 | 23.980 | 36 | 0.15 | 25.832 | 92.832 | 3.65 | 1.85 | 0.4 | 867.79 | 867.57 | 861.53 | 861.41 | 2.93 | 2.83 |
| | INL13 | INL14 | 75 | 0.55 | 0.13 | 0.07 | 0.55 | 5.0 | 8.77 | 6.24 | 24.376 | 36 | 0.16 | 26.679 | 91.365 | 3.77 | 2.30 | 0.3 | 867.57 | 867.38 | 861.41 | 861.29 | 2.83 | 2.76 |
| | INL14 | END | 268 | 0.43 | 0.31 | 0.13 | 0.69 | 5.0 | 9.10 | 6.14 | 25.145 | 36 | 0.16 | 26.679 | 94.249 | 3.77 | 1.53 | 1.2 | 867.38 | 865.35 | 861.29 | 860.86 | 2.76 | 1.16 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | SOUTH | INL7 | 97 | 0.42 | 0.12 | 0.05 | 0.05 | 5.0 | 5.00 | 7.56 | 0.378 | 12 | 3.13 | 6.299 | 6.005 | 8.02 | 5.92 | 0.2 | na | 867.49 | 865.49 | 862.47 | na | 3.85 |

# Appendix C – Water Quality Calculations

# Water Quality Calculations

Project Name: Lion's Trucking
Project Job #: 21346

*Water Quality Volume*

WQv = ((P)(Rv)(A))/12

P= 1" of Rainfall
Rv = Volumetric Flow Rate = 0.05 + 0.009 (I)
I = percent of impervious area
A = Area in acres

| | | | |
|---|---|---|---|
| Total Site (acres) | 3.02 | Percent -Impervious Area (%) | 66.23 |
| Total Impervious Area (acres) | 2 | Volumetric Flow Rate | 0.65 |
| Prop. Time of Conc. (min) | 9.00 | Water Quality Volume (ac-ft) | 0.16 |
| | | Water Quality Volume (ft3) | **7082.13** |
| *Forebay Volume is included in overall req. volume | | Forebay (ac-ft) | 0.02 |
| | | Forebay (ft3) | **726.00** |

*Water Quality Curve Number*

$$\text{WQ Curve Number} = \frac{1000}{[10+5P+10Qa- 10*(\text{sqrt}(Qa^2+1.25*Qa*P))]}$$

P = 1" (rainfall for water quality storm event)
Qa = runoff volume, in inches = 1" * Rv = Rv (inches)
Rv = volumetric runoff coefficient

WQ Curve Number = 96.22 * Check with CBBEL WQ-CN Graph

*Water Quality Runoff Rate* TR-20 Method * Design Criteria different for City of Indianapolis

| | Input Data | * Indy |
|---|---|---|
| Dimensionless Hydrograph: | SCS Type II Distribution | Huff 1st quartile |
| Curve Number: | 96.22 | 98 |
| Area: | 3.02 | 3.02 |
| Rainfall: | 1.00 | 0.30 |
| Time of Concentration: | 9.00 | 9.00 |

*Area for TR-20 calculated runoff* * Utilize Peak Discharge for WQ Structure BMP

SCS Method

Given Input Data:

- Description ..... Water Quality
- Drainage area ..... 1.5540 ac
- Runoff curve number, CN ..... 97
- Time of concentration, Tc ..... 5.0000 min
- Dimensionless Hydrograph ..... scsdim
- Rainfall ..... 1.0000 in
- Distribution Curve ..... tr20t2: Type 2, 24 hrs

Computed Results:

- **Peak discharge, qp ..... 1.5871 cfs**
- Peak Time, Tp ..... 717.5407 min
- Peak rate factor ..... 484
- Constant, K ..... 0.7500
- Runoff Volume ..... 0.6923 in
- ..... 1.0849 cfs-hrs
- ..... 0.0897 acft

Req. AquaShield Aqua-Swirl (per City of Indy WQ Flowrate Standards in Stormwater Manual) **AS-10**

# Appendix D – Stage Storage/Discharge Table

# Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Tuesday, 12 / 16 / 2025

## Pond No. 1 - <New Pond>

### Pond Data

**Contours -**User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 862.66 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 862.66 | 3,979 | 0 | 0 |
| 0.34 | 863.00 | 4,250 | 1,398 | 1,398 |
| 1.34 | 864.00 | 5,096 | 4,666 | 6,065 |
| 2.34 | 865.00 | 6,013 | 5,548 | 11,612 |
| 3.34 | 866.00 | 6,990 | 6,495 | 18,107 |
| 4.34 | 867.00 | 8,024 | 7,500 | 25,608 |
| 5.34 | 868.00 | 9,114 | 8,562 | 34,170 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 4.00 | 4.00 | 0.00 | Inactive |
| **Span (in)** | = 4.00 | 4.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 1 | 0 | 1 |
| **Invert El. (ft)** | = 862.66 | 865.47 | 0.00 | 0.00 |
| **Length (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 0.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .013 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | No | No | No |

### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | Inactive | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = 1 | --- | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 0.000 (by Wet area)

**TW Elev. (ft)** = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

### Stage / Storage / Discharge Table

| Stage ft | Storage cuft | Elevation ft | Clv A cfs | Clv B cfs | Clv C cfs | PrfRsr cfs | Wr A cfs | Wr B cfs | Wr C cfs | Wr D cfs | Exfil cfs | User cfs | Total cfs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0 | 862.66 | 0.00 | 0.00 | --- | --- | --- | --- | --- | --- | --- | --- | 0.000 |
| 0.34 | 1,398 | 863.00 | 0.17 ic | 0.00 | --- | --- | --- | --- | --- | --- | --- | --- | 0.175 |
| 1.34 | 6,065 | 864.00 | 0.46 ic | 0.00 | --- | --- | --- | --- | --- | --- | --- | --- | 0.455 |
| 2.34 | 11,612 | 865.00 | 0.62 ic | 0.00 | --- | --- | --- | --- | --- | --- | --- | --- | 0.619 |
| 3.34 | 18,107 | 866.00 | 0.75 ic | 0.25 ic | --- | --- | --- | --- | --- | --- | --- | --- | 1.002 |
| 4.34 | 25,608 | 867.00 | 0.86 ic | 0.49 ic | --- | --- | --- | --- | --- | --- | --- | --- | 1.349 |
| 5.34 | 34,170 | 868.00 | 0.96 ic | 0.65 ic | --- | --- | --- | --- | --- | --- | --- | --- | 1.601 |

# Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Pond No. 1 - <New Pond>

### Pond Data

**Contours -**User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 862.66 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 862.66 | 3,979 | 0 | 0 |
| 0.34 | 863.00 | 4,250 | 1,398 | 1,398 |
| 1.34 | 864.00 | 5,096 | 4,666 | 6,065 |
| 2.34 | 865.00 | 6,013 | 5,548 | 11,612 |
| 3.34 | 866.00 | 6,990 | 6,495 | 18,107 |
| 4.34 | 867.00 | 8,024 | 7,500 | 25,608 |
| 5.34 | 868.00 | 9,114 | 8,562 | 34,170 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 4.00 | 4.00 | 0.00 | Inactive |
| **Span (in)** | = 4.00 | 4.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 1 | 0 | 1 |
| **Invert El. (ft)** | = 862.66 | 865.47 | 0.00 | 0.00 |
| **Length (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 0.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .013 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | No | No | No |

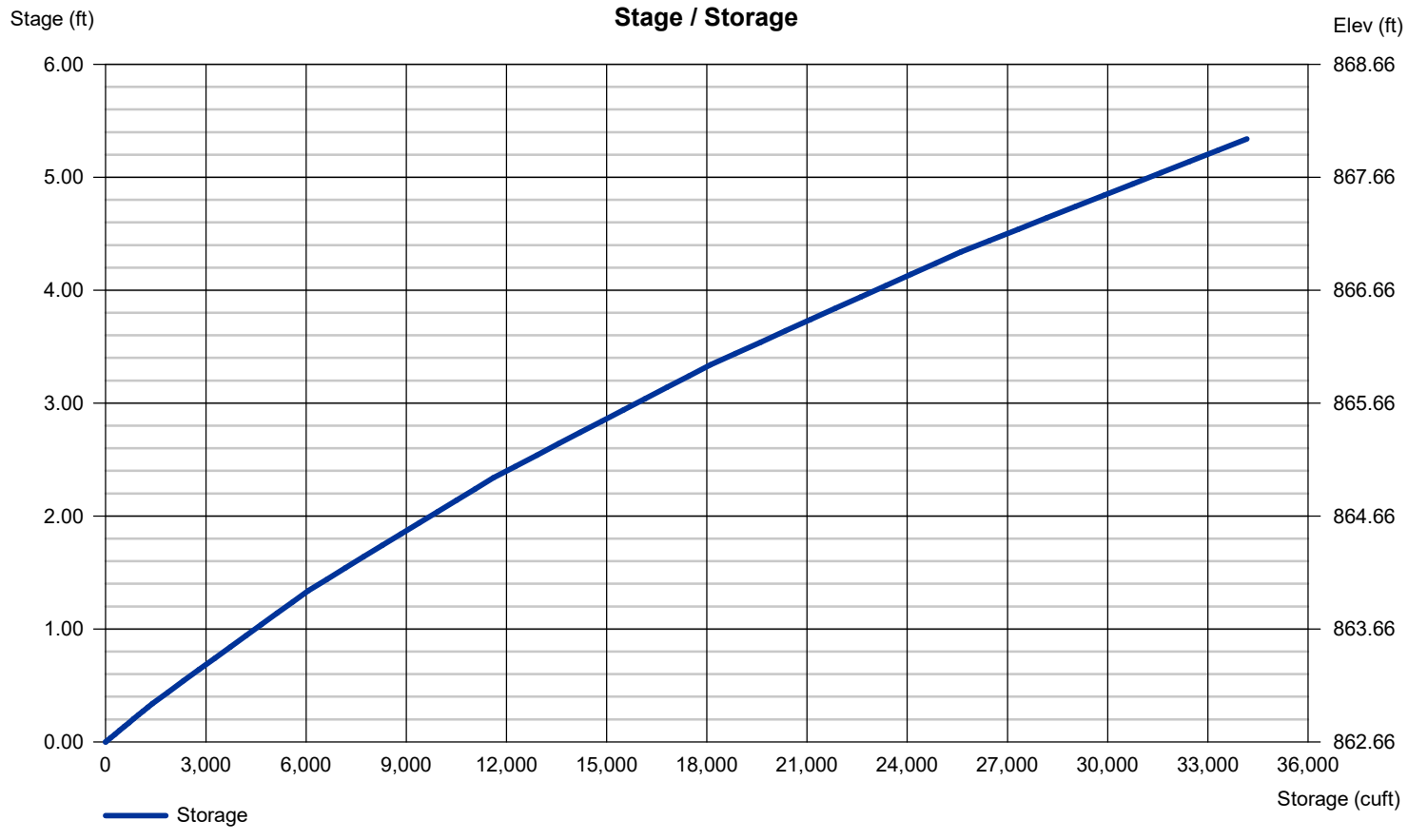
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | Inactive | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = 1 | --- | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 0.000 (by Wet area)

**TW Elev. (ft)** = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



# Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023 Wednesday, 12 / 17 / 2025

## Pond No. 1 - <New Pond>

### Pond Data

**Contours -**User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 862.66 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 862.66 | 3,979 | 0 | 0 |
| 0.34 | 863.00 | 4,250 | 1,398 | 1,398 |
| 1.34 | 864.00 | 5,096 | 4,666 | 6,065 |
| 2.34 | 865.00 | 6,013 | 5,548 | 11,612 |
| 3.34 | 866.00 | 6,990 | 6,495 | 18,107 |
| 4.34 | 867.00 | 8,024 | 7,500 | 25,608 |
| 5.34 | 868.00 | 9,114 | 8,562 | 34,170 |

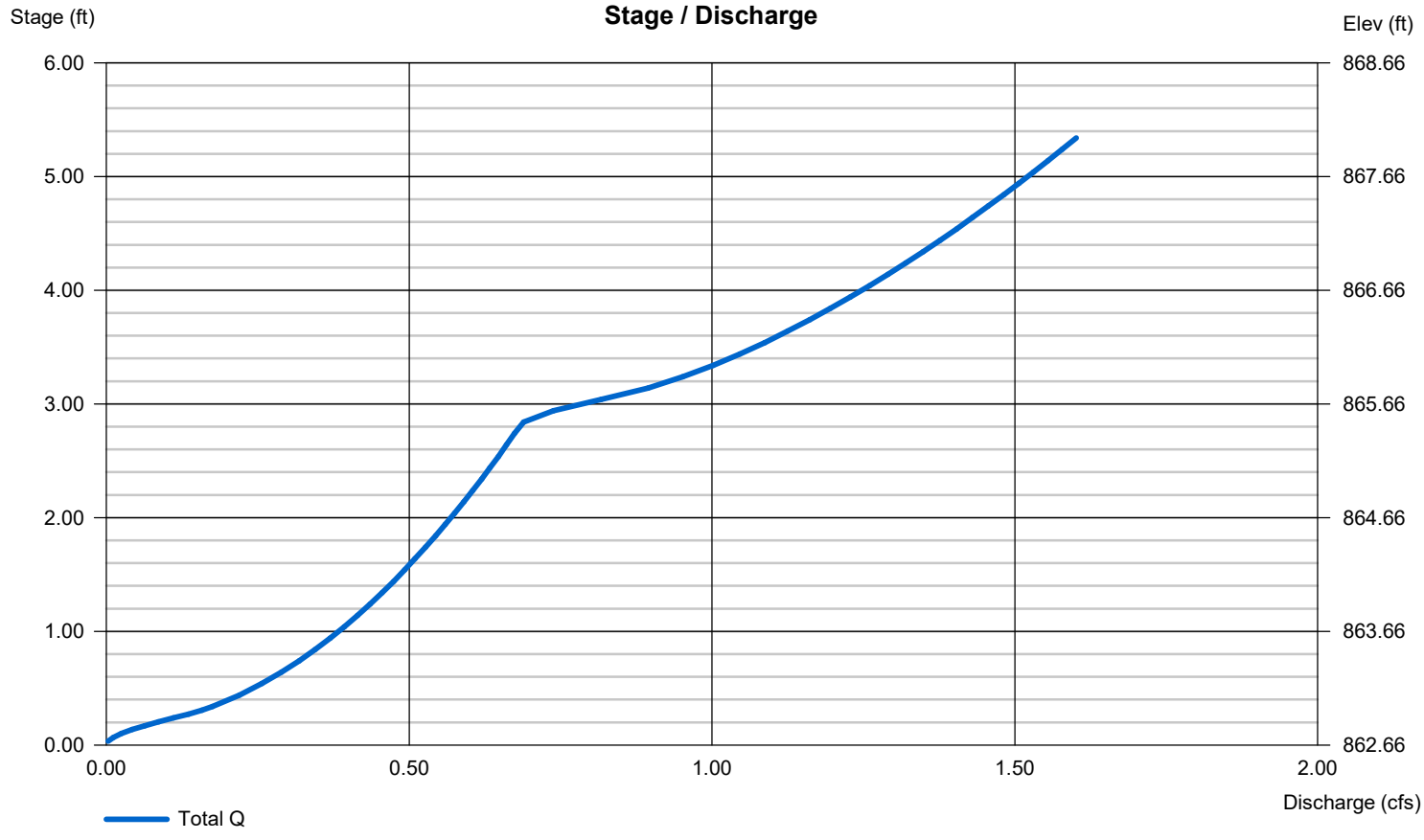
### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 4.00 | 4.00 | 0.00 | Inactive |
| **Span (in)** | = 4.00 | 4.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 1 | 0 | 1 |
| **Invert El. (ft)** | = 862.66 | 865.47 | 0.00 | 0.00 |
| **Length (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 0.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .013 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | No | No | No |

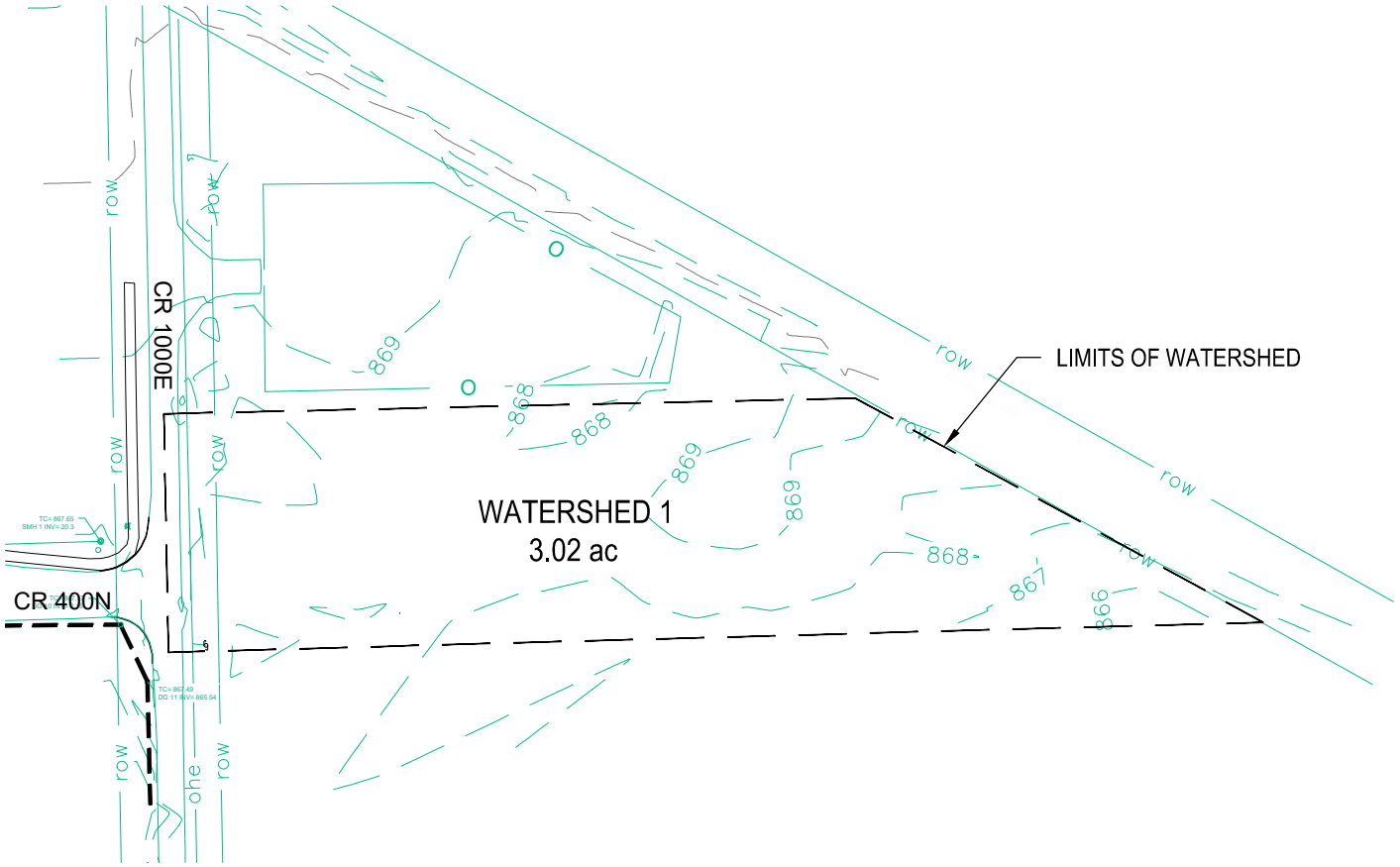
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | Inactive | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = 1 | --- | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |
| **Exfil.(in/hr)** | = 0.000 (by Wet area) | | | |
| **TW Elev. (ft)** | = 0.00 | | | |

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



# Appendix E – Existing Watershed




N

150 0 150 300

GRAPHIC SCALE: 1" = 150'

| NOTE |
| --- |
| PERVIOUS SURFACE = 2.97 ac (131,401 sf) |
| IMPERVIOUS SURFACE = 0.05 ac (2,144 sf) |

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH MOENCH ENGINEERING, P.C. NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF MOENCH ENGINEERING, P.C. ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

Lion Transfer Inc.
4005 N. County Road 1000 E
Brownsbburg, Indiana 46122
Hendricks County, Lincoln Township

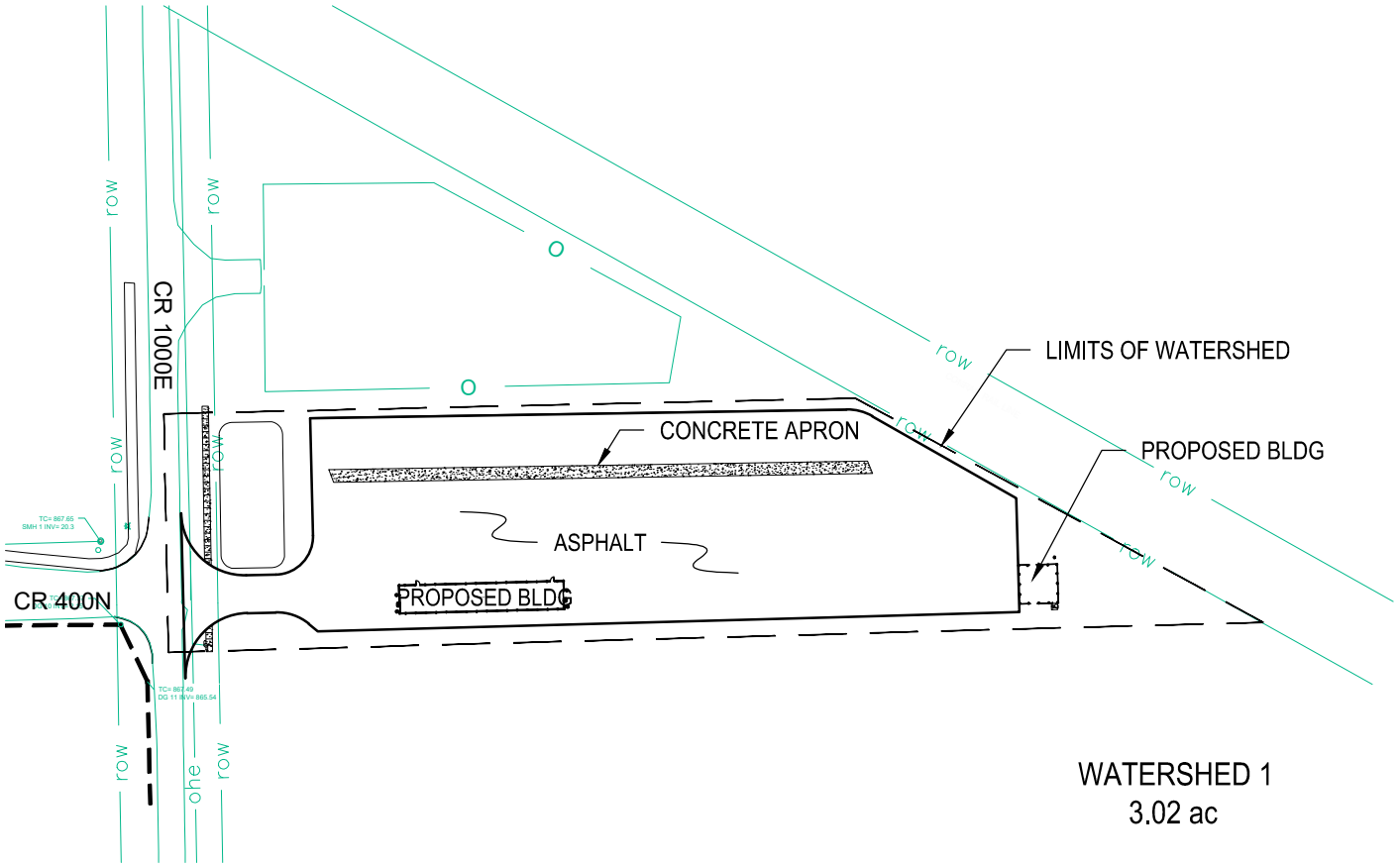
EXISTING WATERSHED MAP

Drawn By: JBF
Checked By: BEM
Project No. 21346
Date: 6/20/24

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
Phone (317) 837-2767

Sheet Number:
WSE

# Appendix F – Proposed Watershed




N

150 0 150 300

GRAPHIC SCALE: 1" = 150'

| NOTE |
|---|
| PERVIOUS SURFACE = 0.77 ac (33,488 sf) |
| IMPERVIOUS SURFACE = 2.17 ac (94,492 sf) |
| IMPERVIOUS ROOF AREA = 0.08 ac (3,760 sf) |

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH MOENCH ENGINEERING, P.C. NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF MOENCH ENGINEERING, P.C. ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

Lion Transfer Inc.
4005 N. County Road 1000 E
Brownsbburg, Indiana 46122
Hendricks County, Lincoln Township

PROPOSED WATERSHED MAP

Drawn By: JBF
Checked By: BEM
Project No. 21346
Date: 6/20/24

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
Phone (317) 837-2767

Sheet Number:
WSP

# Operations and Maintenance Manual

# Lion Trans Inc.

# 4005 N County Road 1000 E
# Brownsburg, Indiana 46112

# Best Management Practices
# For
# Storm Water Quality

# February 4th, 2026

**Owner:**

**Malhi Kulwinder & Jigna Shah Jtsur**

**7631 E US Hwy 36**

**Avon, Indiana 46123**

**Owner Information:**

| | |
|---|---|
| Name: | Malhi Kulwinder & Jigna Shah Jtsur |
| Address: | 7631 E US Hwy 36<br>Avon, Indiana 46123 |
| Telephone: | (317) 989-1580 |
| Contact Person: | Jigna Shah Jtsur |
| Contact Email: | janh505969@gmail.com |

**BMP Site Drawings:**

See Appendix

**Responsible Party Required Periodic Inspections:** See Appendix B for Tabular Inspection Schedule

It is the responsibility of the Responsible Party to inspect the installed infrastructure to determine if it is functioning as designed quarterly and after each major rainfall event.

**Town Performed Periodic Inspections:**

Town officials shall inspect the storm water improvement system installed annually. Inspections shall be based on the Town of Brownsburg Ordinances. The Responsible Party shall be responsible for the annual inspection fees and subsequent money spent in maintaining the best management practices as determined by the Town's review official.

**Required Perform Maintenance:**

If determined by the Town's inspection, the Responsible Party must complete any maintenance of the best management practices within the given specified timeframe. If maintenance activities are not completed, then the reserves the right to complete the maintenance activity and back charge the Responsible Party accordingly.

**Routine Maintenance:**

It is the responsibility of the Responsible Party to maintain the on-site and adjacent offsite drainage infrastructure. The routine maintenance includes mowing the grassy areas to a height between 4 to 6 inches. It is also the responsibility of the Responsible Party to keep all shrubbery and trees from growing in the right-of-way. The area must be kept clean of all litter and debris as well. Regarding soil within the yard area, if standing water is witnessed in excess for 48 hours after a storm event, the soil must be inspected for reasons of preventing absorption and/or decreasing permeability (i.e. compaction, debris, etc.) The soil needs to be tilled and/or inspected if immediate attention doesn't rectify the situation. During tilling of the soil, mindfulness needs to be kept of the sub-surface drains to prevent damage (i.e. removal or crushing). The soil must maintain a minimum permeability value of fc > 0.50 inches per hour. The sufficient proposed replacement soil such as Urban Land Fox Complex, 0 to 2% slope has sufficient permeability qualities to meet standards, if required. If re-seeding is required, stabilize existing soil and re-seed as necessary using erosion control methods such as straw mats until proper germination takes place. The hydrodynamic separator should be periodically inspected to determine the need for and frequency of maintenance, inspected as soon as construction is complete and then on an annual basis. When maintenance is required, remove all water, debris, oil and sediment using a vacuum truck. Then clean the manhole and fill with water to the invert of the outlet pipe. Volume Control Facilities and BMPs shall be inspected semi-annually and after major storm events exceeding one-half (1.5) inches.

**Remedial Maintenance:**

The responsibility of maintaining the installed infrastructure is the responsibility of the Responsibility Party. This includes replacing any damaged pipe, concrete structure, curb/gutters, etc. to maintain the function of the infrastructure as originally designed.

**Sediment Removal:**

Sediment removal from gutter of adjacent curbs.

**Statement of Town's Right of Access:**

With the location of the access easement, Town officials have the right to enter the property and check the best management practices at their discretion.

**Responsible Party for BMP Maintenance:**

It is the sole responsibility of the Owner to maintain the best management practices after initial installation. This includes all costs and scheduling associated with the maintenance of BMP. The Owner is required to keep records of all inspection and maintenance activities and will self-certify that inspection and maintenance have been performed according to the Operations and Maintenance Manual, when requested by the city.

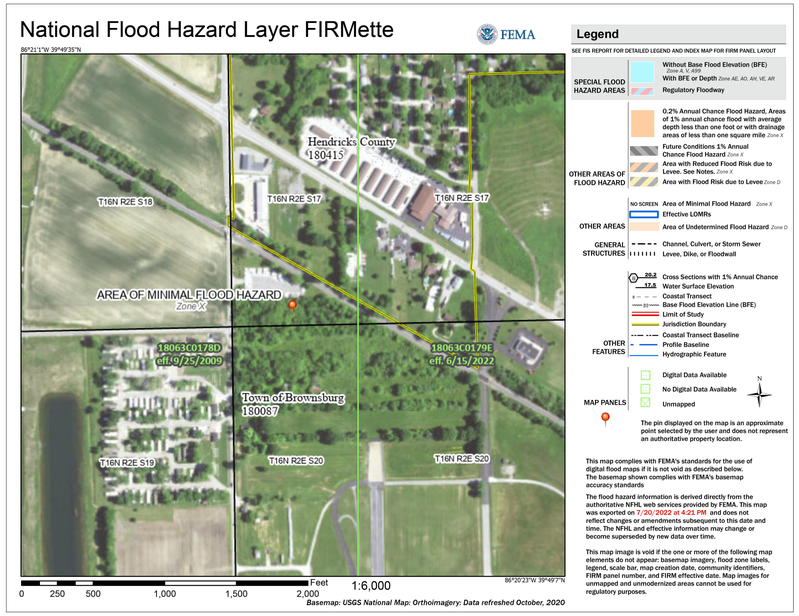
Responsible Party: _____

Printed Name of Responsible Party: _____

Date: _____

# APPENDICES

# APPENDIX A
# BMP DRAWINGS










## Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| YbvA | Brookston silty clay loam-Urban land complex, 0 to 2 percent slopes | 1.8 | 53.2% |
| YclA | Crosby silt loam, fine-loamy subsoil-Urban land complex, 0 to 2 percent slopes | 1.5 | 46.8% |
| **Totals for Area of Interest** | | **3.3** | **100.0%** |

## FLOOD ZONE DESIGNATION:

THIS LOT LIES ENTIRELY IN FLOOD HAZARD ZONE "X" AS SCALES FROM THE FLOOD INSURANCE RATE MAP (FIRM) FOR:

HENDRICKS COUNTY, INDIANA

| | |
|---|---|
| COMMUNITY NAME: | TOWN OF BROWNSBURG |
| COMMUNITY NUMBER: | 180087 |
| PANEL NUMBER: | C0179E |
| DATED: | JUNE 15, 2022 |

## STAGE STORAGE TABLE

| ELEV | AREA (sq. ft.) | DEPTH (ft) | AVG END INC. VOL. (cu. ft.) | AVG END TOTAL VOL. (cu. ft.) | CONIC INC. VOL. (cu. ft.) | CONIC TOTAL VOL. (cu. ft.) |
|---|---|---|---|---|---|---|
| 862.660 | 4,044.91 | N/A | N/A | 0.00 | N/A | 0.00 |
| 863.000 | 4,312.07 | 0.340 | 1420.69 | 1420.69 | 1420.44 | 1420.44 |
| 864.000 | 5,146.08 | 1.000 | 4729.07 | 6149.76 | 4722.93 | 6143.37 |
| 865.000 | 6,051.22 | 1.000 | 5598.65 | 11748.41 | 5592.54 | 11735.92 |
| 866.000 | 7,016.36 | 1.000 | 6533.79 | 18282.20 | 6527.84 | 18263.76 |
| 867.000 | 8,038.03 | 1.000 | 7527.19 | 25809.39 | 7521.41 | 25785.17 |
| 868.000 | 9,116.26 | 1.000 | 8577.15 | 34386.54 | 8571.50 | 34356.66 |

= WQO LOCATIONS

= DRAINAGE ARROWS

## GRADING NOTES:

GENERAL GRADE NOTES:

1. REFER TO THE INDIANA DEPARTMENT OF TRANSPORATION (INDOT) STANDARD SPECIFICATIONS, LATEST EDITION, FOR BASIC MATERIALS AND CONSTRUCTION METHODS. THE SECTION BELOW FOR VARIOUS ITEMS ARE TO CLARIFY THE INTENT OF THE REQUIREMENTS FOR THIS PROJECT, PLEASE NOTE THAT OTHER SECTIONS OF THE INDOT STANDARD SPECIFICATIONS MAY ALSO BE APPLICABLE.

2. FILL MATERIAL SHALL CONSIST OF EARTH OBTAINED FROM CUT AREAS, BORROW PITS OR OTHER APPROVED SOURCES. EARTH SHALL BE FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES AND LARGE ROCKS. THE FILL MATERIAL SHALL BE PLACED IN LAYERS NOT TO EXCEED SIX INCHES FOLLOWING COMPACTION. PROPER MOISTURE CONTENT OF FILL MATERICAL WILL BE SUCH TO ACHIEVE SPECIFIED COMPACTION DENSITY. ALL FILL BENEATH PAVED AREAS, FLOOR SLABS AND FURTURE BUILDINGS SHALL BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY PER ASTM D-1557. FIELD COMPACTING TEST SHALL BE RUN ON EACH LIFT, IN FILL SECTIONS, AND THE REQUIRED COMPACTION ON EACH LIFT SHALL BE IN ACCORDANCE WITH INDOT SECTION 211.

3. MAXIMUM LAWN SLOPE IS 3:1.

4. THE CONTRATOR SHALL CONTACT ALL UTILITY COMPANIES TO LOCATE MAINS, CONDUITS, SERVICE LINES, ETC. IN THE AFFECTED CONSTRUCTION AREA EXISTING UTILITY STRUCTURES ARE SHOWN HERE IN ACCORDANCE WITH AVAILABLE INFORMATION. THE LOCATION AND PROTECTION OF UTILITY STRUCTURES, THEIR SUPPORT AND MAINTENANCE DURING CONSTRUCTION (IN COOPERATION WITH APPLICABLE UTILITY COMPANY) IS THE EXPRESSED RESPONSIBILITY OF THE CONTRACTOR.

5. ALL SPOT ELEVATIONS ARE TO FINISHED GRADE.

6. ALL EXISTING MANHOLE CASTINGS TO BE ADJUSTED TO FINISH GRADE.

7. COMPACT "B" BORROW BACK FILL REQ'D. OVER ALL UTILITIES IN PAVED AREAS.

8. DISTURBED AREAS TO BE GRADED TO FINAL GRADE AND RECEIVE A MIN OF 4" TOPSOIL

9. STABILIZATION MUST BE INITIATED BY END OF THE 7TH DAY THE AREA IS LEFT IDLE AND STABILIZATION SHALL BE COMPLETED WITHIN 14 DAYS AFTER INITIATION.

10. FINAL STABILIZATION IS ACHIEVED WHEN ALL LAND DISTURBING ACTIVITIES HAVE BEEN COMPLETED AND A UNIFORM PERENNIAL VEGATATIVE COVER WITH DENSITY OF 70% ON ALL UNPAVED SURFACES.

11. WATER SHOULD BE PUMPED THROUGH BMP AND INTO THE DETENTION POND.

REINFORCED CONCRETE PIPE:

1. REINFORCED CONCRETE PIPE SHALL BE CLASS III, IV OR V AS SPECIFIED IN ASTM C-76.

2. REINFORCED ELLIPTICAL CONCRETE PIPE SHALL BE CLASS HE-III OR HE-IV AS SPECIFIED IN ASTM C-507.

3. LIFT HOLES ARE NOT ALLOWED FOR PIPE LESS THAN 24 INCHES IN DIAMETER. A MAXIMUM OF TWO LIFT HOLES ARE ALLOWED FOR PIPE 24 INCHES IN DIAMETER OR LARGER. LIFT HOLES SHALL BE REPAIRED ACCORDING TO MOST RECENT INDOT STANDARD SPECIFICATIONS.

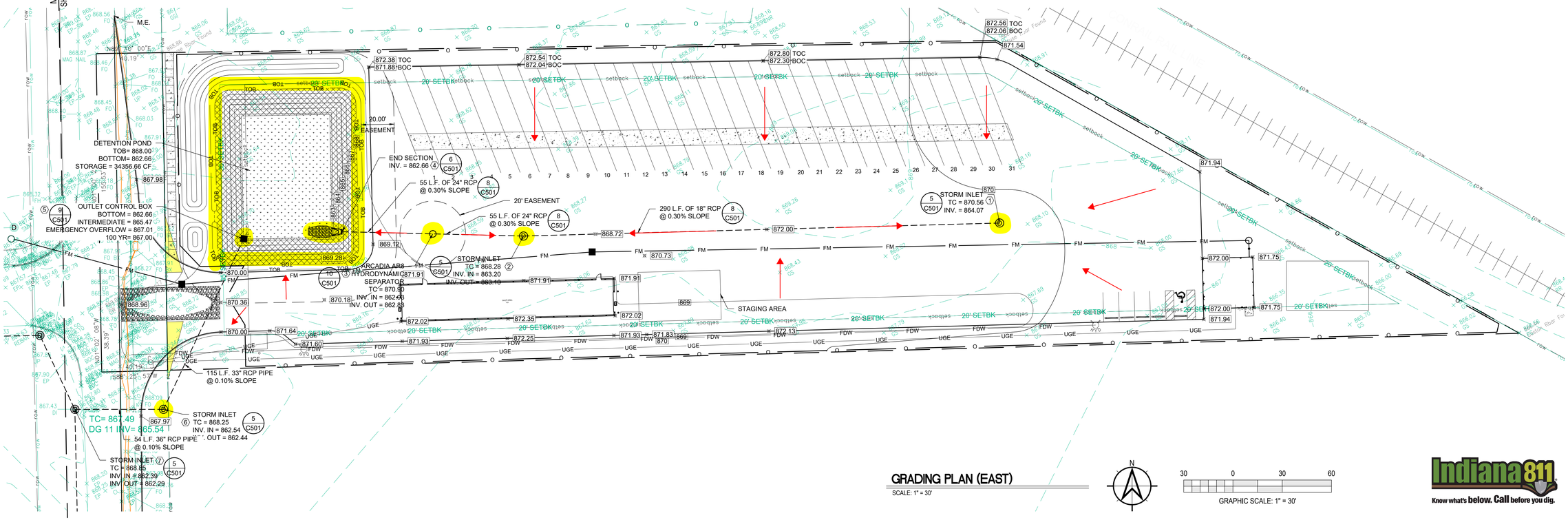
4. FITTINGS AND SPECIALTIES SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS FOR THE TYPE OF PIPE BEING USED.

5. EACH PIPE SECTION SHALL BE MARKED WITH DATE OF MANUFACTURE, SIZE AND CLASS OF PIPE, SPECIFICATION DESIGNATION, MANUFACTURER AND PLANT IDENTIFICATION.

6. PIPE SHALL BE FURNISHED WITH A BELL OR GROOVE ON ONE END OF A UNIT OF PIPE AND A SPIGOT OR TONGUE ON THE ADJACENT END OF THE ADJOINING PIPE. ALL JOINTS SHALL HAVE A GROOVE ON THE SPIGOT FOR PLACEMENT OF A RUBBER "O-RING" OR PROFILE GASKET IN ACCORDANCE WITH ASTM C-443. THE GASKET SHALL BE A CONTINUOUS RING WHICH FITS SNUGLY INTO THE ANNULAR SPACE BETWEEN THE OVERLAPPING SURFACES OF THE ASSEMBLED PIPE JOINT.

## EMERGENCY SPILLWAY DETAIL




GRADING PLAN (EAST)
SCALE: 1" = 30'

N

30 0 30 60
GRAPHIC SCALE: 1" = 30'

Indiana 811
Know what's below. Call before you dig.

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

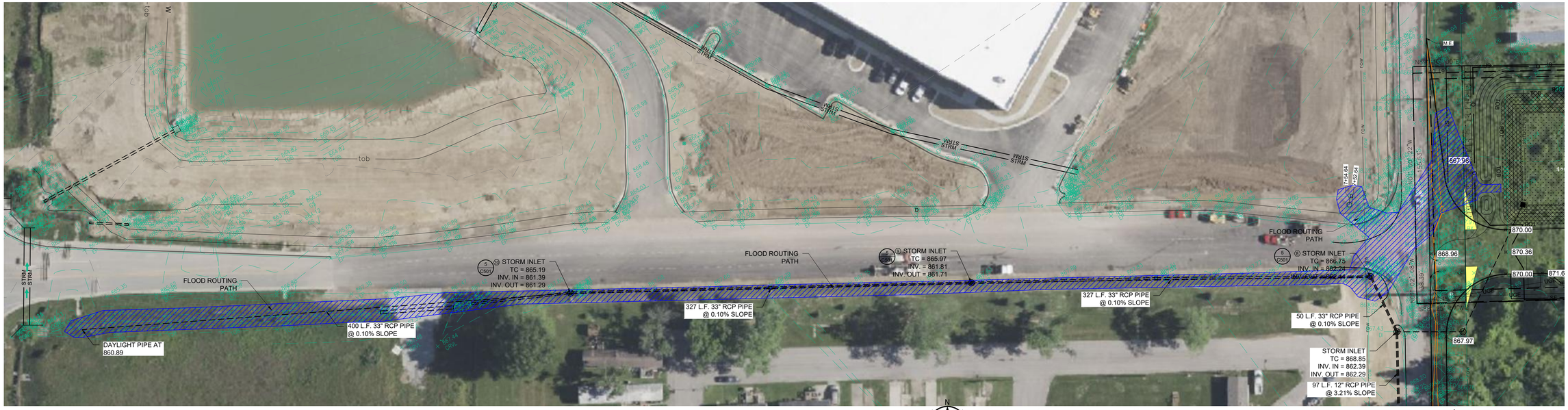
GRADING PLAN (EAST)

BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER
Susan E. Neal

## REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

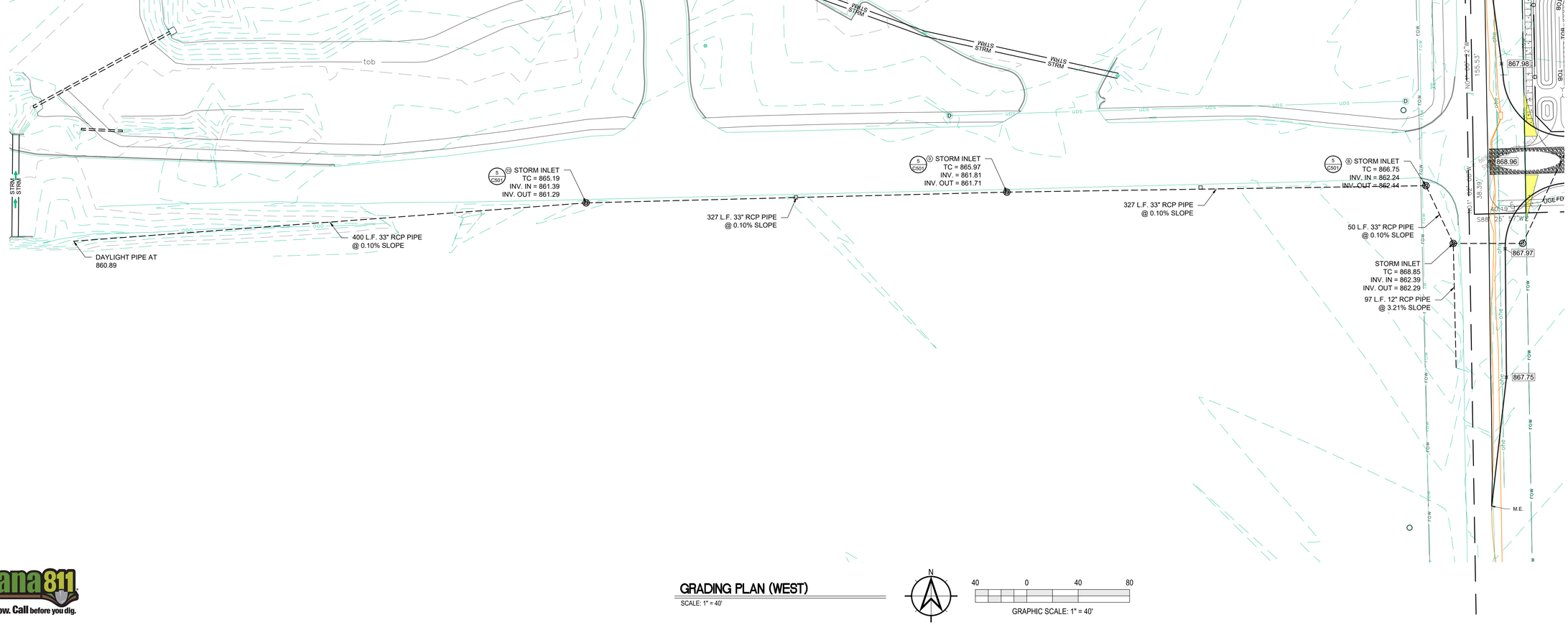
| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C301A |




## FLOOD ROUTING PATH

SCALE: 1" = 40'

GRAPHIC SCALE: 1" = 40'




## GRADING PLAN (WEST)

SCALE: 1" = 40'

GRAPHIC SCALE: 1" = 40'

Indiana 811
Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

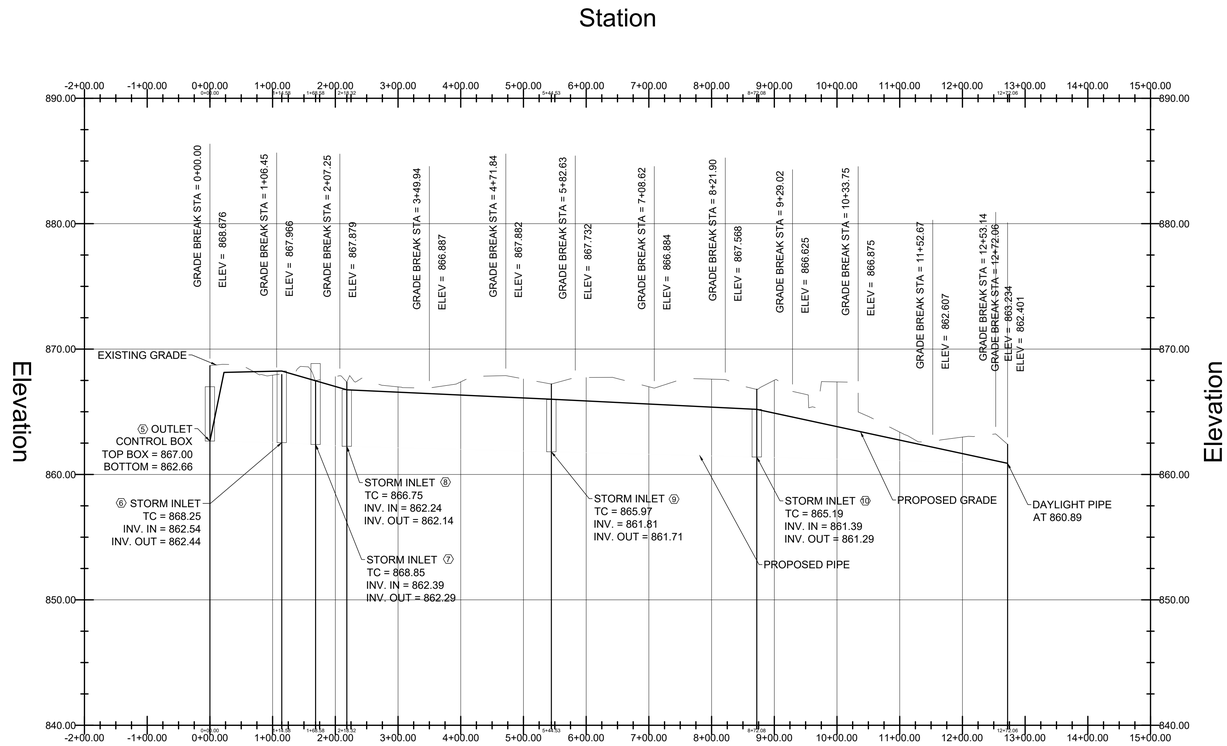
GRADING PLAN (WEST)

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

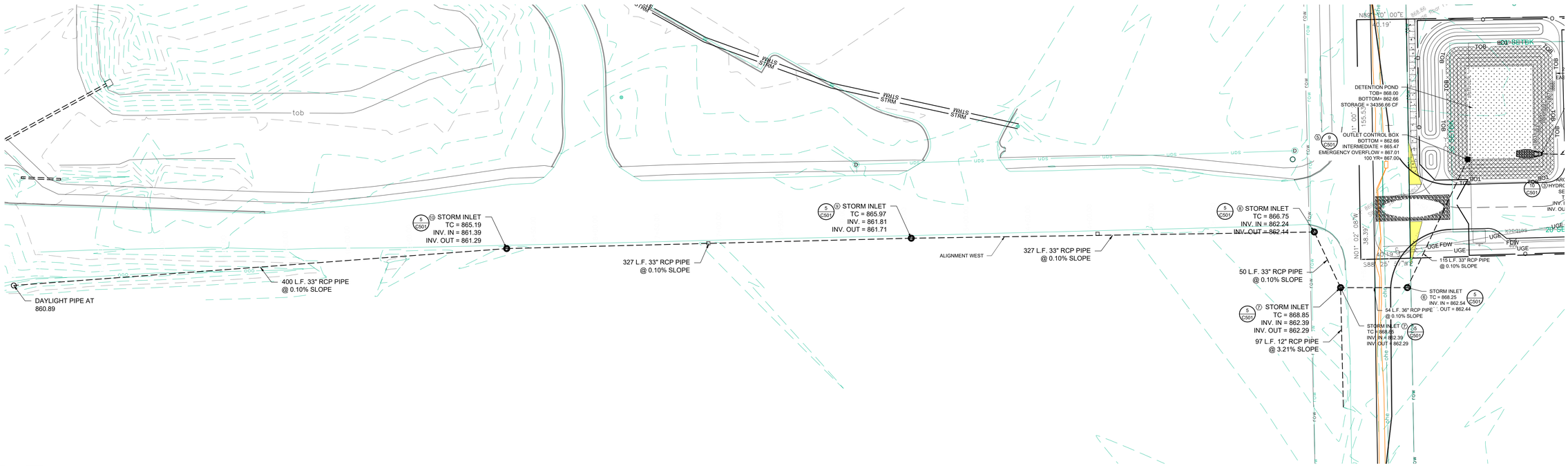
| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C301B |




## PIPE PROFILE VIEW
## ALIGHTNMENT WEST

NOT TO SCALE




## ALIGHTNMENT WEST

SCALE: 1" = 40'

GRAPHIC SCALE: 1" = 40'

Indiana 811
Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

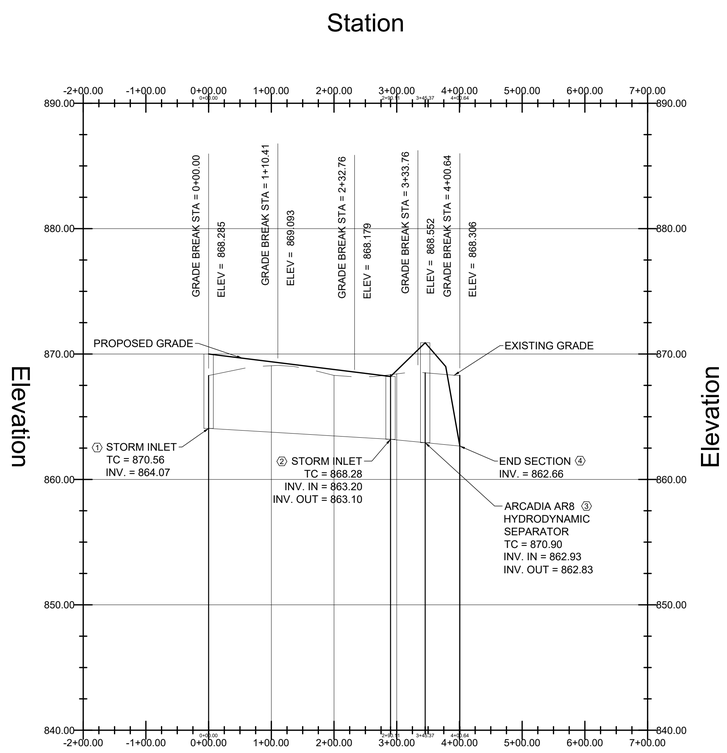
PIPE PROFILE PLAN (WEST)

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER
Brian E. Moench

REVISIONS:

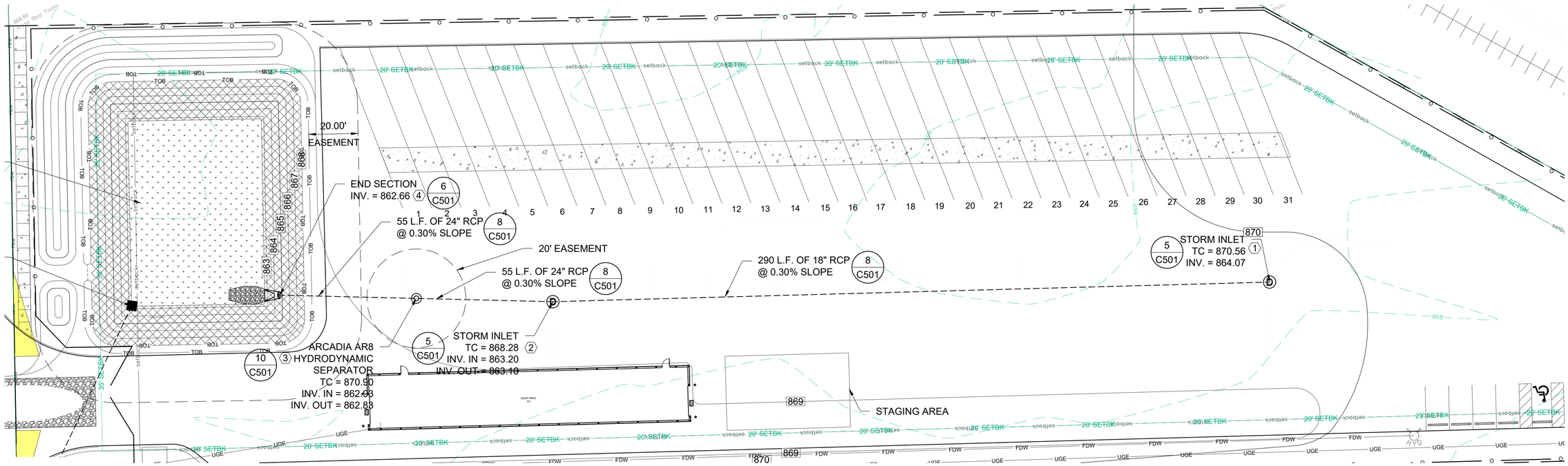
| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C301C |




## PIPE PROFILE VIEW
## ALIGHTNMENT EAST

NOT TO SCALE




## ALIGHTNMENT EAST

SCALE: 1" = 20'

N

40 0 40 80

GRAPHIC SCALE: 1" = 40'

Indiana 811
Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

PIPE PROFILE PLAN (EAST)

BRIAN EDWARD MOENCH
REGISTERED
No. PE9500048
STATE OF INDIANA
PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C301D |

## SEASONAL SOIL PROTECTION CHART

| STABILIZATION PRACTICE | JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. | OCT. | NOV. | DEC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PERMANENT SEEDING | | A | | | * | /// | /// | /// | *// | | | |
| DORMANT SEEDING | B | | | | | | | | | | B | |
| TEMPORARY SEEDING | | C | E | | * | /// | /// | /// | *D | | | |
| SODDING | | F** | | | * | /// | /// | /// | * | | | |
| MULCHING | G | | | | | | | | | | | |

A = KENTUCKY BLUEGRASS 100 LBS/ACRE; CREEPING RED FESCUE 100 LBS/ACRE; PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYEGRASS 20 LBS/ACRE FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

B = KENTUCKY BLUEGRASS 120 LBS/ACRE; CREEPING RED FESCUE 120 LBS/ACRE; PLUS 2 TONS STRAW MULCH/ACRE, OR ADD ANNUAL RYEGRASS 30 LBS/ACRE FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

C = SPRING OATS 3 BUSHELS/ACRE
FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

D = WHEAT OR RYE 2 BUSHELS/ACRE
FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE, APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

E = ANNUAL RYEGRASS 40 LBS/ACRE (1 LB/1000 SQ. FT.)
FERTILIZE AS RECOMMENDED BY SOIL TEST. IF TESTING IS NOT DONE. APPLY 400-600 LBS./ACRE OF 12-12-12 ANALYSIS, OR EQUIVALENT, FERTILIZER.

F = SOD

G = STRAW MULCH 2 TONS/ACRE

* / I / * = IRRIGATION NEEDED DURING JUNE, JULY, AUGUST AND/OR SEPTEMBER  ** = IRRIGATION NEEDED FOR 2 WEEKS AFTER SUPPLYING SOD

## INSTALLATION SCHEDULE:

| CONSTRUCTION PHASE: | CONSTRUCTION SCHEDULE: |
|---|---|
| PRE-CONSTRUCTION ACTIONS (EVALUATION/PROTECTION OF IMPORTANT SITE CHARACTERISTICS) | BEFORE CONSTRUCTION, EVALUATE, MARK AND PROTECT IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, UNIQUE AREAS (e.g., WETLANDS) TO BE PRESERVED, ON SITE SEPTIC SYSTEM ABSORPTION FIELDS IF APPLICABLE, AND VEGETATION SUITABLE FOR FILTER STRIPS, ESPECIALLY IN PERIMETER AREAS. |
| CONSTRUCTION ACCESS (CONSTRUCTION ENTRANCES, CONSTRUCTION ROUTES, EQUIPMENT PARKING AREAS) | STABILIZE BARE AREAS IMMEDIATELY WITH GRAVEL AND TEMPORARY VEGETATION AS WORK TAKES PLACE. |
| SEDIMENT BARRIERS AND TRAPS (BASIN TRAPS, SILT FENCES, OUTLET PROTECTION) | INSTALL PRINCIPAL BASINS AFTER CONSTRUCTION SITE IS ASSESSED. INSTALL ADDITIONAL RUNOFF CONTROL MEASURES DURING GRADING AS NEEDED. |
| RUNOFF CONVEYANCE SYSTEM (STABILIZED STREAM-BANKS, STORM DRAINS, INLET AND OUTLET PROTECTIONS, WATER QUALITY STRUCTURES) | WHERE NECESSARY, STABILIZE STREAMBANKS AS EARLY AS POSSIBLE. INSTALL PRINCIPLE CONVEYANCE SYSTEM WITH RUNOFF CONTROL MEASURES. INSTALL REMAINDER OF SYSTEM AFTER GRADING. |
| LAND CLEARING AND GRADING (CUTTING/FILLING/GRADING, DRAINS, SEDIMENT TRAPS, BARRIERS, DIVERSIONS, SURFACE ROUGHENING) | BEGIN MAJOR CLEARING AND GRADING AFTER INSTALLING THE KEY SEDIMENT AND RUNOFF MEASURES. CLEAR BORROW AND DISPOSAL AREAS AS NEEDED. INSTALL ADDITIONAL CONTROL MEASURES AS GRADING PROGRESSES. |
| SURFACE STABILIZATION (TEMPORARY AND PERMANENT SEEDING, MULCHING, SODDING, RIPRAP) | APPLY TEMPORARY OR PERMANENT STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS WHERE WORK IS DELAYED OR COMPLETED. |
| BUILDING CONSTRUCTION (BUILDINGS, UTILITIES, PAVING) | INSTALL NECESSARY EROSION AND SEDIMENT CONTROL PRACTICES AS WORK TAKES PLACE. |
| LANDSCAPING & FINAL STABILIZATION (TOP SOILING, TREES AND SHRUBS, PERMANENT SEEDING, MULCHING, SODDING, RIPRAP) | STABILIZE ALL OPEN AREAS, INCLUDING BORROW AND SPOIL AREAS. REMOVE TEMPORARY CONTROL MEASURES AND STABILIZE. |

## RESPONSIBLE PARTY FOR EROSION CONTROL

COMPANY: LIONS TRAN INC.
NAME: MALHI KULWINDER
ADDRESS: 7655 E. US HWY 36
AVON, INDIANA 46123
PHONE: 317-989-1580

## EROSION CONTROL NOTES:

SOIL EROSION CONTROL SUMMARY:

1. CONTRACTOR SHALL INSTALL SODDING, INLET PROTECTION, AND FILTERS AS SHOWN.

2. MASS GRADE THE SITE (SIDES OF SWALES, MOUNDS AND PONDS TO BE SODDED OR SEEDED AND MULCHED IMMEDIATELY UPON COMPLETION). TEMPORARY SEEDING SHALL BE RECOMMENDED FOR ALL SWALES AND DISTURBED AREAS THAT CANNOT BE FINAL SEEDED WITHIN A TIME PERIOD THAT WILL PREVENT SOIL EROSION, FOR TEMPORARY SEEDING THE CONTRACTOR SHALL UTILIZE A FAST GROWING SEED OF EITHER OATS, ANNUAL RYE GRASS, WHEAT OR RYE DEPENDING UPON TIME OF YEAR. DISTURBED AREAS SHOULD BE KEPT TO A MINIMUM AT ALL TIMES.

3. CONTRACTOR SHALL CONTROL MUD ACCUMULATION ON ALL STREETS SURROUNDING THE PROJECT BY INSTALLING STONE SURFACE AT ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC LEAVES THE SITE. DUST SHALL BE KEPT TO A MINIMUM BY UTILIZING SPRINKLING, CALCIUM CHLORIDE, VEGETATIVE COVER, SPRAY ON ADDITIVES OR OTHER APPROVED METHODS.

4. MAINTAIN ALL FILTERS DURING CONSTRUCTION TO PREVENT ANY BLOCKAGES FROM ACCUMULATED SEDIMENT. ADDITIONAL SEEDING MAY BE REQUIRED DURING CONSTRUCTION AS SPECIFIED BY ENGINEER OR SOIL CONSERVATION SERVICE, RIPRAP SHALL BE PLACED IN AREAS OF HIGH VELOCITY STREAM FLOW (MINIMUM SIZE 1/3 CU.FT.). PAYMENT FOR ADDITIONAL RIPRAP NOT SHOWN ON PLANS AND SEEDING SHALL BE ON A UNIT BASIS.

5. CONTRACTOR SHALL INSTALL ALL STORM SEWER INLET FILTERS AS STORM SEWER SYSTEM IS INSTALLED.

6. ALL PROPOSED STREET AREAS TO BE PAVED AS SOON AS POSSIBLE AFTER SUBGRADE IS PREPARED.

7. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROLS ONLY WHEN THERE IS SUFFICIENT GROWTH OF GROUND COVER TO PREVENT FURTHER EROSION.

8. ALL SWALES SHALL BE SEEDED AND SODDED (AS INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN) IMMEDIATELY AFTER FINAL GRADING.

9. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE INDIANA HANDBOOK FOR EROSION CONTROL IN DEVELOPING AREAS, MOST RECENT EDITION.

MAINTENANCE:

INSPECT PERIODICALLY, ESPECIALLY AFTER STORM EVENTS, UNTIL THE STAND IS SUCCESSFULLY ESTABLISHED. (CHARACTERISTICS OF A SUCCESSFUL STAND INCLUDE: VIGOROUS DARK GREEN OR BLUISH-GREEN SEEDLINGS; UNIFORM DENSITY WITH NURSE PLANTS, LEGUMES, AND GRASSES WELL INTER-MIXED; GREEN LEAVES; AND THE PERENNIALS REMAINING GREEN THROUGHOUT THE SUMMER, AT LEAST AT THE PLANT BASE.)

PLAN TO ADD FERTILIZER THE FOLLOWING GROWING SEASON ACCORDING TO SOIL TEST RECOMMENDATIONS.

REPAIR DAMAGED, BARE, OR SPARSE AREAS BY FILLING ANY GULLIES, RE-FERTILINZING, OVER- OR RE-SEEDING, AND MULCHING.

IF PLANT COVER IS SPARSE OR PATCHY, REVIEW THE PLANT MATERIALS CHOSEN, SOIL FERTILITY, MOISTURE CONDITION, AND MULCHING AFTER RE-PREPARING THE SEEDBED.

IF VEGETATION FAILS TO GROW, CONSIDER SOIL TESTING TO DETERMINE ACIDITY OR NUTRIENT DEFICIENCY PROBLEMS. (CONTACT YOUR SWCD OR COOPERATIVE EXTENSION OFFICE FOR ASSISTANCE.)

IF ADDITIONAL FERTILIZATION IS NEEDED TO GET A SATISFACTORY STAND, DO SO ACCORDING TO SOIL TEST RECOMMENDATIONS.

EROSION CONTROL NOTES:

PRIOR TO ANY WORK BEING DONE, A TEMPORARY CONSTRUCTION ENTRANCE AND SILT FENCING SHALL BE INSTALLED.

AFTER COMPLETION OF A STORM STRUCTURE, THE CURB INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY.

UPON COMPLETION OF SWALES AND SIDE SLOPES, CONTRACTOR SHALL INSTALL THE EROSION CONTROL BLANKETS.

ALL AREAS NOT DENOTING PERMANENT SEEDING OR FIBER BLANKETS SHALL BE TEMPORARILY SEEDED.

THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR KEEPING THE EXISTING ROADWAYS CLEAR OF DIRT AND DEBRIS.

ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY INSPECTOR AS CONDITIONS WARRANT.

EROSION PROTECTION DURING CONSTRUCTION AND SEEDING:

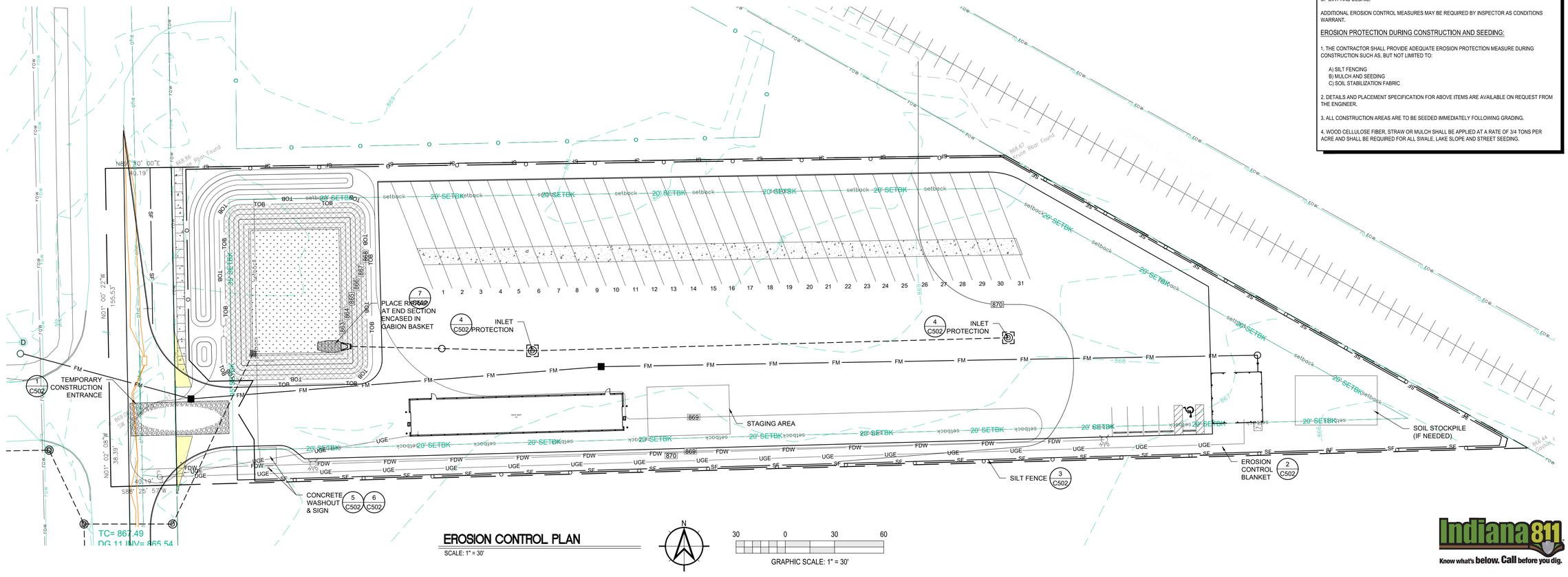
1. THE CONTRACTOR SHALL PROVIDE ADEQUATE EROSION PROTECTION MEASURE DURING CONSTRUCTION SUCH AS, BUT NOT LIMITED TO:

A) SILT FENCING
B) MULCH AND SEEDING
C) SOIL STABILIZATION FABRIC

2. DETAILS AND PLACEMENT SPECIFICATION FOR ABOVE ITEMS ARE AVAILABLE ON REQUEST FROM THE ENGINEER.

3. ALL CONSTRUCTION AREAS ARE TO BE SEEDED IMMEDIATELY FOLLOWING GRADING.

4. WOOD CELLULOSE FIBER, STRAW OR MULCH SHALL BE APPLIED AT A RATE OF 3/4 TONS PER ACRE AND SHALL BE REQUIRED FOR ALL SWALE, LAKE SLOPE AND STREET SEEDING.




## EROSION CONTROL PLAN

SCALE: 1" = 30'

Indiana 811 Know what's below. Call before you dig.


Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

EROSION CONTROL PLAN

BRYAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C302 |

# Construction Storm Water General Permit Index Sheet

| SECTION | TITLE | SHEET |
|---|---|---|
| A1 | Index of the location of required plan elements in the construction plan | C000 |
| A2 | A vicinity map depicting the project site location in relationship to recognizable local landmarks, towns, and major roads | C000 |
| A3 | Narrative of the nature and purpose of the project | C303 |
| A4 | Latitude and longitude to the nearest fifteen (15) seconds | C000 |
| A5 | Legal description of the project site | C201 |
| A6 | 11x17-inch plat showing building lot numbers/ boundaries and road layout/names | C303 |
| A7 | Boundaries of the one hundred (100) year flood plains, floodway fringes, and floodways | C301 |
| A8 | Land use of all adjacent properties | C303 |
| A9 | Identification of a U.S. EPA approved or established TMDL | C303 |
| A10 | Name(s) of the receiving water(s) | C303 |
| A11 | Identification of discharges to a water on the current 303(d) list of impaired waters and the pollutant(s) for which it is impaired | C303 |
| A12 | Soils map of the predominate soil types | C301 |
| A13 | Identification and location of all known wetlands, lakes, and water courses on or adjacent to the project site (construction plan, existing site layout) | C303 |
| A14 | Identification of any other state or federal water quality permits or authorizations that are required for construction activities | C303 |
| A15 | Identification and delineation of existing cover, including natural buffers | C301 |
| A16 | Existing site topography at an interval appropriate to indicate drainage patterns | C301 |
| A17 | Location(s) where run-off enters the project site | C301 |
| A18 | Location(s) where run-off discharges from the project site prior to land disturbance | C301 |
| A19 | Location of all existing structures on the project site | N/A |
| A20 | Existing permanent retention or detention facilities, including manmade wetlands, designed for the purpose of storm water management | N/A |
| A21 | Locations where storm water may be directly discharged into ground water, such as abandoned wells, sinkholes, or karst features | C303 |
| A22 | Size of the project area expressed in acres | C000 |
| A23 | Total expected land disturbance expressed in acres | C000 |
| A24 | Proposed final topography | C301 |
| A25 | Locations and approximate boundaries of all disturbed areas | C201 |
| A26 | Locations, size, and dimensions of all storm water drainage system such as culverts, storm water sewer, and conveyance channels | C301 |
| A27 | Locations of specific points where storm water and non-storm water discharges will leave the project site | C301 |
| A28 | Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, and common areas | C201 |
| A29 | Location of all on-site and off-site soil stockpiles and borrow areas | C302 |
| A30 | Construction support activities that are expected to be part of the project | N/A |
| A31 | Location of any in-stream activities that are planned for the project including, but not limited to, stream crossings and pump arounds | N/A |
| B1 | Description of the potential pollutant generating sources and pollutants, including all potential non-storm water discharges | C303 |
| B2 | Stable construction entrance locations and specifications | C302 |
| B3 | Specifications for temporary and permanent stabilization | C302 |
| B4 | Sediment control measures for concentrated flow areas | C301 |
| B5 | Sediment control measures for sheet flow areas | C302 |
| B6 | Run off control measures | C302 |
| B7 | Storm water outlet protection location and specifications | C302/501 |
| B8 | Grade stabilization structure locations and specifications | N/A |
| B9 | De-watering applications and management methods | C303 |
| B10 | Measures utilized for work within water bodies | N/A |
| B11 | Maintenance guidelines for each proposed storm water quality measure | C303 |
| B12 | Planned construction sequence that describes the implementation of storm water quality measures in relation to land disturbance | C303 |
| B13 | Provisions for erosion and sediment control on individual residential building lots regulated under the proposed project | N/A |
| B14 | Material handling and spill prevention and spill response plan meeting the requirements in 327 IAC 2-6.1 | C303 |
| B15 | Material handling and storage procedures associated with construction activity | C303 |
| C1 | Description of pollutants and their sources associated with the proposed land use | C303 |
| C2 | Description of proposed post-construction storm water measures | C303 |
| C3 | Plan details for each storm water measures | C301/501 |
| C4 | Sequence describing storm water measure implementation | C303 |
| C5 | Maintenance guidelines for proposed post-construction storm water measures | C303 |
| C6 | Entity that will be responsible for operation and maintenance of the post-construction storm water measures | C302 |

NOTES:
"NA" - NON APPLICABLE

## Construction Storm Water General Permit Notes Section A

**A1 - Index of the location of required plan elements in the construction plan:**

An index addressing the required elements within the drawing set is on C000 - Cover Sheet.

**A2 - A vicinity map depicting the project site location in relationship to recognizable local landmarks, towns, and major roads:**

A map showing the project in relationship to other areas of the county is on C000 - Cover Sheet.

**A3 - Narrative of the nature and purpose of the project:**

The project consists of the development of a new heavy duty asphalt parking lot with 36 truck and trailer stalls, a 2860 sq. ft. maintenance building, and 900 sq. ft. office building w/ employee parking. The site is located at 4005 North County Road 1000E in Brownsburg, Indiana 46112. Associated with the new improvements will be storm water management system consisting of overland flow, storm inlets, and retention/percolation basin with outlet control. (Shown on C303 - Construction Storm Water General Permit Notes).

**A4 - Latitude and Longitude:**

The latitude is 39°49'21"N and longitude is 86°20'42.19"W. (Shown on C000 - Cover Sheet)

**A5 - Legal description of the project site:**

A legal description of the overall parcel is on C201 - Site Plan

**A6 - 11 x 17-inch plat showing building lot numbers/boundaries and road layout/names:**

An 11x17 in. plan showing the overall property and new improvements is attached to this narrative.

**A7 - Boundaries of the one hundred (100) year floodplains, floodway fringes, and floodways:**

The 100 year floodway and floodway fringe is on C301 - Grading Plan and is based on best available information from the Indiana Department of Natural Resources.

**A8 - Land use of all adjacent properties:**

North - Commercial
South - Undeveloped/Woods
East - Railroad/Commercial
West - Residential/Agricultural
(Shown on C303 - Stormwater Pollution Prevention Plan)

**A9 - Identification of a U.S. EPA approved or established TMDL:**

Site to discharge stormwater into ground via percolation basin or through evaporation. Any dicharge via the emergency spillway will likely evaporate/percolate prior to being received by White Lick Creek (INW01D2_05) which is EPA 303d listed, but has no established TMDL (Shown on C304 - Construction Storm Water General Permit Notes)

**A10 - Name(s) of the receiving water(s):**

Receiving water is White Lick Creek (INW01D2_05) - (Shown on C303 - Stormwater Pollution Prevention Plan)

**A11 - Identification of discharges to a water on the current 303(d) list of impaired waters and the pollutant(s) for which it is impaired:**

The impaired condition of White Lick Creek is due to presence of Escherichia Coli (E. coli) (Noted on C304 - Construction Storm Water General Permit Notes)

**A12 - Soils map of the predominate soil types:**

The soils on this property are predominantly Brookston Silty Clay Loam-Urban Land Complex and Crosby Silt Loam.
Brookston Silty Clay Loam features wetness as the main limitation affecting use and management of this soil type. Crosby Silt Loam features slow permeability and available water capacity is high with moderate content of organic matter.

Both soils are fair to poor for use as subgrade material as well as shear strength, compaction, and stability, medium to high compressibility, moderate to low shrink-swell potential, subject to frost heave, and seasonal high water table. A soils map is on C301 - Grading Plan.

**A13 - Identification and location of all known wetlands, lakes, and water courses on or adjacent to the project site (construction plan, existing site layout)**

There are no known water courses on or adjacent to this site.

**A14 - Identification on any other state or federal water quality permits or authorizations that are required for construction activities:**

This phase of the project scope will not require any additional federal or state water permits as noted on C304 - Construction Storm Water General Permit Notes.

## Construction Storm Water General Permit Notes Section A (cont'd)

**A15 - Identification and delineation of existing cover, including natural buffers:**

The site is almost entirely covered with thick/heavy vegetation and trees with partial remnants of an existing gravel drive. The delineation of the various surface coverage is on C301 - Grading Plan.

**A16 - Existing site topography at interval appropriate to indicate drainage patterns:**

The existing site topography is largely flat with minor relief at the southeast of the site. The existing and proposed contours are on C301 - Grading Plan.

**A17 - Location(s) where run-off enters the project site:**

As referenced above, the topography in this area is largely flat resulting in little to no potential for run-off entering the site from adjacent property. The existing contours are on C301 - Grading Plan.

**A18 - Location(s) where run-off discharges from the project site prior to land disturbances:**

The existing site topography is largely flat with minor relief at the southeast of the site. The existing contours are on C301 - Grading Plan.

**A19 - Location(s) of all existing structures on the project site:**

The existing site is a vacant lot with no existing structures as depicted on C301 - Grading Plan.

**A20 - Existing permanent retention or detention facilities, including manmade wetlands, designed for the purpose of stormwater management:**

There are no existing retention facilities on site as depicted on C301 - Grading Plan.

**A21 - Locations where storm water may be directly discharged into ground water, such as abandoned wells, sinkholes, or karst features:**

There are no locations on property where storm water may directly discharge into the groundwater as illustrated on C301 - Grading Plan.

**A22 - Size of the project expressed in acres:**

The total project are if 3.07 acres as noted on C000 - Cover Sheet.

**A23 - Total expected land disturbance expressed in acres:**

The total disturbed area is 2.60 acres as noted on C000 - Cover Sheet.

**A24 - Proposed final topography:**

The final topography is on C301 - Grading Plan and is illustrated as spot elevations and contours.

**A25 - Locations and approximate boundaries of all disturbed areas:**

The total disturbed area is 2.60 acres as noted on C000 - Cover Sheet and shown as the Limits of Construction on C201 - Site Plan.

**A26 - Locations, size and dimensions of all stormwater drainage systems such as culverts, stormwater sewer, and conveyance channels:**

The stormwater is conveyed by overland flow, underground storm pipes, and retention pond. These are shown on C301 - Grading Plan.

**A27 - Locations of specific points where stormwater and non-stormwater discharges will leave the project site:**

Stormwater discharge from the site will be via an emergency spillway from the retention pond at the east end of the site and sanitary discharge will be via a pump and force main at the west end of the site.(Shown on C301 - Grading Plan & C402 Sanitary Force Main Plan & Profile.

**A28 - Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, and common areas:**

All the surface improvements including buildings, impervious areas, new surface finishes, etc. are on C201 - Site Plan for horizontal notations and C301 - Grading Plan for elevations.

**A29- Location of all on-site and off-site soil stockpiles and borrow areas:**

The soil storage area will be on site located at the east end of the site (west of the pond). All soil will be placed in the final location or hauled off upon completion of construction as shown on C302 - Erosion Control Plan.

**A30- Construction support activities that are expected to be part of the project**

Any construction support area will be within the limits of disturbance and used as directed by the contractor. Since they are within the limits of disturbance, there will be no impact sensitive areas.

**A31- Location of any on-stream activities that are planned for the project including, but not limited to, stream crossings and pump arounds:**

There are no in stream activities associated with this project.

## Construction Storm Water General Permit Notes Section B

**B1- Description of the potential pollutant generating sources and pollutants, including all potential non-storm water discharges:**

1. Concrete Washout Area: Specific concrete washout area shall be established and labeled.
   a) The specific concrete wash out will be in a provided lined roll off box at a specific location near the entrance to the job site.
   b) The lined roll off box will be placed on stable soil with a stone approach.
   c) Once the lined roll off box is full, it will be removed from the site and discarded as clean fill once solid. A new lined roll off box will replace the one removed.
2. Construction Mobile Equipment Fluid
   a) All fueling of equipment will be managed and completed on a stone surface.
   b) Daily observation of all equipment for inspection of leaks or potential leaks of any fluids.
   c) Any observed fluid leaks are to be handled immediately with the equipment being moved to a stable stone surface and placed out of operation until maintenance is completed.
   d) Spill kits are to be utilized once the equipment is moved to the stable stone surface to prevent leakage from penetrating the ground or impacting storm water runoff.
3. Construction Material Waste
   a) All material waste is to be placed in provided roll off boxes as it is generated.
   b) Full roll off boxes are to be removed and properly disposed of in a licensed facility.
   c) No debris is to be stored on the ground surface at any time.
   These items are noted on C303 - Stormwater Pollution Prevention Plan.

**B2- Stable construction entrance locations and specifications:**

A stable construction entrance consisting of compacted subgrade, filter fabric and #2 stone is to be used for all construction traffic entering / exiting the site. The stone surface is to be maintained with new stone as necessary to maintain a solid drive surface. The location of the temporary construction entrance is shown on C302 for plan view and Sheet C502 for detail.

**B3- Specifications for temporary and permanent stabilization:**

The provisions for temporary stabilization during construction as well as permanent stabilization are included in the drawing set. The information contains specific stabilization techniques for the conditions of the site as well as timing of installation.

For temporary construction stabilization, it is the Contractor responsibility to maintain the stabilization during the construction duration and until permanent stabilization is installed.

For permanent stabilization, it is expected installation to occur immediately after final grading of the soil surface. Permanent stabilization is to be maintained by the Owner until 75% effective cover is established on the soil surface.

The stabilization is noted on C302 - Erosion Control Plan.

**B4- Sediment control measures for concentrated flow areas:**

The concentrated flow is protected at the pond inlet with riprap of minimum size being 6 inches and at the emergency spillway with stone dam as shown on C301 - Grading Plan and details on C501 & C502 - Sections and Details.

**B5- Sediment control measures for sheet flow areas:**

Sediment control for sheet flow is handled at the project perimeter with silt fence. (Shown on C302 - Erosion Control Plan).

**B6- Run-off control measures:**

Sediment control for sheet flow is handled at the project perimeter with silt fence. (Shown on C302 - Erosion Control Plan).

**B7- Stormwater outlet protection location and specifications:**

The concentrated flow is protected at the pond outlet with the previously mentioned rock dam as shown on C302 - Erosion Control Plan.

**B8- Grade stabilization structure locations and specifications:**

The grade on the site is largely flat and remain so post construction. There are no stabilization structures planned for this project as illustrated on C301 - Grading Plan.

**B9- Dewatering applications and management methods:**

Any dewatering required will be directed to the low area of the site (east) where it can percolate into existing soil. The use of sump pumps can be used to dewater where necessary. (Noted C303 - Stormwater Pollution Prevention Plan)

**B10- Measures utilized for work within waterbodies:**

This is not applicable to this project. (Noted C303 - Stormwater Pollution Prevention Plan)

**B11- Maintenance guidelines for each proposed stormwater quality measure:**

Silt fence both surrounding the site and at each protected inlet is to be inspected weekly and after storm events. Breaks, tears, or damaged silt fence is to be replaced immediately. Erosion control blankets are to be inspected weekly and after storm events. Damaged areas are to be repaired by re-securing displaced matting, replacing torn areas, and or removing debris to ensure vegetation growth. Concrete washouts are to be inspected daily to ensure there are no tears, structural damage, or leaks. Damaged concrete washouts are to be repaired.

**B12- Planned construction sequence that describes the implementation of stormwater quality measures in relation to land disturbance:**

The construction sequence for installation of the erosion control measures and stormwater pollution prevention devices are detailed on C302 - Erosion Control Plan. A pre-construction meeting is to be scheduled with the Town of Brownsburg a minimum of 48 hours prior to the start of construction. Per the IDEM CSGP Section 6.4(a)(9)(B) a notice of termination shall be verified by the local MS4 before submittal to IDEM. The town of Brownsburg shall be contacted prior to filing of the Notice of Termination to verify eligibility, for termination of permit coverage.

**B13- Provisions for erosion and sediment control on individual residential building lots regulated under the proposed project:**

Not applicable to this project. (Noted C303 - Stormwater Pollution Prevention Plan)

**B14- Material handling and spill prevention and spill response plan meeting the requirements in 327 IAC 2-6.1:**

The potential materials on site that could cause a spill response include fuels, petroleum fluids or other liquids as part of the construction equipment on site. If a spill occurs, immediate determination of the extent and emergency response requirements should be determined. Immediate containment of the spill with onsite spill kits should be completed. Once the spill is contained, contact is to be made to the Indiana Dept. of Environmental Mgmt., Office of Land Quality, Emergency Response Section: 1-888-233-7745 for in-state calls (toll free) within two hours of the spill. The contact should include the likelihood of damage to the waterways of the State of Indiana. This information is noted on C303 - Stormwater Pollution Prevention Plan.

**B15- Material handling and storage procedures associated with construction activity:**

All construction debris and wastes are to be loaded directly into provided roll off boxes for proper disposal off site. In no terms is debris or waste to be stored on site awaiting disposal or burned on property. Liquid wastes such as concrete wash out is to be disposed in the appropriate concrete wash out lined roll off boxes as provided. This includes any mortar/masonry/concrete grout material. Once these containers are full, they are to be removed from the site and disposed of in a licensed facility. Roll off boxes are to be rotated empty for full boxes for the entire project duration.

## Construction Storm Water General Permit Notes Section C

**C1- Description of pollutants and their sources associated with the proposed land use:**

The post construction land use will have potential contaminants such as fuels, oils, grease, tires and other mobile equipment fluids. All materials, including mobile equipment will be stored on impervious surfaces during non-use or operation. (Noted on C303 - Stormwater Pollution Prevention Plan)

**C2- Description of proposed post-construction stormwater measures:**

The post construction contaminants are minimized by impervious surfaces being directed to a hydrodynamic separator designed to collect sediment and pollutants prior to entering the bioretention pond. This helps alleviate any debris that may overtop the emergency spillway. (Noted C303 - Stormwater Pollution Prevention Plan)

**C3- Plan details for each stormwater measure:**

The post construction stormwater measures is primarily a hydrodynamic separator and bioretention pond as shown on C301 - Grading Plan and L101 - Landscape Plan.

**C4- Sequence describing stormwater measure implementation:**

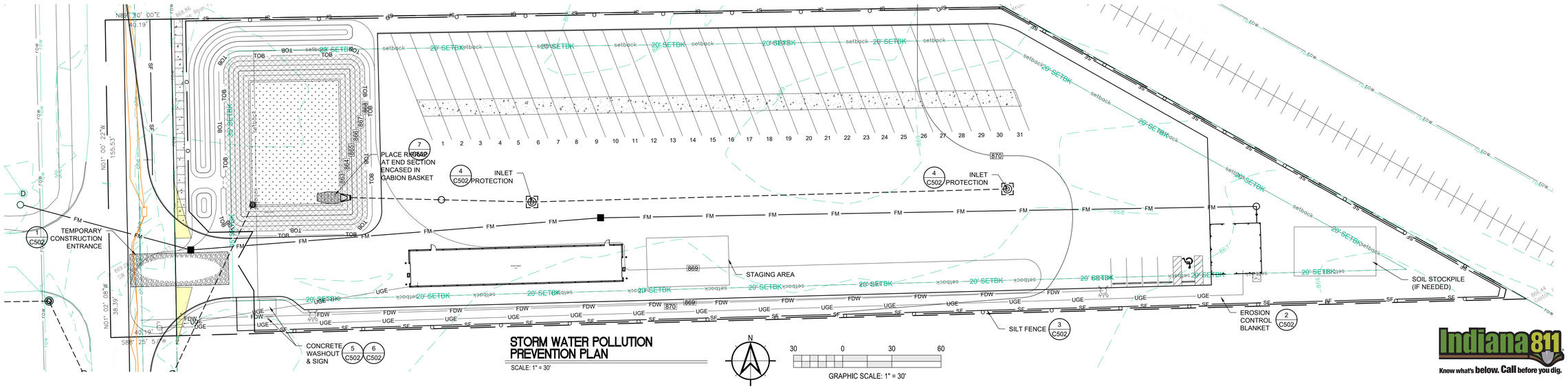
The sequence of installation for the post construction stormwater measure is part of construction sequencing shown C302 - Erosion Control Plan.

**C5- Maintenance guidelines for proposed post-construction stormwater measures:**

An operations and maintenance manual are part of the submittal information under separate documentation.

**C6- Entity that will be responsible for operation and maintenance of the post-construction stormwater measures:**

The responsible person for the post construction stormwater measures is the property owner as noted on C302 - Erosion Control Plan.




## STORM WATER POLLUTION PREVENTION PLAN

SCALE: 1" = 30'

GRAPHIC SCALE: 1" = 30'

Indiana 811 Know what's below. Call before you dig.


Moench Engineering
*4000 Clarks Creek Road*
*Plainfield, Indiana 46168*
*(317) 837-2767*
*(317) 837-7266 (Fax)*



THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
*MOENCH ENGINEERING, P.C.*
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
*MOENCH ENGINEERING, P.C.*
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.


# LIONS TRANS INC. (BROWNSBURG)

4005 N CR 1000 E
BROWNSBURG, IN 46122

STORM WATER POLLUTION PREVENTION PLAN

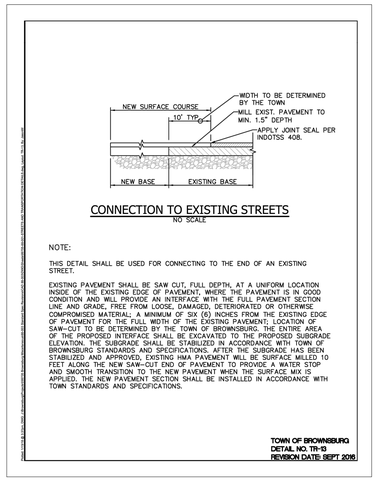
BRYAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER

Bryan E. Moench

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C303 |




## CONNECTION TO EXISTING STREETS
NO SCALE

NOTE:

THIS DETAIL SHALL BE USED FOR CONNECTING TO THE END OF AN EXISTING STREET.

EXISTING PAVEMENT SHALL BE SAW CUT, FULL DEPTH, AT A UNIFORM LOCATION INSIDE OF THE EXISTING EDGE OF PAVEMENT, WHERE THE PAVEMENT IS IN GOOD CONDITION AND WILL PROVIDE AN INTERFACE WITH THE FULL PAVEMENT SECTION LINE AND GRADE, FREE FROM LOOSE, DAMAGED, DETERIORATED OR OTHERWISE COMPROMISED MATERIAL. A MINIMUM OF SIX (6) INCHES FROM THE EXISTING EDGE OF PAVEMENT FOR THE FULL WIDTH OF THE EXISTING PAVEMENT; LOCATION OF SAW-CUT TO BE DETERMINED BY THE TOWN OF BROWNSBURG. THE ENTIRE AREA OF THE PROPOSED INTERFACE SHALL BE EXCAVATED TO THE PROPOSED SUBGRADE ELEVATION. THE SUBGRADE SHALL BE STABILIZED IN ACCORDANCE WITH TOWN OF BROWNSBURG STANDARDS AND SPECIFICATIONS. AFTER THE SUBGRADE HAS BEEN STABILIZED AND APPROVED, EXISTING HMA PAVEMENT WILL BE SURFACE MILLED 10 FEET ALONG THE NEW SAW-CUT END OF PAVEMENT TO PROVIDE A MATER STOP AND SMOOTH TRANSITION TO THE NEW PAVEMENT WHEN THE SURFACE MIX IS APPLIED. THE NEW PAVEMENT SECTION SHALL BE INSTALLED IN ACCORDANCE WITH TOWN STANDARDS AND SPECIFICATIONS.

**TOWN OF BROWNSBURG**
**DETAIL NO. TR-13**
**REVISION DATE: SEPT 2016**

## HANDICAP RAMP
NOT TO SCALE — 11 / C501

SECTION 02504 – ADJACENT ROADWAY IMPROVEMENTS

PART 1 - GENERAL

1.01 Roadways adjacent to proposed developments shall conform to the following requirements and standards.

A. Adjacent Roadway Improvements

1. Developers shall be responsible for improvements to the existing roadway(s) that front their property. These improvements shall include, but are not limited to, the following items:
   a. Construction of acceleration lanes, deceleration lanes, and passing blisters for each entrance or street intersection as indicated in the Standard Details.
   b. In order to construct adequate acceleration lanes, deceleration lanes, and passing blisters, right-of-way shall be obtained which has a width consistent with the most current accepted Thoroughfare Plan.
   c. The existing roadway along the development frontage shall be widened to match the width requirements based on the functional classification of the roadway as defined by the Thoroughfare Plan. Once widened, the entire roadway fronting the development shall be resurfaced for consistency.
2. Additional improvements may be required depending on field conditions and as determined by the Town of Brownsburg.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

PART 4 - FIGURES

4.01 Associated Standard Details

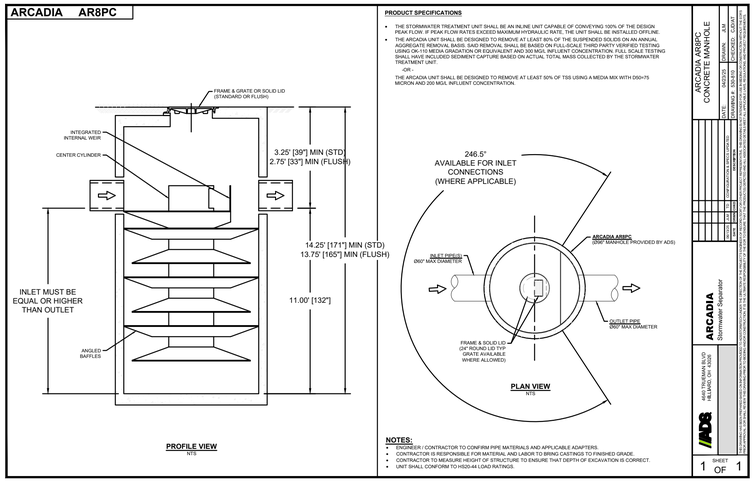
| Detail No. | Description |
|---|---|
| TR-01 | Concrete Chair Back Curb & Gutter |
| TR-02 | Concrete Roll Curb & Gutter |
| TR-03 | Driveway Curb Cut |
| TR-04 | Curb Inlet Detail |
| TR-05 | Concrete Center Curb |
| TR-09 | Concrete Driveway |
| TR-13 | Connection to Existing Streets |
| TR-14 | Widening Detail |
| TR-16 | Minimum Entrance Requirements |



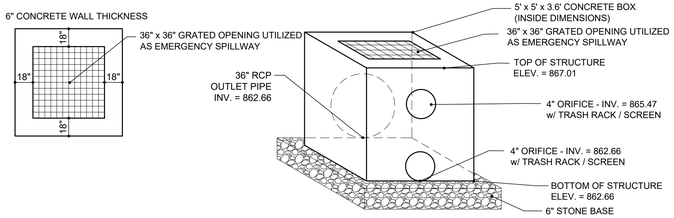
| | |
|---|---|
| TR-17 | Roadway Improvements at New Development Entrances |
| RS-01 | Typical Cross Sections – Primary Arterials A1 and A2 |
| RS-02 | Typical Cross Sections – Primary Arterials B1 and B2 |
| RS-03 | Typical Cross Sections – Primary Arterials C1 and C2 |
| RS-04 | Typical Cross Sections – Secondary Arterials 1 and 2 |
| RS-05 | Typical Cross Sections – Collectors 1 and 2 |
| RS-06 | Typical Cross Sections – Neighbor Collectors 1 and 2 |
| RS-07 | Typical Cross Sections – Local 1 (No Parking), Local 2 (Parking Both Sides) and Local 3 (Parking One Side) |
| RS-08 | Typical Trail Cross Section |
| RS-09 | Typical Cross Section – Local Street with Roadside Ditch |
| RS-10 | Typical Cross Sections – Local Alternatives |

END OF SECTION 02504



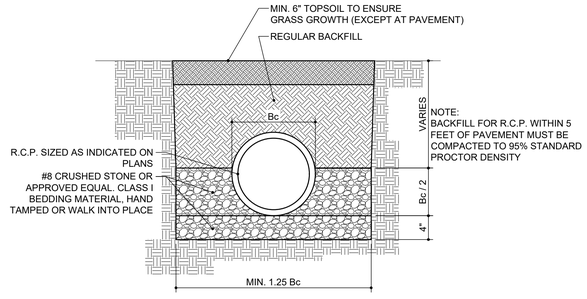


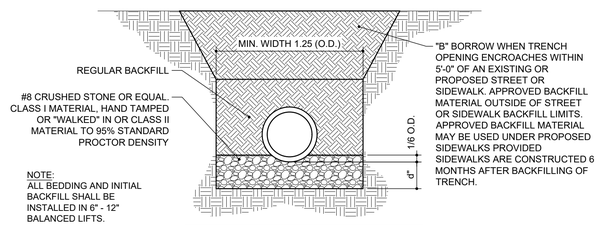

## ARCADIA AR8 HYDRODYNAMIC SEPARATOR DETAIL
NOT TO SCALE — 10 / C501




NOTE:
OPENINGS TO BE COVERED UNTIL COMPLETION OF CONSTRUCTION TO PREVENT SILT AND OTHER DEBRIS FROM PASSING THROUGH.

## OUTLET STRUCTURE DETAIL
NOT TO SCALE — 9 / C501



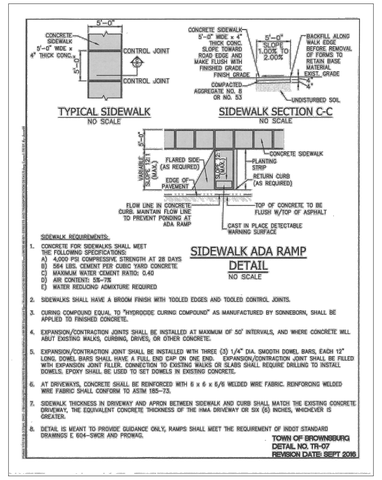

NOTE:
ALL BEDDING AND INITIAL BACKFILL SHALL BE INSTALLED IN 6" - 12" BALANCED LIFTS.

Bc = OUTSIDE DIAMETER
D = INSIDE DIAMETER
d = DEPTH OF BEDDING MATERIAL BELOW PIPE

A MIN. 9" CLEARANCE SHALL BE PROVIDED ON EACH SIDE OF THE INSTALLED PIPE

| PIPE SIZE (D) | 27" OR LESS | 30" TO 60" | 66" AND UP |
|---|---|---|---|
| BEDDING BELOW THE PIPE BARREL 6" MINIMUM | 3" | 4" | 6" |

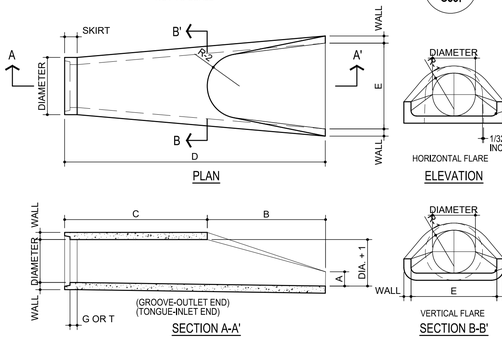
## R.C.P. PIPE TRENCH DETAIL
NOT TO SCALE — 8 / C501




SIDEWALK REQUIREMENTS:
1. CONCRETE FOR SIDEWALKS SHALL MEET THE FOLLOWING SPECIFICATIONS:
   A) 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS
   B) 564 LBS. CEMENT PER CUBIC YARD CONCRETE
   C) MAXIMUM WATER CEMENT RATIO: 0.40
   D) AIR CONTENT: 5%~7%
   E) WATER REDUCING ADMIXTURE REQUIRED
2. SIDEWALKS SHALL HAVE A BROOM FINISH WITH TOOLED EDGES AND TOOLED CONTROL JOINTS.
3. CURING COMPOUND EQUAL TO "HYDROCIDE CURING COMPOUND" AS MANUFACTURED BY SONNEBORN, SHALL BE APPLIED TO FINISHED CONCRETE.
4. EXPANSION/CONTRACTION JOINTS SHALL BE INSTALLED AT MAXIMUM OF 50' INTERVALS, AND WHERE CONCRETE WILL ABUT EXISTING WALKS, CURBING, DRIVES, OR OTHER CONCRETE.
5. EXPANSION/CONTRACTION JOINT SHALL BE INSTALLED WITH THREE (3) 1/4" DIA. SMOOTH DOWEL BARS, EACH 12" LONG. DOWEL BARS SHALL HAVE A FULL END CAP ON ONE END. EXPANSION/CONTRACTION JOINT SHALL BE FILLED WITH EXPANSION JOINT FILLER. CONNECTION TO EXISTING WALKS OR SLABS SHALL REQUIRE DRILLING TO INSTALL DOWELS. EPOXY SHALL BE USED TO SET DOWELS IN EXISTING CONCRETE.
6. AT DRIVEWAYS, CONCRETE SHALL BE REINFORCED WITH 6 x 6 x 6.0 WELDED WIRE FABRIC. REINFORCING WELDED WIRE FABRIC SHALL CONFORM TO ASTM 185–73.
7. SIDEWALK THICKNESS IN DRIVEWAY AND APRON BETWEEN SIDEWALK AND CURB SHALL MATCH THE EXISTING CONCRETE DRIVEWAY, THE EQUIVALENT CONCRETE THICKNESS OF THE HMA DRIVEWAY OR SIX (6) INCHES, WHICHEVER IS GREATER.
8. DETAIL IS MEANT TO PROVIDE GUIDANCE ONLY, RAMPS SHALL MEET THE REQUIREMENT OF INDOT STANDARD DRAWINGS E 604–SWDS AND PROWAG.

**TOWN OF BROWNSBURG**
**DETAIL NO. TR-07**
**REVISION DATE: SEPT 2016**

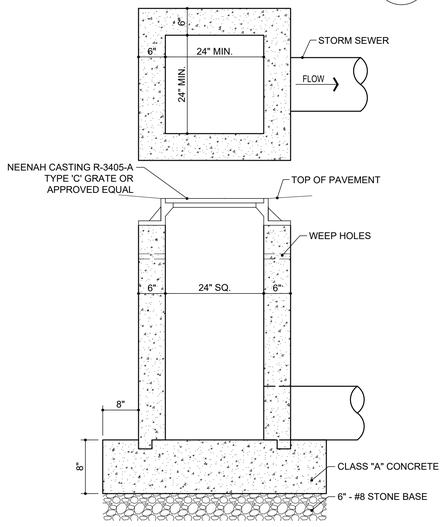
## HANDICAP RAMP
NOT TO SCALE — 7 / C501



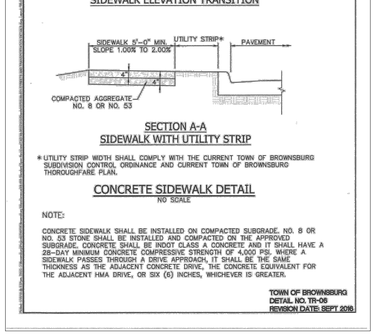

| SIZE SCHEDULE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DIA. | WALL | G or T | WT. SEC | A | B | C | D | E | DIA.+1 | R-1 | R-2 | SKIRT |
| 12 | 2 | 1~8 | 530 | 4 | 24 | 48~1 | 72~1 | 24 | 13 | 10~1 | 9 | 3~8 |
| 15 | 2~4 | 2 | 740 | 6 | 27 | 46 | 73 | 30 | 16 | 12~8 | 11 | 3~8 |
| 18 | 2~8 | 2~8 | 990 | 9 | 27 | 46 | 73 | 36 | 19 | 15~8 | 12 | 4 |
| 21 | 2~∞ | 2~4 | 1280 | 9 | 35 | 38 | 73 | 42 | 22 | 16~2 | 13 | 4 |
| 24 | 3 | 2~8 | 1520 | 9~8 | 43~8 | 30 | 73~8 | 48 | 25 | 16~q | 14 | 4~8 |

NOTE: MANUFACTURER OF END SECTION IS IN ACCORDANCE WITH APPLICABLE PORTIONS OF A.S.T.M. SPECIFICATION C76.

## CONCRETE END SECTION
NOT TO SCALE — 6 / C501




## TYPA 'E' MODIFIED STORM CATCHBASIN
3/4" = 1'-0" — 5 / C501



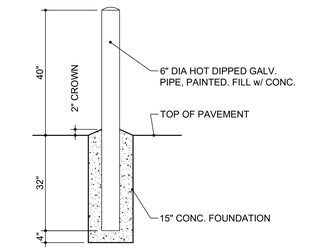

## CONCRETE SIDEWALK DETAIL
NO SCALE

NOTE:

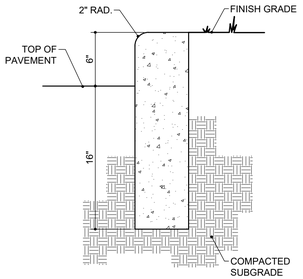
CONCRETE SIDEWALK SHALL BE INSTALLED ON COMPACTED SUBGRADE. NO. 8 OR NO. 53 STONE SHALL BE INSTALLED AND COMPACTED ON THE APPROVED SUBGRADE. CONCRETE SHALL BE INDOT CLASS A CONCRETE AND IT SHALL HAVE A 28-DAY MINIMUM CONCRETE COMPRESSIVE STRENGTH OF 4,000 PSI. WHERE A SIDEWALK PASSES THROUGH A DRIVE APPROACH, IT SHALL BE THE SAME THICKNESS AS THE ADJACENT CONCRETE DRIVE. THE CONCRETE EQUIVALENT FOR THE ADJACENT HMA DRIVE, OR SIX (6) INCHES, WHICHEVER IS GREATER.

**TOWN OF BROWNSBURG**
**DETAIL NO. TR-06**
**REVISION DATE: SEPT 2016**

## CONCRETE SIDEWALK
NOT TO SCALE — 4 / C501

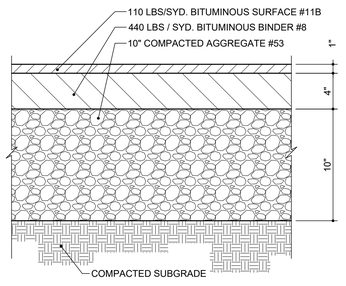



## PIPE BOLLARD
1/2" = 1'-0" — 3 / C501




CURB SHALL HAVE 1/2" EXPANSION JOINTS @ 48'-0" MAX. AND @ ENDS OF RADII. CONTROL JOINTS SHALL BE PLACED @ 10'-0 MAX. UNLESS OTHERWISE NOTED.

## STRAIGHT CURB
1 1/2" = 1'-0" — 2 / C501




## HEAVY DUTY ASPHALT
1 1/2" = 1'-0" — 1 / C501

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

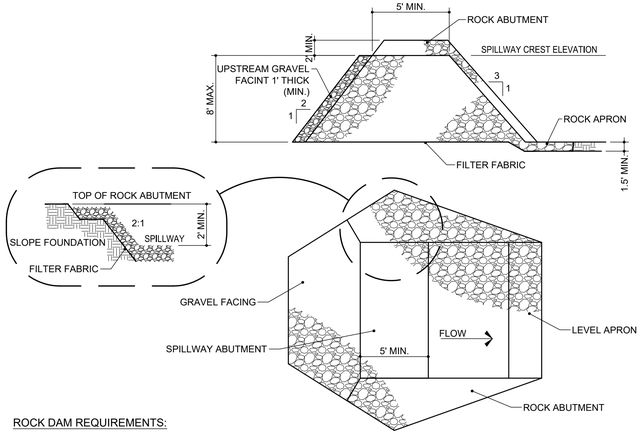
# LIONS TRANS INC. (BROWNSBURG)
4005 N CR 1000 E
BROWNSBURG, IN 46122

SECTIONS AND DETAILS

BRIAN EDWARD MOENCH — REGISTERED — No. PE9500048 — STATE OF INDIANA — PROFESSIONAL ENGINEER

| REVISIONS: | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C501 |




## ROCK DAM REQUIREMENTS:

1. CONTRIBUTING DRAINAGE AREA: 50 ACRES MAXIMUM

2. DESIGN LIFE: LIMITED TO 3 YRS.

3. SEDIMENT STORAGE: 1,800 CU.FT./ACRE DISTURBED (MINUMUM) MEASURED 1 FT. BELOW SPILLWAY CREST.

4. BASIN SHAPE: MINIMUM 2:1 LENGTH-TO-WIDTH RATIO.

5. BASIN AREA: VARIABLE; THE LARGER THE SURFACE AREA THE GREATER THE TRAPPING EFFICIENCY.

6. DAM CREST HEIGHT: LIMITED TO 8 FT.

7. SPILLWAY CAPACITY: PEAK RUNOFF FROM A 10-YR. FREQUENCY, 24-HR. DURATION STORM EVENT, A MAXIMUM FLOW DEPTH OF 1 FT. AND MINIMUM FREEBOARD OF 1 FT. (ENTIRE LENGTH OF DAM BETWEEN ROCK ABUTMENTS MAY SERVE AS SPILLWAY.)

8. DAM DIMENSIONS: TOP WIDTH, 5 FT. MINIMUM; SIDE SLOPES, 2:1 OR FLATTER UPSTREAM, 3:1 OR FLATTER DOWNSTREAM.

9. EARTH ABUTMENTS: SMOOTH, STABLE, 2:1 OR FLATTER SLOPES.

10. ROCK ABUTMENTS (TO PROTECT EARTH ABUTMENTS): EXTENDED ALONG DOWNSTREAM FACE TO TOE OF DAM AND AT LEAST 1 FT. HIGHER THAN SPILLWAY FACE AT ALL POINTS, 2 FT. ABOVE SPILLWAY CREST, AND 1 FT. THICK, WITH 2:1 OR FLATTER SIDE SLOPES.
11. OUTLET PROTECTION: ROCK APRON, 1-1/2 FT. THICK (MINIMUM), ZERO GRADE, WITH LENGTH EQUAL TO HEIGHT OF DAM OR EXTENDED TO STABLE GRADE, WHICHEVER IS GREATER.

12. ROCK MATERIAL: INDOT REVETMENT RIPRAP.

13. PROTECTION FROM PIPING: GEOTEXTILE FABRIC FOR SEPARATION AND FILTRATION COVERING ENTIRE FOUNDATION, INCLUDING EARTH ABUTMENTS AND APRON.

14. BASIN DE-WATERING: THROUGH A 1 FT. THICK LAYER OF INDOT CA NO. 5 STONE ON UPSTREAM FACE OF THE DAM.

INSTALLATION

SITE PREPARATION:

1. DIVERT RUNOFF FROM UNDISTURBED AREAS AWAY FROM THE ROCK DAM AND BASIN AREA.

2. EXCAVATE THE FOUNDATION FOR THE APRON, USING IT AS A TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION OF THE DAM.

3. CLEAR AND GRUB THE AREA UNDER THE DAM, REMOVING AND PROPERLY DISPOSING OF ALL ROOT MAT, BRUSH, AND OTHER DEBRIS.

4. GRADE THE EARTH ABUTMENTS NO STEEPER THAN 2:1.

DAM AND BASIN CONSTRUCTION

1. EXCAVATE A CUTOFF TRENCH AT THE CENTER LINE OF THE DAM, EXTENDING ALL THE WAY UP THE EARTH ABUTMENTS, AND BACKFILL WITH COMPACTED EARTH FILL.

2. SMOOTH THE DAM FOUNDATION.

3. COVER THE ENTIRE FOUNDATION, INCLUDING BOTH EARTH ABUTMENTS, WITH GEOTEXTILE FABRIC, MAKING SURE THE UPSTREAM STRIPS OVERLAP THE DOWNSTREAM STRIPS AT LEAST 1 FT.

4. CONSTRUCT THE DAM TO PLANNED DIMENSIONS.

5. ONCE THE DAM IS IN PLACE, CLEAR THE SEDIMENT BASIN AREA, PROPERLY DISPOSING OF THE CLEARED MATERIAL.

6. SET A MARKER STAKE TO INDICATE THE CLEANOUT ELEVATION (I.E., POINT AT WHICH THE BASIN IS 50% FULL OF SEDIMENT).

7. DIVERT CONSTRUCTION SITE RUNOFF FLOW INTO THE UPPER END OF THE BASIN USING TEMPORARY DIVERSIONS.

8. STABILIZE ALL DISTURBED AREAS EXCEPT THE LOWER HALF OF THE BASIN.

SAFETY PRECAUTIONS:

1. BECAUSE SEDIMENT BASINS THAT IMPOUND WATER ARE HAZARDOUS, (A) BE SURE SIDE SLOPES ARE 2:1 OR FLATTER, (B) FENCE WITH WARNING SIGNS IF TRESPASSING IS LIKELY, (C) DE-WATER THE BASIN BETWEEN STORM EVENTS, AND (D) FOLLOW ALL STATE AND LOCAL IMPOUNDMENT SITE REQUIREMENTS.

MAINTENANCE

1. INSPECT THE ROCK DAM AND BASIN AFTER EACH STORM EVENT.

2. REMOVE SEDIMENT WHEN IT ACCUMULATES TO HALF THE DESIGN VOLUME (MARKED BY A STAKE).

3. CHECK THE DAM AND ABUTMENTS FOR EROSION, PIPING, OR ROCK DISPLACEMENT, AND REPAIR IMMEDIATELY.

4. IF THE BASIN DOES NOT DRAIN BETWEEN STORMS, REPLACE THE STONE ON THE UPSTREAM FACE OF THE DAM.

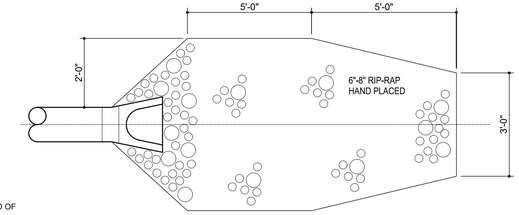
5. IF THE BASIN DRAINS TOO RAPIDLY FOLLOWING A STORM (I.E., LESS THAN 6 HRS.), ADD INDOT CA NO. 5 GRAVEL ON THE UPSTREAM FACE OF THE DAM.

6. ONCE THE CONTRIBUTING ŷŷŷŷŷŷŷŷDRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, (A) REMOVE WATER AND SEDIMENT FROM THE BASIN;

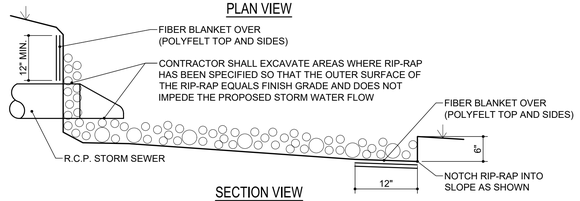
(B) REMOVE THE DAM, DISPOSING OF THE ROCK IN DESIGNATED DISPOSAL AREAS; (C) SMOOTH THE SITE TO BLEND WITH THE SURROUNDING AREA; AND (D) STABILIZE.

COMMON CONCERNS:
FAILURE FROM PIPING ALONG ABUTMENTS-BECAUSE THE FILTER MATERIAL WAS NOT PROPERLY INSTALLED OR THE EARTH ABUTMENTS ARE TOO STEEP. STONE DISPLACEMENT FROM FACE OF DAM-BECAUSE STONE SIZE IS TOO SMALL OR THE FACE IS TOO STEEP. EROSION BELOW DAM BECAUSE THE APRON WAS NOT EXTENDED TO STABLE GRADE. EROSION OF ABUTMENTS DURING SPILLWAY FLOW-BECAUSE THE ROCK ABUTMENT IS NOT HIGH ENOUGH. SEDIMENT CARRIED THROUGH SPILLWAY-BECAUSE THE DRAINAGE AREA IS TOO LARGE; TO SOLVE, DIVERT RUNOFF FROM THE UNDISTURBED AREA AWAY FROM THE BASIN. SEDIMENT LOSS THROUGH DAM-BECAUSE THE LAYER OF AGGREGATE ON THE UPSTREAM FACE IS NOT THICK ENOUGH OR IS TOO COARSE TO RESTRICT FLOW THROUGH THE DAM.

## ROCK DAM
NOT TO SCALE — 8 — C502




PLAN VIEW




SECTION VIEW

## RIP-RAP REQUIREMENTS:

CONTRIBUTING DRAINAGE AREA: 100 ACRES MAXIMUM.

CAPACITY: PEAK RUNOFF FROM 10-YR. FREQUENCY, 24-HR. DURATION STORM EVENT.

APRON: DESIGN DEPENDS ON CHANNEL DEFINITION, BUT IS LONG ENOUGH TO DISSIPATE RUNOFF ENERGY, SET ON ZERO GRADE, STRAIGHT AND ALIGNED WITH THE RECEIVING STREAM. (IF SITE CONDITIONS REQUIRE A CURVE, SET IT NEAR THE UPSTREAM END.)

FOUNDATION: GEOTEXTILE FABRIC FOR STABILIZATION AND FILTRATION OR WELL-GRADED GRAVEL FILTER LAYER AT LEAST 6 IN. THICK.

MATERIAL: HARD, ANGULAR, AND HIGHLY WEATHER-RESISTANT RIPRAP STONE OF 6 - 8 INCHES IN SIZE.

THICKNESS: 12 IN. MINIMUM OR TWO TIMES THE D 50 STONE DIAMETER,wHICHEVER IS GREATER.

## INSTALLATION:

1. EXCAVATE THE APRON AREA SUBGRADE BELOW DESIGN ELEVATION TO ALLOW FOR THICKNESS OF THE FILTER (OR GRAVEL LAYER) AND THE RIPRAP. (THIS OVER-EXCAVATION GREATLY INCREASES THE AMOUNT OF SPOIL.)

2. COMPACT ANY FILL USED IN THE SUBGRADE TO THE DENSITY OF THE SURROUNDING UNDISTURBED MATERIAL, AND SMOOTH ENOUGH TO PROTECT FABRIC FROM TEARING.

3. PLACE THE GEOTEXTILE FABRIC (OR GRAVEL LAYER) ON THE COMPACTED AND SMOOTHED FOUNDATION. IF MORE THAN ONE FABRIC PIECE IS NEEDED, THE UPSTREAM PIECE SHOULD OVERLAP THE DOWNSTREAM PIECE BY AT LEAST 1 FT.

4. INSTALL THE RIPRAP TO THE LINES AND ELEVATIONS SHOWN IN THE DESIGN. IF THE CHANNEL IS POORLY DEFINED, THE FINAL CROSS-SECTION SHOULD BE LEVEL OR SLIGHTLY DEPRESSED IN THE MIDDLE; IF WELL DEFINED, THE FILTER (OR GROUND LAYER) AND RIPRAP SHOULD EXTEND TO THE TOP OF THE BANK.

5. IF THE GEOTEXTILE FABRIC TEARS WHEN PLACING TH RIPRAP, REPAIR IMMEDIATELY BY LAYING AND STAPLING A PIECE OF FABRIC OVER THE DAMAGE AREA, OVERLAPPING THE UNDAMAGED AREAS BY AT LEAST 12 INCHES.

6. MAKE SURE THE TOP OF THE RIPRAP APRON IS LEVEL WITH OR SLIGHTLY BELOW THE RECEIVING STREAM. (RIPRAP SHOULD NOT RESTRICT THE CHANNEL OR PRODUCE AN OVERFALL.)

7. BLEND THE RIPRAP SMOOTHLY TO THE SURROUNDING GRADE.

8. STABILIZE ALL DISTURBED AREAS IMMEDIATELY FOLLOWING INSTALLATION.

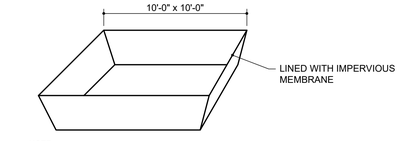
## MAINTENANCE:

* INSPECT ROCK CHUTES AFTER STORM EVENTS FOR STONE DISPLACEMENT AND FOR EROSION AT THE SIDES AND ENDS OF THE APRON.
* MAKE NEEDED REPAIRS IMMEDIATELY; USE APPROPRIATE SIZE STONE; AND DO NOT PLACE THEM ABOVE FINISHED GRADE.

## COMMON CONCERNS:

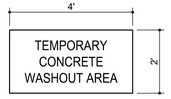
FOUNDATION NOT EXCAVATED DEEP ENOUGH OR WIDE ENOUGH--RIPRAP RESTRICTS THE FLOW CROSS SECTION, RESULTING IN EROSION AROUND THE APRON AND SCOUR HOLES AT THE OUTLET.
RIPRAP APRON ON ZERO GRADE--

## RIP-RAP DETAIL
NOT TO SCALE — 7 — C502



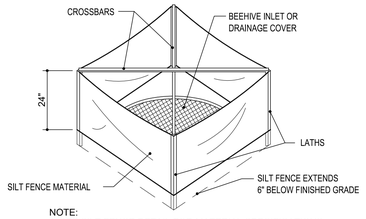

NOTE:
1. A LINED ROLLOFF DUMPSTER OR CONTAINER TO BE USED IN LIEU OF A CONSTRUCTED WASHOUT BASIN.

## CONCRETE WASHOUT BASIN
NOT TO SCALE — 6 — C502



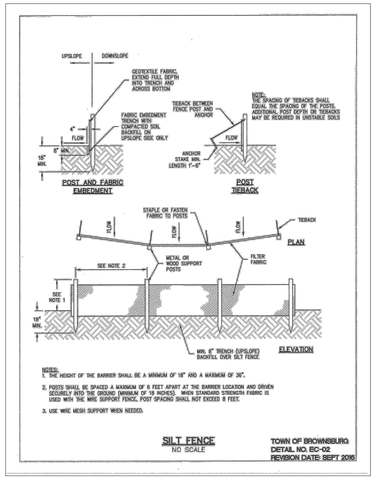

NOTES:
1. SIGN TO BE POSTED THROUGHOUT CONSTRUCTION ACTIVITY.
2. SIGN TO BE MADE OF SEMI-PERMANENT MATERIAL, i.e. WOOD.

## CONCRETE WASHOUT SIGN
NOT TO SCALE — 5 — C502

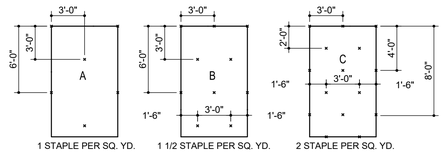



NOTE:
1. SEE SILT FENCE DETAIL FOR MATERIAL SPECIFICATIONS.
2. SILT FENCE SHALL BE PREASSEMBLED BY SUPPLIER.

## SILT FENCE INLET PROTECTION DETAIL
NOT TO SCALE — 4 — C502

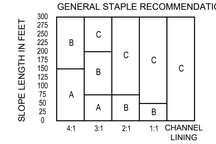



## SILT FENCE DETAIL
NOT TO SCALE — 3 — C502

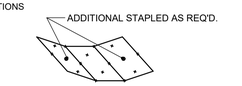



1 STAPLE PER SQ. YD. | 1 1/2 STAPLE PER SQ. YD. | 2 STAPLE PER SQ. YD.

GENERAL STAPLE RECOMMENDATIONS




SLOPE GRADIENT




CHANNEL LININGS UTILIZE STAPLE PATTERN "C" WITH ADDITIONAL STAPLES ON SIDE SLOPES.

## NOTES:
1. STAPLE PATTERNS APPLY TO ALL NORTH AMERICAN GREEN EROSION BLANKETS.

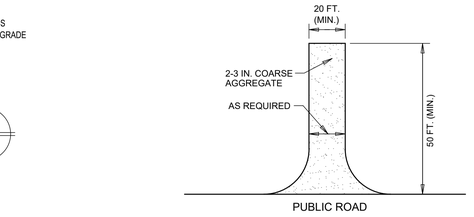
2. STAPLE PATTERNS MAY VARY DEPENDING UPON SOIL TYPE AND AVERAGE ANNUAL RAINFALL.

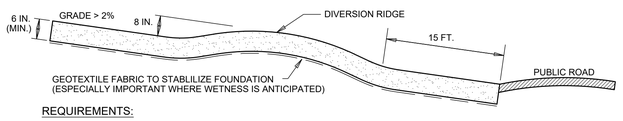
3. AT SLOPE LENGTHS GREATER THAN 300 FEET OR WHERE DRAINAGE OVER LARGE AREAS IS DIRECTED ONTO BLANKETS, STAPLE PATTERN "C" SHOULD BE UTILIZED.

4. CHANNEL LININGS REQUIRE A 2' (MIN.) OVERLAP AT LONGITUDINAL JOINTS AND SIDE SLOPES REQUIRE A 6" (MIN.) OVERLAP. WHERE OVERLAPS OCCUR, THE UPSTREAM BLANKET SHALL OVERLAP THE DOWNSTREAM.

5. NORTH AMERICAN GREEN S150BN TO BE USED FOR EROSION CONTROL BLANKETS.

## EROSION CONTROL BLANKET STAPLE PATTERN
NOT TO SCALE — 2 — C502




## REQUIREMENTS:

Material: 2-3 in. washed stone (INDOT CA No.2) over a stable foundation.

Thickness: 6 in. minimum

Width: 12 ft. minimum or full width of entrance/exit roadway, whichever is greater.

Length: 50 ft. minimum. The length can be shorter for small sites such as for an individual home.

Washing facility (optional): Level area with 3 in washed stone minimum or a commercial rack, and waste water diverted to a sediment trap or basin.

Geotextile fabric underliner: May be used under wet conditions or for soils within a high seasonal water table to provide greater bearing strength.

## INSTALLATION:

1. Avoid locating on steep slopes or at curves in public roads.

2. Remove all vegetation and other objectionable material from the foundation area, and grade and crown for positive drainage.

3. If slope towards the road exceeds 2%, construct a 6-8 in.-high water bar (ridge) with 3:1 side slopes across the foundation area about 15 ft. from the entrance to divert runoff away from the road.

4. Install pipe under the pad if needed to maintain proper public road drainage.

5. If wet conditions are anticipated, place geotextile fabric on the graded foundation to improve stability.

6. Place stone to dimensions and grade shown in the erosion control plan, leaving the surface smooth and sloped for drainage.

7. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin.

## MAINTENANCE:

* Inspect entrance drive and sediment disposal area weekly and after storm events or heavy use.
* Reshape pad as needed for drainage and runoff control.
* Topdress with clean stone as needed.
* Immediately remove mud and sediment tracked or washed onto public roads by brushing or sweeping. Flushing should only be used if the water is conveyed into a sediment trap or basin.
* Repair any broken road pavement immediately.

## COMMON CONCERNS:

Inadequate runoff control--results in sediment washing onto road.
Stone too small, pad too thin, or geotextile fabric absent--results in ruts and a muddy condition as stone is pressed into the soil: add more stone.
Pad too short for heavy construction traffic--extend the pad beyond the 50-ft. length as needed.
Pad not flared sufficiently at road entrance--results in mud being tracked onto the road and possible damage to the road edge: widen stone entrance and repair road damage.
Unstable foundation--use geotextile fabric under th pad and/or improve foundation drainage.

## TEMPORARY CONSTRUCTION ENTRANCE
NOT TO SCALE — 1 — C502

Moench Engineering
4000 Clarks Creek Road
Plainfield, Indiana 46168
(317) 837-2767
(317) 837-7266 (Fax)

THESE DRAWINGS ARE GIVEN IN CONFIDENCE AND SHALL BE USED ONLY IN PURSUANT TO THE AGREEMENT WITH
MOENCH ENGINEERING, P.C.
NO OTHER USE OR DUPLICATION MAY BE MADE WITHOUT THE PRIOR WRITTEN CONSENT OF
MOENCH ENGINEERING, P.C.
ALL OTHER COPYRIGHT AND COMMON LAW RIGHTS ARE HEREBY SPECIFICALLY RESERVED.

LIONS TRANS INC. (BROWNSBURG)
4005 N CR 1000 E
BROWNSBURG, IN 46122

SECTIONS AND DETAILS

BRIAN EDWARD MOENCH REGISTERED No. PE9500048 STATE OF INDIANA PROFESSIONAL ENGINEER
Susan E. Neal

REVISIONS:

| | | |
|---|---|---|
| 0 | SUBMITTED FOR REVIEW | 11/5/21 |
| 1 | REVISED PER ISDH COMMENTS | 12/3/21 |
| 2 | REVISED TO ABOVE GROUND STORAGE | 1/12/22 |
| 3 | REVISED per TOWN COMMENTS | 9/09/24 |
| 4 | REVISED per TOWN COMMENTS | 12/11/24 |
| 5 | Revised Storm Outlet | 9/26/25 |
| | | |
| | | |

| | |
|---|---|
| DRAWN BY: | JBF |
| CHECKED BY: | BEM |
| PROJECT NUMBER: | 21346 |
| DATE: | 1/13/22 |
| SHEET NUMBER: | C502 |

# Appendix B

| Inspection Schedule | | | |
|---|---|---|---|
| **Inspection Frequency** | **Maintenance Item** | **Maintenance Follow-up** | **Action Taken** |
| Annual & Post Major Storm Event | | Vegetation | Routine mowing to a minimum 3 in. |
| Semi -Annually & Post Major Storm Events | Pond Banks | Erosion on Embankment | Erosion Control Measure will be repaired immediately |
| Semi-Annually & Post Major Storm Events | Pond Banks | Animal Burrows | Burrows should be removed at the time of routine mowing |
| Annually & Post Major Storm Events | Drains | Drains Clear & Functioning | Drains shall be inspected to ensure positive drainage |
| | | Leaks or Seeps | Leaks shall be repaired immediately to ensure positive flow |
| Semi-Annually & Post Major Storm Events | | Slope Protection Failure | Erosion Control Measure will be repaired immediately |
| | | Obstructions | Obstructions shall be removed during routine mowing |
| Annual & Post Major Storm Event | | Outlet Pipe Blocked | Outlet shall be cleared of debris immediately upon finding |
| Semi -Annually & Post Major Storm Events | | Debris Removed from Trash Guard | Obstructions shall be removed during routine mowing |
| | | Sediment Build-up | Sediment shall be removed at a depth of 2 inches |
| Annually & Post Major Storm Events | | Pipe Condition | Pipes shall be inspected and repaired if needed |
| Annually & Post Major Storm Events | | Outfall Channel Function | Erosion Control Measure will be repaired immediately |
| Monthly & Post Major Strom Events | | Sediment Build-up | Sediment shall be removed at a depth of 2 inches |
| Monthly & Post Major Strom Events | Miscellaneous | Erosion at Outfalls | Erosion Control Measure will be repaired immediately |
| | | Encroachment into Easements | Encroachments shall be removed from all easements |
| | | Complaints from Surrounding Owners | Complaints shall be heard and considered |
| | | Public Hazards | All hazards to public safety shall be removed immediately |
| Quarterly / Major Storm Event | Impervious Surfaces | Drainage Flow to Collection Point | Remove obstructions |
| Quarterly / Major Storm Event | Swales | Drainage Flow | Remove obstructions |
| Quarterly / Major Storm Event | Storm Pipes / Cleanouts | Pipe Blockage | Remove obstructions / Flush |
| Annual | Hydrodynamic Separator | Debris, oil, sediment buildup | Remove obstructions and clean manhole. Refill manhole to invert of outlet |
| Semi-Annually & Post Major Storm Events | Volume Control Facilities | Debris and or sediment buildup | Remove debris and sediment to allow proper flow |

# APPENDIX C
# BMP CHECKLIST

# Arcadia™
# Maintenance Guide

One of Arcadia's advantages is the ease of maintenance. Like any system that collects pollutants, the Arcadia hydrodynamic separator must be regularly maintained for continued effectiveness. Maintenance is a simple procedure performed using a vacuum truck or similar equipment. The system is designed to minimize the volume of water lost during routine maintenance, reducing disposal costs.

Contractors can access the pollutants stored in the manhole through the manhole cover. This allows them to gain vacuum hose access to the bottom of the manhole to remove sediment and trash. There is no confined space entry necessary for inspection or maintenance.

The entire maintenance procedure typically takes 2 to 4 hours, depending on the system's size, the amount of captured material, and the vacuum truck's capacity.

Local regulations may apply to the maintenance procedure. Safe and legal disposal of pollutants is the responsibility of the maintenance contractor. Maintenance should be performed only by a qualified contractor.

## Inspection and Cleaning Cycle

Periodic inspection is necessary to determine the need for and frequency of maintenance. Inspections should begin as soon as construction is complete and then on an annual basis ongoing. Under normal use, the system will need to be cleaned every 1-3 years.

Sites that have excessive oil, fuel or sediment runoff may shorten the maintenance cycle. Periodic inspection is important.

## Determining When to Clean

To determine the sediment depth, the maintenance contractor should lower a stadia rod into the manhole until it reaches the top of the captured sediment. Mark this spot on the rod, then continue pushing the rod through the sediment until it reaches the bottom of the sump. Next, mark the second spot on the rod then compare the two markings to determine the depth of the captured sediment.

Maintenance should occur when the sediment has reached a depth of 18" (450 mm).

ADS®

**adspipe.com**

800-821-6710

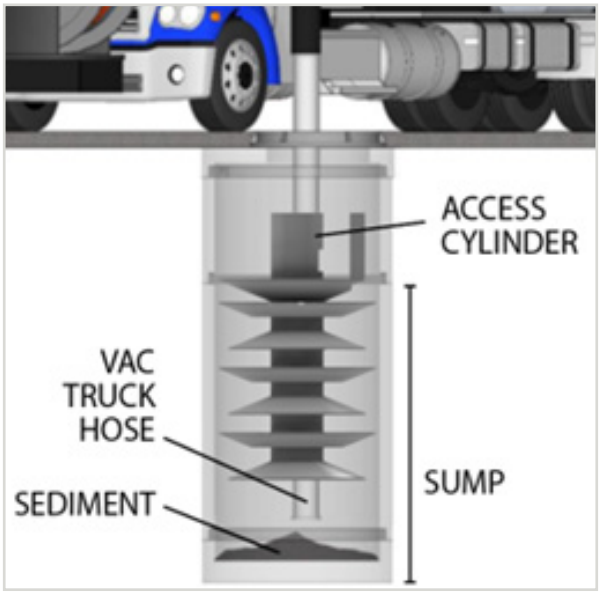
## Arcadia Storage Capacities

| Model | Manhole Diameter in (mm) | Total System Volume Gallons (Liters) | Treatment Chamber Capacity Gallons (Liters) | Standard Sediment Capacity (18" depth) Yards$^3$ (m$^3$) | NJDEP Sediment Capacity (50% of Standard Depth) Yards$^3$ (m$^3$) |
|---|---|---|---|---|---|
| AR3 | 36 (914) | 242 (917) | 203 (767) | 0.39 (0.30) | 0.19 (0.15) |
| AR4 | 48 (1219) | 635 (2402) | 564 (2135) | 0.70 (0.53) | 0.35 (0.27) |
| AR5 | 60 (1524) | 991 (3753) | 881 (3336) | 1.09 (0.83) | 0.55 (0.42) |
| AR6 | 72 (1829) | 1428 (5404) | 1269 (4804) | 1.57 (1.20) | 0.79 (0.60) |
| AR8 | 96 (2438) | 4136 (15656) | 3854 (14588) | 2.79 (2.14) | 1.40 (1.07) |
| AR10 | 120 (3048) | 7931 (30022) | 7490 (28354) | 4.36 (3.34) | 2.18 (1.67) |

## Maintenance Procedures

1. Remove the manhole cover to provide access to the pollutant storage. Pollutants are stored in the sump, below the unit assembly. Access this area through the access cylinder (larger than 10" (254 mm) diameter for all sizes).
2. Use a vacuum truck or other similar equipment to remove all water, debris, oil and sediment. See Figure 1.
3. Use a high pressure hose to clean the manhole of all remaining sediment and debris. Then, use the vacuum truck to remove the water.
4. Fill the clean manhole with water until the level reaches the invert of the outlet pipe.
5. Replace the manhole cover.
6. Dispose of the polluted water, oil, sediment and trash at an approved facility.
    a. Local regulations prohibit the discharge of solid material into the sanitary system. Check with the local sewer authority for authorization to discharge the liquid.
    b. Some localities treat the pollutants as leachate. Check with local regulators about disposal requirements.
    c. Additional local regulations may apply to the maintenance procedure.

**Figure 1**




ADS "Terms and Conditions of Sale" are available on the ADS website, www.adspipe.com
The ADS logo, the Green Stripe and BayFilter are registered trademarks of Advanced Drainage Systems, Inc.
© 2025 Advanced Drainage Systems, Inc. MG 1.21 05/25 AB

**adspipe.com**
800-821-6710

INDIANA DEPARTMENT OF TRANSPORTATION

# INSPECTION REPORT
# POST-CONSTRUCTION STORMWATER MEASURE

| Structure Type | Hydrodynamic Separator | Asset ID | |
|---|---|---|---|
| Design Criteria | | Location | Coordinates, Driving Directions |
| This hydrodynamic separator was designed to remove Total Suspended Solids (TSS) from stormwater runoff. The inspection and maintenance of this stormwater device should follow the manufacturer's guidelines and items outlined in this document. | | Manufacturer, Model & Serial Number | |

## Information

Is a Diversion Structure present? ☐ Yes ☐ No

Is there land use upstream with high probability of pollutants? ☐ Yes ☐ No

Can the unit be accessed directly from INDOT right-of-way? ☐ Yes ☐ No

Will traffic control be required for vac truck access? ☐ Yes ☐ No

## Inspection Criteria

**Maintenance Issues:**

Floatables – Does trash/debris buildup cover 100% of the water surface? ☐ Yes ☐ No

Sediment – Does sedimentation buildup exceed 75%? ☐ Yes ☐ No Depth:_____ inches

Visible pollution – Is there an oil sheen, etc.? ☐ Yes ☐ No Depth:_____ inches

Is there staining present on structures, pipes, or pavement? ☐ Yes ☐ No Description:_____.

Is there an odor present? ☐ Yes ☐ No Description:_____.

Is the inflow or outflow point blocked? ☐ Yes ☐ No Description:_____.

Is the Diversion structure blocked? ☐ Yes ☐ No ☐ N/A Description:_____.

Is access to the unit blocked? ☐ Yes ☐ No Description:_____.

**Structural Issues:**

Is there structural damage to the Manufactured Device? ☐ Yes ☐ No

Is the Manufactured Device casting broken or missing? ☐ Yes ☐ No

Is there structural damage to the Diversion Structure? ☐ Yes ☐ No

Is the Diversion Structure casting broken or missing? ☐ Yes ☐ No

**Comments:**

_____.

_____.

_____.

_____.

_____.

| Last Inspected | | Current Inspection | |
|---|---|---|---|

# INSPECTION REPORT
# POST-CONSTRUCTION STORMWATER MEASURE

| Structure Type | Hydrodynamic Separator | Asset ID | |
|---|---|---|---|

**Typical Corrective Actions**

- **Floatables – Remove floatable trash and debris from unit**
- **Sediment buildup – Remove sediment from unit per manufacture's guidelines**
- **Visible pollution – Remove oil from unit**
- **Inflow and outflow points – Remove blockages**
- **Diversion structure – Remove any blockages, note if device has been installed inline, repair any damages**
- **Inlets and manholes – Repair damages**
- **Maintenance accessibility – Blocked or missing maintenance access**

**Maintenance Recommendations**

| Last Inspected | | Current Inspection | |
|---|---|---|---|

INDIANA DEPARTMENT OF TRANSPORTATION

# INSPECTION REPORT
# POST-CONSTRUCTION STORMWATER MEASURE

| Structure Type | Hydrodynamic Separator | Asset ID | |
|---|---|---|---|
| Plans and Plan Cross Section(s) | | | |

| INSPECTED BY | APPROVED BY |
|---|---|
| Printed Name/Title | Printed Name/Title |

**Pond/Basin Slope Inspection and Maintenance**

**Date**

**Lion Trans Inc.**

Time / Weather: _____

Precipitation Amount / Site Condition: _____

Inspector Name: _____

| Item | Condition when Maintenance is Required | Maintenance Required? (Y/N) | Comments | Expected Maintenance Results | Initials |
|---|---|---|---|---|---|
| Trash and Debris | Trash and debris has accumulated in pond. | | | Trash and debris to be removed from pond. | |
| Erosion | Erosion of the pond's side slopes and/or scouring of the pond's bottom, that exceeds 6-inches, or where continued erosion is prevalent. | | | Slope Stabilized using proper erosion control measures and repair methods. | |
| Bank Stabilization | Bank destabilized by burrowing animal(s). | | | Remove burrowing animals and repair holes in embankment | |
| Sediment Accumulation in the Pond Bottom | Sediment accumulations in pond bottom that exceeds the depth of sediment zone. | | | Sediment removed from pond bottom | |
| Rip Rap | Vegetative growth on rip rap lined channel or missing rocks and soil is exposed | | | Remove vegetative growth on rip rap and replace rocks to design specifications | |
| End Section | End section is blocked / obstructed by trash / debris, sediment or vegetation | | | Trash, debris, sediment, or vegetation to be removed from end section | |
| Outlet Structure | Outlet structure is blocked / obstructed by trash, debris, sediment or vegetation | | | Trash, debris, sediment, or vegetation to be removed from outlet structure | |

| Additional Comments and Observations | Initials |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

# Advisory Plan Commission

## Town of Brownsburg

**Assigned Staff:** Kevin Tolloty, Senior Planner

**Report Date:** 1/15/2026

**Request Type:** Development Plan Review Amendment

### General Information

| | |
|---|---|
| **CASE NUMBER** | PSDP-25-11 |
| **APPLICANT** | Dillon Reynolds, SpaceCo Engineering, for Quik Trip |
| **LOCATION** | 4713 Corrugated Avenue |
| **ARCEL SIZE** | 32-08-18-115-006.000-016 |

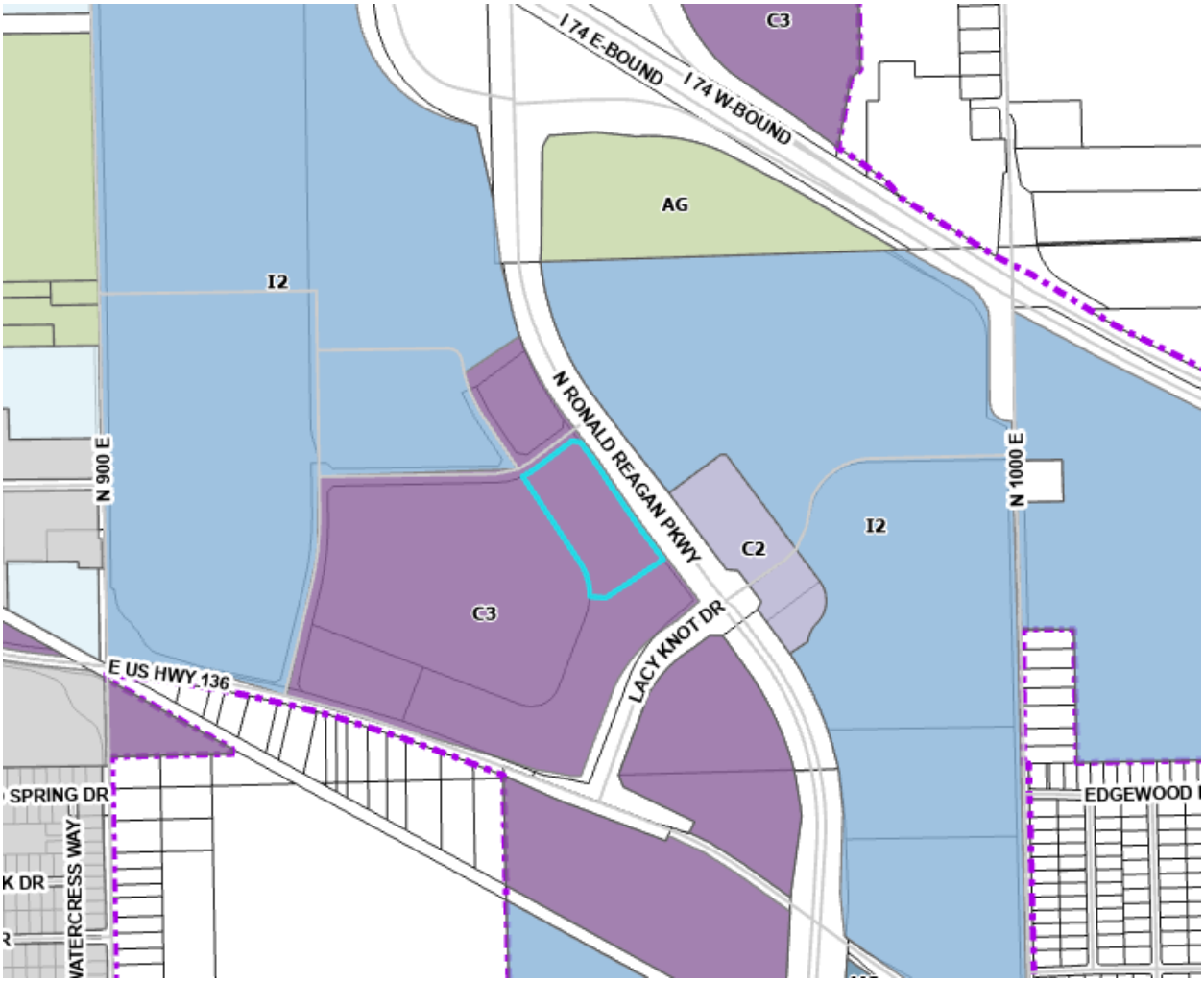
### Cross References

| | |
|---|---|
| **Previous APC Cases** | PSDP-24-1, Quik Trip Development Plan, CPSP-24-3, Quik Trip Secondary Plat, PCPP-23-11, Quik Trip Primary Plat, PCPP-22-5, Ronald Reagan Logistics Park Primary Plat, PCMA-09-21-1949; Lacy Farms West Rezone to C2 and I2 |
| **Relevant BZA Cases** | BZDV-23-2, Canopy Height Variance |
| **Other** | Annexed in 2011, Ord. No. 2011-07 |

### Attachments

| | |
|---|---|
| ☒ | Tech Review & Response |
| ☒ | Site Plan/Civil (Landscape Plan only) |
| ☒ | Original Approved Landscape Plan |
| ☐ | Other: |
| ☐ | Other: |

**Zoning Map:**


I 74 E-BOUND
I 74 W-BOUND
C3
AG
I2
N 900 E
N RONALD REAGAN PKWY
N 1000 E
C2
I2
C3
LACY KNOT DR
E US HWY 136
SPRING DR
EDGEWOOD

**Site Map:**



## Explanation of Changes from Original DPR:

This landscape plan was previously approved as part of PSDP-24-1, which approved the Quik Trip development plan. Due to changes in the 2025 UDO revision in regard to landscaping requirements, the applicant has requested to submit a revised landscape plan. The changes in the UDO allowed the applicant to modify the number and layout of the plantings, and does require a new approval for the landscape plan only.

## Technical Review:

The TECH Review for this project took place on December 18, 2025. Development Services commented that the applicant needed to add an additional ornamental street tree, update the calculation for open space plantings and adjust the number of plantings accordingly, several trees need to be added to parking islands, foundation plantings must be included on the east façade or an equal amount of plantings placed elsewhere on the property, and to ensure that no one species of shrub is over 35% of the total number of shrubs. The Water Department commented that this project is in Citizens Energy Group's water service area. The Wastewater Department commented that the site is outside of Brownsburg's sanitary sewer service area. The Hendricks County Surveyor commented that this does not need Drainage Board approval.

## Criteria:

*Pursuant to Chapter 8 of the Brownsburg Unified Development Ordinance the Advisory Plan Commission shall make findings of fact on the following criteria:*

1) The Development Plan is consistent with the **Comprehensive Plan**.

   Future Land Use Map Link: https://www.brownsburg.org/DocumentCenter/View/1068/2021-Future-Land-Use-Map-PDF

   a) For this criterion, the proposed amendment has no impact. The only change is to the previously approved plans is for landscaping.

      *Based on the above information, staff believes this criterion has been met.*

2) The Development Plan complies with applicable development requirements and standards of **CHAPTER 2 – ZONING DISTRICTS, CHAPTER 3 – PERMITTED USES,** and/or the PUD Ordinance.

   https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=14

   a) For this criterion, the proposed amendment has no impact. The use of the property is not affected by the change in landscaping.

      *Based on the above information, staff believes this criterion has been met.*

3) The Development Plan complies with applicable standards found in **CHAPTER 5: SITE DEVELOPMENT** and/or the PUD Ordinance.

   https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=101

   a) For this criterion, the proposed amendment does have an impact. The proposed amendment affects the landscape plan only, and the revised changes do meet Chapter 5 requirements. The changes were primarily related to the number and location of plantings.

      *Based on the above information, staff believes this criterion has been met.*

4) The Development Plan complies with any **other applicable provisions** of this Ordinance or **Overlay Standards.**

   a) For this criterion, the proposed amendment has no impact.

      *Based on the above information, staff believes this criterion has been met.*

5) Satisfies any provision related to a development's design as found in **CHAPTER 7 – SUBDIVISION REGULATIONS** and/or the PUD Ordinance.

   https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=168

   a) For this criterion, the proposed amendment has no impact.

      *Based on the above information, staff believes this criterion has been met.*

**6)** The Development Plan satisfies the construction requirements of the **Brownsburg Construction Standards and Specifications.**

a) For this criterion, the proposed amendment has no impact. No new tech waivers were requested for this amended landscape plan.

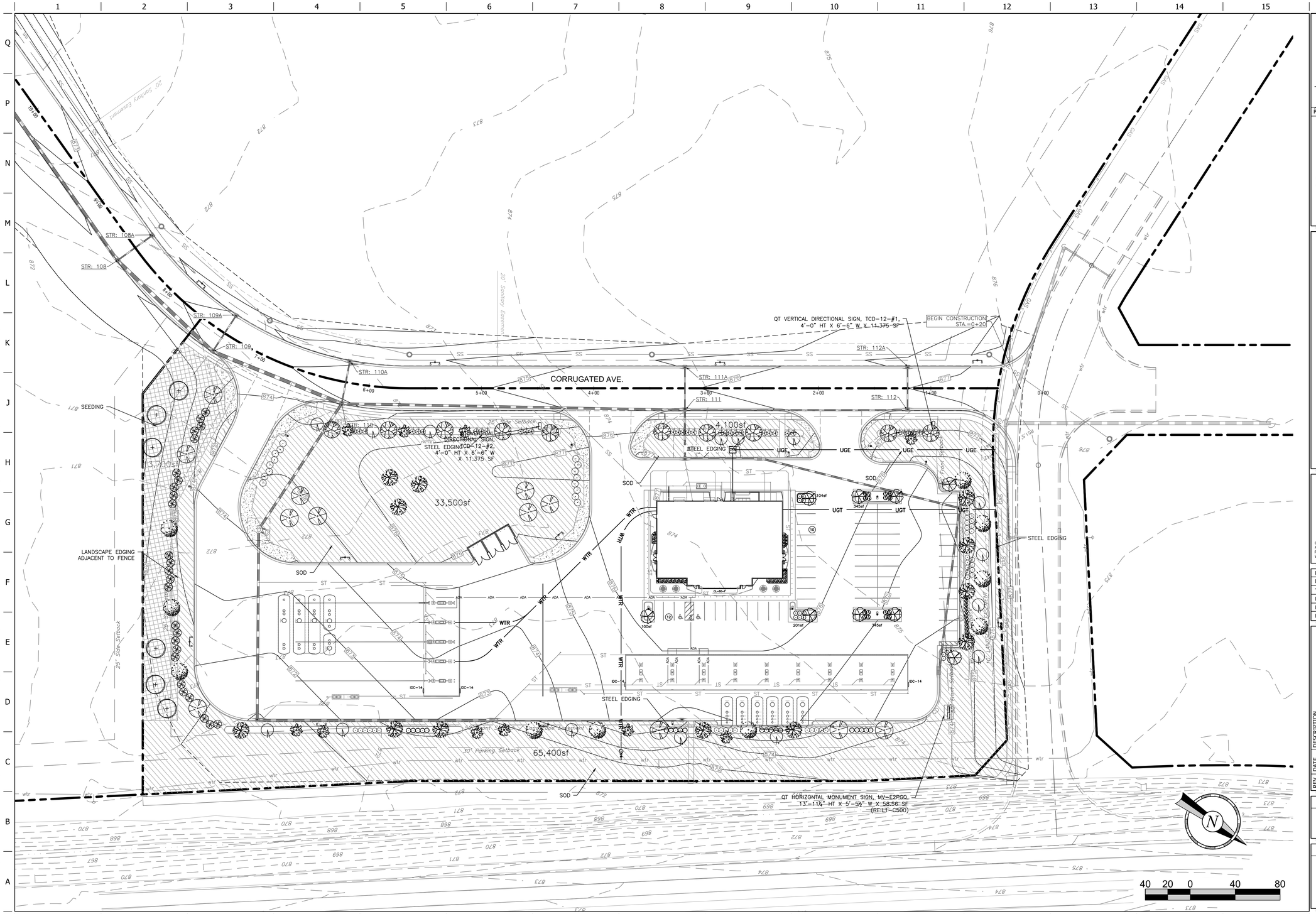
*Based on the above information, staff believes this criterion has been met.*

## Recommendations:

*The Advisory Plan Commission may request conditions and commitments related to the project and criteria. Conditions or commitments must be made as part of the motion.*

***Based on the information provided and the criteria responses, staff recommends a motion to***

| | |
|---|---|
| ☐ | Approve PSDP-25-11 as presented. |
| ☒ | Approve PSDP-25-11 with the following staff conditions:<br>1. Shrubs are removed from landscape islands and placed elsewhere on site<br>2. State quantity of foundation plantings relocated and where relocated.<br>3. The approval of Findings of Fact and Report of Determination.<br>4. The stamping of the construction plans by the Director. |
| ☐ | Deny PSDP-25-11 based on the following criteria: |




REGISTERED PROFESSIONAL ENGINEER
PE12000722
STATE OF INDIANA

Dillon Reynolds

PROJECT NO.:12064.02

Spaceco
Civil Engineering & Surveying

# QuikTrip No. 7263

4713 CORRUGATED AVENUE
BROWNSBURG, INDIANA 46112

© COPYRIGHT QUIKTRIP CORPORATION 2011 ANY UNAUTHORIZED USE, REPRODUCTION, PUBLICATION, DISTRIBUTION, OR SALE IN WHOLE OR IN PART, IS STRICTLY FORBIDDEN.

PROTOTYPE: P-120
DIVISION: REMOTE
VERSION: RTC
DESIGNED BY: ALR
DRAWN BY: ALR
REVIEWED BY: DKR

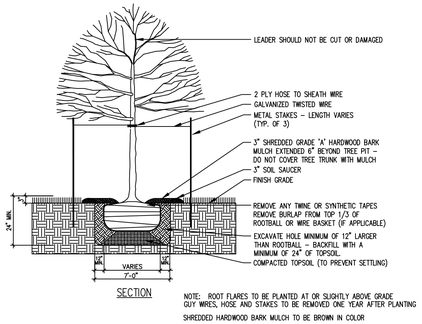
| REV | DATE | DESCRIPTION |
|---|---|---|
| 6 | 11/12/25 | PLAN REVISIONS |
| 5 | 10/14/25 | PLAN REVISIONS |
| 4 | 07/17/25 | ISSUED FOR CONSTRUCTION |
| 3 | 05/01/25 | BID DOCUMENTS |
| 2 | 04/07/25 | FPC REVISIONS |
| 1 | 02/26/25 | BID DOCUMENTS |

ORIGINAL ISSUE DATE: 08/29/2023

SHEET TITLE:
LANDSCAPE PLAN

SHEET NUMBER:
L100

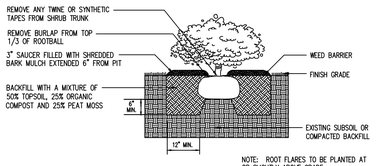
FILE LOCATION:N:\Projects 2022\12064 - INDY\12064.02 - QuickTrip Brownsburg\12064.02_Civil (P-120 Re-roll).dwg TAB NAME:Landscape USER:bgoss SAVED:12/31/2025 12:21 PM PLOTTED:12/31/2025 1:34 PM




NOTE: ROOT FLARES TO BE PLANTED AT OR SLIGHTLY ABOVE GRADE
GUY WIRES, HOSE AND STAKES TO BE REMOVED ONE YEAR AFTER PLANTING
SHREDDED HARDWOOD BARK MULCH TO BE BROWN IN COLOR

# DECIDUOUS TREE DETAIL

NOT TO SCALE




NOTE: ROOT FLARES TO BE PLANTED AT OR SLIGHTLY ABOVE GRADE
SHREDDED HARDWOOD BARK MULCH TO BE BROWN IN COLOR

# SHRUB DETAIL

## PLANTING NOTES:

1. IN CASE OF DISCREPANCIES BETWEEN THE PLAN AND THE PLANT LIST, THE PLAN SHALL DICTATE

2. ALL SHRUB AND TREE PLANTING AREAS TO BE COVERED WITH 3" LAYER OF SHREDDED HARDWOOD BARK MULCH THAT IS BROWN IN COLOR.

3. ALL BACKFILL FOR TREE AND SHRUB PLANTINGS SHALL BE FROM EXISTING SOILS. A 5–10–5 ANALYSIS SLOW RELEASE FERTILIZER SHALL BE INCORPORATED INTO BACKFILL AT APPROVED RATES.

4. FINAL PLACEMENT OF PLANT MATERIALS, ETC. SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING OPERATIONS. ALL TREE LOCATIONS SHALL BE MARKED WITH A WOOD STAKE INDICATING VARIETY AND SIZE OF TREE. PLANTING BED LINES SHALL BE MARKED WITH HIGHLY VISIBLE PAINT LINES WITH OCCASIONAL WOOD STAKES FOR REFERENCE. ALL STAKES SHALL BE REMOVED FOLLOWING PLANTING OPERATIONS. LANDSCAPE ARCHITECT RESERVES THE RIGHT TO ADJUST PLANT LOCATIONS ON THE SITE.

5. NO SUBSTITUTIONS OF PLANT MATERIALS WILL BE ALLOWED. IF PLANTS ARE NOT AVAILABLE, THE CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT PRIOR TO BIDDING IN WRITING. PLANTS MAY BE INSPECTED AND APPROVED OR REJECTED ON THE JOB SITE BY THE LANDSCAPE ARCHITECT.

6. ALL PLANTS SHALL MEET OR EXCEED AMERICAN STANDARDS FOR NURSERY STOCK, ANSI Z60.1–2004.

7. PLANTS AND ALL OTHER MATERIALS TO BE STORED ON SITE WILL BE PLACED WHERE THEY WILL NOT CONFLICT WITH CONSTRUCTION OPERATIONS.

8. CONTRACTOR TO OBTAIN AND PAY FOR ALL PERMITS AND FEES THAT MAY BE REQUIRED FOR HIS PORTION OF THE WORK.

9. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT IN WRITING PRIOR TO BID DATE OF ANY PLANTS THEY FEEL MAY NOT SURVIVE IN LOCATIONS AS NOTED ON THE PLANS.

10. ALL LANDSCAPE PLANTINGS TO BE MAINTAINED BY CONTRACTOR FOR 60 DAYS FOLLOWING PLANTING.. GUY WIRES, HOSE AND STAKES TO BE REMOVED ONE YEAR AFTER PLANTING.. MAINTENANCE TO INCLUDE WATERING, WEEDING, CULTIVATING, MULCHING, MOWING, AND ALL OTHER NECESSARY OPERATIONS REQUIRED FOR PROPER ESTABLISHMENT OF PLANTINGS.

11. ALL INSTALLED PLANTINGS SHALL BE APPROPRIATELY WATERED FOR A MINIMUM PERIOD OF ONE YEAR TO ALLOW FOR THEIR ESTABLISHMENT

12. ALL LANDSCAPE PLANTINGS SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FOLLOWING FINAL INSPECTION BY LANDSCAPE ARCHITECT. AT END OF THIS PERIOD, PLANT MATERIAL TERMED DEAD OR UNSATISFACTORY BY LANDSCAPE ARCHITECT SHALL BE REPLACED AT NO ADDITIONAL CHARGE BY THE LANDSCAPE CONTRACTOR.

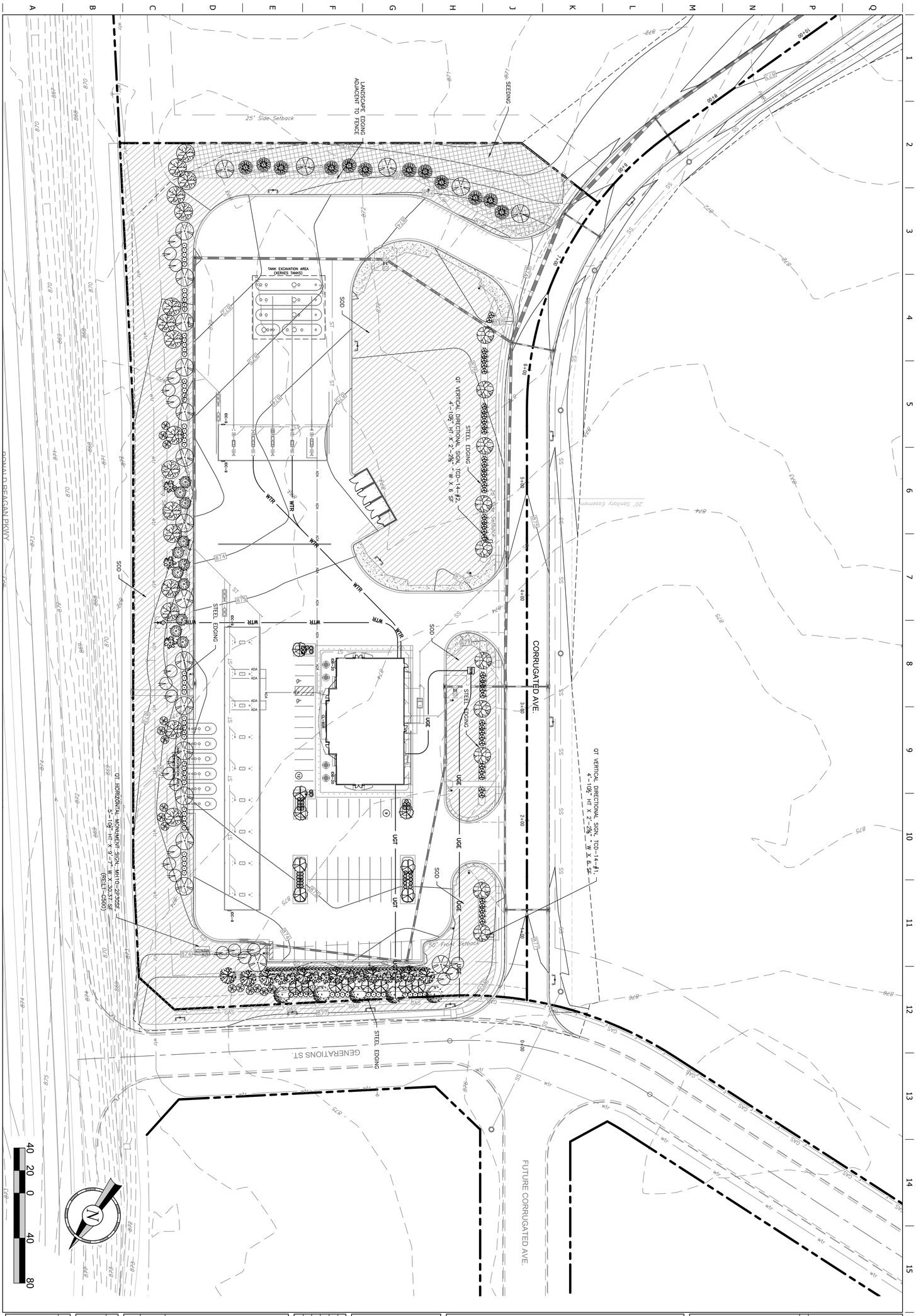
## Landscape Schedule

| USE | SYMBOL | COMMON NAME / *Botanical Name* | MINIMUM SIZE/ HEIGHT/SPREAD | QUANTITIES | COMMENTS |
|---|---|---|---|---|---|
| SHRUBS | | BLACK CHOKEBERRY *Aronia* | HEIGHT/SPREAD 18" X 12" MIN | 16 EA. | SEE LANDSCAPE PLAN AND ASSOCIATED DETAILS FOR LANDSCAPE BED LOCATIONS AND SHRUB SPACING |
| | | COMPACT INKBERRY *Ilex glabra 'Compacta'* | HEIGHT/SPREAD 24" X 30" MIN | 20 EA. | |
| | | GOLDFINGER POTENTILLA *Potentilla fruticosa 'Goldfinger'* | HEIGHT/SPREAD 18" X 12" MIN | 10 EA. | |
| | | JOSEE LILAC Syringa x 'Josee' | HEIGHT/SPREAD 30" X 20" MIN | 20 EA. | |
| | | NICK'S COMPACT JUNIPER *Juniperus chinensis 'Nick's Compact* | HEIGHT/SPREAD 24" X 18" MIN | 32 EA. | |
| | | OAKLEAF HYDRANGEA *Hydrangea quercifolia* | HEIGHT/SPREAD 30" X 20" HT MIN | 16 EA. | |
| | | MOHAWK VIBURNUM Viburnum x burkwoodii 'Mohawk' | HEIGHT/SPREAD 30" X 20" MIN | 26 EA. | |
| | | WARD'S YEW *Taxus x media "Wardii"* | HEIGHT/SPREAD 24"ø X 18" HT MIN | 30 EA. | |
| TREES | | FRONTIER ELM *Ulmus x 'Frontier'* | 2.5" CALIPER 12' HT | 10 EA. | SEE LANDSCAPE PLAN AND ASSOCIATED DETAILS FOR TREE PLACEMENT, AND PLANTING SPECIFICATIONS<br>CONTRACTOR TO VERIFY TREE TYPE, LOCATION, SIZE, HEIGHT, AND SPREAD WITH QT REPRESENTATIVE PRIOR TO INSTALLATION |
| | | GREEN MOUNTAIN SUGAR MAPLE *Acer saccharum 'Green Mountain'* | 2.5" CALIPER 12' HT | 12 EA. | |
| | | PRINCESS DIANA SERVICEBERRY *Amelanchier x grandiflora' 'Princess Diana'* | 2.0" CALIPER 10' HT | 10 EA. | |
| | | PRINCETON SENTRY GINKGO *Ginkgo biloba 'Princeton Sentry'* | 2.5" CALIPER 12' HT | 9 EA. | |
| | | REDBUD – SINGLE STEM *Cercis x canadensis* | 2.0" CALIPER 10' HT | 14 EA. | |
| | | RED OAK *Quercus rubra* | 2.5" CALIPER 12' HT | 12 EA. | |
| | | SHADEMASTER HONEY LOCUST *Gleditsia triacanthos 'Shademaster'* | 2.5" CALIPER 12' HT | 10 EA. | |
| | | TULIP TREE *Liriodendron tulipifera* | 2.5" CALIPER 12' HT | 6 EA. | |
| ORNAMENTAL GRASS | | DWARF FOUNTAIN GRASS *Pennisetum alopecuroides 'Hameln'* | 12" – 18" MIN. | 12 EA. | |
| MISC. | | RTF – RHIZOMATOUS TALL FESCUE SOD | | 103,080 S.F. | |
| | | RTF – RHIZOMATOUS TALL FESCUE SEED | | 13,700 S.F. | |

## LANDSCAPE REQUIREMENTS - UPDATED ORDINANCE

| | REQUIRED ORDINANCE | PROVIDED |
|---|---|---|
| ON-SITE REQUIREMENTS | 5.11A<br>COMMERCIAL DEVELOPMENT<br>4 SHADE TREES AND 8 LARGE SHRUBS PER HALF ACRE OF OPEN SPACE<br><br>OPEN SPACE AREA:<br>2.67 AC/.5 =(5.3) 4 = 21.2<br>2.67 AC/.5 =(5.3) 8 = 42.4<br><br>SHADE TREES = 21<br>LARGE SHRUBS = 42 | <br><br><br><br><br><br>SHADE TREES = 21<br>LARGE SHRUBS = 42 |
| STREET FRONTAGE REQUIREMENTS | 5.10 D<br>LANDSCAPING IS REQUIRED ALONG PERIMETER ROADS OF A SUBDIVISION AND ALONG ALL STREET FRONTAGES (PUBLIC OR PRIVATE STREETS, NOT INCLUDING SHARED ACCESS DRIVES OR DRIVEWAYS.<br><br>COMMERCIAL USE PER 100LF:<br>1.5 SHADE OR EVERGREEN TREES<br>1.5 ORNAMENTAL TREES<br>5 SHRUBS<br><br>RONALD REAGAN PKWY 720LF<br>720/100 = 7.2 (1.5) = 10.8<br>SHADE OR EVERGREEN TREES = 11<br>ORNAMENTAL TREES =11<br>7.2 (5) = 36.0<br>SHRUBS = 36<br><br>GENERATIONS STREET 275 LF<br>275/100 = 2.75 (1.5) = 4.12<br>SHADE OR EVERGREEN TREES = 4<br>ORNAMENTAL TREES = 4<br>2.75 (5) = 13.75<br>SHRUBS = 14<br><br>CORRUGATED AVENUE 650 LF<br>650/100 = 6.5 (1.5) = 9.75<br>SHADE OR EVERGREEN TREES = 10<br>ORNAMENTAL TREES = 10<br>6.5 (5) = 32.5<br>SHRUBS = 33 | <br><br><br><br><br>

FILE LOCATION:N:\Projects 2022\12064 – INDY\12064.02 – QuikTrip Brownsburg\12064.02_Civil (P-114).dwg TAB NAME:Landscape USER:arench SAVED:9/18/2024 1:11 PM PLOTTED:9/18/2024 1:22 PM




| REV | DATE | DESCRIPTION |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| 4 | 09/18/24 | DRAINAGE COMMENTS |
| 3 | 06/27/24 | SWPPP/DRN/PLANNING COMMENTS |
| 2 | 02/01/24 | BROWNSBURG COMMENTS |
| 1 | 01/08/24 | INITIAL BROWNSBURG SUBMITTAL |

ORIGINAL ISSUE DATE: 01/05/2024

PROTOTYPE: P-114
DIVISION: --
VERSION: 001
DESIGNED BY: AJR
DRAWN BY: AJR
REVIEWED BY: DRK

© COPYRIGHT QUIKTRIP CORPORATION 2021
THIS DRAWING IS THE PROPERTY OF QUIKTRIP CORPORATION AND IS NOT TO BE USED, REPRODUCED, PUBLISHED, DISTRIBUTED, OR SOLD IN WHOLE OR IN PART WITHOUT THE PRIOR WRITTEN CONSENT OF QUIKTRIP CORPORATION.

# QuikTrip No. 7263

US HWY 136 & RONALD REAGAN PARKWAY
BROWNSBURG, INDIANA

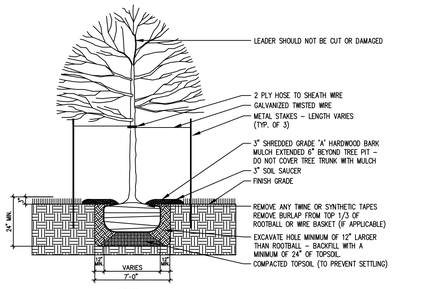
Spaceco Development & Surveying
8425 Woodfield Crossing Blvd., Suite 100
Indianapolis, IN 46240
317.580.7000
www.spaceco-inc.com

DILLON K. REYNOLDS
REGISTERED
PE12000722
STATE OF
INDIANA
PROFESSIONAL ENGINEER

PROJECT NO.: 12064.02

SHEET TITLE: LANDSCAPE PLAN

SHEET NUMBER: L100

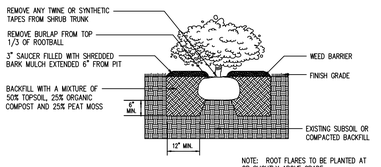



SECTION

NOTE: ROOT FLARES TO BE PLANTED AT OR SLIGHTLY ABOVE GRADE
GUY WIRES, HOSE AND STAKES TO BE REMOVED ONE YEAR AFTER PLANTING
SHREDDED HARDWOOD BARK MULCH TO BE BROWN IN COLOR

# DECIDUOUS TREE DETAIL

NOT TO SCALE




NOTE: ROOT FLARES TO BE PLANTED AT OR SLIGHTLY ABOVE GRADE
SHREDDED HARDWOOD BARK MULCH TO BE BROWN IN COLOR

# SHRUB DETAIL

## PLANTING NOTES:

1. IN CASE OF DISCREPANCIES BETWEEN THE PLAN AND THE PLANT LIST, THE PLAN SHALL DICTATE

2. ALL SHRUB AND TREE PLANTING AREAS TO BE COVERED WITH 3" LAYER OF SHREDDED HARDWOOD BARK MULCH THAT IS BROWN IN COLOR.

3. ALL BACKFILL FOR TREE AND SHRUB PLANTINGS SHALL BE FROM EXISTING SOILS. A 5–10–5 ANALYSIS SLOW RELEASE FERTILIZER SHALL BE INCORPORATED INTO BACKFILL AT APPROVED RATES.

4. FINAL PLACEMENT OF PLANT MATERIALS, ETC. SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING OPERATIONS. ALL TREE LOCATIONS SHALL BE MARKED WITH A WOOD STAKE INDICATING VARIETY AND SIZE OF TREE. PLANTING BED LINES SHALL BE MARKED WITH HIGHLY VISIBLE PAINT LINES WITH OCCASIONAL WOOD STAKES FOR REFERENCE. ALL STAKES SHALL BE REMOVED FOLLOWING PLANTING OPERATIONS. LANDSCAPE ARCHITECT RESERVES THE RIGHT TO ADJUST PLANT LOCATIONS ON THE SITE.

5. NO SUBSTITUTIONS OF PLANT MATERIALS WILL BE ALLOWED. IF PLANTS ARE NOT AVAILABLE, THE CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT PRIOR TO BIDDING IN WRITING. PLANTS MAY BE INSPECTED AND APPROVED OR REJECTED ON THE JOB SITE BY THE LANDSCAPE ARCHITECT.

6. ALL PLANTS SHALL MEET OR EXCEED AMERICAN STANDARDS FOR NURSERY STOCK, ANSI Z60.1–2004.

7. PLANTS AND ALL OTHER MATERIALS TO BE STORED ON SITE WILL BE PLACED WHERE THEY WILL NOT CONFLICT WITH CONSTRUCTION OPERATIONS.

8. CONTRACTOR TO OBTAIN AND PAY FOR ALL PERMITS AND FEES THAT MAY BE REQUIRED FOR HIS PORTION OF THE WORK.

9. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT IN WRITING PRIOR TO BID DATE OF ANY PLANTS THEY FEEL MAY NOT SURVIVE IN LOCATIONS AS NOTED ON THE PLANS.

10. ALL LANDSCAPE PLANTINGS TO BE MAINTAINED BY CONTRACTOR FOR 60 DAYS FOLLOWING PLANTING.. GUY WIRES, HOSE AND STAKES TO BE REMOVED ONE YEAR AFTER PLANTING.. MAINTENANCE TO INCLUDE WATERING, WEEDING, CULTIVATING, MULCHING, MOWING, AND ALL OTHER NECESSARY OPERATIONS REQUIRED FOR PROPER ESTABLISHMENT OF PLANTINGS.

11. ALL INSTALLED PLANTINGS SHALL BE APPROPRIATELY WATERED FOR A MINIMUM PERIOD OF ONE YEAR TO ALLOW FOR THEIR ESTABLISHMENT

12. ALL LANDSCAPE PLANTINGS SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FOLLOWING FINAL INSPECTION BY LANDSCAPE ARCHITECT. AT END OF THIS PERIOD, PLANT MATERIAL TERMED DEAD OR UNSATISFACTORY BY LANDSCAPE ARCHITECT SHALL BE REPLACED AT NO ADDITIONAL CHARGE BY THE LANDSCAPE CONTRACTOR.

## Landscape Schedule

| USE | SYMBOL | COMMON NAME / *Botanical Name* | MINIMUM SIZE/ HEIGHT/SPREAD | QUANTITIES | COMMENTS |
|---|---|---|---|---|---|
| SHRUBS | | BLACK CHOKEBERRY *Taxus x media 'Wardii"* | HEIGHT/SPREAD 18" X 12" MIN | 47 EA. | SEE LANDSCAPE PLAN AND ASSOCIATED DETAILS FOR LANDSCAPE BED LOCATIONS AND SHRUB SPACING |
| | | COMPACT INKBERRY *Ilex glabra 'Compacta'* | HEIGHT/SPREAD 24" X 18" MIN | 40 EA. | |
| | | NICK'S COMPACT JUNIPER *Juniperus chinensis 'Nick's Compact* | HEIGHT/SPREAD 24" X 18" MIN | 45 EA. | |
| | | MOHAWK VIBURNUM Viburnum x burkwoodii 'Mohawk' | HEIGHT/SPREAD 30" X 20" MIN | 12 EA. | |
| | | WARD'S YEW *Taxus x media "Wardii"* | HEIGHT/SPREAD 24"ø X 18" HT MIN | 68 EA. | |
| TREES | | FRONTIER ELM *Ulmus x 'Frontier'* | 2.5" CALIPER 12' HT | 11 EA. | |
| | | GREEN MOUNTAIN SUGAR MAPLE *Acer saccharum 'Green Mountain'* | 2.5" CALIPER 12' HT | 8 EA. | |
| | | IMPCOLE HONEYLOCUST *Gleditsia triacanthos inermis 'Impcole* | 2.5" CALIPER 12' HT | 20 EA. | |
| | | NORWAY SPRUCE *Picea abies* | 6' HT | 12 EA. | SEE LANDSCAPE PLAN AND ASSOCIATED DETAILS FOR TREE PLACEMENT, AND PLANTING SPECIFICATIONS |
| | | PRINCESS DIANA SERVICEBERRY *Amelanchier x grandiflora' 'Princess Diana'* | 2.0" CALIPER 10' HT | 11 EA. | CONTRACTOR TO VERIFY TREE TYPE, LOCATION, SIZE, HEIGHT, AND SPREAD WITH OT REPRESENTATIVE PRIOR TO INSTALLATION |
| | | PRINCETON SENTRY GINKGO *Ginkgo biloba 'Princeton Sentry'* | 2.5" CALIPER 12' HT | 16 EA. | |
| | | REDBUD – SINGLE STEM *Cercis x canadensis* | 2.0" CALIPER 10' HT | 21 EA. | |
| | | RED OAK *Quercus rubra* | 2.5" CALIPER 12' HT | 21 EA. | |
| | | SERBIAN SPRUCE *Picea omorika* | 6' HT | 11 EA. | |
| | | SHADEMASTER HONEY LOCUST *Gleditsia triacanthos 'Shademaster'* | 2.5" CALIPER 12' HT | 5 EA. | |
| MISC. | | RTF – RHIZOMATOUS TALL FESCUE SOD | | 106,200 S.F. | |
| | | RTF – RHIZOMATOUS TALL FESCUE SEED | | 13,700 S.F. | |

A LANDSCAPE BUFFER EQUALING A LEVEL 2 WILL BE INSTALLED ON THE SOUTHEAST PROPERTY LINE AS NOTED IN THE STAFF REPORT. PER THE UDO, TO QUALIFY FOR LEVEL 2 THE LANDSCAPING MUST EQUAL OR EXCEED 3 UNIT VALUE EQUIVALENTS OF PLANTS PER 100 LINEAR FEET, WITH 40% BEING DERIVED FROM EVERGREEN TREES, EVERGREEN SHRUBS, EVERGREEN HEDGES AND/OR EARTHEN MOUNDS.

## LANDSCAPE REQUIREMENTS

| | REQUIRED ORDINANCE | PROVIDED |
|---|---|---|
| ON-SITE REQUIREMENTS | 5.38.F.1 | |
| | 2 SHADE TREES PER 5,000 SF OF GROSS BUILDING AREA (GBA)<br>2 EVERGREEN TREES PER 5,000 SF OF GBA<br>3 ORNAMENTAL TREES PER 5,000 SF OF GBA<br>16 LARGE SHRUBS PER 5,000 SF OF GBA<br>REQUIRED PLANTS<br>GBA = 7,318 SF. / 5,000 SF = 1.46<br>1.46(2) = 2.92 : 3 SHADE TREES<br>1.46(2) = 2.92 : 3 EVERGREEN TREES<br>1.46(3) = 4.38 : 4 ORNAMENTAL TREES<br>1.46(16) = 23.36 : 23 LARGE SHRUBS | 3 SHADE TREES<br>3 EVERGREEN TREES<br>4 ORNAMENTAL TREES<br>25 LARGE SHRUBS |
| STREET FRONTAGE REQUIREMENTS | 5.38.F.2 | |
| | TREES SHALL BE PLANTED 30 FEET APART ON CENTER AND ADJACENT TO THE PUBLIC RIGHT OF WAY OR GROUPED TOGETHER TO FORM A NATURAL LOOKING AREA WHERE FEASIBLE.<br>LEVEL 2 REQUIRED LANDSCAPING REQUIRED AT A RATE OF 3 PLANT UNITS PER 100 LF<br><br>RONALD REAGAN PKWY 450LF<br>765/100 = 7.65 (3) = 22.95 UNITS<br>14 SHADE TREES = 10.5<br>50 EVERGREEN SHRUBS = 12.5<br>TOTAL UNITS = 23.0<br><br>GENERATIONS STREET 275 LF<br>275/100 = 2.75 (3) = 8.25 UNITS<br>5 SHADE TREES = 3.75<br>18 EVERGREEN SHRUBS = 4.5<br>TOTAL UNITS = 8.25<br><br>CORRUGATED AVENUE<br>650/100 = 6.5 (3) = 19.5 UNITS<br>11 SHADE TREES = 8.25<br>45 EVERGREEN SHRUBS = 11.25<br>TOTAL UNITS = 19.5 | RONALD REAGAN PKWY<br>14 SHADE TREES<br>50 EVERGREEN SHRUBS<br><br>GENERATIONS STREET<br>5 SHADE TREES<br>18 EVERGREEN SHRUBS<br><br>CORRUGATED AVENUE<br>11 SHADE TREES<br>45 EVERGREEN SHRUBS |
| INTERIOR PARKING LOT REQUIREMENTS | 5.39.A.1 | |
| | MINIMUM OF 1 TREE PER PARKING ISLAND OR PER 180 SF OF PARKING ISLAND AREA MUST BE PROVIDED.<br>A MINIMUM OF 5 SHRUBS PER PARKING ISLAND OR PER 180 SQUARE FEET OF PARKING ISLAND MUST BE PROVIDED.<br>100% OF PARKING ISLANDS SHALL BE LANDSCAPED WITH PLANT MATERIAL, TURF OR ORGANIC MULCH. EACH ISLAND SHALL HAVE A MINIMUM OF 1 SHADE TREE OR 1 EVERGREEN TREE. | 8 PARKING ISLANDS = 1,440sf<br>8 SHADE TREES<br>40 SHRUBS |
| PERIMETER PARKING LOT REQUIREMENTS | 5.39.A.2 | |
| | ONE TREE PER 30 LF OF YARD LENGTH.<br><br>ONE MEDIUM SHRUB PER 3 LF OF YARD LENGTH EITHER CLUSTERED OR SPACED LINEARLY.<br><br>GRASS OR GROUND COVER SHALL BE PLANTED ON ALL PORTIONS OF THE LANDSCAPED AREAS NOT OCCUPIED BY OTHER LANDSCAPED MATERIAL, EXCLUDING ORGANIC MULCH AROUND PLANTINGS OF LANDSCAPE MATERIAL.<br><br>YARD LENGTH 100 LF<br>140/30 = 4.6 : 5 SHADE TREES<br>140/3 = 46.7 : 47 MEDIUM SHRUBS REQUIRED | 5 SHADE TREES<br>47 MEDIUM SHRUBS |
| FOUNDATION PLANTINGS | NONE REQUIRED PER ORDINANCE | |
| SOUTH PROPERTY LINE | LEVEL 2 REQUIRED<br>YARD LENGTH 345 LF<br>345/100 = 3.45 (3) = 10.35<br>6 SHADE TREES = 4.5<br>12 EVERGREEN TREES = 6.0<br>TOTAL UNITS = 10.50 | 6 SHADE TREES<br>12 EVERGREEN TREES |
| PERIMETER LANDSCAPING REQUIREMENTS | 7.30 D.2 | |
| | TREES (I.E. CANOPY, ORNAMENTAL, UNDERSTORY OR EVERGREEN) SHALL BE PROVIDED AT A COMBINED RATE OF TEN (10) PER 100 LINEAL FEET OF PERIMETER PLANTING. SHRUBS SHALL BE PROVIDED AT A RATE OF TWO (2) PER 100 LINEAL FEET OF PERIMETER PLANTING. | 6 SHADE TREES<br>12 EVERGREEN TREES |
| RONALD REAGAN PKWY. | YARD LENGTH 450 LF<br>450/100 = 4.50 (10) = 45 TREES REQUIRED<br>450/100 = 4.5 (2) = 9 SHRUBS REQUIRED | 16 SHADE TREES<br>18 UNDERSTORY TREES<br>11 EVERGREEN TREES<br>45 TREES<br><br>9 SHRUBS |
| GENERATIONS ST. | YARD LENGTH 275 LF<br>275/100 = 2.75 (10) = 28 TREES REQUIRED<br>275/100 = 2.75 (2) = 6 SHRUBS REQUIRED | 13 SHADE TREES<br>15 UNDERSTORY TREES<br>28 TREES<br><br>6 SHRUBS |


DILLON K. REYNOLDS
REGISTERED
No. PE12000722
STATE OF INDIANA
PROFESSIONAL ENGINEER
Dillon Reynolds
PROJECT NO.:12064.02

Spaceco
Civil Engineering & Surveying
3050 Priority Way South Drive Suite 110
Indianapolis, Indiana 46240
Phone: 317-580-2994
spaceco@sc.com


# QuikTrip No. 7263

US HWY 136 & RONALD REAGAN PARKWAY
BROWNSBURG, INDIANA


© COPYRIGHT QUIKTRIP CORPORATION 2011
ANY UNAUTHORIZED USE, REPRODUCTION, PUBLICATION, DISTRIBUTION, OR SALE IN WHOLE OR IN PART, IS STRICTLY FORBIDDEN.


| | |
|---|---|
| PROTOTYPE: | P-114 |
| DIVISION: | -- |
| VERSION: | 001 |
| DESIGNED BY: | ALR |
| DRAWN BY: | ALR |
| REVIEWED BY: | DKR |

| REV | DATE | DESCRIPTION |
|---|---|---|
| 4 | 09/18/24 | DRAINAGE COMMENTS |
| 3 | 06/27/24 | SWPPP/DRN/PLANNING COMMENTS |
| 2 | 02/01/24 | BROWNSBURG COMMENTS |
| 1 | 01/08/24 | INITIAL BROWNSBURG SUBMITTAL |

ORIGINAL ISSUE DATE: 01/05/2024

SHEET TITLE:

LANDSCAPE TABLES

SHEET NUMBER:

L101


FILE LOCATION:N:\Projects 2022\12064 – INDY\12064.02 – QuikTrip Brownsburg\12064.02_Civil (P-114).dwg TAB NAME:Landscape Tables USER:arench SAVED:9/18/2024 1:11 PM PLOTTED:9/18/2024 1:22 PM

# Advisory Plan Commission
# TECHNICAL REVIEW COMMITTEE

TOWN OF Brownsburg
61 North Green Street | Brownsburg, Indiana 46112
Tel 317.852.1128 | Fax 317.852.1134

Project Name: Quik Trip Landscape Plan
Record Number: PSDP-25-11
TECH Meeting Date: 12/18/25

The following Technical Review Committee ("TECH") members provided comments for the project as detailed below:

Development Services
- [x] Kevin Tolloty, Senior Planner
- [ ] Lauren Bouslog, Planner I
- [ ] Steve Fletcher, Building Commissioner/Director
- [ ] Frank Wise, Senior Building Inspector

Town Administration
- [ ] Debbie Cook, Town Manager
- [ ]
- [ ] Ethan Pierce, Economic Development Manager

Water Department
- [x] Frank Monts, Superintendent

Wastewater Department
- [x] Kathy Dillon, Water Utilities Director
- [ ]

Street Department
- [ ] Aaron Love, Superintendent
- [ ] Matt Griner, Asst. Superintendent

Parks Department
- [ ] Amber Lane, Director
- [ ]

Fire Territory
- [ ] Paul Hudson, Fire Marshal
- [ ] Jeff Schlageter, Deputy Fire Marshal

Police Department
- [ ] Joe Grimes, Chief
- [ ] Pat Bullock, Captain
- [ ] Bryan Fultz, Major

External Agencies
- [ ] Regan Huff, BCSC
- [x] Dave Gaston, P.S., Hend. Co. Surveyor
- [ ] John Ayers, Hendricks Co. Engineer
- [x] Mary Atkins, Wessler Engineering
- [ ] Angie DeKemper, CountryMark
- [ ] Gerry Jones, Vectren

## 1) DEVELOPMENT SERVICES

5.10 (D) Street Frontage Landscaping

a) One (1) additional ornamental tree should be shown along Generations Street (four calculated, only three shown on plan).

5.11 (A) On-Site Landscaping

b) Please recalculate the area of open space. Current calculation appears to be from the previous plan for building area. Calculation now refers to total open space instead of building area. Additional plantings will be required.

5.11 (C) Parking Lot Landscaping

c) Please ensure all landscape islands are a minimum of 160 square feet. Label square footage of each island.

d) There should be a total of ten (10) parking lot island trees - one (1) at the end of each row of parking.

5.11 (D) Foundation Plantings

e) There should be a total of 58 foundations plantings - 22 each on the east and west sides, 7 each on the north and south. The north, east, and west sides all have street frontage and would be considered fronts, south is considered a side.

f) A max. of 20% of the 58 plantings may be ornamental grasses (max. of 12). Currently 16 are shown in the plans.

Other Landscape Comments

g) 12 Chokeberry plants are indicated in the landscape schedule but not shown on the plan.

h) No more than one species of shrub may make up over 35% of the total. Currently the number of yew plants is over 35% of the shrubs.

**2) BUILDING**

a) None

**3) CAPITAL PROJECTS**

a) None

**4) ECONOMIC DEVELOPMENT**

a) None

**5) WATER**

a) None - This is in Citizens Energy Group's water service area

**6) WASTEWATER**

a) None - Sanitary is outside of Brownsburg service area

**7) STREET/PUBLIC WORKS**

a) None

**8) PARKS**

a) None

**9) FIRE TERRITORY**

a) None

**10) POLICE**

a) None

**11) STORMWATER**

a) See attached

**12) BROWNSBURG COMMUNITY SCHOOL CORPORATION**

a) None

13) **HENDRICKS COUNTY SURVEYOR**

a) This project is not required to receive Drainage Board approval.

14) **HENDRICKS COUNTY ENGINEER**

a) None

15) **COUNTRYMARK**

a) None

16) **VECTREN**

a) None

*Please provide a written response to this report addressing each issue and, if necessary, indicate where on the revised plans the modification has been made.*

## TOWN OF BROWNSBURG STORMWATER/DRAINAGE PLAN REVIEW

CO Comment Originator
CR Comment Respondee

**NAME OF PROJECT: QuikTrip 7263**
**DESIGN PACKAGE: Development Plan**
**DESIGNER: Spaceco**

| | | Wessler - Reviewer to complete | | Designer to complete | |
|---|---|---|---|---|---|
| No. | PAGE/SHEET REFERENCE | CO | COMMENT | CR | RESPONSE |
| | General | RS | The following comments are for information and planning purposes when preparing development plans. Note that Chapter 151 was updated April 25, 2024. | | |
| 1 | Storm sewer design | RS | For the future development plan submittal, refer to Ch. 151.21 D. for storm sewer design standards and drainage report requirements. | | |
| 2 | Flood routing | RS | For development plans, evaluate stormwater ponding and overflow path routing for Ch. 151.21 I. | | |
| 3 | Drainage Report | RS | Refer to Ch. 151.20.B (2)(f) for drainage report guidelines. Include runoff, storm sewer sizing calculations, etc. when preparing the drainage report. | | |
| 4 | Post-construction stormwater quality | RS | Refer to Ch. 151.23 for post-construction water quality volume and flow rate requirements. Upstream BMPs are required for ponds/underground detention. An Operation and Maintenance Manual and easements are required for BMPs. (Note: 30 minute minimum Tc for water quality flow rate calculations). For gas stations, additional treatment is required to remove zinc, copper, lead and polyaromatic hydrocarbons. | | |
| 5 | County approval | RS | Coordinate with the Hendricks County Surveyor to determine if Drainage Board approval is necessary. | | |
| 6 | Details and specifications | RS | Refer to the Town's Standard Details and Specifications when developing Construction Plans. | | |
| 7 | Stormwater detention | RS | Detention design requirements follow Chapter 151.21 and Detail EW-04 "Detention/Retention Ponds" in the Town's Standard Details and Specifications. Ordinance revised in April 2024. | | |
| 8 | Adequate outlet | RS | Ensure that there is an adequate outlet for drainage of stormwater. | | |
| 9 | Impervious Surface Area | RS | For projects that are not single family homes, please provide the total amount of impervious surface area in square feet for the completed project. In addition to the total, provide a breakdown of total compacted gravel, total concrete/asphalt and total building footprint (in square feet). This is used for stormwater utility billing. | | |
| 10 | Erosion control and SWPPP | MMT | If the project will disturb 1 acre or more of land then a SWPPP and Construction Stormwater General Permit will be required for the development plan submittal. Refer also to Chapter 151.22 for SWPPP requirements. | | |

**These comments should not be construed as a comprehensive list of comments, and the reviewer may make additional comments based on subsequent submittals**

Spaceco
Civil Engineering & Surveying

3850 Priority Way S. Dr., Suite 110, Indianapolis, IN 46240 | spacecoinc.com

December 31, 2025

**Technical Review Committee**
Town of Brownsburg
61 North Green Street
Brownsburg, Indiana 46112

**RE: PDSP-25-11 – QuikTrip Landscape Plan**

Dear Technical Advisory Committee:

The following is our response to your initial comments from the Technical Review Committee meeting on December 18th, 2025.

**DEVELOPMENT SERVICES**

5.10 (D) Street Frontage Landscaping
- 1 redbud tree was added along Generations drive.

5.11 (A) On-Site Landscaping
- On site open space area was recalculated and updated accordingly on the chart
- 9 shade trees were added - 3 Green Mountain Sugar Maple and 6 Tulip Tree
- 19 large shrubs were added - 3 Mohawk Viburnum and 16 Oakleaf Hydrangea

5.11 (C) Parking Lot Landscaping
- The square footage of parking lot islands has been added to the plan. There are two under 160 square feet, but the required plantings still fit within this space. These islands have already been constructed in the field and were previously approved.
- There appear to be 9 parking lot islands on the plan. 4 Ginko trees have been added for a total 9 parking lot island trees

5.11 (D) Foundation Plantings
- 26 additional foundation plantings have been added
- 32 plants are shown around the building. The additional 26 have been added to the parking lot islands. The UDO allows flexibility for location depending on the entrances and access requirements around the building.
- 4 ornamental grasses were removed to meet the 20% requirement

Other Landscape comments.

- The chokeberry plants have been updated accordingly
- The amount of yews have been reduced and replaced with lilacs

**STORMWATER**

The stormwater design was approved under DPR-24-1 that satisfy all these requirements. No changes are proposed to the stormwater system.

Please contact me with any questions or concerns you may have regarding the attached submittal.
Sincerely,



**Dillon Reynolds, PE**
Senior Project Manager
dreynolds@spacecoinc.com
(317) 779-2194

TOWN OF Brownsburg

## AFFIDAVIT & CONSENT OF PROPERTY OWNER

That I/We QuikTrip Corporation after first being duly sworn, depose and say:

That I am/we are the owner(s) of Real Estate located at: (Legal and/or common address)
4713 Corrugated Avenue, Brownsburg, IN 46112

Parcel Number(s): 32-08-18-115-006.000-016

That we have examined the application for a/an DPR (revised landscape plan) on this property, and I/we are familiar with its contents.
(application type)

That I/we have no objections to, and consent to such request as set forth in the application.

Signature of Affiant

Gwen Keen, QuikTrip Corporatio
Printed Name

State of Missouri )
) SS:
County of St. Charles )

BEFORE ME, the undersigned, a Notary Public in and for said County and State, personally appeared Gwen Keen, who acknowledged the execution of the above and foregoing instrument to its voluntary act and deed on the 5th day of Dec, 2026

4.27.26
Commission Expiration Date

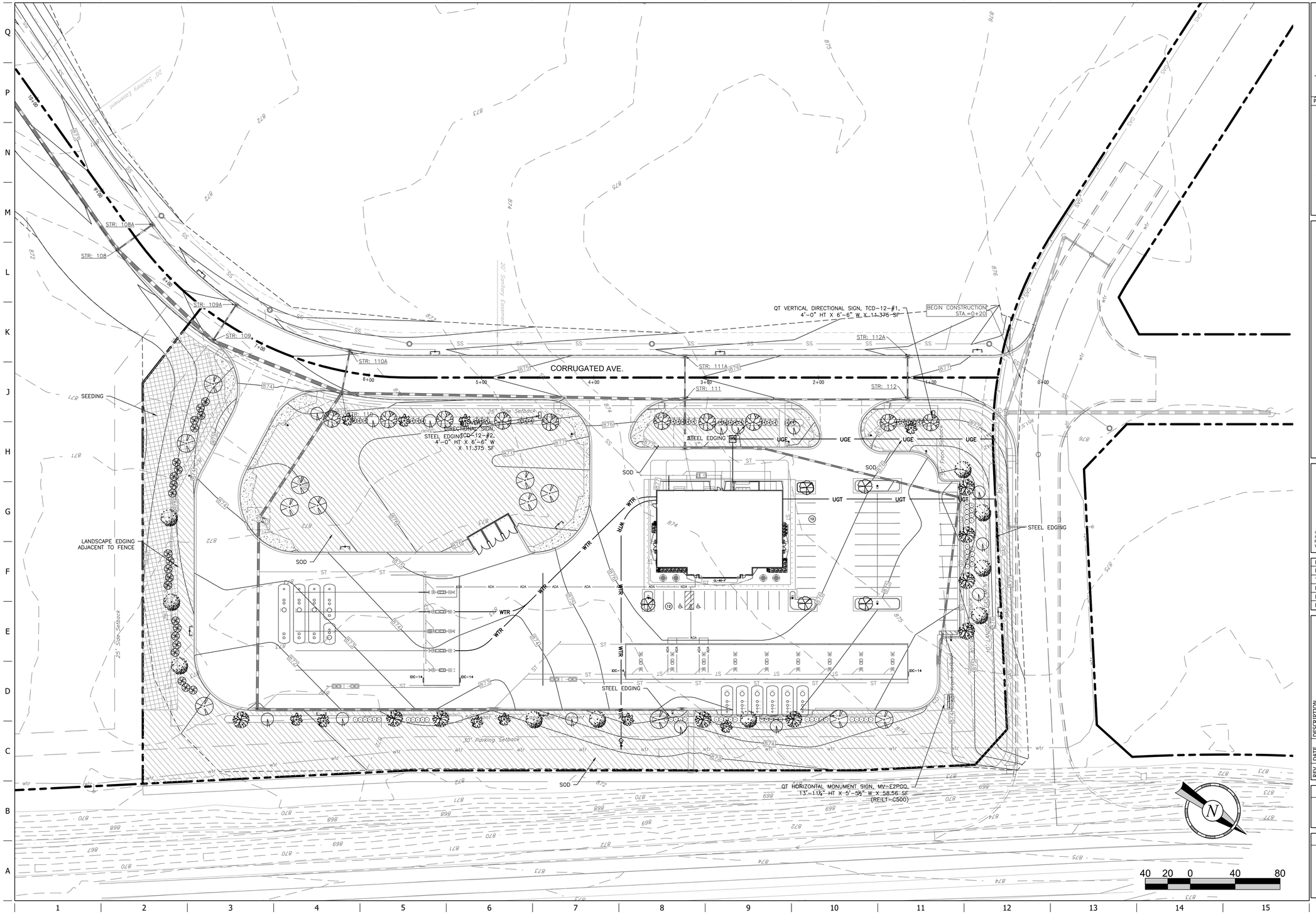
St. Charles
County of Residence

Anne M. Adams
Notary

Anne M. Adams
Printed Name

ANNE M. ADAMS
Notary Public - Notary Seal
St Charles County - State of Missouri
Commission Number 14434098
My Commission Expires Apr 27, 2026

ANNE M. ADAMS
Notary Public - Notary Seal
St Charles County - State of Missouri
Commission Number 14434098
My Commission Expires Apr 27, 2026




DILLON K. REYNOLDS
REGISTERED
No. PE12000722
STATE OF INDIANA
PROFESSIONAL ENGINEER

Dillon Reynolds

PROJECT NO.:12064.02

Spaceco
Civil Engineering & Surveying

# QuikTrip No. 7263

4713 CORRUGATED AVENUE
BROWNSBURG, INDIANA 46112

© COPYRIGHT QUIKTRIP CORPORATION 2011 ANY UNAUTHORIZED USE, REPRODUCTION, PUBLICATION, DISTRIBUTION, OR SALE IN WHOLE OR IN PART, IS STRICTLY FORBIDDEN.

PROTOTYPE: P-120
DIVISION: REMOTE
VERSION: RTC
DESIGNED BY: ALR
DRAWN BY: ALR
REVIEWED BY: DKR

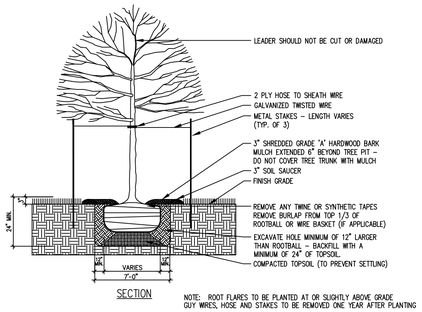
| REV | DATE | DESCRIPTION |
|---|---|---|
| 6 | 11/12/25 | PLAN REVISIONS |
| 5 | 10/14/25 | PLAN REVISIONS |
| 4 | 07/17/25 | ISSUED FOR CONSTRUCTION |
| 3 | 05/01/25 | BID DOCUMENTS |
| 2 | 04/07/25 | FPC REVISIONS |
| 1 | 02/26/25 | BID DOCUMENTS |

ORIGINAL ISSUE DATE: 08/29/2023

SHEET TITLE:
LANDSCAPE PLAN

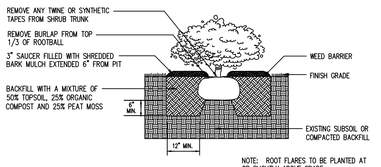
SHEET NUMBER:
L100

FILE LOCATION:N:\Projects 2022\12064 - INDY\12064.02 - QuickTrip Brownsburg\12064.02_Civil (P-120 Re-roll).dwg TAB NAME:Landscape USER:bgoss SAVED:11/26/2025 10:12 AM PLOTTED:11/26/2025 10:44 AM




# DECIDUOUS TREE DETAIL

NOT TO SCALE




# SHRUB DETAIL

## PLANTING NOTES:

1. IN CASE OF DISCREPANCIES BETWEEN THE PLAN AND THE PLANT LIST, THE PLAN SHALL DICTATE

2. ALL SHRUB AND TREE PLANTING AREAS TO BE COVERED WITH 3" LAYER OF SHREDDED HARDWOOD BARK MULCH THAT IS BROWN IN COLOR.

3. ALL BACKFILL FOR TREE AND SHRUB PLANTINGS SHALL BE FROM EXISTING SOILS. A 5–10–5 ANALYSIS SLOW RELEASE FERTILIZER SHALL BE INCORPORATED INTO BACKFILL AT APPROVED RATES.

4. FINAL PLACEMENT OF PLANT MATERIALS, ETC. SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING OPERATIONS. ALL TREE LOCATIONS SHALL BE MARKED WITH A WOOD STAKE INDICATING VARIETY AND SIZE OF TREE. PLANTING BED LINES SHALL BE MARKED WITH HIGHLY VISIBLE PAINT LINES WITH OCCASIONAL WOOD STAKES FOR REFERENCE. ALL STAKES SHALL BE REMOVED FOLLOWING PLANTING OPERATIONS. LANDSCAPE ARCHITECT RESERVES THE RIGHT TO ADJUST PLANT LOCATIONS ON THE SITE.

5. NO SUBSTITUTIONS OF PLANT MATERIALS WILL BE ALLOWED. IF PLANTS ARE NOT AVAILABLE, THE CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT PRIOR TO BIDDING IN WRITING. PLANTS MAY BE INSPECTED AND APPROVED OR REJECTED ON THE JOB SITE BY THE LANDSCAPE ARCHITECT.

6. ALL PLANTS SHALL MEET OR EXCEED AMERICAN STANDARDS FOR NURSERY STOCK, ANSI Z60.1–2004.

7. PLANTS AND ALL OTHER MATERIALS TO BE STORED ON SITE WILL BE PLACED WHERE THEY WILL NOT CONFLICT WITH CONSTRUCTION OPERATIONS.

8. CONTRACTOR TO OBTAIN AND PAY FOR ALL PERMITS AND FEES THAT MAY BE REQUIRED FOR HIS PORTION OF THE WORK.

9. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT IN WRITING PRIOR TO BID DATE OF ANY PLANTS THEY FEEL MAY NOT SURVIVE IN LOCATIONS AS NOTED ON THE PLANS.

10. ALL LANDSCAPE PLANTINGS TO BE MAINTAINED BY CONTRACTOR FOR 60 DAYS FOLLOWING PLANTING.. GUY WIRES, HOSE AND STAKES TO BE REMOVED ONE YEAR AFTER PLANTING.. MAINTENANCE TO INCLUDE WATERING, WEEDING, CULTIVATING, MULCHING, MOWING, AND ALL OTHER NECESSARY OPERATIONS REQUIRED FOR PROPER ESTABLISHMENT OF PLANTINGS.

11. ALL INSTALLED PLANTINGS SHALL BE APPROPRIATELY WATERED FOR A MINIMUM PERIOD OF ONE YEAR TO ALLOW FOR THEIR ESTABLISHMENT

12. ALL LANDSCAPE PLANTINGS SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FOLLOWING FINAL INSPECTION BY LANDSCAPE ARCHITECT. AT END OF THIS PERIOD, PLANT MATERIAL TERMED DEAD OR UNSATISFACTORY BY LANDSCAPE ARCHITECT SHALL BE REPLACED AT NO ADDITIONAL CHARGE BY THE LANDSCAPE CONTRACTOR.

## Landscape Schedule

| USE | SYMBOL | COMMON NAME / *Botanical Name* | MINIMUM SIZE/ HEIGHT/SPREAD | QUANTITIES | COMMENTS |
|---|---|---|---|---|---|
| SHRUBS | | BLACK CHOKEBERRY *Taxus x media 'Wardii"* | HEIGHT/SPREAD 18" X 12" MIN | 12 EA. | SEE LANDSCAPE PLAN AND ASSOCIATED DETAILS FOR LANDSCAPE BED LOCATIONS AND SHRUB SPACING |
| | | COMPACT INKBERRY *Ilex glabra 'Compacta'* | HEIGHT/SPREAD 24" X 30" MIN | 19 EA. | |
| | | NICK'S COMPACT JUNIPER *Juniperus chinensis 'Nick's Compact* | HEIGHT/SPREAD 24" X 18" MIN | 32 EA. | |
| | | MOHAWK VIBURNUM Viburnum x burkwoodii 'Mohawk' | HEIGHT/SPREAD 30" X 20" MIN | 23 EA. | |
| | | WARD'S YEW *Taxus x media "Wardii"* | HEIGHT/SPREAD 24"ø X 18" HT MIN | 54 EA. | |
| TREES | | FRONTIER ELM *Ulmus x 'Frontier'* | 2.5" CALIPER 12' HT | 10 EA. | SEE LANDSCAPE PLAN AND ASSOCIATED DETAILS FOR TREE PLACEMENT, AND PLANTING SPECIFICATIONS<br>CONTRACTOR TO VERIFY TREE TYPE, LOCATION, SIZE, HEIGHT, AND SPREAD WITH QT REPRESENTATIVE PRIOR TO INSTALLATION |
| | | GREEN MOUNTAIN SUGAR MAPLE *Acer saccharum 'Green Mountain'* | 2.5" CALIPER 12' HT | 9 EA. | |
| | | PRINCESS DIANA SERVICEBERRY *Amelanchier x grandiflora' 'Princess Diana'* | 2.0" CALIPER 10' HT | 10 EA. | |
| | | PRINCETON SENTRY GINKGO *Ginkgo biloba 'Princeton Sentry'* | 2.5" CALIPER 12' HT | 5 EA. | |
| | | REDBUD – SINGLE STEM *Cercis x canadensis* | 2.0" CALIPER 10' HT | 14 EA. | |
| | | RED OAK *Quercus rubra* | 2.5" CALIPER 12' HT | 12 EA. | |
| | | SHADEMASTER HONEY LOCUST *Gleditsia triacanthos 'Shademaster'* | 2.5" CALIPER 12' HT | 10 EA. | |
| ORNAMENTAL GRASS | | DWARF FOUNTAIN GRASS *Pennisetum alopecuroides 'Hameln'* | 12" – 18" MIN. | 16 EA. | |
| MISC. | | RTF – RHIZOMATOUS TALL FESCUE SOD | | 106,200 S.F. | |
| | | RTF – RHIZOMATOUS TALL FESCUE SEED | | 13,700 S.F. | |

## LANDSCAPE REQUIREMENTS - UPDATED ORDINANCE

| | REQUIRED ORDINANCE | PROVIDED |
|---|---|---|
| ON-SITE REQUIREMENTS | 5.11A<br>COMMERCIAL DEVELOPMENT<br>4 SHADE TREES AND 8 LARGE SHRUBS PER HALF ACRE OF OPEN SPACE<br><br>OPEN SPACE AREA:<br>1.46AC/.5 =(2.92) 4 = 11.7<br>1.46AC/.5 =(2.92) 8 = 23.4<br><br>SHADE TREES = 12<br>LARGE SHRUBS = 23 | <br><br><br><br><br><br>SHADE TREES = 12<br>LARGE SHRUBS = 23 |
| STREET FRONTAGE REQUIREMENTS | 5.10 D<br>LANDSCAPING IS REQUIRED ALONG PERIMETER ROADS OF A SUBDIVISION AND ALONG ALL STREET FRONTAGES (PUBLIC OR PRIVATE STREETS, NOT INCLUDING SHARED ACCESS DRIVES OR DRIVEWAYS.<br><br>COMMERCIAL USE PER 100LF:<br>1.5 SHADE OR EVERGREEN TREES<br>1.5 ORNAMENTAL TREES<br>5 SHRUBS<br><br>RONALD REAGAN PKWY 720LF<br>720/100 = 7.2 (1.5) = 10.8<br>SHADE OR EVERGREEN TREES = 11<br>ORNAMENTAL TREES =11<br>7.2 (5) = 36.0<br>SHRUBS = 36<br><br>GENERATIONS STREET 275 LF<br>275/100 = 2.75 (1.5) = 4.12<br>SHADE OR EVERGREEN TREES = 4<br>ORNAMENTAL TREES = 4<br>2.75 (5) = 13.75<br>SHRUBS = 14<br><br>CORRUGATED AVENUE 650 LF<br>650/100 = 6.5 (1.5) = 9.75<br>SHADE OR EVERGREEN TREES = 10<br>ORNAMENTAL TREES = 10<br>6.5 (5) = 32.5<br>SHRUBS = 33 | <br><br><br><br><br><br><br><br><br>SHADE OR EVERGREEN TREES = 11<br>ORNAMENTAL TREES =11<br>SHRUBS = 36<br><br><br><br><br>SHADE OR EVERGREEN TREES = 4<br>ORNAMENTAL TREES = 4<br>SHRUBS = 14<br><br><br><br><br>SHADE OR EVERGREEN TREES = 10<br>ORNAMENTAL TREES = 10<br>SHRUBS = 33 |
| INTERIOR PARKING LOT REQUIREMENTS | 5.11 C<br>LANDSCAPE ISLANDS MUST BE A MINIMUM AREA OF 160 SF. 1 TREE PER INDIVIDUAL ISLAND OR PER 160 SF. LANDSCAPE ISLANDS ARE REQUIRED AT THE ENDS OF ALL ROWS OF PARKING. SHRUBS ARE BROADLY DISCOURAGED FOR ISLANDS TO AVOID FUTURE GROWTH THAT BLOCKS VISIBILITY. SHORT GRASSES OR FLOWERS MAY BE INCLUDED IN ISLANDS AS DESIRED.<br><br>TREES = 6 | <br><br><br><br><br><br>TREES = 6 |
| PERIMETER PARKING LOT REQUIREMENTS | 5.11 C<br>ONE SHADE TREE AT 35 FEET ON CENTER<br><br>FOUR EVERGREEN SHRUBS PER 35 LF.<br>YARD LENGTH 100 LF<br>140/35 = 4.0 (4) = 4 SHADE TREES<br>140/35 = 4.0 (4) = 16 EVERGREEN SHRUBS<br><br>SHADE TREES = 4<br>EVERGREEN SHRUBS = 16 | <br><br><br><br><br><br>SHADE TREES = 4<br>EVERGREEN SHRUBS = 16 |
| FOUNDATION PLANTINGS | 5.11 D<br>FOUNDATION PLANTINGS SHALL BE PROVIDED TO HELP SOFTEN LONG EXPANSES OF WALLS AND CREATE ATTRACTIVE BUILDING FACADES.<br>AMOUNT<br>FACADES UNDER 100' IN LENGTH. ANY FRONT OR SIDE FACADE SHALL INCLUDE FOUNDATION PLANTINGS AT A RATE OF 1 SHRUB OR ORNAMENTAL TREE PER 10 FEET OF FACADE LENGTH.<br><br>FACADES 100' IN LENGTH OR MORE. ANY FRONT OR SIDE FACADE SHALL INCLUDE PLANTINGS AT A RATE OF 2 SHRUBS OR ORNAMENTAL TREES PER 10' OF FACADE LENGTH<br><br>FRONT/REAR = 112LF<br>112/10 = 11.2 (2) = 22.4<br><br>SHRUBS OR ORNAMENTAL TREES = 22 PER FACADE<br><br>SIDES = 70LF<br>70/10 = 7 (1) = 7<br><br>SHRUBS OR ORNAMENTAL TREES = 7 PER SIDE<br><br>ORNAMENTAL GRASSES AND PERENNIAL FLOWERS MAY BE PLACED IN LIEU OF REQUIRED SHRUBS OR TREES AT THE RATES LISTED BELOW<br><br>a. NO MORE THAN 20% OF THE REQUIRED PLANT MATERIAL MAY BE ORNAMENTAL GRASS.<br><br>b. NO MORE THAN 10% OF THE REQUIRED MATERIAL MAY BE PERENNIAL FLOWER BEDS. | |
| REQUIRED BUFFERS AND PERIMETER PLANTINGS | 5.10 A–C<br>NONE REQUIRED PER ORDINANCE | |

DILLON K. REYNOLDS
REGISTERED
No. PE12000722
STATE OF INDIANA
PROFESSIONAL ENGINEER
Dillon Reynolds

PROJECT NO.:12064.02

Spaceco
Civil Engineering & Surveying
3050 Priority Way South Drive Suite 110
Indianapolis, Indiana 46240
(317) 580-2964
spacecoinc.com

QuikTrip No. 7263
4713 CORRUGATED AVENUE
BROWNSBURG, INDIANA 46112

© COPYRIGHT QUIKTRIP CORPORATION 2011
ANY UNAUTHORIZED USE, REPRODUCTION, PUBLICATION, DISTRIBUTION, OR SALE IN WHOLE OR IN PART, IS STRICTLY FORBIDDEN.

| | |
|---|---|
| PROTOTYPE: | P-120 |
| DIVISION: | REMOTE |
| VERSION: | RTC |
| DESIGNED BY: | ALR |
| DRAWN BY: | ALR |
| REVIEWED BY: | DKR |

| REV | DATE | DESCRIPTION |
|---|---|---|
| 6 | 11/12/25 | PLAN REVISIONS |
| 5 | 10/14/25 | PLAN REVISIONS |
| 4 | 07/17/25 | ISSUED FOR CONSTRUCTION |
| 3 | 05/01/25 | BID DOCUMENTS |
| 2 | 04/07/25 | PPC REVISIONS |
| 1 | 02/26/25 | BID DOCUMENTS |

ORIGINAL ISSUE DATE: 08/29/2023

SHEET TITLE:
LANDSCAPE TABLES

SHEET NUMBER:
L101

FILE LOCATION:N:\Projects 2022\12064 – INDY\12064.02 – QuikTrip Brownsburg\12064.02_Civil (P-120 Re-roll).dwg TAB NAME:Landscape Tables USER:mromeo SAVED:11/12/2025 10:47 AM PLOTTED:11/26/2025 9:54 AM

# Advisory Plan Commission

## Town of Brownsburg

**Assigned Staff:** Lauren Bouslog, Planner I

**Report Date: 2/11/2026**

**Request Type:** Development Plan Review

### General Information

| | |
|---|---|
| **CASE NUMBER** | PSDP-26-1 |
| **APPLICANT** | Jillian Richardson, Woolpert Inc. |
| **LOCATION** | 32-08-06-311-006.000-016. Within Outlot A in the new Meijer subdivision on E. 56th St. |
| **PARCEL SIZE** | 1.21 acres |

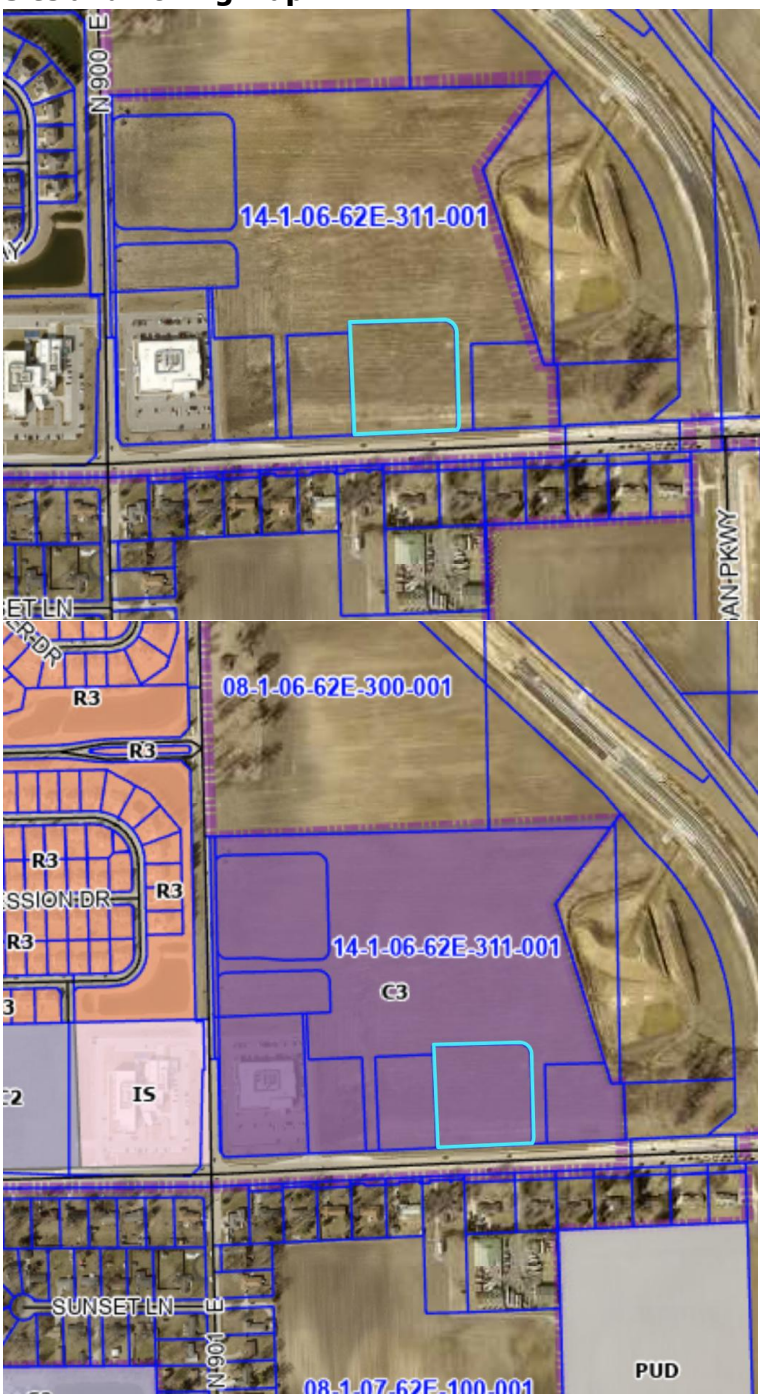
### Cross References

| | |
|---|---|
| **Previous APC Cases** | PSDP-23-18; Development Plan Review for the Meijer at 56th & 900<br>PCPP-23-10; Primary Plat for the Meijer at 56th & 900<br>PCCZ-06-21-1922; Meijer at 56th & 900 Commerce Park Rezone to C2 (C3 under new 2025 ordinance)<br>APLA-26-1 (submitted with this development plan review – not yet signed); Administrative Plat to subdivide Outlot A into Lot 8 & 9 (Heartland Dental would be in the smaller Lot 9 in the southeast corner of the parcel) |
| **Relevant BZA Cases** | N/A for this outlot (There have been several variances for the main Meijer store lot & parking to the north) |
| **Other** | The parcel was annexed into the Town of Brownsburg under Ord. No. 2021-28 in 2021. |

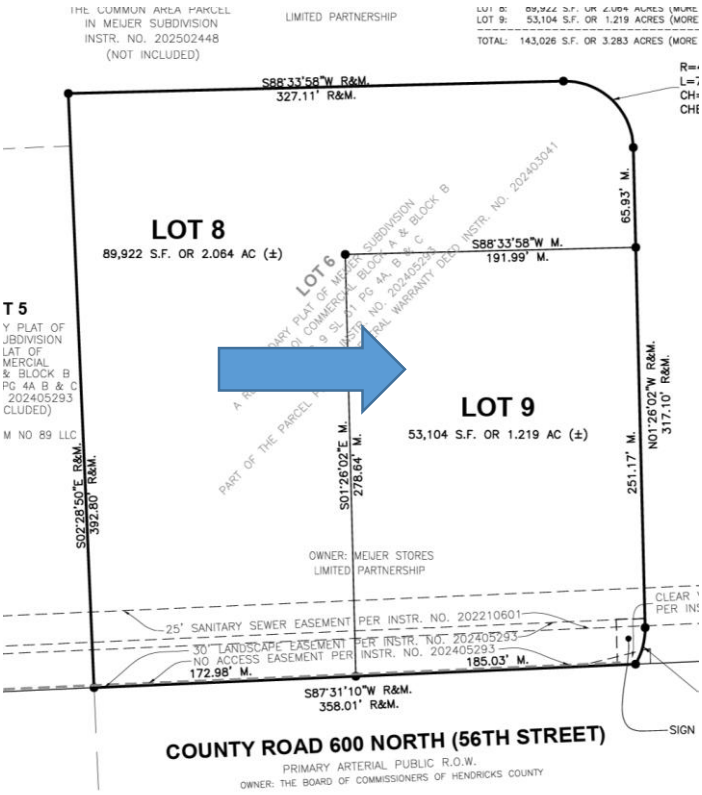
### Attachments

| | |
|---|---|
| ☒ | Tech Review & Response |
| ☒ | Site Plan/Civil |
| ☒ | Landscape Plan |
| ☒ | Architectural Plans |
| ☒ | Other: Stormwater Management Report, O & M Manual, Lighting Plan |

**Site and Zoning Map:**



## Proposed Administrative Plat with Outlot Subdivide:




## Project and Site Background:

This proposed development includes the construction of a 4,285 sq. ft. Heartland Dental office building with associated sidewalks, parking area, landscaping, and utilities on 1.21 acres. The project will get access from a private drive in between Heartland Dental and the new Meijer gas station to the east. This access drive has both right and left turn lanes onto E. 56th St. The project does not require any variances.

## Technical Review:

The TECH review for this project took place on January 15, 2026. Planning Services commented that vision clearance triangles need to be added to the landscape plan and a stub needs to be added to the right northwest corner for connectivity and emergency services when a business goes in next to Heartland Dental in the future. The lot coverage percentage needs added to the civil plans and the streets need a private or public designation put under the road name with the road width labeled as well. The Water Department commented that the water service for this property is provided by Citizens Energy Group. The Wastewater Department commented that this area is within the Hendricks County Regional Sewer District/ Aqua IN Service Area. The Fire Territory commented that the majority of the proposed building is more than 400' from the closest fire hydrant along an approved route. A hydrant shall be placed to satisfy requirement of IFC 507.5.1. The preferred location mentioned was at the parking lot

entrance on the northeast corner of the parcel. The final location must be approved by the Fire Marshal. The Police Department wanted to ensure there would be no landscape obstructions for egress traffic onto 56th St (CR 600 N).

## Traffic Study:

There was not a traffic study submitted for this project.

## Criteria:

*Pursuant to Chapter 8 of the Brownsburg Unified Development Ordinance the Advisory Plan Commission shall make findings of fact on the following criteria:*

1) The Development Plan is consistent with the **Comprehensive Plan**.

   Future Land Use Map Link: https://www.brownsburg.org/DocumentCenter/View/1068/2021-Future-Land-Use-Map-PDF

   a) The Future Land Use Map notes this parcel being used for Regional Commercial. The parcel Heartland Dental is on was platted as an outlot for a regional commercial anchor (Meijer). The outlots bring diverse, need based services to a larger, anchored commercial center. Regional commercial areas are typically located near major traffic corridors, in this case the Ronald Reagan Parkway.



   *Based on the above information, staff believes this criterion has been met.*

2) The Development Plan complies with applicable development requirements and standards of **CHAPTER 2 – ZONING DISTRICTS, CHAPTER 3 – PERMITTED USES,** and/or the PUD Ordinance.

   https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=14

   a) The project's lot coverage is at 61.2% which is under the maximum allowed 75%. The max allowed height in a C3 district is 60', the dental office is 23'-4". The civil plan submittal has the setbacks marked and the setbacks satisfy UDO requirements.

*Based on the above information, staff believes this criterion has been met.*

3) The Development Plan complies with applicable standards found in **CHAPTER 5: SITE DEVELOPMENT** and/or the PUD Ordinance.

https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=101

a) *Landscaping*: The on-site, street frontage, perimeter parking lot, interior parking lot, foundation, and buffer yard landscaping standards have been met.

b) *Lighting*: The lighting does not exceed the maximum allowed 20 lux at the property lines.

c) *Parking*: There are 37 standard parking spaces and 2 ADA accessible spaces for a total of 39 spaces. The requirement for a dental/ medical office is 1.5 spaces per treatment space which would only require them to have 18 spaces.

d) *Vision Clearance Triangle*: The most recent landscape plan submittal has the vision clearance triangles marked on it and there is not any landscaping within the vision clearance triangles.

*Based on the above information, staff believes this criterion has been met.*

4) The Development Plan complies with any **other applicable provisions** of this Ordinance or **Overlay Standards.**

a) No special provisions that relate to the plat are noted for this site. Overlay districts are not applicable to this project.

*Based on the above information, staff believes this criterion has been met.*

5) Satisfies any provision related to a development's design as found in **CHAPTER 7 – SUBDIVISION REGULATIONS** and/or the PUD Ordinance.

https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=168

a) The project was not subject to open space requirements being in a commercial district. Easements are shown and labeled in the civil plans. Setbacks, lot coverage, and height have also been met.

*Based on the above information, staff believes this criterion has been met.*

**6)** The Development Plan satisfies the construction requirements of the **Brownsburg Construction Standards and Specifications.**

a) The project did not receive any waivers. Stormwater review is ongoing, Wessler is reviewing the applicant's new submittals since the TECH review meeting. TECH review comments will need to be resolved before permitting, this will be added as a condition for approval.

*Based on the above information, staff believes this criterion has been met.*

**Recommendations:**

*The Advisory Plan Commission may request conditions and commitments related to the project and criteria. Conditions or commitments must be made as part of the motion.*

***Based on the information provided and the criteria responses, staff recommends a motion to***

| | |
|---|---|
| ☐ | Approve PSDP-26-1 as presented. |
| ☒ | Approve PSDP-26-1 with the following staff conditions:<br>1. The approval of Findings of Fact and Report of Determination.<br>2. The stamping of the construction plans by the Director.<br>3. The completion of any outstanding TECH comments. |
| ☐ | Deny PSDP-26-1 based on the following criteria: |

# Advisory Plan Commission
# TECHNICAL REVIEW COMMITTEE

TOWN OF Brownsburg
61 North Green Street | Brownsburg, Indiana 46112
Tel 317.852.1128 | Fax 317.852.1134

Project Name: Heartland Dental DPR
Record Number: PSDP-26-1
TECH Meeting Date: January 15, 2026

The following Technical Review Committee ("TECH") members provided comments for the project as detailed below:

Development Services
- ☐ Kevin Tolloty, Senior Planner
- ☒ Lauren Bouslog, Planner I
- ☐ Steve Fletcher, Building Commissioner/Director
- ☐ Frank Wise, Senior Building Inspector

Town Administration
- ☐ Debbie Cook, Town Manager
- ☐ Aaron Kaytar, Capital Projects & Procurement Manager
- ☐ Ethan Pierce, Economic Development Manager

Water Department
- ☒ Frank Monts, Superintendent

Wastewater Department
- ☒ Kathy Dillon, Water Utilities Director
- ☐

Street Department
- ☐ Aaron Love, Superintendent
- ☐ Matt Griner, Asst. Superintendent

Parks Department
- ☐ Amber Lane, Director
- ☐

Fire Territory
- ☒ Paul Hudson, Fire Marshal
- ☐ Jeff Schlageter, Deputy Fire Marshal

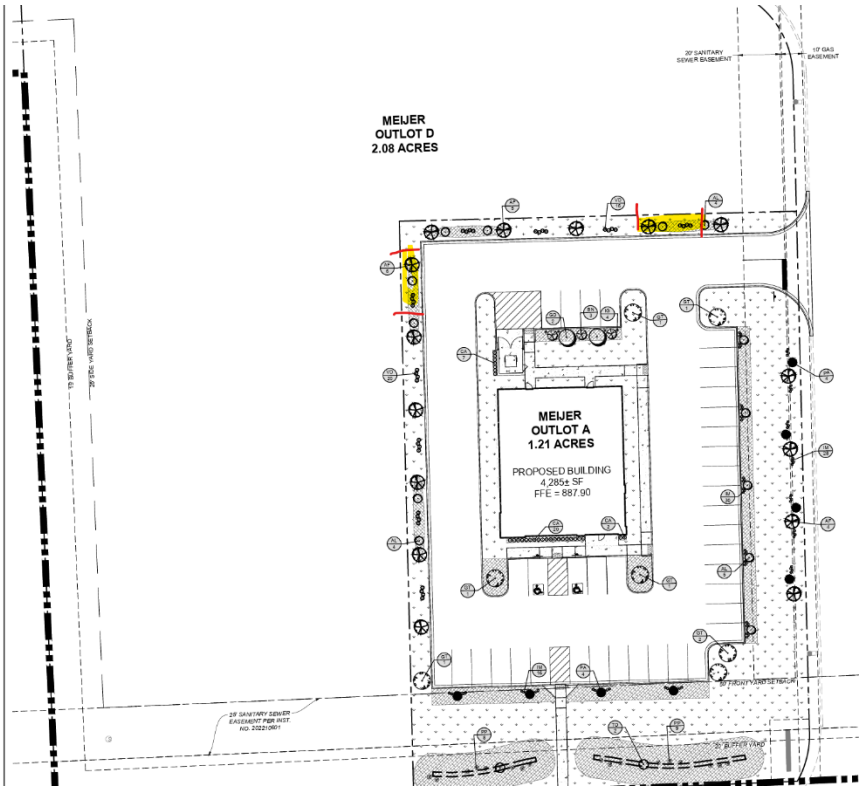
Police Department
- ☐ Joe Grimes, Chief
- ☐ Pat Bullock, Captain
- ☒ Bryan Fultz, Major

External Agencies
- ☐ Regan Huff, BCSC
- ☐ Dave Gaston, P.S., Hend. Co. Surveyor
- ☐ John Ayers, Hendricks Co. Engineer
- ☒ Mary Atkins, Wessler Engineering
- ☐ Angie DeKemper, CountryMark
- ☐ Gerry Jones, Vectren

**1) DEVELOPMENT SERVICES**

a) Add Vision Clearance Triangles to the Landscape Plan.

b) Do you foresee future businesses on this outlot to need access at these points below? That will influence where your landcaping can go. We would like for a stub to be added for connectivity and emergency services.




c) Add lot coverage percentage to civil plans (impervious surface %).
d) Label streets and put private or public designation under the name with the road width (Ex. 56' Public ROW)

**2) BUILDING**

a) None

**3) CAPITAL PROJECTS**

a) None

**4) ECONOMIC DEVELOPMENT**

a) None

**5) WATER**

a) Water service for this property is provided by Citizens Energy Group.

**6) WASTEWATER**

a) This area is within the Hendricks County Regional Sewer District/Aqua IN service area.

**7) STREET/PUBLIC WORKS**

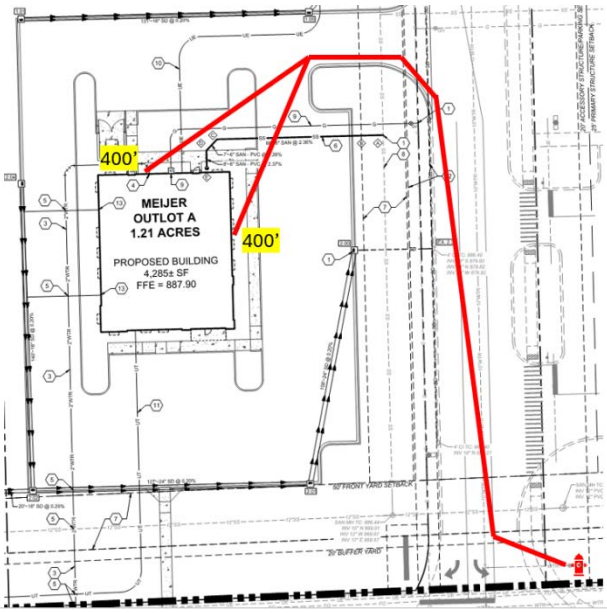
a) None

**8) PARKS**

a) None

**9) FIRE TERRITORY**

a) Majority of proposed building is more than 400' from closest fire hydrant along approved route.




10) 2014 IN Fire Code 675 IAC 22-2.5

**507.5 Fire hydrant systems.** Fire hydrant systems shall comply with Sections 507.5.1 through 507.5.6.

**507.5.1 Where required.** Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 400 feet (122 m) from a hydrant on a fire apparatus access road, as measured by an *approved* route around the exterior of the facility or building, on-site fire hydrants and mains shall be
provided.

**Exceptions:**
1. For Group R-3 and Group U occupancies, the distance
requirement shall be 600 feet (183 m).
2. For buildings equipped throughout with an *approved automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2, the distance requirement shall be 600 feet (183 m).

ACTION REQUIRED: A hydrant shall be placed to satisfy requirement of IFC 507.5.1. Preferred location to be at parking lot entrance at northeast corner of parcel. Location to be approved by Fire Marshal.

**11) POLICE**

a) Ensure there is no landscape obstructions for egress traffic onto 56th Street (CR 600 N).

**12) STORMWATER**

a) See attached

**13) BROWNSBURG COMMUNITY SCHOOL CORPORATION**

a) None

14) **HENDRICKS COUNTY SURVEYOR**

a) None

15) **HENDRICKS COUNTY ENGINEER**

a) None

16) **COUNTRYMARK**

a) None

17) **VECTREN**

a) None

*Please provide a written response to this report addressing each issue and, if necessary, indicate where on the revised plans the modification has been made.*

## TOWN OF BROWNSBURG STORMWATER/DRAINAGE PLAN REVIEW

CO Comment Originator
CR Comment Respondee

**NAME OF PROJECT: Heartland Dental-Meijer Outlot 338A**
**DESIGN PACKAGE: Development**
**DESIGNER**: **Woolpert**

| | | Wessler - Reviewer to complete | | Designer to complete | |
|---|---|---|---|---|---|
| No. | PAGE/SHEET REFERENCE | CO | COMMENT | CR | RESPONSE |
| 1 | Flood Routing | RS | Evaluate stormwater ponding and overflow path routing for Ch. 151.21 I. Show hatching of ponded areas with peak elevation on the plans and flow arrows indicating the surface flow path to the termination (watercourse). | | |
| 2 | Soil Survey Map | RS | Add this to the construction plans. | | |
| 3 | Title Sheet | RS | Missing parcel number | | |
| 4 | Impervious Surface Area | RS | Please provide the total amount of impervious surface area in square feet for the completed project on the Title Sheet. In addition to the total, provide a breakdown of total compacted gravel, total concrete/asphalt and total building footprint (in square feet). This is used for stormwater utility billing. | | |
| 5 | HGL | RS | Include calculations showing that the HGL for the 10-yr event remains below the crown of the pipe. | | |
| 6 | Inlets | RS | Include calculations showing the ponding at inlets when inlets are 50% clogged for the 10-yr event. Max allowable ponding depth is 6 inches. | | |
| 7 | Utility Separation | RS | Vertical separation for electric and phone appear to be less than 18 inches. | | |

**These comments should not be construed as a comprehensive list of comments, and the reviewer may make additional comments based on subsequent submittals**

TOWN OF Brownsburg

**Construction/ Stormwater Pollution Prevention Plan Technical Review**
**Town of Brownsburg Stormwater Management Ordinance**
https://codelibrary.amlegal.com/codes/brownsburg/latest/brownsburg_in/0-0-0-26557
**IDEM Construction Stormwater General Permit:**
https://www.in.gov/idem/stormwater/construction-land-disturbance-permitting/
(INRA00000 effective 12/18/2021)

## Construction/Stormwater Pollution Prevention Plan Technical Review and Comment

**Project Name:** MEIJER OUTLOT #338A - HEARTLAND DENTAL
**Scope of Project:** Dental office and associated infrastructure
**Location of Project:** 9180 E 56th St, Brownsburg, IN
**County(ies):** Hendricks
**Latitude:** N 39.851910 **Longitude:** W -86.359869

**Plan Submittal Date:** **January 6, 2026**
**Plan Review Date:** **January 9, 2026**

**Plan Preparer:** Brianne Vangorder, PE **Affiliation:** Woolpert, Inc.
**Address:** 333 N Alabama St., Suite 200
**City:** Indianapolis **State:** IN **Zip:** 46204
**Phone:** (317) 299-7500 **Cell Phone:** **Email:** BRIANNE.VANGORDER@WOOLPERT.COM

**Project Site Owner:** **Company Name (if applicable):** Meijer Stores Limited Partnership
**Address:** 2350 Three Mile Road
**City:** Grand Rapids **State:** MI **Zip:** 49544
**Phone:** **Cell Phone:** **Email:**

**Plan Reviewer:** Mary Atkins, PE, CPESC **Affiliation:** Wessler Engineering **On behalf of:** Town of Brownsburg
**Assisted By:** Michaela Tauil, CPESC – Wessler Engineering
**Address:** 6219 South East Street
**City:** Indianapolis, IN **State:** IN **Zip:** 46227
**Phone:** 317-788-4551 **Cell Phone:** **Email:** MaryA@wesslerengineering.com

| **Plan Review Status:** | | |
|---|---|---|
| ☐ | **Plan is Adequate** | A comprehensive plan review has been completed and it has been determined that the plan satisfies the minimum requirements of the Town of Brownsburg Stormwater Management Ordinance and Construction Standards, and the Construction Stormwater General Permit INRA00000 (Effective 12-18-2021). |
| ☐ | **Preliminary Review** | A comprehensive review will not be completed at this time. The plan review authority reserves the right to perform a comprehensive review at a later date, and revisions may be required at that time. |
| ☐ | **Conditional Acceptance** | Acceptance of the plan is conditional. The conditional acceptance is contingent upon addressing the issues identified in the comment sections. |
| ☒ | **Plan is Deficient** | Significant deficiencies were identified and must be addressed. Refer to the comment sections. |

| **Action:** | |
|---|---|
| ☐ | **Submit a Notice of Intent:** Submit the Notice of Intent (NOI) online through the IDEM Regulatory ePortal. It is required to upload a copy of this review form when submitting the NOI through the IDEM Regulatory ePortal: (https://stormwater.idem.in.gov/ncore/external/home) |
| ☒ | **Do not file a Notice of Intent or commence land-disturbing activities:** Deficiencies must be adequately addressed and an acceptable plan review completed. |
| ☒ | **Comments:** Refer to Plan Review Comments Sections of this document. |
| ☒ | **Revisions:** Update and submit the revised Construction/Stormwater Pollution Prevention Plan as indicated below. |
| | ☒ Update and submit a complete plan set that addresses plan deficiencies. |
| | ☒ Update and submit a document (narrative and/or plan sheets) that address plan deficiencies. |
| | ☐ Update and submit a complete plan set that addresses plan deficiencies. A comprehensive plan review will not be completed. |

## Plan Review Information

- *The technical review and comment is intended to evaluate the completeness of the Construction/Stormwater Pollution Prevention Plan for the project. The Plan submitted was not reviewed for the adequacy of engineering design. All measures included in the plan, as well as those recommended in the comments should be evaluated as to their feasibility by a qualified individual with structural measures designed by a qualified engineer. The Plan has not been reviewed for other local, state, or federal permits that may be required to proceed with this project.*
- *Construction activities and unforeseen weather conditions may affect the performance of the erosion and sediment control system, individual measures, or the effectiveness of the plan. The plan must be a flexible document, with provisions to modify or substitute measures as necessary to ensure compliance.*

**Priority Site Information:**

| | | | |
|---|---|---|---|
| ☐ | **Nature and Extent of Construction** | ☐ | **Close Proximity to Wetlands** |
| ☐ | **Close Proximity to Sensitive Area** | ☐ | **Potential for Direct Runoff to Receiving Waters** |
| ☐ | **Steep Topography on Proposed Construction Site** | ☒ | **Not a Priority Site** |

## Section A: Construction Plan Elements

| Adequate | Deficient | NA | A | *The construction plan elements include general information associated with the project site that are critical for the evaluation of the stormwater pollution prevention plan component. This information includes, but is not limited to an index, resource information, reference maps, grading information, project layout and design, and drainage plan* |
|---|---|---|---|---|
| ☒ | ☐ | ☐ | **1** | Index of the location of required plan elements in the construction plan |
| ☒ | ☐ | ☐ | **2** | A vicinity map depicting the project site location in relationship to recognizable local landmarks, towns, and major roads |
| ☒ | ☐ | ☐ | **3** | Narrative of the nature and purpose of the project |
| ☒ | ☐ | ☐ | **4** | Latitude and longitude to the nearest fifteen (15) seconds |
| ☒ | ☐ | ☐ | **5** | Legal description of the project site |
| ☒ | ☐ | ☐ | **6** | 11 X 17-inch plat showing building lot numbers/boundaries and road layout/names |
| ☒ | ☐ | ☐ | **7** | Boundaries of the one hundred (100) year floodplains, floodway fringes, and floodways |
| ☒ | ☐ | ☐ | **8** | Land use of all adjacent properties |
| ☒ | ☐ | ☐ | **9** | Identification of a U.S. EPA approved or established TMDL |
| ☒ | ☐ | ☐ | **10** | Name(s) of the receiving water(s) |
| ☒ | ☐ | ☐ | **11** | Identification of discharges to a water on the current 303d list of impaired waters and the pollutant(s) for which it is impaired |
| ☒ | ☐ | ☐ | **12** | Soil map of the predominant soil types |
| ☒ | ☐ | ☐ | **13** | Identification and location of all known wetlands, lakes and water courses on or adjacent to the project site (construction plan, existing site layout) |
| ☒ | ☐ | ☐ | **14** | Identification of any other state or federal water quality permits or authorizations that are required for construction activities– required 50-foot natural buffer |
| ☐ | ☒ | ☐ | **15** | Identification and delineation of existing cover, including natural buffers |
| ☒ | ☐ | ☐ | **16** | Existing topography at a contour interval appropriate to indicate drainage patterns |
| ☒ | ☐ | ☐ | **17** | Location(s) of where run-off enters the project site |
| ☒ | ☐ | ☐ | **18** | Location(s) of where run-off discharges from the project site prior to land disturbance. Erosion measures required at the discharge point. |
| ☒ | ☐ | ☐ | **19** | Location of all existing structures on the project site |
| ☒ | ☐ | ☐ | **20** | Existing permanent retention or detention facilities, including manmade wetlands, designed for the purpose of stormwater management |

| | | | | |
|---|---|---|---|---|
| ☒ | ☐ | ☐ | **21** | Locations where stormwater may be directly discharged into ground water, such as abandoned wells, sinkholes, or karst features |
| ☐ | ☒ | ☐ | **22** | Size of the project area expressed in acres |
| ☐ | ☒ | ☐ | **23** | Total expected land disturbance expressed in acres |
| ☒ | ☐ | ☐ | **24** | Proposed final topography |
| ☒ | ☐ | ☐ | **25** | Locations and approximate boundaries of all disturbed areas |
| ☐ | ☒ | ☐ | **26** | Location, size, and dimensions of all stormwater drainage systems, such as culverts, storm sewers, and conveyance channels |
| ☒ | ☐ | ☐ | **27** | Locations of specific points where stormwater and non-stormwater discharges will leave the project site |
| ☒ | ☐ | ☐ | **28** | Location of all proposed site improvements, including roads, utilities, lot delineation and identification, proposed structures, and common areas |
| ☒ | ☐ | ☐ | **29** | Location of all on-site soil stockpiles and borrow areas |
| ☒ | ☐ | ☐ | **30** | Construction support activities that are expected to be part of the project |
| ☐ | ☐ | ☒ | **31** | Location of any in-stream activities that are planned for the project including, but not limited to stream crossings and pump arounds |

**Section A – Comments:**

- A15: Sheet C100 does not indicate the existing vegetation on the site.
- A22/A23: Disturbed area is greater than the total project area, please clarify and update as needed.
- A26: Sheet C705 is not included in the plan set. Update the SWPPP to reference the correct sheet.

| **Section B: Stormwater Pollution Prevention Plan – Erosion and Sediment Control/Project Site Management** | | | | |
|---|---|---|---|---|
| **Adequate** | **Deficient** | **NA** | **B** | *The construction component of the Stormwater Pollution Prevention Plan includes stormwater quality measures to address erosion, sedimentation, and other pollutants associated with land disturbance and construction activities. Proper implementation of the plan, maintenance of measures, and administering a self-monitoring program is required to manage the project site to minimize the discharge of sediment and other pollutants. Construction activities and unforeseen weather conditions may affect the performance of the erosion and sediment control system, individual measures, or the effectiveness of the plan. The plan must be a flexible document, with provisions to modify or substitute measures as necessary to ensure compliance.* |
| ☒ | ☐ | ☐ | **1** | Description of the potential pollutant generating sources and pollutants, including all potential non-stormwater discharges |
| ☒ | ☐ | ☐ | **2** | Stable construction entrance locations and specifications. Plan to clear tracking of sediments on road. Dust suppression plan. |
| ☐ | ☒ | ☐ | **3** | Specifications for temporary and permanent stabilization. Include seeding and mulching plan and 70% coverage requirement for final stabilization. Include 7-day stabilization requirement. |
| ☐ | ☒ | ☐ | **4** | Sediment control measures for concentrated flow areas (sediment basins if used have specific requirements) |
| ☒ | ☐ | ☐ | **5** | Sediment control measures for sheet flow areas |
| ☐ | ☒ | ☐ | **6** | Run-off control measures |
| ☐ | ☒ | ☐ | **7** | Stormwater outlet protection locations and specifications |
| ☐ | ☐ | ☒ | **8** | Grade stabilization structure locations and specifications |
| ☒ | ☐ | ☐ | **9** | Dewatering applications and management methods |
| ☐ | ☐ | ☒ | **10** | Measures utilized for work within waterbodies |
| ☒ | ☐ | ☐ | **11** | Maintenance guidelines for each proposed temporary stormwater quality measure |
| ☐ | ☒ | ☐ | **12** | Planned construction sequence describing the relationship between implementation of stormwater quality measures in relation to land disturbance |
| ☐ | ☐ | ☒ | **13** | Provisions for erosion and sediment control on individual building lots regulated under the proposed project |

| | | | | |
|---|---|---|---|---|
| ☒ | ☐ | ☐ | **14** | Material handling and spill prevention and spill response plan meeting the requirements in 327 IAC 2-6.1 |
| ☒ | ☐ | ☐ | **15** | Material handling and storage procedures associated with construction activity. Management of waste materials and dumpsters for runoff and wind. Concrete washout management. Fueling areas. Equipment washing. Application of pesticides, herbicides, insecticides and fertilizers. Disposal of hazardous waste. Washing of paint or grout applicators. |

**Section B – Comments:**

- B3: The SWPP indicates the erosion control blanket will be used and the plans have hatching and a key note for the measure however there is no blanket shown. Evaluate if erosion control blanket is needed on site and show as appropriate.
- B4: Section B4 of the SWPPP indicates temporary sediment basins will be used however these are not shown on the plans. Clarify if these measures will be utilized.
- B6/B7: Section B6 and Section B7 of the SWPPP do not appear to have been updated for this project.
- B12: Per Town of Brownsburg Construction Standards 02101 submit notice of termination (NOT) inspection request to Town prior to filing NOT with IDEM. The note should added to the Plan Sheets specifying this requirement.

## Section C: Stormwater Pollution Prevention Plan – Post-Construction

| Adequate | Deficient | NA | C | *The post-construction component of the Stormwater Pollution Prevention Plan includes the implementation of stormwater quality measures to address pollutants that will be associated with the final project land use. Post-construction stormwater measures should be functional upon completion of the project. Long term functionality of the measures is critical to their performance and should be monitored and maintained.* |
|---|---|---|---|---|
| ☒ | ☐ | ☐ | **1** | Description of pollutants and their sources associated with the proposed land use |
| ☒ | ☐ | ☐ | **2** | Description of proposed post-construction stormwater measures including stormwater detention and water quality treatment according to the local ordinance (refer also to separate technical review comments) |
| ☒ | ☐ | ☐ | **3** | Plan details for each stormwater measure |
| ☒ | ☐ | ☐ | **4** | Sequence describing stormwater measure implementation |
| ☒ | ☐ | ☐ | **5** | Maintenance guidelines for proposed post-construction stormwater measures. Operation and Maintenance (O&M) Manual. |
| ☒ | ☐ | ☐ | **6** | Entity that will be responsible for operation and maintenance of the post-construction stormwater measures |

**Section C – Comments:**

- O&M Manual: Per the Town of Brownsburg Stormwater Management Ordinance Chapter 151, and O&M Manual shall be provided for alltormwater management facilities including pipes, structures, swales, open channels, and subsurface drains. Provide an O&M Manual meeting the Town of Brownsburg requirements for this specific site and it's infrastructure.

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL

# Response to Heartland Dental (Meijer ABE-OD1) – TECH Resubmittal Comments

**To:** Town of Brownsburg

**From:** Brianne VanGorder, PE

**Date:** January 29, 2026

This response to the review comments received via email from the Town of Brownsburg Technical Review Committee on 01/15/2026.

**Development Services:**

a) Add Vision Clearance Triangles to the Landscape Plan.
**Woolpert Response: Triangles are added to sheet C-600.**

b) Do you foresee future businesses on this outlot to need access at these points below? That will influence where your landscaping can go. We would like for a stub to be added for connectivity and emergency services.
**Woolpert Response: There aren't any plans for development to the North, but a stub street has been added for any future development to the West.**

c) Add lot coverage percentage to civil plans (impervious surface %).
**Woolpert Response: See sheet C-001 for this information per the stormwater review.**

d) Label streets and put private or public designation under the name with the road width (Ex. 56' Public ROW)
**Woolpert Response: This information has been added to the plan sheets.**

**Building Comments:**

No Comments

**Capital Projects:**

No Comments

**Economic Development:**

No Comments

Woolpert, Inc.
1203 Walnut Street, 2nd Floor
Cincinnati, OH 45202
513.272.8300

**Water:**

a) Water service for this property is provided by Citizens Energy Group.
**Woolpert Response: Noted**

**Wastewater:**

a) This area is within the Hendricks County Regional Sewer District/Aqua IN service area.
**Woolpert Response: Noted**

**Streets/Public Works:**

No Comments

**Parks:**

No Comments

**Fire Territory:**

a) Majority of proposed building is more than 400' from closest fire hydrant along approved route. ACTION REQUIRED: A hydrant shall be placed to satisfy requirement of IFC 507.5.1. Preferred location to be at parking lot entrance at northeast corner of parcel. Location to be approved by Fire Marshal.
**Woolpert Response: A fire hydrant was added to the entrance of the parking lot.**

**Police:**

a) Ensure there is no landscape obstructions for egress traffic onto 56th Street (CR 600 N).
**Woolpert Response: The vision clearance triangle for this intersection has been added to sheet C-600.**

**Stormwater:**

| | | **Wessler - Reviewer to complete** | | **Designer to complete** | |
|---|---|---|---|---|---|
| No. | PAGE/SHEET REFERENCE | CO | COMMENT | CR | RESPONSE |
| | | | | | |
| 1 | Flood Routing | RS | Evaluate stormwater ponding and overflow path routing for Ch. 151.21 I. Show hatching of ponded areas with peak elevation on the plans and flow arrows indicating the surface flow path to the termination (watercourse). | | Flood routing and ponding areas area added to sheet C-300. |
| 2 | Soil Survey Map | RS | Add this to the construction plans. | | The soil information is shown on the plan on sheets C-310 and C-311. |
| 3 | Title Sheet | RS | Missing parcel number | | Information added to sheet C-001 |

| | | | | | |
|---|---|---|---|---|---|
| 4 | Impervious Surface Area | RS | Please provide the total amount of impervious surface area in square feet for the completed project on the Title Sheet. In addition to the total, provide a breakdown of total compacted gravel, total concrete/asphalt and total building footprint (in square feet). This is used for stormwater utility billing. | | Information added to sheet C-001 |
| 5 | HGL | RS | Include calculations showing that the HGL for the 10- yr event remains below the crown of the pipe. | | The SWM memo is updated to include this information. |
| 6 | Inlets | RS | Include calculations showing the ponding at inlets when inlets are 50% clogged for the 10-yr event. Max allowable ponding depth is 6 inches. | | The SWM memo is updated to include this information. |
| 7 | Utility Separation | RS | Vertical separation for electric and phone appear to be less than 18 inches. | | See updated profiles on sheet C-405 |
| **These comments should not be construed as a comprehensive list of comments, and the reviewer may make additional comments based on subsequent submittals** | | | | | |

**Construction/Stormwater Pollution Prevention Plan Technical Review**

1. A15: Sheet C100 does not indicate the existing vegetation on the site.
   **Woolpert Response: Information added to sheet C-100.**

2. A22/A23: Disturbed area is greater than the total project area, please clarify and update as needed.
   **Woolpert Response: Areas revised to reflect the same acreage.**

3. A26: Sheet C705 is not included in the plan set. Update the SWPPP to reference the correct sheet.
   **Woolpert Response: Referenced information has been updated.**

4. B3: The SWPP indicates the erosion control blanket will be used and the plans have hatching and a key note for the measure however there is no blanket shown. Evaluate if erosion control blanket is needed on site and show as appropriate.
   **Woolpert Response: Erosion control blanket is shown on C-311**

5. B4: Section B4 of the SWPPP indicates temporary sediment basins will be used however these are not shown on the plans. Clarify if these measures will be utilized.
   **Woolpert Response: No sediment basin will be used. The section is updated as such.**

6. B6/B7: Section B6 and Section B7 of the SWPPP do not appear to have been updated for this project.
   **Woolpert Response: These sections are updated.**

7. B12: Per Town of Brownsburg Construction Standards 02101 submit notice of termination (NOT) inspection request to Town prior to filing NOT with IDEM. The note should added to the Plan Sheets specifying this requirement.
   **Woolpert Response: Note has been added to the construction sequence on sheet C-311.**

8. O&M Manual: Per the Town of Brownsburg Stormwater Management Ordinance Chapter 151, and O&M Manual shall be provided for all stormwater management facilities including pipes, structures, swales, open channels, and subsurface drains. Provide an O&M Manual meeting the Town of Brownsburg requirements for this specific site and it's infrastructure.
   **Woolpert Response: O&M Manual is provided with this submittal.**

WOOLPERT

# Stormwater Management Summary

**To:** Town of Brownsburg Engineering Department

**From:** Brianne VanGorder, P.E.

**Date:** January 29, 2026

**Subject:** Meijer #338A-OD1 – Stormwater Management Summary

## INTRODUCTION

This Stormwater Management summary was prepared to summarize the drainage conditions and analysis for the proposed Heartland Dental in the Meijer outlot development located at 9180 E. 56th Street, Brownsburg, Indiana. Detention facilities are designed and constructed by the overall developer as established by the Meijer Store ABE Stormwater Management Report developed by Woolpert, Inc. dated September 5, 2023, and revised January 10, 2025. See Exhibit 3 for a copy of this report.

## SITE DESCRIPTION

1. Existing Conditions: Outlot A of the Meijer subdivision, which is 1.21-acres. The lot has been prepared for future development. It is rough graded for a building pad and drainage facilities provided.

2. Proposed Conditions: A Heartland Dental with associated parking areas and access drives will be constructed on the 1.21-acre site. Storm sewer and utility services will be constructed and connected to the proposed subdivision utility infrastructure. Stormwater runoff will be managed within stormwater management facilities that are designed and constructed by the overall development. See FIG-1B of the Meijer Subdivision Stormwater Management Report for the Post-Development Project Area Drainage Plan. See FIG-1D of the Meijer Subdivision Stormwater Management Report for the subdivision Inlet Drainage Plan.

## STORM SEWER DESIGN

See Exhibit 1 for the Inlet Drainage Plan. The storm sewer system is divided into multiple drainage areas, all of which drain to a proposed catch basin or curb inlet. The proposed drainage structures discharge to existing drainage structures as part of the Meijer subdivision. The onsite storm sewers were designed in accordance with the Town of Brownsburg Codified Ordinances. The storm sewers are designed to convey the 10-year storm event. An n-value of 0.012 was used for the storm design calculations. See Exhibit 2 for the post-developed weighted C calculations and storm sewer design. The areas draining to Structures 1.01 and 2.03 are assumed to include future development on Outlot D. As such, the runoff coefficient reflects that area being 75% impervious and 25% pervious. Based on this analysis, the Meijer subdivision storm sewer has the capacity for the proposed Heartland Dental development.

Woolpert, Inc.
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

# EXHIBIT 1
## INLET DRAINAGE PLAN

Woolpert, Inc.
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

MEIJER
OUTLOT D
2.08 ACRES

MEIJER
OUTLOT A
1.21 ACRES

PROPOSED BUILDING
4,285± SF
FFE = 887.90

20' SANITARY SEWER EASEMENT

10' GAS EASEMENT

N02°28'55"W R.

S87°31'05"W R.

15' BUFFER YARD

25' SIDE YARD SETBACK

20' BUFFER YARD

50' FRONT YARD SETBACK

20' ACCESSORY STRUCTURE/PARKING SETBACK

25' PRIMARY STRUCTURE SETBACK

25' SANITARY SEWER EASEMENT PER INST. NO. 202210601

EAST 56TH STREET (E. COUNTY ROAD 600 N.)

1.01
0.35 ACRES
C = 0.74

CUMULATIVE 1.00
0.46 ACRES
C = 0.73

1.00
0.11 ACRES
C = 0.72

2.04
0.13 ACRES
C = 0.85

2.03
0.82 ACRES
C = 0.70

2.02
0.16 ACRES
C = 0.74

2.00
0.14 ACRES
C = 0.69

CUMULATIVE 2.00
1.36 ACRES
C = 0.72

2.01
0.11 ACRES
C = 0.77

5' CI TC: 886.41
INV 24" W 879.66
INV 30" E 879.66

4' YARD INLET TC: 885.00
INV 24" E 880.00

5' CI TC: 886.42
INV 24" W 879.92
INV 30" E 879.47
INV 24" S 879.57

5' CI TC: 886.42
INV 30" W 879.43
INV 30" NE 879.33

4' CI TC: 886.40
INV 18" S 879.92
INV 24" N 879.82
INV 24" W 879.92

4' CI TC: 886.40
INV 18" N 880.27

STM MH TC: 885.21
INV 36" RCP W 879.33
INV 36" RCP E 879.33
INV 15" RCP S 879.91

CURB INLET TC: 884.16
INV 15" RCP N 879.76
INV 15" RCP S 879.86

STM MH TC: 884.98
INV 36" RCP W 875.09
INV 36" RCP E 874.99
INV 15" RCP S 878.68

CURB INLET TC: 883.93
INV 15" RCP N 879.53
INV 15" RCP S 879.73

A1 INLET DRAINAGE PLAN
1"=20'

NORTH

0 20 40 60
GRAPHIC SCALE IN FEET


WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|

MEIJER OUTLOT #338A
9190 E. 56TH STREET
BROWNSBURG, INDIANA 46112

INLET DRAINAGE PLAN

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

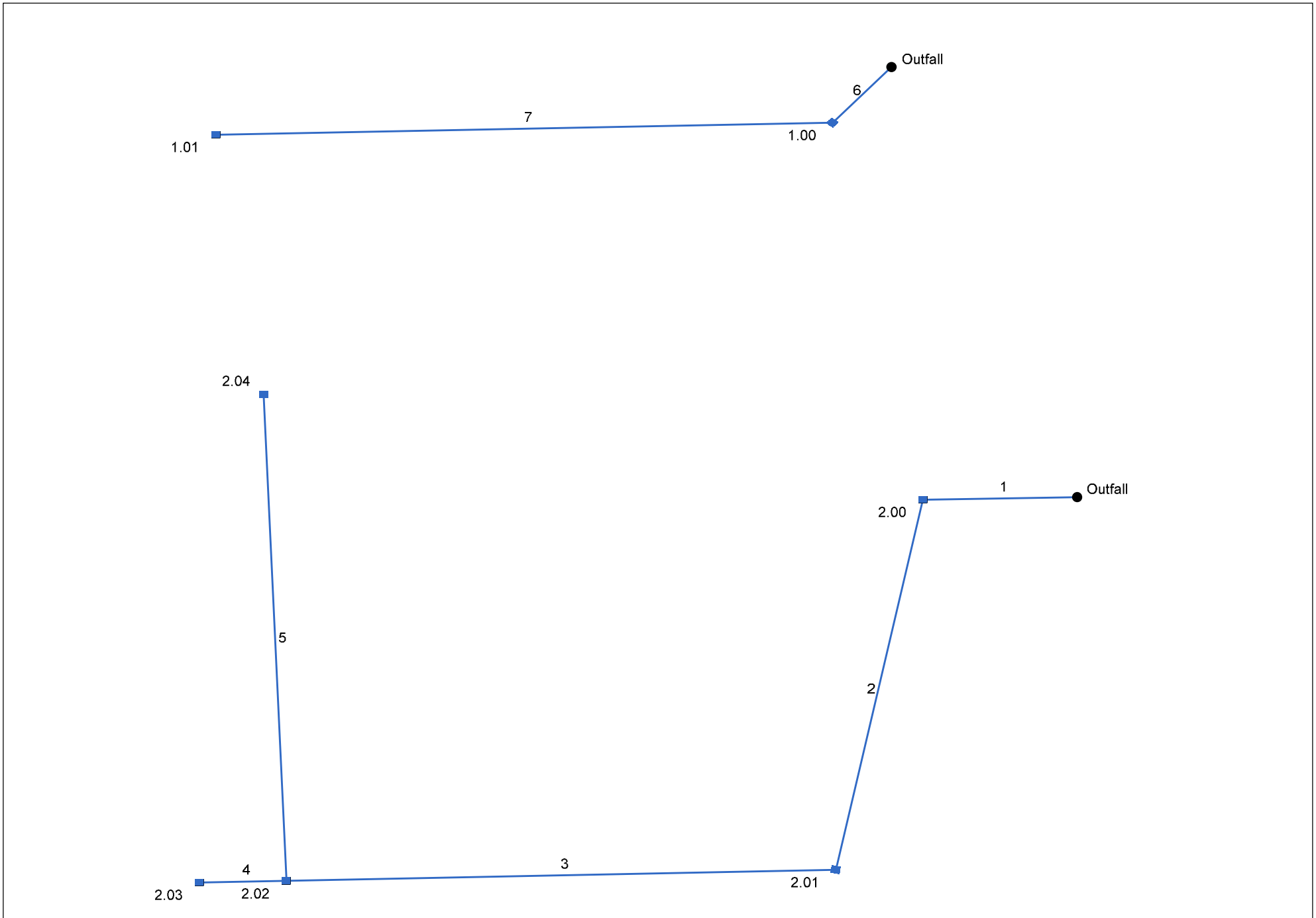
EXH 1


Images: _Xrefs: 10026635TBLK.dwg; 10026635-x.dwg; 10026635-p.dwg; 10026635-g.dwg
Layout: "A1" Model: INLET DRAINAGE PLAN
Last Saved By:BJVonGorder, 1/23/2026 2:55:05 PM
G:\DE\Clients\Meijer\10026635 Meijer 338A-OD1, Brownsburg, IN\4.0 Disciplines\Civil\Eng\Storm Design\10026635-Drainage Plan Exhibit.dwg Plotted By:VonGorder, Brianne Plotted:January 23, 2026, 2:55:49 PM

# EXHIBIT 2
## STORM SEWER DESIGN

Woolpert, Inc.
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

# Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan




| | | |
|---|---|---|
| Project File: P-STM.stm | Number of lines: 7 | Date: 1/23/2026 |

# Storm Sewer Summary Report



| Line No. | Line ID | Flow rate (cfs) | Line Size (in) | Line shape | Line length (ft) | Invert EL Dn (ft) | Invert EL Up (ft) | Line Slope (%) | HGL Down (ft) | HGL Up (ft) | Minor loss (ft) | HGL Junct (ft) | Dns Line No. | Junction Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 1.01 | 1.94 | 15 | Cir | 142.000 | 880.30 | 881.00 | 0.493 | 881.68 | 881.79 | 0.09 | 881.88 | 6 | Grate |
| 6 | 1.00 | 2.53 | 15 | Cir | 21.000 | 880.10 | 880.20 | 0.476 | 881.60* | 881.63* | 0.05 | 881.68 | End | Grate |
| 5 | 2.04 | 0.83 | 12 | Cir | 140.000 | 880.67 | 881.37 | 0.500 | 882.55* | 882.61* | 0.02 | 882.63 | 3 | Grate |
| 4 | 2.03 | 4.30 | 18 | Cir | 20.000 | 880.77 | 880.87 | 0.500 | 882.55* | 882.58* | 0.09 | 882.67 | 3 | Generic |
| 3 | 2.02 | 6.02 | 24 | Cir | 126.500 | 880.42 | 880.67 | 0.198 | 882.42 | 882.49 | 0.06 | 882.55 | 2 | Grate |
| 2 | 2.01 | 6.65 | 24 | Cir | 108.323 | 880.10 | 880.32 | 0.203 | 882.10 | 882.17 | 0.07 | 882.24 | 1 | Grate |
| 1 | EX 2.31 | 7.37 | 24 | Cir | 35.487 | 879.92 | 879.99 | 0.197 | 881.92 | 881.95 | 0.08 | 882.03 | End | Grate |

Project File: P-STM.stm | Number of lines: 7 | Run Date: 1/23/2026

NOTES: Return period = 10 Yrs. ; *Surcharged (HGL above crown).

# Storm Sewer Tabulation

| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 7 | 6 | 142.000 | 0.35 | 0.35 | 0.74 | 0.26 | 0.26 | 5.0 | 5.0 | 7.5 | 1.94 | 4.91 | 1.98 | 15 | 0.49 | 880.30 | 881.00 | 881.68 | 881.79 | 886.00 | 885.68 | 1.01 |
| 6 | End | 21.000 | 0.11 | 0.46 | 0.72 | 0.08 | 0.34 | 5.0 | 5.0 | 7.5 | 2.53 | 4.83 | 2.06 | 15 | 0.48 | 880.10 | 880.20 | 881.60 | 881.63 | 885.00 | 886.00 | 1.00 |
| 5 | 3 | 140.000 | 0.13 | 0.13 | 0.85 | 0.11 | 0.11 | 5.0 | 5.0 | 7.5 | 0.83 | 2.73 | 1.05 | 12 | 0.50 | 880.67 | 881.37 | 882.55 | 882.61 | 885.53 | 886.43 | 2.04 |
| 4 | 3 | 20.000 | 0.82 | 0.82 | 0.70 | 0.57 | 0.57 | 5.0 | 5.0 | 7.5 | 4.30 | 8.04 | 2.43 | 18 | 0.50 | 880.77 | 880.87 | 882.55 | 882.58 | 885.53 | 885.00 | 2.03 |
| 3 | 2 | 126.500 | 0.16 | 1.11 | 0.74 | 0.12 | 0.80 | 5.0 | 5.0 | 7.5 | 6.02 | 10.89 | 1.96 | 24 | 0.20 | 880.42 | 880.67 | 882.42 | 882.49 | 885.90 | 885.53 | 2.02 |
| 2 | 1 | 108.323 | 0.11 | 1.22 | 0.77 | 0.08 | 0.89 | 5.0 | 5.0 | 7.5 | 6.65 | 11.04 | 2.15 | 24 | 0.20 | 880.10 | 880.32 | 882.10 | 882.17 | 886.00 | 885.90 | 2.01 |
| 1 | End | 35.487 | 0.14 | 1.36 | 0.69 | 0.10 | 0.98 | 5.0 | 5.0 | 7.5 | 7.37 | 10.88 | 2.35 | 24 | 0.20 | 879.92 | 879.99 | 881.92 | 881.95 | 886.40 | 886.00 | EX 2.31 |

Project File: P-STM.stm | Number of lines: 7 | Run Date: 1/23/2026

NOTES:Intensity = 58.29 / (Inlet time + 8.60) ^ 0.79; Return period =Yrs. 10 ; Pipe travel time suppressed. ; c = cir e = ellip b = box

# Inlet Report



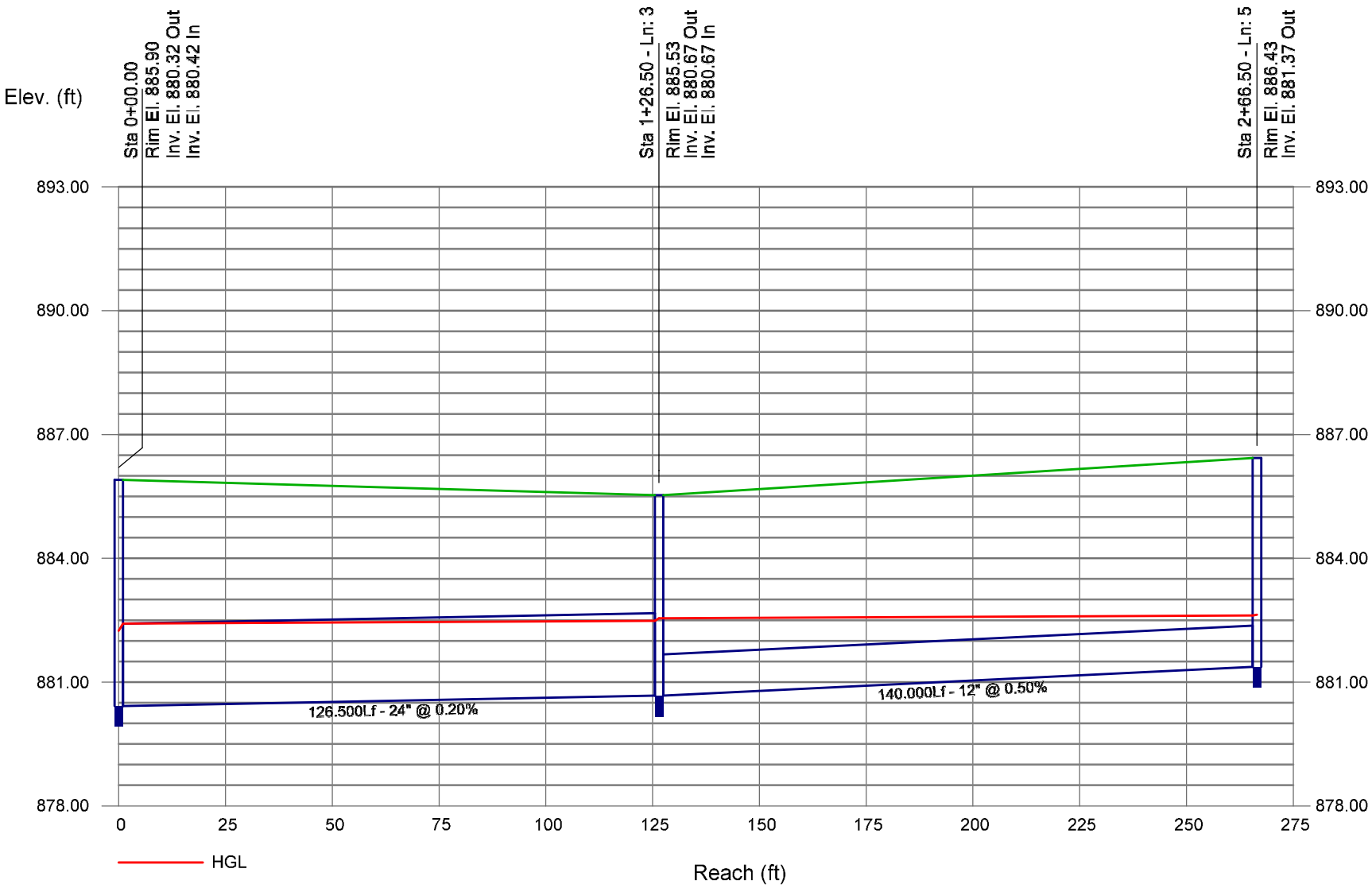
| Line No | Inlet ID | Q = CIA (cfs) | Q carry (cfs) | Q capt (cfs) | Q Byp (cfs) | Junc Type | Curb Inlet | | Grate Inlet | | | Gutter | | | | | | | Inlet | | | Byp Line No |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Ht (in) | L (ft) | Area (sqft) | L (ft) | W (ft) | So (ft/ft) | W (ft) | Sw (ft/ft) | Sx (ft/ft) | n | Depth (ft) | Spread (ft) | Depth (ft) | Spread (ft) | Depr (in) | |
| 7 | 1.01 | 1.94 | 0.00 | 1.94 | 0.00 | Grate | 0.0 | 0.00 | 0.74 | 0.93 | 0.80 | Sag | 1.00 | 0.005 | 0.020 | 0.012 | 0.40 | 20.98 | 0.40 | 20.98 | 0.0 | Off |
| 6 | 1.00 | 0.59 | 0.00 | 0.59 | 0.00 | Grate | 0.0 | 0.00 | 0.74 | 0.93 | 0.80 | Sag | 1.00 | 0.050 | 0.020 | 0.012 | 0.20 | 8.63 | 0.20 | 8.63 | 0.0 | Off |
| 5 | 2.04 | 0.83 | 0.00 | 0.83 | 0.00 | Grate | 0.0 | 0.00 | 0.74 | 0.93 | 0.80 | Sag | 1.00 | 0.050 | 0.020 | 0.012 | 0.25 | 10.91 | 0.25 | 10.91 | 0.0 | Off |
| 4 | 2.03 | 4.30 | 0.00 | 4.30 | 0.00 | Genr | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | Sag | 1.00 | 0.050 | 0.020 | 0.012 | 0.30 | 13.50 | 0.30 | 13.50 | 0.0 | Off |
| 3 | 2.02 | 0.89 | 0.00 | 0.89 | 0.00 | Grate | 0.0 | 0.00 | 0.74 | 0.93 | 0.80 | Sag | 1.00 | 0.050 | 0.020 | 0.012 | 0.26 | 11.44 | 0.26 | 11.44 | 0.0 | Off |
| 2 | 2.01 | 0.63 | 0.00 | 0.63 | 0.00 | Grate | 0.0 | 0.00 | 0.74 | 0.93 | 0.80 | Sag | 1.00 | 0.050 | 0.020 | 0.012 | 0.21 | 9.05 | 0.21 | 9.05 | 0.0 | Off |
| 1 | 2.00 | 0.72 | 0.00 | 0.72 | 0.00 | Grate | 0.0 | 0.00 | 0.74 | 0.93 | 0.80 | Sag | 1.00 | 0.050 | 0.020 | 0.012 | 0.23 | 9.93 | 0.23 | 9.93 | 0.0 | Off |

Project File: P-STM.stm | Number of lines: 7 | Run Date: 1/23/2026

NOTES: Inlet N-Values = 0.012; Intensity = 58.29 / (Inlet time + 8.60) ^ 0.79; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

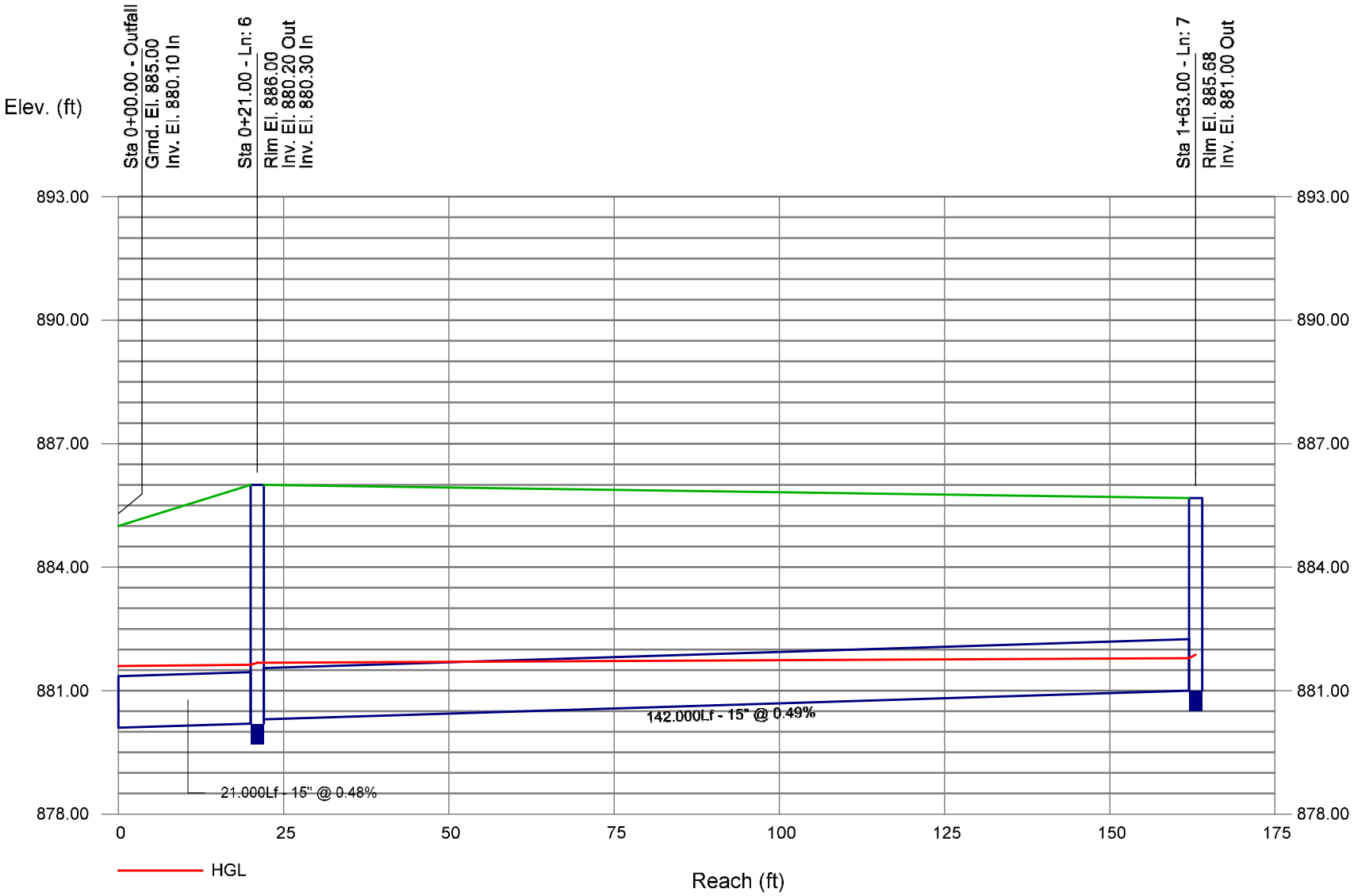
# Storm Sewer Profile

Proj. file: P-STM.stm



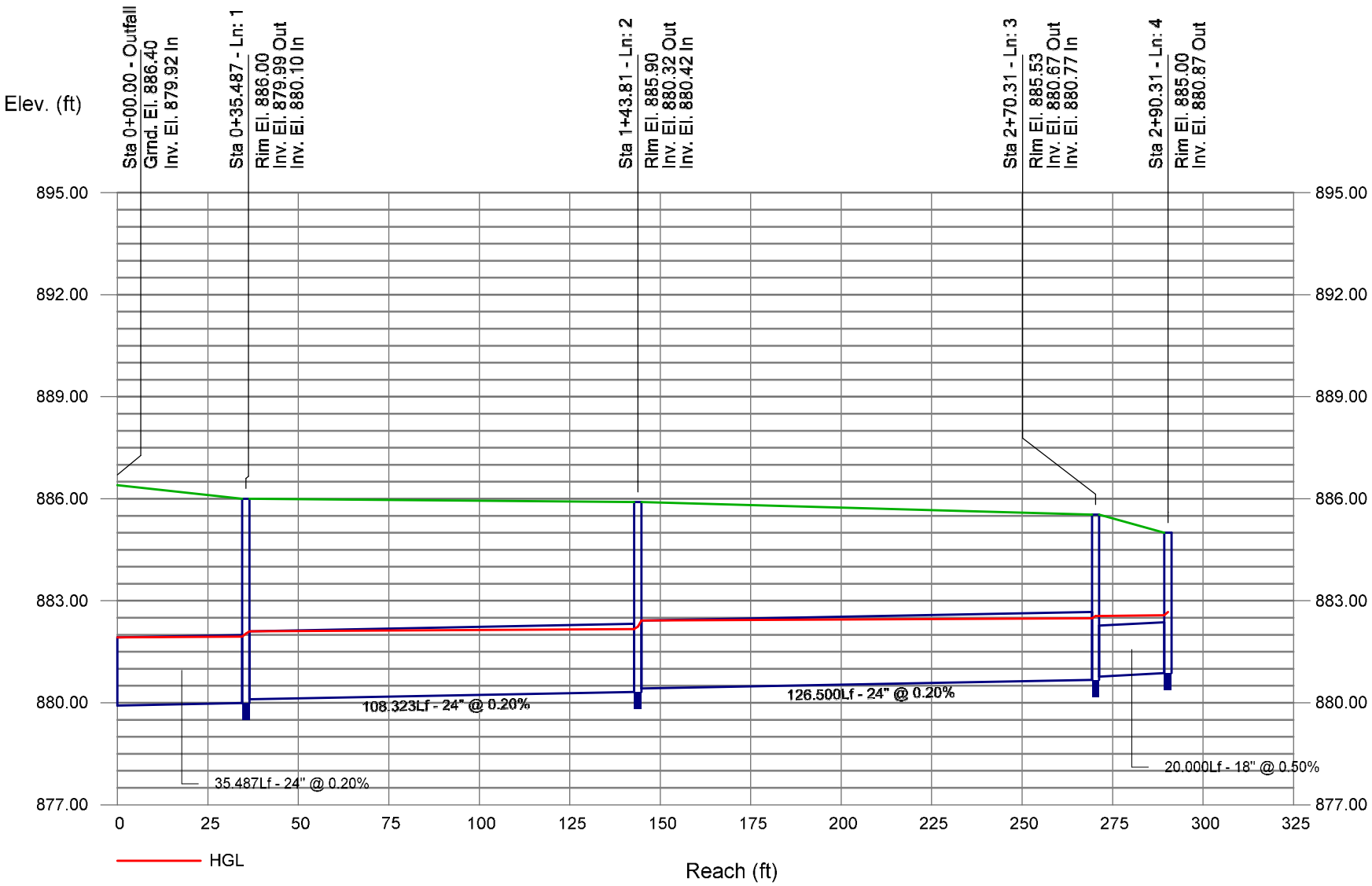
# Storm Sewer Profile

Proj. file: P-STM.stm



# Storm Sewer Profile

Proj. file: P-STM.stm



# EXHIBIT 3

## STORMWATER MANAGEMENT REPORT FOR MEIJER STORE ABE

Woolpert, Inc.
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL

# STORMWATER MANAGEMENT REPORT

PREPARED FOR:

MEIJER STORE #338 ABE
9202 E 56TH STREET
TOWN OF BROWNSBURG
HENDRICKS COUNTY, INDIANA 46112

PREPARED BY:

WOOLPERT, INC.
4454 IDEA CENTER BOULEVARD
DAYTON, OH 45430

WOOLPERT PROJECT: 10020046

September 5, 2023
REV. February 23, 2024
REV. January 10, 2025

Woolpert, Inc.
1203 Walnut Street, Second Floor
Cincinnati, OH 45202
513.272.8300

TABLE OF CONTENTS

Page
INTRODUCTION ..... 1
PROJECT DESCRIPTION ..... 1
PRE-DEVELOPED SITE CONDITIONS ..... 1
POST-DEVELOPED SITE CONDITIONS ..... 1
DETENTION DESIGN ..... 3
STORM WATER QUALITY ..... 5
STORM SEWER DESIGN ..... 5
CONCLUSION ..... 6

FIGURES

Figure
Pre-Developed Drainage Plan ..... 1A
Post-Developed Drainage Plan ..... 1B
Site Watershed Map ..... 1C
Inlet Drainage Plan ..... 1D
Grading Plans ..... 2
Utility Plans ..... 3

APPENDICES

Appendix
Section 1: Detention Design Information
HydroCAD Inputs and Results – Onsite Runoff ..... 1.1
HydroCAD Inputs and Results – Onsite & Offsite Runoff ..... 1.2
Emergency Spillway Calculations ..... 1.3
Stormwater Details ..... 1.4
Water Quality Structure Sizing ..... 1.5
Existing 27” Pipe Analysis ..... 1.6

Section 2: Supplemental Design Data
NCRS Websoil Survey Report ..... 2.1
Hydraflow Storm Sewers 10-YR Design Calculations ..... 2.2
Hydraflow Storm Sewers 25-YR Design Calculations ..... 2.3
Hydraflow Storm Sewers Ponding Analysis ..... 2.4

## INTRODUCTION

This stormwater management report was prepared to provide the methodology and control measures that will be utilized to control stormwater runoff from the proposed Meijer development in post-construction conditions. The development will be constructed at 9202 East 56th St, Brownsburg, Hendricks County, IN. The site is bordered by East 56th Street (E CR 600 N) to the south, N CR 900 E to the west, undeveloped agricultural land to the north, and the right-of-way and future stormwater management basin for the Ronald Reagan Parkway extension to the east.

The Town of Brownsburg Stormwater Management regulations were used to design the stormwater management system, along with the Hendricks County required release rates. HydroCAD was used to simulate pre- and post-developed runoff and to model post-developed stormwater management routing.

## PROJECT DESCRIPTION

The 31.63-acre site will be developed as a Meijer supercenter and mExpress convenience/fueling store with associated parking area, access drives and landscaping. Four entrance drives will be constructed to access the site: two on East 56th Street (E CR 600 N) and two on N CR 900 E. Storm sewer and utility services will be constructed and connect to the existing utility infrastructure. Two proposed above-ground stormwater management basins and an underground stormwater management system will provide detention and water quality treatment for the Meijer development in accordance with the Town of Brownsburg and Hendricks County requirements. Additionally, the commercial outlots to be constructed in the future have been considered in the proposed design. The proposed stormwater management system is designed to manage all detention from the commercial outlots.

## PRE-DEVELOPED SITE CONDITIONS

See Figure 1A for the Pre-Developed Drainage Plan and Figure 1C for the Site Watershed Map. The existing 31.63-acre site is an undeveloped agricultural field. The site is composed primarily of poorly drained Hydrologic Soil Group (HSG) C/D (Treaty Silt Loam) and somewhat poorly drained HSG B/D (Crosby Silt Loam) soils. The site slopes from northwest to southeast at roughly 0.50 – 2.00 percent. Existing storm runoff sheet flows to a common low point at the southeast corner of the site. Additionally, there is an existing 27” storm pipe running West to East across the site. This pipe conveys stormwater discharge from the Hession Farms Subdivision from the west side of CR 900 as well as discharge from the OrthoIndy detention basin located to the southwest of the subject site. The 27” pipe increases in size to a 36” pipe immediately downstream (east) of the subject site and discharges to School Branch. Immediately east of the subject site is the South Detention Pond for the Ronald Regan Extension Road Project, currently under construction. This detention basin is owned and maintained by the Hendricks County Engineering Department. As part of the construction, the 36” discharge pipe from Hession Farms and OrthoIndy will be rerouted around the new detention basin. All stormwater discharge from the South Detention Pond and the 36” pipe will discharge to School Branch. Lastly, the southern portion of the site is bordered by two outlots owned by OrthoIndy, B-1 and B-2, 1.70 acres and 1.80 acres in area, respectively. These outlots will be developed by others but existing runoff within these areas sheet flows from west to east towards the common low point on the subject property.

## POST-DEVELOPED SITE CONDITIONS

See Figure 1B for the Post-Developed Drainage Plan. The Meijer supercenter and convenience store as well as the outlots of the development will be constructed on the 31.63-acre site. The existing 27” storm pipe will remain undisturbed throughout construction. Storm sewer and utility services will be constructed and connect to existing utility infrastructure. The proposed stormwater management system will provide detention and water quality treatment for the development per Town of Brownsburg and Hendricks County requirements.

The proposed stormwater management system is separated into two detention systems for the north and south portions of the site generally delineated by the existing 27” storm pipe running West to East across the site. The majority of the north portion of the site discharges to the above-ground wet detention basin (Pond 1P) located along the northern and eastern property lines. Pond 1P provides detention volume and water quality for the Meijer supercenter store, northern parking lots, Outlots B & C and off-site drainage north of the subject property. The on-site drainage areas referred to as A-1, Out B, and Out C will be detained within the basin. The off-site drainage areas north of the subject property referred to as D-1 and D-2 will bypass through the basin as uncontrolled flow. The small area along

the perimeter referred to as C-2 will remain uncontrolled and contribute to the total site runoff. Pond 1P has a wet bottom elevation of 875.00, a normal pool elevation of 877.29, and a top of bank elevation of 885.00.

The majority of the south portion of the site discharges to the combined above-ground basin and underground detention facility (Pond 2P) located north of Outlot A and the mExpress. Pond 2P provides detention volume and water quality for the Meijer convenience store/fueling station, southern parking lots, and Outlot A. The on-site drainage areas referred to as A-2 and Out A will be detained within the detention system. Small areas along the perimeter referred to as C-3, C-4, C-5, C-6, and C-7 will remain uncontrolled and contribute to the total site runoff. The underground stormwater management facility and the above-ground detention basin are connected via a 42" equalization pipe. The underground detention system does not accept any site runoff but works in combination with the above-ground detention basin to provide additional storage volume. The 42” equalizer pipe will begin to stage as the above-ground detention basin fills up. Runoff volume will continue to stage between the above-ground detention basin, the 42” equalizer pipe and the underground detention system. Runoff volume will flow into and out of the underground detention system via the 42” pipe as the above-ground detention basin fills up and begins to outlet from the outlet control structure, 3.02, at a controlled release rate. Both systems are hydraulically connected and have been modeled as one entity. Pond 2P has a dry bottom elevation of 877.38 with a top of bank elevation of 886.00. The underground detention system is a CONTECH 72” CMP system with stone backfill.

For each post-developed drainage area, the acreage, CN value, and time of concentration were determined. The CN value is weighted based on an impervious CN of 98 and an open space, good condition CN of 80. To comply with Town of Brownsburg and Hendricks County requirements, the future outlots were assumed to have a CN of 95 for commercial development. In post-developed conditions, the HSG has been modeled as Group D. The post-developed time of concentrations for detained developed areas were calculated to be 15.0 minutes assuming 10 minutes of overland flow and 5 minutes of pipe flow. The post-developed time of concentrations for the undetained perimeter areas were assumed to be 6.0 minutes based on the minimum allowable per TR-55 guidance.

The outlet control structures for each detention basin discharge to the existing 27” pipe in accordance with Watershed-Specific Release Rates as coordinated with the Hendricks County Drainage Board. An analysis of the existing 27” pipe running through the subject site indicates that the pipe has sufficient capacity to convey the detained runoff from the proposed development to School Branch. See Appendix 1.6 for the analysis.

Emergency overflow spillways have been provided for both above-ground detention basins and are designed to directly discharge into the future Ronald Reagan detention basin east of the site. An analysis of the Ronald Reagan Parkway detention basin indicates that the emergency spillway has sufficient capacity to allow for the potential overflow from the Meijer basin emergency spillways. See Appendix 1.3 for the Emergency Spillway Calculations.

## DETENTION DESIGN

Stormwater detention will be provided for the proposed development in accordance with the Town of Brownsburg and Hendricks County design requirements. Per a comment received from the Hendricks County Drainage Board on January 4th, 2024, the allowable release rates for the 10- and 100-year storm events have been calculated based on 0.1 cfs per acre and 0.3 cfs per acre, respectively. Table 1.1 on the following page provides the drainage areas for each detention system as well as the allowable release rates. Tables 1.2 and 1.3 provide summaries of the designed release rates. See Appendices 1.1 and 1.2 for HydroCAD Inputs and Results.

POND 1P (ABOVE-GROUND BASIN) DETENTION DESIGN

The proposed above-ground stormwater management system is designed so that runoff from the post-developed Meijer supercenter store, northern parking lots, Outlots B & C will be managed within the detention basin up to and including the 100-year storm. Runoff from the drainage areas referred to as A-1, Out B, and Out C will discharge to the proposed basin. A 40" X 40" structure will be modified to serve as the outlet control structure to control the post-developed release rates for this area. A 4" orifice at invert 877.29 will function as the primary control device. A 12" orifice at invert 882.14 will function as the secondary control device. The grate of the outlet control structure will have an elevation of 884.54. The stormwater management system will outlet to the existing 27" pipe through a 12" pipe at invert 877.29. An emergency spillway will be provided at elevation 884.54 and the top of the basin is at 885.00. See Appendix 1.4 for the Outlet Structure Detail.

POND 2P (COMBINED ABOVE-GROUND & UNDERGROUND BASIN) DETENTION DESIGN

The proposed combined above-ground basin and 72" underground stormwater management system is designed so that runoff from the post-developed Meijer convenience store/fueling station, southern parking lots, and Outlot A will be managed within the detention basin up to and including the 100-year storm. Runoff from the drainage areas referred to as A-2 and Out A will discharge to the proposed basin. A storm structure will be modified to serve as the outlet control structure to control the post-developed release rates for this area. A 4" orifice at invert 877.38 will function as the primary control device. A 12" orifice at invert 882.61 will function as the secondary control device. The grate of the outlet control structure will have an elevation of 885.40. The stormwater management system will outlet to the existing 27" pipe through a 12" pipe at invert 877.38. An emergency spillway will be provided at elevation 885.40 and the top of the basin is at 886.00. See Appendix 1.4 for the Outlet Structure and Underground Detention System Details.

Per comments received from the Hendricks County Drainage Board on January 4th, 2024, the underground detention system was requested to be modeled separately from the above-ground detention basin 2P. Due to HydroCAD modeling software limitations, the model produced oscillations in the hydrograph output for the south pond. After reviewing various HydroCAD help documents, it is recommended to model these systems as a single detention facility for accurate routing.

## Table 1.1: Allowable Release Rate Calculations

Rows highlighted orange denote drainage areas that are detained within the detention systems. Non-highlighted rows indicate drainage areas that are bypassed within the detention systems.

**Detention System 1P (North Detention Basin)**

| Site Type | Node Name | Area (acres) | 10-yr Existing Release Rate (cfs) | 10-yr Allowable (0.1 cfs/acre) | 100-yr Existing Release Rate (cfs) | 100-yr Allowable (0.3 cfs/acre) | |
|---|---|---|---|---|---|---|---|
| Meijer Site | A-1 | 16.51 | 96.82 | 1.65 | 147.35 | 4.95 | |
| Outlot B | Out B | 1.92 | 7.32 | 0.19 | 11.59 | 0.58 | |
| Outlot C | Out C | 3.82 | 10.34 | 0.38 | 16.52 | 1.15 | |
| North Offsite D-1 | D-1 | 18.48 | 24.10 | 24.10 | 38.78 | 38.78 | |
| North Offsite D-2 | D-2 | 10.72 | 29.71 | 29.71 | 47.46 | 47.46 | |
| | Total Area | 51.45 | | | | | |
| | | | | Total 10-yr Allowable Release Rate = | | 56.04 | cfs |
| | | | | Total 100-yr Allowable Release Rate = | | 92.92 | cfs |

**Detention System 2P (South Detention Basin & Underground System)**

| Site Type | Node Name | Area (acres) | 10-yr Existing Release Rate (cfs) | 10-yr Allowable (0.1 cfs/acre) | 100-yr Existing Release Rate (cfs) | 100-yr Allowable (0.3 cfs/acre) | |
|---|---|---|---|---|---|---|---|
| Meijer Site | A-2 | 5.18 | 27.86 | 0.52 | 42.39 | 1.55 | |
| Outlot A | Out A | 3.12 | 10.92 | 0.31 | 17.40 | 0.94 | |
| | Total Area | 8.30 | | | | | |
| | | | | Total 10-yr Allowable Release Rate = | | 0.83 | cfs |
| | | | | Total 100-yr Allowable Release Rate = | | 2.49 | cfs |

**Undetained Area (Bypass Flow Contributing to Total Site Runoff)**

| Site Type | Node Name | Area (acres) | 10-yr Existing Release Rate (cfs) | 10-yr Allowable (0.1 cfs/acre) | 100-yr Existing Release Rate (cfs) | 100-yr Allowable (0.3 cfs/acre) | |
|---|---|---|---|---|---|---|---|
| Ortho-Indy Oulot | B-1 | 1.70 | 7.07 | 7.07 | 12.17 | 12.17 | |
| Ortho-Indy Oulot | B-2 | 1.80 | 4.25 | 4.25 | 7.65 | 7.65 | |
| Undetained Area 2 | C-2 | 0.16 | 0.70 | 0.02 | 1.21 | 0.05 | |
| Undetained Area 3 | C-3 | 0.29 | 1.07 | 0.03 | 1.85 | 0.09 | |
| Undetained Area 4 | C-4 | 0.19 | 0.66 | 0.02 | 1.09 | 0.06 | |
| Undetained Area 5 | C-5 | 0.16 | 0.38 | 0.02 | 0.66 | 0.05 | |
| Undetained Area 6 | C-6 | 0.05 | 0.26 | 0.01 | 0.39 | 0.02 | |
| Undetained Area 7 | C-7 | 0.19 | 0.26 | 0.02 | 0.39 | 0.06 | |
| | Total Area | 4.54 | | | | | |
| | | | | Total 10-yr Allowable Release Rate = | | 11.42 | cfs |
| | | | | Total 100-yr Allowable Release Rate = | | 20.13 | cfs |

| | | |
|---|---|---|
| Total On-Site 10-YR Allowable Release Rate = | 3.16 | cfs |
| Total On-Site 100-YR Allowable Release Rate = | 9.48 | cfs |

| | | |
|---|---|---|
| Total Site 10-YR Allowable Release Rate = | 68.29 | cfs |
| Total Site 100-YR Allowable Release Rate = | 115.54 | cfs |

## Table 1.2: On-Site Release Rate Summary

| Site Area | 10-YR Allowable Release Rate | 10-YR Design Release Rate | WSE | 100-YR Allowable Release Rate | 100-YR Design Release Rate | WSE |
|---|---|---|---|---|---|---|
| Pond 1P | 2.23 cfs | 0.91 cfs | 882.14’ | 6.68 cfs | 4.00 cfs | 883.27’ |
| Pond 2P | 0.83 cfs | 0.95 cfs* | 882.61’ | 2.49 cfs | 5.19 cfs* | 884.29’ |
| Undetained Areas | 0.10 cfs | | | 0.31 cfs | | |
| Total Site Runoff | 3.16 cfs | 5.62 cfs* | | 9.48 cfs | 9.08 cfs | |

*Note:
The design release rates for the detention system are above the calculated allowable release rates. This is due to the minimum orifice size of 4” as stated in the Town of Brownsburg Stormwater Manual.

## Table 1.3: On-Site & Off-Site Release Rate Summary

| Site Area | 10-YR Allowable Release Rate | 10-YR Design Release Rate | WSE | 100-YR Allowable Release Rate | 100-YR Design Release Rate | WSE |
|---|---|---|---|---|---|---|
| Pond 1P | 56.04 cfs | 6.24 cfs | 884.48’ | 92.92 cfs | 61.91 cfs | 884.86’ |
| Pond 2P | 0.83 cfs | 0.95 cfs* | 882.61’ | 2.49 cfs | 5.19 cfs* | 884.29’ |
| Undetained Areas | 11.42 cfs | | | 20.13 cfs | | |
| Total Site Runoff | 68.29 cfs | 15.13 cfs | | 115.54 cfs | 69.48 cfs | |

*Note:
The design release rates for the detention system are above the calculated allowable release rates. This is due to the minimum orifice size of 4” as stated in the Town of Brownsburg Stormwater Manual. However, once both on-site detained and off-site bypass areas are considered, actual release rates for both the 10- and 100-year design storms are below allowable release rates.

## STORM WATER QUALITY

Stormwater quality will be provided by a treatment train of three Hydrodynamic Separators, Structures 1.01, 1.31, & 2.01, to allow for pre-treatment of the stormwater runoff prior to entering the detention systems and the detention basins. Applicable water quality flow rates were used to size each structure to adhere to Town of Brownsburg requirements. Each water quality structure is specified as a Cascade Separator™ by CONTECH Engineering which has independent third-party testing showing 80% TSS removal rates as required by the Town of Brownsburg. See Appendix 1.5 for Water Quality Structure Sizing.

## STORM SEWER DESIGN

See Figure 1D for the Inlet Drainage Plan. The storm sewer system for the site is divided into multiple drainage areas, all of which typically drain to a proposed catch basin or curb inlet and discharge to one of the proposed detention basins. The storm sewer is sized to convey the 10-year storm event and keep the hydraulic grade line within the pipe per Town of Brownsburg and Hendricks County requirements. The system was also designed to keep the hydraulic grade line below the rims of the drainage structures for the 25-year storm event. An n-value of 0.012 was used for the storm sewer design calculations. Additionally, a ponding analysis was completed for all drainage structures with the assumption that 50% of the open grate area for each inlet was blocked. The castings assumed for this analysis adhere to the Town of Brownsburg Construction Standards and utilize applicable Neenah casting types. See Appendices 2.2, 2.3 and 2.4 for Hydraflow Storm Sewers Calculations.

Per Town of Brownsburg regulations, the 100-yr ponding limits under the assumption that all storm inlets are at capacity have been provided on the proposed grading plan. The ponding limits at storm structures 1.02 and 1.03 include the truck dock area and abut the east building face. The pavement elevations in this area are set at or above the 100-yr water surface elevation of the detention basin, so the water elevations in the pond will not impact or flood this area. This ponding would only be a result of clogging or capacity issues with the storm sewer inlet grates to receive surface runoff. Additionally, per Meijer prototypical design standards, the truck dock entrance doors are set 50” above finished grade in this area to align with the main store finished floor elevation and the concrete pad for the entrance is sloped away from the building face at 1.00% to allow for positive drainage. Although the ponding limits abut the building face, site runoff will not pond up to the truck dock entrance doors, even in a case of clogging or capacity issues. The structural integrity of the building foundation will not be impacted by the ponding. The ponding will fluctuate as the detention

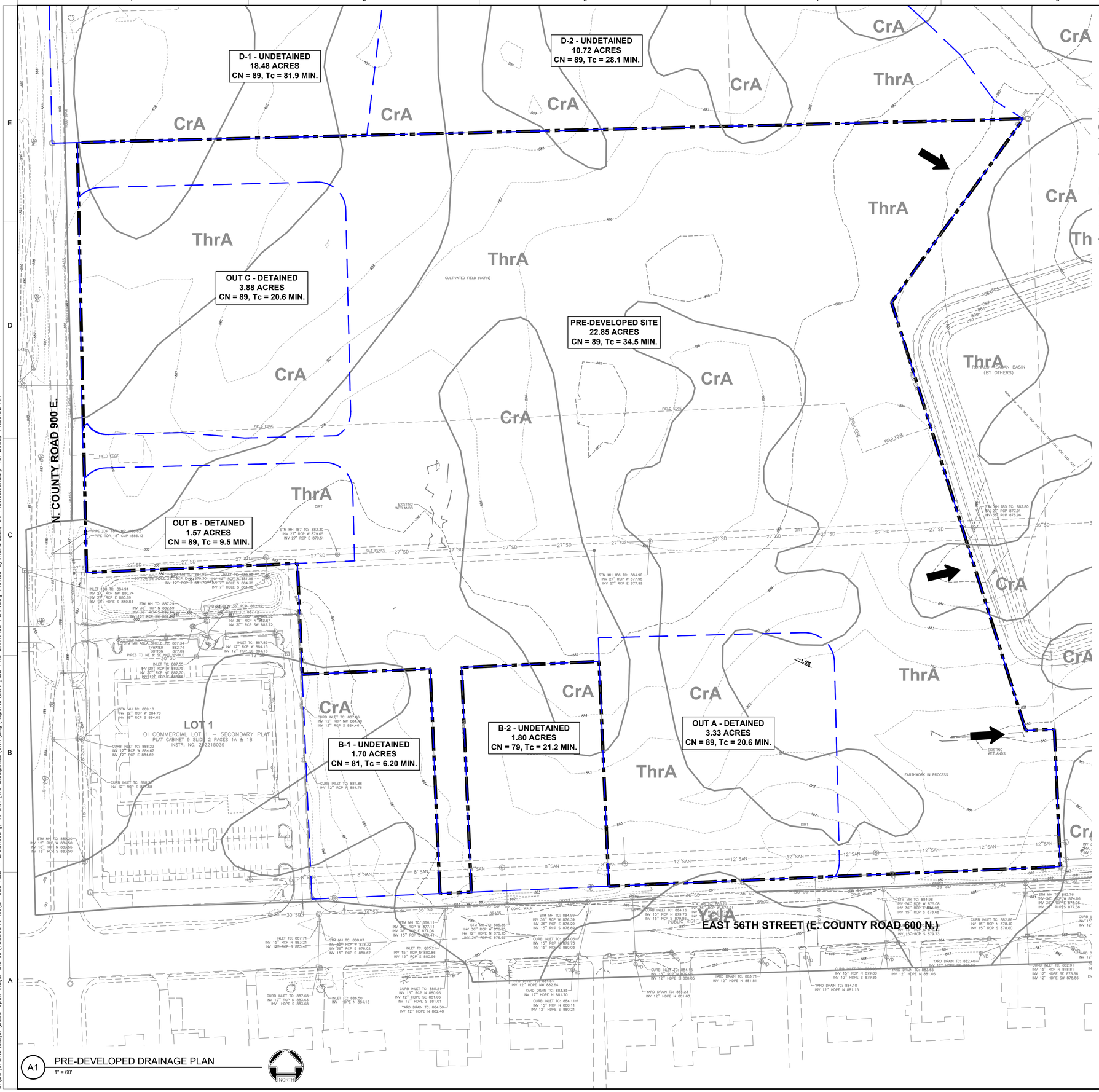
basin fills up and drains, so no permanent ponding will occur in this area. In summary, the design is not anticipated to impact the building foundation.

## CONCLUSION

The proposed design meets the requirements outlined in the Town of Brownsburg and Hendricks County Stormwater Technical Standards Manual Adopted October 2017.

# FIGURES

# FIGURE 1A – PRE-DEVELOPED DRAINAGE PLAN




A1 PRE-DEVELOPED DRAINAGE PLAN
1" = 60'

NORTH

## LEGEND

- EXISTING DRAINAGE STRUCTURE
- EXISTING STORM SEWER
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROJECT BOUNDARY
- DRAINAGE AREA BOUNDARY

## SOILS LEGEND

| | |
|---|---|
| CrA | CROSBY SILT LOAM, 0–2% SLOPES HYDROLOGIC GROUP: C/D |
| YclA | CROSBY SILT LOAM (URBAN LAND COMPLEX), 0–2% SLOPES HYDROLOGIC GROUP: C/D |
| ThrA | TREATY SILTY CLAY LOAM, 0–1% SLOPES HYDROLOGIC GROUP: B/D |

## DRAINAGE AREA SUMMARY

| | |
|---|---|
| AREA B–1 | 1.70 ACRES |
| AREA B–2 | 1.80 ACRES |
| AREA D–1 | 18.48 ACRES |
| AREA D–2 | 10.72 ACRES |
| OUTLOT A | 3.33 ACRES |
| OUTLOT B | 1.57 ACRES |
| OUTLOT C | 3.87 ACRES |
| PRE–DEVELOPED SITE | 22.85 ACRES |
| TOTAL AREA | 64.32 ACRES |

## BENCHMARK:

THE BASIS OF ELEVATIONS HEREON IS NAVD 88 PER OBSERVATIONS OF SELECTED STATIONS IN THE NATIONAL GEODETIC SURVEY CONTINUOUSLY OPERATING REFERENCE STATION (NGS CORS) NETWORK.
MAG NAIL SET IN THE CORNER TOP OF THE CURB JOINT – SEE DRAWING FOR LOCATION.

ELEVATION = 889.36'

0 60 120 180
GRAPHIC SCALE IN FEET

Indiana811 Know what's below. Call before you dig.


WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|

MEIJER STORE #338
9202 E. 56TH STREET
BROWNSBURG, INDIANA 46112

PRE-DEVELOPED DRAINAGE PLAN

| ISSUED FOR: | |
|---|---|
| PERMIT | MM/DD/YY |
| BID | MM/DD/YY |
| CONSTRUCTION | MM/DD/YY |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
NS-26-00338

1A


Images: Topo – County GIS.PNG; Xrefs: 10020046-x.dwg; 10020046TBLK.dwg
Layout Tab Name: PRE-DEVELOPED DRAINAGE PLAN
Last Saved By:richardsonj, 1/10/2025 11:34:15 AM
G:\DE\Clients\Meijer\2026 Open Meijer Stores\10020046 Meijer 338 ABE – Brownsburg, IN Civil\4.0 Disciplines\Civil\Eng\Reports\SWM\ABE PRE DRAINAGE PLAN.dwg Plotted By:Richardson, Jill Plotted:January 10, 2025, 11:35:02 AM

# FIGURE 1B – POST-DEVELOPED DRAINAGE PLAN

D-1 - UNDETAINED
18.48 ACRES
CN = 89, Tc = 81.9 MIN.

D-2 - UNDETAINED
10.72 ACRES
CN = 89, Tc = 28.1 MIN.

OUT C - DETAINED
3.82 ACRES
CN = 95, Tc = 15 MIN.

meijer
159,935 SQ. FT.
FF ELEV = 889.00

A-1 - DETAINED
16.51 ACRES
CN = 92, Tc = 15 min

OUTDOOR GARDEN CENTER

OUTDOOR SALES AREA

OUT B - DETAINED
1.92 ACRES
CN = 95, Tc = 15 MIN.

C-2 - UNDETAINED
0.16 ACRES
CN = 80, Tc = 6 MIN.

C-3 - UNDETAINED
0.29 ACRES
CN = 80, Tc = 6 MIN.

C-4 - UNDETAINED
0.19 ACRES
CN = 80, Tc = 6 MIN.

C-5 - UNDETAINED
0.17 ACRES
CN = 80, Tc = 6 MIN.

B-2 - UNDETAINED
1.80 ACRES
CN = 79, Tc = 21.1 MIN.

B-1 - UNDETAINED
1.70 ACRES
CN = 81, Tc = 6.2 MIN.

OUTLOT
(BY OTHERS)
1.86 ACRES

OUTLOT
(BY OTHERS)
1.80 ACRES

OUT A - DETAINED
3.12 ACRES
CN = 95, Tc = 15 MIN.

A-2 - DETAINED
5.18 ACRES
CN = 93
Tc = 15 MIN.

C-6 - UNDETAINED
0.05 ACRES
CN = 94, Tc = 6 MIN.

C-7 - UNDETAINED
0.19 ACRES
CN = 84, Tc = 6 MIN.

N. COUNTY ROAD 900 E.

EAST 56TH STREET (E. COUNTY ROAD 600 N.)

RONALD REAGAN BASIN
(BY OTHERS)

WET DETENTION BASIN
TOP OF BANK ELEV. = 885.00
NORMAL POOL ELEV. = 877.29
BOTTOM ELEV. = 865.00
10 YR. ELEV. = 882.14
100 YR. ELEV. = 883.27

EMERGENCY SPILLWAY
FLOOD ROUTING PATH
ELEVATION = 884.54

EMERGENCY SPILLWAY
FLOOD ROUTING PATH
ELEVATION = 885.40

DRY DETENTION BASIN
TOP OF BANK ELEV. = 885.00
BOTTOM ELEV. = 877.38
10 YR. ELEV. = 882.61
100 YR. ELEV. = 884.29

UNDERGROUND DETENTION SYSTEM
(72" CMP ROUND CHAMBER SYSTEM)
TOP OF STONE ELEV. = 884.53
TOP OF PIPE ELEV = 884.03
BOTTOM OF PIPE ELEV. = 878.03
BOTTOM OF STONE ELEV. = 877.53
10 YR. ELEV. = 882.61
100 YR. ELEV. = 884.29

LOT 1
OI COMMERCIAL LOT 1 – SECONDARY PLAT
PLAT CABINET 9 SLIDE 2 PAGES 1A & 1B
INSTR. NO. 202215039

## LEGEND

- EXISTING DRAINAGE STRUCTURE
- EXISTING STORM SEWER
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROPOSED 1' CONTOUR
- PROPOSED 5' CONTOUR
- STORM SEWER
- DRAINAGE STRUCTURE
- XX STORM STRUCTURE ID
- PROJECT BOUNDARY
- DRAINAGE AREA BOUNDARY

## DRAINAGE AREA SUMMARY

NORTH DETENTION POND DRAINAGE AREA

| | |
|---|---|
| A–1 – DETAINED | 16.51 AC |
| OUT B – DETAINED | 1.92 AC |
| OUT C – DETAINED | 3.82 AC |
| D–1 – UNDETAINED, BYPASS | 18.48 AC |
| D–2 – UNDETAINED, BYPASS | 10.72 AC |
| TOTAL DRAINAGE AREA | 51.45 ACRES |

SOUTH DETENTION POND & UNDERGROUND SYSTEM DRAINAGE AREA

| | |
|---|---|
| A–2 – DETAINED | 5.18 AC |
| OUT A – DETAINED | 3.12 AC |
| TOTAL DRAINAGE AREA | 8.30 ACRES |

UNDETAINED AREAS, CONSIDERED WITHIN TOTAL SITE RUNOFF

| | |
|---|---|
| B–1 – UNDETAINED | 1.70 AC |
| B–2 – UNDETAINED | 1.80 AC |
| C–2 – UNDETAINED | 0.16 AC |
| C–3 – UNDETAINED | 0.29 AC |
| C–4 – UNDETAINED | 0.19 AC |
| C–5 – UNDETAINED | 0.16 AC |
| C–6 – UNDETAINED | 0.05 AC |
| C–7 – UNDETAINED | 0.19 AC |
| TOTAL UNDETAINED AREA | 4.54 ACRES |

## DRAINAGE AREA LEGEND

- A–1
- A–2
- MEIJER OUTLOTS A, B, & C
- OUTLOTS BY OTHERS B–1 & B–2
- C–2
- C–3
- C–4
- C–5
- C–6
- C–7
- D–1
- D–2

A1 POST-DEVELOPED DRAINAGE PLAN
1" = 60'

NORTH

0 60 120 180
GRAPHIC SCALE IN FEET

Indiana 811 Know what's below. Call before you dig.


WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|

MEIJER STORE #338
8202 E. 56TH STREET
BROWNSBURG, INDIANA 46112

POST-DEVELOPED DRAINAGE PLAN

| ISSUED FOR: | |
|---|---|
| PERMIT | MM/DD/YY |
| BID | MM/DD/YY |
| CONSTRUCTION | MM/DD/YY |

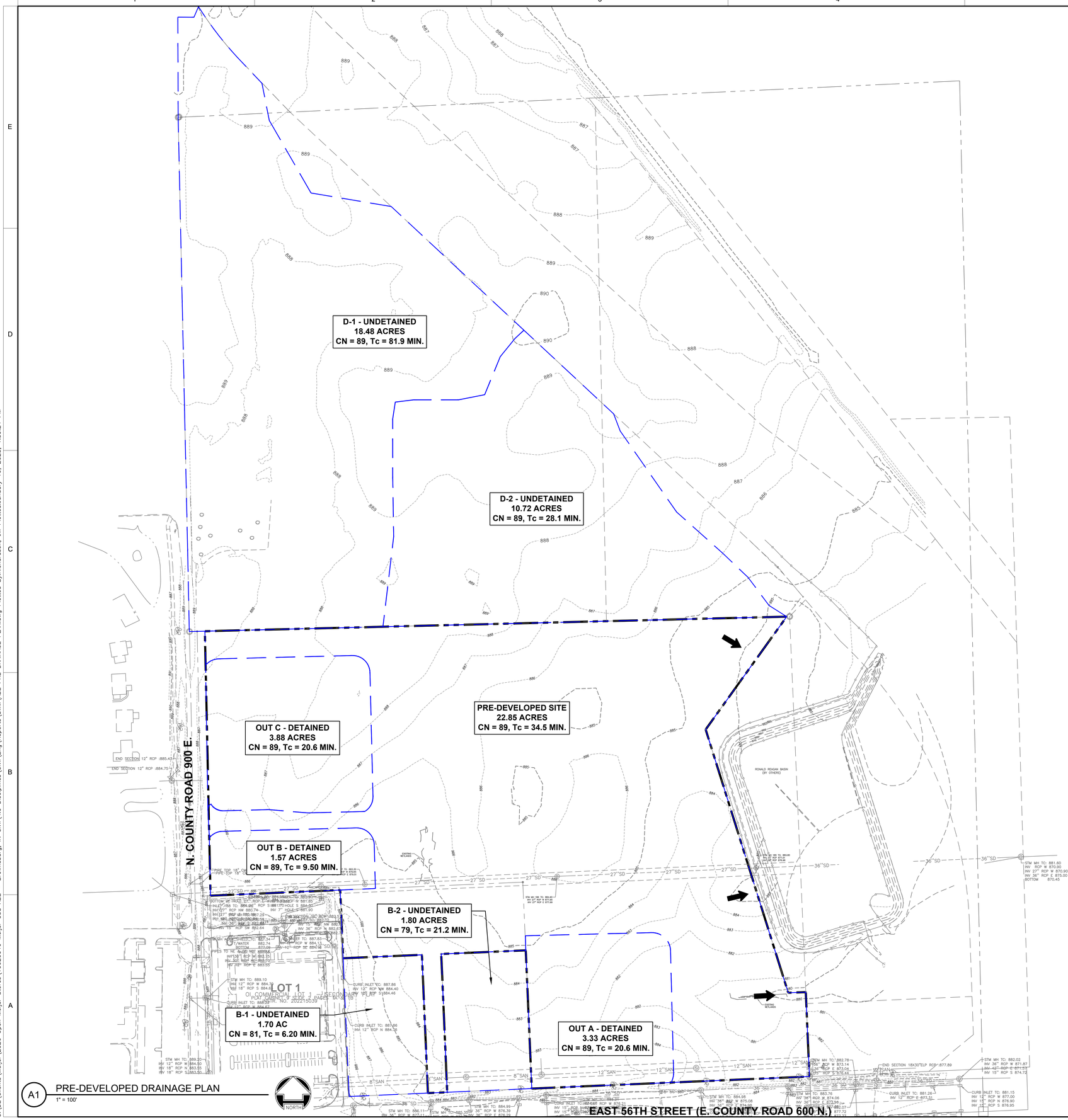
| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
NS-26-00338

1B


Images: *.xrfs; 10220046-x.dwg; 10220046TBLK.dwg; 10220046-p.dwg; 10220046--h.dwg
Last Saved By:richardsonj, Jill Plotted:January 10, 2025, 11:03:52 AM
Last Saved By:richardsonj, 1/10/2025 11:01:03 AM
G:\DE\Clients\Meijer\2026 Open Meijer Stores\10220046 Meijer 338 ABE – Brownsburg, IN Civil\4.0 Disciplines\Civil\Engr\Reports\SWM\ABE POST DRAINAGE PLAN.dwg Plotted By:Richardson, Jill Plotted:January 10, 2025, 11:03:52 AM

# FIGURE 1C – SITE WATERSHED MAP




A1 PRE-DEVELOPED DRAINAGE PLAN
1" = 100'

## LEGEND

| | |
|---|---|
| | EXISTING DRAINAGE STRUCTURE |
| SD | EXISTING STORM SEWER |
| 1179 | EXISTING 1' CONTOUR |
| 1180 | EXISTING 5' CONTOUR |
| | PROJECT BOUNDARY |
| | DRAINAGE AREA BOUNDARY |

## DRAINAGE AREA SUMMARY

| | |
|---|---|
| AREA B-1 | 1.70 ACRES |
| AREA B-2 | 1.80 ACRES |
| AREA D-1 | 18.48 ACRES |
| AREA D-2 | 10.72 ACRES |
| OUTLOT A | 3.33 ACRES |
| OUTLOT B | 1.57 ACRES |
| OUTLOT C | 3.87 ACRES |
| PRE-DEVELOPED SITE | 22.85 ACRES |
| TOTAL AREA | 64.32 ACRES |

0 100 200 300
GRAPHIC SCALE IN FEET

Indiana 811
Know what's below. Call before you dig.

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|

MEIJER STORE #338
9202 E. 56TH STREET
BROWNSBURG, INDIANA 46112

SITE WATERSHED MAP

| ISSUED FOR: | |
|---|---|
| PERMIT | MM/DD/YY |
| BID | MM/DD/YY |
| CONSTRUCTION | MM/DD/YY |

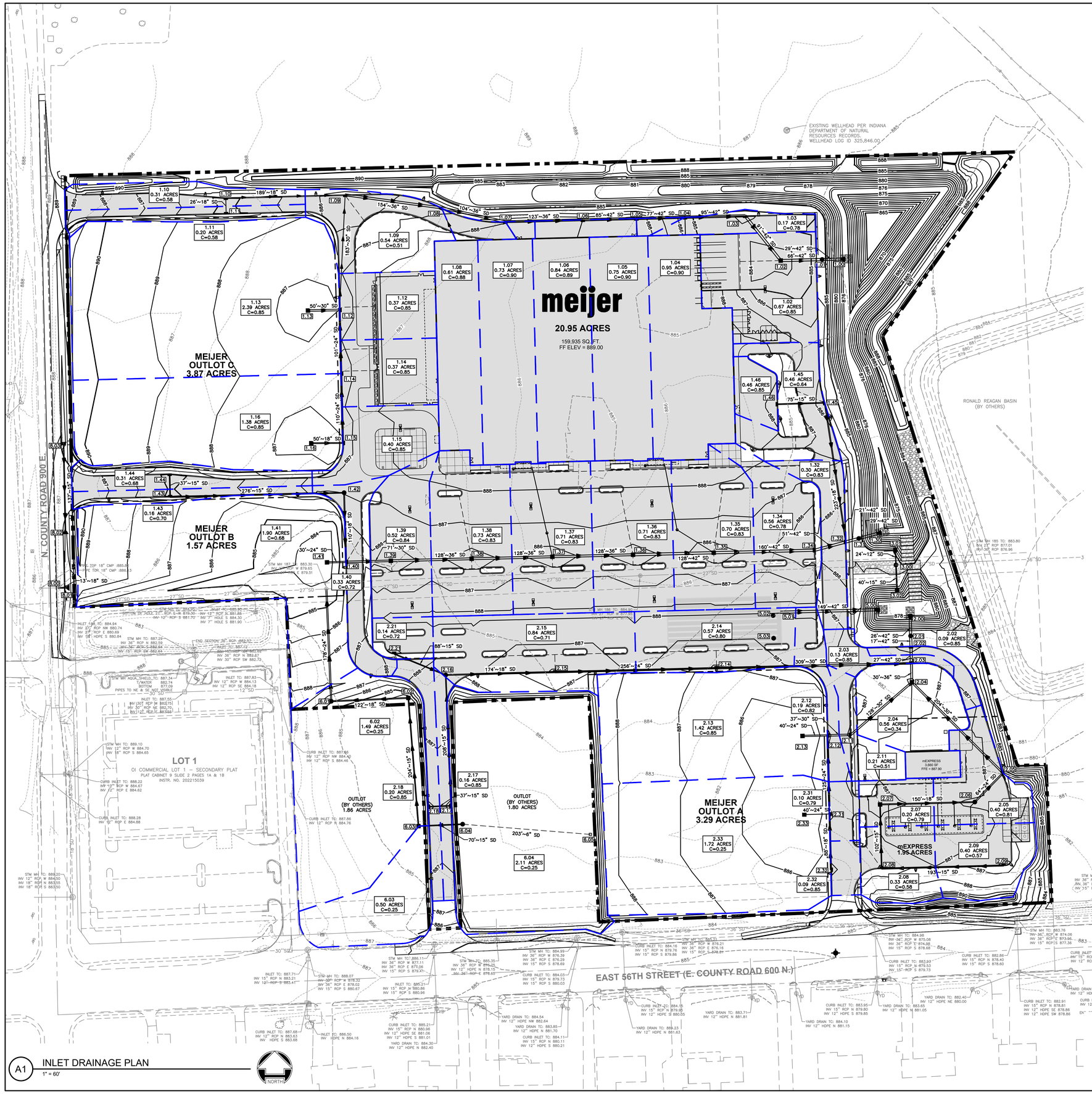
| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
NS-26-00338

1C

Images: Topo - County GIS.PNG; . Xrefs: 10020046-x.dwg; 10020046TBLK.dwg
Layout Tab Name: PRE-DEVELOPED DRAINAGE PLAN 1-100
Last Saved By:richardsonj, 1/10/2025 1:59:01 PM
G:\DE\Clients\Meijer\2026 Open Meijer Stores\10020046 Meijer 338 ABE - Brownsburg, IN Civil\4.0 Disciplines\Civil\Eng\Reports\SWM\ABE PRE DRAINAGE PLAN.dwg Plotted By:Richardson, Jill Plotted:January 10, 2025, 1:59:24 PM

# FIGURE 1D – INLET DRAINAGE PLAN




A1 INLET DRAINAGE PLAN
1" = 60'

0 60 120 180
GRAPHIC SCALE IN FEET

## LEGEND

- EXISTING DRAINAGE STRUCTURE
- EXISTING STORM SEWER
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROJECT BOUNDARY
- DRAINAGE AREA BOUNDARY
- PROPOSED 1' CONTOUR
- PROPOSED 5' CONTOUR
- STORM SEWER
- UNDERDRAIN
- MANHOLE
- DRAINAGE BASIN
- CLEANOUT
- STORM STRUCTURE ID NUMBER
- IMPERVIOUS AREA

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|

MEIJER STORE #338
9202 E. 56TH STREET
BROWNSBURG, INDIANA 46112

INLET DRAINAGE PLAN

| ISSUED FOR: | |
|---|---|
| PERMIT | MM/DD/YY |
| BID | MM/DD/YY |
| CONSTRUCTION | MM/DD/YY |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

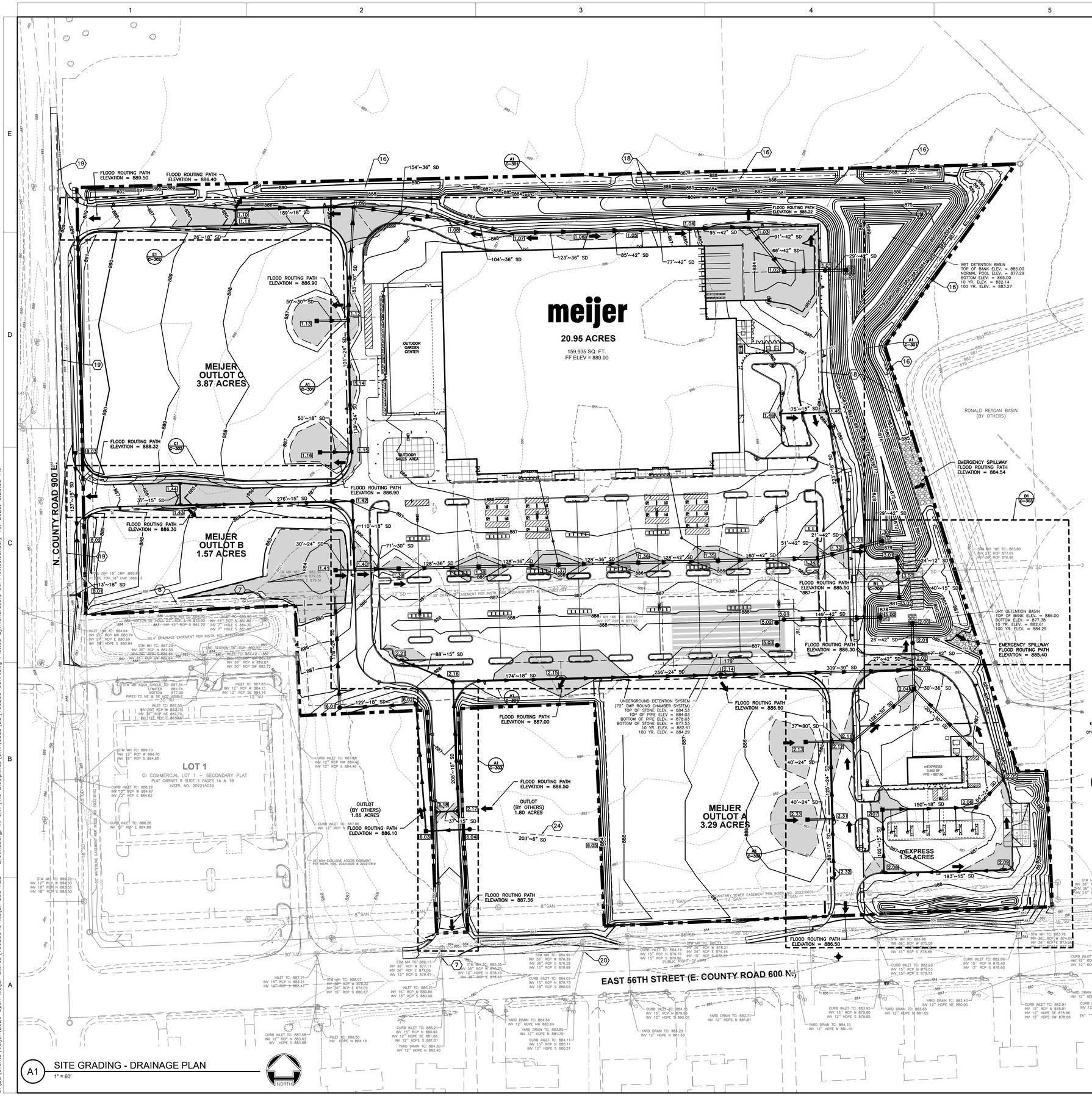
JOB NO.
NS-26-00338

1D

Indiana 811
Know what's below. Call before you dig.

Images: , Xrefs: 10020046-p.dwg; 10020046-g.dwg; 10020046TBLK.dwg; 10020046-x.dwg
Layout Tab Name: EXH3
Last Saved By:Bischof, 1/10/2025 3:19:34 PM
G:\DE\Clients\Meijer\2026 Open Meijer Stores\10020046 Meijer 338 ABE - Brownsburg, IN Civil\4.0 Disciplines\Civil\Eng\Reports\SWM\ABE INLET DRAINAGE PLAN.dwg Plotted By:Bischof, Ali Plotted:January 10, 2025, 3:31:03 PM

# FIGURE 2 – GRADING PLANS




## LEGEND

- PROPERTY LINE
- 799 EXISTING 1' CONTOUR
- 800 EXISTING 5' CONTOUR
- SD EXISTING STORM SEWER
- 799 PROPOSED 1' CONTOUR
- 800 PROPOSED 5' CONTOUR
- STORM SEWER
- FUTURE STORM SEWER
- UNDERDRAIN
- MANHOLE
- DRAINAGE BASIN
- CLEANOUT
- XX STORM STRUCTURE ID NUMBER
- ROCK OUTLET PROTECTION
- FLOOD ROUTING ARROW
- 100-YEAR FLOOD LIMITS (WITH ALL INLETS BLOCKED)

## GRADING NOTES

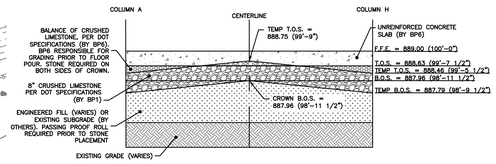
1. ALL SPOT ELEVATIONS ARE TO:
   TOP OF PAVEMENT – (TP)
   TOP OF SLAB – (TS)
   TOP OF CURB – (TC)
   TOP OF WALL – (TW)
   GUTTER PAN – (GP)
   UNLESS NOTED OTHERWISE.
2. CONTOURS SHOWN ARE FOR REFERENCE ONLY.
3. PROVIDE POSITIVE DRAINAGE AT ALL TIMES TO ENSURE NO STANDING WATER WITHIN PAVEMENT, BUILDING PAD, OR GREEN AREAS.
4. FOR ALL CURB ISLANDS, CENTER OF ISLANDS TO BE A MINIMUM OF 6" HIGHER THAN TOP OF CURB.
5. RESTORE ALL STREET SURFACES, DRIVEWAYS, CULVERTS, ROADSIDE DRAINAGE DITCHES, AND OTHER PUBLIC OR PRIVATE STRUCTURES THAT ARE DISTURBED OR DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES TO MATCH AT A MINIMUM EXISTING CONDITIONS.
6. CONTRACTOR'S MANNER AND METHOD OF INGRESS AND EGRESS WITH RESPECT TO THE PROJECT AREAS SHALL IN NO WAY PROHIBIT OR DISTURB NORMAL PEDESTRIAN OR VEHICULAR TRAFFIC IN THE VICINITY AND IS SUBJECT TO REGULATION AND WRITTEN APPROVAL OF APPROPRIATE GOVERNING AGENCIES.
7. FINISHED SUBGRADE SURFACE SHALL NOT BE MORE THAN 0.1 FEET ABOVE OR BELOW ESTABLISHED FINISHED SUBGRADE ELEVATIONS AND ALL GROUND SURFACES SHALL VARY UNIFORMLY BETWEEN INDICATED ELEVATIONS. FINISHED DITCHES SHALL BE GRADED TO ALLOW FOR PROPER DRAINAGE WITHOUT PONDING AND IN A MANNER THAT WILL MINIMIZE EROSION.
8. VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
9. UTILITIES SHALL END 5 FEET FROM THE BUILDING UNLESS NOTED OTHERWISE.
10. PROTECT AND MAINTAIN CROSSINGS OF OTHER UTILITIES.
11. ALL MATERIAL, SPECIFICATIONS, AND CONSTRUCTION METHODS SHALL BE IN CONFORMANCE WITH MEIJER STANDARD SPECIFICATIONS AND THOSE OF THE APPROPRIATE UTILITY COMPANIES.
12. BEFORE COMMENCING WORK, CONTRACTOR SHALL VERIFY ALL LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES.
13. ACCORDING TO THE FLOOD INSURANCE RATE MAP – MAP NUMBER 18063C0176E, PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY WITH A REVISION DATE OF JUNE 15, 2022, WHICH IS THE MOST CURRENT FLOOD INSURANCE RATE MAP AVAILABLE ON FEMA'S WEBSITE, THIS SITE IS LOCATED IN ZONE "X" (NO SCREEN) – AREAS OF MINIMAL FLOOD HAZARD. THE ABOVE REFERENCED FLOODPLAIN MAP WAS UTILIZED FOR THIS DETERMINATION.
14. ENTRY LANDINGS PART OF AN ACCESSIBLE ROUTE SHALL MAINTAIN A MAXIMUM SLOPE OF 1.50% IN ALL DIRECTIONS. THIS IS INTENDED TO ALLOW FOR CONSTRUCTION TOLERANCES. SLOPES STEEPER THAN 1:48 SHALL NOT BE PERMITTED THUS MEETING THE REQUIREMENTS OF THE DEPARTMENT OF JUSTICE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN. ALL SLOPES TO BE VERIFIED AS ACCEPTABLE BY USING A 2'–0" LEVEL.

## KEYNOTES

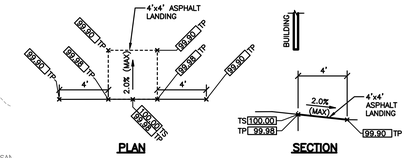
1. CONNECT TO EXISTING UTILITY PER AGENCY REQUIREMENTS, CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITY IN WHICH TO MAKE CONNECTION.
2. ABOVE–GROUND STORMWATER MANAGEMENT FACILITY.
3. UNDERGROUND STORMWATER MANAGEMENT FACILITY, SEE SHEET C–407 FOR PLAN AND PROFILE. SEE SHEET C–708 FOR MORE DETAIL.
4. DETENTION OUTLET STRUCTURE.
5. EMERGENCY SPILLWAY. SEE DETAIL A6 ON SHEET C–314.
6. WATER QUALITY HYDRODYNAMIC SEPARATOR.
7. ADJUST EXISTING UTILITY STRUCTURE TO FINISHED GRADE
8. EXISTING RCP STORM PIPE TO BE MAINTAINED DURING CONSTRUCTION.
9. 4" CANOPY DRAIN AT 1.00% (MIN) INVERT AT BUILDING FACE = 886.75.
10. 6" PVC STORM AT 2.00 % (MIN). INVERT AT BUILDING = 886.50.
11. 4" GARDEN CENTER DRAIN AT 1.00% (MIN).
12. SCREEN WALL. SEE ARCHITECTURAL PLANS..
13. DOCK RETAINING WALL. SEE ARCHITECTURAL PLANS.
14. LOADING DOCK WALL 4" UNDERDRAIN. INVERT = 882.43.
15. ENVIRONMENTAL CATCH BASIN.
16. 3' BERM ALONG NORTH AND EAST PROPERTY LINE. SEE LANDSCAPE PLAN.
17. NDS EZ ROLL PAVER SAFETY ACCESS RAMPS.
18. DETENTION BASIN EASEMENT.
19. 6" UNDERDRAIN PER TOWN OF BROWNSBURG REQUIREMENTS. SEE DETAIL TR–14 OF THE BROWNSBURG CONSTRUCTION STANDARDS.
20. CONVERT EXISTING CHAIR BACK CURB INLET TO FLAT GRATE STORM INLET PER TOWN OF BROWNSBURG REQUIREMENTS.
21. 6" ROOF DRAIN FOR GUTTER DOWNSPOUTS. SEE DETAIL C2 ON SHEET C–700.
22. RIPRAP PLACED AT POND OUTLET PER TOWN OF BROWNSBURG CONSTRUCTION STANDARD DETAIL EC–03.
23. RONALD REAGAN STORM BY OTHERS.
24. 6" PERFORATED UNDERDRAIN.

### IMPERVIOUS SURFACE BREAKDOWN

| MAIN STORE | |
|---|---|
| TYPE | AREA (SQ. FT.) |
| COMPACTED GRAVEL | 0 |
| CONCRETE/ASPHALT | 450,622 |
| BUILDING FOOTPRINT | 159,935 |
| TOTAL IMPERVIOUS SURFACE | 610,557 |
| **mEXPRESS** | |
| TYPE | AREA (SQ. FT.) |
| COMPACTED GRAVEL | 0 |
| CONCRETE/ASPHALT | 40,037 |
| BUILDING FOOTPRINT | 3,660 |
| TOTAL IMPERVIOUS SURFACE | 43,697 |




B5 STONE CROWN BUILDING PAD DETAIL
NOT TO SCALE




NOTES:
1. MAXIMUM GRADE OF LANDING IS 2%.
2. FOR DOUBLE DOORS, PAD SHALL BE 4'x8' WITH SIMILAR ELEVATIONS.

A6 TYPICAL GRADES AT DOOR
NOT TO SCALE

## BENCHMARK:

THE BASIS OF ELEVATIONS HEREON IS NAVD 88 PER OBSERVATIONS OF SELECTED STATIONS IN THE NATIONAL GEODETIC SURVEY CONTINUOUSLY OPERATING REFERENCE STATION (NOS CORS) NETWORK.
MAG NAIL SET IN THE CORNER TOP OF THE CURB JOINT – SEE DRAWING FOR LOCATION.
ELEVATION = 889.36'

A1 SITE GRADING - DRAINAGE PLAN
1" = 60'

0 60 120 180
GRAPHIC SCALE IN FEET

Indiana 811 Know what's below. Call before you dig.


WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER STORE #338
9202 E. 56TH STREET
BROWNSBURG, INDIANA 46112

# SITE GRADING - DRAINAGE PLAN

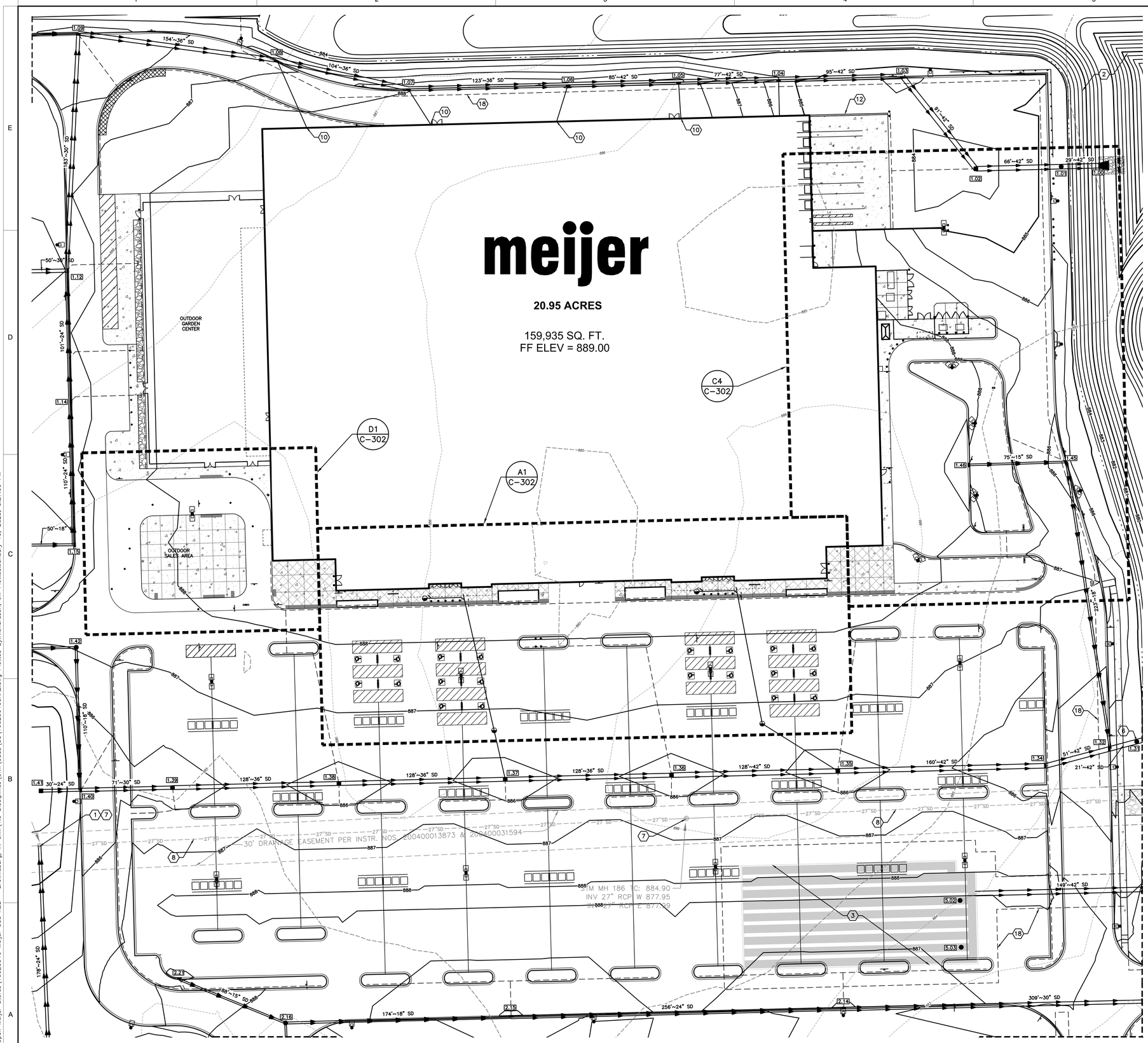
| ISSUED FOR: | |
|---|---|
| PERMIT | MM/DD/YY |
| BID | MM/DD/YY |
| CONSTRUCTION | MM/DD/YY |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
NS-26-00338

C-300


Images: ..., Xrefs: 10020046-x.dwg; 10020046TBLK.dwg; 10020046-GRA-NOTES.dwg; 10020046-p.dwg
User: ..., Last Saved By:richardsonj, 1/10/2025 5:07:32 PM
G:\DE\Clients\Meijer\2026 Open Meijer Stores\10020046 Meijer 338 ABE – Brownsburg, IN Civil\4.0 Disciplines\Civil\Cadd\Cd\10020046GRA.dwg Plotted By:Richardson, Jill Plotted:January 10, 2025, 5:26:33 PM




## LEGEND

- PROPERTY LINE
- 799 EXISTING 1' CONTOUR
- 800 EXISTING 5' CONTOUR
- SD EXISTING STORM SEWER
- 799 PROPOSED 1' CONTOUR
- 800 PROPOSED 5' CONTOUR
- STORM SEWER
- FUTURE STORM SEWER
- UNDERDRAIN
- MANHOLE
- DRAINAGE BASIN
- CLEANOUT
- XX STORM STRUCTURE ID NUMBER
- ROCK OUTLET PROTECTION

## KEYNOTES

1. CONNECT TO EXISTING UTILITY PER AGENCY REQUIREMENTS. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITY IN WHICH TO MAKE CONNECTION.
2. ABOVE-GROUND STORMWATER MANAGEMENT FACILITY.
3. UNDERGROUND STORMWATER MANAGEMENT FACILITY. SEE SHEET C-407 FOR PLAN AND PROFILE. SEE SHEET C-708 FOR MORE DETAIL.
4. DETENTION OUTLET STRUCTURE.
5. EMERGENCY SPILLWAY. SEE DETAIL A6 ON SHEET C-314.
6. WATER QUALITY HYDRODYNAMIC SEPARATOR.
7. ADJUST EXISTING UTILITY STRUCTURE TO FINISHED GRADE
8. EXISTING RCP STORM PIPE TO BE MAINTAINED DURING CONSTRUCTION.
9. 4" CANOPY DRAIN AT 1.00% (MIN) INVERT AT BUILDING FACE = 886.75.
10. 6" PVC STORM AT 2.00 % (MIN). INVERT AT BUILDING = 886.50.
11. 4" GARDEN CENTER DRAIN AT 1.00% (MIN).
12. SCREEN WALL. SEE ARCHITECTURAL PLANS..
13. DOCK RETAINING WALL. SEE ARCHITECTURAL PLANS.
14. LOADING DOCK WALL 4" UNDERDRAIN. INVERT = 882.43.
15. ENVIRONMENTAL CATCH BASIN.
16. 3' BERM ALONG NORTH AND EAST PROPERTY LINE. SEE LANDSCAPE PLAN.
17. NDS EZ ROLL PAVER SAFETY ACCESS RAMPS.
18. DETENTION BASIN EASEMENT.
19. 6" UNDERDRAIN PER TOWN OF BROWNSBURG REQUIREMENTS. SEE DETAIL TR-14 OF THE BROWNSBURG CONSTRUCTION STANDARDS.
20. CONVERT EXISTING CHAIR BACK CURB INLET TO FLAT GRATE STORM INLET PER TOWN OF BROWNSBURG REQUIREMENTS.
21. 6" ROOF DRAIN FOR GUTTER DOWNSPOUTS. SEE DETAIL C2 ON SHEET C-700.
22. RIPRAP PLACED AT POND OUTLET PER TOWN OF BROWNSBURG CONSTRUCTION STANDARD DETAIL EC-03.
23. RONALD REAGAN STORM BY OTHERS.
24. 6" PERFORATED UNDERDRAIN.

## GRADING NOTES

1. ALL SPOT ELEVATIONS ARE TO:
   TOP OF PAVEMENT – (TP)
   TOP OF SLAB – (TS)
   TOP OF CURB – (TC)
   TOP OF WALL – (TW)
   GUTTER PAN – (GP)
   UNLESS NOTED OTHERWISE.
2. CONTOURS SHOWN ARE FOR REFERENCE ONLY.
3. PROVIDE POSITIVE DRAINAGE AT ALL TIMES TO ENSURE NO STANDING WATER WITHIN PAVEMENT, BUILDING PAD, OR GREEN AREAS.
4. FOR ALL CURB ISLANDS, CENTER OF ISLANDS TO BE A MINIMUM OF 6" HIGHER THAN TOP OF CURB.
5. RESTORE ALL STREET SURFACES, DRIVEWAYS, CULVERTS, ROADSIDE DRAINAGE DITCHES, AND OTHER PUBLIC OR PRIVATE STRUCTURES THAT ARE DISTURBED OR DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES TO MATCH AT A MINIMUM EXISTING CONDITIONS.
6. CONTRACTOR'S MANNER AND METHOD OF INGRESS AND EGRESS WITH RESPECT TO THE PROJECT AREAS SHALL IN NO WAY PROHIBIT OR DISTURB NORMAL PEDESTRIAN OR VEHICULAR TRAFFIC IN THE VICINITY AND IS SUBJECT TO REGULATION AND WRITTEN APPROVAL OF APPROPRIATE GOVERNING AGENCIES.
7. FINISHED SUBGRADE SURFACE SHALL NOT BE MORE THAN 0.1 FEET ABOVE OR BELOW ESTABLISHED FINISHED SUBGRADE ELEVATIONS AND ALL GROUND SURFACES SHALL VARY UNIFORMLY BETWEEN INDICATED ELEVATIONS. FINISHED DITCHES SHALL BE GRADED TO ALLOW FOR PROPER DRAINAGE WITHOUT PONDING AND IN A MANNER THAT WILL MINIMIZE EROSION.
8. VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
9. UTILITIES SHALL END 5 FEET FROM THE BUILDING UNLESS NOTED OTHERWISE.
10. PROTECT AND MAINTAIN CROSSINGS OF OTHER UTILITIES.
11. ALL MATERIAL, SPECIFICATIONS, AND CONSTRUCTION METHODS SHALL BE IN CONFORMANCE WITH MEIJER STANDARD SPECIFICATIONS AND THOSE OF THE APPROPRIATE UTILITY COMPANIES.
12. BEFORE COMMENCING WORK, CONTRACTOR SHALL VERIFY ALL LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES.
13. ACCORDING TO THE FLOOD INSURANCE RATE MAP – MAP NUMBER 18063C0176E, PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY WITH A REVISION DATE OF JUNE 15, 2022, WHICH IS THE MOST CURRENT FLOOD INSURANCE RATE MAP AVAILABLE ON FEMA'S WEBSITE, THIS SITE IS LOCATED IN ZONE "X" (NO SCREEN) – AREAS OF MINIMAL FLOOD HAZARD. THE ABOVE REFERENCED FLOODPLAIN MAP WAS UTILIZED FOR THIS DETERMINATION.
14. ENTRY LANDINGS PART OF AN ACCESSIBLE ROUTE SHALL MAINTAIN A MAXIMUM SLOPE OF 1.50X IN ALL DIRECTIONS. THIS IS INTENDED TO ALLOW FOR CONSTRUCTION TOLERANCES. SLOPES STEEPER THAN 1:48 SHALL NOT BE PERMITTED THUS MEETING THE REQUIREMENTS OF THE DEPARTMENT OF JUSTICE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN. ALL SLOPES TO BE VERIFIED AS ACCEPTABLE BY USING A 2'-0" LEVEL.

## BENCHMARK:

THE BASIS OF ELEVATIONS HEREON IS NAVD 88 PER OBSERVATIONS OF SELECTED STATIONS IN THE NATIONAL GEODETIC SURVEY CONTINUOUSLY OPERATING REFERENCE STATION (NGS CORS) NETWORK.
MAG NAIL SET IN THE CORNER TOP OF THE CURB JOINT – SEE DRAWING FOR LOCATION.
ELEVATION = 889.36'

A1 DETAILED SITE GRADING - DRAINAGE PLAN
1" = 30'

0 30 60 90
GRAPHIC SCALE IN FEET

Indiana 811 Know what's below. Call before you dig.


WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER STORE #338
902 E. 56TH STREET
BROWNSBURG, INDIANA 46112

DETAILED SITE GRADING - DRAINAGE PLAN

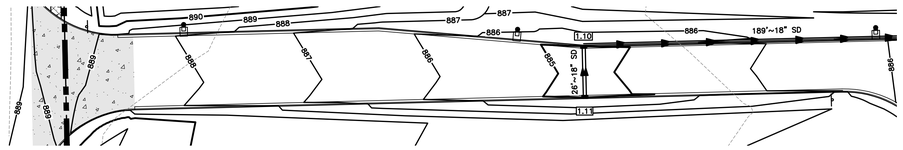
| ISSUED FOR: | |
|---|---|
| PERMIT | MM/DD/YY |
| BID | MM/DD/YY |
| CONSTRUCTION | MM/DD/YY |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

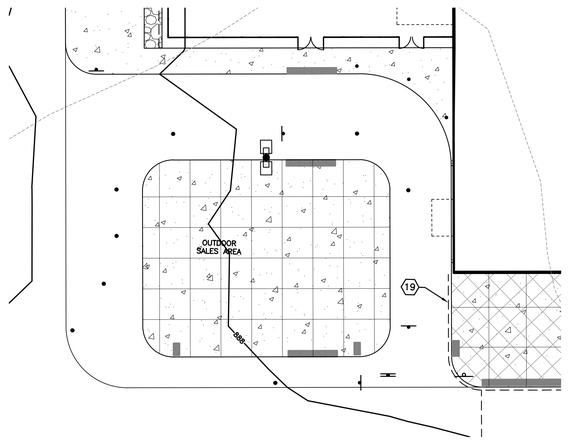
JOB NO.
NS-26-00338

C-301

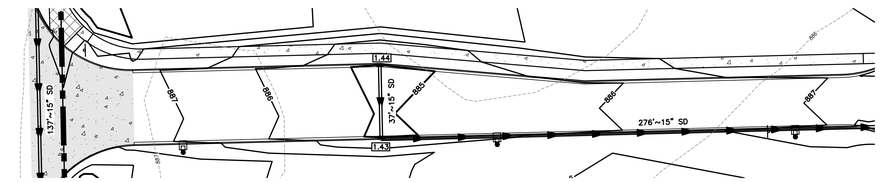

Images: `Xrefs: 10020046-x.dwg; 10020046TBLK.dwg; 10020046-GRA-NOTES.dwg; 10020046-p.dwg; 10020046-p.dwg; 10020046-g.dwg`
Layout: `C-301`
Last Saved By:richardsonj, 1/10/2025 5:07:10 PM
`G:\DE\Clients\Meijer\2026 Open Meijer Stores\10020046 Meijer 338 ABE - Brownsburg, IN Civil\V4.0 Disciplines\Civil\Cadd\Cd\10020046GRA2.dwg` Plotted By:Richardson, Jill Plotted:January 10, 2025, 5:27:00 PM



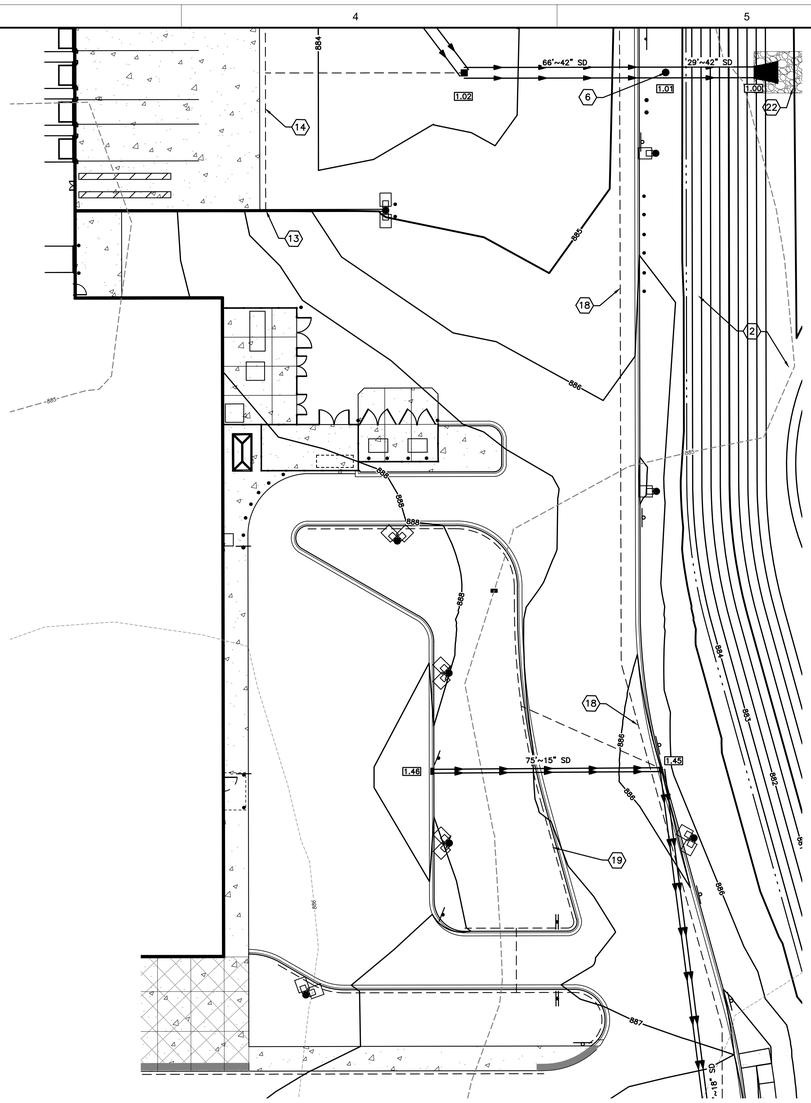

## E1 ENLARGED N. CR. 900 E. NORTH ENTRANCE
1" = 30'



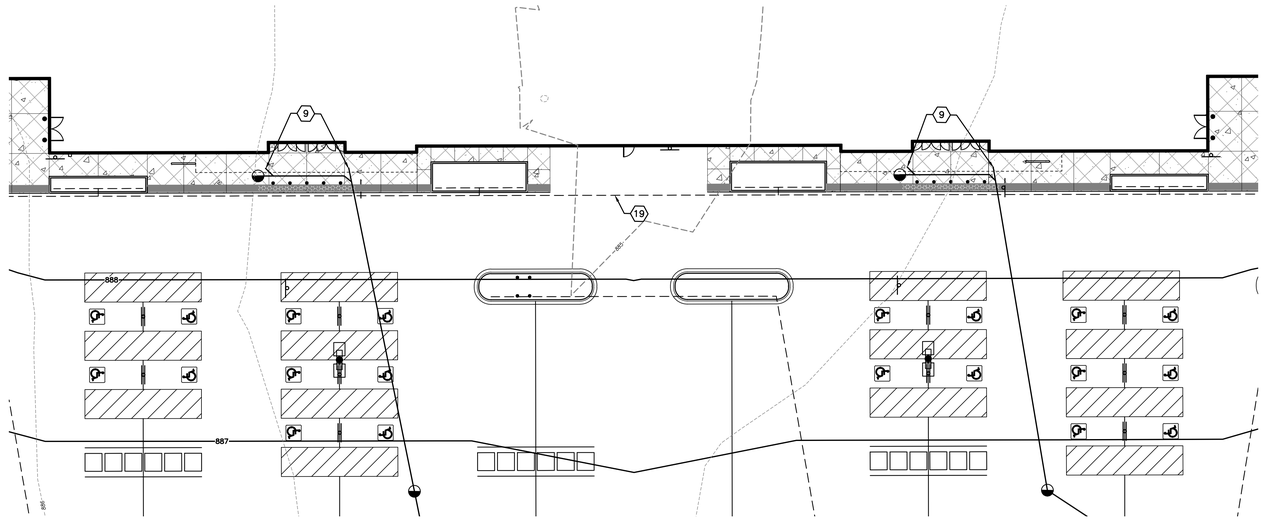

## D1 ENLARGED PHARMACY DRIVE-THRU
1" = 20'




## C1 ENLARGED N. CR. 900 E. SOUTH ENTRANCE
1" = 30'




## C4 ENLARGED PICKUP AREA, EXTERIOT SHELTER, ORGANIX. STORAGE AREA, ELECTRIC YARD, GRADE LEVEL RECEIVING
1" = 20'




## A1 ENLARGED FRONT OF BUILDING/LANDSCAPE BEDS
1" = 20'

## LEGEND

- PROPERTY LINE
- 799 EXISTING 1' CONTOUR
- 800 EXISTING 5' CONTOUR
- SD EXISTING STORM SEWER
- 799 PROPOSED 1' CONTOUR
- 800 PROPOSED 5' CONTOUR
- STORM SEWER
- FUTURE STORM SEWER
- UNDERDRAIN
- MANHOLE
- DRAINAGE BASIN
- CLEANOUT
- XX STORM STRUCTURE ID NUMBER
- ROCK OUTLET PROTECTION

## (X) KEYNOTES

1. CONNECT TO EXISTING UTILITY PER AGENCY REQUIREMENTS. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITY IN WHICH TO MAKE CONNECTION.
2. ABOVE-GROUND STORMWATER MANAGEMENT FACILITY.
3. UNDERGROUND STORMWATER MANAGEMENT FACILITY. SEE SHEET C-407 FOR PLAN AND PROFILE. SEE SHEET C-708 FOR MORE DETAIL.
4. DETENTION OUTLET STRUCTURE.
5. EMERGENCY SPILLWAY. SEE DETAIL A6 ON SHEET C-314.
6. WATER QUALITY HYDRODYNAMIC SEPARATOR.
7. ADJUST EXISTING UTILITY STRUCTURE TO FINISHED GRADE
8. EXISTING RCP STORM PIPE TO BE MAINTAINED DURING CONSTRUCTION.
9. 4" CANOPY DRAIN AT 1.00% (MIN) INVERT AT BUILDING FACE = 886.75.
10. 6" PVC STORM AT 2.00 % (MIN). INVERT AT BUILDING = 886.50.
11. 4" GARDEN CENTER DRAIN AT 1.00% (MIN).
12. SCREEN WALL. SEE ARCHITECTURAL PLANS..
13. DOCK RETAINING WALL. SEE ARCHITECTURAL PLANS.
14. LOADING DOCK WALL 4" UNDERDRAIN. INVERT = 882.43.
15. ENVIRONMENTAL CATCH BASIN.
16. 3' BERM ALONG NORTH AND EAST PROPERTY LINE. SEE LANDSCAPE PLAN.
17. NDS EZ ROLL PAVER SAFETY ACCESS RAMPS.
18. DETENTION BASIN EASEMENT.
19. 6" UNDERDRAIN PER TOWN OF BROWNSBURG REQUIREMENTS. SEE DETAIL TR-14 OF THE BROWNSBURG CONSTRUCTION STANDARDS.
20. CONVERT EXISTING CHAIR BACK CURB INLET TO FLAT GRATE STORM INLET PER TOWN OF BROWNSBURG REQUIREMENTS.
21. 6" ROOF DRAIN FOR GUTTER DOWNSPOUTS. SEE DETAIL C2 ON SHEET C-700.
22. RIPRAP PLACED AT POND OUTLET PER TOWN OF BROWNSBURG CONSTRUCTION STANDARD DETAIL EC-03.
23. RONALD REAGAN STORM BY OTHERS.
24. 6" PERFORATED UNDERDRAIN.

## GRADING NOTES

1. ALL SPOT ELEVATIONS ARE TO:
   TOP OF PAVEMENT – (TP)
   TOP OF SLAB – (TS)
   TOP OF CURB – (TC)
   TOP OF WALL – (TW)
   GUTTER PAN – (GP)
   UNLESS NOTED OTHERWISE.
2. CONTOURS SHOWN ARE FOR REFERENCE ONLY.
3. PROVIDE POSITIVE DRAINAGE AT ALL TIMES TO ENSURE NO STANDING WATER WITHIN PAVEMENT, BUILDING PAD, OR GREEN AREAS.
4. FOR ALL CURB ISLANDS, CENTER OF ISLANDS TO BE A MINIMUM OF 6" HIGHER THAN TOP OF CURB.
5. RESTORE ALL STREET SURFACES, DRIVEWAYS, CULVERTS, ROADSIDE DRAINAGE DITCHES, AND OTHER PUBLIC OR PRIVATE STRUCTURES THAT ARE DISTURBED OR DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES TO MATCH AT A MINIMUM EXISTING CONDITIONS.
6. CONTRACTOR'S MANNER AND METHOD OF INGRESS AND EGRESS WITH RESPECT TO THE PROJECT AREAS SHALL IN NO WAY PROHIBIT OR DISTURB NORMAL PEDESTRIAN OR VEHICULAR TRAFFIC IN THE VICINITY AND IS SUBJECT TO REGULATION AND WRITTEN APPROVAL OF APPROPRIATE GOVERNING AGENCIES.
7. FINISHED SUBGRADE SURFACE SHALL NOT BE MORE THAN 0.1 FEET ABOVE OR BELOW ESTABLISHED FINISHED SUBGRADE ELEVATIONS AND ALL GROUND SURFACES SHALL VARY UNIFORMLY BETWEEN INDICATED ELEVATIONS. FINISHED DITCHES SHALL BE GRADED TO ALLOW FOR PROPER DRAINAGE WITHOUT PONDING AND IN A MANNER THAT WILL MINIMIZE EROSION.
8. VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
9. UTILITIES SHALL END 5 FEET FROM THE BUILDING UNLESS NOTED OTHERWISE.
10. PROTECT AND MAINTAIN CROSSINGS OF OTHER UTILITIES.
11. ALL MATERIAL, SPECIFICATIONS, AND CONSTRUCTION METHODS SHALL BE IN CONFORMANCE WITH MEIJER STANDARD SPECIFICATIONS AND THOSE OF THE APPROPRIATE UTILITY COMPANIES.
12. BEFORE COMMENCING WORK, CONTRACTOR SHALL VERIFY ALL LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES.
13. ACCORDING TO THE FLOOD INSURANCE RATE MAP – MAP NUMBER 18063C0176E, PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY WITH A REVISION DATE OF JUNE 15, 2022, WHICH IS THE MOST CURRENT FLOOD INSURANCE RATE MAP AVAILABLE ON FEMA'S WEBSITE, THIS SITE IS LOCATED IN ZONE "X" (NO SCREEN) – AREAS OF MINIMAL FLOOD HAZARD. THE ABOVE REFERENCED FLOODPLAIN MAP WAS UTILIZED FOR THIS DETERMINATION.
14. ENTRY LANDINGS PART OF AN ACCESSIBLE ROUTE SHALL MAINTAIN A MAXIMUM SLOPE OF 1.50% IN ALL DIRECTIONS. THIS IS INTENDED TO ALLOW FOR CONSTRUCTION TOLERANCES. SLOPES STEEPER THAN 1:48 SHALL NOT BE PERMITTED THUS MEETING THE REQUIREMENTS OF THE DEPARTMENT OF JUSTICE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN. ALL SLOPES TO BE VERIFIED AS ACCEPTABLE BY USING A 2'-0" LEVEL.

## BENCHMARK:

THE BASIS OF ELEVATIONS HEREON IS NAVD 88 PER OBSERVATIONS OF SELECTED STATIONS IN THE NATIONAL GEODETIC SURVEY CONTINUOUSLY OPERATING REFERENCE STATION (NGS CORS) NETWORK.
MAG NAIL SET IN THE CORNER TOP OF THE CURB JOINT – SEE DRAWING FOR LOCATION.
ELEVATION = 889.36'

Indiana 811 Know what's below. Call before you dig.


WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER STORE #338
9202 E. 56TH STREET
BROWNSBURG, INDIANA 46112

# SITE GRADING - DRAINAGE PLAN ENLARGEMENTS & DETAILS

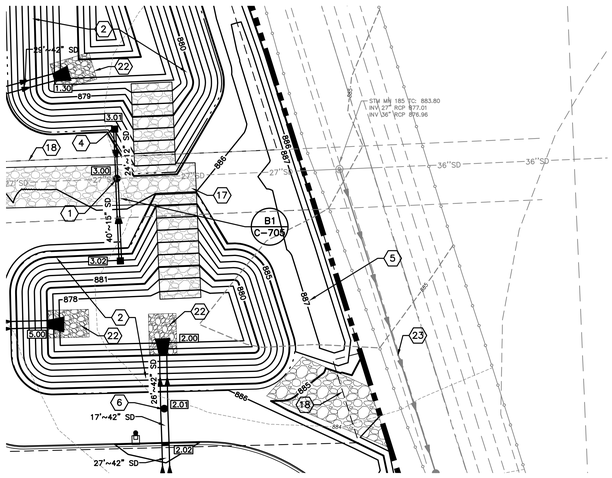
| ISSUED FOR: | |
|---|---|
| PERMIT | MM/DD/YY |
| BID | MM/DD/YY |
| CONSTRUCTION | MM/DD/YY |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

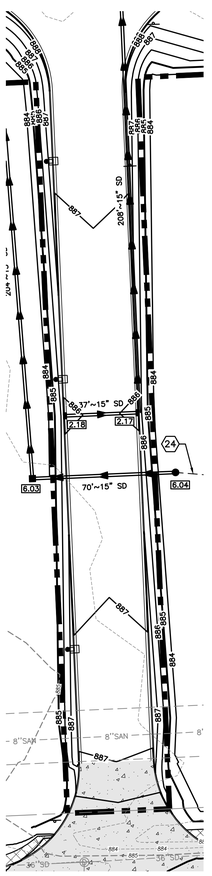
JOB NO.
NS-26-00338

C-302

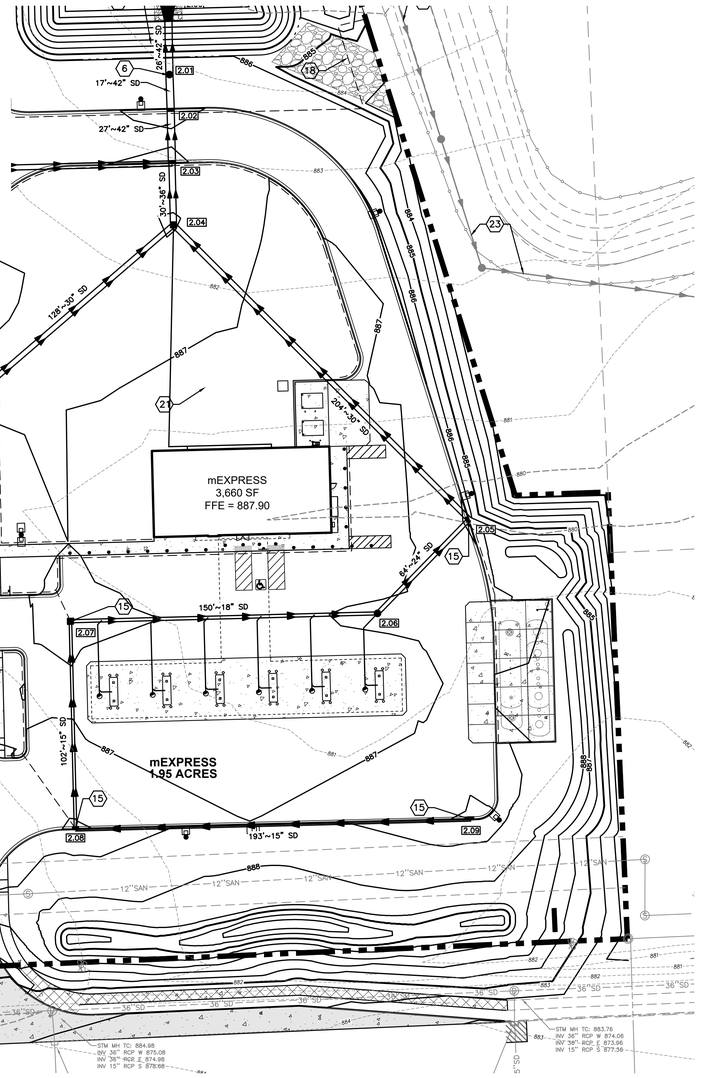

Images: ..\Xrefs\10020046-x.dwg; 10020046TBLK.dwg; 10020046-GRA-NOTES.dwg; 10020046-p.dwg; 10020046-g.dwg
Layout: C-302
Last Saved By:richardson, 1/10/2025 5:07:10 PM
G:\DE\Clients\Meijer\2026 Open Meijer Stores\10020046 Meijer 338 ABE – Brownsburg, IN Civil\4.0 Disciplines\Civil\Cadd\Cd\10020046GRA2.dwg Plotted By:Richardson, Jill Plotted:January 10, 2025, 5:27:26 PM




D1 ENLARGED DETENTION OUTLET AREA
1" = 30'




A1 ENLARGED E. CR. 600. NORTH WEST ENTRANCE
1" = 30'




A3 ENLARGED mEXPRESS
1" = 30'

## LEGEND

- PROPERTY LINE
- 799 — EXISTING 1' CONTOUR
- 800 — EXISTING 5' CONTOUR
- SD — EXISTING STORM SEWER
- 799 — PROPOSED 1' CONTOUR
- 800 — PROPOSED 5' CONTOUR
- STORM SEWER
- FUTURE STORM SEWER
- UNDERDRAIN
- MANHOLE
- DRAINAGE BASIN
- CLEANOUT
- XX — STORM STRUCTURE ID NUMBER
- ROCK OUTLET PROTECTION

## KEYNOTES

1. CONNECT TO EXISTING UTILITY PER AGENCY REQUIREMENTS. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITY IN WHICH TO MAKE CONNECTION.
2. ABOVE-GROUND STORMWATER MANAGEMENT FACILITY.
3. UNDERGROUND STORMWATER MANAGEMENT FACILITY. SEE SHEET C-407 FOR PLAN AND PROFILE. SEE SHEET C-708 FOR MORE DETAIL.
4. DETENTION OUTLET STRUCTURE.
5. EMERGENCY SPILLWAY. SEE DETAIL A6 ON SHEET C-314.
6. WATER QUALITY HYDRODYNAMIC SEPARATOR.
7. ADJUST EXISTING UTILITY STRUCTURE TO FINISHED GRADE
8. EXISTING RCP STORM PIPE TO BE MAINTAINED DURING CONSTRUCTION.
9. 4" CANOPY DRAIN AT 1.00% (MIN) INVERT AT BUILDING FACE = 886.75.
10. 6" PVC STORM AT 2.00 % (MIN). INVERT AT BUILDING = 886.50.
11. 4" GARDEN CENTER DRAIN AT 1.00% (MIN).
12. SCREEN WALL. SEE ARCHITECTURAL PLANS..
13. DOCK RETAINING WALL. SEE ARCHITECTURAL PLANS.
14. LOADING DOCK WALL 4" UNDERDRAIN. INVERT = 882.43.
15. ENVIRONMENTAL CATCH BASIN.
16. 3' BERM ALONG NORTH AND EAST PROPERTY LINE. SEE LANDSCAPE PLAN.
17. NDS EZ ROLL PAVER SAFETY ACCESS RAMPS.
18. DETENTION BASIN EASEMENT.
19. 6" UNDERDRAIN PER TOWN OF BROWNSBURG REQUIREMENTS. SEE DETAIL TR-14 OF THE BROWNSBURG CONSTRUCTION STANDARDS.
20. CONVERT EXISTING CHAIR BACK CURB INLET TO FLAT GRATE STORM INLET PER TOWN OF BROWNSBURG REQUIREMENTS.
21. 6" ROOF DRAIN FOR GUTTER DOWNSPOUTS. SEE DETAIL C2 ON SHEET C-700.
22. RIPRAP PLACED AT POND OUTLET PER TOWN OF BROWNSBURG CONSTRUCTION STANDARD DETAIL EC-03.
23. RONALD REAGAN STORM BY OTHERS.
24. 6" PERFORATED UNDERDRAIN.

## GRADING NOTES

1. ALL SPOT ELEVATIONS ARE TO:
   TOP OF PAVEMENT – (TP)
   TOP OF SLAB – (TS)
   TOP OF CURB – (TC)
   TOP OF WALL – (TW)
   GUTTER PAN – (GP)
   UNLESS NOTED OTHERWISE.
2. CONTOURS SHOWN ARE FOR REFERENCE ONLY.
3. PROVIDE POSITIVE DRAINAGE AT ALL TIMES TO ENSURE NO STANDING WATER WITHIN PAVEMENT, BUILDING PAD, OR GREEN AREAS.
4. FOR ALL CURB ISLANDS, CENTER OF ISLANDS TO BE A MINIMUM OF 6" HIGHER THAN TOP OF CURB.
5. RESTORE ALL STREET SURFACES, DRIVEWAYS, CULVERTS, ROADSIDE DRAINAGE DITCHES, AND OTHER PUBLIC OR PRIVATE STRUCTURES THAT ARE DISTURBED OR DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES TO MATCH AT A MINIMUM EXISTING CONDITIONS.
6. CONTRACTOR'S MANNER AND METHOD OF INGRESS AND EGRESS WITH RESPECT TO THE PROJECT AREAS SHALL IN NO WAY PROHIBIT OR DISTURB NORMAL PEDESTRIAN OR VEHICULAR TRAFFIC IN THE VICINITY AND IS SUBJECT TO REGULATION AND WRITTEN APPROVAL OF APPROPRIATE GOVERNING AGENCIES.
7. FINISHED SUBGRADE SURFACE SHALL NOT BE MORE THAN 0.1 FEET ABOVE OR BELOW ESTABLISHED FINISHED SUBGRADE ELEVATIONS AND ALL GROUND SURFACES SHALL VARY UNIFORMLY BETWEEN INDICATED ELEVATIONS. FINISHED DITCHES SHALL BE GRADED TO ALLOW FOR PROPER DRAINAGE WITHOUT PONDING AND IN A MANNER THAT WILL MINIMIZE EROSION.
8. VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
9. UTILITIES SHALL END 5 FEET FROM THE BUILDING UNLESS NOTED OTHERWISE.
10. PROTECT AND MAINTAIN CROSSINGS OF OTHER UTILITIES.
11. ALL MATERIAL, SPECIFICATIONS, AND CONSTRUCTION METHODS SHALL BE IN CONFORMANCE WITH MEIJER STANDARD SPECIFICATIONS AND THOSE OF THE APPROPRIATE UTILITY COMPANIES.
12. BEFORE COMMENCING WORK, CONTRACTOR SHALL VERIFY ALL LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES.
13. ACCORDING TO THE FLOOD INSURANCE RATE MAP – MAP NUMBER 18063C0176E, PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY WITH A REVISION DATE OF JUNE 15, 2022, WHICH IS THE MOST CURRENT FLOOD INSURANCE RATE MAP AVAILABLE ON FEMA'S WEBSITE, THIS SITE IS LOCATED IN ZONE "X" (NO SCREEN) – AREAS OF MINIMAL FLOOD HAZARD. THE ABOVE REFERENCED FLOODPLAIN MAP WAS UTILIZED FOR THIS DETERMINATION.
14. ENTRY LANDINGS PART OF AN ACCESSIBLE ROUTE SHALL MAINTAIN A MAXIMUM SLOPE OF 1.50% IN ALL DIRECTIONS. THIS IS INTENDED TO ALLOW FOR CONSTRUCTION TOLERANCES. SLOPES STEEPER THAN 1:48 SHALL NOT BE PERMITTED THUS MEETING THE REQUIREMENTS OF THE DEPARTMENT OF JUSTICE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN. ALL SLOPES TO BE VERIFIED AS ACCEPTABLE BY USING A 2'-0" LEVEL.

## BENCHMARK:

THE BASIS OF ELEVATIONS HEREON IS NAVD 88 PER OBSERVATIONS OF SELECTED STATIONS IN THE NATIONAL GEODETIC SURVEY CONTINUOUSLY OPERATING REFERENCE STATION (NGS CORS) NETWORK.
MAG NAIL SET IN THE CORNER TOP OF THE CURB JOINT – SEE DRAWING FOR LOCATION.
ELEVATION = 889.36'

Indiana 811 Know what's below. Call before you dig.


WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER STORE #338
9202 E. 56TH STREET
BROWNSBURG, INDIANA 46112

# SITE GRADING - DRAINAGE PLAN ENLARGEMENTS & DETAILS

| ISSUED FOR: | |
|---|---|
| PERMIT | MM/DD/YY |
| BID | MM/DD/YY |
| CONSTRUCTION | MM/DD/YY |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
NS-26-00338

C-303


Images: , , Xrefs: 10020046-x.dwg; 10020046TBLK.dwg; 10020046-GRA-NOTES.dwg; 10020046-p.dwg; 10020046-g.dwg
Layout: Tab1 Name: C-303
Last Saved By:richardsonj, 1/10/2025 5:07:10 PM
G:\DET\Clients\Meijer\2026 Open Meijer Stores\10020046 Meijer 338 ABE – Brownsburg, IN Civil\4.0 Disciplines\Civil\Coddl\Cd1\10020046GRA2.dwg Plotted By:Richardson, Jill Plotted:January 10, 2025, 5:27:43 PM

# FIGURE 3 – UTILITY PLANS

## UTILITIES RESPONSIBILITIES SUMMARY

1. "WORK" IS DEFINED AS INSTALLATION OF SUBJECT UTILITY, INCLUDING TRENCHING, BEDDING, BACKFILL, AS WELL AS DEMOLITION AND RESTORATION OF THE DISTURBED AREA. INSPECTIONS ARE NOT INCLUDED. "INSTALL" MEANS PROVIDE AND INSTALL UNLESS NOTED OTHERWISE.
2. SANITARY SEWER: MEIJER CONTRACTOR (MC) SHALL PERFORM ALL WORK INCLUDING MAKING CONNECTION TO THE EXISTING MAIN. MC TO SCHEDULE PRE-CONSTRUCTION MEETING WITH HENDRICKS COUNTY REGIONAL SEWER DISTRICT (HCRSD) PRIOR TO STARTING CONSTRUCTION. MC SHALL NOTIFY HCRSD 48 HOURS PRIOR TO ANY SANITARY INSTALLATION AND TESTING. HCRSD TO BE PRESENT FOR ALL TESTING.
3. WATER: MC SHALL PERFORM ALL WORK ASSOCIATED WITH INSTALLATION OF THE WATER SERVICE LINE. CITIZENS ENERGY GROUP (CEG) SHALL MAKE THE TAP ON THE EXISTING MAIN. MC SHALL CONNECT TO THE TAP. MC SHALL CONTACT CEG TO SCHEDULE A PRE-CONSTRUCTION MEETING PRIOR TO INSTALLING FIRE PROTECTION SERVICES. MC TO NOTIFY THE BROWNSBURG FIRE DEPARTMENT (BFD) 48 HOURS PRIOR TO INSTALLATION OF WATER AND FIRE SERVICE LINES, BUT PRESENCE IS NOT REQUIRED. BFD TO BE PRESENT TO WITNESS ACCEPTANCE TESTING.
4. STORM SEWER: MC SHALL PERFORM ALL WORK. MC SHALL CONTACT THE TOWN OF BROWNSBURG WHEN PERFORMING WORK IN THE RIGHT-OF-WAY TO DETERMINE CONTRACTOR REQUIREMENTS.
5. GAS: FOR BOTH BUILDINGS, THE GAS COMPANY, CENTERPOINT ENERGY (CE), SHALL PROVIDE ALL SERVICE PIPING AND EQUIPMENT FROM THE POINT OF CONNECTION AT THE RIGHT-OF-WAY UP TO AND INCLUDING THE GAS METER. MC TO INSTALL ALL SERVICE PIPING FROM THE POINT OF CONNECTION AT THE RIGHT-OF-WAY TO THE GAS METER. CE TO INSTALL GAS METER ONCE MC HAS INSTALLED THE STUBBED OUT CONNECTION. MC TO PROVIDE AND INSTALL ALL PIPING AND MATERIALS DOWNSTREAM OF THE GAS METER. MC SHALL INSTALL METER PROTECTION BOLLARDS PER CE REQUIREMENTS.
6. COMMUNICATIONS:
   - 6.1. MAIN STORE: MC SHALL ISNTALL ALL CONDUIT AND MANHOLES. MC SHALL COORDINATE WITH MEIJER IT AND EVERSTREAM TO COORDINATE WITH MEIJER-SELECTED COMMUNICATIONS PROVIDER WHO SHALL PULL ALL WIRING AND MAKE CONNECTIONS.
   - 6.2. mEXPRESS: MC SHALL INSTALL HANDHOLES AND WIRING. MC SHALL COORDINATE WITH MEIJER IT AND EVERSTREAM TO MAKE CONNECTIONS.
7. ELECTRIC:
   - 7.1. MAIN STORE: THE ELECTRIC COMPANY, HENDRICKS POWER (HP), SHALL PROVIDE AND INSTALL ALL CONDUIT, CONDUCTOR, AND EQUIPMENT FROM THE POINT OF CONNECTION UP TO THE PRIMARY METERING CABINET. MC TO PROVIDE AND INSTALL ALL CONDUIT, CONDUCTOR, AND EQUIPMENT DOWNSTREAM OF THE METERING CABINET.
   - 7.2. mEXPRESS: HP SHALL PROVIDE AND INSTALL ALL CONDUIT, CONDUCTOR, AND EQUIPMENT FROM THE POINT OF CONNECTION UP TO AND INCLUDING THE TRANSFORMER. HP TO PROVIDE TRANSFORMER PAD. HP TO INSTALL METER ON SIDE OF TRANSFORMER.

## GENERAL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR ALL RESTORATION AND CLEAN-UP ASSOCIATED WITH THE INSTALLATION OF THE PROPOSED UTILITIES WITHIN THE PUBLIC RIGHT-OF-WAY AND EASEMENT.
2. VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
3. UTILITIES SHALL END 5 FEET FROM THE BUILDING UNLESS NOTED OTHERWISE.
4. PROTECT AND MAINTAIN CROSSINGS OF OTHER UTILITIES.
5. ALL DIMENSIONS ARE TO COLUMN LINE, CENTERLINE OF PIPE, CENTER OF MANHOLE, EDGE OF PAVEMENT OR BACK OF CURB WHERE APPLICABLE. DIMENSIONS TO COLUMN LINE ASSUME 9" THICK BUILDING WALL.
6. ALL MATERIAL, SPECIFICATIONS, AND CONSTRUCTION METHODS SHALL BE IN CONFORMANCE WITH MEIJER STANDARD SPECIFICATIONS AND DETAILS AND TOWN OF BROWNSBURG AND HENDRICKS COUNTY REQUIREMENTS.
7. CONTRACTOR SHALL PERFORM FULL DEPTH REMOVAL AND REPLACEMENT OF EXISTING PAVEMENT PER MEIJER REQUIREMENTS AT PROPOSED UTILITIES INSTALLATION IN EXISTING PAVED AREAS.
8. PROVIDE MINIMUM 18" VERTICAL CLEARANCE AT ALL UTILITY CROSSINGS.

EXISTING WELLHEAD PER INDIANA DEPARTMENT OF NATURAL RESOURCES RECORDS. WELLHEAD LOG ID 325,846.00

meijer
20.95 ACRES
159,935 SQ. FT.
FF ELEV = 889.00

MEIJER OUTLOT C 3.87 ACRES

MEIJER OUTLOT B 1.57 ACRES

MEIJER OUTLOT A 3.29 ACRES

OUTLOT (BY OTHERS) 1.86 ACRES

OUTLOT (BY OTHERS) 1.80 ACRES

LOT 1
OI COMMERCIAL LOT 1 – SECONDARY PLAT
PLAT CABINET B SLIDE 2 PAGES 1A & 1B
INSTR. NO. 202215039

RONALD REAGAN BASIN (BY OTHERS)

mEXPRESS 1.95 ACRES
mEXPRESS 3,663 SF
FFE = 887.90

OUTDOOR GARDEN CENTER

OUTDOOR SALES AREA

N. COUNTY ROAD 900 E.

EAST 56TH STREET (E. COUNTY ROAD 600 N.)

36' NON-EXCLUSIVE ACCESS EASEMENT PER INSTR. NOS. 202215039 & 202217819

30' DRAINAGE EASEMENT PER INSTR. NOS. 200400013873 & 200400031397

80.4' DRAINAGE EASEMENT PER INSTR. NO. 200400013873

25' SANITARY SEWER EASEMENT PER INSTR. NO. 202210601

EVERSTREAM F.O. PULLBOX

A1 UTILITY PLAN
1" = 60'

NORTH

GRAPHIC SCALE IN FEET
0 60 120 180

## LEGEND

- CATCH BASIN
- CURB INLET
- MANHOLE
- CLEANOUT
- XX'~XX" SD — STORM SEWER
- UNDERDRAIN
- X.X — STORM STRUCTURE I.D.
- XX'~8" SAN — SANITARY SEWER
- SANITARY SERVICE
- SANITARY SEWER I.D.
- 10"WTR — FIRE SERVICE
- 4"WTR — DOMESTIC WATER SERVICE
- FIRE HYDRANT
- WATER VALVE
- TEE
- WATER BEND
- G — GAS SERVICE
- UCT — UNDERGROUND COMMUNICATIONS SERVICE
- UCP — UNDERGROUND COMMUNICATIONS SERVICE
- UCS — UNDERGROUND COMMUNICATIONS SERVICE
- UE — UNDERGROUND ELECTRIC SERVICE
- LIGHT POLE

## KEYNOTES (X)

1. CONNECT TO EXISTING UTILITY PER AGENCY REQUIREMENTS. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITY IN WHICH TO MAKE CONNECTION.
2. ELECTRIC UTILITY OWNER TO MAKE CONNECTION TO EXISTING UTILITY. UTILITY OWNER TO PERFORM RESTORATION WORK OF DISTURBED AREA UNLESS NOTED OTHERWISE.
3. ABOVE-GROUND STORMWATER MANAGEMENT FACILITY.
4. UNDERGROUND STORMWATER MANAGEMENT FACILITY.
5. DETENTION OUTLET STRUCTURE.
6. WATER QUALITY HYDRODYNAMIC SEPARATOR.
7. ENVIRONMENTAL CATCH BASIN.
8. 4" CANOPY STORM DRAIN AT 1.00% (MIN). INVERT AT BUILDING FACE = 886.75.
9. 6" CANOPY DRAIN INV. 883.90. 5' BEYOND EDGE OF CONCRETE SLAB.
10. 6" STORM ROOF DRAIN AT 2.00% (MIN). INVERT AT BUILDING = 886.50.
11. 6" CANOPY STORM DRAIN AT 0.50% (MIN).
12. 4" GARDEN CENTER DRAIN AT 0.50% (MIN). INVERT = 886.00.
13. 6" ROOF DRAIN FOR GUTTER DOWNSPOUTS. SEE C2 ON C-700.
14. LOADING DOCK WALL 4" UNDERDRAIN. INVERT = 882.43.
15. 4" SANITARY SERVICE. INVERT AT BUILDING = 883.90.
16. RONALD REAGAN STORM BY OTHERS.
17. 4" HDPE PERFORATED DRAIN WITH NYLON SOCK. INVERT = 881.90 ADJACENT TO FUEL TANKS. CONNECT TO STRUCTURE 2.05. INSTALLATION AND FINAL DETERMINATION WILL BE DECISION OF FUEL SYSTEM DESIGNER.
18. CONVERT EXISTING CHAIR BACK CURB INLET TO FLAT GRATE STORM INLET PER TOWN OF BROWNSBURG REQUIREMENTS. SEE STORM NOTE 7 THIS SHEET.
19. PROPOSED FIRE HYDRANT ASSEMBLY.
20. FIRE DEPARTMENT CONNECTION. SEE WATER NOTE 10.
21. 10" BUILDING FIRE SERVICE.
22. 4" DOMESTIC WATER SERVICE. 2" DOMESTIC METER AND BACKFLOW PREVENTER TO BE LOCATED INSIDE THE BUILDING.
23. POST INDICATOR VALVE.
24. 2" WATER SERVICE. 1.5" DOMESTIC METER AND BACKFLOW PREVENTER TO BE LOCATED INSIDE THE BUILDING.
25. 2" IRRIGATION SERVICE. 1.5" METER AND BACKFLOW PREVENTER TO BE LOCATED INSIDE THE BUILDING. IRRIGATION METER SHALL HAVE DUAL SET UP PER CITIZENS ENERGY GROUP STANDARD DRAWING T.4. SEE DETAIL ON C-709.
26. 6" SANITARY SERVICE. INVERT AT BUILDING = 885.00.
27. 6" SANITARY SERVICE. INVERT AT BUILDING = 882.00.
28. 6" SANITARY SERVICE. INVERT AT BUILDING = 882.60.
29. GREASE INTERCEPTOR.
30. GREASE INTERCEPTOR SANITARY VENT LINE.
31. 8" WATER LINE TO SERVE FUTURE OUTLOT DEVELOPMENT. PROVIDE WATER LINE CAP PER AGENCY REQUIREMENTS.
32. GAS MAIN BY GAS COMPANY LOCATED IN 10' EASEMENT. GAS COMPANY TO RESTORE ALL DISTURBED AREAS OUTSIDE OF MEIJER WORK LIMITS RELATED TO GAS MAIN INSTALLATION WORK.
33. UNDERGROUND ELECTRIC LOCATED IN 10' EASEMENT. WIRING TO BE DIRECT BURIED BY HENDRICKS POWER.
34. GAS METER.
35. MAIN STORE 2" GAS SERVICE.
36. mEXPRESS 1" GAS SERVICE.
37. PAD-MOUNTED TRANSFORMER. SEE SHEET C-800.
38. PAD-MOUNTED ELECTRICAL EQUIPMENT. SEE SHEET C-800.
39. UNDERGROUND ELECTRIC SERVICE. SEE SHEET C-800.
40. UNDERGROUND COMMUNICATIONS SERVICE. SEE SHEET C-800.
41. HELIUM CABINET. SEE P-405.
42. PHARMACY DETECTION LOOP. VENDOR TO SAWCUT ASPHALT, INSTALL DETECTION LOOP, AND SEAL ASPHALT.

## UTILITIES SUMMARY

SUPERCENTER:

ELECTRIC: PRIMARY SERVICE, PREFERRED BASED ON RATE, MEIJER OWNED TRANSFORMER 2,000 KVA, SECONDARY 480/277V, 3PH, 4W GRD WYE.

PHONE: FIBER OPTIC ENTRANCE CABLE.

GAS: 11,966 CFH @ 2 PSI (5 PSI IF AVAILABLE) FOR 1.5 STORE.

WATER: 4" DIA. PIPE WITH 2" METER, 10,000 GPD SUMMER, 5,000 GPD WINTER, 150 GPM PEAK USE, 65 PSI AFTER BACKFLOW PREVENTER.

FIRE PROTECTION: 10" DIA. MIN., 1,575 GPM @ 35 PSI AT BASE OF RISER.

SANITARY SEWER: 5,000 GPD AVG., 40 GPM PEAK FLOW.

IRRIGATION: DESIGN TO BE PROVIDED AS PART OF FINAL DESIGN.

MEXPRESS:

ELECTRIC: SECONDARY SERVICE PREFERRED BASED ON RATE. PAD-MOUNT UTILITY OWNED TRANSFORMER, 600 AMP, 120/208V, 3PH, 4W SECONDARY SERVICE. TRANSFORMER SIZED AND FURNISHED BY UTILITY COMPANY.

PHONE: FED FROM SUPERCENTER, TYPICALLY NO DEDICATED SERVICE.

GAS: 394 CFH @ 7" WC

WATER: 2" DIA., 1.5" METER, 50 GPM PEAK USE, 65 PSI AFTER BACKFLOW PREVENTER. 750 GPD SUMMER, 500 GPD NON-SUMMER.

FIRE PROTECTION: NOT REQUIRED.

SANITARY SEWER: 500 GPD AVG. 20 GPM PEAK.

## STORM NOTES

1. INSTALL UNDERDRAINS AT ALL PROPOSED CATCH BASINS.
2. ALL UNDERDRAINS ARE 4" DIAMETER AT MINIMUM SLOPE OF 0.50% UNLESS OTHERWISE NOTED.
3. END SECTIONS ARE INCLUDED IN PIPE LENGTHS SHOWN.
4. PROVIDE INLET FILTER FOR ALL CATCH BASIN INLETS.
5. PROVIDE RIP RAP AT ALL END SECTIONS UNLESS OTHERWISE NOTED.
6. ALL STORM GRATE CASTINGS TO BE PRE-CAST WITH A POLLUTION PREVENTION MESSAGE PERMANENTLY ATTACHED, PER TOWN OF BROWNSBURG STANDARD DETAILS SW-13 AND SW-14, POLLUTION PREVENTION MESSAGE TO STATE, AT MINIMUM, "DUMP NO WASTE <FISH ICON> DRAINGS TO WATERWAY" IN MINIMUM 1 INCH HIGH LETTERS.
7. EXISTING CHAIR BACK CURB DRAIN INLETS THAT ARE LOCATED IN THE NEW DRIVE ENTRANCES TO 56TH STREET ARE TO BE CONVERTED TO FLAT GRATE STORM INLET PER TOWN OF BROWNSBURG REQUIREMENTS. CASTINGS WILL HAVE TO BE SPECIAL ORDERED. CONTRACTOR TO PROVIDE ONE ADDITIONAL CASTING TO BROWNSBURG STREET DEPARTMENT AS SPARE STOCK FOR EACH CONVERSION FOR A TOTAL OF SIX NEW CASTINGS.

## SANITARY NOTES

1. ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.
2. A CONTINUOUS 20' LENGTH OF SDR-35 PVC SHALL BE EXTENDED FROM THE YARD CLEANOUTS AT THE FRONT OF THE BUILDING. COORDINATE WITH PLUMBING CONTRACTOR ON LOCATION AND ROUTING.
3. FERNCO COUPLINGS SHALL NOT BE USED ALONG THE SERVICE LATERALS FROM THE FRONT OF THE BUILDING TO THE SANITARY MANHOLE OR MAIN.

## WATER NOTES

1. INSTALL WATER MAIN WITH A MINIMUM OF 4.5 FEET OF COVER.
2. CONTRACTOR TO COORDINATE WITH CITIZENS ENERGY GROUP FOR INSPECTION OF INSTALLATION OF WATER LINES INCLUDING CONNECTIONS TO EXISTING. PROVIDE 48 HOURS NOTICE.
3. ON SITE HYDRANTS SHALL FACE THE BUILDING.
4. HYDRANTS LOCATED IN CURB ISLAND OR GREEN SPACE SHALL BE LOCATED 5' FROM BACK OF CURB OR EDGE OF PAVEMENT (TYP.).
5. INSTALL CONCRETE PADS FOR ALL HYDRANT VALVES IN NON-PAVED AREAS.
6. PROVIDE A MINIMUM OF EIGHTEEN (18) INCHES OF VERTICAL SEPARATION AND TEN (10) FEET OF HORIZONTAL SEPARATION BETWEEN THE WATER LINE AND ALL SANITARY AND STORM SEWERS.
7. PROVIDE THRUST BLOCKS AT ALL WATER BENDS, PLUGS AND TEES IF REQUIRED BY THE UTILITY COMPANY.
8. EXISTING WATER MAINS AND ALL HYDRANTS REQUIRE PREVENTERS TO ADHERE TO CITIZENS ENERGY GROUP STANDARD DETAILS AND REQUIREMENTS.
9. ALL PROPOSED WATER METERS AND BACKFLOW PREVENTERS TO ADHERE TO CITIZENS ENERGY GROUP STANDARD DETAILS AND REQUIREMENTS.
10. FIRE DEPARTMENT CONNECTION SHALL BE 5" STORZ WITH 30-DEGREE DOWN ANGLE AND HEIGHT BETWEEN 3'-4' ABOVE FINISHED GRADE. REFER TO TOWN OF BROWNSBURG CONSTRUCTION STANDARD DETAIL DW-12.

## GAS NOTES

1. GAS COMPANY WILL PROVIDE GAS SERVICE TAP, METER, REGULATOR, AND INSTALL THE NEW SERVICE LINE TO THE METER.

## BENCHMARK:

THE BASIS OF ELEVATIONS HEREON IS NAVD 88 PER OBSERVATIONS OF SELECTED STATIONS IN THE NATIONAL GEODETIC SURVEY CONTINUOUSLY OPERATING REFERENCE STATION (NGS CORS) NETWORK.
MAG NAIL SET IN THE CORNER TOP OF THE CURB JOINT – SEE DRAWING FOR LOCATION.
ELEVATION = 889.36'

Indiana 811 Know what's below. Call before you dig.


WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER STORE #338
9200 E. 56TH STREET
BROWNSBURG, INDIANA 46112

UTILITY PLAN

| ISSUED FOR: | |
|---|---|
| PERMIT | MM/DD/YY |
| BID | MM/DD/YY |
| CONSTRUCTION | MM/DD/YY |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
NS-26-00338

C-400

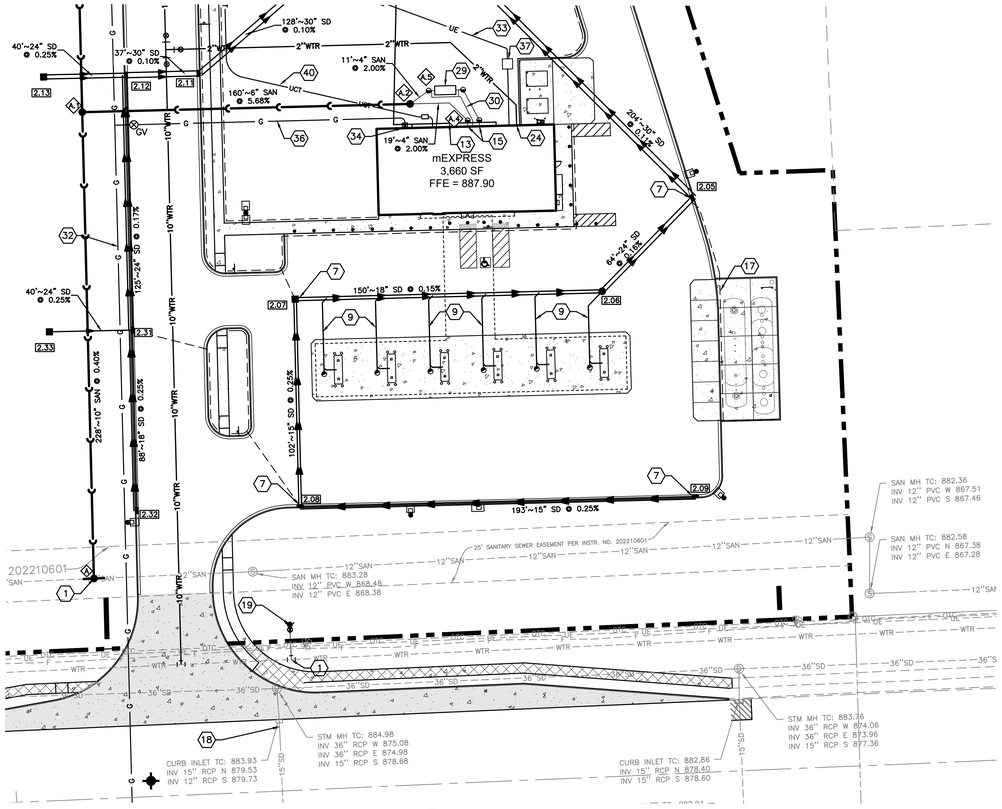

Images: _Xrefs: 10020046-x.dwg; 10020046PLAN.dwg; 10020046TBLK.dwg; 10020046-UTL-NOTES.dwg; 10020046-p.dwg
Last Plotted:January 10, 2025, 2:10:15 PM
Last Saved By:A.Reedy, 1/10/2025 1:52:23 PM
G:\DE\Clients\Meijer\2026 Open Meijer Stores\10020046 Meijer 338 ABE – Brownsburg, IN Civil\4.0 Disciplines\Civil\Coda\Cd\10020046UTL.dwg Plotted By:Reedy, Angela Plotted:January 10, 2025, 2:10:15 PM

## UTILITIES RESPONSIBILITIES SUMMARY

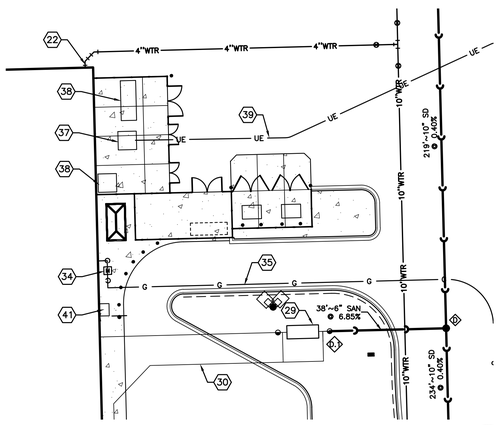
1. "WORK" IS DEFINED AS INSTALLATION OF SUBJECT UTILITY, INCLUDING TRENCHING, BEDDING, BACKFILL, AS WELL AS DEMOLITION AND RESTORATION OF THE DISTURBED AREA. INSPECTIONS ARE NOT INCLUDED. "INSTALL" MEANS PROVIDE AND INSTALL UNLESS NOTED OTHERWISE.
2. SANITARY SEWER: MEIJER CONTRACTOR (MC) SHALL PERFORM ALL WORK INCLUDING MAKING CONNECTION TO THE EXISTING MAIN. MC TO SCHEDULE PRE-CONSTRUCTION MEETING WITH HENDRICKS COUNTY REGIONAL SEWER DISTRICT (HCRSD) PRIOR TO STARTING CONSTRUCTION. MC SHALL NOTIFY HCRSD 48 HOURS PRIOR TO ANY SANITARY INSTALLATION AND TESTING. HCRSD TO BE PRESENT FOR ALL TESTING.
3. WATER: MC SHALL PERFORM ALL WORK ASSOCIATED WITH INSTALLATION OF THE WATER SERVICE LINE. CITIZENS ENERGY GROUP (CEG) SHALL MAKE THE TAP ON THE EXISTING MAIN. MC SHALL CONNECT TO THE TAP. MC SHALL CONTACT CEG TO SCHEDULE A PRE-CONSTRUCTION MEETING PRIOR TO INSTALLING FIRE PROTECTION SERVICES. MC TO NOTIFY THE BROWNSBURG FIRE DEPARTMENT (BFD) 48 HOURS PRIOR TO INSTALLATION OF WATER AND FIRE SERVICE LINES, BUT PRESENCE IS NOT REQUIRED. BFD TO BE PRESENT TO WITNESS ACCEPTANCE TESTING.
4. STORM SEWER: MC SHALL PERFORM ALL WORK. MC SHALL CONTACT THE TOWN OF BROWNSBURG WHEN PERFORMING WORK IN THE RIGHT-OF-WAY TO DETERMINE CONTRACTOR REQUIREMENTS.
5. GAS: FOR BOTH BUILDINGS, THE GAS COMPANY, CENTERPOINT ENERGY (CE), SHALL PROVIDE ALL SERVICE PIPING AND EQUIPMENT FROM THE POINT OF CONNECTION AT THE RIGHT-OF-WAY UP TO AND INCLUDING THE GAS METER. MC TO INSTALL ALL SERVICE PIPING FROM THE POINT OF CONNECTION AT THE RIGHT-OF-WAY TO THE GAS METER. CE TO INSTALL GAS METER ONCE MC HAS INSTALLED THE STUBBED OUT CONNECTION. MC TO PROVIDE AND INSTALL ALL PIPING AND MATERIALS DOWNSTREAM OF THE GAS METER. MC SHALL INSTALL METER PROTECTION BOLLARDS PER CE REQUIREMENTS.
6. COMMUNICATIONS:
   - 6.1. MAIN STORE: MC SHALL ISNTALL ALL CONDUIT AND MANHOLES. MC SHALL COORDINATE WITH MEIJER IT AND EVERSTREAM TO COORDINATE WITH MEIJER-SELECTED COMMUNICATIONS PROVIDER WHO SHALL PULL ALL WIRING AND MAKE CONNECTIONS.
   - 6.2. mEXPRESS: MC SHALL INSTALL HANDHOLES AND WIRING. MC SHALL COORDINATE WITH MEIJER IT AND EVERSTREAM TO MAKE CONNECTIONS.
7. ELECTRIC:
   - 7.1. MAIN STORE: THE ELECTRIC COMPANY, HENDRICKS POWER (HP), SHALL PROVIDE AND INSTALL ALL CONDUIT, CONDUCTOR, AND EQUIPMENT FROM THE POINT OF CONNECTION UP TO THE PRIMARY METERING CABINET. MC TO PROVIDE AND INSTALL ALL CONDUIT, CONDUCTOR, AND EQUIPMENT DOWNSTREAM OF THE METERING CABINET.
   - 7.2. mEXPRESS: HP SHALL PROVIDE AND INSTALL ALL CONDUIT, CONDUCTOR, AND EQUIPMENT FROM THE POINT OF CONNECTION UP TO AND INCLUDING THE TRANSFORMER. HP TO PROVIDE TRANSFORMER PAD. HP TO INSTALL METER ON SIDE OF TRANSFORMER.

## GENERAL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR ALL RESTORATION AND CLEAN-UP ASSOCIATED WITH THE INSTALLATION OF THE PROPOSED UTILITIES WITHIN THE PUBLIC RIGHT-OF-WAY AND EASEMENT.
2. VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
3. UTILITIES SHALL END 5 FEET FROM THE BUILDING UNLESS NOTED OTHERWISE.
4. PROTECT AND MAINTAIN CROSSINGS OF OTHER UTILITIES.
5. ALL DIMENSIONS ARE TO COLUMN LINE, CENTERLINE OF PIPE, CENTER OF MANHOLE, EDGE OF PAVEMENT OR BACK OF CURB WHERE APPLICABLE. DIMENSIONS TO COLUMN LINE ASSUME 9" THICK BUILDING WALL.
6. ALL MATERIAL, SPECIFICATIONS, AND CONSTRUCTION METHODS SHALL BE IN CONFORMANCE WITH MEIJER STANDARD SPECIFICATIONS AND DETAILS AND TOWN OF BROWNSBURG AND HENDRICKS COUNTY REQUIREMENTS.
7. CONTRACTOR SHALL PERFORM FULL DEPTH REMOVAL AND REPLACEMENT OF EXISTING PAVEMENT PER MEIJER REQUIREMENTS AT PROPOSED UTILITIES INSTALLATION IN EXISTING PAVED AREAS.
8. PROVIDE MINIMUM 18" VERTICAL CLEARANCE AT ALL UTILITY CROSSINGS.




C1 mEXPRESS UTILITY PLAN
1" = 30'




A1 UTILITY CONNECTION ENLARGEMENT
1" = 20'

## LEGEND

- CATCH BASIN
- CURB INLET
- MANHOLE
- CLEANOUT
- XX'~XX" SD — STORM SEWER
- UNDERDRAIN
- [X.X] — STORM STRUCTURE I.D.
- XX'~8" SAN — SANITARY SEWER
- SANITARY SERVICE
- SANITARY SEWER I.D.
- 10"WTR — FIRE SERVICE
- 4"WTR — DOMESTIC WATER SERVICE
- FIRE HYDRANT
- WATER VALVE
- TEE
- WATER BEND
- G — GAS SERVICE
- UCT — UNDERGROUND COMMUNICATIONS SERVICE
- UCP — UNDERGROUND COMMUNICATIONS SERVICE
- UCS — UNDERGROUND COMMUNICATIONS SERVICE
- UE — UNDERGROUND ELECTRIC SERVICE
- LIGHT POLE

## STORM NOTES

1. INSTALL UNDERDRAINS AT ALL PROPOSED CATCH BASINS.
2. ALL UNDERDRAINS ARE 4" DIAMETER AT MINIMUM SLOPE OF 0.50% UNLESS OTHERWISE NOTED.
3. END SECTIONS ARE INCLUDED IN PIPE LENGTHS SHOWN.
4. PROVIDE INLET FILTER FOR ALL CATCH BASIN INLETS.
5. PROVIDE RIP RAP AT ALL END SECTIONS UNLESS OTHERWISE NOTED.
6. ALL STORM GRATE CASTINGS TO BE PRE-CAST WITH A POLLUTION PREVENTION MESSAGE PERMANENTLY ATTACHED. PER TOWN OF BROWNSBURG STANDARD DETAILS SW-13 AND SW-14, POLLUTION PREVENTION MESSAGE TO STATE, AT MINIMUM, "DUMP NO WASTE <FISH ICON> DRAINGS TO WATERWAY" IN MINIMUM 1 INCH HIGH LETTERS.
7. EXISTING CHAIR BACK CURB DRAIN INLETS THAT ARE LOCATED IN THE NEW DRIVE ENTRANCES TO 56TH STREET ARE TO BE CONVERTED TO FLAT GRATE STORM INLET PER TOWN OF BROWNSBURG REQUIREMENTS. CASTINGS WILL HAVE TO BE SPECIAL ORDERED. CONTRACTOR PROVIDE ONE ADDITIONAL CASTING TO BROWNSBURG STREET DEPARTMENT AS SPARE STOCK FOR EACH CONVERSION FOR A TOTAL OF SIX NEW CASTINGS.

## SANITARY NOTES

1. ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.
2. A CONTINUOUS 20' LENGTH OF SDR-35 PVC SHALL BE EXTENDED FROM THE YARD CLEANOUTS AT THE FRONT OF THE BUILDING. COORDINATE WITH PLUMBING CONTRACTOR ON LOCATION AND ROUTING.
3. FERNCO COUPLINGS SHALL NOT BE USED ALONG THE SERVICE LATERALS FROM THE FRONT OF THE BUILDING TO THE SANITARY MANHOLE OR MAIN.

## KEYNOTES (X)

1. CONNECT TO EXISTING UTILITY PER AGENCY REQUIREMENTS. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITY IN WHICH TO MAKE CONNECTION.
2. ELECTRIC UTILITY OWNER TO MAKE CONNECTION TO EXISTING UTILITY. UTILITY OWNER TO PERFORM RESTORATION WORK OF DISTURBED AREA UNLESS NOTED OTHERWISE.
3. ABOVE-GROUND STORMWATER MANAGEMENT FACILITY.
4. UNDERGROUND STORMWATER MANAGEMENT FACILITY.
5. DETENTION OUTLET STRUCTURE.
6. WATER QUALITY HYDRODYNAMIC SEPARATOR.
7. ENVIRONMENTAL CATCH BASIN.
8. 4" CANOPY STORM DRAIN AT 1.00% (MIN). INVERT AT BUILDING FACE = 886.75.
9. 6" CANOPY DRAIN INV. 883.90. 5' BEYOND EDGE OF CONCRETE SLAB.
10. 6" STORM ROOF DRAIN AT 2.00% (MIN). INVERT AT BUILDING = 886.50.
11. 6" CANOPY STORM DRAIN AT 0.50% (MIN).
12. 4" GARDEN CENTER DRAIN AT 0.50% (MIN). INVERT = 886.00.
13. 6" ROOF DRAIN FOR GUTTER DOWNSPOUTS. SEE C2 ON C-700.
14. LOADING DOCK WALL 4" UNDERDRAIN. INVERT = 882.43.
15. 4" SANITARY SERVICE. INVERT AT BUILDING = 883.90.
16. RONALD REAGAN STORM BY OTHERS.
17. 4" HDPE PERFORATED DRAIN WITH NYLON SOCK. INVERT = 881.90 ADJACENT TO FUEL TANKS. CONNECT TO STRUCTURE 2.05. INSTALLATION AND FINAL DETERMINATION WILL BE DECISION OF FUEL SYSTEM DESIGNER.
18. CONVERT EXISTING CHAIR BACK CURB INLET TO FLAT GRATE STORM INLET PER TOWN OF BROWNSBURG REQUIREMENTS. SEE STORM NOTE 7 THIS SHEET.
19. PROPOSED FIRE HYDRANT ASSEMBLY.
20. FIRE DEPARTMENT CONNECTION. SEE WATER NOTE 10.
21. 10" BUILDING FIRE SERVICE.
22. 4" DOMESTIC WATER SERVICE. 2" DOMESTIC METER AND BACKFLOW PREVENTER TO BE LOCATED INSIDE THE BUILDING.
23. POST INDICATOR VALVE.
24. 2" WATER SERVICE. 1.5" DOMESTIC METER AND BACKFLOW PREVENTER TO BE LOCATED INSIDE THE BUILDING.
25. 2" IRRIGATION SERVICE. 1.5" METER AND BACKFLOW PREVENTER TO BE LOCATED INSIDE THE BUILDING. IRRIGATION METER SHALL HAVE DUAL SET UP PER CITIZENS ENERGY GROUP STANDARD DRAWING 1.4. SEE DETAIL ON C-709.
26. 6" SANITARY SERVICE. INVERT AT BUILDING = 885.00.
27. 6" SANITARY SERVICE. INVERT AT BUILDING = 882.00.
28. 6" SANITARY SERVICE. INVERT AT BUILDING = 882.60.
29. GREASE INTERCEPTOR.
30. GREASE INTERCEPTOR SANITARY VENT LINE.
31. 8" WATER LINE TO SERVE FUTURE OUTLOT DEVELOPMENT. PROVIDE WATER LINE CAP PER AGENCY REQUIREMENTS.
32. GAS MAIN BY GAS COMPANY LOCATED IN 10' EASEMENT. GAS COMPANY TO RESTORE ALL DISTURBED AREAS OUTSIDE OF MEIJER WORK LIMITS RELATED TO GAS MAIN INSTALLATION WORK.
33. UNDERGROUND ELECTRIC LOCATED IN 10' EASEMENT. WIRING TO BE DIRECT BURIED BY HENDRICKS POWER.
34. GAS METER.
35. MAIN STORE 2" GAS SERVICE.
36. mEXPRESS 1" GAS SERVICE.
37. PAD-MOUNTED TRANSFORMER. SEE SHEET C-800.
38. PAD-MOUNTED ELECTRICAL EQUIPMENT. SEE SHEET C-800.
39. UNDERGROUND ELECTRIC SERVICE. SEE SHEET C-800.
40. UNDERGROUND COMMUNICATIONS SERVICE. SEE SHEET C-800.
41. HELIUM CABINET. SEE P-405.
42. PHARMACY DETECTION LOOP. VENDOR TO SAWCUT ASPHALT, INSTALL DETECTION LOOP, AND SEAL ASPHALT.

## BENCHMARK:

THE BASIS OF ELEVATIONS HEREON IS NAVD 88 PER OBSERVATIONS OF SELECTED STATIONS IN THE NATIONAL GEODETIC SURVEY CONTINUOUSLY OPERATING REFERENCE STATION (NGS CORS) NETWORK.
MAG NAIL SET IN THE CORNER TOP OF THE CURB JOINT - SEE DRAWING FOR LOCATION.
ELEVATION = 889.36'

Know what's below. Call before you dig.

## UTILITIES SUMMARY

SUPERCENTER:

ELECTRIC: PRIMARY SERVICE, PREFERRED BASED ON RATE, MEIJER OWNED TRANSFORMER 2,000 KVA, SECONDARY 480/277V, 3PH, 4W GRD WYE.

PHONE: FIBER OPTIC ENTRANCE CABLE.

GAS: 11,966 CFH @ 2 PSI (5 PSI IF AVAILABLE) FOR 1.5 STORE.

WATER: 4" DIA. PIPE WITH 2" METER, 10,000 GPD SUMMER, 5,000 GPD WINTER, 150 GPM PEAK USE, 65 PSI AFTER BACKFLOW PREVENTER.

FIRE PROTECTION: 10" DIA. MIN., 1,575 GPM @ 35 PSI AT BASE OF RISER.

SANITARY SEWER: 5,000 GPD AVG., 40 GPM PEAK FLOW.

IRRIGATION: DESIGN TO BE PROVIDED AS PART OF FINAL DESIGN.

MEXPRESS:

ELECTRIC: SECONDARY SERVICE PREFERRED BASED ON RATE, PAD-MOUNT UTILITY OWNED TRANSFORMER, 600 AMP, 120/208V, 3PH, 4W SECONDARY SERVICE, TRANSFORMER SIZED AND FURNISHED BY UTILITY COMPANY.

PHONE: FED FROM SUPERCENTER, TYPICALLY NO DEDICATED SERVICE.

GAS: 394 CFH @ 7" WC

WATER: 2" DIA., 1.5" METER, 50 GPM PEAK USE, 65 PSI AFTER BACKFLOW PREVENTER. 750 GPD SUMMER, 500 GPD NON-SUMMER.

FIRE PROTECTION: NOT REQUIRED.

SANITARY SEWER: 500 GPD AVG. 20 GPM PEAK.

## WATER NOTES

1. INSTALL WATER MAIN WITH A MINIMUM OF 4.5 FEET OF COVER.
2. CONTRACTOR TO COORDINATE WITH CITIZENS ENERGY GROUP FOR INSPECTION OF INSTALLATION OF WATER LINES INCLUDING CONNECTIONS TO EXISTING. PROVIDE 48 HOURS NOTICE.
3. ON SITE HYDRANTS SHALL FACE THE BUILDING.
4. HYDRANTS LOCATED IN CURB ISLAND OR GREEN SPACE SHALL BE LOCATED 5' FROM BACK OF CURB OR EDGE OF PAVEMENT (TYP.).
5. INSTALL CONCRETE PADS FOR ALL HYDRANT VALVES IN NON-PAVED AREAS.
6. PROVIDE A MINIMUM OF EIGHTEEN (18) INCHES OF VERTICAL SEPARATION AND TEN (10) FEET OF HORIZONTAL SEPARATION BETWEEN THE WATER LINE AND ALL SANITARY AND STORM SEWERS.
7. PROVIDE THRUST BLOCKS AT ALL WATER BENDS, PLUGS AND TEES IF REQUIRED BY THE UTILITY COMPANY.
8. EXISTING WATER MAINS AND ALL HYDRANTS REQUIRE TESTING. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY.
9. ALL PROPOSED WATER METERS AND BACKFLOW PREVENTERS TO ADHERE TO CITIZENS ENERGY GROUP STANDARD DETAILS AND REQUIREMENTS.
10. FIRE DEPARTMENT CONNECTION SHALL BE 5" STORZ WITH 30-DEGREE DOWN ANGLE AND HEIGHT BETWEEN 3'-4' ABOVE FINISHED GRADE. REFER TO TOWN OF BROWNSBURG CONSTRUCTION STANDARD DETAIL DW-12.

## GAS NOTES

1. GAS COMPANY WILL PROVIDE GAS SERVICE TAP, METER, REGULATOR, AND INSTALL THE NEW SERVICE LINE TO THE METER.


WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER STORE #338
9202 E. 56TH STREET
BROWNSBURG, INDIANA 46112

UTILITY PLAN ENLARGEMENTS

| ISSUED FOR: | |
|---|---|
| PERMIT | MM/DD/YY |
| BID | MM/DD/YY |
| CONSTRUCTION | MM/DD/YY |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
NS-26-00338

C-401


Images: _Xrefs: 10020046-p.dwg; 10020046-x.dwg; 10020046TBLK.dwg; 10020046-UTL-NOTES.dwg
Last Saved By:A.Reedy 1/9/2025 3:25:45 PM
G:\DE\Clients\Meijer\2026 Open Meijer Stores\10020046 Meijer 338 ABE - Brownsburg, IN Civil\4.0 Disciplines\Civil\Cadd\Cet\10020046UTL2.dwg Plotted By:Reedy, Angelo Plotted:January 10, 2025, 2:11:11 PM

## STORM STRUCTURE TABLE

| STRUCTURE ID | DESCRIPTION | RIM/GRATE | INVERTS | NORTHING | EASTING | CASTING | MISCELLANEOUS NOTES |
|---|---|---|---|---|---|---|---|
| 1.00 | 42" CONCRETE FLARED END SECTION | 881.13 | 42" = 877.39 (W) | 1678527.9570 | 3156056.0038 | | |
| 1.01 | CONTECH CDS 10-C UNIT | 885.52 | 42" = 877.52 (W)<br>42" = 877.42 (E) | 1678527.2352 | 3156027.1678 | SEE DETAIL ON C-708 | |
| 1.02 | 5' CB | 883.43 | 42" = 877.74 (NW)<br>42" = 877.64 (E) | 1678525.5918 | 3155961.5195 | NEENAH R-3402-E | |
| 1.03 | 5' CI | 884.33 | 42" = 877.93 (W)<br>42" = 877.83 (SE) | 1678596.6609 | 3155905.0400 | NEENAH R-3287-SB10 | |
| 1.04 | 5' CI | 886.02 | 42" = 878.13 (W)<br>42" = 878.03 (E)<br>6" = 882.74 (S) | 1678594.2737 | 3155809.6806 | NEENAH R-3287-SB10 | |
| 1.05 | 5' CI | 889.18 | 42" = 878.31 (W)<br>42" = 878.21 (E)<br>6" = 885.93 (S) | 1678592.3473 | 3155732.7256 | NEENAH R-3287-SB10 | |
| 1.06 | 4' CI | 888.47 | 36" = 878.50 (W)<br>42" = 878.40 (E)<br>6" = 885.22 (S) | 1678590.2184 | 3155647.6807 | NEENAH R-3287-SB10 | |
| 1.07 | 4' CI | 888.48 | 36" = 878.78 (W)<br>36" = 878.68 (E)<br>6" = 885.23 (SE) | 1678587.1437 | 3155524.8532 | NEENAH R-3287-SB10 | |
| 1.08 | 4' CI | 887.29 | 36" = 879.66 (W)<br>36" = 878.94 (E)<br>6" = 884.04 (SE) | 1678609.1607 | 3155423.6957 | NEENAH R-3287-SB10 | |
| 1.09 | 4' CI | 885.53 | 36" = 879.90 (E)<br>18" = 880.00 (W)<br>30" = 880.00 (S) | 1678629.8852 | 3155270.9014 | NEENAH R-3287-SB10 | |
| 1.10 | 4' CI | 885.16 | 18" = 880.47 (E)<br>18" = 880.57 (S) | 1678625.1479 | 3155081.6606 | NEENAH R-3287-SB10 | |
| 1.11 | 3'' CI | 885.15 | 18" = 880.64 (N) | 1678599.1540 | 3155082.2291 | NEENAH R-3287-SB10 | |
| 1.12 | 4' CI | 887.01 | 30" = 880.99 (N)<br>24" = 881.09 (S)<br>30" = 881.09 (W) | 1678447.2178 | 3155261.9716 | NEENAH R-3287-SB10 | |
| 1.13 | 4' CB | 886.50 | 30" = 881.22 (E) | 1678446.3431 | 3155211.9793 | NEENAH R-4215-C | |
| 1.14 | 4' CI | 887.17 | 24" = 881.44 (S)<br>24" = 881.34 (N) | 1678346.3190 | 3155264.4974 | NEENAH R-3287-SB10 | |
| 1.15 | 4' CB | 886.91 | 24" = 881.72 (N)<br>18" = 881.82 (W) | 1678236.2526 | 3155267.2527 | NEENAH R-3287-SB10 | |
| 1.16 | 3' CB | 886.41 | 18" = 881.95 (E) | 1678235.8757 | 3155217.2479 | NEENAH R-4215-C | |
| 1.30 | 42" CONCRETE FLARED END SECTION | 881.13 | 42" = 877.39 (W) | 1678092.2588 | 3156113.4527 | | |
| 1.31 | CONTECH CDS 8-C UNIT | 885.13 | 42" = 877.52 (W)<br>42" = 877.42 (E) | 1678084.7401 | 3156085.2803 | SEE DETAIL ON C-708 | |
| 1.32 | 5' CI | 885.53 | 18" = 878.99 (N)<br>42" = 877.64 (W)<br>42" = 877.54 (E) | 1678079.3089 | 3156064.9300 | NEENAH R-3287-SB10 | |
| 1.34 | 5' CI | 885.60 | 42" = 877.69 (E)<br>42" = 877.79 (W) | 1678066.1818 | 3156015.7431 | NEENAH R-3287-SB10 | |
| 1.35 | 5' CB | 885.50 | 42" = 877.95 (E)<br>42" = 878.05 (W) | 1678062.1652 | 3155855.2934 | NEENAH R-3402-E | |
| 1.36 | 5' CB | 885.50 | 36" = 878.28 (W)<br>42" = 878.18 (E) | 1678058.9620 | 3155727.3335 | NEENAH R-3402-E | |
| 1.37 | 4' CB | 885.50 | 36" = 878.51 (W)<br>36" = 878.41 (E) | 1678055.7588 | 3155599.3736 | NEENAH R-3402-E | |
| 1.38 | 4' CB | 885.50 | 36" = 878.74 (W)<br>36" = 878.64 (E) | 1678052.5556 | 3155471.4136 | NEENAH R-3402-E | |
| 1.39 | 4' CB | 885.50 | 30" = 878.97 (W)<br>36" = 878.87 (E) | 1678049.3495 | 3155343.3408 | NEENAH R-3402-E | |
| 1.40 | 4' CI | 885.84 | 18" = 879.75 (N)<br>30" = 879.04 (E)<br>24" = 879.14 (W) | 1678047.5634 | 3155271.9891 | NEENAH R-3287-SB10 | |
| 1.41 | 4' CB | 883.25 | 24" = 879.21 (E) | 1678046.8801 | 3155242.1641 | NEENAH R-4215-C | |
| 1.42 | TYPE 1 MANHOLE | 887.07 | 15" = 880.12 (W)<br>18" = 880.02 (S) | 1678157.2801 | 3155269.2401 | NEENAH R-1642 | |
| 1.43 | 3' CI | 885.32 | 15" = 880.91 (N)<br>15" = 880.81 (E) | 1678150.3740 | 3154993.4070 | NEENAH R-3287-SB10 | |
| 1.44 | 3' CI | 885.20 | 15" = 881.00 (S) | 1678187.3645 | 3154992.5633 | NEENAH R-3287-SB10 | |
| 1.45 | 3' CI | 886.11 | 18" = 879.55 (S)<br>15" = 879.65 (W) | 1678299.9729 | 3156031.3733 | NEENAH R-3287-SB10 | |
| 1.46 | 2' CI | 887.85 | 15" = 879.95 (E) | 1678297.7123 | 3155956.8991 | NEENAH R-3287-SB10 | |
| 2.00 | 42" CONCRETE FLARED END SECTION | 881.22 | 42" = 877.48 (S) | 1677956.6825 | 3156166.9908 | | |
| 2.01 | CONTECH CDS 8-C UNIT | 886.10 | 42" = 877.61 (S)<br>42" = 877.51 (N) | 1677930.1920 | 3156167.4878 | SEE DETAIL ON C-708 | |
| 2.02 | 5' CI | 886.31 | 42" = 877.73 (S)<br>42" = 877.63 (N) | 1677913.6959 | 3156168.0668 | NEENAH R-3287-SB10 | |
| 2.03 | 5' CI | 886.40 | 42" = 877.76 (N)<br>30" = 877.95 (W)<br>36" = 877.86 (S) | 1677886.7044 | 3156168.7425 | NEENAH R-3287-SB10 | |
| 2.04 | 4' CB | 885.90 | 36" = 877.89 (N)<br>30" = 878.26 (SE)<br>30" = 877.99 (SW) | 1677856.7075 | 3156169.4934 | NEENAH R-4215-C | |
| 2.05 | 3' ENV. CI | 886.40 | 24" = 878.79 (SW)<br>30" = 878.49 (NW) | 1677712.6462 | 3156314.0564 | NEENAH R-3287-SB10 | |
| 2.06 | TYPE 1 MANHOLE | 886.76 | 18" = 879.39 (W)<br>24" = 878.89 (NE) | 1677666.6980 | 3156269.2328 | NEENAH R-1642 | |
| 2.07 | 3' ENV. CB | 886.56 | 15" = 879.72 (S)<br>18" = 879.62 (E) | 1677662.8426 | 3156119.0763 | NEENAH R-3402-E | |
| 2.08 | 2' ENV. CI | 886.40 | 15" = 880.07 (E)<br>15" = 879.97 (N) | 1677560.8796 | 3156121.5775 | NEENAH R-3287-SB10 | |
| 2.09 | 2' ENV. CI | 886.40 | 15" = 880.55 (W) | 1677565.7188 | 3156314.8899 | NEENAH R-3287-SB10 | |
| 2.11 | 4' CI | 885.97 | 30" = 878.22 (W)<br>30" = 878.12 (NE) | 1677773.3026 | 3156072.5903 | NEENAH R-3287-SB10 | |
| 2.12 | 4' CI | 886.42 | 24" = 878.36 (W)<br>30" = 878.26 (E)<br>24" = 879.55 (S) | 1677772.3767 | 3156035.6019 | NEENAH R-3287-SB10 | |
| 2.13 | 4' CB | 885.00 | 24" = 878.46 (E) | 1677771.5320 | 3155996.0642 | NEENAH R-4215-C | |
| 2.14 | 4' CI | 886.41 | 24" = 878.81 (W)<br>30" = 878.31 (E) | 1677878.9726 | 3155859.8792 | NEENAH R-3287-SB10 | |
| 2.15 | 3' CI | 886.41 | 24" = 879.29 (E)<br>18" = 879.39 (W) | 1677872.5662 | 3155603.9594 | NEENAH R-3287-SB10 | |
| 2.16 | 4' MH | 887.83 | 15" = 879.85 (S)<br>18" = 879.75 (E)<br>15" = 879.95 (W) | 1677868.2195 | 3155430.3212 | NEENAH R-1642 | |
| 2.17 | 2' CI | 886.41 | 15" = 880.47 (W)<br>15" = 880.37 (N) | 1677660.7673 | 3155439.3086 | NEENAH R-3287-SB10 | |
| 2.18 | 2' CI | 886.41 | 15" = 880.56 (E) | 1677659.1658 | 3155402.3432 | NEENAH R-3287-SB10 | |
| 2.21 | 2' CI | 887.39 | 15" = 880.17 (E) | 1677901.6862 | 3155348.6507 | NEENAH R-3287-SB10 | |
| 2.31 | 3' CI | 886.40 | 18" = 879.86 (S)<br>24" = 879.76 (N)<br>24" = 879.86 (W) | 1677647.7225 | 3156038.7234 | NEENAH R-3287-SB10 | |
| 2.32 | 3' CI | 886.40 | 18" = 880.08 (N) | 1677559.3610 | 3156040.9359 | NEENAH R-3287-SB10 | |
| 2.33 | 4' CB | 885.00 | 24" = 879.96 (E) | 1677646.8715 | 3155998.9347 | NEENAH R-4215-C | |
| 3.00 | TYPE 1 MANHOLE | 885.21 | 12" = 877.22 (N)<br>15" = 877.22 (S) | 1678042.7255 | 3156144.2836 | NEENAH R-1642 | |
| 3.01 | OUTLET CONTROL STRUCTURE | 885.00 | 12" = 877.29 (S) | 1678066.9172 | 3156143.2356 | SEE DETAIL ON C-705 | |
| 3.02 | OUTLET CONTROL STRUCTURE | 883.90 | 15" = 877.38 (N) | 1678002.4776 | 3156146.0273 | SEE DETAIL ON C-705 | |
| 5.00 | 42" CONCRETE FLARED END SECTION | 881.12 | 42" = 877.38 (W) | 1677971.5263 | 3156110.6416 | | |
| 5.01 | UNDERGROUND DETENTION OUTLET | 881.47 | 42" = 877.53 (E) | 1677967.7856 | 3155961.2094 | | |

## STORM STRUCTURE TABLE

| STRUCTURE ID | DESCRIPTION | RIM/GRATE | INVERTS | NORTHING | EASTING | CASTING | MISCELLANEOUS NOTES |
|---|---|---|---|---|---|---|---|
| 5.02 | UG DET 36" DIA. RISER | 887.91 | | 1677962.4862 | 3155949.3388 | | |
| 5.03 | UG DET 36" DIA. RISER | 887.31 | | 1677926.4976 | 3155950.2433 | | |
| 6.01 | TYPE 1 MANHOLE | 886.15 | 18" = 879.96 (E)<br>24" = 879.96 (N) | 1677826.5182 | 3155248.8253 | NEENAH R-1642 | |
| 6.02 | 3' CB | 883.35 | 15" = 880.27 (S)<br>18" = 880.27 (W) | 1677831.8138 | 3155371.0609 | NEENAH R-4215-C | |
| 6.03 | 2' CB | 884.15 | 15" = 880.78 (E)<br>15" = 880.78 (N) | 1677628.4798 | 3155387.1571 | NEENAH R-4215-C | |
| 6.04 | 4' MH | 883.49 | 15" = 880.96 (W)<br>6" = 880.96 (E) | 1677631.5095 | 3155457.0915 | | |
| 6.05 | 8" DIA. NYLOPLAST DRAIN BASIN 2808AG | 882.64 | 6" = 881.47 (W) | 1677615.3695 | 3155659.6249 | | |
| 8.00 | CONCRETE COLLAR FOR EX 18" RCP | 887.93 | 18" = 886.13 (E) | 1678006.4230 | 3154816.5790 | | |
| 8.01 | 18" END SECTION | 888.43 | 18" = 886.23 (W) | 1678006.6681 | 3154829.3078 | | |
| 8.02 | 15" END SECTION | 887.49 | 15" = 885.55 (N) | 1678096.2812 | 3154827.4023 | | |
| 8.03 | 15" END SECTION | 887.77 | 15" = 885.83 (S) | 1678233.2540 | 3154824.4897 | | |

## SANITARY STRUCTURE TABLE

| STRUCTURE ID | DESCRIPTION | RIM | INVERTS | NORTHING | EASTING | MISCELLANEOUS NOTES |
|---|---|---|---|---|---|---|
| A | DOGHOUSE SAN MH | 888.21 | 10" = 869.79 (N)<br>12" = 868.67 (W)<br>12" = 868.67 (E) | 1677526.1858 | 3156020.6652 | |
| A.1 | SAN MH | 885.84 | 10" = 870.81 (N)<br>10" = 870.71 (S)<br>6" = 872.50 (E) | 1677754.3198 | 3156014.9544 | |
| A.2 | SAN MH | 887.66 | 6" = 881.61 (W)<br>4" = 883.27 (S)<br>4" = 881.71 (NE) | 1677758.3321 | 3156175.2870 | |
| A.3 | NODE | 884.02 | 4" = 883.65 (SE)<br>4" = 883.65 (W) | 1677758.8122 | 3156194.4729 | |
| A.4 | CLEANOUT | 887.76 | 4" = 883.90 (NW) | 1677750.2618 | 3156203.4624 | |
| A.5 | CLEANOUT | 887.58 | 4" = 881.93 (SW) | 1677764.8328 | 3156184.3979 | |
| B | SAN MH | 887.31 | 10" = 871.49 (N)<br>10" = 871.39 (S) | 1677900.7685 | 3156011.2883 | |
| C | SAN MH | 886.02 | 10" = 872.52 (N)<br>10" = 872.42 (S)<br>8" = 873.06 (W) | 1678131.6740 | 3156005.5081 | |
| D | SAN MH W/ DROP CONNECTION | 886.84 | 6" = 880.43 (W)<br>10" = 873.55 (N)<br>10" = 873.45 (S) | 1678365.5606 | 3155999.6532 | |
| D.1 | CLEANOUT | 888.04 | 6" = 883.03 (E) | 1678364.6098 | 3155961.6693 | |
| E | SAN MH | 884.85 | 10" = 874.53 (W)<br>10" = 874.43 (S) | 1678584.8588 | 3155994.1637 | |
| F | SAN MH | 884.39 | 10" = 875.08 (W)<br>10" = 874.98 (E) | 1678581.5819 | 3155863.0017 | |
| G | SAN MH W/ DROP CONNECTION | 888.41 | 10" = 876.36 (W)<br>6" = 884.02 (S)<br>10" = 876.26 (E) | 1678572.9302 | 3155516.7065 | |
| G.1 | CLEANOUT | 888.82 | 6" = 884.79 (S)<br>6" = 884.79 (N) | 1678561.9388 | 3155516.9815 | |
| G.2 | CONNECT TO MAIN STORE SANITARY SYSTEM | 885.54 | 6" = 885.00 (N) | 1678558.9397 | 3155517.0566 | |
| H | SAN MH | 886.55 | 10" = 877.18 (N)<br>10" = 877.08 (E)<br>8" = 877.18 (W) | 1678567.6399 | 3155304.9572 | |
| H.2 | SAN MH | 889.29 | 10" = 877.52 (S) | 1678669.4005 | 3155302.4096 | |
| H.3 | SAN MH | 887.74 | 8" = 877.54 (E) | 1678565.8540 | 3155233.4742 | |
| I | SAN MH | 887.22 | 8" = 873.92 (W)<br>6" = 875.47 (NW)<br>8" = 873.82 (E) | 1678127.8831 | 3155853.6483 | |
| I.1 | CLEANOUT | 888.95 | 6" = 882.00 (SE) | 1678206.1491 | 3155802.8981 | |
| J | SAN MH W/ DROP CONNECTION | 887.22 | 8" = 875.30 (W)<br>6" = 879.22 (N)<br>8" = 875.20 (E) | 1678121.4947 | 3155597.7280 | |
| J.1 | CLEANOUT | 888.95 | 6" = 885.00 (S) | 1678200.3994 | 3155573.2133 | |
| K | SAN MH | 885.08 | 8" = 877.16 (N)<br>8" = 877.06 (E) | 1678112.6827 | 3155244.7203 | |
| L | SAN MH | 886.79 | 8" = 877.69 (S) | 1678218.8371 | 3155242.0617 | |

## STRUCTURE TABLE NOTES

1. EX = EXISTING.
2. CI = CURB INLET.
3. CB = CATCH BASIN.
4. MH = MANHOLE.
5. CTE = CONNECT TO EXISTING.
6. RIM/GRATE ELEVATION INDICATES:
   - 6.1. FOR MANHOLE, JUNCTION BOX/CLEANOUT: RIM ELEVATION.
   - 6.2. FOR CATCH BASIN: GRATE ELEVATION.
   - 6.3. FOR CURB INLET: TOP OF CASTING/TOP OF CURB ELEVATION.
7. ALL PROPOSED STORM STRUCTURE TYPES SHALL BE IN ACCORDANCE WITH TOWN OF BROWNSBURG CONSTRUCTION STANDARD DETAILS UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL REVIEW CONDITION OF EXISTING STRUCTURES TO REMAIN IN WHICH PROPOSED PIPES ARE PROPOSED TO CONNECT. IF CONDITIONS WARRANT IT, STRUCTURE(S) SHALL BE REPLACED.
9. ALL STORM GRATE CASTINGS TO BE PRE-CAST WITH A POLLUTION PREVENTION MESSAGE PERMANENTLY ATTACHED. PER TOWN OF BROWNSBURG STANDARD DETAILS SW-13 AND SW-14. POLLUTION PREVENTION MESSAGE TO STATE, AT MINIMUM, "DUMP NO WASTE <FISH ICON> DRAINS TO WATERWAY" IN MINIMUM 1 INCH HIGH LETTERS.
10. STORM SEWER PIPING TO BE HIGH DENSITY POLYETHYLENE (HDPE) FOR PIPES 12 TO 24 INCHES IN DIAMETER, POLYPROPYLENE (PP) FOR PIPES 12 TO 60 INCHES IN DIAMETER, POLYVINYL CHLORIDE (PVC) FOR PIPES 12 TO 36 INCHES IN DIAMETER, OR REINFORCED CONCRETE (RCP) FOR PIPES 12 INCHES IN DIAMETER OR LARGER IN ACCORDANCE WITH THE TOWN OF BROWNSBURG CONSTRUCTION STANDARDS, MOST CURRENT EDITION.
11. CONTRACTOR TO SIZE STORM STRUCTURES PER TOWN OF BROWNSBURG STANDARDS.
12. ALL CATCH BASINS AND CURB INLETS SHALL HAVE A 2' SUMP. OUTLET STRUCTURES SHALL NOT HAVE A SUMP.
13. BID ALTERNATE 5: PROVIDE SQUARE CONCRETE COLLARS FOR SANITARY AND STORM STRUCTURES.


WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER STORE #338
9202 E. 56TH STREET
BROWNSBURG, INDIANA 46112

# STRUCTURE DATA TABLES

| ISSUED FOR: | |
|---|---|
| PERMIT | MM/DD/YY |
| BID | MM/DD/YY |
| CONSTRUCTION | MM/DD/YY |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
NS-26-00338

C-402


Images: , Xrefs: 10020046-p.dwg; 10020046-x.dwg; 10020046IBLK.dwg; 10020046-UTL-NOTES.dwg
Layout: C-402
Last Saved By:A.Reedy, 1/9/2025 3:25:45 PM
G:\DE\Clients\Meijer\2026 Open Meijer Stores\10020046 Meijer 338 ABE - Brownsburg, IN Civil\4.0 Disciplines\Civil\Cadd\Cd\10020046UTL2.dwg Plotted By:Reedy, Angela Plotted:January 10, 2025, 2:11:13 PM

# APPENDICES

# SECTION 1:
# DETENTION DESIGN INFORMATION

# 1.1 – HydroCAD INPUTS AND RESULTS – ONSITE RUNOFF

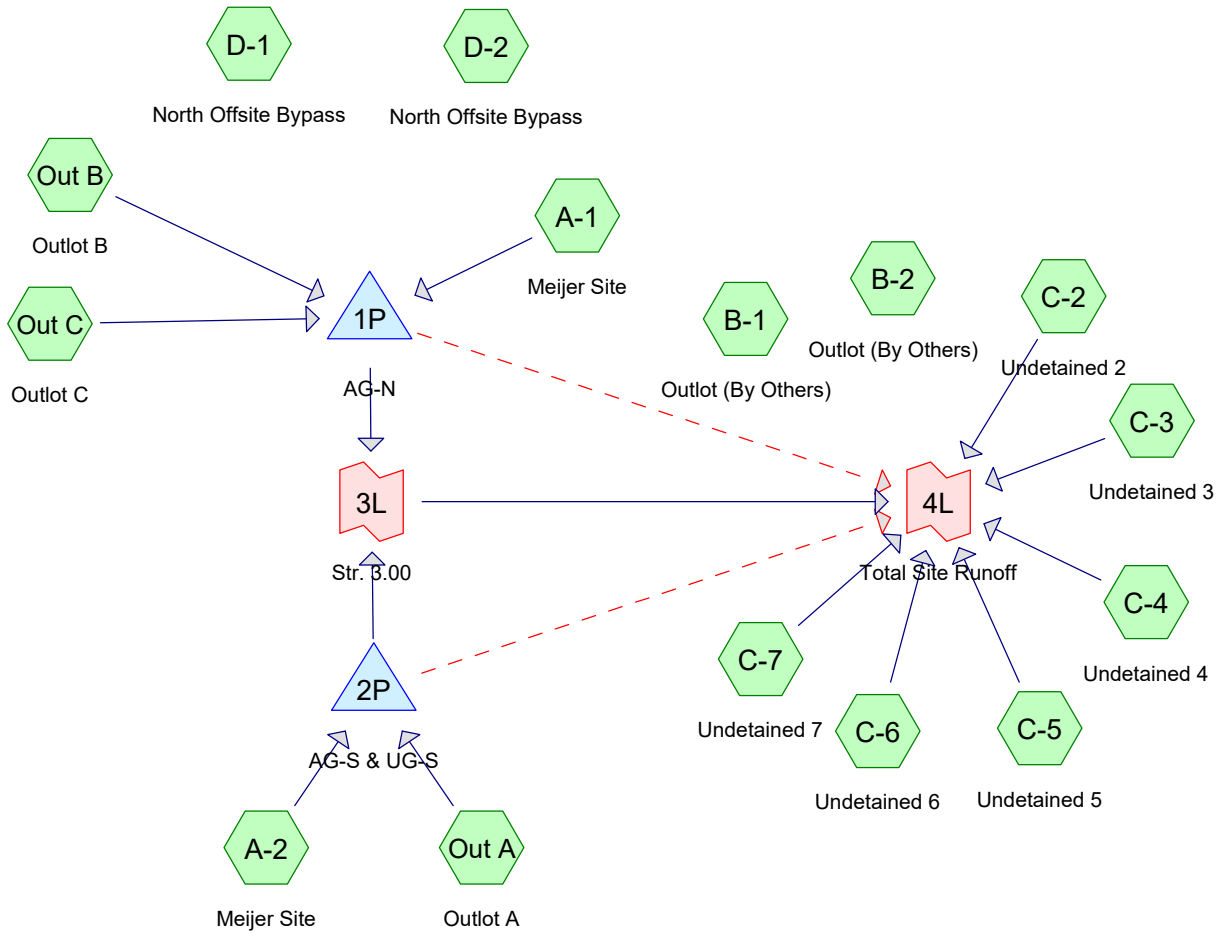
## TABLE OF CONTENTS

**Project Reports**
1 Routing Diagram
2 Rainfall Events Listing (selected events)

**10yr-24hr Event**
3 Node Listing
5 Subcat A-1: Meijer Site
6 Subcat A-2: Meijer Site
7 Subcat B-1: Outlot (By Others)
8 Subcat B-2: Outlot (By Others)
9 Subcat C-2: Undetained 2
10 Subcat C-3: Undetained 3
11 Subcat C-4: Undetained 4
12 Subcat C-5: Undetained 5
13 Subcat C-6: Undetained 6
14 Subcat C-7: Undetained 7
15 Subcat D-1: North Offsite Bypass
16 Subcat D-2: North Offsite Bypass
17 Subcat Out A: Outlot A
18 Subcat Out B: Outlot B
19 Subcat Out C: Outlot C
20 Pond 1P: AG-N
22 Pond 2P: AG-S & UG-S
24 Link 3L: Str. 3.00
25 Link 4L: Total Site Runoff

**100yr-24hr Event**
26 Node Listing
28 Subcat A-1: Meijer Site
29 Subcat A-2: Meijer Site
30 Subcat B-1: Outlot (By Others)
31 Subcat B-2: Outlot (By Others)
32 Subcat C-2: Undetained 2
33 Subcat C-3: Undetained 3
34 Subcat C-4: Undetained 4
35 Subcat C-5: Undetained 5
36 Subcat C-6: Undetained 6
37 Subcat C-7: Undetained 7
38 Subcat D-1: North Offsite Bypass
39 Subcat D-2: North Offsite Bypass
40 Subcat Out A: Outlot A
41 Subcat Out B: Outlot B
42 Subcat Out C: Outlot C
43 Pond 1P: AG-N
45 Pond 2P: AG-S & UG-S
47 Link 3L: Str. 3.00

48 Link 4L: Total Site Runoff




Subcat Reach Pond Link

**Routing Diagram for Meijer ABE SWM**
Prepared by Woolpert, Inc, Printed 1/10/2025
HydroCAD® 10.20-5c s/n 00728 © 2023 HydroCAD Software Solutions LLC

## Rainfall Events Listing (selected events)

| Event# | Event Name | Storm Type | Curve | Mode | Duration (hours) | B/B | Depth (inches) | AMC |
|---|---|---|---|---|---|---|---|---|
| 1 | 10yr-24hr | Type II 24-hr | | Default | 24.00 | 1 | 4.28 | 2 |
| 2 | 100yr-24hr | Type II 24-hr | | Default | 24.00 | 1 | 6.30 | 2 |

Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment A-1: Meijer Site** Runoff Area=16.510 ac 69.41% Impervious Runoff Depth=3.39"
Tc=15.0 min CN=92 Runoff=69.11 cfs 203,077 cf

**Subcatchment A-2: Meijer Site** Runoff Area=5.180 ac 69.31% Impervious Runoff Depth=3.39"
Tc=6.0 min CN=92 Runoff=28.92 cfs 63,715 cf

**Subcatchment B-1: Outlot (By Others)** Runoff Area=1.700 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=263' Tc=6.2 min CN=81 Runoff=7.05 cfs 14,557 cf

**Subcatchment B-2: Outlot (By Others)** Runoff Area=1.800 ac 0.00% Impervious Runoff Depth=2.19"
Flow Length=274' Tc=21.1 min CN=79 Runoff=4.25 cfs 14,330 cf

**Subcatchment C-2: Undetained 2** Runoff Area=0.160 ac 0.00% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=80 Runoff=0.65 cfs 1,321 cf

**Subcatchment C-3: Undetained 3** Runoff Area=0.290 ac 0.00% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=80 Runoff=1.17 cfs 2,395 cf

**Subcatchment C-4: Undetained 4** Runoff Area=0.190 ac 0.00% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=80 Runoff=0.77 cfs 1,569 cf

**Subcatchment C-5: Undetained 5** Runoff Area=0.170 ac 0.00% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=80 Runoff=0.69 cfs 1,404 cf

**Subcatchment C-6: Undetained 6** Runoff Area=0.050 ac 80.00% Impervious Runoff Depth=3.60"
Tc=6.0 min CN=94 Runoff=0.29 cfs 653 cf

**Subcatchment C-7: Undetained 7** Runoff Area=0.190 ac 0.00% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=80 Runoff=0.77 cfs 1,569 cf

**Subcatchment D-1: North Offsite Bypass** Runoff Area=18.480 ac 0.00% Impervious Runoff Depth=3.09"
Flow Length=1,684' Tc=81.9 min CN=89 Runoff=24.12 cfs 207,069 cf

**Subcatchment D-2: North Offsite Bypass** Runoff Area=10.720 ac 0.00% Impervious Runoff Depth=3.09"
Flow Length=952' Tc=28.1 min CN=89 Runoff=29.65 cfs 120,118 cf

**Subcatchment Out A: Outlot A** Runoff Area=3.120 ac 85.00% Impervious Runoff Depth=3.71"
Tc=20.0 min CN=95 Runoff=12.01 cfs 41,988 cf

**Subcatchment Out B: Outlot B** Runoff Area=1.920 ac 85.00% Impervious Runoff Depth=3.71"
Tc=15.0 min CN=95 Runoff=8.50 cfs 25,839 cf

**Subcatchment Out C: Outlot C** Runoff Area=3.820 ac 85.00% Impervious Runoff Depth=3.71"
Tc=15.0 min CN=95 Runoff=16.92 cfs 51,408 cf

**Pond 1P: AG-N** Peak Elev=882.14' Storage=236,943 cf Inflow=94.53 cfs 280,324 cf
Primary=0.91 cfs 178,351 cf Secondary=0.00 cfs 0 cf Outflow=0.91 cfs 178,351 cf

**Pond 2P: AG-S & UG-S** Peak Elev=882.61' Storage=70,517 cf Inflow=36.68 cfs 105,703 cf
Primary=0.95 cfs 105,686 cf Secondary=0.00 cfs 0 cf Outflow=0.95 cfs 105,686 cf

**Link 3L: Str. 3.00** Inflow=1.84 cfs 284,037 cf
Primary=1.84 cfs 284,037 cf

**Link 4L: Total Site Runoff** Inflow=5.62 cfs 292,950 cf
Primary=5.62 cfs 292,950 cf

**Total Runoff Area = 2,800,908 sf Runoff Volume = 751,012 cf Average Runoff Depth = 3.22"**
**64.82% Pervious = 1,815,537 sf 35.18% Impervious = 985,371 sf**

## Summary for Subcatchment A-1: Meijer Site

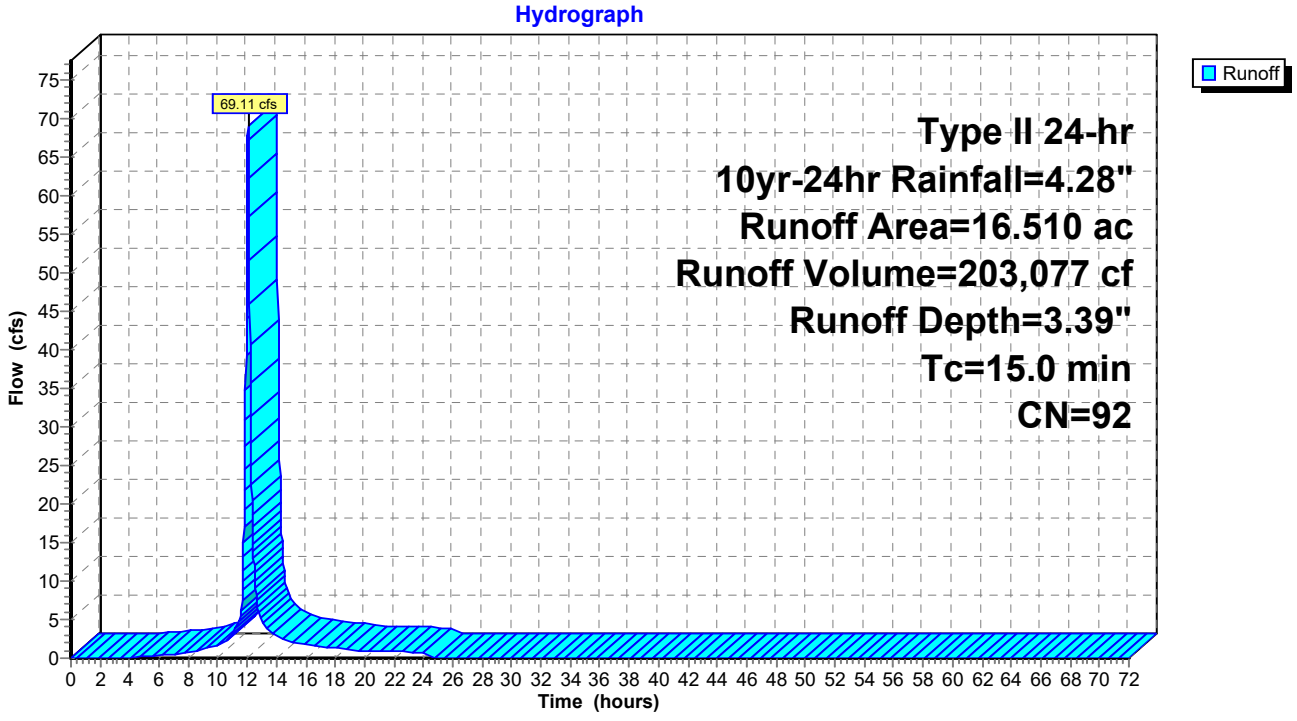
Runoff = 69.11 cfs @ 12.06 hrs, Volume= 203,077 cf, Depth= 3.39"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 11.460 | 98 | Paved parking, HSG D |
| 5.050 | 80 | >75% Grass cover, Good, HSG D |
| 16.510 | 92 | Weighted Average |
| 5.050 | 80 | 30.59% Pervious Area |
| 11.460 | 98 | 69.41% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment A-1: Meijer Site



## Summary for Subcatchment A-2: Meijer Site

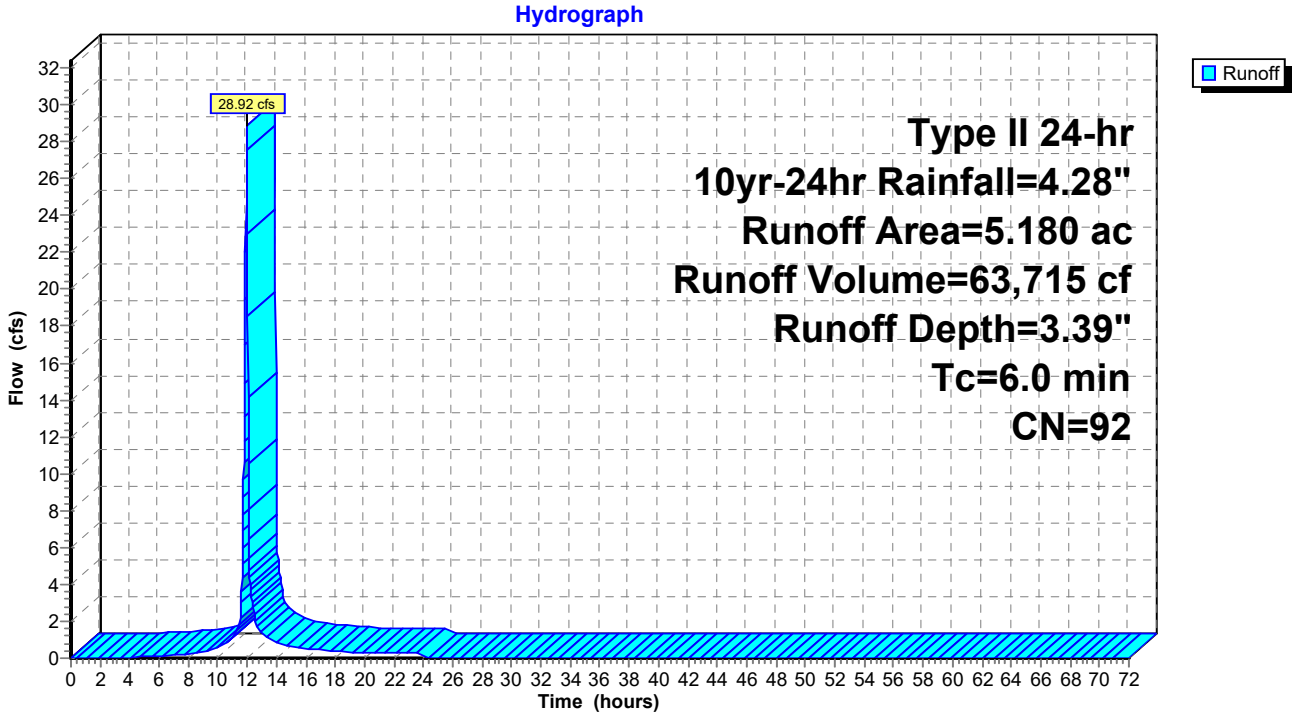
Runoff = 28.92 cfs @ 11.97 hrs, Volume= 63,715 cf, Depth= 3.39"
Routed to Pond 2P : AG-S & UG-S

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 3.590 | 98 | Paved parking, HSG D |
| 1.590 | 80 | >75% Grass cover, Good, HSG D |
| 5.180 | 92 | Weighted Average |
| 1.590 | 80 | 30.69% Pervious Area |
| 3.590 | 98 | 69.31% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment A-2: Meijer Site



## Summary for Subcatchment B-1: Outlot (By Others)

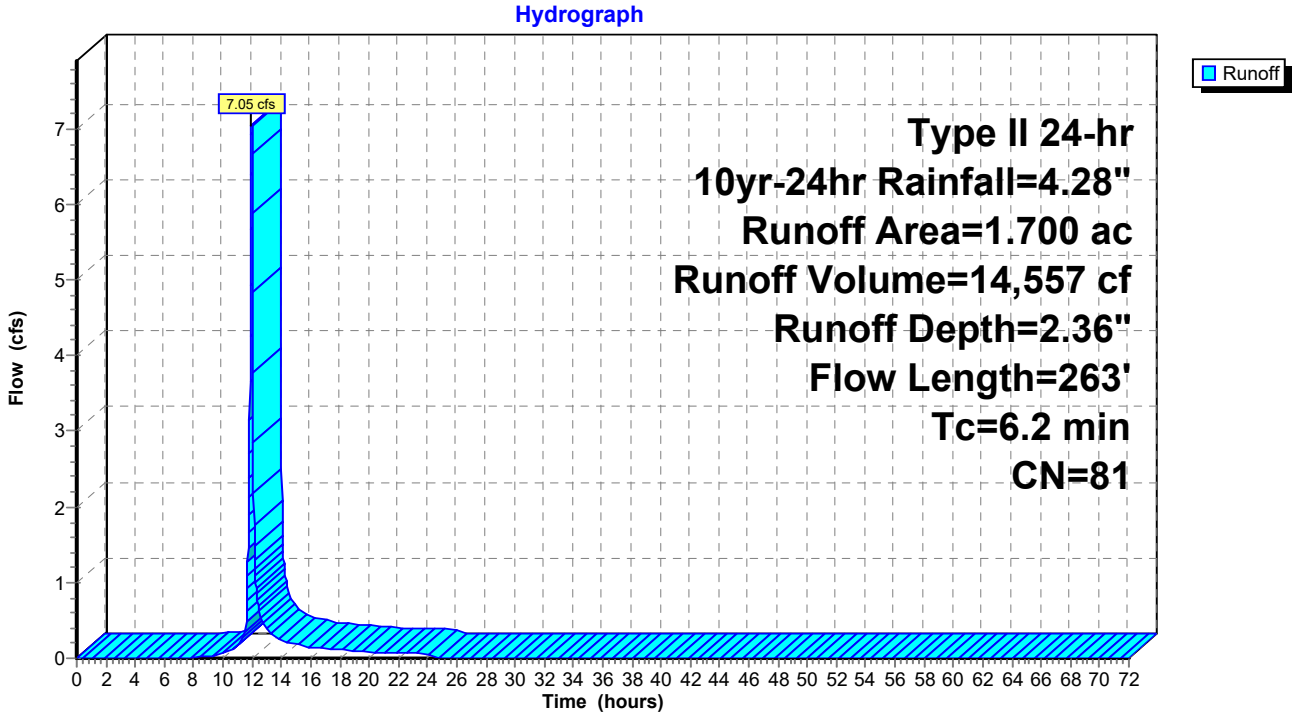
Runoff = 7.05 cfs @ 11.98 hrs, Volume= 14,557 cf, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.000 | 78 | Row crops, straight row, Good, HSG B |
| | 0.700 | 85 | Row crops, straight row, Good, HSG C |
| | 1.700 | 81 | Weighted Average |
| | 1.700 | 81 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 100 | 0.0327 | 0.48 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 2.8 | 163 | 0.0113 | 0.96 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 6.2 | 263 | Total | | | |

## Subcatchment B-1: Outlot (By Others)



## Summary for Subcatchment B-2: Outlot (By Others)

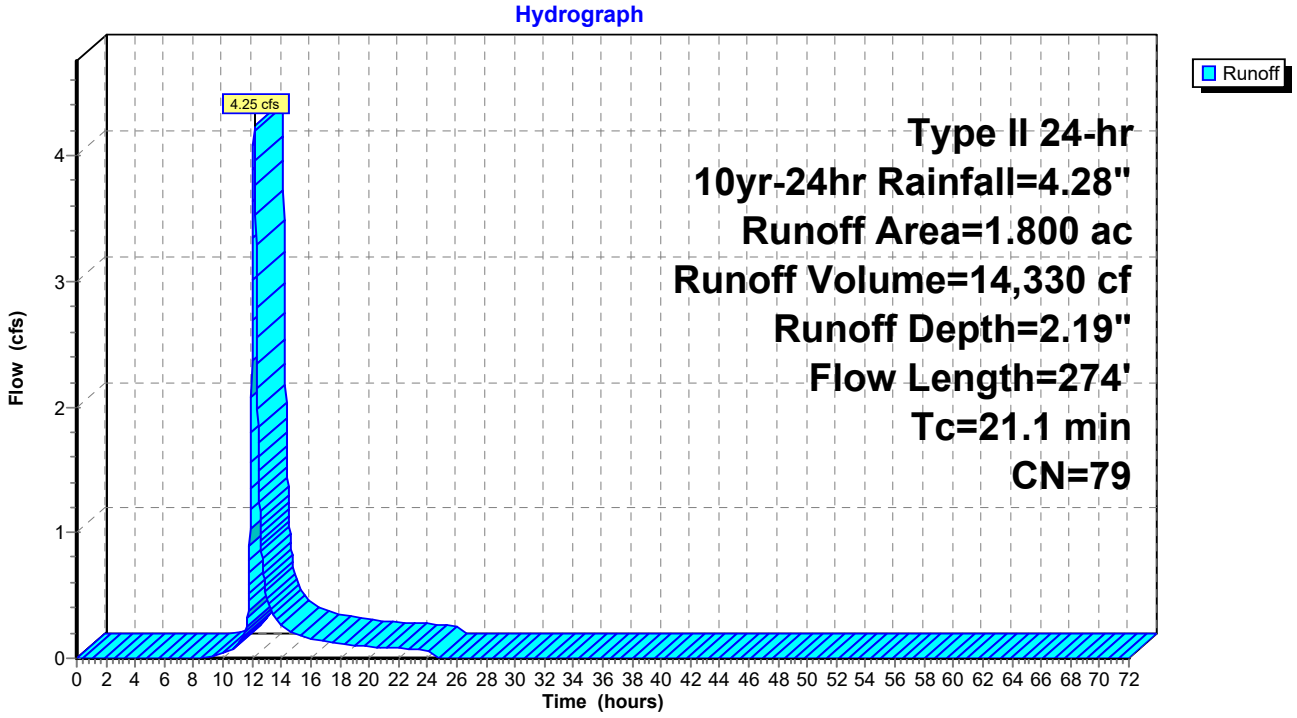
Runoff = 4.25 cfs @ 12.14 hrs, Volume= 14,330 cf, Depth= 2.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.500 | 78 | Row crops, straight row, Good, HSG B |
| | 0.300 | 85 | Row crops, straight row, Good, HSG C |
| | 1.800 | 79 | Weighted Average |
| | 1.800 | 79 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.0 | 100 | 0.0130 | 0.33 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 16.1 | 174 | 0.0004 | 0.18 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 21.1 | 274 | Total | | | |

## Subcatchment B-2: Outlot (By Others)



## Summary for Subcatchment C-2: Undetained 2

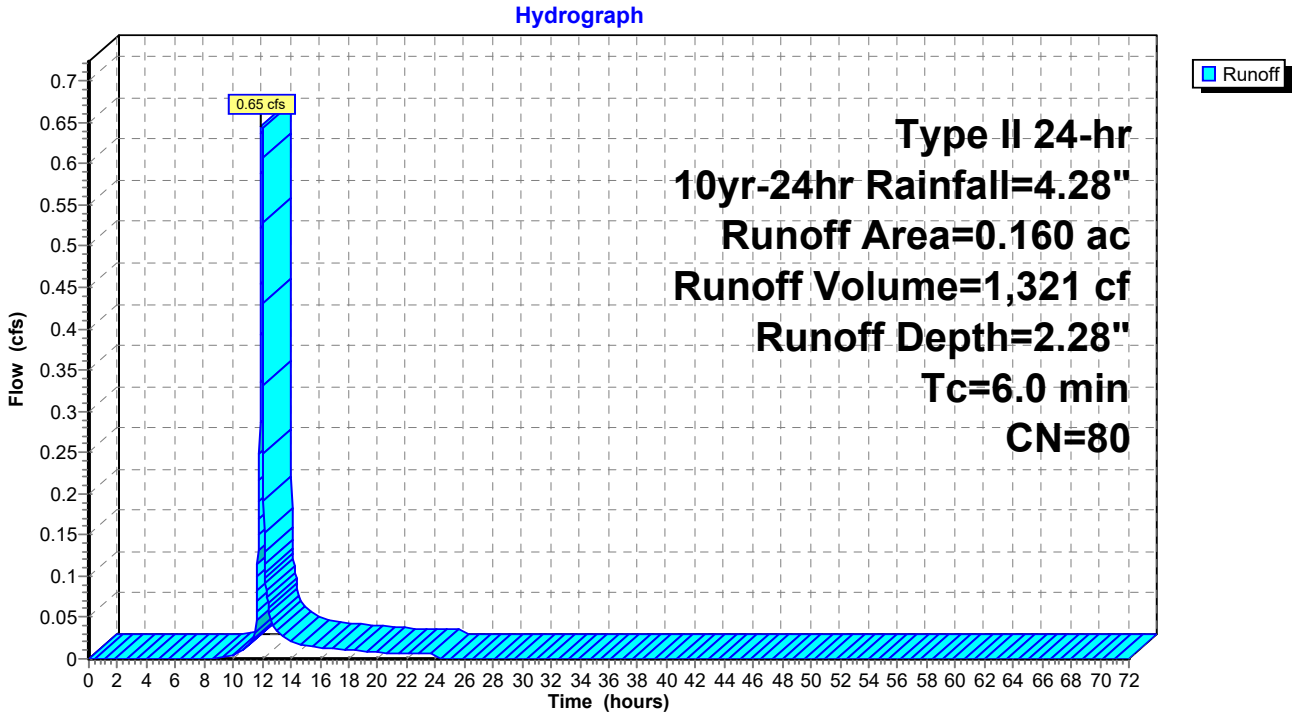
Runoff = 0.65 cfs @ 11.97 hrs, Volume= 1,321 cf, Depth= 2.28"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 80 | >75% Grass cover, Good, HSG D |
| 0.160 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment C-2: Undetained 2



## Summary for Subcatchment C-3: Undetained 3

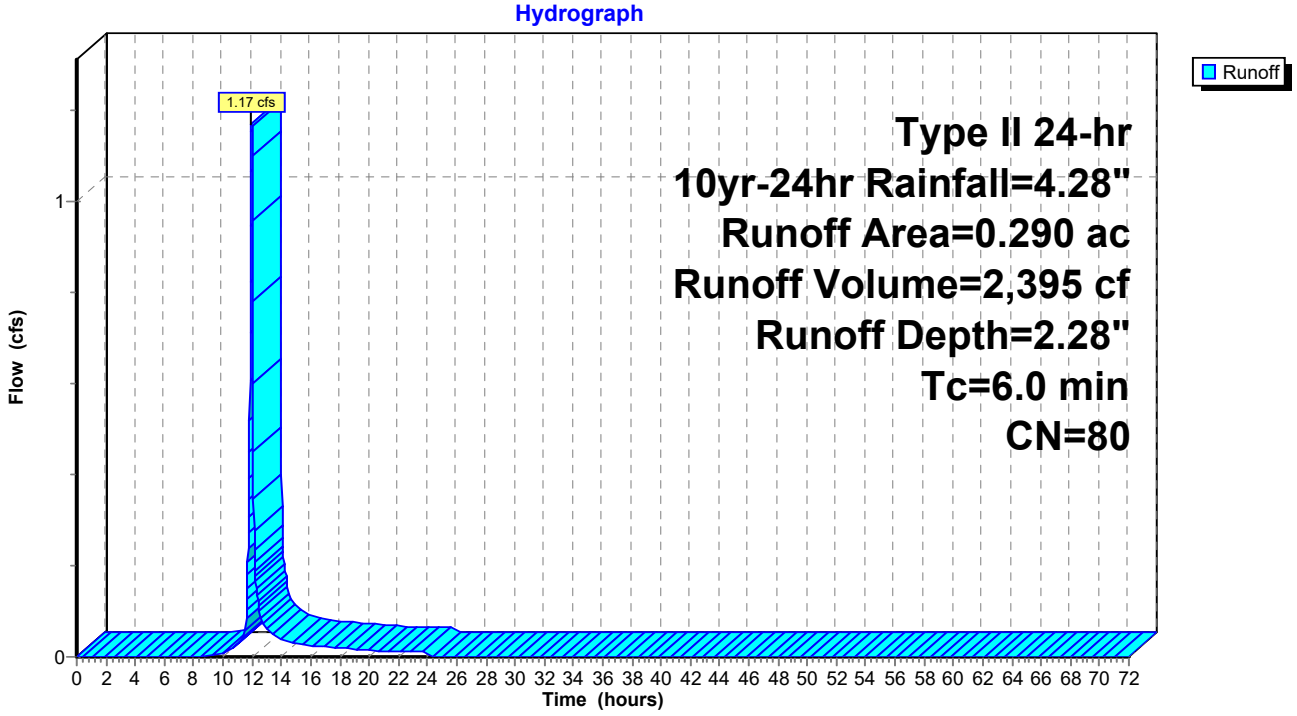
Runoff = 1.17 cfs @ 11.97 hrs, Volume= 2,395 cf, Depth= 2.28"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.290 | 80 | >75% Grass cover, Good, HSG D |
| 0.290 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment C-3: Undetained 3



## Summary for Subcatchment C-4: Undetained 4

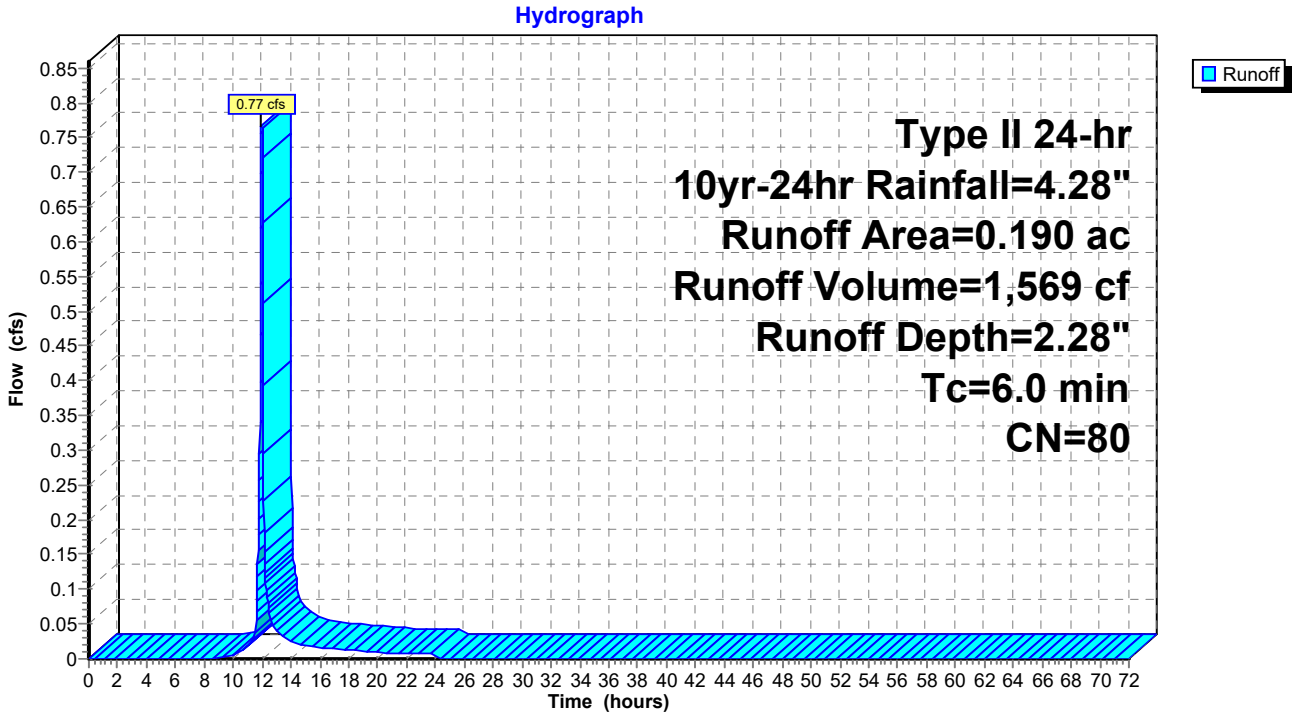
Runoff = 0.77 cfs @ 11.97 hrs, Volume= 1,569 cf, Depth= 2.28"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.190 | 80 | >75% Grass cover, Good, HSG D |
| 0.190 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment C-4: Undetained 4



## Summary for Subcatchment C-5: Undetained 5

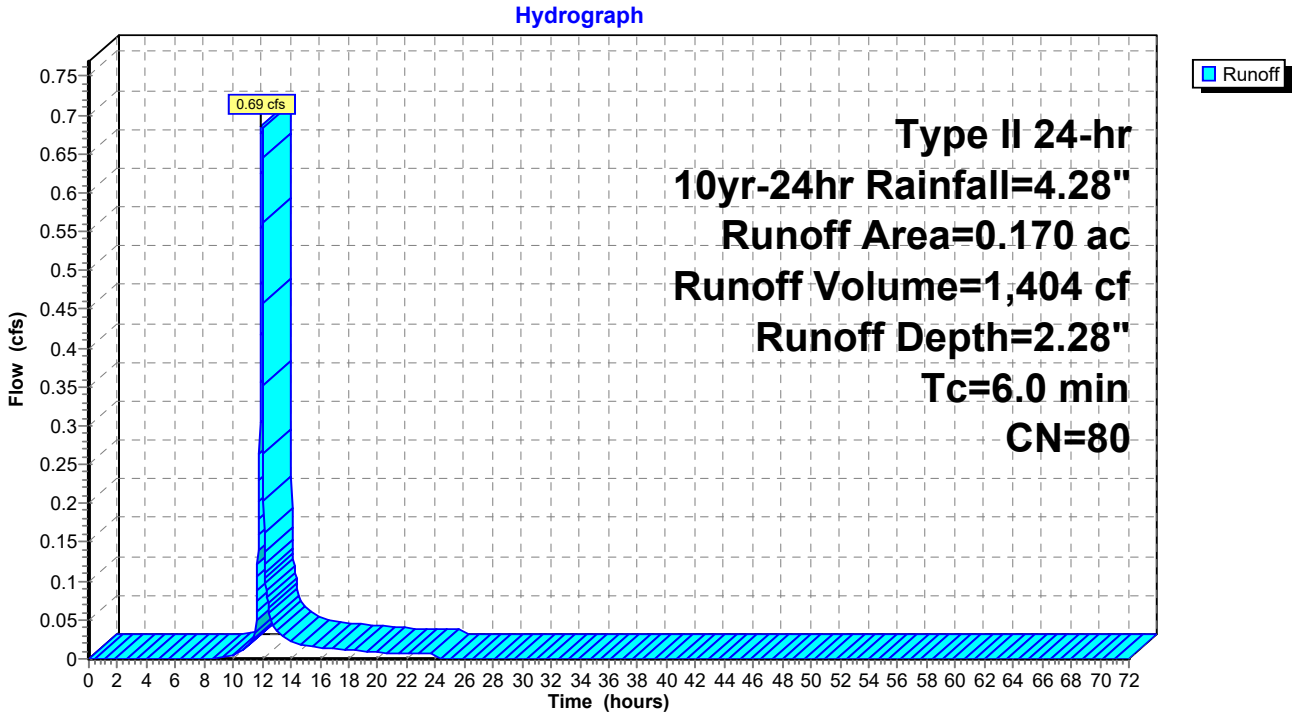
Runoff = 0.69 cfs @ 11.97 hrs, Volume= 1,404 cf, Depth= 2.28"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.170 | 80 | >75% Grass cover, Good, HSG D |
| 0.170 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment C-5: Undetained 5



## Summary for Subcatchment C-6: Undetained 6

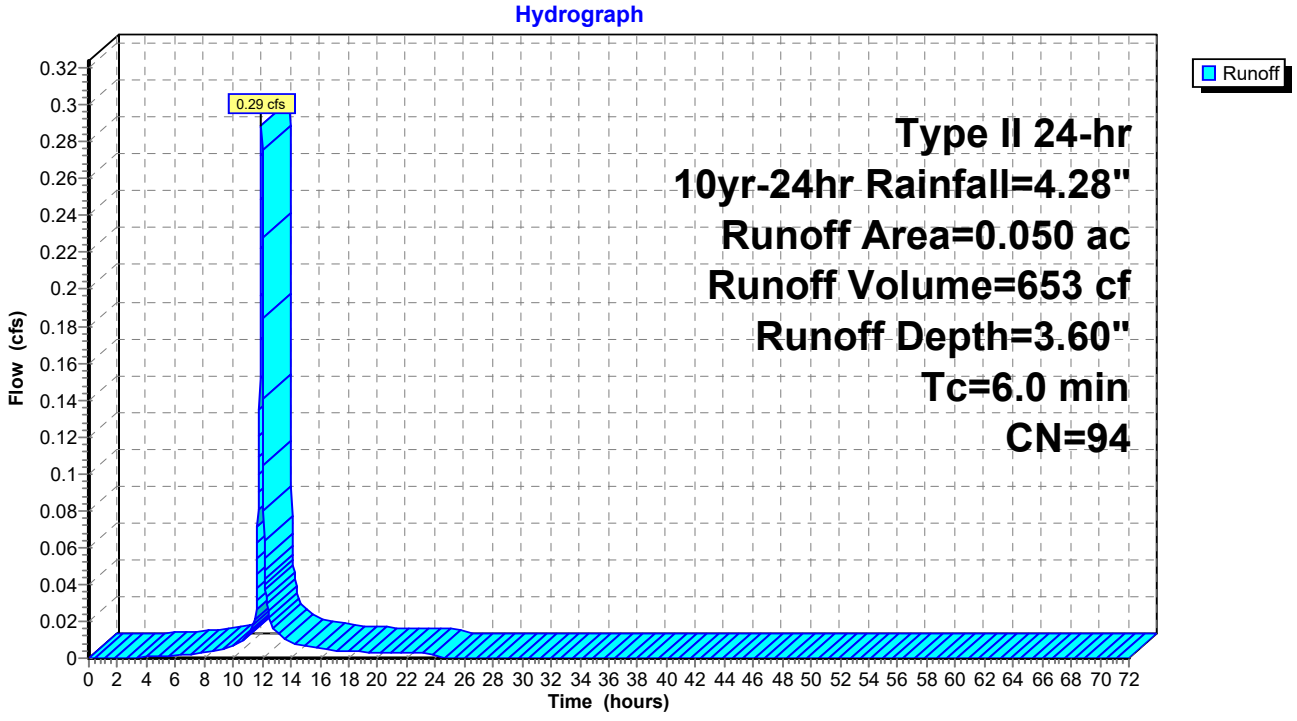
Runoff = 0.29 cfs @ 11.97 hrs, Volume= 653 cf, Depth= 3.60"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.040 | 98 | Paved parking, HSG D |
| 0.010 | 80 | >75% Grass cover, Good, HSG D |
| 0.050 | 94 | Weighted Average |
| 0.010 | 80 | 20.00% Pervious Area |
| 0.040 | 98 | 80.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment C-6: Undetained 6



## Summary for Subcatchment C-7: Undetained 7

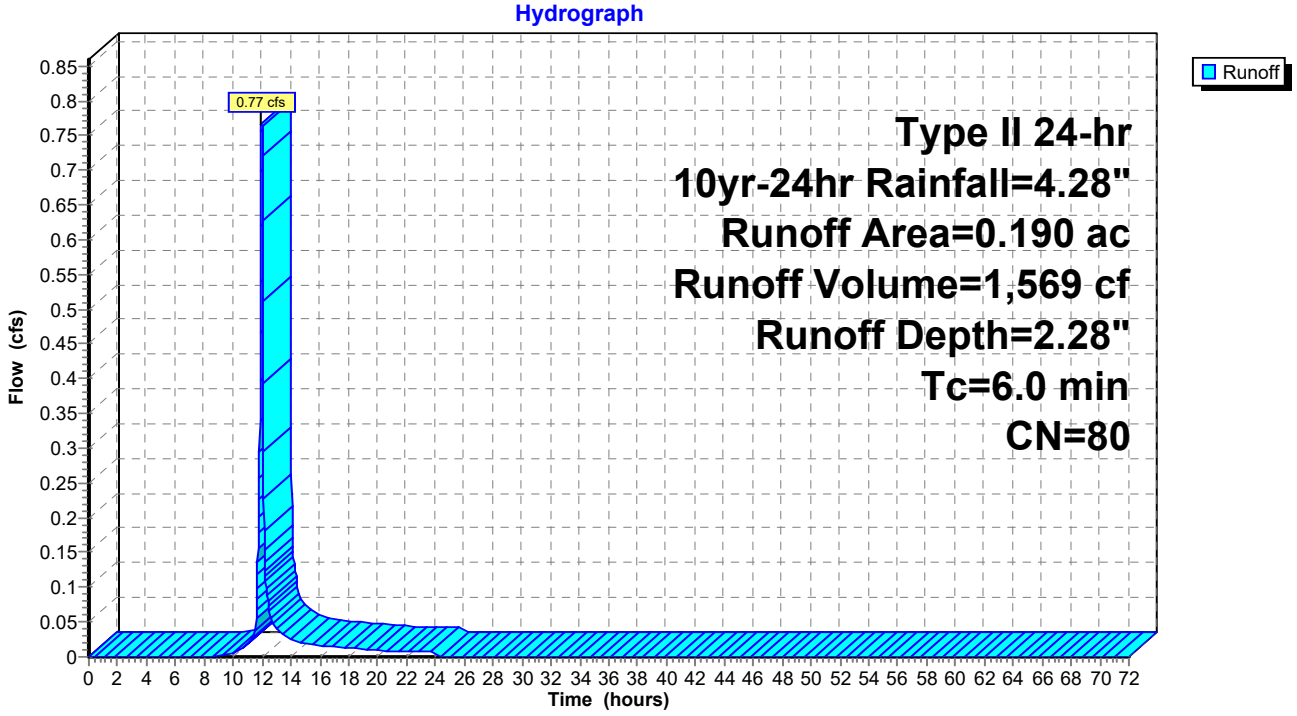
Runoff = 0.77 cfs @ 11.97 hrs, Volume= 1,569 cf, Depth= 2.28"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.190 | 80 | >75% Grass cover, Good, HSG D |
| 0.190 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment C-7: Undetained 7



## Summary for Subcatchment D-1: North Offsite Bypass

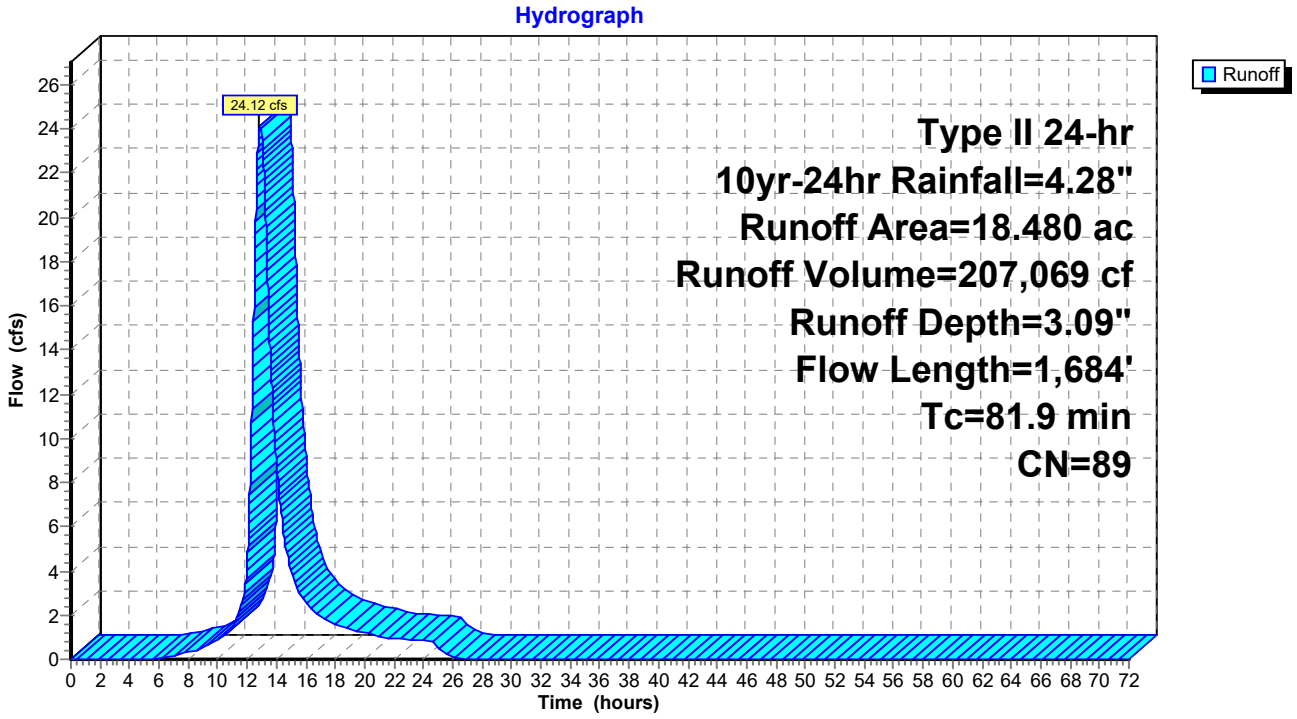
Runoff = 24.12 cfs @ 12.85 hrs, Volume= 207,069 cf, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 18.480 | 89 | Row crops, straight row, Good, HSG D |
| 18.480 | 89 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.2 | 100 | 0.0075 | 0.27 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 75.7 | 1,584 | 0.0015 | 0.35 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 81.9 | 1,684 | Total | | | |

## Subcatchment D-1: North Offsite Bypass



## Summary for Subcatchment D-2: North Offsite Bypass

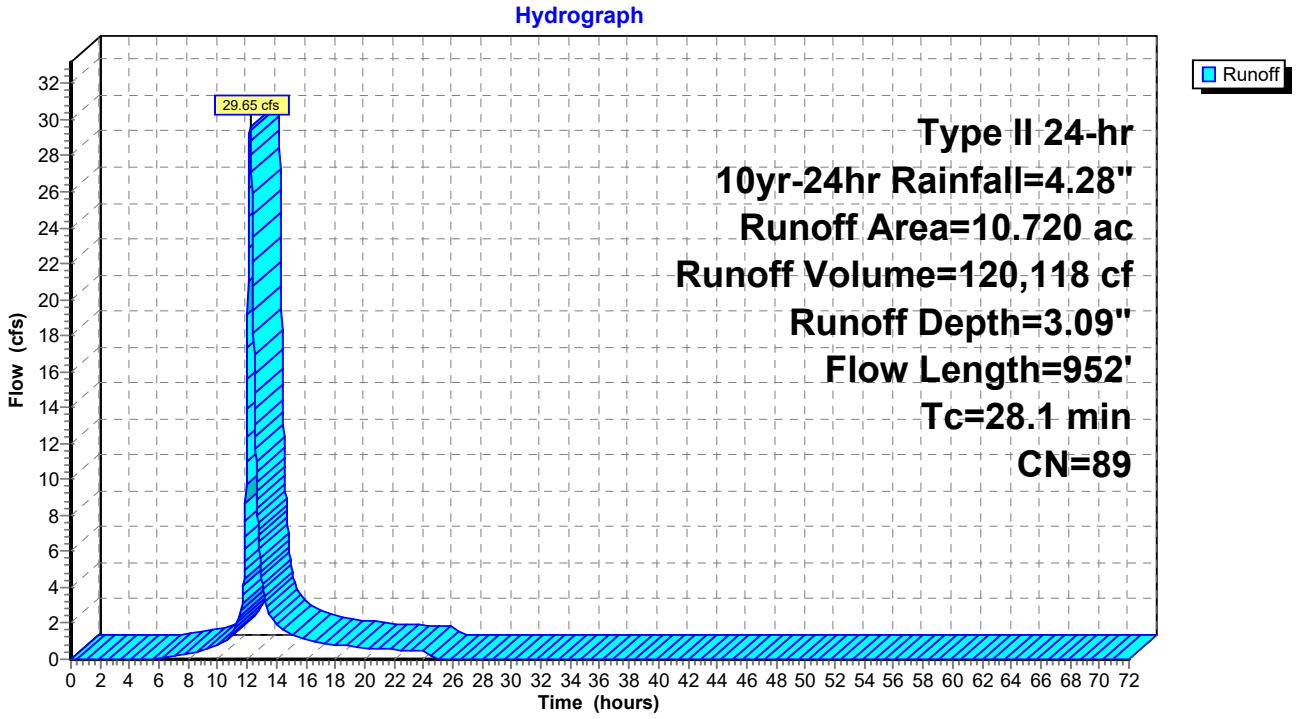
Runoff = 29.65 cfs @ 12.21 hrs, Volume= 120,118 cf, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 10.720 | 89 | Row crops, straight row, Good, HSG D |
| 10.720 | 89 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.8 | 100 | 0.0090 | 0.29 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 22.3 | 852 | 0.0050 | 0.64 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 28.1 | 952 | Total | | | |

### Subcatchment D-2: North Offsite Bypass



## Summary for Subcatchment Out A: Outlot A

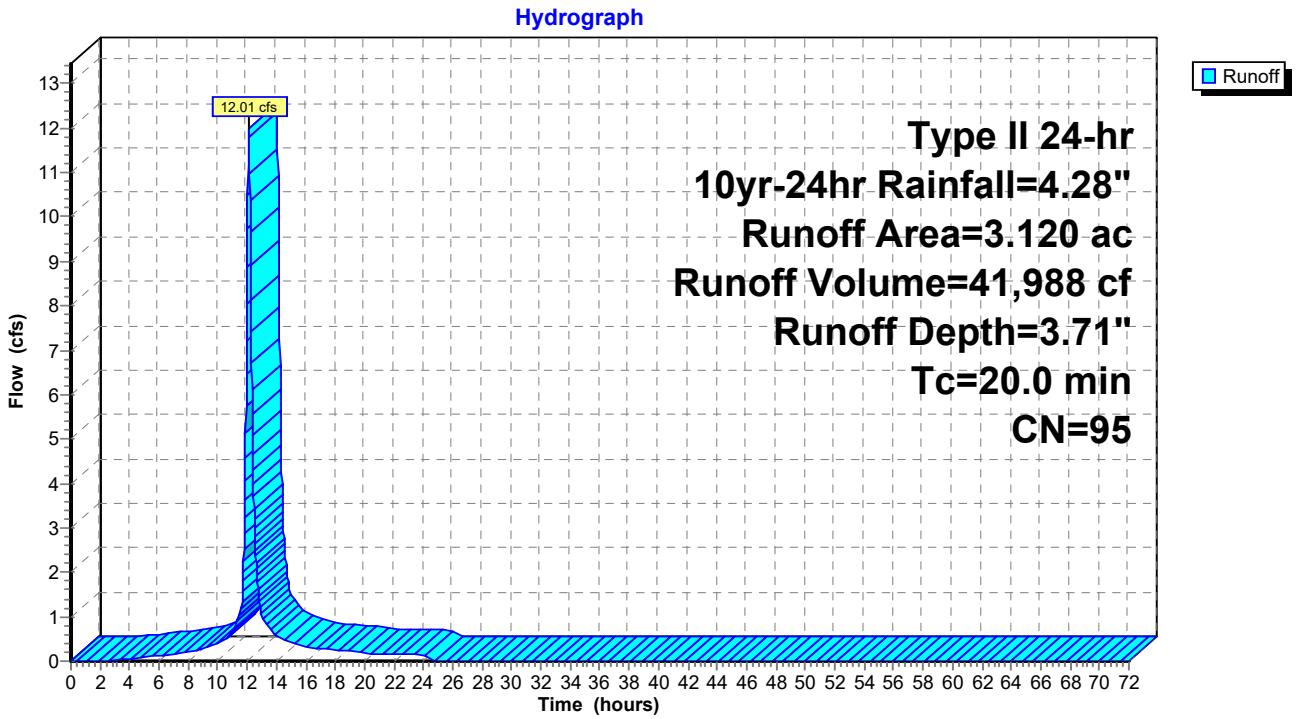
Runoff = 12.01 cfs @ 12.12 hrs, Volume= 41,988 cf, Depth= 3.71"
Routed to Pond 2P : AG-S & UG-S

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 3.120 | 95 | Urban commercial, 85% imp, HSG D |
| 0.468 | 78 | 15.00% Pervious Area |
| 2.652 | 98 | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 20.0 | | | | | **Direct Entry,** |

## Subcatchment Out A: Outlot A



## Summary for Subcatchment Out B: Outlot B

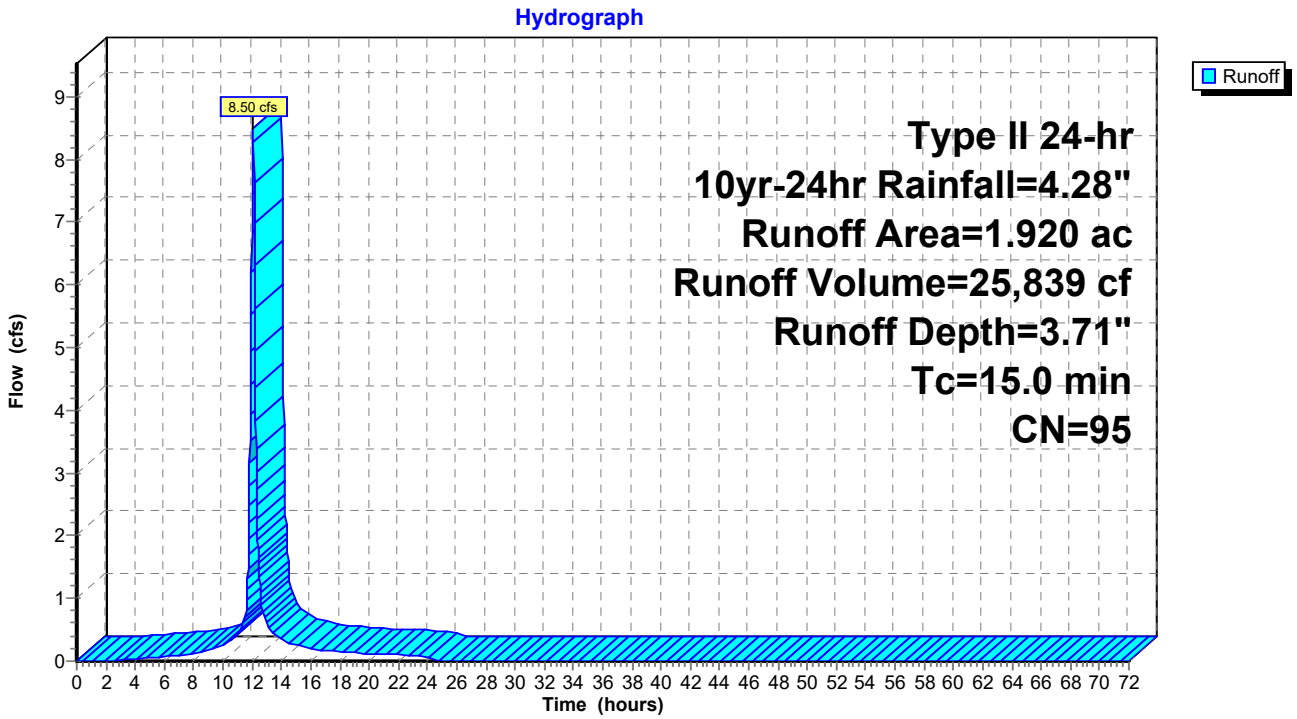
Runoff = 8.50 cfs @ 12.06 hrs, Volume= 25,839 cf, Depth= 3.71"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 1.920 | 95 | Urban commercial, 85% imp, HSG D |
| 0.288 | 78 | 15.00% Pervious Area |
| 1.632 | 98 | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment Out B: Outlot B



## Summary for Subcatchment Out C: Outlot C

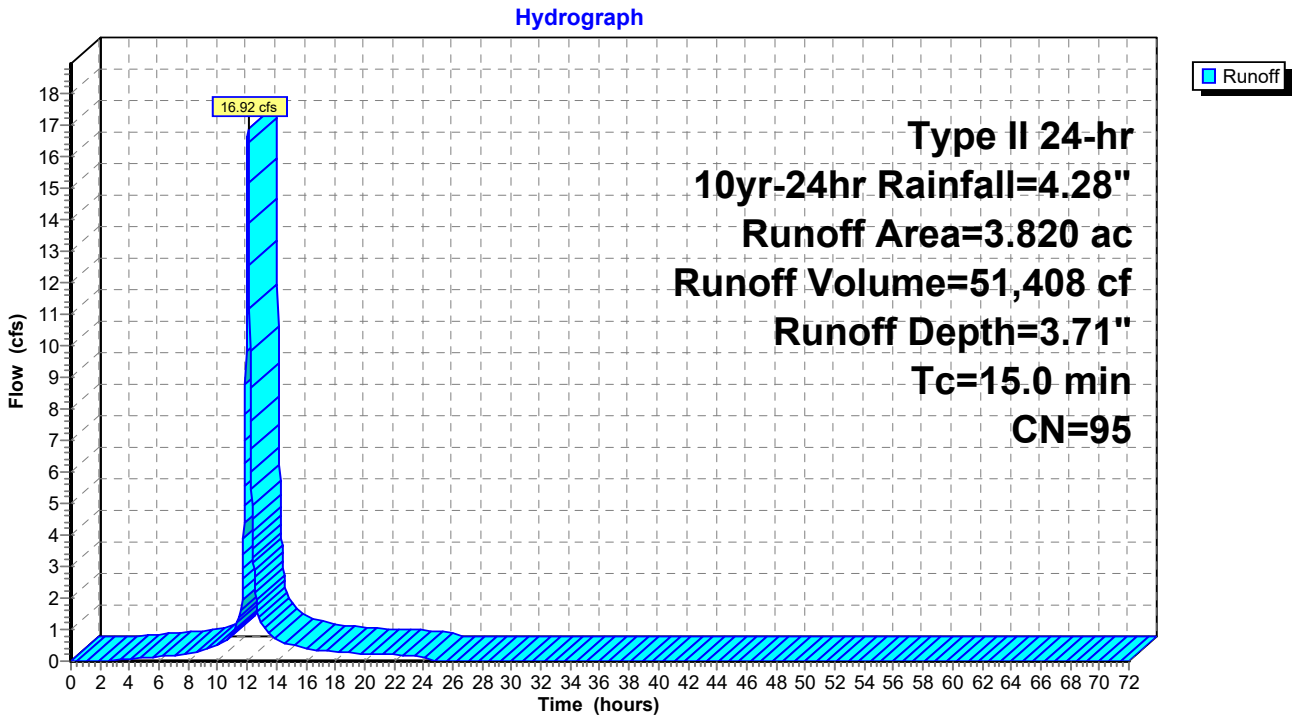
Runoff = 16.92 cfs @ 12.06 hrs, Volume= 51,408 cf, Depth= 3.71"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 3.820 | 95 | Urban commercial, 85% imp, HSG D |
| 0.573 | 78 | 15.00% Pervious Area |
| 3.247 | 98 | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment Out C: Outlot C



## Summary for Pond 1P: AG-N

Inflow Area = 969,210 sf, 73.43% Impervious, Inflow Depth = 3.47" for 10yr-24hr event
Inflow = 94.53 cfs @ 12.06 hrs, Volume= 280,324 cf
Outflow = 0.91 cfs @ 24.12 hrs, Volume= 178,351 cf, Atten= 99%, Lag= 723.4 min
Primary = 0.91 cfs @ 24.12 hrs, Volume= 178,351 cf
Routed to Link 3L : Str. 3.00
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 4L : Total Site Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs / 3
Peak Elev= 882.14' @ 24.12 hrs Surf.Area= 68,682 sf Storage= 236,943 cf

Plug-Flow detention time= 1,692.1 min calculated for 178,302 cf (64% of inflow)
Center-of-Mass det. time= 1,590.5 min ( 2,379.0 - 788.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 877.29' | 573,880 cf | **Custom Stage Data (Irregular)** Listed below (Recalc) |

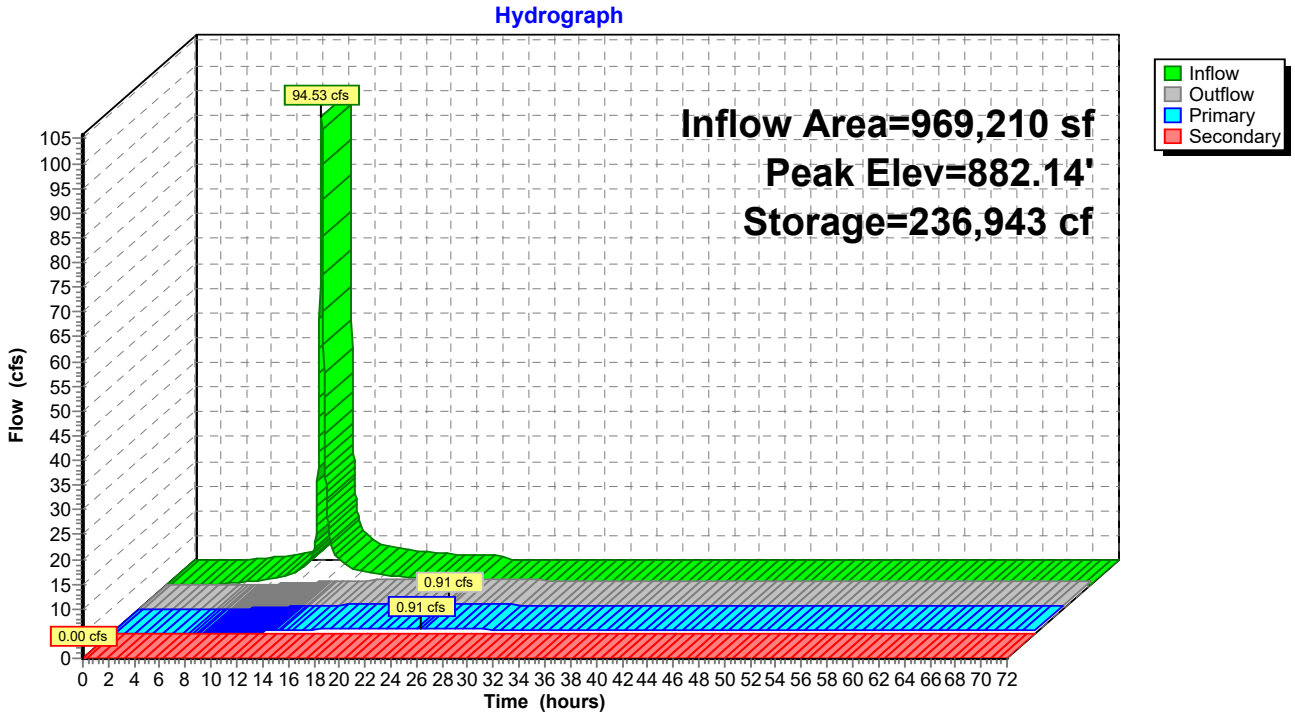
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 877.29 | 33,121 | 1,437.0 | 0 | 0 | 33,121 |
| 878.00 | 37,072 | 1,579.0 | 24,905 | 24,905 | 67,219 |
| 879.00 | 42,856 | 1,793.0 | 39,929 | 64,834 | 124,667 |
| 880.00 | 49,752 | 2,010.0 | 46,261 | 111,096 | 190,366 |
| 881.00 | 57,879 | 2,227.0 | 53,764 | 164,860 | 263,563 |
| 882.00 | 67,238 | 2,444.0 | 62,500 | 227,360 | 344,257 |
| 883.00 | 77,811 | 2,659.0 | 72,460 | 299,820 | 431,602 |
| 884.00 | 87,356 | 2,779.0 | 82,537 | 382,358 | 483,602 |
| 884.64 | 92,754 | 2,793.0 | 57,627 | 439,984 | 490,061 |
| 885.00 | 95,775 | 2,800.0 | 33,934 | 473,918 | 493,335 |
| 886.00 | 104,208 | 2,819.0 | 99,962 | 573,880 | 502,283 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 877.29' | **12.0" Round Culvert**<br>L= 24.0' RCP, sq.cut end projecting, Ke= 0.500<br>Inlet / Outlet Invert= 877.29' / 877.22' S= 0.0029 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |
| #2 | Device 1 | 877.29' | **4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 882.14' | **12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #4 | Secondary | 884.54' | **110.0' long + 3.0 '/' SideZ x 26.2' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 |

**Primary OutFlow** Max=0.91 cfs @ 24.12 hrs HW=882.14' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.91 cfs of 7.89 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.91 cfs @ 10.42 fps)
└**3=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.11 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=877.29' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond 1P: AG-N


Hydrograph
Inflow Area=969,210 sf
Peak Elev=882.14'
Storage=236,943 cf
94.53 cfs
0.91 cfs
0.91 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

## Summary for Pond 2P: AG-S & UG-S

Inflow Area = 361,548 sf, 75.20% Impervious, Inflow Depth = 3.51" for 10yr-24hr event
Inflow = 36.68 cfs @ 11.98 hrs, Volume= 105,703 cf
Outflow = 0.95 cfs @ 15.57 hrs, Volume= 105,686 cf, Atten= 97%, Lag= 215.7 min
Primary = 0.95 cfs @ 15.57 hrs, Volume= 105,686 cf
Routed to Link 3L : Str. 3.00
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 4L : Total Site Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs / 3
Peak Elev= 882.61' @ 15.57 hrs Surf.Area= 20,190 sf Storage= 70,517 cf

Plug-Flow detention time= 866.2 min calculated for 105,686 cf (100% of inflow)
Center-of-Mass det. time= 866.1 min ( 1,649.5 - 783.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 877.38' | 43,614 cf | **Custom Stage Data (Irregular)** Listed below (Recalc) |
| #2A | 877.53' | 22,031 cf | **80.00'W x 180.82'L x 7.00'H Underground Detention**<br>101,259 cf Overall - 46,183 cf Embedded = 55,076 cf x 40.0% Voids |
| #3A | 878.03' | 46,183 cf | **CMP Round 72** x 9 Inside #2<br>Effective Size= 72.0"W x 72.0"H => 28.27 sf x 20.00'L = 565.5 cf<br>Overall Size= 72.0"W x 72.0"H x 20.00'L<br>Row Length Adjustment= +152.82' x 28.27 sf x 9 rows<br>78.00' Header x 28.27 sf x 1 = 2,205.4 cf Inside |
| | | 111,827 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 877.38 | 1,605 | 205.0 | 0 | 0 | 1,605 |
| 878.00 | 2,000 | 220.0 | 1,115 | 1,115 | 2,129 |
| 879.00 | 2,697 | 245.0 | 2,340 | 3,455 | 3,083 |
| 880.00 | 3,462 | 265.0 | 3,072 | 6,527 | 3,934 |
| 881.00 | 4,284 | 284.0 | 3,866 | 10,392 | 4,808 |
| 882.00 | 5,163 | 303.0 | 4,717 | 15,109 | 5,743 |
| 883.00 | 6,098 | 321.0 | 5,624 | 20,733 | 6,690 |
| 884.00 | 7,090 | 340.0 | 6,588 | 27,321 | 7,742 |
| 885.00 | 8,138 | 359.0 | 7,608 | 34,929 | 8,855 |
| 885.90 | 9,130 | 376.0 | 7,766 | 42,695 | 9,903 |
| 886.00 | 9,248 | 378.0 | 919 | 43,614 | 10,029 |

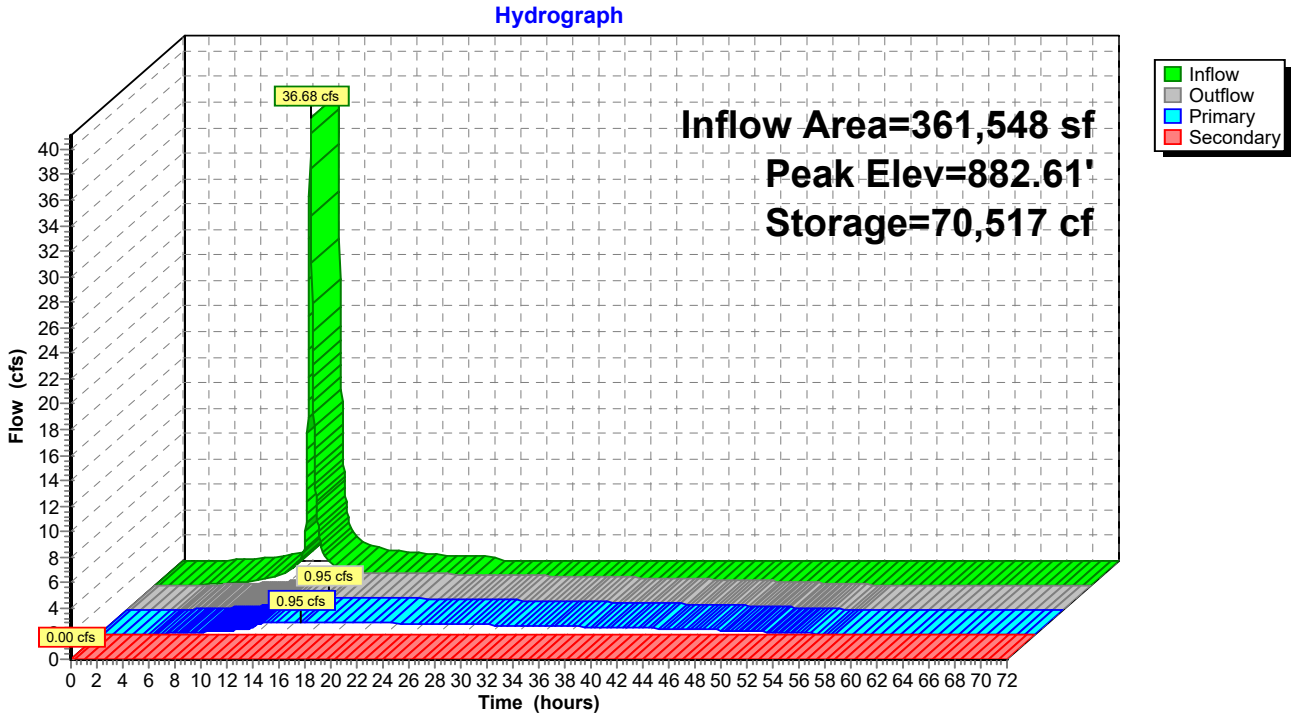
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 877.38' | **15.0" Round Culvert**<br>L= 40.0' RCP, sq.cut end projecting, Ke= 0.500<br>Inlet / Outlet Invert= 877.38' / 877.22' S= 0.0040 '/' Cc= 0.900<br>n= 0.012, Flow Area= 1.23 sf |
| #2 | Device 1 | 877.38' | **4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 882.61' | **12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #4 | Secondary | 885.40' | **25.0' long + 3.0 '/' SideZ x 53.8' breadth Broad-Crested Rectangular Weir** |

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=0.95 cfs @ 15.57 hrs HW=882.61' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.95 cfs of 12.68 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 0.95 cfs @ 10.83 fps)
  └─**3=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=877.38' TW=0.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir**( Controls 0.00 cfs)

## Pond 2P: AG-S & UG-S

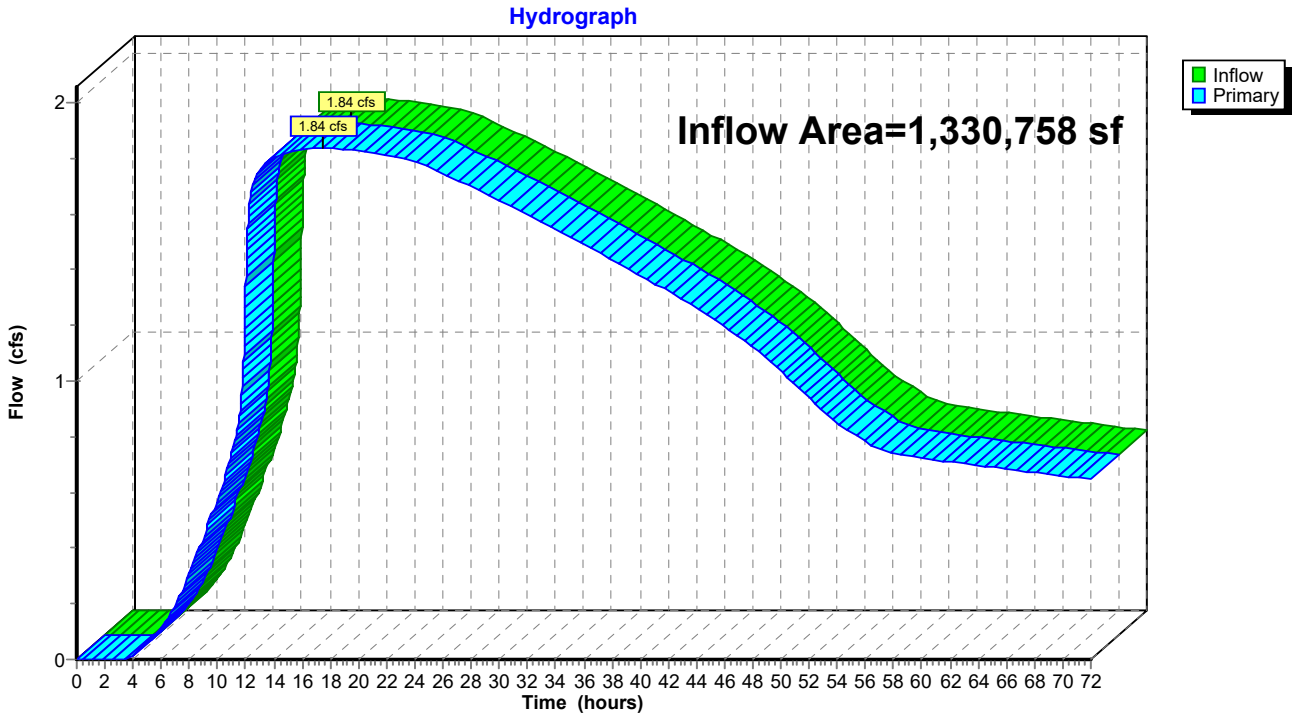


## Summary for Link 3L: Str. 3.00

Inflow Area = 1,330,758 sf, 73.91% Impervious, Inflow Depth > 2.56" for 10yr-24hr event
Inflow = 1.84 cfs @ 17.43 hrs, Volume= 284,037 cf
Primary = 1.84 cfs @ 17.43 hrs, Volume= 284,037 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total Site Runoff

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

### Link 3L: Str. 3.00

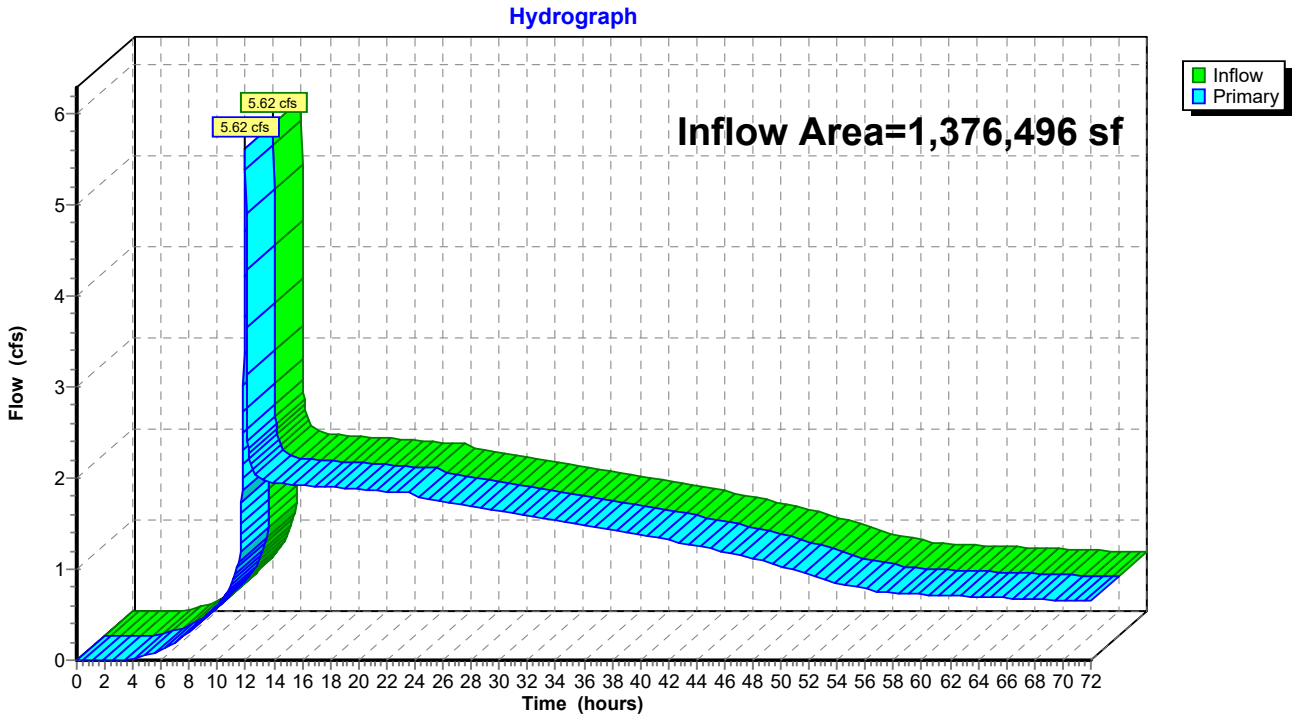


## Summary for Link 4L: Total Site Runoff

Inflow Area = 1,376,496 sf, 71.59% Impervious, Inflow Depth > 2.55" for 10yr-24hr event
Inflow = 5.62 cfs @ 11.98 hrs, Volume= 292,950 cf
Primary = 5.62 cfs @ 11.98 hrs, Volume= 292,950 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

## Link 4L: Total Site Runoff



Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment A-1: Meijer Site** Runoff Area=16.510 ac 69.41% Impervious Runoff Depth=5.36"
Tc=15.0 min CN=92 Runoff=106.61 cfs 321,508 cf

**Subcatchment A-2: Meijer Site** Runoff Area=5.180 ac 69.31% Impervious Runoff Depth=5.36"
Tc=6.0 min CN=92 Runoff=44.40 cfs 100,873 cf

**Subcatchment B-1: Outlot (By Others)** Runoff Area=1.700 ac 0.00% Impervious Runoff Depth=4.16"
Flow Length=263' Tc=6.2 min CN=81 Runoff=12.14 cfs 25,660 cf

**Subcatchment B-2: Outlot (By Others)** Runoff Area=1.800 ac 0.00% Impervious Runoff Depth=3.95"
Flow Length=274' Tc=21.1 min CN=79 Runoff=7.64 cfs 25,801 cf

**Subcatchment C-2: Undetained 2** Runoff Area=0.160 ac 0.00% Impervious Runoff Depth=4.05"
Tc=6.0 min CN=80 Runoff=1.13 cfs 2,354 cf

**Subcatchment C-3: Undetained 3** Runoff Area=0.290 ac 0.00% Impervious Runoff Depth=4.05"
Tc=6.0 min CN=80 Runoff=2.04 cfs 4,267 cf

**Subcatchment C-4: Undetained 4** Runoff Area=0.190 ac 0.00% Impervious Runoff Depth=4.05"
Tc=6.0 min CN=80 Runoff=1.34 cfs 2,795 cf

**Subcatchment C-5: Undetained 5** Runoff Area=0.170 ac 0.00% Impervious Runoff Depth=4.05"
Tc=6.0 min CN=80 Runoff=1.20 cfs 2,501 cf

**Subcatchment C-6: Undetained 6** Runoff Area=0.050 ac 80.00% Impervious Runoff Depth=5.59"
Tc=6.0 min CN=94 Runoff=0.44 cfs 1,015 cf

**Subcatchment C-7: Undetained 7** Runoff Area=0.190 ac 0.00% Impervious Runoff Depth=4.05"
Tc=6.0 min CN=80 Runoff=1.34 cfs 2,795 cf

**Subcatchment D-1: North Offsite Bypass** Runoff Area=18.480 ac 0.00% Impervious Runoff Depth=5.03"
Flow Length=1,684' Tc=81.9 min CN=89 Runoff=38.79 cfs 337,185 cf

**Subcatchment D-2: North Offsite Bypass** Runoff Area=10.720 ac 0.00% Impervious Runoff Depth=5.03"
Flow Length=952' Tc=28.1 min CN=89 Runoff=47.37 cfs 195,597 cf

**Subcatchment Out A: Outlot A** Runoff Area=3.120 ac 85.00% Impervious Runoff Depth=5.71"
Tc=20.0 min CN=95 Runoff=18.08 cfs 64,665 cf

**Subcatchment Out B: Outlot B** Runoff Area=1.920 ac 85.00% Impervious Runoff Depth=5.71"
Tc=15.0 min CN=95 Runoff=12.79 cfs 39,794 cf

**Subcatchment Out C: Outlot C** Runoff Area=3.820 ac 85.00% Impervious Runoff Depth=5.71"
Tc=15.0 min CN=95 Runoff=25.45 cfs 79,173 cf

**Pond 1P: AG-N** Peak Elev=883.27' Storage=320,793 cf Inflow=144.85 cfs 440,475 cf
Primary=4.00 cfs 314,892 cf Secondary=0.00 cfs 0 cf Outflow=4.00 cfs 314,892 cf

**Pond 2P: AG-S & UG-S** Peak Elev=884.29' Storage=96,191 cf Inflow=56.14 cfs 165,538 cf
Primary=5.19 cfs 165,518 cf Secondary=0.00 cfs 0 cf Outflow=5.19 cfs 165,518 cf

**Link 3L: Str. 3.00** Inflow=8.48 cfs 480,410 cf
Primary=8.48 cfs 480,410 cf

**Link 4L: Total Site Runoff** Inflow=9.08 cfs 496,137 cf
Primary=9.08 cfs 496,137 cf

**Total Runoff Area = 2,800,908 sf Runoff Volume = 1,205,983 cf Average Runoff Depth = 5.17"**
**64.82% Pervious = 1,815,537 sf 35.18% Impervious = 985,371 sf**

## Summary for Subcatchment A-1: Meijer Site

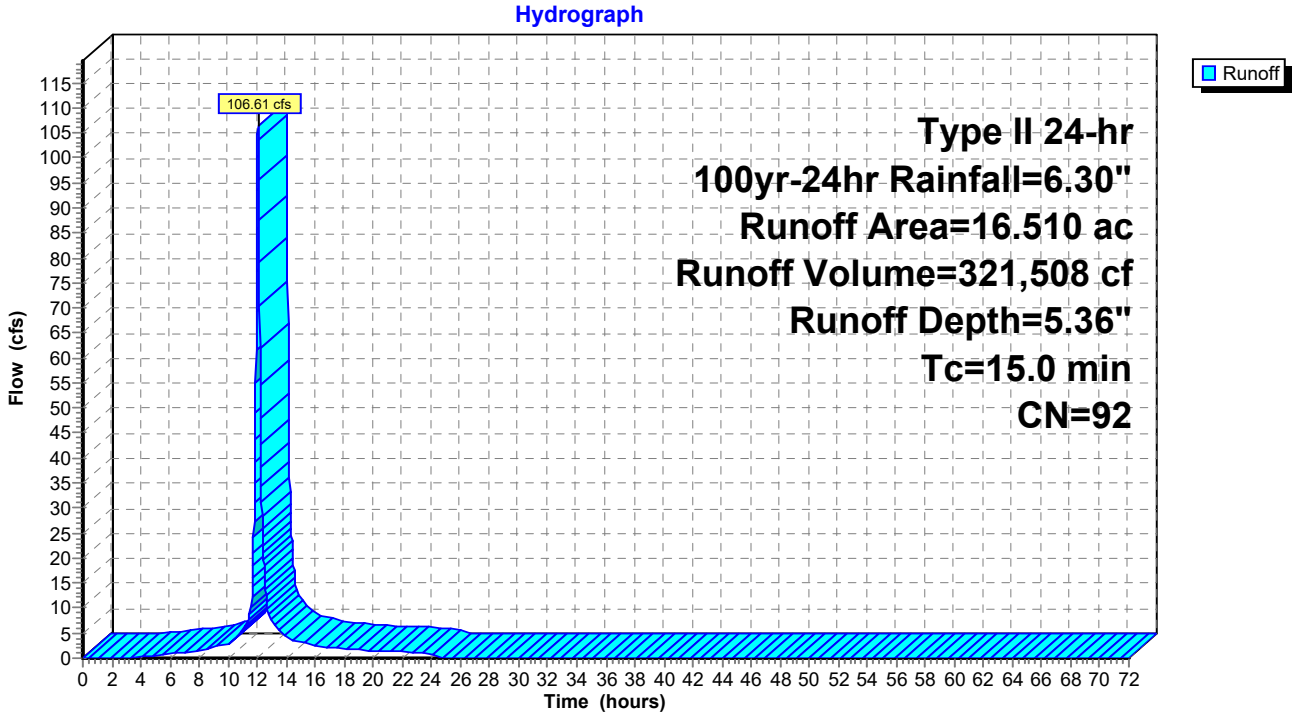
Runoff = 106.61 cfs @ 12.06 hrs, Volume= 321,508 cf, Depth= 5.36"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 11.460 | 98 | Paved parking, HSG D |
| 5.050 | 80 | >75% Grass cover, Good, HSG D |
| 16.510 | 92 | Weighted Average |
| 5.050 | 80 | 30.59% Pervious Area |
| 11.460 | 98 | 69.41% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment A-1: Meijer Site



## Summary for Subcatchment A-2: Meijer Site

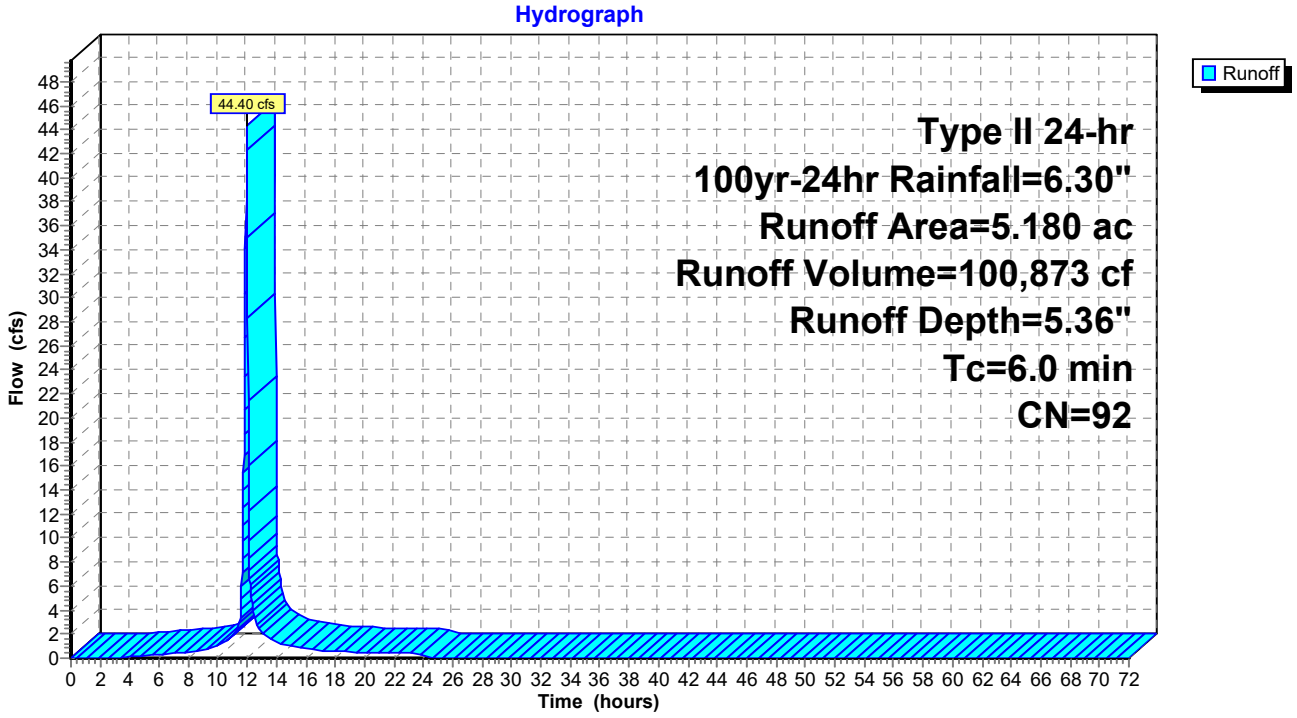
Runoff = 44.40 cfs @ 11.97 hrs, Volume= 100,873 cf, Depth= 5.36"
Routed to Pond 2P : AG-S & UG-S

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 3.590 | 98 | Paved parking, HSG D |
| 1.590 | 80 | >75% Grass cover, Good, HSG D |
| 5.180 | 92 | Weighted Average |
| 1.590 | 80 | 30.69% Pervious Area |
| 3.590 | 98 | 69.31% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment A-2: Meijer Site



## Summary for Subcatchment B-1: Outlot (By Others)

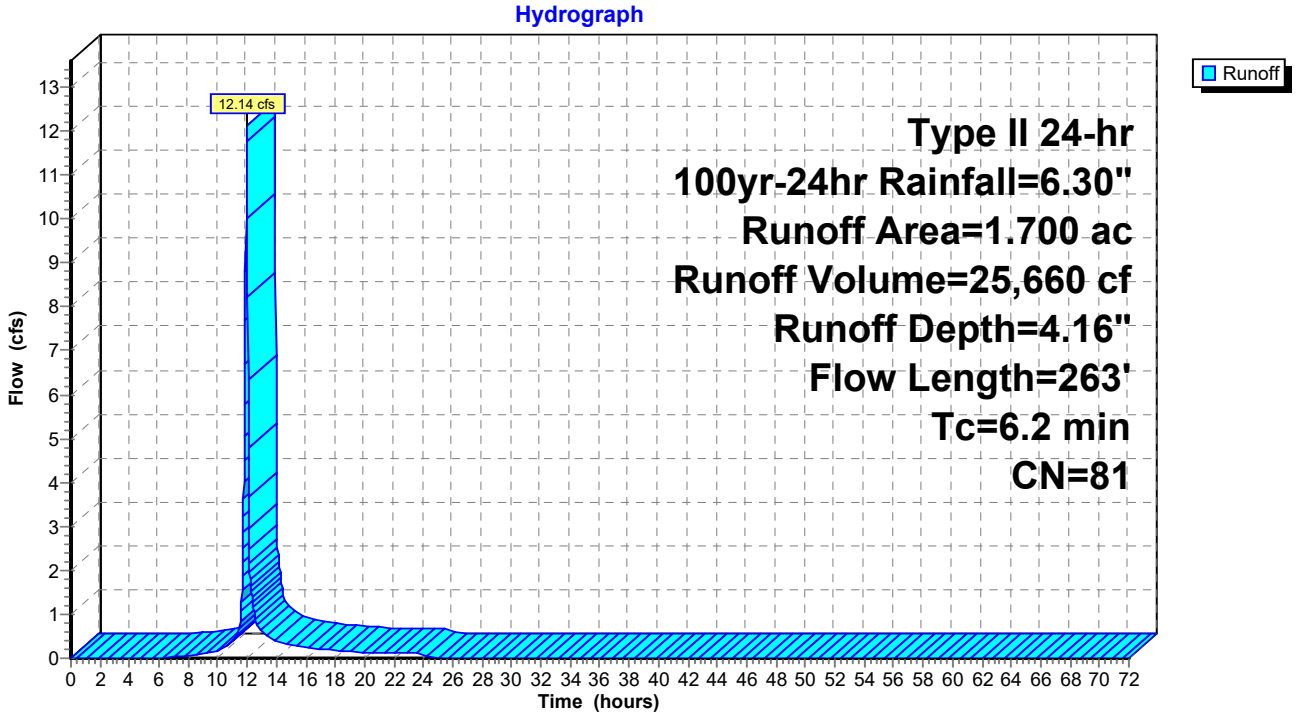
Runoff = 12.14 cfs @ 11.97 hrs, Volume= 25,660 cf, Depth= 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.000 | 78 | Row crops, straight row, Good, HSG B |
| | 0.700 | 85 | Row crops, straight row, Good, HSG C |
| | 1.700 | 81 | Weighted Average |
| | 1.700 | 81 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 100 | 0.0327 | 0.48 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 2.8 | 163 | 0.0113 | 0.96 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 6.2 | 263 | Total | | | |

## Subcatchment B-1: Outlot (By Others)



## Summary for Subcatchment B-2: Outlot (By Others)

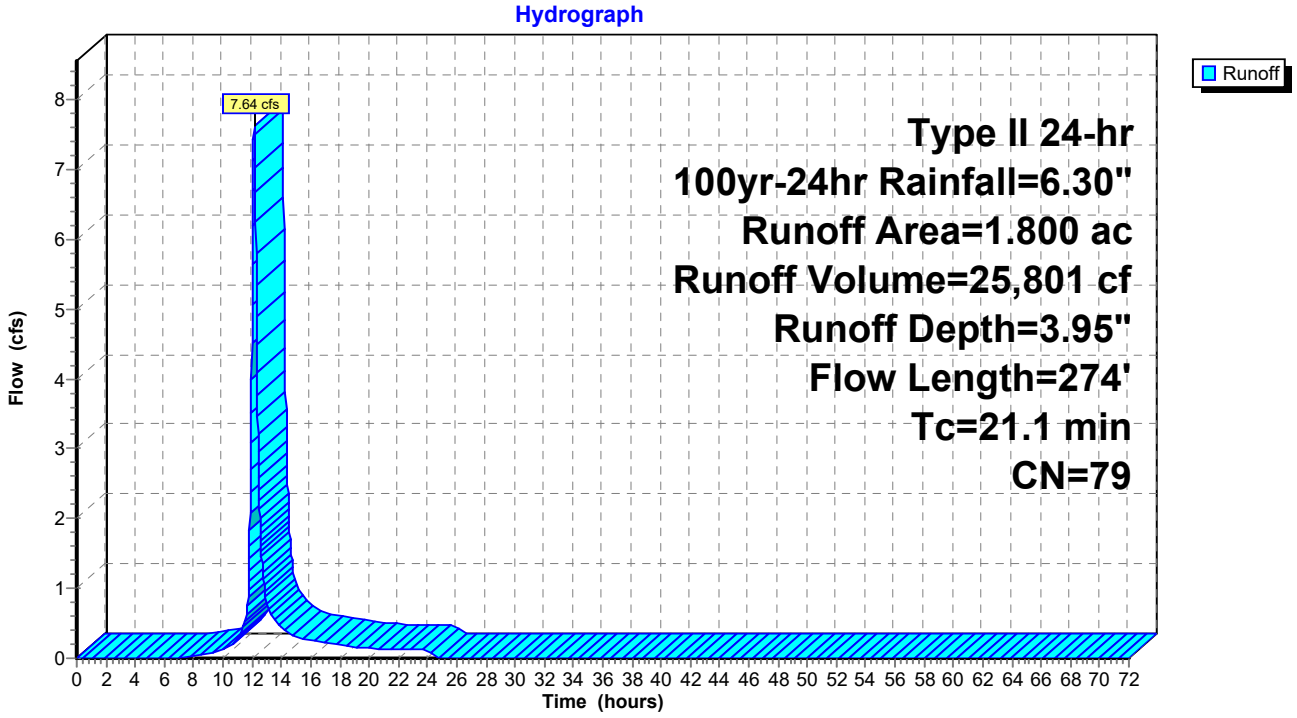
Runoff = 7.64 cfs @ 12.13 hrs, Volume= 25,801 cf, Depth= 3.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.500 | 78 | Row crops, straight row, Good, HSG B |
| | 0.300 | 85 | Row crops, straight row, Good, HSG C |
| | 1.800 | 79 | Weighted Average |
| | 1.800 | 79 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.0 | 100 | 0.0130 | 0.33 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 16.1 | 174 | 0.0004 | 0.18 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 21.1 | 274 | Total | | | |

## Subcatchment B-2: Outlot (By Others)



## Summary for Subcatchment C-2: Undetained 2

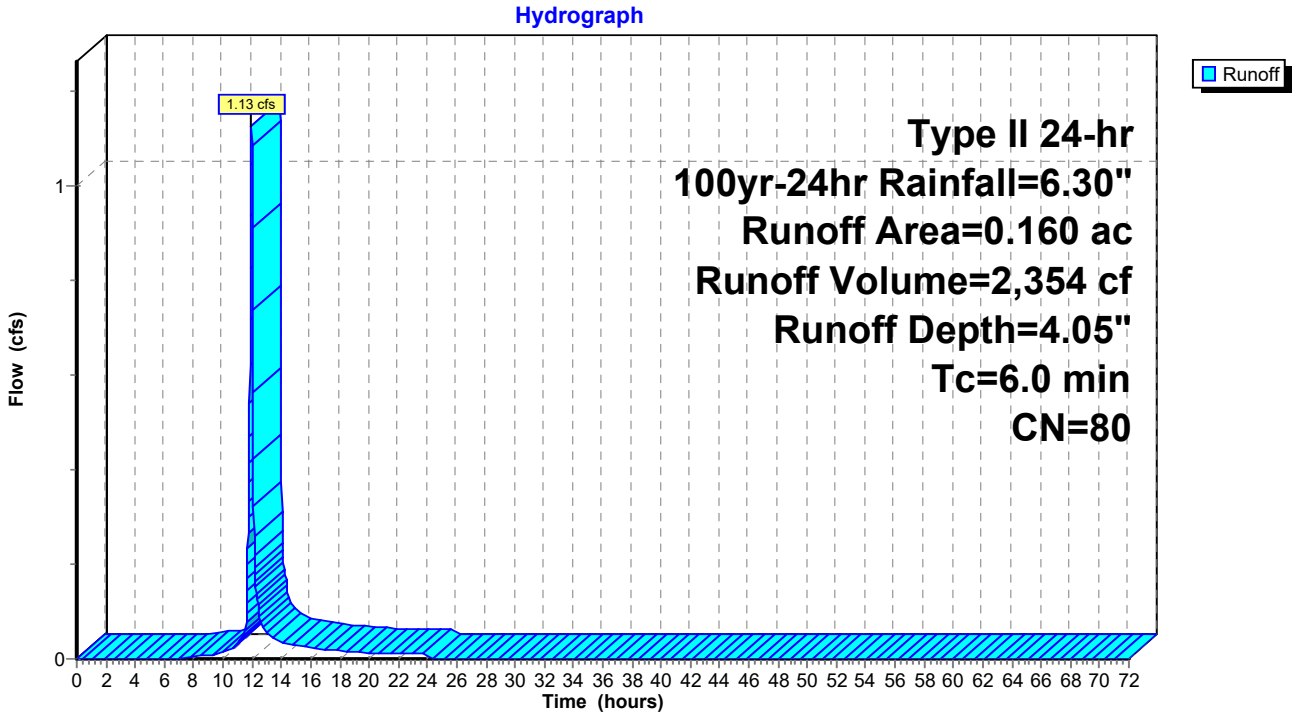
Runoff = 1.13 cfs @ 11.97 hrs, Volume= 2,354 cf, Depth= 4.05"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 80 | >75% Grass cover, Good, HSG D |
| 0.160 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment C-2: Undetained 2



## Summary for Subcatchment C-3: Undetained 3

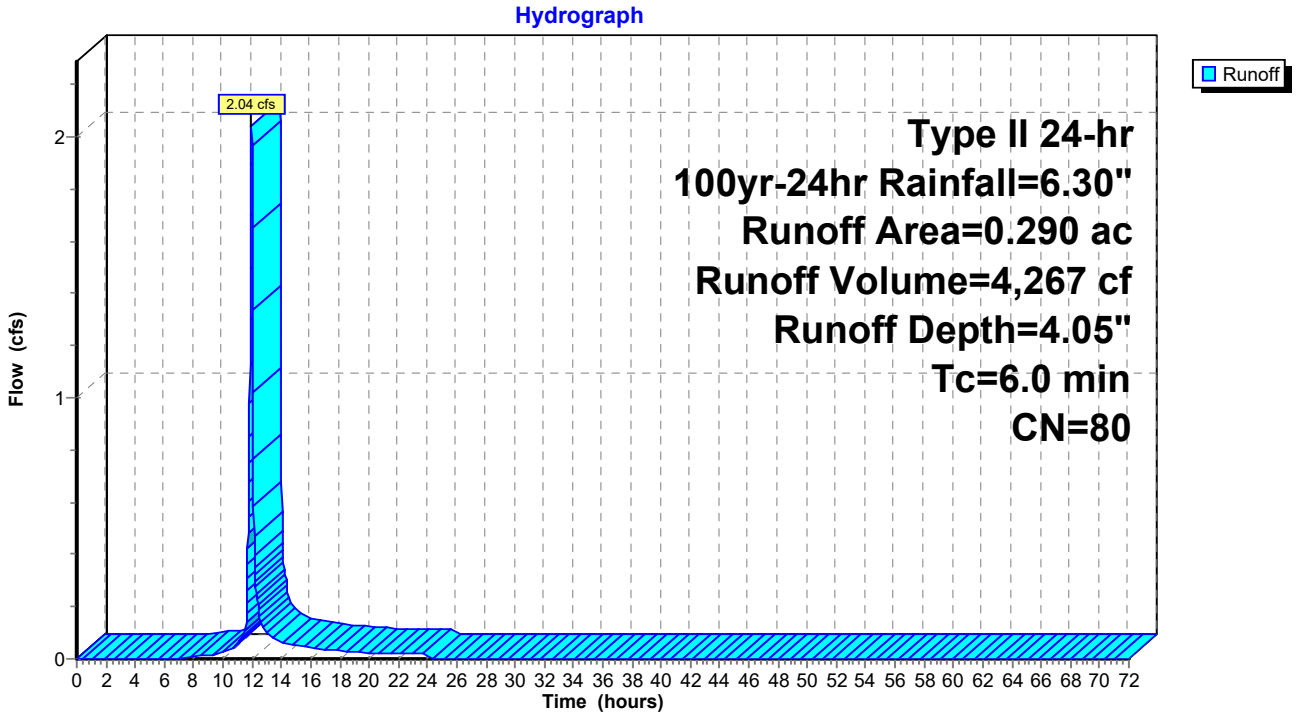
Runoff = 2.04 cfs @ 11.97 hrs, Volume= 4,267 cf, Depth= 4.05"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 0.290 | 80 | >75% Grass cover, Good, HSG D |
| 0.290 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment C-3: Undetained 3



## Summary for Subcatchment C-4: Undetained 4

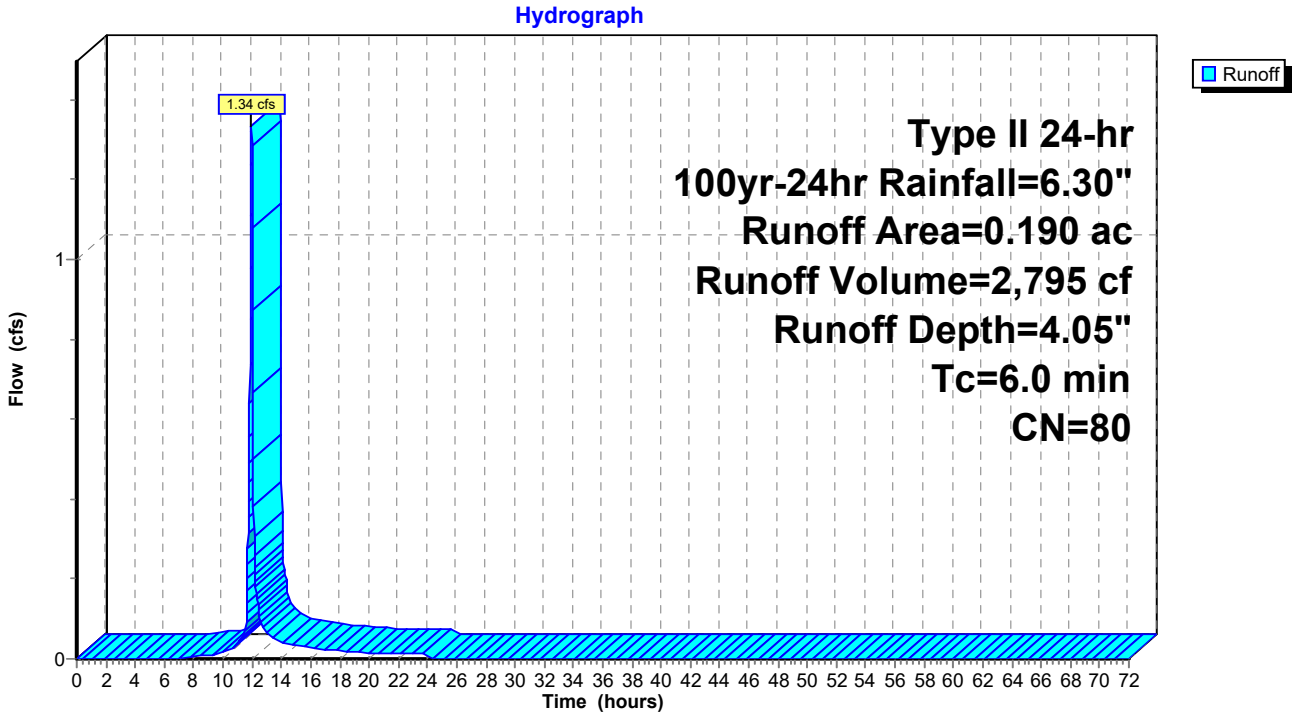
Runoff = 1.34 cfs @ 11.97 hrs, Volume= 2,795 cf, Depth= 4.05"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 0.190 | 80 | >75% Grass cover, Good, HSG D |
| 0.190 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment C-4: Undetained 4



## Summary for Subcatchment C-5: Undetained 5

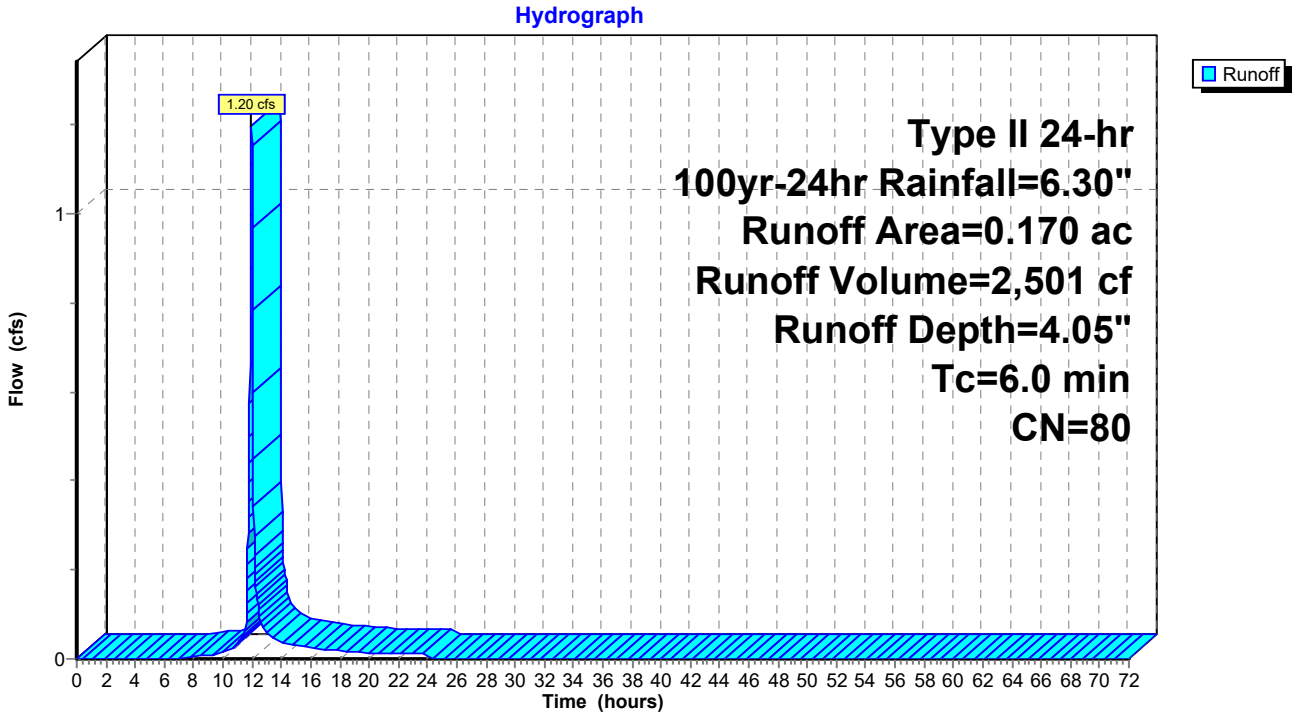
Runoff = 1.20 cfs @ 11.97 hrs, Volume= 2,501 cf, Depth= 4.05"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 0.170 | 80 | >75% Grass cover, Good, HSG D |
| 0.170 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment C-5: Undetained 5



## Summary for Subcatchment C-6: Undetained 6

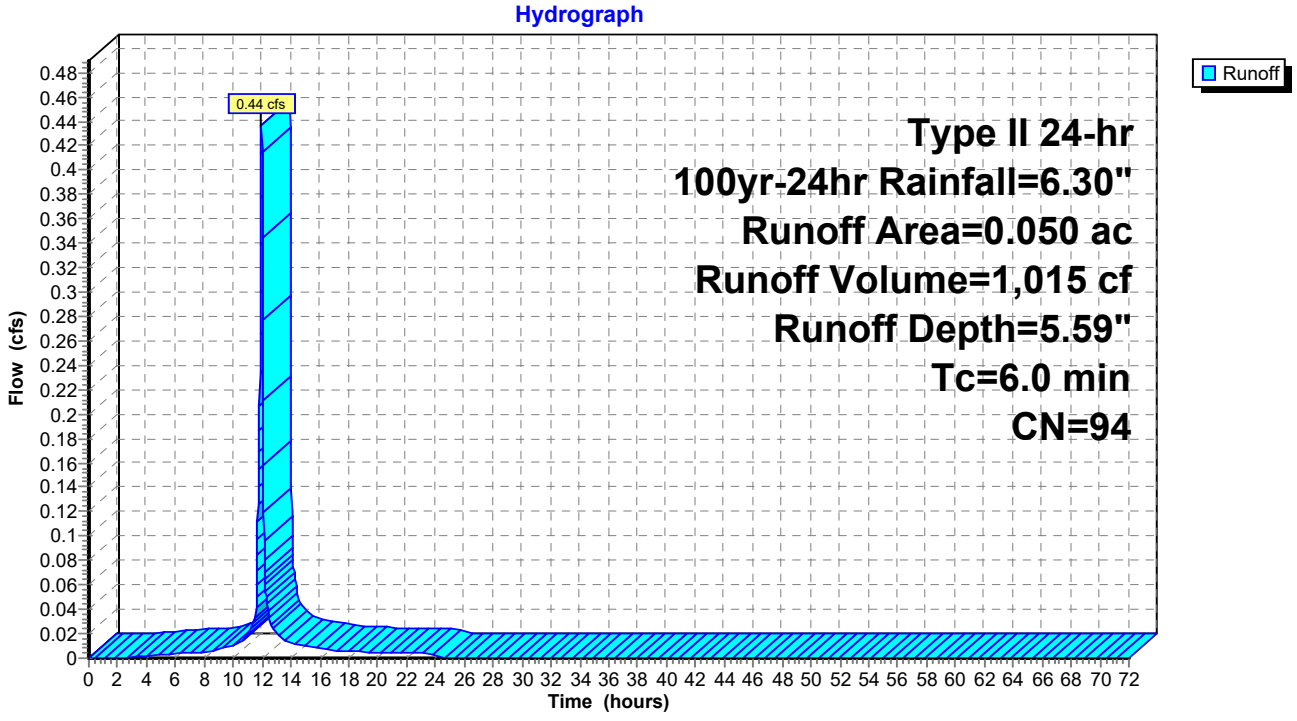
Runoff = 0.44 cfs @ 11.97 hrs, Volume= 1,015 cf, Depth= 5.59"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 0.040 | 98 | Paved parking, HSG D |
| 0.010 | 80 | >75% Grass cover, Good, HSG D |
| 0.050 | 94 | Weighted Average |
| 0.010 | 80 | 20.00% Pervious Area |
| 0.040 | 98 | 80.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment C-6: Undetained 6



## Summary for Subcatchment C-7: Undetained 7

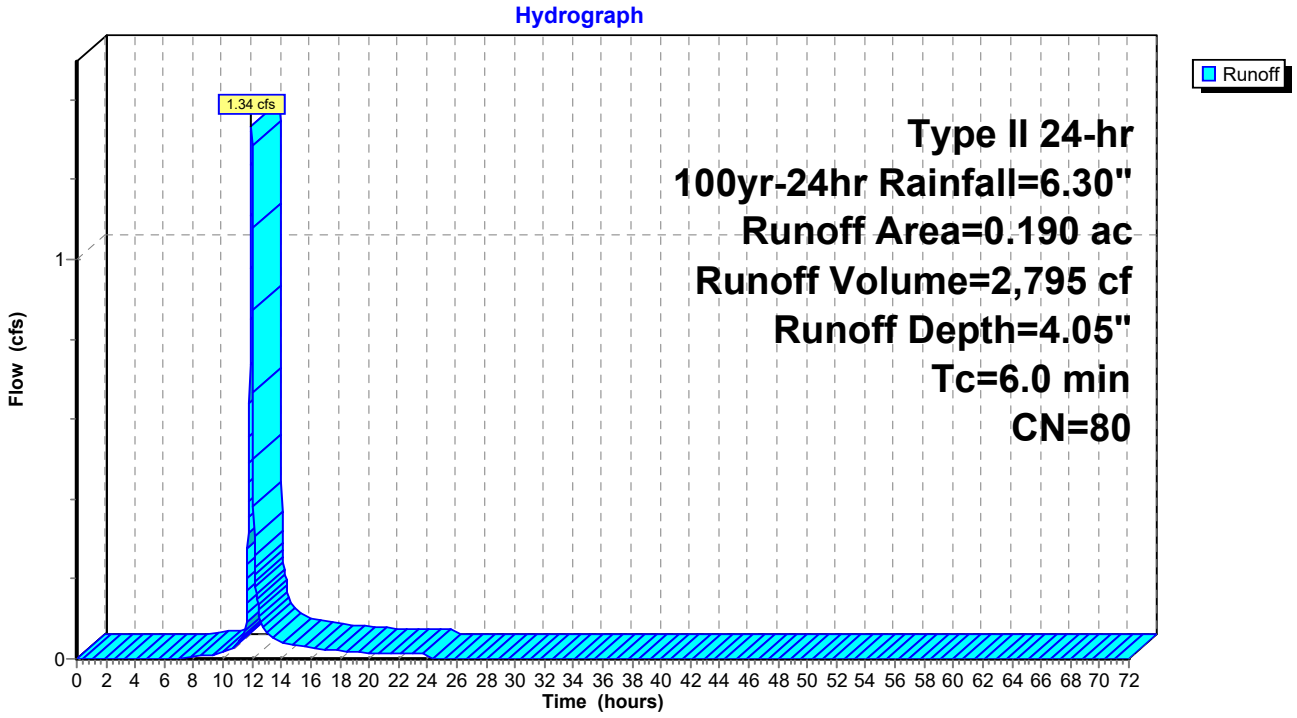
Runoff = 1.34 cfs @ 11.97 hrs, Volume= 2,795 cf, Depth= 4.05"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 0.190 | 80 | >75% Grass cover, Good, HSG D |
| 0.190 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment C-7: Undetained 7



## Summary for Subcatchment D-1: North Offsite Bypass

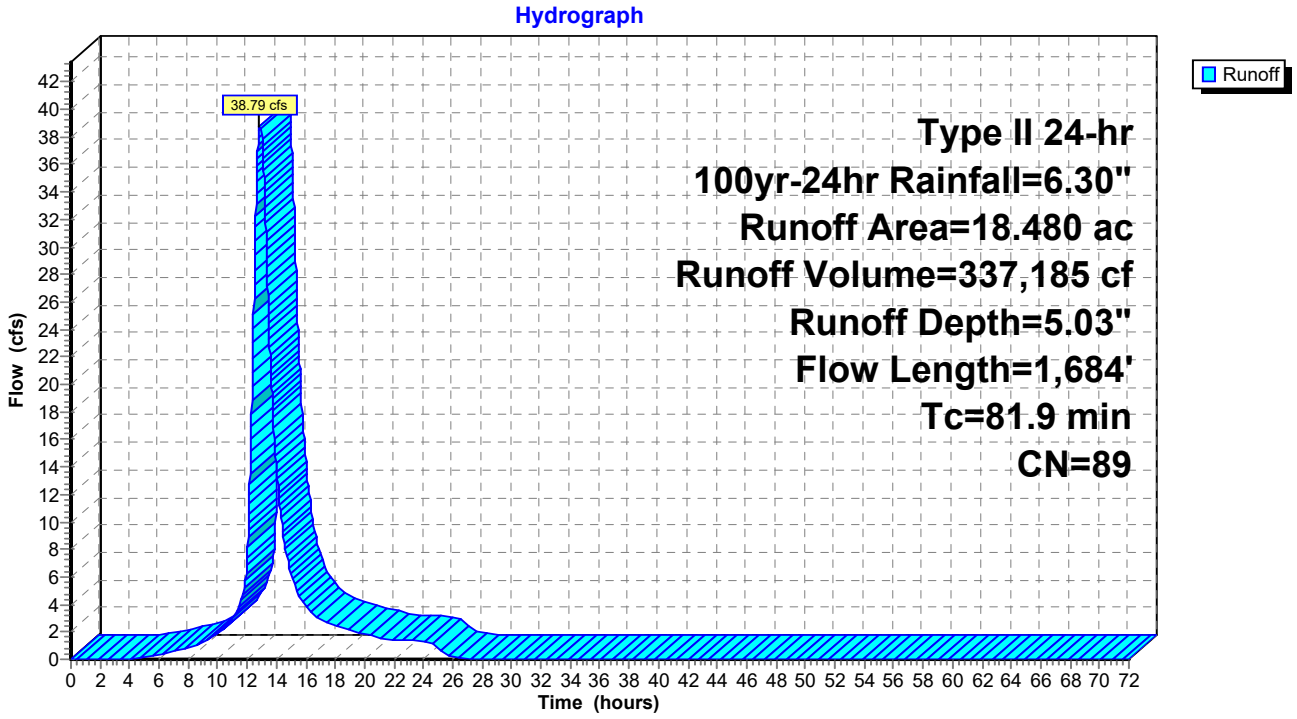
Runoff = 38.79 cfs @ 12.85 hrs, Volume= 337,185 cf, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 18.480 | 89 | Row crops, straight row, Good, HSG D |
| 18.480 | 89 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.2 | 100 | 0.0075 | 0.27 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 75.7 | 1,584 | 0.0015 | 0.35 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 81.9 | 1,684 | Total | | | |

## Subcatchment D-1: North Offsite Bypass



## Summary for Subcatchment D-2: North Offsite Bypass

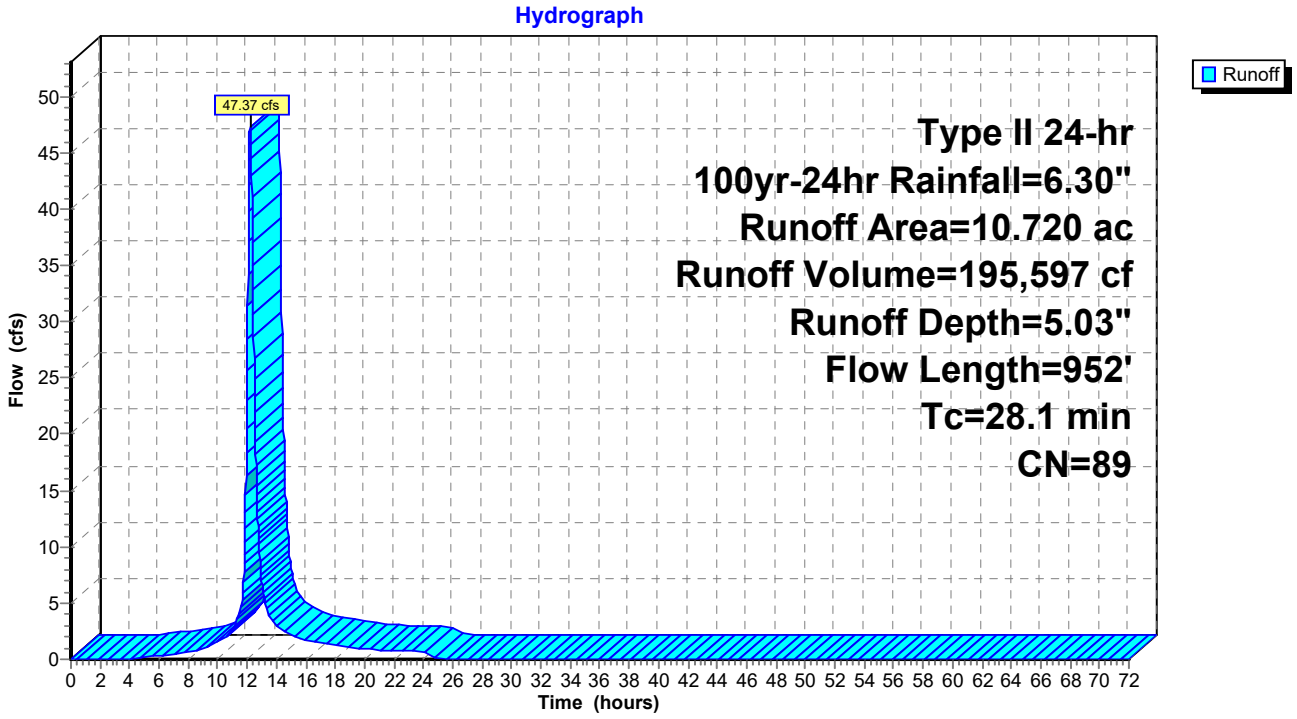
Runoff = 47.37 cfs @ 12.21 hrs, Volume= 195,597 cf, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 10.720 | 89 | Row crops, straight row, Good, HSG D |
| 10.720 | 89 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.8 | 100 | 0.0090 | 0.29 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 22.3 | 852 | 0.0050 | 0.64 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 28.1 | 952 | Total | | | |

## Subcatchment D-2: North Offsite Bypass



## Summary for Subcatchment Out A: Outlot A

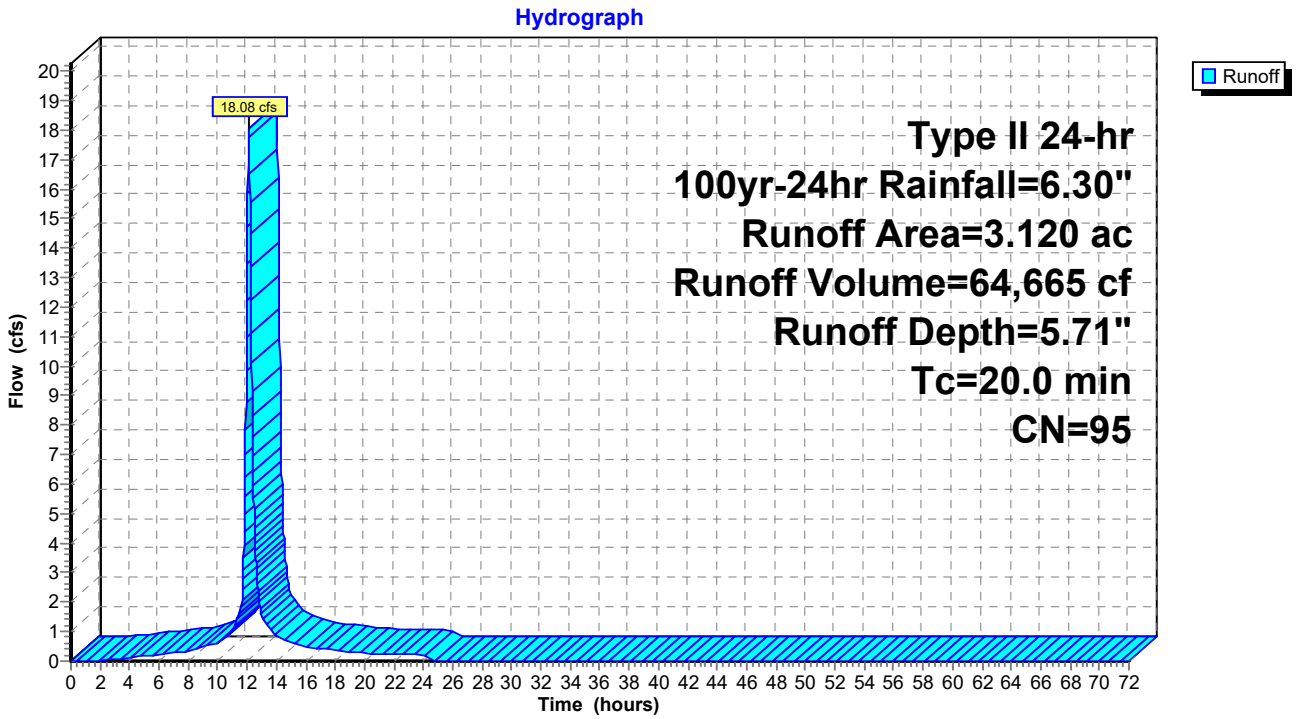
Runoff = 18.08 cfs @ 12.12 hrs, Volume= 64,665 cf, Depth= 5.71"
Routed to Pond 2P : AG-S & UG-S

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 3.120 | 95 | Urban commercial, 85% imp, HSG D |
| 0.468 | 78 | 15.00% Pervious Area |
| 2.652 | 98 | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 20.0 | | | | | **Direct Entry,** |

## Subcatchment Out A: Outlot A



## Summary for Subcatchment Out B: Outlot B

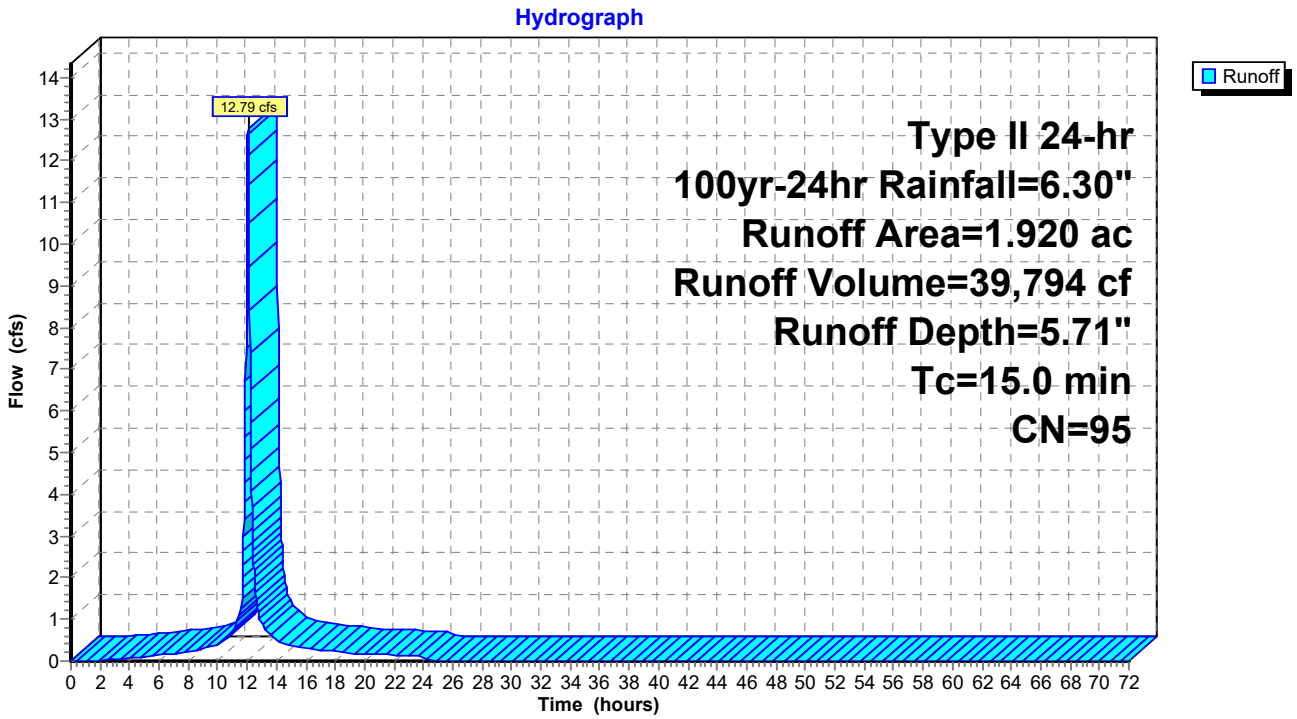
Runoff = 12.79 cfs @ 12.06 hrs, Volume= 39,794 cf, Depth= 5.71"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 1.920 | 95 | Urban commercial, 85% imp, HSG D |
| 0.288 | 78 | 15.00% Pervious Area |
| 1.632 | 98 | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment Out B: Outlot B



## Summary for Subcatchment Out C: Outlot C

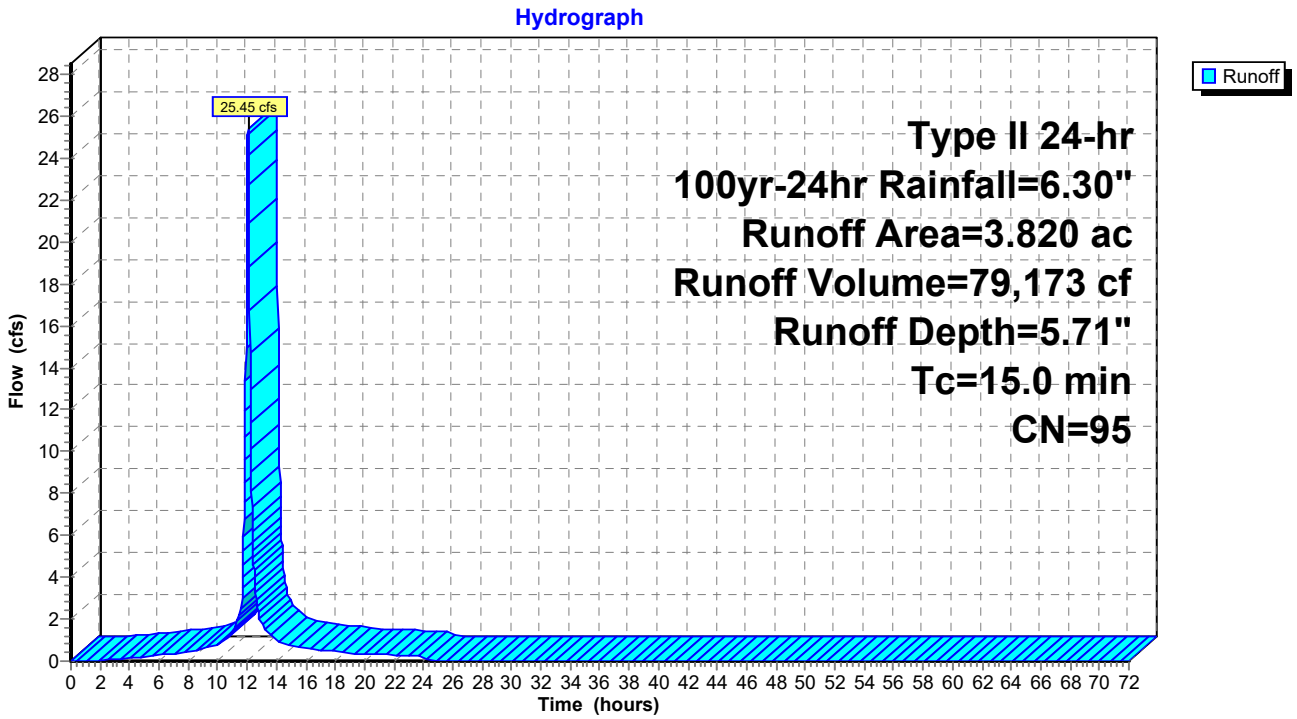
Runoff = 25.45 cfs @ 12.06 hrs, Volume= 79,173 cf, Depth= 5.71"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 3.820 | 95 | Urban commercial, 85% imp, HSG D |
| 0.573 | 78 | 15.00% Pervious Area |
| 3.247 | 98 | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment Out C: Outlot C



## Summary for Pond 1P: AG-N

Inflow Area = 969,210 sf, 73.43% Impervious, Inflow Depth = 5.45" for 100yr-24hr event
Inflow = 144.85 cfs @ 12.06 hrs, Volume= 440,475 cf
Outflow = 4.00 cfs @ 15.40 hrs, Volume= 314,892 cf, Atten= 97%, Lag= 200.3 min
Primary = 4.00 cfs @ 15.40 hrs, Volume= 314,892 cf
Routed to Link 3L : Str. 3.00
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 4L : Total Site Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs / 3
Peak Elev= 883.27' @ 15.40 hrs Surf.Area= 80,290 sf Storage= 320,793 cf

Plug-Flow detention time= 1,199.9 min calculated for 314,804 cf (71% of inflow)
Center-of-Mass det. time= 1,106.9 min ( 1,883.8 - 776.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 877.29' | 573,880 cf | **Custom Stage Data (Irregular)** Listed below (Recalc) |

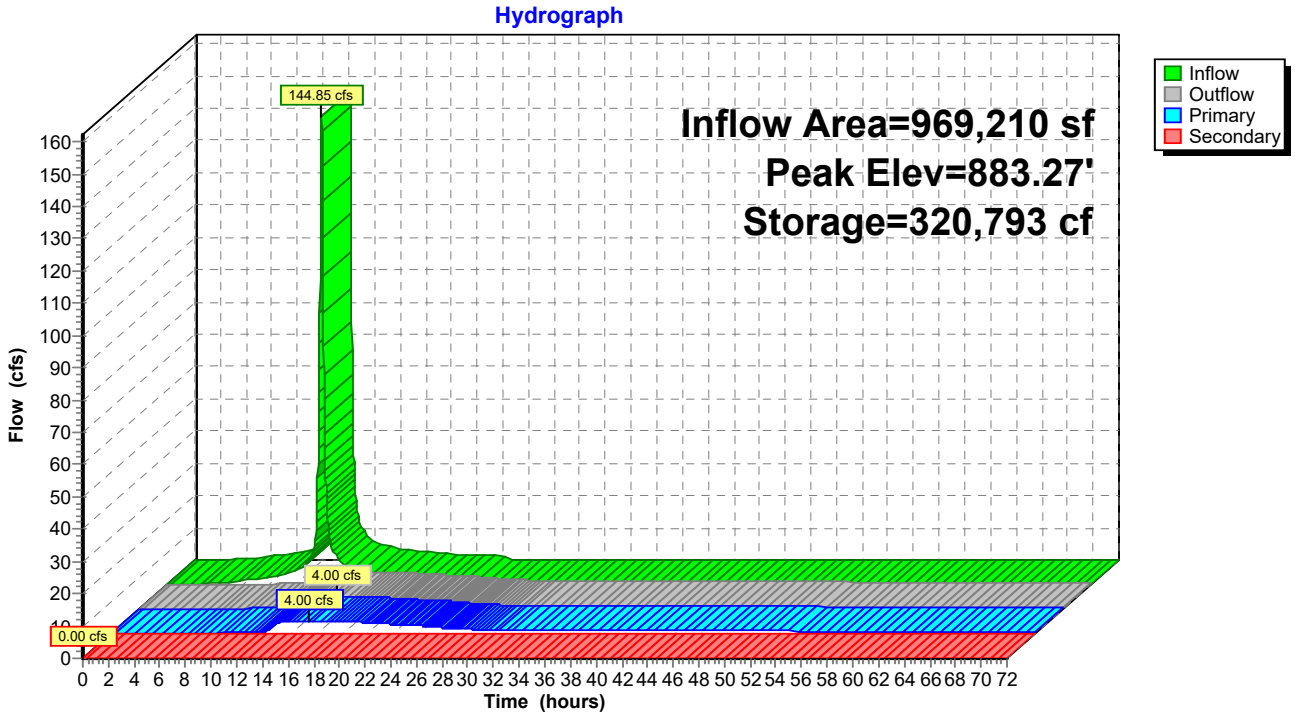
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 877.29 | 33,121 | 1,437.0 | 0 | 0 | 33,121 |
| 878.00 | 37,072 | 1,579.0 | 24,905 | 24,905 | 67,219 |
| 879.00 | 42,856 | 1,793.0 | 39,929 | 64,834 | 124,667 |
| 880.00 | 49,752 | 2,010.0 | 46,261 | 111,096 | 190,366 |
| 881.00 | 57,879 | 2,227.0 | 53,764 | 164,860 | 263,563 |
| 882.00 | 67,238 | 2,444.0 | 62,500 | 227,360 | 344,257 |
| 883.00 | 77,811 | 2,659.0 | 72,460 | 299,820 | 431,602 |
| 884.00 | 87,356 | 2,779.0 | 82,537 | 382,358 | 483,602 |
| 884.64 | 92,754 | 2,793.0 | 57,627 | 439,984 | 490,061 |
| 885.00 | 95,775 | 2,800.0 | 33,934 | 473,918 | 493,335 |
| 886.00 | 104,208 | 2,819.0 | 99,962 | 573,880 | 502,283 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 877.29' | **12.0" Round Culvert**<br>L= 24.0' RCP, sq.cut end projecting, Ke= 0.500<br>Inlet / Outlet Invert= 877.29' / 877.22' S= 0.0029 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |
| #2 | Device 1 | 877.29' | **4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 882.14' | **12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #4 | Secondary | 884.54' | **110.0' long + 3.0 '/' SideZ x 26.2' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 |

**Primary OutFlow** Max=4.00 cfs @ 15.40 hrs HW=883.27' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 4.00 cfs of 8.85 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 1.01 cfs @ 11.60 fps)
└**3=Orifice/Grate** (Orifice Controls 2.99 cfs @ 3.81 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=877.29' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond 1P: AG-N


Hydrograph
Inflow Area=969,210 sf
Peak Elev=883.27'
Storage=320,793 cf
144.85 cfs
4.00 cfs
4.00 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

## Summary for Pond 2P: AG-S & UG-S

Inflow Area = 361,548 sf, 75.20% Impervious, Inflow Depth = 5.49" for 100yr-24hr event
Inflow = 56.14 cfs @ 11.98 hrs, Volume= 165,538 cf
Outflow = 5.19 cfs @ 12.70 hrs, Volume= 165,518 cf, Atten= 91%, Lag= 43.3 min
Primary = 5.19 cfs @ 12.70 hrs, Volume= 165,518 cf
Routed to Link 3L : Str. 3.00
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 4L : Total Site Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs / 3
Peak Elev= 884.29' @ 12.70 hrs Surf.Area= 21,848 sf Storage= 96,191 cf

Plug-Flow detention time= 678.6 min calculated for 165,472 cf (100% of inflow)
Center-of-Mass det. time= 679.0 min ( 1,451.1 - 772.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 877.38' | 43,614 cf | **Custom Stage Data (Irregular)** Listed below (Recalc) |
| #2A | 877.53' | 22,031 cf | **80.00'W x 180.82'L x 7.00'H Underground Detention**<br>101,259 cf Overall - 46,183 cf Embedded = 55,076 cf x 40.0% Voids |
| #3A | 878.03' | 46,183 cf | **CMP Round 72** x 9 Inside #2<br>Effective Size= 72.0"W x 72.0"H => 28.27 sf x 20.00'L = 565.5 cf<br>Overall Size= 72.0"W x 72.0"H x 20.00'L<br>Row Length Adjustment= +152.82' x 28.27 sf x 9 rows<br>78.00' Header x 28.27 sf x 1 = 2,205.4 cf Inside |
| | | 111,827 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 877.38 | 1,605 | 205.0 | 0 | 0 | 1,605 |
| 878.00 | 2,000 | 220.0 | 1,115 | 1,115 | 2,129 |
| 879.00 | 2,697 | 245.0 | 2,340 | 3,455 | 3,083 |
| 880.00 | 3,462 | 265.0 | 3,072 | 6,527 | 3,934 |
| 881.00 | 4,284 | 284.0 | 3,866 | 10,392 | 4,808 |
| 882.00 | 5,163 | 303.0 | 4,717 | 15,109 | 5,743 |
| 883.00 | 6,098 | 321.0 | 5,624 | 20,733 | 6,690 |
| 884.00 | 7,090 | 340.0 | 6,588 | 27,321 | 7,742 |
| 885.00 | 8,138 | 359.0 | 7,608 | 34,929 | 8,855 |
| 885.90 | 9,130 | 376.0 | 7,766 | 42,695 | 9,903 |
| 886.00 | 9,248 | 378.0 | 919 | 43,614 | 10,029 |

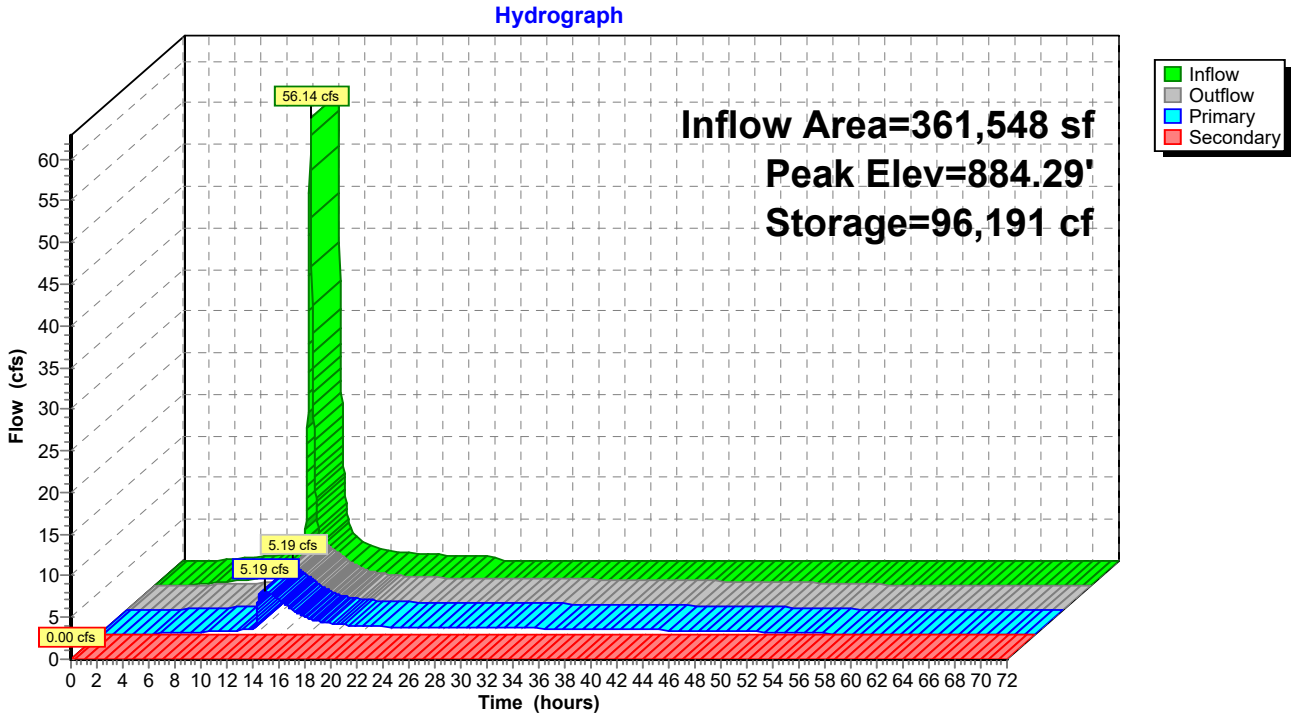
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 877.38' | **15.0" Round Culvert**<br>L= 40.0' RCP, sq.cut end projecting, Ke= 0.500<br>Inlet / Outlet Invert= 877.38' / 877.22' S= 0.0040 '/' Cc= 0.900<br>n= 0.012, Flow Area= 1.23 sf |
| #2 | Device 1 | 877.38' | **4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 882.61' | **12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #4 | Secondary | 885.40' | **25.0' long + 3.0 '/' SideZ x 53.8' breadth Broad-Crested Rectangular Weir** |

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=5.19 cfs @ 12.70 hrs HW=884.29' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 5.19 cfs of 14.81 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 1.09 cfs @ 12.50 fps)
└**3=Orifice/Grate** (Orifice Controls 4.10 cfs @ 5.22 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=877.38' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir**( Controls 0.00 cfs)

## Pond 2P: AG-S & UG-S

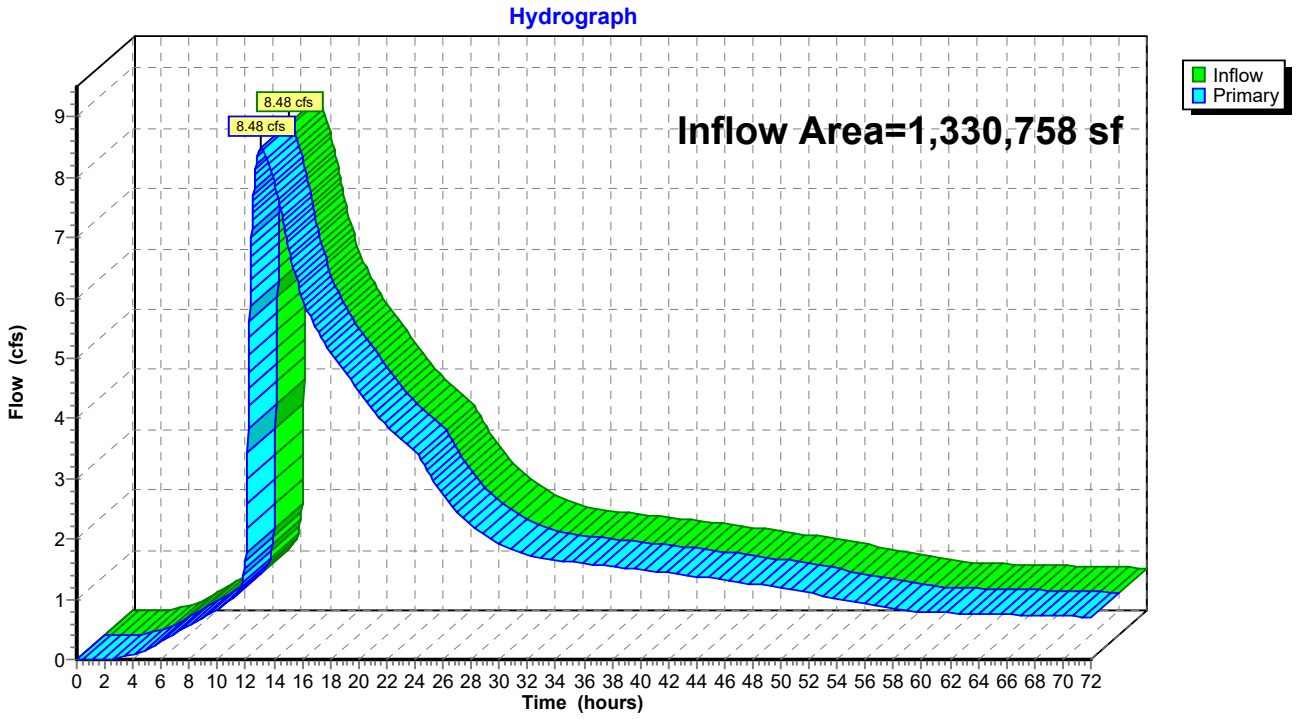


## Summary for Link 3L: Str. 3.00

Inflow Area = 1,330,758 sf, 73.91% Impervious, Inflow Depth > 4.33" for 100yr-24hr event
Inflow = 8.48 cfs @ 13.10 hrs, Volume= 480,410 cf
Primary = 8.48 cfs @ 13.10 hrs, Volume= 480,410 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total Site Runoff

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

## Link 3L: Str. 3.00

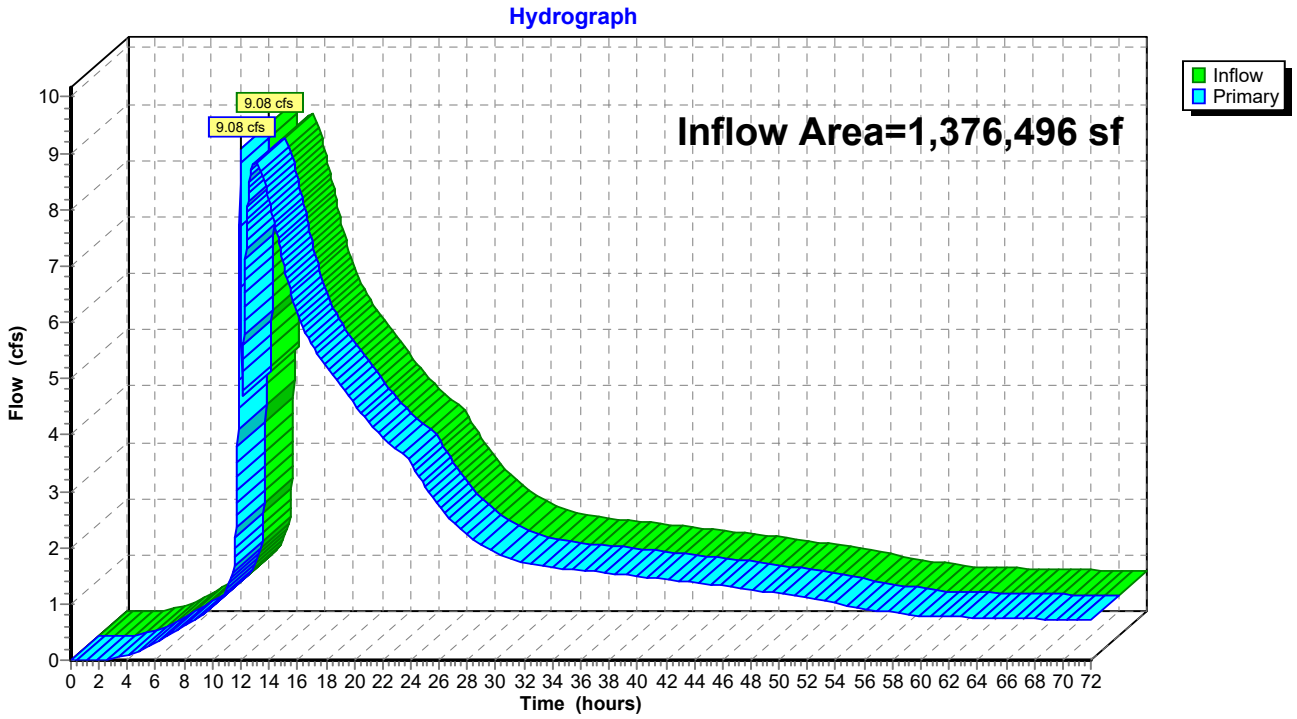


## Summary for Link 4L: Total Site Runoff

Inflow Area = 1,376,496 sf, 71.59% Impervious, Inflow Depth > 4.33" for 100yr-24hr event
Inflow = 9.08 cfs @ 11.97 hrs, Volume= 496,137 cf
Primary = 9.08 cfs @ 11.97 hrs, Volume= 496,137 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

## Link 4L: Total Site Runoff



# 1.2 – HydroCAD INPUTS AND RESULTS – ONSITE & OFFSITE RUNOFF

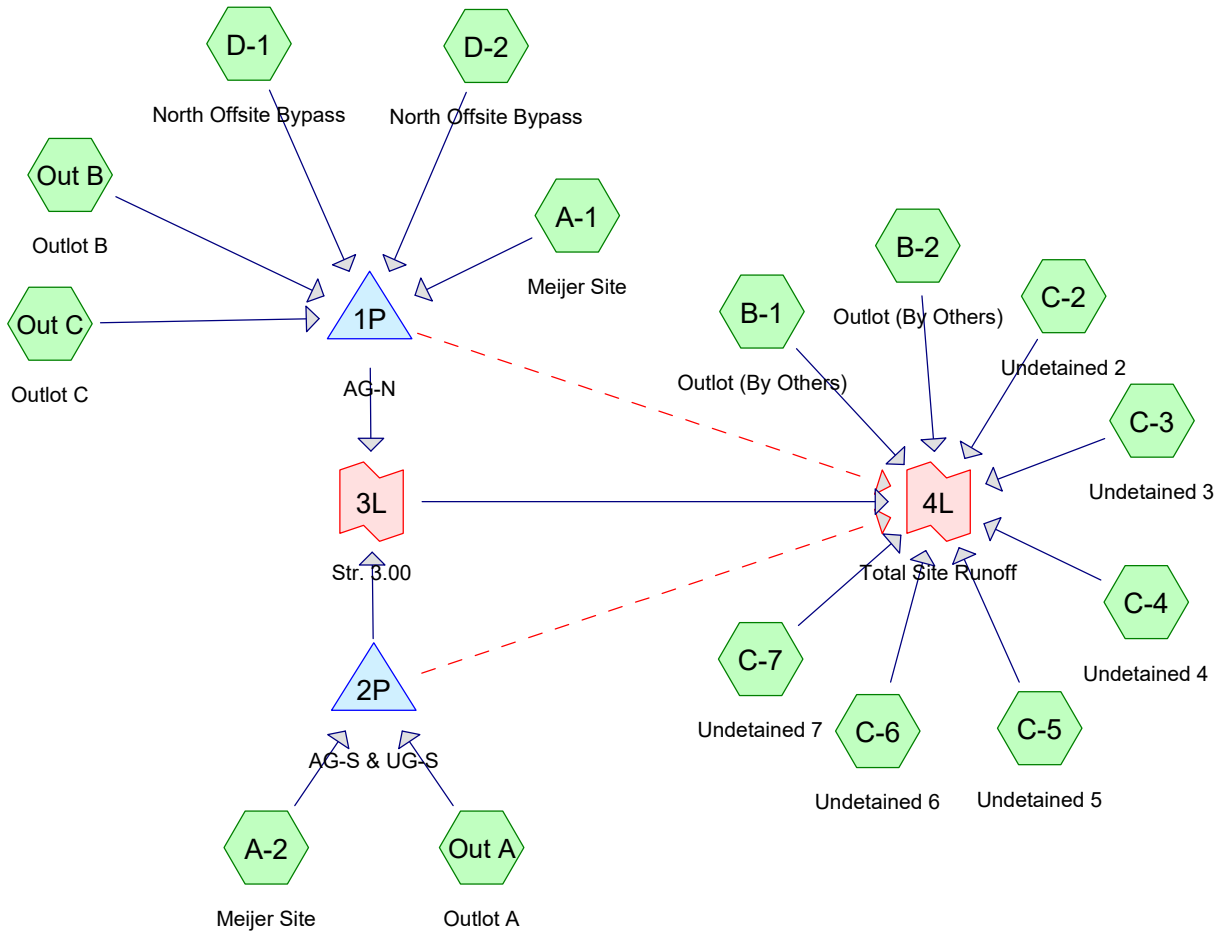
## TABLE OF CONTENTS

**Project Reports**
1 Routing Diagram
2 Rainfall Events Listing (selected events)

**10yr-24hr Event**
3 Node Listing
5 Subcat A-1: Meijer Site
6 Subcat A-2: Meijer Site
7 Subcat B-1: Outlot (By Others)
8 Subcat B-2: Outlot (By Others)
9 Subcat C-2: Undetained 2
10 Subcat C-3: Undetained 3
11 Subcat C-4: Undetained 4
12 Subcat C-5: Undetained 5
13 Subcat C-6: Undetained 6
14 Subcat C-7: Undetained 7
15 Subcat D-1: North Offsite Bypass
16 Subcat D-2: North Offsite Bypass
17 Subcat Out A: Outlot A
18 Subcat Out B: Outlot B
19 Subcat Out C: Outlot C
20 Pond 1P: AG-N
22 Pond 2P: AG-S & UG-S
24 Link 3L: Str. 3.00
25 Link 4L: Total Site Runoff

**100yr-24hr Event**
26 Node Listing
28 Subcat A-1: Meijer Site
29 Subcat A-2: Meijer Site
30 Subcat B-1: Outlot (By Others)
31 Subcat B-2: Outlot (By Others)
32 Subcat C-2: Undetained 2
33 Subcat C-3: Undetained 3
34 Subcat C-4: Undetained 4
35 Subcat C-5: Undetained 5
36 Subcat C-6: Undetained 6
37 Subcat C-7: Undetained 7
38 Subcat D-1: North Offsite Bypass
39 Subcat D-2: North Offsite Bypass
40 Subcat Out A: Outlot A
41 Subcat Out B: Outlot B
42 Subcat Out C: Outlot C
43 Pond 1P: AG-N
45 Pond 2P: AG-S & UG-S
47 Link 3L: Str. 3.00

48 Link 4L: Total Site Runoff




Subcat Reach Pond Link

**Routing Diagram for Meijer ABE SWM**
Prepared by Woolpert, Inc, Printed 1/10/2025
HydroCAD® 10.20-5c s/n 00728 © 2023 HydroCAD Software Solutions LLC

## Rainfall Events Listing (selected events)

| Event# | Event Name | Storm Type | Curve | Mode | Duration (hours) | B/B | Depth (inches) | AMC |
|---|---|---|---|---|---|---|---|---|
| 1 | 10yr-24hr | Type II 24-hr | | Default | 24.00 | 1 | 4.28 | 2 |
| 2 | 100yr-24hr | Type II 24-hr | | Default | 24.00 | 1 | 6.30 | 2 |

Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment A-1: Meijer Site** Runoff Area=16.510 ac 69.41% Impervious Runoff Depth=3.39"
Tc=15.0 min CN=92 Runoff=69.11 cfs 203,077 cf

**Subcatchment A-2: Meijer Site** Runoff Area=5.180 ac 69.31% Impervious Runoff Depth=3.39"
Tc=6.0 min CN=92 Runoff=28.92 cfs 63,715 cf

**Subcatchment B-1: Outlot (By Others)** Runoff Area=1.700 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=263' Tc=6.2 min CN=81 Runoff=7.05 cfs 14,557 cf

**Subcatchment B-2: Outlot (By Others)** Runoff Area=1.800 ac 0.00% Impervious Runoff Depth=2.19"
Flow Length=274' Tc=21.1 min CN=79 Runoff=4.25 cfs 14,330 cf

**Subcatchment C-2: Undetained 2** Runoff Area=0.160 ac 0.00% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=80 Runoff=0.65 cfs 1,321 cf

**Subcatchment C-3: Undetained 3** Runoff Area=0.290 ac 0.00% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=80 Runoff=1.17 cfs 2,395 cf

**Subcatchment C-4: Undetained 4** Runoff Area=0.190 ac 0.00% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=80 Runoff=0.77 cfs 1,569 cf

**Subcatchment C-5: Undetained 5** Runoff Area=0.170 ac 0.00% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=80 Runoff=0.69 cfs 1,404 cf

**Subcatchment C-6: Undetained 6** Runoff Area=0.050 ac 80.00% Impervious Runoff Depth=3.60"
Tc=6.0 min CN=94 Runoff=0.29 cfs 653 cf

**Subcatchment C-7: Undetained 7** Runoff Area=0.190 ac 0.00% Impervious Runoff Depth=2.28"
Tc=6.0 min CN=80 Runoff=0.77 cfs 1,569 cf

**Subcatchment D-1: North Offsite Bypass** Runoff Area=18.480 ac 0.00% Impervious Runoff Depth=3.09"
Flow Length=1,684' Tc=81.9 min CN=89 Runoff=24.12 cfs 207,069 cf

**Subcatchment D-2: North Offsite Bypass** Runoff Area=10.720 ac 0.00% Impervious Runoff Depth=3.09"
Flow Length=952' Tc=28.1 min CN=89 Runoff=29.65 cfs 120,118 cf

**Subcatchment Out A: Outlot A** Runoff Area=3.120 ac 85.00% Impervious Runoff Depth=3.71"
Tc=20.0 min CN=95 Runoff=12.01 cfs 41,988 cf

**Subcatchment Out B: Outlot B** Runoff Area=1.920 ac 85.00% Impervious Runoff Depth=3.71"
Tc=15.0 min CN=95 Runoff=8.50 cfs 25,839 cf

**Subcatchment Out C: Outlot C** Runoff Area=3.820 ac 85.00% Impervious Runoff Depth=3.71"
Tc=15.0 min CN=95 Runoff=16.92 cfs 51,408 cf

**Pond 1P: AG-N** Peak Elev=884.48' Storage=425,157 cf Inflow=122.04 cfs 607,511 cf
Primary=6.24 cfs 467,517 cf Secondary=0.00 cfs 0 cf Outflow=6.24 cfs 467,517 cf

**Pond 2P: AG-S & UG-S** Peak Elev=882.61' Storage=70,517 cf Inflow=36.68 cfs 105,703 cf
Primary=0.95 cfs 105,686 cf Secondary=0.00 cfs 0 cf Outflow=0.95 cfs 105,686 cf

**Link 3L: Str. 3.00** Inflow=7.19 cfs 573,203 cf
Primary=7.19 cfs 573,203 cf

**Link 4L: Total Site Runoff** Inflow=15.13 cfs 611,002 cf
Primary=15.13 cfs 611,002 cf

**Total Runoff Area = 2,800,908 sf Runoff Volume = 751,012 cf Average Runoff Depth = 3.22"**
**64.82% Pervious = 1,815,537 sf 35.18% Impervious = 985,371 sf**

## Summary for Subcatchment A-1: Meijer Site

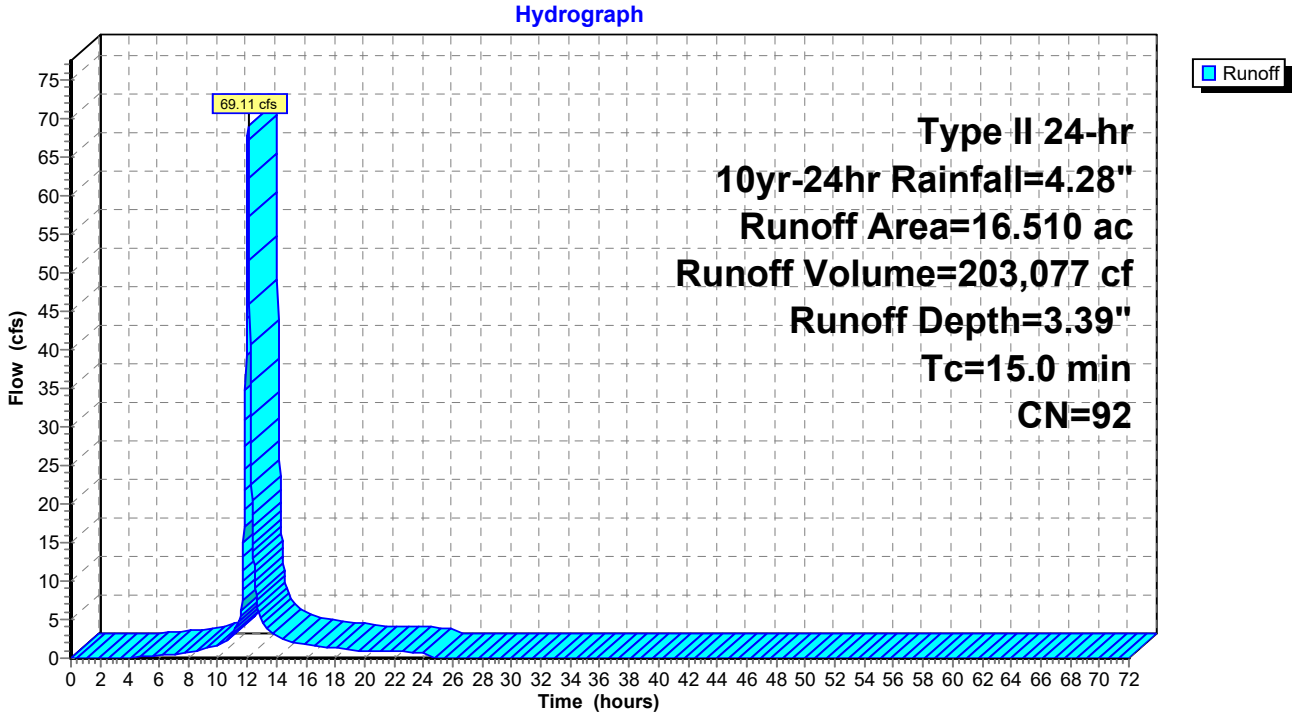
Runoff = 69.11 cfs @ 12.06 hrs, Volume= 203,077 cf, Depth= 3.39"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 11.460 | 98 | Paved parking, HSG D |
| 5.050 | 80 | >75% Grass cover, Good, HSG D |
| 16.510 | 92 | Weighted Average |
| 5.050 | 80 | 30.59% Pervious Area |
| 11.460 | 98 | 69.41% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment A-1: Meijer Site



## Summary for Subcatchment A-2: Meijer Site

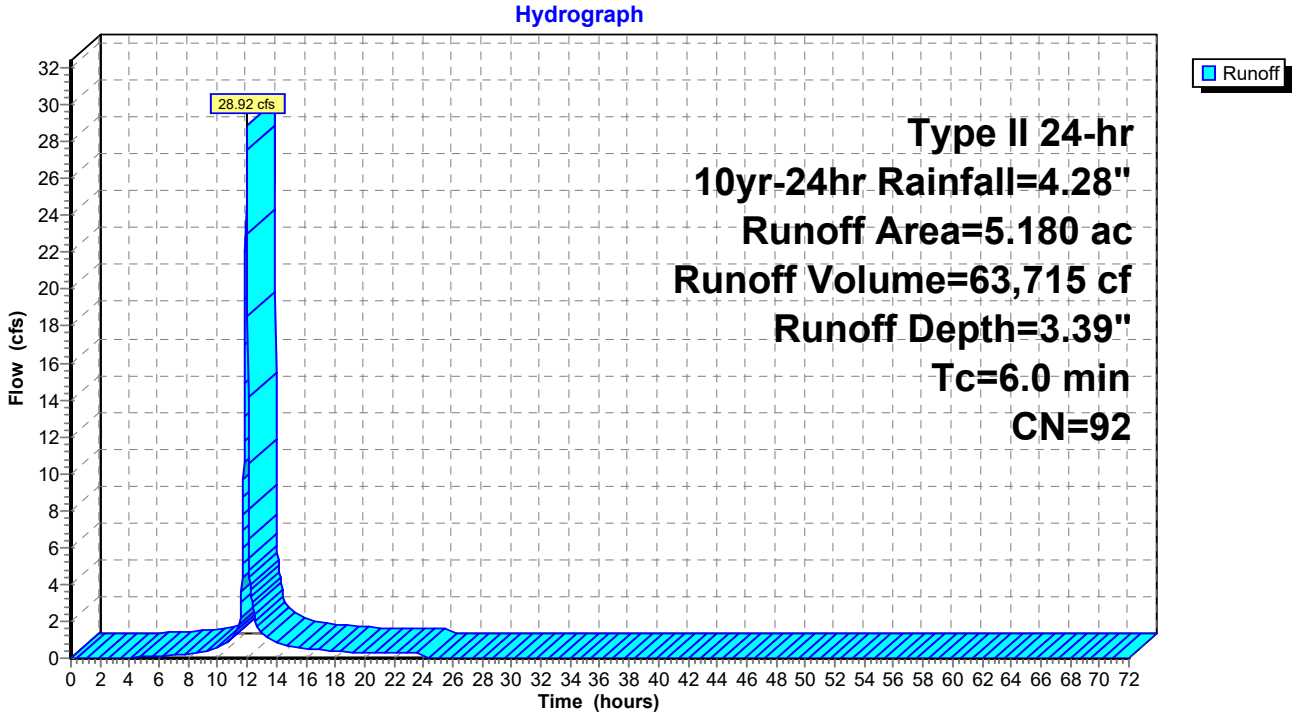
Runoff = 28.92 cfs @ 11.97 hrs, Volume= 63,715 cf, Depth= 3.39"
Routed to Pond 2P : AG-S & UG-S

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 3.590 | 98 | Paved parking, HSG D |
| 1.590 | 80 | >75% Grass cover, Good, HSG D |
| 5.180 | 92 | Weighted Average |
| 1.590 | 80 | 30.69% Pervious Area |
| 3.590 | 98 | 69.31% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment A-2: Meijer Site



## Summary for Subcatchment B-1: Outlot (By Others)

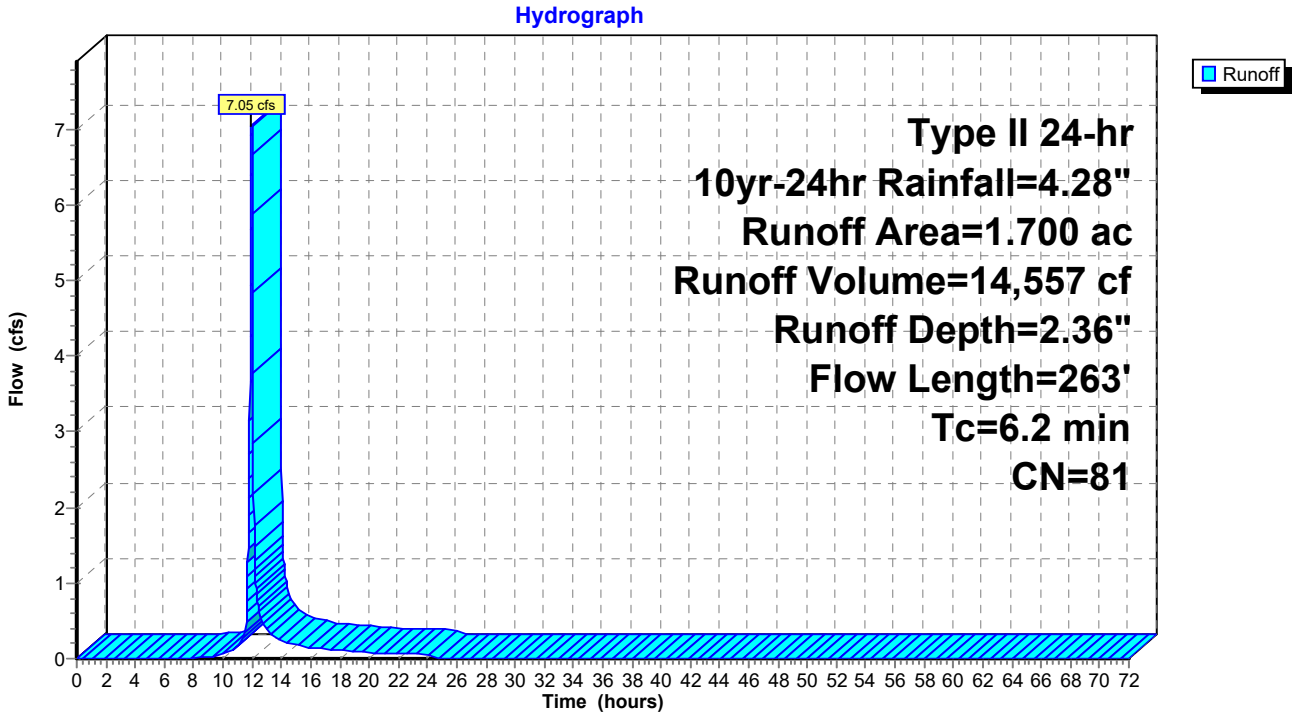
Runoff = 7.05 cfs @ 11.98 hrs, Volume= 14,557 cf, Depth= 2.36"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.000 | 78 | Row crops, straight row, Good, HSG B |
| | 0.700 | 85 | Row crops, straight row, Good, HSG C |
| | 1.700 | 81 | Weighted Average |
| | 1.700 | 81 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 100 | 0.0327 | 0.48 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 2.8 | 163 | 0.0113 | 0.96 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 6.2 | 263 | Total | | | |

## Subcatchment B-1: Outlot (By Others)



## Summary for Subcatchment B-2: Outlot (By Others)

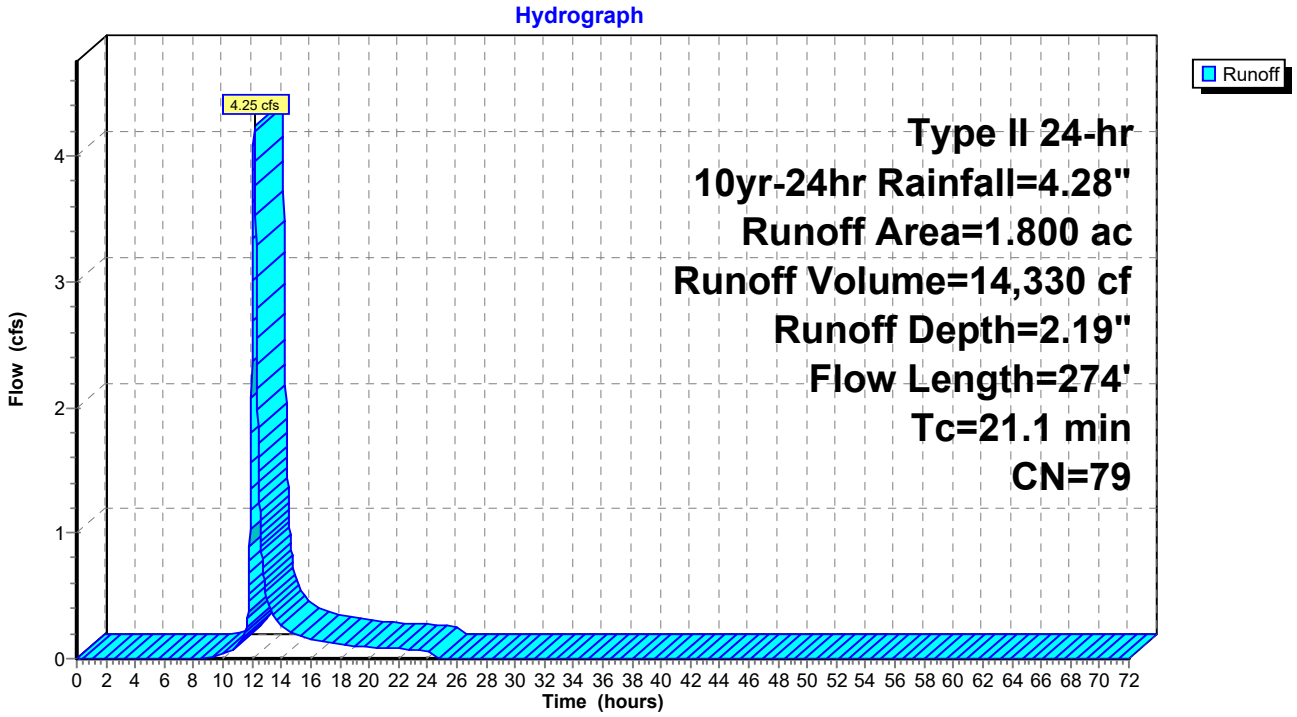
Runoff = 4.25 cfs @ 12.14 hrs, Volume= 14,330 cf, Depth= 2.19"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.500 | 78 | Row crops, straight row, Good, HSG B |
| | 0.300 | 85 | Row crops, straight row, Good, HSG C |
| | 1.800 | 79 | Weighted Average |
| | 1.800 | 79 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.0 | 100 | 0.0130 | 0.33 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 16.1 | 174 | 0.0004 | 0.18 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 21.1 | 274 | Total | | | |

## Subcatchment B-2: Outlot (By Others)



## Summary for Subcatchment C-2: Undetained 2

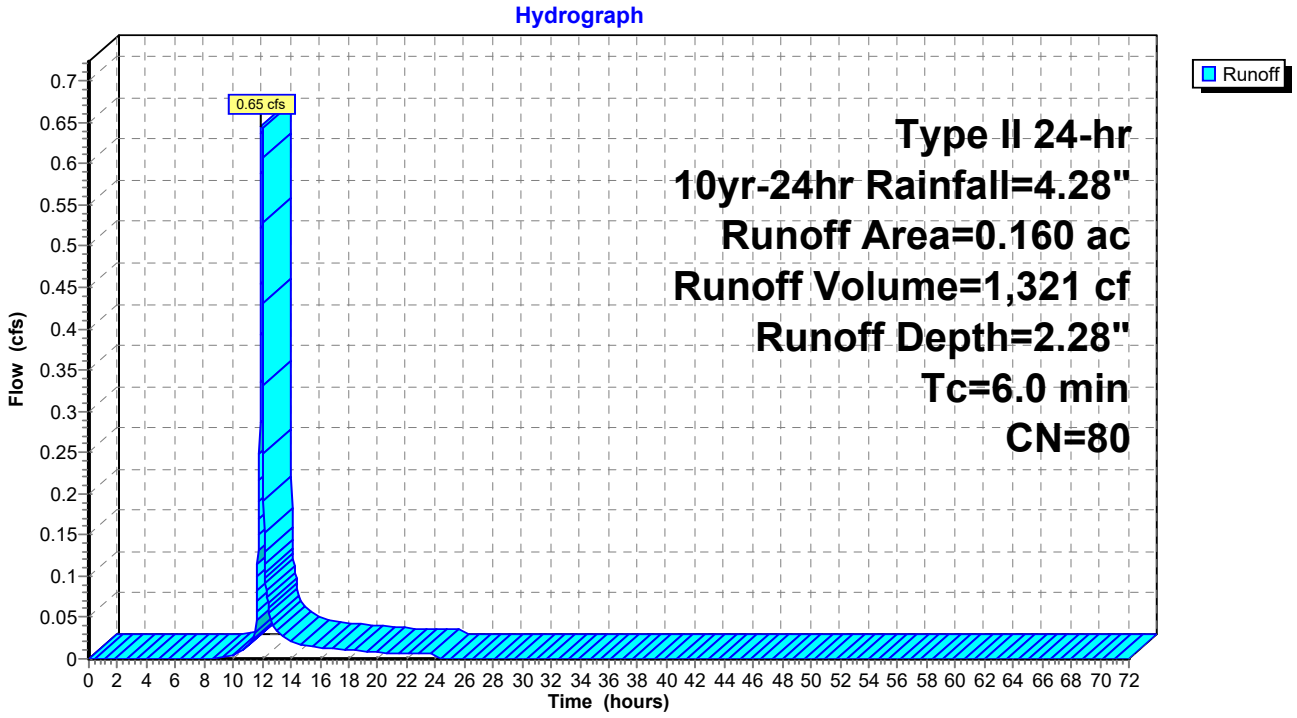
Runoff = 0.65 cfs @ 11.97 hrs, Volume= 1,321 cf, Depth= 2.28"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 80 | >75% Grass cover, Good, HSG D |
| 0.160 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment C-2: Undetained 2



## Summary for Subcatchment C-3: Undetained 3

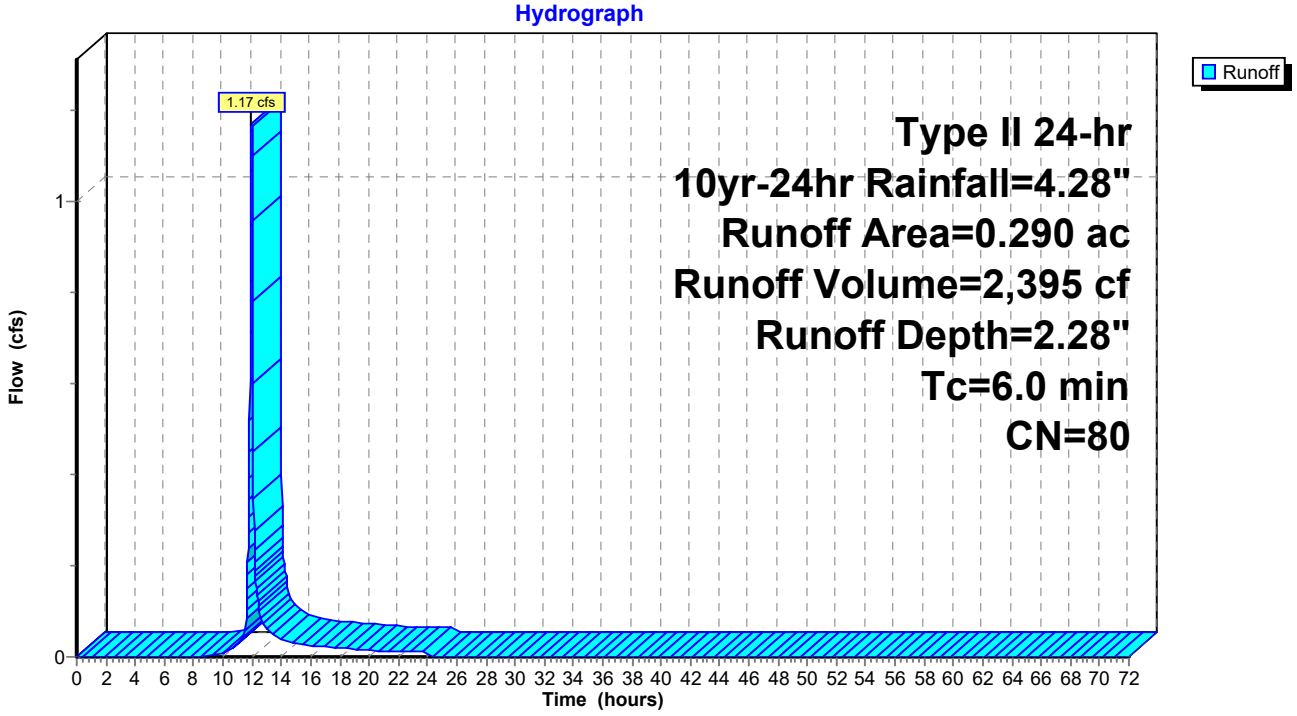
Runoff = 1.17 cfs @ 11.97 hrs, Volume= 2,395 cf, Depth= 2.28"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.290 | 80 | >75% Grass cover, Good, HSG D |
| 0.290 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment C-3: Undetained 3



## Summary for Subcatchment C-4: Undetained 4

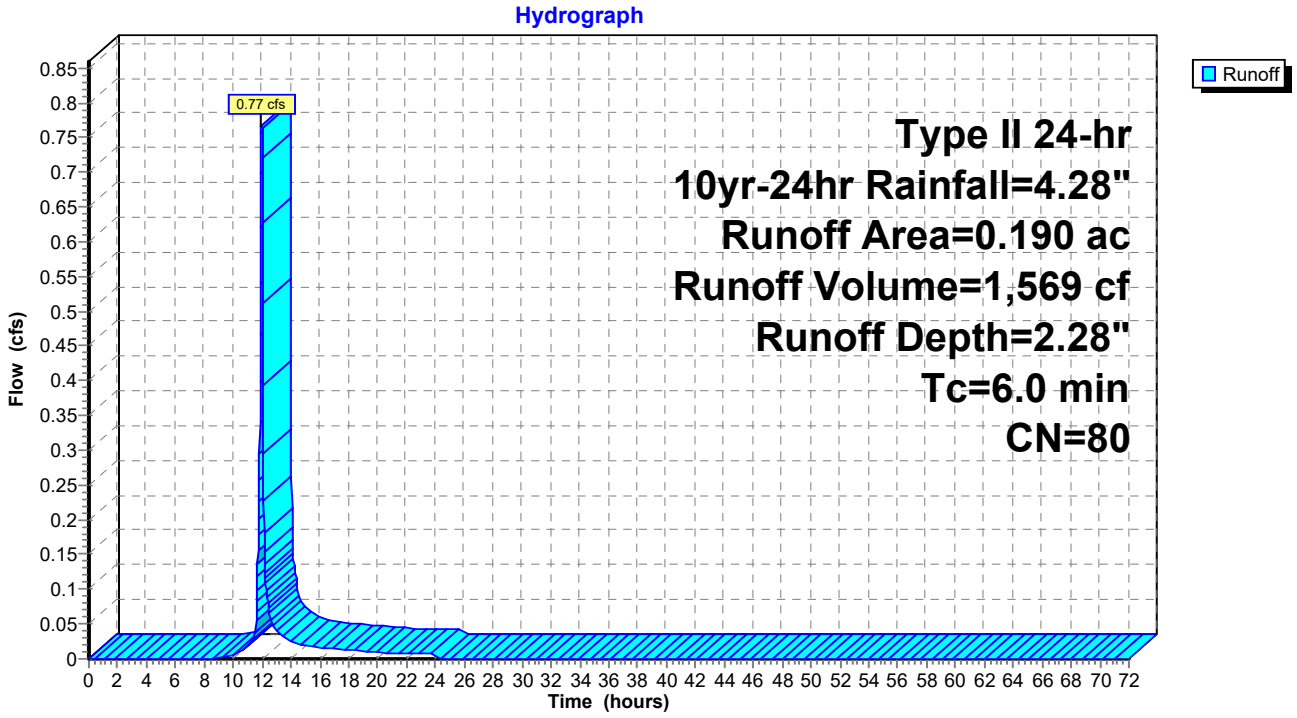
Runoff = 0.77 cfs @ 11.97 hrs, Volume= 1,569 cf, Depth= 2.28"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.190 | 80 | >75% Grass cover, Good, HSG D |
| 0.190 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment C-4: Undetained 4



## Summary for Subcatchment C-5: Undetained 5

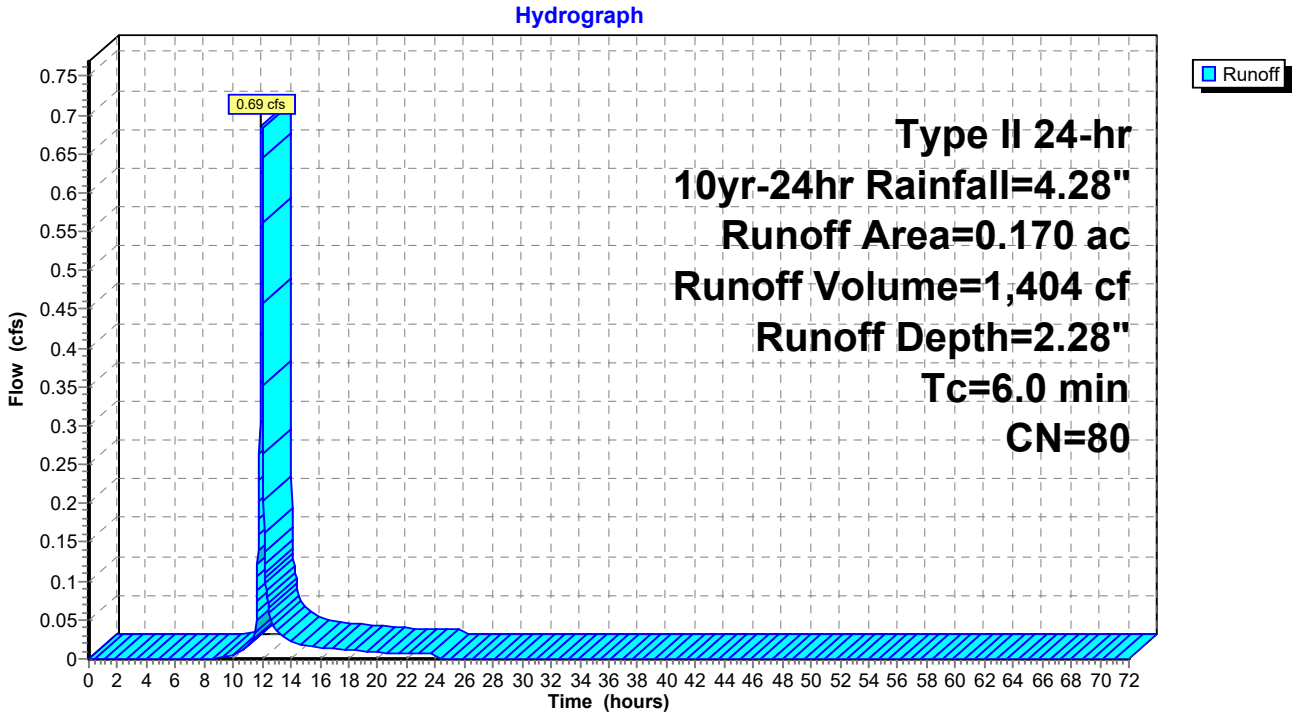
Runoff = 0.69 cfs @ 11.97 hrs, Volume= 1,404 cf, Depth= 2.28"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.170 | 80 | >75% Grass cover, Good, HSG D |
| 0.170 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment C-5: Undetained 5



## Summary for Subcatchment C-6: Undetained 6

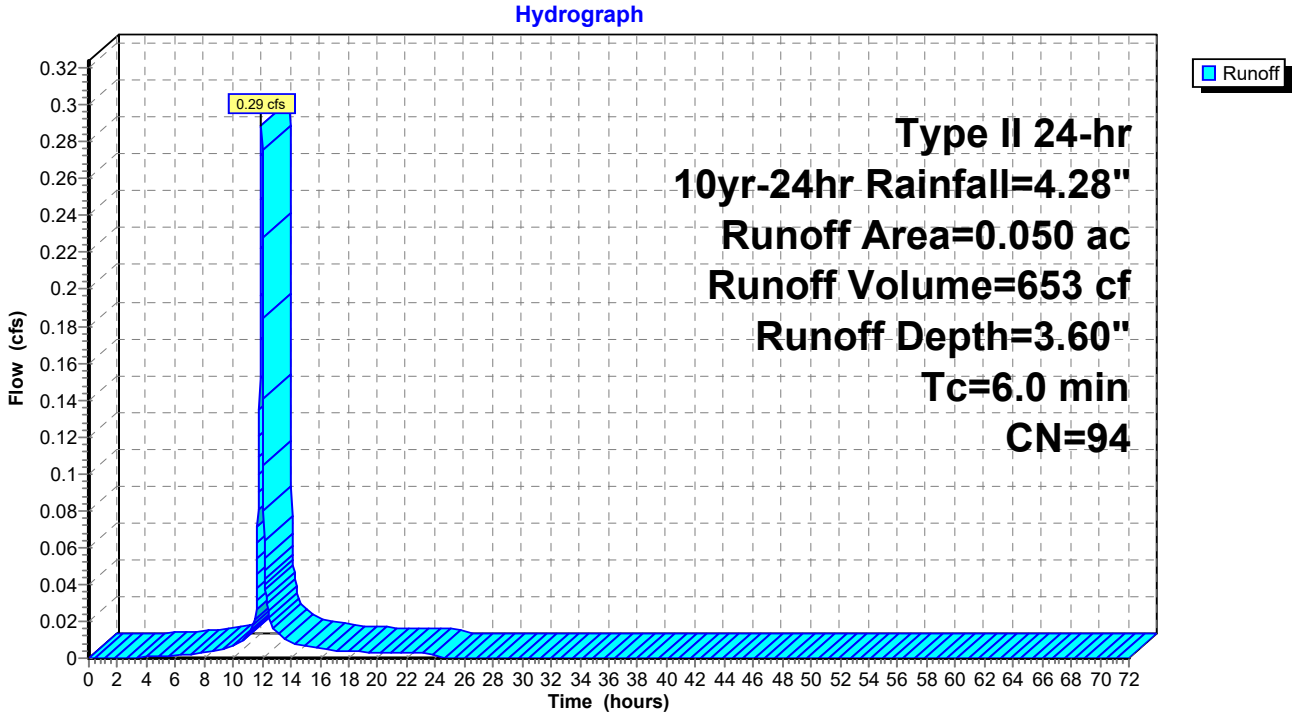
Runoff = 0.29 cfs @ 11.97 hrs, Volume= 653 cf, Depth= 3.60"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.040 | 98 | Paved parking, HSG D |
| 0.010 | 80 | >75% Grass cover, Good, HSG D |
| 0.050 | 94 | Weighted Average |
| 0.010 | 80 | 20.00% Pervious Area |
| 0.040 | 98 | 80.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment C-6: Undetained 6



## Summary for Subcatchment C-7: Undetained 7

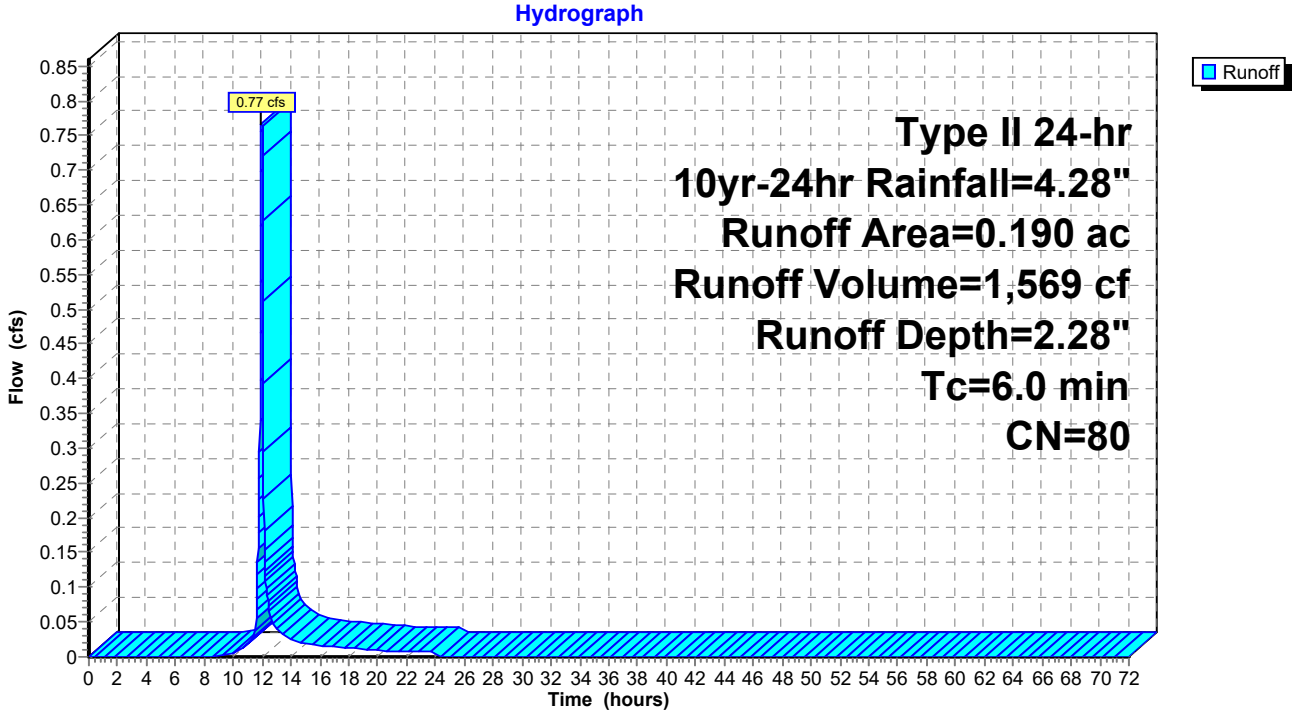
Runoff = 0.77 cfs @ 11.97 hrs, Volume= 1,569 cf, Depth= 2.28"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.190 | 80 | >75% Grass cover, Good, HSG D |
| 0.190 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment C-7: Undetained 7



## Summary for Subcatchment D-1: North Offsite Bypass

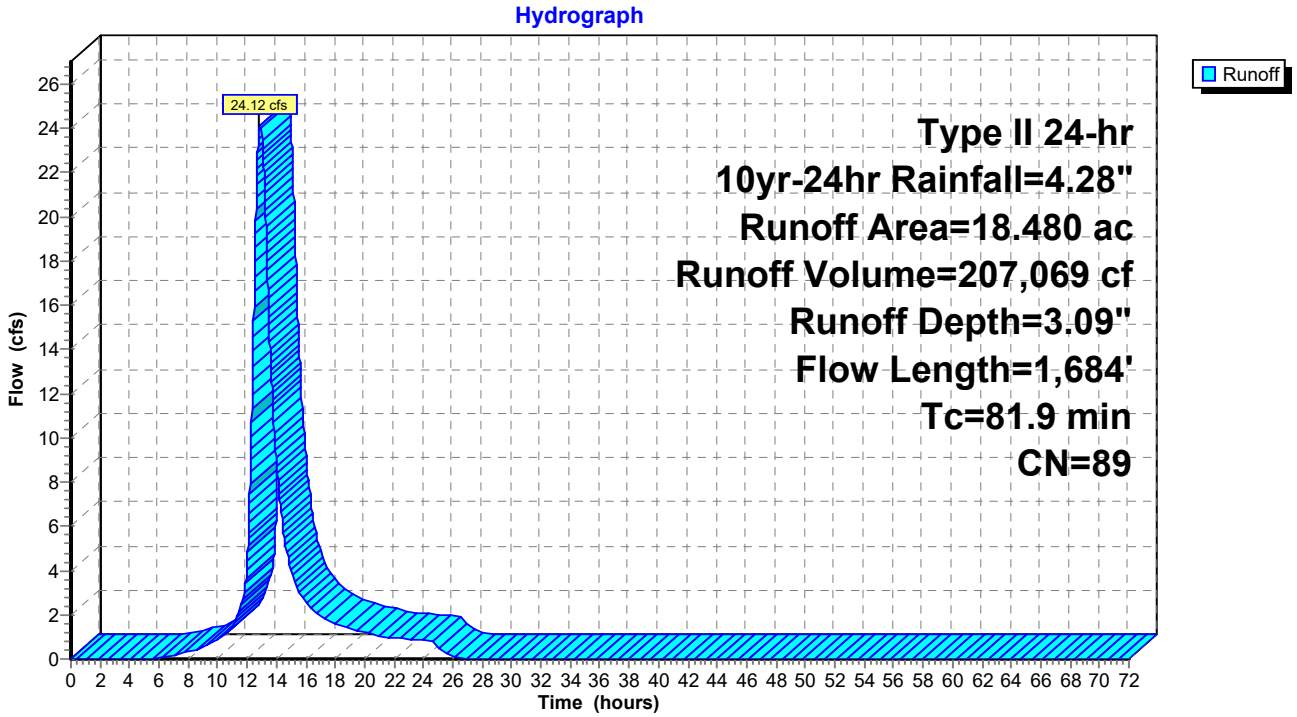
Runoff = 24.12 cfs @ 12.85 hrs, Volume= 207,069 cf, Depth= 3.09"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 18.480 | 89 | Row crops, straight row, Good, HSG D |
| 18.480 | 89 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.2 | 100 | 0.0075 | 0.27 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 75.7 | 1,584 | 0.0015 | 0.35 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 81.9 | 1,684 | Total | | | |

## Subcatchment D-1: North Offsite Bypass



## Summary for Subcatchment D-2: North Offsite Bypass

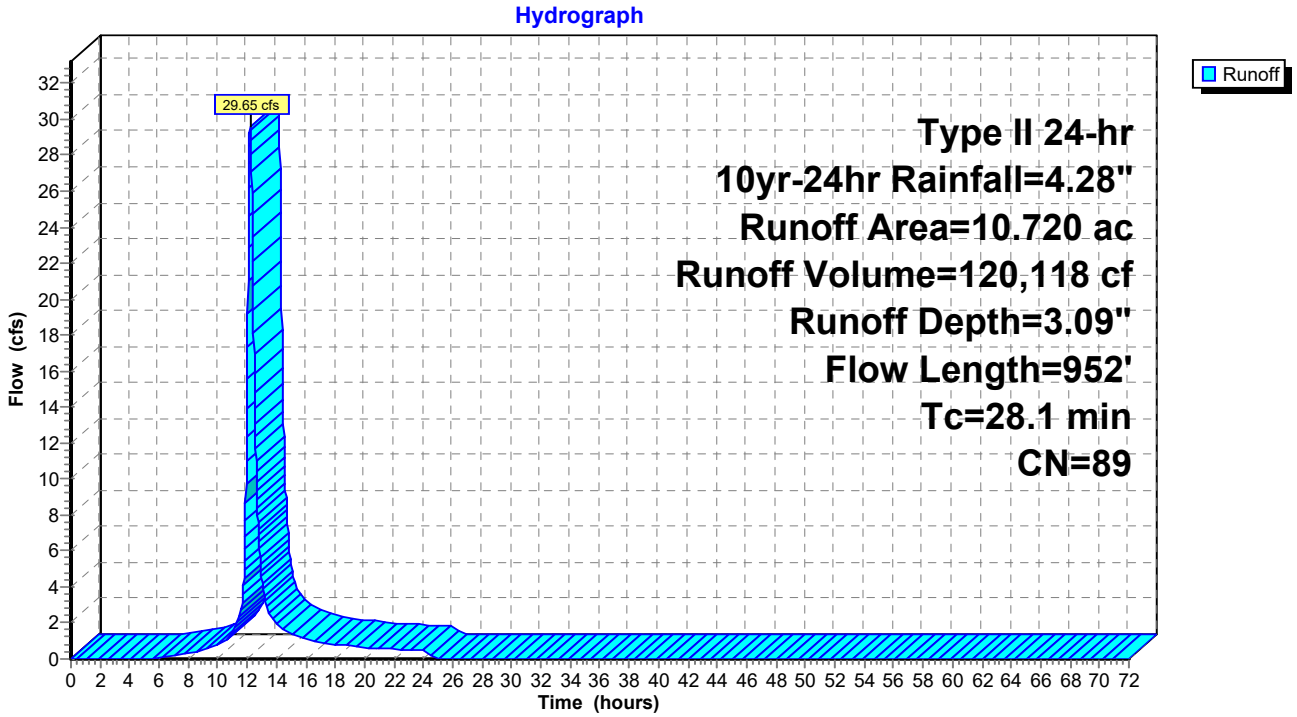
Runoff = 29.65 cfs @ 12.21 hrs, Volume= 120,118 cf, Depth= 3.09"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 10.720 | 89 | Row crops, straight row, Good, HSG D |
| 10.720 | 89 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.8 | 100 | 0.0090 | 0.29 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 22.3 | 852 | 0.0050 | 0.64 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 28.1 | 952 | Total | | | |

## Subcatchment D-2: North Offsite Bypass



## Summary for Subcatchment Out A: Outlot A

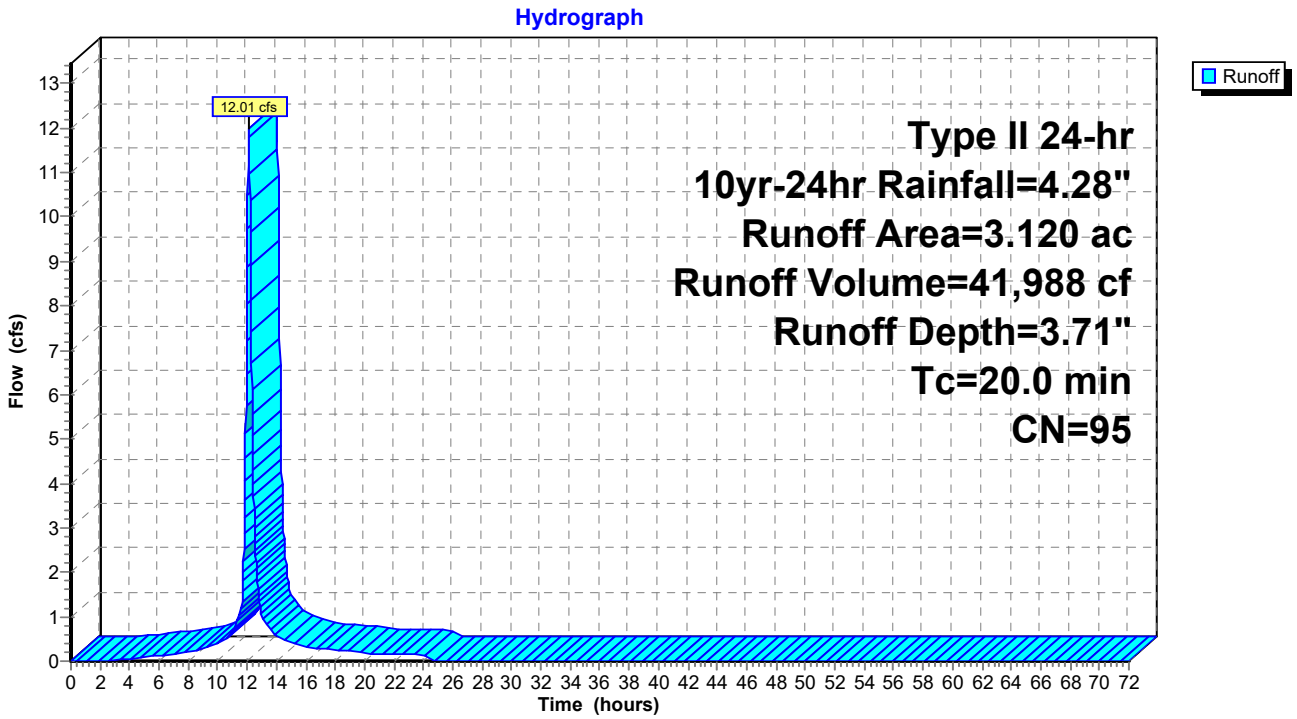
Runoff = 12.01 cfs @ 12.12 hrs, Volume= 41,988 cf, Depth= 3.71"
Routed to Pond 2P : AG-S & UG-S

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 3.120 | 95 | Urban commercial, 85% imp, HSG D |
| 0.468 | 78 | 15.00% Pervious Area |
| 2.652 | 98 | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 20.0 | | | | | **Direct Entry,** |

## Subcatchment Out A: Outlot A



## Summary for Subcatchment Out B: Outlot B

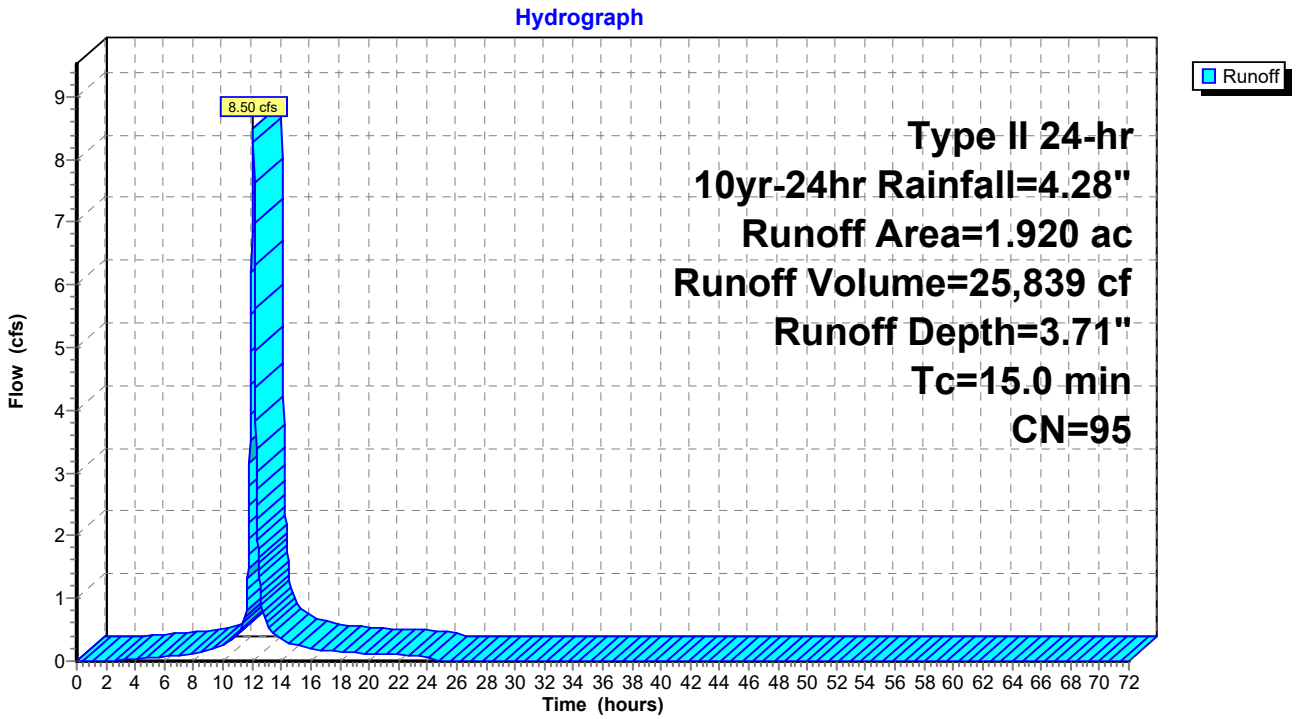
Runoff = 8.50 cfs @ 12.06 hrs, Volume= 25,839 cf, Depth= 3.71"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 1.920 | 95 | Urban commercial, 85% imp, HSG D |
| 0.288 | 78 | 15.00% Pervious Area |
| 1.632 | 98 | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment Out B: Outlot B



## Summary for Subcatchment Out C: Outlot C

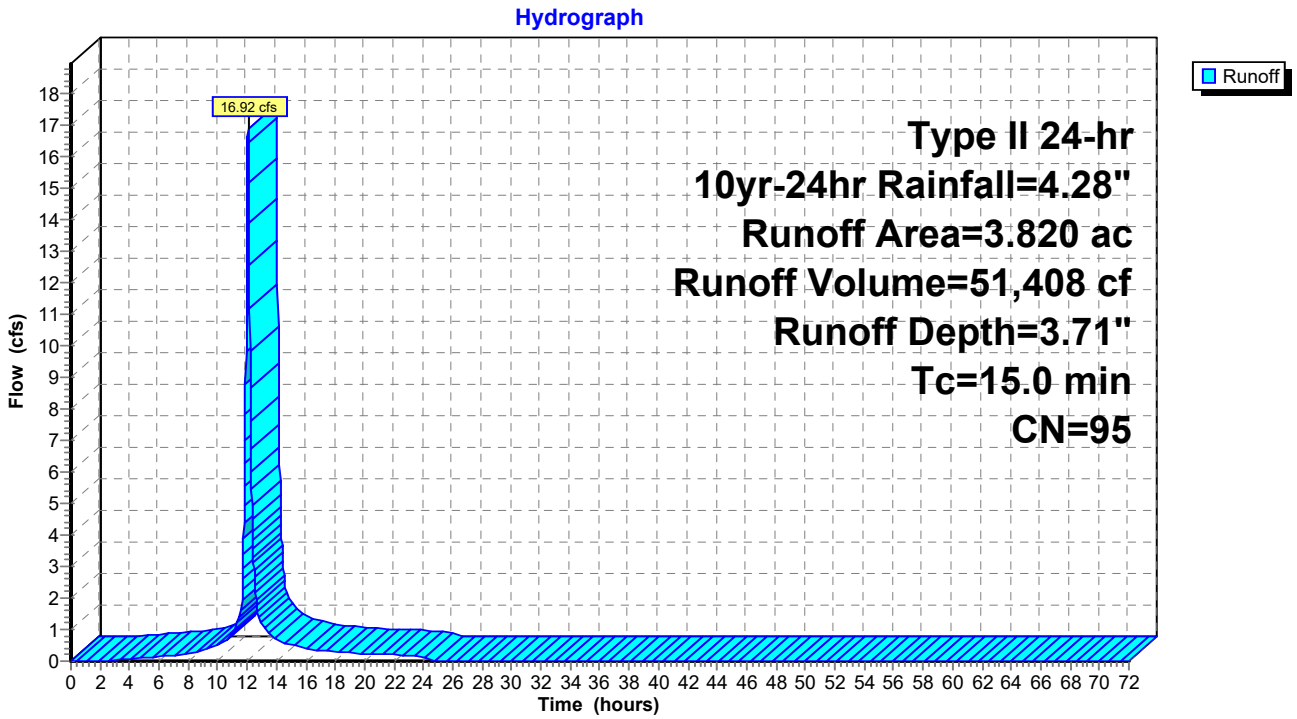
Runoff = 16.92 cfs @ 12.06 hrs, Volume= 51,408 cf, Depth= 3.71"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 10yr-24hr Rainfall=4.28"

| Area (ac) | CN | Description |
|---|---|---|
| 3.820 | 95 | Urban commercial, 85% imp, HSG D |
| 0.573 | 78 | 15.00% Pervious Area |
| 3.247 | 98 | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment Out C: Outlot C



## Summary for Pond 1P: AG-N

Inflow Area = 2,241,162 sf, 31.76% Impervious, Inflow Depth = 3.25" for 10yr-24hr event
Inflow = 122.04 cfs @ 12.08 hrs, Volume= 607,511 cf
Outflow = 6.24 cfs @ 15.84 hrs, Volume= 467,517 cf, Atten= 95%, Lag= 225.6 min
Primary = 6.24 cfs @ 15.84 hrs, Volume= 467,517 cf
Routed to Link 3L : Str. 3.00
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 4L : Total Site Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs / 3
Peak Elev= 884.48' @ 15.84 hrs Surf.Area= 91,380 sf Storage= 425,157 cf

Plug-Flow detention time= 993.3 min calculated for 467,517 cf (77% of inflow)
Center-of-Mass det. time= 905.7 min ( 1,726.7 - 821.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 877.29' | 573,880 cf | **Custom Stage Data (Irregular)** Listed below (Recalc) |

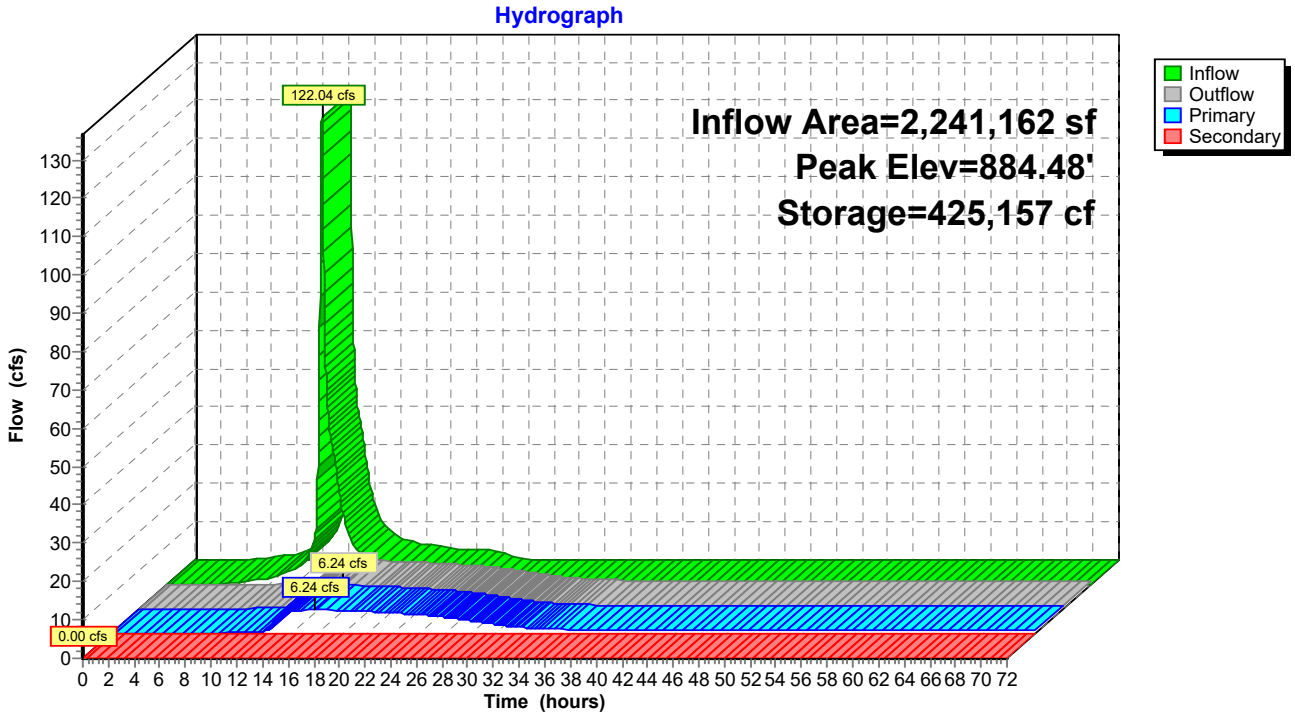
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 877.29 | 33,121 | 1,437.0 | 0 | 0 | 33,121 |
| 878.00 | 37,072 | 1,579.0 | 24,905 | 24,905 | 67,219 |
| 879.00 | 42,856 | 1,793.0 | 39,929 | 64,834 | 124,667 |
| 880.00 | 49,752 | 2,010.0 | 46,261 | 111,096 | 190,366 |
| 881.00 | 57,879 | 2,227.0 | 53,764 | 164,860 | 263,563 |
| 882.00 | 67,238 | 2,444.0 | 62,500 | 227,360 | 344,257 |
| 883.00 | 77,811 | 2,659.0 | 72,460 | 299,820 | 431,602 |
| 884.00 | 87,356 | 2,779.0 | 82,537 | 382,358 | 483,602 |
| 884.64 | 92,754 | 2,793.0 | 57,627 | 439,984 | 490,061 |
| 885.00 | 95,775 | 2,800.0 | 33,934 | 473,918 | 493,335 |
| 886.00 | 104,208 | 2,819.0 | 99,962 | 573,880 | 502,283 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 877.29' | **12.0" Round Culvert**<br>L= 24.0' RCP, sq.cut end projecting, Ke= 0.500<br>Inlet / Outlet Invert= 877.29' / 877.22' S= 0.0029 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |
| #2 | Device 1 | 877.29' | **4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 882.14' | **12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #4 | Secondary | 884.54' | **110.0' long + 3.0 '/' SideZ x 26.2' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 |

**Primary OutFlow** Max=6.24 cfs @ 15.84 hrs HW=884.48' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 6.24 cfs of 9.78 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 1.11 cfs @ 12.76 fps)
└**3=Orifice/Grate** (Orifice Controls 5.13 cfs @ 6.53 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=877.29' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond 1P: AG-N


Hydrograph
Inflow Area=2,241,162 sf
Peak Elev=884.48'
Storage=425,157 cf
122.04 cfs
6.24 cfs
6.24 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 10 20 30 40 50 60 70 80 90 100 110 120 130
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

## Summary for Pond 2P: AG-S & UG-S

Inflow Area = 361,548 sf, 75.20% Impervious, Inflow Depth = 3.51" for 10yr-24hr event
Inflow = 36.68 cfs @ 11.98 hrs, Volume= 105,703 cf
Outflow = 0.95 cfs @ 15.57 hrs, Volume= 105,686 cf, Atten= 97%, Lag= 215.7 min
Primary = 0.95 cfs @ 15.57 hrs, Volume= 105,686 cf
Routed to Link 3L : Str. 3.00
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 4L : Total Site Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs / 3
Peak Elev= 882.61' @ 15.57 hrs Surf.Area= 20,190 sf Storage= 70,517 cf

Plug-Flow detention time= 866.2 min calculated for 105,686 cf (100% of inflow)
Center-of-Mass det. time= 866.1 min ( 1,649.5 - 783.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 877.38' | 43,614 cf | **Custom Stage Data (Irregular)** Listed below (Recalc) |
| #2A | 877.53' | 22,031 cf | **80.00'W x 180.82'L x 7.00'H Underground Detention**<br>101,259 cf Overall - 46,183 cf Embedded = 55,076 cf x 40.0% Voids |
| #3A | 878.03' | 46,183 cf | **CMP Round 72** x 9 Inside #2<br>Effective Size= 72.0"W x 72.0"H => 28.27 sf x 20.00'L = 565.5 cf<br>Overall Size= 72.0"W x 72.0"H x 20.00'L<br>Row Length Adjustment= +152.82' x 28.27 sf x 9 rows<br>78.00' Header x 28.27 sf x 1 = 2,205.4 cf Inside |
| | | 111,827 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 877.38 | 1,605 | 205.0 | 0 | 0 | 1,605 |
| 878.00 | 2,000 | 220.0 | 1,115 | 1,115 | 2,129 |
| 879.00 | 2,697 | 245.0 | 2,340 | 3,455 | 3,083 |
| 880.00 | 3,462 | 265.0 | 3,072 | 6,527 | 3,934 |
| 881.00 | 4,284 | 284.0 | 3,866 | 10,392 | 4,808 |
| 882.00 | 5,163 | 303.0 | 4,717 | 15,109 | 5,743 |
| 883.00 | 6,098 | 321.0 | 5,624 | 20,733 | 6,690 |
| 884.00 | 7,090 | 340.0 | 6,588 | 27,321 | 7,742 |
| 885.00 | 8,138 | 359.0 | 7,608 | 34,929 | 8,855 |
| 885.90 | 9,130 | 376.0 | 7,766 | 42,695 | 9,903 |
| 886.00 | 9,248 | 378.0 | 919 | 43,614 | 10,029 |

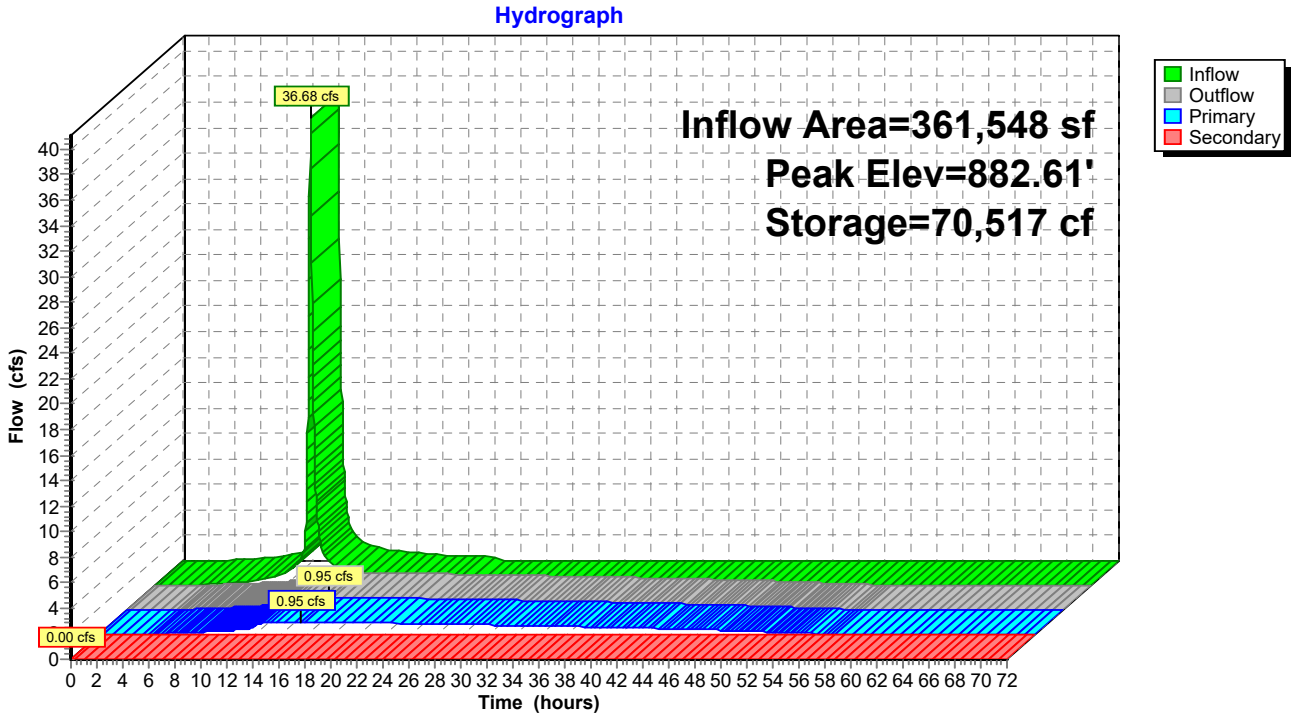
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 877.38' | **15.0" Round Culvert**<br>L= 40.0' RCP, sq.cut end projecting, Ke= 0.500<br>Inlet / Outlet Invert= 877.38' / 877.22' S= 0.0040 '/' Cc= 0.900<br>n= 0.012, Flow Area= 1.23 sf |
| #2 | Device 1 | 877.38' | **4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 882.61' | **12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #4 | Secondary | 885.40' | **25.0' long + 3.0 '/' SideZ x 53.8' breadth Broad-Crested Rectangular Weir** |

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=0.95 cfs @ 15.57 hrs HW=882.61' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.95 cfs of 12.68 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 0.95 cfs @ 10.83 fps)
  └─**3=Orifice/Grate** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=877.38' TW=0.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir**( Controls 0.00 cfs)

## Pond 2P: AG-S & UG-S

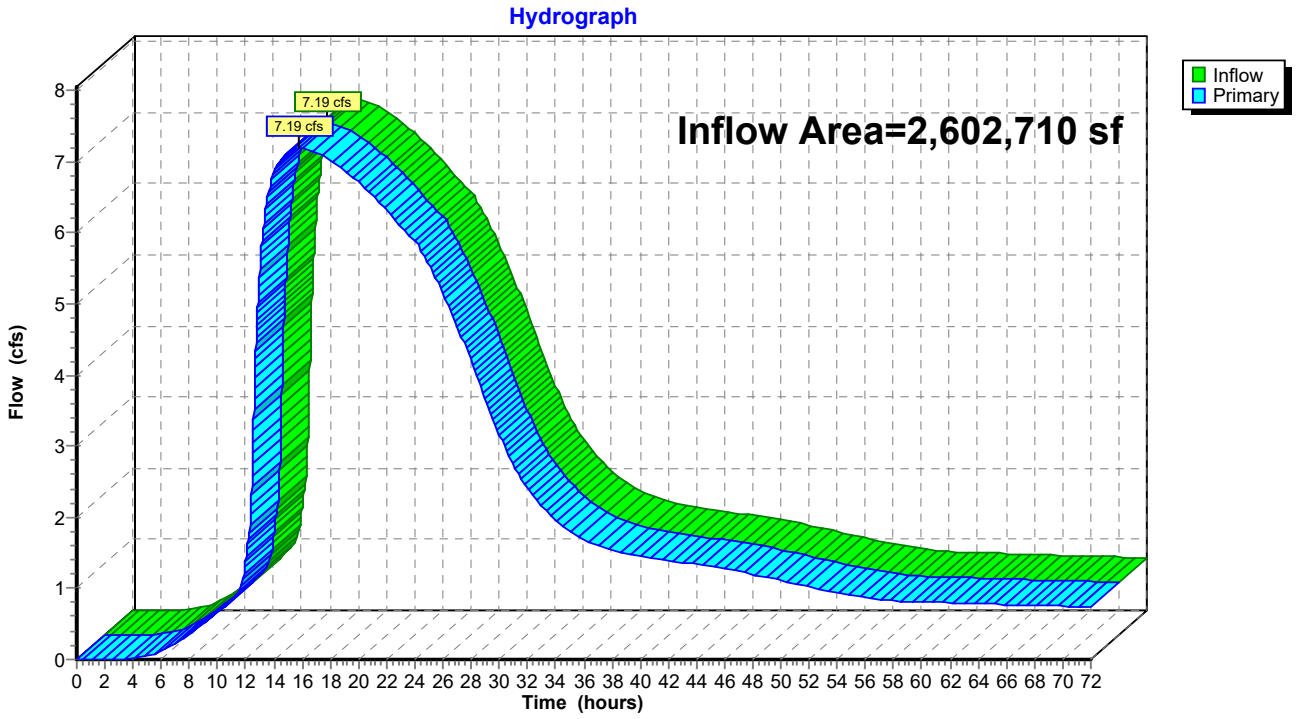


## Summary for Link 3L: Str. 3.00

Inflow Area = 2,602,710 sf, 37.79% Impervious, Inflow Depth > 2.64" for 10yr-24hr event
Inflow = 7.19 cfs @ 15.83 hrs, Volume= 573,203 cf
Primary = 7.19 cfs @ 15.83 hrs, Volume= 573,203 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total Site Runoff

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

## Link 3L: Str. 3.00

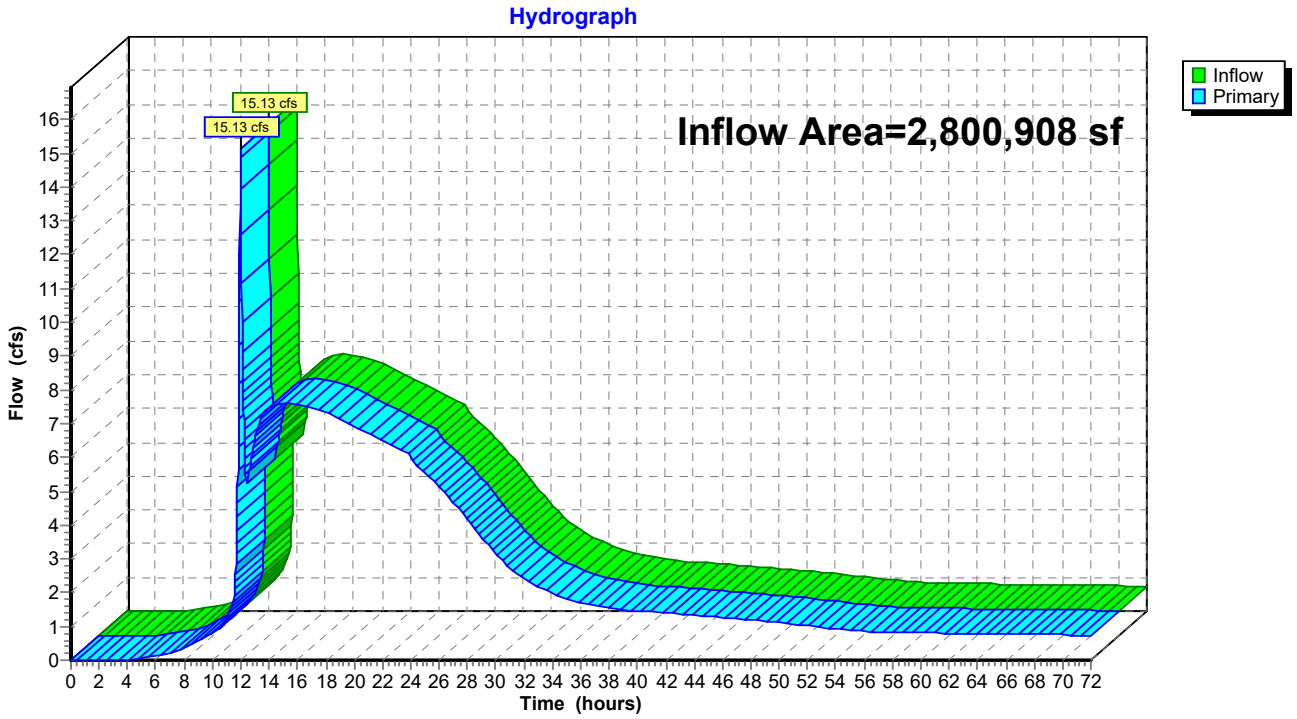


## Summary for Link 4L: Total Site Runoff

Inflow Area = 2,800,908 sf, 35.18% Impervious, Inflow Depth > 2.62" for 10yr-24hr event
Inflow = 15.13 cfs @ 11.98 hrs, Volume= 611,002 cf
Primary = 15.13 cfs @ 11.98 hrs, Volume= 611,002 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

## Link 4L: Total Site Runoff



Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment A-1: Meijer Site** Runoff Area=16.510 ac 69.41% Impervious Runoff Depth=5.36"
Tc=15.0 min CN=92 Runoff=106.61 cfs 321,508 cf

**Subcatchment A-2: Meijer Site** Runoff Area=5.180 ac 69.31% Impervious Runoff Depth=5.36"
Tc=6.0 min CN=92 Runoff=44.40 cfs 100,873 cf

**Subcatchment B-1: Outlot (By Others)** Runoff Area=1.700 ac 0.00% Impervious Runoff Depth=4.16"
Flow Length=263' Tc=6.2 min CN=81 Runoff=12.14 cfs 25,660 cf

**Subcatchment B-2: Outlot (By Others)** Runoff Area=1.800 ac 0.00% Impervious Runoff Depth=3.95"
Flow Length=274' Tc=21.1 min CN=79 Runoff=7.64 cfs 25,801 cf

**Subcatchment C-2: Undetained 2** Runoff Area=0.160 ac 0.00% Impervious Runoff Depth=4.05"
Tc=6.0 min CN=80 Runoff=1.13 cfs 2,354 cf

**Subcatchment C-3: Undetained 3** Runoff Area=0.290 ac 0.00% Impervious Runoff Depth=4.05"
Tc=6.0 min CN=80 Runoff=2.04 cfs 4,267 cf

**Subcatchment C-4: Undetained 4** Runoff Area=0.190 ac 0.00% Impervious Runoff Depth=4.05"
Tc=6.0 min CN=80 Runoff=1.34 cfs 2,795 cf

**Subcatchment C-5: Undetained 5** Runoff Area=0.170 ac 0.00% Impervious Runoff Depth=4.05"
Tc=6.0 min CN=80 Runoff=1.20 cfs 2,501 cf

**Subcatchment C-6: Undetained 6** Runoff Area=0.050 ac 80.00% Impervious Runoff Depth=5.59"
Tc=6.0 min CN=94 Runoff=0.44 cfs 1,015 cf

**Subcatchment C-7: Undetained 7** Runoff Area=0.190 ac 0.00% Impervious Runoff Depth=4.05"
Tc=6.0 min CN=80 Runoff=1.34 cfs 2,795 cf

**Subcatchment D-1: North Offsite Bypass** Runoff Area=18.480 ac 0.00% Impervious Runoff Depth=5.03"
Flow Length=1,684' Tc=81.9 min CN=89 Runoff=38.79 cfs 337,185 cf

**Subcatchment D-2: North Offsite Bypass** Runoff Area=10.720 ac 0.00% Impervious Runoff Depth=5.03"
Flow Length=952' Tc=28.1 min CN=89 Runoff=47.37 cfs 195,597 cf

**Subcatchment Out A: Outlot A** Runoff Area=3.120 ac 85.00% Impervious Runoff Depth=5.71"
Tc=20.0 min CN=95 Runoff=18.08 cfs 64,665 cf

**Subcatchment Out B: Outlot B** Runoff Area=1.920 ac 85.00% Impervious Runoff Depth=5.71"
Tc=15.0 min CN=95 Runoff=12.79 cfs 39,794 cf

**Subcatchment Out C: Outlot C** Runoff Area=3.820 ac 85.00% Impervious Runoff Depth=5.71"
Tc=15.0 min CN=95 Runoff=25.45 cfs 79,173 cf

**Pond 1P: AG-N** Peak Elev=884.86' Storage=461,014 cf Inflow=190.01 cfs 973,257 cf
Primary=6.78 cfs 537,974 cf Secondary=55.12 cfs 289,883 cf Outflow=61.91 cfs 827,857 cf

**Pond 2P: AG-S & UG-S** Peak Elev=884.29' Storage=96,191 cf Inflow=56.14 cfs 165,538 cf
Primary=5.19 cfs 165,518 cf Secondary=0.00 cfs 0 cf Outflow=5.19 cfs 165,518 cf

**Link 3L: Str. 3.00** Inflow=11.97 cfs 703,492 cf
Primary=11.97 cfs 703,492 cf

**Link 4L: Total Site Runoff** Inflow=69.48 cfs 1,060,563 cf
Primary=69.48 cfs 1,060,563 cf

**Total Runoff Area = 2,800,908 sf Runoff Volume = 1,205,983 cf Average Runoff Depth = 5.17"**
**64.82% Pervious = 1,815,537 sf 35.18% Impervious = 985,371 sf**

## Summary for Subcatchment A-1: Meijer Site

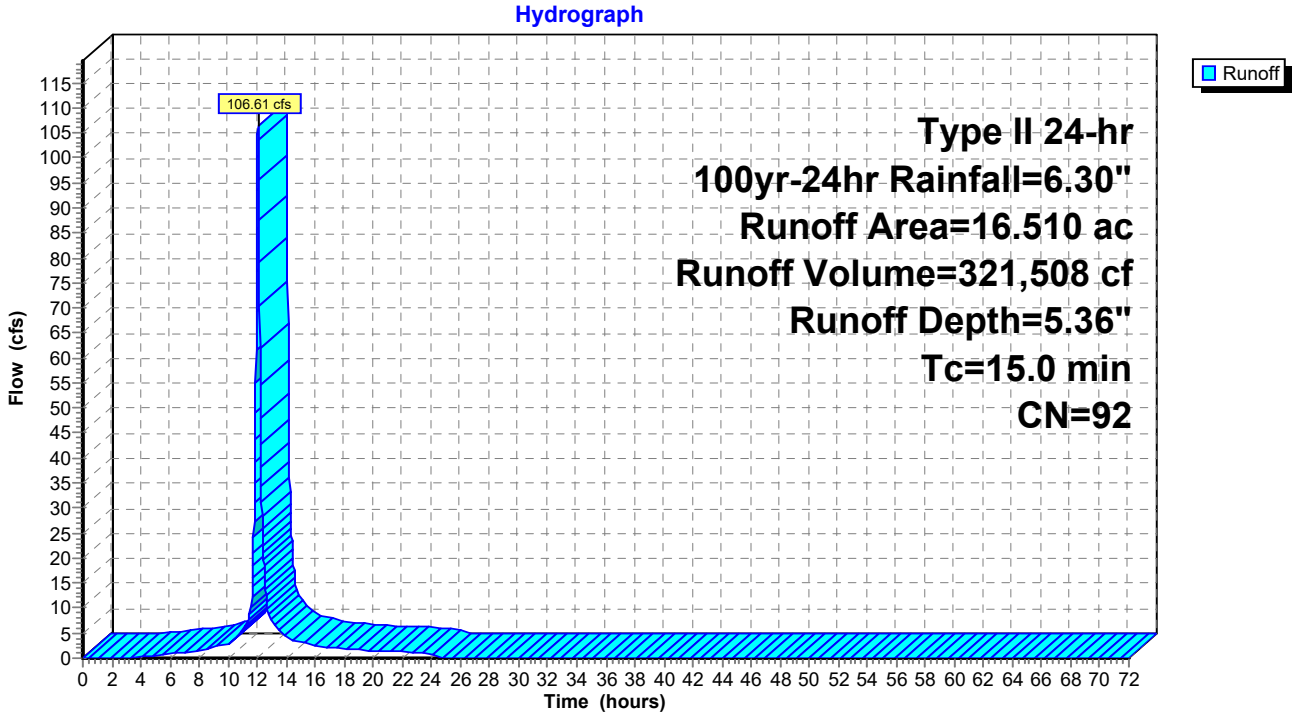
Runoff = 106.61 cfs @ 12.06 hrs, Volume= 321,508 cf, Depth= 5.36"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 11.460 | 98 | Paved parking, HSG D |
| 5.050 | 80 | >75% Grass cover, Good, HSG D |
| 16.510 | 92 | Weighted Average |
| 5.050 | 80 | 30.59% Pervious Area |
| 11.460 | 98 | 69.41% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment A-1: Meijer Site



## Summary for Subcatchment A-2: Meijer Site

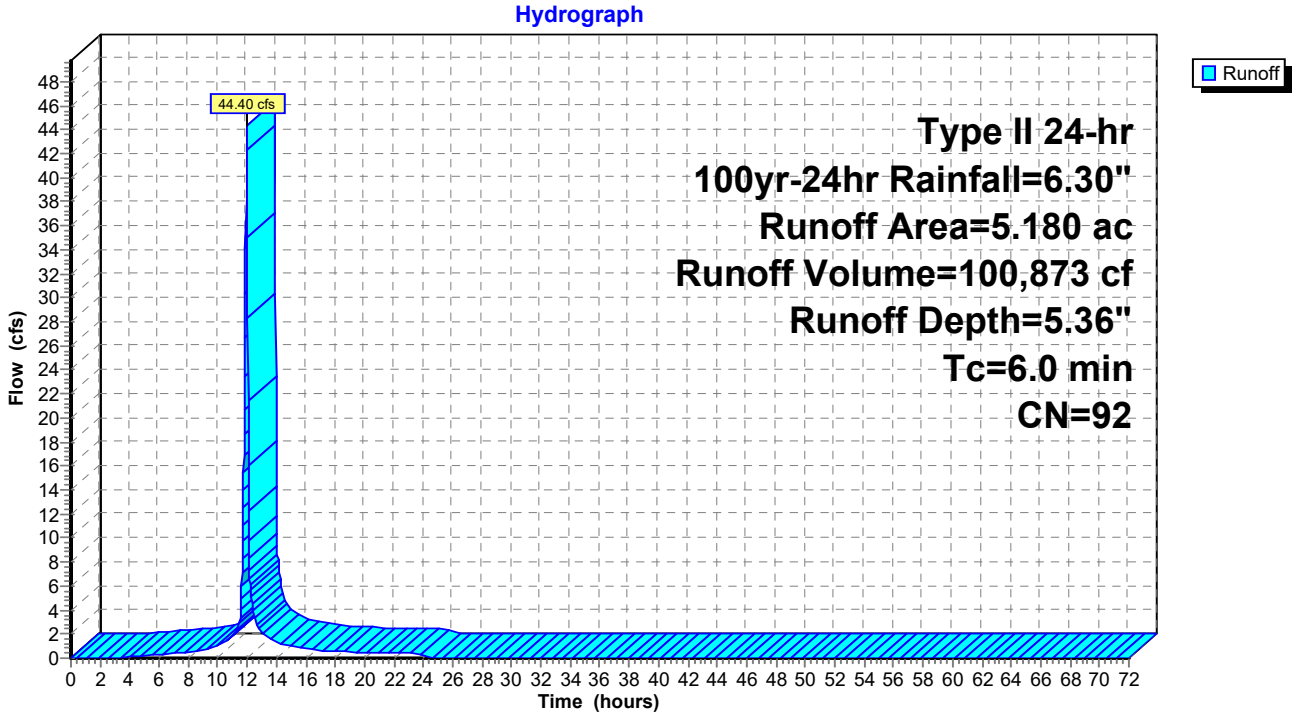
Runoff = 44.40 cfs @ 11.97 hrs, Volume= 100,873 cf, Depth= 5.36"
Routed to Pond 2P : AG-S & UG-S

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 3.590 | 98 | Paved parking, HSG D |
| 1.590 | 80 | >75% Grass cover, Good, HSG D |
| 5.180 | 92 | Weighted Average |
| 1.590 | 80 | 30.69% Pervious Area |
| 3.590 | 98 | 69.31% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment A-2: Meijer Site



## Summary for Subcatchment B-1: Outlot (By Others)

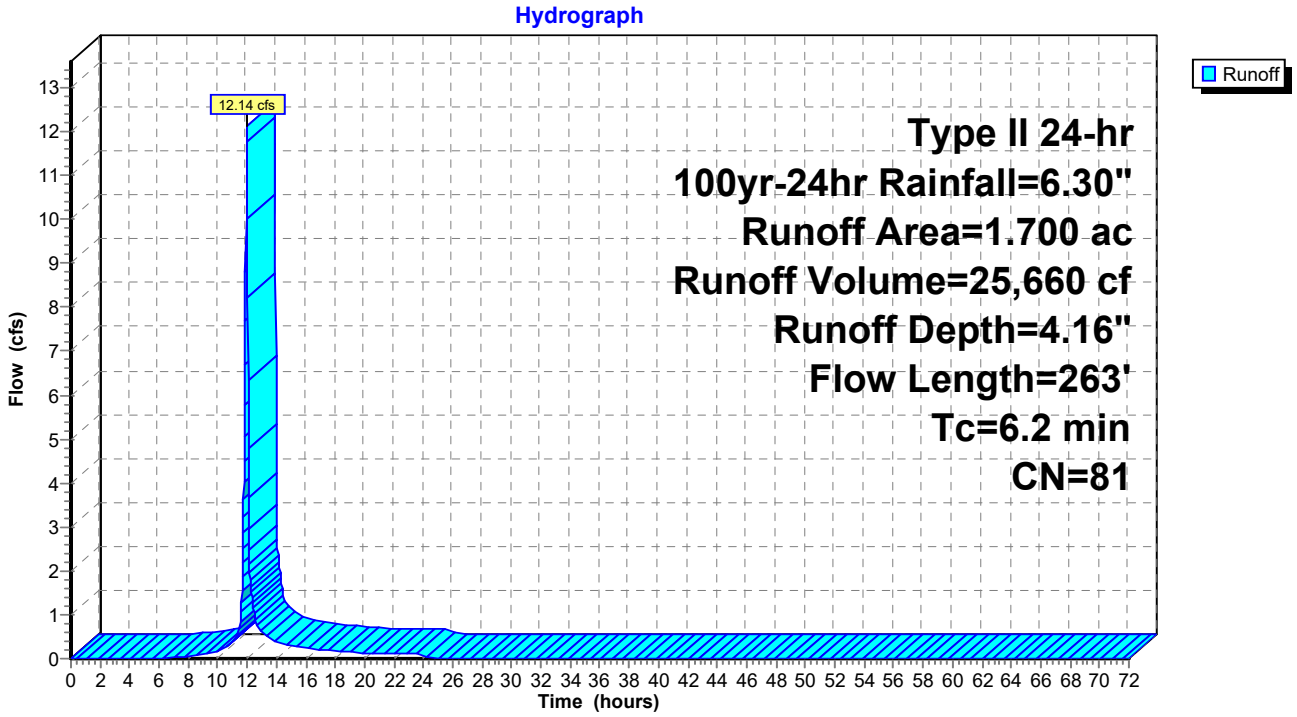
Runoff = 12.14 cfs @ 11.97 hrs, Volume= 25,660 cf, Depth= 4.16"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.000 | 78 | Row crops, straight row, Good, HSG B |
| | 0.700 | 85 | Row crops, straight row, Good, HSG C |
| | 1.700 | 81 | Weighted Average |
| | 1.700 | 81 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 100 | 0.0327 | 0.48 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 2.8 | 163 | 0.0113 | 0.96 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 6.2 | 263 | Total | | | |

## Subcatchment B-1: Outlot (By Others)



## Summary for Subcatchment B-2: Outlot (By Others)

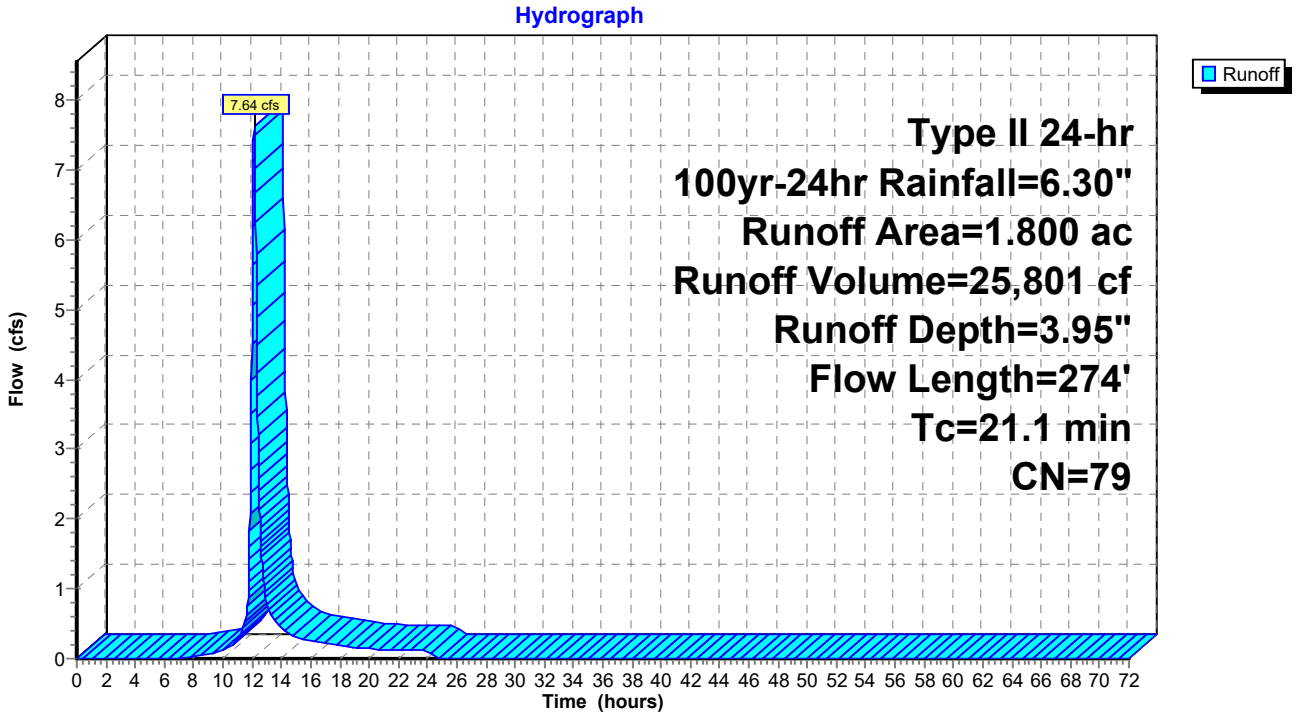
Runoff = 7.64 cfs @ 12.13 hrs, Volume= 25,801 cf, Depth= 3.95"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.500 | 78 | Row crops, straight row, Good, HSG B |
| | 0.300 | 85 | Row crops, straight row, Good, HSG C |
| | 1.800 | 79 | Weighted Average |
| | 1.800 | 79 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.0 | 100 | 0.0130 | 0.33 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 16.1 | 174 | 0.0004 | 0.18 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 21.1 | 274 | Total | | | |

## Subcatchment B-2: Outlot (By Others)



## Summary for Subcatchment C-2: Undetained 2

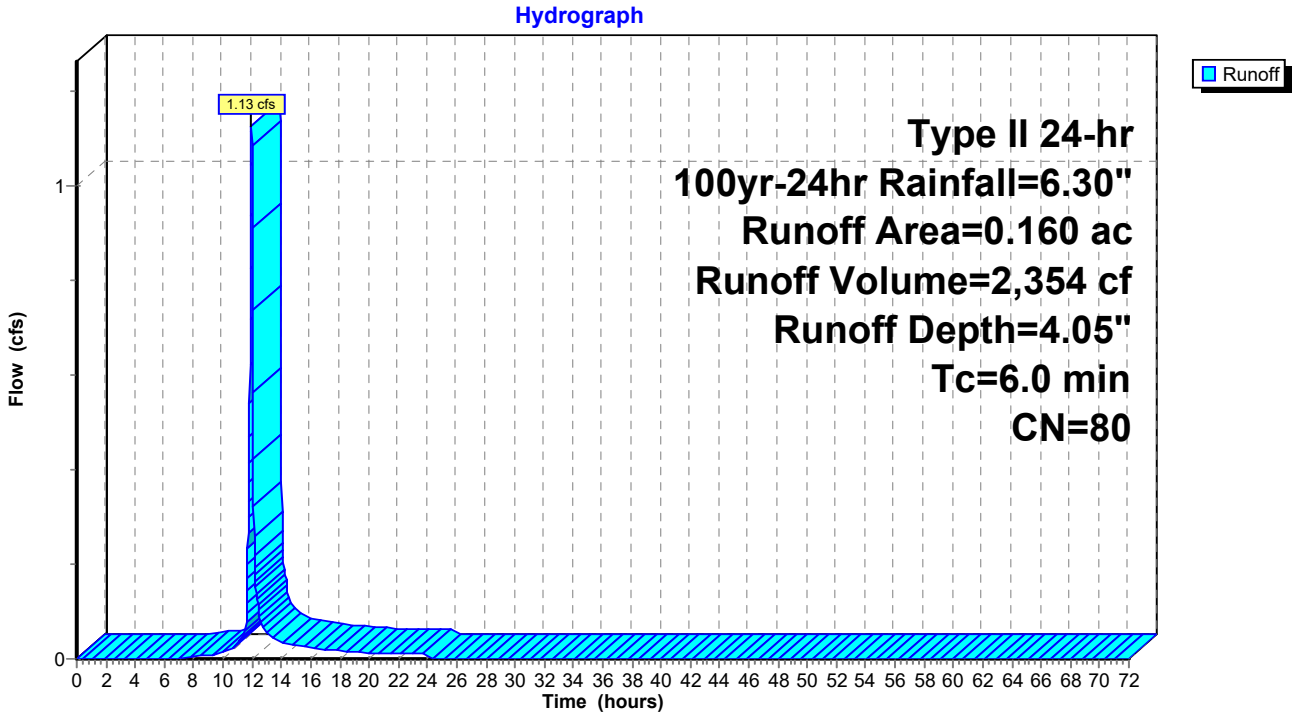
Runoff = 1.13 cfs @ 11.97 hrs, Volume= 2,354 cf, Depth= 4.05"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 80 | >75% Grass cover, Good, HSG D |
| 0.160 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment C-2: Undetained 2



## Summary for Subcatchment C-3: Undetained 3

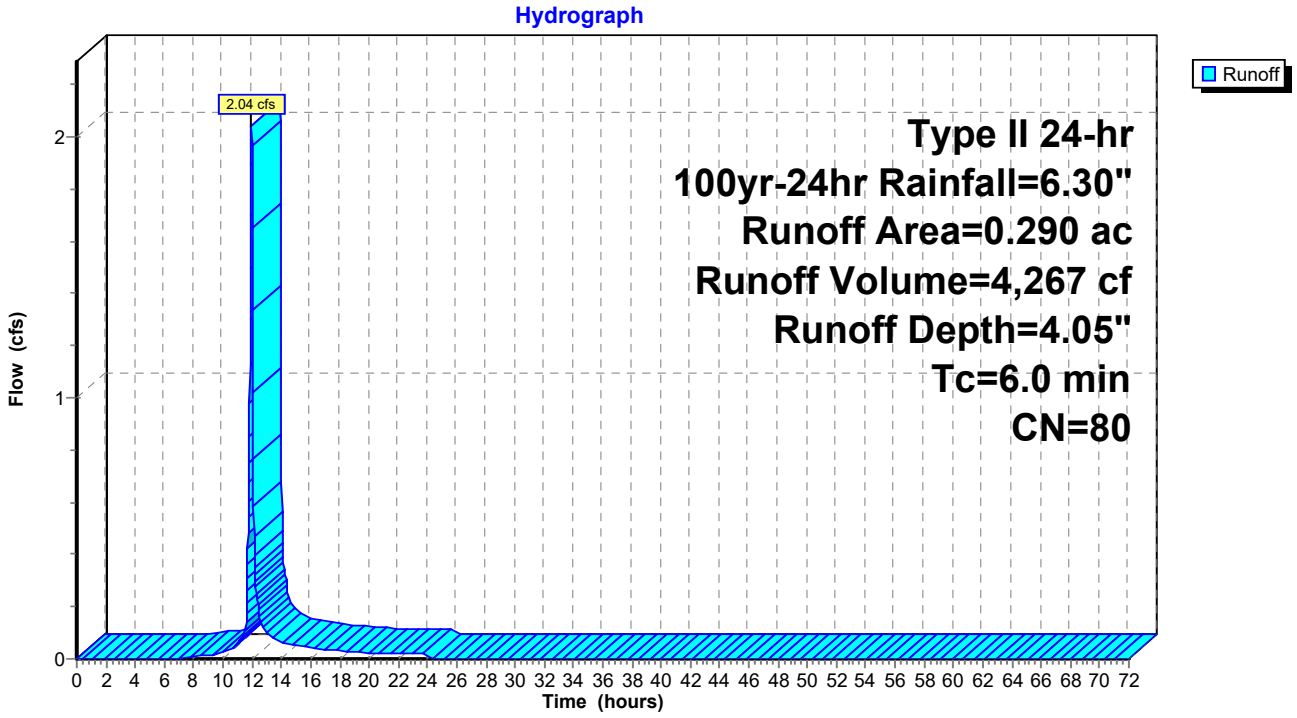
Runoff = 2.04 cfs @ 11.97 hrs, Volume= 4,267 cf, Depth= 4.05"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 0.290 | 80 | >75% Grass cover, Good, HSG D |
| 0.290 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment C-3: Undetained 3



## Summary for Subcatchment C-4: Undetained 4

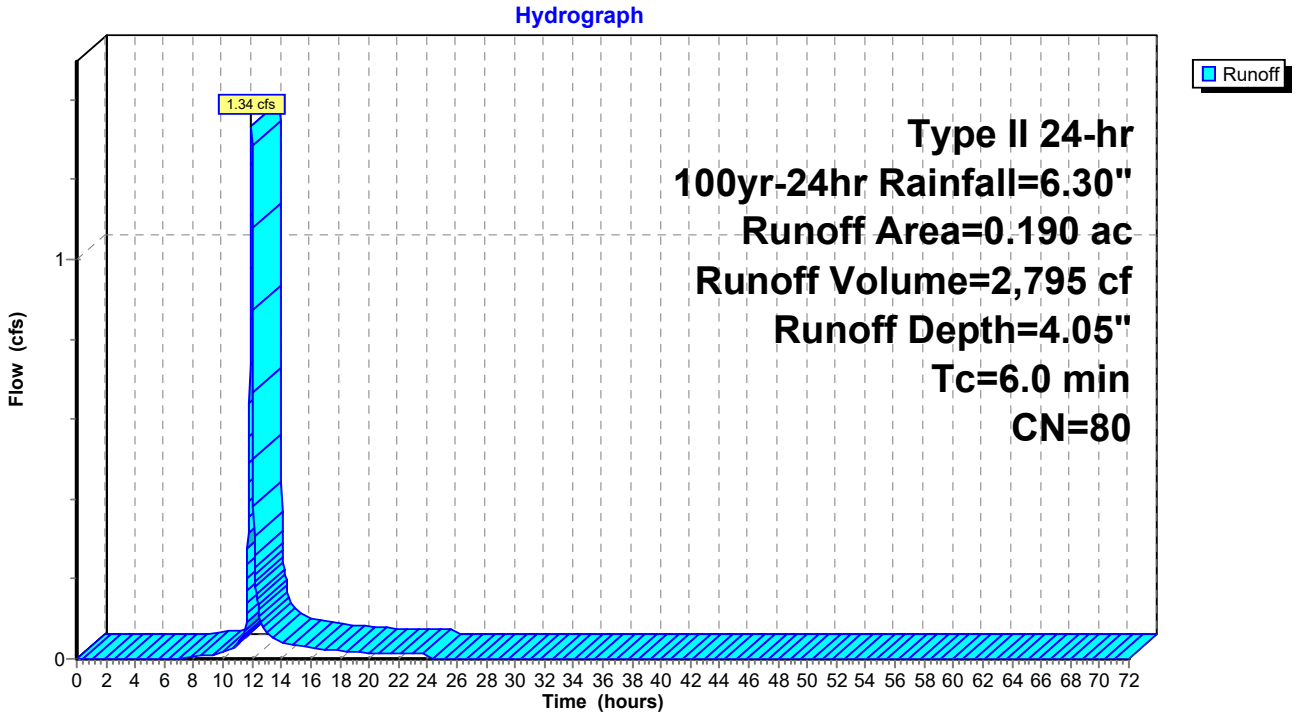
Runoff = 1.34 cfs @ 11.97 hrs, Volume= 2,795 cf, Depth= 4.05"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 0.190 | 80 | >75% Grass cover, Good, HSG D |
| 0.190 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment C-4: Undetained 4



## Summary for Subcatchment C-5: Undetained 5

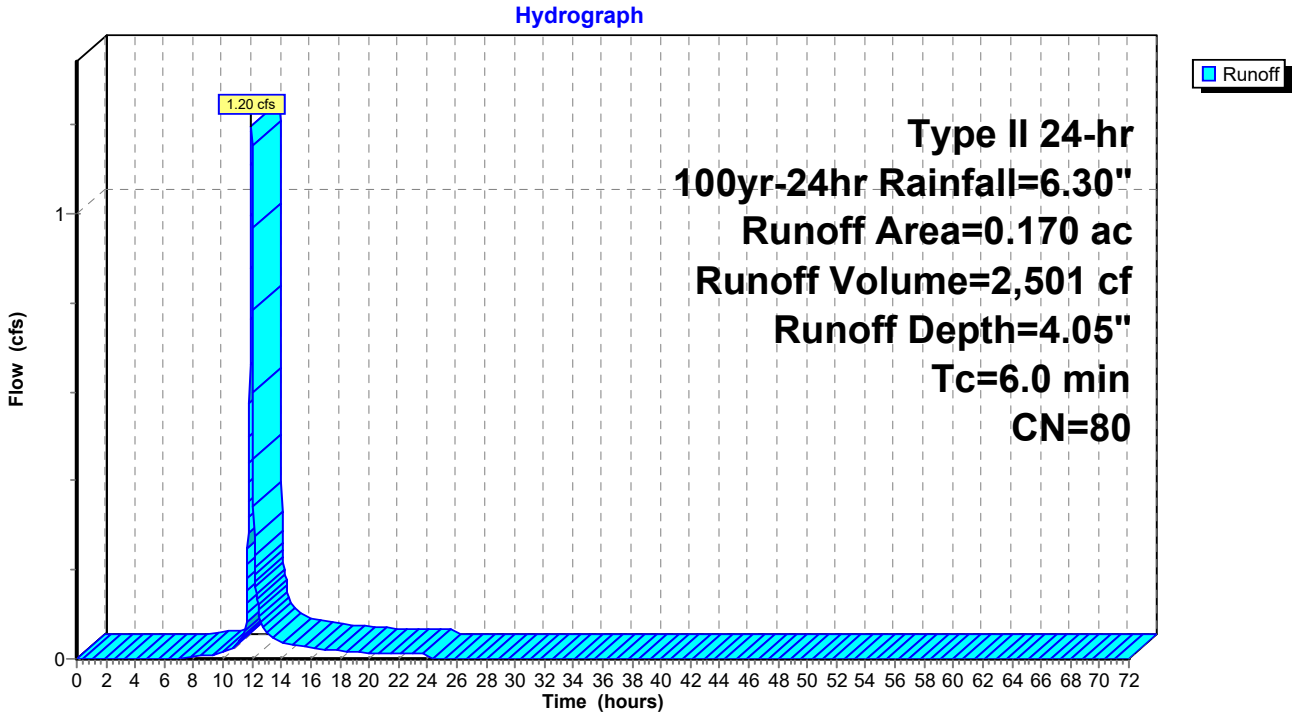
Runoff = 1.20 cfs @ 11.97 hrs, Volume= 2,501 cf, Depth= 4.05"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 0.170 | 80 | >75% Grass cover, Good, HSG D |
| 0.170 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

### Subcatchment C-5: Undetained 5



## Summary for Subcatchment C-6: Undetained 6

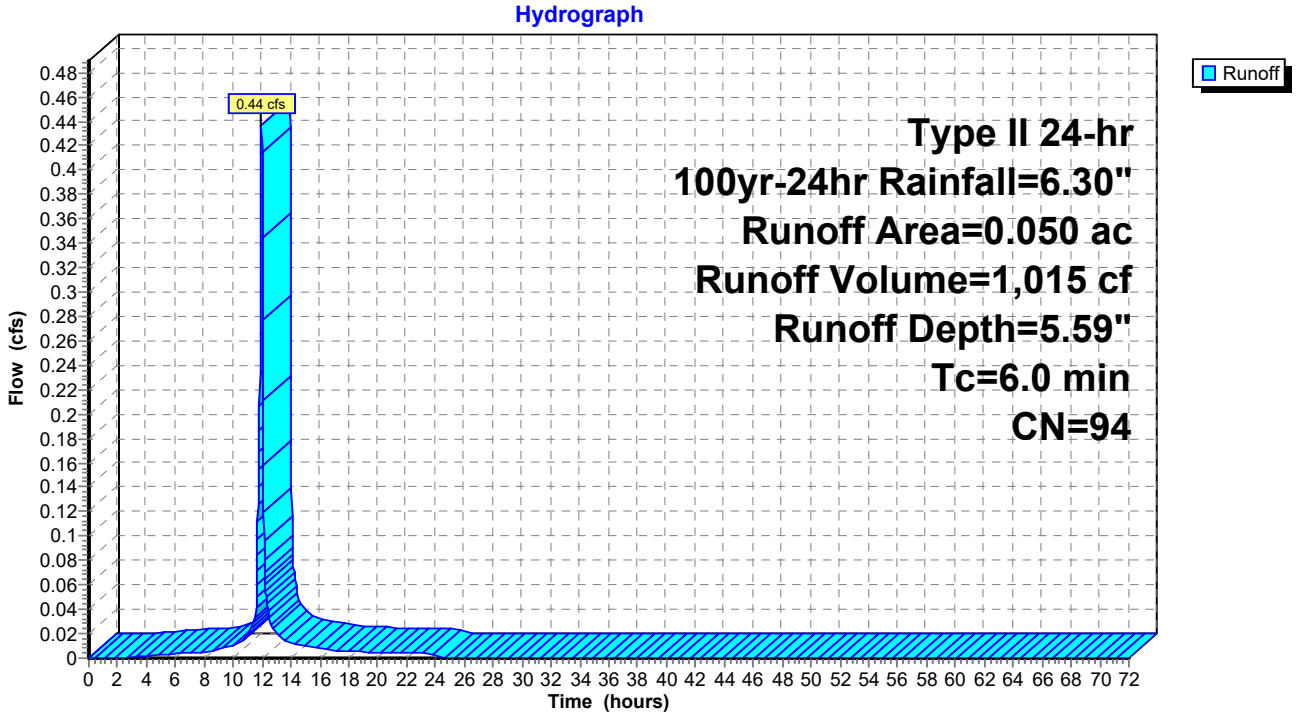
Runoff = 0.44 cfs @ 11.97 hrs, Volume= 1,015 cf, Depth= 5.59"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 0.040 | 98 | Paved parking, HSG D |
| 0.010 | 80 | >75% Grass cover, Good, HSG D |
| 0.050 | 94 | Weighted Average |
| 0.010 | 80 | 20.00% Pervious Area |
| 0.040 | 98 | 80.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment C-6: Undetained 6



## Summary for Subcatchment C-7: Undetained 7

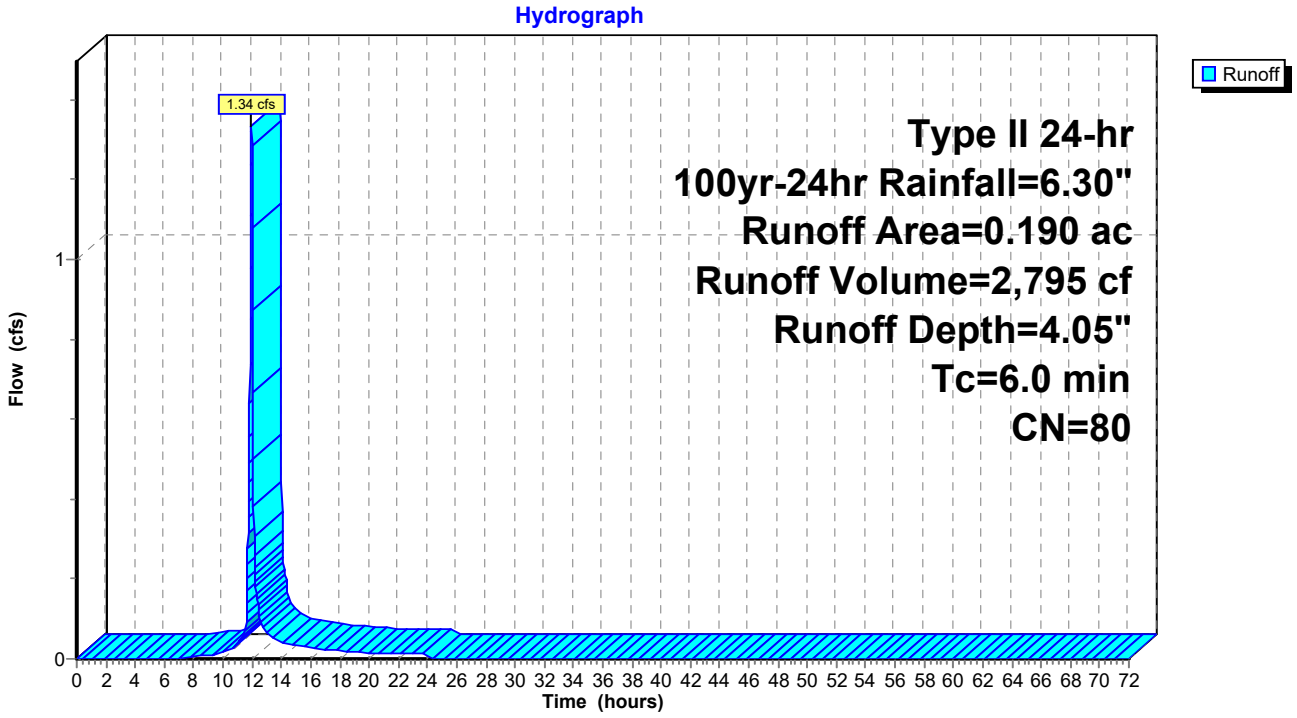
Runoff = 1.34 cfs @ 11.97 hrs, Volume= 2,795 cf, Depth= 4.05"
Routed to Link 4L : Total Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 0.190 | 80 | >75% Grass cover, Good, HSG D |
| 0.190 | 80 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.0 | | | | | **Direct Entry,** |

## Subcatchment C-7: Undetained 7



## Summary for Subcatchment D-1: North Offsite Bypass

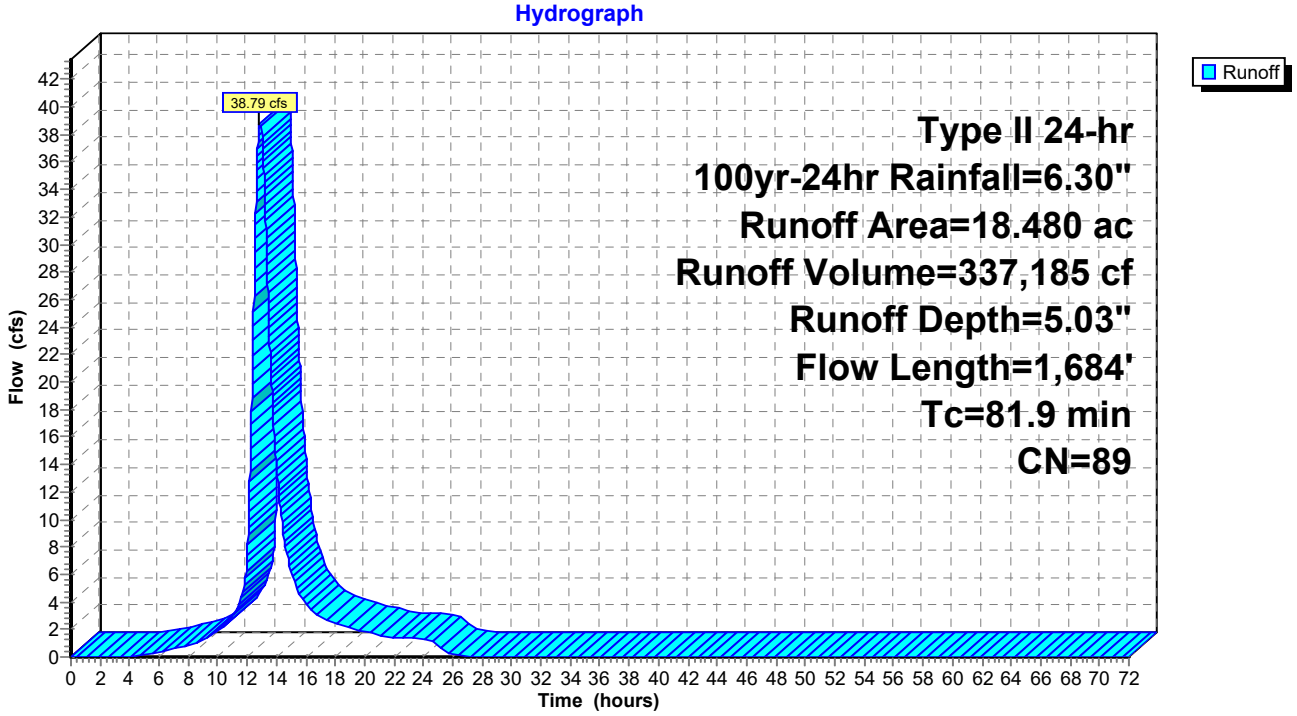
Runoff = 38.79 cfs @ 12.85 hrs, Volume= 337,185 cf, Depth= 5.03"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 18.480 | 89 | Row crops, straight row, Good, HSG D |
| 18.480 | 89 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.2 | 100 | 0.0075 | 0.27 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 75.7 | 1,584 | 0.0015 | 0.35 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 81.9 | 1,684 | Total | | | |

## Subcatchment D-1: North Offsite Bypass



## Summary for Subcatchment D-2: North Offsite Bypass

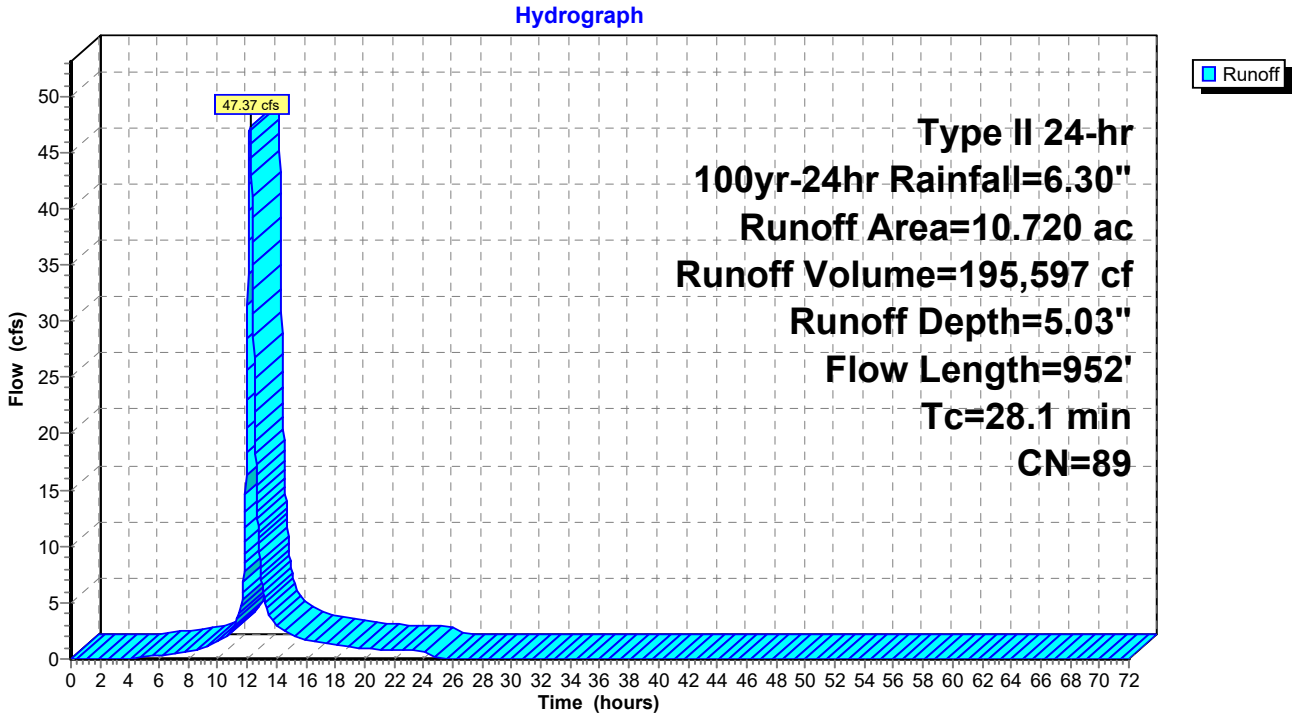
Runoff = 47.37 cfs @ 12.21 hrs, Volume= 195,597 cf, Depth= 5.03"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 10.720 | 89 | Row crops, straight row, Good, HSG D |
| 10.720 | 89 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.8 | 100 | 0.0090 | 0.29 | | **Sheet Flow,** Fallow n= 0.050 P2= 3.02" |
| 22.3 | 852 | 0.0050 | 0.64 | | **Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps |
| 28.1 | 952 | Total | | | |

## Subcatchment D-2: North Offsite Bypass



## Summary for Subcatchment Out A: Outlot A

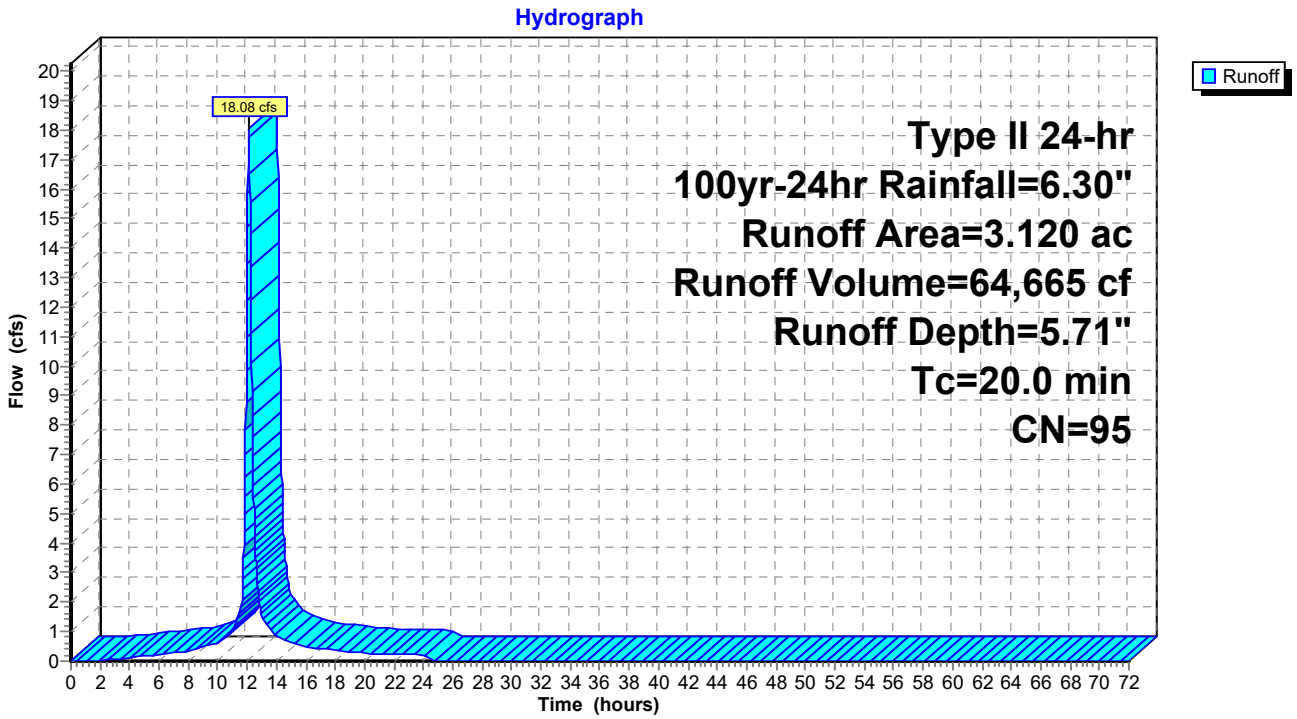
Runoff = 18.08 cfs @ 12.12 hrs, Volume= 64,665 cf, Depth= 5.71"
Routed to Pond 2P : AG-S & UG-S

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 3.120 | 95 | Urban commercial, 85% imp, HSG D |
| 0.468 | 78 | 15.00% Pervious Area |
| 2.652 | 98 | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 20.0 | | | | | **Direct Entry,** |

## Subcatchment Out A: Outlot A



## Summary for Subcatchment Out B: Outlot B

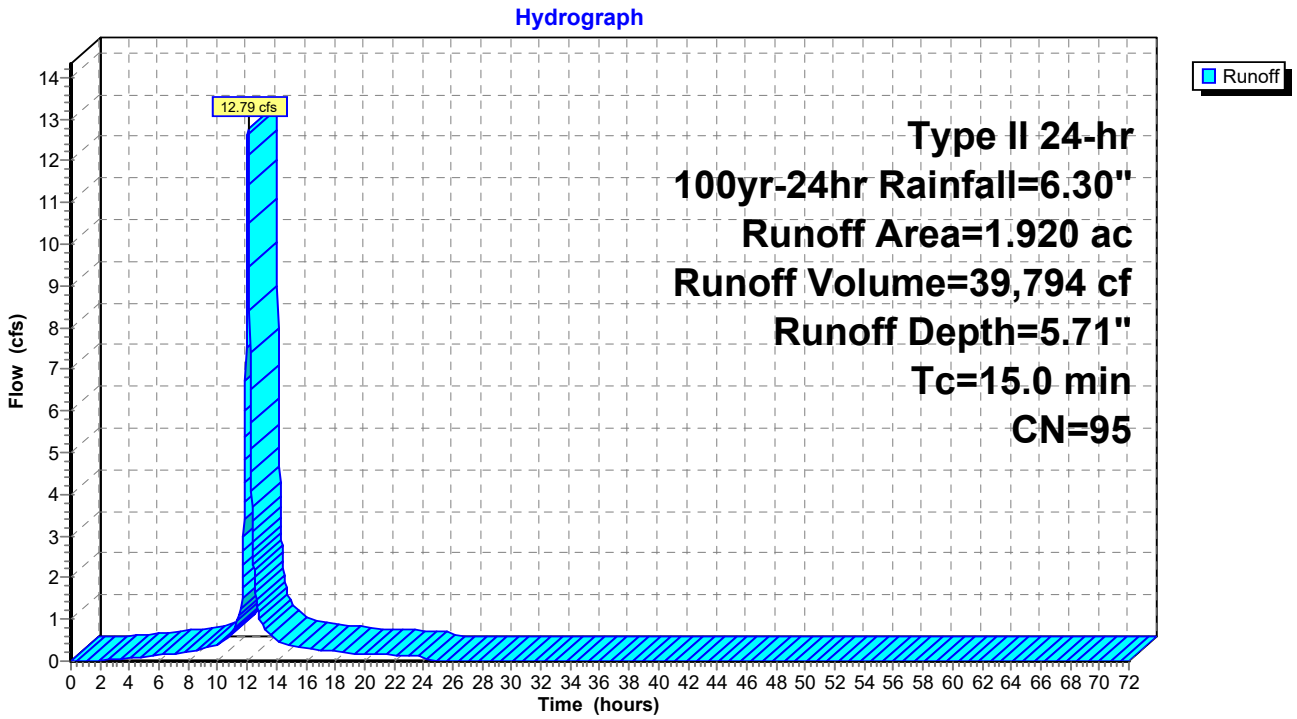
Runoff = 12.79 cfs @ 12.06 hrs, Volume= 39,794 cf, Depth= 5.71"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 1.920 | 95 | Urban commercial, 85% imp, HSG D |
| 0.288 | 78 | 15.00% Pervious Area |
| 1.632 | 98 | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment Out B: Outlot B



## Summary for Subcatchment Out C: Outlot C

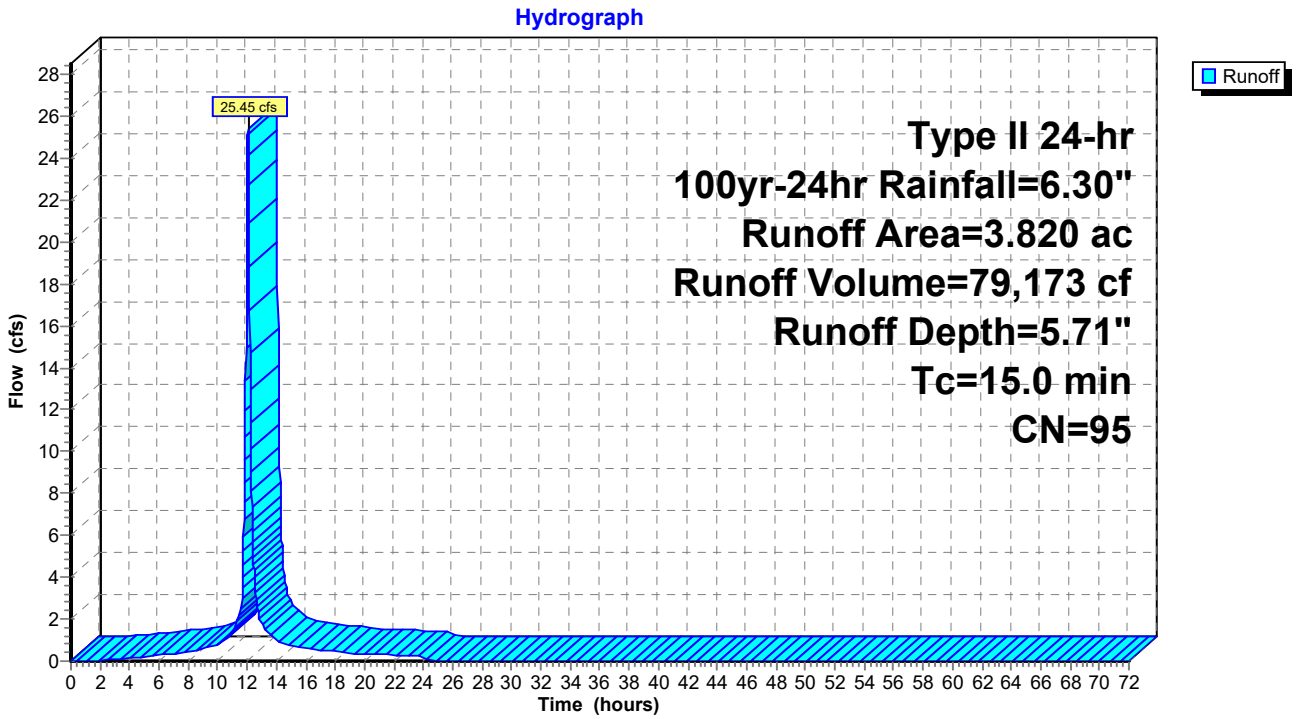
Runoff = 25.45 cfs @ 12.06 hrs, Volume= 79,173 cf, Depth= 5.71"
Routed to Pond 1P : AG-N

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type II 24-hr 100yr-24hr Rainfall=6.30"

| Area (ac) | CN | Description |
|---|---|---|
| 3.820 | 95 | Urban commercial, 85% imp, HSG D |
| 0.573 | 78 | 15.00% Pervious Area |
| 3.247 | 98 | 85.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.0 | | | | | **Direct Entry,** |

## Subcatchment Out C: Outlot C



## Summary for Pond 1P: AG-N

Inflow Area = 2,241,162 sf, 31.76% Impervious, Inflow Depth = 5.21" for 100yr-24hr event
Inflow = 190.01 cfs @ 12.08 hrs, Volume= 973,257 cf
Outflow = 61.91 cfs @ 12.75 hrs, Volume= 827,857 cf, Atten= 67%, Lag= 40.5 min
Primary = 6.78 cfs @ 12.75 hrs, Volume= 537,974 cf
Routed to Link 3L : Str. 3.00
Secondary = 55.12 cfs @ 12.75 hrs, Volume= 289,883 cf
Routed to Link 4L : Total Site Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs / 3
Peak Elev= 884.86' @ 12.75 hrs Surf.Area= 94,632 sf Storage= 461,014 cf

Plug-Flow detention time= 635.9 min calculated for 827,627 cf (85% of inflow)
Center-of-Mass det. time= 568.4 min ( 1,377.3 - 808.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 877.29' | 573,880 cf | **Custom Stage Data (Irregular)** Listed below (Recalc) |

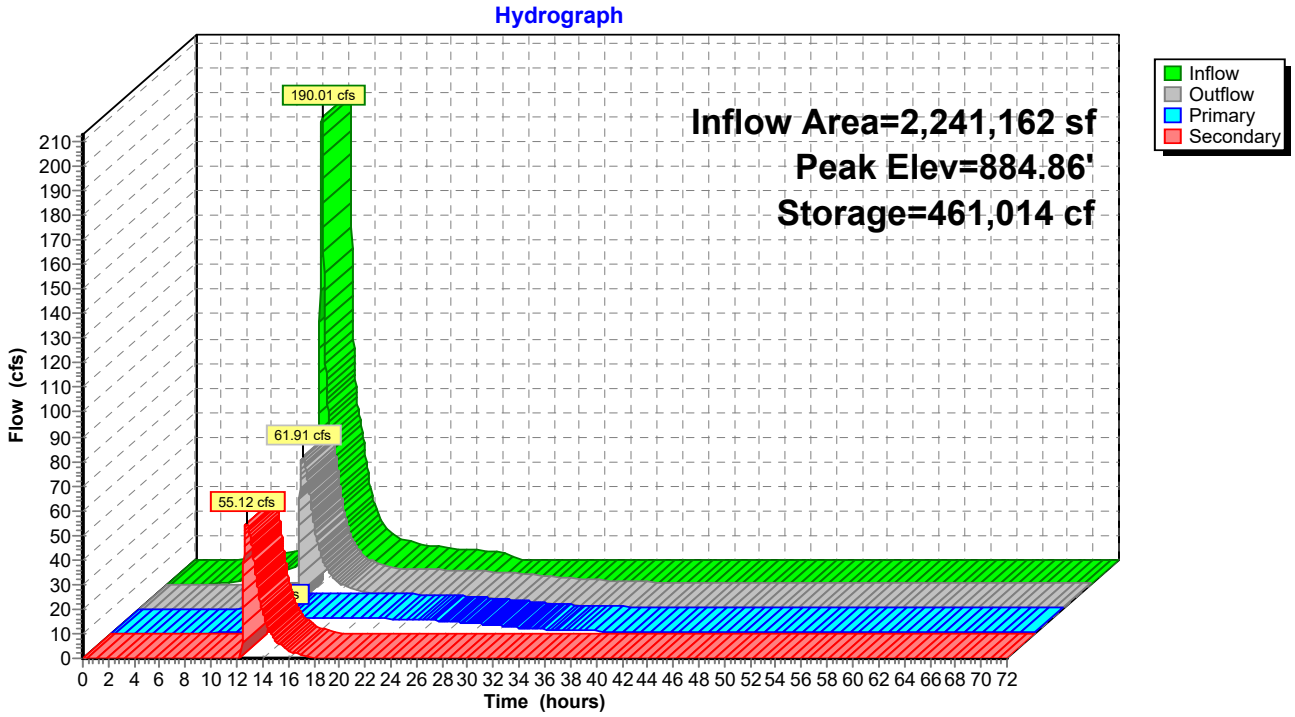
| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 877.29 | 33,121 | 1,437.0 | 0 | 0 | 33,121 |
| 878.00 | 37,072 | 1,579.0 | 24,905 | 24,905 | 67,219 |
| 879.00 | 42,856 | 1,793.0 | 39,929 | 64,834 | 124,667 |
| 880.00 | 49,752 | 2,010.0 | 46,261 | 111,096 | 190,366 |
| 881.00 | 57,879 | 2,227.0 | 53,764 | 164,860 | 263,563 |
| 882.00 | 67,238 | 2,444.0 | 62,500 | 227,360 | 344,257 |
| 883.00 | 77,811 | 2,659.0 | 72,460 | 299,820 | 431,602 |
| 884.00 | 87,356 | 2,779.0 | 82,537 | 382,358 | 483,602 |
| 884.64 | 92,754 | 2,793.0 | 57,627 | 439,984 | 490,061 |
| 885.00 | 95,775 | 2,800.0 | 33,934 | 473,918 | 493,335 |
| 886.00 | 104,208 | 2,819.0 | 99,962 | 573,880 | 502,283 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 877.29' | **12.0" Round Culvert**<br>L= 24.0' RCP, sq.cut end projecting, Ke= 0.500<br>Inlet / Outlet Invert= 877.29' / 877.22' S= 0.0029 '/' Cc= 0.900<br>n= 0.012, Flow Area= 0.79 sf |
| #2 | Device 1 | 877.29' | **4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 882.14' | **12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #4 | Secondary | 884.54' | **110.0' long + 3.0 '/' SideZ x 26.2' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60<br>Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 |

**Primary OutFlow** Max=6.78 cfs @ 12.75 hrs HW=884.86' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 6.78 cfs of 10.06 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 1.14 cfs @ 13.11 fps)
└**3=Orifice/Grate** (Orifice Controls 5.64 cfs @ 7.18 fps)

**Secondary OutFlow** Max=55.11 cfs @ 12.75 hrs HW=884.86' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 55.11 cfs @ 1.53 fps)

## Pond 1P: AG-N


Hydrograph
Inflow Area=2,241,162 sf
Peak Elev=884.86'
Storage=461,014 cf
190.01 cfs
61.91 cfs
55.12 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

## Summary for Pond 2P: AG-S & UG-S

Inflow Area = 361,548 sf, 75.20% Impervious, Inflow Depth = 5.49" for 100yr-24hr event
Inflow = 56.14 cfs @ 11.98 hrs, Volume= 165,538 cf
Outflow = 5.19 cfs @ 12.70 hrs, Volume= 165,518 cf, Atten= 91%, Lag= 43.3 min
Primary = 5.19 cfs @ 12.70 hrs, Volume= 165,518 cf
Routed to Link 3L : Str. 3.00
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link 4L : Total Site Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs / 3
Peak Elev= 884.29' @ 12.70 hrs Surf.Area= 21,848 sf Storage= 96,191 cf

Plug-Flow detention time= 678.6 min calculated for 165,472 cf (100% of inflow)
Center-of-Mass det. time= 679.0 min ( 1,451.1 - 772.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 877.38' | 43,614 cf | **Custom Stage Data (Irregular)** Listed below (Recalc) |
| #2A | 877.53' | 22,031 cf | **80.00'W x 180.82'L x 7.00'H Underground Detention**<br>101,259 cf Overall - 46,183 cf Embedded = 55,076 cf x 40.0% Voids |
| #3A | 878.03' | 46,183 cf | **CMP Round 72** x 9 Inside #2<br>Effective Size= 72.0"W x 72.0"H => 28.27 sf x 20.00'L = 565.5 cf<br>Overall Size= 72.0"W x 72.0"H x 20.00'L<br>Row Length Adjustment= +152.82' x 28.27 sf x 9 rows<br>78.00' Header x 28.27 sf x 1 = 2,205.4 cf Inside |
| | | 111,827 cf | Total Available Storage |

Storage Group A created with Chamber Wizard

| Elevation (feet) | Surf.Area (sq-ft) | Perim. (feet) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | Wet.Area (sq-ft) |
|---|---|---|---|---|---|
| 877.38 | 1,605 | 205.0 | 0 | 0 | 1,605 |
| 878.00 | 2,000 | 220.0 | 1,115 | 1,115 | 2,129 |
| 879.00 | 2,697 | 245.0 | 2,340 | 3,455 | 3,083 |
| 880.00 | 3,462 | 265.0 | 3,072 | 6,527 | 3,934 |
| 881.00 | 4,284 | 284.0 | 3,866 | 10,392 | 4,808 |
| 882.00 | 5,163 | 303.0 | 4,717 | 15,109 | 5,743 |
| 883.00 | 6,098 | 321.0 | 5,624 | 20,733 | 6,690 |
| 884.00 | 7,090 | 340.0 | 6,588 | 27,321 | 7,742 |
| 885.00 | 8,138 | 359.0 | 7,608 | 34,929 | 8,855 |
| 885.90 | 9,130 | 376.0 | 7,766 | 42,695 | 9,903 |
| 886.00 | 9,248 | 378.0 | 919 | 43,614 | 10,029 |

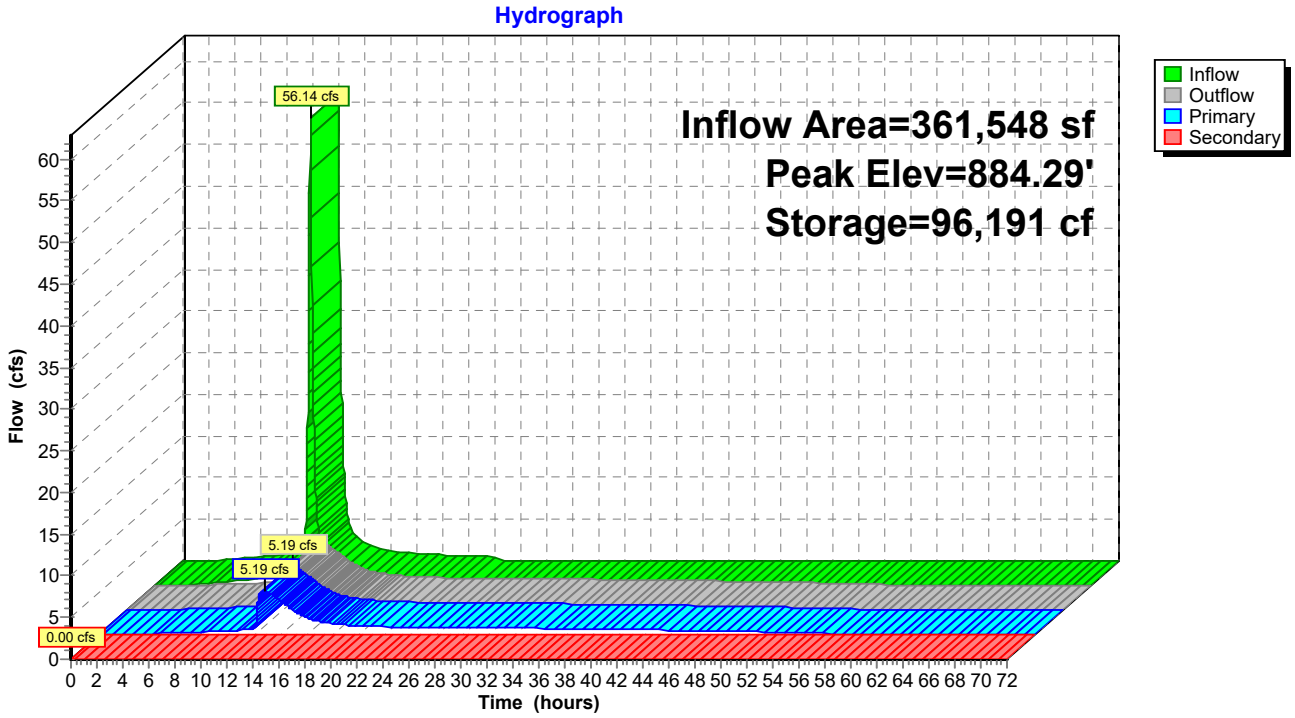
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 877.38' | **15.0" Round Culvert**<br>L= 40.0' RCP, sq.cut end projecting, Ke= 0.500<br>Inlet / Outlet Invert= 877.38' / 877.22' S= 0.0040 '/' Cc= 0.900<br>n= 0.012, Flow Area= 1.23 sf |
| #2 | Device 1 | 877.38' | **4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #3 | Device 1 | 882.61' | **12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |
| #4 | Secondary | 885.40' | **25.0' long + 3.0 '/' SideZ x 53.8' breadth Broad-Crested Rectangular Weir** |

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Primary OutFlow** Max=5.19 cfs @ 12.70 hrs HW=884.29' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 5.19 cfs of 14.81 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 1.09 cfs @ 12.50 fps)
└**3=Orifice/Grate** (Orifice Controls 4.10 cfs @ 5.22 fps)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=877.38' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir**( Controls 0.00 cfs)

## Pond 2P: AG-S & UG-S

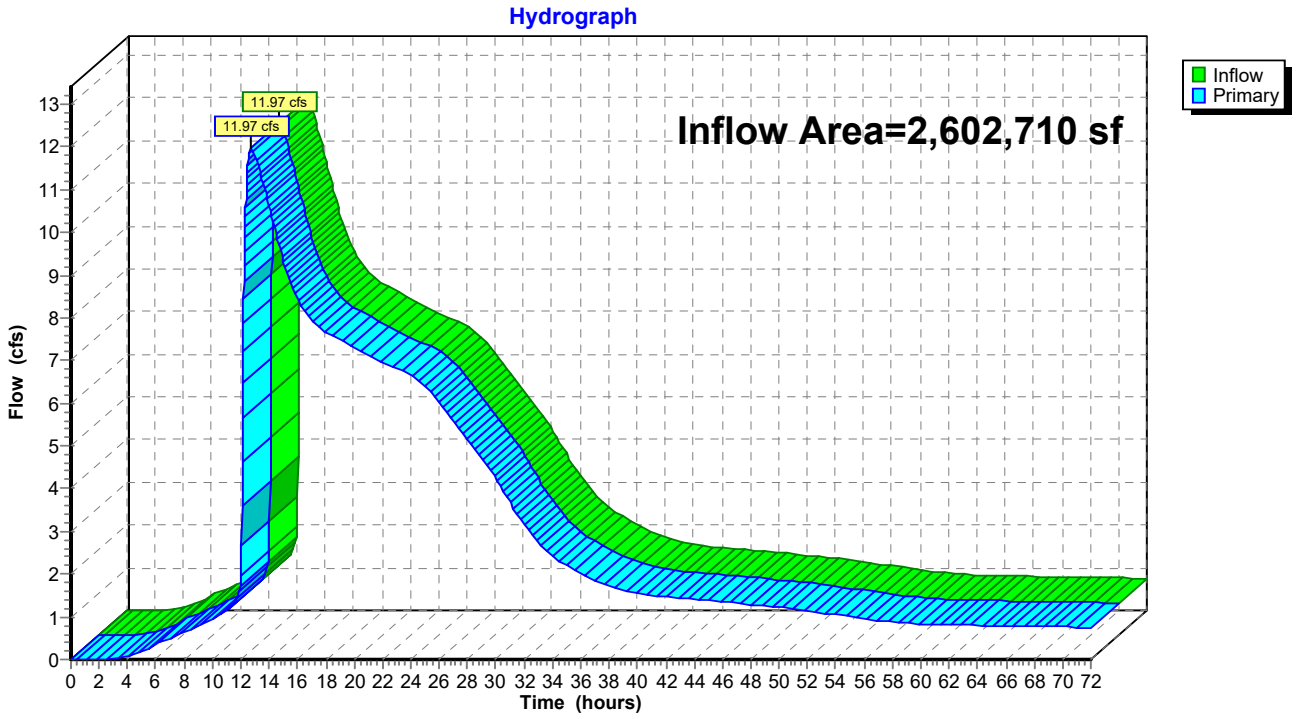


## Summary for Link 3L: Str. 3.00

Inflow Area = 2,602,710 sf, 37.79% Impervious, Inflow Depth > 3.24" for 100yr-24hr event
Inflow = 11.97 cfs @ 12.72 hrs, Volume= 703,492 cf
Primary = 11.97 cfs @ 12.72 hrs, Volume= 703,492 cf, Atten= 0%, Lag= 0.0 min
Routed to Link 4L : Total Site Runoff

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

## Link 3L: Str. 3.00

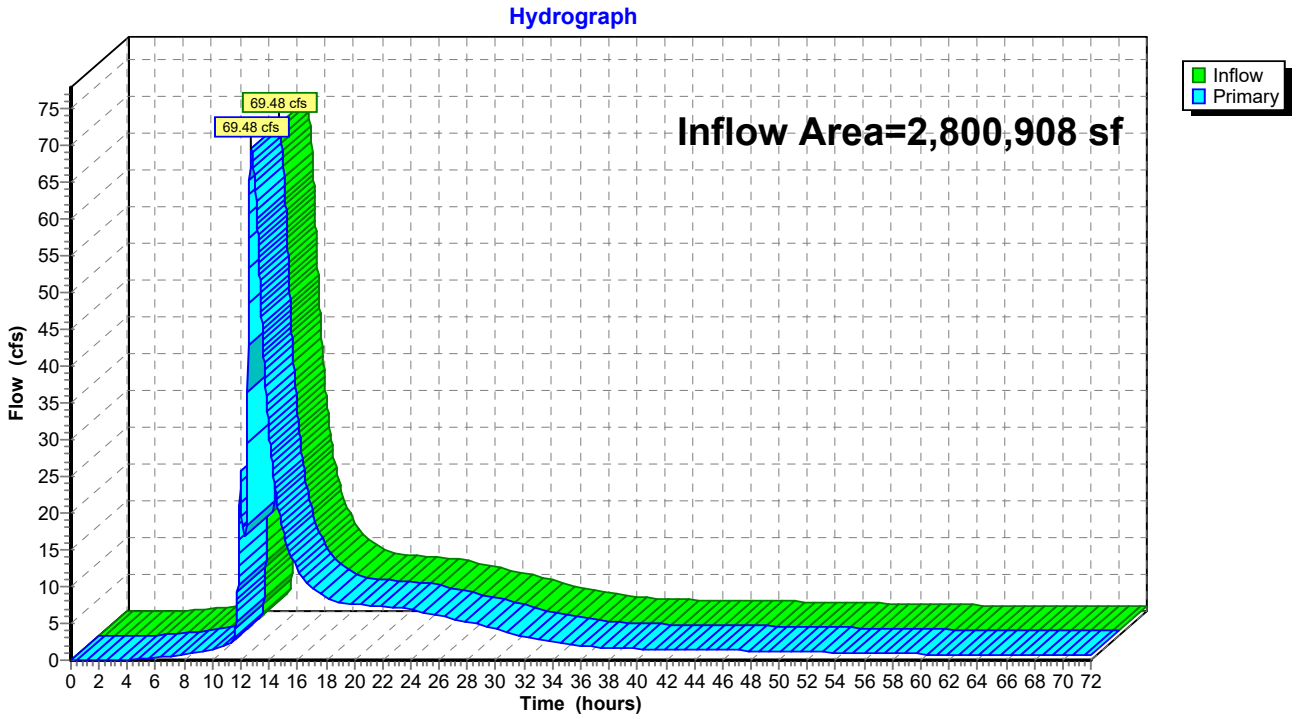


## Summary for Link 4L: Total Site Runoff

Inflow Area = 2,800,908 sf, 35.18% Impervious, Inflow Depth > 4.54" for 100yr-24hr event
Inflow = 69.48 cfs @ 12.74 hrs, Volume= 1,060,563 cf
Primary = 69.48 cfs @ 12.74 hrs, Volume= 1,060,563 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

## Link 4L: Total Site Runoff



# 1.3 – EMERGENCY SPILLWAY CALCULATIONS

# Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 10 2025

## North Detention Basin - Emergency Spillway

**Trapezoidal**

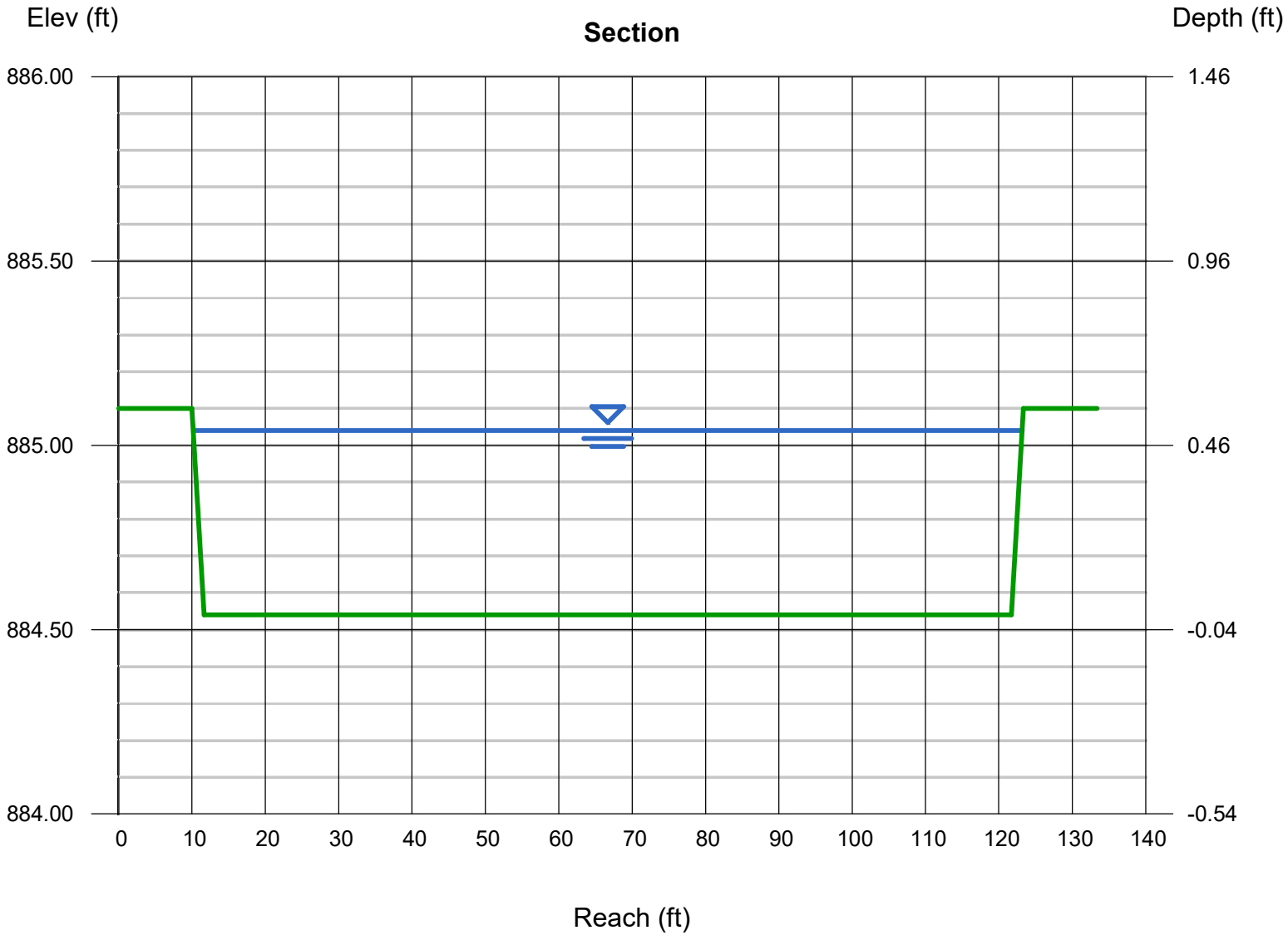
| | |
|---|---|
| Bottom Width (ft) | = 110.00 |
| Side Slopes (z:1) | = 3.00, 3.00 |
| Total Depth (ft) | = 0.56 |
| Invert Elev (ft) | = 884.54 |
| Slope (%) | = 2.00 |
| N-Value | = 0.025 |

**Calculations**

| | |
|---|---|
| Compute by: | Known Q |
| Known Q (cfs) | = 288.76 |

**Highlighted**

| | |
|---|---|
| Depth (ft) | = 0.50 |
| Q (cfs) | = 288.76 |
| Area (sqft) | = 55.75 |
| Velocity (ft/s) | = 5.18 |
| Wetted Perim (ft) | = 113.16 |
| Crit Depth, Yc (ft) | = 0.56 |
| Top Width (ft) | = 113.00 |
| EGL (ft) | = 0.92 |



# Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Jan 10 2025

## South Detention Basin Emergency Spillway

**Trapezoidal**

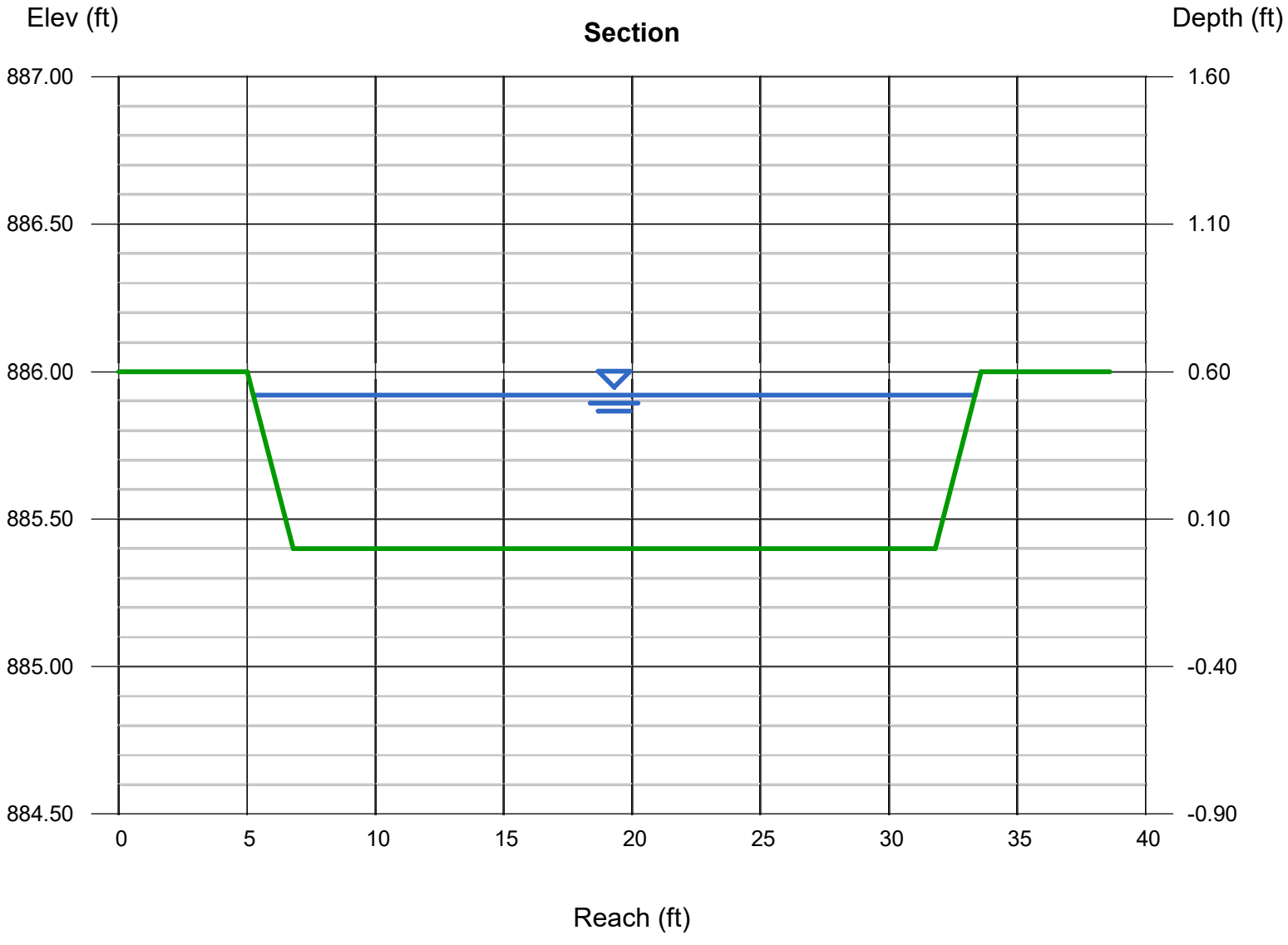
| | |
|---|---|
| Bottom Width (ft) | = 25.00 |
| Side Slopes (z:1) | = 3.00, 3.00 |
| Total Depth (ft) | = 0.60 |
| Invert Elev (ft) | = 885.40 |
| Slope (%) | = 2.00 |
| N-Value | = 0.025 |

**Calculations**

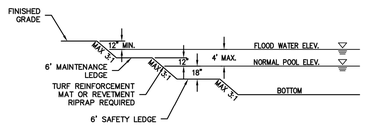
| | |
|---|---|
| Compute by: | Known Q |
| Known Q (cfs) | = 70.41 |

**Highlighted**

| | |
|---|---|
| Depth (ft) | = 0.52 |
| Q (cfs) | = 70.41 |
| Area (sqft) | = 13.81 |
| Velocity (ft/s) | = 5.10 |
| Wetted Perim (ft) | = 28.29 |
| Crit Depth, Yc (ft) | = 0.60 |
| Top Width (ft) | = 28.12 |
| EGL (ft) | = 0.92 |



# 1.4 – STORMWATER DETAILS



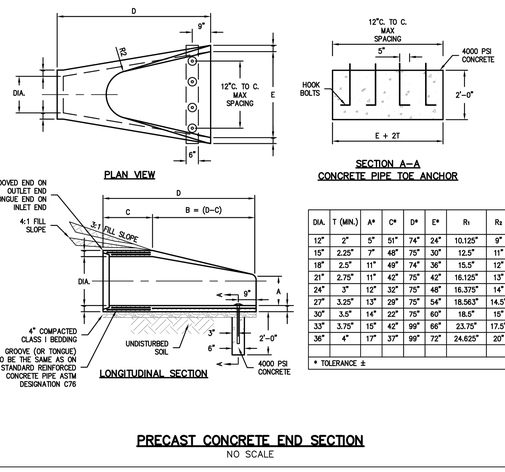

**POND SECTION**

NOTES:

1. GENERAL
   - A. ALL PONDS, INCLUDING THOSE NOT USED FOR DETENTION/RETENTION SHALL INCORPORATE APPLICABLE REQUIREMENTS BELOW. PONDS SHALL MEET THE REQUIREMENTS OF THE TOWN'S STORMWATER MANAGEMENT ORDINANCE AND THE HENDRICKS COUNTY STORMWATER TECHNICAL STANDARDS MANUAL UNLESS OTHERWISE NOTED.
2. ACCESS
   - A. PROVIDE INGRESS AND EGRESS FROM A NEARBY ROAD AND A SAFETY RAMP INTO THE POND.
   - B. SAFETY RAMP SHALL BE A MINIMUM OF 20 FEET WIDE AND MAXIMUM EXIT SLOPE OF 6H:1V.
3. WET POND DESIGN
   - A. MAXIMUM GROUND SLOPE AND POND DIMENSIONS SHALL BE AS SHOWN.
   - B. POND SHALL BE DESIGNED TO PREVENT STAGNATION OF WATER. POND DESIGN SHALL CONSIDER SHAPE, DEPTH, VEGETATIVE BUFFERS, AND OTHER METHODS TO ENCOURAGE A WELL – FUNCTIONING POND. THE TOWN MAY REQUIRE SURFACE OR SUBMERGED AERATION EQUIPMENT IF POND STAGNATION IS A CONCERN.
4. DRY POND DESIGN
   - A. AN UNDERDRAIN IS REQUIRED.
   - B. MAXIMUM GROUND SLOPE SHALL BE 3H:1V. PROTECT SIDE SLOPES WITH TURF REINFORCEMENT MAT.

**DETENTION/RETENTION PONDS**
NO SCALE

**TOWN OF BROWNSBURG**
**DETAIL NO. EW-04**
**REVISION DATE: SEPT 2016**



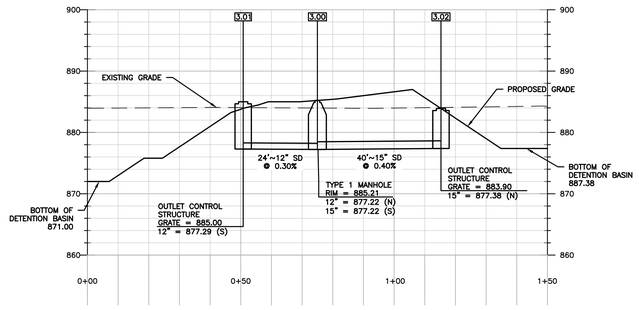

| DIA. | T (MIN.) | A* | C* | D* | E* | R1 | R2 | APPROX. WEIGHT |
|---|---|---|---|---|---|---|---|---|
| 12" | 2" | 5" | 51" | 74" | 24" | 10.125" | 9" | 800 |
| 15" | 2.25" | 7" | 48" | 75" | 30" | 12.5" | 11" | 1100 |
| 18" | 2.5" | 11" | 49" | 74" | 36" | 15.5" | 12" | 1300 |
| 21" | 2.75" | 11" | 42" | 75" | 42" | 16.125" | 13" | 1500 |
| 24" | 3" | 12" | 32" | 75" | 48" | 16.375" | 14" | 1800 |
| 27" | 3.25" | 13" | 29" | 75" | 54" | 18.563" | 14.5" | 2100 |
| 30" | 3.5" | 14" | 22" | 75" | 60" | 18.5" | 15" | 2400 |
| 33" | 3.75" | 15" | 42" | 99" | 66" | 23.75" | 17.5" | 4100 |
| 36" | 4" | 17" | 37" | 99" | 72" | 24.625" | 20" | 4200 |
| | | | | | | | | |

* TOLERANCE ±

**PRECAST CONCRETE END SECTION**
NO SCALE

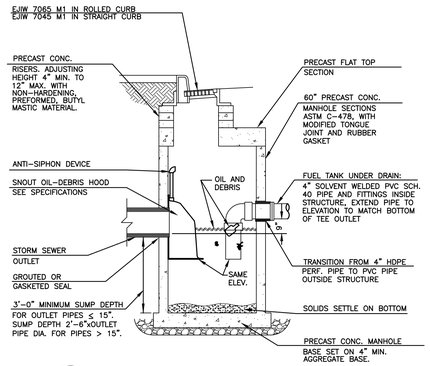
**TOWN OF BROWNSBURG**
**DETAIL NO. SW-09**
**REVISION DATE: SEPT 2016**

B1 TOWN OF BROWNSBURG STORM DETAILS
HORIZ: 1"= 20' VERT: 1"=10'

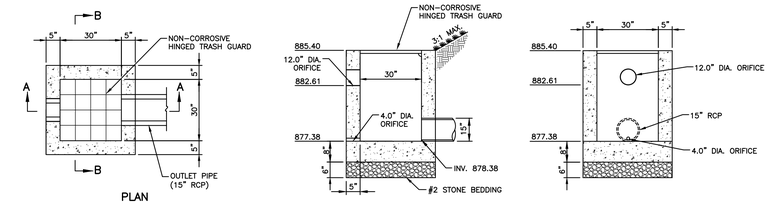



**SECTION A-A**

A1 DETENTION BASIN CROSS SECTION A-A
HORIZ: 1"= 20' VERT: 1"=10'



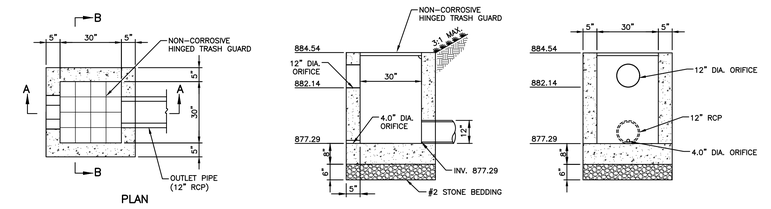

D3 ENVIRONMENTAL CATCH BASIN (mEXPRESS)
NTS




NOTE: CONCRETE SHALL BE PRECAST.

**STRUCTURE 3.02**
**SOUTH POND OUTLET DETAIL**
NO SCALE

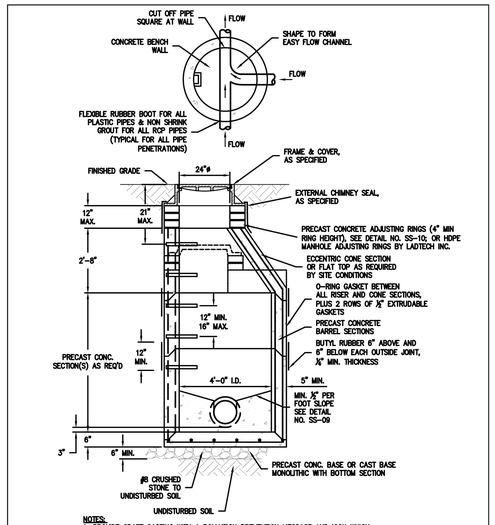
D4 POND 2 OUTLET STRUCTURE (SOUTH)
NTS




NOTE: CONCRETE SHALL BE PRECAST.

**STRUCTURE 3.01**
**NORTH POND OUTLET DETAIL**
NO SCALE

C4 POND 1 OUTLET STRUCTURE (NORTH)
NTS



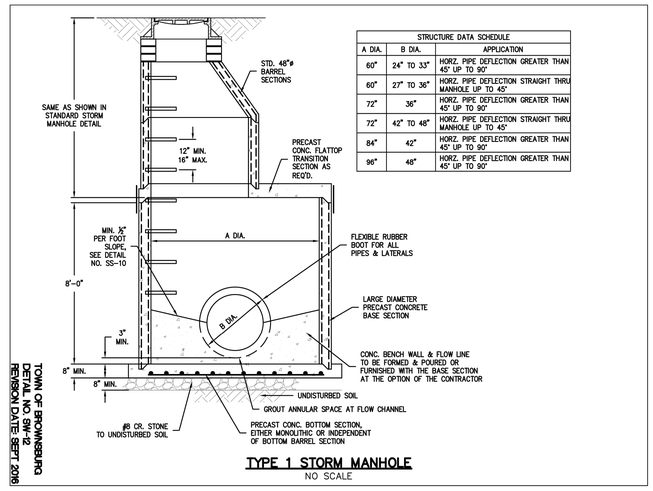

NOTES:
1. PROVIDE GRATE CASTING WITH A POLLUTION PREVENTION MESSAGE AND ICON WHICH ARE PERMANENTLY ATTACHED OR CAST DIRECTLY INTO THE CASTING. THE CASTING SHALL HAVE THE MESSAGE "DUMP NO WASTE <FISH ICON> DRAINS TO WATERWAY" IN MINIMUM 1 INCH HIGH LETTERS.
2. INSTALL CASTING ¾" BELOW FINISHED PAVEMENT ELEVATION.

STANDARD STORM MANHOLE
NO SCALE

REFER TO SPEC SECTION 02720

TOWN OF BROWNSBURG
DETAIL NO. SW–11
REVISION DATE: FEBRUARY 2024

Town standards can be found at www.brownsburg.org




| STRUCTURE DATA SCHEDULE | | |
|---|---|---|
| A DIA. | B DIA. | APPLICATION |
| 60" | 24" TO 33" | HORZ. PIPE DEFLECTION GREATER THAN 45° UP TO 90° |
| 60" | 27" TO 36" | HORZ. PIPE DEFLECTION STRAIGHT THRU MANHOLE UP TO 45° |
| 72" | 36" | HORZ. PIPE DEFLECTION GREATER THAN 45° UP TO 90° |
| 72" | 42" TO 48" | HORZ. PIPE DEFLECTION STRAIGHT THRU MANHOLE UP TO 45° |
| 84" | 42" | HORZ. PIPE DEFLECTION GREATER THAN 45° UP TO 90° |
| 96" | 48" | HORZ. PIPE DEFLECTION GREATER THAN 45° UP TO 90° |

**TYPE 1 STORM MANHOLE**
NO SCALE

**TOWN OF BROWNSBURG**
**DETAIL NO. SW–12**
**REVISION DATE: SEPT 2016**

A3 TOWN OF BROWNSBURG MANHOLE DETAILS
NTS

## BENCHMARK:

THE BASIS OF ELEVATIONS HEREON IS NAVD 88 PER OBSERVATIONS OF SELECTED STATIONS IN THE NATIONAL GEODETIC SURVEY CONTINUOUSLY OPERATING REFERENCE STATION (NGS CORS) NETWORK.
MAG NAIL SET IN THE CORNER TOP OF THE CURB JOINT – SEE DRAWING FOR LOCATION.
ELEVATION = 889.36'


WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER STORE #338
9202 E. 56TH STREET
BROWNSBURG, INDIANA 46112

STORMWATER DETAILS

| ISSUED FOR: | |
|---|---|
| PERMIT | MM/DD/YY |
| BID | MM/DD/YY |
| CONSTRUCTION | MM/DD/YY |

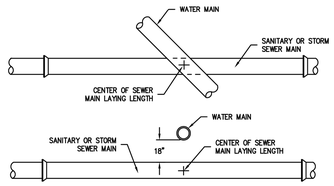
| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
NS-26-00338

C-705

Indiana 811 Know what's below. Call before you dig.


Images: _Xrefs: 10220046TBLK.dwg; 10220046GRA.dwg
Layout: C-705 Notes
Last Saved By:A.Reedy 1/10/2025 12:43:16 PM
G:\DE\Clients\Meijer\2026 Open Meijer Stores\10020046 Meijer 338 ABE – Brownsburg, IN Civil\4.0 Disciplines\Civil\Cadd\Cd\10020046DET5.dwg Plotted By:Reedy, Angela Plotted:January 10, 2025, 2:34:58 PM

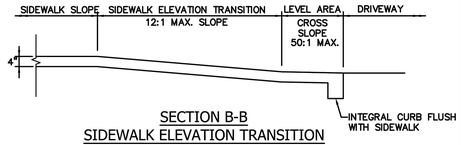



NOTES:
1. WATER MAIN AND SEWER MINIMUM SEPARATION: 18" VERTICAL SEPARATION 10'-0" HORIZONTAL SEPARATION.

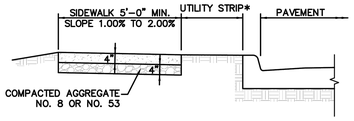
## MINIMUM CROSSOVER AND SEPARATION REQUIREMENTS FOR SEWER & WATER MAINS

NO SCALE

TOWN OF BROWNSBURG
DETAIL NO. GE-02
REVISION DATE: SEPT 2016




## SECTION B-B
## SIDEWALK ELEVATION TRANSITION




## SECTION A-A
## SIDEWALK WITH UTILITY STRIP

* UTILITY STRIP WIDTH SHALL COMPLY WITH THE CURRENT TOWN OF BROWNSBURG SUBDIVISION CONTROL ORDINANCE AND CURRENT TOWN OF BROWNSBURG THOROUGHFARE PLAN.

## CONCRETE SIDEWALK DETAIL

NO SCALE

NOTE:

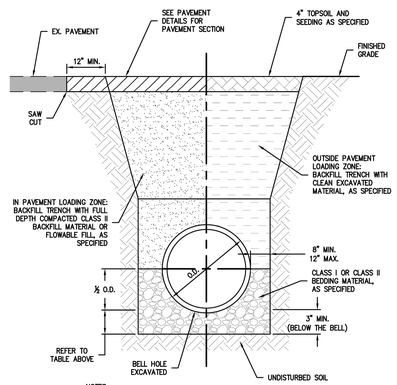
CONCRETE SIDEWALK SHALL BE INSTALLED ON COMPACTED SUBGRADE. NO. 8 OR NO. 53 STONE SHALL BE INSTALLED AND COMPACTED ON THE APPROVED SUBGRADE. CONCRETE SHALL BE INDOT CLASS A CONCRETE AND IT SHALL HAVE A 28-DAY MINIMUM CONCRETE COMPRESSIVE STRENGTH OF 4,000 PSI. WHERE A SIDEWALK PASSES THROUGH A DRIVE APPROACH, IT SHALL BE THE SAME THICKNESS AS THE ADJACENT CONCRETE DRIVE, THE CONCRETE EQUIVALENT FOR THE ADJACENT HMA DRIVE, OR SIX (6) INCHES, WHICHEVER IS GREATER.

REFER TO SPEC SECTION 02500, 02502

TOWN OF BROWNSBURG
DETAIL NO. TR-06
REVISION DATE: FEBRUARY 2024

Town standards can be found at www.brownsburg.org

| PIPE SIZE | 12" TO 15" | 18" TO 30" | 36" & OVER |
|---|---|---|---|
| BEDDING BELOW THE PIPE BARREL | 4" | O.D. / 4 | 8" |



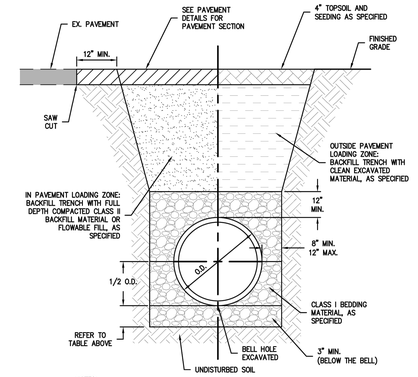

NOTES:
1. RIGID PIPE MATERIALS FOR STORM SEWERS INCLUDE DUCTILE IRON AND REINFORCED CONCRETE PIPE (RCP).
2. RIGID PIPE MATERIALS FOR SANITARY SEWERS INCLUDE DUCTILE IRON PIPE.
3. PAVEMENT LOADING ZONE IS THE AREA WITHIN 5 FEET OF ANY EDGE OF PAVEMENT, CURB, GUTTER, SIDEWALK OR SIMILAR STRUCTURE.

## RIGID GRAVITY PIPE TRENCH

NO SCALE

TOWN OF BROWNSBURG
DETAIL NO. OT-02
REVISION DATE: SEPT 2016

| PIPE SIZE | 12" TO 15" | 18" TO 30" | 36" & OVER |
|---|---|---|---|
| BEDDING BELOW THE PIPE BARREL | 4" | O.D. / 4 | 8" |




NOTES:
1. INSTALLATION OF FLEXIBLE PIPE SHALL BE IN ACCORDANCE WITH ASTM D2321.
2. FLEXIBLE PIPE MATERIALS FOR STORM SEWERS INCLUDE HIGH DENSITY POLYETHYLENE (HDPE), POLYPROPYLENE, AND POLYVINYL CHLORIDE (PVC) PIPE.
3. FLEXIBLE PIPE MATERIALS FOR SANITARY SEWERS INCLUDE POLYVINYL CHLORIDE (PVC) PIPE.
4. PAVEMENT LOADING ZONE IS THE AREA WITHIN 5 FEET OF ANY EDGE OF PAVEMENT, CURB, GUTTER, SIDEWALK OR SIMILAR STRUCTURE.

## FLEXIBLE GRAVITY PIPE TRENCH

NO SCALE

TOWN OF BROWNSBURG
DETAIL NO. OT-04
REVISION DATE: FEB 2017

Indiana 811
Know what's below. Call before you dig.

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|

MEIJER STORE #338
9202 E. 56TH STREET
BROWNSBURG, INDIANA 46112

TOWN OF BROWNSBURG DETAILS

| ISSUED FOR: | |
|---|---|
| PERMIT | MM/DD/YY |
| BID | MM/DD/YY |
| CONSTRUCTION | MM/DD/YY |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
NS-26-00338

C-706

Images: , Xrefs: 10020046TBLK.dwg
Layout: Title, Name: C-706
Last Saved By:A.Reedy, 1/9/2025 4:15:34 PM
G:\DE\Clients\Meijer\2026 Open Meijer Stores\10020046 Meijer 338 ABE – Brownsburg, IN Civil\4.0 Disciplines\Civil\Cadd\Cd\10020046DET6.dwg Plotted By:Reedy, Angela PlottedJanuary 10, 2025, 2:35:19 PM

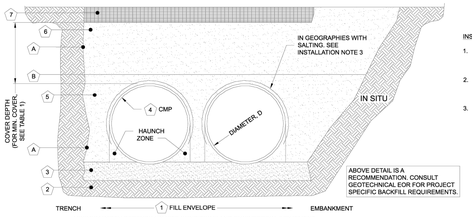



TABLE 1:

| DIAMETER, D | MIN. COVER | CORR. PROFILE |
|---|---|---|
| 6"-10" | 12" | 1 1/2" x 1/4" |
| 12"-48" | 12" | 2 2/3" x 1/2" |
| >48"-96" | 12" | 3" x 1", 5" x 1" |
| >96" | D/8 | 3" x 1", 5" x 1" |

- STRUCTURAL BACKFILL MUST EXTEND TO LIMITS OF THE TABLE
- TOTAL HEIGHT OF COMPACTED COVER FOR CONVENTIONAL HIGHWAY LOADS IS MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT.

INSTALLATION NOTES

1. WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES.
2. OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.
3. IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT A GEOMEMBRANE BARRIER IS RECOMMENDED OVER THE UPPER HALF OF THE PIPE. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

TABLE 2: xFiltration

## XFILTRATION® JOINT STANDARD BACKFILL SPECIFICATIONS

| | MATERIAL LOCATION | MATERIAL SPECIFICATION | DESCRIPTION | |
|---|---|---|---|---|
| 1 | FILL ENVELOPE WIDTH | PER ENGINEER OF RECORD | MINIMUM TRENCH WIDTH MUST ALLOW ROOM FOR PROPER COMPACTION OF HAUNCH MATERIALS UNDER THE PIPE. THE SUGGESTED MINIMUM TRENCH WIDTH, OR EOR RECOMMENDATION: PIPE ≤ 12": D + 16" PIPE > 12": 1.50 × D | MINIMUM EMBANKMENT WIDTH (IN FEET) FOR INITIAL FILL ENVELOPE: PIPE < 24": 3.00 PIPE 24" - 144": D + 4'0" PIPE > 144": D + 10'0" |
| 2 | FOUNDATION | **AASHTO 26.5.2** - PER ENGINEER OF RECORD | PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND FOUNDATION BROUGHT BACK TO GRADE WITH A FILL MATERIAL APPROVED BY THE ENGINEER OF RECORD. | |
| 3 | BEDDING | **AASHTO M 43: 3, 357, 4, 467, 5, 56, 57** | PIPE SHOULD BE PLACED ON THE FOUNDATION BOTTOM WITH A 4"-6" MINIMUM STONE DEPTH ROUGHLY SHAPPED TO FIT THE BOTTOM OF THE PIPE. IF THE ENGINEER OF RECORD DETERMINES THAT STONE BEDDING IS NOT NEEDED, THE PIPE MAY BE PLACED ON THE TRENCH BOTTOM SEPERATED WITH A NON-WOVEN GEOTEXTILE PLACED AT THE INVERT OF A RELATIVELY LOOSE MATERIAL THAT IS ROUGHLY SHAPED TO FIT THE BOTTOM OF THE PIPE, 2" MIN DEPTH. | |
| 4 | | | CORRUGATED METAL PIPE | |
| 5 | BACKFILL | FREE-DRAINING, ANGULAR, NATURALLY OCCURING WASHED-STONE PER **AASHTO M 43: 3, 357, 4, 467, 5, 56, 57** APPROVED EQUAL * OR AASHTO | HAUNCH ZONE MATERIAL SHALL BE HAND SHOVELED OR SHOVEL SLICED INTO PLACE TO ALLOW FOR PROPER COMPACTION WITHOUT SOFT SPOTS. BACKFILL SHALL BE PLACED IN 8" +/- LOOSE LIFTS AND COMPACTED TO 90% STANDARD PROCTOR PER AASHTO T 99. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO LIFT (16") DIFFERENTIAL BETWEEN ANY OF THE PIPES AT ANY TIME DURING THE BACKFILL PROCESS. THE BACKFILL SHOULD BE ADVANCED ALONG THE LENGTH OF THE SYSTEM TO AVOID DIFFERENTIAL LOADING. WHERE CONVENTIONAL COMPACTION TESTING IS NOT PRACTICAL, THE MATERIAL SHALL BE MECHANICALLY COMPACTED UNTIL NO FURTHER YIELDING OF MATERIAL IS OBSERVED UNDER THE COMPACTOR. AREAS WITH HIGH WATER TABLE FLUCTUATIONS THAT INTERACT WITH THE PIPE ZONE, CONSIDER INSTALLING A GEOTEXTILE SEPARATION LAYER TO PREVENT SOIL MIGRATION. | *IN |
| 6 | COVER MATERIAL | UP TO MIN. COVER - **AASHTO M 145: A-1, A-2, A-3** ABOVE MIN. COVER - PER ENGINEER OF RECORD | COVER MATERIAL MAY INCLUDE NON-BITUMINOUS, GRANULAR ROADBASE MATERIAL WITHIN MIN COVER LIMITS | |
| 7 | RIGID OR FLEXIBLE PAVEMENT (IF APPLICABLE) | PER ENGINEER OF RECORD | FLEXIBLE PAVEMENT SHOULD NOT BE COUNTED AS PART OF THE FILL HEIGHT OVER THE CMP. FINAL BACKFILL MATERIAL SELECTION AND COMPACTION REQUIREMENTS SHALL FOLLOW THE PROJECT PLANS AND SPECIFICATIONS PER THE ENGINEER OF RECORD. | |
| A | SIDE GEOTEXTILE | NONE | GEOTEXTILE LAYER IS RECOMMENDED ON SIDES OF EXCAVATION TO PREVENT SOIL MIGRATION WHEN STONE BEDDING IS USED. IF NO STONE BEDDING IS USED, THEN SIDE GEOTEXTILE IS REQUIRED. | |
| B | GEOTEXTILE BETWEEN LAYERS | NONE | IF SOIL TYPES DIFFER AT ANY POINT ABOVE PIPE INVERT, A GEOTEXTILE LAYER IS RECOMMENDED TO BE PLACED BETWEEN THE LAYERS TO PREVENT SOIL MIGRATION. | |

NOTES:
- FOR MULTIPLE BARREL INSTALLATIONS, THE RECOMMENDED STANDARD SPACING BETWEEN PARALLEL PIPE RUNS SHALL BE THE PIPE DIAMETER /2 BUT NO LESS THAN 12" FOR DIAMETERS <72". FOR 72" AND LARGER DIAMETERS, THE MINIMUM SPACING IS 36". CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING.
- APPROVED REGIONAL EQUIVALENTS FOR SECTION 5 INCLUDE CA-7, MIDOT 6AA, 6A, OR 5G, PROVIDED THEY MEET THE PARTICLE SIZES INDICATED.

**MANUFACTURER RECOMMENDED BACKFILL**

NOT TO SCALE

The design and information shown on this drawing is provided as a service to the project owner, engineer and contractor by Contech Engineered Solutions LLC ("Contech"). Neither the design nor any part of the design may be changed or modified in any manner without the prior written consent of Contech. Failure to comply is done at the user's own risk and the preparers expressly disclaims any liability or responsibility for such use.

If discrepancies between the supplied information upon which this drawing is based and actual field conditions are encountered as the work progresses, these discrepancies must be reported to Contech immediately for re-evaluation of the design. Contech also expressly disclaims any liability arising, incomplete or inaccurate information supplied by others.

| DATE | REVISION DESCRIPTION | BY |
|---|---|---|

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO65166 Meijer ABE - Brownsburg, IN
72" Underground xFiltration - Rev2
Brownsburg, IN
DETENTION SYSTEM

| PROJECT No.: 45892 | SEQ. No.: 65166 | DATE: 12/20/2024 |
|---|---|---|
| DESIGNED: DYO | DRAWN: DYO | |
| CHECKED: DYO | APPROVED: DYO | |
| SHEET NO.: 1 | | |

C:\CONTECH\Drawing_AUTOSAVE_YOU.DWG 12/19/2024 10:02 AM

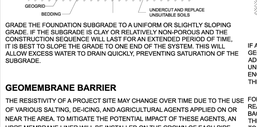
## CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

## FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.




GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

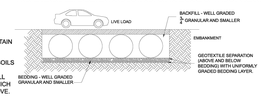
## GEOMEMBRANE BARRIER

THE RESISTIVITY OF A PROJECT SITE MAY CHANGE OVER TIME DUE TO THE USE OF VARIOUS SALTING, DE-ICING, AND AGRICULTURAL AGENTS APPLIED ON OR NEAR THE AREA. TO MITIGATE THE POTENTIAL IMPACT OF THESE AGENTS, AN HDPE MEMBRANE LINER WILL BE INSTALLED ON THE CROWN OF EACH PIPE, CREATING AN IMPERMEABLE BARRIER. THIS MEASURE IS DESIGNED TO PROTECT THE SYSTEM FROM ENVIRONMENTAL CHANGES THAT COULD LEAD TO PREMATURE CORROSION AND REDUCE THE OVERALL SERVICE LIFE.

## IN-SITU TRENCH WALL

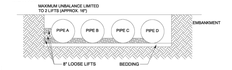
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



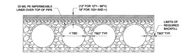

## BACKFILL PLACEMENT

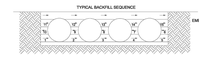
MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.



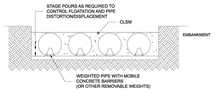

IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.




WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

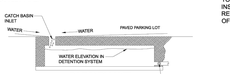



## CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

## ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.




## CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

## INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/ CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

## MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED; INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

The design and information shown on this drawing is provided as a service to the project owner, engineer and contractor by Contech Engineered Solutions LLC ("Contech"). Neither the design nor any part of the design may be changed or modified in any manner without the prior written consent of Contech. Failure to comply is done at the user's own risk and the preparers expressly disclaims any liability or responsibility for such use.

If discrepancies between the supplied information upon which this drawing is based and actual field conditions are encountered as the work progresses, these discrepancies must be reported to Contech immediately for re-evaluation of the design. Contech also expressly disclaims any liability arising, incomplete or inaccurate information supplied by others.

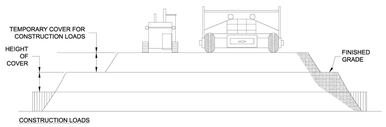
| DATE | REVISION DESCRIPTION | BY |
|---|---|---|

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO65166 Meijer ABE - Brownsburg, IN
72" Underground xFiltration - Rev2
Brownsburg, IN
DETENTION SYSTEM

| PROJECT No.: 45892 | SEQ. No.: 65166 | DATE: 12/20/2024 |
|---|---|---|
| DESIGNED: DYO | DRAWN: DYO | |
| CHECKED: DYO | APPROVED: DYO | |
| SHEET NO.: 1 | | |




CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

| PIPE SPAN, INCHES | AXLE LOADS (kips) | | | |
|---|---|---|---|---|
| | 18-50 | 50-75 | 75-110 | 110-150 |
| | MINIMUM COVER (FT) | | | |
| 12-42 | 2.0 | 2.5 | 3.0 | 3.0 |
| 48-72 | 3.0 | 3.0 | 3.5 | 4.0 |
| 78-120 | 3.0 | 3.5 | 4.0 | 4.0 |
| 126-144 | 3.5 | 4.0 | 4.5 | 4.5 |

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

## CONSTRUCTION LOADING DIAGRAM

**SCALE: N.T.S.**

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

POLYMER COATED: AASHTO M-245 OR ASTM A-762

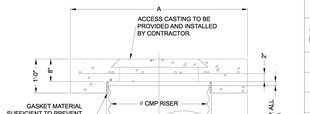
ALUMINUM: AASHTO M-196 OR ASTM B-745

APPLICABLE HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSPS (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.

REQUIREMENTS
INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II DIVISION I OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

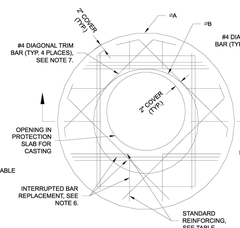
NOTE:
THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.



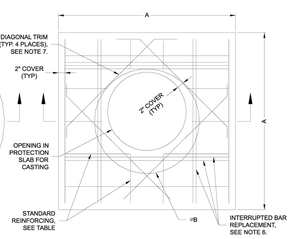

SECTION VIEW

| REINFORCING TABLE | | | | |
|---|---|---|---|---|
| ø CMP RISER | A | ø B | REINFORCING | **BEARING PRESSURE (PSF) |
| 24" | ø 4' 4'X4' | 26" | #5 @ 12" OCEW #5 @ 12" OCEW | 2,410 1,780 |
| 30" | ø 4'-6" 4'-6" X 4'-6" | 32" | #5 @ 12" OCEW #5 @ 12" OCEW | 2,120 1,530 |
| 36" | ø 5' 5' X 5' | 38" | #5 @ 10" OCEW #5 @ 10" OCEW | 1,890 1,350 |
| 42" | ø 5'-6" 5'-6" X 5'-6" | 44" | #5 @ 10" OCEW #5 @ 9" OCEW | 1,720 1,210 |
| 48" | ø 6' 6' X 6' | 50" | #5 @ 9" OCEW #5 @ 8" OCEW | 1,600 1,100 |

** ASSUMED SOIL BEARING CAPACITY




ROUND OPTION PLAN VIEW




SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

**MANHOLE CAP DETAIL**

**SCALE: N.T.S.**

The design and information shown on this drawing is provided as a service to the project owner, engineer and contractor by Contech Engineered Solutions LLC ("Contech"). Neither the design nor any part of the design may be changed or modified in any manner without the prior written consent of Contech. Failure to comply is done at the user's own risk and the preparers expressly disclaims any liability or responsibility for such use.

If discrepancies between the supplied information upon which this drawing is based and actual field conditions are encountered as the work progresses, these discrepancies must be reported to Contech immediately for re-evaluation of the design. Contech also expressly disclaims any liability arising, incomplete or inaccurate information supplied by others.

| DATE | REVISION DESCRIPTION | BY |
|---|---|---|

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO65166 Meijer ABE - Brownsburg, IN
72" Underground xFiltration - Rev2
Brownsburg, IN
DETENTION SYSTEM

| PROJECT No.: 45892 | SEQ. No.: 65166 | DATE: 12/20/2024 |
|---|---|---|
| DESIGNED: DYO | DRAWN: DYO | |
| CHECKED: DYO | APPROVED: DYO | |
| SHEET NO.: 1 | | |

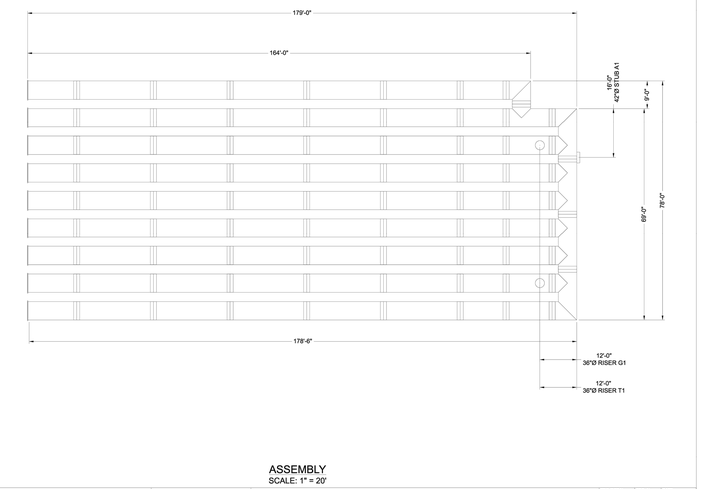
## PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20/HS25
- APPROX. LINEAR FOOTAGE = 1,620 LF

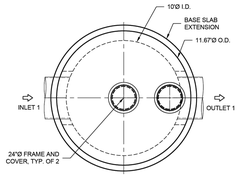
STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = 68,080 CF
- PIPE STORAGE VOLUME = 45,804 CF
- BACKFILL STORAGE VOLUME = 22,412 CF
- TOTAL STORAGE PROVIDED = 68,216 CF
- STONE VOID = 40%

PIPE DETAILS
- DIAMETER = 72"
- CORRUGATION = 5x1
- GAGE = 16
- COATING = ALT2
- WALL TYPE = X-FILTRATION
- BARREL SPACING = 36"

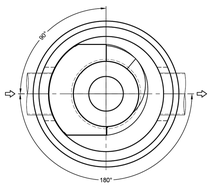
BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 6"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 6"




NOTES
- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OT




**PLAN VIEW**
INTERNALS NOT SHOWN



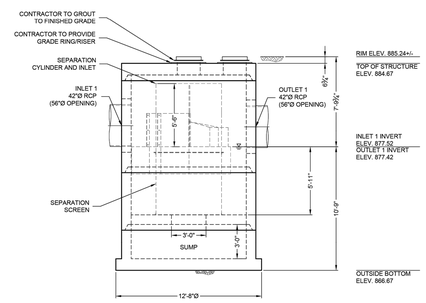

**PLAN VIEW FOR PIPE ORIENTATION**
TOP SLAB NOT SHOWN

**MATERIAL LIST** (PROVIDED BY CONTECH)

| COUNT | DESCRIPTION | INSTALLED BY |
|---|---|---|
| 1 | 5653-10 CONCENTRIC FIBERGLASS INSERT | CONTRACTOR |
| 1 | 5653, 2400 micron, 5.71' O.D. x 5.42' SCREEN, GREEN FLANGE UP | CONTRACTOR |
| 1 | 56 SERIES HARDWARE KIT | CONTRACTOR |
| 1 | SEALANT FOR JOINTS | CONTRACTOR |
| 2 | 24"Ø X 4" FRAME AND COVER, EJ #41600389, OR EQUIV. | CONTRACTOR |

**SITE DESIGN DATA**

| | |
|---|---|
| WATER QUALITY FLOW RATE | 9.46 CFS |
| PEAK FLOW RATE | 53.09 CFS |
| RETURN PERIOD OF PEAK FLOW | 100 YRS |




**ELEVATION VIEW**

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 32500 LBS.
STRUCTURE IS DELIVERED IN 4 PIECES

MAX FOOTPRINT = 12.67'Ø

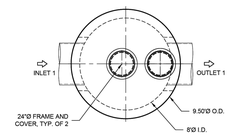
CONTECH
**CONTRACT**
DRAWING

CDS5653-10-C - 831258-15
MEIJER ABE - BROWNSBURG, IN
BROWNSBURG, IN
SITE DESIGNATION: 1.01 - WQU

CONTECH ENGINEERED SOLUTIONS LLC
9025 Centre Pointe Dr, Suite 400, West Chester, OH 45069
800.338.1122 | 513.645.7000 | 513.645.7993 FAX
www.ContechES.com

DATE: 12/12/24
DESIGNED: MDB | DRAWN: CER
CHECKED: MDB | APPROVED: MDB
PROJECT No.: 831258 | SEQUENCE No.: 15
SHEET: 1 OF 1
NCI
LAYOUT 1A

This drawing is and shall remain the property of the Contech Engineered Solutions LLC. The use of this drawing is restricted to the original site for which it was prepared and publication thereof is expressly limited to such use. Reproduction or publication by any method, in whole or part, is prohibited. Title and all rights of common law copyright and other property rights in the subject matter of the drawing are reserved by Contech Engineered Solutions LLC. Possession of this drawing does not convey any rights of reproduction or use for any purpose other than in connection with the project.




**PLAN VIEW**
INTERNALS NOT SHOWN

INTERNAL COMPONENTS TO BE INSTALLED ON SITE BY CONTECH FIELD CONSULTANT. PLEASE CONTACT CONTECH FOR CURRENT INSTALLATION LEAD TIME



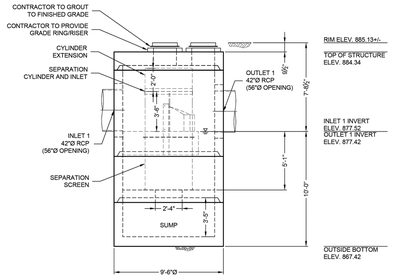

**PLAN VIEW FOR PIPE ORIENTATION**
TOP SLAB NOT SHOWN

**MATERIAL LIST** (PROVIDED BY CONTECH)

| COUNT | DESCRIPTION | INSTALLED BY |
|---|---|---|
| 1 | 4045-8 CONCENTRIC FIBERGLASS INSERT | CONTRACTOR |
| 1 | 4045, 2400 micron, 4.1' O.D. x 4.58' SCREEN, GREEN FLANGE UP | CONTRACTOR |
| 1 | 20, 30, 40 SERIES HARDWARE KIT | CONTRACTOR |
| 1 | 40 SERIES, 3 FT. TALL CYLINDER EXTENSION | CONTRACTOR |
| 1 | SEALANT FOR JOINTS | CONTRACTOR |
| 2 | 24"Ø X 4" FRAME AND COVER, EJ #41600389, OR EQUIV. | CONTRACTOR |

**SITE DESIGN DATA**

| | |
|---|---|
| WATER QUALITY FLOW RATE | 6.58 CFS |
| PEAK FLOW RATE | 42.08 CFS |
| RETURN PERIOD OF PEAK FLOW | 100 YRS |




**ELEVATION VIEW**

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 20000 LBS.
STRUCTURE IS DELIVERED IN 4 PIECES

MAX FOOTPRINT = 9.50'Ø

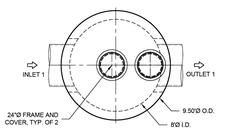
CONTECH
**PROPOSAL**
DRAWING

CDS4045-8-C - 831258-20
MEIJER ABE - BROWNSBURG, IN
BROWNSBURG, IN
SITE DESIGNATION: 1.31 - WQU

CONTECH ENGINEERED SOLUTIONS LLC
9025 Centre Pointe Dr, Suite 400, West Chester, OH 45069
800.338.1122 | 513.645.7000 | 513.645.7993 FAX
www.ContechES.com

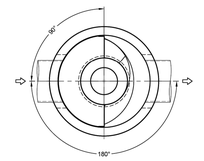
DATE: 12/13/24
DESIGNED: MDB | DRAWN: CER
CHECKED: MDB | APPROVED: MDB
PROJECT No.: 831258 | SEQUENCE No.: 20
SHEET: 1 OF 1
NCI
LAYOUT 1A

This drawing is and shall remain the property of the Contech Engineered Solutions LLC. The use of this drawing is restricted to the original site for which it was prepared and publication thereof is expressly limited to such use. Reproduction or publication by any method, in whole or part, is prohibited. Title and all rights of common law copyright and other property rights in the subject matter of the drawing are reserved by Contech Engineered Solutions LLC. Possession of this drawing does not convey any rights of reproduction or use for any purpose other than in connection with the project.




**PLAN VIEW**
INTERNALS NOT SHOWN

INTERNAL COMPONENTS TO BE INSTALLED ON SITE BY CONTECH FIELD CONSULTANT. PLEASE CONTACT CONTECH FOR CURRENT INSTALLATION LEAD TIME



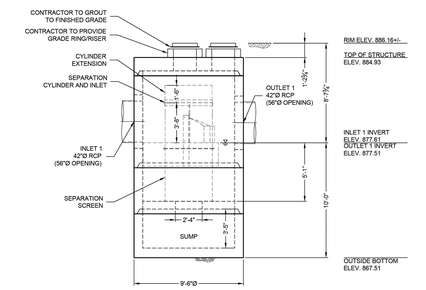

**PLAN VIEW FOR PIPE ORIENTATION**
TOP SLAB NOT SHOWN

**MATERIAL LIST** (PROVIDED BY CONTECH)

| COUNT | DESCRIPTION | INSTALLED BY |
|---|---|---|
| 1 | 4045-8 CONCENTRIC FIBERGLASS INSERT | CONTRACTOR |
| 1 | 4045, 2400 micron, 4.1' O.D. x 4.58' SCREEN, GREEN FLANGE UP | CONTRACTOR |
| 1 | 20, 30, 40 SERIES HARDWARE KIT | CONTRACTOR |
| 1 | 40 SERIES, 1.5 FT. TALL CYLINDER EXTENSION | CONTRACTOR |
| 1 | SEALANT FOR JOINTS | CONTRACTOR |
| 2 | 24"Ø X 4" FRAME AND COVER, EJ #41600389, OR EQUIV. | CONTRACTOR |

**SITE DESIGN DATA**

| | |
|---|---|
| WATER QUALITY FLOW RATE | 6.55 CFS |
| PEAK FLOW RATE | 34.22 CFS |
| RETURN PERIOD OF PEAK FLOW | 100 YRS |




**ELEVATION VIEW**

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 22000 LBS.
STRUCTURE IS DELIVERED IN 4 PIECES

MAX FOOTPRINT = 9.50'Ø

CONTECH
**CONTRACT**
DRAWING

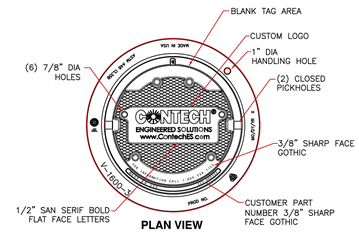
CDS4045-8-C - 831258-25
MEIJER ABE - BROWNSBURG, IN
BROWNSBURG, IN
SITE DESIGNATION: 2.01 - WQU

CONTECH ENGINEERED SOLUTIONS LLC
9025 Centre Pointe Dr, Suite 400, West Chester, OH 45069
800.338.1122 | 513.645.7000 | 513.645.7993 FAX
www.ContechES.com

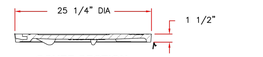
DATE: 12/13/24
DESIGNED: MDB | DRAWN: CER
CHECKED: MDB | APPROVED: MDB
PROJECT No.: 831258 | SEQUENCE No.: 25
SHEET: 1 OF 1
NCI
LAYOUT 1A

This drawing is and shall remain the property of the Contech Engineered Solutions LLC. The use of this drawing is restricted to the original site for which it was prepared and publication thereof is expressly limited to such use. Reproduction or publication by any method, in whole or part, is prohibited. Title and all rights of common law copyright and other property rights in the subject matter of the drawing are reserved by Contech Engineered Solutions LLC. Possession of this drawing does not convey any rights of reproduction or use for any purpose other than in connection with the project.

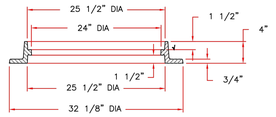
## V1600-3 V1610-3 Assembly




**PLAN VIEW**




**COVER SECTION**




**RING SECTION**

**Product Number**
41600389

**Design Features**
-Materials
Frame
Gray Iron (CL35B)
Cover
Gray Iron (CL35B)

-Design Load
Heavy Duty
-Open Area
n/a
-Coating
Undipped
- -/- Designates Machined Surface

**Certification**
- ASTM A48
-Country of Origin:USA

**Major Components**
41600310
41600374

**Drawing Revision**
05/02/2008 Designer: DEW
6/20/2017 Revised By: DAE

**Disclaimer**
Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

CONFIDENTIAL: This drawing is the property of EJ GROUP, Inc., and embodies confidential information, registered marks, patents, trade secret information, and/or know how that is the property of EJ GROUP, Inc. Copyright © 2012 EJ GROUP, Inc. All rights reserved.

**Contact**
800 626 4653
ejco.com

WOOLPERT
ARCHITECTURE | ENGINEERING | GEOSPATIAL
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|

MEIJER STORE #338
9202 E. 56TH STREET
BROWNSBURG, INDIANA 46112

CONTECH DETAILS

| ISSUED FOR: | |
|---|---|
| PERMIT | MM/DD/YY |
| BID | MM/DD/YY |
| CONSTRUCTION | MM/DD/YY |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
NS-26-00338

C-708

Indiana 811
Know what's below.
Call before you dig.

Images: ..\Xrefs: 10020046TBLK.dwg
Layout: C-708 CONTECH DETAILS
Last Saved By:Doulton, 12/20/2024 3:56:20 PM
G:\DE\Clients\Meijer\2026 Open Meijer Stores\10020046 Meijer 338 ABE – Brownsburg, IN Civil\4.0 Disciplines\Civil\Cadd\Cd\10020046DET7.dwg Plotted By:Reedy, Angela Plotted:January 10, 2025, 2:35:54 PM

# 1.5 – WATER QUALITY STRUCTURE SIZING

**Project:** Meijer ABE
**Location:** *Brownsburg, IN*
**Prepared For:** Woolpert, Inc

**Purpose:** To calculate the first flush runoff flow rate (WQF) over a given site area. In this situation the WQV to be analyzed is the runoff produced by the first 1" of rainfall.

**Reference:** United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual

**Given:**

| Structure Name | A (acres) | A ($miles^2$) | Runoff Coefficient | Percent Imp. (%)* | $t_c$ (min) | $t_c$ (hr) |
|---|---|---|---|---|---|---|
| 1.01 | 10.67 | 0.01667 | 0.84 | 90.00 | 19.0 | 0.317 |
| 1.31 | 7.54 | 0.01178 | 0.79 | 81.67 | 16.0 | 0.267 |
| 2.01 | 7.59 | 0.01186 | 0.77 | 78.33 | 15.0 | 0.250 |

* Assumes runoff coefficient of 0.3 for pervious areas and 0.9 for impervious areas.

**Procedure:**

The Water Quality Flow (WQF) is calculated using the Water Quality Volume (WQV). This WQV, converted to watershed inches, is substituted for the runoff depth (Q) in the Natural Resources Conservation Service (formerly Soil Conservation Service), TR-55 Gr

1. Compute WQV in watershed inches using the following equation:

$$WQV = P * R$$

where: WQV = water quality volume (watershed inches)
P = design precipitation (inches)
R = volumetric runoff coefficient = 0.05 + 0.009(I)
I = percent impervious cover

| Structure Name | Percent Imp. (%) | R | P (in) | WQV (in) | WQV (CF) |
|---|---|---|---|---|---|
| 1.01 | 90.00 | 0.860 | 1 | 0.860 | 33,309.61 |
| 1.31 | 81.67 | 0.785 | 1 | 0.785 | 21,485.61 |
| 2.01 | 78.33 | 0.755 | 1 | 0.755 | 20,801.53 |

2. Compute the NRCS Runoff Curve Number (CN) using the following equation, or graphically using Figure 2-1 from TR-55 (USDA, 1986):

$$CN = 1000 / [10+5P+10Q-10(Q^2+1.25QP)^{1/2}]$$

where: CN = Runoff Curve Number
P = design precipitation (inches)
Q = runoff depth (watershed inches)

| Structure Name | Q (in) | CN |
|---|---|---|
| 1.01 | 0.860 | 98.72 |
| 1.31 | 0.785 | 97.93 |
| 2.01 | 0.755 | 97.59 |



3. Using computed CN, read initial abstraction ($I_a$) from Table 4-1 in Chapter 4 of TR-55; compute $I_a$/P, interpolating when appropriate.

| Structure Name | $I_a$ (in) | $I_a$/P |
|---|---|---|
| 1.01 | 0.041 | 0.041 |
| 1.31 | 0.041 | 0.041 |
| 2.01 | 0.041 | 0.041 |

4. Compute the time of concentration ($t_c$) in hours and the drainage area in square miles. A minimum $t_c$ of 0.167 hours (10 minutes) should be used.

| Structure Name | $t_c$ (hr) | A (miles$^2$) |
|---|---|---|
| 1.01 | 0.317 | 0.01667 |
| 1.31 | 0.267 | 0.01178 |
| 2.01 | 0.250 | 0.01186 |

5. Read the unit peak discharge ($q_u$) from Exhibit 4-II in Chapter 4 of TR-55 for appropriate $t_c$ for type II rainfall distribution.

| Structure Name | $t_c$ (hr) | $I_a$/P | $q_u$ (csm/in) |
|---|---|---|---|
| 1.01 | 0.317 | 0.041 | 660 |
| 1.31 | 0.267 | 0.041 | 712 |
| 2.01 | 0.250 | 0.041 | 731 |

6. Substituting WQV (watershed inches) for runoff depth (Q), compute the water quality flow (WQF) from the following equation:

$$\mathbf{WQF = (q_u)*(A)*(Q)}$$

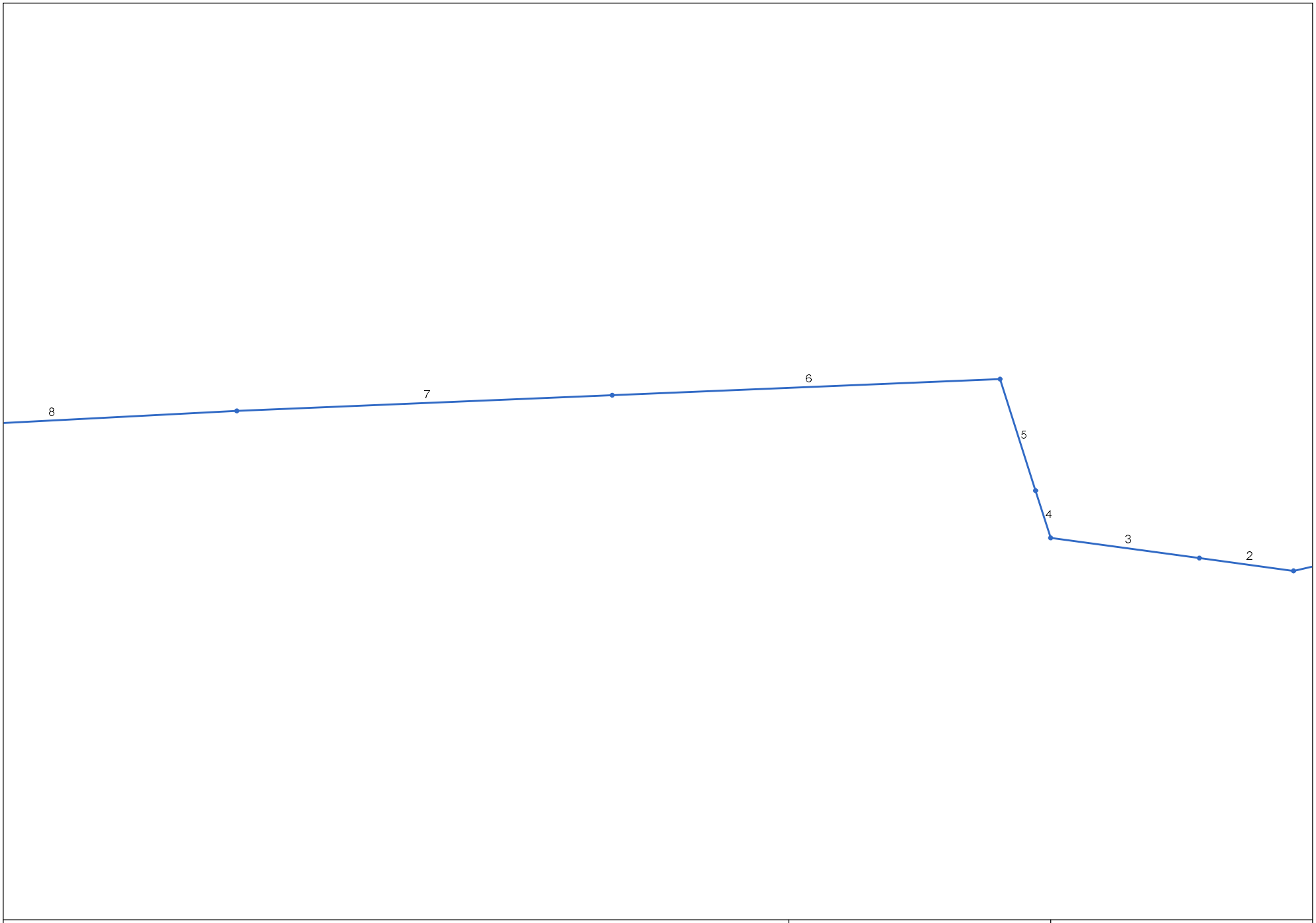
where: WQF = water quality flow (cfs)
$q_u$ = unit peak discharge (cfs/mi$^2$/inch)
A = drainage area (mi$^2$)
Q = runoff depth (watershed inches)

| Structure Name | $q_u$ (csm/in) | A (miles$^2$) | Q (in) | WQF (cfs) | |
|---|---|---|---|---|---|
| 1.01 | 660 | 0.01667 | 0.860 | 9.46 | CDS5653-10 |
| 1.31 | 712 | 0.01178 | 0.785 | 6.58 | CDS4045-8 |
| 2.01 | 731 | 0.01186 | 0.755 | 6.55 | CDS4045-8 |



# 1.6 – EXISTING 27” PIPE ANALYSIS

# Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan




| | | |
|---|---|---|
| Project File: 10018158 - EX STM PIPE.stm | Number of lines: 8 | Date: 1/31/2024 |

# Storm Sewer Inventory Report



| Line No. | Alignment | | | | Flow Data | | | | Physical Data | | | | | | | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Dnstr Line No. | Line Length (ft) | Defl angle (deg) | Junc Type | Known Q (cfs) | Drng Area (ac) | Runoff Coeff (C) | Inlet Time (min) | Invert El Dn (ft) | Line Slope (%) | Invert El Up (ft) | Line Size (in) | Line Shape | N Value (n) | J-Loss Coeff (K) | Inlet/ Rim El (ft) | |
| 1 | End | 166.000 | 166.947 | MH | 0.00 | 0.00 | 0.00 | 0.0 | 876.37 | 0.09 | 876.52 | 36 | Cir | 0.013 | 0.41 | 880.35 | 205 |
| 2 | 1 | 126.000 | 20.811 | MH | 0.00 | 0.00 | 0.00 | 0.0 | 876.52 | 0.09 | 876.63 | 36 | Cir | 0.013 | 0.15 | 879.48 | 204 |
| 3 | 2 | 199.000 | 0.000 | MH | 0.00 | 0.00 | 0.00 | 0.0 | 876.63 | 0.09 | 876.81 | 36 | Cir | 0.013 | 0.92 | 882.04 | 203 |
| 4 | 3 | 66.000 | 64.661 | MH | 0.00 | 0.00 | 0.00 | 0.0 | 876.81 | 0.09 | 876.87 | 36 | Cir | 0.013 | 0.15 | 883.12 | 202 |
| 5 | 4 | 156.000 | 0.000 | MH | 0.00 | 0.00 | 0.00 | 0.0 | 876.87 | 0.09 | 877.01 | 36 | Cir | 0.013 | 0.97 | 883.80 | 185-201 |
| 6 | 5 | 515.000 | -74.830 | MH | 1.84* | 0.00 | 0.00 | 0.0 | 877.01 | 0.19 | 877.99 | 36 | Cir | 0.013 | 0.15 | 886.51 | 186 |
| 7 | 6 | 498.000 | 0.000 | MH | 2.56** | 0.00 | 0.00 | 0.0 | 877.95 | 0.31 | 879.51 | 27 | Cir | 0.013 | 0.15 | 884.86 | 187 |
| 8 | 7 | 499.000 | -0.552 | MH | 16.53** | 0.00 | 0.00 | 0.0 | 879.30 | 0.28 | 880.69 | 27 | Cir | 0.013 | 1.00 | 884.94 | 188 |

*10-year outflow from Meijer detention basins. Emergency flood routing via spillways at the Meijer property lines.

**100-year outflow from Hession Farms, OrthoIndy, and future OrthoIndy detention basins due to emergency flood routing requirements.

Project File: 10018158 - EX STM PIPE.stm | Number of lines: 8 | Date: 1/31/2024

# Storm Sewer Tabulation

| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 1 | End | 166.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 9.4 | 0.0 | 20.93 | 20.05 | 3.22 | 36 | 0.09 | 876.37 | 876.52 | 878.97 | 879.12 | 0.00 | 880.35 | 205 |
| 2 | 1 | 126.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 8.7 | 0.0 | 20.93 | 19.70 | 3.14 | 36 | 0.09 | 876.52 | 876.63 | 879.20 | 879.31 | 880.35 | 879.48 | 204 |
| 3 | 2 | 199.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 7.7 | 0.0 | 20.93 | 20.06 | 3.13 | 36 | 0.09 | 876.63 | 876.81 | 879.33 | 879.50 | 879.48 | 882.04 | 203 |
| 4 | 3 | 66.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 7.3 | 0.0 | 20.93 | 20.11 | 3.03 | 36 | 0.09 | 876.81 | 876.87 | 879.64 | 879.70 | 882.04 | 883.12 | 202 |
| 5 | 4 | 156.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 6.4 | 0.0 | 20.93 | 19.98 | 3.02 | 36 | 0.09 | 876.87 | 877.01 | 879.72 | 879.85 | 883.12 | 883.80 | 185-201 |
| 6 | 5 | 515.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 3.7 | 0.0 | 20.93 | 29.09 | 3.17 | 36 | 0.19 | 877.01 | 877.99 | 879.99 | 880.44 | 883.80 | 886.51 | 186 |
| 7 | 6 | 498.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 2.0 | 0.0 | 19.09 | 17.33 | 4.80 | 27 | 0.31 | 877.95 | 879.51 | 880.47 | 882.36 | 886.51 | 884.86 | 187 |
| 8 | 7 | 499.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 16.53 | 16.34 | 4.16 | 27 | 0.28 | 879.30 | 880.69 | 882.42 | 883.84 | 884.86 | 884.94 | 188 |

Project File: 10018158 - EX STM PIPE.stm

Number of lines: 8

Run Date: 1/31/2024

NOTES:Intensity = 50.33 / (Inlet time + 5.80) ^ 0.66; Return period =Yrs. 100 ; c = cir e = ellip b = box

# SECTION 2:
# SUPPLEMENTAL DESIGN DATA

# 2.1 – NCRS WEB SOIL SURVEY REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for Hendricks County, Indiana




October 23, 2023

# Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

# Contents

**Preface**..... 2
**Soil Map**..... 5
Soil Map.....6
Legend.....7
Map Unit Legend..... 8
Map Unit Descriptions..... 8
Hendricks County, Indiana..... 10
CrA—Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes.....10
ThrA—Treaty silty clay loam, 0 to 1 percent slopes..... 11
YclA—Crosby silt loam, fine-loamy subsoil-Urban land complex, 0 to 2 percent slopes.....13
**Soil Information for All Uses**.....15
Soil Properties and Qualities..... 15
Soil Qualities and Features.....15
Hydrologic Soil Group (Meijer - ABE).....15

# Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report
## Soil Map




Map Scale: 1:3,160 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hendricks County, Indiana
Survey Area Data: Version 27, Sep 1, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 15, 2022—Jun 21, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| CrA | Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes | 10.9 | 34.6% |
| ThrA | Treaty silty clay loam, 0 to 1 percent slopes | 20.7 | 65.4% |
| YclA | Crosby silt loam, fine-loamy subsoil-Urban land complex, 0 to 2 percent slopes | 0.0 | 0.1% |
| **Totals for Area of Interest** | | **31.7** | **100.0%** |

# Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

# Hendricks County, Indiana

## CrA—Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* 2thy4
*Elevation:* 600 to 1,000 feet
*Mean annual precipitation:* 36 to 44 inches
*Mean annual air temperature:* 49 to 54 degrees F
*Frost-free period:* 145 to 180 days
*Farmland classification:* Prime farmland if drained

### Map Unit Composition

*Crosby and similar soils:* 93 percent
*Minor components:* 7 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Crosby

#### Setting

*Landform:* Water-lain moraines, recessionial moraines, ground moraines
*Landform position (two-dimensional):* Summit, backslope, footslope
*Landform position (three-dimensional):* Interfluve, rise
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear, convex
*Parent material:* Silty material or loess over loamy till

#### Typical profile

*Ap - 0 to 10 inches:* silt loam
*Btg - 10 to 17 inches:* silty clay loam
*2Bt - 17 to 29 inches:* clay loam
*2BCt - 29 to 36 inches:* loam
*2Cd - 36 to 79 inches:* loam

#### Properties and qualities

*Slope:* 0 to 2 percent
*Depth to restrictive feature:* 24 to 40 inches to densic material
*Drainage class:* Somewhat poorly drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately high (0.01 to 0.20 in/hr)
*Depth to water table:* About 6 to 24 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 55 percent
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Available water supply, 0 to 60 inches:* Moderate (about 6.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 2w
*Hydrologic Soil Group:* C/D
*Ecological site:* F111XA008IN - Wet Till Ridge
*Hydric soil rating:* No

**Minor Components**

**Williamstown, eroded**

*Percent of map unit:* 5 percent
*Landform:* Recessionial moraines, ground moraines, water-lain moraines
*Landform position (two-dimensional):* Summit, shoulder, backslope
*Landform position (three-dimensional):* Head slope, nose slope, side slope, crest, rise
*Down-slope shape:* Linear, convex
*Across-slope shape:* Convex, linear
*Ecological site:* F111XA009IN - Till Ridge
*Hydric soil rating:* No

**Treaty, drained**

*Percent of map unit:* 2 percent
*Landform:* Swales, water-lain moraines, depressions
*Landform position (two-dimensional):* Footslope, toeslope
*Landform position (three-dimensional):* Base slope, dip
*Down-slope shape:* Linear
*Across-slope shape:* Concave
*Ecological site:* F111XA007IN - Till Depression Flatwood
*Hydric soil rating:* Yes

## ThrA—Treaty silty clay loam, 0 to 1 percent slopes

**Map Unit Setting**

*National map unit symbol:* 2ygzn
*Elevation:* 450 to 1,200 feet
*Mean annual precipitation:* 37 to 46 inches
*Mean annual air temperature:* 48 to 55 degrees F
*Frost-free period:* 145 to 180 days
*Farmland classification:* Prime farmland if drained

**Map Unit Composition**

*Treaty, frequently ponded, drained, and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Treaty, Frequently Ponded, Drained**

**Setting**

*Landform:* Depressions, ground moraines, water-lain moraines, swales
*Landform position (three-dimensional):* Dip, talf
*Down-slope shape:* Concave, linear
*Across-slope shape:* Concave, linear
*Parent material:* Silty material or loess over loamy till

**Typical profile**

*Ap - 0 to 10 inches:* silty clay loam
*A - 10 to 14 inches:* silty clay loam

*Btg1 - 14 to 36 inches:* silty clay loam
*2Btg2 - 36 to 59 inches:* loam
*2C - 59 to 79 inches:* loam

**Properties and qualities**

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Poorly drained
*Runoff class:* Negligible
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)
*Depth to water table:* About 0 to 12 inches
*Frequency of flooding:* None
*Frequency of ponding:* Frequent
*Calcium carbonate, maximum content:* 40 percent
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Available water supply, 0 to 60 inches:* High (about 9.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 2w
*Hydrologic Soil Group:* B/D
*Ecological site:* F111XA007IN - Till Depression Flatwood
*Hydric soil rating:* Yes

## Minor Components

**Southwest, frequently ponded, drained**

*Percent of map unit:* 5 percent
*Landform:* Depressions, ground moraines, drainageways
*Landform position (three-dimensional):* Dip
*Down-slope shape:* Concave, linear
*Across-slope shape:* Linear, concave
*Ecological site:* F111XA004IN - Wet Alluvium
*Hydric soil rating:* Yes

**Rensselaer, frequently ponded, drained**

*Percent of map unit:* 5 percent
*Landform:* Depressions, ground moraines, glacial drainage channels
*Landform position (three-dimensional):* Dip
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Ecological site:* R111XA016IN - Outwash Mollisol
*Hydric soil rating:* Yes

**Pella, frequently ponded, drained**

*Percent of map unit:* 5 percent
*Landform:* Outwash plains, till plains, lake plains, ground moraines
*Landform position (three-dimensional):* Talf
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Ecological site:* R111XA016IN - Outwash Mollisol
*Hydric soil rating:* Yes

**Crosby**

*Percent of map unit:* 5 percent
*Landform:* Recessionial moraines, ground moraines, water-lain moraines

*Landform position (three-dimensional):* Rise
*Down-slope shape:* Convex
*Across-slope shape:* Linear
*Ecological site:* F111XA008IN - Wet Till Ridge
*Hydric soil rating:* No

## YclA—Crosby silt loam, fine-loamy subsoil-Urban land complex, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* 2w57p
*Elevation:* 600 to 1,040 feet
*Mean annual precipitation:* 36 to 46 inches
*Mean annual air temperature:* 48 to 55 degrees F
*Frost-free period:* 145 to 180 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Crosby and similar soils:* 60 percent
*Urban land:* 30 percent
*Minor components:* 10 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Crosby

#### Setting

*Landform:* Recessionial moraines, ground moraines, water-lain moraines
*Landform position (two-dimensional):* Summit, backslope, footslope
*Landform position (three-dimensional):* Interfluve, rise
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear, convex
*Parent material:* Silty material or loess over loamy till

#### Typical profile

*Ap - 0 to 10 inches:* silt loam
*Btg - 10 to 17 inches:* silty clay loam
*2Bt - 17 to 29 inches:* clay loam
*2BCt - 29 to 36 inches:* loam
*2Cd - 36 to 79 inches:* loam

#### Properties and qualities

*Slope:* 0 to 2 percent
*Depth to restrictive feature:* 24 to 40 inches to densic material
*Drainage class:* Somewhat poorly drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately high (0.01 to 0.20 in/hr)
*Depth to water table:* About 6 to 24 inches
*Frequency of flooding:* None
*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 55 percent
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Available water supply, 0 to 60 inches:* Moderate (about 6.5 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 2w
*Hydrologic Soil Group:* C/D
*Ecological site:* F111XA008IN - Wet Till Ridge
*Hydric soil rating:* No

**Minor Components**

**Treaty, drained**

*Percent of map unit:* 5 percent
*Landform:* Swales, water-lain moraines, depressions
*Landform position (two-dimensional):* Footslope, toeslope
*Landform position (three-dimensional):* Base slope, dip
*Down-slope shape:* Linear
*Across-slope shape:* Concave
*Ecological site:* F111XA007IN - Till Depression Flatwood
*Hydric soil rating:* Yes

**Williamstown, eroded**

*Percent of map unit:* 5 percent
*Landform:* Recessionial moraines, ground moraines, water-lain moraines
*Landform position (two-dimensional):* Summit, shoulder, backslope
*Landform position (three-dimensional):* Head slope, nose slope, side slope, crest, rise
*Down-slope shape:* Linear, convex
*Across-slope shape:* Convex, linear
*Ecological site:* F111XA009IN - Till Ridge
*Hydric soil rating:* No

# Soil Information for All Uses

## Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

## Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

### Hydrologic Soil Group (Meijer - ABE)

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

# Custom Soil Resource Report
## Map—Hydrologic Soil Group (Meijer - ABE)




Map Scale: 1:3,160 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

## MAP LEGEND

**Area of Interest (AOI)**

Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**

A

A/D

B

B/D

C

C/D

D

Not rated or not available

**Soil Rating Lines**

A

A/D

B

B/D

C

C/D

D

Not rated or not available

**Soil Rating Points**

A

A/D

B

B/D

C

C/D

D

Not rated or not available

**Water Features**

Streams and Canals

**Transportation**

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

**Background**

Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hendricks County, Indiana
Survey Area Data: Version 27, Sep 1, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 15, 2022—Jun 21, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Table—Hydrologic Soil Group (Meijer - ABE)

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|---|---|---|---|---|
| CrA | Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes | C/D | 10.9 | 34.6% |
| ThrA | Treaty silty clay loam, 0 to 1 percent slopes | B/D | 20.7 | 65.4% |
| YclA | Crosby silt loam, fine-loamy subsoil-Urban land complex, 0 to 2 percent slopes | C/D | 0.0 | 0.1% |
| **Totals for Area of Interest** | | | **31.7** | **100.0%** |

## Rating Options—Hydrologic Soil Group (Meijer - ABE)

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff: None Specified*

*Tie-break Rule:* Higher

# 2.2 – HYDRAFLOW STORM SEWERS – 10-YR DESIGN CALCULATIONS

# Storm Sewer Tabulation



| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 1 | End | 28.845 | 0.00 | 10.68 | 0.00 | 0.00 | 8.93 | 0.0 | 27.4 | 3.5 | 31.14 | 31.63 | 3.75 | 42 | 0.10 | 877.39 | 877.42 | 880.21 | 880.24 | 881.13 | 885.49 | 1.01 |
| 2 | 1 | 65.669 | 0.67 | 10.68 | 0.85 | 0.57 | 8.93 | 5.0 | 27.0 | 3.5 | 31.37 | 43.01 | 3.91 | 42 | 0.18 | 877.52 | 877.64 | 880.27 | 880.33 | 885.49 | 883.43 | 1.02 |
| 3 | 2 | 90.779 | 0.17 | 10.01 | 0.78 | 0.13 | 8.36 | 5.0 | 26.6 | 3.6 | 29.69 | 45.76 | 3.52 | 42 | 0.10 | 877.74 | 877.83 | 880.64 | 880.67 | 883.43 | 883.83 | 1.03 |
| 4 | 3 | 95.389 | 0.95 | 9.84 | 0.90 | 0.86 | 8.23 | 5.0 | 26.0 | 3.6 | 29.56 | 32.58 | 3.39 | 42 | 0.10 | 877.93 | 878.03 | 880.91 | 880.99 | 883.83 | 885.52 | 1.04 |
| 5 | 4 | 76.979 | 0.75 | 8.89 | 0.90 | 0.68 | 7.37 | 5.0 | 25.6 | 3.6 | 26.76 | 32.44 | 3.10 | 42 | 0.10 | 878.13 | 878.21 | 881.08 | 881.13 | 885.52 | 888.68 | 1.05 |
| 6 | 5 | 85.072 | 0.84 | 8.14 | 0.89 | 0.75 | 6.70 | 5.0 | 25.0 | 3.7 | 24.62 | 35.46 | 2.91 | 42 | 0.11 | 878.31 | 878.40 | 881.21 | 881.24 | 888.68 | 887.97 | 1.06 |
| 7 | 6 | 122.866 | 0.73 | 7.30 | 0.90 | 0.66 | 5.95 | 5.0 | 24.4 | 3.7 | 22.21 | 25.53 | 3.25 | 36 | 0.15 | 878.50 | 878.68 | 881.31 | 881.43 | 887.97 | 887.98 | 1.07 |
| 8 | 7 | 103.526 | 0.61 | 6.57 | 0.88 | 0.54 | 5.29 | 5.0 | 23.8 | 3.8 | 20.04 | 26.22 | 3.00 | 36 | 0.15 | 878.78 | 878.94 | 881.51 | 881.58 | 887.98 | 886.79 | 1.08 |
| 9 | 8 | 154.193 | 0.54 | 5.96 | 0.53 | 0.29 | 4.76 | 5.0 | 22.8 | 3.9 | 18.45 | 26.32 | 3.75 | 36 | 0.16 | 879.66 | 879.90 | 881.66 | 881.85 | 886.79 | 885.03 | 1.09 |
| 10 | 9 | 182.886 | 0.37 | 4.91 | 0.85 | 0.31 | 4.17 | 5.0 | 21.9 | 4.0 | 16.56 | 32.69 | 4.73 | 30 | 0.54 | 880.00 | 880.99 | 882.34 | 882.36 | 885.03 | 886.51 | 1.12 |
| 11 | 10 | 100.931 | 0.37 | 2.15 | 0.85 | 0.31 | 1.83 | 5.0 | 21.2 | 4.0 | 7.39 | 12.19 | 3.67 | 24 | 0.25 | 881.09 | 881.34 | 882.36 | 882.52 | 886.51 | 886.68 | 1.14 |
| 12 | 11 | 110.101 | 0.40 | 1.78 | 0.85 | 0.34 | 1.51 | 5.0 | 20.3 | 4.1 | 6.27 | 12.36 | 3.46 | 24 | 0.25 | 881.44 | 881.72 | 882.63 | 882.78 | 886.68 | 886.41 | 1.15 |
| 13 | 12 | 50.006 | 1.38 | 1.38 | 0.85 | 1.17 | 1.17 | 20.0 | 20.0 | 4.2 | 4.90 | 5.80 | 3.10 | 18 | 0.26 | 881.82 | 881.95 | 883.10 | 883.18 | 886.41 | 886.41 | 1.16 |
| 14 | 10 | 50.000 | 2.39 | 2.39 | 0.85 | 2.03 | 2.03 | 20.0 | 20.0 | 4.2 | 8.49 | 20.91 | 3.50 | 30 | 0.26 | 881.09 | 881.22 | 882.36 | 882.42 | 886.51 | 886.50 | 1.13 |
| 15 | 9 | 189.300 | 0.31 | 0.51 | 0.58 | 0.18 | 0.30 | 5.0 | 5.9 | 7.1 | 2.11 | 5.67 | 1.19 | 18 | 0.25 | 880.00 | 880.47 | 882.34 | 882.41 | 885.03 | 884.66 | 1.10 |
| 16 | 15 | 26.000 | 0.20 | 0.20 | 0.58 | 0.12 | 0.12 | 5.0 | 5.0 | 7.5 | 0.87 | 5.45 | 0.49 | 18 | 0.27 | 880.57 | 880.64 | 882.44 | 882.44 | 884.66 | 884.65 | 1.11 |
| 17 | End | 29.159 | 0.00 | 7.79 | 0.00 | 0.00 | 5.97 | 0.0 | 22.3 | 3.9 | 23.51 | 31.79 | 3.61 | 42 | 0.10 | 877.39 | 877.42 | 879.63 | 879.66 | 881.13 | 885.13 | 1.31 |
| 18 | 17 | 21.063 | 0.30 | 7.79 | 0.83 | 0.25 | 5.97 | 5.0 | 22.1 | 3.9 | 23.59 | 30.97 | 3.54 | 42 | 0.09 | 877.52 | 877.54 | 879.81 | 879.83 | 885.13 | 885.03 | 1.32 |
| 19 | 18 | 50.908 | 0.56 | 6.63 | 0.78 | 0.44 | 5.09 | 5.0 | 21.7 | 4.0 | 20.30 | 31.53 | 2.80 | 42 | 0.10 | 877.64 | 877.69 | 880.12 | 880.15 | 885.03 | 885.11 | 1.34 |
| 20 | 19 | 160.500 | 0.70 | 6.07 | 0.83 | 0.58 | 4.65 | 5.0 | 20.5 | 4.1 | 19.19 | 31.77 | 2.76 | 42 | 0.10 | 877.79 | 877.95 | 880.21 | 880.29 | 885.11 | 885.50 | 1.35 |
| 21 | 20 | 128.000 | 0.71 | 5.37 | 0.83 | 0.59 | 4.07 | 5.0 | 19.4 | 4.3 | 17.33 | 32.06 | 2.63 | 42 | 0.10 | 878.05 | 878.18 | 880.35 | 880.41 | 885.50 | 885.50 | 1.36 |
| 22 | 21 | 128.000 | 0.71 | 4.66 | 0.83 | 0.59 | 3.48 | 5.0 | 18.4 | 4.4 | 15.23 | 21.25 | 2.79 | 36 | 0.10 | 878.28 | 878.41 | 880.46 | 880.55 | 885.50 | 885.50 | 1.37 |

Project File: 250106 ABE STM.stm

Number of lines: 52

Run Date: 1/9/2025

NOTES:Intensity = 58.29 / (Inlet time + 8.60) ^ 0.79; Return period =Yrs. 10 ; c = cir e = ellip b = box

# Storm Sewer Tabulation

| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 23 | 22 | 128.000 | 0.73 | 3.95 | 0.83 | 0.61 | 2.90 | 5.0 | 17.3 | 4.5 | 13.08 | 21.25 | 2.52 | 36 | 0.10 | 878.51 | 878.64 | 880.61 | 880.67 | 885.50 | 885.50 | 1.38 |
| 24 | 23 | 128.113 | 0.52 | 3.22 | 0.84 | 0.44 | 2.29 | 5.0 | 15.9 | 4.7 | 10.80 | 21.25 | 2.23 | 36 | 0.10 | 878.74 | 878.87 | 880.72 | 880.78 | 885.50 | 885.50 | 1.39 |
| 25 | 24 | 71.374 | 0.33 | 2.70 | 0.72 | 0.24 | 1.85 | 5.0 | 15.2 | 4.8 | 8.93 | 12.84 | 2.32 | 30 | 0.10 | 878.97 | 879.04 | 880.82 | 880.86 | 885.50 | 885.34 | 1.40 |
| 26 | 25 | 109.751 | 0.00 | 0.47 | 0.00 | 0.00 | 0.32 | 0.0 | 7.8 | 6.5 | 2.08 | 5.69 | 1.47 | 18 | 0.25 | 879.75 | 880.02 | 881.01 | 881.04 | 885.34 | 887.07 | 1.42 |
| 27 | 26 | 275.920 | 0.16 | 0.47 | 0.70 | 0.11 | 0.32 | 5.0 | 5.5 | 7.3 | 2.35 | 3.50 | 2.72 | 15 | 0.25 | 880.12 | 880.81 | 881.08 | 881.55 | 887.07 | 884.82 | 1.43 |
| 28 | 27 | 37.000 | 0.31 | 0.31 | 0.68 | 0.21 | 0.21 | 5.0 | 5.0 | 7.5 | 1.58 | 3.45 | 1.83 | 15 | 0.24 | 880.91 | 881.00 | 881.78 | 881.80 | 884.82 | 884.70 | 1.44 |
| 29 | 18 | 223.201 | 0.46 | 0.86 | 0.64 | 0.29 | 0.63 | 5.0 | 5.6 | 7.2 | 4.59 | 5.26 | 3.28 | 18 | 0.25 | 878.99 | 879.55 | 880.12 | 880.64 | 885.03 | 885.61 | 1.45 |
| 30 | 29 | 74.508 | 0.40 | 0.40 | 0.85 | 0.34 | 0.34 | 5.0 | 5.0 | 7.5 | 2.55 | 4.44 | 2.22 | 15 | 0.40 | 879.65 | 879.95 | 880.90 | 880.97 | 885.61 | 887.64 | 1.46 |
| 31 | 25 | 29.833 | 1.90 | 1.90 | 0.68 | 1.29 | 1.29 | 15.0 | 15.0 | 4.9 | 6.28 | 11.87 | 2.08 | 24 | 0.23 | 879.14 | 879.21 | 881.01 | 881.02 | 885.34 | 883.25 | 1.41 |
| 32 | End | 26.495 | 0.00 | 7.75 | 0.00 | 0.00 | 5.83 | 0.0 | 22.9 | 3.9 | 22.54 | 33.87 | 3.76 | 42 | 0.11 | 877.48 | 877.51 | 879.57 | 879.60 | 881.22 | 886.16 | 2.01 |
| 33 | 32 | 16.506 | 0.09 | 7.75 | 0.85 | 0.08 | 5.83 | 5.0 | 22.8 | 3.9 | 22.61 | 35.04 | 3.87 | 42 | 0.12 | 877.61 | 877.63 | 879.66 | 879.67 | 886.16 | 885.81 | 2.02 |
| 34 | 33 | 27.000 | 0.13 | 7.66 | 0.85 | 0.11 | 5.75 | 5.0 | 22.6 | 3.9 | 22.42 | 33.55 | 3.73 | 42 | 0.11 | 877.73 | 877.76 | 879.82 | 879.86 | 885.81 | 885.90 | 2.03 |
| 35 | 34 | 308.960 | 0.57 | 1.91 | 0.80 | 0.46 | 1.46 | 5.0 | 11.3 | 5.6 | 8.11 | 14.00 | 1.85 | 30 | 0.12 | 877.95 | 878.31 | 880.18 | 880.29 | 885.90 | 885.91 | 2.14 |
| 36 | 35 | 256.000 | 0.84 | 1.34 | 0.71 | 0.60 | 1.00 | 5.0 | 9.3 | 6.0 | 6.06 | 9.79 | 2.64 | 24 | 0.19 | 878.81 | 879.29 | 880.32 | 880.56 | 885.91 | 885.91 | 2.15 |
| 37 | 36 | 173.693 | 0.00 | 0.50 | 0.00 | 0.00 | 0.41 | 0.0 | 7.5 | 6.6 | 2.67 | 4.78 | 1.94 | 18 | 0.21 | 879.39 | 879.75 | 880.62 | 880.74 | 885.91 | 887.83 | 2.16 |
| 38 | 37 | 207.647 | 0.16 | 0.36 | 0.85 | 0.14 | 0.31 | 5.0 | 5.6 | 7.2 | 2.22 | 3.23 | 2.47 | 15 | 0.25 | 879.85 | 880.37 | 880.82 | 881.15 | 887.83 | 885.91 | 2.17 |
| 39 | 38 | 37.000 | 0.20 | 0.20 | 0.85 | 0.17 | 0.17 | 5.0 | 5.0 | 7.5 | 1.27 | 4.60 | 1.51 | 15 | 0.24 | 880.47 | 880.56 | 881.33 | 881.33 | 885.91 | 885.91 | 2.18 |
| 40 | 34 | 30.006 | 0.56 | 5.62 | 0.34 | 0.19 | 4.18 | 5.0 | 22.4 | 3.9 | 16.39 | 22.86 | 2.80 | 36 | 0.10 | 877.86 | 877.89 | 880.18 | 880.19 | 885.90 | 885.90 | 2.04 |
| 41 | 40 | 204.089 | 0.40 | 1.33 | 0.81 | 0.32 | 0.90 | 5.0 | 10.0 | 5.9 | 5.27 | 13.77 | 1.27 | 30 | 0.11 | 878.26 | 878.49 | 880.34 | 880.38 | 885.90 | 885.90 | 2.05 |
| 42 | 41 | 64.190 | 0.00 | 0.93 | 0.00 | 0.00 | 0.58 | 0.0 | 9.1 | 6.1 | 3.51 | 8.93 | 1.32 | 24 | 0.16 | 878.79 | 878.89 | 880.42 | 880.43 | 885.90 | 886.76 | 2.06 |
| 43 | 42 | 150.206 | 0.20 | 0.93 | 0.79 | 0.16 | 0.58 | 5.0 | 8.0 | 6.4 | 3.70 | 4.11 | 2.63 | 18 | 0.15 | 879.39 | 879.62 | 880.50 | 880.73 | 886.76 | 886.56 | 2.07 |
| 44 | 43 | 101.994 | 0.33 | 0.73 | 0.58 | 0.19 | 0.42 | 5.0 | 7.3 | 6.6 | 2.78 | 3.20 | 2.39 | 15 | 0.25 | 879.72 | 879.97 | 880.89 | 881.05 | 886.56 | 885.90 | 2.08 |

Project File: 250106 ABE STM.stm | Number of lines: 52 | Run Date: 1/9/2025

NOTES:Intensity = 58.29 / (Inlet time + 8.60) ^ 0.79; Return period =Yrs. 10 ; c = cir e = ellip b = box

# Storm Sewer Tabulation

| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 45 | 44 | 193.373 | 0.40 | 0.40 | 0.57 | 0.23 | 0.23 | 5.0 | 5.0 | 7.5 | 1.71 | 3.22 | 1.77 | 15 | 0.25 | 880.07 | 880.55 | 881.19 | 881.34 | 885.90 | 885.90 | 2.09 |
| 46 | 40 | 127.854 | 0.21 | 3.73 | 0.51 | 0.11 | 3.09 | 5.0 | 21.6 | 4.0 | 12.37 | 14.17 | 2.60 | 30 | 0.10 | 877.99 | 878.12 | 880.34 | 880.43 | 885.90 | 885.92 | 2.11 |
| 47 | 46 | 37.000 | 0.19 | 3.52 | 0.82 | 0.16 | 2.98 | 5.0 | 21.3 | 4.0 | 12.02 | 14.62 | 2.54 | 30 | 0.11 | 878.22 | 878.26 | 880.54 | 880.56 | 885.92 | 885.92 | 2.12 |
| 48 | 47 | 124.693 | 0.10 | 1.91 | 0.79 | 0.08 | 1.62 | 5.0 | 20.3 | 4.1 | 6.69 | 10.06 | 3.42 | 24 | 0.17 | 879.55 | 879.76 | 880.74 | 880.96 | 885.92 | 885.90 | 2.31 |
| 49 | 48 | 39.798 | 1.72 | 1.72 | 0.85 | 1.46 | 1.46 | 20.0 | 20.0 | 4.2 | 6.11 | 12.28 | 2.75 | 24 | 0.25 | 879.86 | 879.96 | 881.23 | 881.25 | 885.90 | 885.00 | 2.33 |
| 50 | 48 | 88.389 | 0.09 | 0.09 | 0.85 | 0.08 | 0.08 | 5.0 | 5.0 | 7.5 | 0.57 | 7.57 | 1.43 | 18 | 0.25 | 879.86 | 880.08 | 881.23 | 880.36 | 885.90 | 885.90 | 2.32 |
| 51 | 37 | 88.261 | 0.14 | 0.14 | 0.72 | 0.10 | 0.10 | 5.0 | 5.0 | 7.5 | 0.76 | 3.22 | 0.99 | 15 | 0.25 | 879.95 | 880.17 | 880.82 | 880.83 | 887.83 | 886.89 | 2.21 |
| 52 | 47 | 39.547 | 1.42 | 1.42 | 0.85 | 1.21 | 1.21 | 20.0 | 20.0 | 4.2 | 5.04 | 12.32 | 1.60 | 24 | 0.25 | 878.36 | 878.46 | 880.71 | 880.73 | 885.92 | 885.00 | 2.13 |

Project File: 250106 ABE STM.stm | Number of lines: 52 | Run Date: 1/9/2025

NOTES:Intensity = 58.29 / (Inlet time + 8.60) ^ 0.79; Return period =Yrs. 10 ; c = cir e = ellip b = box

# 2.3 – HYDRAFLOW STORM SEWERS – 25-YR DESIGN CALCULATIONS

# Storm Sewer Tabulation



| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 1 | End | 28.845 | 0.00 | 10.68 | 0.00 | 0.00 | 8.93 | 0.0 | 26.4 | 4.1 | 36.96 | 31.63 | 3.84 | 42 | 0.10 | 877.39 | 877.42 | 882.14 | 882.18 | 881.13 | 885.49 | 1.01 |
| 2 | 1 | 65.669 | 0.67 | 10.68 | 0.85 | 0.57 | 8.93 | 5.0 | 26.1 | 4.2 | 37.19 | 43.01 | 3.87 | 42 | 0.18 | 877.52 | 877.64 | 882.21 | 882.30 | 885.49 | 883.43 | 1.02 |
| 3 | 2 | 90.779 | 0.17 | 10.01 | 0.78 | 0.13 | 8.36 | 5.0 | 25.7 | 4.2 | 35.14 | 45.76 | 3.65 | 42 | 0.10 | 877.74 | 877.83 | 882.59 | 882.65 | 883.43 | 883.83 | 1.03 |
| 4 | 3 | 95.389 | 0.95 | 9.84 | 0.90 | 0.86 | 8.23 | 5.0 | 25.2 | 4.2 | 34.93 | 32.58 | 3.63 | 42 | 0.10 | 877.93 | 878.03 | 882.91 | 883.02 | 883.83 | 885.52 | 1.04 |
| 5 | 4 | 76.979 | 0.75 | 8.89 | 0.90 | 0.68 | 7.37 | 5.0 | 24.8 | 4.3 | 31.58 | 32.44 | 3.28 | 42 | 0.10 | 878.13 | 878.21 | 883.12 | 883.20 | 885.52 | 888.68 | 1.05 |
| 6 | 5 | 85.072 | 0.84 | 8.14 | 0.89 | 0.75 | 6.70 | 5.0 | 24.4 | 4.3 | 29.00 | 35.46 | 3.01 | 42 | 0.11 | 878.31 | 878.40 | 883.28 | 883.34 | 888.68 | 887.97 | 1.06 |
| 7 | 6 | 122.866 | 0.73 | 7.30 | 0.90 | 0.66 | 5.95 | 5.0 | 23.8 | 4.4 | 26.10 | 25.53 | 3.69 | 36 | 0.15 | 878.50 | 878.68 | 883.41 | 883.60 | 887.97 | 887.98 | 1.07 |
| 8 | 7 | 103.526 | 0.61 | 6.57 | 0.88 | 0.54 | 5.29 | 5.0 | 23.3 | 4.4 | 23.50 | 26.22 | 3.33 | 36 | 0.15 | 878.78 | 878.94 | 883.71 | 883.84 | 887.98 | 886.79 | 1.08 |
| 9 | 8 | 154.193 | 0.54 | 5.96 | 0.53 | 0.29 | 4.76 | 5.0 | 22.4 | 4.5 | 21.56 | 26.32 | 3.05 | 36 | 0.16 | 879.66 | 879.90 | 883.92 | 884.08 | 886.79 | 885.03 | 1.09 |
| 10 | 9 | 182.886 | 0.37 | 4.91 | 0.85 | 0.31 | 4.17 | 5.0 | 21.7 | 4.6 | 19.29 | 32.69 | 3.93 | 30 | 0.54 | 880.00 | 880.99 | 884.40 | 884.75 | 885.03 | 886.51 | 1.12 |
| 11 | 10 | 100.931 | 0.37 | 2.15 | 0.85 | 0.31 | 1.83 | 5.0 | 21.1 | 4.7 | 8.58 | 12.19 | 2.73 | 24 | 0.25 | 881.09 | 881.34 | 885.11 | 885.23 | 886.51 | 886.68 | 1.14 |
| 12 | 11 | 110.101 | 0.40 | 1.78 | 0.85 | 0.34 | 1.51 | 5.0 | 20.3 | 4.8 | 7.25 | 12.36 | 2.31 | 24 | 0.25 | 881.44 | 881.72 | 885.29 | 885.39 | 886.68 | 886.41 | 1.15 |
| 13 | 12 | 50.006 | 1.38 | 1.38 | 0.85 | 1.17 | 1.17 | 20.0 | 20.0 | 4.8 | 5.66 | 5.80 | 3.20 | 18 | 0.26 | 881.82 | 881.95 | 885.51 | 885.63 | 886.41 | 886.41 | 1.16 |
| 14 | 10 | 50.000 | 2.39 | 2.39 | 0.85 | 2.03 | 2.03 | 20.0 | 20.0 | 4.8 | 9.80 | 20.91 | 2.00 | 30 | 0.26 | 881.09 | 881.22 | 885.11 | 885.14 | 886.51 | 886.50 | 1.13 |
| 15 | 9 | 189.300 | 0.31 | 0.51 | 0.58 | 0.18 | 0.30 | 5.0 | 5.8 | 8.3 | 2.44 | 5.67 | 1.38 | 18 | 0.25 | 880.00 | 880.47 | 884.40 | 884.49 | 885.03 | 884.66 | 1.10 |
| 16 | 15 | 26.000 | 0.20 | 0.20 | 0.58 | 0.12 | 0.12 | 5.0 | 5.0 | 8.6 | 1.00 | 5.45 | 0.57 | 18 | 0.27 | 880.57 | 880.64 | 884.53 | 884.54 | 884.66 | 884.65 | 1.11 |
| 17 | End | 29.159 | 0.00 | 7.79 | 0.00 | 0.00 | 5.97 | 0.0 | 21.3 | 4.7 | 27.88 | 31.79 | 2.90 | 42 | 0.10 | 877.39 | 877.42 | 882.14 | 882.16 | 881.13 | 885.13 | 1.31 |
| 18 | 17 | 21.063 | 0.30 | 7.79 | 0.83 | 0.25 | 5.97 | 5.0 | 21.2 | 4.7 | 27.96 | 30.97 | 2.91 | 42 | 0.09 | 877.52 | 877.54 | 882.18 | 882.20 | 885.13 | 885.03 | 1.32 |
| 19 | 18 | 50.908 | 0.56 | 6.63 | 0.78 | 0.44 | 5.09 | 5.0 | 20.9 | 4.7 | 24.03 | 31.53 | 2.50 | 42 | 0.10 | 877.64 | 877.69 | 882.40 | 882.42 | 885.03 | 885.11 | 1.34 |
| 20 | 19 | 160.500 | 0.70 | 6.07 | 0.83 | 0.58 | 4.65 | 5.0 | 19.8 | 4.9 | 22.61 | 31.77 | 2.35 | 42 | 0.10 | 877.79 | 877.95 | 882.47 | 882.55 | 885.11 | 885.50 | 1.35 |
| 21 | 20 | 128.000 | 0.71 | 5.37 | 0.83 | 0.59 | 4.07 | 5.0 | 18.8 | 5.0 | 20.33 | 32.06 | 2.11 | 42 | 0.10 | 878.05 | 878.18 | 882.60 | 882.65 | 885.50 | 885.50 | 1.36 |
| 22 | 21 | 128.000 | 0.71 | 4.66 | 0.83 | 0.59 | 3.48 | 5.0 | 18.0 | 5.1 | 17.80 | 21.25 | 2.52 | 36 | 0.10 | 878.28 | 878.41 | 882.68 | 882.78 | 885.50 | 885.50 | 1.37 |

Project File: 250106 ABE STM.stm | Number of lines: 52 | Run Date: 1/9/2025

NOTES:Intensity = 55.51 / (Inlet time + 7.50) ^ 0.74; Return period =Yrs. 25 ; c = cir e = ellip b = box

# Storm Sewer Tabulation



| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 23 | 22 | 128.000 | 0.73 | 3.95 | 0.83 | 0.61 | 2.90 | 5.0 | 17.0 | 5.3 | 15.22 | 21.25 | 2.15 | 36 | 0.10 | 878.51 | 878.64 | 882.82 | 882.89 | 885.50 | 885.50 | 1.38 |
| 24 | 23 | 128.113 | 0.52 | 3.22 | 0.84 | 0.44 | 2.29 | 5.0 | 15.8 | 5.5 | 12.49 | 21.25 | 1.77 | 36 | 0.10 | 878.74 | 878.87 | 882.93 | 882.97 | 885.50 | 885.50 | 1.39 |
| 25 | 24 | 71.374 | 0.33 | 2.70 | 0.72 | 0.24 | 1.85 | 5.0 | 15.2 | 5.6 | 10.29 | 12.84 | 2.10 | 30 | 0.10 | 878.97 | 879.04 | 883.00 | 883.04 | 885.50 | 885.34 | 1.40 |
| 26 | 25 | 109.751 | 0.00 | 0.47 | 0.00 | 0.00 | 0.32 | 0.0 | 7.5 | 7.6 | 2.44 | 5.69 | 1.38 | 18 | 0.25 | 879.75 | 880.02 | 883.16 | 883.21 | 885.34 | 887.07 | 1.42 |
| 27 | 26 | 275.920 | 0.16 | 0.47 | 0.70 | 0.11 | 0.32 | 5.0 | 5.4 | 8.4 | 2.72 | 3.50 | 2.22 | 15 | 0.25 | 880.12 | 880.81 | 883.24 | 883.66 | 887.07 | 884.82 | 1.43 |
| 28 | 27 | 37.000 | 0.31 | 0.31 | 0.68 | 0.21 | 0.21 | 5.0 | 5.0 | 8.6 | 1.82 | 3.45 | 1.48 | 15 | 0.24 | 880.91 | 881.00 | 883.77 | 883.80 | 884.82 | 884.70 | 1.44 |
| 29 | 18 | 223.201 | 0.46 | 0.86 | 0.64 | 0.29 | 0.63 | 5.0 | 5.5 | 8.4 | 5.31 | 5.26 | 3.01 | 18 | 0.25 | 878.99 | 879.55 | 882.40 | 882.97 | 885.03 | 885.61 | 1.45 |
| 30 | 29 | 74.508 | 0.40 | 0.40 | 0.85 | 0.34 | 0.34 | 5.0 | 5.0 | 8.6 | 2.93 | 4.44 | 2.39 | 15 | 0.40 | 879.65 | 879.95 | 883.18 | 883.31 | 885.61 | 887.64 | 1.46 |
| 31 | 25 | 29.833 | 1.90 | 1.90 | 0.68 | 1.29 | 1.29 | 15.0 | 15.0 | 5.6 | 7.23 | 11.87 | 2.30 | 24 | 0.23 | 879.14 | 879.21 | 883.16 | 883.19 | 885.34 | 883.25 | 1.41 |
| 32 | End | 26.495 | 0.00 | 7.75 | 0.00 | 0.00 | 5.83 | 0.0 | 22.5 | 4.5 | 26.35 | 33.87 | 2.74 | 42 | 0.11 | 877.48 | 877.51 | 883.27 | 883.29 | 881.22 | 886.16 | 2.01 |
| 33 | 32 | 16.506 | 0.09 | 7.75 | 0.85 | 0.08 | 5.83 | 5.0 | 22.4 | 4.5 | 26.42 | 35.04 | 2.75 | 42 | 0.12 | 877.61 | 877.63 | 883.31 | 883.32 | 886.16 | 885.81 | 2.02 |
| 34 | 33 | 27.000 | 0.13 | 7.66 | 0.85 | 0.11 | 5.75 | 5.0 | 22.3 | 4.6 | 26.18 | 33.55 | 2.72 | 42 | 0.11 | 877.73 | 877.76 | 883.38 | 883.39 | 885.81 | 885.90 | 2.03 |
| 35 | 34 | 308.960 | 0.57 | 1.91 | 0.80 | 0.46 | 1.46 | 5.0 | 10.5 | 6.6 | 9.64 | 14.00 | 1.96 | 30 | 0.12 | 877.95 | 878.31 | 883.57 | 883.74 | 885.90 | 885.91 | 2.14 |
| 36 | 35 | 256.000 | 0.84 | 1.34 | 0.71 | 0.60 | 1.00 | 5.0 | 8.7 | 7.1 | 7.15 | 9.79 | 2.27 | 24 | 0.19 | 878.81 | 879.29 | 883.77 | 884.02 | 885.91 | 885.91 | 2.15 |
| 37 | 36 | 173.693 | 0.00 | 0.50 | 0.00 | 0.00 | 0.41 | 0.0 | 7.1 | 7.7 | 3.12 | 4.78 | 1.77 | 18 | 0.21 | 879.39 | 879.75 | 884.06 | 884.22 | 885.91 | 887.83 | 2.16 |
| 38 | 37 | 207.647 | 0.16 | 0.36 | 0.85 | 0.14 | 0.31 | 5.0 | 5.5 | 8.4 | 2.56 | 3.23 | 2.09 | 15 | 0.25 | 879.85 | 880.37 | 884.27 | 884.59 | 887.83 | 885.91 | 2.17 |
| 39 | 38 | 37.000 | 0.20 | 0.20 | 0.85 | 0.17 | 0.17 | 5.0 | 5.0 | 8.6 | 1.47 | 4.60 | 1.20 | 15 | 0.24 | 880.47 | 880.56 | 884.69 | 884.70 | 885.91 | 885.91 | 2.18 |
| 40 | 34 | 30.006 | 0.56 | 5.62 | 0.34 | 0.19 | 4.18 | 5.0 | 22.1 | 4.6 | 19.12 | 22.86 | 2.70 | 36 | 0.10 | 877.86 | 877.89 | 883.57 | 883.59 | 885.90 | 885.90 | 2.04 |
| 41 | 40 | 204.089 | 0.40 | 1.33 | 0.81 | 0.32 | 0.90 | 5.0 | 9.4 | 6.9 | 6.24 | 13.77 | 1.27 | 30 | 0.11 | 878.26 | 878.49 | 883.73 | 883.77 | 885.90 | 885.90 | 2.05 |
| 42 | 41 | 64.190 | 0.00 | 0.93 | 0.00 | 0.00 | 0.58 | 0.0 | 8.6 | 7.2 | 4.14 | 8.93 | 1.32 | 24 | 0.16 | 878.79 | 878.89 | 883.81 | 883.83 | 885.90 | 886.76 | 2.06 |
| 43 | 42 | 150.206 | 0.20 | 0.93 | 0.79 | 0.16 | 0.58 | 5.0 | 7.6 | 7.5 | 4.33 | 4.11 | 2.45 | 18 | 0.15 | 879.39 | 879.62 | 883.85 | 884.11 | 886.76 | 886.56 | 2.07 |
| 44 | 43 | 101.994 | 0.33 | 0.73 | 0.58 | 0.19 | 0.42 | 5.0 | 7.0 | 7.7 | 3.24 | 3.20 | 2.64 | 15 | 0.25 | 879.72 | 879.97 | 884.25 | 884.50 | 886.56 | 885.90 | 2.08 |

Project File: 250106 ABE STM.stm | Number of lines: 52 | Run Date: 1/9/2025

NOTES:Intensity = 55.51 / (Inlet time + 7.50) ^ 0.74; Return period =Yrs. 25 ; c = cir e = ellip b = box

# Storm Sewer Tabulation

| Station | | Len | Drng Area | | Rnoff coeff | Area x C | | Tc | | Rain (I) | Total flow | Cap full | Vel | Pipe | | Invert Elev | | HGL Elev | | Grnd / Rim Elev | | Line ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | To Line | (ft) | Incr (ac) | Total (ac) | (C) | Incr | Total | Inlet (min) | Syst (min) | (in/hr) | (cfs) | (cfs) | (ft/s) | Size (in) | Slope (%) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | Dn (ft) | Up (ft) | |
| 45 | 44 | 193.373 | 0.40 | 0.40 | 0.57 | 0.23 | 0.23 | 5.0 | 5.0 | 8.6 | 1.97 | 3.22 | 1.60 | 15 | 0.25 | 880.07 | 880.55 | 884.67 | 884.85 | 885.90 | 885.90 | 2.09 |
| 46 | 40 | 127.854 | 0.21 | 3.73 | 0.51 | 0.11 | 3.09 | 5.0 | 21.4 | 4.7 | 14.38 | 14.17 | 2.93 | 30 | 0.10 | 877.99 | 878.12 | 883.73 | 883.86 | 885.90 | 885.92 | 2.11 |
| 47 | 46 | 37.000 | 0.19 | 3.52 | 0.82 | 0.16 | 2.98 | 5.0 | 21.1 | 4.7 | 13.96 | 14.62 | 2.84 | 30 | 0.11 | 878.22 | 878.26 | 884.00 | 884.03 | 885.92 | 885.92 | 2.12 |
| 48 | 47 | 124.693 | 0.10 | 1.91 | 0.79 | 0.08 | 1.62 | 5.0 | 20.3 | 4.8 | 7.75 | 10.06 | 2.47 | 24 | 0.17 | 879.55 | 879.76 | 884.22 | 884.35 | 885.92 | 885.90 | 2.31 |
| 49 | 48 | 39.798 | 1.72 | 1.72 | 0.85 | 1.46 | 1.46 | 20.0 | 20.0 | 4.8 | 7.06 | 12.28 | 2.25 | 24 | 0.25 | 879.86 | 879.96 | 884.49 | 884.52 | 885.90 | 885.00 | 2.33 |
| 50 | 48 | 88.389 | 0.09 | 0.09 | 0.85 | 0.08 | 0.08 | 5.0 | 5.0 | 8.6 | 0.66 | 7.57 | 0.37 | 18 | 0.25 | 879.86 | 880.08 | 884.49 | 884.49 | 885.90 | 885.90 | 2.32 |
| 51 | 37 | 88.261 | 0.14 | 0.14 | 0.72 | 0.10 | 0.10 | 5.0 | 5.0 | 8.6 | 0.87 | 3.22 | 0.71 | 15 | 0.25 | 879.95 | 880.17 | 884.27 | 884.28 | 887.83 | 886.89 | 2.21 |
| 52 | 47 | 39.547 | 1.42 | 1.42 | 0.85 | 1.21 | 1.21 | 20.0 | 20.0 | 4.8 | 5.83 | 12.32 | 1.85 | 24 | 0.25 | 878.36 | 878.46 | 884.22 | 884.24 | 885.92 | 885.00 | 2.13 |

Project File: 250106 ABE STM.stm | Number of lines: 52 | Run Date: 1/9/2025

NOTES:Intensity = 55.51 / (Inlet time + 7.50) ^ 0.74; Return period =Yrs. 25 ; c = cir e = ellip b = box

# 2.4 – HYDRAFLOW STORM SEWERS – PONDING ANALYSIS

# Inlet Report



| Line No | Inlet ID | Q = CIA (cfs) | Q carry (cfs) | Q capt (cfs) | Q Byp (cfs) | Junc Type | Curb Inlet | | Grate Inlet | | | Gutter | | | | | | | Inlet | | | Byp Line No |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Ht (in) | L (ft) | Area (sqft) | L (ft) | W (ft) | So (ft/ft) | W (ft) | Sw (ft/ft) | Sx (ft/ft) | n | Depth (ft) | Spread (ft) | Depth (ft) | Spread (ft) | Depr (in) | |
| 1 | 1.01 | 0.00 | 0.00 | 0.00 | 0.00 | MH | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | Sag | 0.00 | 0.000 | 0.000 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | Off |
| 2 | 1.02 | 4.27 | 0.00 | 4.27 | 0.00 | DrGrt | 0.0 | 0.00 | 1.04 | 1.02 | 1.02 | Sag | 2.00 | 0.020 | 0.020 | 0.000 | 0.58 | 60.30 | 0.58 | 60.30 | 0.0 | Off |
| 3 | 1.03 | 0.99 | 0.00 | 0.99 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.20 | 6.86 | 0.20 | 6.86 | 0.0 | Off |
| 4 | 1.04 | 6.41 | 0.00 | 6.41 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.55 | 24.26 | 0.55 | 24.26 | 0.0 | Off |
| 5 | 1.05 | 5.06 | 0.00 | 5.06 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.47 | 20.69 | 0.47 | 20.69 | 0.0 | Off |
| 6 | 1.06 | 5.60 | 0.00 | 5.60 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.50 | 22.17 | 0.50 | 22.17 | 0.0 | Off |
| 7 | 1.07 | 4.92 | 0.00 | 4.92 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.47 | 20.32 | 0.47 | 20.32 | 0.0 | Off |
| 8 | 1.08 | 4.02 | 0.00 | 4.02 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.41 | 17.73 | 0.41 | 17.73 | 0.0 | Off |
| 9 | 1.09 | 2.14 | 0.00 | 2.14 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.29 | 11.59 | 0.29 | 11.59 | 0.0 | Off |
| 10 | 1.12 | 2.36 | 0.00 | 2.36 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.013 | 0.31 | 12.36 | 0.31 | 12.36 | 0.0 | Off |
| 11 | 1.14 | 2.36 | 0.00 | 2.36 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.31 | 12.36 | 0.31 | 12.36 | 0.0 | Off |
| 12 | 1.15 | 2.55 | 0.00 | 2.55 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.32 | 13.03 | 0.32 | 13.03 | 0.0 | Off |
| 13 | 1.16 | 4.90 | 0.00 | 4.90 | 0.00 | DrGrt | 0.0 | 0.00 | 1.64 | 1.28 | 1.28 | Sag | 2.00 | 0.020 | 0.020 | 0.000 | 0.47 | 48.67 | 0.47 | 48.67 | 0.0 | Off |
| 14 | 1.13 | 8.49 | 0.00 | 8.49 | 0.00 | DrGrt | 0.0 | 0.00 | 1.65 | 4.28 | 1.28 | Sag | 2.00 | 0.020 | 0.020 | 0.000 | 0.92 | 93.60 | 0.92 | 93.60 | 0.0 | Off |
| 15 | 1.10 | 1.35 | 0.00 | 1.35 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.013 | 0.23 | 8.45 | 0.23 | 8.45 | 0.0 | Off |
| 16 | 1.11 | 0.87 | 0.00 | 0.87 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.013 | 0.19 | 6.25 | 0.19 | 6.25 | 0.0 | Off |
| 17 | 1.31 | 0.00 | 0.00 | 0.00 | 0.00 | MH | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | Sag | 0.00 | 0.000 | 0.000 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | Off |
| 18 | 1.32 | 1.87 | 0.00 | 1.87 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.27 | 10.55 | 0.27 | 10.55 | 0.0 | Off |
| 19 | 1.34 | 3.27 | 0.00 | 3.27 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.37 | 15.43 | 0.37 | 15.43 | 0.0 | Off |
| 20 | 1.35 | 4.35 | 0.00 | 4.35 | 0.00 | DrGrt | 0.0 | 0.00 | 1.04 | 1.02 | 1.02 | Sag | 2.00 | 0.020 | 0.020 | 0.000 | 0.61 | 62.68 | 0.61 | 62.68 | 0.0 | Off |
| 21 | 1.36 | 4.42 | 0.00 | 4.42 | 0.00 | DrGrt | 0.0 | 0.00 | 1.04 | 1.02 | 1.02 | Sag | 2.00 | 0.020 | 0.020 | 0.000 | 0.62 | 64.42 | 0.62 | 64.42 | 0.0 | Off |
| 22 | 1.37 | 4.42 | 0.00 | 4.42 | 0.00 | DrGrt | 0.0 | 0.00 | 1.04 | 1.02 | 1.02 | Sag | 2.00 | 0.020 | 0.020 | 0.000 | 0.62 | 64.42 | 0.62 | 64.42 | 0.0 | Off |
| 23 | 1.38 | 4.54 | 0.00 | 4.54 | 0.00 | DrGrt | 0.0 | 0.00 | 1.04 | 1.02 | 1.02 | Sag | 2.00 | 0.020 | 0.020 | 0.000 | 0.66 | 67.99 | 0.66 | 67.99 | 0.0 | Off |

Project File: 250106 ABE STM.stm | Number of lines: 52 | Run Date: 1/9/2025

NOTES: Inlet N-Values = 0.016; Intensity = 58.29 / (Inlet time + 8.60) ^ 0.79; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

# Inlet Report



| Line No | Inlet ID | Q = CIA (cfs) | Q carry (cfs) | Q capt (cfs) | Q Byp (cfs) | Junc Type | Curb Inlet | | Grate Inlet | | | Gutter | | | | | | | Inlet | | | Byp Line No |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Ht (in) | L (ft) | Area (sqft) | L (ft) | W (ft) | So (ft/ft) | W (ft) | Sw (ft/ft) | Sx (ft/ft) | n | Depth (ft) | Spread (ft) | Depth (ft) | Spread (ft) | Depr (in) | |
| 24 | 1.39 | 3.27 | 0.00 | 3.27 | 0.00 | DrGrt | 0.0 | 0.00 | 1.04 | 1.02 | 1.02 | Sag | 2.00 | 0.020 | 0.020 | 0.000 | 0.41 | 43.48 | 0.41 | 43.48 | 0.0 | Off |
| 25 | 1.40 | 1.78 | 0.00 | 1.78 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.26 | 10.22 | 0.26 | 10.22 | 0.0 | Off |
| 26 | 1.42 | 0.00 | 0.00 | 0.00 | 0.00 | MH | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | Sag | 0.00 | 0.000 | 0.000 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | Off |
| 27 | 1.43 | 0.84 | 0.00 | 0.84 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.18 | 6.11 | 0.18 | 6.11 | 0.0 | Off |
| 28 | 1.44 | 1.58 | 0.00 | 1.58 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.25 | 9.42 | 0.25 | 9.42 | 0.0 | Off |
| 29 | 1.45 | 2.21 | 0.00 | 2.21 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.30 | 11.82 | 0.30 | 11.82 | 0.0 | Off |
| 30 | 1.46 | 2.55 | 0.00 | 2.55 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.32 | 13.03 | 0.32 | 13.03 | 0.0 | Off |
| 31 | 1.41 | 6.28 | 0.00 | 6.28 | 0.00 | DrGrt | 0.0 | 0.00 | 1.64 | 1.28 | 1.28 | Sag | 2.00 | 0.020 | 0.020 | 0.000 | 0.55 | 57.05 | 0.55 | 57.05 | 0.0 | Off |
| 32 | 2.01 | 0.00 | 0.00 | 0.00 | 0.00 | MH | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | Sag | 0.00 | 0.000 | 0.000 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | Off |
| 33 | 2.02 | 0.57 | 0.00 | 0.57 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.15 | 4.69 | 0.15 | 4.69 | 0.0 | Off |
| 34 | 2.03 | 0.83 | 0.00 | 0.83 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.18 | 6.05 | 0.18 | 6.05 | 0.0 | Off |
| 35 | 2.14 | 3.42 | 0.00 | 3.42 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.38 | 15.88 | 0.38 | 15.88 | 0.0 | Off |
| 36 | 2.15 | 4.47 | 0.00 | 4.47 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.013 | 0.44 | 19.04 | 0.44 | 19.04 | 0.0 | Off |
| 37 | 2.16 | 0.00 | 0.00 | 0.00 | 0.00 | MH | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | Sag | 0.00 | 0.000 | 0.000 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | Off |
| 38 | 2.17 | 1.02 | 0.00 | 1.02 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.20 | 6.98 | 0.20 | 6.98 | 0.0 | Off |
| 39 | 2.18 | 1.27 | 0.00 | 1.27 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.22 | 8.13 | 0.22 | 8.13 | 0.0 | Off |
| 40 | 2.04 | 1.43 | 0.00 | 1.43 | 0.00 | DrGrt | 0.0 | 0.00 | 1.64 | 1.28 | 1.28 | Sag | 2.00 | 0.020 | 0.020 | 0.000 | 0.20 | 22.49 | 0.20 | 22.49 | 0.0 | Off |
| 41 | 2.05 | 2.43 | 0.00 | 2.43 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.31 | 12.61 | 0.31 | 12.61 | 0.0 | Off |
| 42 | 2.06 | 0.00 | 0.00 | 0.00 | 0.00 | MH | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | Sag | 0.00 | 0.000 | 0.000 | 0.000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | Off |
| 43 | 2.07 | 1.18 | 0.00 | 1.18 | 0.00 | DrGrt | 0.0 | 0.00 | 1.04 | 1.02 | 1.02 | Sag | 2.00 | 0.020 | 0.020 | 0.000 | 0.21 | 23.05 | 0.21 | 23.05 | 0.0 | Off |
| 44 | 2.08 | 1.43 | 0.00 | 1.43 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.24 | 8.82 | 0.24 | 8.82 | 0.0 | Off |
| 45 | 2.09 | 1.71 | 0.00 | 1.71 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.26 | 9.93 | 0.26 | 9.93 | 0.0 | Off |
| 46 | 2.11 | 0.80 | 0.00 | 0.80 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.18 | 5.92 | 0.18 | 5.92 | 0.0 | Off |

Project File: 250106 ABE STM.stm | Number of lines: 52 | Run Date: 1/9/2025

NOTES: Inlet N-Values = 0.016; Intensity = 58.29 / (Inlet time + 8.60) ^ 0.79; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

# Inlet Report

| Line No | Inlet ID | Q = CIA (cfs) | Q carry (cfs) | Q capt (cfs) | Q Byp (cfs) | Junc Type | Curb Inlet | | Grate Inlet | | | Gutter | | | | | | | Inlet | | | Byp Line No |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Ht (in) | L (ft) | Area (sqft) | L (ft) | W (ft) | So (ft/ft) | W (ft) | Sw (ft/ft) | Sx (ft/ft) | n | Depth (ft) | Spread (ft) | Depth (ft) | Spread (ft) | Depr (in) | |
| 47 | 2.12 | 1.17 | 0.00 | 1.17 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.21 | 7.66 | 0.21 | 7.66 | 0.0 | Off |
| 48 | 2.31 | 0.59 | 0.00 | 0.59 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.16 | 4.79 | 0.16 | 4.79 | 0.0 | Off |
| 49 | 2.33 | 6.11 | 0.00 | 6.11 | 0.00 | DrGrt | 0.0 | 0.00 | 1.64 | 1.28 | 1.28 | Sag | 2.00 | 0.020 | 0.020 | 0.000 | 0.54 | 56.05 | 0.54 | 56.05 | 0.0 | Off |
| 50 | 2.32 | 0.57 | 0.00 | 0.57 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.15 | 4.69 | 0.15 | 4.69 | 0.0 | Off |
| 51 | 2.21 | 0.76 | 0.00 | 0.76 | 0.00 | Comb | 6.0 | 2.00 | 0.75 | 0.87 | 0.87 | Sag | 2.00 | 0.050 | 0.020 | 0.000 | 0.17 | 5.68 | 0.17 | 5.68 | 0.0 | Off |
| 52 | 2.13 | 5.04 | 0.00 | 5.04 | 0.00 | DrGrt | 0.0 | 0.00 | 1.64 | 1.28 | 1.28 | Sag | 2.00 | 0.020 | 0.020 | 0.000 | 0.48 | 49.57 | 0.48 | 49.57 | 0.0 | Off |

Project File: 250106 ABE STM.stm | Number of lines: 52 | Run Date: 1/9/2025

NOTES: Inlet N-Values = 0.016; Intensity = 58.29 / (Inlet time + 8.60) ^ 0.79; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

TOWN OF Brownsburg

**AFFIDAVIT & CONSENT OF PROPERTY OWNER**

That I/We PHILIP QUARTEY after first being duly sworn, depose and say:

That I am/we are the owner(s) of Real Estate located at: (Legal and/or common address)
9180 E 56th St, Brownsburg, IN

Parcel Number(s): 32-08-06-311-006.000-016

That we have examined the application for a/an Development Plan Review on this property, and I/we are familiar with its contents. (application type)

That I/we have no objections to, and consent to such request as set forth in the application.

Signature of Affiant

PHILIP QUARTEY
Printed Name

State of Michigan )
) SS:
County of Kent )

BEFORE ME, the undersigned, a Notary Public in and for said County and State, personally appeared Philip Quartey, who acknowledged the execution of the above and foregoing instrument to its voluntary act and deed on the 6th day of January, 2026.

June 28, 2029
Commission Expiration Date

Ottawa
County of Residence

Notary

Bryan Heyboer
Printed Name

BRYAN HEYBOER
NOTARY PUBLIC - STATE OF MICHIGAN
COUNTY OF OTTAWA
My Commission Expires June 28, 2029
Acting in the County of Kent

# Appendix O-1
# Draft Long-Term Post-Construction Operation and Maintenance Plan

**for**

# Meijer Outlot ABE-OD1 (Heartland Dental)

**Water Quality BMP's**

***Site Location:***

**Meijer Outlot ABE – OD1**
**9108 E. 56th Street**
**Brownsburg, IN 46112**


***Prepared By:***
Woolpert, Inc.
333 N Alabama St, Suite 200
Indianapolis, IN 46204


January 29, 2026

# Table of Contents

**GENERAL PROVISIONS PAGE.....3**

**INFORMATION PAGE .....4**

**SECTION 1.0 – OWNER INFORMATION.....5**

**SECTION 2.0 – SITE INFORMATION .....5**

**SECTION 4.0 – INSPECTION OF BMP'S .....6**

**SECTION 5.0 – TOWN REQUIRED MAINTENANCE .....7**

APPENDIX O-1A – INSPECTION & MAINTENANCE ACTIVITIES

APPENDIX O-1B – SITE EXHIBIT

APPENDIX O-1C – MAINTENANCE CHECKLISTS

APPENDIX O-1D – RIGHT-OF-ENTRY STATEMENT

# General Provisions Page

The following maintenance plan provides guidelines for proper operation and maintenance of the specified water quality best management practices (BMP's). The information supplied is based on the guidelines of the Town of Brownsburg and should be followed to ensure proper operation and longevity of the system.

Water quality BMP's are to be inspected bi-annually, and per the schedule included in Appendix O-1A. In the event that an unsatisfactory condition exists, it is the responsibility of the Owner to clean or perform any other necessary work to the water quality BMP's so that their condition is deemed satisfactory by the Town of Brownsburg. Maintained infrastructure shall include all pipes and channels built to convey stormwater to the facility, as well as all structures, improvements, and vegetation provided to control the quantity and quality of the stormwater from the facility. "Maintain" is herein defined as good working condition so that these facilities are performing their design functions. Any additional costs of repair, maintenance and inspection are the sole responsibility of the Owner. All work performed on the water quality BMP's is to be within recommendations and specifications of the Town of Brownsburg.

# Information Page

## ***Owner's Contact Information:***

### ***Property Owner:***
Meijer Stores Limited Partnership
2350 Three Mile Road
Grand Rapids, MI 49544
**(616) 791-3061**

### ***Maintenance Staff:***
TBD
Meijer Stores Limited Partnership
2350 Three Mile Road
Grand Rapids, MI 49544
**Office:**
**Mobile:**
**Email:**

### ***Person Responsible for Performing Inspection:***
**TBD**

## Section 1.0 – Owner Information

Owner information submitted to the Town of Brownsburg should be current and up-to-date at all times. In the event of a change of ownership, contact person, phone, fax, or any other change in information listed on the Owner's Information page, is the responsibility of the Owner to notify the Town of Brownsburg of the changes. It is the responsibility of the Owner to notify the Town of Brownsburg when major repairs or failure have occurred. Owner must notify the Town in writing within thirty (30) days. All changes in ownership and notifications of major repairs or failure can be directed to the Town of Brownsburg at the address listed below:

Town of Brownsburg
Department of Development Services
61 N. Green Street
Brownsburg, IN 46112
DevelopmentServices@Brownsburg.org
(317) 852-1128

## Section 2.0 – Site Information

The site in which this manual is written for is located at the address listed below. A set of construction plans may be obtained from the Owner listed on the Owner's Information page in this manual.

Site Address: Heartland Dental
9180 E. 56th Street
Brownsburg, IN 46112

## Section 3.0 – Maintenance of BMP's

Maintenance of the BMP's is the responsibility of the Owner. All maintenance is to be performed within the guidelines and requirements of the Town of Brownsburg. These requirements are in Appendix O-1A of this manual. Any deviation from the required maintenance could result in unsatisfactory conditions, increased cost of inspection or even total replacement of the BMP's. Proper maintenance is imperative to ensure proper function and longevity of each BMP measure.

Following construction completion and the issuance of a Notice of Termination (NOT), inspection and maintenance of stormwater management facilities and BMP's shall be the long-term responsibility of the Owner.

## Section 4.0 – Inspection of BMP's

Inspections of the water quality BMP's are to be completed in accordance with the schedule included in Appendix O-1A. An Owner representative will perform this inspection and access must be granted to the Town of Brownsburg, if requested.

Inspections shall cover all elements for the stormwater facility as defined in this Maintenance Plan. The Owner shall keep an updated logbook or inspection worksheets documenting the performance of the required operation and maintenance activities for perpetuity. Note inspection dates, facility components inspected, facility condition, and any maintenance performed, or repairs made. Documentation must be provided upon the request of the Town Personnel within forty-eight (48) hours of the request.

The stormwater management facility or BMP Owner must conduct necessary inspections at least once per year. The inspections shall follow the guidelines and requirements of the Town of Brownsburg. The inspection shall cover physical conditions, available water quality storage capacity, and the operational condition of key facility elements. Completed inspection forms must be maintained by the Owner and produced upon request by the Town Personnel within forty-eight (48) hours of the request.

Annual inspection reports shall be due to the Development Services Department, beginning one year after construction is completed. Subsequent reports shall be due each year within the same month of the initial report. All deficiencies found during the inspection shall be addressed. If the annual inspection report is not received within the month it is due, if there are deficiencies which exist but are not included in the report, or if any deficiencies included in the report are not addressed in a timely manner, the Town may take enforcement action in accordance with Chapter 151.29 of the Town of Brownsburg Stormwater Management Ordinance.

In the event that the Town Personnel find a stormwater management facility in need of maintenance or repair, the Development Services Department will notify the Owner on record of the necessary maintenance or repairs

and give the Owner a timeframe for completing the work. If maintenance or repairs are not completed within the designated timeframe, the Town may perform the work and bill the Owner for the actual costs of the work.

Any questions or issues regarding the inspection of the water quality BMP's should be directed to Town of Brownsburg.

## Section 5.0 – Town Required Maintenance

In the event that any of the BMP's fail an inspection, it is the responsibility of the Owner to correct the problem and follow the directions as shown on the inspection sheet. All costs incurred through repair or additional inspection of the water quality BMP's is the responsibility of the Owner.

The Town also has the authority to perform long-term inspection of all public or privately-owned stormwater management facilities. Such inspections will be in addition to the regular inspections required to be performed by the facility owner. The inspections will follow the operation and maintenance procedures listed in Appendix O-1A. Noted deficiencies and recommended corrective action will be included in an inspection report.

# Appendix O-1A

Maintenance Guidelines

**Stormwater Water Quality BMP Inspection and Maintenance Activities**

Operation and maintenance procedures and practices shall be reviewed and assessed annually. The BMP owner agrees to follow the following maintenance and inspection program:

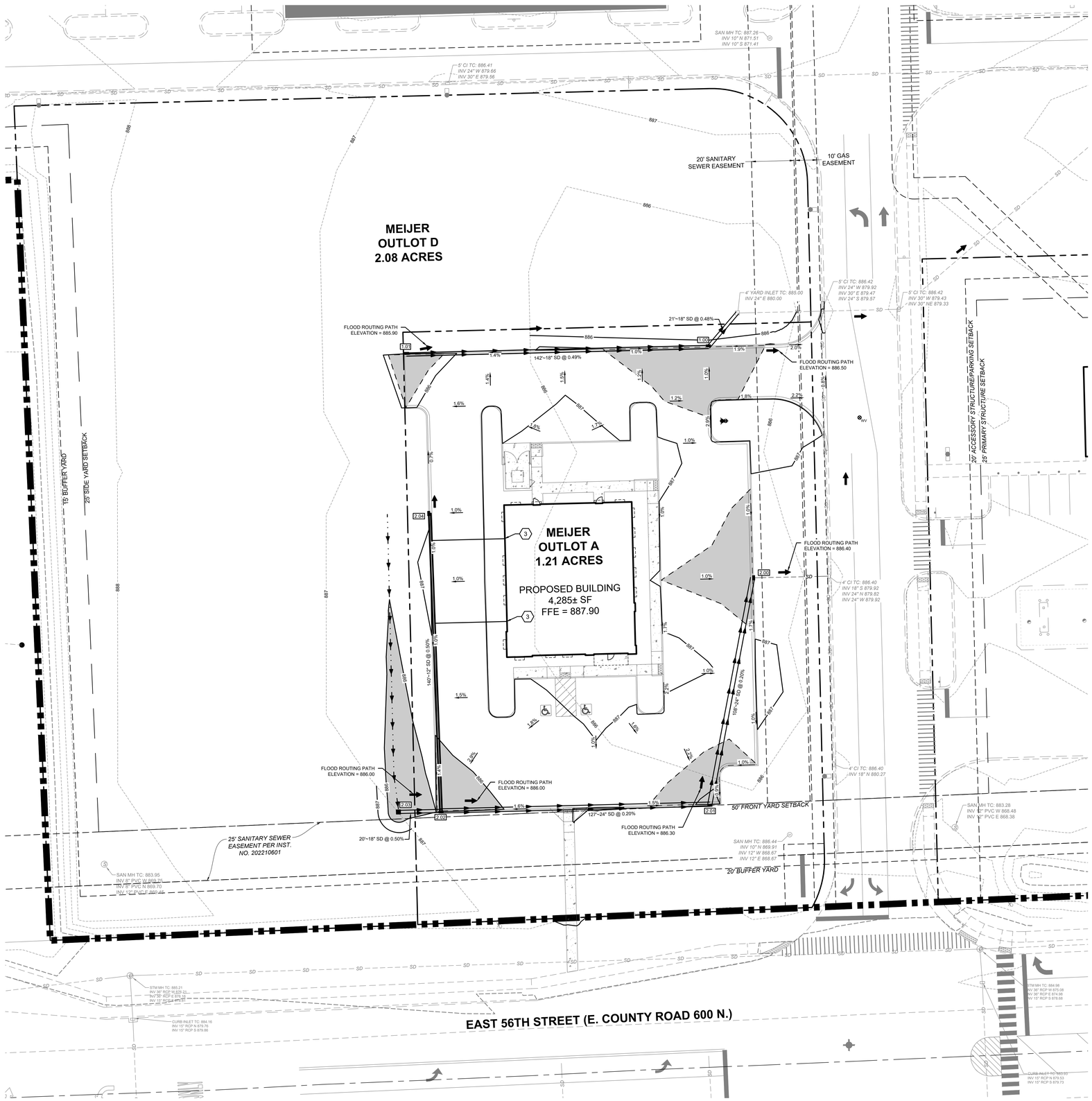
| Maintenance Item | Inspection Frequency | Maintenance |
|---|---|---|
| **Storm Structures & Pipes** | | |
| 1. Access | Annually | • Open the access hatch to ensure proper function. |
| 2. Remove Debris | Bi-Annually and after major storm events (1.50 inches or greater) | • Remove debris from the storm structures when the depth of debris exceeds 4 inches. |
| 3. Sediment Buildup | Annually and after major storm events (1.50 inches or greater) | • Remove sediment from the drainage structure's sump when the sediment depth exceeds 18 inches. |
| 4. Function | Annually and after major storm events (1.50 inches or greater) | • Ensure the grate and structure is not blocked. |
| **Access Routes** | | |
| 1. General Inspection | Annually and as needed | • Access routes, including roadways and sidewalks, shall be inspected and maintained as needed. |
| **Pest Control Measures** | | |
| 1. General Inspection | As needed | • Pest control measures shall be implemented to address insects, rodents, and other pests.<br>• Natural pest control is preferred over chemical treatments. |

| Signage | | |
|---|---|---|
| 1. Installation and Maintenance | As needed | • Signage shall be installed and maintained in accordance with the Town of Brownsburg Construction Standards and where necessary to protect property and the public.<br>• Native vegetation plantings shall have “No Mow” or other appropriate signage. |

**Note: Do not enter underground detention manholes to inspect system unless Occupational Safety & Health Administration (OSHA) regulations for confined space entry are followed.**

# Appendix O-1B

Site Exhibit




A1 SITE GRADING - DRAINAGE PLAN
1"=20'

## LEGEND

- MEIJER PROPERTY LINE
- PROPERTY LINE
- 799 EXISTING 1' CONTOUR
- 800 EXISTING 5' CONTOUR
- SD EXISTING STORM SEWER
- EXISTING DRAINAGE BASIN
- 799 PROPOSED 1' CONTOUR
- 800 PROPOSED 5' CONTOUR
- DRAINAGE BASIN
- XX"~XX" SD STORM SEWER
- X.X STORM STRUCTURE I.D.
- 1.00% FLOW DIRECTION AND GRADE (PROP.)
- DRAINAGE SWALE
- 100-YEAR FLOOD LIMITS (WITH ALL INLETS BLOCKED)
- FLOOD ROUTING PATH

0 20 40 60
GRAPHIC SCALE IN FEET

Indiana 811
Know what's below. Call before you dig.

WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|

MEIJER OUTLOT #338A
9180 E. 56TH STREET
BROWNSBURG, INDIANA 46112

SITE GRADING - DRAINAGE PLAN

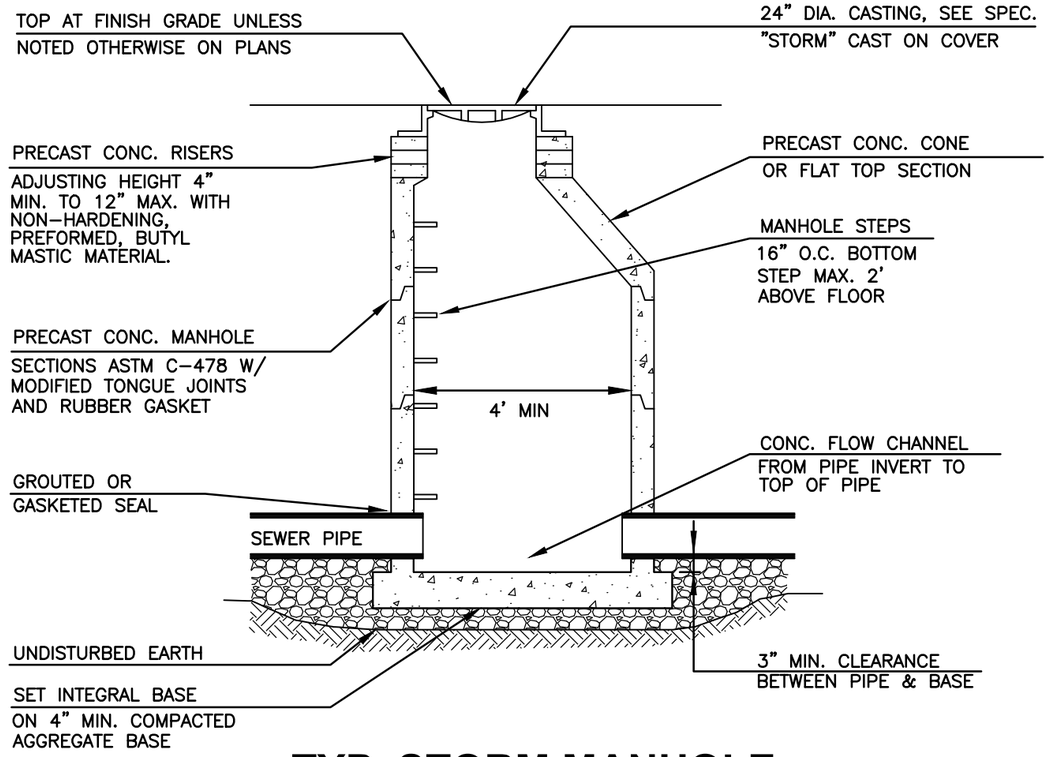
| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

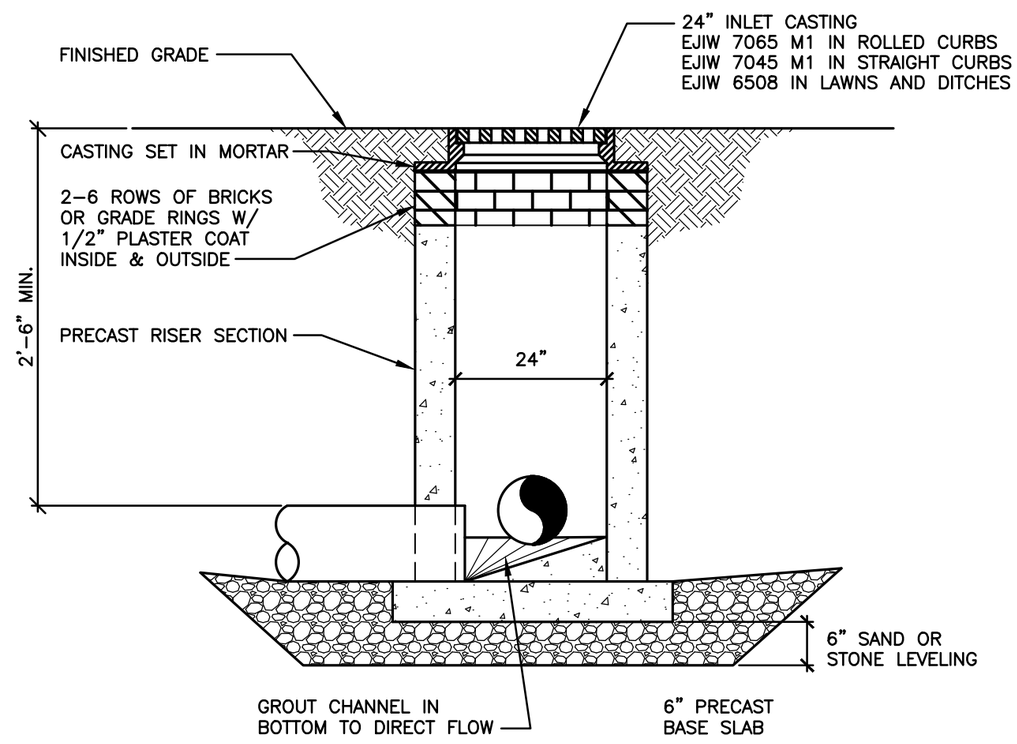
O-1B

Images: , Xrefs: 10026635TBLK.dwg; 10026635-x.dwg; 10026635-p.dwg; 10026635-g.dwg
Layout Tab Name: C-300 SITE GRADING - DRAINAGE PLAN
Last Saved By:B.VanGorder, 1/26/2026 1:14:31 PM
G:\DE\Clients\Meijer\10026635 Meijer 338A-OD1, Brownsburg, IN\4.0 Disciplines\Civil\Eng\SWPPP\10026635-O&M Exhibit.dwg Plotted By:VanGorder, Brianne Plotted:January 26, 2026, 1:15:08 PM



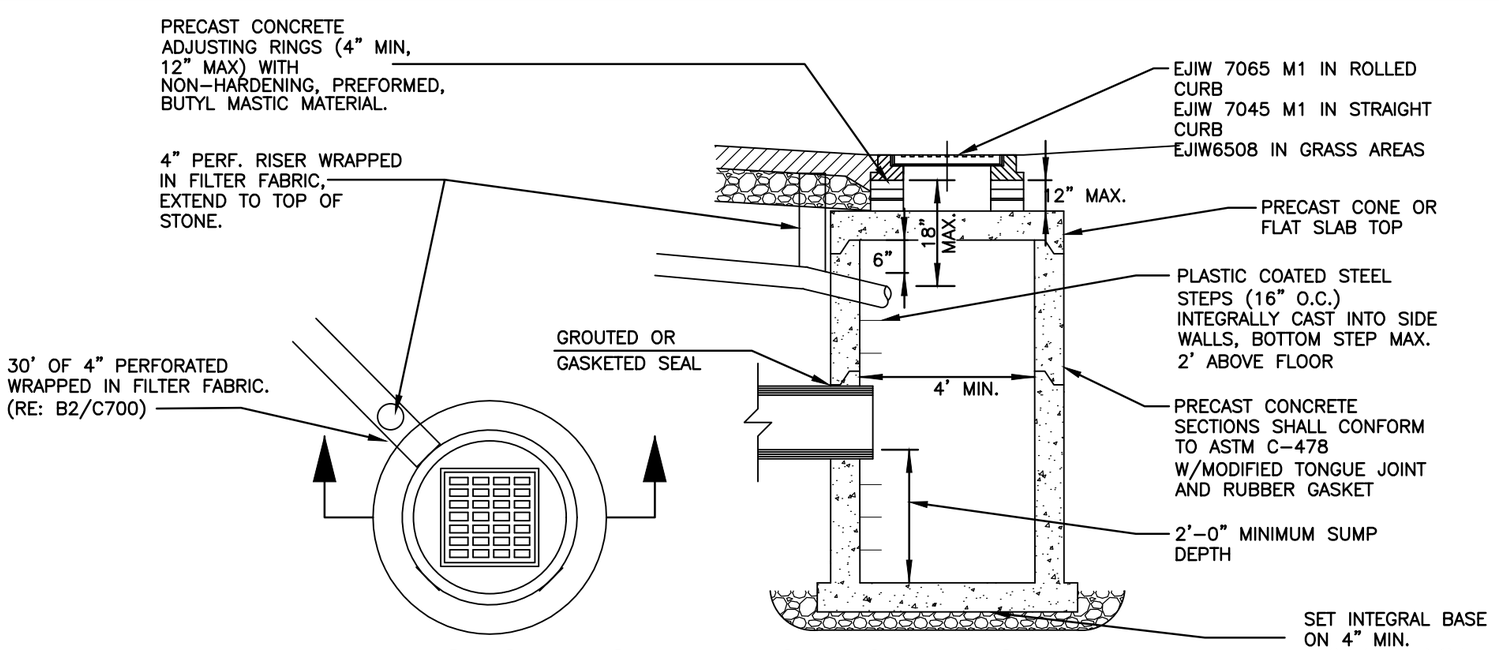

# TYP. STORM MANHOLE

NO SCALE




# 24" DIA. CATCH BASIN

NO SCALE




# STORM SEWER CATCH BASIN

NO SCALE

PROJECT NO. 10026635
DATE 01/29/2026
DR. BVG
SHT. NO. O-1B

WOOLPERT
333 North Alabama Street
Suite 200
Indianapolis, IN 46204
317.299.7500

**MEIJER OUTLOT #338A**

9180 E. 56TH STREET BROWNSBURG, INDIANA 46112

**STORM DETAILS**

Layout Tab Name: O&M Detail Exhibit - 3
Last Saved By:BVanGorder, 1/26/2026 1:48:41 PM
G:\DE\Clients\Meijer\10026635 Meijer 338A-001, Brownsburg, IN\4.0 Disciplines\Civil\Eng\SWPPP\Appendices\Supporting Documents\10026635-DET.dwg, Plotted By:VanGorder, Brianne Plotted:January 26, 2026, 1:50:59 PM

# Appendix O-1C

Maintenance Checklists

## I. Inlet and/or Manhole Inspection Checklist

Site Name:_____

Owner Changed Since Last Inspection? Y or N

Owner Name, Address, and Phone Number:

_____

_____

Location:_____

Date:_____

Time:_____

Inspector Name:_____

| **Inlet/Manhole Maintenance Item** | **Satisfactory/ Unsatisfactory** | **Comments** |
|---|---|---|
| **Structure** (Inspect at least once per year before rainy season) | | |
| 1. Sediment/Litter accumulation? | | |
| 2. Structure free from damage? | | |
| 3. Weir free from damage? | | |

***Note:*** *Sediments and debris shall be removed by hand or with a vacuum truck. Sediments and waste shall be disposed of in accordance with City of Indianapolis and any applicable state, and/or federal requirements*.

| Additional Comments and Actions to be Taken: | Timeframe: |
|---|---|
| | |
| | |
| | |
| | |

## II. Conveyance System Inspection Checklist

Site Name:_____

Owner Changed Since Last Inspection? Y or N

Owner Name, Address, and Phone Number:

_____

_____

Location:_____

Date:_____

Time:_____

Inspector Name:_____

| **Conveyance Maintenance Item** | **Satisfactory/ Unsatisfactory** | **Comments** |
|---|---|---|
| **Pipe/Swale** (Inspect at least once per year before rainy season) | | |
| 1. Sediment/Litter accumulation? | | |
| 2. Structure free from damage? | | |
| 3. Weir free from damage? | | |

***Note:*** *Sediments and debris shall be removed by hand or with a vacuum truck. Sediments and waste shall be disposed of in accordance with City of Indianapolis and any applicable state, and/or federal requirements*.

| Additional Comments and Actions to be Taken: | Timeframe: |
| --- | --- |
| | |
| | |
| | |
| | |

# Appendix O-1D

Right-of-Entry Statement

## Right-of-Entry Statement

That I/We_____after first being duly sworn, depose and say:

The Town of Brownsburg has the right to enter the property and inspect the stormwater management facility or BMP.

Property Address(es): Meijer Outlot #338A-OD1
9180 E 56th Street
Brownsburg, IN 46112

_____
Signature of Affiant

_____
Printed Name

State of_____)

) SS:

County of_____)

BEFORE ME, the undersigned, a Notary Public in and for said County and State, personally appeared

_____, who acknowledged the execution of the above and foregoing instrumentto

its voluntary act and deed on the_____day of_____, 20____.

_____ _____
Commission Expiration Date Notary

_____ _____
County of Residence Printed Name

meijer

# MEIJER OUTLOT #338A - HEARTLAND DENTAL
# 9180 E. 56TH STREET
# BROWNSBURG, LINCOLN TOWNSHIP, HENDRICKS COUNTY, INDIANA 46112

±1.21 ACRES LOCATED IN LOT 6 OF THE MEIJER SUBDIVISION IN THE SOUTHWEST QUARTER OF FRACTIONAL SECTION 6, TOWNSHIP 16 NORTH, RANGE 2 EAST, IN THE TOWN OF BROWNSBURG, HENDRICKS COUNTY, INDIANA.

**OWNER**
MEIJER STORES LIMITED PARTNERSHIP
2350 THREE MILE ROAD
GRAND RAPIDS, MI 49544

**PLAN PREPARER & ENGINEER**
WOOLPERT, INC.
BRIANNE VANGORDER, P.E.
333 N ALABAMA ST, SUITE 200
INDIANAPOLIS, IN 46204
(317) 269-7500
BRIANNE.VANGORDER@WOOLPERT.COM

**LAND SURVEYOR**
WOOLPERT, INC.
STEVE KREGER, PLS
3333 WARRENVILLE ROAD, SUITE 200
LISLE, IL 60532
(630) 693-6340
STEVE.KREGER@WOOLPERT.COM

**PROPERTY DESCRIPTION**
BLOCK A AND BLOCK B IN OI COMMERCIAL LOT 1 - SECONDARY PLAT SUBDIVISION, AS PER PLAT THEREOF, RECORDED JUNE 23, 2022 IN PLAT CABINET 9, SLIDE 2, PAGES 1A AND 1B, AND AS INSTRUMENT NO. 2022150391 IN THE OFFICE OF THE RECORDER OF HENDRICKS COUNTY, INDIANA.

## CIVIL DRAWING INDEX

| FILLED CIRCLE INDICATES INCLUDED IN ISSUANCE | LATEST ISSUANCE NUMBER | LATEST ISSUANCE DATE | SHEET NUMBER | SHEET TITLE |
|---|---|---|---|---|
| • | - | - | C-001 | COVER SHEET |
| • | - | - | C-100 | EXISTING CONDITIONS - DEMOLITION PLAN |
| • | - | - | C-200 | SITE PLAN - PAVEMENT PLAN & SIGNAGE AND STRIPING PLAN |
| • | - | - | C-300 | SITE GRADING - DRAINAGE PLAN |
| • | - | - | C-310 | PHASE 1 STORMWATER POLLUTION PREVENTION PLAN |
| • | - | - | C-311 | PHASE 2 STORMWATER POLLUTION PREVENTION PLAN |
| • | - | - | C-312 | STORMWATER POLLUTION PREVENTION DETAILS |
| • | - | - | C-313 | STORMWATER POLLUTION PREVENTION DETAILS |
| • | - | - | C-400 | UTILITY PLAN |
| • | - | - | C-405 | STORM & SANITARY PROFILES AND STRUCTURE DATA TABLES |
| • | - | - | C-600 | LANDSCAPE PLAN |
| • | - | - | C-700 | DETAILS |
| • | - | - | C-701 | DETAILS |
| • | - | - | C-702 | DETAILS |
| • | - | - | C-703 | TOWN OF BROWNSBURG DETAILS |
| • | - | - | C-704 | WATER DETAILS |
| • | - | - | C-800 | PHOTOMETRIC PLAN |

## GENERAL NOTES

1. CONDUCT SITE CLEARING OPERATIONS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS, AND OTHER ADJACENT OCCUPIED OR USED FACILITIES. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, OR OTHER OCCUPIED OR USED FACILITIES WITHOUT PERMISSION FROM AUTHORITIES HAVING JURISDICTION. STREETS AND ROADWAYS SHALL BE THOROUGHLY CLEANED AND/OR SWEPT ON A DAILY BASIS OR MORE FREQUENTLY AS REQUIRED BY THE GOVERNING AUTHORITY. RESTORE DAMAGED IMPROVEMENTS TO ORIGINAL CONDITION AS ACCEPTABLE TO PARTIES HAVING JURISDICTION.
2. PROVIDE DUST CONTROL MEASURES IN ACCORDANCE WITH LOCAL AUTHORITIES.
3. ALL STREET SURFACES, DRIVEWAYS, CULVERTS, ROADSIDE DRAINAGE DITCHES AND OTHER STRUCTURES THAT ARE DISTURBED OR DAMAGED IN ANY MANNER AS A RESULT OF CONSTRUCTION SHALL BE REPLACED IN ACCORDANCE WITH SPECIFICATIONS.
4. UNLESS SPECIFIED OTHERWISE, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH MEIJER STANDARD SPECIFICATIONS, THE STATE DEPARTMENT OF ENVIRONMENTAL QUALITY STANDARDS, DEPARTMENT OF TRANSPORTATION SPECIFICATIONS AND/OR THE APPROPRIATE LOCAL AUTHORITIES.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS, PERMIT FEES, LICENSES, AND LICENSE FEES, UNLESS NOTED OTHERWISE.
6. RELOCATION OF ANY UTILITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS OF THE APPROPRIATE UTILITY COMPANY AND/OR REGULATORY AGENCY. OBTAIN WRITTEN APPROVAL FROM THE ENGINEER BEFORE ANY UTILITY RELOCATION.
7. ELECTRONIC FILES IN DWG FORMAT WILL BE SUPPLIED TO THE CONSTRUCTION MANAGER FOR LAYOUT AND GRADING.
8. ELECTRONIC FILE USE TERMS AND CONDITIONS:
   - 8.A. RECIPIENT ACKNOWLEDGES THAT ANY USE OF THE TRANSFERRED DATA IS FOR INFORMATION ONLY AND NOT GUARANTEED OR WARRANTED BY MEIJER OR ITS CONSULTANTS. USE OF TRANSFERRED DATA BY THE RECIPIENT SHALL BE AT RECIPIENT'S SOLE RISK. RECIPIENT ACKNOWLEDGES THAT THE AUTOMATED CONVERSION OF INFORMATION AND DATA FROM THE ORIGINAL FORMAT AND SYSTEM TO AN ALTERNATE FORMAT OR SYSTEM CAN NOT BE ACCOMPLISHED WITHOUT THE INTRODUCTION OF INEXACTITUDES, ANOMALIES, AND ERRORS. RECIPIENT FURTHER ACKNOWLEDGES THAT THE ELECTRONIC DATA MAY NOT BE FULLY COMPATIBLE WITH RECIPIENT'S COMPUTER SYSTEM AND NEITHER MEIJER NOR ITS CONSULTANTS MAKE NO REPRESENTATIONS REGARDING SUCH COMPATIBILITY.
   - 8.B. ACCORDINGLY, WITH RESPECT TO THE CONVERSION AND USE OF SUCH ELECTRONIC DATA, RECIPIENT AGREES TO ASSUME ALL RISKS ASSOCIATED THEREWITH, AND TO THE FULLEST EXTENT PERMITTED BY LAW, TO HOLD HARMLESS AND INDEMNIFY MEIJER AND THEIR CONSULTANTS FROM AND AGAINST ALL CLAIMS, LIABILITIES, LOSSES, DAMAGES, AND COSTS, INCLUDING BUT NOT LIMITED TO ATTORNEY'S FEES AND COSTS, WHETHER OR NOT SUIT HAS BEEN FILED, ARISING OUT OF, OR IN ANY WAY CONNECTED WITH THE USE, MODIFICATION, MISINTERPRETATION, MISUSE, OR REUSE BY RECIPIENT OR OTHERS OF THE ELECTRONIC DATA WHICH IS PROVIDED BY MEIJER OR ITS CONSULTANTS UNDER THESE TERMS AND CONDITIONS.
   - 8.C. THESE TERMS AND CONDITIONS SHALL BE BINDING UPON THE SUCCESSORS AND ASSIGNS OF THE PARTIES.

UPON ACCEPTANCE OF THE ELECTRONIC DATA TRANSMISSION, RECIPIENT HEREBY AGREES TO THE FOREGOING TERMS AND CONDITIONS. IF RECIPIENT DOES NOT AGREE TO THE FOREGOING TERMS AND CONDITIONS, MEIJER AND ITS CONSULTANTS DO NOT AUTHORIZE THE USE OF THE TRANSMITTED DATA, AND RECIPIENT SHALL DESTROY THE TRANSMITTED DATA AND NOTIFY MEIJER OR ITS CONSULTANTS OF THE SAME BY PROVIDING WRITTEN NOTICE WITHIN ONE DAY OF TRANSMISSION. FAILURE TO PROVIDE SUCH NOTICE SHALL ACT AS WAIVER AND RECIPIENT SHALL BE BOUND TO THE FOREGOING TERMS AND CONDITIONS.

## LOCAL UTILITY LOCATING AGENCY

ALL CONTRACTORS SHALL NOTIFY UTILITY COMPANIES AND GOVERNMENT AGENCIES IN WRITING OF THE INTENT TO EXCAVATE NO LESS THAN 72 HOURS PRIOR TO SUCH EXCAVATION (EXCLUSIVE OF SATURDAYS, SUNDAYS, AND HOLIDAYS) AND CALL LOCAL UTILITY LOCATING AGENCY AT 1-800-382-5544.

EXISTING UTILITY LOCATIONS SHOWN SHALL BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. LOCATIONS OF UNDERGROUND UTILITIES ON THESE DRAWINGS ARE APPROXIMATE ONLY AND BASED ON ACTUAL FIELD LOCATIONS OF VISIBLE STRUCTURES AND PLAN COMPUTATIONS.

## SURVEY

EXISTING TOPOGRAPHY IS BASED ON AN ACTUAL FIELD SURVEY PERFORMED BY WOOLPERT, INC., COMPLETED ON JUNE 17, 2023 AND SUPPLEMENTED ON OCTOBER 10, 2023.

## GEOTECHNICAL

REFER TO REPORT OF GEOTECHNICAL INVESTIGATION - PHASE 1 PREPARED BY ATLAS TECHNICAL CONSULTANTS LLC DATED OCTOBER 10, 2023.

REFER TO SOIL BORING LOGS BY ATLAS TECHNICAL CONSULTANTS LLC DATED AUGUST 21, 2023 TO SEPTEMBER 13, 2023.

## SHEET KEYNOTE INSTRUCTIONS

SHEET KEYNOTES ARE NOTED WITHIN THE GRAPHIC AREA OF THE DRAWING. THESE ARE REPRESENTED BY A NUMBER SURROUNDED BY A HEXAGON, WITH OR WITHOUT A LEADER. A LEGEND ON THE RIGHT SIDE OF THE PAGE LISTS THE NOTES IN NUMERICAL ORDER.

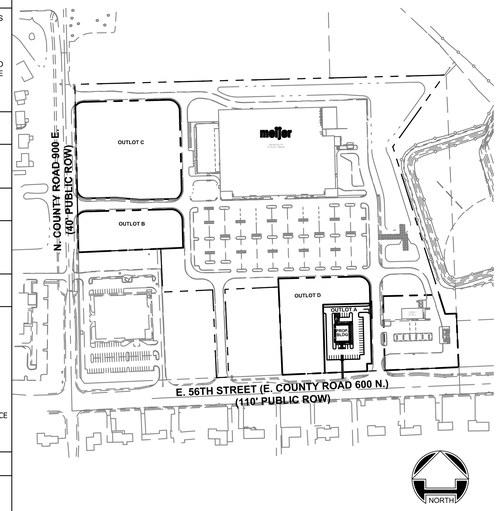
EXAMPLE: (1)

1. ALIGN NEW CONSTRUCTION WITH THE FACE OF EXISTING CONSTRUCTION.

## TABULATED SITE DATA

**MEIJER OUTLOT A AREA = 53,110± SF**

| PROPOSED LAND COVERAGE | AREA (SF) | PERCENTAGE |
|---|---|---|
| PROPOSED BUILDING | 4,285 | 8.1% |
| PROPOSED COMPACTED GRAVEL | 0 | 0% |
| PROPOSED CONCRETE/ASPHALT | 28,200 | 53.1% |
| **TOTAL AMOUNT OF IMPERVIOUS SURFACE** | **32,485** | **61.2%** |




B5 OVERALL SITE PLAN
NTS

SITE ADDRESS:
9180 E. 56TH STREET

## SYMBOL LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- NEW MINOR CONTOUR
- NEW MAJOR CONTOUR
- CENTER OF DITCH
- LOT LINE (AS PLATTED)
- R.O.W. LINE
- SECTION LINE
- FENCE
- GRAVEL SURFACE
- PAVED SURFACE
- EXISTING CURB & GUTTER
- PROPOSED CURB & GUTTER
- TURN DOWN CONCRETE SLAB
- SIGN
- SITE LIGHT POLES
- BENCH MARK
- SECTION CORNER
- EASEMENT LINE
- PROPOSED ELEVATION (0.50 ATC / 0.00 DTP)
- PROPOSED PAVEMENT MARKING (PAINTING)
- PROPOSED BARRIER FREE PARKING
- SANITARY SEWER & MANHOLE (8" SAN)
- WYE & LEAD
- RISER & LEAD
- STANDARD SEWER CLEANOUT
- STORM SEWER & MANHOLE (12" SD)
- CATCH BASIN WITH EROSION CONTROL
- UNDERDRAIN
- WATER MAIN (8"WTR)
- VALVE & BOX (8"WTR)
- METER
- PLUG
- STANDARD FIRE HYDRANT ASSEMBLY
- CURB STOP & BOX
- GAS MAIN (G)
- UNDERGROUND ELECTRIC (UE)
- UNDERGROUND TELEPHONE (UT)
- TELEPHONE PEDESTAL (TP)
- CONCRETE SLAB
- HEAVY DUTY ASPHALT
- LIGHT DUTY ASPHALT
- MATCH LINE
- MATCH LINE
- BREAK MARK
- CONTROL POINT (CP1)
- DATUM MARK (T.O. MASONRY 12'-0")
- WALL SECTION MARK (A1 / A-101)
- BUILDING SECTION MARK (A1 / A-101)
- ELEVATION TAGS (A1 / A-101 / E2 / A2 / B4)
- ENLARGED PLAN OR DETAIL (SIM / A101)
- REVISION CLOUD

## ABBREVIATIONS

| | | | |
|---|---|---|---|
| A | AREA | PC | POINT OF CURVATURE |
| ALT | ALTERNATE | PE | POLYETHYLENE |
| AMP | AMPERE | PH | PHASE |
| ARCH | ARCHITECTURAL | PSI | POUNDS PER SQUARE INCH |
| ASTM | AMERICAN SOCIETY FOR TESTING & MATERIALS | PT | POINT OF TANGENCY |
| B/C | BACK OF CURB | PVC | POLYVINYL CHLORIDE |
| BIT | BITUMINOUS PAVEMENT | PVMT | PAVEMENT |
| BM | BENCH MARK | R | RADIUS |
| BP | BID PACKAGE | RCP | REINFORCED CONCRETE PIPE |
| C | CONDUIT | RE; | REFERENCE |
| CAL | CALIPER | REQ'D | REQUIRED |
| CB | CATCH BASIN | ROW | RIGHT-OF-WAY |
| CFH | CUBIC FEET PER HOUR | RW | RETAINING WALL |
| C.I. | CURB ISLAND | (S) | SOUTH |
| CIR | CIRCUIT | SAN | SANITARY SEWER |
| CONC | CONCRETE | SB | SOIL BORING |
| DIA | DIAMETER | SF, SQFT | SQUARE FEET |
| (E) | EAST | SQ | SQUARE |
| E.I.F.S. | EXTERIOR INSULATION FINISHING SYSTEM | STM | STORM SEWER |
| | | STRUC | STRUCTURE |
| EL, ELEV | ELEVATION | TC | TOP OF CURB |
| EQ | EQUIVALENT | TEL | TELEPHONE |
| ES | END SECTION | TP | TOP OF PAVEMENT |
| ETC | ETCETERA | TRNF | TRANSFORMER |
| FH | FIRE HYDRANT | TS | TOP OF SLAB |
| FF | FINISHED FLOOR | TW | TOP OF WALL |
| FT' | FOOT SQUARE | TYP | TYPICAL |
| GND, GRD | GROUND | UC | UTILITY CROSSING |
| GP | GUTTER PAN | UD | UNDER DRAIN |
| GPD | GALLONS PER DAY | W | WIRE |
| GPM | GALLONS PER MINUTE | (W) | WEST |
| GV&BOX | GATE VALVE AND BOX | W/ | WITH |
| HC | HIGH CAPACITY | WC | WATER COLUMN |
| HD | HEAVY DUTY | WTR | WATER |
| HT | HEIGHT | WWF | WELDED WIRE FABRIC |
| IE | INVERT ELEVATION | | |
| KVA | KILOVOLT AMPERE | | |
| LBS | POUNDS | | |
| LD | LIGHT DUTY | | |
| LED | LIGHT EMITTING DIODE | | |
| LF | LINEAR FEET | | |
| LG | LARGE | | |
| MANUF | MANUFACTURE | | |
| MAT'L | MATERIAL | | |
| MAX | MAXIMUM | | |
| MECH | MECHANICAL | | |
| MIN | MINIMUM | | |
| MH | MANHOLE | | |
| (N) | NORTH | | |
| OC | ON CENTER | | |
| OSHA | OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION | | |

## AGENCIES

**ZONING**
TOWN OF BROWNSBURG
DEVELOPMENT SERVICES
JENNA WERTMAN, DEVELOPMENT SERVICES DIRECTOR
61 N. GREEN STREET
BROWNSBURG, IN 46112
(317) 852-1128
EMAIL: JWERTMAN@BROWNSBURG.ORG

**HIGHWAY DEPARTMENT**
HENDRICKS COUNTY HIGHWAY DEPARTMENT
930 E. MAIN STREET
CURT HIGGINBOTHAM, SUPERINTENDENT
DANVILLE, IN 46122
(317) 745-9227
EMAIL: CHIGGINBOTHAM@CO.HENDRICKS.IN.US

**SANITARY**
HENDRICKS COUNTY REGIONAL SEWER DISTRICT
JIM MARDIS
355 S. WASHINGTON STREET, #206
DANVILLE, IN 46122
(317) 718-6036

AQUA INDIANA
KIERAN TANSY
5750 CASTLE CREEK PARKWAY NORTH DRIVE, SUITE #314
INDIANAPOLIS, IN 46250
(317) 716-6026

**WATER**
CITIZENS ENERGY GROUP
RICHARD NEWELL, PROJECT MANAGER
2150 DR. MARTIN LUTHER KING JR. ST.
INDIANAPOLIS, IN 46202
(317) 927-4377
EMAIL: RNEWELL@CITIZENSENERGYGROUP.COM

**STORMWATER**
HENDRICKS COUNTY SURVEYOR'S OFFICE
DAVID GASTON, HENDRICKS COUNTY SURVEYOR
355 S. WASHINGTON STREET, #170
DANVILLE, IN 46122
(317) 745-9237
EMAIL: DGASTON@CO.HENDRICKS.IN.US

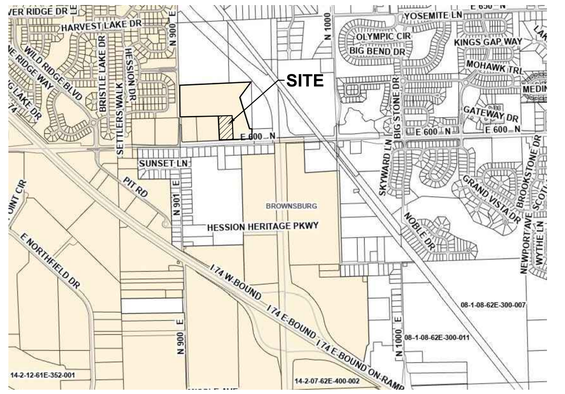
**FIRE**
TOWN OF BROWNSBURG FIRE TERRITORY
PAUL HUDSON, FIRE MARSHAL
470 E. NORTHFIELD DRIVE
BROWNSBURG, IN 46112
(317) 696-0546
EMAIL: PHUDSON@BROWNSBURGFIRE.ORG

**ELECTRIC**
HENDRICKS POWER
DAVID VANWYE, DISTRIBUTION DESIGNER
P.O. BOX 309
DANVILLE, IN 46122
(317) 745-5473
EMAIL: DVANWYE@HENDRICKSPOWER.COM

**GAS**
CENTERPOINT ENERGY
JON EASTHAM, SENIOR GAS ENGINEER
8399 ZIONSVILLE ROAD
INDIANAPOLIS, IN 46268
(765) 287-2119
EMAIL: JONATHANEASTHAM@CENTERPOINTENERGY.COM

**TELEPHONE & INTERNET**

## VICINITY MAP




A5 VICINITY MAP
NTS


WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER OUTLOT #338A
9180 E. 56TH STREET
BROWNSBURG, INDIANA 46112

COVER SHEET

| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

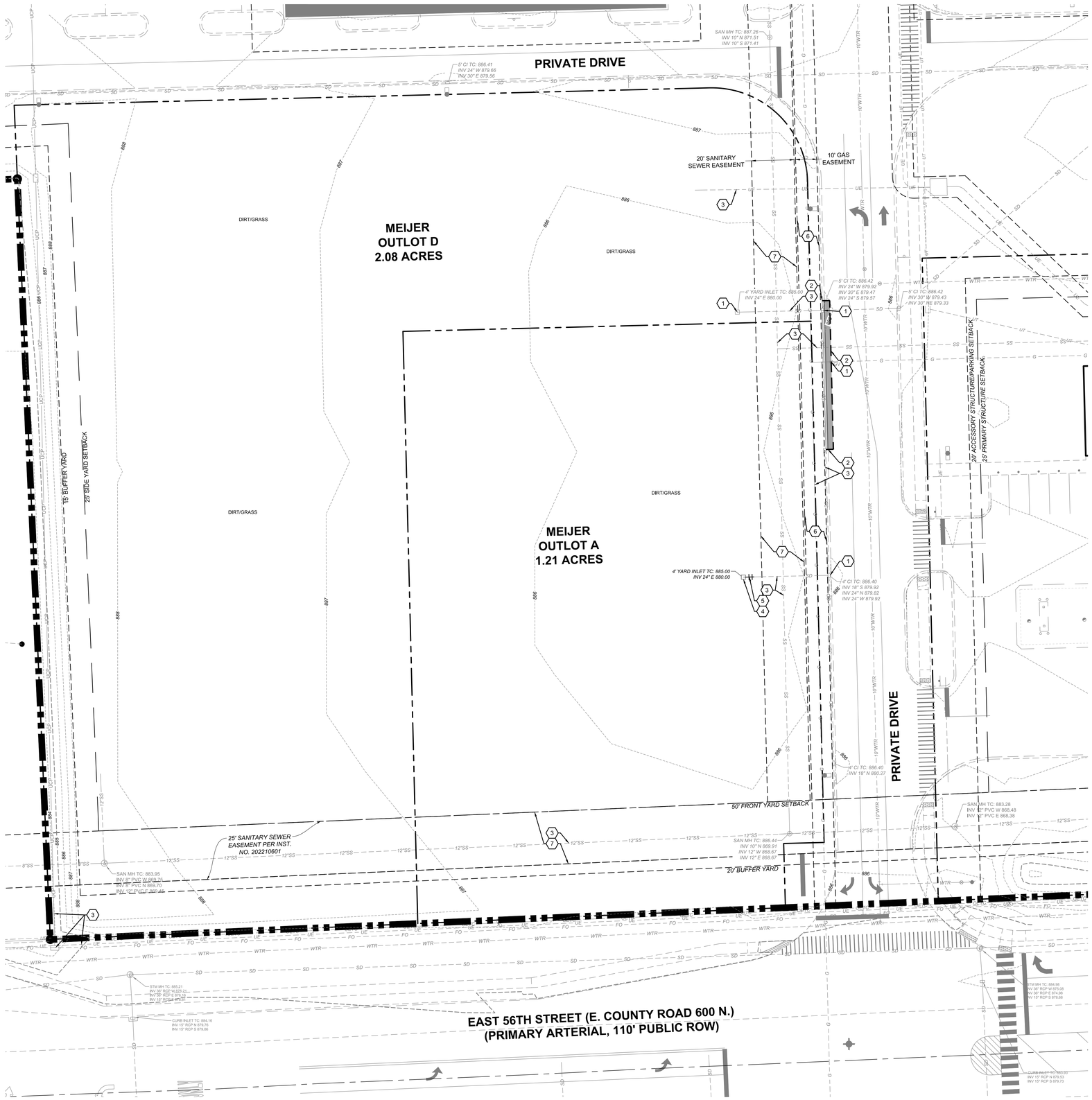
| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

C-001

Indiana 811 Know what's below. Call before you dig.


Image: Vicinity Map.jpg, ; Xrefs: 10026635TBLK.dwg; 10026635-x.dwg; 10026635-p.dwg
Layout Tab: Name: C-001
Last Saved By:BJVonGorder, 1/27/2026, 2:00:05 PM
G:\DE\Clients\Meijer\10026635 Meijer 338A-OD1, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cat\10026635-C0V.dwg Plotted By:VonGorder, Brianne PlottedJanuary 29, 2026, 10:50:08 AM




A1 EXISTING CONDITIONS - DEMOLITION PLAN
1"=20'

NORTH

## EXISTING LEGEND

- MEIJER PROPERTY LINE
- PROPERTY BOUNDARY
- 799 — 1' CONTOUR
- 800 — 5' CONTOUR
- SD — STORM SEWER
- WTR — WATER MAIN
- SS — SANITARY SEWER
- G — GAS MAIN
- UE — UNDERGROUND ELECTRIC
- UT — UNDERGROUND TELEPHONE
- OE — OVERHEAD ELECTRIC
- OEC — OVERHEAD ELECTRIC AND CABLE
- OET — OVERHEAD ELECTRIC AND TELECOMM
- OETC — OVERHEAD ELECTRIC, TELECOMM, AND CABLE
- SANITARY MANHOLE
- STORM MANHOLE
- DRAINAGE INLET
- FIRE HYDRANT
- POWER POLE
- SIGN
- LIGHT POLE

## DEMOLITION LEGEND

- ASPHALT PAVEMENT TO BE REMOVED
- APPROXIMATE SAW/CUT LINE
- UTILITY LINE TO BE REMOVED

## GENERAL NOTES

1. PLANIMETRIC FEATURES SHOWN HEREON ARE BASED UPON A FIELD SURVEY COMPLETED BY WOOLPERT INC. ON JUNE 17, 2023 AND SUPPLEMENTED ON OCTOBER 10, 2023 AND WILL NOT REFLECT ANY CHANGES TO THE PHYSICAL SITE THROUGH MANMADE OR NATURAL OCCURRENCES BEYOND SAID DATE. CONTRACTOR SHALL VISIT THE SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION TO VERIFY SITE CONDITIONS. ANY DISCREPANCIES BETWEEN THE ACTUAL FIELD CONDITIONS AND PLAN DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE MEIJER PROJECT MANAGER IMMEDIATELY.
2. ANY USE OF THIS DRAWING BY PARTIES NOT CONTRACTED DIRECTLY WITH WOOLPERT OR CERTIFIED TO ON THIS DRAWING IS PROHIBITED WITHOUT PRIOR WRITTEN PERMISSION.
3. ONLY THE IMPROVEMENTS THAT WERE VISIBLE FROM ABOVE GROUND AT TIME OF SURVEY, THROUGH A NORMAL SEARCH AND WALK THROUGH OF THE SITE, ARE SHOWN ON THE FACE OF THIS PLAT. THIS SURVEY MAY NOT REFLECT ALL UTILITIES OR IMPROVEMENTS, IF SUCH ITEMS ARE HIDDEN BY LANDSCAPING, OR ARE COVERED BY SUCH THINGS AS DUMPSTERS, TRAILERS, SNOW, ETC.
4. ACCORDING TO THE FLOOD INSURANCE RATE MAPS - MAP NUMBERS 18063C0176E, PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY WITH A REVISION DATE OF JUNE 15, 2022, WHICH IS THE MOST CURRENT FLOOD INSURANCE RATE MAP AVAILABLE ON FEMA'S WEBSITE, THIS SITE IS LOCATED IN ZONE "X" (NO SCREEN) - AREAS OF MINIMAL FLOOD HAZARD, THE ABOVE REFERENCED FLOODPLAIN MAP WAS UTILIZED FOR THIS DETERMINATION.
5. RECYCLED CONCRETE MATERIAL IS DEFINED AS CRUSHED CONCRETE SLAB, FOUNDATIONS, CURBS AND SIDEWALK, ALONG WITH THE GRANULAR BASE MATERIAL ASSOCIATED WITH THESE ITEMS (EXCLUDES CRUSHED CONCRETE BLOCK). THIS MATERIAL SHALL BE CRUSHED AND OR PROCESSED TO BE IN ACCORDANCE WITH MEIJER SPECIFICATIONS AND CAN BE USED AS FOLLOWS:
   - MASS GRADING AND GENERAL FILL AREAS.
   - UTILITY TRENCH BACKFILL (EXCEPT FOR PIPE BEDDING).
   - SUBGRADE FILL MATERIAL DIRECTLY UNDER THE ASPHALT AND CONCRETE PAVEMENT SECTIONS. (MATERIAL SHALL NOT BE USED AS PART OF THE PAVEMENT SECTIONS.)
   - BACKFILL MATERIAL AROUND THE UNDERGROUND DETENTION SYSTEM (MATERIAL SHALL NOT BE USED AS PIPE BEDDING), IF USED IN THIS APPLICATION, CONTRACTOR MUST DEMONSTRATE THAT THE MATERIAL MEETS THE REQUIRED GRADATION SPECIFICATIONS AND THE MATERIAL IS FREE OF CONTAMINATION.

## DEMOLITION NOTES

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL REQUIRED PERMITS RELATED TO AIR QUALITY DURING DEMOLITION FROM IDEM.
2. CONTRACTOR SHALL DISPOSE OF ALL DEMOLITION DEBRIS IN A LEGAL MANNER IN ACCORDANCE WITH ALL APPLICABLE GOVERNING CRITERIA. UPON COMPLETION OF DEMOLITION WORK, CONTRACTOR SHALL CLEAR SITE OF ALL DEBRIS.
3. CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITY SERVICES TO EXISTING ADJACENT BUILDINGS TO REMAIN. CONTRACTOR TO COORDINATE WITH EXISTING BUILDING OWNER(S) SHOULD ANY SERVICE INTERRUPTIONS BE REQUIRED.
4. CONTRACTOR SHALL ENSURE THAT ALL APPROPRIATE MEASURES ARE IN PLACE SHOULD A RAIN EVENT OCCUR DURING THE REMOVAL AND/OR CONSTRUCTION OF THE STORM AND SANITARY SEWER SYSTEMS TO MAINTAIN FLOW TO THE APPROPRIATE SYSTEMS.
5. VOIDS CREATED BY REMOVAL OF EXISTING ITEMS, SUCH AS LIGHT POLES, SIGNS, ETC., SHALL BE FILLED IN ACCORDANCE WITH MEIJER SPECIFICATIONS.
6. REMOVE (UNDER PROPOSED PAVEMENT AND BUILDING)/ABANDON (UNDER PROPOSED LAWN) ANY LOCATED INACTIVE STORM OR DOWNSPOUT LINES, SANITARY SERVICES, GAS SERVICES, WATER SERVICES, LIGHTING CONDUIT OR OTHER FOUND UTILITIES PER AGENCY REQUIREMENTS.
7. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS TO PERFORM WORK ON THE OWNER'S PROPERTY.
8. CONTRACTOR RESPONSIBLE FOR COORDINATING TEMPORARY POWER TO SITE.
9. FIRE EMERGENCY VEHICLE ACCESS MUST BE MAINTAINED DURING CONSTRUCTION.
10. PORTABLE FIRE EXTINGUISHERS MUST BE READILY AVAILABLE TO CONSTRUCTION CREWS DURING CONSTRUCTION.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION TO VERIFY SITE CONDITIONS. ANY DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND PLAN DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE MEIJER PROJECT MANAGER IMMEDIATELY.
12. OPEN BURNING ON SITE IS PROHIBITED.

## KEYNOTES ⟨X⟩

1. ITEM TO REMAIN, PROTECT IN PLACE.
2. SAWCUT PAVEMENT/CURB/SIDEWALK. REMOVE SIDEWALK AT NEAREST EXISTING JOINT.
3. EXISTING UTILITY TO BE MAINTAINED DURING CONSTRUCTION.
4. REMOVE AND RELOCATE EXISTING UTILITY STRUCTURE. SEE C-400 FOR PROPOSED LOCATION. CONTRACTOR SHALL REVIEW CONDITION OF EXISTING STRUCTURE TO BE RELOCATED IN WHICH PROPOSED PIPES ARE PROPOSED TO CONNECT, IF CONDITIONS WARRANT IT, STRUCTURE SHALL BE REPLACED.
5. REMOVE PIPE.
6. 10' GAS EASEMENT.
7. PUBLIC SANITARY EASEMENT.

## BENCHMARK:

THE BASIS OF ELEVATIONS HEREON IS NAVD 88 PER OBSERVATIONS OF SELECTED STATIONS IN THE NATIONAL GEODETIC SURVEY CONTINUOUSLY OPERATING REFERENCE STATION (NGS CORS) NETWORK.
MAG NAIL SET IN THE CORNER TOP OF THE CURB JOINT - SEE C-001 FOR LOCATION.

ELEVATION = 889.36'

0 20 40 60
GRAPHIC SCALE IN FEET

Indiana 811 Know what's below. Call before you dig.


WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER OUTLOT #338A
9180 E. 56TH STREET
BROWNSBURG, INDIANA 46112

EXISTING CONDITIONS - DEMOLITION PLAN

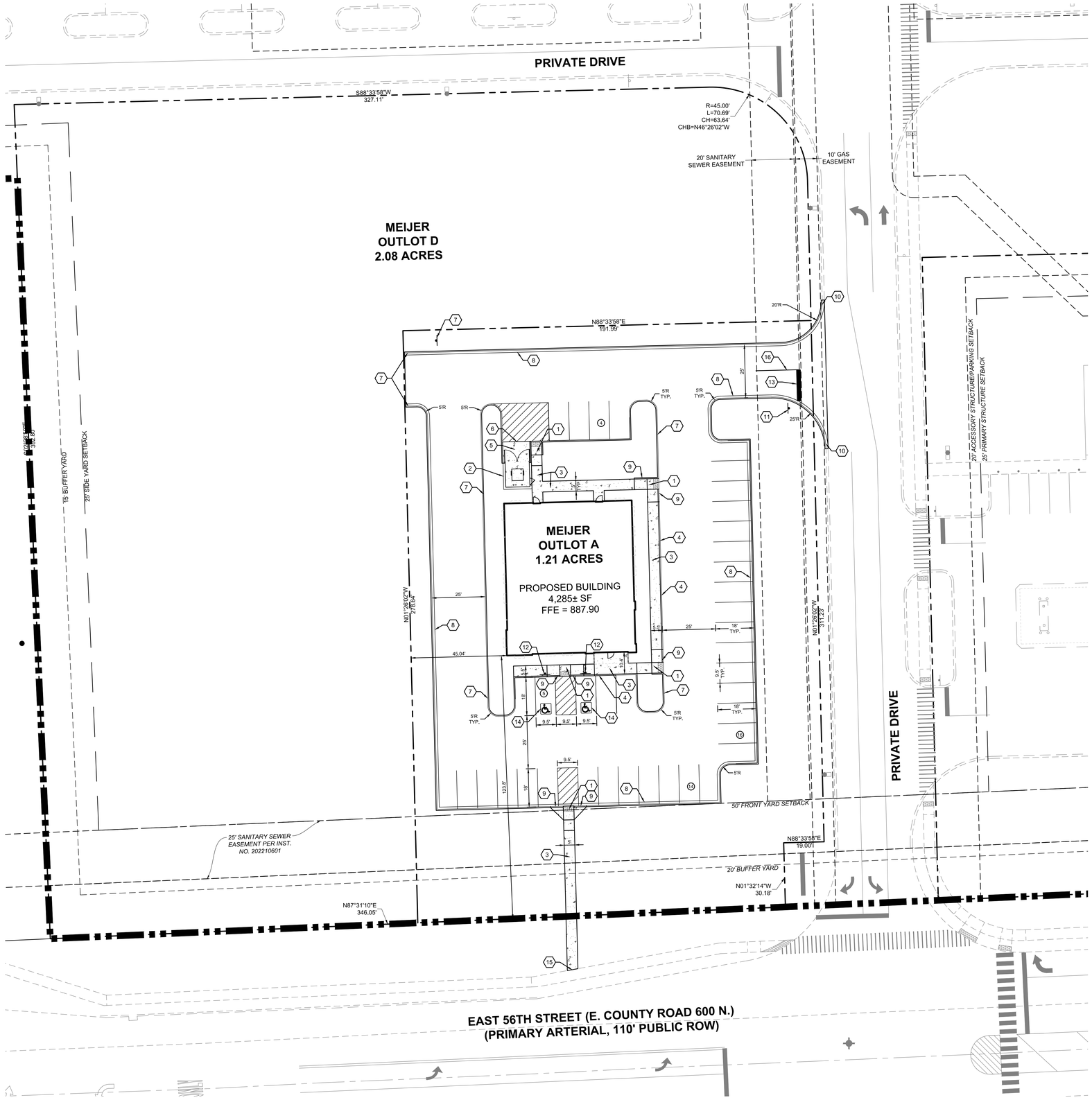
| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

C-100


Images: - Xrefs: 10026635-cp.dwg; 10026635-x.dwg; 10026635TBLK.dwg
Layout: Layout: C-100 DEMOLITION PLAN
Last Saved By:BJVonGorder, 1/23/2026 1:43:18 PM
G:\DE\Clients\Meijer\10026635 Meijer 338A-OD1, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cd\10026635-DEM.dwg Plotted By:VonGorder, Brianne Plotted:January 29, 2026, 10:50:48 AM




A1 SITE PLAN - PAVEMENT PLAN & SIGNAGE AND STRIPING PLAN
1"=20'

NORTH

0 20 40 60
GRAPHIC SCALE IN FEET

## LEGEND

- MEIJER PROPERTY LINE
- PROPERTY LINE
- LIGHT POLE
- 9.5' x 18' PARKING SPACES, UNLESS NOTED OTHERWISE
- CONCRETE PAVEMENT, SEE DETAIL D1 ON C-702
- LIGHT DUTY ASPHALT PAVEMENT, SEE DETAIL D1 ON C-702

| PROJECT AREA SUMMARY | |
|---|---|
| EXISTING LOT 6 | 3.29 ACRES |
| | |
| PROPOSED LOT A | 1.21 ACRES |
| PROPOSED LOT D | 2.08 ACRES |

| PARKING SUMMARY | |
|---|---|
| 9 FT X 18 FT STANDARD PARKING | 37 SPACES |
| VAN ACCESSIBLE ADA | 2 SPACES |
| TOTAL PROVIDED PARKING | 39 SPACES |
| | |
| MINIMUM REQUIRED BY CODE (1.5 SPACES/TREATMENT SPACE) | 18 SPACES |

## GENERAL NOTES

1. NO DIMENSION MAY BE SCALED. REFER UNCLEAR ITEMS TO THE ENGINEER FOR INTERPRETATION.
2. DIMENSIONS AND/OR COORDINATES ARE TO FACE OF CURB, FACE OF BUILDING (FACE OF PRECAST), EDGE OF PAVEMENT OR CENTER OF STRUCTURE OR SIGN. VERIFY BUILDING DIMENSIONS WITH ARCHITECTURAL DRAWINGS.
3. BUILDING SLABS, UNDERBED THICKNESS AND LOCATIONS ARE SHOWN FOR REFERENCE. VERIFY WITH STRUCTURAL DRAWINGS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING TO ACCOMPLISH ALL WORK INDICATED ON PLANS AND PERFORM REQUIRED COMPACTION OPERATIONS.
5. PROVIDE ADEQUATE BARRICADES AT DRIVES, ENTRANCES, EXCAVATIONS AND OTHER OPENINGS TO KEEP OUT UNAUTHORIZED PERSONS AND FOR PUBLIC SAFETY AND TRAFFIC CONTROL. SAFETY PROVISIONS OF APPLICABLE LAWS SHALL BE OBSERVED AT ALL TIMES. BARRICADES LEFT IN PLACE AT NIGHT SHALL BE LIGHTED.
6. NO EQUIPMENT OR MATERIAL STORAGE IS PERMITTED IN THE RIGHT-OF-WAY.
7. WORK SHALL CONFORM TO THE REQUIREMENTS OF MEIJER STANDARD SPECIFICATIONS, GOVERNING AGENCIES HAVING JURISDICTION, GRADING, PAVING AND MATERIALS SHALL COMPLY WITH THE STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AS WELL AS PROJECT SPECIFICATIONS AND DRAWINGS, IN CASE OF DISCREPANCIES BETWEEN REQUIREMENTS, THE MORE STRINGENT SHALL APPLY.
8. EXTERIOR CONCRETE SLABS ADJACENT TO BUILDING SHALL BE PLACED ON 4" STRUCTURAL CUSHION, UNLESS NOTED OTHERWISE.
9. AGGREGATE TO EXTEND 12" BEYOND BACK OF CURB OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
10. ALL RADII SHALL BE 4' UNLESS OTHERWISE NOTED.
11. ALL PAVEMENT MARKING SHALL BE YELLOW IN COLOR UNLESS NOTED OTHERWISE.
12. REFER TO SHEET C-701 FOR SIGNAGE/STRIPING DETAILS.

## (X) KEYNOTES

1. ADA RAMP WITH DETECTABLE WARNING SURFACE, SEE DETAIL ON C-702.
2. DUMPSTER ENCLOSURE. SEE ARCHITECTURAL PLANS FOR DETAILS.
3. 4" CONCRETE SIDEWALK ON 4" BASE MATERIAL, SEE DETAIL ON C-702.
4. CONCRETE CURBED WALK. SEE DETAIL A1 ON C-702.
5. HEAVY DUTY CONCRETE DUMPSTER APRON, SEE DETAIL D1 ON C-702.
6. THICKENED BITUMINOUS PAVEMENT EDGE. SEE DETAIL B1 ON C-702.
7. CONCRETE STRAIGHT CURB, SEE DETAIL C2 ON C-702.
8. CONCRETE STRAIGHT CURB AND GUTTER, SEE DETAIL E6 ON C-702.
9. TRANSITION CURB HEIGHT FROM 6" TO 0", SEE DETAIL E4 ON C-702.
10. TRANSITION TO EXISTING CURB.
11. "STOP" SIGN, SEE DETAIL C1 ON C-701.
12. "VAN ACCESSIBLE" PARKING SIGN, SEE DETAIL C3 ON C-701.
13. 12" STOP LINE, WHITE.
14. ADA GRAPHIC AT ADA PARKING STALL, SEE DETAIL E2 ON C-701.
15. TRANSITION TO EXISTING CONCRETE WALK.
16. 4" SINGLE SOLID LINE, WHITE.
17. "DEAD END" SIGN, SEE DETAIL C1 ON C-701.

WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER OUTLOT #338A
9160 E. 56TH STREET
BROWNSBURG, INDIANA 46112

# SITE PLAN - PAVEMENT PLAN & SIGNAGE AND STRIPING PLAN

| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

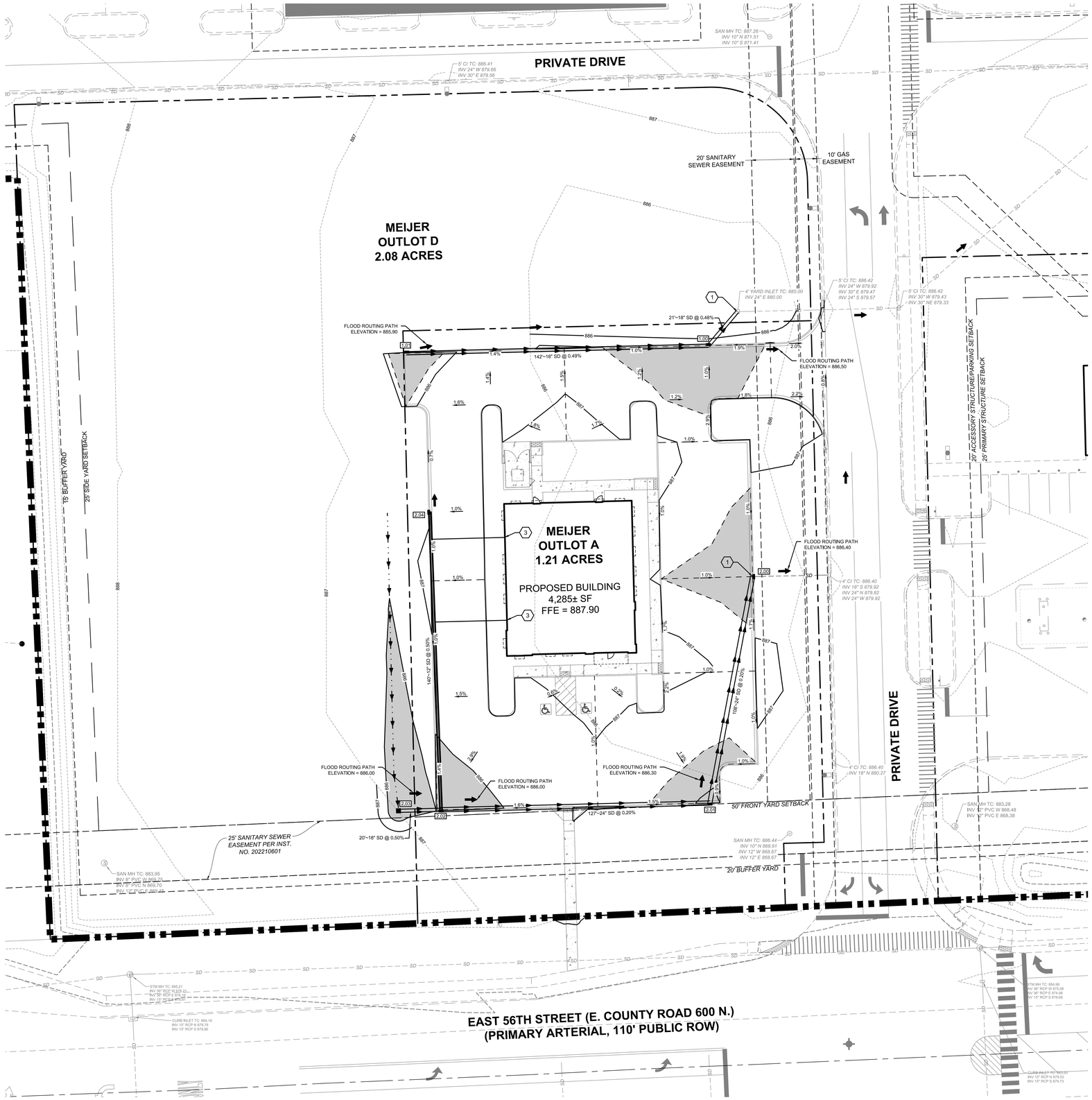
| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

C-200

Indiana 811 Know what's below. Call before you dig.

Images: , Xrefs: 10026635-p.dwg; 10026635-x.dwg; 10026635TBLK.dwg
Layout: C-200 Name: C-200 - SITE PLAN
Last Saved By:BJVanGorder, 1/29/2026 10:32:33 AM
G:\DE\Clients\Meijer\10026635 Meijer 338A-OD1, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cd\10026635-SIT.dwg Plotted By:VanGorder, Brianne Plotted:January 29, 2026, 10:51:16 AM




A1 SITE GRADING - DRAINAGE PLAN
1"=20'

0 20 40 60
GRAPHIC SCALE IN FEET

## LEGEND

- MEIJER PROPERTY LINE
- PROPERTY LINE
- 799 EXISTING 1' CONTOUR
- 800 EXISTING 5' CONTOUR
- SD EXISTING STORM SEWER
- EXISTING DRAINAGE BASIN
- 799 PROPOSED 1' CONTOUR
- 800 PROPOSED 5' CONTOUR
- DRAINAGE BASIN
- CLEANOUT
- XX"~XX" SD STORM SEWER
- XX STORM STRUCTURE I.D.
- 1.00% SLOPE LABEL
- GRADE BREAK
- DRAINAGE SWALE
- 100-YEAR FLOOD LIMITS (WITH ALL INLETS BLOCKED)
- FLOOD ROUTING PATH

## GRADING NOTES

1. ALL SPOT ELEVATIONS ARE TO:
   TOP OF PAVEMENT - (TP)
   TOP OF SLAB - (TS)
   TOP OF CURB - (TC)
   TOP OF WALL - (TW)
   GUTTER PAN - (GP)
   U.O.N.- UNLESS OTHERWISE NOTED
2. CONTOURS SHOWN ARE FOR REFERENCE ONLY.
3. PROVIDE POSITIVE DRAINAGE AT ALL TIMES TO ENSURE NO STANDING WATER WITHIN PAVEMENT, BUILDING PAD, OR GREEN AREAS.
4. FOR ALL CURB ISLANDS, CENTER OF ISLANDS TO BE A MINIMUM OF 6" HIGHER THAN TOP OF CURB.
5. RESTORE ALL STREET SURFACES, DRIVEWAYS, CULVERTS, ROADSIDE DRAINAGE DITCHES, AND OTHER PUBLIC OR PRIVATE STRUCTURES THAT ARE DISTURBED OR DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES TO MATCH AT A MINIMUM EXISTING CONDITIONS.
6. CONTRACTOR'S MANNER AND METHOD OF INGRESS AND EGRESS WITH RESPECT TO THE PROJECT AREAS SHALL IN NO WAY PROHIBIT OR DISTURB NORMAL PEDESTRIAN OR VEHICULAR TRAFFIC IN THE VICINITY AND IS SUBJECT TO REGULATION AND WRITTEN APPROVAL OF APPROPRIATE GOVERNING AGENCIES.
7. FINISHED SUBGRADE SURFACE SHALL NOT BE MORE THAN 0.1 FEET ABOVE OR BELOW ESTABLISHED FINISHED SUBGRADE ELEVATIONS AND ALL GROUND SURFACES SHALL VARY UNIFORMLY BETWEEN INDICATED ELEVATIONS. FINISHED DITCHES SHALL BE GRADED TO ALLOW FOR PROPER DRAINAGE WITHOUT PONDING AND IN A MANNER THAT WILL MINIMIZE EROSION.
8. VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
9. PROTECT AND MAINTAIN CROSSINGS OF OTHER UTILITIES.
10. ALL MATERIAL, SPECIFICATIONS, AND CONSTRUCTION METHODS SHALL BE IN CONFORMANCE WITH MEIJER STANDARD SPECIFICATIONS AND THOSE OF THE APPROPRIATE UTILITY COMPANIES.
11. BEFORE COMMENCING WORK, CONTRACTOR SHALL VERIFY ALL LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES.
12. ENTRY LANDINGS PART OF AN ACCESSIBLE ROUTE SHALL MAINTAIN A MAXIMUM SLOPE OF 1.50% IN ALL DIRECTIONS. THIS IS INTENDED TO ALLOW FOR CONSTRUCTION TOLERANCES. SLOPES STEEPER THAN 1:48 SHALL NOT BE PERMITTED THUS MEETING THE REQUIREMENTS OF THE DEPARTMENT OF JUSTICE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN. ALL SLOPES TO BE VERIFIED AS ACCEPTABLE BY USING A 2'-0" LEVEL.
13. CONTRACTOR TO NOTIFY THE SITE ENGINEER SHOULD ANY EXISTING DRAINS AND/OR TILES BE ENCOUNTERED DURING CONSTRUCTION.

## KEYNOTES (X)

1. CONNECT TO EXISTING UTILITY PER AGENCY REQUIREMENTS. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITY IN WHICH TO MAKE CONNECTION.
2. ADJUST EXISTING UTILITY STRUCTURE TO FINISHED GRADE.
3. 6" ROOF DRAIN FOR GUTTER DOWNSPOUTS. SEE DETAIL A5 ON C-700.


WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER OUTLOT #338A
9180 E. 56TH STREET
BROWNSBURG, INDIANA 46112

SITE GRADING - DRAINAGE PLAN

| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

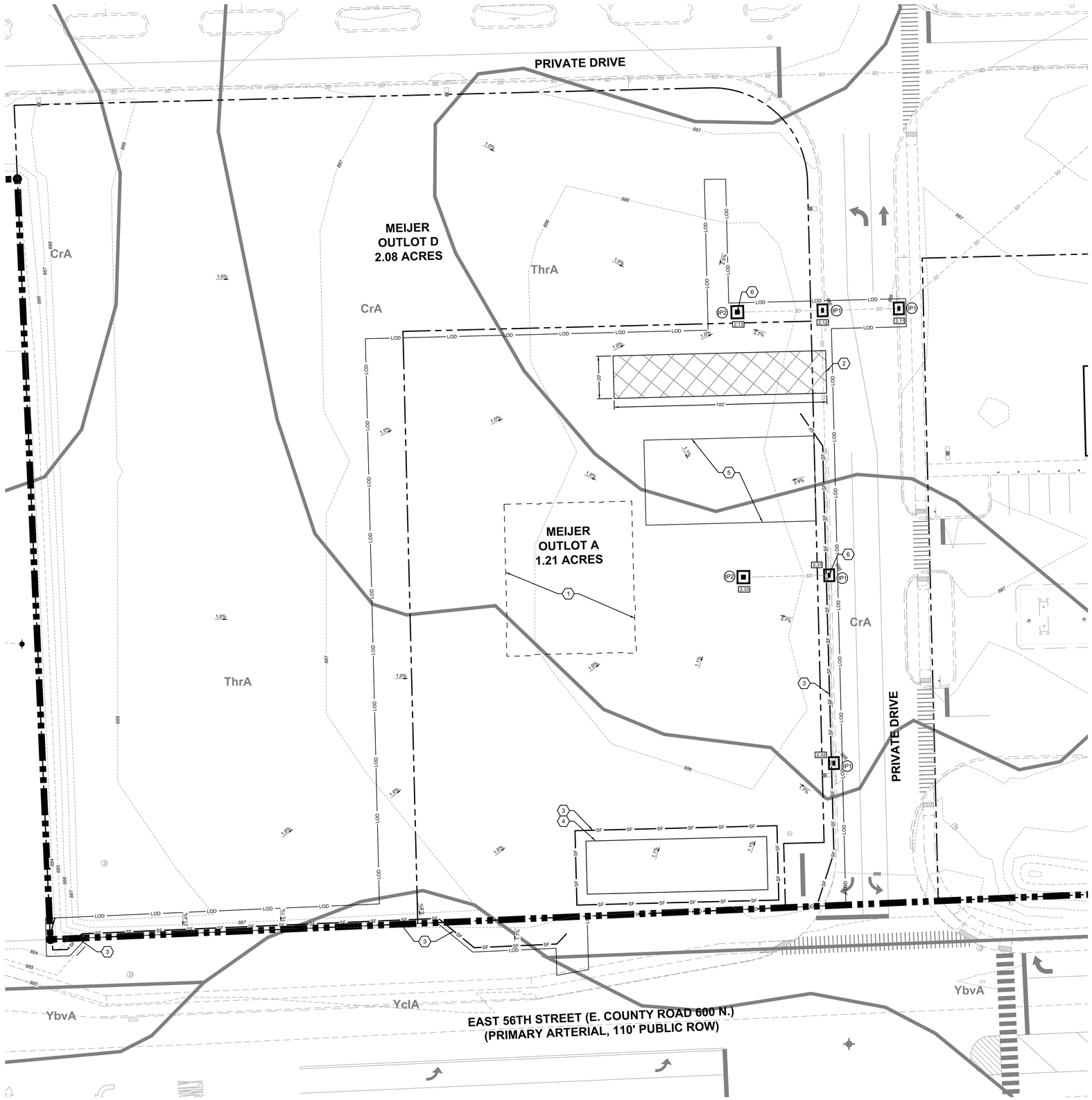
| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

C-300

Indiana 811 Know what's below. Call before you dig.


Images: - Xrefs: 10026635TBLK.dwg; 10026635-x.dwg; 10026635-p.dwg; 10026635-g.dwg
Layout: - Tab Name: C-300 SITE GRADING - DRAINAGE PLAN
Last Saved By:BJVonGorder, 1/29/2026 10:40:28 AM
G:\DE\Clients\Meijer\10026635 Meijer 338A-OD1, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cat\10026635-GRA.dwg Plotted By:VonGorder, Brianne Plotted:January 29, 2026, 10:52:00 AM




A1 PHASE 1 STORMWATER POLLUTION PREVENTION PLAN
1"=20'

NORTH

| SOILS LEGEND | |
|---|---|
| MAP UNIT SYMBOL | MAP UNIT NAME |
| CrA | CROSBY SILT LOAM, 0-2% SLOPES HYDROLOGIC GROUP: C/D |
| YclA | CROSBY SILT LOAM (URBAN LAND COMPLEX), 0-2% SLOPES HYDROLOGIC GROUP: C/D |
| ThrA | TREATY SILTY CLAY LOAM, 0-1% SLOPES HYDROLOGIC GROUP: B/D |

NOTE: CONTRACTOR IS RESPONSIBLE FOR SECURING NECESSARY SWPPP APPROVAL AND IDEM CONSTRUCTION GENERAL PERMIT NOI FOR ANY OFFSITE BORROW AND SPOILS SITES. CONTACT CITY, COUNTY AND APPLICABLE MUNICIPALITIES TO DETERMINE IF SPECIAL HAULING OR OTHER PERMITS WILL BE REQUIRED. OBTAIN THESE PERMITS PRIOR TO INITIATION OF ACTIVITIES.

## DEVELOPER

MEIJER STORES LIMITED PARTNERSHIP
ATTN: KEVIN WIERINGA
2350 3 MILE RD, NW
GRAND RAPIDS, MI 49544
PHONE: 616-791-3288
EMAIL: KEVIN.WIERINGA@MEIJER.COM

## LEGEND

- MEIJER PROPERTY LINE
- PROPERTY LINE
- 799 — EXISTING 1' CONTOUR
- 800 — EXISTING 5' CONTOUR
- SD — EXISTING STORM SEWER
- EXISTING STORM STRUCTURE
- XX STORM STRUCTURE I.D.
- 1.0% EXISTING FLOW DIRECTION AND GRADE
- LOD — LIMITS OF DISTURBANCE
- SF — SILT FENCE/EROSION EEL
- (IP1) INLET PROTECTION - TYPE 1 (PAVEMENT)
- (IP2) INLET PROTECTION - TYPE 2 (LAWN)
- Cy SOIL TYPE
- SOIL TYPE BOUNDARY
- PROPOSED BUILDING FOOTPRINT
- TEMPORARY STABILIZED CONSTRUCTION ENTRANCE

## GENERAL NOTES

1. THE TOWN OF BROWNSBURG RESERVES THE RIGHT TO REQUIRE ADDITIONAL ONSITE CONTROLS AS DEEMED NECESSARY TO MAINTAIN COMPLIANCE WITH THE INDIANA CONSTRUCTION STORMWATER GENERAL PERMIT AND THE TOWN'S STORMWATER MANAGEMENT ORDINANCE. ALL EROSION AND SEDIMENT CONTROLS, BEST MANAGEMENT PRACTICES AND POLLUTION PREVENTION MEASURES MUST BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE INDIANA STORMWATER QUALITY MANUAL.
2. EXISTING SOIL SOIL TYPES, HYDROLOGIC SOIL GROUPS, AND SOIL DESCRIPTIONS ARE FROM THE NATIONAL RESOURCE CONSERVATION SERVICE'S (NRCS) WEB SOIL SURVEY. PLEASE SEE THE SOIL LEGEND FOR ADDITIONAL DETAILS.
3. REFER TO SHEET C-313 FOR EROSION CONTROL NOTES AND ESTIMATED SWPPP IMPLEMENTATION SCHEDULE.

## BEST MANAGEMENT PRACTICE (BMP) PHASE 1 IMPLEMENTATION SEQUENCE

1. PER TOWN OF BROWNSBURG REQUIREMENTS, FOLLOWING APPROVAL OF THE SWPPP AND AT LEAST 72 HOURS PRIOR TO ANY LAND-DISTURBING ACTIVITIES (INCLUDING INSTALLATION OF SEDIMENT AND EROSION CONTROL MEASURES), CONTRACTOR SHALL SET UP AND CONDUCT AN ONSITE PRE-CONSTRUCTION MEETING. REQUIRED ATTENDEES INCLUDE: THE TOWN, DEVELOPER, CONTRACTOR, SEDIMENT AND EROSION CONTROL INSTALLER, AND THE QUALIFIED INDIVIDUAL FOR THE SEDIMENT AND EROSION CONTROL INSPECTIONS.
2. POST A COPY OF THE NOI AT THE CONSTRUCTION ENTRANCE ALONG WITH THE CONTACT INFORMATION OF THE PERSON RESPONSIBLE FOR IMPLEMENTING THE SWPPP. THE SWPPP SHOULD BE ONSITE AND WEEKLY SITE REPORTS NEED TO BE AVAILABLE WITHIN 48 HOURS OF A REQUEST.
3. STAKE THE PROJECT LIMITS OF DISTURBANCE AS SHOWN ON THE SWPPP DRAWING.
4. BEGIN CLEARING AND GRUBBING ONLY THE MINIMUM AREA NECESSARY FOR INSTALLATION OF PHASE 1 BMPS. CLEAR AREAS REQUIRED FOR BMPS AS EACH BMP IS BEING INSTALLED.
5. INSTALL TEMPORARY STABILIZED CONSTRUCTION ENTRANCE.
6. PERIMETER CONTROLS AND OTHER PRACTICES INTENDED TO TRAP SEDIMENT SHALL BE IMPLEMENTED PRIOR TO GRADING AND WITHIN SEVEN (7) DAYS FROM THE START OF GRUBBING FOR SAID PERIMETER CONTROLS AND PHASE 1 BMPS.
7. INSTALL PERIMETER CONTROLS.
8. INSTALL INLET PROTECTION AT EXISTING DRAINAGE STRUCTURES.
9. TEMPORARILY STABILIZE PER DETAIL C1 ON C-312 ANY AREAS DISTURBED BY THE PLACEMENT OR ADJUSTMENT OF TEMPORARY BMPS.
10. PRIOR TO MODIFICATION OF THE APPROVED SWPPP DESIGN, CONSULT WITH WOOLPERT PROJECT ENGINEER. ANY DESIGN MODIFICATIONS OR ADDENDA TO THE PROJECT ARE REQUIRED TO BE SUBMITTED TO THE TOWN OF BROWNSBURG FOR REVIEW AND APPROVAL PRIOR TO IMPLEMENTATION.

## KEYNOTES (X)

1. PROPOSED BUILDING FOOTPRINT.
2. TEMPORARY STABILIZED CONSTRUCTION ENTRANCE.
3. SILT FENCE/EROSION EEL. SEE DETAIL E1 ON SHEET C-312 FOR EROSION EEL DETAIL. SEE NOTE BELOW FOR ADDITIONAL DETAILS ON SILT FENCE AND EROSION EEL INSTALLATION.
4. STOCKPILE AREA. SEE DETAIL A3 ON SHEET C-312.
5. POTENTIAL CONSTRUCTION STAGING MATERIAL STORAGE AREA (INCLUDES FUELING AREA, DUMPSTERS, CONCRETE WASHOUT, TRAILERS, PORT-O-LET, ETC.).
6. OUTFALL: SHEET FLOW INTO PROPOSED AND MODIFIED EXISTING INLETS, WHICH DISCHARGE TO THE MEIJER STORE DRAINAGE SYSTEM.

| RUNOFF COEFFICIENTS | |
|---|---|
| PRE-CONSTRUCTION RUNOFF COEFFICIENT | 0.25 |
| POST-CONSTRUCTION RUNOFF COEFFICIENT | 0.61 |

| SUMMARY OF ACREAGE (ACRES) | |
|---|---|
| TOTAL PROJECT AREA | 1.21± |
| PERMITTED DISTURBED AREA ON PROPERTY | 1.27± |
| PERMITTED DISTURBED AREA ON OFF-SITE AREAS | 0.2± |
| TOTAL PERMITTED DISTURBED AREA FOR PROJECT | 1.47± |

ALL AREAS THAT ARE LEFT UNDISTURBED FOR 7 DAYS SHALL RECEIVE SEED AND MULCH.

0 20 40 60
GRAPHIC SCALE IN FEET

Indiana 811 Know what's below. Call before you dig.


WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|

MEIJER OUTLOT #338A
9180 E. 56TH STREET
BROWNSBURG, INDIANA 46112

PHASE 1 STORMWATER POLLUTION PREVENTION PLAN

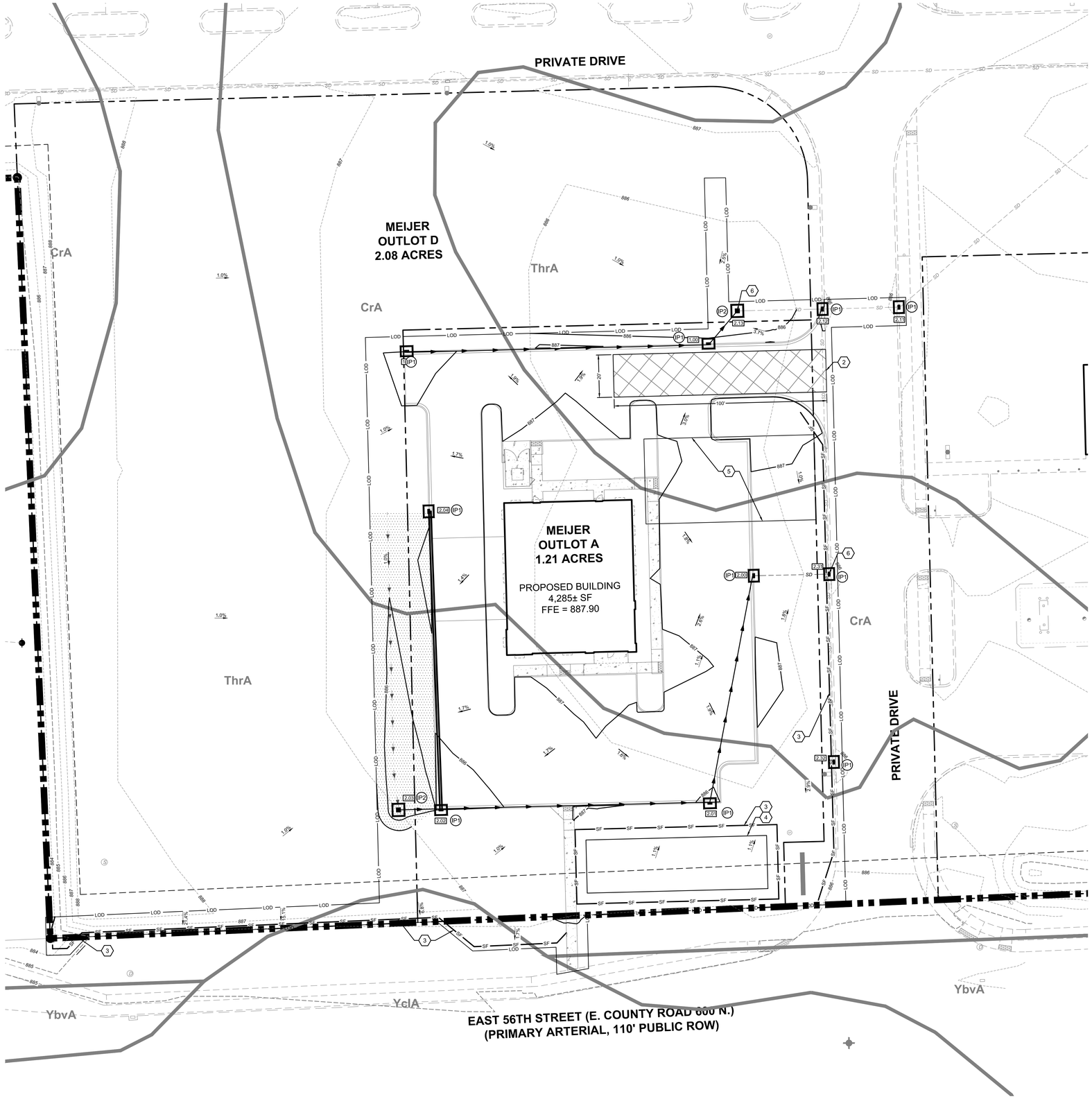
| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

C-310


Images: _Xrefs: 10026635-p.dwg; 10026635-x.dwg; 10026635TBLK.dwg; 10026635-LOD.dwg; 10026635-x-soils.dwg
Layout: C-310 Name: C-310, SHEET 1, STORMWATER POLLUTION PREVENTION PLAN
Last Saved By:BJVonGorder, 1/29/2026 10:40:47 AM
G:\DE\Clients\Meijer\10026635 Meijer 338A-OD1, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cd\10026635-ERO1.dwg Plotted By:VonGorder, Brianne Plotted:January 29, 2026, 10:52:51 AM




A1 PHASE 2 STORMWATER POLLUTION PREVENTION PLAN
1"=20'

NORTH

0 20 40 60
GRAPHIC SCALE IN FEET

## LEGEND

- MEIJER PROPERTY LINE
- PROPERTY LINE
- 799 EXISTING 1' CONTOUR
- 800 EXISTING 5' CONTOUR
- SD EXISTING STORM SEWER
- EXISTING STORM STRUCTURE
- 799 PROPOSED 1' CONTOUR
- 800 PROPOSED 5' CONTOUR
- DRAINAGE BASIN
- STORM SEWER
- 1.0% PROPOSED FLOW DIRECTION AND GRADE
- XX STORM STRUCTURE I.D.
- LOD LIMITS OF DISTURBANCE
- SF SILT FENCE/EROSION EEL
- IP1 INLET PROTECTION - TYPE 1 (PAVEMENT)
- IP2 INLET PROTECTION - TYPE 2 (LAWN)
- Cy SOIL TYPE
- SOIL TYPE BOUNDARY
- TEMPORARY STABILIZED CONSTRUCTION ENTRANCE
- EROSION CONTROL BLANKET

## GENERAL NOTES

1. THE TOWN OF BROWNSBURG RESERVES THE RIGHT TO REQUIRE ADDITIONAL ONSITE CONTROLS AS DEEMED NECESSARY TO MAINTAIN COMPLIANCE WITH THE IDEM CONSTRUCTION STORMWATER GENERAL PERMIT AND THE CITY'S STORMWATER MANAGEMENT ORDINANCE. ALL EROSION AND SEDIMENT CONTROLS, BEST MANAGEMENT PRACTICES AND POLLUTION PREVENTION MEASURES MUST BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE INDIANA STORMWATER QUALITY MANUAL.
2. EXISTING SOIL TYPES, HYDROLOGIC SOIL GROUPS, AND SOIL DESCRIPTIONS ARE FROM THE NATIONAL RESOURCE CONSERVATION SERVICE'S (NRCS) WEB SOIL SURVEY, PLEASE SEE THE SOIL LEGEND BELOW FOR ADDITIONAL DETAILS.
3. REFER TO SHEET C-313 FOR EROSION CONTROL NOTES AND FOR ESTIMATED SWPPP IMPLEMENTATION SCHEDULE.

## BEST MANAGEMENT PRACTICE (BMP) PHASE 2 IMPLEMENTATION SEQUENCE

1. BEGIN MASS GRADING THE SITE, PROVIDE TEMPORARY STABILIZATION.
2. START CONSTRUCTION OF BUILDING PAD AND BUILDINGS, IMPLEMENT TEMPORARY STABILIZATION PER DETAIL C1 ON C-312.
3. INSTALL UTILITIES, STORM SEWERS, WATER SUPPLY LINES, SANITARY SEWERS, ETC.
4. INSTALL INLET PROTECTION MEASURES AT STORM SEWER INLETS AS EACH INLET STRUCTURE IS INSTALLED.
5. PREPARE SITE FOR PAVING, AND PAVE SITE.
6. COMPLETE GRADING, BUILDING CONSTRUCTION AND INSTALLATION OF PERMANENT STABILIZATION MEASURES ON ALL DISTURBED AREAS.
7. REMOVE ALL REMAINING TEMPORARY BMPS UPON APPROVAL OF MEIJER OR ITS DESIGNATED REPRESENTATIVE.
8. PERMANENTLY STABILIZE ANY AREAS DISTURBED BY THE REMOVAL OF TEMPORARY BMPS PER DETAIL C3 ON C-312.
9. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL HYDRAULICALLY CLEAN THE STORM SEWERS TO THE SATISFACTION OF THE CITY ENGINEER, ALL SEDIMENT SHALL BE REMOVED FROM THE SYSTEM AND SHALL NOT BE FLUSHED DOWNSTREAM.
10. NOTIFY MEIJER OR ITS DESIGNATED REPRESENTATIVE OF FINAL SITE STABILIZATION.
11. MEIJER OR ITS DESIGNATED REPRESENTATIVE SHALL SUBMIT NOTICE OF TERMINATION INSPECTION REQUEST TO THE TOWN OF BROWNSBURG PRIOR TO FILING THE NOT WITH IDEM.
12. MEIJER OR ITS DESIGNATED REPRESENTATIVE SHALL SUBMIT NOTICE OF TERMINATION TO THE PERMITTING AGENCY.
13. NOTE: THE CONTRACTOR MAY COMPLETE CONSTRUCTION ACTIVITIES CONCURRENTLY, PROVIDED ALL PRECEDING BMPS AND STABILIZATION ACTIVITIES HAVE BEEN COMPLETELY INSTALLED.

## KEYNOTES (X)

1. EROSION CONTROL BLANKET, SEE DETAIL E3 ON SHEET C-312.
2. TEMPORARY STABILIZED CONSTRUCTION ENTRANCE.
3. SILT FENCE/EROSION EEL. SEE DETAIL E1 ON SHEET C-312 FOR EROSION EEL DETAIL. SEE NOTE BELOW FOR ADDITIONAL DETAILS ON SILT FENCE AND EROSION EEL INSTALLATION.
4. STOCKPILE AREA, SEE DETAIL A3 ON SHEET C-312.
5. POTENTIAL CONSTRUCTION STAGING MATERIAL STORAGE AREA (INCLUDES FUELING AREA, DUMPSTERS, CONCRETE WASHOUT, TRAILERS, PORT-O-LET, ETC.).
6. OUTFALL: SHEET FLOW INTO PROPOSED AND MODIFIED EXISTING INLETS, WHICH DISCHARGE TO THE MEIJER STORE DRAINAGE SYSTEM.

Indiana 811 Know what's below. Call before you dig.

WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER OUTLOT #338A
9160 E. 56TH STREET
BROWNSBURG, INDIANA 46112

# PHASE 2 STORMWATER POLLUTION PREVENTION PLAN

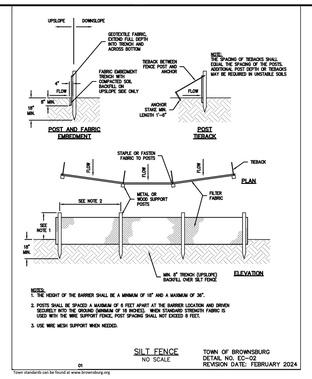
| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

C-311

Images: Xrefs: 10026635-x.dwg; 10026635TBLK.dwg; 10026635-LOD.dwg; 10026635-x-soils.dwg; 10026635-p.dwg
Layout: C-311 Name: C-311 PHASE 2 STORMWATER POLLUTION PREVENTION PLAN
Last Saved By:B.VonGorder, 1/29/2026 10:45:00 AM
G:\DE\Clients\Meijer\10026635 Meijer 338A-001, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cad\10026635-ERO2.dwg Plotted By:VonGorder, Brianne Plotted:January 29, 2026, 10:53:40 AM




SILT FENCE
NO SCALE

TOWN OF BROWNSBURG
DETAIL NO. EC-02
REVISION DATE: FEBRUARY 2024

Town standards can be found at www.brownsburg.org

# E1 SILT FENCE

NTS

DESCRIPTION

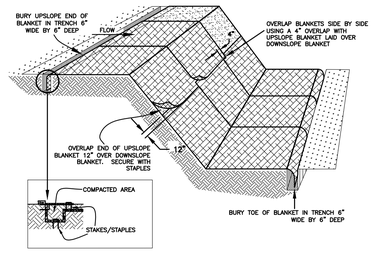
SILT FENCE IS THE MOST COMMON TEMPORARY SEDIMENT BARRIER AND CONSISTS OF A GEOTEXTILE FABRIC THAT IS ATTACHED TO SUPPORTING POSTS AND TRENCHED OR SLICED INTO THE GROUND. SEDIMENT-LADEN RUNOFF PONDS UPHILL FROM THE SILT FENCE AND RUNOFF IS TEMPORARILY STORED TO ALLOW SEDIMENT TO SETTLE OUT OF THE WATER. THIS PRACTICE APPLIES WHERE SHEET EROSION OCCURS ON SMALL DISTURBED AREAS. SILT FENCE IS INTENDED TO INTERCEPT AND DETAIN SMALL AMOUNTS OF SEDIMENT FROM DISTURBED AREAS IN ORDER TO PREVENT SEDIMENT FROM LEAVING THE SITE. SILT FENCES CAN ALSO PREVENT SHEET EROSION BY DECREASING THE VELOCITY OF THE RUNOFF. SILT FENCE IS NOT INTENDED TO BE USED IN CONCENTRATED FLOW PATHS.

INSTALLATION

1. INSTALL PARALLEL TO A CONTOUR.
2. THE SILT FENCE SHOULD BE MADE OF WOVEN GEOTEXTILE FABRIC.
3. SILT FENCE SHOULD ACCOMMODATE NO MORE THAN 1/2 TO 1 ACRE OF DRAINAGE PER 100' OF FENCE AND ON SLOPES LESS THAN 1:2 (V:H).
4. DIG A 6" TRENCH ALONG THE AREA WHERE THE FENCE IS TO BE INSTALLED.
5. PLACE 6" OF THE SILT FENCE BOTTOM FLAP INTO THE TRENCH.
6. BACKFILL THE TRENCH WITH SOIL AND COMPACT THE SOIL ON BOTH SIDES. CREATE A SMALL RIDGE ON THE UP-SLOPE SIDE OF THE FENCE.
7. INSTALL WOODEN STAKES 6 – 10' APART AND DRIVE INTO THE GROUND A MINIMUM OF 12".
8. STAPLE THE GEOTEXTILE FABRIC TO THE WOODEN STAKES.
9. JOIN SECTIONS OF SILT FENCE BY WRAPPING ENDS TOGETHER (SEE DRAWING).

MAINTENANCE

- INSPECT FREQUENTLY AND IMMEDIATELY AFTER EACH STORM EVENT. CHECK SEVERAL TIMES DURING PROLONGED STORM EVENTS. IF NECESSARY, REPAIR IMMEDIATELY.
- IF THE SEDIMENT HAS REACHED 1/3 THE HEIGHT OF THE FENCE, THE SOIL SHOULD BE REMOVED AND DISPOSED OF IN A STABLE UPLAND SITE.
- THE FENCE SHOULD BE RE-INSTALLED IF WATER IS SEEPING UNDERNEATH IT OR IF THE FENCE HAS BECOME INEFFECTIVE.
- SILT FENCE SHOULD BE REMOVED ONCE VEGETATION IS ESTABLISHED AND UP-SLOPE AREA HAS STABILIZED.
- SILT FENCE MAY CAUSE TEMPORARY PONDING AND COULD FAIL IF TOO MUCH WATER FLOWS THROUGH THE AREA.
- DO NOT USE IN AREAS WITH CONCENTRATED FLOWS.
- CHANCE OF FAILURE INCREASES IF FENCE IS INSTALLED INCORRECTLY OR IF SEDIMENT ACCUMULATION IS NOT REMOVED.




# E3 EROSION CONTROL BLANKET

NTS

DESCRIPTION

EROSION CONTROL BLANKETS ARE USED TO AID IN CONTROLLING EROSION ON CRITICAL AREAS BY PROVIDING A PROTECTIVE COVER. EROSION CONTROL BLANKETS ARE USED ON SLOPES AND CHANNELS WHERE THE EROSION HAZARD IS HIGH AND PLANT GROWTH IS LIKELY TO BE SLOW TO PROVIDE ADEQUATE PROTECTIVE COVER FOR THE SEED AND SOIL UNTIL GERMINATION. EROSION CONTROL BLANKETS ARE TO BE INSTALLED IN ACCORDANCE WITH THE SWPPP DRAWING AND DETAILS AND FOLLOWING THE MANUFACTURER'S SPECIFICATIONS.

INSTALLATION

1. PREPARE SUBGRADE TO PROPER GRADE AND COMPACTION REQUIREMENTS.
2. REMOVE RUTS, ROOTS, SOIL CLODS, OR OTHER DEBRIS FROM SURFACE SUBJECT TO MULCH BLANKET INSTALLATION.
3. SPREAD OR DRILL SEED.
4. CONSULT WITH EROSION CONTROL MATERIAL SUPPLIER TO SELECT EROSION CONTROL BLANKET BASED ON SLOPE GRADIENT, EXPECTED SURFACE RUN-OFF, AND PROTECTION TERM NECESSARY (LONG OR SHORT TERM).
5. POSITION SELECTED MULCH BLANKET AS CLOSE AS POSSIBLE TO INTENDED USE LOCATION.
6. INSTALL BLANKET AT TOP OF SLOPE, FIRST ANCHORING TOE IN TRENCH 6" WIDE X 6" DEEP, PROGRESSING DOWN-SLOPE OR DOWN-GRADIENT WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH.
7. ANCHOR THE BLANKET WITH STAPLES/STAKES PLACED APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER SECURING.
8. APPLY SEED TO COMPACTED SOIL AND FOLD THE 12" PORTION OF THE BLANKET OVER COMPACTED AREA AND SECURE WITH A ROW OF STAPLES/STAKES PLACED 12" APART ACROSS THE WIDTH OF THE BLANKET.
9. UNROLL THE BLANKETS DOWN OR HORIZONTALLY ACROSS THE SLOPE. OVERLAP BLANKET EDGES BY A MINIMUM OF 4" AND BLANKET ENDS BY A MINIMUM OF 12".
10. OVERLAPS SHOULD BE IN THE DIRECTION OF EXPECTED FLOW WITH THE UP-SLOPE BLANKET PLACED OVER THE DOWN-SLOPE BLANKET EDGE.
11. SECURE DOWN-SLOPE END OF BLANKET WITH STAPLES/STAKES AND TRENCH IN.

MAINTENANCE

- CHECK AFTER A RAIN EVENT TO ENSURE THE BLANKET IS STILL IN PLACE.
- KEEP ERODED SOIL, VEHICULAR AND PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF AWAY FROM THE BLANKETED AREA.
- EROSION CONTROL BLANKETS AND ANCHORS MAY INHIBIT MOWING.

NOTES

1. PLACE EROSION CONTROL BLANKET PARALLEL TO FLOW AND ANCHOR SECURELY.
2. WHEN BLANKETS ARE USED IN FLOWING DITCH, BLANKETS SHOULD NOT OVERLAP IN DITCH CENTER PARALLEL TO FLOW.
3. STAPLES INSTALLED/SECURED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
4. WHERE POSSIBLE, CONSTRUCT WITH BIODEGRADABLE MATERIAL.

# E5 AS-BUILT REQUIREMENTS

NTS

## TOWN OF BROWNSBURG AS-BUILT REQUIREMENTS:

AFTER COMPLETION OF CONSTRUCTION AND BEFORE FINAL PROJECT ACCEPTANCE OF THE STORMWATER MANAGEMENT PLAN (THE ISSUANCE OF A "VERIFIED" NOT), A PROFESSIONALLY PREPARED AND CERTIFIED AS-BUILT DRAWINGS BY A PROFESSIONAL ENGINEER OR LICENSED LAND SURVEYOR REGISTERED IN THE STATE OF INDIANA SHALL BE SUBMITTED TO THE TOWN OF BROWNSBURG FOR REVIEW. THESE AS-BUILT PLANS MUST BE PREPARED AND CERTIFIED BY THE ENGINEER OF RECORD, I.E. THE COMPANY/ENGINEER WHO ORIGINALLY PREPARED THE SURVEY ASSOCIATED WITH THE CONSTRUCTION PLANS. IN ADDITION TO HARD COPIES, DIGITAL COPIES OF THE AS-BUILT PLANS AND FINALIZED VERSIONS OF ALL ANALYSES, MODELS, MANUALS, AND REPORTS THAT ARE CONSISTENT WITH THE AS-BUILT CONDITIONS ARE REQUIRED IN DIGITAL FORMATS ACCEPTED BY THE TOWN OF BROWNSBURG. THESE PLANS SHALL INCLUDE ALL PERTINENT DATA RELEVANT TO THE COMPLETED STORM DRAINAGE SYSTEM AND STORMWATER MANAGEMENT FACILITIES, AND SHALL INCLUDE THE FOLLOWING:

A. PIPE SIZE AND PIPE MATERIAL
B. INVERT ELEVATIONS, TOP OF CASTING ELEVATIONS, SWALE FLOW LINES, LOT ELEVATIONS, ETC.
C. TOP RIM ELEVATIONS
D. PIPE STRUCTURE LENGTHS
E. BMP TYPES, DIMENSIONS, AND BOUNDARIES/EASEMENTS
F. "AS-PLANTED" PLANS FOR BMPS, AS APPLICABLE
G. DATA AND CALCULATIONS SHOWING DETENTION BASIN STORAGE VOLUME
H. DATA AND CALCULATIONS SHOWING BMP TREATMENT CAPACITY
I. CERTIFIED STATEMENT ON PLANS STATING THE COMPLETED STORM DRAINAGE SYSTEM AND STORMWATER MANAGEMENT FACILITIES SUBSTANTIALLY COMPLY WITH CONSTRUCTION PLANS AND THE STORMWATER MANAGEMENT PERMIT AS APPROVED BY THE TOWN OF BROWNSBURG

## Concrete Washout Areas

**Installation:**

1. Concrete wash water shall not be allowed to flow to streams, ditches, storm drains, or any other water conveyance and washout pits shall be situated a minimum of fifty (50) feet from them.
2. Field tile or other subsurface drainage structures within 10 ft. of the sump shall be cut and plugged.
3. Ensure a stable path is provided for concrete trucks to reach the washout area.
4. A highly visible sign that reads "Concrete Washout Area" shall be erected adjacent to the washout pit.
5. Surface runoff generated from upslope areas shall be diverted away from below-grade washout pits so as not to flow into them.
6. A single centralized washout area may be utilized for multiple sublots.

**Sizing of Concrete Washout Pits**

| Above-grade (2-ft depth) | | |
|---|---|---|
| # of concrete trucks expected to be washed out on site* | Width (ft) | Length (ft) |
| 2 | 3 | 3 |
| 3-4 | 4 | 4 |
| 5-6 | 5 | 5 |
| 7-8 | 6 | 6 |
| 9-11 | 7 | 7 |
| 12-15 | 8 | 8 |

**Maintenance:**

7. The washout pit must be inspected daily and after heavy rains to check for leaks, identify if any plastic linings and sidewalls have been damaged by construction activities, and determine whether the pit has been filled to over 75% capacity.
8. If 75% of the original volume of the washout pit is filled, wash water should be vacuumed off or allowed to evaporate to avoid overflows. Then when the remaining material has hardened, it must be removed and properly disposed of. Once the hardened concrete is removed, the liner will need to be replaced if torn. A new pit must be constructed if the original structure is no longer suitable.
9. Before heavy rains, the washout container's liquid level should be lowered, or the container should be covered to avoid an overflow during the rain event.

**Removal:**

10. Once the washout pit is no longer needed, ensure all washout material has completely hardened, then remove and properly dispose of all materials. If straw bales were used, they can be spread as mulch.
11. Prefabricated containers specifically designed for concrete washout collection may be used subject to prior approval by the Engineer. Follow the manufacturer's suggestions for installation, maintenance and removal procedures.

Note: Contractor to provide and utilize a lined dumpster for use as a concrete washout as necessary. The concrete washout shall be located a minimum of 50' away from adjacent storm drainage structures.

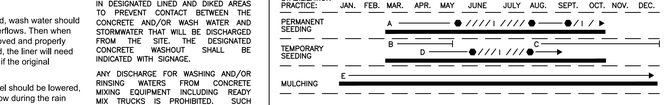
*For small projects using a maximum of only one truckload of concrete or utilizing on-site mixing, rinsing of equipment may take place on the lot without a pit, provided it can be done a minimum of fifty (50) feet away from any water conveyances.

DISCHARGE OF EXCESS OR WASTE CONCRETE AND/OR WASH WATER FROM CONCRETE TRUCKS WILL BE ALLOWED ON THE CONSTRUCTION SITE, BUT ONLY IN DESIGNATED LINED AND DIKED AREAS TO PREVENT CONTACT BETWEEN THE CONCRETE AND/OR WASH WATER AND STORMWATER THAT WILL BE DISCHARGED FROM THE SITE. THE DESIGNATED CONCRETE WASHOUT SHALL BE INDICATED WITH SIGNAGE.

ANY DISCHARGE FOR WASHING AND/OR RINSING WATERS FROM CONCRETE MIXING EQUIPMENT INCLUDING READY MIX TRUCKS IS PROHIBITED. SUCH POLLUTANTS SHALL BE ADEQUATELY TREATED AND CANNOT BE DISCHARGED TO WATERS OF THE STATE. ANY SPILLS SHALL BE CLEANED IMMEDIATELY UPON DISCOVERY.

# D1 CONCRETE WASHOUT AREA

NTS




A = KENTUCKY BLUEGRASS 40%, TURF TYPE TALL FESCUE 40%, ANNUAL RYE GRASS 20% PLUS 2 TONS OF STRAW MULCH/ ACRE
APPLY MIXTURE AT A RATE OF 2 LBS. PER 1000 SQ.FT.

B = SPRING OATS 3 BUSHEL PER ACRE

C = WHEAT OR RYE 2 BUSHEL PER ACRE

D = ANNUAL RYE GRASS (1 LB. PER 1000 SQ. FT.)

E = STRAW MULCH (90 LBS. PER 1000 SQ.FT.)

●/ / ● IRRIGATION NEEDED DURING JUNE, JULY, AND / OR SEPTEMBER.

●● IRRIGATION NEEDED FOR 2 TO 3 WEEKS AFTER APPLYING SOD

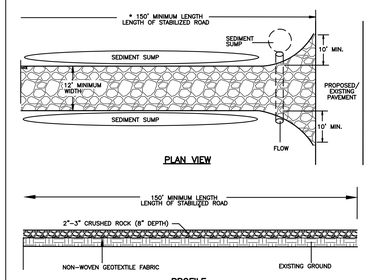
NOTE: ALL SEEDING SHALL HAVE 12-12-12 FERTILIZER APPLIED 400-600 LBS. PER ACRE OR AS SPECIFIED.

# D3 SEEDING SCHEDULE

NTS

# D4

NTS




DESCRIPTION

ALL ACCESS POINTS FROM THE CONSTRUCTION SITE ARE TO INCLUDE A STABILIZED CONSTRUCTION ENTRANCE/EXIT COMPOSED OF COARSE STONE TO THE DIMENSIONS AND SPECIFICATIONS SHOWN HERE. CONSTRUCTION TRAFFIC MUST ENTER AND EXIT THE SITE AT THE STABILIZED CONSTRUCTION EXIT. THE PURPOSE IS TO TRAP DUST AND MUD THAT WOULD OTHERWISE BE CARRIED BEYOND THE PERMITTED PROJECT AREA BY CONSTRUCTION TRAFFIC. THE ROUGH TEXTURE OF THE STONE HELPS TO REMOVE CLUMPS OF SOIL ADHERING TO THE CONSTRUCTION VEHICLE TIRES THROUGH THE ACTION OF VIBRATION AND JARRING OVER THE ROUGH SURFACE.

IN THE EVENT THE STABILIZED CONSTRUCTION ENTRANCE IS NOT EFFECTIVE BY ITSELF AND/OR REQUIRES A SIGNIFICANT AMOUNT OF MAINTENANCE, ADDITIONAL PRACTICES, SUCH AS WHEEL WASHING OR STREET SWEEPING, MAY BE REQUIRED.

INSTALLATION

1. STABILIZED CONSTRUCTION ACCESS ROAD SHOULD BE ESTABLISHED AT THE ONSET OF THE CONSTRUCTION ACTIVITIES AND MAINTAINED IN PLACE FOR THE DURATION OF THE CONSTRUCTION PROJECT.
2. INSTALLATION OF THIS PRACTICE SHOULD BE THE RESPONSIBILITY OF THE SITE CLEARING OR EXCAVATING CONTRACTOR.
3. ACCESS LOCATION SHOULD BE CLEARED OF WOODY VEGETATION.
4. NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE.
5. ACCESS LENGTH SHOULD BE A MINIMUM OF 150'.
6. ACCESS WIDTH SHOULD BE 12' MINIMUM, FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
7. CRUSHED AGGREGATE (2" TO 3"), OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT, SHALL BE PLACED AT LEAST 8" DEEP OVER THE LENGTH AND WIDTH OF THE INGRESS/EGRESS CORRIDOR.

MAINTENANCE

- PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN EVENT.
- STABILIZED ENTRANCES SHALL BE REPAIRED AND ROCK ADDED AS NECESSARY.
- SEDIMENT DEPOSITED ON PUBLIC RIGHTS-OF-WAY SHALL BE REMOVED IMMEDIATELY AND RETURNED TO THE CONSTRUCTION SITE.
- IF SOILS ARE SUCH THAT WASHING OF TIRES IS REQUIRED, IT SHALL BE DONE IN A WASH RACK AREA, STABILIZED WITH STONE, IMMEDIATELY PRIOR TO THE CONSTRUCTION ACCESS STABILIZED CORRIDOR.
- AT THE PROJECT COMPLETION, ROCK ACCESS ROAD SHOULD BE REMOVED AND DISPOSED OF UNLESS UTILIZED AS SUBGRADE FOR FINAL ROAD.
- EFFECTIVENESS LIMITED, SEDIMENT MAY BE TRACKED ONTO ROADS REQUIRING ADDITIONAL ACTION.

NOTES

1. ESTABLISH STABILIZED CONSTRUCTION ENTRANCE PRIOR TO THE INITIATION OF SITE CONSTRUCTION ACTIVITIES.
2. CARE SHOULD BE TAKEN TO PREVENT MATERIAL MOVEMENT INTO ADJACENT WETLANDS/WATERBODIES.
3. CARE SHOULD BE TAKEN TO MAINTAIN EXISTING ROADSIDE DRAINAGE VIA CULVERT INSTALLATION, WITH SEDIMENT SUMP PLACED DOWNFLOW OF CULVERT.

# C5 STABILIZED CONSTRUCTION ENTRANCE

NTS

DESCRIPTION

TEMPORARY STABILIZATION MEASURES SHALL BE IMPLEMENTED IMMEDIATELY WHENEVER EARTH-DISTURBING ACTIVITIES HAVE TEMPORARILY CEASED ON ANY PORTION OF THE SITE. EARTH-DISTURBING ACTIVITIES HAVE TEMPORARILY CEASED WHEN CLEARING, GRADING, AND EXCAVATION WITHIN ANY AREA OF THE SITE THAT WILL NOT INCLUDE PERMANENT STRUCTURES WILL NOT RESUME (I.E., THE LAND WILL BE IDLE) FOR A PERIOD OF 7 OR MORE CALENDAR DAYS, BUT SUCH ACTIVITIES WILL RESUME IN THE FUTURE. THE TERM "IMMEDIATELY" IS USED TO DEFINE THE DEADLINE FOR INITIATING STABILIZATION MEASURES, IN THE CONTEXT OF THIS REQUIREMENT, "IMMEDIATELY" MEANS AS SOON AS PRACTICABLE, BUT NO LATER THAN THE END OF THE NEXT WORK DAY FOLLOWING THE DAY WHEN THE EARTH-DISTURBING ACTIVITIES HAVE TEMPORARILY CEASED. IMPLEMENTATION OF TEMPORARY STABILIZATION MEASURES ARE TO BE COMPLETED NO LATER THAN 14 CALENDAR DAYS AFTER THE INITIATION OF SOIL STABILIZATION MEASURES.

TEMPORARY STABILIZATION IS NOT ACHIEVED SIMPLY THROUGH SEEDING. IN ORDER FOR AN AREA OR CONSOLIDATION AREA TO BE SUFFICIENTLY STABILIZED VIA TEMPORARY STABILIZATION, SEED MUST GERMINATE, GROW AND PROVIDE ADEQUATE VEGETATIVE DENSITY.

ALL DISTURBED AREAS ON SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION (I.E., WITH VEHICLE CLEAT MARKS RUNNING PERPENDICULAR TO THE FALL LINE OF THE SLOPE) WHEN TEMPORARY STABILIZATION IS NOT ATTAINABLE TO HELP REDUCE POTENTIAL FOR EROSION.

INSTALLATION

1. REVIEW CONSTRUCTION PHASING AND SOIL EROSION CONTROL PLAN TO IDENTIFY AREAS REQUIRING TEMPORARY SEEDING.
2. SELECT ANNUAL GRASS SEED FOR TEMPORARY COVER AREAS.
3. SEED MIXES MAY VARY, SHOULD ONLY CONTAIN ANNUAL, NON-AGGRESSIVE SPECIES, AND GENERALLY INCLUDE RYE, WHEAT, OR OAT SPECIES. SEED MIXES SHOULD BE OBTAINED FROM A SEED SUPPLIER AS SEED MIXES ARE DEPENDENT ON SOIL TYPE, LIGHT, MOISTURE, AND USE APPLICATION.
4. PREPARE SEEDBED BY REMOVAL OF CONSTRUCTION/WOODY DEBRIS. THEN SCARIFY OR RAKE SEEDBED.
5. SLOPES STEEPER THAN 1:3 SHOULD BE ROUGHENED.
6. APPLY SEED AS SOON AS POSSIBLE AFTER SEEDBED PREPARATION. MULCH IMMEDIATELY AFTER SEEDING.
7. THE TIME TO SEED IS DEPENDENT ON THE CLIMATE OF THE AREA.
8. PROTECT SEEDED AREAS FROM PEDESTRIAN/VEHICULAR TRAFFIC.
9. DIVERT CONCENTRATED FLOWS AWAY FROM SEEDED AREA UNTIL VEGETATION IS ESTABLISHED.
10. INSPECT TEMPORARY SEEDED AREAS WEEKLY AND FOLLOWING EACH RAIN EVENT UNTIL FINAL GRADING AND STABILIZATION ACTIVITIES ARE COMPLETED.
11. MUST BE FOLLOWED BY PERMANENT SEEDING.

MAINTENANCE

1. SEEDS NEED ADEQUATE TIME TO ESTABLISH.
2. MAY NOT BE APPROPRIATE IN AREAS WITH FREQUENT TRAFFIC.
3. SEEDED AREA MAY REQUIRE IRRIGATION IN DRY PERIODS.

# C1 TEMPORARY STABILIZATION/SEEDING

NTS

DESCRIPTION

PERMANENT STABILIZATION MEASURES SHALL BE IMPLEMENTED IMMEDIATELY WHENEVER EARTH-DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED ON ANY PORTION OF THE SITE. EARTH-DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED WHEN CLEARING AND EXCAVATION WITHIN ANY AREA OF THE SITE THAT WILL NOT INCLUDE PERMANENT STRUCTURES HAVE BEEN COMPLETED. THE TERM "IMMEDIATELY" IS USED TO DEFINE THE DEADLINE FOR INITIATING STABILIZATION MEASURES. IN THE CONTEXT OF THIS REQUIREMENT, "IMMEDIATELY" MEANS AS SOON AS PRACTICABLE, BUT NO LATER THAN THE END OF THE NEXT WORK DAY FOLLOWING THE DAY WHEN THE EARTH-DISTURBING ACTIVITIES HAVE TEMPORARILY CEASED. IMPLEMENTATION OF PERMANENT STABILIZATION MEASURES ARE TO BE COMPLETED NO LATER THAN 14 CALENDAR DAYS AFTER THE INITIATION OF SOIL STABILIZATION MEASURES.

IN AREAS WHERE FINAL STABILIZATION WILL OCCUR, VEHICLE AND EQUIPMENT ACCESS WILL BE RESTRICTED IN ORDER TO MINIMIZE COMPACTION. IN ADDITION, THE SOIL MAY NEED TO BE CONDITIONED FOR SEEDING OR PLANTING. SEEDED AREAS SHALL BE PROTECTED WITH STRAW MULCH, HYDRAULIC MULCH OR A ROLLED EROSION CONTROL PRODUCT.

FINAL SITE STABILIZATION IS ACHIEVED WHEN THE ESTABLISHMENT OF PERENNIAL VEGETATIVE COVER PROVIDES A DENSITY OF AT LEAST 70 PERCENT OVER THE ENTIRE AREA TO BE STABILIZED. THIS AREA IS EXCLUSIVE OF AREAS THAT ARE COVERED WITH ROCK (CRUSHED GRANITE, GRAVEL, ETC.) OR LANDSCAPE MULCH, PAVED OR HAVE A BUILDING OR OTHER PERMANENT STRUCTURE ON THEM.

INSTALLATION

1. REVIEW SESC PLAN AND CONSTRUCTION PHASING TO IDENTIFY AREAS IN NEED OF PERMANENT VEGETATIVE STABILIZATION.
2. SELECT PERENNIAL GRASS AND GROUND COVER FOR PERMANENT COVER.
3. SEED MIXES VARY. HOWEVER, THEY SHOULD CONTAIN NATIVE SPECIES.
4. SEED MIXES SHOULD BE SELECTED THROUGH CONSULTATION WITH A CERTIFIED SEED PROVIDER AND WITH CONSIDERATION OF SOIL TYPE, LIGHT, MOISTURE, USE APPLICATIONS, AND NATIVE SPECIES CONTENT.
5. SOIL TESTS SHOULD BE PERFORMED TO DETERMINE THE NUTRIENT AND PH LEVELS IN THE SOIL. THE PH MAY NEED TO BE ADJUSTED TO BETWEEN 6.5 AND 7.0.
6. PREPARE A 3–5" DEEP SEEDBED, WITH THE TOP 3–4" CONSISTING OF TOPSOIL.
7. SLOPES STEEPER THAN 1:3 SHOULD BE ROUGHENED.
8. APPLY SEED AS SOON AS POSSIBLE AFTER SEEDBED PREPARATION. SEED MAY BE BROADCAST BY HAND, HYDROSEEDING, OR BY USING MECHANICAL DRILLS.
9. MULCH IMMEDIATELY AFTER SEEDING.
10. DORMANT SEED MIXES ARE FOR USE AFTER THE GROWING SEASON, USING SEED WHICH LIES DORMANT IN THE WINTER AND BEGINS GROWING AS SOON AS SITE CONDITIONS BECOME FAVORABLE.
11. PROTECT SEEDED AREAS FROM PEDESTRIAN OR VEHICULAR TRAFFIC.
12. DIVERT CONCENTRATED FLOWS AWAY FROM THE SEEDED AREA UNTIL VEGETATION IS ESTABLISHED.

MAINTENANCE

1. INSPECT WEEKLY AND WITHIN 24 HOURS FOLLOWING EACH RAIN EVENT IN THE FIRST FEW MONTHS FOLLOWING INSTALLATION TO BE SURE SEED HAS GERMINATED AND PERMANENT VEGETATIVE COVER IS BEING ESTABLISHED.
2. ADD SUPPLEMENTAL SEED AS NECESSARY.
3. SEEDS NEED ADEQUATE TIME TO ESTABLISH.
4. MAY NOT BE APPROPRIATE IN AREAS WITH FREQUENT TRAFFIC.
5. SEEDED AREAS MAY REQUIRE IRRIGATION DURING DRY PERIODS.
6. SEEDING SUCCESS IS SITE SPECIFIC, CONSIDER MULCHING OR SODDING WHEN NECESSARY.

# C3 PERMANENT STABILIZATION/SEEDING

NTS

NOTICE:

THE PUMPING OR DIRECT DISCHARGE OF SEDIMENT-LADEN (MUDDY) WATER TO THE TOWN'S SEWER SYSTEM OR A RECEIVING STREAM IS A VIOLATION OF IDEM REGULATIONS. DISCHARGES FROM DEWATERING ACTIVITIES, INCLUDING DISCHARGES FROM DEWATERING OF TRENCHES AND EXCAVATIONS, ARE PROHIBITED UNLESS MANAGED BY APPROPRIATE CONTROLS. IN NO CASE IS WATER FROM DEWATERING ACTIVITIES TO BE PUMPED OFF-SITE WITHOUT BEING PROPERLY TREATED.

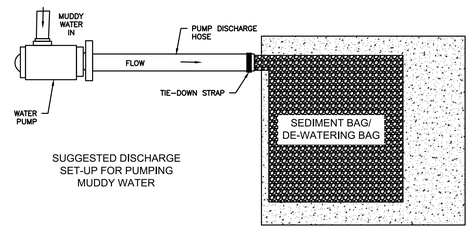
ALL INLETS RECEIVING FLOW FROM RUNOFF, PUMPING ACTIVITIES, OR OTHER DIRECT DISCHARGES SHALL BE FITTED WITH AN INLET PROTECTION DEVICE THAT IS PROPERLY SIZED AND SECURED TO REDUCE THE DISCHARGE OF SEDIMENT INTO THE STORM SEWER SYSTEM AND RECEIVING STREAM. INLET PROTECTION IS REQUIRED ON ALL INLETS RECEIVING DISCHARGE REGARDLESS OF WHETHER OR NOT THE INLET IS TRIBUTARY TO ANY DOWNSTREAM EROSION AND SEDIMENT CONTROLS.

DISCHARGES FROM DEWATERING ACTIVITIES, INCLUDING DISCHARGES FROM DEWATERING OF TRENCHES AND EXCAVATIONS, ARE PROHIBITED UNLESS MANAGED BY APPROPRIATE CONTROLS. IN NO CASE IS WATER FROM DEWATERING ACTIVITIES TO BE PUMPED OFF-SITE WITHOUT BEING PROPERLY TREATED.

**SEDIMENT BASINS SHALL BE DEWATERED AT THE POND SURFACE USING A SKIMMER OR EQUIVALENT DEVICE.**

DEWATERING THAT HAS SEDIMENT-LADEN WATER MUST DISCHARGE TO A SEDIMENT BASIN OR EQUIVALENT SETTLING, FILTERING, OR ENERGY DISSIPATION MEASURES TO REMOVE SUSPENDED SOLIDS BEFORE DISCHARGE. SEDIMENT BAGS, INFILTRATION TRENCHES, VEGETATED SWALES, OR FILTER BERMS MAY ALSO BE USED. SECONDARY CONTAINMENT SHOULD BE USED TO PREVENT THE POTENTIAL LEAK OF CHEMICALS USED DURING DEWATERING, SUCH AS CHEMICALS FOR FLOCCULATION.

DISCHARGE HOSES USED DURING PUMPING ACTIVITIES SHALL BE FITTED WITH SEDIMENT BAGS THAT ARE PROPERLY SIZED PER MANUFACTURER'S RECOMMENDATIONS REGARDLESS OF WHAT OTHER SEDIMENT CONTROLS ARE IN PLACE FURTHER DOWNSTREAM. SEDIMENT BAGS MUST BE PROPERLY SECURED TO THE DISCHARGE HOSE AND PLACED OVER VEGETATED AREAS, WHERE FEASIBLE, DURING DISCHARGE. SEE DETAIL BELOW OF A TYPICAL SEDIMENT BAG INSTALLATION.




SUGGESTED DISCHARGE SET-UP FOR PUMPING MUDDY WATER

DRAIN OVER VEGETATED AREA (WHERE POSSIBLE)

DISCHARGES FROM DEWATERING ACTIVITIES, INCLUDING DISCHARGES FROM DEWATERING OF TRENCHES AND EXCAVATIONS, ARE PROHIBITED UNLESS MANAGED BY APPROPRIATE CONTROLS. IN NO CASE IS WATER FROM DEWATERING ACTIVITIES TO BE PUMPED OFF-SITE WITHOUT BEING PROPERLY TREATED.

DEWATERING THAT HAS SEDIMENT-LADEN WATER MUST DISCHARGE TO A SEDIMENT BASIN OR EQUIVALENT SETTLING, FILTERING, OR ENERGY DISSIPATION MEASURES TO REMOVE SUSPENDED SOLIDS BEFORE DISCHARGE. SEDIMENT BAGS, INFILTRATION TRENCHES, VEGETATED SWALES, OR FILTER BERMS MAY ALSO BE USED. SECONDARY CONTAINMENT SHOULD BE USED TO PREVENT THE POTENTIAL LEAK OF CHEMICALS USED DURING DEWATERING, SUCH AS CHEMICALS FOR FLOCCULATION.

# B1 DEWATERING

LARGE AREAS OF SOIL THAT ARE DENUDED OF VEGETATION AND HAVE NO PROTECTION FROM PARTICLES BEING PICKED UP AND CARRIED BY WIND SHOULD BE PROTECTED WITH A TEMPORARY COVER OR KEPT UNDER CONTROL WITH WATER OR OTHER SOIL ADHERING PRODUCTS TO LIMIT WIND TRANSPORTED PARTICLES EXITING THE SITE PERIMETER.

WATER TRUCKS OR OTHER DUST CONTROL AGENTS ARE TO BE USED AS NEEDED DURING CONSTRUCTION TO MINIMIZE DUST GENERATED ON THE SITE. TACKIFIERS MAY BE USED TO HOLD SOIL IN PLACE AND PREVENT DUST. MANUFACTURER RECOMMENDATIONS FOR APPLICATION RATES MUST BE USED FOR DUST CONTROL APPLICATIONS. DUST CONTROL MUST BE PROVIDED BY THE CONTRACTOR TO A DEGREE THAT IS IN COMPLIANCE WITH APPLICABLE LOCAL AND STATE DUST CONTROL REGULATIONS.

# B2 DUST CONTROL

NTS

DISCHARGE FROM WASHING AND MAINTENANCE OF EQUIPMENT OR VEHICLES WILL BE ALLOWED ON THE CONSTRUCTION SITE, BUT ONLY IN DESIGNATED LINED AND DIKED AREAS TO PREVENT CONTACT BETWEEN THE WASH WATER AND STORMWATER THAT WILL BE DISCHARGED FROM THE SITE.

DISCHARGES OF CONTAMINATED WATERS FROM WASHING AND MAINTAINING VEHICLES OR EQUIPMENT, INCLUDING WASHING AND/OR RINSING WATERS FROM CONTAINERS OR APPLICATORS INVOLVED WITH THE USE OF PAINT, CONCRETE, OR OTHER SUCH MATERIALS, IS PROHIBITED. SUCH POLLUTANTS SHALL BE ADE

| ESTIMATED SWPPP IMPLEMENTATION SCHEDULE | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACTIVITY | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG |
| STABILIZED CONSTRUCTION ENTRANCE | | | | | | | | | | | | | | | | | | | | |
| SILT FENCE | | | | | | | | | | | | | | | | | | | | |
| INLET FILTERS/ROCK DONUTS AT EX. INLETS | | | | | | | | | | | | | | | | | | | | |
| SEDIMENT BASIN AND APPURTENANCES | | | | | | | | | | | | | | | | | | | | |
| DIVERSION DITCHES/ROCK CHECKS | | | | | | | | | | | | | | | | | | | | |
| STAGING/MATERIALS STORAGE AREA | | | | | | | | | | | | | | | | | | | | |
| CONCRETE WASHOUT/DUMPSTERS | | | | | | | | | | | | | | | | | | | | |
| CLEARING AND GRUBBING | | | | | | | | | | | | | | | | | | | | |
| ROUGH GRADING | | | | | | | | | | | | | | | | | | | | |
| STORM SEWERS/UTILITIES | | | | | | | | | | | | | | | | | | | | |
| INLET FILTERS AT PROPOSED INLETS | | | | | | | | | | | | | | | | | | | | |
| FOUNDATION/BUILDING CONSTRUCTION | | | | | | | | | | | | | | | | | | | | |
| ASPHALT INSTALLATION | | | | | | | | | | | | | | | | | | | | |
| FINAL GRADING | | | | | | | | | | | | | | | | | | | | |
| PERMANENT STORMWATER CONTROLS | | | | | | | | | | | | | | | | | | | | |
| FINAL STABILIZATION | | | | | | | | | | | | | | | | | | | | |
| NOTE: GENERAL CONTRACTOR TO COMPLETE TABLE WITH THEIR ESTIMATED PROJECT SCHEDULE AT ONSET OF CONSTRUCTION AND UPDATE AS CONSTRUCTION PROCEEDS. | | | | | | | | | | | | | | | | | | | | |

# E4 SWPPP IMPLEMENTATION SCHEDULE

NTS

## SECTION A: CONSTRUCTION PLAN

A1 PLAN INDEX ITEMS RELATED TO THE SWPPP ARE SHOWN AS NOTES ON THIS SHEET.

A2 VICINITY MAP IS SHOWN ON SHEET C-001.

A3 THIS PROJECT INVOLVES THE CONSTRUCTION OF AN APPROXIMATELY 4,300 SF DENTAL OFFICE WITH ASSOCIATED ACCESS DRIVES, PARKING, AND UTILITIES.

A4 LATITUDE N 39.851910, LONGITUDE W -86.359869

A5 LOT 6 PARCEL IN MEIJER SUBDIVISION, A REPLAT OF OI COMMERCIAL BLOCK A & BLOCK B, AS PER PLAT THEREOF, RECORDED MARCH 28, 2024 IN PLAT CABINET 9, SLIDE 51, PAGES 4A THROUGH 4C, AND AS INSTRUMENT 202405293, IN THE OFFICE OF THE RECORDER OF HENDRICKS COUNTY, INDIANA.

A6 11x17 INCH PLAT IS INCLUDED SEPARATELY.

A7 NO FLOODPLAIN, FLOODWAYS, OR FLOODWAY FRINGES ARE ON THE PROPERTY.

A8 ADJACENT LAND USES:
NORTH: COMMERCIAL
SOUTH: RESIDENTIAL
EAST: COMMERCIAL
WEST: COMMERCIAL

A9 THE PROJECT DOES NOT FALL WITHIN A WATERSHED THAT HAS AN APPROVED OR ESTABLISHED TMDL.

A10 THE SITE DISCHARGE INTO SCHOOL BRANCH STREAM WITH AN ULTIMATE RECEIVING WATER OF EAGLE CREEK RESERVOIR.

A11 SCHOOL BRANCH STREAM IS AN IMPAIRED WATERBODY ON THE 303(d) LIST. SCHOOL BRANCH STREAM IS IMPAIRED FOR FULL BODY CONTACT WITH E.COLI AS AN IDENTIFIED ISSUE. EAGLE CREEK RESERVOIR IS AN IMPAIRED FRESHWATER LAKE ON THE 303(d) LIST. EAGLE CREEK RESERVOIR IS IMPAIRED FOR HUMAN HEALTH AND WILDLIFE WITH PCBS IN FISH TISSUE AS AN IDENTIFIED ISSUE AND PUBLIC WATER SUPPLY WITH TASTE AS AN IDENTIFIED ISSUE.

A12 SOIL MAP AND DESCRIPTIONS SHOWN ON SHEETS C-310 AND C-311.

A13 THERE ARE NO WETLANDS LOCATED ON SITE.

A14 IDEM HAS DETERMINED THAT THERE ARE NO WETLANDS ON SITE.

A15 EXISTING VEGETATIVE COVER DETAILS ARE SHOWN IN THE EXISTING CONDITIONS PLAN, C-100. THERE ARE NO NATURAL BUFFERS PRESENT ON SITE.

A16 EXISTING TOPOGRAPHY IS SHOWN IN THE EXISTING CONDITIONS PLAN, C-100.

A17 EXISTING STORMWATER FLOWS ARE SHOWN ON SHEET C-310.

A18 EXISTING RUNOFF DISCHARGES PRIOR TO LAND DISTURBANCE ARE SHOWN ON THE SWPPP PLANS, C-310 AND C-311.

A19 LOCATIONS OF ALL EXISTING STRUCTURES ARE SHOWN ON THE EXISTING CONDITIONS PLAN, C-100.

A20 EXISTING STORMWATER MANAGEMENT FEATURES ARE SHOWN ON SHEET C-100.

A21 THERE ARE NO KNOWN LOCATIONS OF DIRECT STORMWATER DISCHARGE INTO GROUND WATER AREAS ON SITE OR DOWNSTREAM OF THE SITE. THERE IS AN UNSPECIFIED WELL TYPE LOCATED NORTH OF THE SUBJECT PROPERTY BUT IT IS NOT ANTICIPATED TO IMPACT DIRECT STORMWATER DISCHARGE AS IT IS LOCATED UPSTREAM OF THE SUBJECT PROPERTY.

A22 PROJECT SITE AREA = 1.5± ACRES.

A23 DISTURBED ACREAGE = 1.5± ACRES.

A24 PROPOSED CONTOURS AND SPOT SHOTS ARE PROVIDED ON THE GRADING PLANS, C-300.

A25 CONSTRUCTION LIMITS ARE SHOWN ON THE STORMWATER POLLUTION PREVENTION PLAN SHEETS, C-310 & C-311.

A26 ALL PROPOSED STORMWATER SYSTEMS ARE SHOWN ON THE GRADING PLANS, UTILITY PLANS, AND STORM PLAN AND PROFILES; C-300; C-400; C-405, RESPECTIVELY, SEE DETAILS ON SHEET C-703.

A27 PROPOSED STORMWATER DISCHARGES ARE SHOWN ON THE GRADING, UTILITY, AND PHASE 2 SWPPP PLANS, C-300; C-400; C-311, RESPECTIVELY.

A28 PROPOSED SITE IMPROVEMENTS ARE SHOWN ON THE SITE PLAN, SHEETS C-200. PROPOSED UTILITY IMPROVEMENTS ARE SHOWN ON THE UTILITY PLAN, SHEETS C-400. TWO EMERGENCY SPILLWAYS HAVE BEEN CONSTRUCTED AS A PART OF THE MEIJER MAIN STORE CONSTRUCTION PROJECT.

A29 PROPOSED STOCKPILE LOCATION IS PROVIDED ON SHEETS C-310 AND C-311.

A30 PROPOSED CONSTRUCTION STAGING AREA IS SHOWN ON SHEETS C-310 AND C-311.

A31 THERE ARE NO WETLAND AREAS LOCATED ON SITE AND WETLAND PERMIT INFORMATION LISTED IN A14.

## SECTION B: CONSTRUCTION COMPONENT

B1 POTENTIAL POLLUTANT SOURCES DURING CONSTRUCTION ACTIVITIES INCLUDE SEDIMENT, CONCRETE WASTE WATER, TRASH, FOSSIL FUELS, OIL, GREASE, PAINT, EXPOSURE OF THESE POLLUTANTS TO STORMWATER RUNOFF SHOULD BE MINIMIZED BY PERFORMING ACTIVITIES SUCH AS EROSION CONTROL, EQUIPMENT STORAGE, REFUELING, MAINTENANCE AND PORT-A-LET PLACEMENT IN DESIGNED AREAS AS SHOWN ON THE EROSION CONTROL PLAN.

B2 CONSTRUCTION ENTRANCE LOCATIONS ARE SHOWN ON SHEETS C-310 AND C-311.

CONTRACTOR TO REFERENCE SHEET C-312 FOR CONSTRUCTION ENTRANCE DETAILS, FOR DETAILED SPECIFICATIONS AND INSTALLATION REQUIREMENTS, SEE INDIANA STORM WATER QUALITY MANUAL, PUBLISHED BY INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (IDEM), OCTOBER 2007.

B3 SEE PHASE 1 AND PHASE 2 IMPLEMENTATION SEQUENCING NOTES ON SHEETS C-310 AND C-311, SEE SHEETS C-312 FOR TEMPORARY AND PERMANENT STABILIZATION DETAILS. EROSION CONTROL BLANKETS TO BE USED ON SLOPES GREATER THAN 3:1. EROSION CONTROL BLANKET LOCATIONS ARE SHOWN ON SHEETS C-310 AND C-311, EROSION CONTROL BLANKET DETAIL IS ON SHEET C-312.

B4 SEDIMENT CONTROL MEASURES FOR CONCENTRATED FLOW AREAS INCLUDE INLET PROTECTION (TYPES 1 AND 2), DETAILS CAN BE FOUND ON SHEET C-313, FOR DETAILED SPECIFICATIONS AND INSTALLATION REQUIREMENTS, SEE INDIANA STORM WATER QUALITY MANUAL, PUBLISHED BY INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (IDEM), OCTOBER 2007.

B5 SEDIMENT CONTROL MEASURES FOR SHEET FLOW AREAS ARE SILT FENCE, CONTRACTOR TO REFERENCE THE TOWN OF BROWNSBURG CONSTRUCTION DETAIL EC-02, FOR DETAILED SPECIFICATIONS AND INSTALLATION REQUIREMENTS, SEE INDIANA STORM WATER QUALITY MANUAL, PUBLISHED BY INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (IDEM), OCTOBER 2007.

B6 RUNOFF CONTROL MEASURES FOR SWALES AND DIVERSION DITCHES INCLUDES PERMANENT SEEDING WITH EROSION CONTROL BLANKET, DETAILS FOR EROSION CONTROL BLANKET CAN BE FOUND ON SHEET C-312. FOR DETAILED SPECIFICATIONS AND INSTALLATION REQUIREMENTS, SEE INDIANA STORM WATER QUALITY MANUAL, PUBLISHED BY INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (IDEM), OCTOBER 2007.

B7 NOT APPLICABLE, NO OUTLET PROTECTION IS PROPOSED,

B8 NOT APPLICABLE, NO GRADE STABILIZATION STRUCTURES ARE PROPOSED.

B9 DEWATERING METHODS ARE PROVIDED ON SHEETS C-310 AND C-311, DETAIL CAN BE FOUND ON SHEET C-312.

B10 NO PROPOSED IN-STREAM ACTIVITIES WILL OCCUR ON SITE.

B11 REFERENCE INDIVIDUAL SWPPP DETAILS ON SHEETS C-312 - C-313 AND CHART BELOW FOR MAINTENANCE PROCEDURES.

B12 REFERENCE PHASE 1 AND PHASE 2 IMPLEMENTATION SEQUENCING NOTES ON SHEETS C-310 AND C-311 AND EROSION CONTROL NOTES, DETAIL E4, ON THIS SHEET.

B13 PROPOSED OUTLOTS WILL BE DEVELOPED AT A FUTURE DATE BY INDIVIDUAL OWNERS AND WILL BE REQUIRED TO OBTAIN THEIR OWN PERMIT COVERAGE.

B14 MATERIAL HANDLING AND SPILL PREVENTION PLAN:

IN ORDER TO MINIMIZE THE RELEASE OF POTENTIAL POLLUTANTS DURING CONSTRUCTION THE CONTRACTOR SHALL IMPLEMENT THIS MATERIAL HANDLING AND SPILL PREVENTION PLAN. THE CONTRACTOR SHALL REVIEW THIS PLAN WITH ALL SUBCONTRACTORS AND REQUIRE THAT THEY IMPLEMENT THE PLAN AS WELL. IF A SPILL SHOULD OCCUR PLEASE CONTACT THE APPROPRIATE AUTHORITIES BELOW:

| | |
|---|---|
| EMERGENCY RESPONSE | 911 |
| BROWNSBURG FIRE TERRITORY | (317) 852-1190 |
| BROWNSBURG POLICE DEPARTMENT | (317) 852-1109 |
| INDIANA DEPARTMENT OF NATURAL RESOURCES | (877) 463-6367 |
| INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT | (888) 233-7745 |
| HENDRICKS COUNTY SOIL AND WATER | (317) 745-2555 EXT. 3 |

1. CONSTRUCTION EQUIPMENT

A. FUELING, LUBRICATION, AND FLUIDS: ALL OPERATIONS INVOLVING THE ADDITION OF FLUIDS TO EQUIPMENT SHOULD BE DONE IN ONE LOCATION, SO THAT SPILLS ARE LIMITED TO THAT SPECIFIC LOCATION WHICH WILL FACILITATE THE CLEANUP OF SPILLS, IF AN OUTSIDE FUELING TANK IS PLANNED TO BE ON SITE, IT SHALL BE DOUBLE WALLED AND STORED IN THIS DESIGNATED AREA, THIS LOCATION IS AN AREA THAT WILL NOT ALLOW SPILLED FLUIDS TO MIGRATE INTO SUBSURFACE SOILS, IN THE EVENT OF A SPILL, THE FLUID SHALL IMMEDIATELY BE CLEANED UP BY REMOVING THE CONTAMINATED SOIL OR STONE WHICH SHALL BE DISPOSED OF IN AN ACCEPTABLE MANNER, SPILLS ON HARD SURFACES SHALL BE SOAKED UP BY AN ACCEPTABLE MATERIAL SUCH AS OIL DRY AND THE ABSORBENT MATERIAL DISPOSED OF IN A PROPER MANNER, THE SPILL SHALL ALSO BE REPORTED IMMEDIATELY TO THE CONTRACTOR'S SUPERINTENDENT.

B. EQUIPMENT REPAIR, ESPECIALLY WHEN FLUIDS MUST BE REMOVED FROM THE EQUIPMENT OR THE POSSIBILITY OF FLUID SPILLS IS HIGH, SHOULD ALWAYS BE DONE OFFSITE AT A FACILITY THAT IS MORE SUITABLE THAN A CONSTRUCTION SITE TO HANDLE SPILLS. WHEN EQUIPMENT MUST BE REPAIRED ONSITE IT SHOULD BE MOVED TO THE MAINTENANCE AND FUELING AREA IF POSSIBLE, OTHERWISE, SUITABLE ON SITE CONTAINERS SHOULD BE PLACED UNDER THE EQUIPMENT DURING REPAIR TO CATCH ANY SPILLED FLUIDS AND THESE FLUIDS SHOULD BE DISPOSED OF IN A PROPER MANNER.

C. ALL REUSABLE FLUID CONTAINERS, SUCH AS GASOLINE CANS, SHALL BE INSPECTED FOR LEAKS EACH TIME THEY ARE USED, IF LEAKS ARE FOUND, THE FLUID SHALL BE REMOVED FROM THE CONTAINER IN A PROPER MANNER AND THE CONTAINER DISPOSED OF IN AN ACCEPTABLE MANNER, EMPTY DISPOSABLE CONTAINERS, SUCH AS GREASE TUBES AND LUBRICATING OIL AND BRAKE FLUID CONTAINERS, AND THEIR PACKAGING, SHALL BE DISPOSED OF IN A PROPER MANNER AND SHALL NOT BE LEFT ON THE GROUND OR IN THE OPEN ON THE CONSTRUCTION SITE.

2. CONSTRUCTION MATERIALS AND THEIR PACKAGING

A. EROSION CONTROL MEASURES SHOWN ON THESE PLANS SHALL BE IMPLEMENTED PRIOR TO AND DURING CONSTRUCTION IN THE PROPER SEQUENCING TO MINIMIZE SOIL EROSION, EROSION CONTROLS SHALL BE INSPECTED AND MAINTAINED AS DESCRIBED ELSEWHERE IN THESE PLANS, EXCESSIVE DUSTING OF SOIL ON THE SITE SHALL BE MINIMIZED BY REDUCING CONSTRUCTION TRAFFIC ACROSS BARE SOIL DURING DRY AND/OR WINDY WEATHER, AND BY APPLYING WATER OR OTHER ACCEPTABLE DUST CONTROL MEASURES TO THE SOIL. UPON COMPLETION OF CONSTRUCTION AND SUITABLE ESTABLISHMENT OF PERMANENT VEGETATION, TEMPORARY EROSION CONTROL MEASURES SUCH AS SILT FENCE AND INLET PROTECTION DEVICES SHALL BE REMOVED IN A MANNER TO MINIMIZE ADDITIONAL LAND DISTURBANCE, ANY AREAS DISTURBED BY THESE OPERATIONS SHALL BE PROPERLY STABILIZED.

B. LARGE WASTE MATERIALS CREATED BY CUTTING, SAWING, DRILLING, OR OTHER OPERATIONS SHALL BE PROPERLY DISPOSED OF IN SUITABLE ONSITE WASTE CONTAINERS, THE SITE SHALL BE CHECKED AT THE END OF THE DAY, AT MINIMUM, AND ALL WASTE MATERIALS, INCLUDING THOSE BLOWN AGENCIES OFF THE SITE BY WIND, SHALL BE PICKED UP AND DISPOSED OF IN SUITABLE CONTAINERS, WHERE POSSIBLE, OPERATIONS SUCH AS SAWING THAT CREATE SMALL PARTICLES SHOULD BE PERFORMED IN ONE SPOT IN AN AREA PROTECTED FROM WIND, AND WASTE PARTICLES COLLECTED AND DISPOSED OF FREQUENTLY TO MINIMIZE WIND DISPERSAL, PACKAGING USED TO TRANSPORT MATERIALS TO THE SITE FOR CONSTRUCTION OF THE FACILITY SHALL BE DISPOSED OF PROPERLY, WHETHER THE MATERIAL IS TAKEN OUT OF ITS PACKAGE AND INCORPORATED INTO THE PROJECT IMMEDIATELY OR STORED ONSITE FOR FUTURE USE. PACKAGED MATERIALS STORED ONSITE SHALL BE INSPECTED REGULARLY AND ANY LOOSE PACKAGING SHALL BE REPAIRED OR DISPOSED OF PROPERLY.

C. ALL DEWATERING ACTIVITIES SHALL BE DONE IN ACCORDANCE TO GOOD EROSION CONTROL PRACTICES, THESE PRACTICES SHOULD INCLUDE THE USE OF DIRT BAGS SUCH AS DANDY DIRT BAGS, THE USE OF THESE TYPES OF DEWATERING DEVICES WILL REMOVE LARGE QUANTITIES OF SILT, SEDIMENT, AND DIRT AND PREVENT THESE MATERIALS FROM ENTERING THE STORM SEWER SYSTEM.

D. IF THE USE OF LIME IS USED TO STABILIZE THE SOIL OF THE SITE THEN ALL CONSTRUCTION EQUIPMENT USED SHALL BE CLEANED OF ALL EXCESS MATERIAL WITH WATER IN THE CONSTRUCTION STAGING AREA AS SHOWN WITHIN THESE PLANS.

E. NUTRIENTS AND FERTILIZERS SHALL ONLY BE USED TO ESTABLISH RAPID VEGETATION. WHEN THESE PRODUCTS ARE UTILIZED, THE USER SHOULD PAY STRICT ATTENTION TO THE PRODUCTS RECOMMENDED USAGE.

3. CONCRETE WASTE WATER

A. ALL CONCRETE WASTE WATER SHALL BE DISPOSED OF IN THE DESIGNATED CONCRETE WASHOUT AREAS SHOWN ON SHEETS C-310 AND C-311, CONCRETE WASTE WATER SHALL BE DISCHARGED INTO A 4'-HIGH, 10'-DIAMETER DOUGHNUT-TYPE MULCH BERM CONSTRUCTED OVER A POLYETHYLENE LINER, CONTRACTOR SHALL INSPECT THIS AREA ON A DAILY BASIS AT A MINIMUM, WHEN THIS AREA BECOMES FULL, THE POLLUTANTS SHALL BE EXCAVATED, PLACED IN AN ACCEPTABLE CONTAINER AND DISPOSED OF IN A PROPER MANNER.

4. PAINT PRODUCTS

A. ALL EXCESS PAINT AND THEIR RELATED PRODUCTS SHALL BE DISPOSED OF IN THE MANNER BY WHICH THE MANUFACTURER SUGGESTS, UNDER NO CIRCUMSTANCES SHALL PAINT OR THEIR RELATED PRODUCTS BE CLEANED OR DISPOSED OF IN SOIL, SANITARY SEWERS, STORM SEWERS OR STORMWATER MANAGEMENT BASINS. ANY VIOLATIONS OF THIS SHALL BE REPORTED TO THE JOB SUPERINTENDENT.

B15 SEE SHEETS C-310 AND C-311 FOR CONSTRUCTION STAGING AREAS, WASTE REMOVAL AND CONCRETE WASHOUT AREAS, REFERENCE DETAILS ON SHEET C-312.

## SECTION C: POST-CONSTRUCTION COMPONENT

C1 EXPECTED POLLUTANTS IN THE POST-DEVELOPED CONDITION ARE: SEDIMENT, OIL, GREASE, ANTIFREEZE, AND GASOLINE MAY OCCUR IN LIMITED AMOUNTS AS A RESULT OF THIS PROJECT. THE ONLY OTHER REASONABLY FORESEEN POLLUTION FROM THIS SITE WILL BE LITTER AND TRASH DUMPED BY OTHERS.

C2 THE STORMWATER MANGEMENT SYSTEM OF THIS SITE WILL CONNECT TO THE DRY DETENTION BASIN AND UNDERGROUND DETENTION SYSTEM OF THE LARGER MEIJER DEVELOPMENT LOCATED NORTHEAST OF THE SITE. VEGETATION COVERS THE TOP AND SIDES OF THE DRY BASIN, THE SITE DRAINS TO AN HDS WATER QUALITY STRUCTURE IMMEDIATELY NORTH OF THE MEIJER CONVENIENCE STORE, THAT SERVES AS PRE-TREATMENT PRIOR TO SITE RUNOFF ENTERING THE DETENTION SYSTEMS.

ALL STRUCTURES HAVE A SUMP TO CAPTURE DEBRIS AND SEDIMENT.

C3 POST-CONSTRUCTION STORMWATER MEASURES ARE SHOWN ON SHEETS C-311.

C4 SEE PHASE 1 AND PHASE 2 SEQUENCING NOTES ON C-310 AND C-312, RESPECTIVELY, FOR AN APPROPRIATE CONSTRUCTION SEQUENCING AND INSTALLATION OF EROSION CONTROL MEASURES.

C5 APPLICABLE MAINTENANCE MANUALS ARE INCLUDED SEPARATELY.

C6 OWNER CONTACT:

KEVIN WIERINGA
MEIJER STORES LIMITED PARTNERSHIP
2350 THREE MILE ROAD NW
GRAND RAPIDS, MICHIGAN 49544
PHONE: (616) 916-3288

## GENERAL NOTES

1. THE CONTRACTOR SHALL CONTROL WASTE, GARBAGE, DEBRIS, WASTEWATER, AND OTHER SUBSTANCES ON THE SITE IN SUCH A WAY THAT THEY SHALL NOT BE TRANSPORTED FROM THE SITE BY THE ACTION OF WINDS, STORM WATER RUNOFF, OR OTHER FORCES. PROPER DISPOSAL OR MANAGEMENT OF ALL WASTES AND UNUSED BUILDING MATERIALS, APPROPRIATE TO THE NATURE OF THE WASTE OR MATERIAL, IS REQUIRED.
2. PUBLIC OR PRIVATE ROADWAYS SHALL BE KEPT CLEARED OF ACCUMULATED SEDIMENT. BULK CLEARING OF ACCUMULATED SEDIMENT SHALL NOT INCLUDE FLUSHING THE AREA WITH WATER. CLEARED SEDIMENT SHALL BE RETURNED TO THE POINT OF LIKELY ORIGIN OR OTHER SUITABLE LOCATION.
3. THIS EROSION CONTROL PLAN SHALL BE IMPLEMENTED ON ALL DISTURBED AREAS WITHIN THE CONSTRUCTION SITE. ALL MEASURES INVOLVING EROSION CONTROL PRACTICES SHALL BE INSTALLED UNDER THE GUIDANCE OF QUALIFIED PERSONNEL EXPERIENCED IN EROSION CONTROL, AND FOLLOWING THE PLANS AND SPECIFICATIONS INCLUDED HEREIN.
4. ALL EROSION CONTROL PRACTICES SHALL BE IN ACCORDANCE WITH MEIJER SPECIFICATIONS AND THE INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S "INDIANA STORM WATER QUALITY MANUAL" DATED OCTOBER 2007.

## (B11) MONITORING AND MAINTENANCE GUIDELINES

| EROSION CONTROL MEASURE | *MAINTENANCE FREQUENCY | INSTALLATION SEQUENCE |
|---|---|---|
| STONE ENTRANCE | AS NEEDED | PRIOR TO CLEARING AND GRADING |
| SILT FENCE | WEEKLY, AFTER STORM EVENTS AND AS NEEDED | PRIOR TO CLEARING AND GRADING |
| INLET PROTECTION | WEEKLY, AFTER STORM EVENTS AND AS NEEDED | PRIOR TO CLEARING AND GRADING (EX.), ALONG WITH NEW STORM SEWER INLETS (PRO.) |
| TEMPORARY SEDIMENT BASIN (INCLUDING OUTLET STRUCTURE, DISCHARGING PIPE, TEMPORARY SKIMMER, BAFFLE, EMERGENCY SPILLWAY) | WEEKLY, AFTER STORM EVENTS AND AS NEEDED | PRIOR TO CLEARING AND GRADING |
| EROSION CONTROL BLANKET | WEEKLY, AFTER STORM EVENTS AND AS NEEDED | ALONG WITH ALL EARTHWORK ACTIVITIES |
| SEED, SOD & LANDSCAPE | WATER AS NEEDED | AFTER FINISH GRADING |
| DUST CONTROL | AS NEEDED | ALONG WITH ALL EARTHWORK ACTIVITIES |
| CONCRETE WASHOUT | WEEKLY, AFTER STORM EVENTS AND AS NEEDED | PRIOR TO START OF ANY CONCRETE WORK |
| DIVERSION DITCHES/BERMS | WEEKLY, AFTER STORM EVENTS AND AS NEEDED | ALONG WITH ALL EARTHWORK ACTIVITIES |
| ROCK CHECK DAM | WEEKLY, AFTER STORM EVENTS AND AS NEEDED | PRIOR TO CLEARING AND GRADING (EX.), ALONG WITH DITCH GRADING (PRO.) |
| ROCK DONUT | WEEKLY, AFTER STORM EVENTS AND AS NEEDED | PRIOR TO CLEARING AND GRADING (EX.), ALONG WITH NEW CULVERT PIPE INLETS (PRO.) |
| REMOVAL OF INLET PROTECTION | N/A | AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED |
| REMOVAL OF SILT FENCE | N/A | AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED |
| REMOVAL OF TEMPORARY SEDIMENT BASIN APPURTENANCES | N/A | AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED |
| REMOVAL OF DIVERSION DITCHES/BERMS | N/A | ALONG WITH INSTALLATION OF STORM SEWER SYSTEM |
| REMOVAL OF ROCK CHECK DAM | N/A | AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED |
| REMOVAL OF ROCK DONUT | N/A | AFTER ALL AREAS DRAINING TO THESE AREAS ARE STABILIZED |

EROSION CONTROL MEASURES MAINTENANCE REQUIREMENTS
-SEE CHART FOR MAINTENANCE REQUIREMENTS *

SILT FENCE MAINTENANCE REQUIREMENTS:
1. INSPECT THE SILT FENCE PERIODICALLY AND AFTER EACH STORM EVENT.
2. IF FENCE FABRIC TEARS, STARTS TO DECOMPOSE, OR IN ANY WAY BECOMES INEFFECTIVE, REPLACE THE AFFECTED PORTION IMMEDIATELY.
3. REMOVE DEPOSITED SEDIMENT WHEN IT REACHES HALF THE HEIGHT OF THE FENCE AT ITS LOWEST POINT OR IS CAUSING THE FABRIC TO BULGE.
4. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEAN OUT.
5. AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, REMOVE THE FENCE AND SEDIMENT DEPOSITS, BRING THE DISTURBED AREA TO GRADE, AND STABILIZE.

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE MAINTENANCE REQUIREMENTS:
1. INSPECT ENTRANCE PAD AND SEDIMENT DISPOSAL AREA DAILY AND AFTER STORM EVENTS OR HEAVY USE.
2. RESHAPE PAD AS NEEDED FOR DRAINAGE AND RUNOFF CONTROL.
3. TOPDRESS WITH CLEAN STONE AS NEEDED.
4. IMMEDIATELY REMOVE MUD AND SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROADS BY BRUSHING OR SWEEPING.
5. REPAIR ANY BROKEN ROAD PAVEMENT IMMEDIATELY.

CONCRETE WASHOUT MAINTENANCE REQUIREMENTS:
1. INSPECT EACH CONCRETE WASHOUT AREAS DAILY AND AFTER STORM EVENTS OR HEAVY USE.
2. INSPECT THE INTEGRITY OF THE OVERALL STRUCTURE. CHECK FOR LEAKS, SPILLS OR TRACKING OF SOIL BY EQUIPMENT.
3. REMOVE EXCESS CONCRETE WHEN WASHOUT SYSTEMS REACHES 50% OF THE DESIGN CAPACITY. UPON REMOVAL, INSPECT STRUCTURE. REPAIR AS NEEDED.
4. DISPOSE OF ALL CONCRETE IN A LEGAL MANNER.
5. REPLACE PLASTIC LINER AFTER EVERY CLEANING. ENLARGE AS NECESSARY TO MAINTAIN CAPACITY.

INLET PROTECTION MAINTENANCE REQUIREMENTS:
1. INSPECT EACH INLET PROTECTION MEASURE DAILY AND AFTER STORM EVENTS OR HEAVY USE.
2. INSPECT STORM INLET BASKET OR GEOTEXTILE FABRIC AND MAKE REPAIRS.
3. REMOVE ANY SEDIMENT. AVOID DAMAGING OR UNDERCUTTING FABRIC.

ROCK DONUT MAINTENANCE REQUIREMENTS:
1. INSPECT EACH ROCK DONUT MEASURE DAILY AND AFTER STORM EVENTS OR HEAVY USE.
2. MAKE NEEDED REPAIRS IMMEDIATELY.
3. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE-HALF THE HEIGHT OF THE ROCK DONUT TO MAINTAIN END SECTION INLET CAPACITY.
4. ADD RIPRAP AND AGGREGATE AS NEEDED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION OF THE ROCK DONUTS.
5. WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, REMOVE RIPRAP AND AGGREGATE AND PROPERLY DISPOSE OF ALL SEDIMENT AND CONSTRUCTION MATERIAL AND RESTABILIZE.

TEMPORARY SEDIMENT BASIN MAINTENANCE REQUIREMENTS:
1. INSPECT WITHIN 24 HOURS OF A RAIN EVENT AND AT LEAST ONCE EVERY SEVEN CALENDAR DAYS.
2. REMOVE AND PROPERLY DISPOSE OF SEDIMENT WHEN IT ACCUMULATES TO ONE-HALF THE DESIGN VOLUME.
3. PERIODICALLY CHECK EMBANKMENT, EMERGENCY SPILLWAY, AND OUTLET FOR EROSION DAMAGE, PIPING, SETTLING, SEEPAGE, OR SLUMPING ALONG THE TOE OR AROUND THE BARREL; REPAIR IMMEDIATELY.
4. REMOVE TRASH AND OTHER DEBRIS FROM RISER, EMERGENCY SPILLWAY, AND POOL AREA.
5. CLEAN OR REPLACE AGGREGATE AROUND THE RISER IF THE SEDIMENT POOL DOES NOT DEWATER (DRAIN) WITHIN 48 TO 72 HOURS FOLLOWING A STORM WATER RUNOFF EVENT.
6. REMOVE BASIN AFTER DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, INSPECTED, AND APPROVED, DO SO BY DRAINING ANY WATER, REMOVING SEDIMENT TO A DESIGNATED DISPOSAL AREA, SMOOTHING THE SITE TO BLEND WITH THE SURROUNDING AREA, AND THEN STABILIZING WITH SEED AND MULCH OR ANOTHER APPROPRIATE NONERODSIVE COVER.

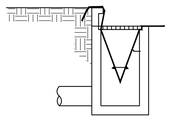
EROSION CONTROL BLANKET MAINTENANCE REQUIREMENTS:
1. INSPECT WITHIN 24 HOURS OF A RAIN EVENT AND AT LEAST ONCE EVERY SEVEN CALENDAR DAYS.
2. CHECK FOR EROSION OR DISPLACEMENT OF THE BLANKET.
3. IF ANY AREA SHOWS EROSION, PULL BACK THAT PORTION OF THE BLANKET COVERING THE ERODED AREA, ADD SOIL AND TAMP, RESEED THE AREA, REPLACE AND STAPLE THE BLANKET.

ROCK CHECK DAM MAINTENANCE REQUIREMENTS:
1. INSPECT WITHIN 24 HOURS OF A RAIN EVENT AND AT LEAST ONCE EVERY SEVEN CALENDAR DAYS.
2. IF SIGNIFICANT EROSION OCCURS BETWEEN DAMS, INSTALL AN EROSION-RESISTANT LINER IN THAT PORTION OF THE CHANNEL.
3. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE-HALF THE HEIGHT OF THE DAM TO MAINTAIN CHANNEL CAPACITY. ALLOW DRAINAGE THROUGH THE DAM, AND PREVENT LARGE FLOW FROM DISPLACING SEDIMENT.
4. ADD RIPRAP AND AGGREGATE AS NEEDED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION OF THE DAMS.
5. WHEN DAMS ARE NO LONGER NEEDED, REMOVE THE RIPRAP AND AGGREGATE AND STABILIZE THE CHANNEL, USING AN EROSION-RESISTANT LINING IF NECESSARY, (RIPRAP AND AGGREGATE FROM THE DAM MAY BE REMOVED OR UTILIZED TO STABILIZE THE CHANNEL)

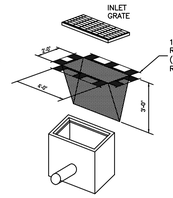
DIVERSION DITCH / BERM MAINTENANCE REQUIREMENTS:
1. INSPECT WITHIN 24 HOURS OF A RAIN EVENT AND AT LEAST ONCE EVERY SEVEN CALENDAR DAYS.
2. REMOVE SEDIMENT FROM CHANNEL / TOE OF BERM TO MAINTAIN POSITIVE GRADE.
3. CHECK OUTLETS AND MAKE NECESSARY REPAIRS IMMEDIATELY.
4. ADJUST RIDGE HEIGHT TO PREVENT OVERTOPPING.

# A1 IDEM CONSTRUCTION GENERAL PERMIT NOTES

NTS



INSTALLATION DETAIL



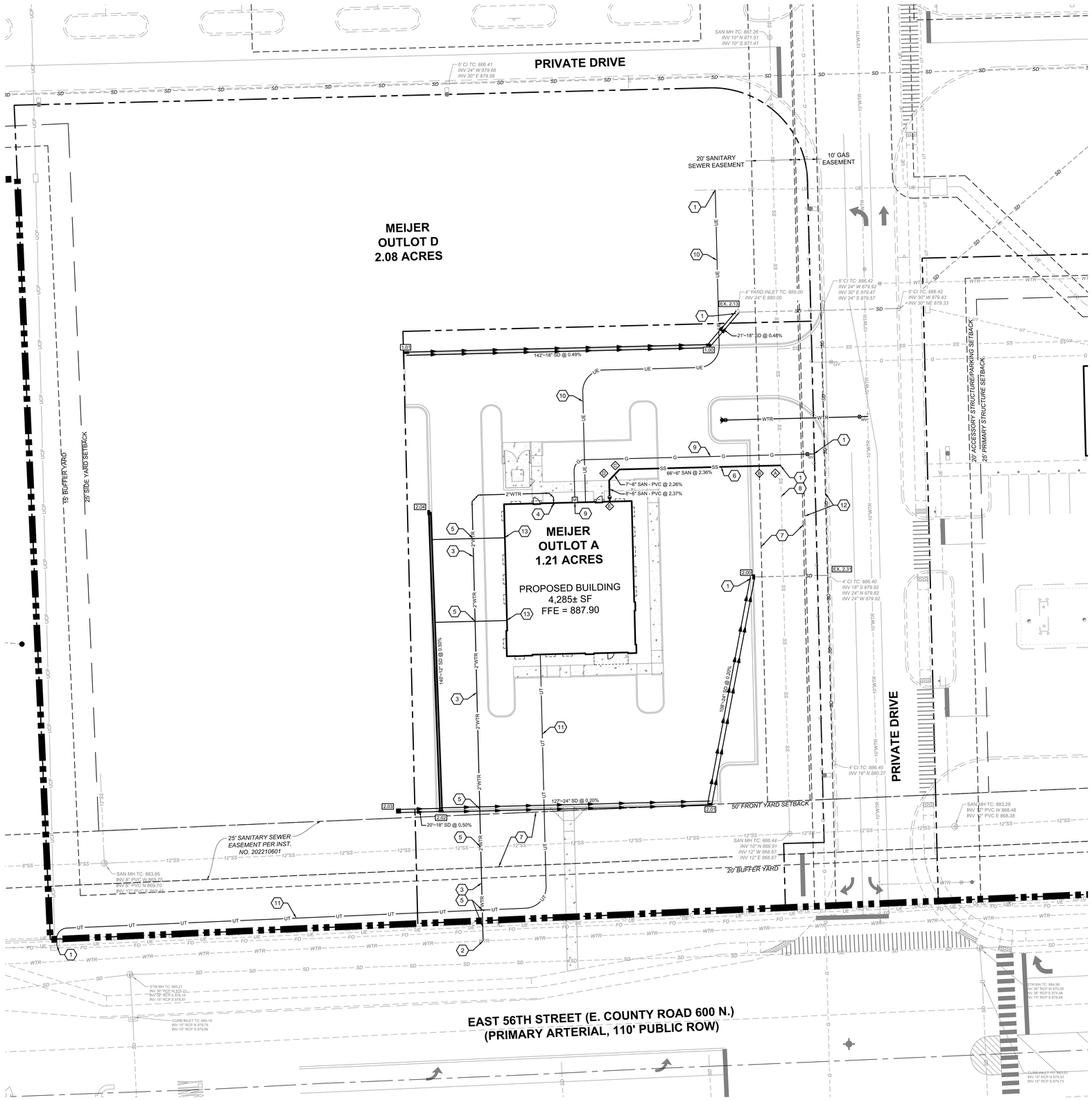

ISOMETRIC VIEW

DESCRIPTION

VARIOUS TYPES OF STORM SEWER INLET PROTECTION MEASURES ARE AVAILABLE DEPENDING ON THE TYPE OF INLET STRUCTURE (E.G., CURB OR AREA) AND THE STAGE OF CONSTRUCTION. IN GENERAL, INLET PROTECTION MEASURES ARE TEMPORARY SEDIMENT CONTROL BARRIER FORMED AROUND OR IN A STORM SEWER INLET TO HELP PREVENT SEDIMENT FROM ENTERING STORM DRAINS DURING CONSTRUCTION. INLET PROTECTION MEASURES ARE TO BE INSTALLED AS EACH INLET STRUCTURE IS CONSTRUCTED.

INSTALLATION
1. A FILTER FABRIC BAG IS HUNG INSIDE THE INLET, BENEATH THE GRATE.
2. REPLACE GRATE, WHICH WILL HOLD BAG IN PLACE.
3. ANCHOR FILTER BAG WITH 1" REBAR FOR REMOVAL FROM INLET.
4. FLAPS OF BAG THAT EXTEND BEYOND THE BAG CAN BE BURIED IN SOIL IN EARTH AREAS.

MAINTENANCE
- DRO




A1 UTILITY PLAN
1"=20'

0 20 40 60
GRAPHIC SCALE IN FEET

## LEGEND

- MEIJER PROPERTY LINE
- PROPERTY LINE
- SD — EXISTING STORM SEWER
- WTR — EXISTING WATER MAIN
- SS — EXISTING SANITARY SEWER
- G — EXISTING GAS MAIN
- UE — EXISTING UNDERGROUND ELECTRIC
- UT — EXISTING UNDERGROUND TELEPHONE
- OE — EXISTING OVERHEAD ELECTRIC
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING CURB INLET
- EXISTING CATCH BASIN
- EXISTING FIRE HYDRANT
- EXISTING POWER POLE
- CURB INLET
- CATCH BASIN
- CLEANOUT
- XX"~XX" SD — STORM SEWER
- XX — STORM STRUCTURE I.D.
- XX"~8" SAN — SANITARY SEWER
- SANITARY STRUCTURE I.D.
- X" WTR — DOMESTIC WATER SERVICE, SIZE PER PLAN
- WV — WATER VALVE
- TEE WITH THRUST BLOCK
- WATER BEND WITH THRUST BLOCK
- G — GAS SERVICE
- GV — GAS VALVE
- M — GAS METER
- UCT — UNDERGROUND COMMUNICATIONS SERVICE
- UE — UNDERGROUND ELECTRIC SERVICE
- LIGHT POLE

## GENERAL NOTES

1. VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
2. UTILITIES SHALL END 5 FEET FROM THE BUILDING UNLESS NOTED OTHERWISE.
3. PROTECT AND MAINTAIN CROSSINGS OF OTHER UTILITIES.
4. ALL DIMENSIONS ARE TO CENTERLINE OF PIPE, CENTER OF MANHOLE, EDGE OF PAVEMENT OR BACK OF CURB WHERE APPLICABLE. DIMENSIONS TO COLUMN LINE ASSUME 9" THICK BUILDING WALL.
5. ALL MATERIAL, SPECIFICATIONS, AND CONSTRUCTION METHODS SHALL BE IN CONFORMANCE WITH MEIJER STANDARD SPECIFICATIONS AND DETAILS AND TOWN OF BROWNSBURG AND HENDRICKS COUNTY REQUIREMENTS.
6. PROVIDE MINIMUM 18" VERTICAL CLEARANCE AT ALL UTILITY CROSSINGS.
7. BEFORE COMMENCING WORK, CONTRACTOR SHALL VERIFY ALL LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES.

## KEYNOTES (X)

1. CONNECT TO EXISTING UTILITY PER AGENCY REQUIREMENTS. CONTRACTOR TO VERIFY LOCATION OF EXISTING UTILITY IN WHICH TO MAKE CONNECTION.
2. CONNECT TO EXISTING WATER MAIN PER CITIZENS ENERGY GROUP REQUIREMENTS. CONTRACTOR TO VERIFY THERE IS 3' OF CLEARANCE FROM EXISTING TAPS AND FITTINGS.
3. 2" DOMESTIC WATER SERVICE. HDPE SDR9, 1.5" DOMESTIC METER AND BACKFLOW PREVENTER TO BE LOCATED INSIDE THE BUILDING.
4. COPPER OR DUCTILE IRON SHALL BE INSTALLED FROM 5 FEET OUTSIDE OF THE BUILDING FOOTER INTO THE BUILDING METER SETUP. SEE ARCHITECTURAL PLANS FOR CONTINUATION. SEE CEG STANDARDS SECTION 8.06.
5. ADJUST WATER LINE VERTICALLY AS NECESSARY TO PROVIDE 18" VERTICAL CLEARANCE FROM SANITARY OR STORM SEWER WHILE MAINTAINING APPROPRIATE COVER FOR WATER LINE.
6. 6" SANITARY SERVICE.
7. PUBLIC SANITARY EASEMENT.
8. PUBLIC SANITARY SEWER.
9. GAS SERVICE AND METER.
10. UNDERGROUND ELECTRIC SERVICE. PROVIDE (2) 4" CONDUIT FOR ELECTRIC SERVICE.
11. UNDERGROUND COMMUNICATIONS SERVICE. PROVIDE (2) 4" CONDUIT FOR TELECOMMUNICATIONS.
12. GAS EASEMENT.
13. 6" ROOF DRAIN FOR GUTTER DOWNSPOUTS.

## WATER NOTES

ALL MATERIALS, INSTALLATION, TESTING, AND RELATED WORK SHALL COMPLY WITH THE CITIZENS WATER STANDARDS MANUAL, LATEST EDITION.

1. FULL-DEPTH GRANULAR BACKFILL IS REQUIRED BENEATH AND WITHIN FIVE (5) FEET OF ALL PAVEMENT, IN ACCORDANCE WITH THE CITIZENS WATER STANDARDS MANUAL, LATEST EDITION.
2. THE TRACING WIRE AND IDENTIFICATION RIBBON SHALL BE INSTALLED AS SPECIFIED IN SECTION 9.17, "INSTALLATION OF TRACING WIRE AND IDENTIFICATION RIBBON"
3. MANDATORY PIPE COVER SHALL BE 54-INCH BELOW FINISHED GRADE OR AS REQUIRED BY 327 IAC 8-3.2-17.
4. A MINIMUM OF A 10' HORIZONTAL SEPARATION AND AN 18" VERTICAL SEPARATION BETWEEN SEWER LINES (SANITARY OR STORM) AND THE WATER SERVICE LINES MUST BE MAINTAINED.
5. TAPS MUST BE A MINIMUM OF 3 FEET FROM EACH OTHER/EXISTING FITTINGS.
6. TAPS MUST BE PERPENDICULAR TO THE MAIN.
7. BENDS ARE NOT ALLOWED WITHIN THE RIGHT-OF-WAY.
8. AT LEAST 3' OF SEPARATION MUST MAINTAINED BETWEEN THE WATER SERVICE LINES AND OTHER UTILITIES.

WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER OUTLOT #338A
9180 E. 56TH STREET
BROWNSBURG, INDIANA 46112

UTILITY PLAN

| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

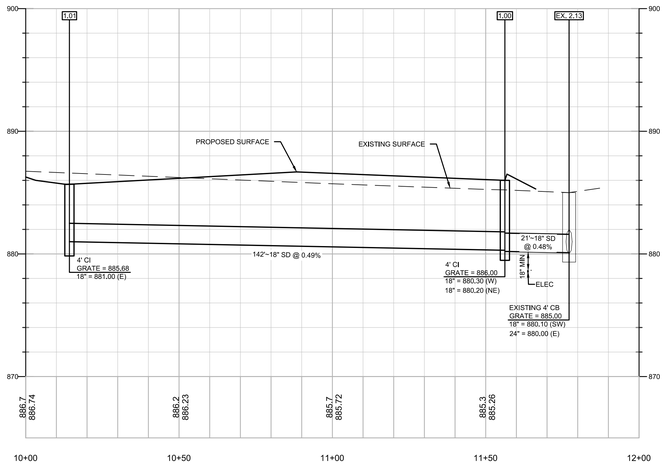
| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

C-400

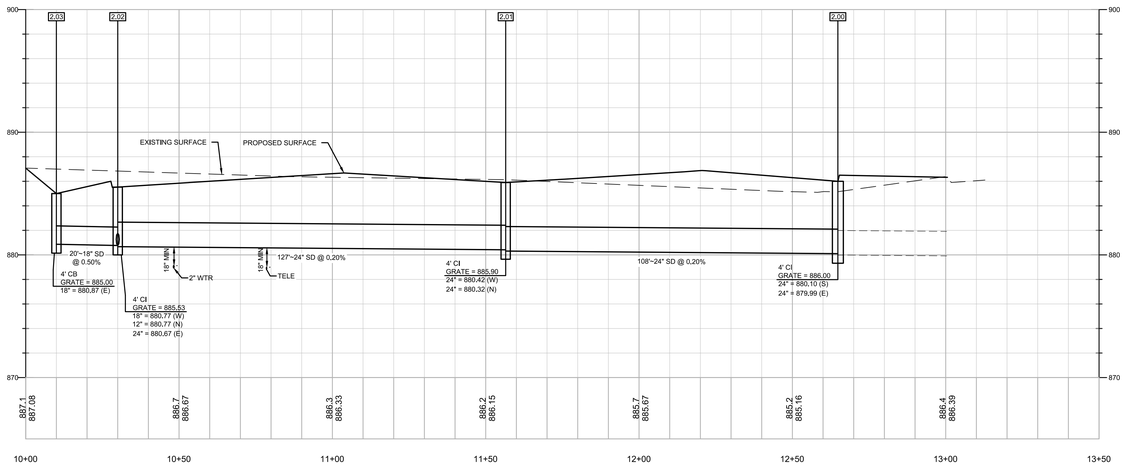
Indiana 811 Know what's below. Call before you dig.

Images: ..\Xrefs\ 10026635-p.dwg; 10026635-x.dwg; 10026635TBLK.dwg
Layout: A1 Name: C-400 UTILITY PLAN
Last Saved By:BVanGorder 1/29/2026 10:49:03 AM
G:\DE\Clients\Meijer\10026635 Meijer 338A-001, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cat\10026635-UTL.dwg Plotted By:VanGorder, Brianne PlottedJanuary 29, 2026, 10:54:49 AM



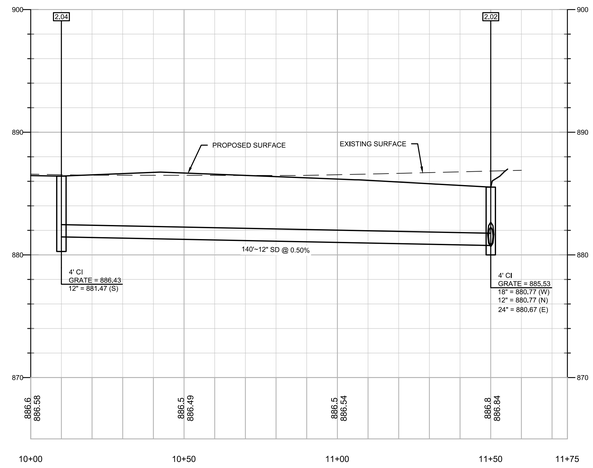

D1 STM 1.00 - 1.01 PROFILE

1"=20'




B1 STM 2.03 - EX.2.31 PROFILE

1"=20'




D1 STM 2.04 - 2.02 PROFILE

1"=20'

## STORM STRUCTURE TABLE

| STRUCTURE ID | DESCRIPTION | RIM/GRATE | INVERTS | NORTHING | EASTING | CASTING | MISCELLANEOUS NOTES |
|---|---|---|---|---|---|---|---|
| 1.00 | 4' CI | 886.00 | 18" = 880.20 (NE)<br>18" = 880.30 (W) | 1677755.5716 | 3155982.5205 | NEENAH R-3287-SB10 | |
| 1.01 | 4' CI | 885.68 | 18" = 881.00 (E) | 1677752.0180 | 3155840.5650 | NEENAH R-3287-SB10 | |
| 2.00 | 4' CI | 886.00 | 24" = 879.99 (E)<br>24" = 880.10 (S) | 1677646.9637 | 3156003.2449 | NEENAH R-3287-SB10 | EAST INVERT IS EXISTING, CONTRACTOR TO VERIFY. |
| 2.01 | 4' CI | 885.90 | 24" = 880.32 (N)<br>24" = 880.42 (W) | 1677540.5200 | 3155983.1524 | NEENAH R-3287-SB10 | |
| 2.02 | 4' CI | 885.53 | 18" = 880.77 (W)<br>24" = 880.67 (E)<br>12" = 880.77 (N) | 1677537.3543 | 3155856.6920 | NEENAH R-3287-SB10 | |
| 2.03 | 4' CB | 885.00 | 18" = 880.87 (E) | 1677536.8643 | 3155836.6980 | NEENAH R-4215-C | |
| 2.04 | 4' CI | 886.43 | 12" = 881.47 (S) | 1677677.2663 | 3155851.4391 | NEENAH R-3287-SB10 | |

## SANITARY STRUCTURE TABLE

| STRUCTURE ID | DESCRIPTION | RIM/GRATE | INVERTS | NORTHING | EASTING | MISCELLANEOUS NOTES |
|---|---|---|---|---|---|---|
| A | 8"X6" WYE CONNECTION | 887.01 | 6" = 870.60 (W) | 1677699.4225 | 3156016.3286 | EX. 10" = 870.60 TO BE VERIFIED |
| B | BEND | 882.17 | 6" = 880.60 (W)<br>6" = 880.60 (E) | 1677699.1867 | 3156006.3314 | |
| C | BEND | 882.54 | 6" = 882.15 (SW)<br>6" = 882.15 (E) | 1677697.5322 | 3155940.6606 | |
| D | BEND | 882.79 | 6" = 882.31 (S)<br>6" = 882.31 (NE) | 1677692.4078 | 3155935.7881 | |
| E | CLEAN OUT | 887.87 | 6" = 882.50 (N)<br>6" = 882.50 (S) | 1677684.4073 | 3155935.9897 | |
| F | CONNECT TO BUILDING SANITARY | 887.90 | 6" = 882.50 (N) | 1677682.4079 | 3155936.0397 | |

## STRUCTURE TABLE NOTES

1. EX = EXISTING.
2. CI = CURB INLET.
3. CB = CATCH BASIN.
4. MH = MANHOLE.
5. CTE = CONNECT TO EXISTING.
6. RIM/GRATE ELEVATION INDICATES:
   - 6.1. FOR MANHOLE, JUNCTION BOX/CLEANOUT: RIM ELEVATION.
   - 6.2. FOR CATCH BASIN: GRATE ELEVATION.
   - 6.3. FOR CURB INLET: TOP OF CASTING/TOP OF CURB ELEVATION.
7. ALL PROPOSED STORM AND SANITARY STRUCTURE TYPES SHALL BE IN ACCORDANCE WITH THE TOWN OF BROWNSBURG STANDARD CONSTRUCTION DETAILS UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL REVIEW CONDITION OF EXISTING STRUCTURES TO REMAIN IN WHICH PROPOSED PIPES ARE PROPOSED TO CONNECT. IF CONDITIONS WARRANT IT, STRUCTURE(S) SHALL BE REPLACED.
9. ALL STORM GRATE CASTINGS TO BE PRE-CAST WITH A POLLUTION PREVENTION MESSAGE PERMANENTLY ATTACHED. PER TOWN OF BROWNSBURG STANDARD DETAILS SW-13 AND SW-14, POLLUTION PREVENTION MESSAGE TO STATE, AT MINIMUM, "DUMP NO WASTE <FISH ICON> DRAINS TO WATERWAY" IN MINIMUM 1 INCH HIGH LETTERS.
10. STORM SEWER PIPING TO BE HIGH DENSITY POLYETHYLENE (HDPE) FOR PIPES 12 TO 24 INCHES IN DIAMETER, POLYPROPYLENE (PP) FOR PIPES 12 TO 60 INCHES IN DIAMETER, POLYVINYL CHLORIDE (PVC) FOR PIPES 12 TO 36 INCHES IN DIAMETER, OR REINFORCED CONCRETE (RCP) FOR PIPES 12 INCHES IN DIAMETER OR LARGER IN ACCORDANCE WITH THE TOWN OF BROWNSBURG CONSTRUCTION STANDARDS, MOST CURRENT EDITION.
11. CONTRACTOR TO SIZE STORM STRUCTURES PER TOWN OF BROWNSBURG STANDARDS.
12. SUMPS ARE NOT PERMITTED IN INLET STRUCTURES PER TOWN OF BROWNSBURG STANDARDS.


WOOLPERT

4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer

2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER OUTLOT #338A
9180 E. 56TH STREET
BROWNSBURG, INDIANA 46112

# STORM & SANITARY PROFILES AND STRUCTURE DATA TABLES

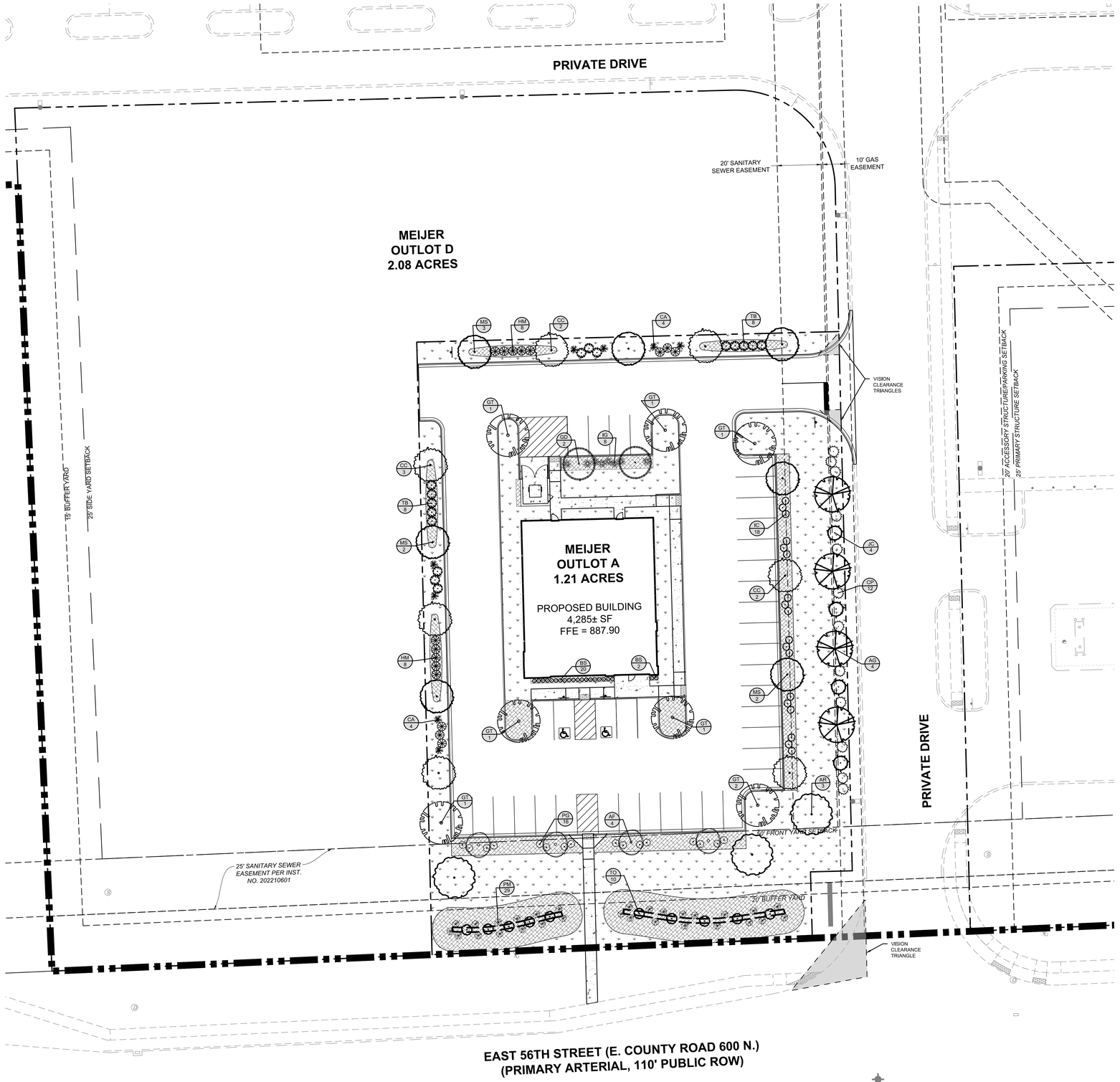
| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

C-405


Images: * Xrefs: 10026635TBLK.dwg; 10026635-x.dwg; 10026635-p.dwg
Drawing Name: C-405 STORM & SANITARY PROFILES AND STRUCTURE DATA TABLES
Last Saved By:B.VonGorder, 1/23/2026 1:35:56 PM
G:\DE\Clients\Meijer\10026635 Meijer 338A-OD1, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cat\10026635-STMPRO.dwg Plotted By:VonGorder, Brionne Plotted:January 29, 2026, 10:55:22 AM




A1 LANDSCAPE PLAN
1"=20'

## LANDSCAPE NOTES

1. COORDINATE PLACEMENT OF PLANTS WITH UTILITY LOCATIONS AND SIGHT LINES TO BUILDING. MAKE ADJUSTMENTS AS REQUIRED TO AVOID PLANTING OVER THE UTILITIES AND/OR WITHIN SIGHT LINES TO ALL MEIJER BUILDING SIGNAGE.
2. THE CENTER OF LARGE ISLANDS IS TO BE SIX INCHES HIGHER THAN TOP OF CURB. ENSURE ALL ISLANDS ARE SLOPED FOR POSITIVE DRAINAGE.
3. ALL AREAS THAT REQUIRE SEEDING SHALL RECEIVE 4" MINIMUM TOPSOIL, UNLESS NOTED OTHERWISE.
4. SEED ALL AREAS INDICATED ON THE LANDSCAPE PLAN, THE SOIL EROSION CONTROL PLAN AND ALL DISTURBED AREA. REVIEW AREAS OF SEEDING WITH CONSTRUCTION MANAGER PRIOR TO ANY SEEDING. ANY AREAS DISTURBED BY THE CONTRACTOR WHICH ARE BEYOND THE LIMITS OF GRADING AND EARTHWORK SHALL BE SEEDED AT NO ADDITIONAL COST TO THE OWNER.
5. TOPSOIL SHALL BE TESTED AND AMENDED AS NECESSARY DURING FINAL GRADING AND PREPARATION FOR SEEDING BY CONTRACTOR.
6. ALL SHRUBS BEDS (EXISTING AND NEW) TO BE MULCHED WITH A MIN. 3 INCH LAYER OF MULCH (DOUBLE SHREDDED HARDWOOD MULCH.
7. APPLY STARTER FERTILIZER (16-32-4) AT 250 POUNDS/ACRE TO SEEDED AREAS.
8. ALL LANDSCAPE ISLANDS SHALL BE NATURAL COLOR, DYE-FREE, 3" DEEP SHREDDED HARDWOOD MULCH EXCEPT AS NOTED. PLACE MULCH OVER WEED BARRIER FABRIC AND TREAT WITH PRE-EMERGENT HERBICIDE.
9. ALL LANDSCAPING SHALL BE INSTALLED A MINIMUM OF 4' FROM THE EDGE OF PAVEMENT WHERE A VEHICLE WILL OVERHANG A LANDSCAPE BED.

## LANDSCAPE CODE SUMMARY

CURRENT ZONING: C3 (HEAVY COMMERCIAL)

ON-SITE LANDSCAPING STANDARDS
COMMERCIAL USE (C3) - REQUIRED PLANT QUANTITIES ARE BASED ON OPEN SPACE. THESE PLANTING REQUIREMENTS ARE IN ADDITION TO THE OTHER LANDSCAPE REQUIREMENTS.
CALCULATED OPEN SPACE = 0.53 ACRES

SHADE TREES REQUIRED / PROVIDED:
4 SHADE TREES PER HALF ACRE OF OPEN SPACE = 5 SHADE TREES / 5 SHADE TREES

SHRUBS REQUIRED:
8 LARGE SHRUBS PER HALF ACRE OF OPEN SPACE = 8 SHRUBS / 8 SHRUBS

STREET FRONTAGE LANDSCAPING.
THE AMOUNT OF LANDSCAPING REQUIRED IS BASED ON THE LENGTH OF FRONTAGE.

LENGTH OF FRONTAGE: 245 FT
SHADE OR EVERGREEN TREES REQUIRED / PROVIDED:
(1,5 TREES / 100 LF) 4 TREES / 4 TREES

ORNAMENTAL TREES REQUIRED / PROVIDED:
(1,5 TREES / 100 LF) 4 TREES / 4 TREES

SHRUBS REQUIRED / PROVIDED:
(5 SHRUBS / 100 LF) 12 SHRUBS / 12 SHRUBS

PERIMETER PARKING LOT LANDSCAPING
THE AMOUNT OF LANDSCAPING REQUIRED IS BASED ON THE LENGTH OF FRONTAGE. TREES REQUIRED 35' O.C. ADJACENT TO R/W.

8' WIDE LANDSCAPED AREA FRONT YARD: 134 FT
SHADE TREES (1 TREE / 35 FT OF PARKING LOT FRONTAGE)
REQUIRED / PROVIDED: 4 TREES / 4 TREES

EVERGREEN SHRUBS (4 SHRUBS / 35 FT OF PARKING LOT FRONTAGE)
REQUIRED / PROVIDED: 16 SHRUBS / 16 TREES

6' WIDE LANDSCAPED AREA SIDE/REAR YARD: 505
TREES (1 TREE / 35 FT OF PARKING LOT FRONTAGE)
REQUIRED / PROVIDED: 14 TREES / 14 TREES

MEDIUM SHRUBS (4 SHRUBS / 35 FT OF PARKING LOT FRONTAGE)
REQUIRED / PROVIDED: 58 SHRUBS / 58 SHRUBS

INTERIOR PARKING LOT LANDSCAPING.
INTERIOR PARKING LOT LANDSCAPING INCLUDES 1 SHADE TREE PER PER INDIVIDUAL ISLAND OR PER 160 SQUARE FEET. LANDSCAPE ISLANDS ARE REQUIRED AT THE ENDS OF ALL ROWS OF PARKING.

TREES REQUIRED / PROVIDED:
7 TREES / 7 TREES

FOUNDATION LANDSCAPING
FAÇADES SHALL INCLUDE FOUNDATION PLANTINGS AT A RATE OF 1 SHRUB OR ORNAMENTAL TREE PER 10 FEET OF FAÇADE LENGTH.

FRONT AND SIDE FAÇADE LENGTH = 133 FT
TREES OR SHRUBS REQUIRED / PROVIDED:
14 TREES OR SHRUBS / 22 SHRUBS

BUFFER YARD PLANTING.
BUFFER YARD PLANTS MUST REACH MATURE HEIGHT OF 48" AFTER 3 YEARS AND BE AT LEAST 24 INCES TALL AT TIME OF INSTALLATION

C3 ADJACENT TO C3: NO BUFFER YARD REQUIRED

EAST 56TH STREET BUFFER YARD (HIGH INTENSITY BUFFER): 192 LF

EVERGREEN TREES REQUIRED / PROVIDED:
(1 TREE / 20 LF)* = 10 TREES / 10 TREES

LARGE SHRUBS REQUIRED / PROVIDED:
(3 LARGE SHRUBS / 20 LF)* = 29 SHRUBS / 29 SHRUBS

BERM REQUIRED:
UNDULATING BERM WITH 3'-0" HEIGHT.

| TAG | QTY | SCIENTIFIC NAME | COMMON NAME | COND. | SIZE | REMARKS |
|---|---|---|---|---|---|---|
| TREES | | | | | | |
| AR | 3 | Acer rubrum 'October Glory' | October Glory Red Maple | B&B | 2,5" Cal, | Full, well shaped |
| GT | 7 | Gleditsia triacanthos var. inermis 'Street Keeper' | Street Keeper Thornless Honey Locust | B&B | 2,5" Cal, | Full, well shaped |
| AG | 4 | Amelanchier x grandiflora 'Autumn Brilliance' | Autumn Brilliance Serviceberry | B&B | 2" Cal, | Full, well shaped |
| AF | 4 | Acer Rubrum 'Armstrong' | Armstrong Red Maple | B&B | 2.5" Cal. | Columnar |
| MS | 7 | Magnolia x stellata 'Royal Star' | Royal Star Magnolia | B&B | 1.5" Cal, | Full, well shaped |
| CC | 7 | Cercis canadensis 'Ace of Hearts' | Ace of Hearts Redbud | B&B | 1.5" Cal, | Full, well shaped |
| GD | 2 | Gymnocladus diocus 'Morton' | Skinny Latte Kentucky Coffee Tree | B&B | 2,5" Cal, | Full, well shaped |
| EVERGREEN TREES | | | | | | |
| TO | 10 | Thuja occidentalis 'Smaragd' | Emerald Green Arborvitae | B&B | 6' Ht, | Full, well shaped |
| JC | 4 | Juniperus chinensis 'Blue Point' | Blue Point Juniper | B&B | 6' Ht, | Full, well shaped |
| SHRUBS | | | | | | |
| CP | 12 | Chamaecyparis pisifera 'Golden Mop' | Golden Mop False Cypress | #5 cont. | 24"ht. x 24"wd, | Full, vigorous |
| IG | 8 | Ilex glabra 'Shamrock' | Shamrock Inkberry Holly | #5 cont. | 24"ht. x 24"wd, | Full, vigorous |
| HM | 18 | Hydrangea macrophylla 'Endless Summer' | Endless Summer Hydrangea | #5 cont. | 24"ht. x 24"wd, | Full, vigorous |
| PM | 29 | Pinus mugo 'Emerald Dwarf' | Emerald Dwarf Mugo Pine | #5 cont, | 24"ht. x 24"wd, | Full, vigorous |
| IC | 18 | Ilex crenata 'Soft Touch' | Soft Touch Holly | #3 cont, | 18"ht. x 18"wd, | Full, vigorous |
| TB | 16 | Taxus baccata 'Icicle' | Icicle English Yew | #5 cont, | 24"ht. x 24"wd, | Full, vigorous |
| PG | 16 | Picea glauca 'Little Gem' | Little Gem Dwarf Alberta Spruce | #3 cont. | 18"ht. x 18"wd, | Full, vigorous |
| BS | 22 | Buxus sempervirens 'Green Gem' | Green Gem Boxwood | #3 cont. | 12"ht. x 12"wd, | Full, vigorous |
| ORNAMENTAL GRASSES | | | | | | |
| CA | 8 | Calamagrostis x acutiflora 'Karl Foerster' | Feather Reed Grass | #3 cont. | 12"ht. x 12"wd, | Full, vigorous |

* QUANTITIES ARE PROVIDED FOR CONVENIENCE ONLY. CONTRACTOR IS RESPONSIBLE FOR ALL QUANTITIES OF PLANTS ON LANDSCAPE PLAN.

A5 PLANTING SCHEDULE
NTS

## LEGEND

- MEIJER PROPERTY LINE
- PROPERTY LINE
- SHREDDED HARDWOOD MULCH TO 3" DEPTH, UNLESS NOTED OTHERWISE. SEE SPECIFICATIONS
- SEED MIXTURE TYPE A

0 20 40 60
GRAPHIC SCALE IN FEET

Indiana 811 Know what's below. Call before you dig.

WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER OUTLOT #338A
9160 E. 56TH STREET
BROWNSBURG, INDIANA 46112

LANDSCAPE PLAN

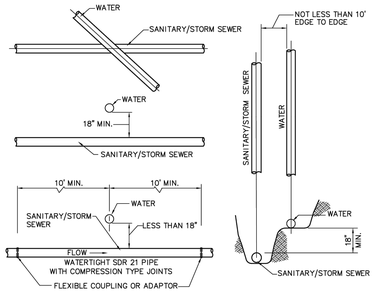
| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

C-600

Images: ..\Xrefs: 10026635-p.dwg; 10026635-x.dwg; 10026635TBLK.dwg; 10026635-g.dwg
Layout: Layout1 Saved: 1/28/2026 9:08:44 AM
Last Saved By:BJVonGorder, 1/28/2026 9:08:44 AM
G:\DE\Clients\Meijer\10026635 Meijer 338A-OD1, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cd\10026635-LAN.dwg Plotted By:VonGorder, Brianne Plotted:January 29, 2026, 10:56:02 AM

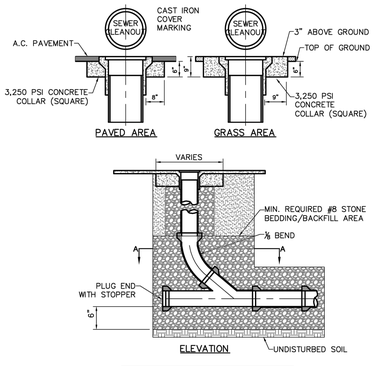



NOTES:

1. WHEN LATERAL SEPARATION IS 10' OR GREATER NO VERTICAL CLEARANCE IS NEEDED
2. ALL CROSSINGS AND SEPARATIONS TO BE 327 IAC, ARTICLES 3 & 8
3. WHEN HORIZONTAL SEPARATION IS LESS THAN 10' OR VERTICAL SEPARATION IS LESS THAN 18", SANITARY PIPE MUST BE WATERTIGHT SDR 21 WITH COMPRESSION TYPE JOINTS.
4. CONTRACTOR SHALL VERIFY THAT MORE STRINGENT SEPARATION REQUIREMENTS DO NOT EXIST WITH THE JURISDICTIONAL WATER UTILITY. IF THEY DO EXIST, CONTRACTOR SHALL FOLLOW THE MORE STRINGENT REQUIREMENTS.

## MIN. CROSSOVER & SEPARATION REQUIREMENTS FOR WATER & SANITARY/STORM SEWERS

NOT TO SCALE

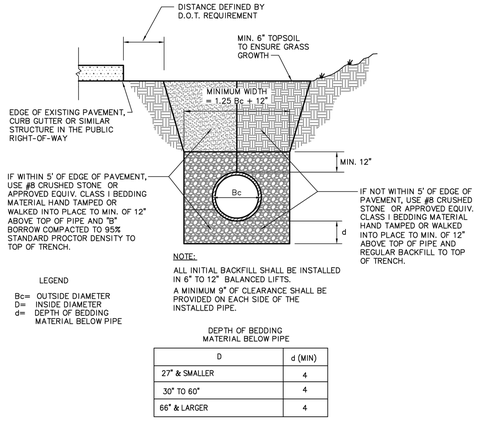



NOTES:

1. CLEANOUT PIPE TO BE SAME SIZE AND KIND OF MATERIAL AS MAIN
2. INSTALL SEWUR VALVE BY KODIAK CONTROLS, INC., OR APPROVED EQUAL

## SEWER CLEANOUT

NOT TO SCALE




LEGEND

Bc= OUTSIDE DIAMETER
D= INSIDE DIAMETER
d= DEPTH OF BEDDING MATERIAL BELOW PIPE

NOTE:

ALL INITIAL BACKFILL SHALL BE INSTALLED IN 6" TO 12" BALANCED LIFTS.

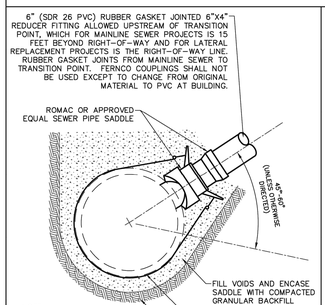
A MINIMUM 9" OF CLEARANCE SHALL BE PROVIDED ON EACH SIDE OF THE INSTALLED PIPE.

DEPTH OF BEDDING MATERIAL BELOW PIPE

| D | d (MIN) |
|---|---|
| 27" & SMALLER | 4 |
| 30" TO 60" | 4 |
| 66" & LARGER | 4 |

## PLASTIC PIPE (PVC & HDPE) BEDDING DETAIL

NOT TO SCALE

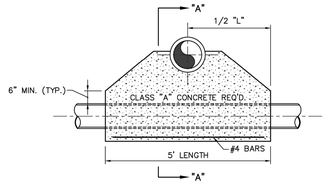


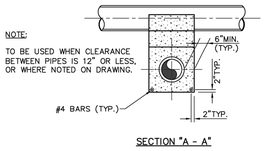

NOTE:

1. SEWER PIPE SADDLE SHOULD BE ROMAC INDUSTRIES, INC. STYLE "CB" SEWER SADDLE OR APPROVED EQUAL.

## LATERAL CONNECTION TO EXISTING SEWER

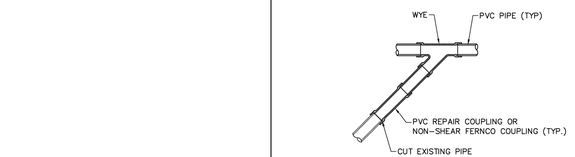
NOT TO SCALE



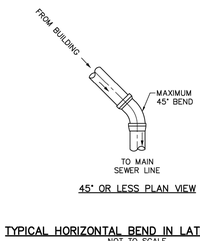

## CONCRETE SADDLE DETAIL

NOT TO SCALE




## EXISTING LATERAL RECONNECTION DETAIL

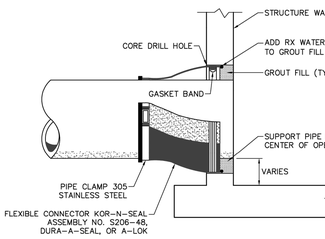
NOT TO SCALE




## 45° OR LESS PLAN VIEW

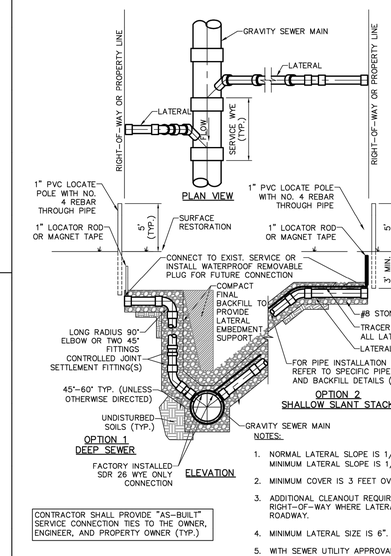
## TYPICAL HORIZONTAL BEND IN LATERAL DETAIL

NOT TO SCALE




## NEW CONNECTION TO EXISTING MANHOLE

NOT TO SCALE




NOTES:

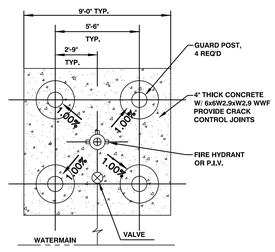
1. NORMAL LATERAL SLOPE IS 1/4" PER FOOT MINIMUM LATERAL SLOPE IS 1/8" PER FOOT
2. MINIMUM COVER IS 3 FEET OVER PIPE
3. ADDITIONAL CLEANOUT REQUIRED AT RIGHT-OF-WAY WHERE LATERAL CROSSES ROADWAY.
4. MINIMUM LATERAL SIZE IS 6".
5. WITH SEWER UTILITY APPROVAL, DEEP SEWER SLANT STACK MAY BE INSTALLED.
6. LATERALS SHALL BE PVC SDR 26.

CONTRACTOR SHALL PROVIDE "AS-BUILT" SERVICE CONNECTION TIES TO THE OWNER, ENGINEER, AND PROPERTY OWNER (TYP.)

## TYPICAL SERVICE CONNECTION

NOT TO SCALE

C6 HCRSD SANITARY DETAILS
NTS



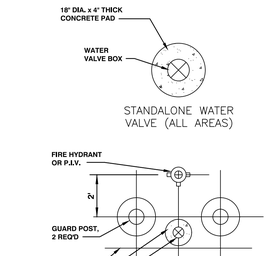

HYDRANT AND VALVE IN PAVED AREAS

NOTES:

PROVIDE POSITIVE DRAINAGE (1% MIN) AWAY FROM THE FIRE HYDRANT.

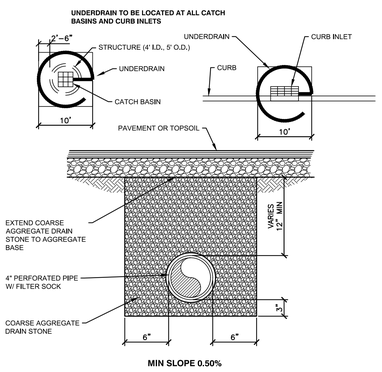
GUARD POSTS NOT REQUIRED WHERE FH IS BEHIND CURB. FIRE HYDRANTS LOCATED IN LOADING DOCK AREAS WILL REQUIRE 2 GUARD POSTS REGARDLESS IF THERE IS CURB.

SEE TOWN OF BROWNSBURG STANDARD DETAIL O.1 FOR VEHICLE IMPACT PROTECTION REQUIREMENTS FOR FIRE HYDRANTS.



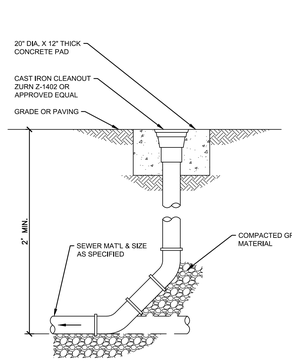

HYDRANT AND VALVE IN NON-PAVED AREAS

A1 FH AND WATER VALVE LAYOUT
NTS

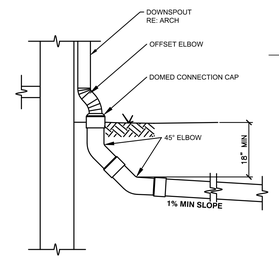



MIN SLOPE 0.50%

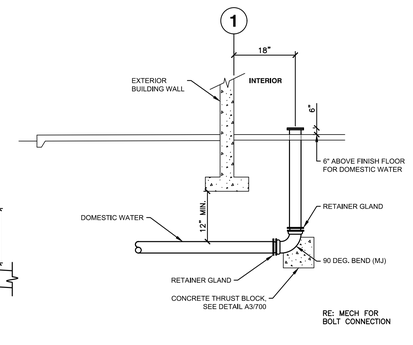
A3 PERFORATED UNDERDRAIN
NTS




A4 TYP. CLEANOUT DETAIL
NTS




A5 DOWNSPOUT CONNECTION
NTS




A6 TYP. DOMESTIC WATER RISER
NTS


WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


HENDRICKS COUNTY REGIONAL SEWER DISTRICT

meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

HENDRICKS COUNTY REGIONAL SEWER DISTRICT

STANDARD DETAILS

DREW C. SAXON REGISTERED No. PE11500679 STATE OF INDIANA PROFESSIONAL ENGINEER

CERTIFIED BY

| ISSUANCE INDEX |
|---|
| DATE: |
| 04/30/2021 |

| REVISION SCHEDULE | | |
|---|---|---|
| NO. | DESCRIPTION | DATE |
| 1 | DIRECT ADDED | 12/10/2018 |
| 3 | REVISIONS TO AIR RELEASE VALVE, LATERAL CONNECTION TO EXISTING SEWER, DETAIL AND LIFT STATION SPECIFICATIONS UPDATES | 01/03/2019 |
| 4 | | 01/21/2021 |
| SPECIFICATIONS | | |
| 1 | UPDATED TESTING REQ PER IDEM COMMENTS | 01/20/2017 |
| 2 | UPDATED TESTING REQ PER IDEM COMMENTS | 12/10/2018 |
| 3 | GENERAL REVISIONS | 01/03/2019 |
| 4 | ASTM REFERENCE | 08/05/2019 |
| | | |

Project Number 2000.00103

SANITARY SEWER STANDARD DETAILS

02

MEJER OUTLET #338A
9180 E. 56TH STREET
BROWNSBURG, INDIANA 46112

DETAILS

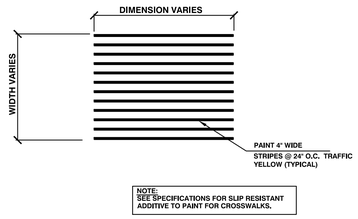
| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

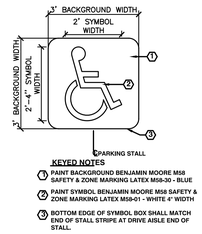
JOB NO.
10026635

C-700

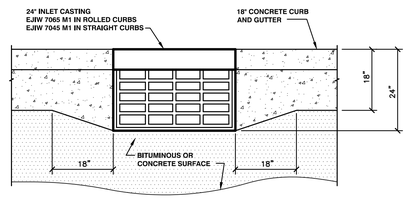

Images: ..\Xrefs\ 10026635TBLK.dwg
Layout: Tab: Plotted: 1/26/2026 10:07:49 AM
Last Saved By:BJVanGorder 1/26/2026 10:07:49 AM
G:\DE\Clients\Meijer\10026635 Meijer 338A-001, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cd\10026635-DET.dwg Plotted By:VanGorder, Brianne Plotted:January 29, 2026, 10:56:25 AM



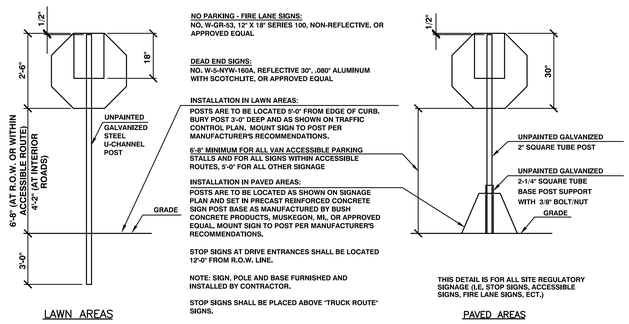

E1 PEDESTRIAN CROSSWALK
NTS



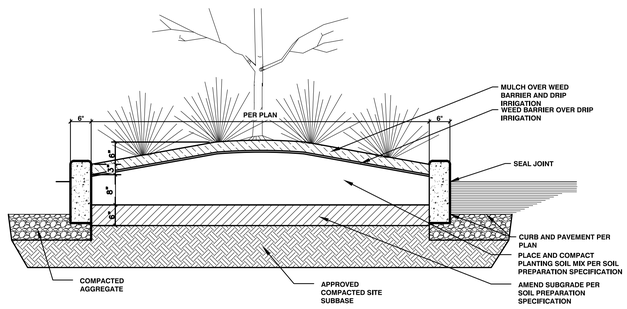

E2 ACCESIBLE PAVEMENT SYMBOL
NTS



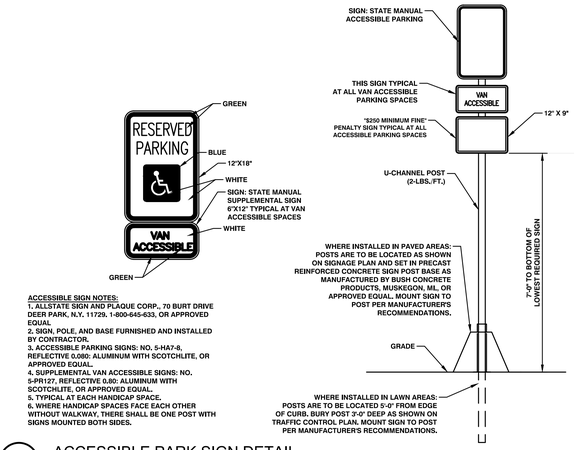

E3 CURB TRANSITION DETAIL
NTS



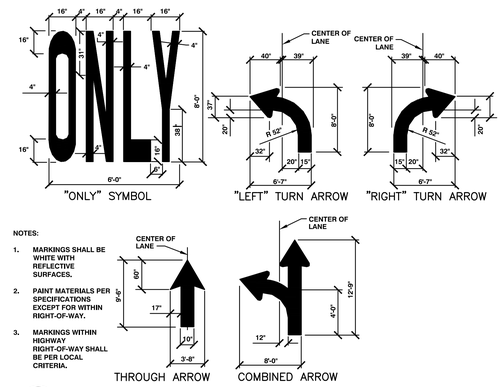

C1 TRAFFIC CONTROL SIGNAGE
NTS



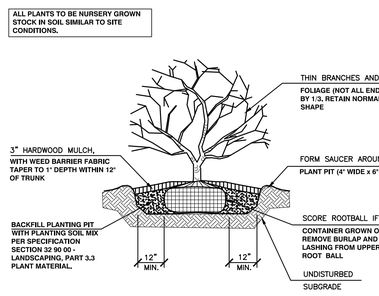

B1 LANDSCAPE PARKING LOT ISLAND SECTION
NTS



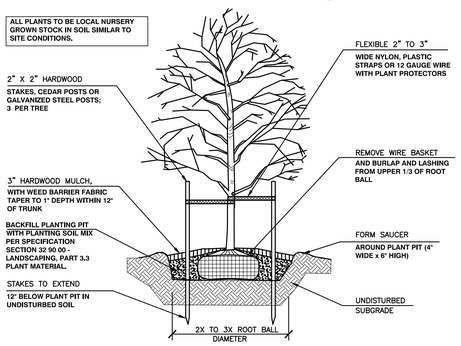

C3 ACCESSIBLE PARK SIGN DETAIL
NTS




C5 PAVEMENT MARKING DETAILS
NTS

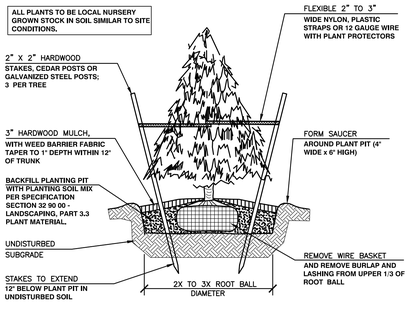



A1 SHRUB PLANTING
NTS



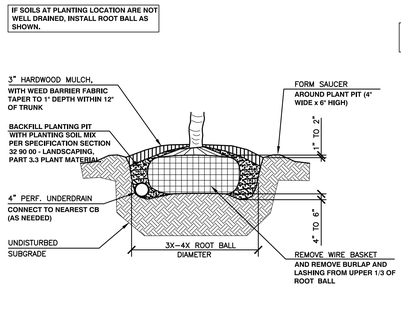

NOTE: CONTRACTOR TO SUPPLY, INSTALL, AND MAINTAIN TREE WATERING DEVICES PER THE PROJECT SPECIFICATIONS

A2 DECIDUOUS TREE PLANTING
NTS

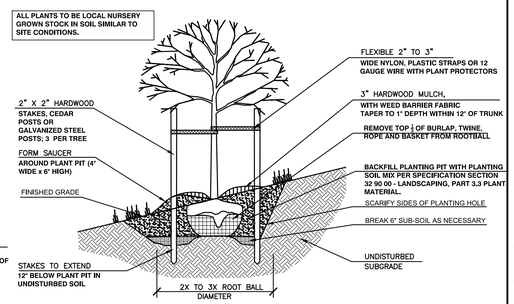



NOTE: CONTRACTOR TO SUPPLY, INSTALL, AND MAINTAIN TREE WATERING DEVICES PER THE PROJECT SPECIFICATIONS

A3 EVERGREEN TREE PLANTING
NTS




A4 POORLY DRAINED SOILS PLANTING
NTS




NOTE: CONTRACTOR TO SUPPLY, INSTALL, AND MAINTAIN TREE WATERING DEVICES PER THE PROJECT SPECIFICATIONS

A5 TREE PLANTING ON SLOPE
NTS

WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|

MEIJER OUTLOT #338A
9180 E. 56TH STREET
BROWNSBURG, INDIANA 46112

DETAILS

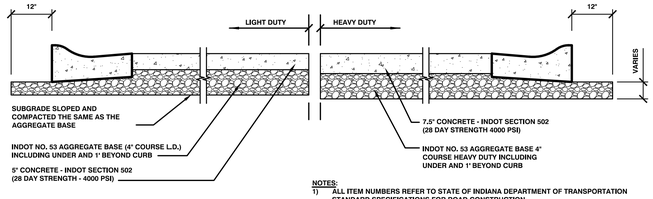
| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

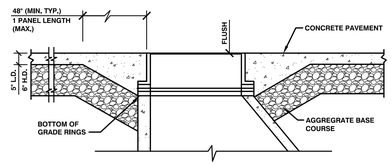
C-701

Images: - Xrefs: 10026635TBLK.dwg
Underlays: - None -
Last Saved By:B.VanGorder, 1/26/2026 10:07:49 AM
G:\DE\Clients\Meijer\10026635 Meijer 338A-OD1, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cat\10026635-DET.dwg Plotted By:VanGorder, Brianne Plotted:January 29, 2026, 10:56:37 AM

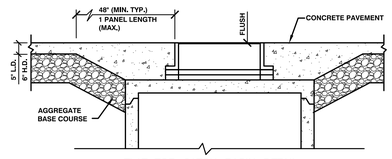



NOTES:
1) ALL ITEM NUMBERS REFER TO STATE OF INDIANA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD CONSTRUCTION.
2) THE POURING FOR BOTH TYPES CAN BE COMPLETED AT THE SAME TIME. ALL PAVEMENT JOINTS SHOULD BE IN CONFORMANCE WITH DETAIL PROVIDED ON THIS SHEET.
3) SEE SPECIFICATIONS FOR MODIFICATIONS TO STANDARD CONCRETE D.O.T. MIXES.

## D1 LIGHT DUTY/HEAVY DUTY CONCRETE PAVEMENT SECTION
NTS

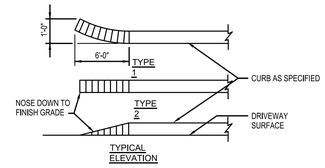



CONE TOP MANHOLE DETAIL

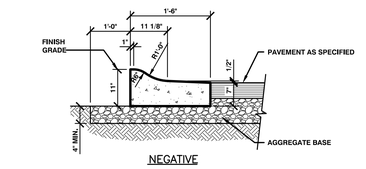



FLAT TOP CATCH BASIN DETAIL

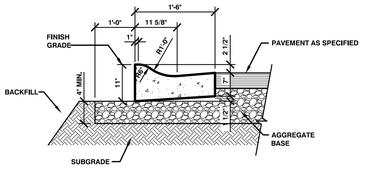
## D3 TYPICAL CONCRETE PAVEMENT AT MH AND CB
NTS




## E4 CURB TAPER
NTS



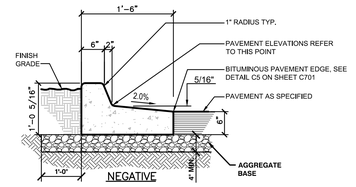

NEGATIVE



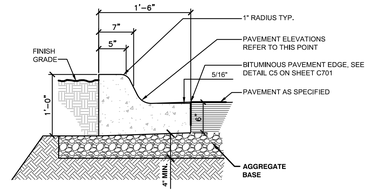

POSITIVE

1. FOR USE OUTSIDE O.C.R.C. RIGHT-OF-WAY INFLUENCE.
2. CURBS MAY BE INSTALLED INTEGRALLY WITH SLAB POUR AT CONTRACTORS OPTION.

## E5 ROLLED CURB & GUTTER DETAIL
NTS

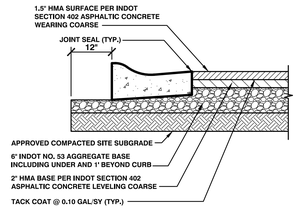



NEGATIVE



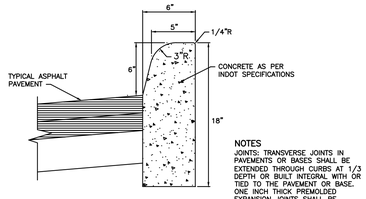

POSITIVE

## E6 STRAIGHT CURB AND GUTTER
NTS



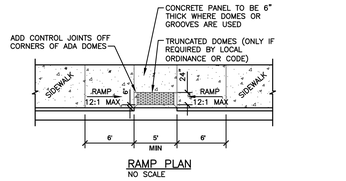

NOTES:
1. ALL ITEM NUMBERS REFER TO LOCAL STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
2. THE SURFACE FOR BOTH TYPES CAN BE COMPLETED AT THE SAME TIME. ALL PAVEMENT JOINTS SHOULD BE SQUARE WITHOUT FEATHERING.
3. SEE SPECIFICATIONS FOR MODIFICATIONS TO STANDARD BITUMINOUS D.O.T. MIXES.

## C1 LIGHT DUTY PAVEMENT SECTION
NTS



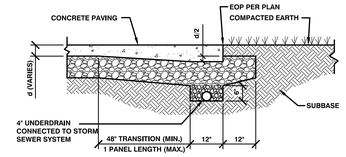

NOTES
JOINTS: TRANSVERSE JOINTS IN PAVEMENTS OR BASES SHALL BE EXTENDED THROUGH CURBS AT 1/3 DEPTH OR BUILT INTEGRAL WITH OR TIED TO THE PAVEMENT OR BASE. ONE INCH THICK PREMOLDED EXPANSION JOINTS SHALL BE CONSTRUCTED AT THE BEGINNING AND END OF INTERSECTION RADIUS CURB AND AT INTERVALS NOT TO EXCEED 300 FT.

## C2 6" STRAIGHT CURB
NTS

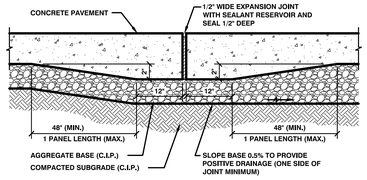



RAMP PLAN
NO SCALE

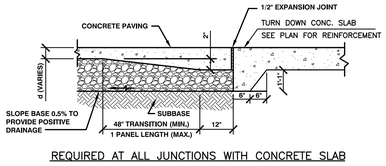
## D4 TRUNCATED DOME DETAIL
NTS




REQUIRED AT ALL JUNCTIONS WITH LAWN AREAS

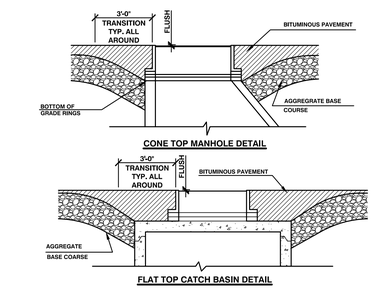



## C4 EXPANSION JOINT
NTS

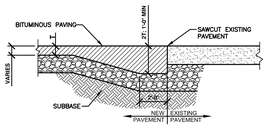



REQUIRED AT ALL JUNCTIONS WITH CONCRETE SLAB

## C5 CONCRETE PAVEMENT EDGE DETAIL
NTS



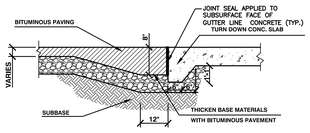

CONE TOP MANHOLE DETAIL




REQUIRED AT ALL JUNCTIONS WITH EXISTING PAVEMENT

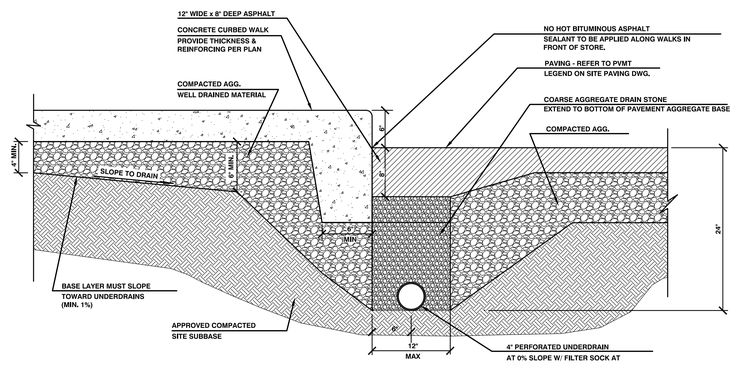



FLAT TOP CATCH BASIN DETAIL

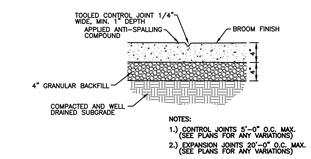



REQUIRED AT ALL JUNCTIONS WITH CONCRETE

## B1 BITUMINOUS PAVEMENT EDGE DETAILS
NTS

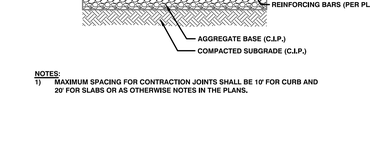



## A1 CONCRETE CURBED WALK
NTS



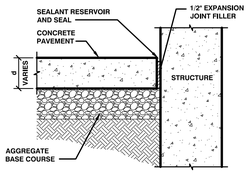

NOTES:
1.) CONTROL JOINTS 5'-0" O.C. MAX. (SEE PLANS FOR ANY VARIATIONS)
2.) EXPANSION JOINTS 20'-0" O.C. MAX. (SEE PLANS FOR ANY VARIATIONS)

## A3 CONCRETE WALK DETAIL
NTS

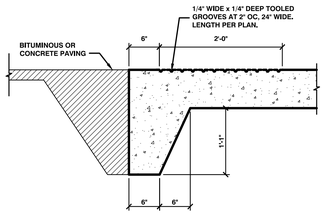



NOTES:
1) MAXIMUM SPACING FOR CONTRACTION JOINTS SHALL BE 10' FOR CURB AND 20' FOR SLABS OR AS OTHERWISE NOTES IN THE PLANS.

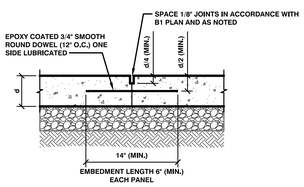
## B4 CONTRACTION JOINT (UNDOWELED)
NTS



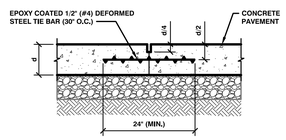

## B5 CONCRETE PAVEMENT EDGE
NTS



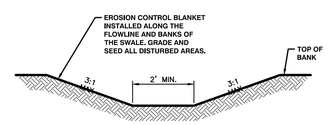

## B6 CONCRETE GROOVE DETAIL
NTS




## A4 DOWELED BUTT JOINT
NTS




## A5 TIED BUTT JOINT
NTS




## A6 TYPICAL DRAINAGE SWALE
NTS

WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 43430
937.461.5660

meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|

MEIJER OUTLOT #338A
9160 E. 56TH STREET
BROWNSBURG, INDIANA 46112

DETAILS

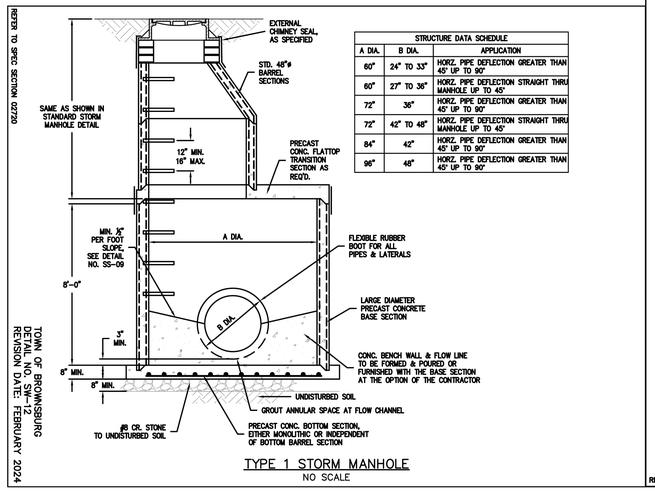
| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

C-702

Images: , Xrefs: 10026635TBLK.dwg
Layout: C-702 Name: C-702
Last Saved By:BVonGorder, 1/26/2026 10:07:49 AM
G:\DE\Clients\Meijer\10026635 Meijer 338A-001, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cd\10026635-DET.dwg Plotted By:VonGorder, Brianne Plotted:January 29, 2026, 10:56:41 AM

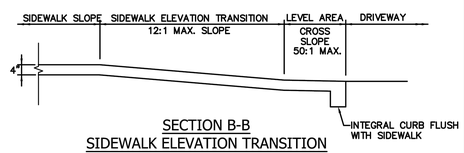



| STRUCTURE DATA SCHEDULE | | |
|---|---|---|
| A DIA. | B DIA. | APPLICATION |
| 60" | 24" TO 33" | HORZ. PIPE DEFLECTION GREATER THAN 45° UP TO 90° |
| 60" | 27" TO 36" | HORZ. PIPE DEFLECTION STRAIGHT THRU MANHOLE UP TO 45° |
| 72" | 36" | HORZ. PIPE DEFLECTION GREATER THAN 45° UP TO 90° |
| 72" | 42" TO 48" | HORZ. PIPE DEFLECTION STRAIGHT THRU MANHOLE UP TO 45° |
| 84" | 42" | HORZ. PIPE DEFLECTION GREATER THAN 45° UP TO 90° |
| 96" | 48" | HORZ. PIPE DEFLECTION GREATER THAN 45° UP TO 90° |

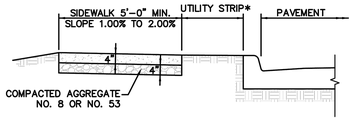
TYPE 1 STORM MANHOLE
NO SCALE

REFER TO SPEC SECTION 02500, 02502

TOWN OF BROWNSBURG
DETAIL NO. TR-06
REVISION DATE: FEBRUARY 2024




SECTION B-B
SIDEWALK ELEVATION TRANSITION




SECTION A-A
SIDEWALK WITH UTILITY STRIP

* UTILITY STRIP WIDTH SHALL COMPLY WITH THE CURRENT TOWN OF BROWNSBURG SUBDIVISION CONTROL ORDINANCE AND CURRENT TOWN OF BROWNSBURG THOROUGHFARE PLAN.

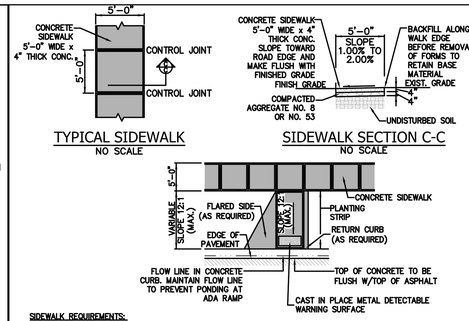
CONCRETE SIDEWALK DETAIL
NO SCALE

NOTE:

CONCRETE SIDEWALK SHALL BE INSTALLED ON COMPACTED SUBGRADE. NO. 8 OR NO. 53 STONE SHALL BE INSTALLED AND COMPACTED ON THE APPROVED SUBGRADE. CONCRETE SHALL BE INDOT CLASS A CONCRETE AND IT SHALL HAVE A 28-DAY MINIMUM CONCRETE COMPRESSIVE STRENGTH OF 4,000 PSI. WHERE A SIDEWALK PASSES THROUGH A DRIVE APPROACH, IT SHALL BE THE SAME THICKNESS AS THE ADJACENT CONCRETE DRIVE, THE CONCRETE EQUIVALENT FOR THE ADJACENT HMA DRIVE, OR SIX (6) INCHES, WHICHEVER IS GREATER.

REFER TO SPEC SECTION 02500, 02502

TOWN OF BROWNSBURG
DETAIL NO. TR-07
REVISION DATE: FEBRUARY 2024




TYPICAL SIDEWALK
NO SCALE

SIDEWALK SECTION C-C
NO SCALE

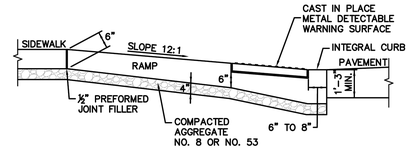
SIDEWALK REQUIREMENTS:

1. CONCRETE FOR SIDEWALKS SHALL MEET THE FOLLOWING SPECIFICATIONS:
   A) 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS
   B) 564 LBS. CEMENT PER CUBIC YARD CONCRETE
   C) MAXIMUM WATER CEMENT RATIO: 0.40
   D) AIR CONTENT: 5%-7%
   E) WATER REDUCING ADMIXTURE REQUIRED
2. SIDEWALKS SHALL HAVE A BROOM FINISH WITH TOOLED EDGES AND TOOLED CONTROL JOINTS.
3. CURING COMPOUND EQUAL TO "HYDROCIDE CURING COMPOUND" AS MANUFACTURED BY SONNEBORN, SHALL BE APPLIED TO FINISHED CONCRETE.
4. EXPANSION/CONTRACTION JOINTS SHALL BE INSTALLED AT MAXIMUM OF 50' INTERVALS, AND WHERE CONCRETE WILL ABUT EXISTING WALKS, CURBING, DRIVES, OR OTHER CONCRETE.
5. EXPANSION/CONTRACTION JOINT SHALL BE INSTALLED WITH THREE (3) 1/4" DIA. SMOOTH DOWEL BARS, EACH 12" LONG. DOWEL BARS SHALL HAVE A FULL END CAP ON ONE END. EXPANSION/CONTRACTION JOINT SHALL BE FILLED WITH EXPANSION JOINT FILLER. CONNECTION TO EXISTING WALKS OR SLABS SHALL REQUIRE DRILLING TO INSTALL DOWELS. EPOXY SHALL BE USED TO SET DOWELS IN EXISTING CONCRETE.
6. AT DRIVEWAYS, CONCRETE SHALL BE REINFORCED WITH 6 x 6 x 6/6 WELDED WIRE FABRIC. REINFORCING WELDED WIRE FABRIC SHALL CONFORM TO ASTM 185-73.
7. SIDEWALK THICKNESS IN DRIVEWAY AND APRON BETWEEN SIDEWALK AND CURB SHALL MATCH THE EXISTING CONCRETE DRIVEWAY, THE EQUIVALENT CONCRETE THICKNESS OF THE HMA DRIVEWAY OR SIX (6) INCHES, WHICHEVER IS GREATER.
8. DETAIL IS MEANT TO PROVIDE GUIDANCE ONLY, RAMPS SHALL MEET THE REQUIREMENT OF INDOT STANDARD DRAWINGS E 604-SWCR AND PROWAG.

SIDEWALK ADA RAMP DETAIL
NO SCALE

REFER TO SPEC SECTION 02500, 02502

TOWN OF BROWNSBURG
DETAIL NO. TR-08
REVISION DATE: FEBRUARY 2024




DETECTABLE WARNING SURFACE DETAIL
NO SCALE

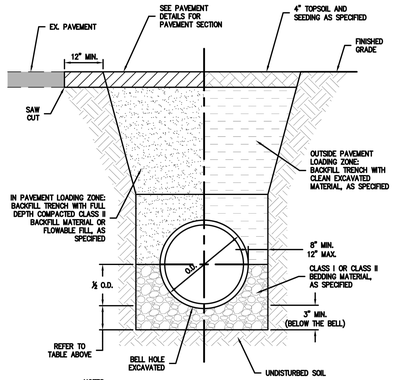
NOTE:

THIS DETAIL SHALL BE USED WHEN ACCESSIBLE RAMPS ARE TO BE INSTALLED. DETECTABLE WARNING SURFACE SHALL MEET APPLICABLE TOWN STANDARDS. WHEN PLACED IN CORNER RADII, MATERIAL SHALL BE CAST IRON DETECTABLE WARNING PLATES, SIMILAR TO NEENAH FOUNDRY PRODUCT, OR APPROVED EQUAL.

REFER TO SPEC SECTION 02500, 02502

TOWN OF BROWNSBURG
DETAIL NO. TR-08
REVISION DATE: FEBRUARY 2024

| PIPE SIZE | 12" TO 15" | 18" TO 30" | 36" & OVER |
|---|---|---|---|
| BEDDING BELOW THE PIPE BARREL | 4" | O.D. / 4 | 8" |



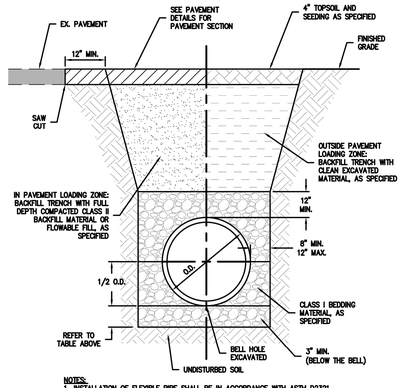

NOTES:
1. RIGID PIPE MATERIALS FOR STORM SEWERS INCLUDE DUCTILE IRON AND REINFORCED CONCRETE PIPE (RCP).
2. RIGID PIPE MATERIALS FOR SANITARY SEWERS INCLUDE DUCTILE IRON PIPE.
3. PAVEMENT LOADING ZONE IS THE AREA WITHIN 5 FEET OF ANY EDGE OF PAVEMENT, CURB, GUTTER, SIDEWALK OR SIMILAR STRUCTURE.

RIGID GRAVITY PIPE TRENCH
NO SCALE

REFER TO SPEC SECTION 02220

TOWN OF BROWNSBURG
DETAIL NO. OT-02
REVISION DATE: FEBRUARY 2024

| PIPE SIZE | 12" TO 15" | 18" TO 30" | 36" & OVER |
|---|---|---|---|
| BEDDING BELOW THE PIPE BARREL | 4" | O.D. / 4 | 8" |

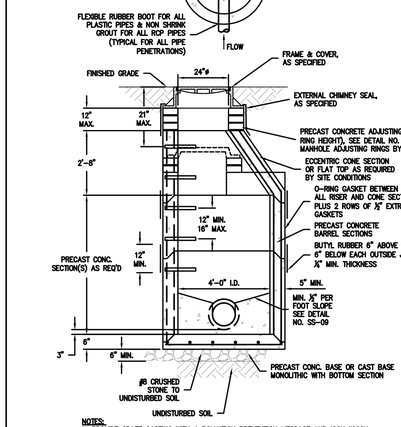



NOTES:
1. INSTALLATION OF FLEXIBLE PIPE SHALL BE IN ACCORDANCE WITH ASTM D2321.
2. FLEXIBLE PIPE MATERIALS FOR STORM SEWERS INCLUDE HIGH DENSITY POLYETHYLENE (HDPE), POLYPROPYLENE, AND POLYVINYL CHLORIDE (PVC) PIPE.
3. FLEXIBLE PIPE MATERIALS FOR SANITARY SEWERS INCLUDE POLYVINYL CHLORIDE (PVC) PIPE.
4. PAVEMENT LOADING ZONE IS THE AREA WITHIN 5 FEET OF ANY EDGE OF PAVEMENT, CURB, GUTTER, SIDEWALK OR SIMILAR STRUCTURE.

FLEXIBLE GRAVITY PIPE TRENCH
NO SCALE

REFER TO SPEC SECTION 02220

TOWN OF BROWNSBURG
DETAIL NO. OT-04
REVISION DATE: FEBRUARY 2024

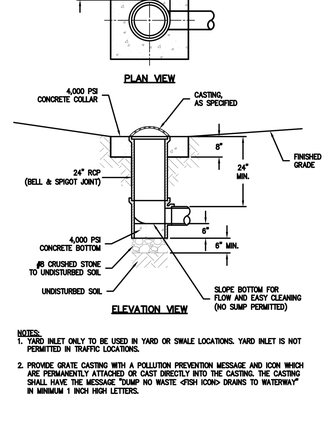



NOTES:
1. PROVIDE GRATE CASTING WITH A POLLUTION PREVENTION MESSAGE AND ICON WHICH ARE PERMANENTLY ATTACHED OR CAST DIRECTLY INTO THE CASTING. THE CASTING SHALL HAVE THE MESSAGE "DUMP NO WASTE <FISH ICON> DRAINS TO WATERWAY" IN MINIMUM 1 INCH HIGH LETTERS.
2. INSTALL CASTING ¼" BELOW FINISHED PAVEMENT ELEVATION.

STANDARD STORM MANHOLE
NO SCALE

REFER TO SPEC SECTION 02720

TOWN OF BROWNSBURG
DETAIL NO. SW-11
REVISION DATE: FEBRUARY 2024




NOTES:
1. YARD INLET ONLY TO BE USED IN YARD OR SWALE LOCATIONS. YARD INLET IS NOT PERMITTED IN TRAFFIC LOCATIONS.
2. PROVIDE GRATE CASTING WITH A POLLUTION PREVENTION MESSAGE AND ICON WHICH ARE PERMANENTLY ATTACHED OR CAST DIRECTLY INTO THE CASTING. THE CASTING SHALL HAVE THE MESSAGE "DUMP NO WASTE <FISH ICON> DRAINS TO WATERWAY" IN MINIMUM 1 INCH HIGH LETTERS.

YARD INLET
NO SCALE

REFER TO SPEC SECTION 02720

TOWN OF BROWNSBURG
DETAIL NO. SW-14
REVISION DATE: FEBRUARY 2024

WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660

meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|

MEIJER OUTLOT #338A
9160 E. 56TH STREET
BROWNSBURG, INDIANA 46112

TOWN OF BROWNSBURG DETAILS

| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

C-703

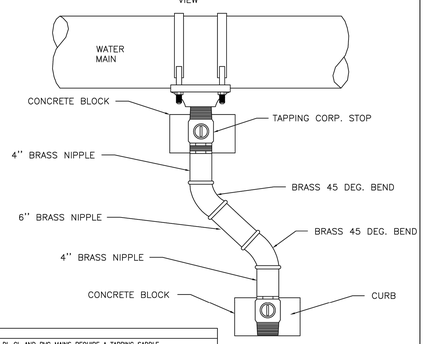
Indiana 811
Know what's below.
Call before you dig.

Images: , Xrefs: 10026635TBLK.dwg
Layout: C-703, Name: C-703, 1:1
Last Saved By:BVanGorder, 1/26/2026 10:07:49 AM
G:\DE\Clients\Meijer\10026635 Meijer 338A-OD1, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cd\10026635-DET.dwg Plotted By:VanGorder, Brianne Plotted:January 29, 2026, 10:56:56 AM

CITIZENS WATER
## STANDARD PRACTICE N

REVISION DATE: 7/25/2018 ISSUE DATE: 6/8/2009

1-1/2" & 2" SERVICE LINE
SWING JOINT




| NOTES: |
|---|
| 1) ALL SIZE DI, CI, AND PVC MAINS REQUIRE A TAPPING SADDLE |
| 2) ALL SIZE POLY MAINS REQUIRE A FUSED ON TAPPING SADDLE FOR 1-1/2" AND 2" SERVICE LINES. |
| 3) SADDLE AND TAPPING CORP. STOP SUPPLIED & INSTALLED BY CCG. THIS MATERIAL WILL NOT BE SUPPLIED ON DEVELOPER PROJECTS. |
| 4) ALL TAP EXCAVATIONS ARE REQUIRED TO BE BACKFILLED WITH GRANULAR OR FLOWABLE FILL TO A POINT 1'-0" ABOVE WATER MAIN |
| 5) SWING JOINT DIRECTION MUST NOT DEVIATE FROM DRAWING. |
| 6) A COMPRESSION FITTING MUST BE USED OUT OF CURB STOP TO SERVICE LINE. |
| 7) STIFFENERS MUST BE USED ON ALL POLY SERVICES. |
| 8) 4" PLASTIC RISER W/ 5-1/4" VALVE BOX MUST BE INSTALLED OVER CURB STOP AND RESTING ON CONCRETE BLOCK. |
| 9) POLY SERVICES REQUIRE A TRACER WIRE WHICH SHOULD BE ROUTED ON THE OUTSIDE OF THE 4" RISER THEN STUBBED INSIDE THE RISER AT THE TOP. VERIFY THIS WIRE DOES NOT INTERFERE WITH THE OPERATION OF THE CURB STOP. |

CITIZENS WATER
## STANDARD PRACTICE O

REVISION DATE: 11/06/2023 ISSUE DATE: 6/8/2009

INSTALLATION OF RESTRAINTS

MAIN ENDING WITH BLOW-OFF ASSEMBLY OR HYDRANT

6" & 8" MAINS WITH BLOW-OFF — MAIN SIZE TAPPED PLUG, B.O.

MAINS 10" & LARGER WITH BLOW-OFF — B.O., MJ, 6" PLUG WITH 2" TAP, KICKER REQUIRED, MAIN SIZE X 6" TEE, MAIN SIZE PLUG

6" MAINS WITH HYDRANT — MJ

8" MAINS WITH HYDRANT — MJ MJ

10" MAINS & LARGER WITH HYDRANT — MJ, KICKER REQUIRED, MAIN SIZE PLUG

1 JOINT RESTRAINT & 1 MECHANICAL JOINT RESTRAINT MIN. 20'

IN-LINE FITTINGS

(2) JOINT RESTRAINT ON EACH SIDE — 6" & 8": MJ MJ; 10" & LARGER

(2) JOINT RESTRAINTS AND (1) MECH. JOINT RESTRAINT ON EACH SIDE

BEND RESTRAINT

1. ALL BENDS REQUIRE RESTRAINERS.
2. ALL BENDS ARE DUCTILE IRON AND REQUIRE (1) MECHANICAL JOINT RESTRAINT ON EACH SIDE OF THE FITTING.
3. 22 1/2° BENDS REQUIRE ONLY MECHANICAL JOINT RESTRAINTS AND 30° BENDS REQUIRE MECHANICAL JOINT RESTRAINTS AND A SET OF JOINT RESTRAINTS 40' EACH SIDE OF THE FITTING.
4. THRUST BLOCK REQUIRED ON ALL 45° & 90° BENDS.

MAIN LINE REDUCER

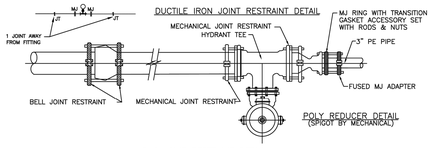
6" & 8": USE 1 MECHANICAL JOINT RESTRAINT & 1 JOINT RESTRAINER @ MIN. 20' ON EACH SIDE OF REDUCER. MJ MJ

10" & LARGER: USE 2 JOINT RESTRAINERS ON THE LARGER SIDE @ MIN. 20' ON THE SMALL SIDE @ MIN. 20'. MJ MJ

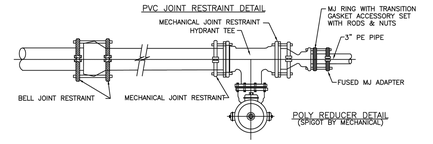
FITTING RESTRAIN WITH PE PIPE

WATER STOP, MJ ADAPTER, MJ PVC OR DI, PE PIPE, ANY FITTING

DUCTILE IRON JOINT RESTRAINT DETAIL




PVC JOINT RESTRAINT DETAIL




CITIZENS WATER
## STANDARD PRACTICE O.1

REVISION DATE: 8/25/2010 ISSUE DATE: 9/1/2010

VEHICLE IMPACT PROTECTION FOR HYDRANTS

ADOPTED CODE FOR THE STATE OF INDIANA, TAKEN FROM THE 2006 INTERNATIONAL FIRE CODE.

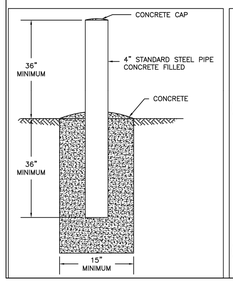
SECTION 312 VEHICLE IMPACT PROTECTION

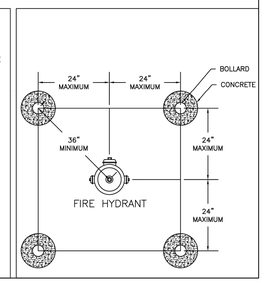
312.1 GENERAL. VEHICLE IMPACT PROTECTION REQUIRED BY THIS CODE SHALL BE PROVIDED BY POSTS THAT COMPLY WITH SECTION 312.2 OR BY OTHER APPROVED PHYSICAL BARRIERS THAT COMPLY WITH SECTION 312.3.

312.2 POSTS. GUARD POSTS SHALL COMPLY WITH ALL OF THE FOLLOWING REQUIREMENTS:

1. CONSTRUCTED OF STEEL NOT LESS THAN 4 INCHES (102 MM) IN DIAMETER AND CONCRETE FILLED.
2. SPACED NOT MORE THAN 4 FEET (1219 MM) BETWEEN POSTS ON CENTER.
3. SET NOT LESS THAN 3 FEET (914 MM) DEEP IN A CONCRETE FOOTING OF NOT LESS THAN A 15-INCH (381 MM) DIAMETER.
4. SET WITH THE TOP OF THE POSTS NOT LESS THAN 3 FEET (914 MM) ABOVE GROUND.
5. LOCATED NOT LESS THAN 3 FEET (914 MM) FROM THE PROTECTED OBJECT

312.3 OTHER BARRIERS. PHYSICAL BARRIERS SHALL BE A MINIMUM OF 36 INCHES (914 MM) IN HEIGHT AND SHALL RESIST A FORCE OF 12,000 POUNDS (53 375 N) APPLIED 36 INCHES (914 MM) ABOVE ADJACENT GROUND SURFACE.



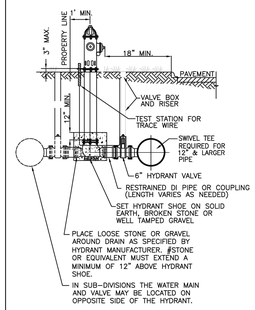




CITIZENS WATER
## STANDARD PRACTICE B

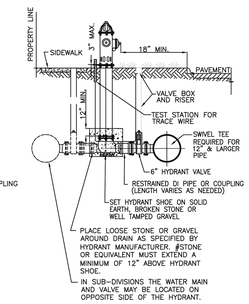
REVISION DATE: 10/02/2019 ISSUE DATE: 12/31/2019

STANDARD HYDRANT SETTING

NOTES:
1. ALL HYDRANTS SHALL BE RESTRAINED TO THE HYDRANT TEE WITH DUCTILE IRON BRANCH PIPING ENCASED IN POLYETHYLENE WRAP.
2. SWIVEL 90° BEND MAY BE USED TO INSTALL HYDRANT AND VALVE IN GRASS STRIP BETWEEN CURB & SIDEWALK.
3. A MANUFACTURED "OUT OF SERVICE" SIGN WILL BE REQUIRED ON HYDRANTS UNTIL MAIN HAS BEEN PLACED "IN SERVICE" BY THE INSPECTOR.
4. FOR BRANCH PIPE LONGER THAN 10', INSTALL TRACING WIRE ALONG HYDRANT VALVE RISER.




SECTION VIEW
(WITHOUT SIDEWALK)



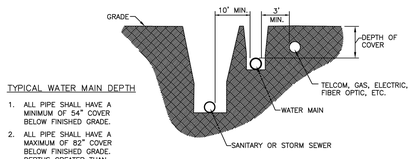

SECTION VIEW
(WITH SIDEWALK)

CITIZENS WATER
## STANDARD PRACTICE A

REVISION DATE: 09/29/2021 ISSUE DATE: 6/8/2009

WATER MAIN SEPARATION FROM OTHER UTILITIES

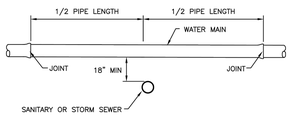
NOTE:
WATER MAIN AND SANITARY SEWERS SHALL BE PLACED IN SEPARATE TRENCHES.




TYPICAL WATER MAIN DEPTH

1. ALL PIPE SHALL HAVE A MINIMUM OF 54" COVER BELOW FINISHED GRADE.
2. ALL PIPE SHALL HAVE A MAXIMUM OF 82" COVER BELOW FINISHED GRADE. DEPTHS GREATER THAN 82" COVER WILL REQUIRE A LOWERING

WATER MAIN LAYING PARALLEL TO OTHER UTILITIES SECTION VIEW

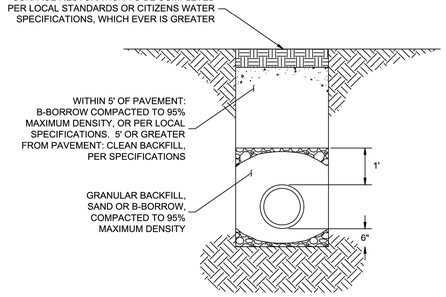



WATER MAIN CROSSING SEWER SECTION VIEW

CITIZENS WATER
## STANDARD PRACTICE A.1

REVISION DATE: 9/20/2018 ISSUE DATE: 7/17/2013

WATER MAIN AND SERVICE BACKFILL REQUIREMENTS



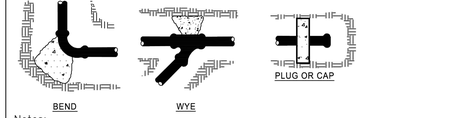

SCALE: NTS

NOTE:
COMPACTED BACKFILL IN LIFTS OF 12" MAXIMUM. TRENCH EXCAVATION SHALL CONFORM TO LOCAL STANDARDS.

CITIZENS WATER
## STANDARD PRACTICE A.2

REVISION DATE: 10/02/2019 ISSUE DATE: 12/31/2019

THRUST BLOCKING




Notes:
1) CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
2) KEEP CONCRETE CLEAR OF JOINT AND ACCESSORIES.
3) POLYETHYLENE ENCASEMENT SHALL BE PLACED BETWEEN CONCRETE AND FITTINGS.
4) ALL POURED IN PLACE CONCRETE SHALL HAVE A 28 DAY STRENGTH OF 3,000 P.S.I., 2" TO 4" SLUMP AND INCLUDE WIRE MESH FOR REINFORCEMENT.
5) MINIMUM SOIL BEARING SURFACE AREA REQUIREMENTS ARE PROVIDED BELOW BASED ON 150 P.S.I. WATER PRESSURE PLUS 100 P.S.I. WATER HAMMER AND SOIL BEARING CAPACITY OF 3,000 POUNDS PER SQUARE FOOT.

| Minimum Soil Bearing Surface Area (ft2) (Assuming 3,000 psf Soil Bearing Capacity) | | | | |
|---|---|---|---|---|
| Pipe Size | Horizontal Bends | | | Tee or Dead End (Plug/Cap) |
| | 22-1/2° | 45° | 90° | |
| 6" | | 6 | 8 | 6 |
| 8" | | 6 | 8 | 6 |
| 12" | 4 | 6 | 11 | 8 |
| 16" | 6 | 11 | 22 | 15 |
| 20" | 9 | 18 | 36 | 24 |
| 24" | 13 | 27 | 50 | 36 |
| 30" | 20 | 45 | 76 | 57 |
| 36" | 31 | 59 | 115 | 80 |


WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|
| | | |

MEIJER OUTLOT #338A
9180 E. 56TH STREET
BROWNSBURG, INDIANA 46112

WATER DETAILS

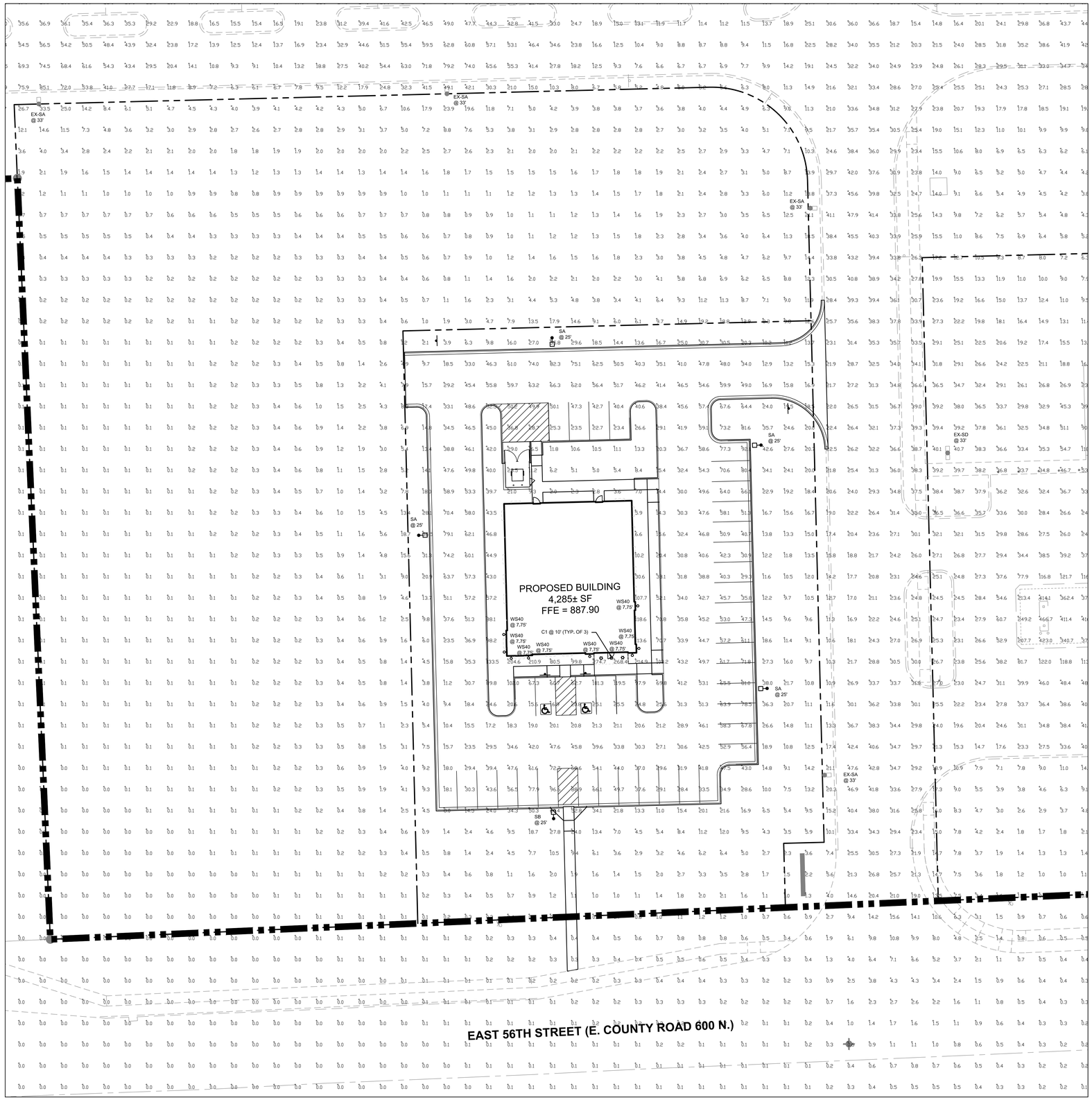
| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

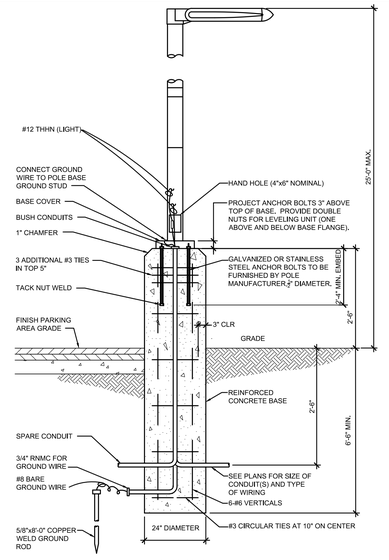
JOB NO.
10026635

C-704


Images: , Xrefs: 10026633TBLK.dwg
Layout: C-704 WATER DETAILS
Last Saved By:BVanGorder, 1/26/2026 10:07:49 AM
G:\DE\Clients\Meijer\10026635 Meijer 338A-OD1, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cat\10026635-DET.dwg Plotted By:VanGorder, Brianne Plotted:January 29, 2026, 10:57:22 AM




A1 PHOTOMETRIC PLAN
1"=20'




D6 RAISED CONCRETE LIGHTING BASE DETAIL
NTS

| STATISTICAL AREA SUMMARY | | | | | |
|---|---|---|---|---|---|
| LABEL | AVG | MAX | MIN | AVG/MIN | MAX/MIN |
| SITE | 14.8 | 466.7 | 0.0 | N.A. | N.A. |
| DENTAL OFFICE SITE | 34.3 | 274.7 | 0.2 | 171.7 | 1374 |
| PARKING LOT | 51.9 | 96.6 | 8.0 | 6.5 | 12.1 |
| PROPERTY LINE | 6.8 | 19.2 | 0.1 | 68.2 | 192.0 |

NOTES:
1. CALCULATION POINTS IN LUX (LUMEN / SQUARE METER) PER TOWN OF BROWNSBURG GUIDELINES.
2. MOUNTING HEIGHT VARIES. SEE LABEL ON PLAN.

C6 CALCULATION SUMMARY
NTS

| LUMINAIRE SCHEDULE | | | | | |
|---|---|---|---|---|---|
| LABEL | QTY | TAG | DESCRIPTION | LUM. LUMENS | LLF |
| WS40 | 8 | WALL MOUNTED, LED | REFER TO LIGHTING FIXTURE IN ARCHITECTURAL PLAN SET | 4270 | 0.810 |
| SA | 3 | SITE LIGHT ARM MOUNTED, TYPE 3 BACKLIGHT CONTROL, 32,000 LUMEN LED, 22.5' POLE | RSX3 LED P4 40K R3 HS | 28386 | 0.810 |
| SB | 1 | SITE LIGHT ARM MOUNTED, TYPE 4 BACKLIGHT CONTROL, 34,000 LUMEN LED, 22.5' POLE | RSX3 LED P4 40K R4 HS | 26929 | 0.810 |
| C1 | 3 | CANOPY MOUNTED, LED | REFER TO LIGHTING FIXTURE IN ARCHITECTURAL PLAN SET | 4142 | 0.810 |

B5 LUMINAIRE SCHEDULE
NTS

0 20 40 60
GRAPHIC SCALE IN FEET

Indiana 811
Know what's below. Call before you dig.


WOOLPERT
4454 Idea Center Boulevard
Dayton, OH 45430
937.461.5660


meijer
2929 WALKER AVENUE
GRAND RAPIDS, MICHIGAN 49544
(616) 453-6711

| REV. | DATE | DESCRIPTION |
|---|---|---|

MEIJER OUTLOT #338A
9180 E. 56TH STREET
BROWNSBURG, INDIANA 46112

PHOTOMETRIC PLAN

| ISSUED FOR: | |
|---|---|
| PERMIT | 01/29/26 |
| BID | XX/XX/26 |
| CONSTRUCTION | XX/XX/26 |

| PROJECT MANAGER | DESIGNER |
|---|---|
| BLS | JMR |

JOB NO.
10026635

C-800


Images: , Xrefs: 10026635-p.dwg; 10026635-x.dwg; 10026635TBLK.dwg; 10026635-photometrics.dwg
Layout Tab Name: C-800 PHOTOMETRIC PLAN
Last Saved By:Bischof, 12/29/2025 11:04:36 AM
G:\DE\Clients\Meijer\10026635 Meijer 338A-OD1, Brownsburg, IN\4.0 Disciplines\Civil\Cadd\Cd\10026635-LTG.dwg Plotted By:VanGorder, Brianne Plotted:January 29, 2026, 10:58:14 AM




| MATERIAL | PERCENTAGE |
|---|---|
| BRICK | 48% |
| EIFS | 52% |

WEST ELEVATION




| MATERIAL | PERCENTAGE |
|---|---|
| BRICK | 67% |
| EIFS | 33% |

SOUTH ELEVATION

## MATERIALS

BRICK + SOLDIER
TAYLOR BRICK
'319 GREY
MODULAR WIRECUT'

BRICK + SOLDIER
TAYLOR BRICK
'323 GREY
MODULAR WIRECUT'

EIFS
SHERWIN WILLIAMS
SW7015
'REPOSE GREY'

CANVAS AWNING
SUNBRELLA
'HOGAN CAROB'

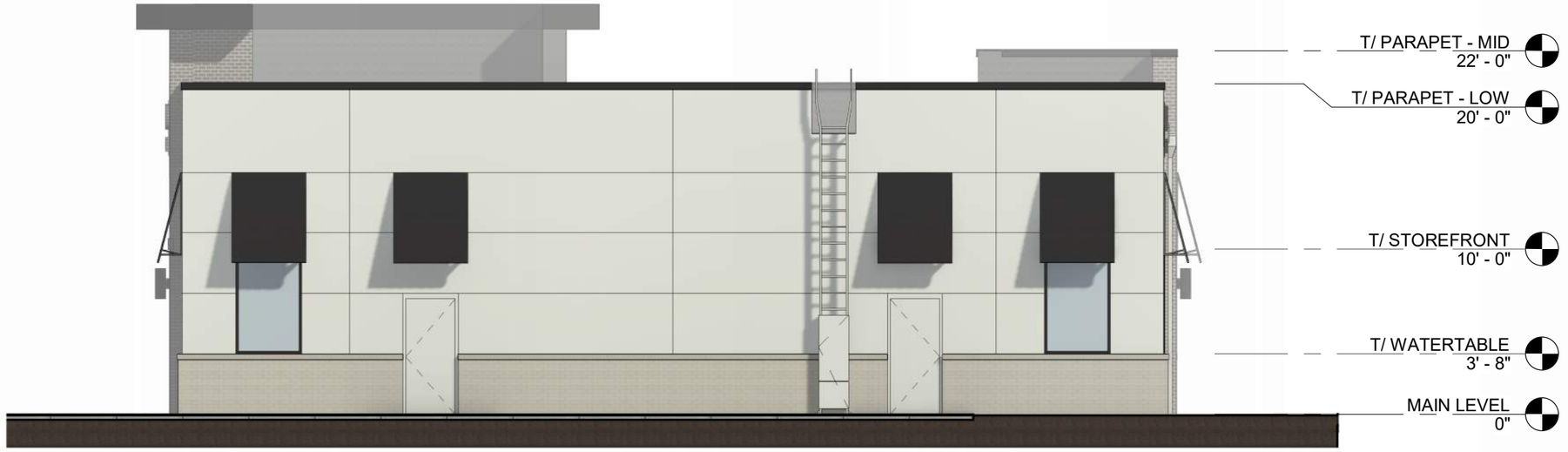
STOREFRONT
+ ACCENT METALS
'DARK BRONZE'

DP3 ARCHITECTS

**DENTAL OFFICE BROWNSBURG, IN EAST 56TH STREET**

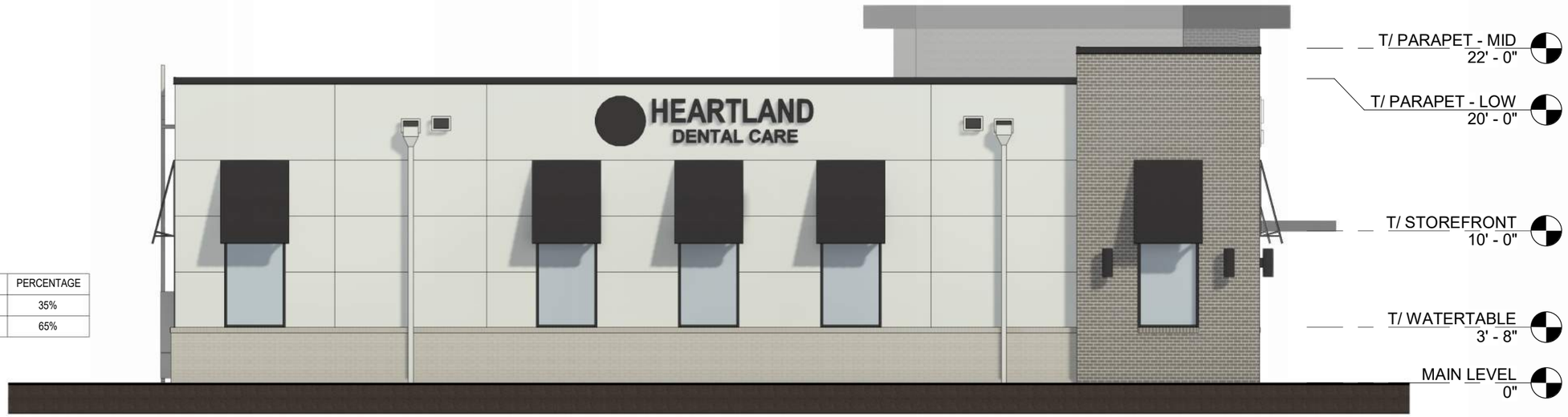
CONCEPT ELEVATIONS 22 DEC 2025

| MATERIAL | PERCENTAGE |
|---|---|
| BRICK | 18% |
| EIFS | 82% |




NORTH ELEVATION

| MATERIAL | PERCENTAGE |
|---|---|
| BRICK | 35% |
| EIFS | 65% |




EAST ELEVATION

## MATERIALS



BRICK + SOLDIER
TAYLOR BRICK
'323 GREY
MODULAR WIRECUT'



BRICK + SOLDIER
TAYLOR BRICK
'323 GREY
MODULAR WIRECUT'



EIFS
SHERWIN WILLIAMS
SW7015
'REPOSE GREY'



CANVAS AWNING
SUNBRELLA
'HOGAN CAROB'



STOREFRONT
+ ACCENT METALS
'DARK BRONZE'

DP3 ARCHITECTS

**DENTAL OFFICE BROWNSBURG, IN EAST 56TH STREET**

CONCEPT ELEVATIONS 22 DEC 2025




DP3 ARCHITECTS

**DENTAL OFFICE BROWNSBURG, IN EAST 56TH STREET**

CONCEPT PERSPECTIVES 22 DEC 2025




DP3 ARCHITECTS

**DENTAL OFFICE BROWNSBURG, IN EAST 56TH STREET**

CONCEPT PERSPECTIVES 22 DEC 2025




DP3 ARCHITECTS

**DENTAL OFFICE BROWNSBURG, IN EAST 56TH STREET**

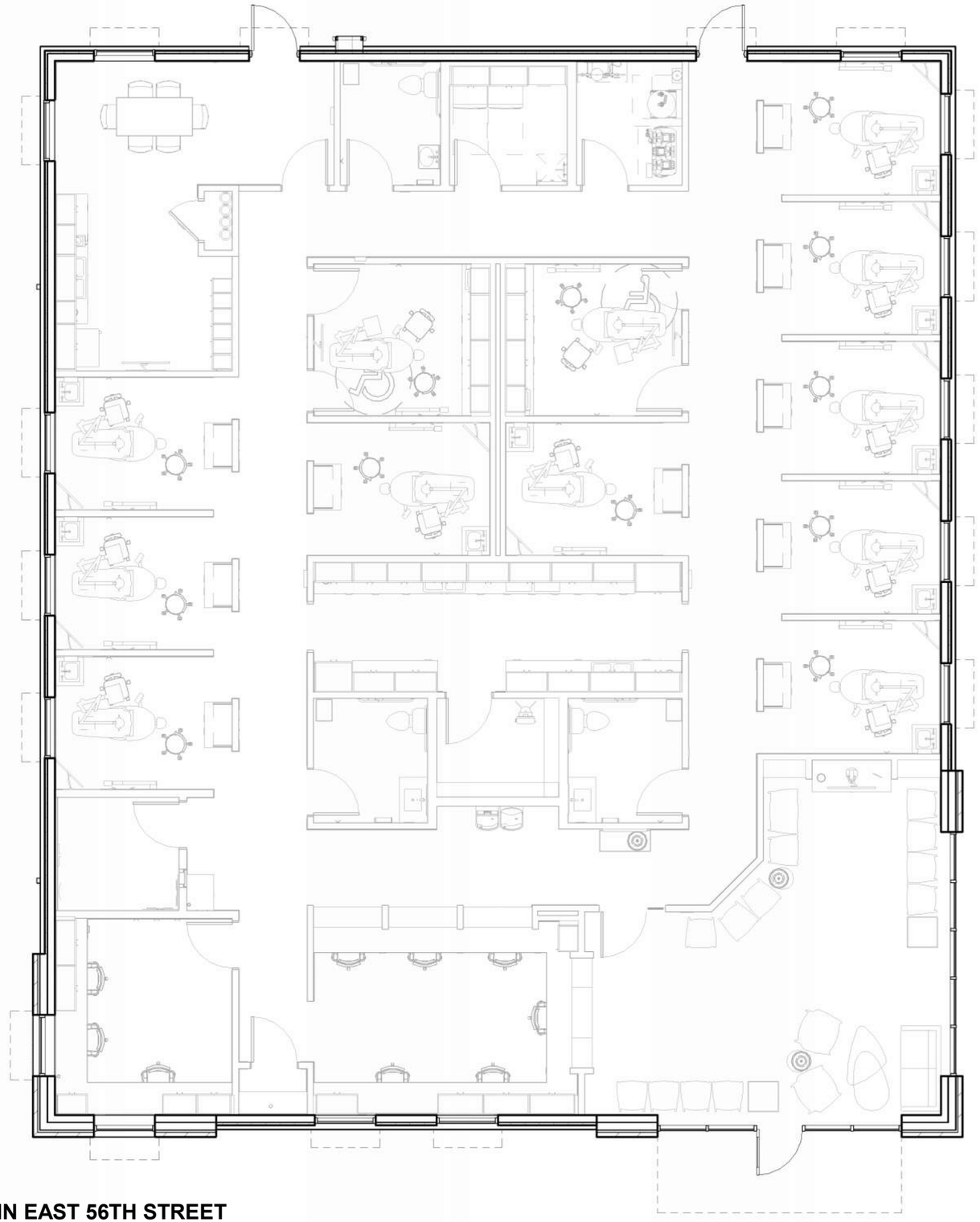
CONCEPT PERSPECTIVES 22 DEC 2025



DP3 ARCHITECTS

**DENTAL OFFICE BROWNSBURG, IN EAST 56TH STREET**

CONCEPT PERSPECTIVES 22 DEC 2025



DP3 ARCHITECTS

**DENTAL OFFICE BROWNSBURG, IN EAST 56TH STREET**

CONCEPT PLAN 22 DEC 2025

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1966

8365 Keystone Crossing, Suite 201
Indianapolis, IN 46240
Phone: (317) 202-0864 Fax: (317) 202-0908



# TRAFFIC IMPACT STUDY

## PROPOSED RESIDENTIAL DEVELOPMENT
## "HAWK'S LANDING"

## BROWNSBURG, INDIANA

---

PREPARED FOR

David Weekley Homes

---

NOVEMBER 2025

# COPYRIGHT

This analysis and the ideas, designs, concepts and data contained herein are the exclusive intellectual property of A&F Engineering Co., LLC and are not to be used or reproduced in whole or in part, without the written consent of A&F Engineering Co., LLC.

©2025, A&F Engineering Co., LLC

# TABLE OF CONTENTS

TABLE OF CONTENTS ..... II
LIST OF FIGURES ..... III
CERTIFICATION ..... IV
INTRODUCTION ..... 1
PURPOSE ..... 1
SCOPE OF WORK ..... 1
DESCRIPTION OF THE PROPOSED DEVELOPMENT ..... 2
STUDY AREA ..... 2
DESCRIPTION OF ABUTTING STREET SYSTEM ..... 6
TABLE 1 – DESCRIPTION OF THE ABUTTING STREET SYSTEM ..... 6
EXISTING TRAFFIC VOLUMES & PEAK HOURS ..... 6
REDISTRIBUTION OF EXISTING TRAFFIC VOLUMES ..... 6
YEAR 2030 BACKGROUND TRAFFIC VOLUMES ..... 6
GENERATED TRIPS FOR PROPOSED DEVELOPMENT ..... 9
TABLE 2 – GENERATED TRIPS FOR PROPOSED DEVELOPMENT ..... 9
PASS-BY & INTERNAL TRIPS ..... 9
ASSIGNMENT AND DISTRIBUTION OF GENERATED TRIPS ..... 10
GENERATED TRIPS ADDED TO THE STREET SYSTEM ..... 10
TURN LANE WARRANT ANALYSIS ..... 17
TABLE 3 – TURN LANE WARRANT RESULTS ..... 17
CAPACITY ANALYSIS ..... 17
CAPACITY ANALYSIS SCENARIOS ..... 18
TABLE 4 – LEVEL OF SERVICE SUMMARY: CR 800 N & CR 650 E ..... 18
TABLE 5 – LEVEL OF SERVICE SUMMARY: CR 800 N & SR 267 (GREEN STREET) ..... 19
TABLE 6 – LEVEL OF SERVICE SUMMARY: CR 700 N & SR 267 (GREEN STREET) ..... 19
TABLE 7 – LEVEL OF SERVICE SUMMARY: CR 700 N & CR 650 E ..... 19
TABLE 8 – LEVEL OF SERVICE SUMMARY: SR 267 (GREEN STREET) & ACRE LANE/CONNECTION POINTE CHRISTIAN CHURCH/PROPOSED DEVELOPMENT ACCESS DRIVE ..... 19
TABLE 9 – LEVEL OF SERVICE SUMMARY: CR 800 N & PROPOSED DEVELOPMENT ACCESS DRIVE ..... 20
CONCLUSIONS & RECOMMENDATIONS ..... 20

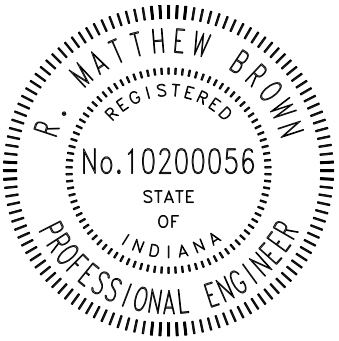
# LIST OF FIGURES

FIGURE 1: AREA MAP ..... 3
FIGURE 2A: EXISTING INTERSECTION GEOMETRICS ..... 4
FIGURE 2B: EXISTING INTERSECTION GEOMETRICS ..... 5
FIGURE 3: EXISTING TRAFFIC VOLUMES ..... 6
FIGURE 4: YEAR 2030 BACKGROUND TRAFFIC VOLUMES ..... 8
FIGURE 5A: ASSIGNMENT AND DISTRIBUTION OF GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT (WEEKDAY - EAST PARCEL) ..... 11
FIGURE 5B: ASSIGNMENT AND DISTRIBUTION OF GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT (WEEKDAY - WEST PARCEL) ..... 12
FIGURE 5C: ASSIGNMENT AND DISTRIBUTION OF GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT (SUNDAY - EAST PARCEL) ..... 13
FIGURE 5D: ASSIGNMENT AND DISTRIBUTION OF GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT (SUNDAY - WEST PARCEL) ..... 14
FIGURE 6: TOTAL GENERATED TRAFFIC VOLUMES FROM THE PROPOSED DEVELOPMENT ..... 15
FIGURE 7: SUM OF YEAR 2030 BACKGROUND TRAFFIC VOLUMES & GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT ..... 16

## *CERTIFICATION*

I certify that this **TRAFFIC IMPACT STUDY** has been prepared by me and under my immediate supervision and that I have experience and training in the field of traffic and transportation engineering.

A&F ENGINEERING CO., LLC




November 18, 2025
R. Matt Brown, P.E.
Indiana Registration 10200056

Trevor Reich, P.E.
Senior Traffic Engineer

Isadora Ribeiro
Traffic Engineer

Pooja Aswar
Traffic Engineer

## INTRODUCTION

This **TRAFFIC IMPACT STUDY**, prepared on behalf of David Weekley Homes, is for a proposed residential development known as "Hawk's Landing" that will be located south of CR 800 N & west of SR 267 (Green Street) in Brownsburg, Indiana.

## PURPOSE

The purpose of this analysis is to determine what impact traffic generated by the proposed residential development will have on the existing adjacent roadway system. This analysis will identify any existing roadway deficiencies or ones that may occur in the future.

Conclusions will be reached that will determine if the roadway system can accommodate the anticipated traffic volumes or will determine the modifications that will be required to the system if there are identified deficiencies.

Recommendations will be made that will address the conclusions resulting from this analysis. These recommendations will address feasible roadway system improvements to provide safe ingress and egress, to and from the proposed residential development, with minimal interference to traffic on the public street system.

## SCOPE OF WORK

The scope of work for this analysis is as follows:

First, obtain peak hour turning movement traffic volume counts between the hours of 6:30 AM to 9:30 AM and 3:00 PM to 8:00 PM on a typical Thursday and between the hours of 7:00 AM to 2:00 PM on a typical Sunday at the following intersections:

- CR 800 N & CR 650 E
- CR 800 N & SR 267 (Green Street)
- CR 700 N & CR 650 E
- CR 700 N & SR 267 (Green Street)
- SR 267 (Green Street) & Acre Lane

Second, estimate the year 2030 background traffic volumes by applying growth rate factors to the existing traffic volumes.

Third, estimate the number of peak hour weekday trips and Sunday midday peak hour trips that will be generated by the proposed development.

Fourth, assign and distribute the generated traffic from the proposed development to the study intersections.

Fifth, prepare a capacity analysis/level of service analysis and turn lane analysis at the study intersections for each of the following scenarios:

*Scenario 1: Existing Traffic Volumes* – Based on existing peak hour traffic volumes.

*Scenario 2: Year 2030 Background Traffic Volumes* – Based on applying growth rate factors to the existing traffic volumes.

*Scenario 3: Year 2030 + Proposed Development Traffic Volumes* – Based on the sum of year 2030 background traffic volumes and generated traffic volumes from the proposed development.

Sixth, prepare recommendations for the roadway geometrics that will be needed to accommodate the total traffic volumes once the proposed development is constructed.

Finally, prepare a **TRAFFIC IMPACT STUDY** report documenting all data, analyses, conclusions, and recommendations to provide for the safe and efficient movement of traffic through the study area.

## DESCRIPTION OF THE PROPOSED DEVELOPMENT

The proposed development will be located south of CR 800 North & west of SR 267 (Green Street) in Brownsburg, Indiana. The proposed residential development will consist of two parcels. The west parcel will have 81 single-family homes that will be served by one full-access drive along CR 800 N and a secondary access connection to Windridge Lane. The east parcel will have 24 single-family homes that will be served via a connection to the existing Connection Pointe Christian Church access drive along SR 267 (Green Street). **Figure 1** is an area map showing the location and general layout of the proposed site. The detailed site plan for the proposed development is included in the **Appendix**.

## STUDY AREA

The study area for this analysis has been defined to include the following intersections:

- CR 800 N & CR 650 E
- CR 800 N & SR 267 (Green Street)
- CR 700 N & CR 650 E
- CR 700 N & SR 267 (Green Street)
- SR 267 (Green Street) & Acre Lane / Proposed Development Access Drive
- CR 800 N & Proposed Access Drive

**Figures 2A** and **2B** show the existing intersection geometrics.

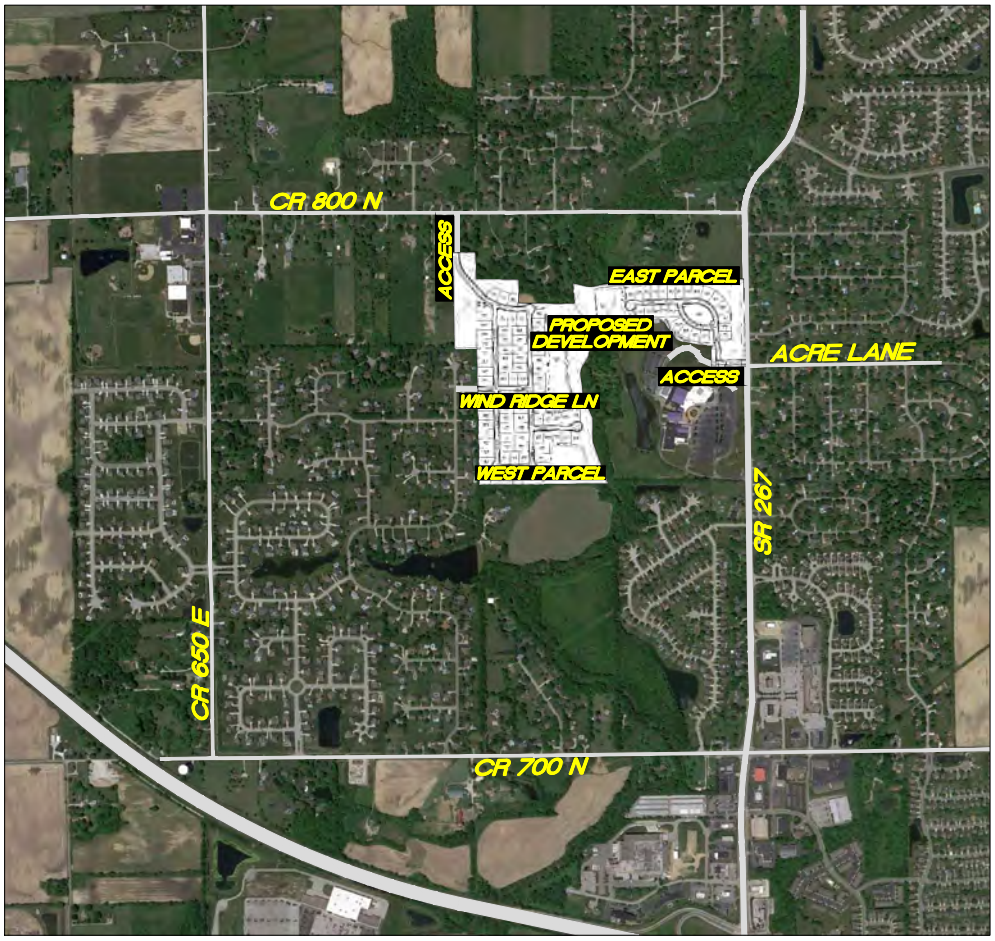


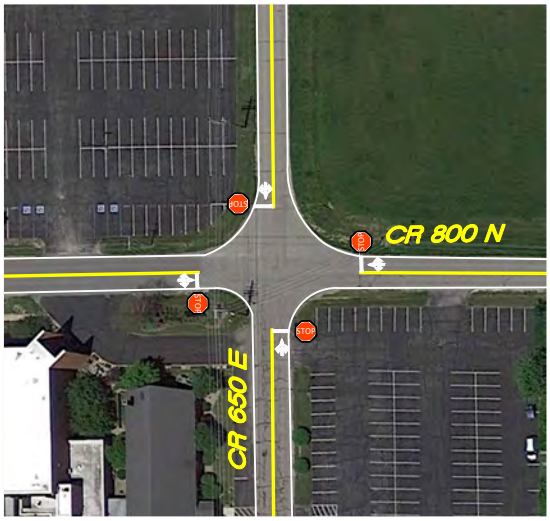

**FIGURE 1**

**AREA MAP**

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

Z:\2025\25103S-David Weekley Homes, TIS, Hawks Landing Revised, Brownsburg\25103S-EXH.dwg 1=1 2025-11-13 SK

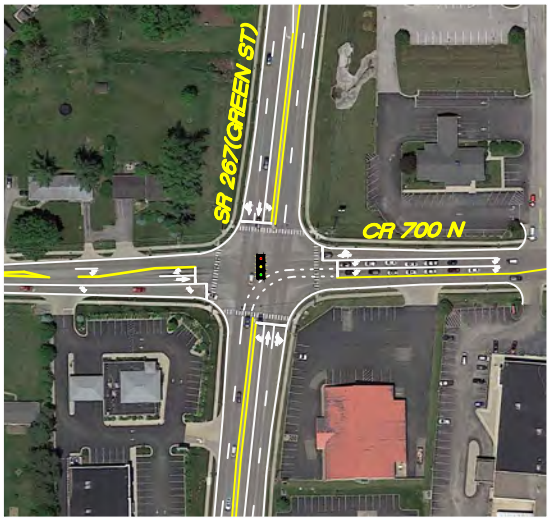
A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1968




CR 800 N & CR 650 E




CR 700 N & CR 650 E




CR 700 N & SR 267(GREEN ST)




CR 800 N & SR 267(GREEN ST)

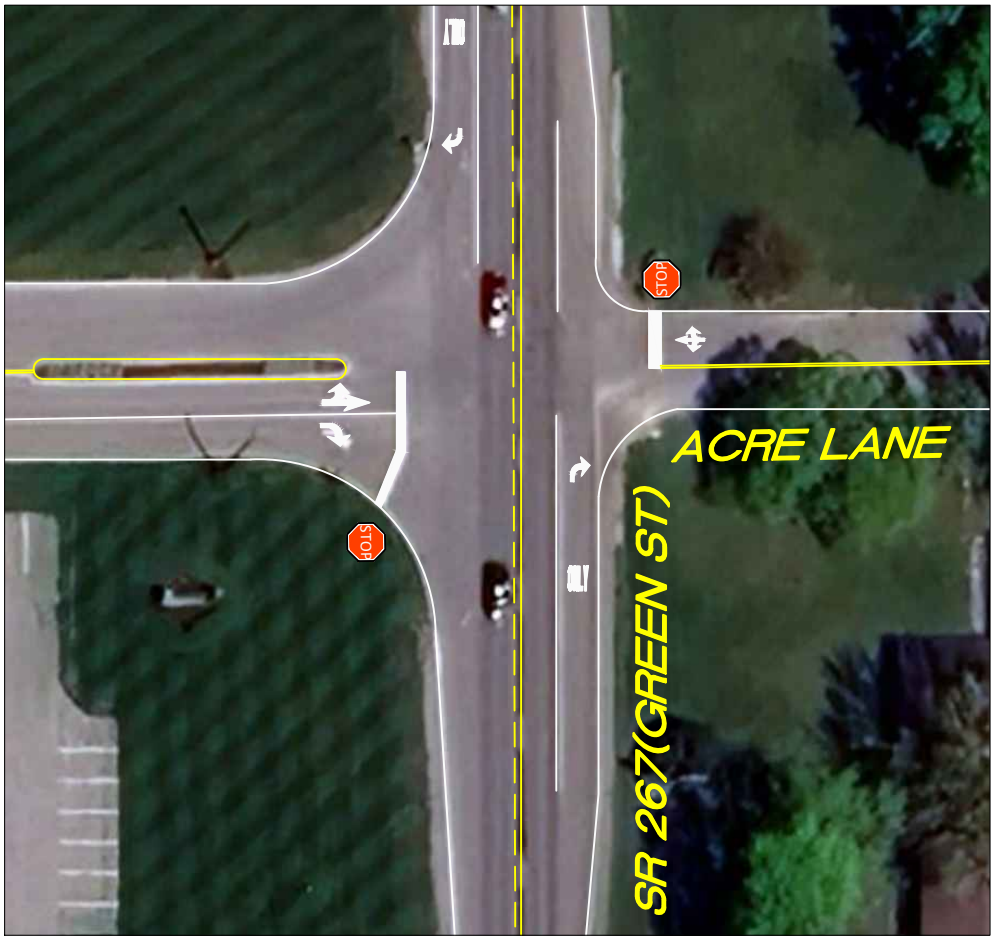
**FIGURE 2A**

**EXISTING INTERSECTION GEOMETRICS**

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

Z:\2025\25103S-David Weekley Homes, TIS, Hawks Landing Revised, Brownsburg\25103S-EXH.dwg 1=1 2025-11-13 SK

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1968




**SR 267(GREEN ST) & ACRE LANE**

**FIGURE 2B**

**EXISTING INTERSECTION GEOMETRICS**

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

Z:\2025\25103S-David Weekley Homes, TIS, Hawks Landing Revised, Brownsburg\25103S-EXH.dwg 1=1 2025-11-13 SK

## DESCRIPTION OF ABUTTING STREET SYSTEM

The proposed residential development will be primarily served by the public roadway system that includes CR 800 N, CR 650 E, CR 700 N, and SR 267 (Green Street).

TABLE 1 – DESCRIPTION OF THE ABUTTING STREET SYSTEM

| STREET NAME | NUMBER OF LANES | SPEED LIMIT (MPH) | ROADWAY CLASSIFICATION * |
|---|---|---|---|
| CR 800 N | 2 | 35 | Collector |
| CR 650 E | 2 | 45 | Secondary Arterial |
| CR 700 N | 2 | 30 | Secondary Arterial |
| SR 267 (Green Street) | 2 | 45 | Primary Arterial |

* Roadway classification based on INDOT Roadway Inventory & Functional Class Viewer

## EXISTING TRAFFIC VOLUMES & PEAK HOURS

Turning movement traffic volume counts were collected by the A&F Engineering at the existing study intersections between the hours of 6:30 AM and 9:30 AM and 3:00 PM and 8:00 PM on a typical Thursday and between the hours of 7:00 AM to 2:00 PM on a typical Sunday in October and November 2025 under good weather conditions. According to the turning movement traffic volume counts, the AM and PM weekday and Sunday peak hours vary slightly at each study intersection. Hence, the actual peak hours are used at each study intersection to create a "worse-case" scenario. The intersection count output summary sheets are included in the **Appendix**, and the AM and PM peak hour traffic volumes at the study intersection are shown in **Figure 3**.

## REDISTRIBUTION OF EXISTING TRAFFIC VOLUMES

The west parcel of the proposed development will have a secondary access via a connection to Windridge Lane. Therefore, it is possible that existing traffic from the Windridge subdivision could utilize this connection to access CR 800 N. However, it is not anticipated that these volumes will be significant during the peak hours. Therefore, these volumes have been considered negligible for the purposes of this analysis.

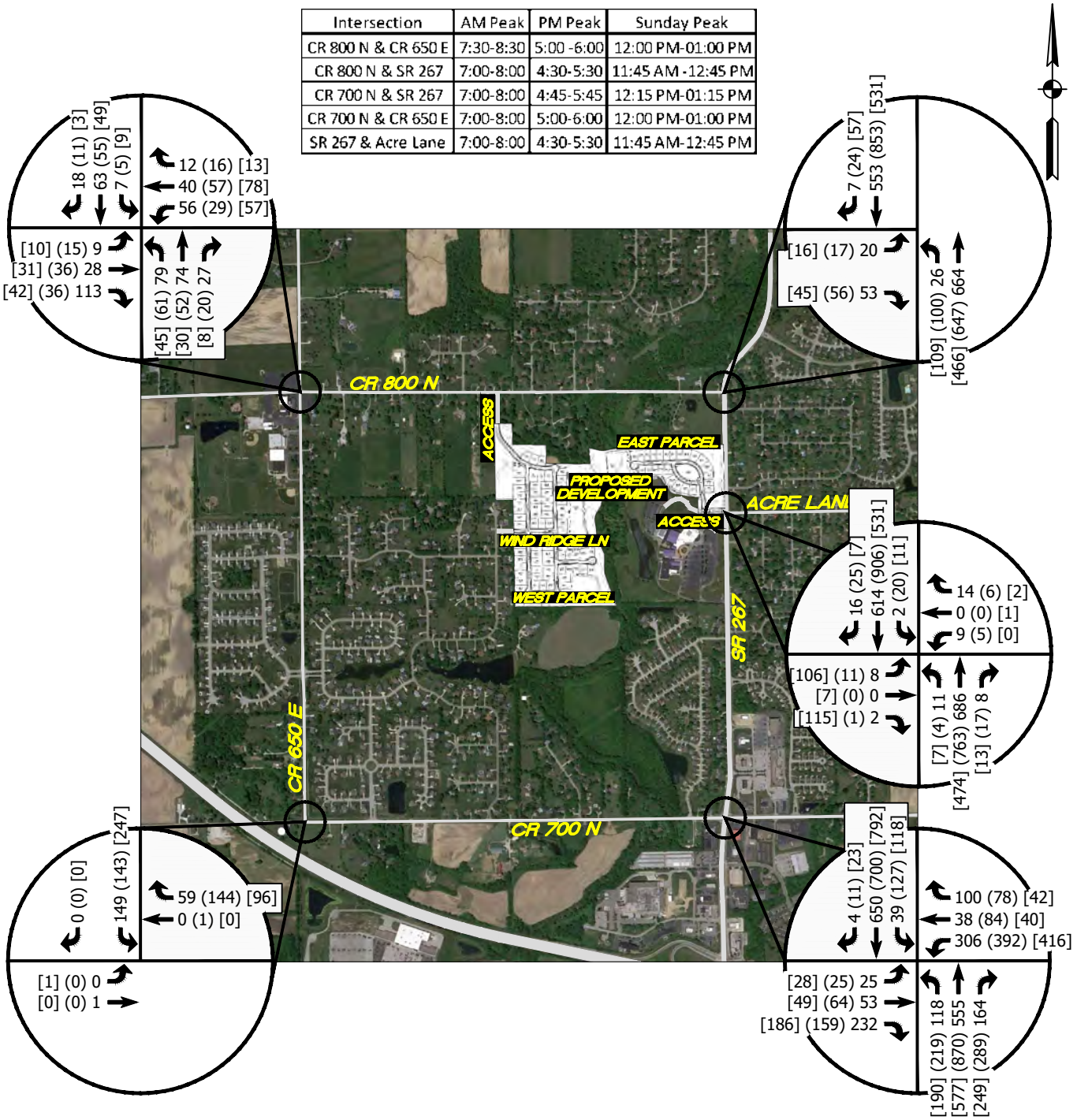
## YEAR 2030 BACKGROUND TRAFFIC VOLUMES

To account for annual growth in traffic that would occur due to future development outside of the study area, growth rate factors were applied to the existing traffic volumes. Growth rate factors provided by Shrewsberry were applied to the existing traffic volumes to obtain year 2030 background traffic volumes shown in **Figure 4.**

FIGURE 3: EXISTING TRAFFIC VOLUMES

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1968

| Intersection | AM Peak | PM Peak | Sunday Peak |
|---|---|---|---|
| CR 800 N & CR 650 E | 7:30-8:30 | 5:00 -6:00 | 12:00 PM-01:00 PM |
| CR 800 N & SR 267 | 7:00-8:00 | 4:30-5:30 | 11:45 AM -12:45 PM |
| CR 700 N & SR 267 | 7:00-8:00 | 4:45-5:45 | 12:15 PM-01:15 PM |
| CR 700 N & CR 650 E | 7:00-8:00 | 5:00-6:00 | 12:00 PM-01:00 PM |
| SR 267 & Acre Lane | 7:00-8:00 | 4:30-5:30 | 11:45 AM-12:45 PM |




LEGEND

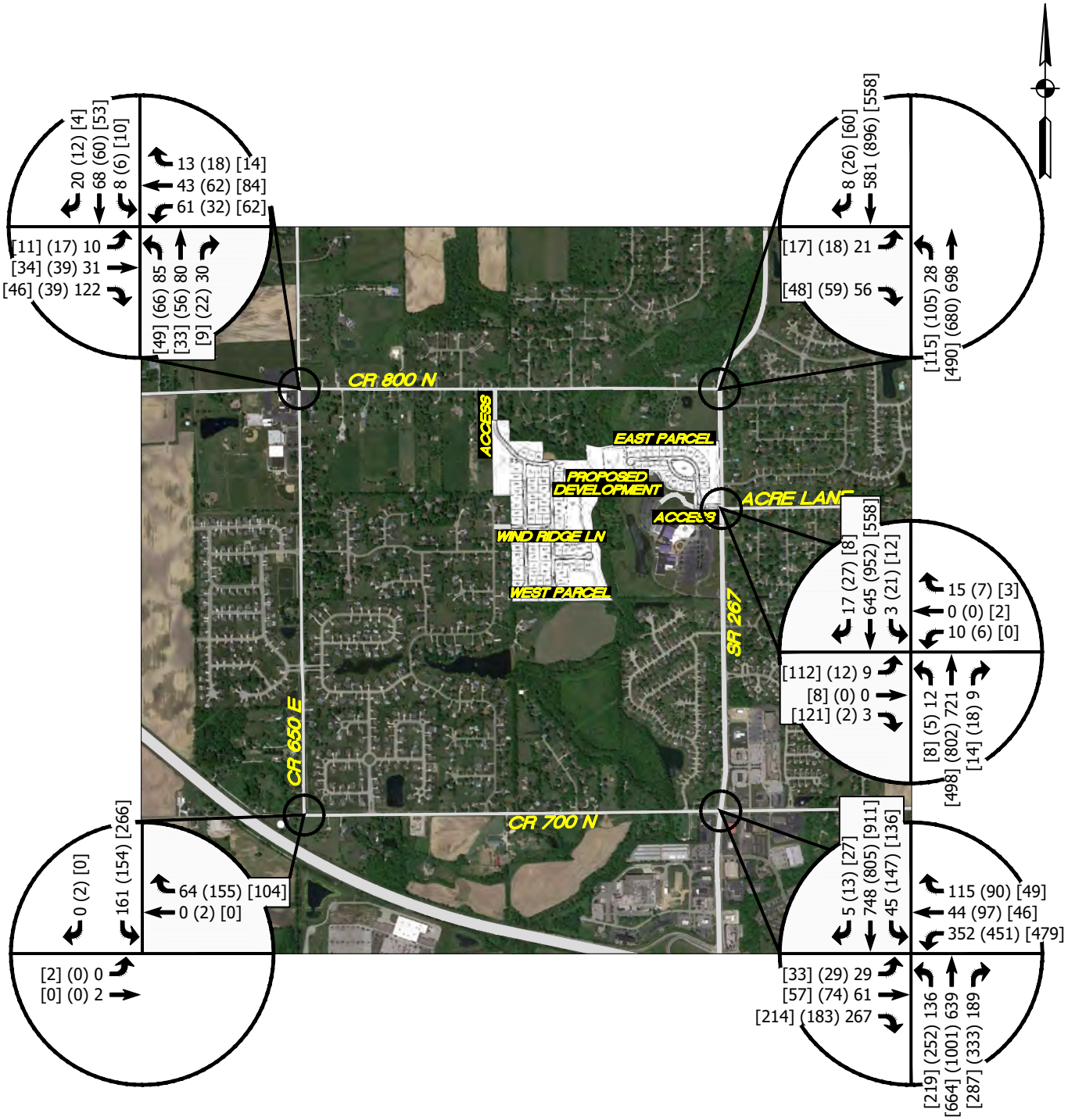
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
[XX] = SUNDAY PEAK HOUR
* = NEGLIGIBLE

**FIGURE 3**

**EXISTING TRAFFIC VOLUMES**

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

Z:\2025\25103S-David Weekley Homes, TIS, Hawks Landing Revised, Brownsburg\25103S-EXH.dwg 1=1 2025-11-13 SK




LEGEND

XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
[XX] = SUNDAY PEAK HOUR
* = NEGLIGIBLE

**FIGURE 4**

**YEAR 2030 BACKGROUND TRAFFIC VOLUMES**

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

Z:\2025\25103S-David Weekley Homes, TIS, Hawks Landing Revised, Brownsburg\25103S-EXH.dwg 1=1 2025-11-13 SK

## GENERATED TRIPS FOR PROPOSED DEVELOPMENT

The estimate of newly generated traffic is a function of the development size and of the character of the land use. The ITE *Trip Generation Manual*[1] was used to calculate the number of trips that will be generated by the proposed development. This report is a compilation of trip data for various land uses as collected by transportation professionals throughout the United States in order to establish the average number of trips generated by those land uses. **Table 2** summarizes the trips that will be generated by the subject site.

TABLE 2 – GENERATED TRIPS FOR PROPOSED DEVELOPMENT

| DEVELOPMENT INFORMATION | | | GENERATED TRIPS | | | | | |
|---|---|---|---|---|---|---|---|---|
| LAND USE | ITE CODE | SIZE | WEEKDAY AM PEAK HOUR | | WEEKDAY PM PEAK HOUR | | SUNDAY MIDDAY PEAK HOUR | |
| | | | ENTER | EXIT | ENTER | EXIT | ENTER | EXIT |
| Single-Family Housing (East Parcel) | 210 | 24 DU | 6 | 16 | 16 | 10 | 8 | 6 |
| Single-Family Housing (West Parcel) | 210 | 81 DU | 16 | 44 | 49 | 30 | 34 | 25 |

Note: Sunday Trip Generation is based on 24-Hour Sunday trip generation data & applying time-of-day distribution data from the *ITE Trip Generation Manual* Appendices for the 12:00 PM - 1:00 PM time period.

## PASS-BY & INTERNAL TRIPS

Pass-by trips are trips that are already in the existing traffic stream along the adjacent public roadway system that enter a site, utilize the site, and then return to the existing traffic stream. Residential developments don't typically generate a significant number of pass-by trips. Therefore, pass-by trips were not considered in this study.

An internal trip results when a trip is made between two or more land uses without traversing the external public roadway system. The proposed development is a single land use. Therefore, internal trips were not considered in this study.

[1] *Trip Generation Manual*, Institute of Transportation Engineers, Twelfth Edition, 2025.

## ASSIGNMENT AND DISTRIBUTION OF GENERATED TRIPS

The study methodology used to determine the traffic volumes from the site that will be added to the street system is defined as follows:

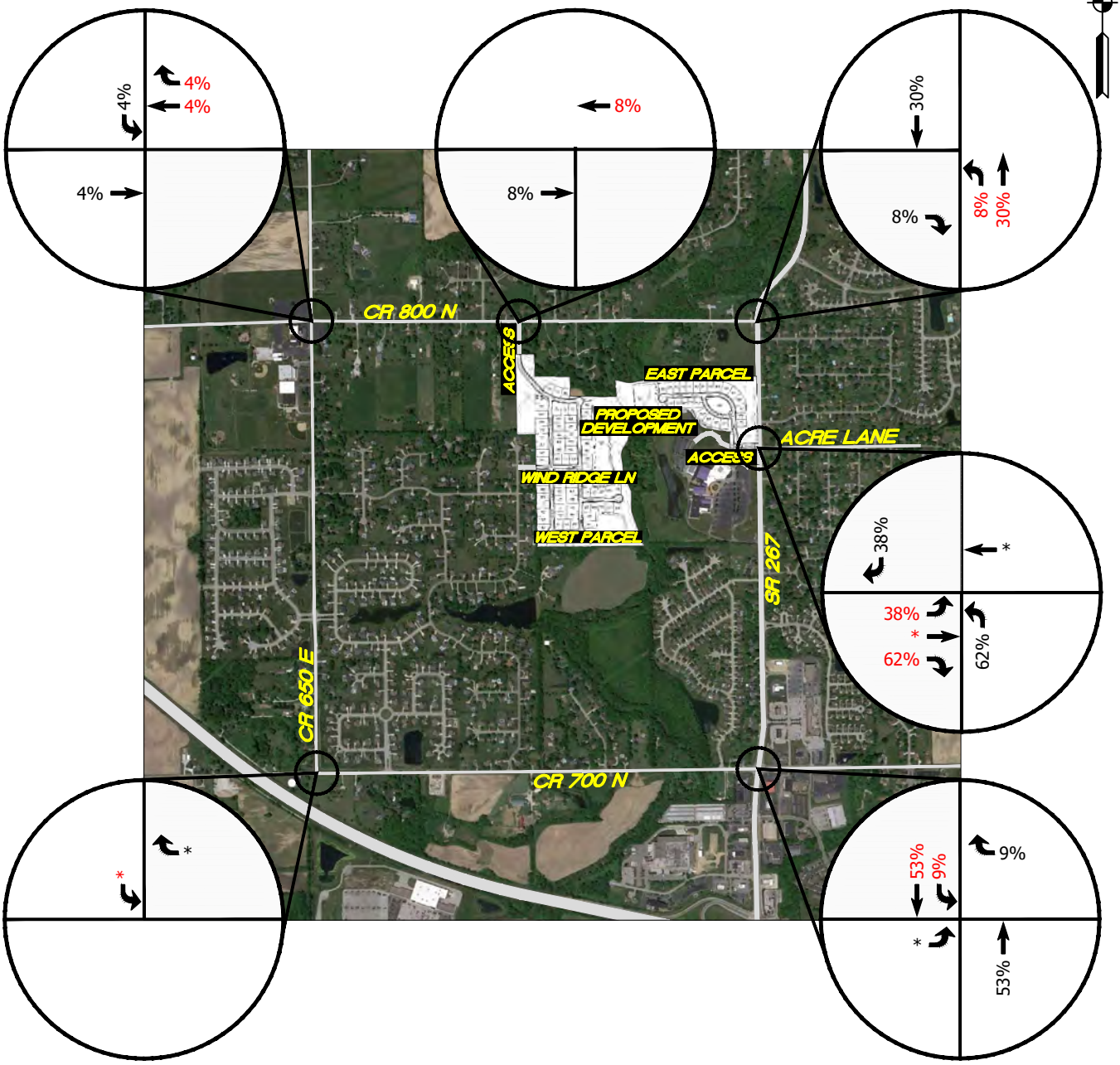
1. The volume of traffic that will enter and exit the proposed development must be assigned to the access points and to the public street system. Using the traffic volume data collected for this analysis, traffic to and from the site development has been assigned to the proposed driveways and to the public street system that will be serving the site.
2. To determine the volume of traffic that will be added to the public roadway system, the generated traffic must be distributed by direction to the public roadways at their intersection with the driveways. For the proposed development, the trip distribution was based on the location of the development, the existing traffic patterns, and the assignment of generated traffic.

**Figures 5A, 5B, 5C** and **5D** illustrate the assignment and distribution of generated traffic volumes for the proposed development.

## GENERATED TRIPS ADDED TO THE STREET SYSTEM

The generated traffic volumes that can be expected from the proposed development have been assigned to each of the study intersections. These volumes were determined based on the previously discussed trip generation data, assignment and distribution of generated traffic. The peak hour total generated traffic volumes from the proposed development are shown in **Figure 6**, and **Figure 7** shows the sum of background year 2030 traffic volumes and generated traffic volumes from the proposed development. The separated generated traffic volumes from the east parcel and west parcel of the development are shown in **Figure A** and **Figure B** in the **Appendix.**

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1968




LEGEND
XX = INBOUND TRAFFIC
XX = OUTBOUND TRAFFIC
* = NEGLIGIBLE

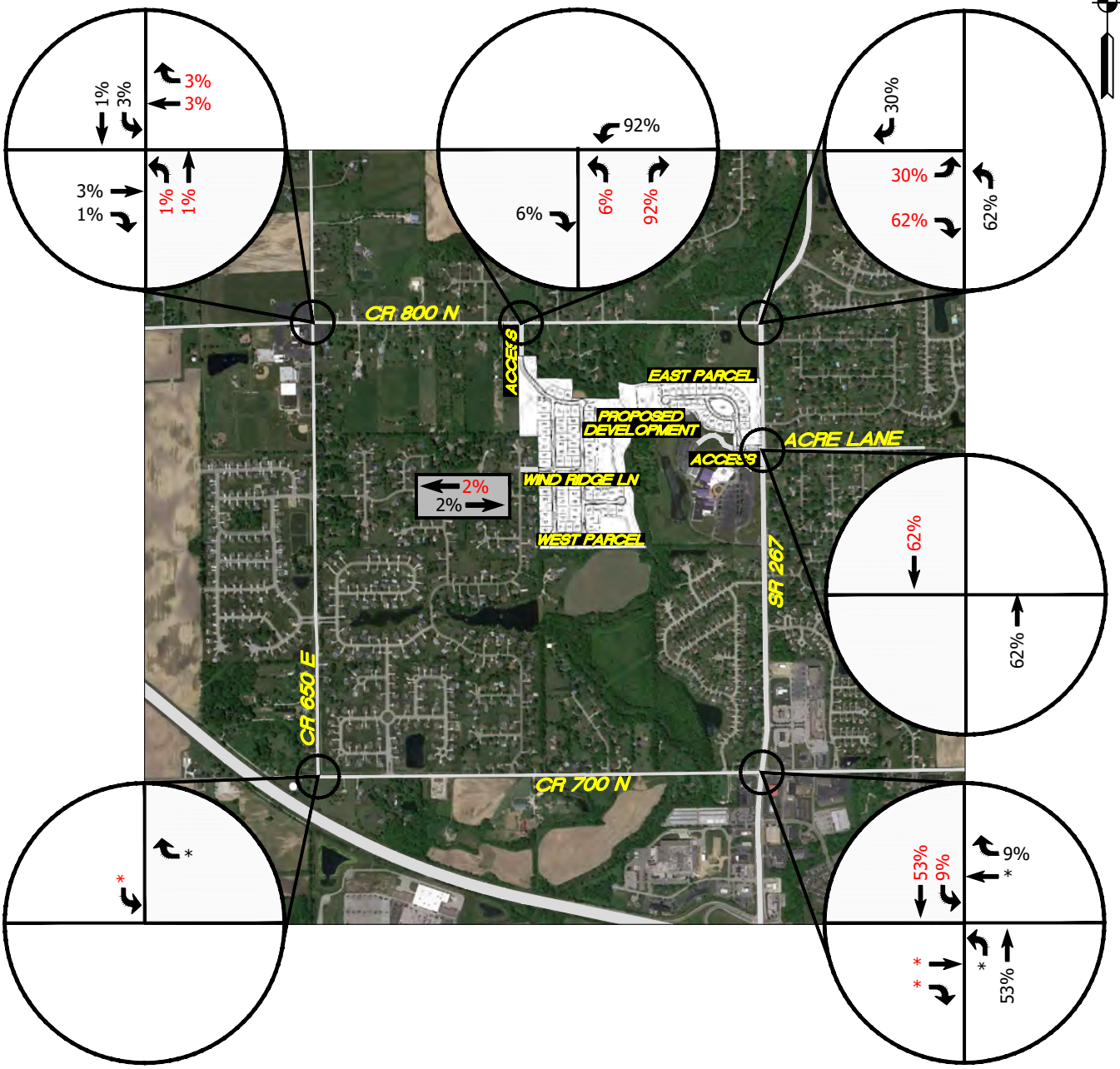
**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

## FIGURE 5A

## ASSIGNMENT & DISTRIBUTION OF GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT (WEEKDAY - EAST PARCEL)

Z:\2025\25103S-David Weekley Homes, TIS, Hawks Landing Revised, Brownsburg\25103S-EXH.dwg 1=1 2025-11-13 SK

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1968




LEGEND
XX = INBOUND TRAFFIC
XX = OUTBOUND TRAFFIC
* = NEGLIGIBLE

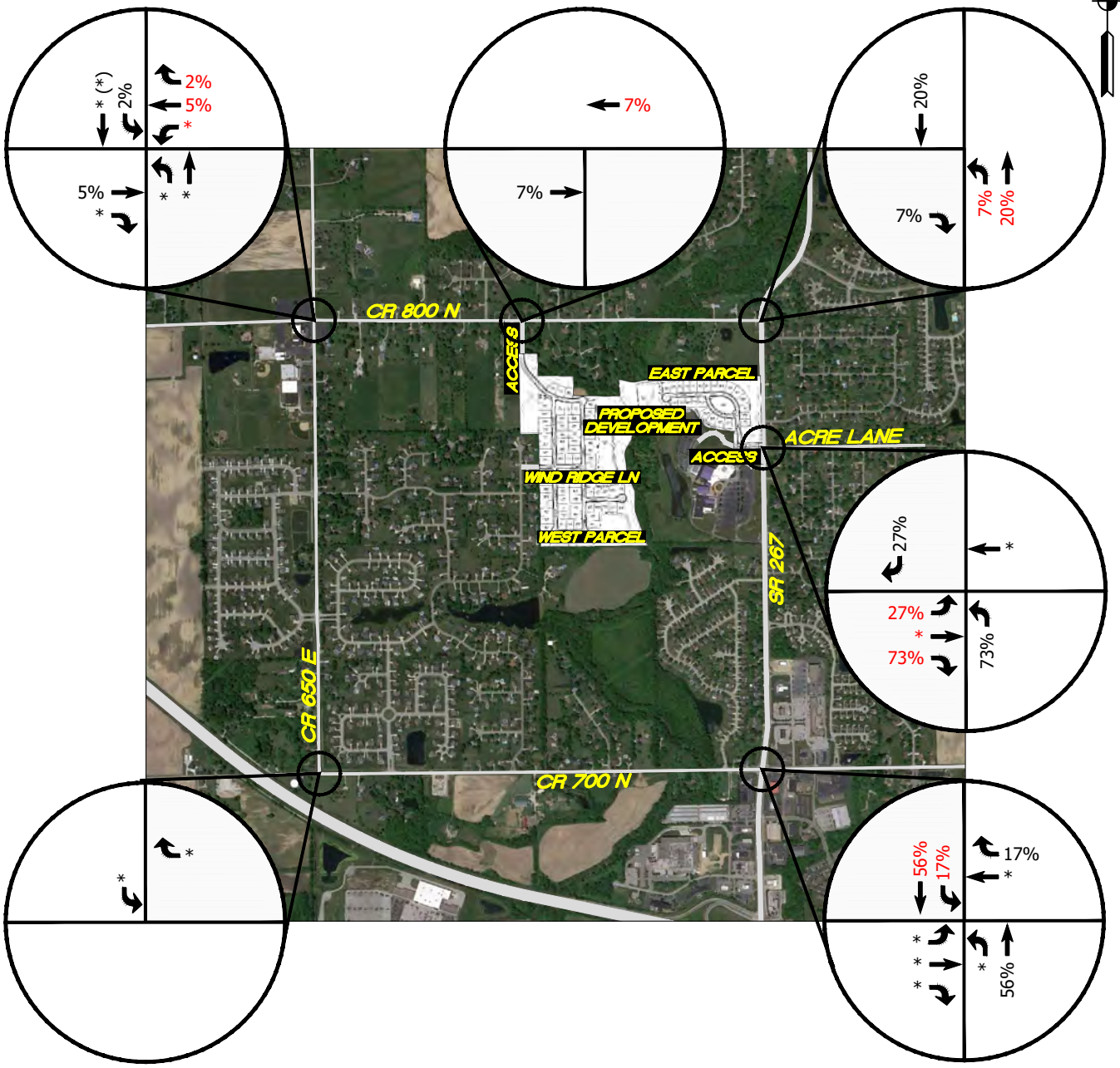
**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

## FIGURE 5B

**ASSIGNMENT & DISTRIBUTION OF GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT (WEEKDAY - WEST PARCEL)**

Z:\2025\25103S-David Weekley Homes, TIS, Hawks Landing Revised, Brownsburg\25103S-EXH.dwg 1=1 2025-11-13 SK

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1968




LEGEND
XX = INBOUND TRAFFIC
XX = OUTBOUND TRAFFIC
* = NEGLIGIBLE

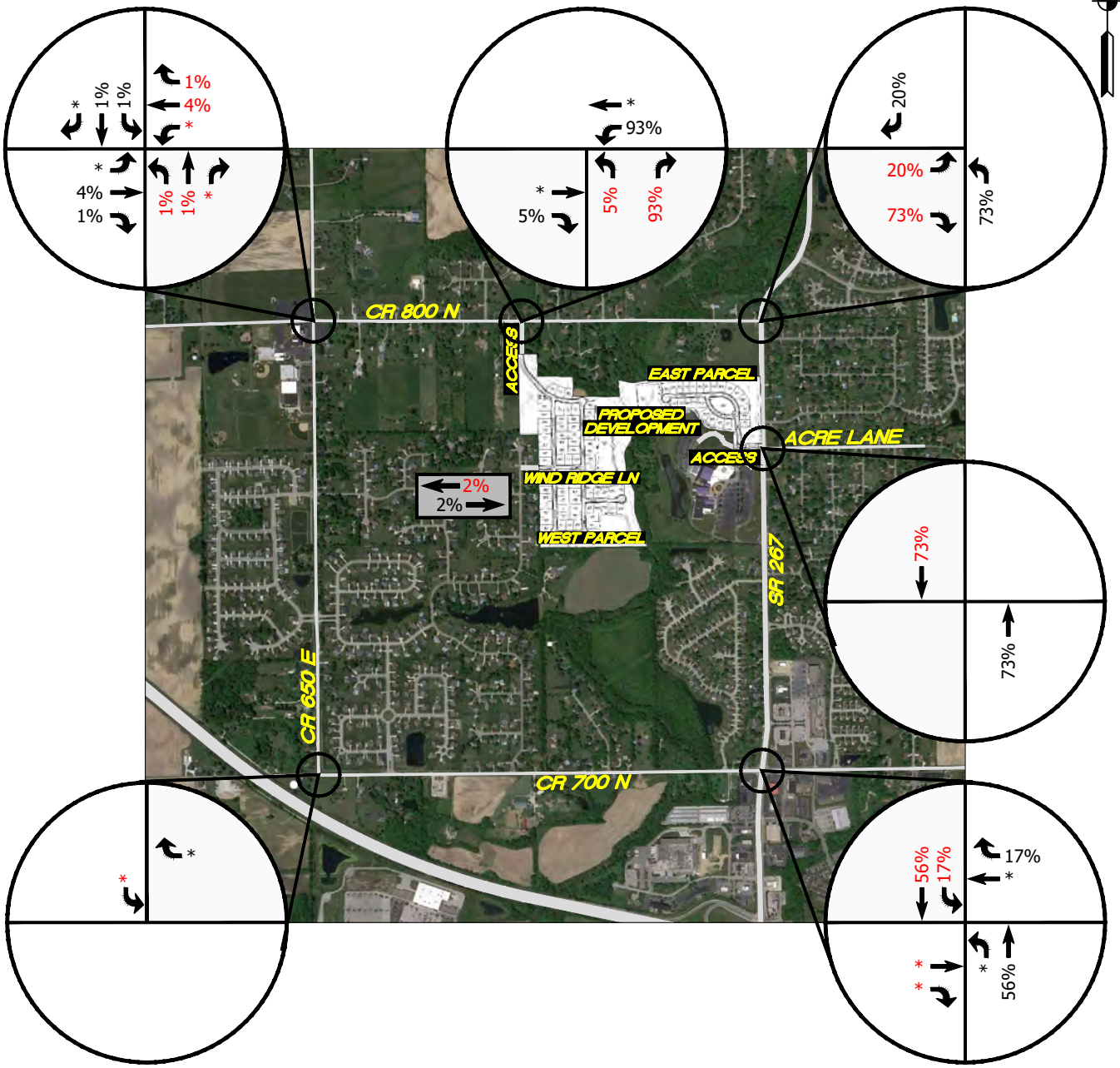
**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

## FIGURE 5C

**ASSIGNMENT & DISTRIBUTION OF GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT (SUNDAY - EAST PARCEL)**

Z:\2025\25103S-David Weekley Homes, TIS, Hawks Landing Revised, Brownsburg\25103S-EXH.dwg 1=1 2025-11-13 SK

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1968



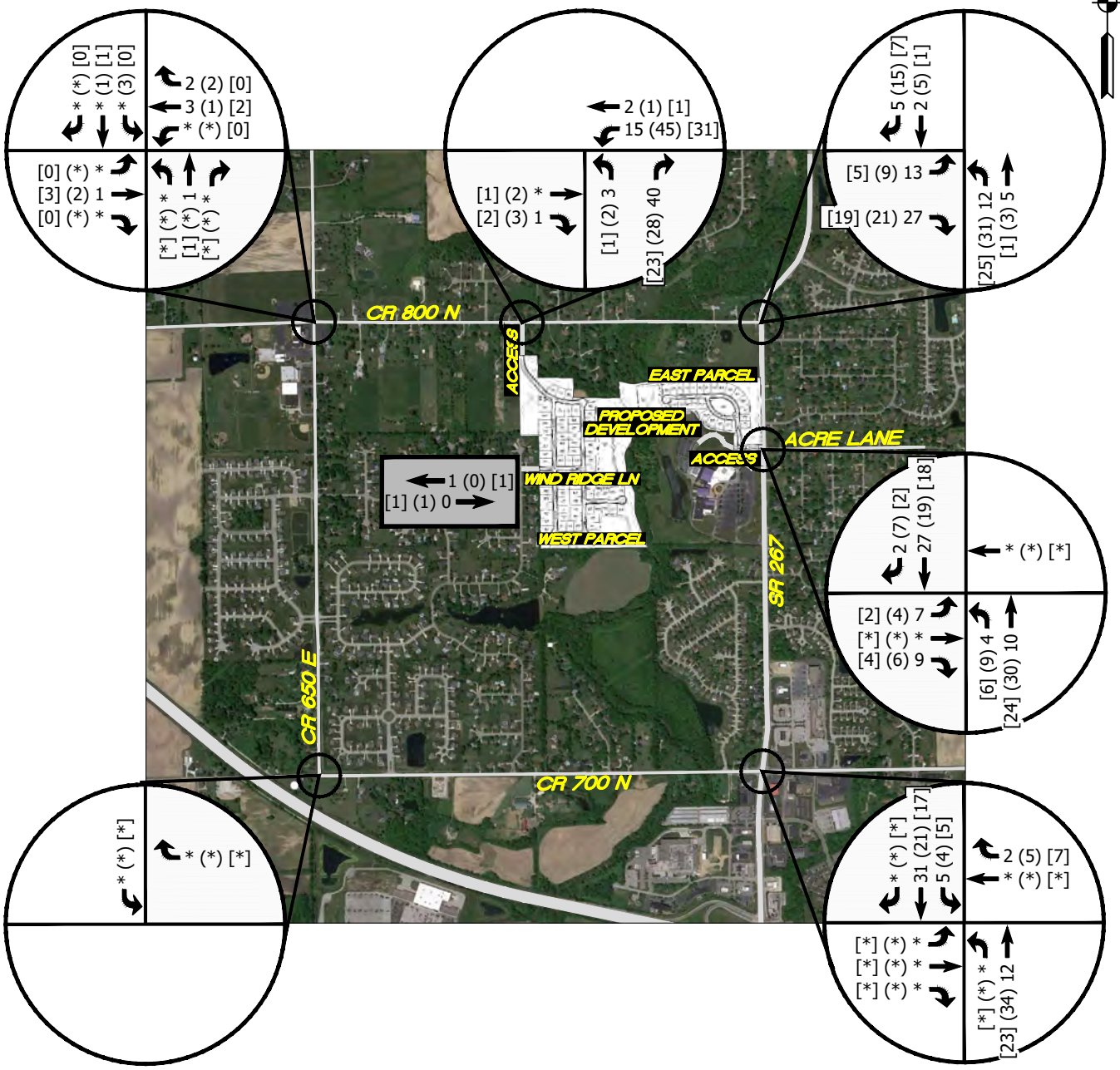

LEGEND
XX = INBOUND TRAFFIC
XX = OUTBOUND TRAFFIC
* = NEGLIGIBLE

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

## FIGURE 5D

**ASSIGNMENT & DISTRIBUTION OF GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT (SUNDAY - WEST PARCEL)**

Z:\2025\25103S-David Weekley Homes, TIS, Hawks Landing Revised, Brownsburg\25103S-EXH.dwg 1=1 2025-11-13 SK




LEGEND

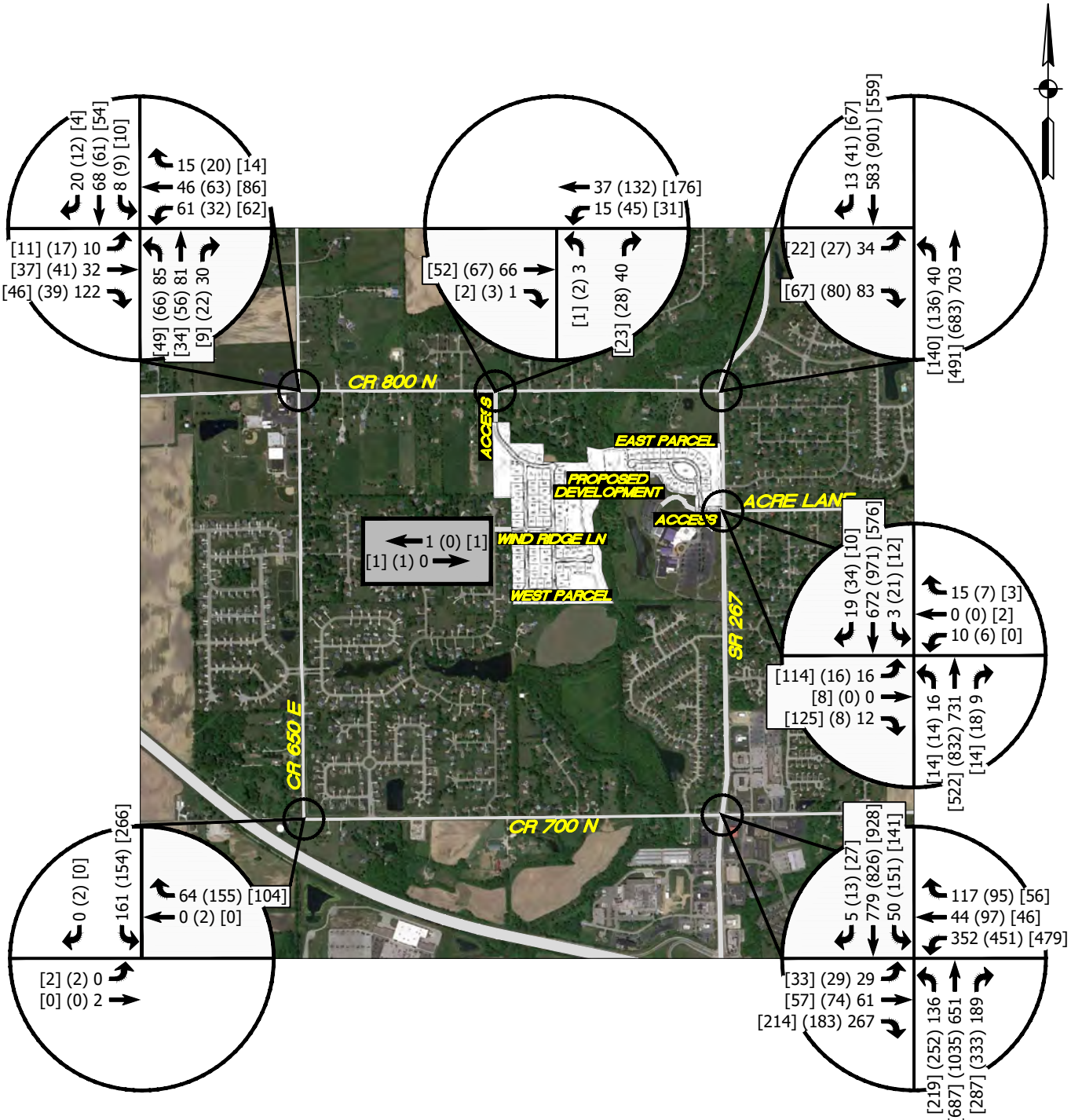
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
[XX] = SUNDAY PEAK HOUR
* = NEGLIGIBLE

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

**FIGURE 6**

**TOTAL GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT**

Z:\2025\25103S-David Weekley Homes, TIS, Hawks Landing Revised, Brownsburg\25103S-EXH.dwg 1=1 2025-11-13 SK




LEGEND

XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
[XX] = SUNDAY PEAK HOUR
* = NEGLIGIBLE

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

## FIGURE 7

**SUM OF YEAR 2030 BACKGROUND TRAFFIC VOLUMES & GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT**

Z:\2025\25103S-David Weekley Homes, TIS, Hawks Landing Revised, Brownsburg\25103S-EXH.dwg 1=1 2025-11-13 SK

## TURN LANE WARRANT ANALYSIS

The year 2030 background traffic volumes were combined with the generated traffic volumes from the proposed development to determine if turn lanes would be required along CR 800 N at the proposed access drive location. This analysis was done in accordance with the INDOT *Driveway Permit Guide*[2] and the results are summarized in the following table.

TABLE 3 – TURN LANE WARRANT RESULTS

| LOCATION | RIGHT- TURN LANE | LEFT-TURN LANE |
|---|---|---|
| CR 800 N & Proposed Access Drive | ✗ | ✗ |

✔=Turn Lane warranted; ✗=Turn Lane not warranted

The graphs that show the turn lane warrant criteria are shown in the **Appendix**. Furthermore, it should be noted that where turn lanes are not shown to be warranted, turn treatments could be required by Hendricks County based on local preferences.

## CAPACITY ANALYSIS

The "efficiency" of an intersection is based on its ability to accommodate the traffic volumes that approach the intersection. It is defined by the Level-of-Service (LOS) of the intersection. The LOS is determined by a series of calculations commonly called a "capacity analysis". Input data into a capacity analysis includes traffic volumes, intersection geometry, and number and use of lanes. To determine the LOS at each of the study intersections, a capacity analysis has been made using the recognized computer program *Synchro/SimTraffic*[3]. This program allows intersections to be analyzed and optimized using the capacity calculation methods outlined within the *Highway Capacity Manual (HCM 7th Edition)*[4]. The following list shows the delays related to the levels of service for unsignalized and signalized intersections:

[2] INDOT *Driveway Permit Guide*, Version 1.4, Indiana Department of Transportation, 2024
[3] *Synchro/SimTraffic 12*, Cubic Transportation Systems, 2023.
[4] *Highway Capacity Manual (HCM), 7th Edition* Transportation Research Board, National Research Council, Washington, DC, 2022.

| Level of Service | Control Delay (seconds/vehicle) | |
|---|---|---|
| | UNSIGNALIZED | SIGNALIZED |
| A | Less than or equal to 10 | Less than or equal to 10 |
| B | Between 10.1 and 15 | Between 10.1 and 20 |
| C | Between 15.1 and 25 | Between 20.1 and 35 |
| D | Between 25.1 and 35 | Between 35.1 and 55 |
| E | Between 35.1 and 50 | Between 55.1 and 80 |
| F | greater than 50 | greater than 80 |

## CAPACITY ANALYSIS SCENARIOS

To evaluate the proposed development's impact on the public street system, a series of traffic volume scenarios were analyzed to determine the adequacy of the existing roadway network. From this analysis, necessary recommendations can be made to improve the public street system so it will accommodate future traffic volumes. An analysis has been made for the peak hours at each of the study intersections for the following traffic volume scenarios:

*Scenario 1: Existing Traffic Volumes* – Based on existing peak hour traffic volumes. **Figure 3** is a summary of these traffic volumes.

*Scenario 2: Year 2030 Background Traffic Volumes* – Based on applying growth rate factors to the existing traffic volumes. **Figure 4** is a summary of these traffic volumes.

*Scenario 3: Year 2030 + Proposed Development Traffic Volumes* – Based on the sum of year 2030 background traffic volumes and generated traffic volumes from the proposed development. **Figure 7** is a summary of these traffic volumes.

The following tables summarize the level of service results at each study intersection. The *Synchro* (*HCM 7th Edition*) intersection reports illustrating the capacity analysis results are included in the **Appendix**.

TABLE 4 – LEVEL OF SERVICE SUMMARY: CR 800 N & CR 650 E

| APPROACH | AM PEAK Scenarios | | | PM PEAK Scenarios | | | SUNDAY PEAK Scenarios | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Northbound Approach | A | A | A | A | A | A | A | A | A |
| Southbound Approach | A | A | A | A | A | A | A | A | A |
| Eastbound Approach | A | A | A | A | A | A | A | A | A |
| Westbound Approach | A | A | A | A | A | A | A | A | A |
| **Intersection** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** | **A** |

TABLE 5 – LEVEL OF SERVICE SUMMARY: CR 800 N & SR 267 (GREEN STREET)

| APPROACH | AM PEAK | | | | | PM PEAK | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Scenarios | | | | | Scenarios | | | | |
| | 1A | 2A | 2B | 3A | 3B | 1A | 2A | 2B | 3A | 3B |
| Northbound Left-Turn | A | A | A | A | A | B | B | B | B | B |
| Eastbound Approach | C | C | C | D | C | E | F | E | F | F |

| APPROACH | SUNDAY PEAK | | | | |
|---|---|---|---|---|---|
| | Scenarios | | | | |
| | 1A | 2A | 2B | 3A | 3B |
| Northbound Left-Turn | A | A | A | A | A |
| Eastbound Approach | C | C | C | D | C |

Scenario A considers existing intersection geometrics.

Scenario B considers construction of an exclusive eastbound right-turn lane and an exclusive eastbound left-turn lane.

TABLE 6 – LEVEL OF SERVICE SUMMARY: CR 700 N & SR 267 (GREEN STREET)

| APPROACH | AM PEAK | | | PM PEAK | | | SUNDAY PEAK | | |
|---|---|---|---|---|---|---|---|---|---|
| | Scenarios | | | Scenarios | | | Scenarios | | |
| | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Northbound Approach | C | C | C | C | C | C | C | C | C |
| Southbound Approach | C | C | C | C | C | C | C | C | C |
| Eastbound Approach | C | C | C | C | D | D | C | C | C |
| Westbound Approach | C | C | C | D | D | D | C | C | C |
| **Intersection** | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **C** | **C** |

TABLE 7 – LEVEL OF SERVICE SUMMARY: CR 700 N & CR 650 E

| APPROACH | AM PEAK | | | PM PEAK | | | SUNDAY PEAK | | |
|---|---|---|---|---|---|---|---|---|---|
| | Scenarios | | | Scenarios | | | Scenarios | | |
| | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Southbound Approach | A | A | A | A | A | A | B | B | B |
| Eastbound Left-Turn | A | A | A | A | A | A | A | A | A |

TABLE 8 – LEVEL OF SERVICE SUMMARY: SR 267 (GREEN STREET) & ACRE LANE/CONNECTION POINTE CHRISTIAN CHURCH/PROPOSED DEVELOPMENT ACCESS DRIVE

| APPROACH | AM PEAK | | | PM PEAK | | | SUNDAY PEAK | | |
|---|---|---|---|---|---|---|---|---|---|
| | Scenarios | | | Scenarios | | | Scenarios | | |
| | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Northbound Left-Turn | A | A | A | B | B | B | A | A | A |
| Southbound Left-Turn | B | B | B | A | B | A | A | A | A |
| Eastbound Approach | E | E | E | F | F | F | E | F | F |
| Westbound Approach | D | D | D | F | F | F | C | C | C |

TABLE 9 – LEVEL OF SERVICE SUMMARY: CR 800 N & PROPOSED DEVELOPMENT ACCESS DRIVE

| APPROACH | AM PEAK | PM PEAK | SUNDAY PEAK |
|---|---|---|---|
| | Scenario 3 | Scenario 3 | Scenario 3 |
| Northbound Approach | A | A | A |
| Westbound Left-Turn | A | A | A |

Analysis considers construction of the access drive with one inbound and one outbound lane that will stop for CR 800 N.

## CONCLUSIONS & RECOMMENDATIONS

The conclusions that follow are based on existing traffic volume data, trip generation, assignment and distribution of generated traffic, and the capacity analyses/level of service results. Based on the analysis and the resulting conclusions of this study, the following recommendations are formulated to ensure that the roadway system will accommodate the increased traffic volumes from the proposed development.

CR 800 N & CR 650 E

Capacity analyses for all traffic volume scenarios have shown that this intersection currently operates and will continue to operate at acceptable levels of service during the AM, PM and Sunday peak hours with the existing intersection conditions.

CR 800 N & SR 267 (GREEN STREET)

Capacity analyses have shown that all approaches to this intersection currently operate at acceptable levels of service during the AM and Sunday peak hours with the existing intersection conditions. It is expected that the eastbound approach will experience increased delays during the peak hours as future traffic is added to the intersection. However, additional analyses have shown that these future delays can be substantially reduced if an exclusive left-turn lane and an exclusive right-turn lane are constructed along the eastbound approach.

CR 700 N & SR 267 (GREEN STREET)

Capacity analyses for all traffic volume scenarios have shown that this intersection currently operates and will continue to operate at acceptable levels of service during the AM, PM and Sunday peak hours with the existing intersection conditions.

CR 700 N & CR 650 E

Capacity analyses for all traffic volume scenarios have shown that all approaches to this intersection currently operate and will continue to operate at acceptable levels of service during the AM, PM and Sunday peak hours with the existing intersection conditions.

SR 267 (GREEN STREET) & ACRE LANE/CONNECTION POINTE CHRISTIAN CHURCH/PROPOSED DEVELOPMENT ACCESS DRIVE

Capacity analyses have shown that the eastbound approach currently operates below acceptable levels of service during the weekday and Sunday peak hours. Additionally, the westbound approach currently operates below acceptable levels of service during the PM peak hour. The eastbound and westbound approach delays will increase when future traffic volumes (background and proposed development) are added to the intersection. However, it should be noted that minor street approach peak hour delays are not uncommon when the major street has high peak hour volumes.

CR 800 N & PROPOSED DEVELOPMENT ACCESS DRIVE

Capacity analyses have shown that all approaches at this intersection will operate at acceptable levels of service during the AM, PM and Sunday peak hours when the generated traffic volumes from the proposed development are added to the roadway network and the following recommended intersection conditions are considered.

- Construction of the full access drive with one inbound lane and one outbound lane.
- The intersection should be stop-controlled with the access drive stopping for CR 800 N.

# TRAFFIC IMPACT STUDY

# APPENDIX

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1966

*8365 Keystone Crossing Boulevard, Suite 201*
*Indianapolis, IN 46240*
*Phone: (317) 202-0864 Fax: (317) 202-0908*

# ADDITIONAL FIGURES

C.A. "A"
162,367 sq. ft.
3.73 Ac.±

C.A. "B"
734,265 sq. ft.
16.86 Ac. ±

C.A. "C"
64,531 sq. ft.
1.66 Ac.±

LOT 1 12,221 sq. ft.
LOT 2 12,113 sq. ft.
LOT 3 10,570 sq. ft.
LOT 4 14,972 sq. ft.
LOT 5 12,670 sq. ft.
LOT 6 13,058 sq. ft.
LOT 7 9,619 sq. ft.
LOT 8 10,800 sq. ft.
LOT 9 10,800 sq. ft.
LOT 10 10,800 sq. ft.
LOT 11 10,800 sq. ft.
LOT 12 10,800 sq. ft.
LOT 13 10,800 sq. ft.
LOT 14 10,800 sq. ft.
LOT 15 10,800 sq. ft.
LOT 16 10,800 sq. ft.
LOT 17 10,800 sq. ft.
LOT 18 10,753 sq. ft.
LOT 19 10,800 sq. ft.
LOT 20 10,878 sq. ft.
LOT 21 12,364 sq. ft.
LOT 22 10,759 sq. ft.
LOT 23 11,370 sq. ft.
LOT 24 10,939 sq. ft.
LOT 25 10,800 sq. ft.
LOT 26 10,800 sq. ft.
LOT 27 10,752 sq. ft.
LOT 28 13,993 sq. ft.
LOT 29 12,364 sq. ft.
LOT 30 13,631 sq. ft.
LOT 31 15,706 sq. ft.
LOT 32 12,209 sq. ft.
LOT 33 12,852 sq. ft.
LOT 34 12,785 sq. ft.
LOT 35 14,727 sq. ft.
LOT 36 22,918 sq. ft.
LOT 37 12,398 sq. ft.
LOT 38 13,555 sq. ft.
LOT 39 13,556 sq. ft.
LOT 40 13,556 sq. ft.
LOT 41 13,557 sq. ft.
LOT 42 13,558 sq. ft.
LOT 43 13,559 sq. ft.
LOT 44 14,267 sq. ft.
LOT 45 14,311 sq. ft.
LOT 46 13,561 sq. ft.
LOT 47 13,562 sq. ft.
LOT 48 13,563 sq. ft.
LOT 49 13,564 sq. ft.
LOT 50 13,564 sq. ft.
LOT 51 13,565 sq. ft.
LOT 52 13,566 sq. ft.
LOT 53 12,600 sq. ft.
LOT 54 12,600 sq. ft.
LOT 55 12,600 sq. ft.
LOT 56 12,600 sq. ft.
LOT 57 12,600 sq. ft.
LOT 58 12,017 sq. ft.
LOT 59 11,827 sq. ft.
LOT 60 12,600 sq. ft.
LOT 61 12,600 sq. ft.
LOT 62 13,776 sq. ft.
LOT 63 12,600 sq. ft.
LOT 64 12,600 sq. ft.
LOT 65 11,849 sq. ft.
LOT 66 11,250 sq. ft.
LOT 67 11,849 sq. ft.
LOT 68 12,600 sq. ft.
LOT 69 12,600 sq. ft.
LOT 70 13,776 sq. ft.
LOT 71 12,600 sq. ft.
LOT 72 12,600 sq. ft.
LOT 73 11,827 sq. ft.
LOT 74 11,250 sq. ft.
LOT 75 11,430 sq. ft.
LOT 76 12,017 sq. ft.
LOT 77 12,600 sq. ft.
LOT 78 12,600 sq. ft.
LOT 79 12,600 sq. ft.
LOT 80 12,600 sq. ft.
LOT 81 12,600 sq. ft.
LOT 82 10,036 sq. ft.
LOT 83 10,454 sq. ft.
LOT 84 11,042 sq. ft.
LOT 85 11,308 sq. ft.
LOT 86 11,198 sq. ft.
LOT 87 11,089 sq. ft.
LOT 88 10,979 sq. ft.
LOT 89 10,869 sq. ft.
LOT 90 13,037 sq. ft.
LOT 91 13,660 sq. ft.
LOT 92 13,289 sq. ft.
LOT 93 13,327 sq. ft.
LOT 94 11,868 sq. ft.
LOT 95 9,427 sq. ft.
LOT 96 9,397 sq. ft.
LOT 97 10,825 sq. ft.
LOT 98 11,633 sq. ft.
LOT 99 11,633 sq. ft.
LOT 100 11,633 sq. ft.
LOT 101 10,682 sq. ft.
LOT 102 9,520 sq. ft.
LOT 103 9,520 sq. ft.
LOT 104 9,520 sq. ft.
LOT 105 9,477 sq. ft.
LOT 113 42,100 sq. ft.

HAWK HOLLOW BEND
MEADOWBROOK LANE
FEATHERCREST LANE
WINDJAMMER COURT
WINDJAMMER CT.
WINDJAMMER DR.
WINDRIDGE WAY
SKYHAVEN DRIVE
HAWKEYE CIRCLE
SUNNY HOLLOW COURT
HORIZON BEND
WHEELWRIGHT
CONNECTION POINTE DRIVE
STATE ROAD 267
HICKORY ROAD
ACRE LANE

0 100' 200'

| Sym. | Revisions | Date |
|---|---|---|
| 1 | REVISIONS PER TECH REVIEW COMMITTEE COMMENTS | 10-02-2025 |

Designed: GAF
Drawn: GAF
Checked: AGI, SB
Scale: 1"= 60'
Date: 09-08-2025

# R1 - PRIMARY PLAT
# HAWKS LANDING
# HENDRICKS COUNTY
# BROWNSBURG, INDIANA

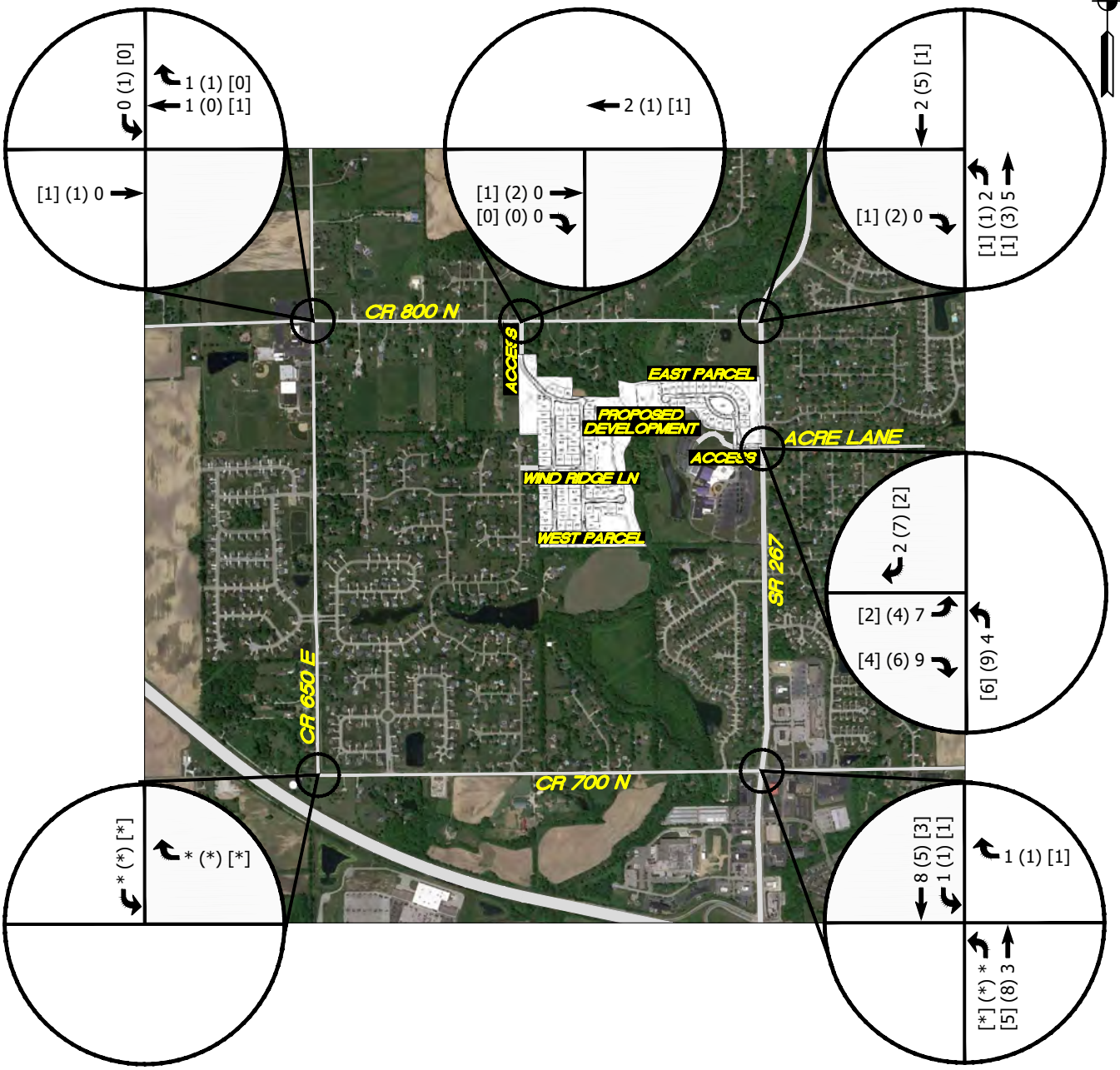
CHANDLER A. HARDEN
REGISTERED
NO.
22300025
STATE OF
INDIANA
LAND SURVEYOR
Chandler Harden


BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN. 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com


Project No: 23369
Sheet No:

jbaldwin P:\2023\23369\Engineering\Cadd\Preliminary\R1 Lots\23369-R1-PP-Overall.dwg Oct 30, 2025 - 10:21am

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1968




LEGEND

XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
[XX] = SUNDAY PEAK HOUR
* = NEGLIGIBLE

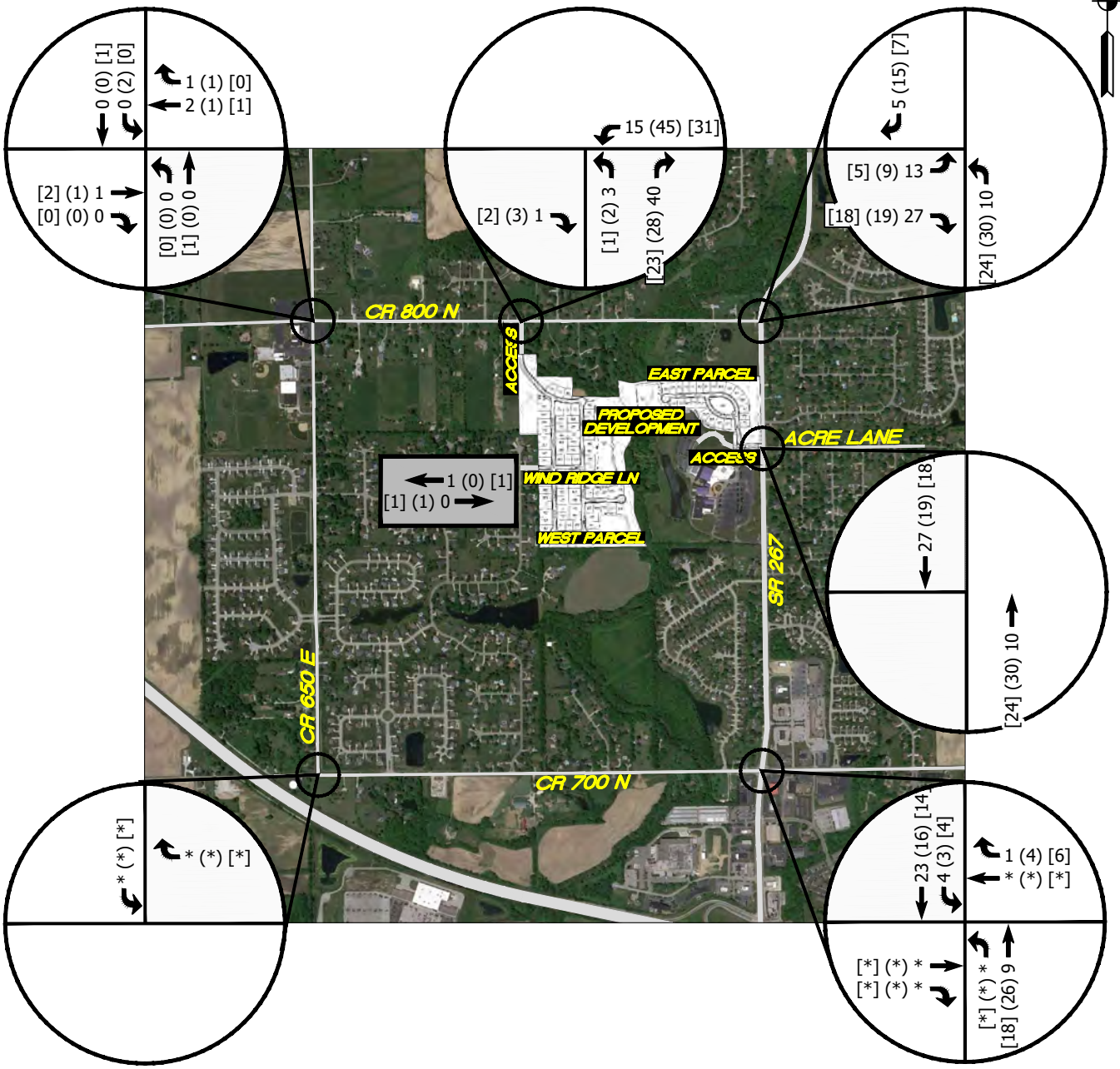
**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

# FIGURE A

## GENERATED TRAFFIC VOLUMES FROM THE PROPOSED DEVELOPMENT (EAST PARCEL)

Z:\2025\25103S-David Weekley Homes, TIS, Hawks Landing Revised, Brownsburg\25103S-EXH.dwg 1=1 2025-11-13 SK

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1968




LEGEND

XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
[XX] = SUNDAY PEAK HOUR
* = NEGLIGIBLE

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

## FIGURE B

### GENERATED TRAFFIC VOLUMES FROM THE PROPOSED DEVELOPMENT (WEST PARCEL)

Z:\2025\25103S-David Weekley Homes, TIS, Hawks Landing Revised, Brownsburg\25103S-EXH.dwg 1=1 2025-11-13 SK

# CR 800 N & CR 650 E

## TRAFFIC VOLUME COUNTS
## CAPACITY ANALYSIS

## CR 650 E & CR 800 N THURSDAY AM - TMC

Thu Nov 6, 2025
AM Peak (7:30 AM - 8:30 AM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1355979, Location: 39.880045, -86.411371

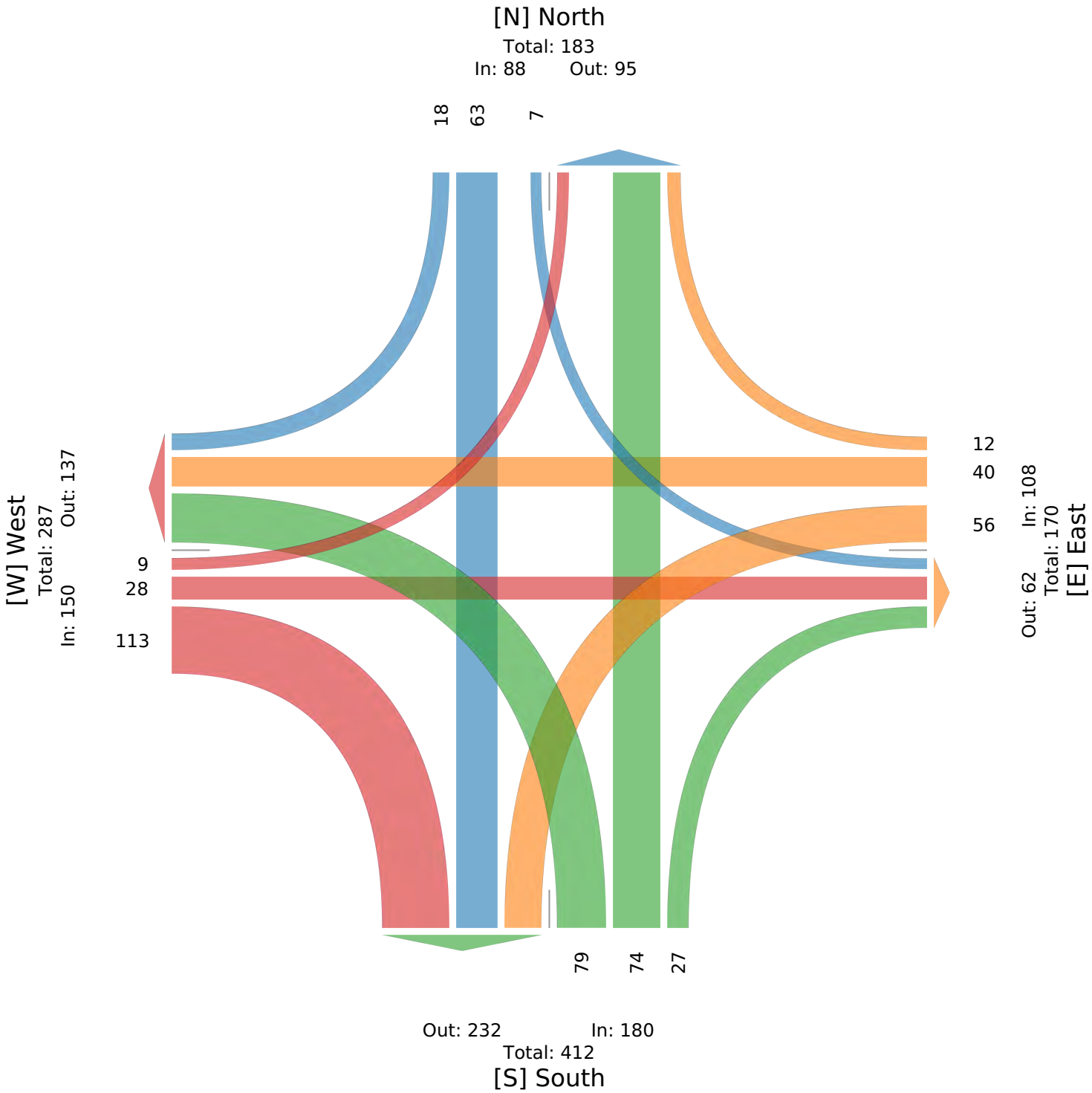
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg / Direction | South Northbound | | | | | North Southbound | | | | | West Eastbound | | | | | East Westbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | **Int** |
| 2025-11-06 7:30AM | 11 | 13 | 2 | 0 | **26** | 1 | 4 | 4 | 0 | **9** | 1 | 7 | 15 | 0 | **23** | 4 | 10 | 0 | 0 | **14** | **72** |
| 7:45AM | 8 | 9 | 3 | 0 | **20** | 2 | 14 | 0 | 0 | **16** | 3 | 12 | 25 | 0 | **40** | 10 | 7 | 7 | 0 | **24** | **100** |
| 8:00AM | 25 | 17 | 13 | 0 | **55** | 1 | 22 | 5 | 0 | **28** | 3 | 7 | 32 | 0 | **42** | 24 | 4 | 3 | 0 | **31** | **156** |
| 8:15AM | 35 | 35 | 9 | 0 | **79** | 3 | 23 | 9 | 0 | **35** | 2 | 2 | 41 | 0 | **45** | 18 | 19 | 2 | 0 | **39** | **198** |
| **Total** | 79 | 74 | 27 | 0 | **180** | 7 | 63 | 18 | 0 | **88** | 9 | 28 | 113 | 0 | **150** | 56 | 40 | 12 | 0 | **108** | **526** |
| **% Approach** | 43.9% | 41.1% | 15.0% | 0% | **-** | 8.0% | 71.6% | 20.5% | 0% | **-** | 6.0% | 18.7% | 75.3% | 0% | **-** | 51.9% | 37.0% | 11.1% | 0% | **-** | - |
| **% Total** | 15.0% | 14.1% | 5.1% | 0% | **34.2%** | 1.3% | 12.0% | 3.4% | 0% | **16.7%** | 1.7% | 5.3% | 21.5% | 0% | **28.5%** | 10.6% | 7.6% | 2.3% | 0% | **20.5%** | - |
| **PHF** | 0.564 | 0.529 | 0.519 | - | **0.570** | 0.583 | 0.685 | 0.500 | - | **0.629** | 0.750 | 0.583 | 0.689 | - | **0.833** | 0.583 | 0.526 | 0.429 | - | **0.692** | 0.664 |
| **Lights and Motorcycles** | 78 | 73 | 27 | 0 | **178** | 6 | 63 | 17 | 0 | **86** | 8 | 28 | 111 | 0 | **147** | 54 | 40 | 12 | 0 | **106** | 517 |
| **% Lights and Motorcycles** | 98.7% | 98.6% | 100% | 0% | **98.9%** | 85.7% | 100% | 94.4% | 0% | **97.7%** | 88.9% | 100% | 98.2% | 0% | **98.0%** | 96.4% | 100% | 100% | 0% | **98.1%** | 98.3% |
| **Heavy** | 1 | 1 | 0 | 0 | **2** | 1 | 0 | 1 | 0 | **2** | 1 | 0 | 2 | 0 | **3** | 2 | 0 | 0 | 0 | **2** | 9 |
| **% Heavy** | 1.3% | 1.4% | 0% | 0% | **1.1%** | 14.3% | 0% | 5.6% | 0% | **2.3%** | 11.1% | 0% | 1.8% | 0% | **2.0%** | 3.6% | 0% | 0% | 0% | **1.9%** | 1.7% |

*L: Left, R: Right, T: Thru, U: U-Turn

**CR 650 E & CR 800 N THURSDAY AM - TMC**
Thu Nov 6, 2025
AM Peak (7:30 AM - 8:30 AM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1355979, Location: 39.880045, -86.411371

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## CR 650 E & CR 800 N - TMC

Thu Oct 30, 2025
PM Peak (Oct 30 2025 5PM - 6 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354702, Location: 39.880045, -86.411371

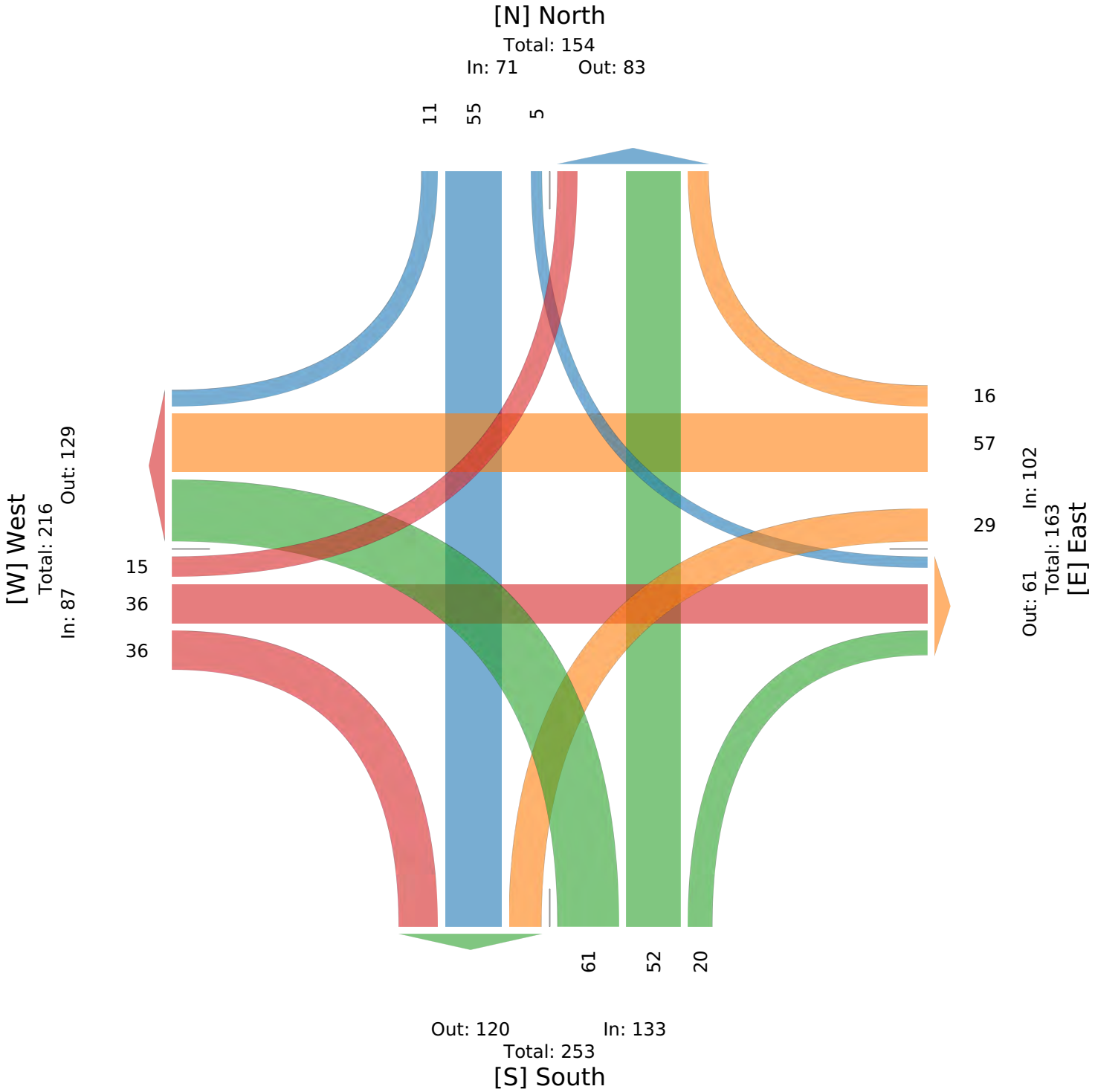
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg | South | | | | | North | | | | | West | | | | | East | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Northbound | | | | | Southbound | | | | | Eastbound | | | | | Westbound | | | | | |
| Time | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | **Int** |
| 2025-10-30 5:00PM | 20 | 13 | 1 | 0 | **34** | 1 | 19 | 2 | 0 | **22** | 2 | 7 | 9 | 0 | **18** | 8 | 12 | 4 | 0 | **24** | **98** |
| 5:15PM | 12 | 15 | 7 | 0 | **34** | 2 | 17 | 5 | 0 | **24** | 6 | 11 | 11 | 0 | **28** | 8 | 16 | 6 | 0 | **30** | **116** |
| 5:30PM | 16 | 10 | 7 | 0 | **33** | 2 | 8 | 2 | 0 | **12** | 2 | 12 | 12 | 0 | **26** | 8 | 15 | 4 | 0 | **27** | **98** |
| 5:45PM | 13 | 14 | 5 | 0 | **32** | 0 | 11 | 2 | 0 | **13** | 5 | 6 | 4 | 0 | **15** | 5 | 14 | 2 | 0 | **21** | **81** |
| **Total** | 61 | 52 | 20 | 0 | **133** | 5 | 55 | 11 | 0 | **71** | 15 | 36 | 36 | 0 | **87** | 29 | 57 | 16 | 0 | **102** | **393** |
| **% Approach** | 45.9% | 39.1% | 15.0% | 0% | **-** | 7.0% | 77.5% | 15.5% | 0% | **-** | 17.2% | 41.4% | 41.4% | 0% | **-** | 28.4% | 55.9% | 15.7% | 0% | **-** | - |
| **% Total** | 15.5% | 13.2% | 5.1% | 0% | **33.8%** | 1.3% | 14.0% | 2.8% | 0% | **18.1%** | 3.8% | 9.2% | 9.2% | 0% | **22.1%** | 7.4% | 14.5% | 4.1% | 0% | **26.0%** | - |
| **PHF** | 0.763 | 0.867 | 0.714 | - | **0.978** | 0.625 | 0.724 | 0.550 | - | **0.740** | 0.625 | 0.750 | 0.750 | - | **0.777** | 0.906 | 0.891 | 0.667 | - | **0.850** | 0.847 |
| **Lights and Motorcycles** | 61 | 52 | 20 | 0 | **133** | 4 | 55 | 11 | 0 | **70** | 15 | 36 | 36 | 0 | **87** | 29 | 57 | 16 | 0 | **102** | 392 |
| **% Lights and Motorcycles** | 100% | 100% | 100% | 0% | **100%** | 80.0% | 100% | 100% | 0% | **98.6%** | 100% | 100% | 100% | 0% | **100%** | 100% | 100% | 100% | 0% | **100%** | 99.7% |
| **Heavy** | 0 | 0 | 0 | 0 | **0** | 1 | 0 | 0 | 0 | **1** | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | **0** | 1 |
| **% Heavy** | 0% | 0% | 0% | 0% | **0%** | 20.0% | 0% | 0% | 0% | **1.4%** | 0% | 0% | 0% | 0% | **0%** | 0% | 0% | 0% | 0% | **0%** | 0.3% |

*L: Left, R: Right, T: Thru, U: U-Turn

**CR 650 E & CR 800 N - TMC**
Thu Oct 30, 2025
PM Peak (Oct 30 2025 5PM - 6 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354702, Location: 39.880045, -86.411371

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## CR 650 E & CR 800 N - TMC

Sun Nov 2, 2025
Midday Peak (WKND) (Nov 02 2025 12PM - 1 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354702, Location: 39.880045, -86.411371

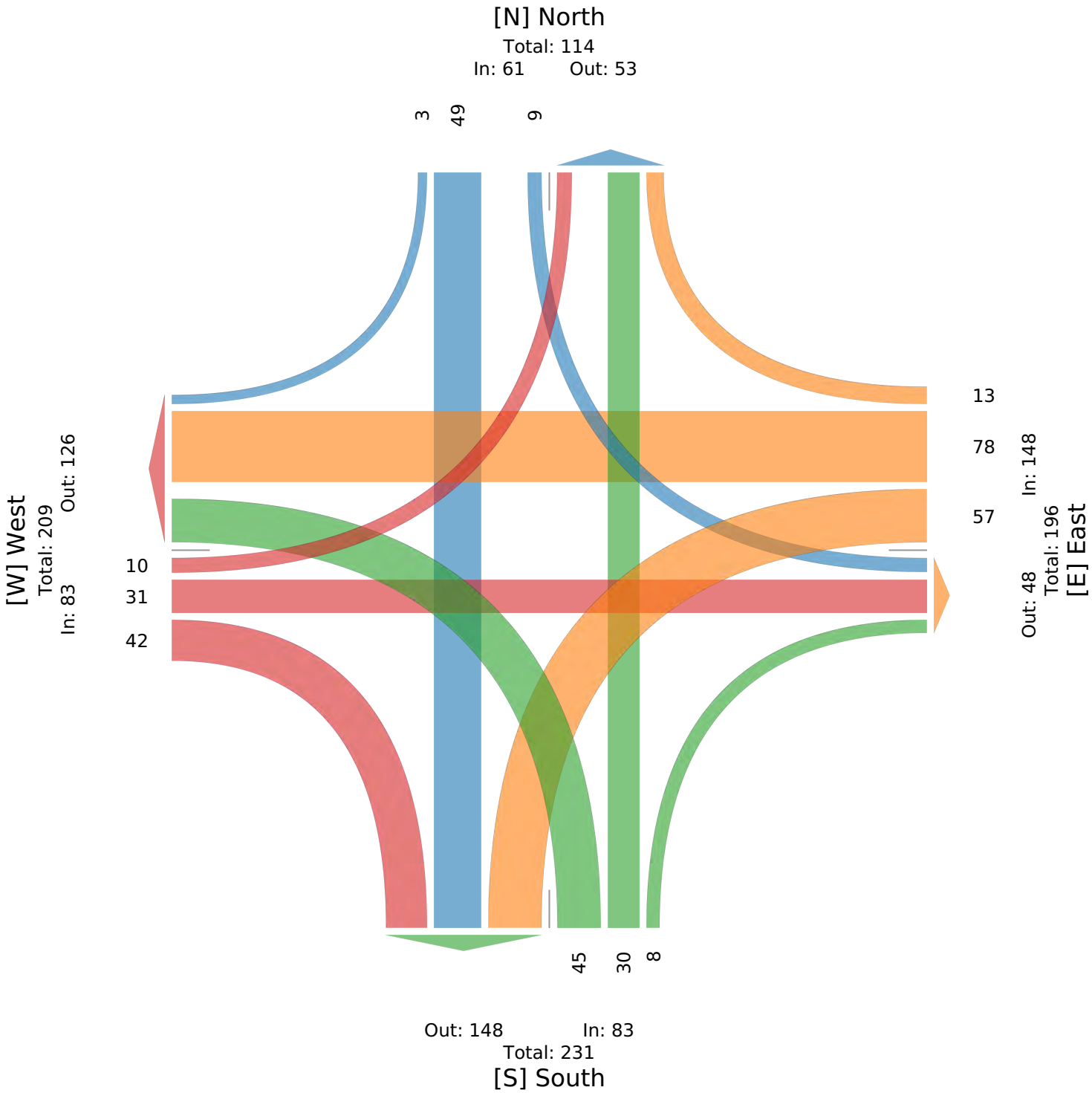
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg / Direction | South Northbound | | | | | North Southbound | | | | | West Eastbound | | | | | East Westbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | **Int** |
| 2025-11-02 12:00PM | 6 | 4 | 2 | 0 | **12** | 5 | 13 | 2 | 0 | **20** | 2 | 7 | 17 | 0 | **26** | 3 | 11 | 2 | 0 | **16** | **74** |
| 12:15PM | 8 | 10 | 2 | 0 | **20** | 1 | 14 | 0 | 0 | **15** | 3 | 8 | 11 | 0 | **22** | 8 | 19 | 3 | 0 | **30** | **87** |
| 12:30PM | 20 | 8 | 2 | 0 | **30** | 1 | 13 | 1 | 0 | **15** | 3 | 5 | 6 | 0 | **14** | 17 | 31 | 5 | 0 | **53** | **112** |
| 12:45PM | 11 | 8 | 2 | 0 | **21** | 2 | 9 | 0 | 0 | **11** | 2 | 11 | 8 | 0 | **21** | 29 | 17 | 3 | 0 | **49** | **102** |
| **Total** | 45 | 30 | 8 | 0 | **83** | 9 | 49 | 3 | 0 | **61** | 10 | 31 | 42 | 0 | **83** | 57 | 78 | 13 | 0 | **148** | **375** |
| **% Approach** | 54.2% | 36.1% | 9.6% | 0% | **-** | 14.8% | 80.3% | 4.9% | 0% | **-** | 12.0% | 37.3% | 50.6% | 0% | **-** | 38.5% | 52.7% | 8.8% | 0% | **-** | - |
| **% Total** | 12.0% | 8.0% | 2.1% | 0% | **22.1%** | 2.4% | 13.1% | 0.8% | 0% | **16.3%** | 2.7% | 8.3% | 11.2% | 0% | **22.1%** | 15.2% | 20.8% | 3.5% | 0% | **39.5%** | - |
| **PHF** | 0.563 | 0.750 | 1.000 | - | **0.692** | 0.450 | 0.875 | 0.375 | - | **0.763** | 0.833 | 0.705 | 0.618 | - | **0.798** | 0.491 | 0.629 | 0.650 | - | **0.698** | 0.837 |
| **Lights and Motorcycles** | 45 | 29 | 8 | 0 | **82** | 9 | 49 | 3 | 0 | **61** | 10 | 31 | 42 | 0 | **83** | 57 | 77 | 12 | 0 | **146** | 372 |
| **% Lights and Motorcycles** | 100% | 96.7% | 100% | 0% | **98.8%** | 100% | 100% | 100% | 0% | **100%** | 100% | 100% | 100% | 0% | **100%** | 100% | 98.7% | 92.3% | 0% | **98.6%** | 99.2% |
| **Heavy** | 0 | 1 | 0 | 0 | **1** | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | **0** | 0 | 1 | 1 | 0 | **2** | 3 |
| **% Heavy** | 0% | 3.3% | 0% | 0% | **1.2%** | 0% | 0% | 0% | 0% | **0%** | 0% | 0% | 0% | 0% | **0%** | 0% | 1.3% | 7.7% | 0% | **1.4%** | 0.8% |

*L: Left, R: Right, T: Thru, U: U-Turn

**CR 650 E & CR 800 N - TMC**
Sun Nov 2, 2025
Midday Peak (WKND) (Nov 02 2025 12PM - 1 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354702, Location: 39.880045, -86.411371

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



| Intersection | |
|---|---|
| Intersection Delay, s/veh | 8.8 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 9 | 28 | 113 | 56 | 40 | 12 | 79 | 74 | 27 | 7 | 63 | 18 |
| Future Vol, veh/h | 9 | 28 | 113 | 56 | 40 | 12 | 79 | 74 | 27 | 7 | 63 | 18 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 10 | 30 | 123 | 61 | 43 | 13 | 86 | 80 | 29 | 8 | 68 | 20 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 8.4 | 8.8 | 9.3 | 8.4 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 44% | 6% | 52% | 8% |
| Vol Thru, % | 41% | 19% | 37% | 72% |
| Vol Right, % | 15% | 75% | 11% | 20% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 180 | 150 | 108 | 88 |
| LT Vol | 79 | 9 | 56 | 7 |
| Through Vol | 74 | 28 | 40 | 63 |
| RT Vol | 27 | 113 | 12 | 18 |
| Lane Flow Rate | 196 | 163 | 117 | 96 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.255 | 0.196 | 0.158 | 0.125 |
| Departure Headway (Hd) | 4.689 | 4.335 | 4.852 | 4.709 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 763 | 825 | 737 | 759 |
| Service Time | 2.732 | 2.376 | 2.896 | 2.758 |
| HCM Lane V/C Ratio | 0.257 | 0.198 | 0.159 | 0.126 |
| HCM Control Delay, s/veh | 9.3 | 8.4 | 8.8 | 8.4 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 1 | 0.7 | 0.6 | 0.4 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 8.4 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 15 | 36 | 36 | 29 | 57 | 16 | 61 | 52 | 20 | 5 | 55 | 11 |
| Future Vol, veh/h | 15 | 36 | 36 | 29 | 57 | 16 | 61 | 52 | 20 | 5 | 55 | 11 |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 |
| Mvmt Flow | 18 | 42 | 42 | 34 | 67 | 19 | 72 | 61 | 24 | 6 | 65 | 13 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 8.1 | 8.4 | 8.6 | 8.5 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 46% | 17% | 28% | 7% |
| Vol Thru, % | 39% | 41% | 56% | 77% |
| Vol Right, % | 15% | 41% | 16% | 15% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 133 | 87 | 102 | 71 |
| LT Vol | 61 | 15 | 29 | 5 |
| Through Vol | 52 | 36 | 57 | 55 |
| RT Vol | 20 | 36 | 16 | 11 |
| Lane Flow Rate | 156 | 102 | 120 | 84 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.196 | 0.125 | 0.152 | 0.113 |
| Departure Headway (Hd) | 4.511 | 4.395 | 4.547 | 4.851 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 795 | 815 | 788 | 738 |
| Service Time | 2.541 | 2.425 | 2.576 | 2.883 |
| HCM Lane V/C Ratio | 0.196 | 0.125 | 0.152 | 0.114 |
| HCM Control Delay, s/veh | 8.6 | 8.1 | 8.4 | 8.5 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 0.7 | 0.4 | 0.5 | 0.4 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 8.3 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 10 | 31 | 42 | 57 | 78 | 13 | 45 | 30 | 8 | 9 | 49 | 3 |
| Future Vol, veh/h | 10 | 31 | 42 | 57 | 78 | 13 | 45 | 30 | 8 | 9 | 49 | 3 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 3 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 12 | 37 | 50 | 68 | 93 | 15 | 54 | 36 | 10 | 11 | 58 | 4 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 7.8 | 8.7 | 8.4 | 8.1 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 54% | 12% | 39% | 15% |
| Vol Thru, % | 36% | 37% | 53% | 80% |
| Vol Right, % | 10% | 51% | 9% | 5% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 83 | 83 | 148 | 61 |
| LT Vol | 45 | 10 | 57 | 9 |
| Through Vol | 30 | 31 | 78 | 49 |
| RT Vol | 8 | 42 | 13 | 3 |
| Lane Flow Rate | 99 | 99 | 176 | 73 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.128 | 0.116 | 0.217 | 0.093 |
| Departure Headway (Hd) | 4.654 | 4.225 | 4.438 | 4.635 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 771 | 849 | 810 | 773 |
| Service Time | 2.679 | 2.248 | 2.458 | 2.664 |
| HCM Lane V/C Ratio | 0.128 | 0.117 | 0.217 | 0.094 |
| HCM Control Delay, s/veh | 8.4 | 7.8 | 8.7 | 8.1 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 0.4 | 0.4 | 0.8 | 0.3 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 9.1 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 10 | 31 | 122 | 61 | 43 | 13 | 85 | 80 | 30 | 8 | 68 | 20 |
| Future Vol, veh/h | 10 | 31 | 122 | 61 | 43 | 13 | 85 | 80 | 30 | 8 | 68 | 20 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 11 | 34 | 133 | 66 | 47 | 14 | 92 | 87 | 33 | 9 | 74 | 22 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 8.7 | 9.1 | 9.7 | 8.6 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 44% | 6% | 52% | 8% |
| Vol Thru, % | 41% | 19% | 37% | 71% |
| Vol Right, % | 15% | 75% | 11% | 21% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 195 | 163 | 117 | 96 |
| LT Vol | 85 | 10 | 61 | 8 |
| Through Vol | 80 | 31 | 43 | 68 |
| RT Vol | 30 | 122 | 13 | 20 |
| Lane Flow Rate | 212 | 177 | 127 | 104 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.28 | 0.218 | 0.175 | 0.139 |
| Departure Headway (Hd) | 4.763 | 4.421 | 4.94 | 4.799 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 750 | 808 | 722 | 742 |
| Service Time | 2.818 | 2.472 | 2.996 | 2.86 |
| HCM Lane V/C Ratio | 0.283 | 0.219 | 0.176 | 0.14 |
| HCM Control Delay, s/veh | 9.7 | 8.7 | 9.1 | 8.6 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 1.1 | 0.8 | 0.6 | 0.5 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 8.6 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 17 | 39 | 39 | 32 | 62 | 18 | 66 | 56 | 22 | 6 | 60 | 12 |
| Future Vol, veh/h | 17 | 39 | 39 | 32 | 62 | 18 | 66 | 56 | 22 | 6 | 60 | 12 |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 |
| Mvmt Flow | 20 | 46 | 46 | 38 | 73 | 21 | 78 | 66 | 26 | 7 | 71 | 14 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 8.2 | 8.6 | 8.9 | 8.7 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 46% | 18% | 29% | 8% |
| Vol Thru, % | 39% | 41% | 55% | 77% |
| Vol Right, % | 15% | 41% | 16% | 15% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 144 | 95 | 112 | 78 |
| LT Vol | 66 | 17 | 32 | 6 |
| Through Vol | 56 | 39 | 62 | 60 |
| RT Vol | 22 | 39 | 18 | 12 |
| Lane Flow Rate | 169 | 112 | 132 | 92 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.215 | 0.139 | 0.169 | 0.126 |
| Departure Headway (Hd) | 4.577 | 4.473 | 4.616 | 4.928 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 783 | 800 | 776 | 727 |
| Service Time | 2.612 | 2.508 | 2.65 | 2.965 |
| HCM Lane V/C Ratio | 0.216 | 0.14 | 0.17 | 0.127 |
| HCM Control Delay, s/veh | 8.9 | 8.2 | 8.6 | 8.7 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 0.8 | 0.5 | 0.6 | 0.4 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 8.5 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 11 | 34 | 46 | 62 | 84 | 14 | 49 | 33 | 9 | 10 | 53 | 4 |
| Future Vol, veh/h | 11 | 34 | 46 | 62 | 84 | 14 | 49 | 33 | 9 | 10 | 53 | 4 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 3 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 13 | 40 | 55 | 74 | 100 | 17 | 58 | 39 | 11 | 12 | 63 | 5 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 8 | 8.9 | 8.5 | 8.3 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 54% | 12% | 39% | 15% |
| Vol Thru, % | 36% | 37% | 53% | 79% |
| Vol Right, % | 10% | 51% | 9% | 6% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 91 | 91 | 160 | 67 |
| LT Vol | 49 | 11 | 62 | 10 |
| Through Vol | 33 | 34 | 84 | 53 |
| RT Vol | 9 | 46 | 14 | 4 |
| Lane Flow Rate | 108 | 108 | 190 | 80 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.142 | 0.129 | 0.238 | 0.104 |
| Departure Headway (Hd) | 4.72 | 4.289 | 4.495 | 4.702 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 759 | 835 | 800 | 761 |
| Service Time | 2.753 | 2.318 | 2.52 | 2.737 |
| HCM Lane V/C Ratio | 0.142 | 0.129 | 0.238 | 0.105 |
| HCM Control Delay, s/veh | 8.5 | 8 | 8.9 | 8.3 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 0.5 | 0.4 | 0.9 | 0.3 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 9.2 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 10 | 32 | 122 | 61 | 46 | 15 | 85 | 81 | 30 | 8 | 68 | 20 |
| Future Vol, veh/h | 10 | 32 | 122 | 61 | 46 | 15 | 85 | 81 | 30 | 8 | 68 | 20 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 11 | 35 | 133 | 66 | 50 | 16 | 92 | 88 | 33 | 9 | 74 | 22 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 8.8 | 9.1 | 9.7 | 8.7 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 43% | 6% | 50% | 8% |
| Vol Thru, % | 41% | 20% | 38% | 71% |
| Vol Right, % | 15% | 74% | 12% | 21% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 196 | 164 | 122 | 96 |
| LT Vol | 85 | 10 | 61 | 8 |
| Through Vol | 81 | 32 | 46 | 68 |
| RT Vol | 30 | 122 | 15 | 20 |
| Lane Flow Rate | 213 | 178 | 133 | 104 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.283 | 0.22 | 0.182 | 0.14 |
| Departure Headway (Hd) | 4.78 | 4.436 | 4.937 | 4.817 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 748 | 804 | 723 | 739 |
| Service Time | 2.836 | 2.49 | 2.995 | 2.881 |
| HCM Lane V/C Ratio | 0.285 | 0.221 | 0.184 | 0.141 |
| HCM Control Delay, s/veh | 9.7 | 8.8 | 9.1 | 8.7 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 1.2 | 0.8 | 0.7 | 0.5 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 8.7 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 17 | 41 | 39 | 32 | 63 | 20 | 66 | 56 | 22 | 9 | 61 | 12 |
| Future Vol, veh/h | 17 | 41 | 39 | 32 | 63 | 20 | 66 | 56 | 22 | 9 | 61 | 12 |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 |
| Mvmt Flow | 20 | 48 | 46 | 38 | 74 | 24 | 78 | 66 | 26 | 11 | 72 | 14 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 8.3 | 8.6 | 8.9 | 8.8 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 46% | 18% | 28% | 11% |
| Vol Thru, % | 39% | 42% | 55% | 74% |
| Vol Right, % | 15% | 40% | 17% | 15% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 144 | 97 | 115 | 82 |
| LT Vol | 66 | 17 | 32 | 9 |
| Through Vol | 56 | 41 | 63 | 61 |
| RT Vol | 22 | 39 | 20 | 12 |
| Lane Flow Rate | 169 | 114 | 135 | 96 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.216 | 0.142 | 0.174 | 0.133 |
| Departure Headway (Hd) | 4.598 | 4.494 | 4.623 | 4.953 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 779 | 795 | 775 | 723 |
| Service Time | 2.635 | 2.533 | 2.659 | 2.993 |
| HCM Lane V/C Ratio | 0.217 | 0.143 | 0.174 | 0.133 |
| HCM Control Delay, s/veh | 8.9 | 8.3 | 8.6 | 8.8 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 0.8 | 0.5 | 0.6 | 0.5 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 8.6 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 11 | 37 | 46 | 62 | 86 | 14 | 49 | 34 | 9 | 10 | 54 | 4 |
| Future Vol, veh/h | 11 | 37 | 46 | 62 | 86 | 14 | 49 | 34 | 9 | 10 | 54 | 4 |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 3 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 13 | 44 | 55 | 74 | 102 | 17 | 58 | 40 | 11 | 12 | 64 | 5 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 8 | 9 | 8.6 | 8.3 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 53% | 12% | 38% | 15% |
| Vol Thru, % | 37% | 39% | 53% | 79% |
| Vol Right, % | 10% | 49% | 9% | 6% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 92 | 94 | 162 | 68 |
| LT Vol | 49 | 11 | 62 | 10 |
| Through Vol | 34 | 37 | 86 | 54 |
| RT Vol | 9 | 46 | 14 | 4 |
| Lane Flow Rate | 110 | 112 | 193 | 81 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.144 | 0.134 | 0.241 | 0.106 |
| Departure Headway (Hd) | 4.738 | 4.308 | 4.505 | 4.722 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 757 | 831 | 797 | 759 |
| Service Time | 2.77 | 2.338 | 2.532 | 2.755 |
| HCM Lane V/C Ratio | 0.145 | 0.135 | 0.242 | 0.107 |
| HCM Control Delay, s/veh | 8.6 | 8 | 9 | 8.3 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 0.5 | 0.5 | 0.9 | 0.4 |

# CR 800 N & SR 267 (GREEN STREET)

## TRAFFIC VOLUME COUNTS
## CAPACITY ANALYSIS

## CR 800 N & SR 267 - TMC

Thu Oct 30, 2025
AM Peak (Oct 30 2025 7AM - 8 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354693, Location: 39.880061, -86.39249

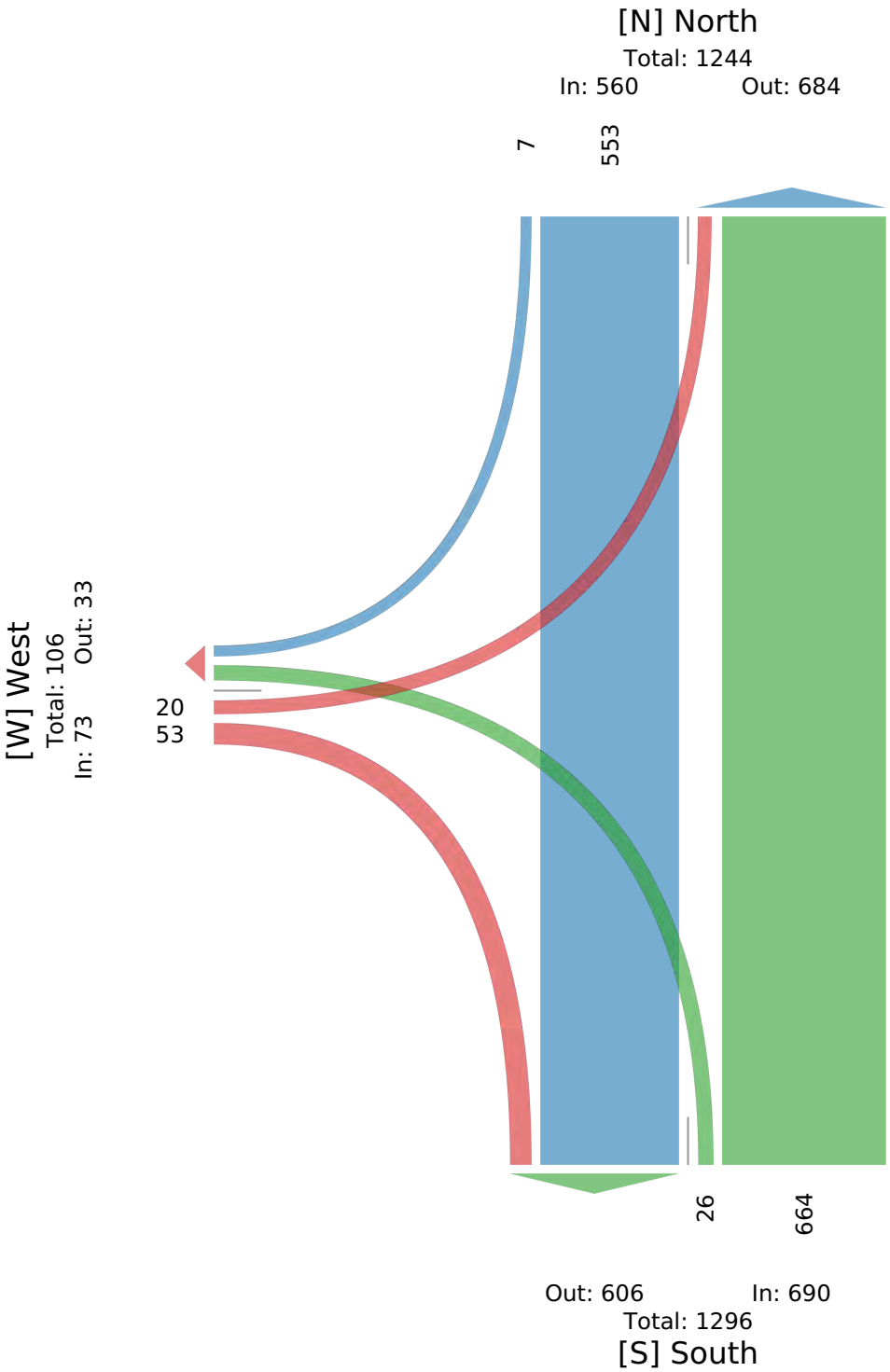
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg | South | | | | North | | | | West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Northbound | | | | Southbound | | | | Eastbound | | | | |
| Time | L | T | U | **App** | T | R | U | **App** | L | R | U | **App** | **Int** |
| 2025-10-30 7:00AM | 2 | 143 | 0 | **145** | 165 | 2 | 0 | **167** | 3 | 17 | 0 | **20** | **332** |
| 7:15AM | 6 | 156 | 0 | **162** | 112 | 2 | 0 | **114** | 9 | 11 | 0 | **20** | **296** |
| 7:30AM | 7 | 185 | 0 | **192** | 131 | 0 | 0 | **131** | 6 | 9 | 0 | **15** | **338** |
| 7:45AM | 11 | 180 | 0 | **191** | 145 | 3 | 0 | **148** | 2 | 16 | 0 | **18** | **357** |
| **Total** | 26 | 664 | 0 | **690** | 553 | 7 | 0 | **560** | 20 | 53 | 0 | **73** | **1323** |
| **% Approach** | 3.8% | 96.2% | 0% | **-** | 98.8% | 1.3% | 0% | **-** | 27.4% | 72.6% | 0% | **-** | - |
| **% Total** | 2.0% | 50.2% | 0% | **52.2%** | 41.8% | 0.5% | 0% | **42.3%** | 1.5% | 4.0% | 0% | **5.5%** | - |
| **PHF** | 0.591 | 0.897 | - | **0.898** | 0.838 | 0.583 | - | **0.838** | 0.556 | 0.779 | - | **0.913** | 0.926 |
| **Lights and Motorcycles** | 26 | 645 | 0 | **671** | 527 | 6 | 0 | **533** | 20 | 51 | 0 | **71** | 1275 |
| **% Lights and Motorcycles** | 100% | 97.1% | 0% | **97.2%** | 95.3% | 85.7% | 0% | **95.2%** | 100% | 96.2% | 0% | **97.3%** | 96.4% |
| **Heavy** | 0 | 19 | 0 | **19** | 26 | 1 | 0 | **27** | 0 | 2 | 0 | **2** | 48 |
| **% Heavy** | 0% | 2.9% | 0% | **2.8%** | 4.7% | 14.3% | 0% | **4.8%** | 0% | 3.8% | 0% | **2.7%** | 3.6% |

*L: Left, R: Right, T: Thru, U: U-Turn

**CR 800 N & SR 267 - TMC**
Thu Oct 30, 2025
AM Peak (Oct 30 2025 7AM - 8 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354693, Location: 39.880061, -86.39249

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## CR 800 N & SR 267 - TMC

Thu Oct 30, 2025
PM Peak (Oct 30 2025 4:30PM - 5:30 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354693, Location: 39.880061, -86.39249

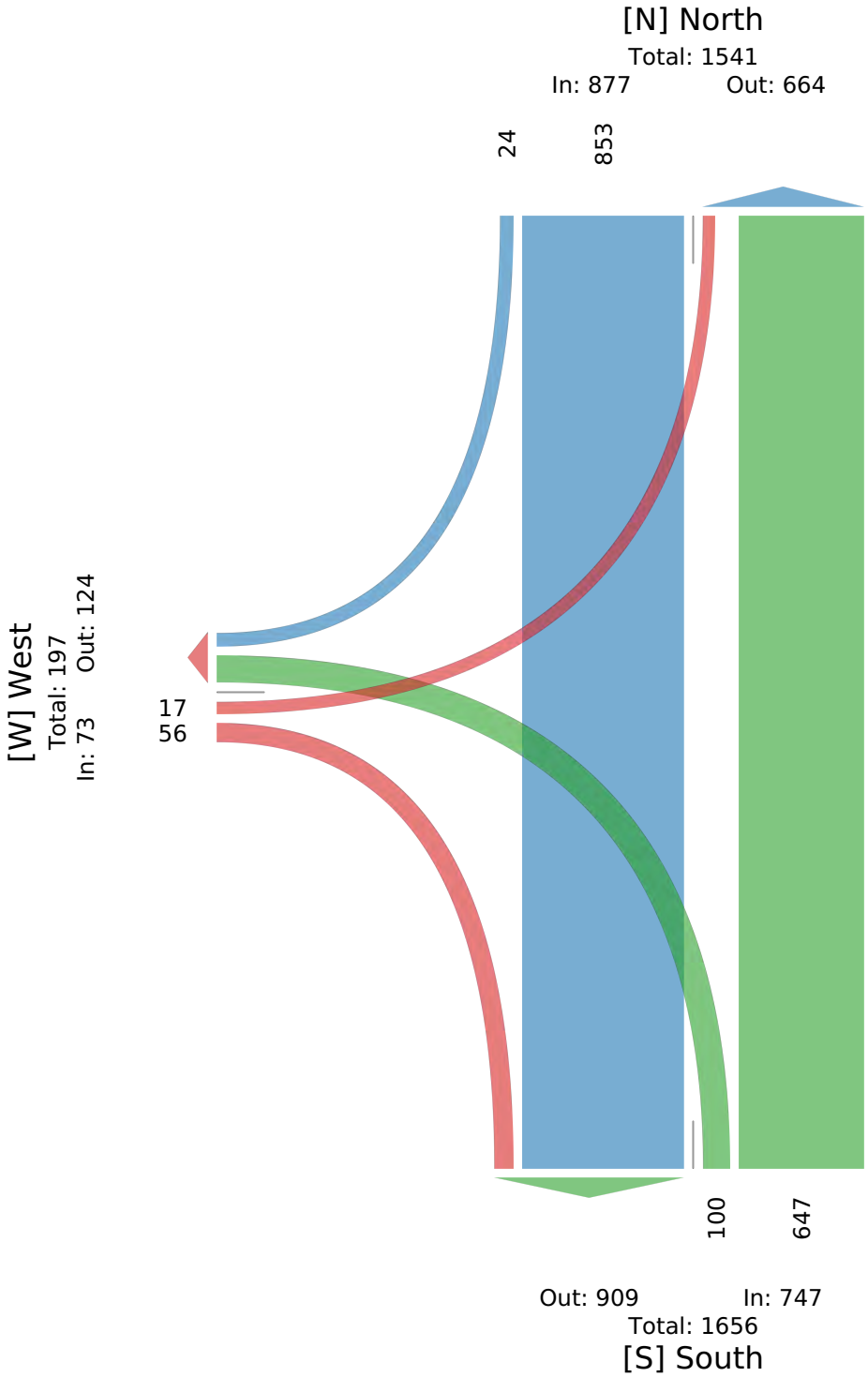
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg | South | | | | North | | | | West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Northbound | | | | Southbound | | | | Eastbound | | | | |
| Time | L | T | U | **App** | T | R | U | **App** | L | R | U | **App** | **Int** |
| 2025-10-30 4:30PM | 17 | 182 | 0 | **199** | 193 | 4 | 0 | **197** | 4 | 16 | 0 | **20** | **416** |
| 4:45PM | 26 | 149 | 0 | **175** | 238 | 5 | 0 | **243** | 2 | 9 | 0 | **11** | **429** |
| 5:00PM | 20 | 164 | 0 | **184** | 179 | 6 | 0 | **185** | 4 | 15 | 0 | **19** | **388** |
| 5:15PM | 37 | 152 | 0 | **189** | 243 | 9 | 0 | **252** | 7 | 16 | 0 | **23** | **464** |
| **Total** | 100 | 647 | 0 | **747** | 853 | 24 | 0 | **877** | 17 | 56 | 0 | **73** | **1697** |
| **% Approach** | 13.4% | 86.6% | 0% | **-** | 97.3% | 2.7% | 0% | **-** | 23.3% | 76.7% | 0% | **-** | - |
| **% Total** | 5.9% | 38.1% | 0% | **44.0%** | 50.3% | 1.4% | 0% | **51.7%** | 1.0% | 3.3% | 0% | **4.3%** | - |
| **PHF** | 0.676 | 0.889 | - | **0.938** | 0.878 | 0.667 | - | **0.870** | 0.607 | 0.875 | - | **0.793** | 0.914 |
| **Lights and Motorcycles** | 99 | 625 | 0 | **724** | 801 | 23 | 0 | **824** | 16 | 56 | 0 | **72** | 1620 |
| **% Lights and Motorcycles** | 99.0% | 96.6% | 0% | **96.9%** | 93.9% | 95.8% | 0% | **94.0%** | 94.1% | 100% | 0% | **98.6%** | 95.5% |
| **Heavy** | 1 | 22 | 0 | **23** | 52 | 1 | 0 | **53** | 1 | 0 | 0 | **1** | 77 |
| **% Heavy** | 1.0% | 3.4% | 0% | **3.1%** | 6.1% | 4.2% | 0% | **6.0%** | 5.9% | 0% | 0% | **1.4%** | 4.5% |

*L: Left, R: Right, T: Thru, U: U-Turn

**CR 800 N & SR 267 - TMC**
Thu Oct 30, 2025
PM Peak (Oct 30 2025 4:30PM - 5:30 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354693, Location: 39.880061, -86.39249

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## CR 800 N & SR 267 - TMC

Sun Nov 2, 2025
Midday Peak (WKND) (Nov 02 2025 11:45AM - 12:45 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354693, Location: 39.880061, -86.39249

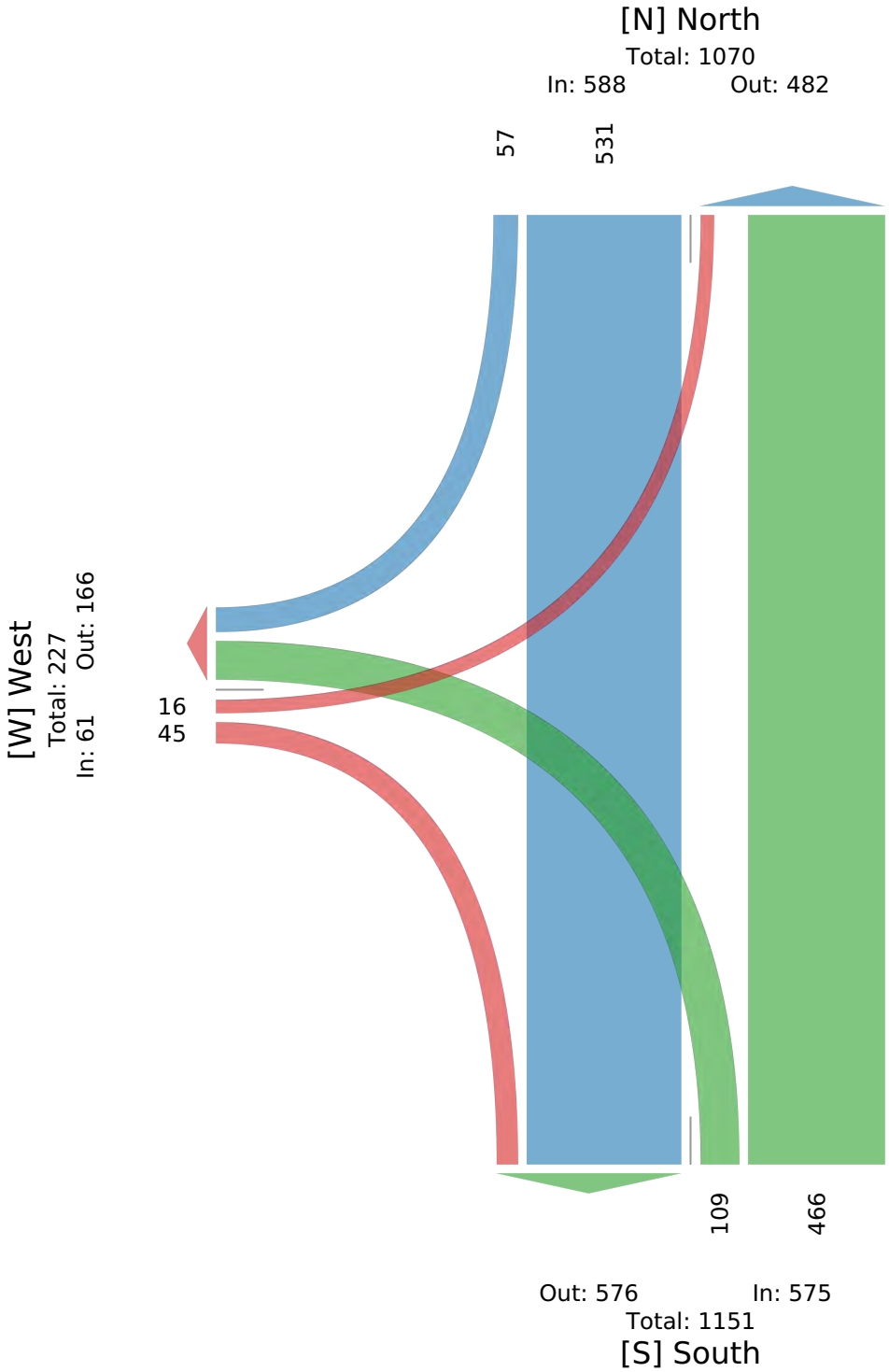
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg | South | | | | North | | | | West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Northbound | | | | Southbound | | | | Eastbound | | | | |
| Time | L | T | U | **App** | T | R | U | **App** | L | R | U | **App** | **Int** |
| 2025-11-02 11:45AM | 14 | 117 | 0 | **131** | 196 | 14 | 0 | **210** | 1 | 8 | 0 | **9** | **350** |
| 12:00PM | 13 | 93 | 0 | **106** | 128 | 9 | 0 | **137** | 5 | 16 | 0 | **21** | **264** |
| 12:15PM | 35 | 122 | 0 | **157** | 105 | 15 | 0 | **120** | 6 | 15 | 0 | **21** | **298** |
| 12:30PM | 47 | 134 | 0 | **181** | 102 | 19 | 0 | **121** | 4 | 6 | 0 | **10** | **312** |
| **Total** | 109 | 466 | 0 | **575** | 531 | 57 | 0 | **588** | 16 | 45 | 0 | **61** | **1224** |
| **% Approach** | 19.0% | 81.0% | 0% | **-** | 90.3% | 9.7% | 0% | **-** | 26.2% | 73.8% | 0% | **-** | - |
| **% Total** | 8.9% | 38.1% | 0% | **47.0%** | 43.4% | 4.7% | 0% | **48.0%** | 1.3% | 3.7% | 0% | **5.0%** | - |
| **PHF** | 0.580 | 0.869 | - | **0.794** | 0.677 | 0.750 | - | **0.700** | 0.667 | 0.703 | - | **0.726** | 0.874 |
| **Lights and Motorcycles** | 109 | 464 | 0 | **573** | 525 | 56 | 0 | **581** | 16 | 45 | 0 | **61** | 1215 |
| **% Lights and Motorcycles** | 100% | 99.6% | 0% | **99.7%** | 98.9% | 98.2% | 0% | **98.8%** | 100% | 100% | 0% | **100%** | 99.3% |
| **Heavy** | 0 | 2 | 0 | **2** | 6 | 1 | 0 | **7** | 0 | 0 | 0 | **0** | 9 |
| **% Heavy** | 0% | 0.4% | 0% | **0.3%** | 1.1% | 1.8% | 0% | **1.2%** | 0% | 0% | 0% | **0%** | 0.7% |

*L: Left, R: Right, T: Thru, U: U-Turn

**CR 800 N & SR 267 - TMC**
Sun Nov 2, 2025
Midday Peak (WKND) (Nov 02 2025 11:45AM - 12:45 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354693, Location: 39.880061, -86.39249

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



| Intersection | |
|---|---|
| Int Delay, s/veh | 1.3 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 20 | 53 | 26 | 664 | 553 | 7 |
| Future Vol, veh/h | 20 | 53 | 26 | 664 | 553 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 4 | 0 | 3 | 5 | 14 |
| Mvmt Flow | 22 | 57 | 28 | 714 | 595 | 8 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1365 | 595 | 602 | 0 | - | 0 |
| Stage 1 | 595 | - | - | - | - | - |
| Stage 2 | 770 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.24 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.336 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 164 | 501 | 985 | - | - | - |
| Stage 1 | 555 | - | - | - | - | - |
| Stage 2 | 460 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 160 | 501 | 985 | - | - | - |
| Mov Cap-2 Maneuver | 160 | - | - | - | - | - |
| Stage 1 | 539 | - | - | - | - | - |
| Stage 2 | 460 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 20.13 | 0.33 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 985 | - | 316 | - | - |
| HCM Lane V/C Ratio | 0.028 | - | 0.249 | - | - |
| HCM Ctrl Dly (s/v) | 8.8 | - | 20.1 | - | - |
| HCM Lane LOS | A | - | C | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 17 | 56 | 100 | 647 | 853 | 24 |
| Future Vol, veh/h | 17 | 56 | 100 | 647 | 853 | 24 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 6 | 0 | 1 | 3 | 6 | 4 |
| Mvmt Flow | 19 | 62 | 110 | 711 | 937 | 26 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1868 | 937 | 964 | 0 | - | 0 |
| Stage 1 | 937 | - | - | - | - | - |
| Stage 2 | 931 | - | - | - | - | - |
| Critical Hdwy | 6.46 | 6.2 | 4.11 | - | - | - |
| Critical Hdwy Stg 1 | 5.46 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.46 | - | - | - | - | - |
| Follow-up Hdwy | 3.554 | 3.3 | 2.209 | - | - | - |
| Pot Cap-1 Maneuver | 78 | 324 | 718 | - | - | - |
| Stage 1 | 375 | - | - | - | - | - |
| Stage 2 | 377 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 66 | 324 | 718 | - | - | - |
| Mov Cap-2 Maneuver | 66 | - | - | - | - | - |
| Stage 1 | 317 | - | - | - | - | - |
| Stage 2 | 377 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 44.11 | 1.46 | 0 |
| HCM LOS | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 718 | - | 169 | - | - |
| HCM Lane V/C Ratio | 0.153 | - | 0.474 | - | - |
| HCM Ctrl Dly (s/v) | 10.9 | - | 44.1 | - | - |
| HCM Lane LOS | B | - | E | - | - |
| HCM 95th %tile Q(veh) | 0.5 | - | 2.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.9 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 16 | 45 | 109 | 466 | 531 | 57 |
| Future Vol, veh/h | 16 | 45 | 109 | 466 | 531 | 57 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 87 | 87 | 87 | 87 | 87 | 87 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 1 | 2 |
| Mvmt Flow | 18 | 52 | 125 | 536 | 610 | 66 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1397 | 610 | 676 | 0 | - | 0 |
| Stage 1 | 610 | - | - | - | - | - |
| Stage 2 | 786 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 157 | 498 | 925 | - | - | - |
| Stage 1 | 546 | - | - | - | - | - |
| Stage 2 | 452 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 136 | 498 | 925 | - | - | - |
| Mov Cap-2 Maneuver | 136 | - | - | - | - | - |
| Stage 1 | 472 | - | - | - | - | - |
| Stage 2 | 452 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 21.11 | 1.8 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 925 | - | 293 | - | - |
| HCM Lane V/C Ratio | 0.135 | - | 0.239 | - | - |
| HCM Ctrl Dly (s/v) | 9.5 | - | 21.1 | - | - |
| HCM Lane LOS | A | - | C | - | - |
| HCM 95th %tile Q(veh) | 0.5 | - | 0.9 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.4 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 21 | 56 | 28 | 698 | 581 | 8 |
| Future Vol, veh/h | 21 | 56 | 28 | 698 | 581 | 8 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 4 | 0 | 3 | 5 | 14 |
| Mvmt Flow | 23 | 60 | 30 | 751 | 625 | 9 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1435 | 625 | 633 | 0 | - | 0 |
| Stage 1 | 625 | - | - | - | - | - |
| Stage 2 | 811 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.24 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.336 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 149 | 481 | 959 | - | - | - |
| Stage 1 | 538 | - | - | - | - | - |
| Stage 2 | 441 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 144 | 481 | 959 | - | - | - |
| Mov Cap-2 Maneuver | 144 | - | - | - | - | - |
| Stage 1 | 521 | - | - | - | - | - |
| Stage 2 | 441 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 22 | 0.34 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 959 | - | 294 | - | - |
| HCM Lane V/C Ratio | 0.031 | - | 0.282 | - | - |
| HCM Ctrl Dly (s/v) | 8.9 | - | 22 | - | - |
| HCM Lane LOS | A | - | C | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 1.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.2 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 21 | 56 | 28 | 698 | 581 | 8 |
| Future Vol, veh/h | 21 | 56 | 28 | 698 | 581 | 8 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 4 | 0 | 3 | 5 | 14 |
| Mvmt Flow | 23 | 60 | 30 | 751 | 625 | 9 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1435 | 625 | 633 | 0 | - | 0 |
| Stage 1 | 625 | - | - | - | - | - |
| Stage 2 | 811 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.24 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.336 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 149 | 481 | 959 | - | - | - |
| Stage 1 | 538 | - | - | - | - | - |
| Stage 2 | 441 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 144 | 481 | 959 | - | - | - |
| Mov Cap-2 Maneuver | 144 | - | - | - | - | - |
| Stage 1 | 521 | - | - | - | - | - |
| Stage 2 | 441 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 19.28 | 0.34 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 959 | - | 144 | 481 | - | - |
| HCM Lane V/C Ratio | 0.031 | - | 0.157 | 0.125 | - | - |
| HCM Ctrl Dly (s/v) | 8.9 | - | 34.6 | 13.5 | - | - |
| HCM Lane LOS | A | - | D | B | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 0.5 | 0.4 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 3.1 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 18 | 59 | 105 | 680 | 896 | 26 |
| Future Vol, veh/h | 18 | 59 | 105 | 680 | 896 | 26 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 6 | 0 | 1 | 3 | 6 | 4 |
| Mvmt Flow | 20 | 65 | 115 | 747 | 985 | 29 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1963 | 985 | 1013 | 0 | - | 0 |
| Stage 1 | 985 | - | - | - | - | - |
| Stage 2 | 978 | - | - | - | - | - |
| Critical Hdwy | 6.46 | 6.2 | 4.11 | - | - | - |
| Critical Hdwy Stg 1 | 5.46 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.46 | - | - | - | - | - |
| Follow-up Hdwy | 3.554 | 3.3 | 2.209 | - | - | - |
| Pot Cap-1 Maneuver | 68 | 304 | 688 | - | - | - |
| Stage 1 | 356 | - | - | - | - | - |
| Stage 2 | 358 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 56 | 304 | 688 | - | - | - |
| Mov Cap-2 Maneuver | 56 | - | - | - | - | - |
| Stage 1 | 296 | - | - | - | - | - |
| Stage 2 | 358 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 56.28 | 1.51 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 688 | - | 150 | - | - |
| HCM Lane V/C Ratio | 0.168 | - | 0.564 | - | - |
| HCM Ctrl Dly (s/v) | 11.3 | - | 56.3 | - | - |
| HCM Lane LOS | B | - | F | - | - |
| HCM 95th %tile Q(veh) | 0.6 | - | 2.9 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.3 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 18 | 59 | 105 | 680 | 896 | 26 |
| Future Vol, veh/h | 18 | 59 | 105 | 680 | 896 | 26 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 6 | 0 | 1 | 3 | 6 | 4 |
| Mvmt Flow | 20 | 65 | 115 | 747 | 985 | 29 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1963 | 985 | 1013 | 0 | - | 0 |
| Stage 1 | 985 | - | - | - | - | - |
| Stage 2 | 978 | - | - | - | - | - |
| Critical Hdwy | 6.46 | 6.2 | 4.11 | - | - | - |
| Critical Hdwy Stg 1 | 5.46 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.46 | - | - | - | - | - |
| Follow-up Hdwy | 3.554 | 3.3 | 2.209 | - | - | - |
| Pot Cap-1 Maneuver | 68 | 304 | 688 | - | - | - |
| Stage 1 | 356 | - | - | - | - | - |
| Stage 2 | 358 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 56 | 304 | 688 | - | - | - |
| Mov Cap-2 Maneuver | 56 | - | - | - | - | - |
| Stage 1 | 296 | - | - | - | - | - |
| Stage 2 | 358 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 38.73 | 1.51 | 0 |
| HCM LOS | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 688 | - | 56 | 304 | - | - |
| HCM Lane V/C Ratio | 0.168 | - | 0.351 | 0.213 | - | - |
| HCM Ctrl Dly (s/v) | 11.3 | - | 100 | 20 | - | - |
| HCM Lane LOS | B | - | F | C | - | - |
| HCM 95th %tile Q(veh) | 0.6 | - | 1.3 | 0.8 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 17 | 48 | 115 | 490 | 558 | 60 |
| Future Vol, veh/h | 17 | 48 | 115 | 490 | 558 | 60 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 87 | 87 | 87 | 87 | 87 | 87 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 1 | 2 |
| Mvmt Flow | 20 | 55 | 132 | 563 | 641 | 69 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1469 | 641 | 710 | 0 | - | 0 |
| Stage 1 | 641 | - | - | - | - | - |
| Stage 2 | 828 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 142 | 478 | 898 | - | - | - |
| Stage 1 | 528 | - | - | - | - | - |
| Stage 2 | 433 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 121 | 478 | 898 | - | - | - |
| Mov Cap-2 Maneuver | 121 | - | - | - | - | - |
| Stage 1 | 450 | - | - | - | - | - |
| Stage 2 | 433 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 23.37 | 1.84 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 898 | - | 270 | - | - |
| HCM Lane V/C Ratio | 0.147 | - | 0.277 | - | - |
| HCM Ctrl Dly (s/v) | 9.7 | - | 23.4 | - | - |
| HCM Lane LOS | A | - | C | - | - |
| HCM 95th %tile Q(veh) | 0.5 | - | 1.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.9 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 17 | 48 | 115 | 490 | 558 | 60 |
| Future Vol, veh/h | 17 | 48 | 115 | 490 | 558 | 60 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 87 | 87 | 87 | 87 | 87 | 87 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 1 | 2 |
| Mvmt Flow | 20 | 55 | 132 | 563 | 641 | 69 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1469 | 641 | 710 | 0 | - | 0 |
| Stage 1 | 641 | - | - | - | - | - |
| Stage 2 | 828 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 142 | 478 | 898 | - | - | - |
| Stage 1 | 528 | - | - | - | - | - |
| Stage 2 | 433 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 121 | 478 | 898 | - | - | - |
| Mov Cap-2 Maneuver | 121 | - | - | - | - | - |
| Stage 1 | 450 | - | - | - | - | - |
| Stage 2 | 433 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 20.54 | 1.84 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 898 | - | 121 | 478 | - | - |
| HCM Lane V/C Ratio | 0.147 | - | 0.161 | 0.115 | - | - |
| HCM Ctrl Dly (s/v) | 9.7 | - | 40.4 | 13.5 | - | - |
| HCM Lane LOS | A | - | E | B | - | - |
| HCM 95th %tile Q(veh) | 0.5 | - | 0.6 | 0.4 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 34 | 83 | 40 | 703 | 583 | 13 |
| Future Vol, veh/h | 34 | 83 | 40 | 703 | 583 | 13 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 4 | 0 | 3 | 5 | 14 |
| Mvmt Flow | 37 | 89 | 43 | 756 | 627 | 14 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1469 | 627 | 641 | 0 | - | 0 |
| Stage 1 | 627 | - | - | - | - | - |
| Stage 2 | 842 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.24 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.336 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 142 | 480 | 953 | - | - | - |
| Stage 1 | 536 | - | - | - | - | - |
| Stage 2 | 426 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 135 | 480 | 953 | - | - | - |
| Mov Cap-2 Maneuver | 135 | - | - | - | - | - |
| Stage 1 | 512 | - | - | - | - | - |
| Stage 2 | 426 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 28.51 | 0.48 | 0 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 953 | - | 276 | - | - |
| HCM Lane V/C Ratio | 0.045 | - | 0.456 | - | - |
| HCM Ctrl Dly (s/v) | 9 | - | 28.5 | - | - |
| HCM Lane LOS | A | - | D | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 2.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 34 | 83 | 40 | 703 | 583 | 13 |
| Future Vol, veh/h | 34 | 83 | 40 | 703 | 583 | 13 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 4 | 0 | 3 | 5 | 14 |
| Mvmt Flow | 37 | 89 | 43 | 756 | 627 | 14 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1469 | 627 | 641 | 0 | - | 0 |
| Stage 1 | 627 | - | - | - | - | - |
| Stage 2 | 842 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.24 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.336 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 142 | 480 | 953 | - | - | - |
| Stage 1 | 536 | - | - | - | - | - |
| Stage 2 | 426 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 135 | 480 | 953 | - | - | - |
| Mov Cap-2 Maneuver | 135 | - | - | - | - | - |
| Stage 1 | 512 | - | - | - | - | - |
| Stage 2 | 426 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 22.02 | 0.48 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 953 | - | 135 | 480 | - | - |
| HCM Lane V/C Ratio | 0.045 | - | 0.27 | 0.186 | - | - |
| HCM Ctrl Dly (s/v) | 9 | - | 41.1 | 14.2 | - | - |
| HCM Lane LOS | A | - | E | B | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 1 | 0.7 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 8 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 27 | 80 | 136 | 683 | 901 | 41 |
| Future Vol, veh/h | 27 | 80 | 136 | 683 | 901 | 41 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 6 | 0 | 1 | 3 | 6 | 4 |
| Mvmt Flow | 30 | 88 | 149 | 751 | 990 | 45 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2040 | 990 | 1035 | 0 | - | 0 |
| Stage 1 | 990 | - | - | - | - | - |
| Stage 2 | 1049 | - | - | - | - | - |
| Critical Hdwy | 6.46 | 6.2 | 4.11 | - | - | - |
| Critical Hdwy Stg 1 | 5.46 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.46 | - | - | - | - | - |
| Follow-up Hdwy | 3.554 | 3.3 | 2.209 | - | - | - |
| Pot Cap-1 Maneuver | 61 | 302 | 675 | - | - | - |
| Stage 1 | 354 | - | - | - | - | - |
| Stage 2 | 331 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 47 | 302 | 675 | - | - | - |
| Mov Cap-2 Maneuver | 47 | - | - | - | - | - |
| Stage 1 | 275 | - | - | - | - | - |
| Stage 2 | 331 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 124.79 | 1.97 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 675 | - | 128 | - | - |
| HCM Lane V/C Ratio | 0.221 | - | 0.92 | - | - |
| HCM Ctrl Dly (s/v) | 11.8 | - | 124.8 | - | - |
| HCM Lane LOS | B | - | F | - | - |
| HCM 95th %tile Q(veh) | 0.8 | - | 6 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 4.2 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 27 | 80 | 136 | 683 | 901 | 41 |
| Future Vol, veh/h | 27 | 80 | 136 | 683 | 901 | 41 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 6 | 0 | 1 | 3 | 6 | 4 |
| Mvmt Flow | 30 | 88 | 149 | 751 | 990 | 45 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2040 | 990 | 1035 | 0 | - | 0 |
| Stage 1 | 990 | - | - | - | - | - |
| Stage 2 | 1049 | - | - | - | - | - |
| Critical Hdwy | 6.46 | 6.2 | 4.11 | - | - | - |
| Critical Hdwy Stg 1 | 5.46 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.46 | - | - | - | - | - |
| Follow-up Hdwy | 3.554 | 3.3 | 2.209 | - | - | - |
| Pot Cap-1 Maneuver | 61 | 302 | 675 | - | - | - |
| Stage 1 | 354 | - | - | - | - | - |
| Stage 2 | 331 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 47 | 302 | 675 | - | - | - |
| Mov Cap-2 Maneuver | 47 | - | - | - | - | - |
| Stage 1 | 275 | - | - | - | - | - |
| Stage 2 | 331 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 58.38 | 1.97 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 675 | - | 47 | 302 | - | - |
| HCM Lane V/C Ratio | 0.221 | - | 0.629 | 0.291 | - | - |
| HCM Ctrl Dly (s/v) | 11.8 | - | 166.9 | 21.8 | - | - |
| HCM Lane LOS | B | - | F | C | - | - |
| HCM 95th %tile Q(veh) | 0.8 | - | 2.4 | 1.2 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.9 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 22 | 67 | 140 | 491 | 559 | 67 |
| Future Vol, veh/h | 22 | 67 | 140 | 491 | 559 | 67 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 87 | 87 | 87 | 87 | 87 | 87 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 1 | 2 |
| Mvmt Flow | 25 | 77 | 161 | 564 | 643 | 77 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1529 | 643 | 720 | 0 | - | 0 |
| Stage 1 | 643 | - | - | - | - | - |
| Stage 2 | 886 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 130 | 477 | 891 | - | - | - |
| Stage 1 | 528 | - | - | - | - | - |
| Stage 2 | 406 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 107 | 477 | 891 | - | - | - |
| Mov Cap-2 Maneuver | 107 | - | - | - | - | - |
| Stage 1 | 432 | - | - | - | - | - |
| Stage 2 | 406 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 27.96 | 2.2 | 0 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 891 | - | 257 | - | - |
| HCM Lane V/C Ratio | 0.181 | - | 0.398 | - | - |
| HCM Ctrl Dly (s/v) | 9.9 | - | 28 | - | - |
| HCM Lane LOS | A | - | D | - | - |
| HCM 95th %tile Q(veh) | 0.7 | - | 1.8 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 22 | 67 | 139 | 491 | 559 | 67 |
| Future Vol, veh/h | 22 | 67 | 139 | 491 | 559 | 67 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | 100 | - | - | 150 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 87 | 87 | 87 | 87 | 87 | 87 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 1 | 2 |
| Mvmt Flow | 25 | 77 | 160 | 564 | 643 | 77 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1526 | 643 | 720 | 0 | - | 0 |
| Stage 1 | 643 | - | - | - | - | - |
| Stage 2 | 884 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 131 | 477 | 891 | - | - | - |
| Stage 1 | 528 | - | - | - | - | - |
| Stage 2 | 407 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 107 | 477 | 891 | - | - | - |
| Mov Cap-2 Maneuver | 107 | - | - | - | - | - |
| Stage 1 | 433 | - | - | - | - | - |
| Stage 2 | 407 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 22.53 | 2.19 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 891 | - | 107 | 477 | - | - |
| HCM Lane V/C Ratio | 0.179 | - | 0.235 | 0.161 | - | - |
| HCM Ctrl Dly (s/v) | 9.9 | - | 48.5 | 14 | - | - |
| HCM Lane LOS | A | - | E | B | - | - |
| HCM 95th %tile Q(veh) | 0.7 | - | 0.9 | 0.6 | - | - |

# CR 700 N & CR 650 E

## TRAFFIC VOLUME COUNTS
## CAPACITY ANALYSIS

## CR 700 N & CR 650 E - TMC

Thu Oct 30, 2025
AM Peak (Oct 30 2025 7AM - 8 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354694, Location: 39.865393, -86.41116

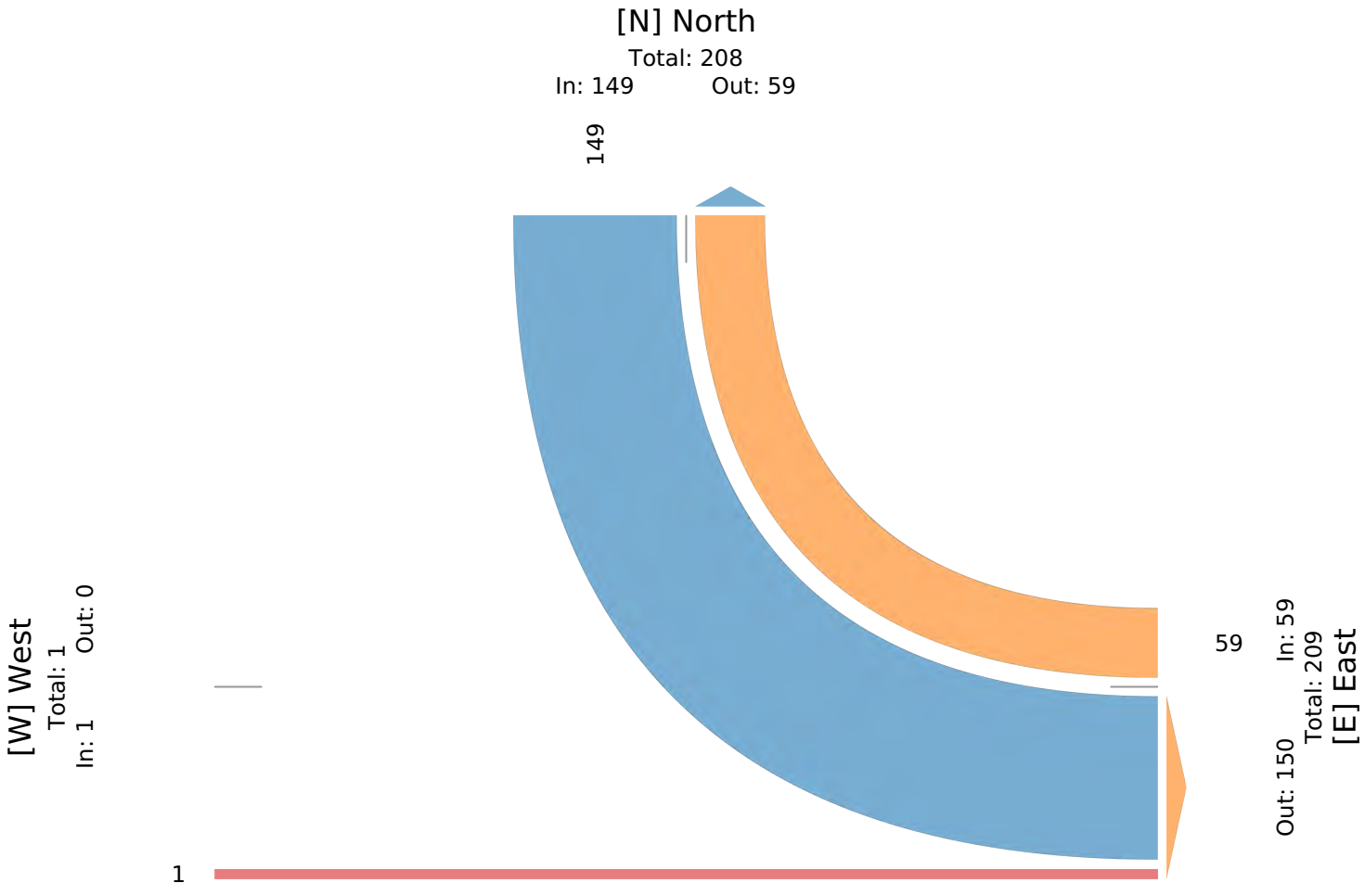
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg | North | | | | West | | | | East | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Southbound | | | | Eastbound | | | | Westbound | | | | |
| Time | L | R | U | **App** | L | T | U | **App** | T | R | U | **App** | **Int** |
| 2025-10-30 7:00AM | 46 | 0 | 0 | **46** | 0 | 0 | 0 | **0** | 0 | 8 | 0 | **8** | **54** |
| 7:15AM | 47 | 0 | 0 | **47** | 0 | 1 | 0 | **1** | 0 | 5 | 0 | **5** | **53** |
| 7:30AM | 26 | 0 | 0 | **26** | 0 | 0 | 0 | **0** | 0 | 23 | 0 | **23** | **49** |
| 7:45AM | 30 | 0 | 0 | **30** | 0 | 0 | 0 | **0** | 0 | 23 | 0 | **23** | **53** |
| **Total** | 149 | 0 | 0 | **149** | 0 | 1 | 0 | **1** | 0 | 59 | 0 | **59** | **209** |
| **% Approach** | 100% | 0% | 0% | **-** | 0% | 100% | 0% | **-** | 0% | 100% | 0% | **-** | - |
| **% Total** | 71.3% | 0% | 0% | **71.3%** | 0% | 0.5% | 0% | **0.5%** | 0% | 28.2% | 0% | **28.2%** | - |
| **PHF** | 0.793 | - | - | **0.793** | - | 0.250 | - | **0.250** | - | 0.641 | - | **0.641** | 0.968 |
| **Lights and Motorcycles** | 147 | 0 | 0 | **147** | 0 | 1 | 0 | **1** | 0 | 54 | 0 | **54** | 202 |
| **% Lights and Motorcycles** | 98.7% | 0% | 0% | **98.7%** | 0% | 100% | 0% | **100%** | 0% | 91.5% | 0% | **91.5%** | 96.7% |
| **Heavy** | 2 | 0 | 0 | **2** | 0 | 0 | 0 | **0** | 0 | 5 | 0 | **5** | 7 |
| **% Heavy** | 1.3% | 0% | 0% | **1.3%** | 0% | 0% | 0% | **0%** | 0% | 8.5% | 0% | **8.5%** | 3.3% |

*L: Left, R: Right, T: Thru, U: U-Turn

CR 700 N & CR 650 E - TMC
Thu Oct 30, 2025
AM Peak (Oct 30 2025 7AM - 8 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354694, Location: 39.865393, -86.41116

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## CR 700 N & CR 650 E - TMC

Thu Oct 30, 2025
PM Peak (Oct 30 2025 5PM - 6 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354694, Location: 39.865393, -86.41116

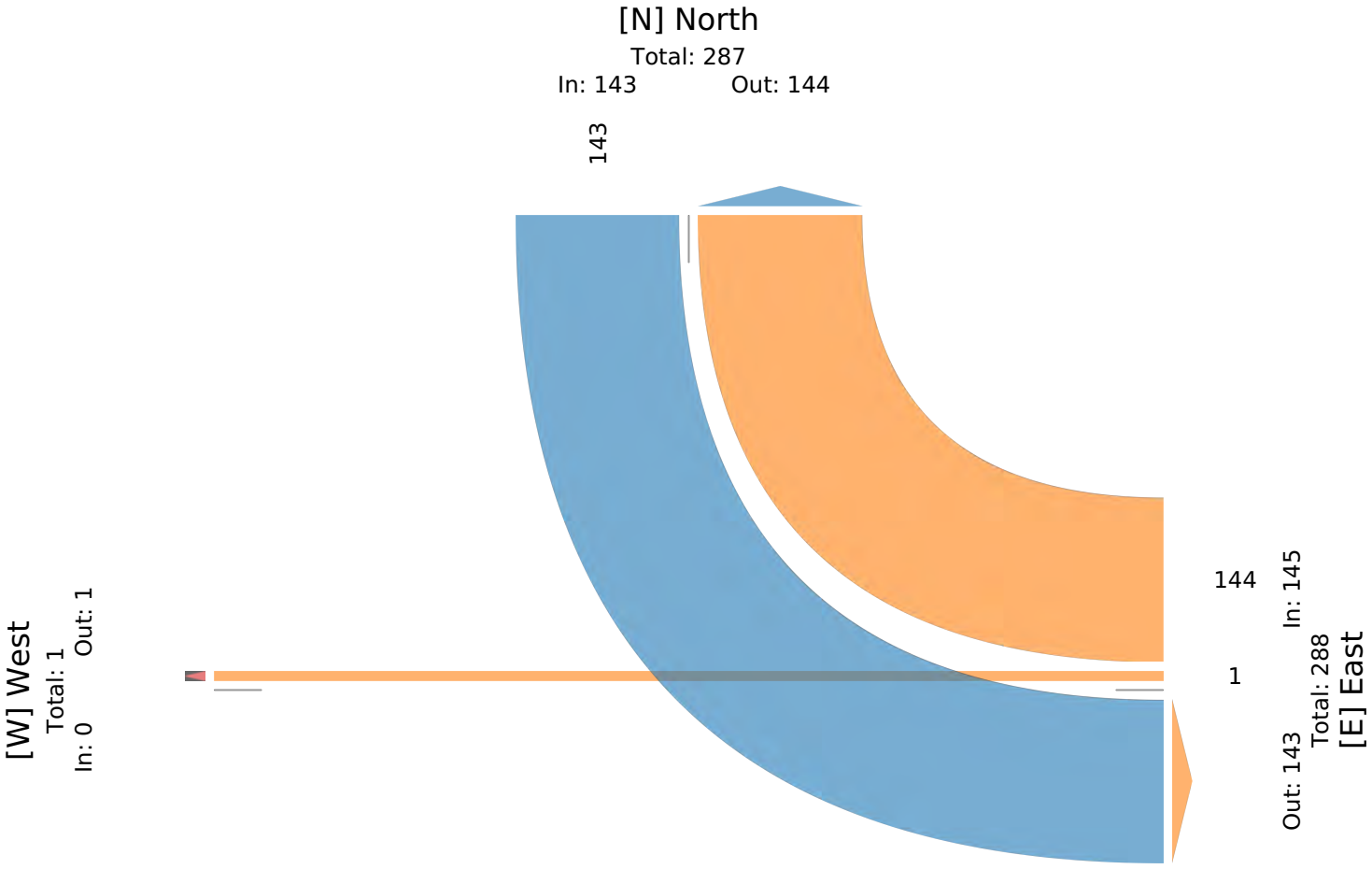
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg<br>Direction | North<br>Southbound | | | | West<br>Eastbound | | | | East<br>Westbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | L | R | U | **App** | L | T | U | **App** | T | R | U | **App** | **Int** |
| 2025-10-30 5:00PM | 32 | 0 | 0 | **32** | 0 | 0 | 0 | **0** | 0 | 38 | 0 | **38** | **70** |
| 5:15PM | 36 | 0 | 0 | **36** | 0 | 0 | 0 | **0** | 0 | 27 | 0 | **27** | **63** |
| 5:30PM | 40 | 0 | 0 | **40** | 0 | 0 | 0 | **0** | 1 | 41 | 0 | **42** | **82** |
| 5:45PM | 35 | 0 | 0 | **35** | 0 | 0 | 0 | **0** | 0 | 38 | 0 | **38** | **73** |
| **Total** | 143 | 0 | 0 | **143** | 0 | 0 | 0 | **0** | 1 | 144 | 0 | **145** | **288** |
| **% Approach** | 100% | 0% | 0% | **-** | 0% | 0% | 0% | **-** | 0.7% | 99.3% | 0% | **-** | - |
| **% Total** | 49.7% | 0% | 0% | **49.7%** | 0% | 0% | 0% | **0%** | 0.3% | 50.0% | 0% | **50.3%** | - |
| **PHF** | 0.894 | - | - | **0.894** | - | - | - | **-** | 0.250 | 0.878 | - | **0.863** | 0.878 |
| **Lights and Motorcycles** | 143 | 0 | 0 | **143** | 0 | 0 | 0 | **0** | 1 | 144 | 0 | **145** | 288 |
| **% Lights and Motorcycles** | 100% | 0% | 0% | **100%** | 0% | 0% | 0% | **-** | 100% | 100% | 0% | **100%** | 100% |
| **Heavy** | 0 | 0 | 0 | **0** | 0 | 0 | 0 | **0** | 0 | 0 | 0 | **0** | 0 |
| **% Heavy** | 0% | 0% | 0% | **0%** | 0% | 0% | 0% | **-** | 0% | 0% | 0% | **0%** | 0% |

*L: Left, R: Right, T: Thru, U: U-Turn

**CR 700 N & CR 650 E - TMC**
Thu Oct 30, 2025
PM Peak (Oct 30 2025 5PM - 6 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354694, Location: 39.865393, -86.41116

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## CR 700 N & CR 650 E - TMC

Sun Nov 2, 2025
Midday Peak (WKND) (Nov 02 2025 12PM - 1 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354694, Location: 39.865393, -86.41116

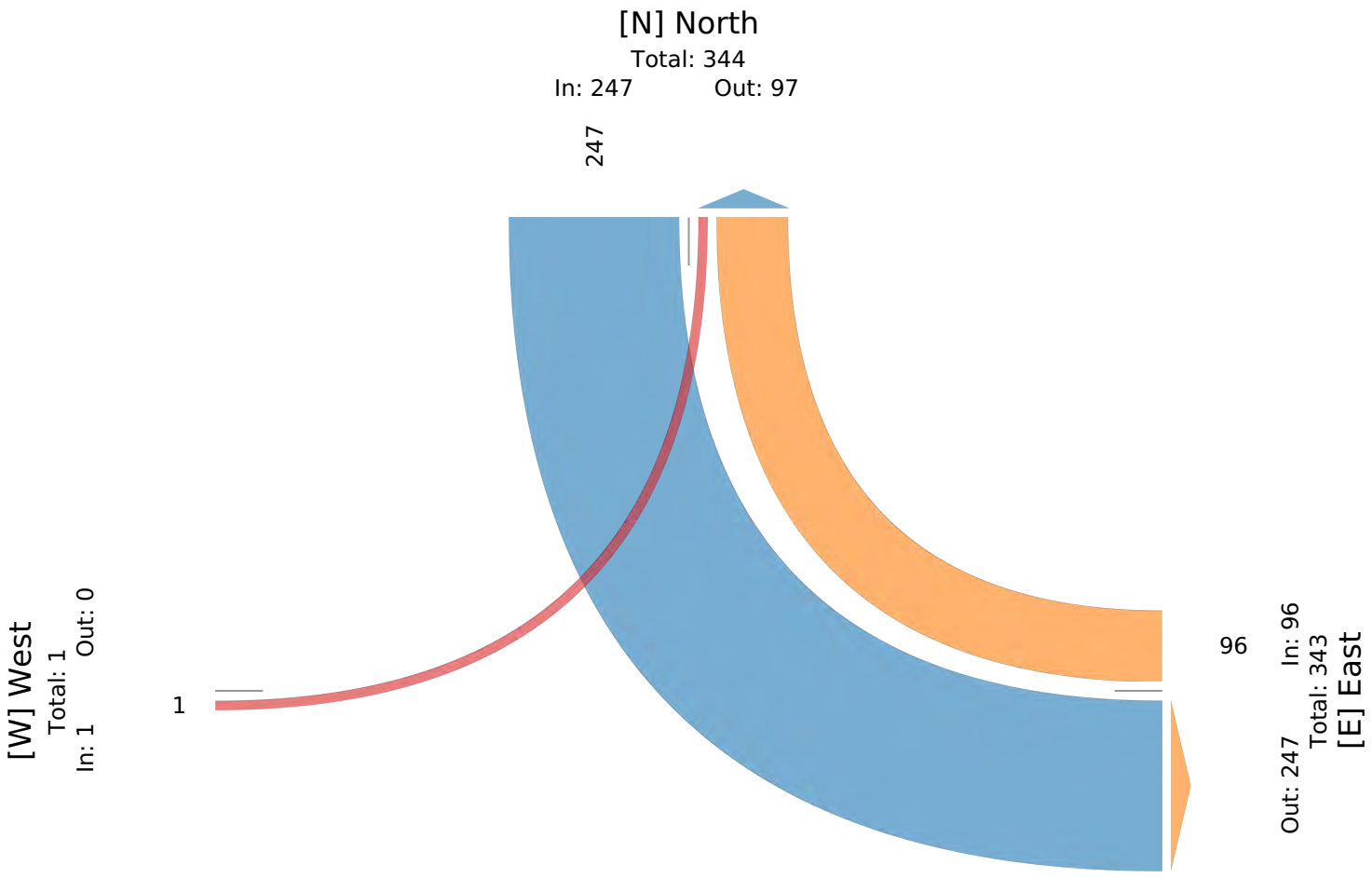
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201,
Indianapolis, IN, 46240, US

| Leg<br>Direction | North<br>Southbound | | | | West<br>Eastbound | | | | East<br>Westbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | L | R | U | **App** | L | T | U | **App** | T | R | U | **App** | **Int** |
| 2025-11-02 12:00PM | 80 | 0 | 0 | **80** | 0 | 0 | 0 | **0** | 0 | 13 | 0 | **13** | **93** |
| 12:15PM | 72 | 0 | 0 | **72** | 0 | 0 | 0 | **0** | 0 | 24 | 0 | **24** | **96** |
| 12:30PM | 46 | 0 | 0 | **46** | 0 | 0 | 0 | **0** | 0 | 34 | 0 | **34** | **80** |
| 12:45PM | 49 | 0 | 0 | **49** | 1 | 0 | 0 | **1** | 0 | 25 | 0 | **25** | **75** |
| **Total** | 247 | 0 | 0 | **247** | 1 | 0 | 0 | **1** | 0 | 96 | 0 | **96** | **344** |
| **% Approach** | 100% | 0% | 0% | **-** | 100% | 0% | 0% | **-** | 0% | 100% | 0% | **-** | - |
| **% Total** | 71.8% | 0% | 0% | **71.8%** | 0.3% | 0% | 0% | **0.3%** | 0% | 27.9% | 0% | **27.9%** | - |
| **PHF** | 0.772 | - | - | **0.772** | 0.250 | - | - | **0.250** | - | 0.706 | - | **0.706** | 0.896 |
| **Lights and Motorcycles** | 247 | 0 | 0 | **247** | 1 | 0 | 0 | **1** | 0 | 96 | 0 | **96** | 344 |
| **% Lights and Motorcycles** | 100% | 0% | 0% | **100%** | 100% | 0% | 0% | **100%** | 0% | 100% | 0% | **100%** | 100% |
| **Heavy** | 0 | 0 | 0 | **0** | 0 | 0 | 0 | **0** | 0 | 0 | 0 | **0** | 0 |
| **% Heavy** | 0% | 0% | 0% | **0%** | 0% | 0% | 0% | **0%** | 0% | 0% | 0% | **0%** | 0% |

*L: Left, R: Right, T: Thru, U: U-Turn

**CR 700 N & CR 650 E - TMC**
Sun Nov 2, 2025
Midday Peak (WKND) (Nov 02 2025 12PM - 1 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354694, Location: 39.865393, -86.41116

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201,
Indianapolis, IN, 46240, US



| Intersection | |
|---|---|
| Int Delay, s/veh | 6.7 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 1 | 0 | 59 | 149 | 0 |
| Future Vol, veh/h | 0 | 1 | 0 | 59 | 149 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 0 | 0 | 0 | 9 | 1 | 0 |
| Mvmt Flow | 0 | 1 | 0 | 61 | 154 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 61 | 0 | - | 0 | 31 | 30 |
| Stage 1 | - | - | - | - | 30 | - |
| Stage 2 | - | - | - | - | 1 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.41 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.41 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.41 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.509 | 3.3 |
| Pot Cap-1 Maneuver | 1555 | - | - | - | 985 | 1050 |
| Stage 1 | - | - | - | - | 995 | - |
| Stage 2 | - | - | - | - | 1025 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1555 | - | - | - | 985 | 1050 |
| Mov Cap-2 Maneuver | - | - | - | - | 985 | - |
| Stage 1 | - | - | - | - | 995 | - |
| Stage 2 | - | - | - | - | 1025 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 0 | 0 | 9.33 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1555 | - | - | - | 985 |
| HCM Lane V/C Ratio | - | - | - | - | 0.156 |
| HCM Ctrl Dly (s/v) | 0 | - | - | - | 9.3 |
| HCM Lane LOS | A | - | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.6 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 4.8 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 1 | 144 | 143 | 0 |
| Future Vol, veh/h | 0 | 0 | 1 | 144 | 143 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 0 | 1 | 164 | 163 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 165 | 0 | - | 0 | 83 | 83 |
| Stage 1 | - | - | - | - | 83 | - |
| Stage 2 | - | - | - | - | 0 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 1426 | - | - | - | 924 | 982 |
| Stage 1 | - | - | - | - | 945 | - |
| Stage 2 | - | - | - | - | - | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1426 | - | - | - | 924 | 982 |
| Mov Cap-2 Maneuver | - | - | - | - | 924 | - |
| Stage 1 | - | - | - | - | 945 | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 0 | 0 | 9.73 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1426 | - | - | - | 924 |
| HCM Lane V/C Ratio | - | - | - | - | 0.176 |
| HCM Ctrl Dly (s/v) | 0 | - | - | - | 9.7 |
| HCM Lane LOS | A | - | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.6 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.4 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 0 | 0 | 96 | 247 | 0 |
| Future Vol, veh/h | 1 | 0 | 0 | 96 | 247 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 0 | 0 | 107 | 274 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 107 | 0 | - | 0 | 56 | 53 |
| Stage 1 | - | - | - | - | 53 | - |
| Stage 2 | - | - | - | - | 2 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 1497 | - | - | - | 957 | 1020 |
| Stage 1 | - | - | - | - | 974 | - |
| Stage 2 | - | - | - | - | 1026 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1497 | - | - | - | 957 | 1020 |
| Mov Cap-2 Maneuver | - | - | - | - | 957 | - |
| Stage 1 | - | - | - | - | 974 | - |
| Stage 2 | - | - | - | - | 1026 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 7.41 | 0 | 10.27 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1497 | - | - | - | 957 |
| HCM Lane V/C Ratio | 0.001 | - | - | - | 0.287 |
| HCM Ctrl Dly (s/v) | 7.4 | 0 | - | - | 10.3 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.7 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 2 | 0 | 64 | 161 | 0 |
| Future Vol, veh/h | 0 | 2 | 0 | 64 | 161 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 0 | 0 | 0 | 9 | 1 | 0 |
| Mvmt Flow | 0 | 2 | 0 | 66 | 166 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 66 | 0 | - | 0 | 35 | 33 |
| Stage 1 | - | - | - | - | 33 | - |
| Stage 2 | - | - | - | - | 2 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.41 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.41 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.41 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.509 | 3.3 |
| Pot Cap-1 Maneuver | 1549 | - | - | - | 980 | 1046 |
| Stage 1 | - | - | - | - | 992 | - |
| Stage 2 | - | - | - | - | 1024 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1549 | - | - | - | 980 | 1046 |
| Mov Cap-2 Maneuver | - | - | - | - | 980 | - |
| Stage 1 | - | - | - | - | 992 | - |
| Stage 2 | - | - | - | - | 1024 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 0 | 0 | 9.42 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1549 | - | - | - | 980 |
| HCM Lane V/C Ratio | - | - | - | - | 0.169 |
| HCM Ctrl Dly (s/v) | 0 | - | - | - | 9.4 |
| HCM Lane LOS | A | - | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.6 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 4.9 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 2 | 155 | 154 | 0 |
| Future Vol, veh/h | 0 | 0 | 2 | 155 | 154 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 0 | 2 | 176 | 175 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 178 | 0 | - | 0 | 90 | 90 |
| Stage 1 | - | - | - | - | 90 | - |
| Stage 2 | - | - | - | - | 0 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 1410 | - | - | - | 915 | 973 |
| Stage 1 | - | - | - | - | 938 | - |
| Stage 2 | - | - | - | - | - | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1410 | - | - | - | 915 | 973 |
| Mov Cap-2 Maneuver | - | - | - | - | 915 | - |
| Stage 1 | - | - | - | - | 938 | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 0 | 0 | 9.86 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1410 | - | - | - | 915 |
| HCM Lane V/C Ratio | - | - | - | - | 0.191 |
| HCM Ctrl Dly (s/v) | 0 | - | - | - | 9.9 |
| HCM Lane LOS | A | - | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.7 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.6 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 2 | 0 | 0 | 104 | 266 | 0 |
| Future Vol, veh/h | 2 | 0 | 0 | 104 | 266 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 2 | 0 | 0 | 116 | 296 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 116 | 0 | - | 0 | 62 | 58 |
| Stage 1 | - | - | - | - | 58 | - |
| Stage 2 | - | - | - | - | 4 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 1486 | - | - | - | 949 | 1014 |
| Stage 1 | - | - | - | - | 970 | - |
| Stage 2 | - | - | - | - | 1024 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1486 | - | - | - | 948 | 1014 |
| Mov Cap-2 Maneuver | - | - | - | - | 948 | - |
| Stage 1 | - | - | - | - | 968 | - |
| Stage 2 | - | - | - | - | 1024 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 7.43 | 0 | 10.51 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1486 | - | - | - | 948 |
| HCM Lane V/C Ratio | 0.001 | - | - | - | 0.312 |
| HCM Ctrl Dly (s/v) | 7.4 | 0 | - | - | 10.5 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1.3 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.7 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 2 | 0 | 64 | 161 | 0 |
| Future Vol, veh/h | 0 | 2 | 0 | 64 | 161 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 0 | 0 | 0 | 9 | 1 | 0 |
| Mvmt Flow | 0 | 2 | 0 | 66 | 166 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 66 | 0 | - | 0 | 35 | 33 |
| Stage 1 | - | - | - | - | 33 | - |
| Stage 2 | - | - | - | - | 2 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.41 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.41 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.41 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.509 | 3.3 |
| Pot Cap-1 Maneuver | 1549 | - | - | - | 980 | 1046 |
| Stage 1 | - | - | - | - | 992 | - |
| Stage 2 | - | - | - | - | 1024 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1549 | - | - | - | 980 | 1046 |
| Mov Cap-2 Maneuver | - | - | - | - | 980 | - |
| Stage 1 | - | - | - | - | 992 | - |
| Stage 2 | - | - | - | - | 1024 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 0 | 0 | 9.42 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1549 | - | - | - | 980 |
| HCM Lane V/C Ratio | - | - | - | - | 0.169 |
| HCM Ctrl Dly (s/v) | 0 | - | - | - | 9.4 |
| HCM Lane LOS | A | - | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.6 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 4.9 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 2 | 155 | 154 | 0 |
| Future Vol, veh/h | 0 | 0 | 2 | 155 | 154 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 0 | 2 | 176 | 175 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 178 | 0 | - | 0 | 90 | 90 |
| Stage 1 | - | - | - | - | 90 | - |
| Stage 2 | - | - | - | - | 0 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 1410 | - | - | - | 915 | 973 |
| Stage 1 | - | - | - | - | 938 | - |
| Stage 2 | - | - | - | - | - | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1410 | - | - | - | 915 | 973 |
| Mov Cap-2 Maneuver | - | - | - | - | 915 | - |
| Stage 1 | - | - | - | - | 938 | - |
| Stage 2 | - | - | - | - | - | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 0 | 0 | 9.86 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1410 | - | - | - | 915 |
| HCM Lane V/C Ratio | - | - | - | - | 0.191 |
| HCM Ctrl Dly (s/v) | 0 | - | - | - | 9.9 |
| HCM Lane LOS | A | - | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.7 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.6 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 2 | 0 | 0 | 104 | 266 | 0 |
| Future Vol, veh/h | 2 | 0 | 0 | 104 | 266 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 2 | 0 | 0 | 116 | 296 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 116 | 0 | - | 0 | 62 | 58 |
| Stage 1 | - | - | - | - | 58 | - |
| Stage 2 | - | - | - | - | 4 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 1486 | - | - | - | 949 | 1014 |
| Stage 1 | - | - | - | - | 970 | - |
| Stage 2 | - | - | - | - | 1024 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1486 | - | - | - | 948 | 1014 |
| Mov Cap-2 Maneuver | - | - | - | - | 948 | - |
| Stage 1 | - | - | - | - | 968 | - |
| Stage 2 | - | - | - | - | 1024 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 7.43 | 0 | 10.51 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1486 | - | - | - | 948 |
| HCM Lane V/C Ratio | 0.001 | - | - | - | 0.312 |
| HCM Ctrl Dly (s/v) | 7.4 | 0 | - | - | 10.5 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1.3 |

# CR 700 N & SR 267 (GREEN STREET)

## TRAFFIC VOLUME COUNTS
## CAPACITY ANALYSIS

## SR 267 & CR 700 N - TMC

Thu Oct 30, 2025
AM Peak (Oct 30 2025 7AM - 8 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354608, Location: 39.865526, -86.392498

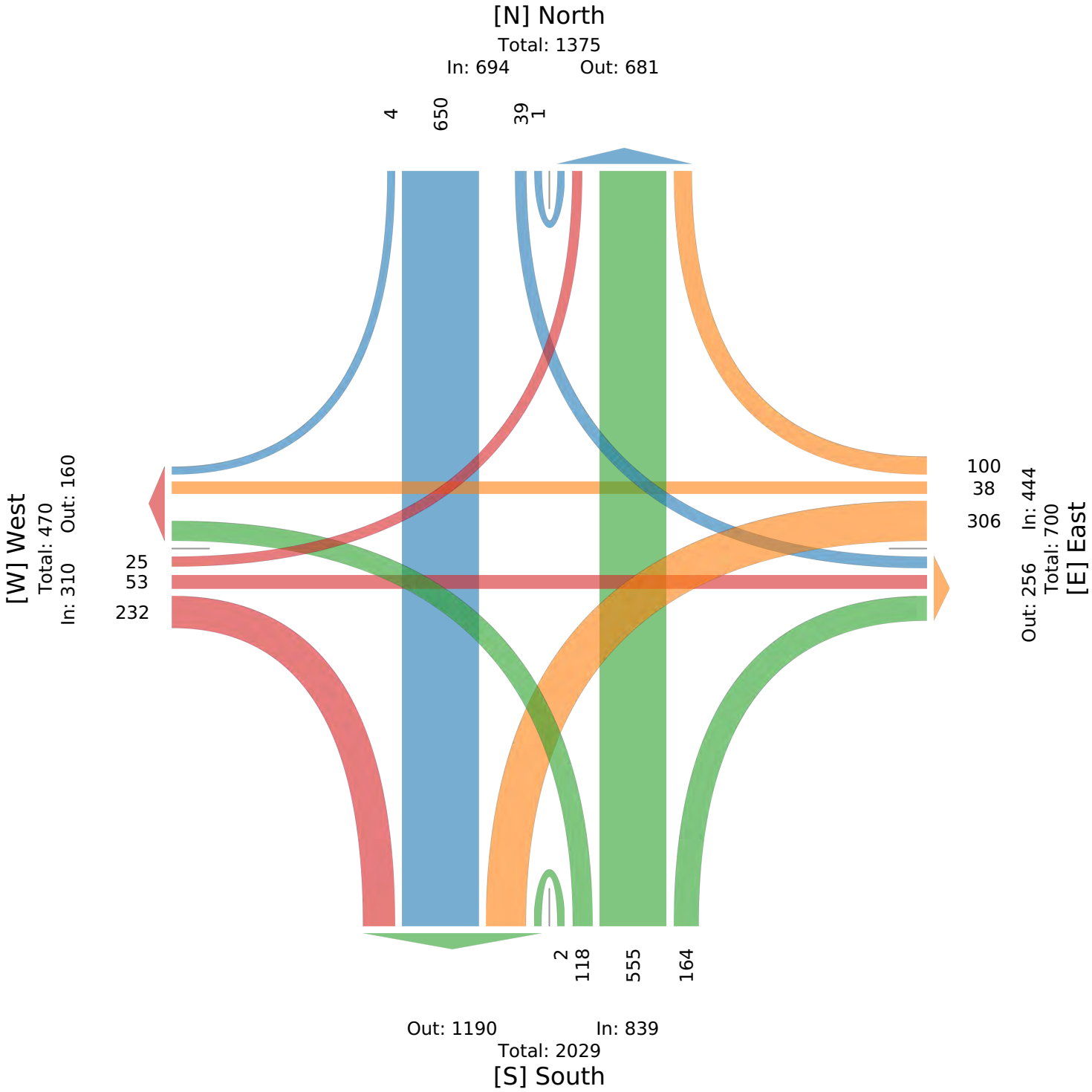
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg | South | | | | | North | | | | | West | | | | | East | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Northbound | | | | | Southbound | | | | | Eastbound | | | | | Westbound | | | | | |
| Time | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | **Int** |
| 2025-10-30 7:00AM | 18 | 109 | 23 | 0 | **150** | 9 | 190 | 1 | 0 | **200** | 5 | 10 | 84 | 0 | **99** | 69 | 10 | 22 | 0 | **101** | **550** |
| 7:15AM | 32 | 138 | 40 | 1 | **211** | 9 | 140 | 2 | 1 | **152** | 7 | 22 | 61 | 0 | **90** | 83 | 4 | 23 | 0 | **110** | **563** |
| 7:30AM | 38 | 152 | 52 | 1 | **243** | 14 | 145 | 0 | 0 | **159** | 5 | 13 | 52 | 0 | **70** | 77 | 13 | 27 | 0 | **117** | **589** |
| 7:45AM | 30 | 156 | 49 | 0 | **235** | 7 | 175 | 1 | 0 | **183** | 8 | 8 | 35 | 0 | **51** | 77 | 11 | 28 | 0 | **116** | **585** |
| **Total** | 118 | 555 | 164 | 2 | **839** | 39 | 650 | 4 | 1 | **694** | 25 | 53 | 232 | 0 | **310** | 306 | 38 | 100 | 0 | **444** | **2287** |
| **% Approach** | 14.1% | 66.2% | 19.5% | 0.2% | **-** | 5.6% | 93.7% | 0.6% | 0.1% | **-** | 8.1% | 17.1% | 74.8% | 0% | **-** | 68.9% | 8.6% | 22.5% | 0% | **-** | - |
| **% Total** | 5.2% | 24.3% | 7.2% | 0.1% | **36.7%** | 1.7% | 28.4% | 0.2% | 0% | **30.3%** | 1.1% | 2.3% | 10.1% | 0% | **13.6%** | 13.4% | 1.7% | 4.4% | 0% | **19.4%** | - |
| **PHF** | 0.776 | 0.889 | 0.788 | 0.500 | **0.863** | 0.696 | 0.855 | 0.500 | 0.250 | **0.868** | 0.781 | 0.602 | 0.690 | - | **0.783** | 0.922 | 0.731 | 0.893 | - | **0.949** | 0.971 |
| **Lights and Motorcycles** | 116 | 535 | 159 | 2 | **812** | 38 | 626 | 4 | 1 | **669** | 25 | 52 | 228 | 0 | **305** | 296 | 35 | 99 | 0 | **430** | 2216 |
| **% Lights and Motorcycles** | 98.3% | 96.4% | 97.0% | 100% | **96.8%** | 97.4% | 96.3% | 100% | 100% | **96.4%** | 100% | 98.1% | 98.3% | 0% | **98.4%** | 96.7% | 92.1% | 99.0% | 0% | **96.8%** | 96.9% |
| **Heavy** | 2 | 20 | 5 | 0 | **27** | 1 | 24 | 0 | 0 | **25** | 0 | 1 | 4 | 0 | **5** | 10 | 3 | 1 | 0 | **14** | 71 |
| **% Heavy** | 1.7% | 3.6% | 3.0% | 0% | **3.2%** | 2.6% | 3.7% | 0% | 0% | **3.6%** | 0% | 1.9% | 1.7% | 0% | **1.6%** | 3.3% | 7.9% | 1.0% | 0% | **3.2%** | 3.1% |

*L: Left, R: Right, T: Thru, U: U-Turn

**SR 267 & CR 700 N - TMC**
Thu Oct 30, 2025
AM Peak (Oct 30 2025 7AM - 8 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354608, Location: 39.865526, -86.392498

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## SR 267 & CR 700 N - TMC

Thu Oct 30, 2025
PM Peak (Oct 30 2025 4:45PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354608, Location: 39.865526, -86.392498

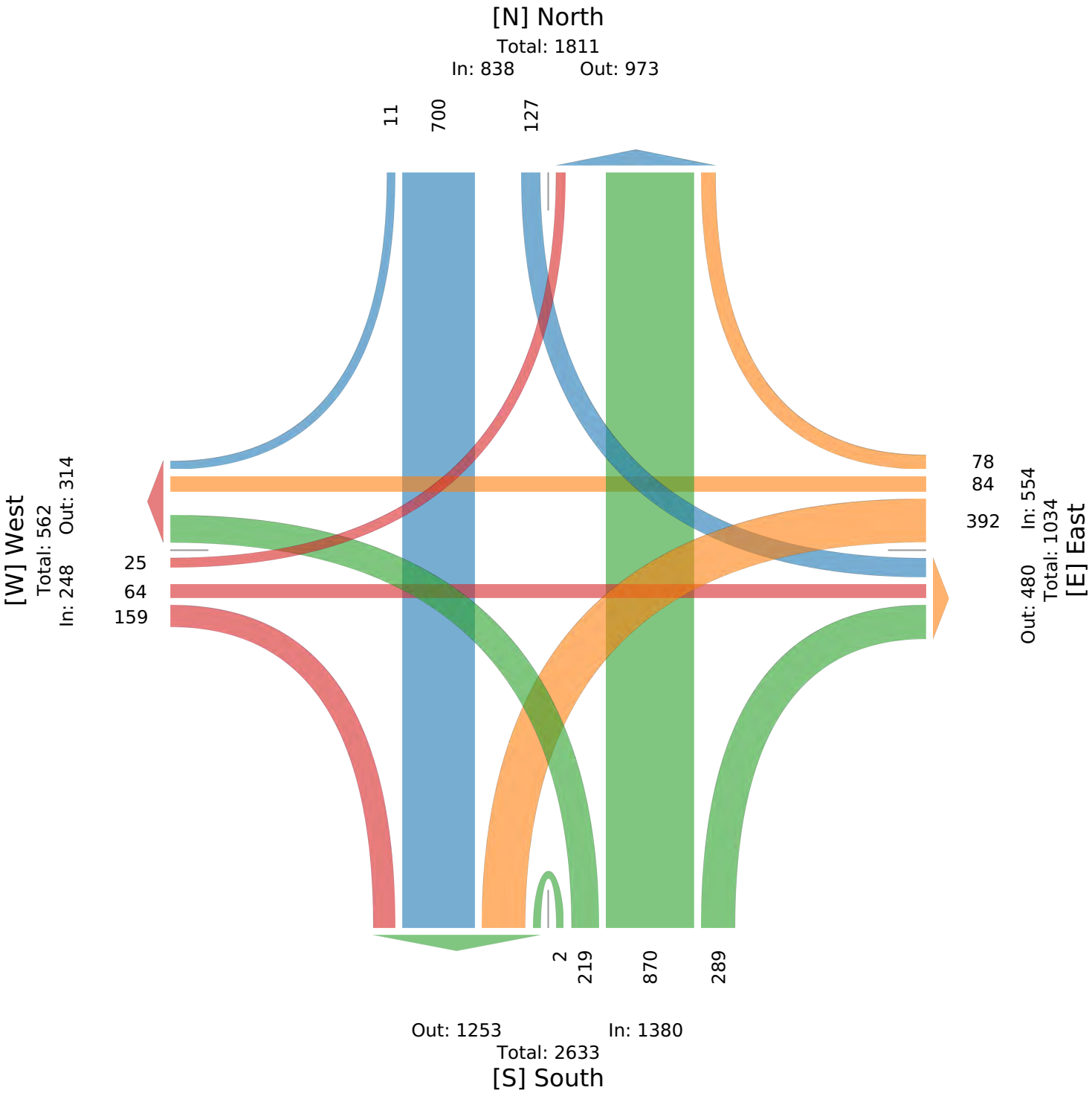
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg | South | | | | | North | | | | | West | | | | | East | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Northbound | | | | | Southbound | | | | | Eastbound | | | | | Westbound | | | | | |
| Time | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | **Int** |
| 2025-10-30 4:45PM | 55 | 211 | 96 | 1 | **363** | 31 | 193 | 1 | 0 | **225** | 3 | 15 | 32 | 0 | **50** | 100 | 23 | 19 | 0 | **142** | **780** |
| 5:00PM | 47 | 207 | 68 | 0 | **322** | 35 | 159 | 4 | 0 | **198** | 5 | 16 | 41 | 0 | **62** | 101 | 25 | 19 | 0 | **145** | **727** |
| 5:15PM | 48 | 208 | 54 | 0 | **310** | 35 | 188 | 3 | 0 | **226** | 7 | 20 | 36 | 0 | **63** | 109 | 18 | 16 | 0 | **143** | **742** |
| 5:30PM | 69 | 244 | 71 | 1 | **385** | 26 | 160 | 3 | 0 | **189** | 10 | 13 | 50 | 0 | **73** | 82 | 18 | 24 | 0 | **124** | **771** |
| **Total** | 219 | 870 | 289 | 2 | **1380** | 127 | 700 | 11 | 0 | **838** | 25 | 64 | 159 | 0 | **248** | 392 | 84 | 78 | 0 | **554** | **3020** |
| **% Approach** | 15.9% | 63.0% | 20.9% | 0.1% | **-** | 15.2% | 83.5% | 1.3% | 0% | **-** | 10.1% | 25.8% | 64.1% | 0% | **-** | 70.8% | 15.2% | 14.1% | 0% | **-** | - |
| **% Total** | 7.3% | 28.8% | 9.6% | 0.1% | **45.7%** | 4.2% | 23.2% | 0.4% | 0% | **27.7%** | 0.8% | 2.1% | 5.3% | 0% | **8.2%** | 13.0% | 2.8% | 2.6% | 0% | **18.3%** | - |
| **PHF** | 0.793 | 0.891 | 0.753 | 0.500 | **0.896** | 0.907 | 0.907 | 0.688 | - | **0.927** | 0.625 | 0.800 | 0.795 | - | **0.849** | 0.899 | 0.840 | 0.813 | - | **0.955** | 0.968 |
| **Lights and Motorcycles** | 219 | 848 | 289 | 2 | **1358** | 126 | 652 | 11 | 0 | **789** | 25 | 64 | 158 | 0 | **247** | 387 | 84 | 77 | 0 | **548** | 2942 |
| **% Lights and Motorcycles** | 100% | 97.5% | 100% | 100% | **98.4%** | 99.2% | 93.1% | 100% | 0% | **94.2%** | 100% | 100% | 99.4% | 0% | **99.6%** | 98.7% | 100% | 98.7% | 0% | **98.9%** | 97.4% |
| **Heavy** | 0 | 22 | 0 | 0 | **22** | 1 | 48 | 0 | 0 | **49** | 0 | 0 | 1 | 0 | **1** | 5 | 0 | 1 | 0 | **6** | 78 |
| **% Heavy** | 0% | 2.5% | 0% | 0% | **1.6%** | 0.8% | 6.9% | 0% | 0% | **5.8%** | 0% | 0% | 0.6% | 0% | **0.4%** | 1.3% | 0% | 1.3% | 0% | **1.1%** | 2.6% |

*L: Left, R: Right, T: Thru, U: U-Turn

**SR 267 & CR 700 N - TMC**
Thu Oct 30, 2025
PM Peak (Oct 30 2025 4:45PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354608, Location: 39.865526, -86.392498

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## SR 267 & CR 700 N - TMC

Sun Nov 2, 2025
Midday Peak (WKND) (Nov 02 2025 12:15PM - 1:15 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354608, Location: 39.865526, -86.392498

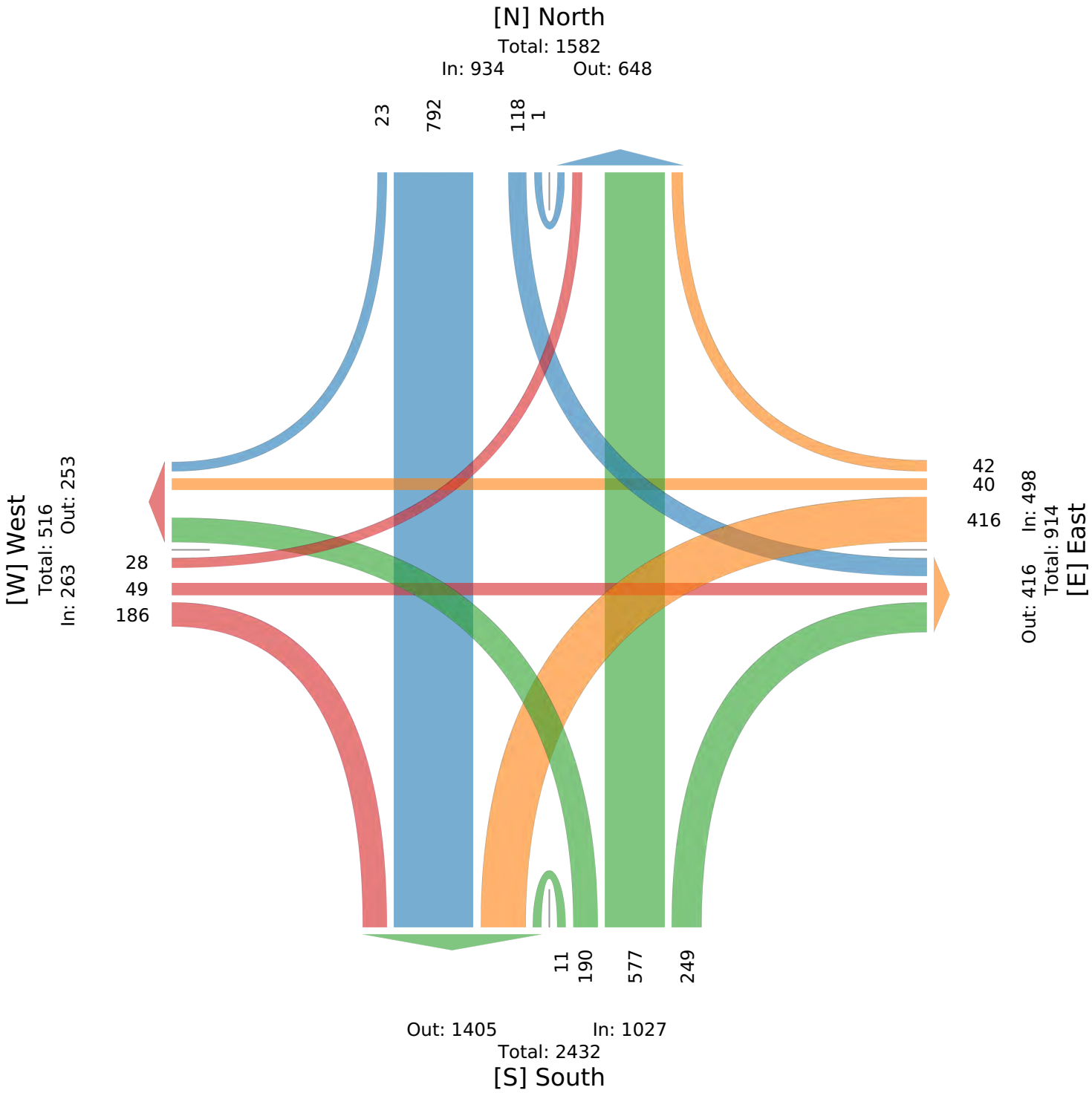
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

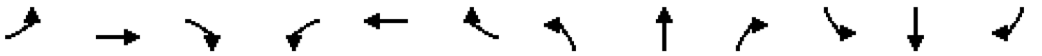
| Leg | South | | | | | North | | | | | West | | | | | East | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Northbound | | | | | Southbound | | | | | Eastbound | | | | | Westbound | | | | | |
| Time | L | T | R | U | App | L | T | R | U | App | L | T | R | U | App | L | T | R | U | App | Int |
| 2025-11-02 12:15PM | 45 | 135 | 57 | 1 | **238** | 25 | 201 | 7 | 0 | **233** | 13 | 21 | 65 | 0 | **99** | 101 | 6 | 12 | 0 | **119** | **689** |
| 12:30PM | 55 | 155 | 51 | 4 | **265** | 37 | 216 | 2 | 0 | **255** | 5 | 13 | 46 | 0 | **64** | 88 | 14 | 12 | 0 | **114** | **698** |
| 12:45PM | 37 | 137 | 64 | 5 | **243** | 24 | 221 | 4 | 0 | **249** | 4 | 7 | 51 | 0 | **62** | 113 | 15 | 10 | 0 | **138** | **692** |
| 1:00PM | 53 | 150 | 77 | 1 | **281** | 32 | 154 | 10 | 1 | **197** | 6 | 8 | 24 | 0 | **38** | 114 | 5 | 8 | 0 | **127** | **643** |
| **Total** | 190 | 577 | 249 | 11 | **1027** | 118 | 792 | 23 | 1 | **934** | 28 | 49 | 186 | 0 | **263** | 416 | 40 | 42 | 0 | **498** | **2722** |
| **% Approach** | 18.5% | 56.2% | 24.2% | 1.1% | **-** | 12.6% | 84.8% | 2.5% | 0.1% | **-** | 10.6% | 18.6% | 70.7% | 0% | **-** | 83.5% | 8.0% | 8.4% | 0% | **-** | - |
| **% Total** | 7.0% | 21.2% | 9.1% | 0.4% | **37.7%** | 4.3% | 29.1% | 0.8% | 0% | **34.3%** | 1.0% | 1.8% | 6.8% | 0% | **9.7%** | 15.3% | 1.5% | 1.5% | 0% | **18.3%** | - |
| **PHF** | 0.864 | 0.931 | 0.808 | 0.550 | **0.914** | 0.797 | 0.896 | 0.575 | 0.250 | **0.916** | 0.538 | 0.583 | 0.715 | | **0.664** | 0.912 | 0.667 | 0.875 | - | **0.902** | 0.975 |
| **Lights and Motorcycles** | 190 | 573 | 248 | 11 | **1022** | 118 | 787 | 23 | 1 | **929** | 28 | 49 | 186 | 0 | **263** | 415 | 40 | 42 | 0 | **497** | 2711 |
| **% Lights and Motorcycles** | 100% | 99.3% | 99.6% | 100% | **99.5%** | 100% | 99.4% | 100% | 100% | **99.5%** | 100% | 100% | 100% | 0% | **100%** | 99.8% | 100% | 100% | 0% | **99.8%** | 99.6% |
| **Heavy** | 0 | 4 | 1 | 0 | **5** | 0 | 5 | 0 | 0 | **5** | 0 | 0 | 0 | 0 | **0** | 1 | 0 | 0 | 0 | **1** | 11 |
| **% Heavy** | 0% | 0.7% | 0.4% | 0% | **0.5%** | 0% | 0.6% | 0% | 0% | **0.5%** | 0% | 0% | 0% | 0% | **0%** | 0.2% | 0% | 0% | 0% | **0.2%** | 0.4% |

*L: Left, R: Right, T: Thru, U: U-Turn

**SR 267 & CR 700 N - TMC**
Sun Nov 2, 2025
Midday Peak (WKND) (Nov 02 2025 12:15PM - 1:15 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354608, Location: 39.865526, -86.392498

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

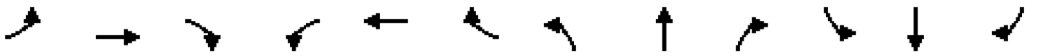




| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 25 | 53 | 232 | 306 | 38 | 100 | 118 | 555 | 164 | 39 | 650 | 4 |
| Future Volume (veh/h) | 25 | 53 | 232 | 306 | 38 | 100 | 118 | 555 | 164 | 39 | 650 | 4 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1870 | 1870 | 1856 | 1781 | 1885 | 1870 | 1841 | 1856 | 1856 | 1841 | 1900 |
| Adj Flow Rate, veh/h | 26 | 55 | 239 | 315 | 39 | 103 | 122 | 572 | 169 | 40 | 670 | 4 |
| Peak Hour Factor | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 3 | 8 | 1 | 2 | 4 | 3 | 3 | 4 | 0 |
| Cap, veh/h | 324 | 335 | 433 | 616 | 78 | 205 | 338 | 783 | 231 | 276 | 909 | 5 |
| Arrive On Green | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.09 | 0.29 | 0.29 | 0.05 | 0.25 | 0.25 |
| Sat Flow, veh/h | 1810 | 1870 | 1585 | 3428 | 433 | 1143 | 1781 | 2663 | 785 | 1767 | 3564 | 21 |
| Grp Volume(v), veh/h | 26 | 55 | 239 | 315 | 0 | 142 | 122 | 375 | 366 | 40 | 329 | 345 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1870 | 1585 | 1714 | 0 | 1576 | 1781 | 1749 | 1699 | 1767 | 1749 | 1837 |
| Q Serve(g_s), s | 0.8 | 1.7 | 8.6 | 5.5 | 0.0 | 5.4 | 3.2 | 12.9 | 12.9 | 1.1 | 11.5 | 11.5 |
| Cycle Q Clear(g_c), s | 0.8 | 1.7 | 8.6 | 5.5 | 0.0 | 5.4 | 3.2 | 12.9 | 12.9 | 1.1 | 11.5 | 11.5 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.73 | 1.00 | | 0.46 | 1.00 | | 0.01 |
| Lane Grp Cap(c), veh/h | 324 | 335 | 433 | 616 | 0 | 283 | 338 | 514 | 500 | 276 | 446 | 468 |
| V/C Ratio(X) | 0.08 | 0.16 | 0.55 | 0.51 | 0.00 | 0.50 | 0.36 | 0.73 | 0.73 | 0.14 | 0.74 | 0.74 |
| Avail Cap(c_a), veh/h | 325 | 336 | 434 | 668 | 0 | 307 | 531 | 875 | 850 | 367 | 707 | 743 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 22.8 | 23.2 | 20.8 | 24.7 | 0.0 | 24.7 | 16.3 | 21.2 | 21.2 | 17.1 | 22.8 | 22.8 |
| Incr Delay (d2), s/veh | 0.1 | 0.2 | 1.5 | 0.7 | 0.0 | 1.4 | 0.6 | 2.0 | 2.1 | 0.2 | 2.4 | 2.3 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.3 | 0.7 | 3.2 | 2.2 | 0.0 | 2.0 | 1.3 | 5.2 | 5.1 | 0.4 | 4.7 | 4.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 22.9 | 23.4 | 22.3 | 25.4 | 0.0 | 26.1 | 17.0 | 23.2 | 23.3 | 17.4 | 25.2 | 25.1 |
| LnGrp LOS | C | C | C | C | | C | B | C | C | B | C | C |
| Approach Vol, veh/h | | 320 | | | 457 | | | 863 | | | 714 | |
| Approach Delay, s/veh | | 22.5 | | | 25.6 | | | 22.4 | | | 24.7 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 8.2 | 24.6 | | 17.0 | 10.8 | 22.0 | | 17.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 5.0 | | 5.0 | 4.5 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 7.1 | 33.4 | | 12.0 | 13.5 | 27.0 | | 13.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 3.1 | 14.9 | | 10.6 | 5.2 | 13.5 | | 7.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 4.6 | | 0.2 | 0.2 | 3.5 | | 1.0 | | | | |

| Intersection Summary | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HCM 7th Control Delay, s/veh | | | 23.7 | | | | | | | | | |
| HCM 7th LOS | | | C | | | | | | | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 25 | 64 | 159 | 392 | 84 | 78 | 219 | 870 | 289 | 127 | 700 | 11 |
| Future Volume (veh/h) | 25 | 64 | 159 | 392 | 84 | 78 | 219 | 870 | 289 | 127 | 700 | 11 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1885 | 1885 | 1900 | 1885 | 1900 | 1856 | 1900 | 1885 | 1796 | 1900 |
| Adj Flow Rate, veh/h | 26 | 66 | 164 | 404 | 87 | 80 | 226 | 897 | 298 | 131 | 722 | 11 |
| Peak Hour Factor | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, % | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 3 | 0 | 1 | 7 | 0 |
| Cap, veh/h | 234 | 246 | 361 | 531 | 139 | 128 | 439 | 1129 | 374 | 273 | 1412 | 22 |
| Arrive On Green | 0.13 | 0.13 | 0.13 | 0.15 | 0.15 | 0.15 | 0.10 | 0.43 | 0.43 | 0.07 | 0.41 | 0.41 |
| Sat Flow, veh/h | 1810 | 1900 | 1598 | 3483 | 911 | 838 | 1810 | 2601 | 862 | 1795 | 3441 | 52 |
| Grp Volume(v), veh/h | 26 | 66 | 164 | 404 | 0 | 167 | 226 | 607 | 588 | 131 | 358 | 375 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1900 | 1598 | 1742 | 0 | 1749 | 1810 | 1763 | 1700 | 1795 | 1706 | 1787 |
| Q Serve(g_s), s | 1.2 | 2.9 | 8.2 | 10.3 | 0.0 | 8.3 | 6.5 | 27.5 | 27.7 | 3.8 | 14.5 | 14.5 |
| Cycle Q Clear(g_c), s | 1.2 | 2.9 | 8.2 | 10.3 | 0.0 | 8.3 | 6.5 | 27.5 | 27.7 | 3.8 | 14.5 | 14.5 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.48 | 1.00 | | 0.51 | 1.00 | | 0.03 |
| Lane Grp Cap(c), veh/h | 234 | 246 | 361 | 531 | 0 | 267 | 439 | 765 | 738 | 273 | 700 | 733 |
| V/C Ratio(X) | 0.11 | 0.27 | 0.45 | 0.76 | 0.00 | 0.63 | 0.51 | 0.79 | 0.80 | 0.48 | 0.51 | 0.51 |
| Avail Cap(c_a), veh/h | 235 | 247 | 362 | 829 | 0 | 416 | 627 | 1197 | 1155 | 407 | 1070 | 1121 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 35.5 | 36.3 | 30.9 | 37.6 | 0.0 | 36.7 | 14.5 | 22.6 | 22.6 | 18.2 | 20.3 | 20.3 |
| Incr Delay (d2), s/veh | 0.2 | 0.6 | 0.9 | 2.3 | 0.0 | 2.4 | 0.9 | 2.0 | 2.2 | 1.3 | 0.6 | 0.6 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.5 | 1.4 | 3.2 | 4.5 | 0.0 | 3.7 | 2.6 | 11.2 | 10.9 | 1.6 | 5.7 | 5.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 35.7 | 36.9 | 31.8 | 39.8 | 0.0 | 39.1 | 15.4 | 24.6 | 24.8 | 19.5 | 20.9 | 20.9 |
| LnGrp LOS | D | D | C | D | | D | B | C | C | B | C | C |
| Approach Vol, veh/h | | 256 | | | 571 | | | 1421 | | | 864 | |
| Approach Delay, s/veh | | 33.5 | | | 39.6 | | | 23.2 | | | 20.7 | |
| Approach LOS | | C | | | D | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 11.3 | 45.1 | | 17.0 | 13.4 | 43.0 | | 19.1 | | | | |
| Change Period (Y+Rc), s | 4.5 | 5.0 | | 5.0 | 4.5 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 13.7 | 62.8 | | 12.0 | 18.5 | 58.0 | | 22.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 5.8 | 29.7 | | 10.2 | 8.5 | 16.5 | | 12.3 | | | | |
| Green Ext Time (p_c), s | 0.2 | 10.5 | | 0.2 | 0.4 | 5.3 | | 1.8 | | | | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 7th Control Delay, s/veh | | 26.4 | |
| HCM 7th LOS | | C | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 28 | 49 | 186 | 416 | 40 | 42 | 190 | 577 | 249 | 118 | 792 | 23 |
| Future Volume (veh/h) | 28 | 49 | 186 | 416 | 40 | 42 | 190 | 577 | 249 | 118 | 792 | 23 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1885 | 1900 | 1900 | 1885 | 1900 |
| Adj Flow Rate, veh/h | 29 | 50 | 190 | 424 | 41 | 43 | 194 | 589 | 254 | 120 | 808 | 23 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Percent Heavy Veh, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Cap, veh/h | 293 | 307 | 422 | 570 | 138 | 145 | 352 | 793 | 341 | 327 | 1108 | 32 |
| Arrive On Green | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.10 | 0.33 | 0.33 | 0.09 | 0.31 | 0.31 |
| Sat Flow, veh/h | 1810 | 1900 | 1610 | 3510 | 849 | 891 | 1810 | 2437 | 1050 | 1810 | 3557 | 101 |
| Grp Volume(v), veh/h | 29 | 50 | 190 | 424 | 0 | 84 | 194 | 433 | 410 | 120 | 407 | 424 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1900 | 1610 | 1755 | 0 | 1740 | 1810 | 1791 | 1696 | 1810 | 1791 | 1867 |
| Q Serve(g_s), s | 1.0 | 1.7 | 7.3 | 8.5 | 0.0 | 3.1 | 5.2 | 15.9 | 15.9 | 3.2 | 15.0 | 15.0 |
| Cycle Q Clear(g_c), s | 1.0 | 1.7 | 7.3 | 8.5 | 0.0 | 3.1 | 5.2 | 15.9 | 15.9 | 3.2 | 15.0 | 15.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.51 | 1.00 | | 0.62 | 1.00 | | 0.05 |
| Lane Grp Cap(c), veh/h | 293 | 307 | 422 | 570 | 0 | 283 | 352 | 583 | 552 | 327 | 558 | 582 |
| V/C Ratio(X) | 0.10 | 0.16 | 0.45 | 0.74 | 0.00 | 0.30 | 0.55 | 0.74 | 0.74 | 0.37 | 0.73 | 0.73 |
| Avail Cap(c_a), veh/h | 294 | 309 | 423 | 903 | 0 | 447 | 575 | 1086 | 1028 | 408 | 921 | 960 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 26.4 | 26.7 | 22.8 | 29.5 | 0.0 | 27.2 | 16.4 | 22.2 | 22.2 | 16.2 | 22.7 | 22.7 |
| Incr Delay (d2), s/veh | 0.1 | 0.2 | 0.8 | 1.9 | 0.0 | 0.6 | 1.3 | 1.9 | 2.0 | 0.7 | 1.8 | 1.8 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.4 | 0.8 | 2.7 | 3.6 | 0.0 | 1.3 | 2.1 | 6.6 | 6.2 | 1.3 | 6.2 | 6.5 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 26.5 | 26.9 | 23.6 | 31.4 | 0.0 | 27.8 | 17.8 | 24.1 | 24.2 | 16.9 | 24.5 | 24.4 |
| LnGrp LOS | C | C | C | C | | C | B | C | C | B | C | C |
| Approach Vol, veh/h | | 269 | | | 508 | | | 1037 | | | 951 | |
| Approach Delay, s/veh | | 24.5 | | | 30.8 | | | 22.9 | | | 23.5 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 10.9 | 29.0 | | 17.0 | 11.9 | 28.0 | | 17.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 5.0 | | 5.0 | 4.5 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 9.7 | 44.8 | | 12.0 | 16.5 | 38.0 | | 19.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 5.2 | 17.9 | | 9.3 | 7.2 | 17.0 | | 10.5 | | | | |
| Green Ext Time (p_c), s | 0.1 | 6.1 | | 0.3 | 0.3 | 5.4 | | 1.4 | | | | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 7th Control Delay, s/veh | | 24.7 | |
| HCM 7th LOS | | C | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 29 | 61 | 267 | 352 | 44 | 115 | 136 | 639 | 189 | 45 | 748 | 5 |
| Future Volume (veh/h) | 29 | 61 | 267 | 352 | 44 | 115 | 136 | 639 | 189 | 45 | 748 | 5 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1870 | 1870 | 1856 | 1781 | 1885 | 1870 | 1841 | 1856 | 1856 | 1841 | 1900 |
| Adj Flow Rate, veh/h | 30 | 63 | 275 | 363 | 45 | 119 | 140 | 659 | 195 | 46 | 771 | 5 |
| Peak Hour Factor | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 3 | 8 | 1 | 2 | 4 | 3 | 3 | 4 | 0 |
| Cap, veh/h | 303 | 313 | 411 | 575 | 72 | 192 | 339 | 888 | 263 | 277 | 1071 | 7 |
| Arrive On Green | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.09 | 0.33 | 0.33 | 0.06 | 0.30 | 0.30 |
| Sat Flow, veh/h | 1810 | 1870 | 1585 | 3428 | 432 | 1143 | 1781 | 2661 | 787 | 1767 | 3562 | 23 |
| Grp Volume(v), veh/h | 30 | 63 | 275 | 363 | 0 | 164 | 140 | 433 | 421 | 46 | 378 | 398 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1870 | 1585 | 1714 | 0 | 1576 | 1781 | 1749 | 1699 | 1767 | 1749 | 1837 |
| Q Serve(g_s), s | 1.0 | 2.1 | 11.1 | 7.1 | 0.0 | 6.9 | 3.7 | 15.7 | 15.7 | 1.2 | 13.8 | 13.8 |
| Cycle Q Clear(g_c), s | 1.0 | 2.1 | 11.1 | 7.1 | 0.0 | 6.9 | 3.7 | 15.7 | 15.7 | 1.2 | 13.8 | 13.8 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.73 | 1.00 | | 0.46 | 1.00 | | 0.01 |
| Lane Grp Cap(c), veh/h | 303 | 313 | 411 | 575 | 0 | 264 | 339 | 584 | 567 | 277 | 526 | 552 |
| V/C Ratio(X) | 0.10 | 0.20 | 0.67 | 0.63 | 0.00 | 0.62 | 0.41 | 0.74 | 0.74 | 0.17 | 0.72 | 0.72 |
| Avail Cap(c_a), veh/h | 303 | 313 | 411 | 814 | 0 | 374 | 626 | 1084 | 1054 | 349 | 816 | 857 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 25.2 | 25.7 | 23.8 | 27.7 | 0.0 | 27.7 | 16.0 | 21.1 | 21.1 | 16.4 | 22.3 | 22.3 |
| Incr Delay (d2), s/veh | 0.1 | 0.3 | 4.1 | 1.2 | 0.0 | 2.4 | 0.8 | 1.9 | 1.9 | 0.3 | 1.9 | 1.8 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.4 | 0.9 | 4.4 | 2.9 | 0.0 | 2.7 | 1.5 | 6.3 | 6.1 | 0.5 | 5.6 | 5.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 25.4 | 26.0 | 27.9 | 28.9 | 0.0 | 30.1 | 16.8 | 23.0 | 23.1 | 16.7 | 24.2 | 24.1 |
| LnGrp LOS | C | C | C | C | | C | B | C | C | B | C | C |
| Approach Vol, veh/h | | 368 | | | 527 | | | 994 | | | 822 | |
| Approach Delay, s/veh | | 27.4 | | | 29.3 | | | 22.2 | | | 23.8 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 8.7 | 28.9 | | 17.0 | 11.1 | 26.5 | | 17.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 5.0 | | 5.0 | 4.5 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 7.1 | 44.4 | | 12.0 | 18.1 | 33.4 | | 17.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 3.2 | 17.7 | | 13.1 | 5.7 | 15.8 | | 9.1 | | | | |
| Green Ext Time (p_c), s | 0.0 | 6.2 | | 0.0 | 0.3 | 4.6 | | 1.5 | | | | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 7th Control Delay, s/veh | | 24.7 | |
| HCM 7th LOS | | C | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 29 | 74 | 183 | 451 | 97 | 90 | 252 | 1001 | 333 | 147 | 805 | 13 |
| Future Volume (veh/h) | 29 | 74 | 183 | 451 | 97 | 90 | 252 | 1001 | 333 | 147 | 805 | 13 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1885 | 1885 | 1900 | 1885 | 1900 | 1856 | 1900 | 1885 | 1796 | 1900 |
| Adj Flow Rate, veh/h | 30 | 76 | 189 | 465 | 100 | 93 | 260 | 1032 | 343 | 152 | 830 | 13 |
| Peak Hour Factor | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, % | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 3 | 0 | 1 | 7 | 0 |
| Cap, veh/h | 215 | 226 | 344 | 583 | 152 | 141 | 419 | 1261 | 415 | 232 | 1552 | 24 |
| Arrive On Green | 0.12 | 0.12 | 0.12 | 0.17 | 0.17 | 0.17 | 0.10 | 0.48 | 0.48 | 0.06 | 0.45 | 0.45 |
| Sat Flow, veh/h | 1810 | 1900 | 1598 | 3483 | 906 | 842 | 1810 | 2606 | 858 | 1795 | 3439 | 54 |
| Grp Volume(v), veh/h | 30 | 76 | 189 | 465 | 0 | 193 | 260 | 695 | 680 | 152 | 412 | 431 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1900 | 1598 | 1742 | 0 | 1748 | 1810 | 1763 | 1701 | 1795 | 1706 | 1787 |
| Q Serve(g_s), s | 1.7 | 4.3 | 12.4 | 15.1 | 0.0 | 12.1 | 8.7 | 39.5 | 40.4 | 5.3 | 20.5 | 20.5 |
| Cycle Q Clear(g_c), s | 1.7 | 4.3 | 12.4 | 15.1 | 0.0 | 12.1 | 8.7 | 39.5 | 40.4 | 5.3 | 20.5 | 20.5 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.48 | 1.00 | | 0.50 | 1.00 | | 0.03 |
| Lane Grp Cap(c), veh/h | 215 | 226 | 344 | 583 | 0 | 293 | 419 | 853 | 823 | 232 | 770 | 806 |
| V/C Ratio(X) | 0.14 | 0.34 | 0.55 | 0.80 | 0.00 | 0.66 | 0.62 | 0.81 | 0.83 | 0.66 | 0.53 | 0.53 |
| Avail Cap(c_a), veh/h | 215 | 226 | 344 | 948 | 0 | 476 | 643 | 1342 | 1295 | 422 | 1213 | 1270 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 46.4 | 47.5 | 41.0 | 47.0 | 0.0 | 45.8 | 16.7 | 25.9 | 26.1 | 24.1 | 23.3 | 23.3 |
| Incr Delay (d2), s/veh | 0.3 | 0.9 | 1.8 | 2.6 | 0.0 | 2.5 | 1.5 | 2.2 | 2.6 | 3.1 | 0.6 | 0.6 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.8 | 2.1 | 5.0 | 6.7 | 0.0 | 5.5 | 3.7 | 16.5 | 16.4 | 2.3 | 8.3 | 8.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 46.7 | 48.4 | 42.9 | 49.6 | 0.0 | 48.3 | 18.2 | 28.1 | 28.7 | 27.2 | 23.9 | 23.9 |
| LnGrp LOS | D | D | D | D | | D | B | C | C | C | C | C |
| Approach Vol, veh/h | | 295 | | | 658 | | | 1635 | | | 995 | |
| Approach Delay, s/veh | | 44.7 | | | 49.2 | | | 26.8 | | | 24.4 | |
| Approach LOS | | D | | | D | | | C | | | C | |

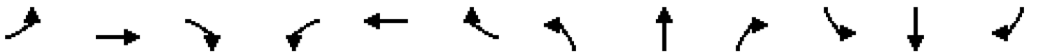
| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 12.0 | 61.9 | | 19.0 | 15.8 | 58.0 | | 24.7 | | | | |
| Change Period (Y+Rc), s | 4.5 | 5.0 | | 5.0 | 4.5 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 20.0 | 89.5 | | 14.0 | 25.9 | 83.6 | | 32.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 7.3 | 42.4 | | 14.4 | 10.7 | 22.5 | | 17.1 | | | | |
| Green Ext Time (p_c), s | 0.3 | 14.4 | | 0.0 | 0.7 | 6.6 | | 2.6 | | | | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 7th Control Delay, s/veh | | 31.7 | |
| HCM 7th LOS | | C | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 33 | 57 | 214 | 479 | 46 | 49 | 219 | 664 | 287 | 136 | 911 | 27 |
| Future Volume (veh/h) | 33 | 57 | 214 | 479 | 46 | 49 | 219 | 664 | 287 | 136 | 911 | 27 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1885 | 1900 | 1900 | 1885 | 1900 |
| Adj Flow Rate, veh/h | 34 | 58 | 218 | 489 | 47 | 50 | 223 | 678 | 293 | 139 | 930 | 28 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Percent Heavy Veh, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Cap, veh/h | 259 | 272 | 403 | 629 | 151 | 160 | 341 | 887 | 383 | 301 | 1198 | 36 |
| Arrive On Green | 0.14 | 0.14 | 0.14 | 0.18 | 0.18 | 0.18 | 0.11 | 0.36 | 0.36 | 0.08 | 0.34 | 0.34 |
| Sat Flow, veh/h | 1810 | 1900 | 1610 | 3510 | 842 | 896 | 1810 | 2435 | 1052 | 1810 | 3550 | 107 |
| Grp Volume(v), veh/h | 34 | 58 | 218 | 489 | 0 | 97 | 223 | 499 | 472 | 139 | 469 | 489 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1900 | 1610 | 1755 | 0 | 1739 | 1810 | 1791 | 1696 | 1810 | 1791 | 1866 |
| Q Serve(g_s), s | 1.4 | 2.3 | 9.8 | 11.1 | 0.0 | 4.1 | 6.5 | 20.5 | 20.5 | 4.1 | 19.7 | 19.7 |
| Cycle Q Clear(g_c), s | 1.4 | 2.3 | 9.8 | 11.1 | 0.0 | 4.1 | 6.5 | 20.5 | 20.5 | 4.1 | 19.7 | 19.7 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.52 | 1.00 | | 0.62 | 1.00 | | 0.06 |
| Lane Grp Cap(c), veh/h | 259 | 272 | 403 | 629 | 0 | 311 | 341 | 652 | 618 | 301 | 604 | 630 |
| V/C Ratio(X) | 0.13 | 0.21 | 0.54 | 0.78 | 0.00 | 0.31 | 0.65 | 0.76 | 0.76 | 0.46 | 0.78 | 0.78 |
| Avail Cap(c_a), veh/h | 259 | 272 | 403 | 1007 | 0 | 499 | 592 | 1113 | 1054 | 426 | 940 | 979 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 31.3 | 31.7 | 27.2 | 32.8 | 0.0 | 29.9 | 18.3 | 23.4 | 23.4 | 18.0 | 24.9 | 24.9 |
| Incr Delay (d2), s/veh | 0.2 | 0.4 | 1.5 | 2.1 | 0.0 | 0.6 | 2.1 | 1.9 | 2.0 | 1.1 | 2.2 | 2.1 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.6 | 1.0 | 3.8 | 4.8 | 0.0 | 1.7 | 2.7 | 8.6 | 8.1 | 1.7 | 8.3 | 8.7 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 31.5 | 32.1 | 28.6 | 34.9 | 0.0 | 30.4 | 20.4 | 25.3 | 25.4 | 19.1 | 27.1 | 27.0 |
| LnGrp LOS | C | C | C | C | | C | C | C | C | B | C | C |
| Approach Vol, veh/h | | 310 | | | 586 | | | 1194 | | | 1097 | |
| Approach Delay, s/veh | | 29.6 | | | 34.1 | | | 24.5 | | | 26.0 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 11.2 | 35.5 | | 17.0 | 13.5 | 33.2 | | 20.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 5.0 | | 5.0 | 4.5 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 12.5 | 52.0 | | 12.0 | 20.6 | 43.9 | | 24.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 6.1 | 22.5 | | 11.8 | 8.5 | 21.7 | | 13.1 | | | | |
| Green Ext Time (p_c), s | 0.2 | 7.6 | | 0.0 | 0.5 | 6.6 | | 1.9 | | | | |

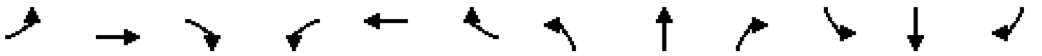
| Intersection Summary | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HCM 7th Control Delay, s/veh | | | 27.3 | | | | | | | | | |
| HCM 7th LOS | | | C | | | | | | | | | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 29 | 61 | 267 | 352 | 44 | 117 | 136 | 651 | 189 | 50 | 779 | 5 |
| Future Volume (veh/h) | 29 | 61 | 267 | 352 | 44 | 117 | 136 | 651 | 189 | 50 | 779 | 5 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1870 | 1870 | 1856 | 1781 | 1885 | 1870 | 1841 | 1856 | 1856 | 1841 | 1900 |
| Adj Flow Rate, veh/h | 30 | 63 | 275 | 363 | 45 | 121 | 140 | 671 | 195 | 52 | 803 | 5 |
| Peak Hour Factor | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 3 | 8 | 1 | 2 | 4 | 3 | 3 | 4 | 0 |
| Cap, veh/h | 299 | 309 | 405 | 566 | 70 | 190 | 335 | 906 | 263 | 284 | 1108 | 7 |
| Arrive On Green | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.09 | 0.34 | 0.34 | 0.06 | 0.31 | 0.31 |
| Sat Flow, veh/h | 1810 | 1870 | 1585 | 3428 | 427 | 1148 | 1781 | 2673 | 776 | 1767 | 3563 | 22 |
| Grp Volume(v), veh/h | 30 | 63 | 275 | 363 | 0 | 166 | 140 | 439 | 427 | 52 | 394 | 414 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1870 | 1585 | 1714 | 0 | 1575 | 1781 | 1749 | 1701 | 1767 | 1749 | 1837 |
| Q Serve(g_s), s | 1.0 | 2.1 | 11.4 | 7.2 | 0.0 | 7.1 | 3.7 | 16.1 | 16.1 | 1.4 | 14.6 | 14.6 |
| Cycle Q Clear(g_c), s | 1.0 | 2.1 | 11.4 | 7.2 | 0.0 | 7.1 | 3.7 | 16.1 | 16.1 | 1.4 | 14.6 | 14.6 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.73 | 1.00 | | 0.46 | 1.00 | | 0.01 |
| Lane Grp Cap(c), veh/h | 299 | 309 | 405 | 566 | 0 | 260 | 335 | 593 | 576 | 284 | 544 | 571 |
| V/C Ratio(X) | 0.10 | 0.20 | 0.68 | 0.64 | 0.00 | 0.64 | 0.42 | 0.74 | 0.74 | 0.18 | 0.72 | 0.72 |
| Avail Cap(c_a), veh/h | 299 | 309 | 405 | 802 | 0 | 368 | 651 | 1179 | 1147 | 356 | 890 | 935 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 25.8 | 26.2 | 24.4 | 28.3 | 0.0 | 28.3 | 16.0 | 21.2 | 21.2 | 16.2 | 22.3 | 22.3 |
| Incr Delay (d2), s/veh | 0.1 | 0.3 | 4.5 | 1.2 | 0.0 | 2.6 | 0.8 | 1.8 | 1.9 | 0.3 | 1.9 | 1.8 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.4 | 0.9 | 4.5 | 2.9 | 0.0 | 2.8 | 1.5 | 6.4 | 6.3 | 0.5 | 5.9 | 6.2 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 25.9 | 26.5 | 28.9 | 29.5 | 0.0 | 30.9 | 16.8 | 23.0 | 23.1 | 16.5 | 24.1 | 24.0 |
| LnGrp LOS | C | C | C | C | | C | B | C | C | B | C | C |
| Approach Vol, veh/h | | 368 | | | 529 | | | 1006 | | | 860 | |
| Approach Delay, s/veh | | 28.2 | | | 30.0 | | | 22.2 | | | 23.6 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 9.0 | 29.6 | | 17.0 | 11.1 | 27.6 | | 17.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 5.0 | | 5.0 | 4.5 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 7.5 | 49.0 | | 12.0 | 19.5 | 37.0 | | 17.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 3.4 | 18.1 | | 13.4 | 5.7 | 16.6 | | 9.2 | | | | |
| Green Ext Time (p_c), s | 0.0 | 6.5 | | 0.0 | 0.3 | 5.2 | | 1.5 | | | | |

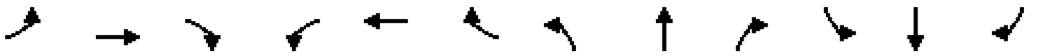
| Intersection Summary | | | |
|---|---|---|---|
| HCM 7th Control Delay, s/veh | | 24.9 | |
| HCM 7th LOS | | C | |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 29 | 74 | 183 | 451 | 97 | 95 | 252 | 1035 | 333 | 151 | 826 | 13 |
| Future Volume (veh/h) | 29 | 74 | 183 | 451 | 97 | 95 | 252 | 1035 | 333 | 151 | 826 | 13 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1885 | 1885 | 1900 | 1885 | 1900 | 1856 | 1900 | 1885 | 1796 | 1900 |
| Adj Flow Rate, veh/h | 30 | 76 | 189 | 465 | 100 | 98 | 260 | 1067 | 343 | 156 | 852 | 13 |
| Peak Hour Factor | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, % | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 3 | 0 | 1 | 7 | 0 |
| Cap, veh/h | 192 | 202 | 323 | 576 | 146 | 143 | 421 | 1291 | 411 | 233 | 1581 | 24 |
| Arrive On Green | 0.11 | 0.11 | 0.11 | 0.17 | 0.17 | 0.17 | 0.10 | 0.49 | 0.49 | 0.06 | 0.46 | 0.46 |
| Sat Flow, veh/h | 1810 | 1900 | 1598 | 3483 | 881 | 863 | 1810 | 2631 | 837 | 1795 | 3441 | 52 |
| Grp Volume(v), veh/h | 30 | 76 | 189 | 465 | 0 | 198 | 260 | 711 | 699 | 156 | 423 | 442 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1900 | 1598 | 1742 | 0 | 1745 | 1810 | 1763 | 1705 | 1795 | 1706 | 1787 |
| Q Serve(g_s), s | 1.7 | 4.2 | 12.0 | 14.5 | 0.0 | 12.1 | 8.2 | 38.9 | 40.0 | 5.1 | 20.1 | 20.1 |
| Cycle Q Clear(g_c), s | 1.7 | 4.2 | 12.0 | 14.5 | 0.0 | 12.1 | 8.2 | 38.9 | 40.0 | 5.1 | 20.1 | 20.1 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.49 | 1.00 | | 0.49 | 1.00 | | 0.03 |
| Lane Grp Cap(c), veh/h | 192 | 202 | 323 | 576 | 0 | 288 | 421 | 865 | 837 | 233 | 784 | 821 |
| V/C Ratio(X) | 0.16 | 0.38 | 0.58 | 0.81 | 0.00 | 0.69 | 0.62 | 0.82 | 0.84 | 0.67 | 0.54 | 0.54 |
| Avail Cap(c_a), veh/h | 192 | 202 | 323 | 802 | 0 | 402 | 623 | 1171 | 1133 | 395 | 1043 | 1092 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 45.8 | 47.0 | 40.7 | 45.4 | 0.0 | 44.4 | 15.8 | 24.5 | 24.8 | 23.3 | 21.9 | 21.9 |
| Incr Delay (d2), s/veh | 0.4 | 1.2 | 2.7 | 4.3 | 0.0 | 2.9 | 1.5 | 3.5 | 4.1 | 3.3 | 0.6 | 0.6 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.8 | 2.1 | 5.0 | 6.6 | 0.0 | 5.4 | 3.4 | 16.4 | 16.5 | 2.3 | 8.0 | 8.4 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 46.2 | 48.1 | 43.4 | 49.7 | 0.0 | 47.3 | 17.3 | 28.1 | 28.9 | 26.6 | 22.5 | 22.5 |
| LnGrp LOS | D | D | D | D | | D | B | C | C | C | C | C |
| Approach Vol, veh/h | | 295 | | | 663 | | | 1670 | | | 1021 | |
| Approach Delay, s/veh | | 44.9 | | | 49.0 | | | 26.7 | | | 23.1 | |
| Approach LOS | | D | | | D | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 11.8 | 60.4 | | 17.0 | 15.4 | 56.9 | | 23.7 | | | | |
| Change Period (Y+Rc), s | 4.5 | 5.0 | | 5.0 | 4.5 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 17.5 | 75.0 | | 12.0 | 23.5 | 69.0 | | 26.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 7.1 | 42.0 | | 14.0 | 10.2 | 22.1 | | 16.5 | | | | |
| Green Ext Time (p_c), s | 0.3 | 13.5 | | 0.0 | 0.6 | 6.7 | | 2.1 | | | | |

| Intersection Summary | |
|---|---|
| HCM 7th Control Delay, s/veh | 31.2 |
| HCM 7th LOS | C |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 33 | 57 | 214 | 479 | 46 | 56 | 219 | 687 | 287 | 141 | 928 | 27 |
| Future Volume (veh/h) | 33 | 57 | 214 | 479 | 46 | 56 | 219 | 687 | 287 | 141 | 928 | 27 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1885 | 1900 | 1900 | 1885 | 1900 |
| Adj Flow Rate, veh/h | 34 | 58 | 218 | 489 | 47 | 57 | 223 | 701 | 293 | 144 | 947 | 28 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Percent Heavy Veh, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Cap, veh/h | 255 | 268 | 398 | 630 | 140 | 170 | 339 | 912 | 381 | 298 | 1221 | 36 |
| Arrive On Green | 0.14 | 0.14 | 0.14 | 0.18 | 0.18 | 0.18 | 0.11 | 0.37 | 0.37 | 0.08 | 0.34 | 0.34 |
| Sat Flow, veh/h | 1810 | 1900 | 1610 | 3510 | 782 | 948 | 1810 | 2462 | 1029 | 1810 | 3552 | 105 |
| Grp Volume(v), veh/h | 34 | 58 | 218 | 489 | 0 | 104 | 223 | 510 | 484 | 144 | 477 | 498 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1900 | 1610 | 1755 | 0 | 1729 | 1810 | 1791 | 1700 | 1810 | 1791 | 1866 |
| Q Serve(g_s), s | 1.4 | 2.3 | 10.0 | 11.3 | 0.0 | 4.5 | 6.6 | 21.3 | 21.3 | 4.2 | 20.3 | 20.3 |
| Cycle Q Clear(g_c), s | 1.4 | 2.3 | 10.0 | 11.3 | 0.0 | 4.5 | 6.6 | 21.3 | 21.3 | 4.2 | 20.3 | 20.3 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.55 | 1.00 | | 0.61 | 1.00 | | 0.06 |
| Lane Grp Cap(c), veh/h | 255 | 268 | 398 | 630 | 0 | 310 | 339 | 663 | 630 | 298 | 616 | 642 |
| V/C Ratio(X) | 0.13 | 0.22 | 0.55 | 0.78 | 0.00 | 0.34 | 0.66 | 0.77 | 0.77 | 0.48 | 0.78 | 0.78 |
| Avail Cap(c_a), veh/h | 255 | 268 | 398 | 1032 | 0 | 509 | 604 | 1167 | 1108 | 432 | 990 | 1032 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 32.0 | 32.3 | 27.9 | 33.3 | 0.0 | 30.5 | 18.5 | 23.6 | 23.6 | 18.2 | 25.0 | 25.0 |
| Incr Delay (d2), s/veh | 0.2 | 0.4 | 1.6 | 2.1 | 0.0 | 0.6 | 2.2 | 1.9 | 2.0 | 1.2 | 2.1 | 2.0 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.6 | 1.1 | 3.9 | 4.9 | 0.0 | 1.9 | 2.8 | 8.9 | 8.5 | 1.8 | 8.6 | 8.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 32.2 | 32.7 | 29.4 | 35.4 | 0.0 | 31.1 | 20.6 | 25.5 | 25.6 | 19.4 | 27.1 | 27.0 |
| LnGrp LOS | C | C | C | D | | C | C | C | C | B | C | C |
| Approach Vol, veh/h | | 310 | | | 593 | | | 1217 | | | 1119 | |
| Approach Delay, s/veh | | 30.4 | | | 34.6 | | | 24.6 | | | 26.1 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 11.3 | 36.5 | | 17.0 | 13.5 | 34.2 | | 20.3 | | | | |
| Change Period (Y+Rc), s | 4.5 | 5.0 | | 5.0 | 4.5 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 13.1 | 55.4 | | 12.0 | 21.5 | 47.0 | | 25.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 6.2 | 23.3 | | 12.0 | 8.6 | 22.3 | | 13.3 | | | | |
| Green Ext Time (p_c), s | 0.2 | 8.0 | | 0.0 | 0.5 | 7.0 | | 2.0 | | | | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 7th Control Delay, s/veh | | 27.5 | |
| HCM 7th LOS | | C | |

# SR 267 (GREEN STREET)/ACRE LANE & PROPOSED DEVELOPMENT ACCESS DRIVE

## TRAFFIC VOLUME COUNTS
## CAPACITY ANALYSIS

## SR 267 & ACRE LN - TMC

Thu Oct 30, 2025
AM Peak (Oct 30 2025 7AM - 8 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354610, Location: 39.875951, -86.392426



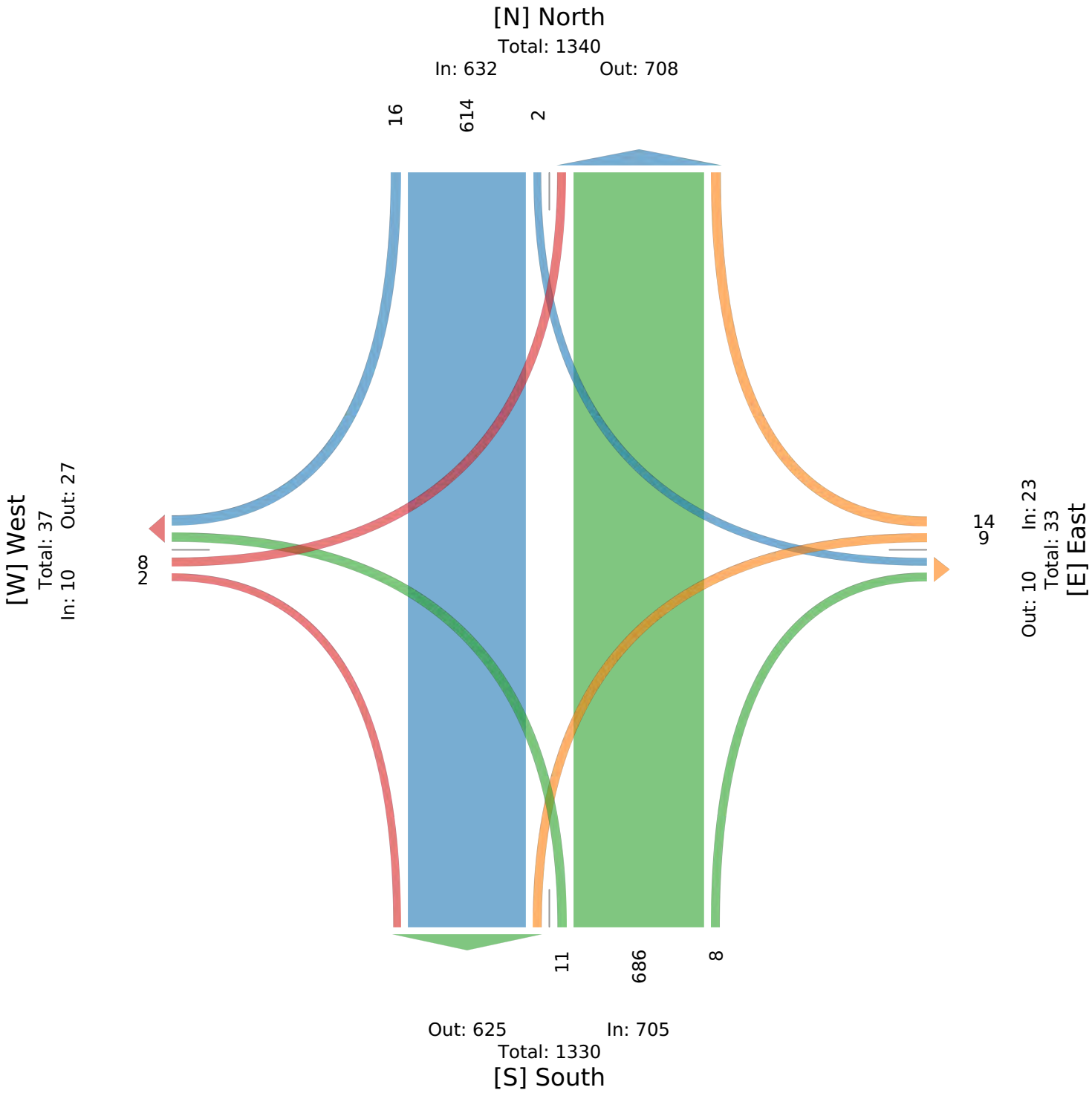

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg / Direction | South Northbound | | | | | North Southbound | | | | | West Eastbound | | | | | East Westbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | **Int** |
| 2025-10-30 7:00AM | 3 | 148 | 0 | 0 | **151** | 1 | 188 | 2 | 0 | **191** | 2 | 0 | 1 | 0 | **3** | 2 | 0 | 5 | 0 | **7** | **352** |
| 7:15AM | 1 | 161 | 3 | 0 | **165** | 0 | 118 | 5 | 0 | **123** | 4 | 0 | 0 | 0 | **4** | 2 | 0 | 0 | 0 | **2** | **294** |
| 7:30AM | 2 | 184 | 4 | 0 | **190** | 0 | 148 | 5 | 0 | **153** | 1 | 0 | 1 | 0 | **2** | 4 | 0 | 8 | 0 | **12** | **357** |
| 7:45AM | 5 | 193 | 1 | 0 | **199** | 1 | 160 | 4 | 0 | **165** | 1 | 0 | 0 | 0 | **1** | 1 | 0 | 1 | 0 | **2** | **367** |
| **Total** | 11 | 686 | 8 | 0 | **705** | 2 | 614 | 16 | 0 | **632** | 8 | 0 | 2 | 0 | **10** | 9 | 0 | 14 | 0 | **23** | **1370** |
| **% Approach** | 1.6% | 97.3% | 1.1% | 0% | **-** | 0.3% | 97.2% | 2.5% | 0% | **-** | 80.0% | 0% | 20.0% | 0% | **-** | 39.1% | 0% | 60.9% | 0% | **-** | - |
| **% Total** | 0.8% | 50.1% | 0.6% | 0% | **51.5%** | 0.1% | 44.8% | 1.2% | 0% | **46.1%** | 0.6% | 0% | 0.1% | 0% | **0.7%** | 0.7% | 0% | 1.0% | 0% | **1.7%** | - |
| **PHF** | 0.550 | 0.889 | 0.500 | - | **0.886** | 0.500 | 0.816 | 0.800 | - | **0.827** | 0.500 | - | 0.500 | - | **0.625** | 0.563 | - | 0.438 | - | **0.479** | 0.933 |
| **Lights and Motorcycles** | 11 | 668 | 8 | 0 | **687** | 1 | 588 | 16 | 0 | **605** | 8 | 0 | 2 | 0 | **10** | 9 | 0 | 14 | 0 | **23** | 1325 |
| **% Lights and Motorcycles** | 100% | 97.4% | 100% | 0% | **97.4%** | 50.0% | 95.8% | 100% | 0% | **95.7%** | 100% | 0% | 100% | 0% | **100%** | 100% | 0% | 100% | 0% | **100%** | 96.7% |
| **Heavy** | 0 | 18 | 0 | 0 | **18** | 1 | 26 | 0 | 0 | **27** | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | **0** | 45 |
| **% Heavy** | 0% | 2.6% | 0% | 0% | **2.6%** | 50.0% | 4.2% | 0% | 0% | **4.3%** | 0% | 0% | 0% | 0% | **0%** | 0% | 0% | 0% | 0% | **0%** | 3.3% |

*L: Left, R: Right, T: Thru, U: U-Turn

**SR 267 & ACRE LN - TMC**
Thu Oct 30, 2025
AM Peak (Oct 30 2025 7AM - 8 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354610, Location: 39.875951, -86.392426

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## SR 267 & ACRE LN - TMC

Thu Oct 30, 2025
PM Peak (Oct 30 2025 4:30PM - 5:30 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354610, Location: 39.875951, -86.392426

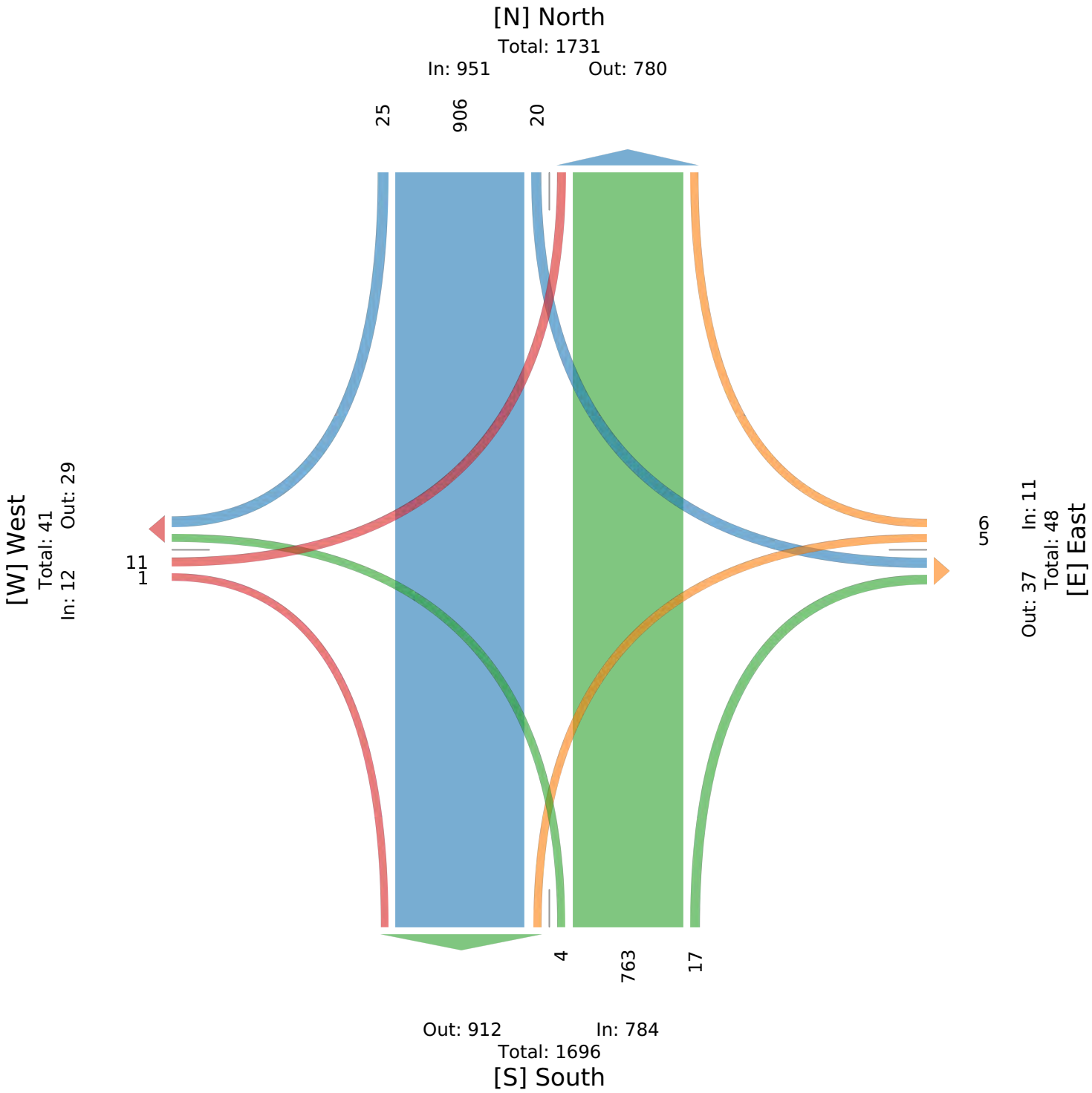
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg | South | | | | | North | | | | | West | | | | | East | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Northbound | | | | | Southbound | | | | | Eastbound | | | | | Westbound | | | | | |
| Time | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | **Int** |
| 2025-10-30 4:30PM | 0 | 207 | 4 | 0 | **211** | 5 | 212 | 5 | 0 | **222** | 2 | 0 | 0 | 0 | **2** | 2 | 0 | 1 | 0 | **3** | **438** |
| 4:45PM | 2 | 173 | 5 | 0 | **180** | 4 | 244 | 5 | 0 | **253** | 2 | 0 | 1 | 0 | **3** | 2 | 0 | 1 | 0 | **3** | **439** |
| 5:00PM | 1 | 186 | 6 | 0 | **193** | 4 | 199 | 8 | 0 | **211** | 3 | 0 | 0 | 0 | **3** | 1 | 0 | 2 | 0 | **3** | **410** |
| 5:15PM | 1 | 197 | 2 | 0 | **200** | 7 | 251 | 7 | 0 | **265** | 4 | 0 | 0 | 0 | **4** | 0 | 0 | 2 | 0 | **2** | **471** |
| **Total** | 4 | 763 | 17 | 0 | **784** | 20 | 906 | 25 | 0 | **951** | 11 | 0 | 1 | 0 | **12** | 5 | 0 | 6 | 0 | **11** | **1758** |
| **% Approach** | 0.5% | 97.3% | 2.2% | 0% | **-** | 2.1% | 95.3% | 2.6% | 0% | **-** | 91.7% | 0% | 8.3% | 0% | **-** | 45.5% | 0% | 54.5% | 0% | **-** | - |
| **% Total** | 0.2% | 43.4% | 1.0% | 0% | **44.6%** | 1.1% | 51.5% | 1.4% | 0% | **54.1%** | 0.6% | 0% | 0.1% | 0% | **0.7%** | 0.3% | 0% | 0.3% | 0% | **0.6%** | - |
| **PHF** | 0.500 | 0.921 | 0.708 | - | **0.929** | 0.714 | 0.902 | 0.781 | - | **0.897** | 0.688 | - | 0.250 | - | **0.750** | 0.625 | - | 0.750 | - | **0.917** | 0.933 |
| **Lights and Motorcycles** | 4 | 737 | 17 | 0 | **758** | 20 | 855 | 25 | 0 | **900** | 11 | 0 | 1 | 0 | **12** | 4 | 0 | 6 | 0 | **10** | 1680 |
| **% Lights and Motorcycles** | 100% | 96.6% | 100% | 0% | **96.7%** | 100% | 94.4% | 100% | 0% | **94.6%** | 100% | 0% | 100% | 0% | **100%** | 80.0% | 0% | 100% | 0% | **90.9%** | 95.6% |
| **Heavy** | 0 | 26 | 0 | 0 | **26** | 0 | 51 | 0 | 0 | **51** | 0 | 0 | 0 | 0 | **0** | 1 | 0 | 0 | 0 | **1** | 78 |
| **% Heavy** | 0% | 3.4% | 0% | 0% | **3.3%** | 0% | 5.6% | 0% | 0% | **5.4%** | 0% | 0% | 0% | 0% | **0%** | 20.0% | 0% | 0% | 0% | **9.1%** | 4.4% |

*L: Left, R: Right, T: Thru, U: U-Turn

**SR 267 & ACRE LN - TMC**
Thu Oct 30, 2025
PM Peak (Oct 30 2025 4:30PM - 5:30 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354610, Location: 39.875951, -86.392426

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## SR 267 & ACRE LN - TMC

Sun Nov 2, 2025
Midday Peak (WKND) (Nov 02 2025 11:45AM - 12:45 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354610, Location: 39.875951, -86.392426

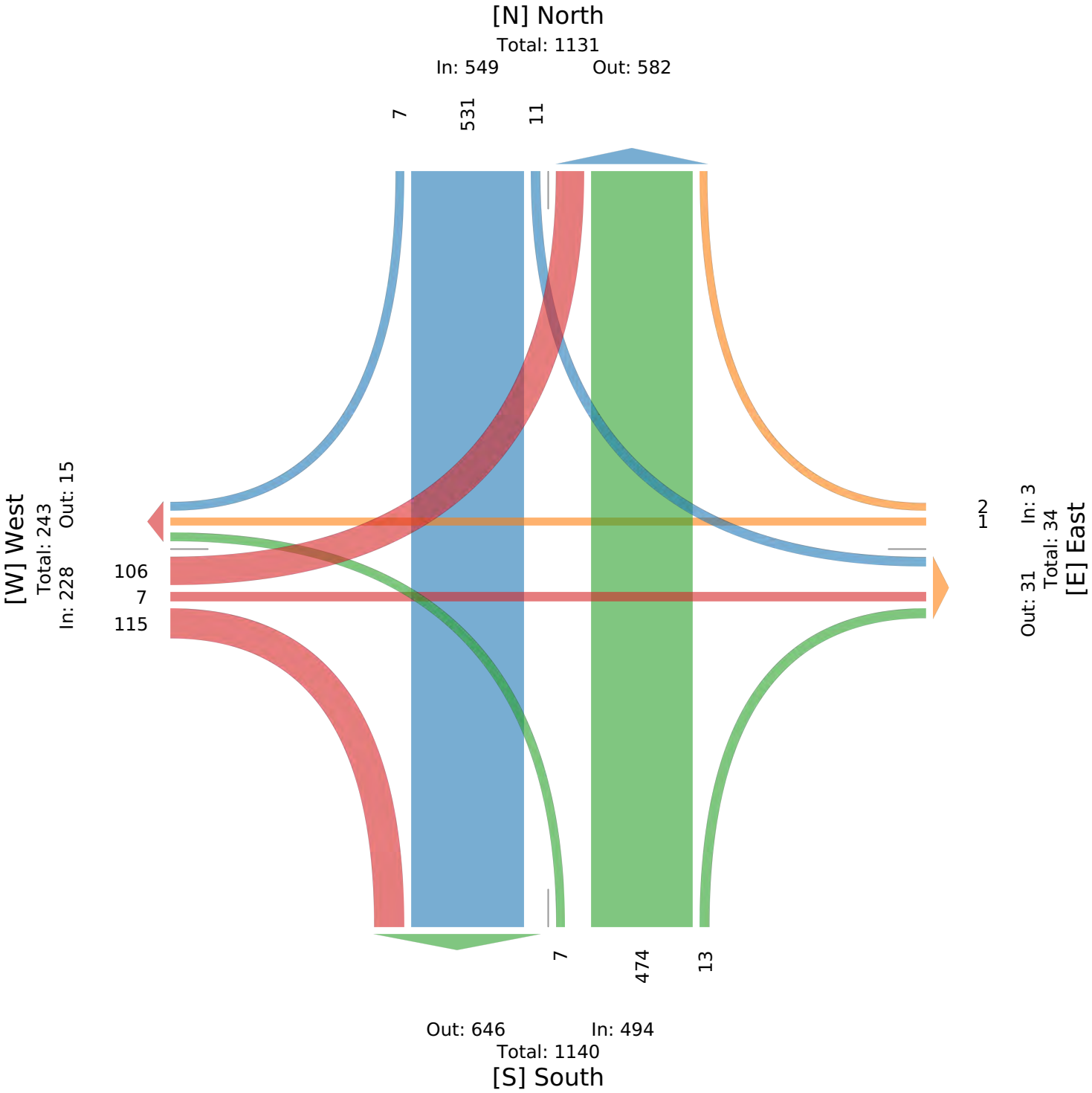
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg | South | | | | | North | | | | | West | | | | | East | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Northbound | | | | | Southbound | | | | | Eastbound | | | | | Westbound | | | | | |
| Time | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | **Int** |
| 2025-11-02 11:45AM | 0 | 129 | 3 | 0 | **132** | 3 | 204 | 0 | 0 | **207** | 2 | 0 | 0 | 0 | **2** | 0 | 1 | 1 | 0 | **2** | **343** |
| 12:00PM | 3 | 110 | 4 | 0 | **117** | 2 | 137 | 2 | 0 | **141** | 2 | 0 | 4 | 0 | **6** | 0 | 0 | 0 | 0 | **0** | **264** |
| 12:15PM | 1 | 106 | 4 | 0 | **111** | 2 | 102 | 3 | 0 | **107** | 61 | 5 | 63 | 0 | **129** | 0 | 0 | 0 | 0 | **0** | **347** |
| 12:30PM | 3 | 129 | 2 | 0 | **134** | 4 | 88 | 2 | 0 | **94** | 41 | 2 | 48 | 0 | **91** | 0 | 0 | 1 | 0 | **1** | **320** |
| **Total** | 7 | 474 | 13 | 0 | **494** | 11 | 531 | 7 | 0 | **549** | 106 | 7 | 115 | 0 | **228** | 0 | 1 | 2 | 0 | **3** | **1274** |
| **% Approach** | 1.4% | 96.0% | 2.6% | 0% | **-** | 2.0% | 96.7% | 1.3% | 0% | **-** | 46.5% | 3.1% | 50.4% | 0% | **-** | 0% | 33.3% | 66.7% | 0% | **-** | - |
| **% Total** | 0.5% | 37.2% | 1.0% | 0% | **38.8%** | 0.9% | 41.7% | 0.5% | 0% | **43.1%** | 8.3% | 0.5% | 9.0% | 0% | **17.9%** | 0% | 0.1% | 0.2% | 0% | **0.2%** | - |
| **PHF** | 0.583 | 0.919 | 0.813 | - | **0.922** | 0.688 | 0.651 | 0.583 | - | **0.663** | 0.434 | 0.350 | 0.456 | - | **0.442** | - | 0.250 | 0.500 | - | **0.375** | 0.918 |
| **Lights and Motorcycles** | 7 | 472 | 13 | 0 | **492** | 11 | 527 | 7 | 0 | **545** | 106 | 7 | 115 | 0 | **228** | 0 | 1 | 2 | 0 | **3** | 1268 |
| **% Lights and Motorcycles** | 100% | 99.6% | 100% | 0% | **99.6%** | 100% | 99.2% | 100% | 0% | **99.3%** | 100% | 100% | 100% | 0% | **100%** | 0% | 100% | 100% | 0% | **100%** | 99.5% |
| **Heavy** | 0 | 2 | 0 | 0 | **2** | 0 | 4 | 0 | 0 | **4** | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | **0** | 6 |
| **% Heavy** | 0% | 0.4% | 0% | 0% | **0.4%** | 0% | 0.8% | 0% | 0% | **0.7%** | 0% | 0% | 0% | 0% | **0%** | 0% | 0% | 0% | 0% | **0%** | 0.5% |

*L: Left, R: Right, T: Thru, U: U-Turn

**SR 267 & ACRE LN - TMC**
Sun Nov 2, 2025
Midday Peak (WKND) (Nov 02 2025 11:45AM - 12:45 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1354610, Location: 39.875951, -86.392426

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



| Intersection | |
|---|---|
| Int Delay, s/veh | 0.8 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 8 | 0 | 2 | 9 | 0 | 14 | 11 | 686 | 8 | 2 | 614 | 16 |
| Future Vol, veh/h | 8 | 0 | 2 | 9 | 0 | 14 | 11 | 686 | 8 | 2 | 614 | 16 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 100 | - | - | - | - | 275 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 50 | 4 | 0 |
| Mvmt Flow | 9 | 0 | 2 | 10 | 0 | 15 | 12 | 738 | 9 | 2 | 660 | 17 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1426 | 1434 | 660 | 1430 | 1447 | 742 | 677 | 0 | 0 | 746 | 0 | 0 |
| Stage 1 | 665 | 665 | - | 766 | 766 | - | - | - | - | - | - | - |
| Stage 2 | 761 | 770 | - | 665 | 682 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.6 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.65 | - | - |
| Pot Cap-1 Maneuver | 114 | 135 | 466 | 113 | 133 | 419 | 924 | - | - | 680 | - | - |
| Stage 1 | 453 | 461 | - | 399 | 415 | - | - | - | - | - | - | - |
| Stage 2 | 401 | 413 | - | 453 | 453 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 108 | 133 | 466 | 111 | 130 | 419 | 924 | - | - | 680 | - | - |
| Mov Cap-2 Maneuver | 108 | 133 | - | 111 | 130 | - | - | - | - | - | - | - |
| Stage 1 | 451 | 459 | - | 393 | 410 | - | - | - | - | - | - | - |
| Stage 2 | 381 | 408 | - | 449 | 451 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Ctrl Dly, s/v | 35.46 | 25.43 | 0.14 | 0.03 |
| HCM LOS | E | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 924 | - | - | 108 | 466 | 201 | 6 | - | - |
| HCM Lane V/C Ratio | 0.013 | - | - | 0.08 | 0.005 | 0.123 | 0.003 | - | - |
| HCM Ctrl Dly (s/v) | 8.9 | - | - | 41.1 | 12.8 | 25.4 | 10.3 | 0 | - |
| HCM Lane LOS | A | - | - | E | B | D | B | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.3 | 0 | 0.4 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 11 | 0 | 1 | 5 | 0 | 6 | 4 | 763 | 17 | 20 | 906 | 25 |
| Future Vol, veh/h | 11 | 0 | 1 | 5 | 0 | 6 | 4 | 763 | 17 | 20 | 906 | 25 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 100 | - | - | - | - | 275 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 3 | 0 | 0 | 6 | 0 |
| Mvmt Flow | 12 | 0 | 1 | 5 | 0 | 6 | 4 | 820 | 18 | 22 | 974 | 27 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1846 | 1865 | 974 | 1855 | 1882 | 830 | 1001 | 0 | 0 | 839 | 0 | 0 |
| Stage 1 | 1017 | 1017 | - | 838 | 838 | - | - | - | - | - | - | - |
| Stage 2 | 829 | 847 | - | 1017 | 1044 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.3 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.3 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.3 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.68 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 58 | 74 | 308 | 51 | 72 | 373 | 700 | - | - | 805 | - | - |
| Stage 1 | 289 | 318 | - | 336 | 384 | - | - | - | - | - | - | - |
| Stage 2 | 368 | 381 | - | 265 | 309 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 53 | 69 | 308 | 47 | 67 | 373 | 700 | - | - | 805 | - | - |
| Mov Cap-2 Maneuver | 53 | 69 | - | 47 | 67 | - | - | - | - | - | - | - |
| Stage 1 | 271 | 298 | - | 334 | 382 | - | - | - | - | - | - | - |
| Stage 2 | 359 | 378 | - | 248 | 290 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Ctrl Dly, s/v | 84.74 | 50.89 | 0.05 | 0.2 |
| HCM LOS | F | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 700 | - | - | 53 | 308 | 90 | 39 | - | - |
| HCM Lane V/C Ratio | 0.006 | - | - | 0.222 | 0.003 | 0.131 | 0.027 | - | - |
| HCM Ctrl Dly (s/v) | 10.2 | - | - | 90.9 | 16.7 | 50.9 | 9.6 | 0 | - |
| HCM Lane LOS | B | - | - | F | C | F | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.7 | 0 | 0.4 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 106 | 7 | 115 | 0 | 1 | 2 | 7 | 474 | 13 | 11 | 531 | 7 |
| Future Vol, veh/h | 106 | 7 | 115 | 0 | 1 | 2 | 7 | 474 | 13 | 11 | 531 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 100 | - | - | - | - | 275 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Mvmt Flow | 115 | 8 | 125 | 0 | 1 | 2 | 8 | 515 | 14 | 12 | 577 | 8 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1132 | 1146 | 577 | 1142 | 1146 | 522 | 585 | 0 | 0 | 529 | 0 | 0 |
| Stage 1 | 601 | 601 | - | 538 | 538 | - | - | - | - | - | - | - |
| Stage 2 | 531 | 545 | - | 605 | 609 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 182 | 201 | 520 | 179 | 201 | 558 | 1000 | - | - | 1048 | - | - |
| Stage 1 | 490 | 492 | - | 531 | 526 | - | - | - | - | - | - | - |
| Stage 2 | 536 | 522 | - | 488 | 489 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 176 | 196 | 520 | 128 | 196 | 558 | 1000 | - | - | 1048 | - | - |
| Mov Cap-2 Maneuver | 176 | 196 | - | 128 | 196 | - | - | - | - | - | - | - |
| Stage 1 | 482 | 484 | - | 527 | 522 | - | - | - | - | - | - | - |
| Stage 2 | 528 | 518 | - | 359 | 480 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Ctrl Dly, s/v | 37.75 | 15.52 | 0.12 | 0.17 |
| HCM LOS | E | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1000 | - | - | 177 | 520 | 346 | 37 | - | - |
| HCM Lane V/C Ratio | 0.008 | - | - | 0.694 | 0.24 | 0.009 | 0.011 | - | - |
| HCM Ctrl Dly (s/v) | 8.6 | - | - | 61.8 | 14.1 | 15.5 | 8.5 | 0 | - |
| HCM Lane LOS | A | - | - | F | B | C | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 4.2 | 0.9 | 0 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 9 | 0 | 3 | 10 | 0 | 15 | 12 | 721 | 9 | 3 | 645 | 17 |
| Future Vol, veh/h | 9 | 0 | 3 | 10 | 0 | 15 | 12 | 721 | 9 | 3 | 645 | 17 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 100 | - | - | - | - | 275 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 50 | 4 | 0 |
| Mvmt Flow | 10 | 0 | 3 | 11 | 0 | 16 | 13 | 775 | 10 | 3 | 694 | 18 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1501 | 1511 | 694 | 1506 | 1524 | 780 | 712 | 0 | 0 | 785 | 0 | 0 |
| Stage 1 | 700 | 700 | - | 806 | 806 | - | - | - | - | - | - | - |
| Stage 2 | 801 | 811 | - | 700 | 718 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.6 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.65 | - | - |
| Pot Cap-1 Maneuver | 101 | 121 | 446 | 101 | 119 | 398 | 897 | - | - | 656 | - | - |
| Stage 1 | 433 | 444 | - | 379 | 398 | - | - | - | - | - | - | - |
| Stage 2 | 381 | 396 | - | 433 | 436 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 95 | 119 | 446 | 98 | 116 | 398 | 897 | - | - | 656 | - | - |
| Mov Cap-2 Maneuver | 95 | 119 | - | 98 | 116 | - | - | - | - | - | - | - |
| Stage 1 | 430 | 441 | - | 373 | 392 | - | - | - | - | - | - | - |
| Stage 2 | 360 | 390 | - | 426 | 432 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Ctrl Dly, s/v | 38.64 | 28.73 | 0.15 | 0.05 |
| HCM LOS | E | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 897 | - | - | 95 | 446 | 178 | 8 | - | - |
| HCM Lane V/C Ratio | 0.014 | - | - | 0.102 | 0.007 | 0.151 | 0.005 | - | - |
| HCM Ctrl Dly (s/v) | 9.1 | - | - | 47.1 | 13.1 | 28.7 | 10.5 | 0 | - |
| HCM Lane LOS | A | - | - | E | B | D | B | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.3 | 0 | 0.5 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 12 | 0 | 2 | 6 | 0 | 7 | 5 | 802 | 18 | 21 | 952 | 27 |
| Future Vol, veh/h | 12 | 0 | 2 | 6 | 0 | 7 | 5 | 802 | 18 | 21 | 952 | 27 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 100 | - | - | - | - | 275 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 3 | 0 | 0 | 6 | 0 |
| Mvmt Flow | 13 | 0 | 2 | 6 | 0 | 8 | 5 | 862 | 19 | 23 | 1024 | 29 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1942 | 1961 | 1024 | 1952 | 1981 | 872 | 1053 | 0 | 0 | 882 | 0 | 0 |
| Stage 1 | 1069 | 1069 | - | 883 | 883 | - | - | - | - | - | - | - |
| Stage 2 | 873 | 892 | - | 1069 | 1098 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.3 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.3 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.3 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.68 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 50 | 64 | 288 | 43 | 62 | 353 | 669 | - | - | 775 | - | - |
| Stage 1 | 270 | 300 | - | 317 | 367 | - | - | - | - | - | - | - |
| Stage 2 | 348 | 363 | - | 248 | 291 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 45 | 59 | 288 | 40 | 57 | 353 | 669 | - | - | 775 | - | - |
| Mov Cap-2 Maneuver | 45 | 59 | - | 40 | 57 | - | - | - | - | - | - | - |
| Stage 1 | 251 | 279 | - | 314 | 364 | - | - | - | - | - | - | - |
| Stage 2 | 337 | 360 | - | 229 | 271 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Ctrl Dly, s/v | 101.11 | 63.03 | 0.06 | 0.21 |
| HCM LOS | F | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 669 | - | - | 45 | 288 | 76 | 39 | - | - |
| HCM Lane V/C Ratio | 0.008 | - | - | 0.288 | 0.007 | 0.185 | 0.029 | - | - |
| HCM Ctrl Dly (s/v) | 10.4 | - | - | 115 | 17.6 | 63 | 9.8 | 0 | - |
| HCM Lane LOS | B | - | - | F | C | F | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 1 | 0 | 0.6 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 9.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 112 | 8 | 121 | 0 | 2 | 3 | 8 | 498 | 14 | 12 | 558 | 8 |
| Future Vol, veh/h | 112 | 8 | 121 | 0 | 2 | 3 | 8 | 498 | 14 | 12 | 558 | 8 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 100 | - | - | - | - | 275 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Mvmt Flow | 122 | 9 | 132 | 0 | 2 | 3 | 9 | 541 | 15 | 13 | 607 | 9 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1192 | 1207 | 607 | 1203 | 1208 | 549 | 615 | 0 | 0 | 557 | 0 | 0 |
| Stage 1 | 633 | 633 | - | 566 | 566 | - | - | - | - | - | - | - |
| Stage 2 | 560 | 574 | - | 637 | 641 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 165 | 185 | 500 | 163 | 185 | 539 | 974 | - | - | 1024 | - | - |
| Stage 1 | 471 | 477 | - | 512 | 510 | - | - | - | - | - | - | - |
| Stage 2 | 517 | 507 | - | 469 | 472 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 158 | 180 | 500 | 111 | 180 | 539 | 974 | - | - | 1024 | - | - |
| Mov Cap-2 Maneuver | 158 | 180 | - | 111 | 180 | - | - | - | - | - | - | - |
| Stage 1 | 462 | 467 | - | 508 | 506 | - | - | - | - | - | - | - |
| Stage 2 | 507 | 502 | - | 333 | 463 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Ctrl Dly, s/v | 50.67 | 17.25 | 0.13 | 0.18 |
| HCM LOS | F | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 974 | - | - | 159 | 500 | 299 | 38 | - | - |
| HCM Lane V/C Ratio | 0.009 | - | - | 0.819 | 0.263 | 0.018 | 0.013 | - | - |
| HCM Ctrl Dly (s/v) | 8.7 | - | - | 86.9 | 14.7 | 17.2 | 8.6 | 0 | - |
| HCM Lane LOS | A | - | - | F | B | C | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 5.4 | 1 | 0.1 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 16 | 0 | 12 | 10 | 0 | 15 | 16 | 731 | 9 | 3 | 672 | 19 |
| Future Vol, veh/h | 16 | 0 | 12 | 10 | 0 | 15 | 16 | 731 | 9 | 3 | 672 | 19 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 100 | - | - | - | - | 275 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 50 | 4 | 0 |
| Mvmt Flow | 17 | 0 | 13 | 11 | 0 | 16 | 17 | 786 | 10 | 3 | 723 | 20 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1549 | 1559 | 723 | 1554 | 1575 | 791 | 743 | 0 | 0 | 796 | 0 | 0 |
| Stage 1 | 729 | 729 | - | 825 | 825 | - | - | - | - | - | - | - |
| Stage 2 | 820 | 830 | - | 729 | 749 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.6 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.65 | - | - |
| Pot Cap-1 Maneuver | 94 | 113 | 430 | 93 | 111 | 393 | 873 | - | - | 649 | - | - |
| Stage 1 | 417 | 431 | - | 369 | 390 | - | - | - | - | - | - | - |
| Stage 2 | 372 | 388 | - | 417 | 422 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 87 | 110 | 430 | 88 | 108 | 393 | 873 | - | - | 649 | - | - |
| Mov Cap-2 Maneuver | 87 | 110 | - | 88 | 108 | - | - | - | - | - | - | - |
| Stage 1 | 414 | 427 | - | 362 | 382 | - | - | - | - | - | - | - |
| Stage 2 | 349 | 380 | - | 401 | 418 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Ctrl Dly, s/v | 37.87 | 31.16 | 0.19 | 0.05 |
| HCM LOS | E | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 873 | - | - | 87 | 430 | 164 | 8 | - | - |
| HCM Lane V/C Ratio | 0.02 | - | - | 0.197 | 0.03 | 0.164 | 0.005 | - | - |
| HCM Ctrl Dly (s/v) | 9.2 | - | - | 56 | 13.6 | 31.2 | 10.6 | 0 | - |
| HCM Lane LOS | A | - | - | F | B | D | B | A | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.7 | 0.1 | 0.6 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 16 | 0 | 8 | 6 | 0 | 7 | 14 | 832 | 18 | 21 | 971 | 34 |
| Future Vol, veh/h | 16 | 0 | 8 | 6 | 0 | 7 | 14 | 832 | 18 | 21 | 971 | 34 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 100 | - | - | - | - | 275 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 3 | 0 | 0 | 6 | 0 |
| Mvmt Flow | 17 | 0 | 9 | 6 | 0 | 8 | 15 | 895 | 19 | 23 | 1044 | 37 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 2014 | 2033 | 1044 | 2024 | 2060 | 904 | 1081 | 0 | 0 | 914 | 0 | 0 |
| Stage 1 | 1089 | 1089 | - | 934 | 934 | - | - | - | - | - | - | - |
| Stage 2 | 925 | 944 | - | 1089 | 1126 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.3 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.3 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.3 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.68 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 44 | 58 | 281 | 38 | 56 | 338 | 653 | - | - | 754 | - | - |
| Stage 1 | 263 | 294 | - | 296 | 347 | - | - | - | - | - | - | - |
| Stage 2 | 325 | 343 | - | 241 | 282 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 39 | 52 | 281 | 33 | 50 | 338 | 653 | - | - | 754 | - | - |
| Mov Cap-2 Maneuver | 39 | 52 | - | 33 | 50 | - | - | - | - | - | - | - |
| Stage 1 | 243 | 272 | - | 289 | 339 | - | - | - | - | - | - | - |
| Stage 2 | 311 | 336 | - | 216 | 261 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Ctrl Dly, s/v | 110.31 | 74.91 | 0.17 | 0.2 |
| HCM LOS | F | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 653 | - | - | 39 | 281 | 65 | 38 | - | - |
| HCM Lane V/C Ratio | 0.023 | - | - | 0.441 | 0.031 | 0.215 | 0.03 | - | - |
| HCM Ctrl Dly (s/v) | 10.6 | - | - | 156.3 | 18.2 | 74.9 | 9.9 | 0 | - |
| HCM Lane LOS | B | - | - | F | C | F | A | A | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 1.5 | 0.1 | 0.7 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 11.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 114 | 8 | 125 | 0 | 2 | 3 | 14 | 522 | 14 | 12 | 576 | 10 |
| Future Vol, veh/h | 114 | 8 | 125 | 0 | 2 | 3 | 14 | 522 | 14 | 12 | 576 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 100 | - | - | - | - | 275 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Mvmt Flow | 124 | 9 | 136 | 0 | 2 | 3 | 15 | 567 | 15 | 13 | 626 | 11 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1251 | 1265 | 626 | 1262 | 1268 | 575 | 637 | 0 | 0 | 583 | 0 | 0 |
| Stage 1 | 652 | 652 | - | 605 | 605 | - | - | - | - | - | - | - |
| Stage 2 | 599 | 613 | - | 657 | 663 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 151 | 171 | 488 | 148 | 170 | 521 | 956 | - | - | 1002 | - | - |
| Stage 1 | 460 | 467 | - | 488 | 490 | - | - | - | - | - | - | - |
| Stage 2 | 492 | 486 | - | 457 | 462 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 143 | 165 | 488 | 98 | 164 | 521 | 956 | - | - | 1002 | - | - |
| Mov Cap-2 Maneuver | 143 | 165 | - | 98 | 164 | - | - | - | - | - | - | - |
| Stage 1 | 451 | 458 | - | 480 | 482 | - | - | - | - | - | - | - |
| Stage 2 | 479 | 479 | - | 317 | 453 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Ctrl Dly, s/v | 64.88 | 18.19 | 0.22 | 0.17 |
| HCM LOS | F | C | | |

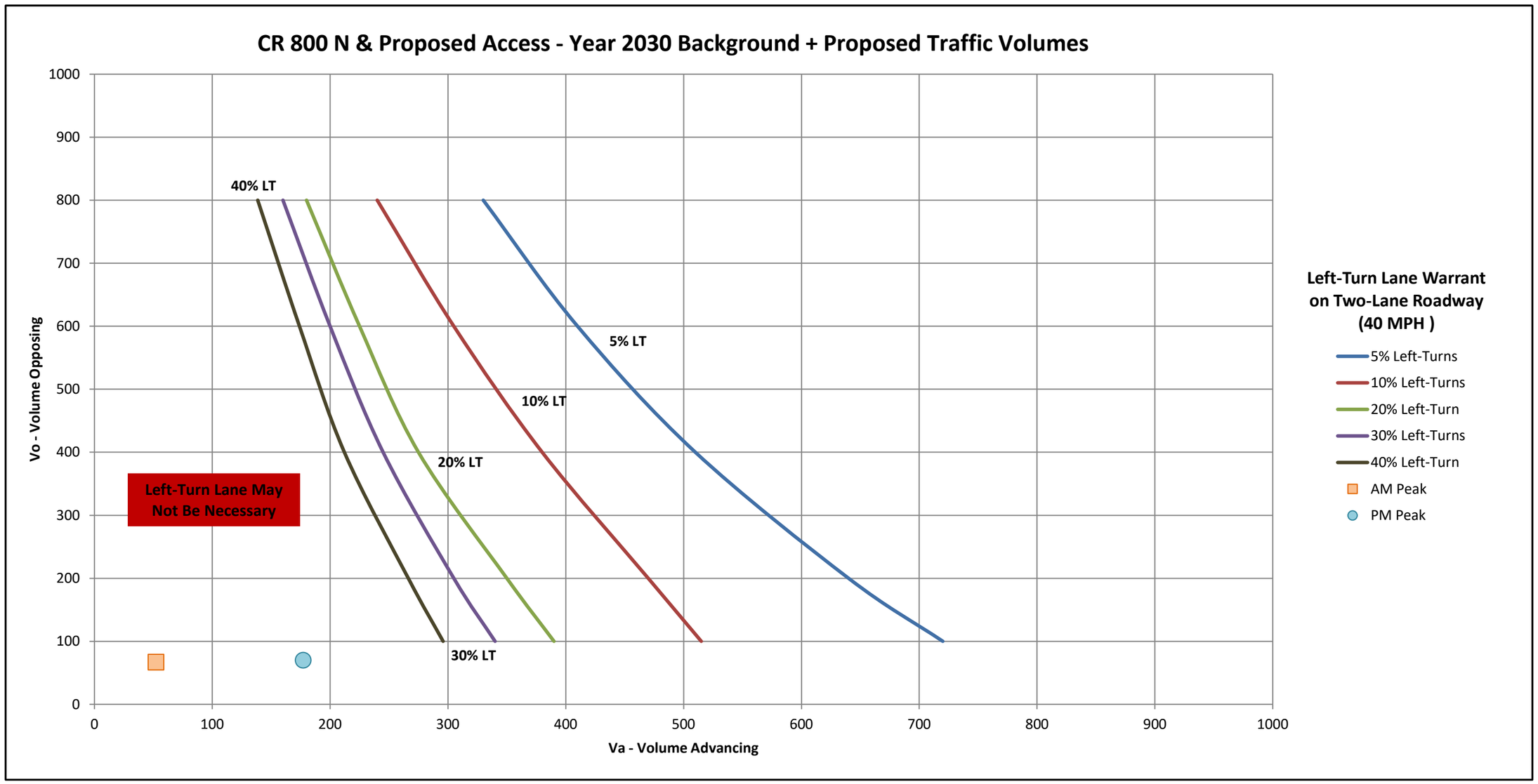
| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 956 | - | - | 144 | 488 | 278 | 37 | - | - |
| HCM Lane V/C Ratio | 0.016 | - | - | 0.922 | 0.279 | 0.02 | 0.013 | - | - |
| HCM Ctrl Dly (s/v) | 8.8 | - | - | 115.8 | 15.2 | 18.2 | 8.6 | 0 | - |
| HCM Lane LOS | A | - | - | F | C | C | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 6.4 | 1.1 | 0.1 | 0 | - | - |

# CR 800 N & PROPOSED DEVELOPMENT ACCESS DRIVE

## TURN LANE ANALYSIS
## CAPACITY ANALYSIS

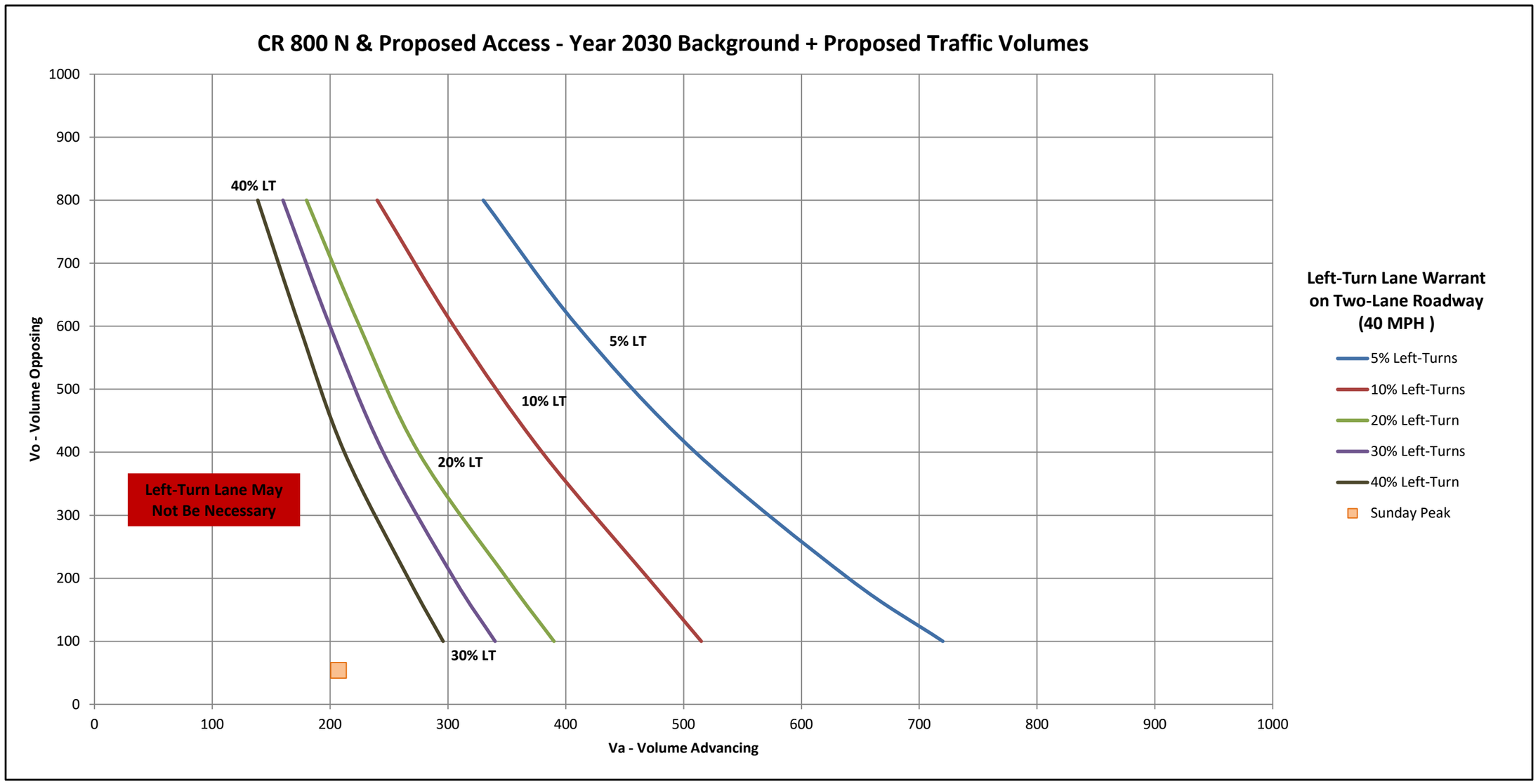
| Operating Speed (mph) | Opposing Volume (veh/h) | Advancing Volume (veh/h) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 5% Left Turns | 10% Left Turns | 15% Left Turns | 20% Left Turns | 25% Left Turns | 30% Left Turns | 35% Left Turns | 40% Left Turns |
| 40 | 800 | 330 | 240 | 207 | 180 | 168 | 160 | 146 | 139 |
| | 600 | 410 | 305 | 260 | 225 | 211 | 200 | 184 | 174 |
| | 400 | 510 | 380 | 320 | 275 | 258 | 245 | 224 | 212 |
| | 200 | 640 | 470 | 401 | 350 | 324 | 305 | 282 | 266 |
| | 100 | 720 | 515 | 446 | 390 | 360 | 340 | 313 | 296 |

| AM Peak Hour Traffic Volume Input | | PM Peak Hour Traffic Volume Input | |
|---|---|---|---|
| Advancing Volume (Va) | 52 | Advancing Volume (Va) | 177 |
| Opposing Volume (Vo) | 67 | Opposing Volume (Vo) | 70 |
| Left-Turn Volume | 15 | Left-Turn Volume | 45 |
| % Left-Turn | 29% | % Left-Turn | 25% |
| WARRANTED? | NO | WARRANTED? | NO |



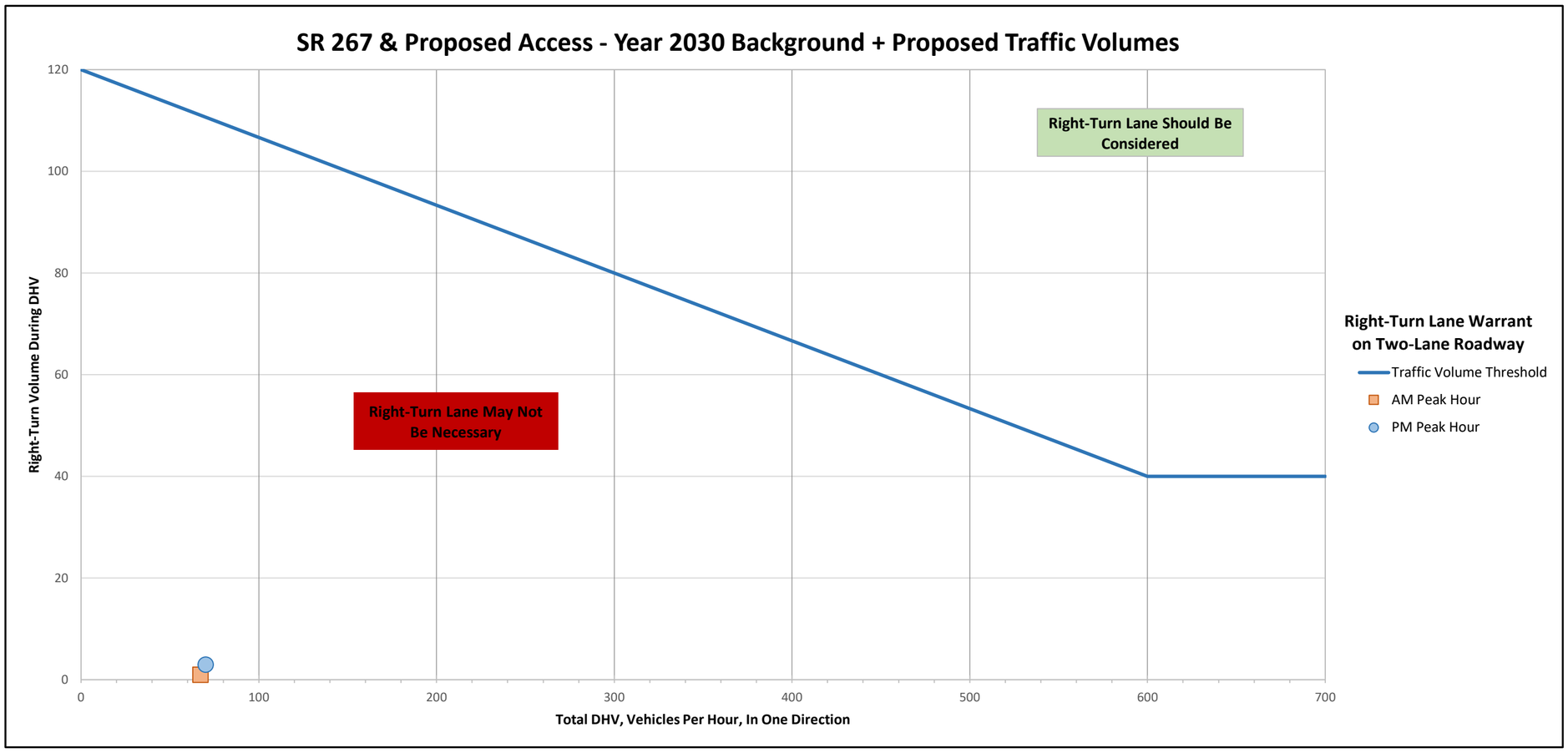
| Operating Speed (mph) | Opposing Volume (veh/h) | Advancing Volume (veh/h) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 5% Left Turns | 10% Left Turns | 15% Left Turns | 20% Left Turns | 25% Left Turns | 30% Left Turns | 35% Left Turns | 40% Left Turns |
| 40 | 800 | 330 | 240 | 207 | 180 | 168 | 160 | 146 | 139 |
| | 600 | 410 | 305 | 260 | 225 | 211 | 200 | 184 | 174 |
| | 400 | 510 | 380 | 320 | 275 | 258 | 245 | 224 | 212 |
| | 200 | 640 | 470 | 401 | 350 | 324 | 305 | 282 | 266 |
| | 100 | 720 | 515 | 446 | 390 | 360 | 340 | 313 | 296 |

| Sunday Peak Traffic Volume Input | |
|---|---|
| Advancing Volume (Va) | 207 |
| Opposing Volume (Vo) | 54 |
| Left-Turn Volume | 31 |
| % Left-Turn | 15% |
| WARRANTED? | NO |



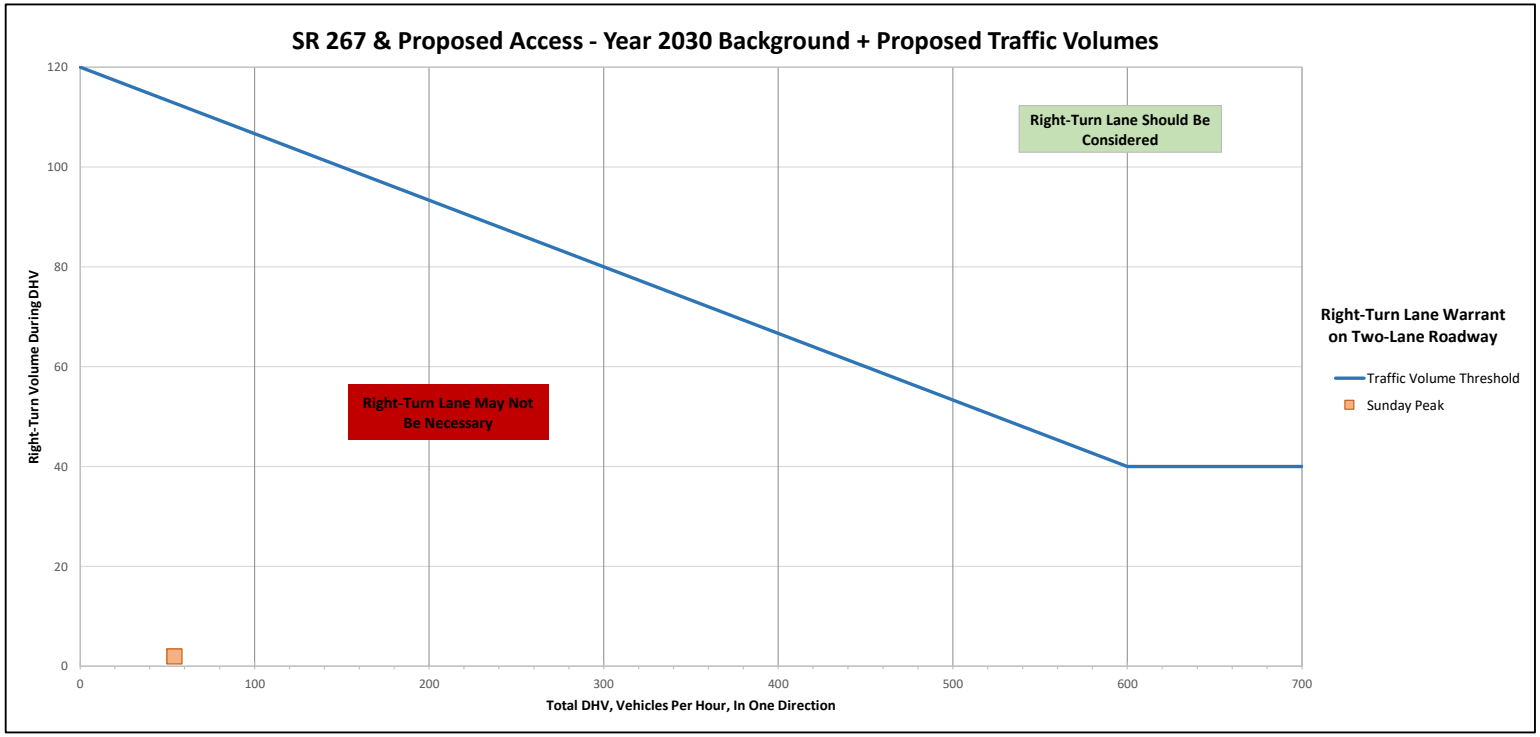
| Total Approach Volume | Right-Turn Volume |
|---|---|
| 0 | 120 |
| 600 | 40 |
| 700 | 40 |

| AM Peak Hour Traffic Volume Input | | PM Peak Hour Traffic Volume Input | |
|---|---|---|---|
| Total Approach Volume | 67 | Total Approach Volume | 70 |
| Right-Turn Volume | 1 | Right-Turn Volume | 3 |
| WARRANTED? | NO | WARRANTED? | NO |



| Total Approach Volume | Right-Turn Volume |
|---|---|
| 0 | 120 |
| 600 | 40 |
| 700 | 40 |

| Sunday Peak Traffic Volume Input | |
|---|---|
| Total Approach Volume | 54 |
| Right-Turn Volume | 2 |
| WARRANTED? | NO |



| Intersection | |
|---|---|
| Int Delay, s/veh | 4.9 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 1 | 15 | 37 | 3 | 40 |
| Future Vol, veh/h | 0 | 1 | 15 | 37 | 3 | 40 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 1 | 16 | 40 | 3 | 43 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 1 | 0 | 73 | 1 |
| Stage 1 | - | - | - | - | 1 | - |
| Stage 2 | - | - | - | - | 73 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1622 | - | 930 | 1084 |
| Stage 1 | - | - | - | - | 1023 | - |
| Stage 2 | - | - | - | - | 950 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1622 | - | 921 | 1084 |
| Mov Cap-2 Maneuver | - | - | - | - | 921 | - |
| Stage 1 | - | - | - | - | 1023 | - |
| Stage 2 | - | - | - | - | 940 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 0 | 2.09 | 8.51 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1071 | - | - | 519 | - |
| HCM Lane V/C Ratio | 0.044 | - | - | 0.01 | - |
| HCM Ctrl Dly (s/v) | 8.5 | - | - | 7.2 | 0 |
| HCM Lane LOS | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.2 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 67 | 3 | 45 | 132 | 2 | 28 |
| Future Vol, veh/h | 67 | 3 | 45 | 132 | 2 | 28 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 73 | 3 | 49 | 143 | 2 | 30 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 76 | 0 | 316 | 74 |
| Stage 1 | - | - | - | - | 74 | - |
| Stage 2 | - | - | - | - | 241 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1523 | - | 677 | 987 |
| Stage 1 | - | - | - | - | 948 | - |
| Stage 2 | - | - | - | - | 799 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1523 | - | 654 | 987 |
| Mov Cap-2 Maneuver | - | - | - | - | 654 | - |
| Stage 1 | - | - | - | - | 948 | - |
| Stage 2 | - | - | - | - | 771 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 0 | 1.89 | 8.9 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 955 | - | - | 458 | - |
| HCM Lane V/C Ratio | 0.034 | - | - | 0.032 | - |
| HCM Ctrl Dly (s/v) | 8.9 | - | - | 7.4 | 0 |
| HCM Lane LOS | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.1 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.5 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 52 | 2 | 31 | 176 | 1 | 23 |
| Future Vol, veh/h | 52 | 2 | 31 | 176 | 1 | 23 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 57 | 2 | 34 | 191 | 1 | 25 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 59 | 0 | 316 | 58 |
| Stage 1 | - | - | - | - | 58 | - |
| Stage 2 | - | - | - | - | 259 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1545 | - | 677 | 1009 |
| Stage 1 | - | - | - | - | 965 | - |
| Stage 2 | - | - | - | - | 785 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1545 | - | 660 | 1009 |
| Mov Cap-2 Maneuver | - | - | - | - | 660 | - |
| Stage 1 | - | - | - | - | 965 | - |
| Stage 2 | - | - | - | - | 765 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Ctrl Dly, s/v | 0 | 1.11 | 8.75 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 987 | - | - | 270 | - |
| HCM Lane V/C Ratio | 0.026 | - | - | 0.022 | - |
| HCM Ctrl Dly (s/v) | 8.7 | - | - | 7.4 | 0 |
| HCM Lane LOS | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.1 | - |

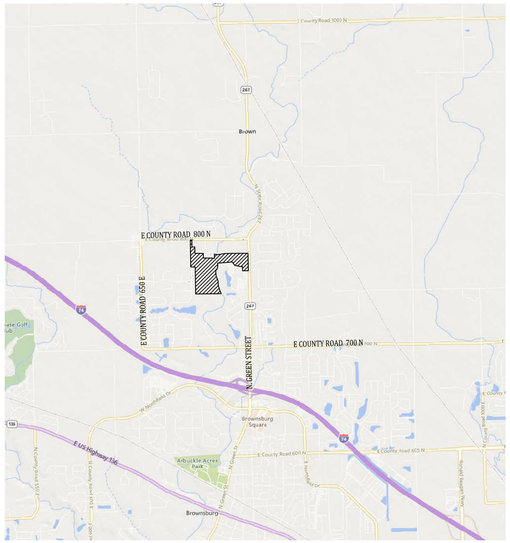
PRIMARY PLAT

# HAWKS LANDING

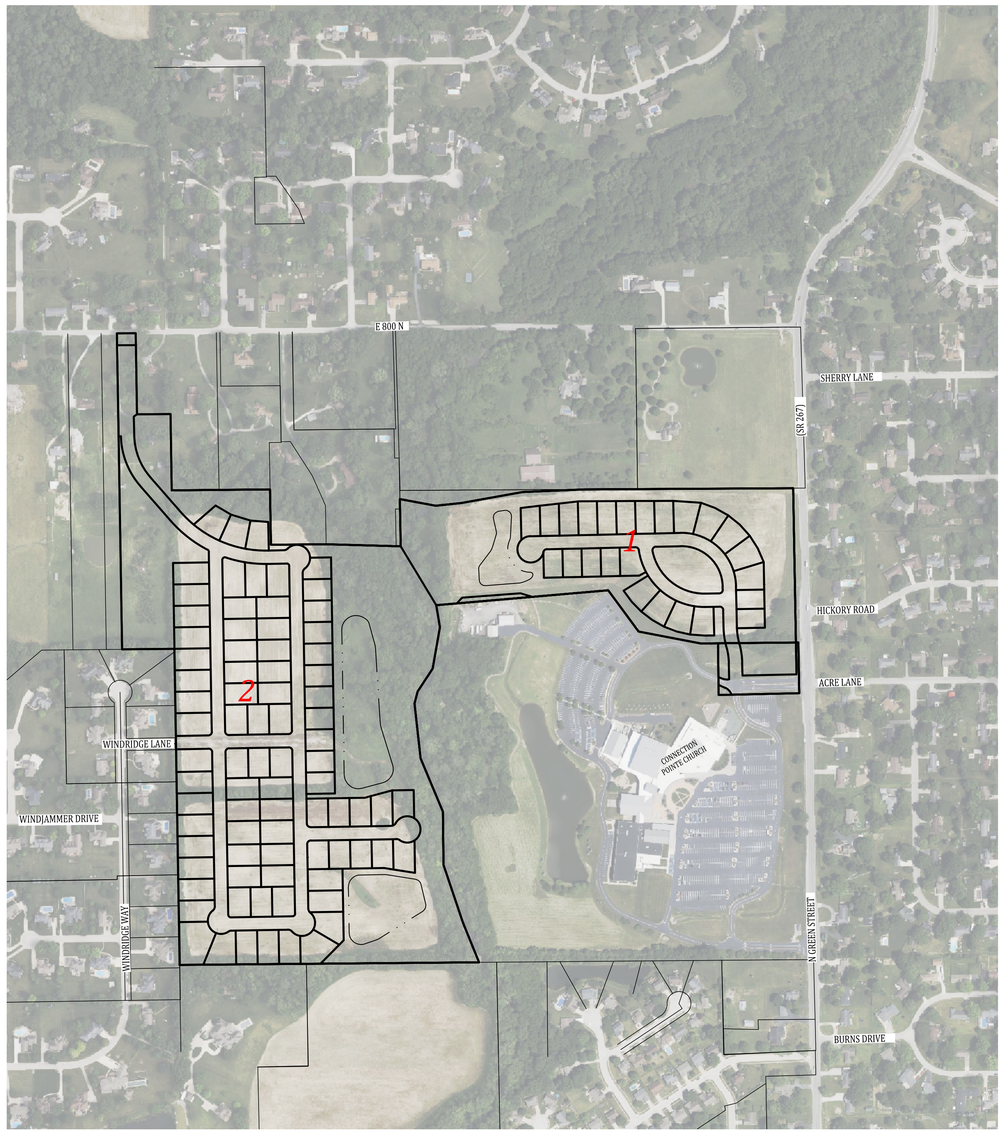
SECTION 34, TOWNSHIP 17N, RANGE 1E,
TOWN OF BROWNSBURG, BROWN TWP., HENDRICKS CO., INDIANA
ZONED: R3

PLANS PREPARED FOR:
DAVID WEEKLEY HOMES
ATTENTION: ED FREEMAN
9310 NORTH MERIDIAN, SUITE 100,
INDIANAPOLIS, IN 46260
EFREEMAN@DWHOMES.COM

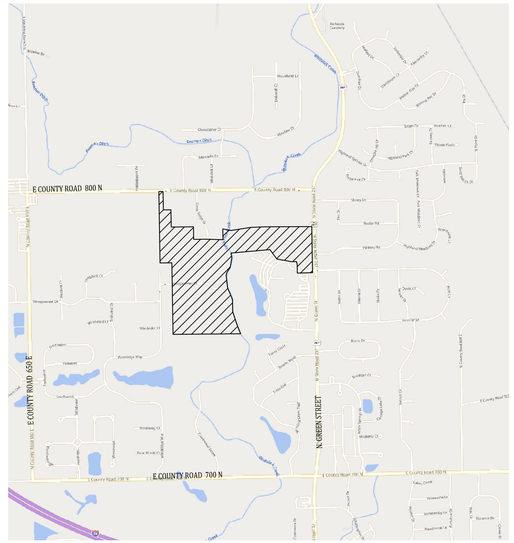
Building Dreams, Enhancing Lives
David Weekley Homes




VICINITY MAP
NO SCALE




SITE MAP
SCALE: 1"=300'




LOCATION MAP
NO SCALE

## OPERATING AUTHORITIES

GAS
VECTREN (NORTH)
ANDREW THEISZ
2345 E. MAIN STREET
DANVILLE, IN 46122
812-231-6403

ELECTRIC
DUKE ENERGY
1000 E MAIN STREET
PLAINFIELD, IN 46168

ELECTRIC
HENDRICKS POWER COOPERATIVE
PO BOX 309
DANVILLE, IN 46112
317-745-5473
MIKE GOOD

FIBER OPTIC
MCI

FIBER OPTIC
TCS COMMUNICATION, LLC

TOWN OF BROWNSBURG
61 N. GREEN STREET
BROWNSBURG, IN 46112
317-852-1120

SANITARY - TOWN OF BROWNSBURG
KATHY DILLON, DIRECTOR
225 S. MARDALE DRIVE
BROWNSBURG, IN 46112
317-852-1114

COMMUNICATION
AT&T - DISTRIBUTION
MATT SPINDLER
240 N. MERIDIAN ST. RM 1791
INDIANAPOLIS, IN 46204
317-265-3050

CABLE TELEVISION
SPECTRUM
JASON KIRKMAN
3030 ROOSEVELT AVENUE
INDIANAPOLIS, IN 46218
317-429-6691

CABLE TELEVISION
COMCAST CABLE INDPLS.
RAY REEVES
5330 E. 65TH STREET
INDIANAPOLIS, IN

STORM
WASTEWATER DEPARTMENT
225 S MARDALE DRIVE
BROWNSBURG, IN 46112
317-852-1114

WATER - TOWN OF BROWNSBURG
FRANK MONTS, DIRECTOR
220 S. MARDALE DRIVE
BROWNSBURG, IN 46112
317-858-4147

POLICE DEPARTMENT
BROWNSBURG POLICE DEPARTMENT
JOE GRIMES
31 N. GREEN STREET
BROWNSBURG, IN 46112
317-852-1190

FIRE DEPARTMENT
BROWNSBURG FIRE TERRITORY
FIRE MARSHAL
470 NORTHFIELD DR.
BROWNSBURG, IN 46112
317-852-1190

SCHOOL DISTRICT
BROWNSBURG COMMUNITY
SCHOOL CORP.
DR. JIM SNAPP
310 STADIUM DRIVE
BROWNSBURG, IN 46112-1414
317-852.5726

**PLAN COMMISSION CERTIFICATE**

Pursuant to I.C. 36-7-4-700 et. seq., and all amendments thereof, the undersigned do hereby certify that the public notice of the hearing by the Town of Brownsburg Advisory Plan Commission (the "Commission"); on the application for approval of this plat duly complied with I.C. 36-7-4-706 and all amendments thereof, and said primary plat was granted primary approval by the Commission on the _____ day of _____, 20_____; pursuant to the Town of Brownsburg Unified Development Ordinance, with a majority of the members of the Commission concurring in said approval.

_____ Zoning Administrator

_____ Date

This approval is valid for a time period specified in Article 9 of the Town of Brownsburg Unified Development Ordinance.

Dated: _____

Certified this 21st day of December, 2021.

| REVISIONS | | |
|---|---|---|
| NUMBER | DESCRIPTION | DATE |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

PHASING NOTE:

THE DEVELOPMENT PHASING SHALL BE ACCORDING TO THE SECTIONS AS SHOWN HERE. HOWEVER, IF NECESSARY, THE DEVELOPER HAS THE ABILITY TO REVISE THE SECTIONS TO ACCOMMODATE THE UTILITY SERVICES, DRAINAGE PLAN AND STREET ACCESS.

| SHEET INDEX | |
|---|---|
| SHEET NO | DESCRIPTION |
| C100 | TITLE SHEET |
| C101-C104 | EXISTING TOPOGRAPHY |
| C200-C203 | PRIMARY PLAT |
| C300-C303 | UTILITY PLAN |
| C400-C401 | AMENITIES & LANDSCAPING PLAN |
| C500 | SOIL MAP & FLOOD MAP, DETAILS |
| C501 | PHASING PLAN |

PLANS PREPARED BY:


BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

CONTACT: AUSTON LEWIS
EMAIL: alewis@banning-eng.com


CERTIFIED: 10-02-2025

CHANDLER A. HARDEN
REGISTERED
No. 22300025
STATE OF INDIANA
LAND SURVEYOR

CERTIFIED: 10-02-2025

W. CHAD ZIEGLER
REGISTERED
No. PE11200667
STATE OF INDIANA
PROFESSIONAL ENGINEER

NOTE:

USERS OF THE EXISTING TOPOGRAPHY PLAN ARE CAUTIONED TO CONSIDER THAT ALL NATURAL SURFACES ARE SUBJECT TO DISPLACEMENT DUE TO THE EFFECTS OF ENVIRONMENTAL AND MECHANICAL FACTORS ON SOIL PROPERTIES. THE INTERPOLATED CONTOUR LINES DEPICTED HEREON ARE REPRESENTATIVE OF THE SURFACE OF THE SITE ON THE DATE(S) THE FIELD SURVEY WAS PERFORMED. CHANGES IN SURFACE ELEVATIONS VARYING UP TO 0.5 FEET AFTER THE DATE OF THE SURVEY MAY BE POSSIBLE WITHOUT ANY OBVIOUS VISIBLE INDICATIONS. THEREFORE, IT IS RECOMMENDED THAT THE SURFACE ELEVATIONS OF THIS SITE BE VERIFIED PRIOR TO CONSTRUCTION AND THAT ANY SIGNIFICANT DISCREPANCIES BE REPORTED TO THE ENGINEER FOR EVALUATION. THE SURVEYOR IS NOT RESPONSIBLE FOR ESTIMATING OR ACCOUNTING FOR ANY VERTICAL VARIANCE CAUSED BY SUCH ENVIRONMENTAL OR MECHANICAL INFLUENCES.

THIS EXISTING TOPOGRAPHY PLAN REFLECTS ABOVE GROUND INDICATIONS OF UTILITIES AND INFORMATION AVAILABLE FROM UTILITY COMPANIES. THE ENGINEER/SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE ENGINEER/SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH HE / SHE DOES CONFIRM THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE ENGINEER/SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

Indiana 811
Know what's below. Call before you dig.

THESE PLANS ARE NOT INTENDED TO BE REPRESENTED AS A RETRACEMENT OR ORIGINAL BOUNDARY SURVEY, A ROUTE SURVEY, OR A SURVEYOR LOCATION REPORT.

Date: 09-08-2025
Project No: 23369
Sheet No: C100

HAWKS LANDING-PRIMARY PLAT - 23369


alewis P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plat\23369-PP--Title.dwg Dec 18, 2025 -- 1:09pm

SEE SHEET C104 FOR CONTINUATION

SEE SHEET C102 FOR CONTINUATION

0 60' 120'

## LEGEND

- T — UNDERGROUND TELEPHONE LINE
- W — UNDERGROUND WATER LINE
- CATV — UNDERGROUND CATV LINE
- G — UNDERGROUND GAS LINE
- OHU — OVERHEAD UTILITY LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EASEMENT LINE
- SECTION LINE
- X — FENCE LINE
- ST — TREE/BUSH LINE
- S — STORM SEWER PIPE
- SANITARY SEWER PIPE
- FLOWLINE
- CABLE STRUCTURE
- FIRE HYDRANT
- WATER METER
- WATER VALVE
- WATER SPIGOT
- ELECTRIC METER
- GUY ANCHOR
- UTILITY POLE
- ELECTRIC BOX
- ELECTRIC TRANSFORMER
- AIR CONDITIONING UNIT
- MAILBOX POST
- SIGN
- STORM SEWER STRUCTURE
- SANITARY SEWER STRUCTURE
- TELEPHONE STRUCTURE
- SEPTIC LID
- LIGHT POLE
- BUSH
- CONIFEROUS TREE
- DECIDUOUS TREE
- 5/8" REBAR SET
- MAGNAIL SET
- EP — EDGE OF PAVEMENT
- D.U. & U.E. — DRAINAGE & UTILITY EASEMENT

TBM #20
CUT SQUARE ON TOP EAST SIDE OF CONCRETE LIGHT POLE BASE. LOCATED APPROXIMATELY 100' SOUTHWEST OF 267 & NORTH ENTRANCE DRIVE TO CONNECTION POINT CHURCH. ON THE SOUTH SIDE OF ENTRANCE DRIVE.
ELEVATION= 895.37'

TBM #21
CUT SQUARE ON NORTHEAST TOP OF CONCRETE LIGHT POLE BASE. +- 800' WEST OF STATE ROAD 267. +- 100' SOUTHEAST OF THE FURTHEST NORTHWEST CORNER OF ASPHALT IN PARKING LOT.
ELEVATION= 890.94

NOTES:

Per 865 IAC 1-12-12 this drawing is not intended to be represented as a retracement or original boundary survey, a route survey, or a Surveyor Location Report.

The topographic information shown hereon was obtained in the field during JULY 2024. The topographic data was gathered using a robotic total station and data collector applying standard radial surveying techniques and by global positioning equipment, utilizing the VRS Network, a real-time kinematic (RTK) correction service over the internet.

Elevations on hard surfaces or structures are accurate to within 0.05 feet, elevations on natural surfaces are accurate to within 0.10 feet. The contours shown hereon were plotted based upon interpolation of spot elevations and other topographic information and are accurate to within one half of a contour interval.

This survey reflects above ground indications of utilities and information available from utility companies. The surveyor makes no guarantee that the underground utilities shown comprise all such utilities in the area, either in service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated, although they are located as accurately as possible from the information available. The surveyor has not physically located the underground utilities.

Indiana 811 Know what's below. Call before you dig.

Revisions | Sym. | Date

Designed: GAF
Drawn: GAF
Checked: AGL/SB
Scale: 1" = 60'
Date: 09-08-2025

# EXISTING TOPOGRAPHY
## HAWKS LANDING
## HENDRICKS COUNTY
## BROWNSBURG, INDIANA

CHAD ZIGLER — REGISTERED — No. PE11200637 — STATE OF INDIANA — PROFESSIONAL ENGINEER
W. Chad Zigler

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN. 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Project No: 23369
Sheet No: C101

olew's P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plot\23369-PP--Topo.dwg Dec 18, 2025 -- 1:09pm

SEE SHEET C104 FOR CONTINUATION




SEE SHEET C103 FOR CONTINUATION

SEE SHEET C101 FOR CONTINUATION

0 60' 120'

LEGEND

| | |
|---|---|
| T | UNDERGROUND TELEPHONE LINE |
| W | UNDERGROUND WATER LINE |
| CATV | UNDERGROUND CATV LINE |
| G | UNDERGROUND GAS LINE |
| OHU | OVERHEAD UTILITY LINE |
| | PROPERTY LINE |
| | RIGHT-OF-WAY LINE |
| | EASEMENT LINE |
| X | SECTION LINE |
| | FENCE LINE |
| ST | TREE/BUSH LINE |
| S | STORM SEWER PIPE |
| | SANITARY SEWER PIPE |
| | FLOWLINE |
| | CABLE STRUCTURE |
| | FIRE HYDRANT |
| | WATER METER |
| | WATER VALVE |
| | WATER SPIGOT |
| | ELECTRIC METER |
| | GUY ANCHOR |
| | UTILITY POLE |
| | ELECTRIC BOX |
| | ELECTRIC TRANSFORMER |
| | AIR CONDITIONING UNIT |
| | MAILBOX POST |
| | SIGN |
| | STORM SEWER STRUCTURE |
| | SANITARY SEWER STRUCTURE |
| | TELEPHONE STRUCTURE |
| | SEPTIC LID |
| | LIGHT POLE |
| | BUSH |
| | CONIFEROUS TREE |
| | DECIDUOUS TREE |
| | 5/8" REBAR SET |
| | MAGNAIL SET |
| EP | EDGE OF PAVEMENT |
| D.U. & U.E. | DRAINAGE & UTILITY EASEMENT |

TBM #20
CUT SQUARE ON TOP EAST SIDE OF CONCRETE LIGHT POLE BASE. LOCATED APPROXIMATELY 100' SOUTHWEST OF 267 & NORTH ENTRANCE DRIVE TO CONNECTION POINT CHURCH. ON THE SOUTH SIDE OF ENTRANCE DRIVE.
ELEVATION= 895.37'

TBM #21
CUT SQUARE ON NORTHEAST TOP OF CONCRETE LIGHT POLE BASE. +- 800' WEST OF STATE ROAD 267. +- 100' SOUTHEAST OF THE FURTHEST NORTHWEST CORNER OF ASPHALT IN PARKING LOT.
ELEVATION= 890.94

NOTES:

Per 865 IAC 1-12-12 this drawing is not intended to be represented as a retracement or original boundary survey, a route survey, or a Surveyor Location Report.

The topographic information shown hereon was obtained in the field during JULY 2024. The topographic data was gathered using a robotic total station and data collector applying standard radial surveying techniques and by global positioning equipment, utilizing the VRS Network, a real-time kinematic (RTK) correction service over the internet.

Elevations on hard surfaces or structures are accurate to within 0.05 feet, elevations on natural surfaces are accurate to within 0.10 feet. The contours shown hereon were plotted based upon interpolation of spot elevations and other topographic information and are accurate to within one half of a contour interval.

This survey reflects above ground indications of utilities and information available from utility companies. The surveyor makes no guarantee that the underground utilities shown comprise all such utilities in the area, either in service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated, although they are located as accurately as possible from the information available. The surveyor has not physically located the underground utilities.

| Sym. | Revisions | Date |
|---|---|---|
| | | |

Designed: GAF
Drawn: GAF
Checked: AGL/SB
Scale: 1" = 60'
Date: 09-08-2025

# EXISTING TOPOGRAPHY
HAWKS LANDING
HENDRICKS COUNTY
BROWNSBURG, INDIANA

COMMONWEALTH OF INDIANA
W. CHAD ZIEGLER
REGISTERED
NO.
PE11200037
STATE
INDIANA
PROFESSIONAL ENGINEER

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN. 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Project No: 23369
Sheet No: C102

Indiana 811 Know what's below. Call before you dig.

dlewis P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plat\23369-PP-Topo.dwg Dec 18, 2025 - 1:09pm

SEE SHEET C102 FOR CONTINUATION




SEE SHEET C101 FOR CONTINUATION

0 60' 120'

## LEGEND

- T — UNDERGROUND TELEPHONE LINE
- W — UNDERGROUND WATER LINE
- CATV — UNDERGROUND CATV LINE
- G — UNDERGROUND GAS LINE
- OHU — OVERHEAD UTILITY LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EASEMENT LINE
- SECTION LINE
- FENCE LINE
- TREE/BUSH LINE
- ST — STORM SEWER PIPE
- S — SANITARY SEWER PIPE
- FLOWLINE
- CABLE STRUCTURE
- FIRE HYDRANT
- WATER METER
- WATER VALVE
- WATER SPIGOT
- ELECTRIC METER
- GUY ANCHOR
- UTILITY POLE
- ELECTRIC BOX
- ELECTRIC TRANSFORMER
- AIR CONDITIONING UNIT
- MAILBOX POST
- SIGN
- STORM SEWER STRUCTURE
- SANITARY SEWER STRUCTURE
- TELEPHONE STRUCTURE
- SEPTIC LID
- LIGHT POLE
- BUSH
- CONIFEROUS TREE
- DECIDUOUS TREE
- 5/8" REBAR SET
- MAGNAIL SET
- EP — EDGE OF PAVEMENT
- D.U. & U.E. — DRAINAGE & UTILITY EASEMENT

TBM #20
CUT SQUARE ON TOP EAST SIDE OF CONCRETE LIGHT POLE BASE. LOCATED APPROXIMATELY 100' SOUTHWEST OF 267 & NORTH ENTRANCE DRIVE TO CONNECTION POINT CHURCH. ON THE SOUTH SIDE OF ENTRANCE DRIVE.
ELEVATION= 895.37'

TBM #21
CUT SQUARE ON NORTHEAST TOP OF CONCRETE LIGHT POLE BASE. +- 800' WEST OF STATE ROAD 267. +- 100' SOUTHEAST OF THE FURTHEST NORTHWEST CORNER OF ASPHALT IN PARKING LOT.
ELEVATION= 890.94

NOTES:

Per 865 IAC 1-12-12 this drawing is not intended to be represented as a retracement or original boundary survey, a route survey, or a Surveyor Location Report.

The topographic information shown hereon was obtained in the field during JULY 2024. The topographic data was gathered using a robotic total station and data collector applying standard radial surveying techniques and by global positioning equipment, utilizing the VRS Network, a real-time kinematic (RTK) correction service over the internet.

Elevations on hard surfaces or structures are accurate to within 0.05 feet, elevations on natural surfaces are accurate to within 0.10 feet. The contours shown hereon were plotted based upon interpolation of spot elevations and other topographic information and are accurate to within one half of a contour interval.

This survey reflects above ground indications of utilities and information available from utility companies. The surveyor makes no guarantee that the underground utilities shown comprise all such utilities in the area, either in service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated, although they are located as accurately as possible from the information available. The surveyor has not physically located the underground utilities.

| Sym. | Revisions | Date |
|---|---|---|
| | | |

Designed: GAF
Drawn: GAF
Checked: AGL/SB
Scale: 1"= 60'
Date: 09-08-2025

# EXISTING TOPOGRAPHY
## HAWKS LANDING
## HENDRICKS COUNTY
## BROWNSBURG, INDIANA

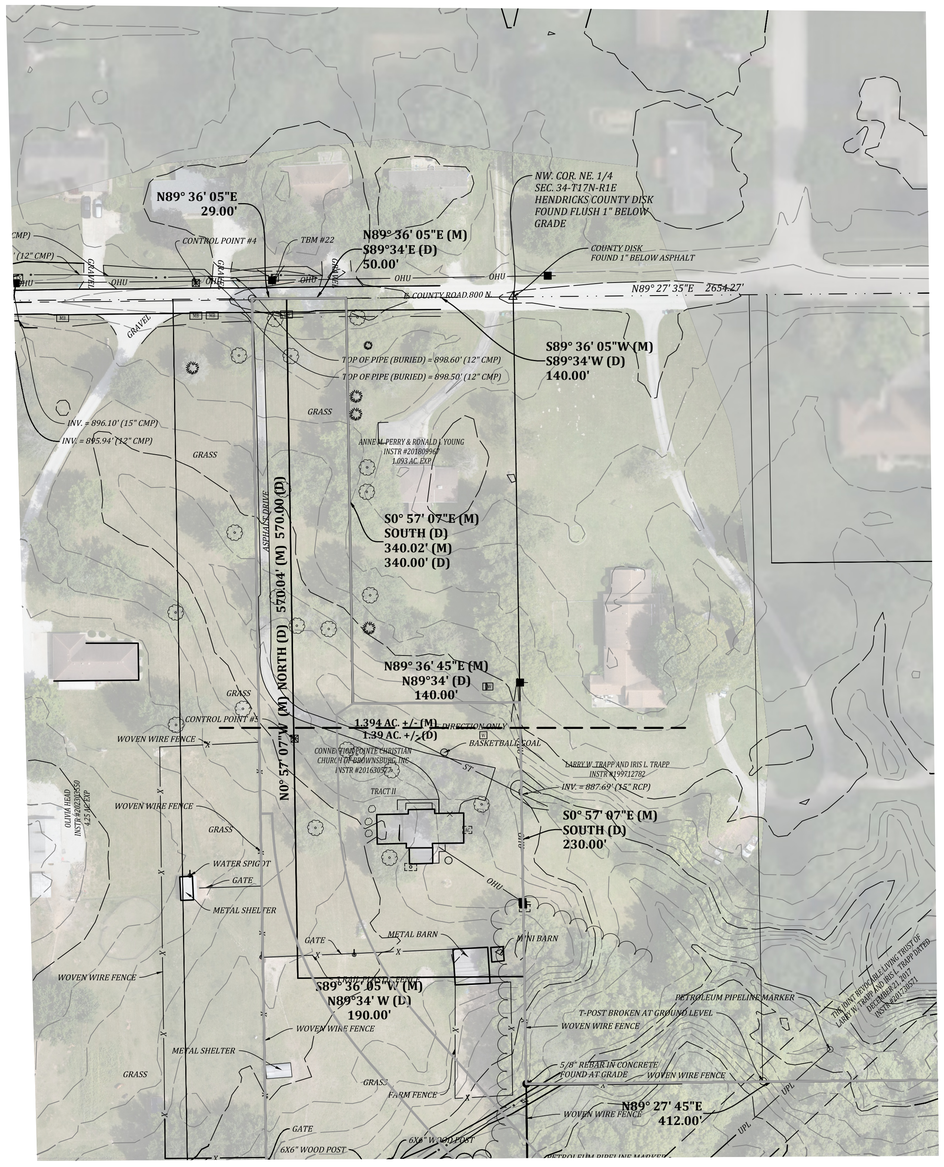
COMMONWEALTH OF INDIANA — W. CHAD ZIEGLER — REGISTERED — NO. PE11200637 — STATE OF INDIANA — PROFESSIONAL ENGINEER

BANNING ENGINEERING
853 COLUMBIA ROAD SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700 FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Indiana 811 — Know what's below. Call before you dig.

Project No: 23369
Sheet No: C103

dalewis P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plat\23369-PP-Topo.dwg Dec 18, 2025 - 1:09pm




SEE SHEET C102 FOR CONTINUATION

LEGEND

- T — UNDERGROUND TELEPHONE LINE
- W — UNDERGROUND WATER LINE
- CATV — UNDERGROUND CATV LINE
- G — UNDERGROUND GAS LINE
- OHU — OVERHEAD UTILITY LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EASEMENT LINE
- SECTION LINE
- X — FENCE LINE
- TREE/BUSH LINE
- ST — STORM SEWER PIPE
- S — SANITARY SEWER PIPE
- FLOWLINE
- CABLE STRUCTURE
- FIRE HYDRANT
- WATER METER
- WATER VALVE
- WATER SPIGOT
- ELECTRIC METER
- GUY ANCHOR
- UTILITY POLE
- ELECTRIC BOX
- ELECTRIC TRANSFORMER
- AIR CONDITIONING UNIT
- MAILBOX POST
- SIGN
- ST — STORM SEWER STRUCTURE
- S — SANITARY SEWER STRUCTURE
- T — TELEPHONE STRUCTURE
- SEPTIC LID
- LIGHT POLE
- BUSH
- CONIFEROUS TREE
- DECIDUOUS TREE
- 5/8" REBAR SET
- MAGNAIL SET
- EP — EDGE OF PAVEMENT
- D.U. & U.E. — DRAINAGE & UTILITY EASEMENT

TBM #20
CUT SQUARE ON TOP EAST SIDE OF CONCRETE LIGHT POLE BASE. LOCATED APPROXIMATELY 100' SOUTHWEST OF 267 & NORTH ENTRANCE DRIVE TO CONNECTION POINT CHURCH. ON THE SOUTH SIDE OF ENTRANCE DRIVE.
ELEVATION= 895.37'

TBM #21
CUT SQUARE ON NORTHEAST TOP OF CONCRETE LIGHT POLE BASE. +- 800' WEST OF STATE ROAD 267. +- 100' SOUTHEAST OF THE FURTHEST NORTHWEST CORNER OF ASPHALT IN PARKING LOT.
ELEVATION= 890.94

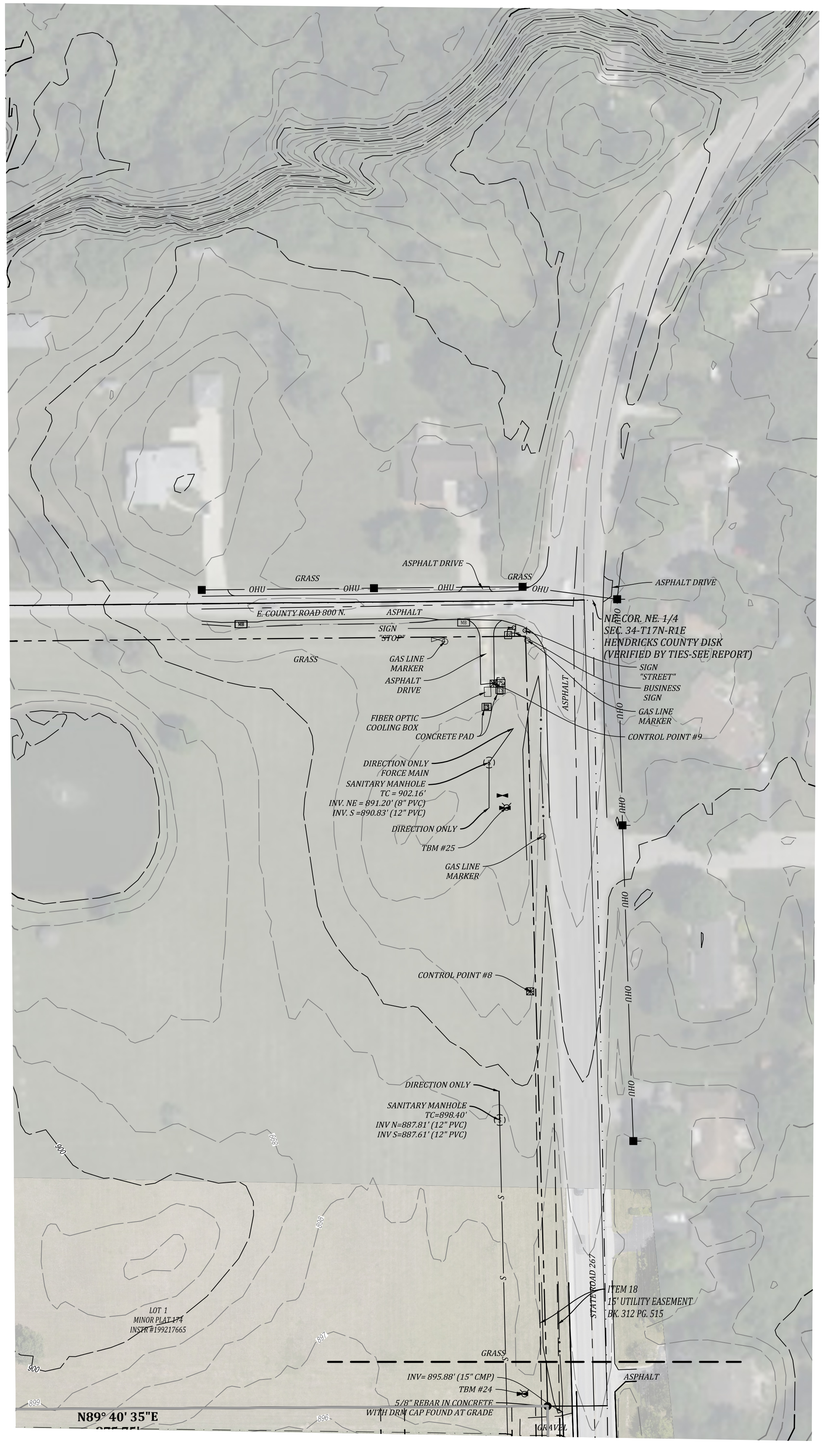
NOTES:

Per 865 IAC 1-12-12 this drawing is not intended to be represented as a retracement or original boundary survey, a route survey, or a Surveyor Location Report.

The topographic information shown hereon was obtained in the field during JULY 2024. The topographic data was gathered using a robotic total station and data collector applying standard radial surveying techniques and by global positioning equipment, utilizing the VRS Network, a real-time kinematic (RTK) correction service over the internet.

Elevations on hard surfaces or structures are accurate to within 0.05 feet, elevations on natural surfaces are accurate to within 0.10 feet. The contours shown hereon were plotted based upon interpolation of spot elevations and other topographic information and are accurate to within one half of a contour interval.

This survey reflects above ground indications of utilities and information available from utility companies. The surveyor makes no guarantee that the underground utilities shown comprise all such utilities in the area, either in service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated, although they are located as accurately as possible from the information available. The surveyor has not physically located the underground utilities.




SEE SHEET C101 FOR CONTINUATION

Indiana 811
Know what's below. Call before you dig.

Revisions

| Sym. | Date |
|---|---|
| | |

Designed: GAF
Drawn: GAF
Checked: AGL/SB
Scale: 1"= 60'
Date: 09-08-2025

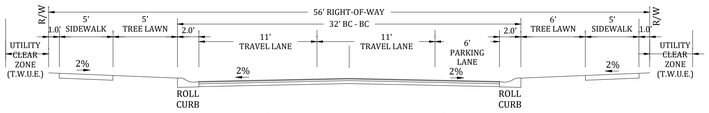
# EXISTING TOPOGRAPHY
## HAWKS LANDING
## HENDRICKS COUNTY
## BROWNSBURG, INDIANA

CHAD ZIEGLER
REGISTERED
NO.
PE11200657
STATE OF
INDIANA
PROFESSIONAL ENGINEER
W. Chad Ziegler

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700 FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Project No: 23369
Sheet No: C104

olewis P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plat\23369--PP--Topo.dwg Dec 18, 2025 - 1:09pm




**TYPICAL LOCAL STREET SECTION**

ALL STREETS PARKING ON ONE SIDE ONLY
NO SCALE

0 60' 120'

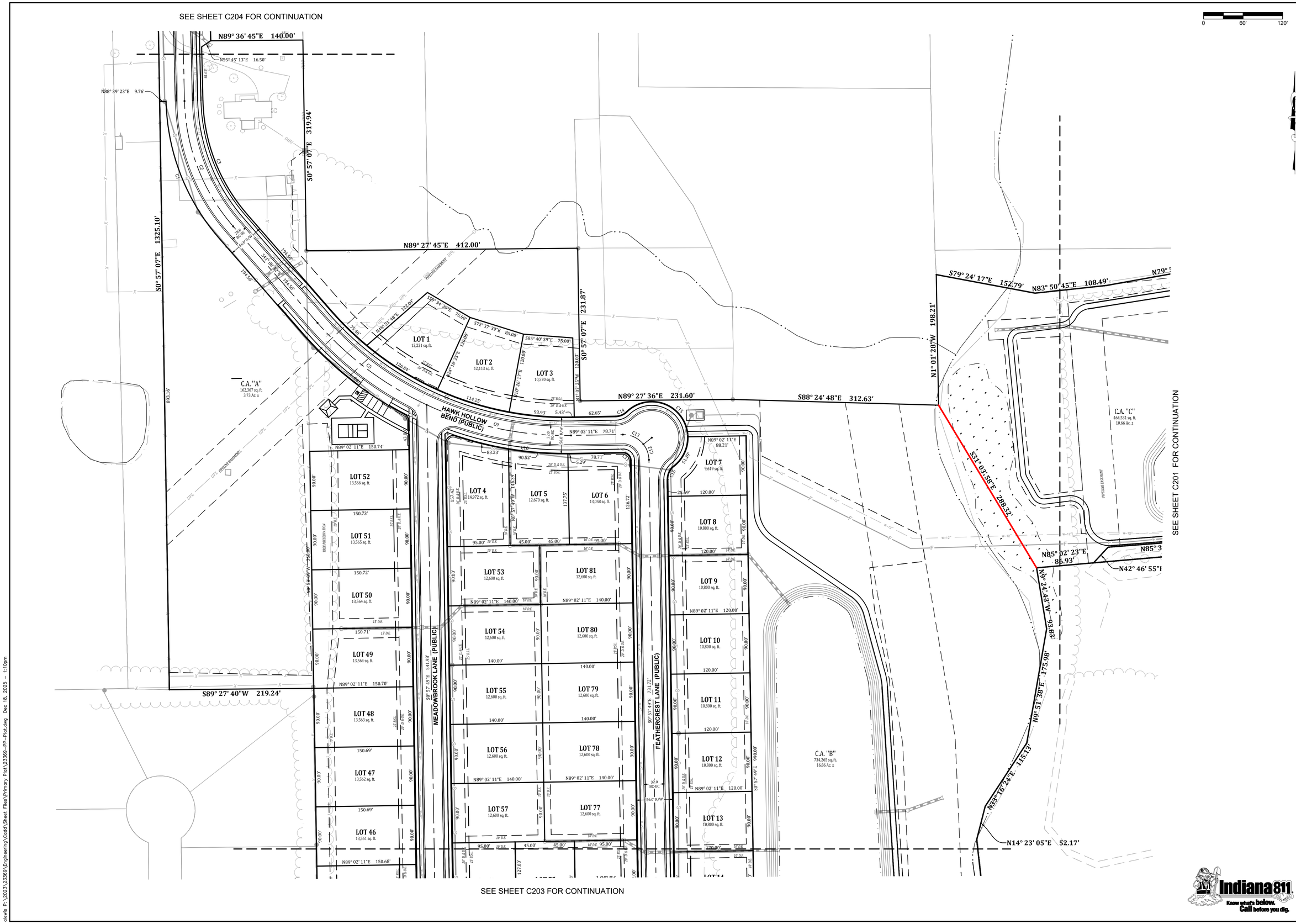
PROPOSED LEGEND

- STORM SEWER PIPE
- STORM SEWER MANHOLE
- STORM SEWER INLETS
- STORM SEWER CURB INLET
- STORM SEWER END-SECTION
- SANITARY SEWER PIPE
- SANITARY SEWER MANHOLE
- SANITARY FORCEMAIN
- WATER MAIN
- STREET LIGHT
- STOP SIGN / STREET SIGN

| | |
|---|---|
| D.E. | DRAINAGE EASEMENT |
| U.E. | UTILITY EASEMENT |
| T.W.U.E. | WATER EASEMENT |
| L.B.E. | LANDSCAPE BUFFER YARD EASEMENT |
| IRR. | IRREGULAR |
| R/W | RIGHT OF WAY |
| B.S.L. | BUILDING SETBACK LINE |
| L.E. | LANDSCAPE EASEMENT |
| sq. ft. | SQUARE FEET |

SEE SHEET C202 FOR CONTINUATION

N89° 40' 35"E 875.75'
N87° 32' 04"E 259.27'
N79° 53' 04"E 260.12'
50' 45"E 108.49'
N89° 40' 34"E 396.85'
N83° 27' 07"E 244.23'
PIPELINE EASEMENT
STATE ROAD 267
SUNNY HOLLOW COURT (PUBLIC)
N88° 41' 38"E 410.56'
N88° 41' 38"E 150.02'
S1° 18' 22"E 7.09'
HORIZON BEND (PUBLIC)
WINGHAVEN WAY (PUBLIC)
CONNECTION POINTE DRIVE (PUBLIC)
HICKORY ROAD
ACRE LANE
C.A. "C" 464,531 sq. ft. 10.66 Ac. ±
C.A. "D" 42,100 sq. ft. 0.97 Ac. ±
LOT 82 10,036 sq. ft.
LOT 83 10,454 sq. ft.
LOT 84 11,042 sq. ft.
LOT 85 11,308 sq. ft.
LOT 86 11,198 sq. ft.
LOT 87 11,089 sq. ft.
LOT 88 10,979 sq. ft.
LOT 89 10,869 sq. ft.
LOT 90 13,037 sq. ft.
LOT 91 13,660 sq. ft.
LOT 92 13,289 sq. ft.
LOT 93 13,327 sq. ft.
LOT 94 11,868 sq. ft.
LOT 95 9,427 sq. ft.
LOT 96 9,397 sq. ft.
LOT 97 10,825 sq. ft.
LOT 98 11,633 sq. ft.
LOT 99 11,633 sq. ft.
LOT 100 11,633 sq. ft.
LOT 101 10,682 sq. ft.
LOT 102 9,520 sq. ft.
LOT 103 9,520 sq. ft.
LOT 104 9,520 sq. ft.
LOT 105 9,477 sq. ft.
N1° 18' 22"W 134.18'
N85° 35' 58"E 245.53'
N85° 02' 23"E 86.93'
N42° 46' 55"E 32.48'
N72° 55' 59"W 51.83'
N85° 02' 23"E 319.12'
N26° 19' 37"W 215.00'
N70° 10' 15"W 265.51'
S89° 24' 07"W 72.46'
N0° 35' 53"W 216.72'
S1° 01' 28"E 646.93'
S1° 01' 28"E 212.84'
S88° 41' 38"W 226.89'
N88° 41' 38"E 276.32'
S88° 44' 35"W 338.22'
N89° 24' 12"E 10.00'
S88° 41' 38"W 399.62'
S61° 50' 10"W 31.69'
N88° 57' 33"E 167.69'
S88° 57' 33"W 118.02'
S88° 57' 33"W 117.26'
S14° 29' 33"E 11.88'
S73° 07' 26"W 132.15'
S14° 17' 06"W 135.61'
S35° 04' 04"W 131.09'
S52° 39' 22"W 130.11'
S51° 18' 22"E 135.18'
S51° 18' 22"E 119.81'
S51° 18' 22"E 140.69'
S51° 18' 22"E 141.09'
S51° 18' 22"E 135.18'
S51° 18' 22"E 119.00'
S51° 18' 22"E 119.00'
S51° 18' 22"E 119.00




| Sym. | Revisions | Date |
|---|---|---|

Designed: GAF
Drawn: GAF
Checked: AGL/SB
Scale: 1"= 60'
Date: 09-08-2025

# PRIMARY PLAT
# HAWKS LANDING
# HENDRICKS COUNTY
# BROWNSBURG, INDIANA

CHANDLER A. HARDEN
REGISTERED
No. 22300025
STATE OF INDIANA
LAND SURVEYOR
Chandler Harden

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Indiana 811
Know what's below. Call before you dig.

Project No: 23369
Sheet No: C201

alewis P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plat\23369-PP-Plat.dwg Dec 18, 2025 - 1:10pm

SEE SHEET C202 FOR CONTINUATION

SEE SHEET C201 FOR CONTINUATION

0 60' 120'

WINDJAMMER CT.

WINDJAMMER WAY

WINDJAMMER DR.

WINDJAMMER COURT (PUBLIC)

FEATHERCREST LANE (PUBLIC)

MEADOWBROOK LANE (PUBLIC)

HAWKEYE CIRCLE (PUBLIC)

SKYHAVEN DRIVE (PUBLIC)

LOT 46 13,561 sq. ft.
LOT 45 14,311 sq. ft.
LOT 44 14,267 sq. ft.
LOT 43 13,559 sq. ft.
LOT 42 13,558 sq. ft.
LOT 41 13,557 sq. ft.
LOT 40 13,556 sq. ft.
LOT 39 13,556 sq. ft.
LOT 38 13,555 sq. ft.
LOT 37 12,398 sq. ft.
LOT 36 22,918 sq. ft.
LOT 35 14,727 sq. ft.
LOT 34 12,785 sq. ft.
LOT 33 12,852 sq. ft.
LOT 32 12,209 sq. ft.
LOT 31 15,706 sq. ft.
LOT 30 13,631 sq. ft.
LOT 29 13,334 sq. ft.
LOT 28 13,222 sq. ft.
LOT 27 10,752 sq. ft.
LOT 26 10,800 sq. ft.
LOT 25 10,800 sq. ft.
LOT 24 10,939 sq. ft.
LOT 23 11,370 sq. ft.
LOT 22 10,759 sq. ft.
LOT 21 12,364 sq. ft.
LOT 20 10,878 sq. ft.
LOT 19 10,800 sq. ft.
LOT 18 10,753 sq. ft.
LOT 17 10,800 sq. ft.
LOT 16 10,800 sq. ft.
LOT 15 10,800 sq. ft.
LOT 14 10,800 sq. ft.
LOT 58 12,017 sq. ft.
LOT 75 11,430 sq. ft.
LOT 76 12,017 sq. ft.
LOT 59 11,827 sq. ft.
LOT 74 11,250 sq. ft.
LOT 73 11,827 sq. ft.
LOT 60 12,600 sq. ft.
LOT 72 12,600 sq. ft.
LOT 61 12,600 sq. ft.
LOT 71 12,600 sq. ft.
LOT 62 13,776 sq. ft.
LOT 70 13,776 sq. ft.
LOT 63 12,600 sq. ft.
LOT 69 12,600 sq. ft.
LOT 64 12,600 sq. ft.
LOT 68 12,600 sq. ft.
LOT 65 11,849 sq. ft.
LOT 66 11,250 sq. ft.
LOT 67 11,849 sq. ft.

S0° 58' 09"E 1325.43'
N89° 02' 11"E 150.68'
S89° 02' 11"W 178.67'
N89° 02' 11"E 336.00'
N0° 57' 49"W 392.28'
S0° 57' 49"E 684.40'
N89° 02' 17"E 414.70'
N14° 23' 05"E 52.17'
N6° 22' 20"W 231.47'
N22° 37' 52"W 242.02'
N0° 39' 59"W 222.70'
N18° 37' 14"W 255.48'
N22° 07' 00"W 179.89'
N89° 30' 41"E 1254.85'

PRIMARY PLAT
HAWKS LANDING
HENDRICKS COUNTY
BROWNSBURG, INDIANA

| Sym. | Revisions | Date |
|---|---|---|
| | | |

Designed: GAF
Drawn: GAF
Checked: AGL/SB
Scale: 1" = 60'
Date: 09-08-2025

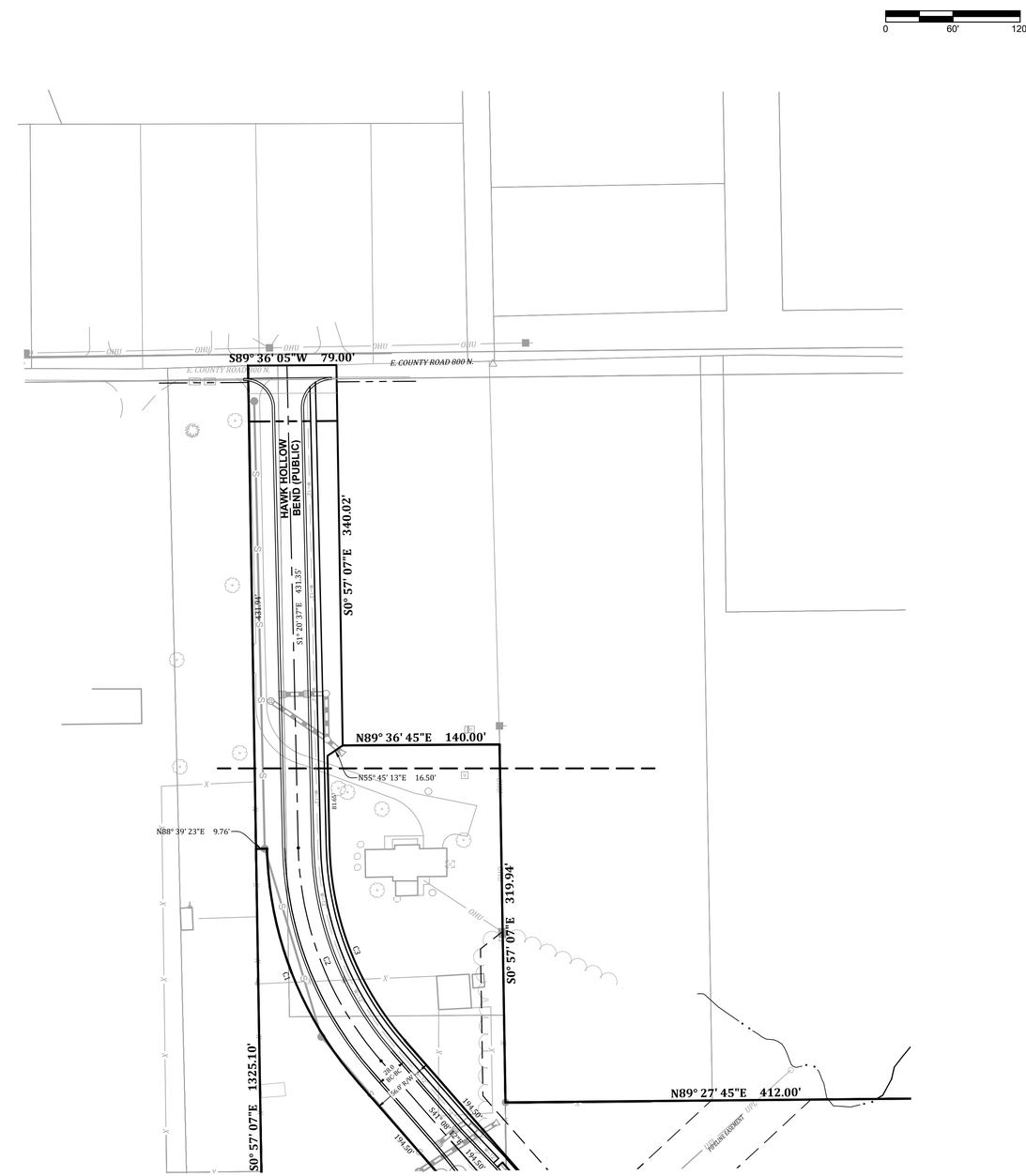
CHANDLER A. HARDEN
REGISTERED
NO.
22300021
STATE OF
INDIANA
LAND SURVEYOR
Chandler Harden

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN. 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Project No: 23369
Sheet No: C202

Indiana 811 Know what's below. Call before you dig.

dlewis P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plat\23369--PP--Plat.dwg Dec 18, 2025 -- 1:10pm




SEE SHEET C202 FOR CONTINUATION

Indiana 811
Know what's below. Call before you dig.

| Sym. | Revisions | Date |
|---|---|---|
| | | |

Designed: GAF
Drawn: GAF
Checked: AGL/SB
Scale: 1"= 60'
Date: 09-08-2025

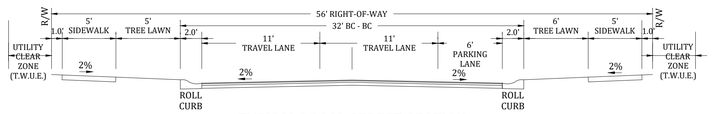
# PRIMARY PLAT
# HAWKS LANDING
# HENDRICKS COUNTY
# BROWNSBURG, INDIANA

CHANDLER A. HARDEN
REGISTERED
No. 22300025
STATE OF INDIANA
LAND SURVEYOR
Chandler Harden


BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com


Project No: 23369
Sheet No: C203

alewis P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plat\23369-PP-Plat.dwg Dec 18, 2025 - 1:10pm




**TYPICAL LOCAL STREET SECTION**

ALL STREETS PARKING ON ONE SIDE ONLY
NO SCALE

0 60' 120'

PROPOSED LEGEND

- STORM SEWER PIPE
- STORM SEWER MANHOLE
- STORM SEWER INLETS
- STORM SEWER CURB INLET
- STORM SEWER END-SECTION
- SANITARY SEWER PIPE
- SANITARY SEWER MANHOLE
- SANITARY FORCEMAIN
- WATER MAIN
- STREET LIGHT
- STOP SIGN / STREET SIGN

| | |
|---|---|
| D.E. | DRAINAGE EASEMENT |
| U.E. | UTILITY EASEMENT |
| T.W.U.E. | WATER EASEMENT |
| L.B.E. | LANDSCAPE BUFFER YARD EASEMENT |
| IRR. | IRREGULAR |
| R/W | RIGHT OF WAY |
| B.S.L. | BUILDING SETBACK LINE |
| L.E. | LANDSCAPE EASEMENT |
| sq. ft. | SQUARE FEET |

SEE SHEET C304 FOR CONTINUATION

SEE SHEET C302 FOR CONTINUATION

LOT 82 10,036 sq. ft.
LOT 83 10,454 sq. ft.
LOT 84 11,042 sq. ft.
LOT 85 11,308 sq. ft.
LOT 86 11,198 sq. ft.
LOT 87 11,089 sq. ft.
LOT 88 10,979 sq. ft.
LOT 89 10,869 sq. ft.
LOT 90 13,037 sq. ft.
LOT 91 13,660 sq. ft.
LOT 92 13,289 sq. ft.
LOT 93 13,327 sq. ft.
LOT 94 11,868 sq. ft.
LOT 95 9,427 sq. ft.
LOT 96 9,397 sq. ft.
LOT 97 10,825 sq. ft.
LOT 98 11,633 sq. ft.
LOT 99 11,833 sq. ft.
LOT 100 11,633 sq. ft.
LOT 101 10,682 sq. ft.
LOT 102 9,528 sq. ft.
LOT 103 9,520 sq. ft.
LOT 104 9,520 sq. ft.
LOT 105 9,477 sq. ft.
C.A. "C" 464,531 sq. ft. 10.66 Ac. ±
C.A. "D" 42,100 sq. ft. 0.97 Ac. ±

SUNNY HOLLOW COURT (PUBLIC)
HORIZON BEND (PUBLIC)
WINGHAVEN WAY (PUBLIC)
CONNECTION POINTE DRIVE (PUBLIC)
STATE ROAD 267

PROPOSED POND

TIE INTO EXISTING SANITARY SEWER HERE

TIE INTO EXISTING WATER MAIN HERE

PIPELINE EASEMENT

Indiana 811 Know what's below. Call before you dig.

| Designed: | GAF |
|---|---|
| Drawn: | GAF |
| Checked: | AGL/SB |
| Scale: | 1" = 60' |
| Date: | 09-08-2025 |

| Sym. | Revisions | Date |
|---|---|---|
| | | |

UTILITY PLAN
HAWKS LANDING
HENDRICKS COUNTY
BROWNSBURG, INDIANA

COMMERCIAL DEVELOPMENT

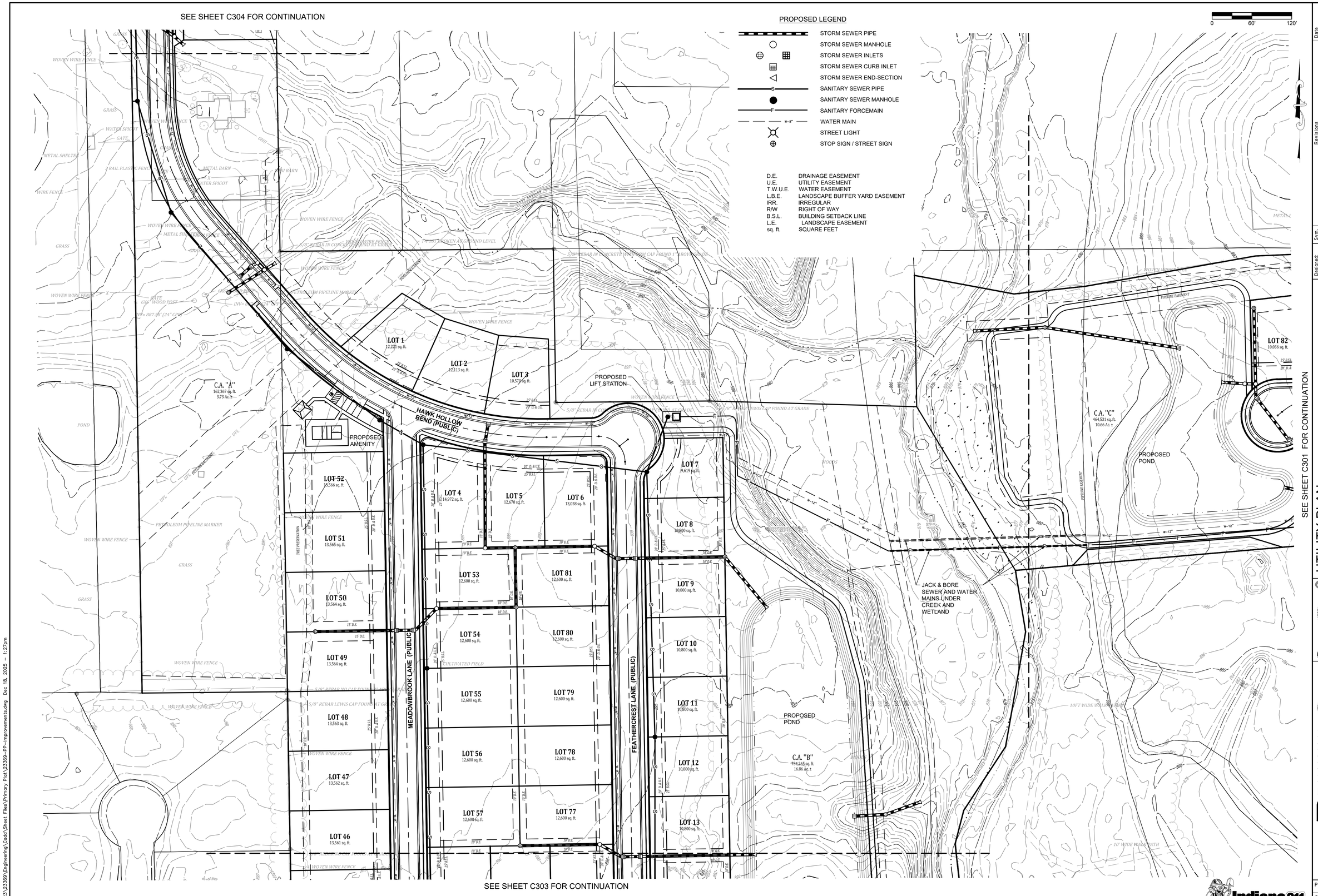
W. CHAD ZIEGLER — REGISTERED — LICENSED — PE11300657 — STATE OF — INDIANA — PROFESSIONAL ENGINEER

W. Chad Ziegler

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Project No: 23369
Sheet No: C300

dlewis P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plot\23369--PP--Improvements.dwg Dec 18, 2025 - 1:23pm




Indiana 811 Know what's below. Call before you dig.

| Sym. | Revisions | Date |
|---|---|---|

Designed: GAF
Drawn: GAF
Checked: AGL/SB
Scale: 1"= 60'
Date: 09-08-2025

# UTILITY PLAN
# HAWKS LANDING
# HENDRICKS COUNTY
# BROWNSBURG, INDIANA

W. CHAD ZIEGLER REGISTERED PROFESSIONAL ENGINEER PE11200667 STATE OF INDIANA

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Project No: 23369
Sheet No: C301

alewis P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plat\23369-PP-Improvements.dwg Dec 18, 2025 - 1:27pm

SEE SHEET C302 FOR CONTINUATION

SEE SHEET C301 FOR CONTINUATION

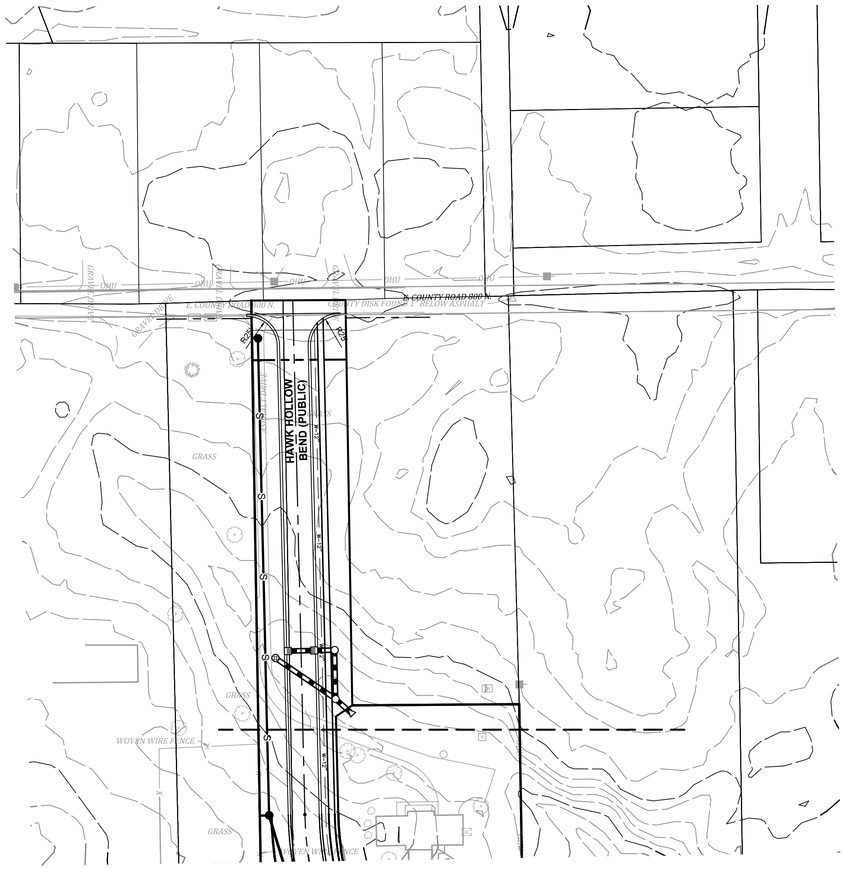
0 60' 120'

## PROPOSED LEGEND

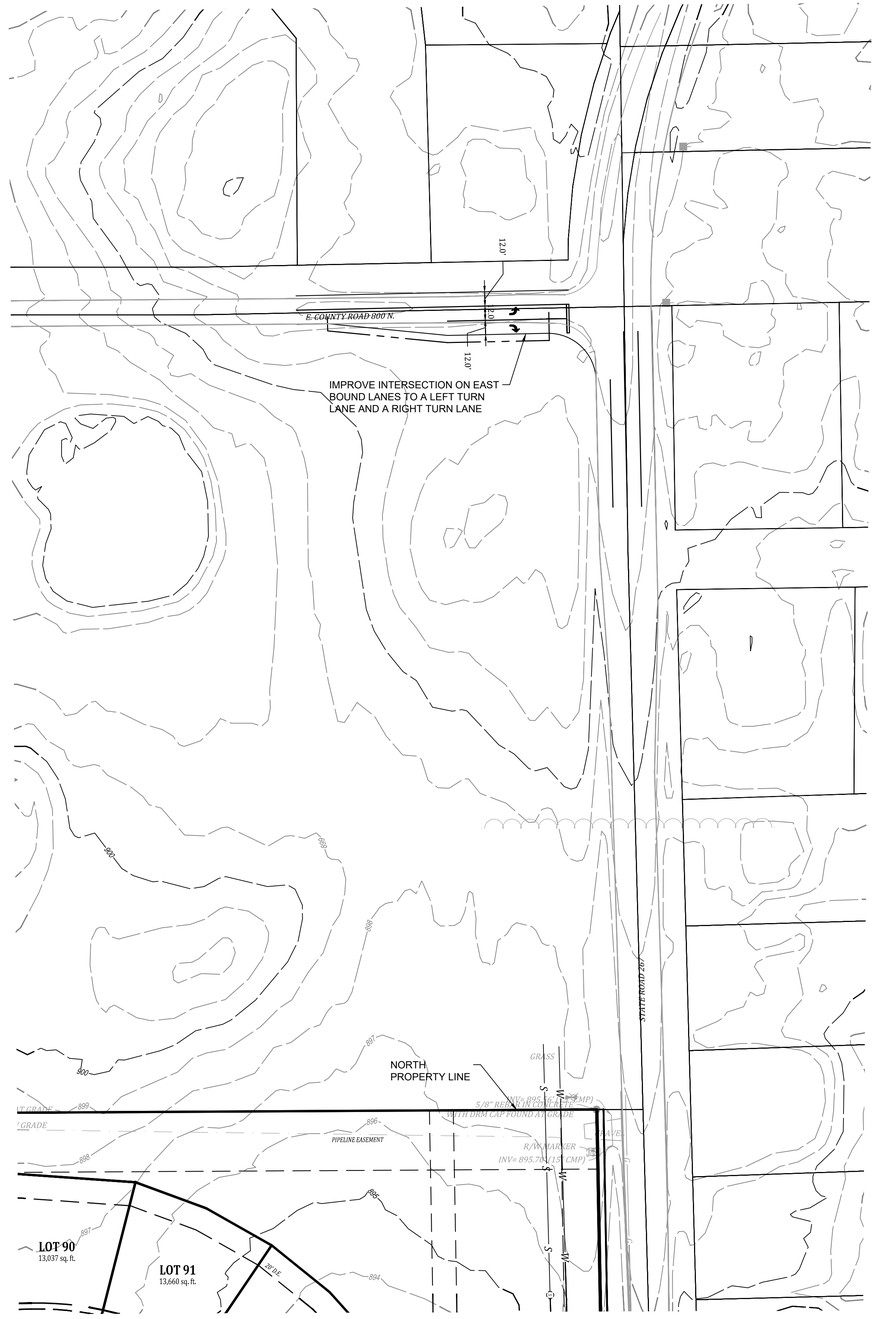
- STORM SEWER PIPE
- STORM SEWER MANHOLE
- STORM SEWER INLETS
- STORM SEWER CURB INLET
- STORM SEWER END-SECTION
- SANITARY SEWER PIPE
- SANITARY SEWER MANHOLE
- SANITARY FORCEMAIN
- WATER MAIN
- STREET LIGHT
- STOP SIGN / STREET SIGN

| | |
|---|---|
| D.E. | DRAINAGE EASEMENT |
| U.E. | UTILITY EASEMENT |
| T.W.U.E. | WATER EASEMENT |
| L.B.E. | LANDSCAPE BUFFER YARD EASEMENT |
| IRR. | IRREGULAR |
| R/W | RIGHT OF WAY |
| B.S.L. | BUILDING SETBACK LINE |
| L.E. | LANDSCAPE EASEMENT |
| sq. ft. | SQUARE FEET |

WINDJAMMER COURT (PUBLIC)
MEADOWBROOK LANE (PUBLIC)
FEATHERCREST LANE (PUBLIC)
HAWKEYE CIRCLE (PUBLIC)
SKYHAVEN DRIVE (PUBLIC)
WINDJAMMER CT.
WINDJAMMER DR.
WINDJAMMER WAY
PROPOSED POND
PROPOSED POND
WOODS
WOODS
WOODS
LOT 46 13,561 sq. ft.
LOT 45 14,311 sq. ft.
LOT 44 14,267 sq. ft.
LOT 43 13,559 sq. ft.
LOT 42 13,558 sq. ft.
LOT 41 13,557 sq. ft.
LOT 40 13,556 sq. ft.
LOT 39 13,556 sq. ft.
LOT 38 13,555 sq. ft.
LOT 37 12,398 sq. ft.
LOT 36 22,918 sq. ft.
LOT 35 14,727 sq. ft.
LOT 58 12,017 sq. ft.
LOT 75 11,430 sq. ft.
LOT 76 12,017 sq. ft.
LOT 59 11,827 sq. ft.
LOT 74 11,250 sq. ft.
LOT 73 11,827 sq. ft.
LOT 60 12,600 sq. ft.
LOT 72 12,600 sq. ft.
LOT 61 12,600 sq. ft.
LOT 71 12,600 sq. ft.
LOT 62 13,776 sq. ft.
LOT 70 13,776 sq. ft.
LOT 63 12,600 sq. ft.
LOT 69 12,600 sq. ft.
LOT 64 12,600 sq. ft.
LOT 68 12,600 sq. ft.
LOT 65 11,849 sq. ft.
LOT 66 11,250 sq. ft.
LOT 67 11,849 sq. ft.
LOT 34 12,785 sq. ft.
LOT 33 12,082 sq. ft.
LOT 32 12,209 sq. ft.
LOT 31 15,706 sq. ft.
LOT 13 10,800 sq. ft.
LOT 14 10,800 sq. ft.
LOT 15 10,800 sq. ft.
LOT 16 10,800 sq. ft.
LOT 17 10,800 sq. ft.
LOT 18 10,753 sq. ft.
LOT 19 10,800 sq. ft.
LOT 20 10,878 sq. ft.
LOT 21 12,364 sq. ft.
LOT 22 10,759 sq. ft.
LOT 27 10,752 sq. ft.
LOT 26 10,800 sq. ft.
LOT 25 10,800 sq. ft.
LOT 24 10,959 sq. ft.
LOT 23 11,310 sq. ft.
LOT 28 13,222 sq. ft.
LOT 29 13,134 sq. ft.
LOT 30 13,634 sq. ft.
5/8" REBAR LEWIS CAP FOUND 1" ABOVE GRADE
5/8" REBAR LEWIS CAP FOUND 1" BELOW GRADE
5/8" REBAR LEWIS CAP FOUND AT GRADE
5/8" REBAR LEWIS FOUND 1" ABOVE GRADE
5/8" REBAR LEWIS CAP FOUND 1" ABOVE GRADE
5/8" REBAR IN 4"X4" CONCRETE MONUMENT FOUND AT GRADE
5/8" REBAR NO CAP FOUND 2" ABOVE GRADE
5/8" REBAR NO CAP FOUND 1" BELOW GRADE
5/8" REBAR NO CAP FOUND 2" ABOVE GRADE
4' WOVEN WIRE FENCE
4' WOVEN WIRE FENCE
4' WOVEN WIRE FENC




SEE SHEET C302 FOR CONTINUATION




SEE SHEET C301 FOR CONTINUATION

PROPOSED LEGEND

- STORM SEWER PIPE
- STORM SEWER MANHOLE
- STORM SEWER INLETS
- STORM SEWER CURB INLET
- STORM SEWER END-SECTION
- SANITARY SEWER PIPE
- SANITARY SEWER MANHOLE
- SANITARY FORCEMAIN
- WATER MAIN
- STREET LIGHT
- STOP SIGN / STREET SIGN

| | |
|---|---|
| D.E. | DRAINAGE EASEMENT |
| U.E. | UTILITY EASEMENT |
| T.W.U.E. | WATER EASEMENT |
| L.B.E. | LANDSCAPE BUFFER YARD EASEMENT |
| IRR. | IRREGULAR |
| R/W | RIGHT OF WAY |
| B.S.L. | BUILDING SETBACK LINE |
| L.E. | LANDSCAPE EASEMENT |
| sq. ft. | SQUARE FEET |

Indiana 811. Know what's below. Call before you dig.

Date | Sym. | Revisions

Designed: GAF
Drawn: GAF
Checked: AGI,SB
Scale: 1"= 60'
Date: 09-08-2025

UTILITY PLAN
HAWKS LANDING
HENDRICKS COUNTY
BROWNSBURG, INDIANA

W. CHAD ZIEGLER — REGISTERED No. PE11200657 — STATE OF INDIANA — PROFESSIONAL ENGINEER
COPYRIGHT ©

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN. 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Project No: 23369
Sheet No: C303

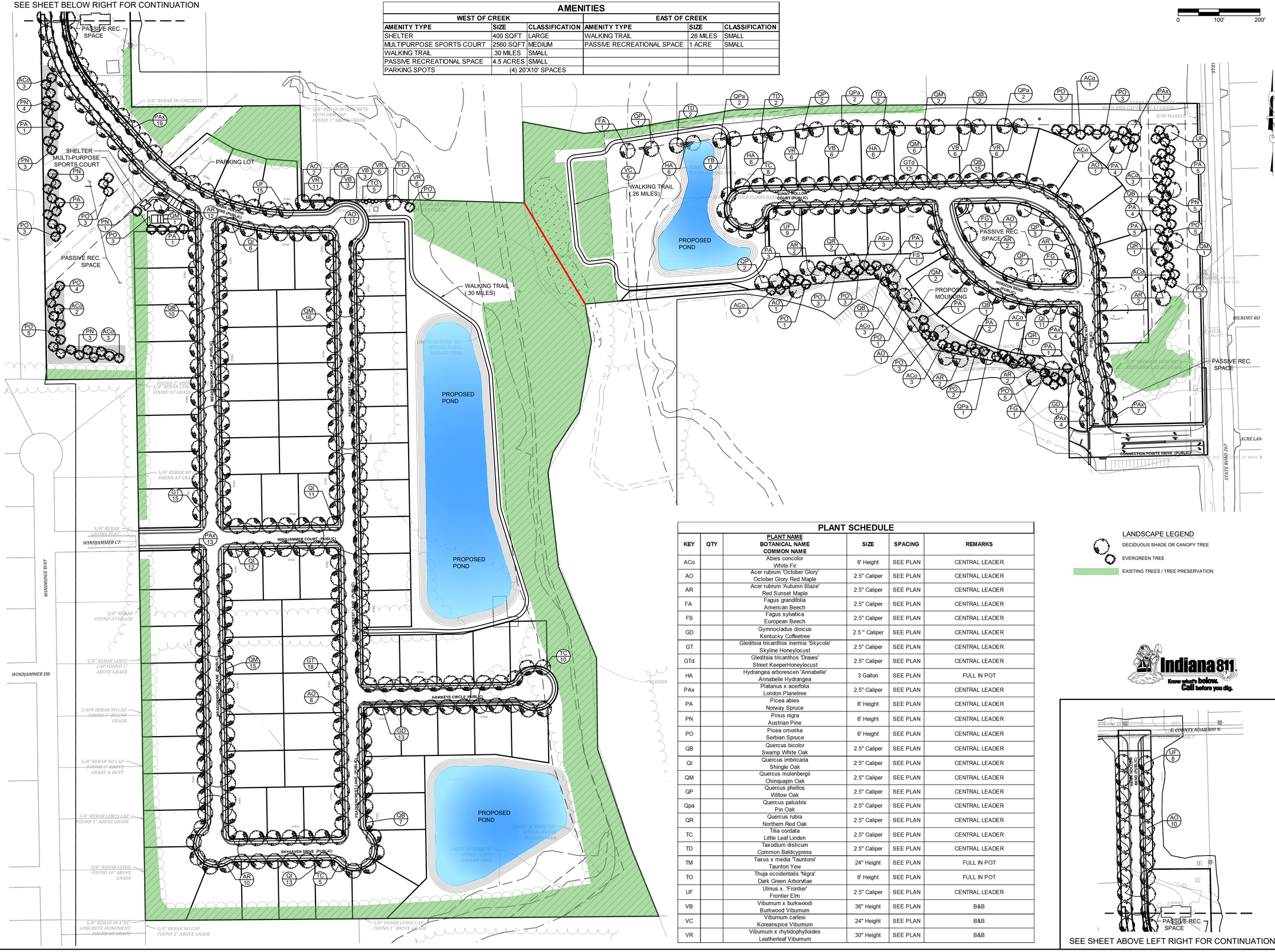
olewis P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plot\23369-PP--improvements.dwg Dec 18, 2025 - 1:24pm

SEE SHEET BELOW RIGHT FOR CONTINUATION

## AMENITIES

| WEST OF CREEK | | | EAST OF CREEK | | |
|---|---|---|---|---|---|
| AMENITY TYPE | SIZE | CLASSIFICATION | AMENITY TYPE | SIZE | CLASSIFICATION |
| SHELTER | 400 SQFT | LARGE | WALKING TRAIL | .26 MILES | SMALL |
| MULTIPURPOSE SPORTS COURT | 2560 SQFT | MEDIUM | PASSIVE RECREATIONAL SPACE | 1 ACRE | SMALL |
| WALKING TRAIL | .30 MILES | SMALL | | | |
| PASSIVE RECREATIONAL SPACE | 4.5 ACRES | SMALL | | | |
| PARKING SPOTS | (4) 20'X10' SPACES | | | | |

0 100' 200'




## PLANT SCHEDULE

| KEY | QTY | PLANT NAME<br>BOTANICAL NAME<br>COMMON NAME | SIZE | SPACING | REMARKS |
|---|---|---|---|---|---|
| ACo | | Abies concolor<br>White Fir | 6' Height | SEE PLAN | CENTRAL LEADER |
| AO | | Acer rubrum 'October Glory'<br>October Glory Red Maple | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| AR | | Acer rubrum 'Autumn Blaze'<br>Red Sunset Maple | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| FA | | Fagus grandifolia<br>American Beech | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| FS | | Fagus sylvatica<br>European Beech | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| GD | | Gymnocladus dioicus<br>Kentucky Coffeetree | 2.5 " Caliper | SEE PLAN | CENTRAL LEADER |
| GT | | Gleditsia tricanthos inermis 'Skycole'<br>Skyline Honeylocust | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| GTd | | Gleditsia tricanthos 'Draves'<br>Street KeeperHoneylocust | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| HA | | Hydrangea arborescen 'Annabelle'<br>Annabelle Hydrangea | 3 Gallon | SEE PLAN | FULL IN POT |
| PAx | | Platanus x acerfolia<br>London Planetree | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| PA | | Picea abies<br>Norway Spruce | 6' Height | SEE PLAN | CENTRAL LEADER |
| PN | | Pinus nigra<br>Austrian Pine | 6' Height | SEE PLAN | CENTRAL LEADER |
| PO | | Picea omorika<br>Serbian Spruce | 6' Height | SEE PLAN | CENTRAL LEADER |
| QB | | Quercus bicolor<br>Swamp White Oak | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| QI | | Quercus imbricaria<br>Shingle Oak | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| QM | | Quercus mulenbergii<br>Chinquapin Oak | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| QP | | Quercus phellos<br>Willow Oak | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| Qpa | | Quercus palustris<br>Pin Oak | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| QR | | Quercus rubra<br>Northern Red Oak | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| TC | | Tilia cordata<br>Little Leaf Linden | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| TD | | Taxodium disticum<br>Common Baldcypress | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| TM | | Taxus x media 'Tauntonii'<br>Taunton Yew | 24" Height | SEE PLAN | FULL IN POT |
| TO | | Thuja occidentalis 'Nigra'<br>Dark Green Arborvtae | 6' Height | SEE PLAN | FULL IN POT |
| UF | | Ulmus x. 'Frontier'<br>Frontier Elm | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| VB | | Vibumum x burkwoodi<br>Burkwood Vibumum | 36" Height | SEE PLAN | B&B |
| VC | | Viburnum carlesi<br>Koreanspice Viburnum | 24" Height | SEE PLAN | B&B |
| VR | | Vibumum x rhytidophylloides<br>Leatherleaf Vibumum | 30" Height | SEE PLAN | B&B |

### LANDSCAPE LEGEND

- DECIDUOUS SHADE OR CANOPY TREE
- EVERGREEN TREE
- EXISTING TREES / TREE PRESERVATION

Indiana 811 Know what's below. Call before you dig.




SEE SHEET ABOVE LEFT RIGHT FOR CONTINUATION

Date | Sym. | Revisions

Designed: GAF
Drawn: GAF
Checked: AGL/SB
Scale: 1"= 100'
Date: 09-08-2025

# AMENITIES & LANDSCAPING PLAN
HAWKS LANDING
HENDRICKS COUNTY
BROWNSBURG, INDIANA

CHAD ZIEGLER REGISTERED No. PE11200627 STATE OF INDIANA PROFESSIONAL ENGINEER
W. Chad Ziegler


BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com


Project No: 23369
Sheet No: C400

olewis P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plat\23369--PP--Landscoping--All.dwg Dec 18, 2025 - 1:25pm

## *LANDSCAPE SPECIFICATIONS*

GENERAL NOTES:

1. STREET TREES MAY BE PLANTED WHERE SUFFICIENT LANDSCAPE AREA IS PROVIDED BETWEEN THE CURB AND SIDEWALK OR IN A STREET MEDIAM. STREET TREE PLACEMENT SHOULD NOT INTERFERE WITH UTILITY LOCATIONS. WHERE STREET TREES ARE PROPOSED NEAR OR UTILITY LINES, APPROVAL MUST BE OBTAINED IN WRITING FROM IMPACTED UTILITIES PRIOR TO APPROVAL OF THE LANDSCAPE PLAN.

A. STREET TREES TO BE SPACED APPROXIMATELY 35 FEET ON CENTER. THE TYPE OF TREE SELECTED MUST HAVE AN APPROPRIATE MATURE HEIGHT AND ROOT SYSTEM TO MINIMIZE FUTURE DAMAGE AND OBSTRUCTION TO THE SIDEWALK.

B. STREET TREES MAY BE COUNTED TOWARD ANY STREET FRONTAGE OR LOT LANDSCAPING REQUIREMENT.

**Table 5-3: Required Buffer Level Matrix**

| | INCOMING USE | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Existing Use** | Single Detached Home | Duplex | Triplex or Quadplex | Townhomes | Apartments | Commercial | Industrial/ Motorsports | Institutional |
| Agriculture | Low | Low | Low | Low | Low | Moderate | Moderate | Moderate |
| SF Detached Home | Low | Low | Low | Moderate | High | High | High | Moderate |
| Duplex | Low | Low | Low | Moderate | High | High | High | Moderate |
| Triplex or Quadplex | Low | Low | Low | Low | Moderate | High | High | Moderate |
| Townhomes | Low | Low | Low | Low | Moderate | High | High | Moderate |
| Apartments | Moderate | Moderate | Moderate | Low | Low | Moderate | High | Low |
| Commercial | High | Moderate | Moderate | Moderate | Moderate | None | None | Low |
| Industrial | High | High | High | High | High | None | None | Low |
| Institutional | Low | Low | Low | Low | Low | Moderate | Moderate | None |

**Table 5-4: Low Intensity Buffer**

| | OPTION 1 BASE STANDARD | OPTION 2 FENCE/WALL | OPTION 3 VEGETATIVE SCREEN |
|---|---|---|---|
| Buffer Width (min.) | 10' | 5' | 8' |
| Tree Planting (min.) | 1 shade, or evergreen tree per 50 linear feet | n/a | n/a |
| Shrub Planting (min.) | 3 large shrubs per 50 linear feet | n/a | Continuous planting at least 6' high and 50% opacity |
| Fence/Wall (min.) | n/a | 6' high 50% opacity | n/a |

**NORTH PERIMETER PROPERTY LINE**
**LANDSCAPE PLANTINGS**
**LEVEL LOW LANDSCAPE PLANTING**
1 CANOPY, 1 EVERGREEN TREE OR
1 EXISTING TREES / 50'
3 SHRUBS / 50'

| Location | Plant No. per 50' | Type of Plant | LANDSCAPE CLASSIFICATION LOW |
|---|---|---|---|
| N1 | 0<br>0 | CANOPY TREE<br>SHRUBS | LOW CLASSIFICATION SHOWN ON PLAN |
| N2 | 0<br>0 | CANOPY TREE<br>SHRUBS | LOW CLASSIFICATION SHOWN ON PLAN |
| N3 | 3 | EVERGREEN TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| N4 | 3 | EVERGREEN TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| N5 | 3 | EVERGREEN TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| N6 | 3 | EVERGREEN TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| N7 | 3 | EVERGREEN TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| N8 | 0<br>0 | CANOPY TREE<br>SHRUBS | LOW CLASSIFICATION SHOWN ON PLAN |
| N9 | 1<br>3 | CANOPY TREE<br>SHRUBS | LOW CLASSIFICATION SHOWN ON PLAN |
| N10 | 3<br>3 | CANOPY TREE<br>SHRUBS | LOW CLASSIFICATION SHOWN ON PLAN |
| N11 | 1<br>3 | CANOPY TREE<br>SHRUBS | LOW CLASSIFICATION SHOWN ON PLAN |
| N12 | 1<br>3 | CANOPY TREE<br>SHRUBS | LOW CLASSIFICATION SHOWN ON PLAN |
| N13 | 1<br>3 | CANOPY TREE<br>SHRUBS | LOW CLASSIFICATION SHOWN ON PLAN |
| N14-N28 | 1<br>3<br>. | CANOPY TREE<br>SHRUBS<br>EXISTING TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| N29-N52 | 1<br>3<br>. | CANOPY TREE<br>SHRUBS<br>EXISTING TREES | LOW CLASSIFICATION SHOWN ON PLAN |

**EAST PERIMETER PROPERTY LINE**
**LANDSCAPE PLANTINGS**
**LEVEL LOW LANDSCAPE PLANTING**
1 CANOPY, 1 EVERGREEN TREE OR
1 EXISTING TREES / 50'
3 SHRUBS / 50'

| Location | Plant No. per 50' | Type of Plant | LANDSCAPE CLASSIFICATION LOW |
|---|---|---|---|
| E1 | 0 | TREES | SHOWN ON PLAN |
| E2 | 1<br>3 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| E3 | 0<br>4 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| E4 | 0<br>3 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| E5 | 2<br>3 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| E6 | 0<br>4 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| E7 | 1<br>3 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| E8 | 1<br>4 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| E9 | 1<br>3 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| E10 | 1<br>3 | CANOPY TREE<br>EXISTING TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| E11 | 3 | EXISTING TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| E12 | 3 | EXISTING TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| E13 | 4 | EXISTING TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| E14 | 2<br>4 | CANOPY TREE<br>EXISTING TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| E15 | 2 | CANOPY TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| E16 | 2 | CANOPY TREE | LOW CLASSIFICATION SHOWN ON PLAN |

**SOUTH PERIMETER PROPERTY LINE**
**LANDSCAPE PLANTINGS**
**LEVEL LOW LANDSCAPE PLANTING**
1 CANOPY, 1 EVERGREEN TREE OR
1 EXISTING TREES / 50'
3 SHRUBS / 50'

| Location | Plant No. per 50' | Type of Plant | LANDSCAPE CLASSIFICATION |
|---|---|---|---|
| S1-S4 | | EXISTING TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| S5 | 2 | CANOPY TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S6 | 2 | CANOPY TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S7 | 1<br>1 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S8 | 1<br>5 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S9 | 2<br>2 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S10 | 1<br>3 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S11 | 1<br>2 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S12 | 1<br>3 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S13 | 2<br>3 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S14 | 0<br>4 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S15 | 5<br>1 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S16 | 2<br>4 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S17 | 0<br>4 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S18 | 2<br>2 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S19 | 1<br>3 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S20 | 2<br>2 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S21 | 1<br>4 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S22 | 1<br>1 | CANOPY TREE<br>EVERGREEN TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| S23-29 | | NO TREES/SHRUBS | LOW CLASSIFICATION SHOWN ON PLAN |
| S30-S52 | | EXISTING TREES | LOW CLASSIFICATION SHOWN ON PLAN |

**WEST PERIMETER PROPERTY LINE**
**LANDSCAPE PLANTINGS**
**LEVEL LOW LANDSCAPE PLANTING**
1 CANOPY, 1 EVERGREEN TREE OR
1 EXISTING TREES / 50'
3 SHRUBS / 50'

| Location | Plant No. per 50' | Type of Plant | LANDSCAPE CLASSIFICATION LOW |
|---|---|---|---|
| W1 | 0 | TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| W2 | 2 | CANOPY TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| W3 | 1 | CANOPY TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| W4 | 1 | CANOPY TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| W5 | 1 | CANOPY TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| W6 | 2 | CANOPY TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| W7 | 1 | CANOPY TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| W8 | 1 | CANOPY TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| W9 | 1 | CANOPY TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| W10 | 2 | CANOPY TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| W11 | 1 | CANOPY TREE | LOW CLASSIFICATION SHOWN ON PLAN |
| W12 | 1<br>3 | CANOPY TREE<br>EXISTING TREE<br>5' BERM | LOW CLASSIFICATION SHOWN ON PLAN |
| W13 | 2<br>3 | CANOPY TREE<br>EXISTING TREE<br>5' BERM | LOW CLASSIFICATION SHOWN ON PLAN |
| W14 | 2<br>3<br>. | CANOPY TREE<br>EXISTING TREE<br>5' BERM | LOW CLASSIFICATION SHOWN ON PLAN |
| W15 | 2<br>3<br>. | CANOPY TREE<br>EXISTING TREE<br>5' BERM | LOW CLASSIFICATION SHOWN ON PLAN |
| W16 | 0 | TREE - DRAINAGE AREA | LOW CLASSIFICATION SHOWN ON PLAN |
| W17 | 3<br>.<br>. | EVERGREEN TREE<br>5' BERM<br>EXISTING TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| W18 | 4<br>.<br>. | EVERGREEN TREE<br>5' BERM<br>EXISTING TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| W19 | 3<br>.<br>. | EVERGREEN TREE<br>5' BERM<br>EXISTING TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| W20 | 1<br>.<br>. | EVERGREEN TREE<br>5' BERM<br>EXISTING TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| W21 | 0 | TREE - GAS EASEMENT | LOW CLASSIFICATION SHOWN ON PLAN |
| W22 | 2<br>.<br>. | EVERGREEN TREE<br>5' BERM<br>EXISTING TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| W23 | 3<br>.<br>. | EVERGREEN TREE<br>5' BERM<br>EXISTING TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| W24 | 3<br>.<br>. | EVERGREEN TREE<br>5' BERM<br>EXISTING TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| W25 | 3<br>.<br>. | EVERGREEN TREE<br>5' BERM<br>EXISTING TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| W26 | 1<br>.<br>. | EVERGREEN TREE<br>5' BERM<br>EXISTING TREES | LOW CLASSIFICATION SHOWN ON PLAN |
| W27 - W52 | 0 | EXISTING TREES | LOW CLASSIFICATION SHOWN ON PLAN |

## *LANDSCAPE SPECIFICATIONS*

GENERAL NOTES:

1. ALL UTILITIES SHALL BE LOCATED AND MARKED/FLAGGED BEFORE BEGINNING LANDSCAPE WORK RELOCATED PLANTS THAT ARE UNDER OR OVER UTILITIES. THE RELOCATED PLANTS TO BE APPROVED BY OWNER AND/OR LANDSCAPE ARCHITECT/DESIGNER PRIOR TO INSTALLATION. CONTRACTOR SHALL NOTIFY UTILITY LOCATE SERVICE (811) A MINIMUM OF TWO WORKING DAYS PRIOR TO EXCAVATION.
2. UTILITY LOCATION NOTE: ALL LOCATIONS SHOWN ON PLANS ARE APPROXIMATE AND BASED ON PROVIDED INFORMATION BY SURVEYOR OR CIVIL ENGINEER OR OWNER AND OR MEASURED IN THE FIELD. IF DISCREPANCIES EXIST OR ARE PRESENT, CONTRACTOR SHALL NOTIFY OWNER, OWNERS REPRESENTATIVE AND LANDSCAPE ARCHITECT/DESIGNER PRIOR TO BEGINNING ANY WORK.
3. IN CASE OF DISCREPANCIES BETWEEN THE PLANS AND PLANT LIST. THE PLAN SHALL DICTATE.
4. THESE SPECIFICATIONS COVER THE FURNISHING OF LABOR, PLANTS, EQUIPMENT, AND MATERIALS TO PERFORM LANDSCAPE OPERATIONS IN CONNECTION WITH THIS CONSTRUCTION PROJECT AT THE LOCATIONS SHOWN ON THE LANDSCAPE DRAWING.
5. PLANTS AND ALL LANDSCAPE MATERIAL TO BE STORED ON SITE WILL BE PLACED WHERE THEY ARE NOT IN CONFLICT WITH CONSTRUCTION OPERATIONS.
6. REMOVE AND CLEAN UP ALL DEBRIS AND REMOVE FROM SITE, REPAIR DAMAGED OR DISTURBED AREAS CAUSED BY LANDSCAPE CONTRACTOR.
7. TOPSOIL: TOPSOIL SHALL BE FRIABLE, NATURAL LOAM, SURFACE SOIL AND FREE OF SUBSOIL, CLAY LUMPS, BRUSH, WEEDS, LITTER, ROOTS, STONES DOMESTIC AND AGRICULTURE FERTILIZERS, HERBICIDES, AND OTHER TOXIC MATERIALS HARMFUL TO PLANT GROWTH AND ENVIRONMENT. WASTE SOILS, BORROW, OR HEAVY CLAY BASED SOILS WILL NOT BE ACCEPTED. TOPSOIL SHALL HAVE A PH VALUE OF 6.0-7.4. SUBMIT SOIL SAMPLES, PH SAMPLES, PH LEVELS AND NPK ANALYSIS PRIOR TO DELIVERY.

PLANTING NOTES:

1. REMOVE WEEDS, ORGANIC MATTER, ROCKS LARGER THAN 1.5" FROM SOIL.
2. LANDSCAPE MATERIALS: FERTILIZER: GRANULAR NON-BURNING PRODUCT COMPOSED OF NOT LESS THAN 50% ORGANIC SLOW ACTING, GUARANTEED ANALYSIS PROFESSIONAL FERTILIZER; 20% NITROGEN, 10% PHOSPHORIC ACID, AND 5% POTASH BY WEIGHT OR SIMILARLY APPROVED COMPOSITION.
3. PLANTING BACKFILL SOIL: BACKFILL PLANT PITS WITH THE FOLLOWING TOPSOIL MIXTURE: 1 PART ON-SITE TOPSOIL, 1 PART IMPORTED TOPSOIL, 1 PART COMPOST AND 1/2 POUND PLANT SPECIFIED FERTILIZER PER CUBIC YARD.
4. PLANT MATERIALS: PROVIDE TREES AND SHRUBS AS INDICATED. COMPLY WITH SIZING AND GRADING STANDARDS OF "AMERICAN STANDARD FOR NURSERY STOCK". PROVIDE ONLY SOUND, HEALTHY VIGOROUS PLANTS FREE FROM DEFECTS, DISFIGURING KNOTS, SUNSCALD INJURIES, FROST CRACKS, PLANT DISEASES, INSECTS OR ANY OTHER FORM OF DISEASE OR INFESTATION. ALL PLANTS SHALL HAVE FULLY DEVELOPED FORM WITHOUT VOIDS OR OPEN SPACES.
5. NO SUBSTITUTIONS OF PLANT MATERIAL WILL NOT BE ALLOWED. IF PLANTS ARE NOT AVAILABLE. THE CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT/DESIGNER, OWNERS REPRESENTATIVE IN WRITING. ALL PLANTS SHALL BE INSPECTED AND TAGGED WITH PROJECT I.D. AT NURSERY OR CONTRACTORS OPERATIONS PRIOR TO MOVING TO JOB SITE. PLANTS MAY BE INSPECTED AND APPROVED OR REJECTED ON THE JOB SITE BY LANDSCAPE ARCHITECT/DESIGNER OR OWNERS REPRESENTATIVE.
6. LANDSCAPE ARCHITECT/DESIGNER OR OWNERS REPRESENTATIVE RESERVES THE RIGHT TO REJECT ANY AND ALL PLANT MATERIALS DURING THE COURSE OF THE PROJECT.
7. PLANTING BED MULCH: 3 INCHES OF GRADE 'A' SHREDDED HARDWOOD MULCH WHERE PLANTING BED ADJOINS EITHER PAVEMENT OR TURF.
8. PLANTING BED FABRIC: DEWITT PRO 5 WEED BARRIER. INSTALL ONLY IN PLANTING BEDS.
9. SEE PLANTING DETAILS FOR PLANTING, PRUNING AND STAKING REQUIREMENTS.

SEEDING AND SODDING PREPARATION:

1. LANDSCAPE CONTRACTOR TO FINE GRADE AND PREPARE ALL SITE AREAS TO RECEIVE SODDING OR SEEDING. FINE GRADE SITE SMOOTH TO FINAL GRADING PLAN ELEVATIONS. FILL IN DEPRESSIONS, LOW SPOTS AND GRADE SMOOTH.
2. ALL TURF AREAS WITHIN LIMIT LINES TO RECEIVE 6" TOPSOIL PRIOR TO OPERATIONS. ONCE TOPSOIL HAS BEEN PLACED. CONSTRUCTION ACTIVITY OF ANY KIND (EXCLUDING LANDSCAPING) SHALL NOT BE PERMITTED ON OR ACROSS ANY PLANTING AREA.
3. TURF AREAS TO TO BE SCARIFIED/CULTIVATE TO A DEPTH OF 4" AND LIGHTLY ROLLED (NOT COMPACTED) PRIOR TO BEING SODDED OR SEEDED.
4. LAWNS TO BE FERTILIZED WITH 12-12-12 AT A RATE OF 10 LBS/1000 SQ.FT. PRIOR TO INSTALLATION.
5. WATER AND MAINTAIN GRASS STAND IS ESTABLISHED AND READY FOR MOWING AT A MINIMUM 4" HEIGHT. CONTRACTOR SHALL MAINTAIN LAWN FOR A PERIOD OF 60 DAYS BEYOND FINAL ACCEPTANCE BY MOWING AND WATERING AS REQUIRED TO MAINTAIN VIGOROUS GROWTH DURING ESTABLISHMENT.

SEEDED LAWN:

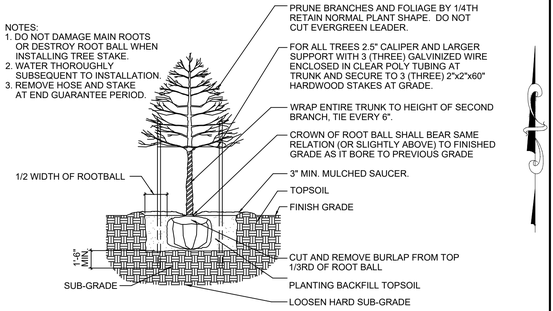
TURF TYPE TALL FESCUE - SEED

1. COMPLETE ALL OTHER LANDSCAPE PLANTINGS, MULCHING, FINE GRADING AND STAKING PRIOR TO SEEDING LAWN AREAS.
2. PROVIDE SEEDED LAWN FOR ALL LAWN AREAS UTILIZING AMER-TURF FRONT-RUNNER TURF TYPE TALL FESCUE BLEND SEED.
3. APPLY SEED AT A RATE OF 5 POUNDS PER 1000 SQUARE FEET.
4. SEED BED SHALL BE IN A FIRM BUT UNCOMPACTED CONDITION WITH A RELATIVELY FINE TEXTURE AT TIME OF SEEDING.
5. CONTRACTOR SHALL MAINTAIN SEEDING LAWN FOR A PERIOD OF 60 DAYS BEYOND FINAL ACCEPTANCE BY MOWING AND WATERING AS REQUIRED TO MAINTAIN VIGOROUS GROWTH DURING ESTABLISHMENT PERIOD.
6. LAWN AREAS SHALL NOT HAVE VOIDS LARGER THAN 6"X6". IF VOIDS ARE LARGER THAN ACCEPTABLE SIZE AN OVERSEEDING SHALL BE COMPLETED BY THE CONTRACTOR DURING THE NEXT AVAILABLE GROWING SEASON.
7. GROWING SEASON AUGUST 15TH - SEPTEMBER 20TH. SPRING GROWING SEASON MARCH 20TH - APRIL 20TH.

PROJECT WARRANTY:

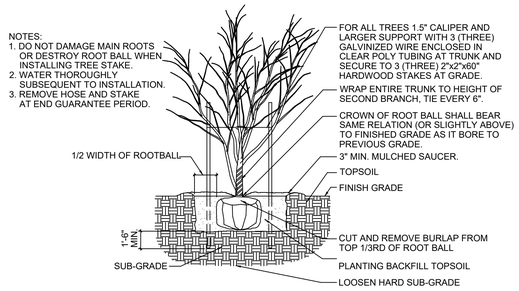
1. CONTRACTOR SHALL WARRANT TREES, SHRUBS, AND PLANTS FOR A PERIOD OF ONE YEAR AFTER DATE OF SUBSTANTIAL COMPLETION AGAINST DEFECTS INCLUDING DEATH AND UNSATISFACTORY GROWTH, EXCEPT FOR DEFECTS RESULTING FROM NEGLECT BY THE OWNER, ABUSE OR DAMAGE BY OTHERS, OR UNUSUAL PHENOMENA OR INCIDENTS WHICH ARE BEYOND INSTALLER'S CONTROL. REMOVE AND REPLACE TREES, SHRUBS OR OTHER PLANTS FOUND TO BE DEAD OR IN UNHEALTHY CONDITION DURING WARRANTY PERIOD. REPLACE TREES AND SHRUBS WHICH ARE IN DOUBTFUL CONDITION AT END OF WARRANTY PERIOD.

0 100' 200'



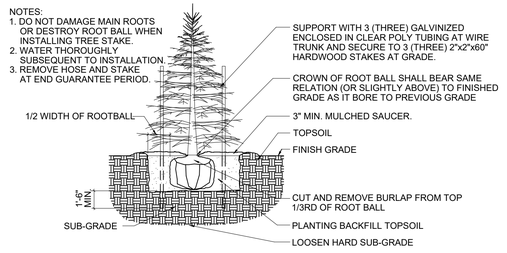

## CANOPY TREE PLANTING

**NO SCALE**



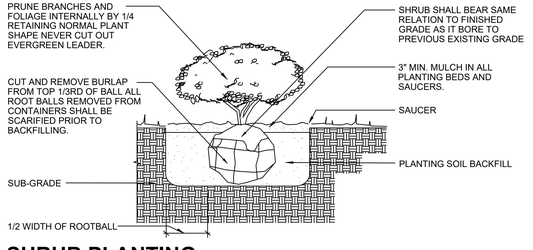

## ORNAMENTAL TREE PLANTING

**NO SCALE**




## EVERGREEN TREE PLANTING

**NO SCALE**




## SHRUB PLANTING

**NO SCALE**

Indiana 811 Know what's below. Call before you dig.

| | |
|---|---|
| Designed: | GAF |
| Drawn: | GAF |
| Checked: | AGL/SB |
| Scale: | 1" = 100' |
| Date: | 09-08-2025 |

Sym. | Revisions | Date

# LANDSCAPE DETAILS & SPECIFICATIONS
# HAWKS LANDING
# HENDRICKS COUNTY
# BROWNSBURG, INDIANA

COMMONWEALTH OF INDIANA — W. CHAD ZIEGLER — REGISTERED — PE11300637 — STATE OF — INDIANA — PROFESSIONAL ENGINEER


BANNING ENGINEERING
853 COLUMBIA ROAD SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700 FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

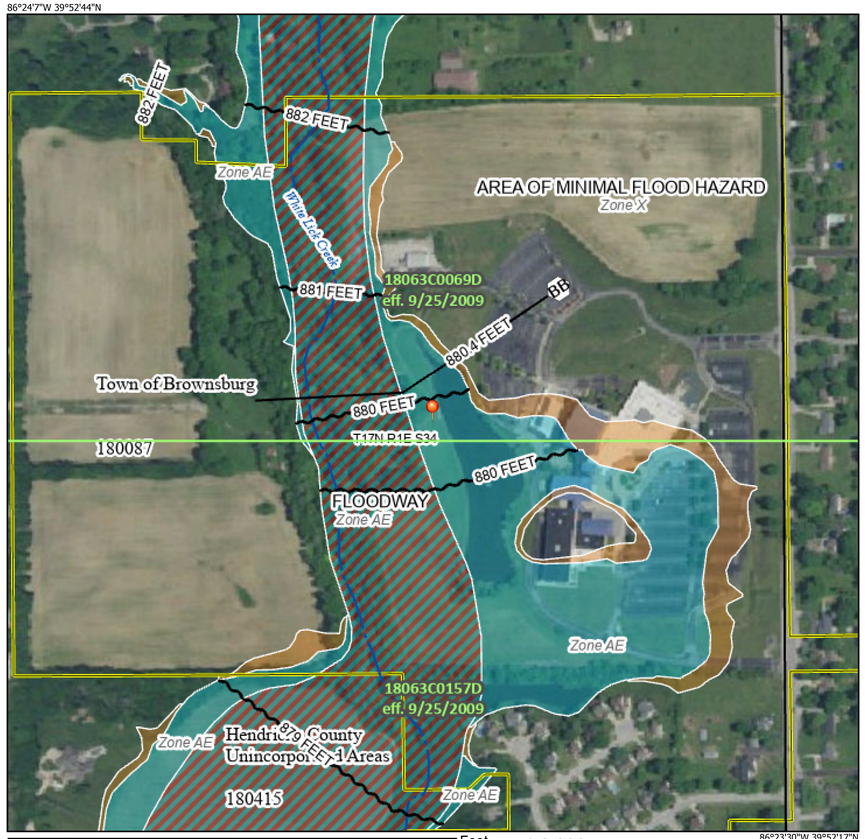

Project No: 23369

Sheet No: C400


dtewis P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plat\23369-PP-Landscaping-All.dwg Dec 18, 2025 - 1:25pm

# National Flood Hazard Layer FIRMette

86°24'7"W 39°52'44"N




*Basemap Imagery Source: USGS National Map 2023*

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- **SPECIAL FLOOD HAZARD AREAS**
  - Without Base Flood Elevation (BFE) *Zone A, V, A99*
  - With BFE or Depth *Zone AE, AO, AH, VE, AR*
  - Regulatory Floodway
- **OTHER AREAS OF FLOOD HAZARD**
  - 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
  - Future Conditions 1% Annual Chance Flood Hazard *Zone X*
  - Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
  - Area with Flood Risk due to Levee *Zone D*
- **OTHER AREAS**
  - NO SCREEN — Area of Minimal Flood Hazard *Zone X*
  - Effective LOMRs
  - Area of Undetermined Flood Hazard *Zone D*
- **GENERAL STRUCTURES**
  - Channel, Culvert, or Storm Sewer
  - Levee, Dike, or Floodwall
- **OTHER FEATURES**
  - 20.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation
  - Coastal Transect
  - 513 — Base Flood Elevation Line (BFE)
  - Limit of Study
  - Jurisdiction Boundary
  - Coastal Transect Baseline
  - Profile Baseline
  - Hydrographic Feature
- **MAP PANELS**
  - Digital Data Available
  - No Digital Data Available
  - Unmapped

N

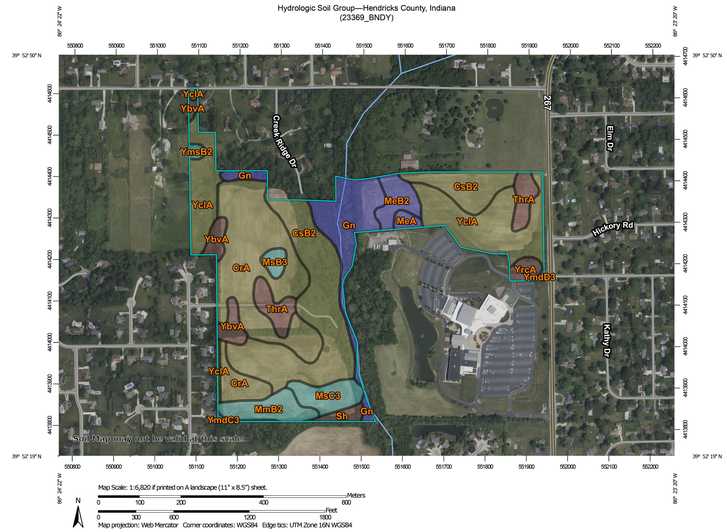
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/2/2025 at 4:03 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

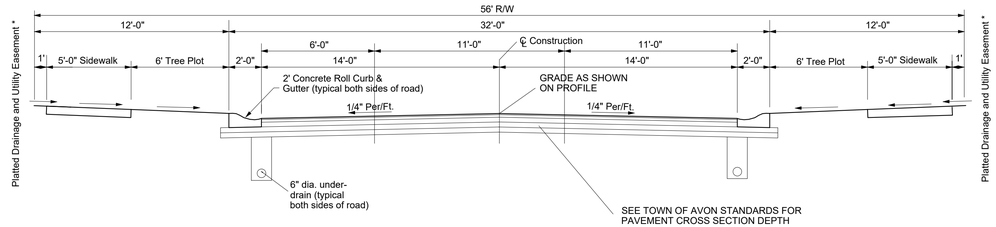
| Map unit symbol | Map unit name |
|---|---|
| CrA | Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes |
| CsB2 | Crosby-Miami silt loams, 2 to 4 percent slopes, eroded |
| Gn | Genesee silt loam, 0 to 2 percent slopes, frequently flooded, very brief duration |
| MeA | Martinsville loam, 0 to 2 percent slopes |
| MeB2 | Martinsville loam, 2 to 6 percent slopes, eroded |
| MmB2 | Miami silt loam, 2 to 6 percent slopes, eroded |
| MsB3 | Miami clay loam, 2 to 6 percent slopes, severely eroded |
| MsC3 | Miami clay loam, 6 to 12 percent slopes, severely eroded |
| Sh | Shoals silt loam, 0 to 2 percent slopes, frequently flooded, brief duration |
| ThrA | Treaty silty clay loam, 0 to 1 percent slopes |
| YbvA | Brookston silty clay loam-Urban land complex, 0 to 2 percent slopes |
| YclA | Crosby silt loam, fine-loamy subsoil-Urban land complex, 0 to 2 percent slopes |
| YmdC3 | Miami clay loam-Urban land complex, 6 to 12 percent slopes, severely eroded |
| YmdD3 | Miami clay loam-Urban land complex, 12 to 18 percent slopes, severely eroded |




USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

8/14/2025
Page 1 of 5




***56' R/W PUBLIC ROAD CROSS SECTION***

NO SCALE

Indiana 811 Know what's below. Call before you dig.

Revisions | Date | Sym.

Designed: GAF
Drawn: GAF
Checked: AGL/SB
Scale: 1" = 60'
Date: 09-08-2025

DETAILS
HAWKS LANDING
HENDRICKS COUNTY
BROWNSBURG, INDIANA

W. CHAD ZIEGLER — REGISTERED — NO. PE11200657 — STATE OF INDIANA — PROFESSIONAL ENGINEER

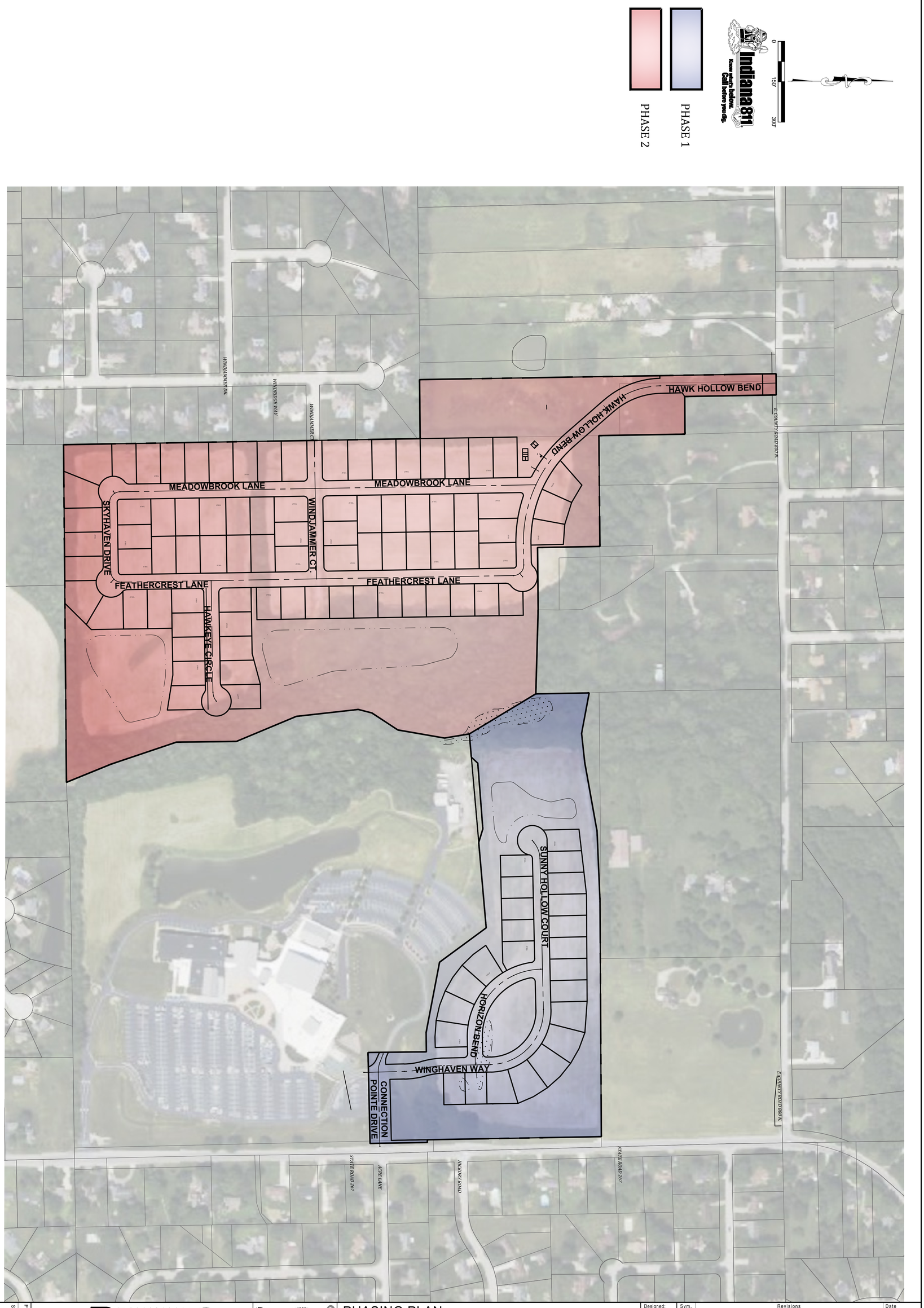

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN. 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com


Project No: 23369

Sheet No: C500

olewis P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plot\23369-PP--det.dwg Dec 18, 2025 - 1:12pm

alewis P:\2023\23369\Engineering\Cadd\Sheet Files\Primary Plat\23369-PP-PHASING PLAN.dwg Dec 18, 2025 - 1:13pm




Project No: 23369

Sheet No: C501

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

CHAD Z. IEGLER
PROFESSIONAL ENGINEER
STATE OF INDIANA
PETER MEYER
PROFESSIONAL ENGINEER
STATE OF INDIANA

PHASING PLAN
HAWKS LANDING
HENDRICKS COUNTY
BROWNSBURG, INDIANA

| | | | |
|---|---|---|---|
| Designed: GAF | Sym. | Revisions | Date |
| Drawn: GAF | | | |
| Checked: AGL/SB | | | |
| Scale: 1"= 150' | | | |
| Date: 09-08-2025 | | | |

December 4, 2025

Lauren Bouslog
Development Services
61 N. Green St.
Brownsburg, IN 46112

RE: Hawks Landing TIS

Lauren,

We have reviewed the submitted traffic impact study (TIS) for the proposed residential development of Hawks Landing. Our review is intended to provide a review of appropriateness of intersections, traffic distributions, forecasts, and recommendations according to current industry practices. Below you will find my comments:

1. Traffic distributions, growth rates, and forecasts are appropriate as presented.
2. Resultant capacity analysis on selected intersections and recommended improvements meets acceptable performance levels.

Please contact me at 317-780-1555, x124 if you have any questions.

Sincerely,

Andrew J. Wolf, P.E.
CrossRoad Engineers, PC

# Hawks Landing Primary Plat

# LETTER OF INTENT

Hawk's Landing is a proposed residential development in Town of Brownsburg, Brown Township, Hendricks County, Indiana. The development is located on the Northwest corner of Green Street and Acre Lane. Hawk's Landing covers approximately 72.39 acres and will include the construction of 105 single family homes with associated roadway, utility infrastructure and amenity areas.

This development is unique in that it is split into two separate residential areas by a large creek and forested wetland bisecting the site from north to south. The eastern portion of the development, accessed from Green Street, contains 24 lots. Amenities for this portion of the development include 1.2 acres of passive open space, 1 acre of which is located within a level central common area. This area will include benches and will be available to the residents for active recreational activity. This portion of the development also includes a 0.26-mile walking trail that circles the detention pond and meanders through the wooded area along the creek and near the wetland.

The western portion of the development consists of 81 lots and is accessed by a roadway connection to Co Rd. 800 N and an existing street stub from the Windridge neighborhood (Windridge Lane). Amenities for this area will include a large 400 SF shelter house, a medium 2,560 SF multi-sport court, a 0.25-mile walking trail and 4.5 acres of passive recreational space.

Linking the eastern and western portions of the development with a pedestrian facility is not practical. The most viable means of connection would be construction of a suspension bridge, spanning the floodway along the creek. However, such a bridge would require a span of nearly 300', would likely approach $1 million dollars in cost and it is doubtful that it could be made an accessible route. Development of a bridge would require removal of trees within the riparian buffer along the creek as well as disturbance of the wetland. Mitigation of tree loss would be required and payment for disturbance of wetland area at a rate of $90,000 an acre could be anticipated. A pedestrian bridge linking both sides of the community is not viable for many of the same reasons that a vehicular bridge is not viable. The creek and wetland area is a physical barrier that is not customary on most development sites.

In recognition of that lack of a pedestrian link between the 2 portions of the neighborhood, 5 off-street parking spaces have been provided near the western amenity area. The location of the amenity area was carefully chosen to be conveniently located to serve as a mailbox kiosk location as well. Additional on-street parking is available north and west of the amenity area without the need to park in front of a home for those residents who may drive to the amenity area.

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1966

8365 Keystone Crossing, Suite 201
Indianapolis, IN 46240
Phone: (317) 202-0864 Fax: (317) 202-0908



# TRAFFIC IMPACT STUDY

## PROPOSED RESIDENTIAL DEVELOPMENT

### HAWK'S CREEK

### BROWNSBURG, INDIANA

---

PREPARED FOR

David Weekley Homes

---

JULY 2024

# COPYRIGHT

This analysis and the ideas, designs, concepts and data contained herein are the exclusive intellectual property of A&F Engineering Co., LLC and are not to be used or reproduced in whole or in part, without the written consent of A&F Engineering Co., LLC.

©2024, A&F Engineering Co., LLC

# TABLE OF CONTENTS

TABLE OF CONTENTS ..... II
LIST OF FIGURES ..... III
CERTIFICATION ..... IV
INTRODUCTION ..... 1
PURPOSE ..... 1
SCOPE OF WORK ..... 1
DESCRIPTION OF THE PROPOSED DEVELOPMENT ..... 2
STUDY AREA ..... 2
DESCRIPTION OF ABUTTING STREET SYSTEM ..... 6
TABLE 1 – DESCRIPTION OF THE ABUTTING STREET SYSTEM ..... 6
EXISTING TRAFFIC VOLUMES & PEAK HOURS ..... 6
REDISTRIBUTION OF EXISTING TRAFFIC VOLUMES ..... 6
YEAR 2029 BACKGROUND TRAFFIC VOLUMES ..... 6
GENERATED TRIPS FOR PROPOSED DEVELOPMENT ..... 9
TABLE 2 – GENERATED TRIPS FOR PROPOSED DEVELOPMENT ..... 9
PASS-BY & INTERNAL TRIPS ..... 9
ASSIGNMENT AND DISTRIBUTION OF GENERATED TRIPS ..... 9
GENERATED TRIPS ADDED TO THE STREET SYSTEM ..... 10
TURN LANE WARRANT ANALYSIS ..... 10
TABLE 3 –TURN LANE WARRANT ANALYSIS SUMMARY ..... 10
CAPACITY ANALYSIS ..... 15
CAPACITY ANALYSIS SCENARIOS ..... 15
TABLE 4 – LEVEL OF SERVICE SUMMARY: CR 800 N & CR 650 E ..... 16
TABLE 5 – LEVEL OF SERVICE SUMMARY: CR 800 N & SR 267 (GREEN STREET) ..... 16
TABLE 6 – LEVEL OF SERVICE SUMMARY: CR 700 N & SR 267 (GREEN STREET) ..... 16
TABLE 7 – LEVEL OF SERVICE SUMMARY: CR 700 N & CR 650 E ..... 16
TABLE 8 – LEVEL OF SERVICE SUMMARY: SR 267 (GREEN STREET) & ACRE LANE/CONNECTION POINTE CHRISTIAN CHURCH/PROPOSED DEVELOPMENT ACCESS DRIVE ..... 17
TABLE 9 – LEVEL OF SERVICE SUMMARY: CR 800 N & PROPOSED DEVELOPMENT ACCESS DRIVE ..... 17
CONCLUSIONS & RECOMMENDATIONS ..... 17

# LIST OF FIGURES

FIGURE 1: AREA MAP ..... 3
FIGURE 2: EXISTING INTERSECTION GEOMETRICS ..... 4
FIGURE 3: EXISTING TRAFFIC VOLUMES ..... 7
FIGURE 4: YEAR 2029 BACKGROUND TRAFFIC VOLUMES ..... 8
FIGURE 5A: ASSIGNMENT AND DISTRIBUTION OF GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT (EAST PARCEL) ..... 11
FIGURE 5B: ASSIGNMENT AND DISTRIBUTION OF GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT (WEST PARCEL) ..... 12
FIGURE 6: GENERATED TRAFFIC VOLUMES FROM THE PROPOSED DEVELOPMENT ..... 13
FIGURE 7: SUM OF YEAR 2029 BACKGROUND TRAFFIC VOLUMES & GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT ..... 14

## CERTIFICATION

I certify that this **TRAFFIC IMPACT STUDY** has been prepared by me and under my immediate supervision and that I have experience and training in the field of traffic and transportation engineering.

A&F ENGINEERING CO., LLC






July 23, 2024
R. Matt Brown, P.E.
Indiana Registration 10200056



Sri Gayatri Kesara
Traffic Engineer Technician

## INTRODUCTION

This **TRAFFIC IMPACT STUDY**, prepared on behalf of David Weekley Homes, is for a proposed residential development known as "Hawk's Creek" that will be located south of CR 800 North & west of SR 267 (Green Street) in Brownsburg, Indiana.

## PURPOSE

The purpose of this analysis is to determine what impact traffic generated by the proposed residential development will have on the existing adjacent roadway system. This analysis will identify any existing roadway deficiencies or ones that may occur in the future.

Conclusions will be reached that will determine if the roadway system can accommodate the anticipated traffic volumes or will determine the modifications that will be required to the system if there are identified deficiencies.

Recommendations will be made that will address the conclusions resulting from this analysis. These recommendations will address feasible roadway system improvements to provide safe ingress and egress, to and from the proposed residential development, with minimal interference to traffic on the public street system.

## SCOPE OF WORK

The scope of work for this analysis is as follows:

First, obtain peak hour turning movement traffic volume counts between the hours of 6:30 AM and 9:00 AM and 3:30 PM and 7:00 PM at the following intersections:

- CR 800 N & CR 650 E
- CR 800 N & SR 267 (Green Street)
- CR 700 N & CR 650 E
- CR 700 N & SR 267 (Green Street)
- SR 267 (Green Street) & Acre Lane

Second, estimate the year 2029 background traffic volumes by applying growth rate factors provided by Shrewsberry to the existing traffic volumes.

Third, estimate the number of peak hour trips that will be generated by the proposed residential development.

Fourth, assign and distribute the generated peak hour traffic from the proposed residential development to each of the study intersections.

Fifth, prepare a capacity analysis, level of service analysis and turn lane analysis at the study intersections for each of the following scenarios:

*Scenario 1: Existing Traffic Volumes* – Based on existing peak hour traffic volumes.

*Scenario 2: Year 2029 Background Traffic Volumes* – Based on applying growth rate factors provided by Shrewsberry to the existing traffic volumes.

*Scenario 3: Year 2029 + Proposed Development Traffic Volumes* – Based on the sum of year 2029 background traffic volumes and generated traffic volumes from the proposed development.

Sixth, prepare recommendations for the roadway geometrics that will be needed to accommodate the future traffic volumes.

Finally, prepare a **TRAFFIC IMPACT STUDY** report documenting all data, analyses, conclusions, and recommendations to provide for the safe and efficient movement of traffic through the study area.

## DESCRIPTION OF THE PROPOSED DEVELOPMENT

The proposed development will be located south of CR 800 North & west of SR 267 (Green Street) in Brownsburg, Indiana. The proposed residential development will consist of two parcels. The west parcel will have 89 homes and the east parcel will have 25 homes. As proposed, the west parcel will be served by a full access drive along CR 800 N and a connection to the existing Windridge Lane. The east parcel will be served via a realigned access drive at the existing Connection Pointe Christian Church access location along SR 267 (Green Street). **Figure 1** is an area map showing the location and general layout of the proposed site.

## STUDY AREA

The study area for this analysis has been defined to include the following intersections:

- CR 800 N & CR 650 E
- CR 800 N & SR 267 (Green Street)
- CR 700 N & CR 650 E
- CR 700 N & SR 267 (Green Street)
- SR 267 (Green Street) & Acre Lane/ Connection Pointe Christian Church/ Proposed Development Access Drive
- CR 800 N & Proposed Access Drive

**Figures 2A & 2B** show the existing intersection geometrics at the study intersections.

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1966

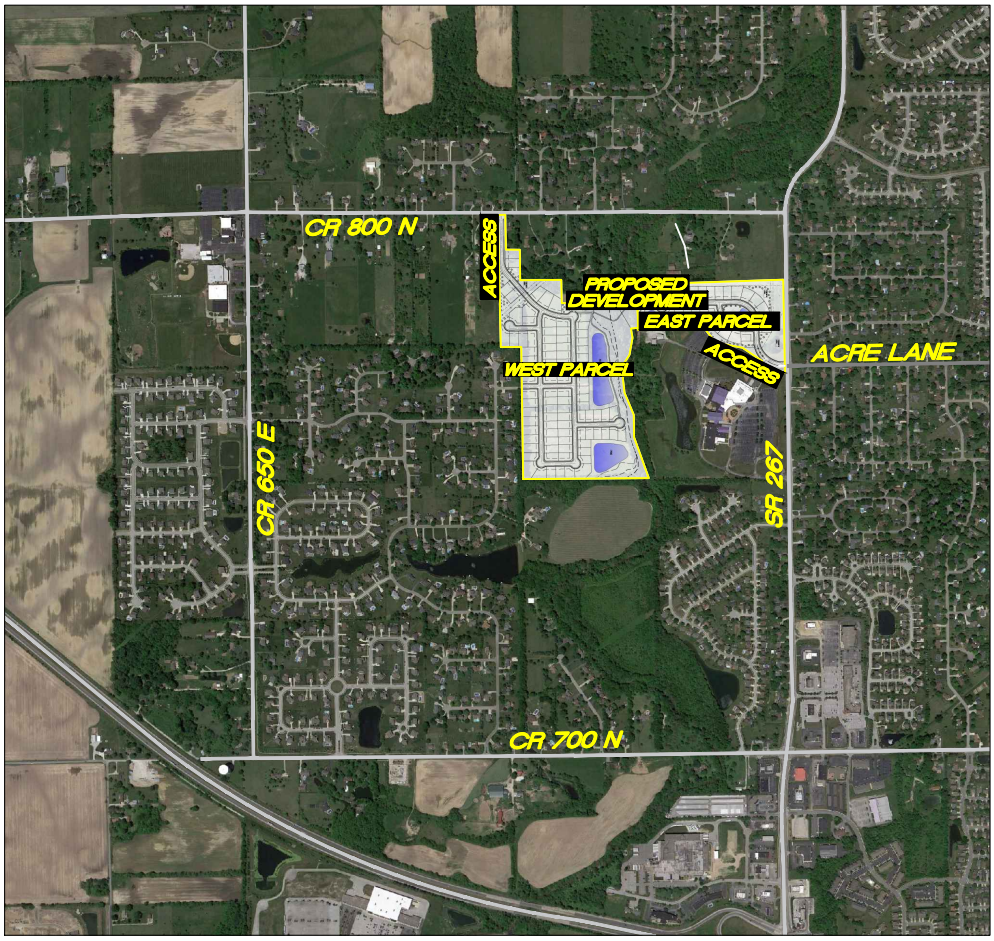
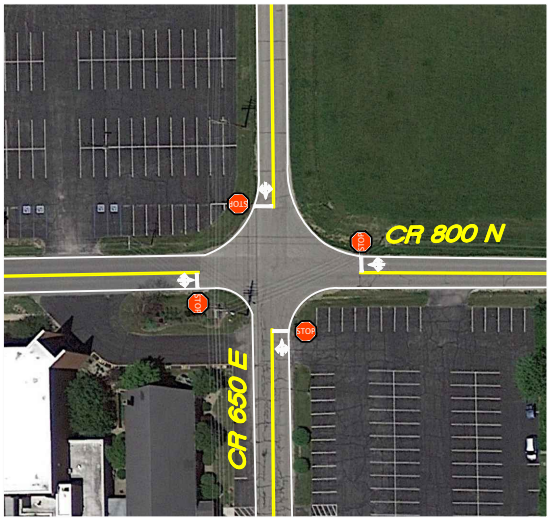



**FIGURE 1**

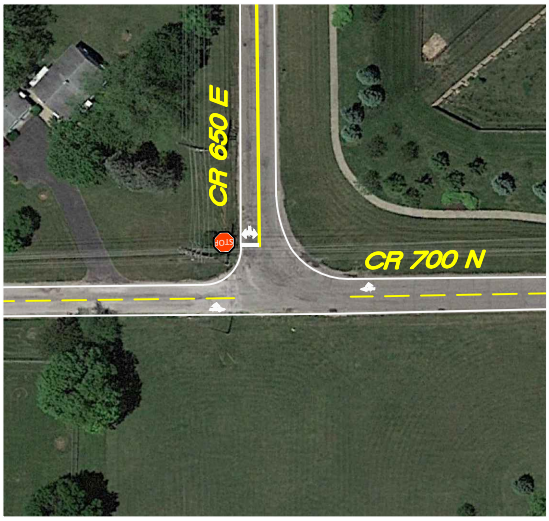
**AREA MAP**

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

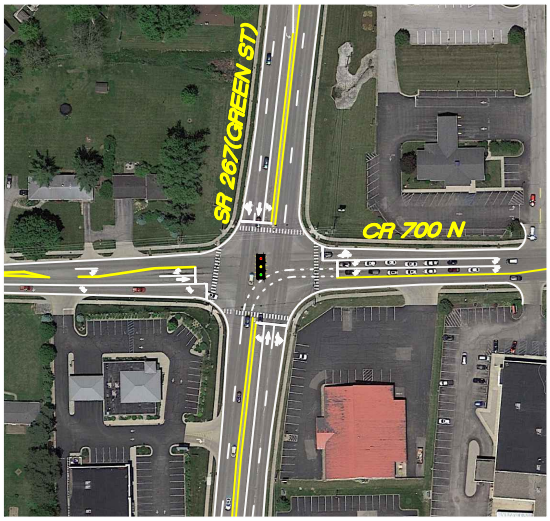
Z:\2023\23112S-Dovid Weekley Homes, TIS, Brownsburg\23112S_EXH.dwg 1=1 2024-06-27 SK



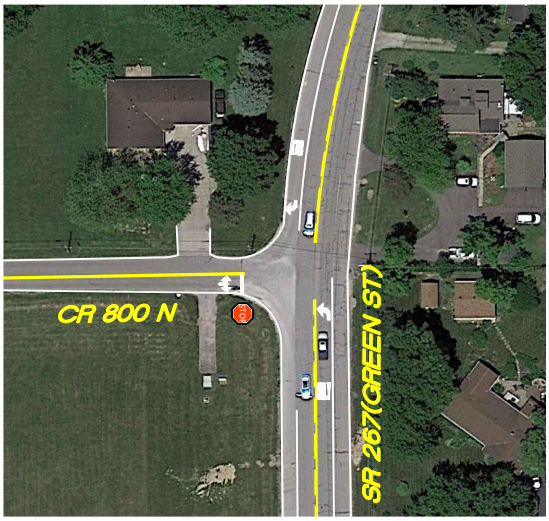

CR 800 N & CR 650 E




CR 700 N & CR 650 E




CR 700 N & SR 267(GREEN ST)




CR 800 N & SR 267(GREEN ST)

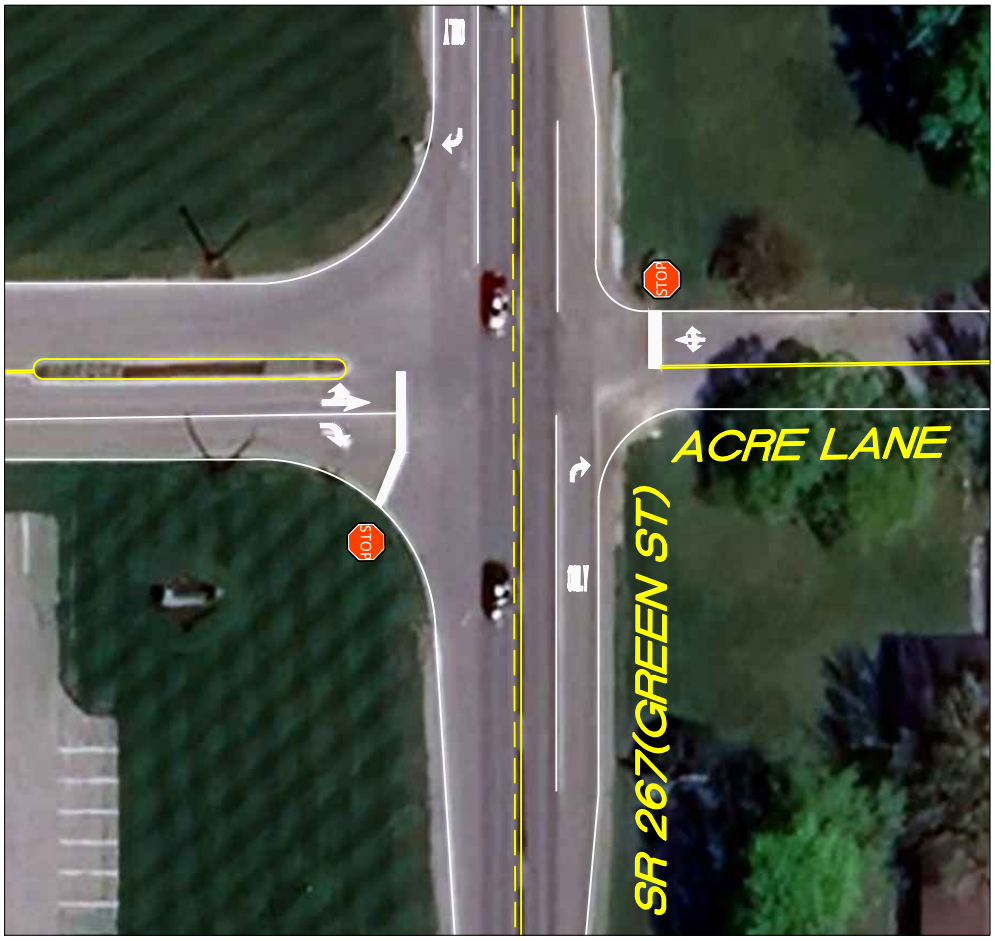
## FIGURE 2A

## EXISTING INTERSECTION GEOMETRICS

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

Z:\2023\23112S-Dovid Weekley Homes, TIS, Brownsburg\23112S_EXH.dwg 1=1 2024-06-27 SK

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1966




***SR 267(GREEN ST) & ACRE LANE***

***FIGURE 2B***

***EXISTING INTERSECTION GEOMETRICS***

***TRAFFIC IMPACT STUDY***
***DAVID WEEKLEY HOMES***
***BROWNSBURG, IN***

Z:\2023\23112S-Dovid Weekley Homes, TIS, Brownsburg\23112S_EXH.dwg 1=1 2024-06-27 SK

## DESCRIPTION OF ABUTTING STREET SYSTEM

The proposed residential development will be primarily served by the public roadway system that includes CR 800 N, CR 650 E, CR 700 N, and SR 267 (Green Street).

TABLE 1 – DESCRIPTION OF THE ABUTTING STREET SYSTEM

| STREET NAME | NUMBER OF LANES | SPEED LIMIT (MPH) | FUNCTIONAL CLASSIFICATION |
|---|---|---|---|
| CR 800 N | 2 | 35 | Collector |
| CR 650 E | 2 | 45 | Secondary Arterial |
| CR 700 N | 2 | 30 | Secondary Arterial |
| SR 267 (Green Street) | 2 | 45 | Primary Arterial |

## EXISTING TRAFFIC VOLUMES & PEAK HOURS

The turning movement traffic volume counts were collected by A&F Engineering at the study intersections between the hours of 6:30 AM to 9:00 AM and 3:30 PM to 7:00 PM during a typical weekday in December 2023 & May 2024 under good weather conditions. According to the turning movement counts, the AM and PM peak hours vary slightly at each study intersection. Hence, the actual peak hours are used at each study intersection to create a "worse-case" scenario. The peak hour volumes are shown on **Figure 3** and the intersection count output summary sheets, are included in the **Appendix.**

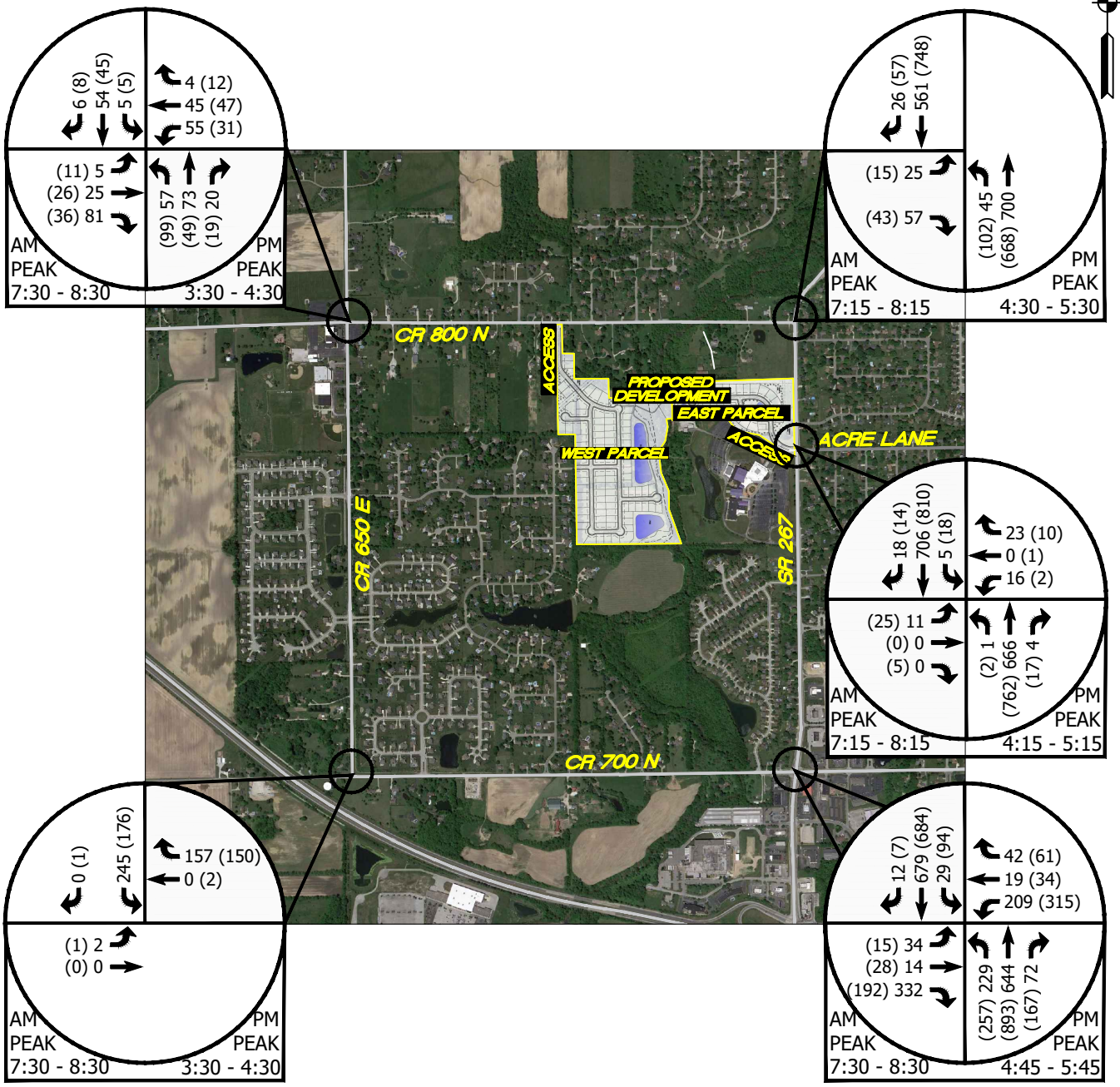
## REDISTRIBUTION OF EXISTING TRAFFIC VOLUMES

The west parcel of the proposed development will have a secondary access via a connection to Windridge Lane. Therefore, it is possible that existing traffic from the Windridge subdivision could utilize this connection to access CR 800 N. However, it is not anticipated that these volumes will be significant during the peak hours. Therefore, these volumes have been considered negligible for the purposes of this analysis.

## YEAR 2029 BACKGROUND TRAFFIC VOLUMES

In order to account for annual growth in traffic that would occur due to future development outside of the study area, growth rate factors are applied to the existing traffic volumes. Growth rate factors provided by Shrewsberry were applied to the existing traffic volumes to obtain year 2029 background traffic volumes. The year 2029 background traffic volumes are shown in **Figure 4.**

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1966



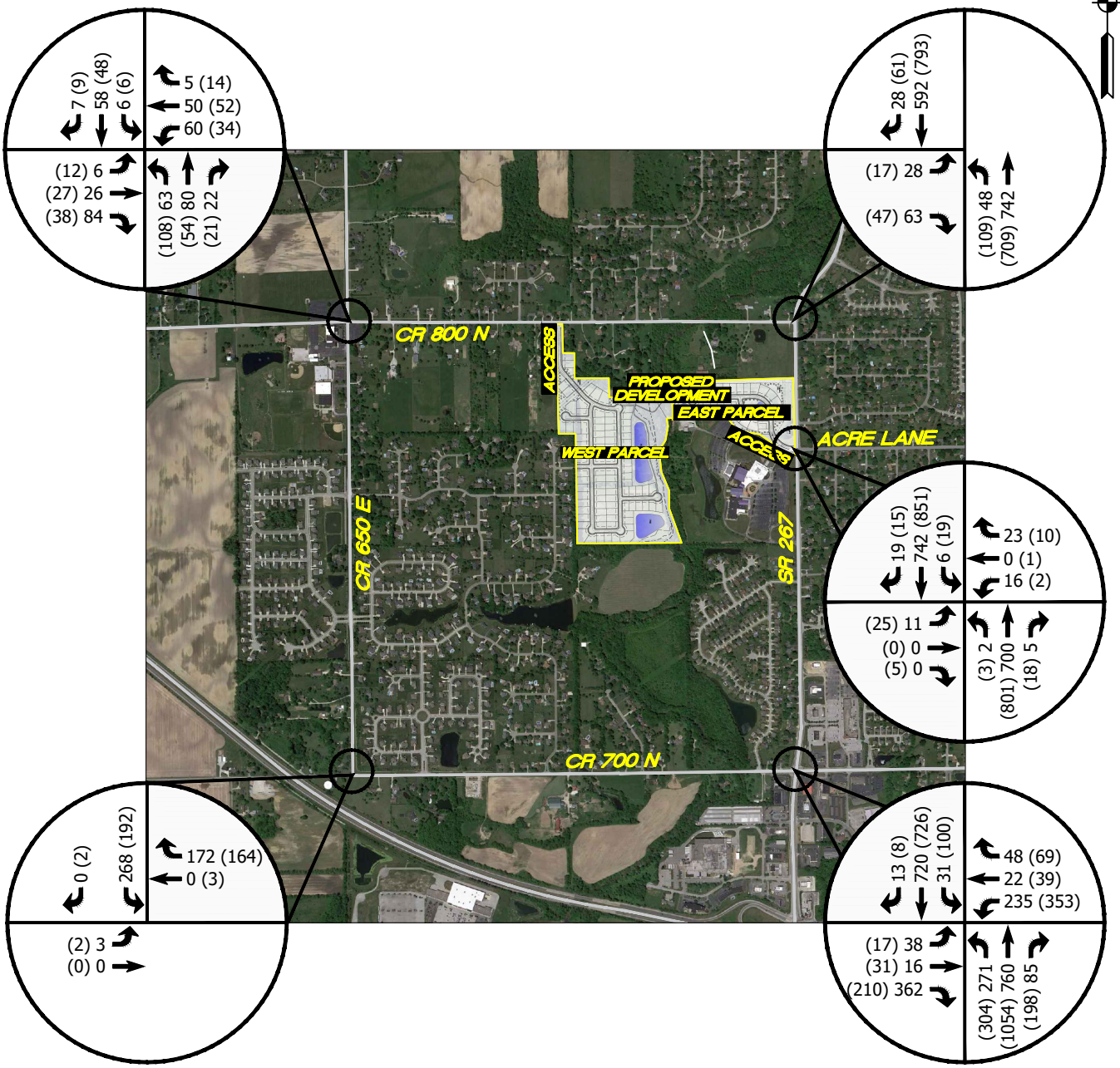

LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

**FIGURE 3**

**EXISTING TRAFFIC VOLUMES**

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

Z:\2023\23112S-Dovid Weekley Homes, TIS, Brownsburg\23112S_EXH.dwg 1=1 2024-06-27 SK




LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

**FIGURE 4**

**YEAR 2029 BACKGROUND TRAFFIC VOLUMES**

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

Z:\2023\23112S-Dovid Weekley Homes, TIS, Brownsburg\23112S_EXH.dwg 1=1 2024-06-27 SK

## GENERATED TRIPS FOR PROPOSED DEVELOPMENT

The estimate of newly generated traffic is a function of the development size and of the character of the land use. The ITE *Trip Generation Manual*[1] was used to calculate the number of trips that will be generated by the proposed Hawk's Creek development. This report is a compilation of trip data for various land uses as collected by transportation professionals throughout the United States in order to establish the average number of trips generated by those land uses. **Table 2** summarizes the total number of trips that will be generated by the proposed development.

TABLE 2 – GENERATED TRIPS FOR PROPOSED DEVELOPMENT

| DEVELOPMENT INFORMATION | | | GENERATED TRIPS | | | |
|---|---|---|---|---|---|---|
| LAND USE | ITE CODE | SIZE | AM PEAK HOUR | | PM PEAK HOUR | |
| | | | ENTER | EXIT | ENTER | EXIT |
| Single-Family Housing (East Parcel) | 210 | 25 DU | 5 | 16 | 17 | 10 |
| Single-Family Housing (West Parcel) | 210 | 89 DU | 17 | 50 | 56 | 33 |

## PASS-BY & INTERNAL TRIPS

Pass-by trips are trips that are already in the existing traffic stream along the adjacent public roadway system that enter a site, utilize the site, and then return to the existing traffic stream. Residential developments do not typically attract a significant number of pass-by trips. Therefore, pass-by trip reductions are not included in this study.

An internal trip results when a trip is made between two or more land uses without traversing the external public roadway system. The proposed development is a single land use only. Hence, internal trip reductions are not considered in this study.

## ASSIGNMENT AND DISTRIBUTION OF GENERATED TRIPS

The study methodology used to determine the traffic volumes from the site that will be added to the street system is defined as follows:

1. The volume of traffic that will enter and exit the proposed development must be assigned to the access points and to the public street system. Using the traffic volume data collected for this analysis, traffic to and from the site development has been assigned to the proposed driveways and to the public street system that will be serving the site.

[1] *Trip Generation Manual*, Institute of Transportation Engineers, Eleventh Edition, 2021.

2. To determine the volume of traffic that will be added to the public roadway system, the generated traffic must be distributed by direction to the public roadways at their intersection with the driveways. For the proposed development, the trip distribution was based on the location of the development, the existing traffic patterns, and the assignment of generated traffic.

**Figure 5A and 5B** illustrate the assignment and distribution of generated traffic volumes for the proposed development.

## GENERATED TRIPS ADDED TO THE STREET SYSTEM

The generated traffic volumes from the proposed development have been assigned to each of the study intersections. These volumes were determined based on the previously discussed trip generation data, assignment and distribution of generated traffic. The total peak hour generated traffic volumes from the proposed development are shown in **Figure 6,** and **Figure 7** shows the sum of the year 2029 background traffic volumes and generated traffic volumes from the proposed development.

## TURN LANE WARRANT ANALYSIS

A turn lane analysis was conducted to determine if exclusive turn lanes would be warranted at the proposed access drive along CR 800 N when the proposed residential development is constructed. This analysis was done in accordance with the INDOT *Driveway Permit Manual*[2]. The results are summarized in the following table.

TABLE 3 –TURN LANE WARRANT ANALYSIS SUMMARY

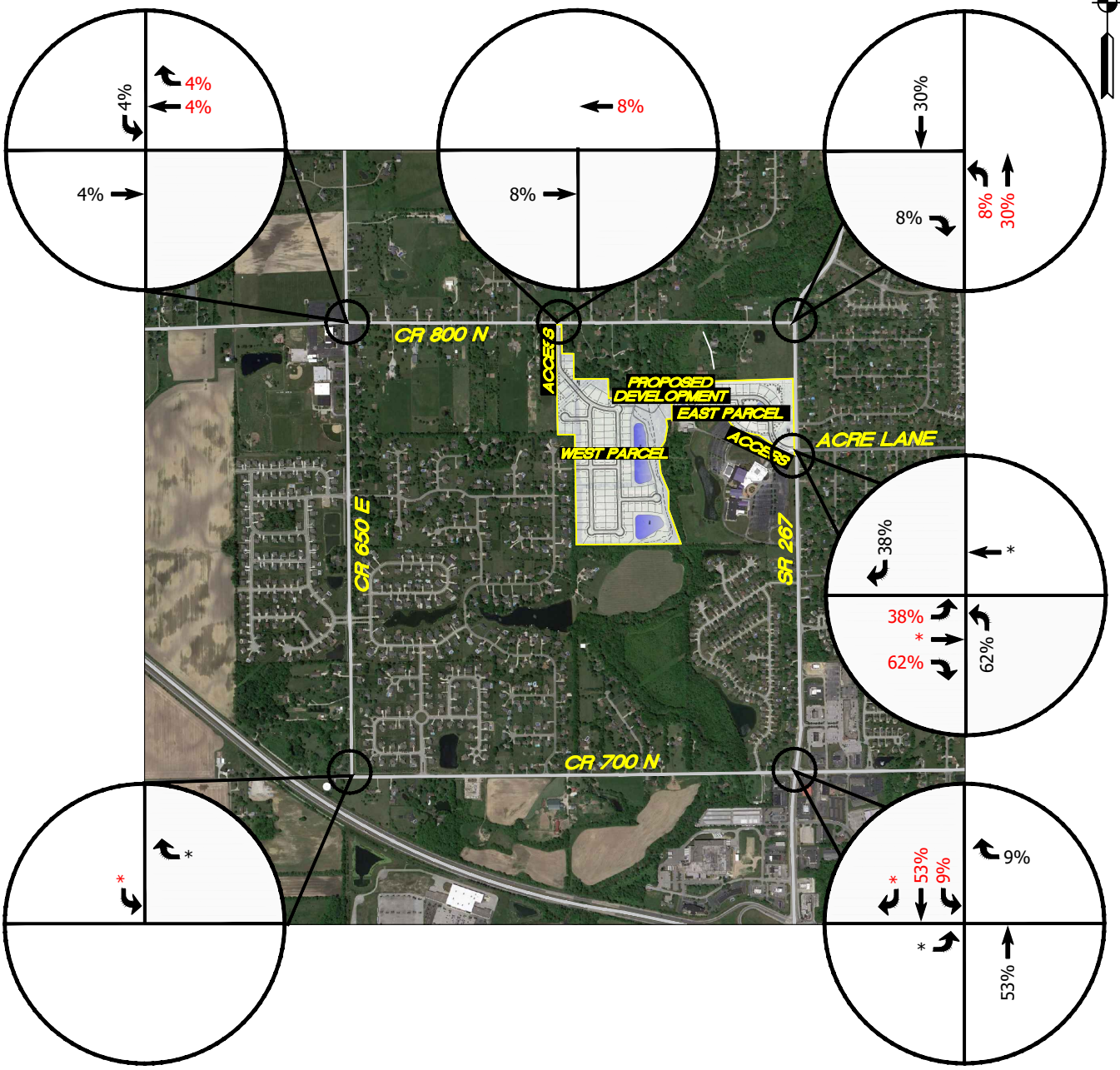
| LOCATION | SCENARIO | RIGHT-TURN LANE | LEFT-TURN LANE |
|---|---|---|---|
| CR 800 N & Proposed Development Access Drive | Year 2029 Traffic Volumes + Proposed Development Traffic Volumes | ✗ | ✗ |

✔ =Turn Lane warranted; ✗ =Turn Lane not warranted

The graphs that show the turn lane warrant criteria are shown in the **Appendix**.

[2] INDOT *Driveway Permit Manual*, Indiana Department of Transportation, 2018

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1966




LEGEND
XX = INBOUND TRAFFIC
XX = OUTBOUND TRAFFIC
* = NEGLIGIBLE

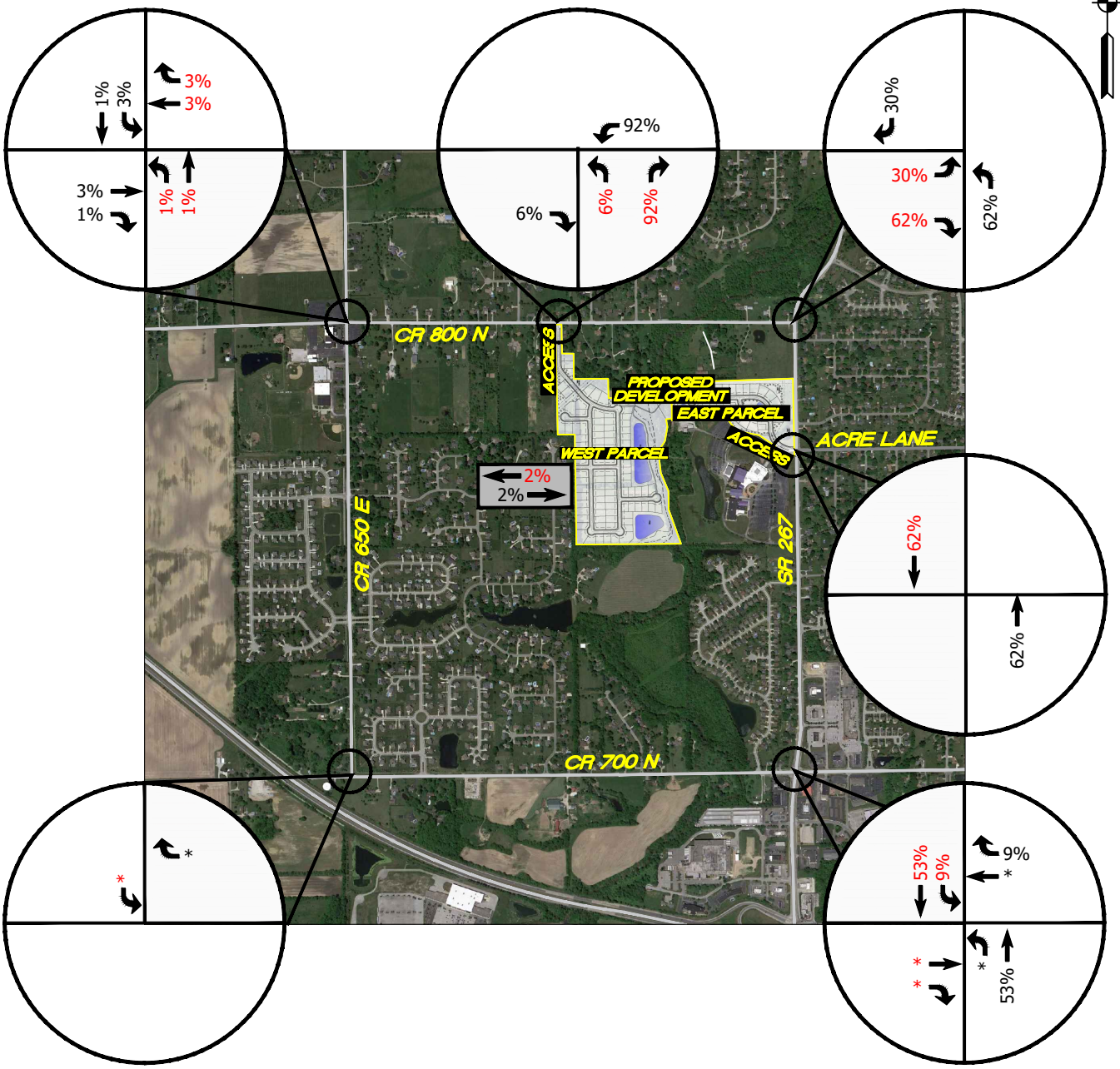
**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

**FIGURE 5A**

**ASSIGNMENT & DISTRIBUTION OF GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT (EAST PARCEL)**

Z:\2023\23112S-Dovid Weekley Homes, TIS, Brownsburg\23112S_EXH.dwg 1=1 2024-06-27 SK

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1966




LEGEND
XX = INBOUND TRAFFIC
XX = OUTBOUND TRAFFIC
* = NEGLIGIBLE

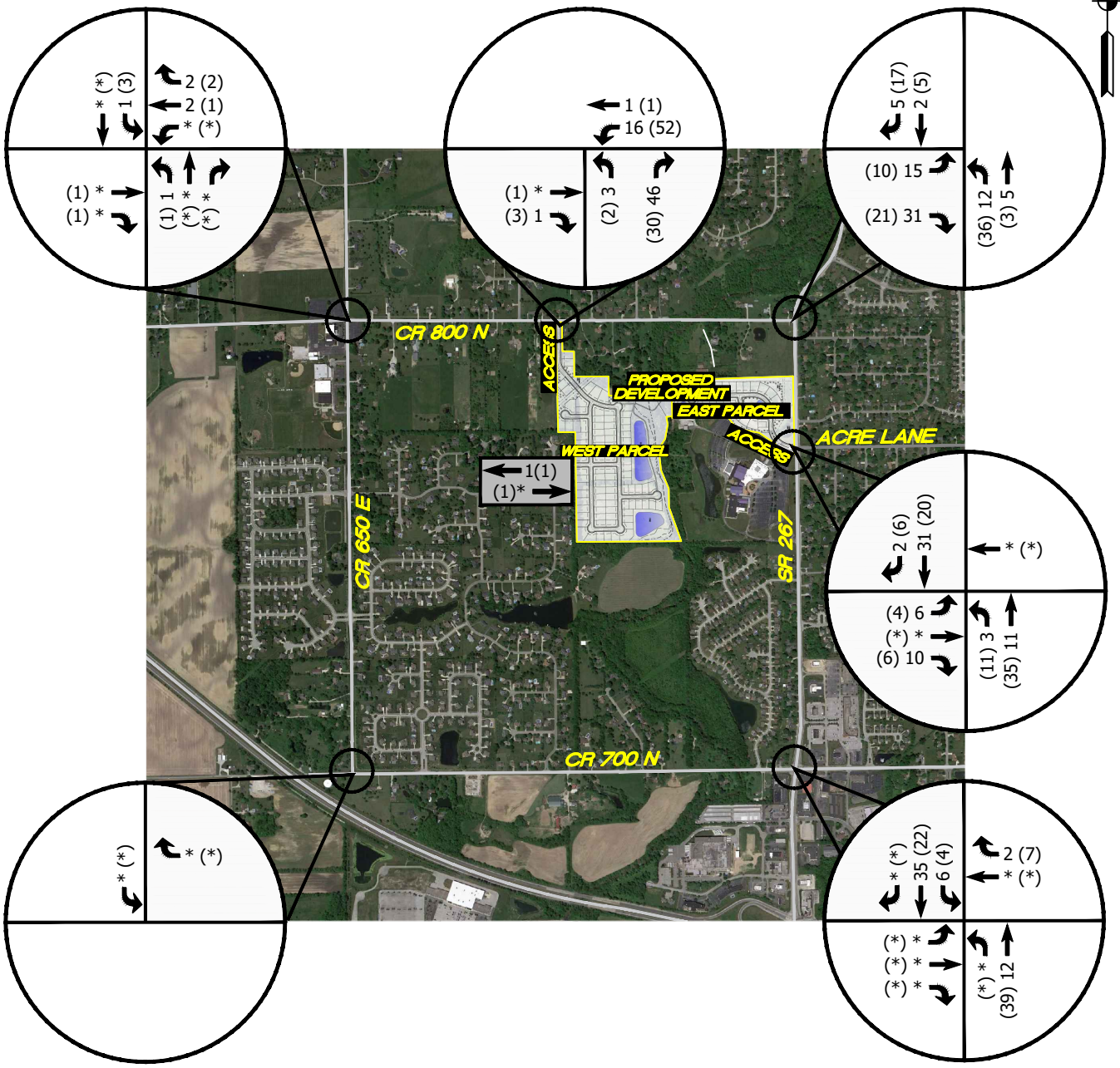
**FIGURE 5B**

**ASSIGNMENT & DISTRIBUTION OF GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT (WEST PARCEL)**

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

Z:\2023\23112S-Dovid Weekley Homes, TIS, Brownsburg\23112S_EXH.dwg 1=1 2024-06-27 SK

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1966



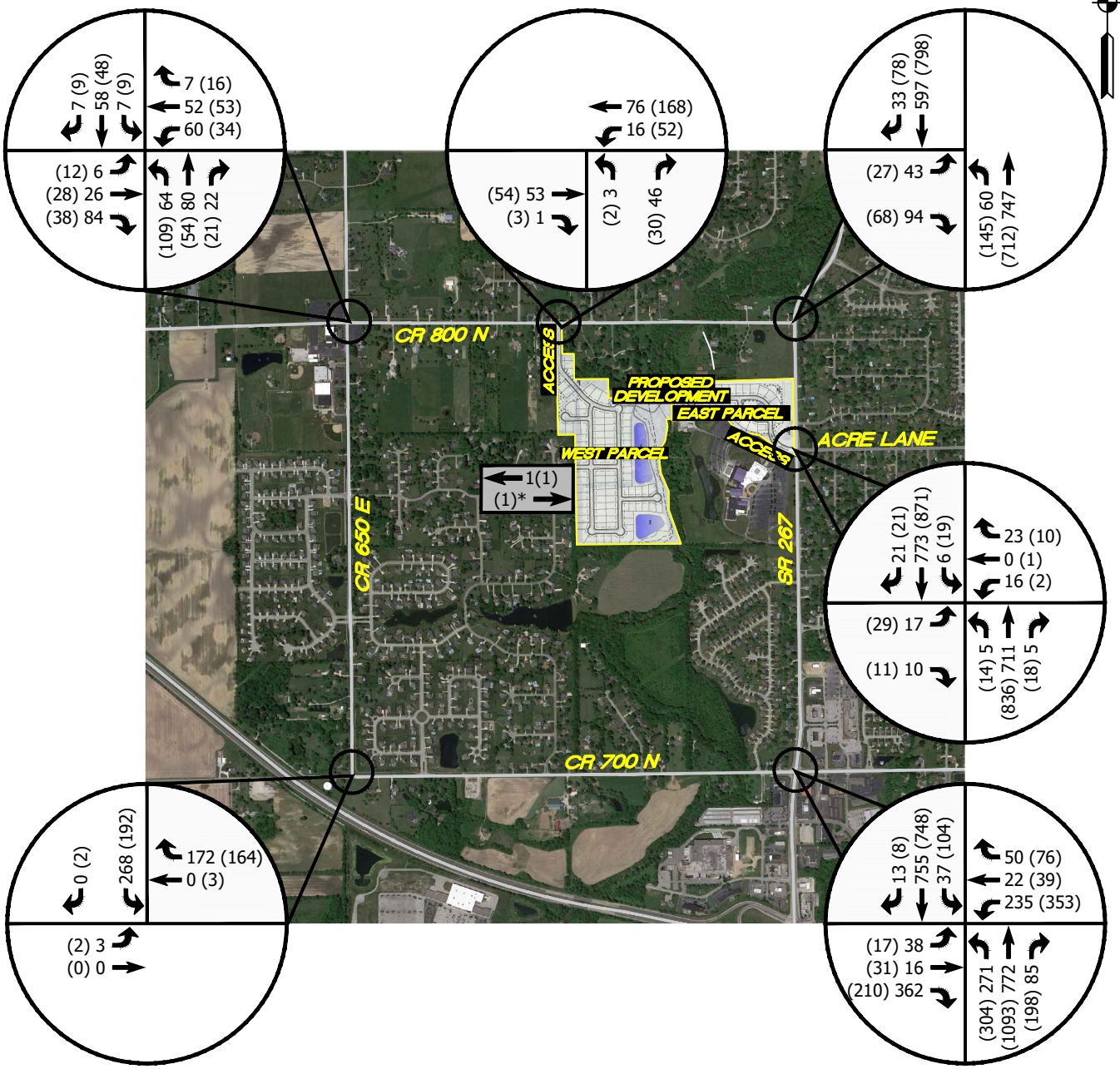

LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

**FIGURE 6**
**GENERATED TRAFFIC VOLUMES FROM THE PROPOSED DEVELOPMENT**

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

Z:\2023\23112S-Dovid Weekley Homes, TIS, Brownsburg\23112S_EXH.dwg 1=1 2024-06-27 SK

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1966




LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

**FIGURE 7**

**SUM OF YEAR 2029 BACKGROUND TRAFFIC VOLUMES & GENERATED TRAFFIC VOLUMES FROM PROPOSED DEVELOPMENT**

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

Z:\2023\23112S-Dovid Weekley Homes, TIS, Brownsburg\23112S_EXH.dwg 1=1 2024-06-27 SK

## CAPACITY ANALYSIS

The "efficiency" of an intersection is based on its ability to accommodate the traffic volumes that approach the intersection. It is defined by the Level-of-Service (LOS) of the intersection. The LOS is determined by a series of calculations commonly called a "capacity analysis". Input data into a capacity analysis include traffic volumes, intersection geometry, and number and use of lanes. To determine the LOS at each of the study intersections, a capacity analysis has been made using the recognized computer program *Synchro/SimTraffic*[3].This program allows intersections to be analyzed and optimized using the capacity calculation methods outlined within the *Highway Capacity Manual (HCM 7th Edition)*[4]. The following list shows the delays related to the levels of service for unsignalized and signalized intersections:

| Level of Service | Control Delay (seconds/vehicle) | |
|---|---|---|
| | UNSIGNALIZED | SIGNALIZED |
| A | Less than or equal to 10 | Less than or equal to 10 |
| B | Between 10.1 and 15 | Between 10.1 and 20 |
| C | Between 15.1 and 25 | Between 20.1 and 35 |
| D | Between 25.1 and 35 | Between 35.1 and 55 |
| E | Between 35.1 and 50 | Between 55.1 and 80 |
| F | greater than 50 | greater than 80 |

## CAPACITY ANALYSIS SCENARIOS

To evaluate the proposed development's effect on the public street system, a series of traffic volume scenarios were analyzed to determine the adequacy of the existing roadway network. From this analysis, necessary recommendations can be made to improve the public street system so it will accommodate future traffic volumes. An analysis has been made for the peak hours at each of the study intersections for the following traffic volume scenarios:

*Scenario 1: Existing Traffic Volumes* – Based on existing peak hour traffic volumes.

*Scenario 2: Year 2029 Background Traffic Volumes* – Based on applying growth rate factors provided by Shrewsberry to the existing traffic volumes.

*Scenario 3: Year 2029 + Proposed Development Traffic Volumes* – Based on the sum of year 2029 background traffic volumes and generated traffic volumes from the proposed development.

[3] *Synchro/SimTraffic 12*, Cubic Transportation Systems, 2023.
[4] *Highway Capacity Manual (HCM), 7th Edition* Transportation Research Board, National Research Council, Washington, DC, 2022.

The following tables summarize the peak hour level of service results at each of the study intersections. The *Synchro* (*HCM 7th Edition*) intersection reports illustrating the capacity analysis results are included in the **Appendix**.

TABLE 4 – LEVEL OF SERVICE SUMMARY: CR 800 N & CR 650 E

| APPROACH | AM PEAK | | | PM PEAK | | |
|---|---|---|---|---|---|---|
| | Scenarios | | | Scenarios | | |
| | 1 | 2 | 3 | 1 | 2 | 3 |
| Northbound Approach | B | B | B | A | A | A |
| Southbound Approach | A | A | A | A | A | A |
| Eastbound Approach | A | A | B | A | A | A |
| Westbound Approach | A | B | B | A | A | A |
| **Intersection** | **A** | **B** | **B** | **A** | **A** | **A** |

TABLE 5 – LEVEL OF SERVICE SUMMARY: CR 800 N & SR 267 (GREEN STREET)

| APPROACH | AM PEAK | | | | | PM PEAK | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Scenarios | | | | | Scenarios | | | | |
| | 1 | 2A | 2B | 3A | 3B | 1 | 2A | 2B | 3A | 3B |
| Northbound Left-Turn | A | A | A | A | A | B | B | B | B | B |
| Eastbound Approach | C | D | C | E | D | D | E | D | F | E |

Analysis considers the following intersection geometrics:
Scenario A considers existing intersection geometrics.
Scenario B considers construction of a eastbound left-turn lane and right-turn lane.

TABLE 6 – LEVEL OF SERVICE SUMMARY: CR 700 N & SR 267 (GREEN STREET)

| APPROACH | AM PEAK | | | PM PEAK | | |
|---|---|---|---|---|---|---|
| | Scenarios | | | Scenarios | | |
| | 1 | 2 | 3 | 1 | 2 | 3 |
| Northbound Approach | B | B | B | C | C | C |
| Southbound Approach | C | C | C | C | C | C |
| Eastbound Approach | C | C | C | C | C | C |
| Westbound Approach | C | C | C | C | D | D |
| **Intersection** | **C** | **C** | **C** | **C** | **C** | **C** |

TABLE 7 – LEVEL OF SERVICE SUMMARY: CR 700 N & CR 650 E

| APPROACH | AM PEAK | | | PM PEAK | | |
|---|---|---|---|---|---|---|
| | Scenarios | | | Scenarios | | |
| | 1 | 2 | 3 | 1 | 2 | 3 |
| Southbound Approach | B | B | B | B | B | B |
| Eastbound Left-Turn | A | A | A | A | A | A |

TABLE 8 – LEVEL OF SERVICE SUMMARY: SR 267 (GREEN STREET) & ACRE LANE/CONNECTION POINTE CHRISTIAN CHURCH/PROPOSED DEVELOPMENT ACCESS DRIVE

| APPROACH | AM PEAK | | | PM PEAK | | |
|---|---|---|---|---|---|---|
| | Scenarios | | | Scenarios | | |
| | 1 | 2 | 3 | 1 | 2 | 3 |
| Northbound Left-Turn | A | A | A | A | A | A |
| Southbound Left-Turn | A | A | A | A | A | A |
| Eastbound Approach | E | F | E | F | F | F |
| Westbound Approach | D | D | E | C | D | D |

TABLE 9 – LEVEL OF SERVICE SUMMARY: CR 800 N & PROPOSED DEVELOPMENT ACCESS DRIVE

| APPROACH | AM PEAK | PM PEAK |
|---|---|---|
| | Scenario 3 | Scenario 3 |
| Northbound Approach | A | A |
| Westbound Left-Turn | A | A |

Analysis considers construction of the access drive with one inbound and one outbound lane that will stop for CR 800 N.

## CONCLUSIONS & RECOMMENDATIONS

The conclusions that follow are based on existing traffic volume data, trip generation, assignment and distribution of generated traffic, capacity analyses/level of service results and a field review conducted at the site. Based on the analysis and the resulting conclusions of this study, recommendations are formulated to ensure that the roadway system will accommodate the increased traffic volumes from the proposed residential development.

CR 800 N & CR 650 E

Capacity analyses for all traffic volume scenarios have shown that this intersection currently operates and will continue to operate at acceptable levels of service during the AM and PM peak hours with the existing intersection conditions.

CR 800 N & SR 267 (GREEN STREET)

Capacity analyses have shown that all approaches to this intersection currently operate at acceptable levels of service during the AM and PM peak hours with the existing intersection conditions. It is expected that the eastbound approach will experience increased delays during the peak hours as future traffic is added to the intersection. However, additional analyses have shown that these delays can be substantially reduced if separate left-turn and right-turn lanes are constructed along the eastbound approach.

CR 700 N & SR 267 (GREEN STREET)

Capacity analyses for all traffic volume scenarios have shown that this intersection currently operates and will continue to operate at acceptable levels of service during the AM and PM peak hours with the existing intersection conditions.

CR 700 N & CR 650 E

Capacity analyses for all traffic volume scenarios have shown that all approaches to this intersection currently operate and will continue to operate at acceptable levels of service during the AM and PM peak hours with the existing intersection conditions.

SR 267 (GREEN STREET) & ACRE LANE/CONNECTION POINTE CHRISTIAN CHURCH/PROPOSED DEVELOPMENT ACCESS DRIVE

Capacity analyses have shown that the eastbound approach currently operates below acceptable levels of service during the peak hours. The eastbound and westbound approach delays will increase when future traffic volumes are added to the intersection. However, it should be noted that minor street approach peak hour delays are not uncommon when the major street has high peak hour volumes.

CR 800 N & PROPOSED DEVELOPMENT ACCESS DRIVE

Capacity analyses have shown that all approaches to this intersection will operate at acceptable levels of service during the AM and PM peak hours with the following recommended intersection conditions:

- Construction of the access drive with one inbound and one outbound lane.
- The intersection should be stop-controlled with the proposed access drive stopping for CR 800 N.

# TRAFFIC IMPACT STUDY

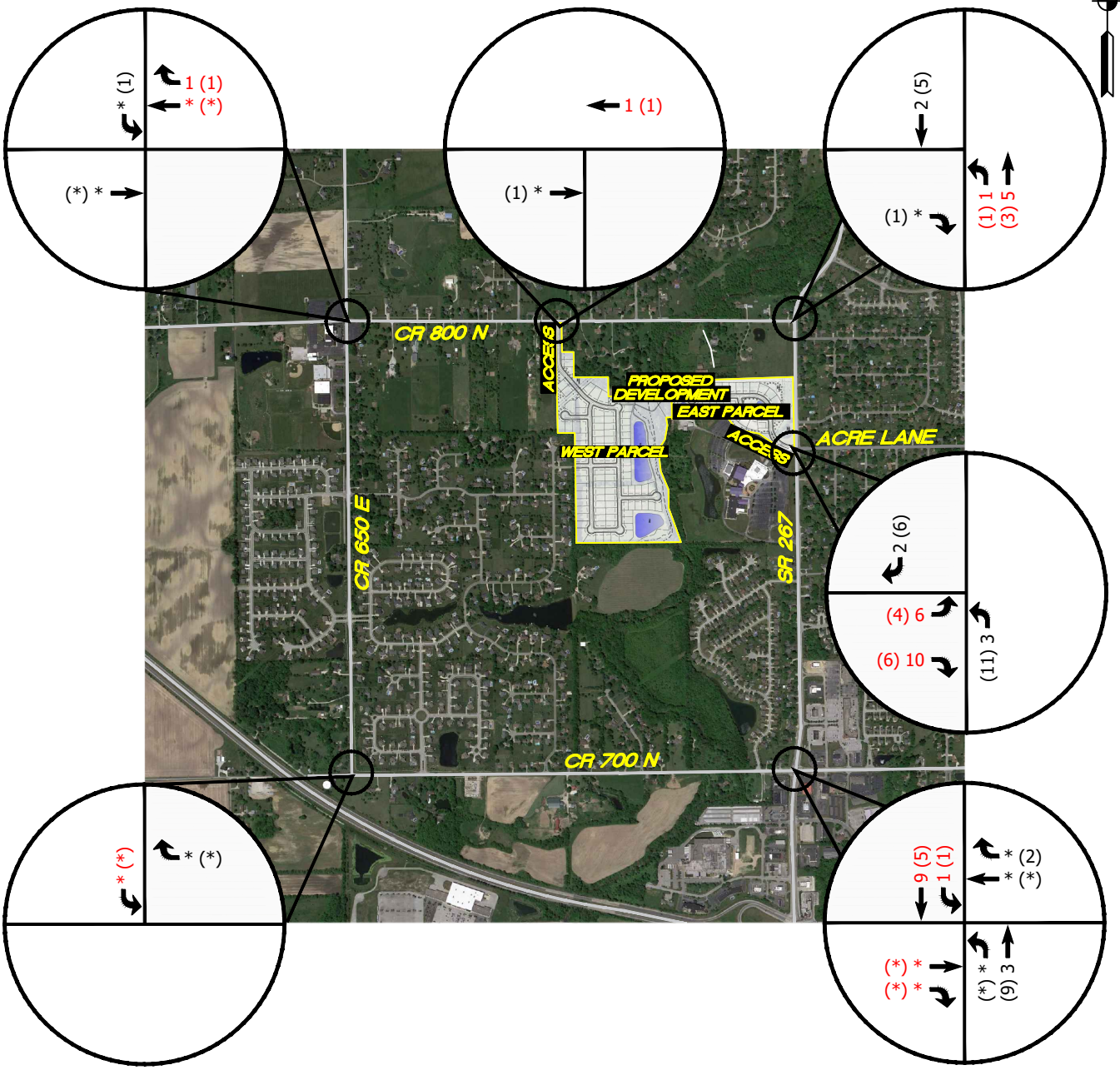
# APPENDIX

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1966

*8365 Keystone Crossing Boulevard, Suite 201*
*Indianapolis, IN 46240*
*Phone: (317) 202-0864 Fax: (317) 202-0908*

# ADDITIONAL FIGURES

A&F ENGINEERING
Transcription & Site Engineering
Creating Order Since 1966




LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

## FIGURE A

**GENERATED TRAFFIC VOLUMES FROM THE PROPOSED DEVELOPMENT (EAST PARCEL)**

Z:\2023\23112S-Dovid Weekley Homes, TIS, Brownsburg\23112S_EXH.dwg 1=1 2024-06-27 SK

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1966

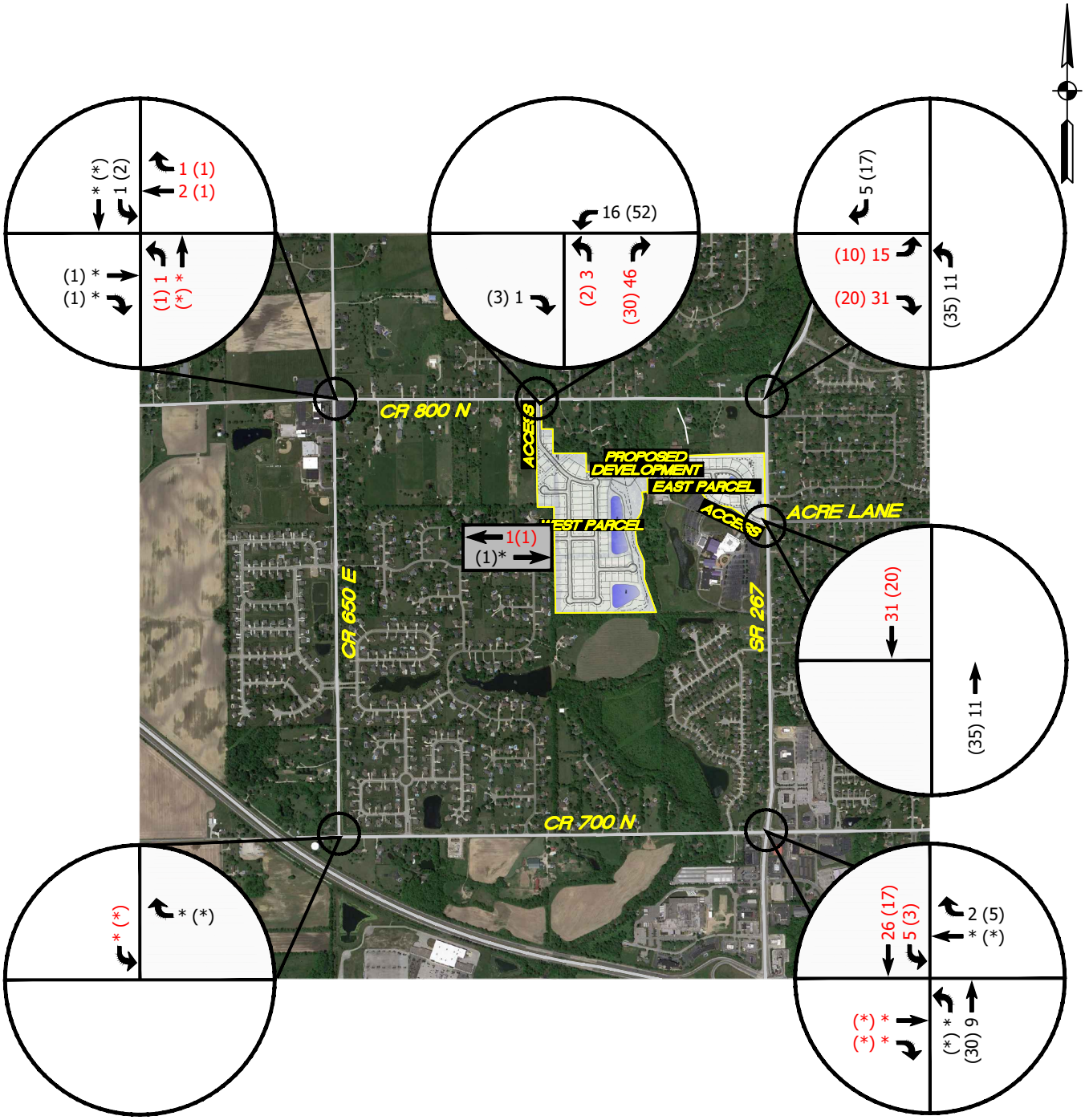



**FIGURE B**

**GENERATED TRAFFIC VOLUMES FROM THE PROPOSED DEVELOPMENT (WEST PARCEL)**

**TRAFFIC IMPACT STUDY**
**DAVID WEEKLEY HOMES**
**BROWNSBURG, IN**

Z:\2023\23112S-Dovid Weekley Homes, TIS, Brownsburg\23112S_EXH.dwg 1=1 2024-06-27 SK

# CR 800 N & CR 650 E

## TRAFFIC VOLUME COUNTS
## CAPACITY ANALYSIS

## CR 800 N & CR 650 E - TMC

Tue Dec 12, 2023
AM Peak (7:30 AM - 8:30 AM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142922, Location: 39.880045, -86.411371



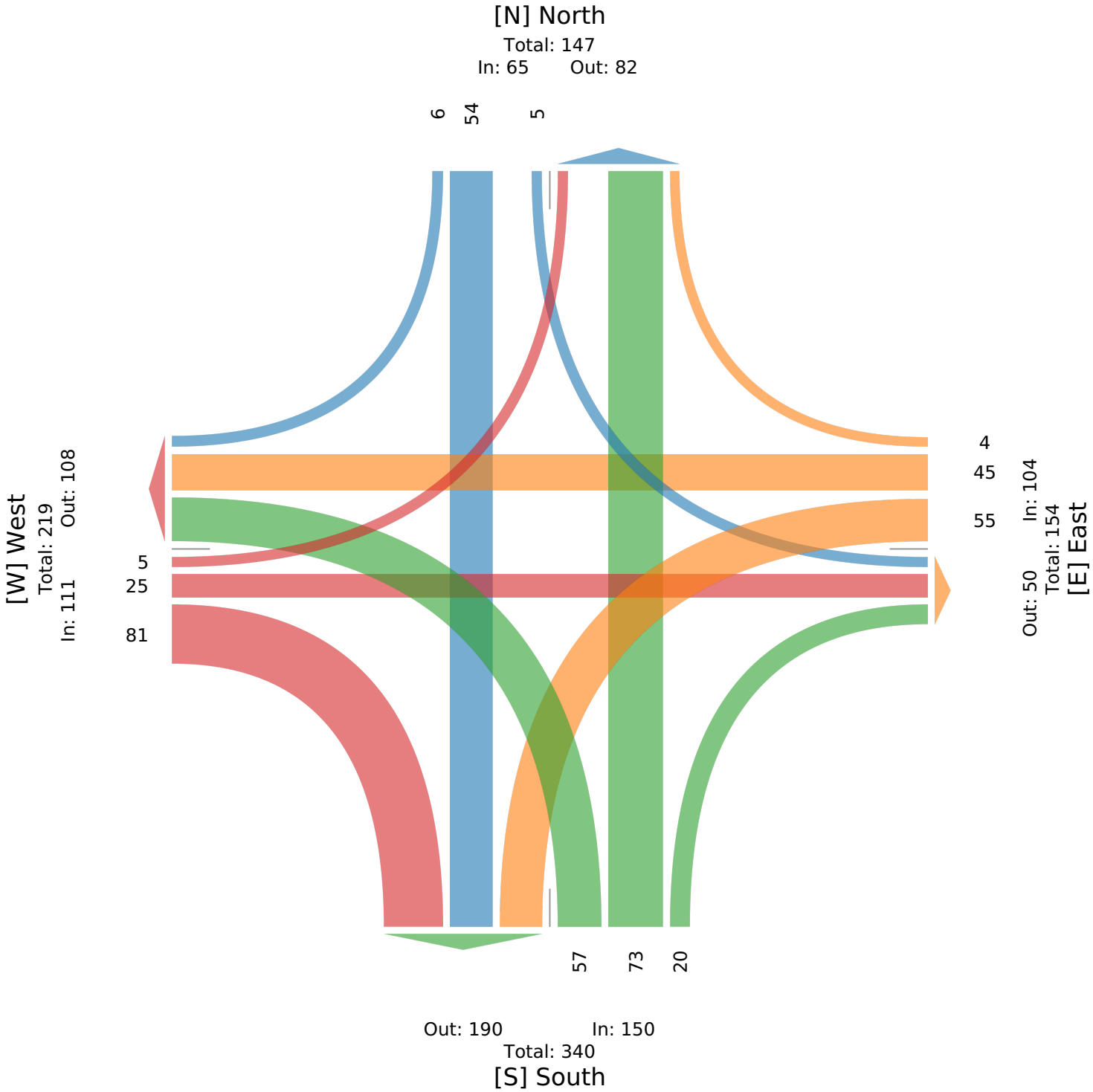

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg | South | | | | | North | | | | | West | | | | | East | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Northbound | | | | | Southbound | | | | | Eastbound | | | | | Westbound | | | | | |
| Time | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | **Int** |
| 2023-12-12 7:30AM | 1 | 13 | 4 | 0 | **18** | 2 | 11 | 1 | 0 | **14** | 2 | 5 | 11 | 0 | **18** | 2 | 7 | 2 | 0 | **11** | **61** |
| 7:45AM | 7 | 9 | 0 | 0 | **16** | 1 | 6 | 0 | 0 | **7** | 0 | 9 | 15 | 0 | **24** | 14 | 4 | 0 | 0 | **18** | **65** |
| 8:00AM | 18 | 20 | 7 | 0 | **45** | 2 | 17 | 2 | 0 | **21** | 1 | 5 | 27 | 0 | **33** | 19 | 13 | 1 | 0 | **33** | **132** |
| 8:15AM | 31 | 31 | 9 | 0 | **71** | 0 | 20 | 3 | 0 | **23** | 2 | 6 | 28 | 0 | **36** | 20 | 21 | 1 | 0 | **42** | **172** |
| **Total** | 57 | 73 | 20 | 0 | **150** | 5 | 54 | 6 | 0 | **65** | 5 | 25 | 81 | 0 | **111** | 55 | 45 | 4 | 0 | **104** | **430** |
| **% Approach** | 38.0% | 48.7% | 13.3% | 0% | **-** | 7.7% | 83.1% | 9.2% | 0% | **-** | 4.5% | 22.5% | 73.0% | 0% | **-** | 52.9% | 43.3% | 3.8% | 0% | **-** | - |
| **% Total** | 13.3% | 17.0% | 4.7% | 0% | **34.9%** | 1.2% | 12.6% | 1.4% | 0% | **15.1%** | 1.2% | 5.8% | 18.8% | 0% | **25.8%** | 12.8% | 10.5% | 0.9% | 0% | **24.2%** | - |
| **PHF** | 0.460 | 0.589 | 0.556 | - | **0.528** | 0.625 | 0.675 | 0.500 | - | **0.707** | 0.625 | 0.694 | 0.723 | - | **0.771** | 0.688 | 0.536 | 0.500 | - | **0.619** | 0.625 |
| **Lights and Motorcycles** | 57 | 73 | 19 | 0 | **149** | 4 | 54 | 6 | 0 | **64** | 4 | 25 | 81 | 0 | **110** | 53 | 44 | 4 | 0 | **101** | 424 |
| **% Lights and Motorcycles** | 100% | 100% | 95.0% | 0% | **99.3%** | 80.0% | 100% | 100% | 0% | **98.5%** | 80.0% | 100% | 100% | 0% | **99.1%** | 96.4% | 97.8% | 100% | 0% | **97.1%** | 98.6% |
| **Heavy** | 0 | 0 | 1 | 0 | **1** | 1 | 0 | 0 | 0 | **1** | 1 | 0 | 0 | 0 | **1** | 2 | 1 | 0 | 0 | **3** | 6 |
| **% Heavy** | 0% | 0% | 5.0% | 0% | **0.7%** | 20.0% | 0% | 0% | 0% | **1.5%** | 20.0% | 0% | 0% | 0% | **0.9%** | 3.6% | 2.2% | 0% | 0% | **2.9%** | 1.4% |

*L: Left, R: Right, T: Thru, U: U-Turn

**CR 800 N & CR 650 E - TMC**
Tue Dec 12, 2023
AM Peak (7:30 AM - 8:30 AM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142922, Location: 39.880045, -86.411371

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## CR 800 N & CR 650 E - TMC

Tue Dec 12, 2023
PM Peak (3:30 PM - 4:30 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142922, Location: 39.880045, -86.411371

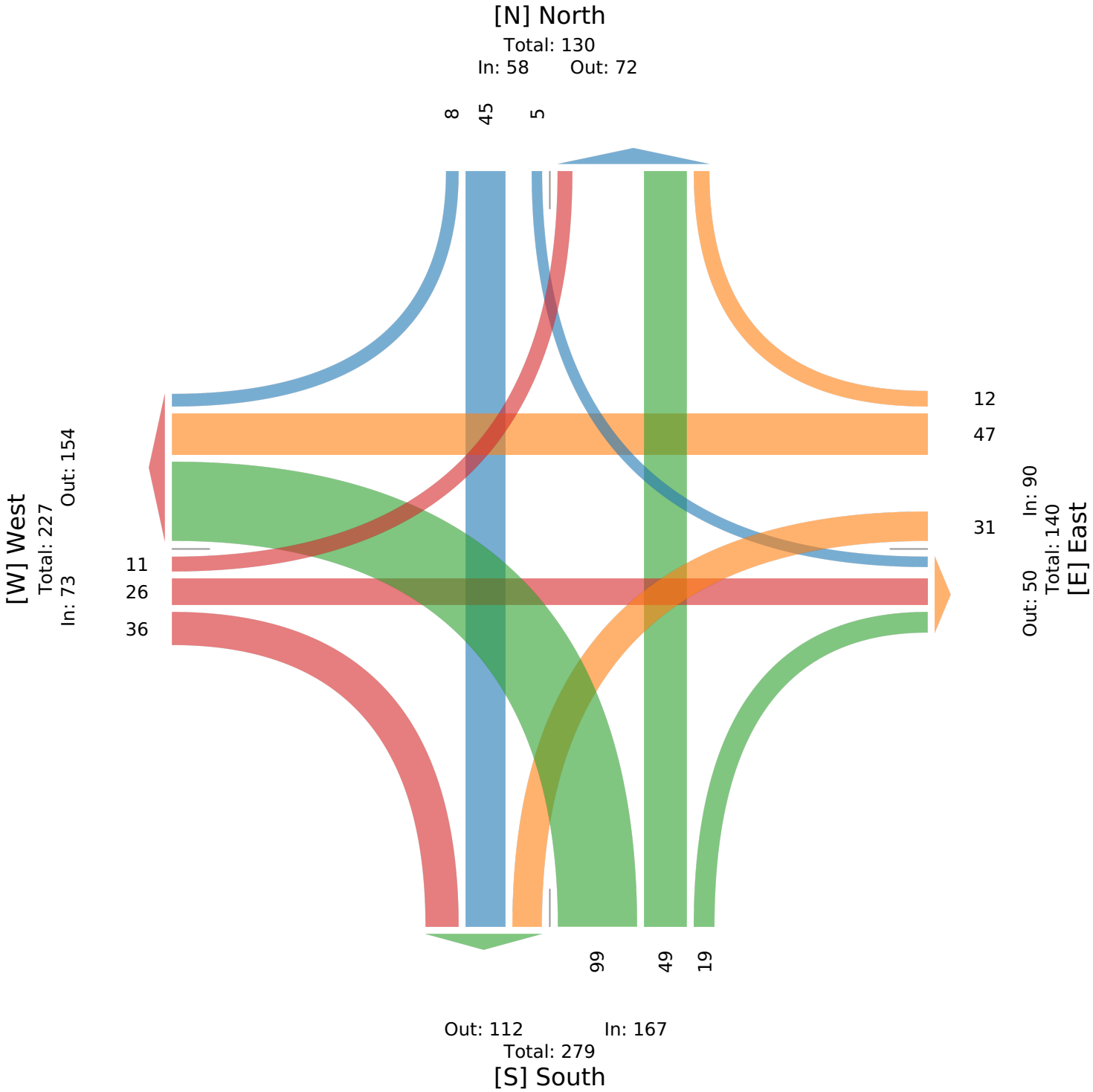
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg / Direction | South Northbound | | | | | North Southbound | | | | | West Eastbound | | | | | East Westbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | **Int** |
| 2023-12-12 3:30PM | 21 | 5 | 6 | 0 | **32** | 2 | 13 | 5 | 0 | **20** | 1 | 3 | 15 | 0 | **19** | 9 | 18 | 3 | 0 | **30** | **101** |
| 3:45PM | 51 | 20 | 9 | 0 | **80** | 0 | 10 | 1 | 0 | **11** | 4 | 8 | 5 | 0 | **17** | 9 | 14 | 1 | 0 | **24** | **132** |
| 4:00PM | 14 | 14 | 2 | 0 | **30** | 0 | 9 | 1 | 0 | **10** | 3 | 4 | 8 | 0 | **15** | 5 | 7 | 3 | 0 | **15** | **70** |
| 4:15PM | 13 | 10 | 2 | 0 | **25** | 3 | 13 | 1 | 0 | **17** | 3 | 11 | 8 | 0 | **22** | 8 | 8 | 5 | 0 | **21** | **85** |
| **Total** | 99 | 49 | 19 | 0 | **167** | 5 | 45 | 8 | 0 | **58** | 11 | 26 | 36 | 0 | **73** | 31 | 47 | 12 | 0 | **90** | **388** |
| **% Approach** | 59.3% | 29.3% | 11.4% | 0% | **-** | 8.6% | 77.6% | 13.8% | 0% | **-** | 15.1% | 35.6% | 49.3% | 0% | **-** | 34.4% | 52.2% | 13.3% | 0% | **-** | - |
| **% Total** | 25.5% | 12.6% | 4.9% | 0% | **43.0%** | 1.3% | 11.6% | 2.1% | 0% | **14.9%** | 2.8% | 6.7% | 9.3% | 0% | **18.8%** | 8.0% | 12.1% | 3.1% | 0% | **23.2%** | - |
| **PHF** | 0.485 | 0.613 | 0.528 | - | **0.522** | 0.417 | 0.865 | 0.400 | - | **0.725** | 0.688 | 0.591 | 0.600 | - | **0.830** | 0.861 | 0.653 | 0.600 | - | **0.750** | 0.735 |
| **Lights and Motorcycles** | 99 | 47 | 19 | 0 | **165** | 5 | 43 | 8 | 0 | **56** | 9 | 24 | 36 | 0 | **69** | 28 | 46 | 9 | 0 | **83** | 373 |
| **% Lights and Motorcycles** | 100% | 95.9% | 100% | 0% | **98.8%** | 100% | 95.6% | 100% | 0% | **96.6%** | 81.8% | 92.3% | 100% | 0% | **94.5%** | 90.3% | 97.9% | 75.0% | 0% | **92.2%** | 96.1% |
| **Heavy** | 0 | 2 | 0 | 0 | **2** | 0 | 2 | 0 | 0 | **2** | 2 | 2 | 0 | 0 | **4** | 3 | 1 | 3 | 0 | **7** | 15 |
| **% Heavy** | 0% | 4.1% | 0% | 0% | **1.2%** | 0% | 4.4% | 0% | 0% | **3.4%** | 18.2% | 7.7% | 0% | 0% | **5.5%** | 9.7% | 2.1% | 25.0% | 0% | **7.8%** | 3.9% |

*L: Left, R: Right, T: Thru, U: U-Turn

**CR 800 N & CR 650 E - TMC**
Tue Dec 12, 2023
PM Peak (3:30 PM - 4:30 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142922, Location: 39.880045, -86.411371

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



| Intersection | |
|---|---|
| Intersection Delay, s/veh | 9.9 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 5 | 25 | 81 | 55 | 45 | 4 | 57 | 73 | 20 | 5 | 54 | 6 |
| Future Vol, veh/h | 5 | 25 | 81 | 55 | 45 | 4 | 57 | 73 | 20 | 5 | 54 | 6 |
| Peak Hour Factor | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 |
| Heavy Vehicles, % | 20 | 0 | 0 | 4 | 2 | 0 | 0 | 0 | 5 | 20 | 0 | 0 |
| Mvmt Flow | 8 | 40 | 131 | 89 | 73 | 6 | 92 | 118 | 32 | 8 | 87 | 10 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 9.6 | 9.9 | 10.4 | 9.5 |
| HCM LOS | A | A | B | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 38% | 5% | 53% | 8% |
| Vol Thru, % | 49% | 23% | 43% | 83% |
| Vol Right, % | 13% | 73% | 4% | 9% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 150 | 111 | 104 | 65 |
| LT Vol | 57 | 5 | 55 | 5 |
| Through Vol | 73 | 25 | 45 | 54 |
| RT Vol | 20 | 81 | 4 | 6 |
| Lane Flow Rate | 242 | 179 | 168 | 105 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.329 | 0.244 | 0.24 | 0.157 |
| Departure Headway (Hd) | 4.9 | 4.908 | 5.152 | 5.381 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 726 | 723 | 689 | 659 |
| Service Time | 2.977 | 2.99 | 3.236 | 3.474 |
| HCM Lane V/C Ratio | 0.333 | 0.248 | 0.244 | 0.159 |
| HCM Control Delay, s/veh | 10.4 | 9.6 | 9.9 | 9.5 |
| HCM Lane LOS | B | A | A | A |
| HCM 95th-tile Q | 1.4 | 1 | 0.9 | 0.6 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 9 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 11 | 26 | 36 | 31 | 47 | 12 | 99 | 49 | 19 | 5 | 45 | 8 |
| Future Vol, veh/h | 11 | 26 | 36 | 31 | 47 | 12 | 99 | 49 | 19 | 5 | 45 | 8 |
| Peak Hour Factor | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |
| Heavy Vehicles, % | 18 | 8 | 0 | 10 | 2 | 25 | 0 | 4 | 0 | 0 | 4 | 0 |
| Mvmt Flow | 15 | 35 | 49 | 42 | 64 | 16 | 134 | 66 | 26 | 7 | 61 | 11 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 8.6 | 8.9 | 9.5 | 8.2 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 59% | 15% | 34% | 9% |
| Vol Thru, % | 29% | 36% | 52% | 78% |
| Vol Right, % | 11% | 49% | 13% | 14% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 167 | 73 | 90 | 58 |
| LT Vol | 99 | 11 | 31 | 5 |
| Through Vol | 49 | 26 | 47 | 45 |
| RT Vol | 19 | 36 | 12 | 8 |
| Lane Flow Rate | 226 | 99 | 122 | 78 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.287 | 0.132 | 0.165 | 0.101 |
| Departure Headway (Hd) | 4.585 | 4.811 | 4.897 | 4.643 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 783 | 744 | 731 | 770 |
| Service Time | 2.617 | 2.851 | 2.937 | 2.683 |
| HCM Lane V/C Ratio | 0.289 | 0.133 | 0.167 | 0.101 |
| HCM Control Delay, s/veh | 9.5 | 8.6 | 8.9 | 8.2 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 1.2 | 0.5 | 0.6 | 0.3 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 10.5 |
| Intersection LOS | B |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 6 | 26 | 84 | 60 | 50 | 5 | 63 | 80 | 22 | 6 | 58 | 7 |
| Future Vol, veh/h | 6 | 26 | 84 | 60 | 50 | 5 | 63 | 80 | 22 | 6 | 58 | 7 |
| Peak Hour Factor | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 |
| Heavy Vehicles, % | 20 | 0 | 0 | 4 | 2 | 0 | 0 | 0 | 5 | 20 | 0 | 0 |
| Mvmt Flow | 10 | 42 | 135 | 97 | 81 | 8 | 102 | 129 | 35 | 10 | 94 | 11 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 10 | 10.4 | 11.2 | 9.9 |
| HCM LOS | A | B | B | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 38% | 5% | 52% | 8% |
| Vol Thru, % | 48% | 22% | 43% | 82% |
| Vol Right, % | 13% | 72% | 4% | 10% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 165 | 116 | 115 | 71 |
| LT Vol | 63 | 6 | 60 | 6 |
| Through Vol | 80 | 26 | 50 | 58 |
| RT Vol | 22 | 84 | 5 | 7 |
| Lane Flow Rate | 266 | 187 | 185 | 115 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.378 | 0.267 | 0.276 | 0.179 |
| Departure Headway (Hd) | 5.114 | 5.143 | 5.366 | 5.616 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 708 | 698 | 670 | 639 |
| Service Time | 3.114 | 3.175 | 3.398 | 3.646 |
| HCM Lane V/C Ratio | 0.376 | 0.268 | 0.276 | 0.18 |
| HCM Control Delay, s/veh | 11.2 | 10 | 10.4 | 9.9 |
| HCM Lane LOS | B | A | B | A |
| HCM 95th-tile Q | 1.8 | 1.1 | 1.1 | 0.6 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 9.3 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 12 | 27 | 38 | 34 | 52 | 14 | 108 | 54 | 21 | 6 | 48 | 9 |
| Future Vol, veh/h | 12 | 27 | 38 | 34 | 52 | 14 | 108 | 54 | 21 | 6 | 48 | 9 |
| Peak Hour Factor | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |
| Heavy Vehicles, % | 18 | 8 | 0 | 10 | 2 | 25 | 0 | 4 | 0 | 0 | 4 | 0 |
| Mvmt Flow | 16 | 36 | 51 | 46 | 70 | 19 | 146 | 73 | 28 | 8 | 65 | 12 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 8.8 | 9.2 | 9.9 | 8.4 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 59% | 16% | 34% | 10% |
| Vol Thru, % | 30% | 35% | 52% | 76% |
| Vol Right, % | 11% | 49% | 14% | 14% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 183 | 77 | 100 | 63 |
| LT Vol | 108 | 12 | 34 | 6 |
| Through Vol | 54 | 27 | 52 | 48 |
| RT Vol | 21 | 38 | 14 | 9 |
| Lane Flow Rate | 247 | 104 | 135 | 85 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.319 | 0.142 | 0.187 | 0.112 |
| Departure Headway (Hd) | 4.647 | 4.905 | 4.974 | 4.727 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 772 | 727 | 719 | 754 |
| Service Time | 2.688 | 2.959 | 3.025 | 2.779 |
| HCM Lane V/C Ratio | 0.32 | 0.143 | 0.188 | 0.113 |
| HCM Control Delay, s/veh | 9.9 | 8.8 | 9.2 | 8.4 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 1.4 | 0.5 | 0.7 | 0.4 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 10.6 |
| Intersection LOS | B |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 6 | 26 | 84 | 60 | 52 | 7 | 64 | 80 | 22 | 7 | 58 | 7 |
| Future Vol, veh/h | 6 | 26 | 84 | 60 | 52 | 7 | 64 | 80 | 22 | 7 | 58 | 7 |
| Peak Hour Factor | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 |
| Heavy Vehicles, % | 20 | 0 | 0 | 4 | 2 | 0 | 0 | 0 | 5 | 20 | 0 | 0 |
| Mvmt Flow | 10 | 42 | 135 | 97 | 84 | 11 | 103 | 129 | 35 | 11 | 94 | 11 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 10.1 | 10.6 | 11.3 | 9.9 |
| HCM LOS | B | B | B | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 39% | 5% | 50% | 10% |
| Vol Thru, % | 48% | 22% | 44% | 81% |
| Vol Right, % | 13% | 72% | 6% | 10% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 166 | 116 | 119 | 72 |
| LT Vol | 64 | 6 | 60 | 7 |
| Through Vol | 80 | 26 | 52 | 58 |
| RT Vol | 22 | 84 | 7 | 7 |
| Lane Flow Rate | 268 | 187 | 192 | 116 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.382 | 0.269 | 0.286 | 0.182 |
| Departure Headway (Hd) | 5.141 | 5.167 | 5.368 | 5.644 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 704 | 696 | 670 | 635 |
| Service Time | 3.141 | 3.2 | 3.401 | 3.679 |
| HCM Lane V/C Ratio | 0.381 | 0.269 | 0.287 | 0.183 |
| HCM Control Delay, s/veh | 11.3 | 10.1 | 10.6 | 9.9 |
| HCM Lane LOS | B | B | B | A |
| HCM 95th-tile Q | 1.8 | 1.1 | 1.2 | 0.7 |

| Intersection | |
|---|---|
| Intersection Delay, s/veh | 9.3 |
| Intersection LOS | A |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 12 | 28 | 39 | 34 | 53 | 16 | 109 | 54 | 21 | 9 | 48 | 9 |
| Future Vol, veh/h | 12 | 28 | 39 | 34 | 53 | 16 | 109 | 54 | 21 | 9 | 48 | 9 |
| Peak Hour Factor | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |
| Heavy Vehicles, % | 18 | 8 | 0 | 10 | 2 | 25 | 0 | 4 | 0 | 0 | 4 | 0 |
| Mvmt Flow | 16 | 38 | 53 | 46 | 72 | 22 | 147 | 73 | 28 | 12 | 65 | 12 |
| Number of Lanes | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| Opposing Approach | WB | EB | SB | NB |
| Opposing Lanes | 1 | 1 | 1 | 1 |
| Conflicting Approach Left | SB | NB | EB | WB |
| Conflicting Lanes Left | 1 | 1 | 1 | 1 |
| Conflicting Approach Right | NB | SB | WB | EB |
| Conflicting Lanes Right | 1 | 1 | 1 | 1 |
| HCM Control Delay, s/veh | 8.8 | 9.2 | 9.9 | 8.5 |
| HCM LOS | A | A | A | A |

| Lane | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|
| Vol Left, % | 59% | 15% | 33% | 14% |
| Vol Thru, % | 29% | 35% | 51% | 73% |
| Vol Right, % | 11% | 49% | 16% | 14% |
| Sign Control | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 184 | 79 | 103 | 66 |
| LT Vol | 109 | 12 | 34 | 9 |
| Through Vol | 54 | 28 | 53 | 48 |
| RT Vol | 21 | 39 | 16 | 9 |
| Lane Flow Rate | 249 | 107 | 139 | 89 |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.323 | 0.146 | 0.193 | 0.118 |
| Departure Headway (Hd) | 4.671 | 4.927 | 4.984 | 4.761 |
| Convergence, Y/N | Yes | Yes | Yes | Yes |
| Cap | 768 | 724 | 717 | 749 |
| Service Time | 2.714 | 2.984 | 3.037 | 2.815 |
| HCM Lane V/C Ratio | 0.324 | 0.148 | 0.194 | 0.119 |
| HCM Control Delay, s/veh | 9.9 | 8.8 | 9.2 | 8.5 |
| HCM Lane LOS | A | A | A | A |
| HCM 95th-tile Q | 1.4 | 0.5 | 0.7 | 0.4 |

# CR 800 N & SR 267

## TRAFFIC VOLUME COUNTS
## CAPACITY ANALYSIS

## SR 267 & CR 800 N - TMC

Tue Dec 12, 2023
AM Peak (7:15 AM - 8:15 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142924, Location: 39.880075, -86.392508

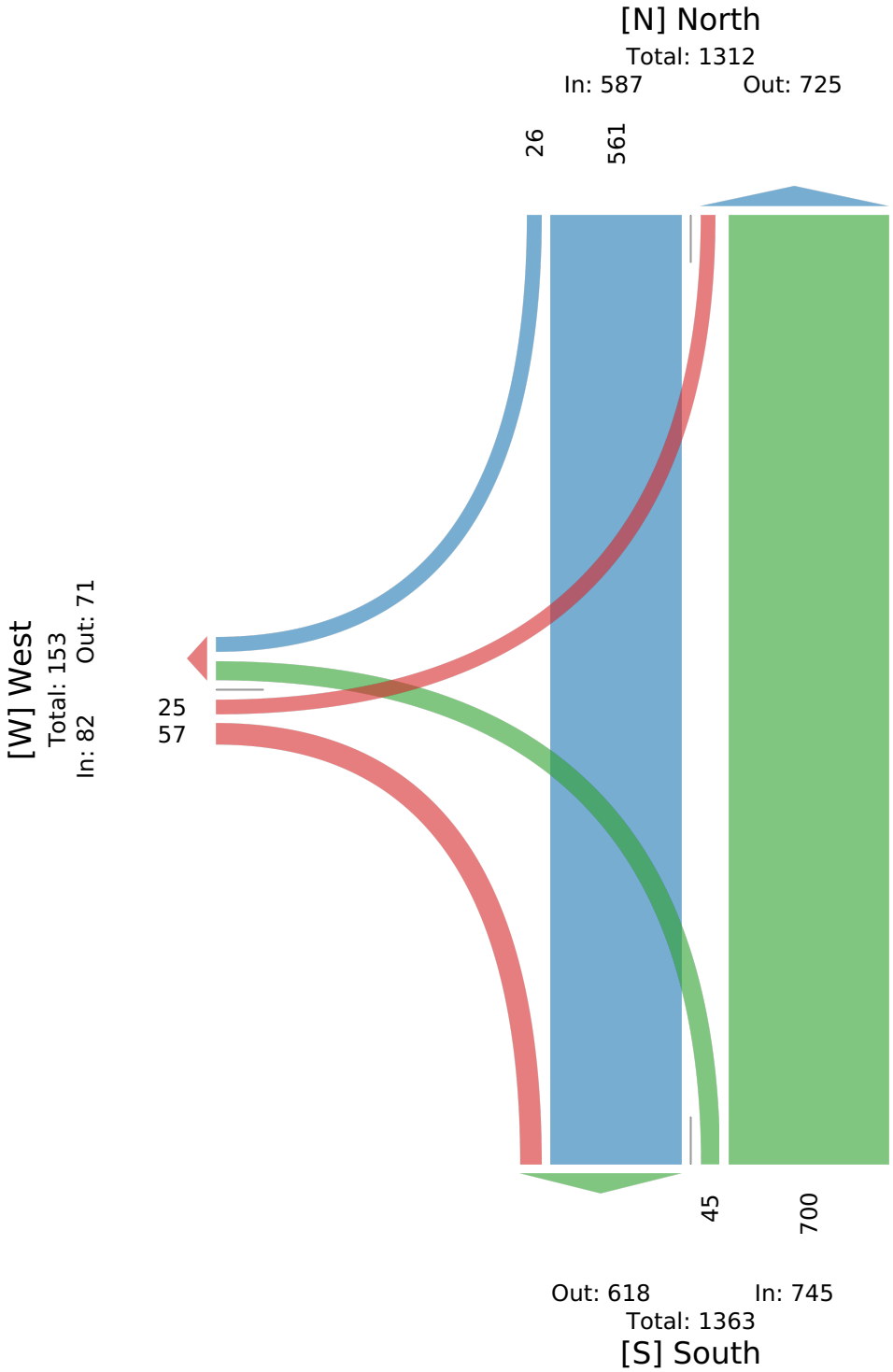
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg | South | | | | North | | | | West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Northbound | | | | Southbound | | | | Eastbound | | | | |
| Time | L | T | U | **App** | T | R | U | **App** | L | R | U | **App** | **Int** |
| 2023-12-12 7:15AM | 5 | 191 | 0 | **196** | 156 | 1 | 0 | **157** | 10 | 13 | 0 | **23** | **376** |
| 7:30AM | 8 | 191 | 0 | **199** | 131 | 5 | 0 | **136** | 9 | 12 | 0 | **21** | **356** |
| 7:45AM | 4 | 182 | 0 | **186** | 145 | 10 | 0 | **155** | 4 | 17 | 0 | **21** | **362** |
| 8:00AM | 28 | 136 | 0 | **164** | 129 | 10 | 0 | **139** | 2 | 15 | 0 | **17** | **320** |
| **Total** | 45 | 700 | 0 | **745** | 561 | 26 | 0 | **587** | 25 | 57 | 0 | **82** | **1414** |
| **% Approach** | 6.0% | 94.0% | 0% | **-** | 95.6% | 4.4% | 0% | **-** | 30.5% | 69.5% | 0% | **-** | - |
| **% Total** | 3.2% | 49.5% | 0% | **52.7%** | 39.7% | 1.8% | 0% | **41.5%** | 1.8% | 4.0% | 0% | **5.8%** | - |
| **PHF** | 0.402 | 0.916 | - | **0.936** | 0.899 | 0.650 | - | **0.935** | 0.625 | 0.838 | - | **0.891** | 0.940 |
| **Lights and Motorcycles** | 45 | 680 | 0 | **725** | 540 | 24 | 0 | **564** | 25 | 55 | 0 | **80** | 1369 |
| **% Lights and Motorcycles** | 100% | 97.1% | 0% | **97.3%** | 96.3% | 92.3% | 0% | **96.1%** | 100% | 96.5% | 0% | **97.6%** | 96.8% |
| **Heavy** | 0 | 20 | 0 | **20** | 21 | 2 | 0 | **23** | 0 | 2 | 0 | **2** | 45 |
| **% Heavy** | 0% | 2.9% | 0% | **2.7%** | 3.7% | 7.7% | 0% | **3.9%** | 0% | 3.5% | 0% | **2.4%** | 3.2% |

*L: Left, R: Right, T: Thru, U: U-Turn

SR 267 & CR 800 N - TMC
Tue Dec 12, 2023
AM Peak (7:15 AM - 8:15 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142924, Location: 39.880075, -86.392508

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## SR 267 & CR 800 N - TMC

Tue Dec 12, 2023
PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142924, Location: 39.880075, -86.392508

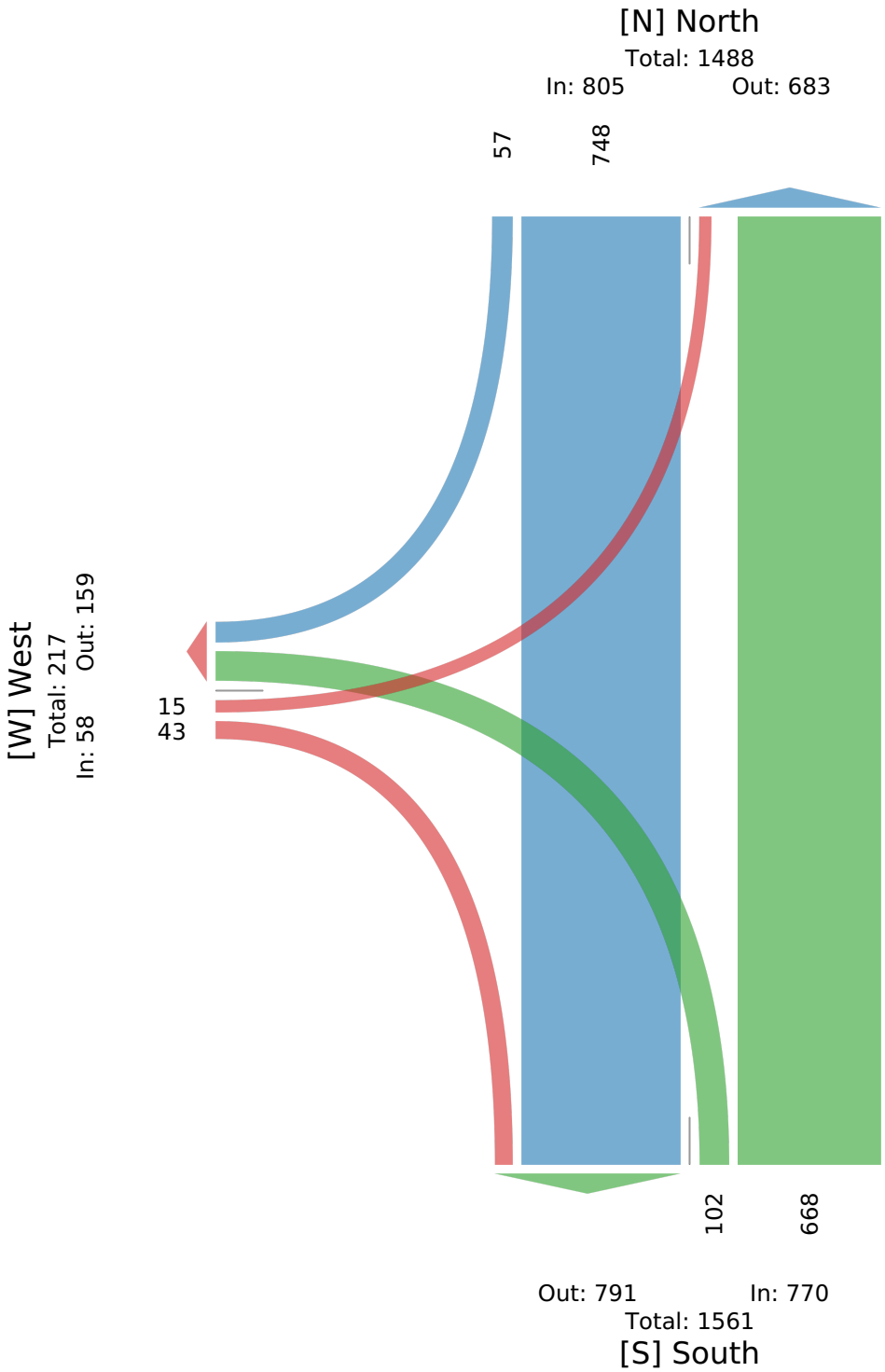
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg | South | | | | North | | | | West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Northbound | | | | Southbound | | | | Eastbound | | | | |
| Time | L | T | U | **App** | T | R | U | **App** | L | R | U | **App** | **Int** |
| 2023-12-12 4:30PM | 30 | 169 | 0 | **199** | 172 | 18 | 0 | **190** | 3 | 5 | 0 | **8** | **397** |
| 4:45PM | 20 | 156 | 0 | **176** | 202 | 13 | 0 | **215** | 1 | 10 | 0 | **11** | **402** |
| 5:00PM | 26 | 173 | 0 | **199** | 174 | 15 | 0 | **189** | 7 | 19 | 0 | **26** | **414** |
| 5:15PM | 26 | 170 | 0 | **196** | 200 | 11 | 0 | **211** | 4 | 9 | 0 | **13** | **420** |
| **Total** | 102 | 668 | 0 | **770** | 748 | 57 | 0 | **805** | 15 | 43 | 0 | **58** | **1633** |
| **% Approach** | 13.2% | 86.8% | 0% | **-** | 92.9% | 7.1% | 0% | **-** | 25.9% | 74.1% | 0% | **-** | - |
| **% Total** | 6.2% | 40.9% | 0% | **47.2%** | 45.8% | 3.5% | 0% | **49.3%** | 0.9% | 2.6% | 0% | **3.6%** | - |
| **PHF** | 0.850 | 0.965 | - | **0.967** | 0.926 | 0.792 | - | **0.936** | 0.536 | 0.566 | - | **0.558** | 0.972 |
| **Lights and Motorcycles** | 102 | 655 | 0 | **757** | 726 | 56 | 0 | **782** | 14 | 43 | 0 | **57** | 1596 |
| **% Lights and Motorcycles** | 100% | 98.1% | 0% | **98.3%** | 97.1% | 98.2% | 0% | **97.1%** | 93.3% | 100% | 0% | **98.3%** | 97.7% |
| **Heavy** | 0 | 13 | 0 | **13** | 22 | 1 | 0 | **23** | 1 | 0 | 0 | **1** | 37 |
| **% Heavy** | 0% | 1.9% | 0% | **1.7%** | 2.9% | 1.8% | 0% | **2.9%** | 6.7% | 0% | 0% | **1.7%** | 2.3% |

*L: Left, R: Right, T: Thru, U: U-Turn

SR 267 & CR 800 N - TMC
Tue Dec 12, 2023
PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142924, Location: 39.880075, -86.392508

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 25 | 57 | 45 | 700 | 561 | 26 |
| Future Vol, veh/h | 25 | 57 | 45 | 700 | 561 | 26 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 195 | - | - | 145 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 4 | 0 | 3 | 4 | 8 |
| Mvmt Flow | 27 | 61 | 48 | 745 | 597 | 28 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1437 | 597 | 624 | 0 | - | 0 |
| Stage 1 | 597 | - | - | - | - | - |
| Stage 2 | 840 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.24 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.336 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 148 | 499 | 967 | - | - | - |
| Stage 1 | 554 | - | - | - | - | - |
| Stage 2 | 427 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 141 | 499 | 967 | - | - | - |
| Mov Cap-2 Maneuver | 141 | - | - | - | - | - |
| Stage 1 | 526 | - | - | - | - | - |
| Stage 2 | 427 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 23.45 | 0.54 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 967 | - | 281 | - | - |
| HCM Lane V/C Ratio | 0.05 | - | 0.31 | - | - |
| HCM Control Delay (s/veh) | 8.9 | - | 23.4 | - | - |
| HCM Lane LOS | A | - | C | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | 1.3 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 15 | 43 | 102 | 668 | 748 | 57 |
| Future Vol, veh/h | 15 | 43 | 102 | 668 | 748 | 57 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 195 | - | - | 145 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 7 | 0 | 0 | 2 | 3 | 2 |
| Mvmt Flow | 15 | 44 | 105 | 689 | 771 | 59 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1670 | 771 | 830 | 0 | - | 0 |
| Stage 1 | 771 | - | - | - | - | - |
| Stage 2 | 899 | - | - | - | - | - |
| Critical Hdwy | 6.47 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.47 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.47 | - | - | - | - | - |
| Follow-up Hdwy | 3.563 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 103 | 403 | 811 | - | - | - |
| Stage 1 | 448 | - | - | - | - | - |
| Stage 2 | 389 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 89 | 403 | 811 | - | - | - |
| Mov Cap-2 Maneuver | 89 | - | - | - | - | - |
| Stage 1 | 390 | - | - | - | - | - |
| Stage 2 | 389 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 28.63 | 1.34 | 0 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 811 | - | 211 | - | - |
| HCM Lane V/C Ratio | 0.13 | - | 0.283 | - | - |
| HCM Control Delay (s/veh) | 10.1 | - | 28.6 | - | - |
| HCM Lane LOS | B | - | D | - | - |
| HCM 95th %tile Q(veh) | 0.4 | - | 1.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 28 | 63 | 48 | 742 | 592 | 28 |
| Future Vol, veh/h | 28 | 63 | 48 | 742 | 592 | 28 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 195 | - | - | 145 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 4 | 0 | 3 | 4 | 8 |
| Mvmt Flow | 30 | 67 | 51 | 789 | 630 | 30 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1521 | 630 | 660 | 0 | - | 0 |
| Stage 1 | 630 | - | - | - | - | - |
| Stage 2 | 891 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.24 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.336 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 132 | 478 | 938 | - | - | - |
| Stage 1 | 535 | - | - | - | - | - |
| Stage 2 | 404 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 125 | 478 | 938 | - | - | - |
| Mov Cap-2 Maneuver | 125 | - | - | - | - | - |
| Stage 1 | 506 | - | - | - | - | - |
| Stage 2 | 404 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 27.46 | 0.55 | 0 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 938 | - | 255 | - | - |
| HCM Lane V/C Ratio | 0.054 | - | 0.379 | - | - |
| HCM Control Delay (s/veh) | 9.1 | - | 27.5 | - | - |
| HCM Lane LOS | A | - | D | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | 1.7 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 17 | 47 | 109 | 709 | 793 | 61 |
| Future Vol, veh/h | 17 | 47 | 109 | 709 | 793 | 61 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 195 | - | - | 145 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 7 | 0 | 0 | 2 | 3 | 2 |
| Mvmt Flow | 18 | 48 | 112 | 731 | 818 | 63 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1773 | 818 | 880 | 0 | - | 0 |
| Stage 1 | 818 | - | - | - | - | - |
| Stage 2 | 956 | - | - | - | - | - |
| Critical Hdwy | 6.47 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.47 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.47 | - | - | - | - | - |
| Follow-up Hdwy | 3.563 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 89 | 379 | 776 | - | - | - |
| Stage 1 | 426 | - | - | - | - | - |
| Stage 2 | 366 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 76 | 379 | 776 | - | - | - |
| Mov Cap-2 Maneuver | 76 | - | - | - | - | - |
| Stage 1 | 364 | - | - | - | - | - |
| Stage 2 | 366 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 35.19 | 1.39 | 0 |
| HCM LOS | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 776 | - | 184 | - | - |
| HCM Lane V/C Ratio | 0.145 | - | 0.359 | - | - |
| HCM Control Delay (s/veh) | 10.4 | - | 35.2 | - | - |
| HCM Lane LOS | B | - | E | - | - |
| HCM 95th %tile Q(veh) | 0.5 | - | 1.5 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.7 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 28 | 63 | 48 | 742 | 592 | 28 |
| Future Vol, veh/h | 28 | 63 | 48 | 742 | 592 | 28 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | 195 | - | - | 145 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 4 | 0 | 3 | 4 | 8 |
| Mvmt Flow | 30 | 67 | 51 | 789 | 630 | 30 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1521 | 630 | 660 | 0 | - | 0 |
| Stage 1 | 630 | - | - | - | - | - |
| Stage 2 | 891 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.24 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.336 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 132 | 478 | 938 | - | - | - |
| Stage 1 | 535 | - | - | - | - | - |
| Stage 2 | 404 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 125 | 478 | 938 | - | - | - |
| Mov Cap-2 Maneuver | 125 | - | - | - | - | - |
| Stage 1 | 506 | - | - | - | - | - |
| Stage 2 | 404 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 22.67 | 0.55 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 938 | - | 125 | 478 | - | - |
| HCM Lane V/C Ratio | 0.054 | - | 0.239 | 0.14 | - | - |
| HCM Control Delay (s/veh) | 9.1 | - | 42.7 | 13.8 | - | - |
| HCM Lane LOS | A | - | E | B | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | 0.9 | 0.5 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.7 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 17 | 47 | 109 | 709 | 793 | 61 |
| Future Vol, veh/h | 17 | 47 | 109 | 709 | 793 | 61 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | 195 | - | - | 145 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 7 | 0 | 0 | 2 | 3 | 2 |
| Mvmt Flow | 18 | 48 | 112 | 731 | 818 | 63 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1773 | 818 | 880 | 0 | - | 0 |
| Stage 1 | 818 | - | - | - | - | - |
| Stage 2 | 956 | - | - | - | - | - |
| Critical Hdwy | 6.47 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.47 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.47 | - | - | - | - | - |
| Follow-up Hdwy | 3.563 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 89 | 379 | 776 | - | - | - |
| Stage 1 | 426 | - | - | - | - | - |
| Stage 2 | 366 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 76 | 379 | 776 | - | - | - |
| Mov Cap-2 Maneuver | 76 | - | - | - | - | - |
| Stage 1 | 364 | - | - | - | - | - |
| Stage 2 | 366 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 29.27 | 1.39 | 0 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 776 | - | 76 | 379 | - | - |
| HCM Lane V/C Ratio | 0.145 | - | 0.231 | 0.128 | - | - |
| HCM Control Delay (s/veh) | 10.4 | - | 66.3 | 15.9 | - | - |
| HCM Lane LOS | B | - | F | C | - | - |
| HCM 95th %tile Q(veh) | 0.5 | - | 0.8 | 0.4 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 3.8 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 43 | 94 | 60 | 747 | 597 | 33 |
| Future Vol, veh/h | 43 | 94 | 60 | 747 | 597 | 33 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 195 | - | - | 145 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 4 | 0 | 3 | 4 | 8 |
| Mvmt Flow | 46 | 100 | 64 | 795 | 635 | 35 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1557 | 635 | 670 | 0 | - | 0 |
| Stage 1 | 635 | - | - | - | - | - |
| Stage 2 | 922 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.24 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.336 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 125 | 475 | 930 | - | - | - |
| Stage 1 | 532 | - | - | - | - | - |
| Stage 2 | 391 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 117 | 475 | 930 | - | - | - |
| Mov Cap-2 Maneuver | 117 | - | - | - | - | - |
| Stage 1 | 495 | - | - | - | - | - |
| Stage 2 | 391 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 40.17 | 0.68 | 0 |
| HCM LOS | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 930 | - | 242 | - | - |
| HCM Lane V/C Ratio | 0.069 | - | 0.603 | - | - |
| HCM Control Delay (s/veh) | 9.2 | - | 40.2 | - | - |
| HCM Lane LOS | A | - | E | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | 3.5 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 4 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 27 | 68 | 145 | 712 | 798 | 78 |
| Future Vol, veh/h | 27 | 68 | 145 | 712 | 798 | 78 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | 195 | - | - | 145 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 7 | 0 | 0 | 2 | 3 | 2 |
| Mvmt Flow | 28 | 70 | 149 | 734 | 823 | 80 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1856 | 823 | 903 | 0 | - | 0 |
| Stage 1 | 823 | - | - | - | - | - |
| Stage 2 | 1033 | - | - | - | - | - |
| Critical Hdwy | 6.47 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.47 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.47 | - | - | - | - | - |
| Follow-up Hdwy | 3.563 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 79 | 377 | 761 | - | - | - |
| Stage 1 | 423 | - | - | - | - | - |
| Stage 2 | 336 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 63 | 377 | 761 | - | - | - |
| Mov Cap-2 Maneuver | 63 | - | - | - | - | - |
| Stage 1 | 340 | - | - | - | - | - |
| Stage 2 | 336 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 60.45 | 1.84 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 761 | - | 156 | - | - |
| HCM Lane V/C Ratio | 0.196 | - | 0.627 | - | - |
| HCM Control Delay (s/veh) | 10.9 | - | 60.5 | - | - |
| HCM Lane LOS | B | - | F | - | - |
| HCM 95th %tile Q(veh) | 0.7 | - | 3.4 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.7 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 43 | 94 | 60 | 747 | 597 | 33 |
| Future Vol, veh/h | 43 | 94 | 60 | 747 | 597 | 33 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | 195 | - | - | 145 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 4 | 0 | 3 | 4 | 8 |
| Mvmt Flow | 46 | 100 | 64 | 795 | 635 | 35 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1557 | 635 | 670 | 0 | - | 0 |
| Stage 1 | 635 | - | - | - | - | - |
| Stage 2 | 922 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.24 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.336 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 125 | 475 | 930 | - | - | - |
| Stage 1 | 532 | - | - | - | - | - |
| Stage 2 | 391 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 117 | 475 | 930 | - | - | - |
| Mov Cap-2 Maneuver | 117 | - | - | - | - | - |
| Stage 1 | 495 | - | - | - | - | - |
| Stage 2 | 391 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 27.12 | 0.68 | 0 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 930 | - | 117 | 475 | - | - |
| HCM Lane V/C Ratio | 0.069 | - | 0.392 | 0.211 | - | - |
| HCM Control Delay (s/veh) | 9.2 | - | 54.5 | 14.6 | - | - |
| HCM Lane LOS | A | - | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | 1.6 | 0.8 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 3 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 27 | 68 | 145 | 712 | 798 | 78 |
| Future Vol, veh/h | 27 | 68 | 145 | 712 | 798 | 78 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 0 | 195 | - | - | 145 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 7 | 0 | 0 | 2 | 3 | 2 |
| Mvmt Flow | 28 | 70 | 149 | 734 | 823 | 80 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1856 | 823 | 903 | 0 | - | 0 |
| Stage 1 | 823 | - | - | - | - | - |
| Stage 2 | 1033 | - | - | - | - | - |
| Critical Hdwy | 6.47 | 6.2 | 4.1 | - | - | - |
| Critical Hdwy Stg 1 | 5.47 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.47 | - | - | - | - | - |
| Follow-up Hdwy | 3.563 | 3.3 | 2.2 | - | - | - |
| Pot Cap-1 Maneuver | 79 | 377 | 761 | - | - | - |
| Stage 1 | 423 | - | - | - | - | - |
| Stage 2 | 336 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 63 | 377 | 761 | - | - | - |
| Mov Cap-2 Maneuver | 63 | - | - | - | - | - |
| Stage 1 | 340 | - | - | - | - | - |
| Stage 2 | 336 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 40.64 | 1.84 | 0 |
| HCM LOS | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 761 | - | 63 | 377 | - | - |
| HCM Lane V/C Ratio | 0.196 | - | 0.441 | 0.186 | - | - |
| HCM Control Delay (s/veh) | 10.9 | - | 100.9 | 16.7 | - | - |
| HCM Lane LOS | B | - | F | C | - | - |
| HCM 95th %tile Q(veh) | 0.7 | - | 1.7 | 0.7 | - | - |

# CR 700 N & CR 650 E

## TRAFFIC VOLUME COUNTS
## CAPACITY ANALYSIS

## CR 700 N & CR 650 E - TMC

Tue Dec 12, 2023
AM Peak (7:30 AM - 8:30 AM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142921, Location: 39.865393, -86.41116

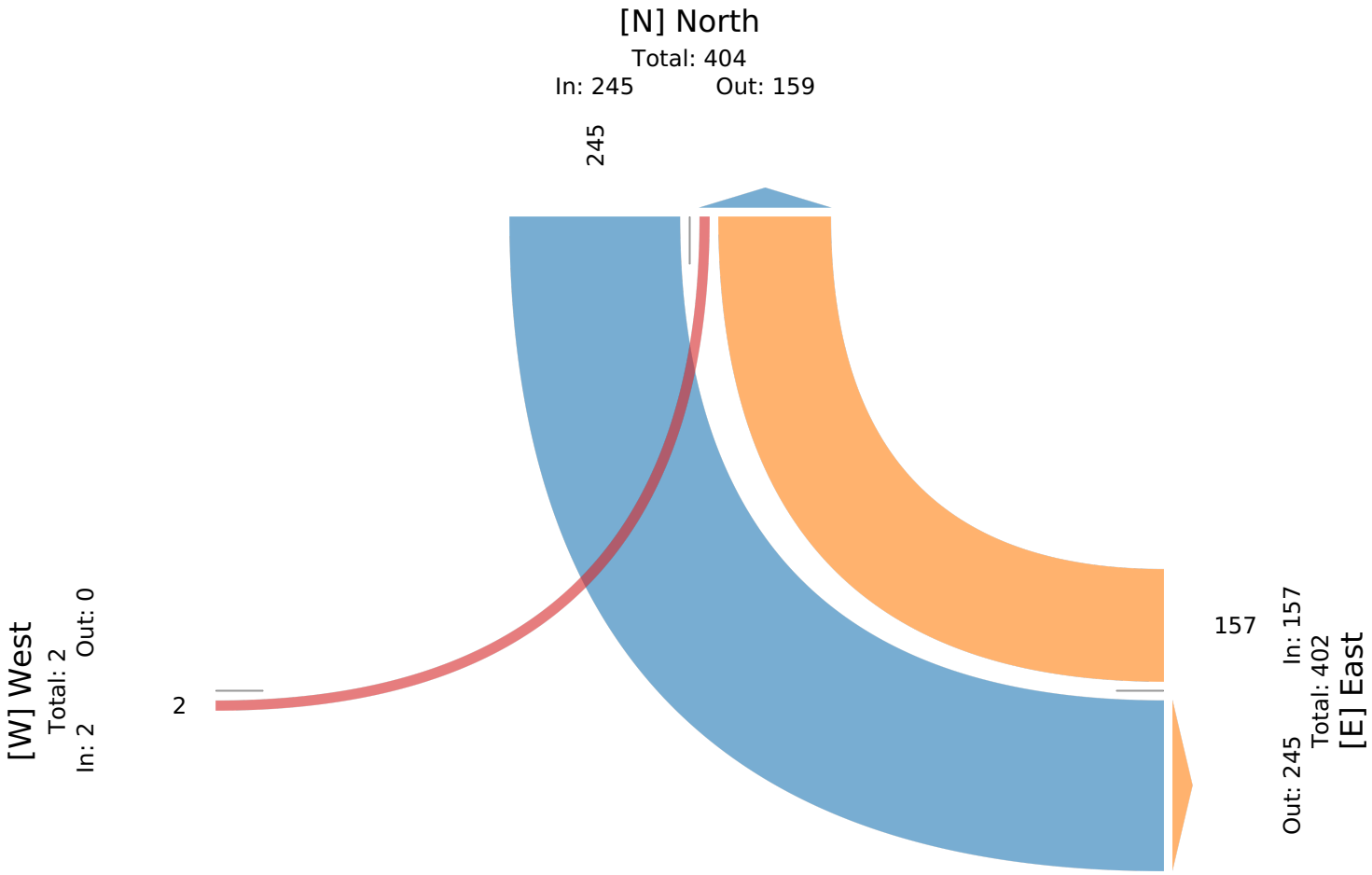
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg | North | | | | West | | | | East | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Southbound | | | | Eastbound | | | | Westbound | | | | |
| Time | L | R | U | **App** | L | T | U | **App** | T | R | U | **App** | **Int** |
| 2023-12-12 7:30AM | 33 | 0 | 0 | **33** | 1 | 0 | 0 | **1** | 0 | 15 | 0 | **15** | **49** |
| 7:45AM | 39 | 0 | 0 | **39** | 0 | 0 | 0 | **0** | 0 | 36 | 0 | **36** | **75** |
| 8:00AM | 67 | 0 | 0 | **67** | 1 | 0 | 0 | **1** | 0 | 58 | 0 | **58** | **126** |
| 8:15AM | 106 | 0 | 0 | **106** | 0 | 0 | 0 | **0** | 0 | 48 | 0 | **48** | **154** |
| **Total** | 245 | 0 | 0 | **245** | 2 | 0 | 0 | **2** | 0 | 157 | 0 | **157** | **404** |
| **% Approach** | 100% | 0% | 0% | **-** | 100% | 0% | 0% | **-** | 0% | 100% | 0% | **-** | - |
| **% Total** | 60.6% | 0% | 0% | **60.6%** | 0.5% | 0% | 0% | **0.5%** | 0% | 38.9% | 0% | **38.9%** | - |
| **PHF** | 0.578 | - | - | **0.578** | 0.500 | - | - | **0.500** | - | 0.677 | - | **0.677** | 0.656 |
| **Lights and Motorcycles** | 238 | 0 | 0 | **238** | 2 | 0 | 0 | **2** | 0 | 153 | 0 | **153** | 393 |
| **% Lights and Motorcycles** | 97.1% | 0% | 0% | **97.1%** | 100% | 0% | 0% | **100%** | 0% | 97.5% | 0% | **97.5%** | 97.3% |
| **Heavy** | 7 | 0 | 0 | **7** | 0 | 0 | 0 | **0** | 0 | 4 | 0 | **4** | 11 |
| **% Heavy** | 2.9% | 0% | 0% | **2.9%** | 0% | 0% | 0% | **0%** | 0% | 2.5% | 0% | **2.5%** | 2.7% |

*L: Left, R: Right, T: Thru, U: U-Turn

**CR 700 N & CR 650 E - TMC**
Tue Dec 12, 2023
AM Peak (7:30 AM - 8:30 AM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142921, Location: 39.865393, -86.41116

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## CR 700 N & CR 650 E - TMC

Tue Dec 12, 2023
PM Peak (3:30 PM - 4:30 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142921, Location: 39.865393, -86.41116

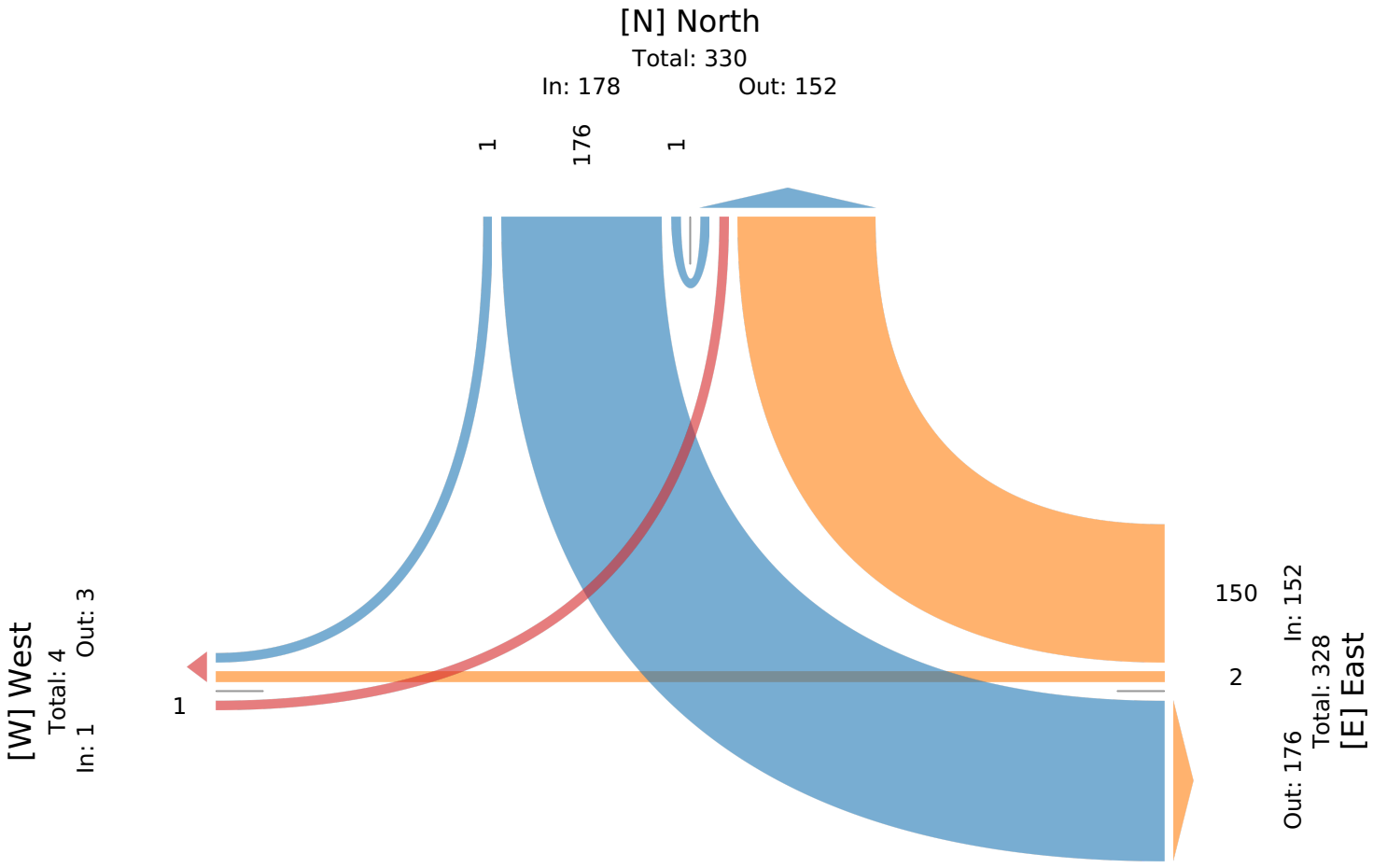
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg / Direction | North Southbound | | | | West Eastbound | | | | East Westbound | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | L | R | U | **App** | L | T | U | **App** | T | R | U | **App** | **Int** |
| 2023-12-12 3:30PM | 49 | 0 | 0 | **49** | 1 | 0 | 0 | **1** | 0 | 44 | 0 | **44** | **94** |
| 3:45PM | 71 | 0 | 0 | **71** | 0 | 0 | 0 | **0** | 0 | 26 | 0 | **26** | **97** |
| 4:00PM | 27 | 1 | 1 | **29** | 0 | 0 | 0 | **0** | 0 | 37 | 0 | **37** | **66** |
| 4:15PM | 29 | 0 | 0 | **29** | 0 | 0 | 0 | **0** | 2 | 43 | 0 | **45** | **74** |
| **Total** | 176 | 1 | 1 | **178** | 1 | 0 | 0 | **1** | 2 | 150 | 0 | **152** | **331** |
| **% Approach** | 98.9% | 0.6% | 0.6% | **-** | 100% | 0% | 0% | **-** | 1.3% | 98.7% | 0% | **-** | - |
| **% Total** | 53.2% | 0.3% | 0.3% | **53.8%** | 0.3% | 0% | 0% | **0.3%** | 0.6% | 45.3% | 0% | **45.9%** | - |
| **PHF** | 0.620 | 0.250 | 0.250 | **0.627** | 0.250 | - | - | **0.250** | 0.250 | 0.852 | - | **0.844** | 0.853 |
| **Lights and Motorcycles** | 167 | 0 | 0 | **167** | 0 | 0 | 0 | **0** | 2 | 148 | 0 | **150** | 317 |
| **% Lights and Motorcycles** | 94.9% | 0% | 0% | **93.8%** | 0% | 0% | 0% | **0%** | 100% | 98.7% | 0% | **98.7%** | 95.8% |
| **Heavy** | 9 | 1 | 1 | **11** | 1 | 0 | 0 | **1** | 0 | 2 | 0 | **2** | 14 |
| **% Heavy** | 5.1% | 100% | 100% | **6.2%** | 100% | 0% | 0% | **100%** | 0% | 1.3% | 0% | **1.3%** | 4.2% |

*L: Left, R: Right, T: Thru, U: U-Turn

**CR 700 N & CR 650 E - TMC**
Tue Dec 12, 2023
PM Peak (3:30 PM - 4:30 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142921, Location: 39.865393, -86.41116

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



| Intersection | |
|---|---|
| Int Delay, s/veh | 7.5 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 2 | 0 | 0 | 157 | 245 | 0 |
| Future Vol, veh/h | 2 | 0 | 0 | 157 | 245 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 66 | 66 | 66 | 66 | 66 | 66 |
| Heavy Vehicles, % | 0 | 0 | 0 | 3 | 3 | 0 |
| Mvmt Flow | 3 | 0 | 0 | 238 | 371 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 238 | 0 | - | 0 | 125 | 119 |
| Stage 1 | - | - | - | - | 119 | - |
| Stage 2 | - | - | - | - | 6 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.43 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.43 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.527 | 3.3 |
| Pot Cap-1 Maneuver | 1341 | - | - | - | 867 | 938 |
| Stage 1 | - | - | - | - | 904 | - |
| Stage 2 | - | - | - | - | 1014 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1341 | - | - | - | 866 | 938 |
| Mov Cap-2 Maneuver | - | - | - | - | 866 | - |
| Stage 1 | - | - | - | - | 902 | - |
| Stage 2 | - | - | - | - | 1014 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 7.69 | 0 | 12.25 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1341 | - | - | - | 866 |
| HCM Lane V/C Ratio | 0.002 | - | - | - | 0.429 |
| HCM Control Delay (s/veh) | 7.7 | 0 | - | - | 12.2 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 2.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 5.5 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 0 | 2 | 150 | 176 | 1 |
| Future Vol, veh/h | 1 | 0 | 2 | 150 | 176 | 1 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 85 | 85 | 85 | 85 |
| Heavy Vehicles, % | 100 | 0 | 0 | 1 | 5 | 100 |
| Mvmt Flow | 1 | 0 | 2 | 176 | 207 | 1 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 179 | 0 | - | 0 | 93 | 91 |
| Stage 1 | - | - | - | - | 91 | - |
| Stage 2 | - | - | - | - | 2 | - |
| Critical Hdwy | 5.1 | - | - | - | 6.45 | 7.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.45 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.45 | - |
| Follow-up Hdwy | 3.1 | - | - | - | 3.545 | 4.2 |
| Pot Cap-1 Maneuver | 973 | - | - | - | 900 | 754 |
| Stage 1 | - | - | - | - | 925 | - |
| Stage 2 | - | - | - | - | 1013 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 973 | - | - | - | 899 | 754 |
| Mov Cap-2 Maneuver | - | - | - | - | 899 | - |
| Stage 1 | - | - | - | - | 924 | - |
| Stage 2 | - | - | - | - | 1013 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 8.71 | 0 | 10.22 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 973 | - | - | - | 898 |
| HCM Lane V/C Ratio | 0.001 | - | - | - | 0.232 |
| HCM Control Delay (s/veh) | 8.7 | 0 | - | - | 10.2 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.9 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 8 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 3 | 0 | 0 | 172 | 268 | 0 |
| Future Vol, veh/h | 3 | 0 | 0 | 172 | 268 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 66 | 66 | 66 | 66 | 66 | 66 |
| Heavy Vehicles, % | 0 | 0 | 0 | 3 | 3 | 0 |
| Mvmt Flow | 5 | 0 | 0 | 261 | 406 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 261 | 0 | - | 0 | 139 | 130 |
| Stage 1 | - | - | - | - | 130 | - |
| Stage 2 | - | - | - | - | 9 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.43 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.43 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.527 | 3.3 |
| Pot Cap-1 Maneuver | 1316 | - | - | - | 851 | 925 |
| Stage 1 | - | - | - | - | 893 | - |
| Stage 2 | - | - | - | - | 1011 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1316 | - | - | - | 848 | 925 |
| Mov Cap-2 Maneuver | - | - | - | - | 848 | - |
| Stage 1 | - | - | - | - | 890 | - |
| Stage 2 | - | - | - | - | 1011 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 7.75 | 0 | 13.08 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1316 | - | - | - | 848 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.479 |
| HCM Control Delay (s/veh) | 7.7 | 0 | - | - | 13.1 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 2.6 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 5.7 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 2 | 0 | 3 | 164 | 192 | 2 |
| Future Vol, veh/h | 2 | 0 | 3 | 164 | 192 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 85 | 85 | 85 | 85 |
| Heavy Vehicles, % | 100 | 0 | 0 | 1 | 5 | 100 |
| Mvmt Flow | 2 | 0 | 4 | 193 | 226 | 2 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 196 | 0 | - | 0 | 105 | 100 |
| Stage 1 | - | - | - | - | 100 | - |
| Stage 2 | - | - | - | - | 5 | - |
| Critical Hdwy | 5.1 | - | - | - | 6.45 | 7.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.45 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.45 | - |
| Follow-up Hdwy | 3.1 | - | - | - | 3.545 | 4.2 |
| Pot Cap-1 Maneuver | 956 | - | - | - | 886 | 744 |
| Stage 1 | - | - | - | - | 917 | - |
| Stage 2 | - | - | - | - | 1011 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 956 | - | - | - | 884 | 744 |
| Mov Cap-2 Maneuver | - | - | - | - | 884 | - |
| Stage 1 | - | - | - | - | 914 | - |
| Stage 2 | - | - | - | - | 1011 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 8.78 | 0 | 10.5 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 956 | - | - | - | 882 |
| HCM Lane V/C Ratio | 0.002 | - | - | - | 0.259 |
| HCM Control Delay (s/veh) | 8.8 | 0 | - | - | 10.5 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 8 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 3 | 0 | 0 | 172 | 268 | 0 |
| Future Vol, veh/h | 3 | 0 | 0 | 172 | 268 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 66 | 66 | 66 | 66 | 66 | 66 |
| Heavy Vehicles, % | 0 | 0 | 0 | 3 | 3 | 0 |
| Mvmt Flow | 5 | 0 | 0 | 261 | 406 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 261 | 0 | - | 0 | 139 | 130 |
| Stage 1 | - | - | - | - | 130 | - |
| Stage 2 | - | - | - | - | 9 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.43 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.43 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.43 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.527 | 3.3 |
| Pot Cap-1 Maneuver | 1316 | - | - | - | 851 | 925 |
| Stage 1 | - | - | - | - | 893 | - |
| Stage 2 | - | - | - | - | 1011 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1316 | - | - | - | 848 | 925 |
| Mov Cap-2 Maneuver | - | - | - | - | 848 | - |
| Stage 1 | - | - | - | - | 890 | - |
| Stage 2 | - | - | - | - | 1011 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 7.75 | 0 | 13.08 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1316 | - | - | - | 848 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.479 |
| HCM Control Delay (s/veh) | 7.7 | 0 | - | - | 13.1 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 2.6 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 5.7 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 2 | 0 | 3 | 164 | 192 | 2 |
| Future Vol, veh/h | 2 | 0 | 3 | 164 | 192 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 85 | 85 | 85 | 85 |
| Heavy Vehicles, % | 100 | 0 | 0 | 1 | 5 | 100 |
| Mvmt Flow | 2 | 0 | 4 | 193 | 226 | 2 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 196 | 0 | - | 0 | 105 | 100 |
| Stage 1 | - | - | - | - | 100 | - |
| Stage 2 | - | - | - | - | 5 | - |
| Critical Hdwy | 5.1 | - | - | - | 6.45 | 7.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.45 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.45 | - |
| Follow-up Hdwy | 3.1 | - | - | - | 3.545 | 4.2 |
| Pot Cap-1 Maneuver | 956 | - | - | - | 886 | 744 |
| Stage 1 | - | - | - | - | 917 | - |
| Stage 2 | - | - | - | - | 1011 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 956 | - | - | - | 884 | 744 |
| Mov Cap-2 Maneuver | - | - | - | - | 884 | - |
| Stage 1 | - | - | - | - | 914 | - |
| Stage 2 | - | - | - | - | 1011 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s/v | 8.78 | 0 | 10.5 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 956 | - | - | - | 882 |
| HCM Lane V/C Ratio | 0.002 | - | - | - | 0.259 |
| HCM Control Delay (s/veh) | 8.8 | 0 | - | - | 10.5 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1 |

# CR 700 N & SR 267

## TRAFFIC VOLUME COUNTS
## CAPACITY ANALYSIS

## SR 267 & CR 700 N - TMC

Tue Dec 12, 2023
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142918, Location: 39.865527, -86.39247

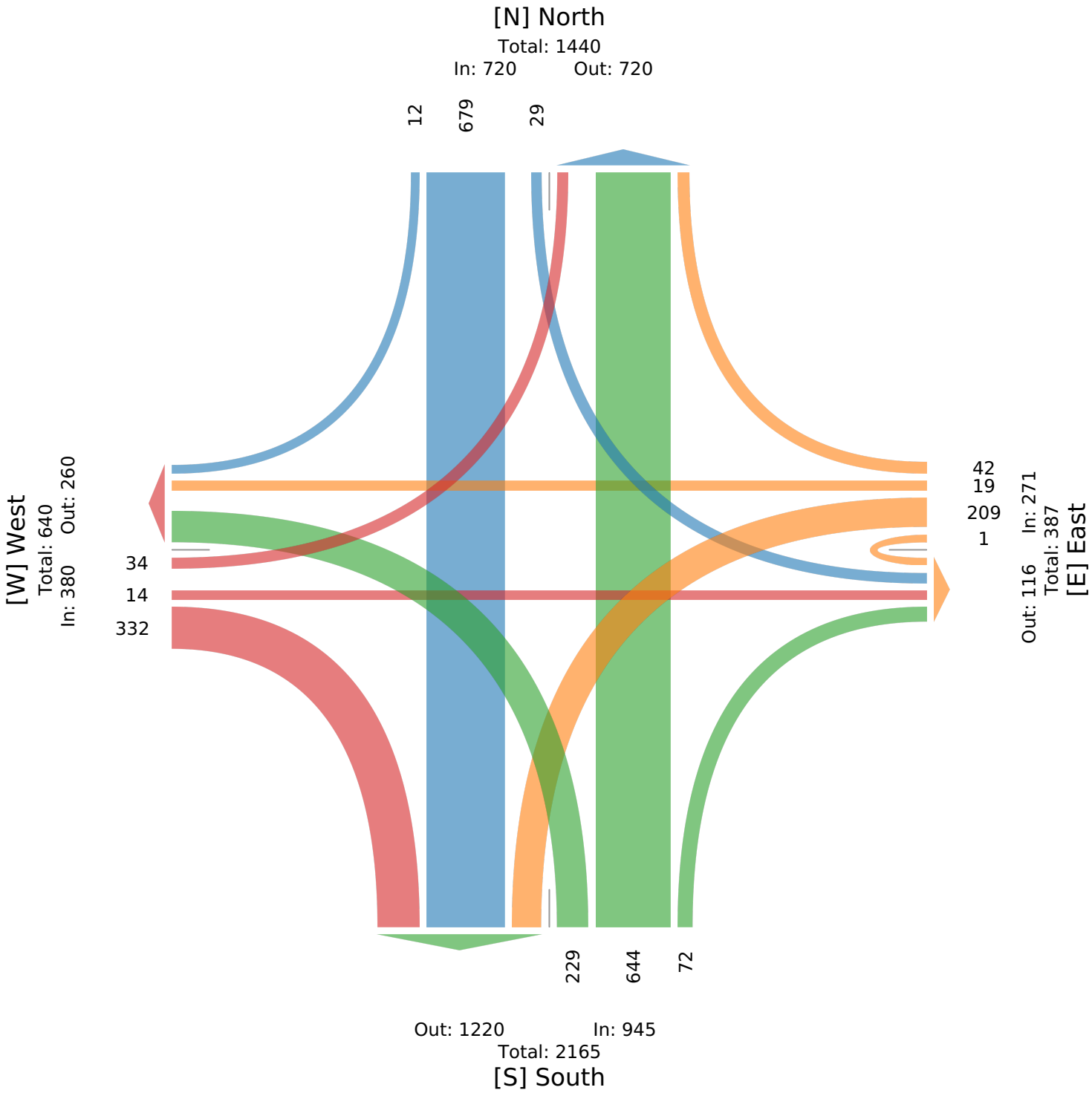
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg / Direction | South Northbound | | | | | North Southbound | | | | | West Eastbound | | | | | East Westbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | **Int** |
| 2023-12-12 7:30AM | 45 | 170 | 16 | 0 | **231** | 7 | 180 | 2 | 0 | **189** | 10 | 5 | 61 | 0 | **76** | 57 | 5 | 13 | 0 | **75** | **571** |
| 7:45AM | 67 | 185 | 15 | 0 | **267** | 5 | 173 | 0 | 0 | **178** | 7 | 4 | 60 | 0 | **71** | 37 | 5 | 8 | 0 | **50** | **566** |
| 8:00AM | 61 | 147 | 20 | 0 | **228** | 9 | 148 | 5 | 0 | **162** | 11 | 2 | 82 | 0 | **95** | 54 | 5 | 8 | 0 | **67** | **552** |
| 8:15AM | 56 | 142 | 21 | 0 | **219** | 8 | 178 | 5 | 0 | **191** | 6 | 3 | 129 | 0 | **138** | 61 | 4 | 13 | 1 | **79** | **627** |
| **Total** | 229 | 644 | 72 | 0 | **945** | 29 | 679 | 12 | 0 | **720** | 34 | 14 | 332 | 0 | **380** | 209 | 19 | 42 | 1 | **271** | **2316** |
| **% Approach** | 24.2% | 68.1% | 7.6% | 0% | **-** | 4.0% | 94.3% | 1.7% | 0% | **-** | 8.9% | 3.7% | 87.4% | 0% | **-** | 77.1% | 7.0% | 15.5% | 0.4% | **-** | - |
| **% Total** | 9.9% | 27.8% | 3.1% | 0% | **40.8%** | 1.3% | 29.3% | 0.5% | 0% | **31.1%** | 1.5% | 0.6% | 14.3% | 0% | **16.4%** | 9.0% | 0.8% | 1.8% | 0% | **11.7%** | - |
| **PHF** | 0.854 | 0.870 | 0.857 | - | **0.885** | 0.806 | 0.943 | 0.600 | - | **0.942** | 0.773 | 0.700 | 0.643 | - | **0.688** | 0.857 | 0.950 | 0.808 | 0.250 | **0.858** | 0.923 |
| **Lights and Motorcycles** | 225 | 623 | 67 | 0 | **915** | 27 | 661 | 12 | 0 | **700** | 34 | 14 | 325 | 0 | **373** | 209 | 18 | 41 | 1 | **269** | 2257 |
| **% Lights and Motorcycles** | 98.3% | 96.7% | 93.1% | 0% | **96.8%** | 93.1% | 97.3% | 100% | 0% | **97.2%** | 100% | 100% | 97.9% | 0% | **98.2%** | 100% | 94.7% | 97.6% | 100% | **99.3%** | 97.5% |
| **Heavy** | 4 | 21 | 5 | 0 | **30** | 2 | 18 | 0 | 0 | **20** | 0 | 0 | 7 | 0 | **7** | 0 | 1 | 1 | 0 | **2** | 59 |
| **% Heavy** | 1.7% | 3.3% | 6.9% | 0% | **3.2%** | 6.9% | 2.7% | 0% | 0% | **2.8%** | 0% | 0% | 2.1% | 0% | **1.8%** | 0% | 5.3% | 2.4% | 0% | **0.7%** | 2.5% |

*L: Left, R: Right, T: Thru, U: U-Turn

**SR 267 & CR 700 N - TMC**
Tue Dec 12, 2023
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142918, Location: 39.865527, -86.39247

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## SR 267 & CR 700 N - TMC

Tue Dec 12, 2023
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142918, Location: 39.865527, -86.39247

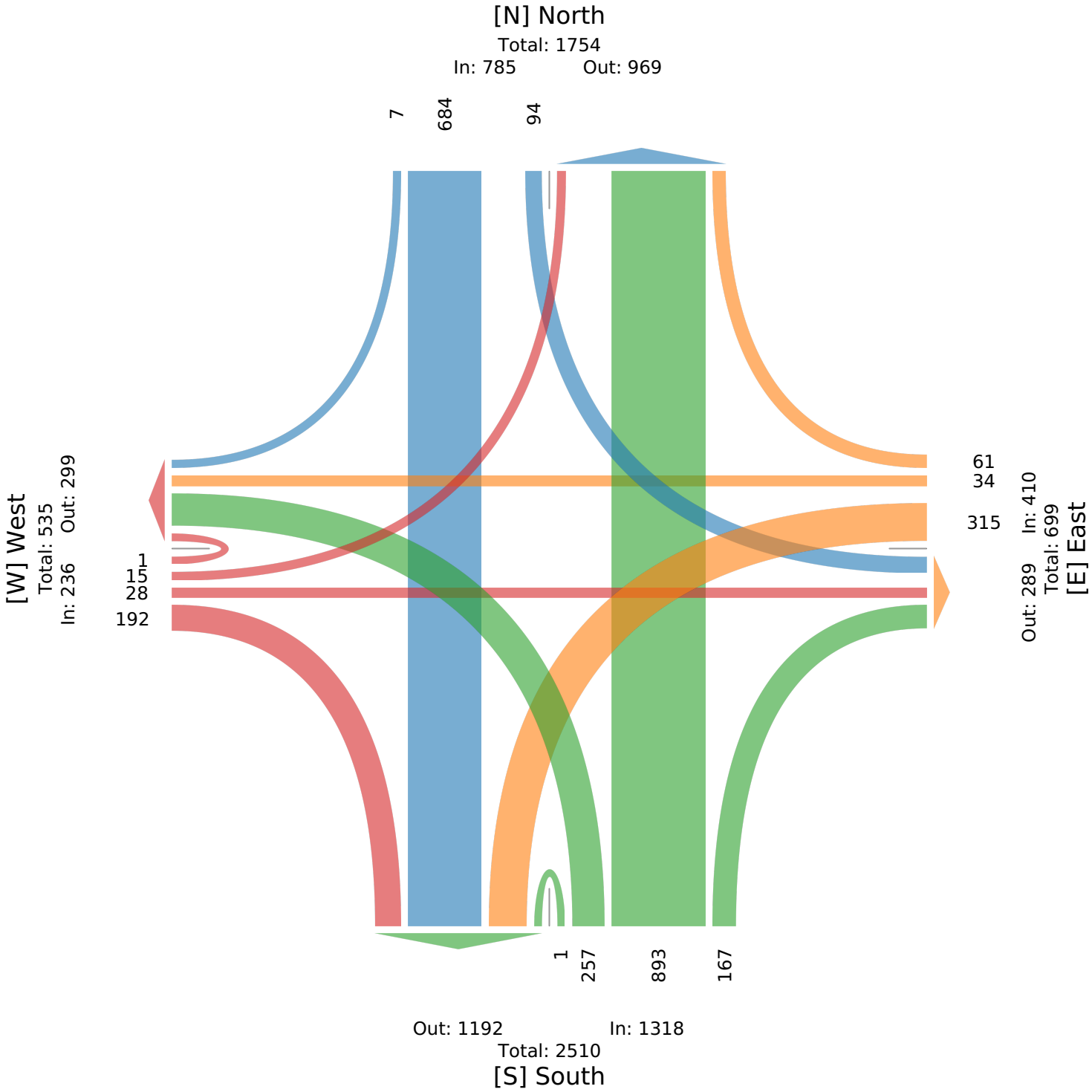
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

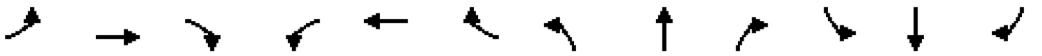
| Leg | South | | | | | North | | | | | West | | | | | East | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Northbound | | | | | Southbound | | | | | Eastbound | | | | | Westbound | | | | | |
| Time | L | T | R | U | App | L | T | R | U | App | L | T | R | U | App | L | T | R | U | App | Int |
| 2023-12-12 4:45PM | 63 | 215 | 42 | 1 | **321** | 26 | 191 | 0 | 0 | **217** | 4 | 2 | 46 | 0 | **52** | 78 | 9 | 13 | 0 | **100** | **690** |
| 5:00PM | 78 | 228 | 36 | 0 | **342** | 23 | 132 | 2 | 0 | **157** | 4 | 12 | 33 | 1 | **50** | 86 | 8 | 14 | 0 | **108** | **657** |
| 5:15PM | 52 | 225 | 40 | 0 | **317** | 24 | 194 | 5 | 0 | **223** | 4 | 4 | 55 | 0 | **63** | 70 | 8 | 15 | 0 | **93** | **696** |
| 5:30PM | 64 | 225 | 49 | 0 | **338** | 21 | 167 | 0 | 0 | **188** | 3 | 10 | 58 | 0 | **71** | 81 | 9 | 19 | 0 | **109** | **706** |
| **Total** | 257 | 893 | 167 | 1 | **1318** | 94 | 684 | 7 | 0 | **785** | 15 | 28 | 192 | 1 | **236** | 315 | 34 | 61 | 0 | **410** | **2749** |
| **% Approach** | 19.5% | 67.8% | 12.7% | 0.1% | **-** | 12.0% | 87.1% | 0.9% | 0% | **-** | 6.4% | 11.9% | 81.4% | 0.4% | **-** | 76.8% | 8.3% | 14.9% | 0% | **-** | - |
| **% Total** | 9.3% | 32.5% | 6.1% | 0% | **47.9%** | 3.4% | 24.9% | 0.3% | 0% | **28.6%** | 0.5% | 1.0% | 7.0% | 0% | **8.6%** | 11.5% | 1.2% | 2.2% | 0% | **14.9%** | - |
| **PHF** | 0.824 | 0.979 | 0.852 | 0.250 | **0.963** | 0.904 | 0.881 | 0.350 | - | **0.880** | 0.938 | 0.583 | 0.828 | 0.250 | **0.831** | 0.916 | 0.944 | 0.803 | - | **0.940** | 0.973 |
| **Lights and Motorcycles** | 256 | 878 | 167 | 1 | **1302** | 94 | 660 | 7 | 0 | **761** | 15 | 28 | 190 | 1 | **234** | 314 | 34 | 60 | 0 | **408** | 2705 |
| **% Lights and Motorcycles** | 99.6% | 98.3% | 100% | 100% | **98.8%** | 100% | 96.5% | 100% | 0% | **96.9%** | 100% | 100% | 99.0% | 100% | **99.2%** | 99.7% | 100% | 98.4% | 0% | **99.5%** | 98.4% |
| **Heavy** | 1 | 15 | 0 | 0 | **16** | 0 | 24 | 0 | 0 | **24** | 0 | 0 | 2 | 0 | **2** | 1 | 0 | 1 | 0 | **2** | 44 |
| **% Heavy** | 0.4% | 1.7% | 0% | 0% | **1.2%** | 0% | 3.5% | 0% | 0% | **3.1%** | 0% | 0% | 1.0% | 0% | **0.8%** | 0.3% | 0% | 1.6% | 0% | **0.5%** | 1.6% |

*L: Left, R: Right, T: Thru, U: U-Turn

**SR 267 & CR 700 N - TMC**
Tue Dec 12, 2023
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1142918, Location: 39.865527, -86.39247

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

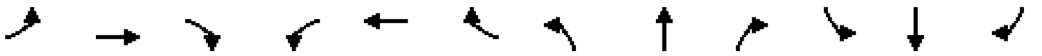




| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 34 | 14 | 332 | 209 | 19 | 42 | 229 | 644 | 72 | 29 | 679 | 12 |
| Future Volume (veh/h) | 34 | 14 | 332 | 209 | 19 | 42 | 229 | 644 | 72 | 29 | 679 | 12 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1870 | 1900 | 1826 | 1870 | 1870 | 1856 | 1796 | 1796 | 1856 | 1900 |
| Adj Flow Rate, veh/h | 37 | 15 | 361 | 227 | 21 | 46 | 249 | 700 | 78 | 32 | 738 | 13 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 0 | 0 | 2 | 0 | 5 | 2 | 2 | 3 | 7 | 7 | 3 | 0 |
| Cap, veh/h | 458 | 353 | 499 | 374 | 126 | 276 | 403 | 1147 | 128 | 312 | 981 | 17 |
| Arrive On Green | 0.05 | 0.19 | 0.19 | 0.11 | 0.25 | 0.25 | 0.13 | 0.36 | 0.36 | 0.05 | 0.28 | 0.28 |
| Sat Flow, veh/h | 1810 | 1900 | 1585 | 3510 | 509 | 1116 | 1781 | 3198 | 356 | 1711 | 3545 | 62 |
| Grp Volume(v), veh/h | 37 | 15 | 361 | 227 | 0 | 67 | 249 | 386 | 392 | 32 | 367 | 384 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1900 | 1585 | 1755 | 0 | 1625 | 1781 | 1763 | 1791 | 1711 | 1763 | 1844 |
| Q Serve(g_s), s | 1.0 | 0.4 | 12.0 | 4.0 | 0.0 | 2.1 | 5.9 | 11.6 | 11.6 | 0.8 | 12.3 | 12.3 |
| Cycle Q Clear(g_c), s | 1.0 | 0.4 | 12.0 | 4.0 | 0.0 | 2.1 | 5.9 | 11.6 | 11.6 | 0.8 | 12.3 | 12.3 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.69 | 1.00 | | 0.20 | 1.00 | | 0.03 |
| Lane Grp Cap(c), veh/h | 458 | 353 | 499 | 374 | 0 | 402 | 403 | 632 | 643 | 312 | 488 | 511 |
| V/C Ratio(X) | 0.08 | 0.04 | 0.72 | 0.61 | 0.00 | 0.17 | 0.62 | 0.61 | 0.61 | 0.10 | 0.75 | 0.75 |
| Avail Cap(c_a), veh/h | 562 | 353 | 499 | 543 | 0 | 402 | 724 | 1129 | 1148 | 419 | 777 | 813 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 19.1 | 21.6 | 19.6 | 27.6 | 0.0 | 19.1 | 14.3 | 17.0 | 17.0 | 15.4 | 21.3 | 21.3 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 5.1 | 1.6 | 0.0 | 0.2 | 1.5 | 1.0 | 0.9 | 0.1 | 2.4 | 2.3 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.4 | 0.2 | 5.1 | 1.7 | 0.0 | 0.8 | 2.1 | 4.1 | 4.2 | 0.3 | 4.7 | 4.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 19.2 | 21.6 | 24.8 | 29.2 | 0.0 | 19.3 | 15.8 | 18.0 | 18.0 | 15.5 | 23.7 | 23.6 |
| LnGrp LOS | B | C | C | C | | B | B | B | B | B | C | C |
| Approach Vol, veh/h | | 413 | | | 294 | | | 1027 | | | 783 | |
| Approach Delay, s/veh | | 24.2 | | | 26.9 | | | 17.4 | | | 23.3 | |
| Approach LOS | | C | | | C | | | B | | | C | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 7.6 | 28.2 | 11.9 | 17.0 | 12.8 | 22.9 | 7.9 | 21.0 |
| Change Period (Y+Rc), s | 4.5 | 5.0 | 5.0 | 5.0 | 4.5 | 5.0 | 4.5 | 5.0 |
| Max Green Setting (Gmax), s | 7.1 | 41.4 | 10.0 | 12.0 | 20.0 | 28.5 | 7.1 | 15.4 |
| Max Q Clear Time (g_c+I1), s | 2.8 | 13.6 | 6.0 | 14.0 | 7.9 | 14.3 | 3.0 | 4.1 |
| Green Ext Time (p_c), s | 0.0 | 4.7 | 0.3 | 0.0 | 0.5 | 3.6 | 0.0 | 0.2 |

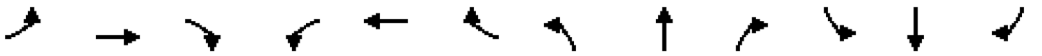
| Intersection Summary | |
|---|---|
| HCM 7th Control Delay, s/veh | 21.5 |
| HCM 7th LOS | C |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 15 | 28 | 192 | 315 | 34 | 61 | 257 | 893 | 167 | 94 | 684 | 7 |
| Future Volume (veh/h) | 15 | 28 | 192 | 315 | 34 | 61 | 257 | 893 | 167 | 94 | 684 | 7 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1885 | 1900 | 1900 | 1870 | 1900 | 1870 | 1900 | 1900 | 1841 | 1900 |
| Adj Flow Rate, veh/h | 15 | 29 | 198 | 325 | 35 | 63 | 265 | 921 | 172 | 97 | 705 | 7 |
| Peak Hour Factor | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, % | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 4 | 0 |
| Cap, veh/h | 340 | 292 | 440 | 438 | 158 | 285 | 453 | 1172 | 219 | 299 | 1239 | 12 |
| Arrive On Green | 0.02 | 0.15 | 0.15 | 0.12 | 0.26 | 0.26 | 0.12 | 0.39 | 0.39 | 0.08 | 0.35 | 0.35 |
| Sat Flow, veh/h | 1810 | 1900 | 1598 | 3510 | 608 | 1095 | 1810 | 2989 | 558 | 1810 | 3548 | 35 |
| Grp Volume(v), veh/h | 15 | 29 | 198 | 325 | 0 | 98 | 265 | 547 | 546 | 97 | 347 | 365 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1900 | 1598 | 1755 | 0 | 1703 | 1810 | 1777 | 1770 | 1810 | 1749 | 1834 |
| Q Serve(g_s), s | 0.5 | 1.0 | 8.0 | 7.0 | 0.0 | 3.5 | 6.9 | 21.1 | 21.1 | 2.5 | 12.6 | 12.6 |
| Cycle Q Clear(g_c), s | 0.5 | 1.0 | 8.0 | 7.0 | 0.0 | 3.5 | 6.9 | 21.1 | 21.1 | 2.5 | 12.6 | 12.6 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.64 | 1.00 | | 0.32 | 1.00 | | 0.02 |
| Lane Grp Cap(c), veh/h | 340 | 292 | 440 | 438 | 0 | 443 | 453 | 697 | 694 | 299 | 611 | 641 |
| V/C Ratio(X) | 0.04 | 0.10 | 0.45 | 0.74 | 0.00 | 0.22 | 0.58 | 0.79 | 0.79 | 0.32 | 0.57 | 0.57 |
| Avail Cap(c_a), veh/h | 469 | 293 | 440 | 811 | 0 | 503 | 733 | 1159 | 1154 | 381 | 875 | 918 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 26.5 | 28.3 | 23.3 | 32.9 | 0.0 | 22.6 | 14.0 | 20.8 | 20.8 | 15.9 | 20.6 | 20.6 |
| Incr Delay (d2), s/veh | 0.1 | 0.1 | 0.7 | 2.5 | 0.0 | 0.2 | 1.2 | 2.0 | 2.0 | 0.6 | 0.8 | 0.8 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.2 | 0.5 | 3.0 | 3.0 | 0.0 | 1.4 | 2.5 | 8.0 | 8.0 | 0.9 | 4.7 | 4.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 26.5 | 28.5 | 24.1 | 35.4 | 0.0 | 22.9 | 15.2 | 22.8 | 22.8 | 16.6 | 21.4 | 21.4 |
| LnGrp LOS | C | C | C | D | | C | B | C | C | B | C | C |
| Approach Vol, veh/h | | 242 | | | 423 | | | 1358 | | | 809 | |
| Approach Delay, s/veh | | 24.7 | | | 32.5 | | | 21.3 | | | 20.8 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 10.6 | 35.5 | 14.7 | 17.0 | 14.0 | 32.2 | 6.4 | 25.3 |
| Change Period (Y+Rc), s | 4.5 | 5.0 | 5.0 | 5.0 | 4.5 | 5.0 | 4.5 | 5.0 |
| Max Green Setting (Gmax), s | 9.7 | 50.8 | 18.0 | 12.0 | 21.5 | 39.0 | 7.5 | 23.0 |
| Max Q Clear Time (g_c+I1), s | 4.5 | 23.1 | 9.0 | 10.0 | 8.9 | 14.6 | 2.5 | 5.5 |
| Green Ext Time (p_c), s | 0.1 | 7.4 | 0.8 | 0.2 | 0.6 | 4.1 | 0.0 | 0.4 |

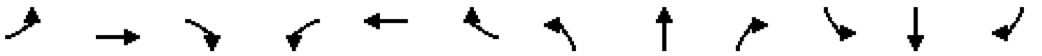
| Intersection Summary | |
|---|---|
| HCM 7th Control Delay, s/veh | 23.1 |
| HCM 7th LOS | C |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 38 | 16 | 362 | 235 | 22 | 48 | 271 | 760 | 85 | 31 | 720 | 13 |
| Future Volume (veh/h) | 38 | 16 | 362 | 235 | 22 | 48 | 271 | 760 | 85 | 31 | 720 | 13 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1870 | 1900 | 1826 | 1870 | 1870 | 1856 | 1796 | 1796 | 1856 | 1900 |
| Adj Flow Rate, veh/h | 41 | 17 | 393 | 255 | 24 | 52 | 295 | 826 | 92 | 34 | 783 | 14 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 0 | 0 | 2 | 0 | 5 | 2 | 2 | 3 | 7 | 7 | 3 | 0 |
| Cap, veh/h | 445 | 336 | 510 | 359 | 119 | 257 | 423 | 1229 | 137 | 289 | 1022 | 18 |
| Arrive On Green | 0.06 | 0.18 | 0.18 | 0.10 | 0.23 | 0.23 | 0.14 | 0.38 | 0.38 | 0.05 | 0.29 | 0.29 |
| Sat Flow, veh/h | 1810 | 1900 | 1585 | 3510 | 513 | 1112 | 1781 | 3198 | 356 | 1711 | 3544 | 63 |
| Grp Volume(v), veh/h | 41 | 17 | 393 | 255 | 0 | 76 | 295 | 455 | 463 | 34 | 389 | 408 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1900 | 1585 | 1755 | 0 | 1626 | 1781 | 1763 | 1791 | 1711 | 1763 | 1844 |
| Q Serve(g_s), s | 1.2 | 0.5 | 12.0 | 4.8 | 0.0 | 2.6 | 7.2 | 14.5 | 14.5 | 0.9 | 13.7 | 13.7 |
| Cycle Q Clear(g_c), s | 1.2 | 0.5 | 12.0 | 4.8 | 0.0 | 2.6 | 7.2 | 14.5 | 14.5 | 0.9 | 13.7 | 13.7 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.68 | 1.00 | | 0.20 | 1.00 | | 0.03 |
| Lane Grp Cap(c), veh/h | 445 | 336 | 510 | 359 | 0 | 376 | 423 | 677 | 688 | 289 | 509 | 532 |
| V/C Ratio(X) | 0.09 | 0.05 | 0.77 | 0.71 | 0.00 | 0.20 | 0.70 | 0.67 | 0.67 | 0.12 | 0.77 | 0.77 |
| Avail Cap(c_a), veh/h | 534 | 336 | 510 | 466 | 0 | 376 | 678 | 1102 | 1120 | 385 | 780 | 816 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 20.4 | 23.2 | 20.8 | 29.5 | 0.0 | 21.0 | 14.6 | 17.3 | 17.3 | 15.7 | 22.0 | 22.0 |
| Incr Delay (d2), s/veh | 0.1 | 0.1 | 7.1 | 3.5 | 0.0 | 0.3 | 2.1 | 1.2 | 1.1 | 0.2 | 2.4 | 2.3 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.5 | 0.2 | 6.2 | 2.1 | 0.0 | 1.0 | 2.6 | 5.1 | 5.2 | 0.3 | 5.3 | 5.5 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 20.5 | 23.2 | 27.9 | 32.9 | 0.0 | 21.3 | 16.7 | 18.5 | 18.5 | 15.9 | 24.5 | 24.4 |
| LnGrp LOS | C | C | C | C | | C | B | B | B | B | C | C |
| Approach Vol, veh/h | | 451 | | | 331 | | | 1213 | | | 831 | |
| Approach Delay, s/veh | | 27.0 | | | 30.2 | | | 18.0 | | | 24.1 | |
| Approach LOS | | C | | | C | | | B | | | C | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 7.8 | 31.1 | 11.9 | 17.0 | 14.3 | 24.6 | 8.3 | 20.7 |
| Change Period (Y+Rc), s | 4.5 | 5.0 | 5.0 | 5.0 | 4.5 | 5.0 | 4.5 | 5.0 |
| Max Green Setting (Gmax), s | 7.1 | 42.4 | 9.0 | 12.0 | 19.5 | 30.0 | 7.1 | 14.4 |
| Max Q Clear Time (g_c+I1), s | 2.9 | 16.5 | 6.8 | 14.0 | 9.2 | 15.7 | 3.2 | 4.6 |
| Green Ext Time (p_c), s | 0.0 | 5.7 | 0.2 | 0.0 | 0.6 | 3.9 | 0.0 | 0.2 |

| Intersection Summary | |
|---|---|
| HCM 7th Control Delay, s/veh | 22.7 |
| HCM 7th LOS | C |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 17 | 31 | 210 | 353 | 39 | 69 | 304 | 1054 | 198 | 100 | 726 | 8 |
| Future Volume (veh/h) | 17 | 31 | 210 | 353 | 39 | 69 | 304 | 1054 | 198 | 100 | 726 | 8 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1885 | 1900 | 1900 | 1870 | 1900 | 1870 | 1900 | 1900 | 1841 | 1900 |
| Adj Flow Rate, veh/h | 18 | 32 | 216 | 364 | 40 | 71 | 313 | 1087 | 204 | 103 | 748 | 8 |
| Peak Hour Factor | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, % | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 4 | 0 |
| Cap, veh/h | 308 | 257 | 421 | 462 | 150 | 266 | 472 | 1316 | 246 | 264 | 1366 | 15 |
| Arrive On Green | 0.03 | 0.14 | 0.14 | 0.13 | 0.24 | 0.24 | 0.13 | 0.44 | 0.44 | 0.07 | 0.39 | 0.39 |
| Sat Flow, veh/h | 1810 | 1900 | 1598 | 3510 | 614 | 1090 | 1810 | 2988 | 559 | 1810 | 3545 | 38 |
| Grp Volume(v), veh/h | 18 | 32 | 216 | 364 | 0 | 111 | 313 | 645 | 646 | 103 | 369 | 387 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1900 | 1598 | 1755 | 0 | 1704 | 1810 | 1777 | 1770 | 1810 | 1749 | 1834 |
| Q Serve(g_s), s | 0.7 | 1.3 | 10.2 | 8.9 | 0.0 | 4.7 | 8.6 | 28.3 | 28.5 | 2.9 | 14.6 | 14.6 |
| Cycle Q Clear(g_c), s | 0.7 | 1.3 | 10.2 | 8.9 | 0.0 | 4.7 | 8.6 | 28.3 | 28.5 | 2.9 | 14.6 | 14.6 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.64 | 1.00 | | 0.32 | 1.00 | | 0.02 |
| Lane Grp Cap(c), veh/h | 308 | 257 | 421 | 462 | 0 | 416 | 472 | 783 | 780 | 264 | 674 | 707 |
| V/C Ratio(X) | 0.06 | 0.12 | 0.51 | 0.79 | 0.00 | 0.27 | 0.66 | 0.82 | 0.83 | 0.39 | 0.55 | 0.55 |
| Avail Cap(c_a), veh/h | 402 | 257 | 421 | 712 | 0 | 449 | 740 | 1041 | 1037 | 306 | 710 | 744 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 31.4 | 33.7 | 27.8 | 37.3 | 0.0 | 27.1 | 14.3 | 21.8 | 21.9 | 17.9 | 21.2 | 21.2 |
| Incr Delay (d2), s/veh | 0.1 | 0.2 | 1.1 | 3.3 | 0.0 | 0.3 | 1.6 | 4.1 | 4.3 | 0.9 | 0.8 | 0.8 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.3 | 0.6 | 3.9 | 4.0 | 0.0 | 1.9 | 3.2 | 11.3 | 11.3 | 1.1 | 5.6 | 5.8 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 31.4 | 34.0 | 28.9 | 40.6 | 0.0 | 27.4 | 15.9 | 25.9 | 26.2 | 18.9 | 22.0 | 22.0 |
| LnGrp LOS | C | C | C | D | | C | B | C | C | B | C | C |
| Approach Vol, veh/h | | 266 | | | 475 | | | 1604 | | | 859 | |
| Approach Delay, s/veh | | 29.7 | | | 37.5 | | | 24.1 | | | 21.6 | |
| Approach LOS | | C | | | D | | | C | | | C | |

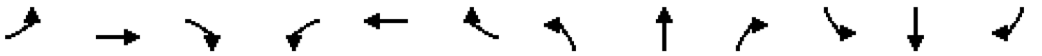
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 10.9 | 44.1 | 16.7 | 17.0 | 15.9 | 39.2 | 7.0 | 26.7 |
| Change Period (Y+Rc), s | 4.5 | 5.0 | 5.0 | 5.0 | 4.5 | 5.0 | 4.5 | 5.0 |
| Max Green Setting (Gmax), s | 8.5 | 52.0 | 18.0 | 12.0 | 24.5 | 36.0 | 7.1 | 23.4 |
| Max Q Clear Time (g_c+I1), s | 4.9 | 30.5 | 10.9 | 12.2 | 10.6 | 16.6 | 2.7 | 6.7 |
| Green Ext Time (p_c), s | 0.1 | 8.6 | 0.8 | 0.0 | 0.7 | 4.1 | 0.0 | 0.5 |

| Intersection Summary | |
|---|---|
| HCM 7th Control Delay, s/veh | 25.9 |
| HCM 7th LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 38 | 16 | 362 | 235 | 22 | 50 | 271 | 772 | 85 | 37 | 755 | 13 |
| Future Volume (veh/h) | 38 | 16 | 362 | 235 | 22 | 50 | 271 | 772 | 85 | 37 | 755 | 13 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1870 | 1900 | 1826 | 1870 | 1870 | 1856 | 1796 | 1796 | 1856 | 1900 |
| Adj Flow Rate, veh/h | 41 | 17 | 393 | 255 | 24 | 54 | 295 | 839 | 92 | 40 | 821 | 14 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 0 | 0 | 2 | 0 | 5 | 2 | 2 | 3 | 7 | 7 | 3 | 0 |
| Cap, veh/h | 438 | 331 | 501 | 356 | 114 | 256 | 416 | 1241 | 136 | 295 | 1063 | 18 |
| Arrive On Green | 0.06 | 0.17 | 0.17 | 0.10 | 0.23 | 0.23 | 0.14 | 0.39 | 0.39 | 0.05 | 0.30 | 0.30 |
| Sat Flow, veh/h | 1810 | 1900 | 1585 | 3510 | 500 | 1124 | 1781 | 3204 | 351 | 1711 | 3547 | 60 |
| Grp Volume(v), veh/h | 41 | 17 | 393 | 255 | 0 | 78 | 295 | 462 | 469 | 40 | 408 | 427 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1900 | 1585 | 1755 | 0 | 1624 | 1781 | 1763 | 1792 | 1711 | 1763 | 1845 |
| Q Serve(g_s), s | 1.2 | 0.5 | 12.0 | 4.9 | 0.0 | 2.7 | 7.2 | 15.0 | 15.0 | 1.1 | 14.5 | 14.5 |
| Cycle Q Clear(g_c), s | 1.2 | 0.5 | 12.0 | 4.9 | 0.0 | 2.7 | 7.2 | 15.0 | 15.0 | 1.1 | 14.5 | 14.5 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.69 | 1.00 | | 0.20 | 1.00 | | 0.03 |
| Lane Grp Cap(c), veh/h | 438 | 331 | 501 | 356 | 0 | 369 | 416 | 683 | 694 | 295 | 528 | 553 |
| V/C Ratio(X) | 0.09 | 0.05 | 0.78 | 0.72 | 0.00 | 0.21 | 0.71 | 0.68 | 0.68 | 0.14 | 0.77 | 0.77 |
| Avail Cap(c_a), veh/h | 525 | 331 | 501 | 458 | 0 | 369 | 641 | 1084 | 1103 | 379 | 793 | 830 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 20.9 | 23.7 | 21.4 | 30.0 | 0.0 | 21.6 | 14.7 | 17.5 | 17.5 | 15.4 | 22.0 | 22.0 |
| Incr Delay (d2), s/veh | 0.1 | 0.1 | 8.0 | 3.8 | 0.0 | 0.3 | 2.2 | 1.2 | 1.2 | 0.2 | 2.7 | 2.6 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.5 | 0.2 | 6.4 | 2.2 | 0.0 | 1.0 | 2.6 | 5.3 | 5.4 | 0.4 | 5.6 | 5.9 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 21.0 | 23.8 | 29.4 | 33.8 | 0.0 | 21.9 | 16.9 | 18.7 | 18.7 | 15.6 | 24.7 | 24.6 |
| LnGrp LOS | C | C | C | C | | C | B | B | B | B | C | C |
| Approach Vol, veh/h | | 451 | | | 333 | | | 1226 | | | 875 | |
| Approach Delay, s/veh | | 28.5 | | | 31.0 | | | 18.3 | | | 24.2 | |
| Approach LOS | | C | | | C | | | B | | | C | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 8.2 | 31.7 | 12.0 | 17.0 | 14.3 | 25.6 | 8.3 | 20.7 |
| Change Period (Y+Rc), s | 4.5 | 5.0 | 5.0 | 5.0 | 4.5 | 5.0 | 4.5 | 5.0 |
| Max Green Setting (Gmax), s | 7.1 | 42.4 | 9.0 | 12.0 | 18.5 | 31.0 | 7.1 | 14.4 |
| Max Q Clear Time (g_c+I1), s | 3.1 | 17.0 | 6.9 | 14.0 | 9.2 | 16.5 | 3.2 | 4.7 |
| Green Ext Time (p_c), s | 0.0 | 5.8 | 0.2 | 0.0 | 0.6 | 4.1 | 0.0 | 0.2 |

| Intersection Summary | |
|---|---|
| HCM 7th Control Delay, s/veh | 23.1 |
| HCM 7th LOS | C |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 17 | 31 | 210 | 353 | 39 | 76 | 304 | 1093 | 198 | 104 | 748 | 8 |
| Future Volume (veh/h) | 17 | 31 | 210 | 353 | 39 | 76 | 304 | 1093 | 198 | 104 | 748 | 8 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Width Adj. | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1885 | 1900 | 1900 | 1870 | 1900 | 1870 | 1900 | 1900 | 1841 | 1900 |
| Adj Flow Rate, veh/h | 18 | 32 | 216 | 364 | 40 | 78 | 313 | 1127 | 204 | 107 | 771 | 8 |
| Peak Hour Factor | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 |
| Percent Heavy Veh, % | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 4 | 0 |
| Cap, veh/h | 302 | 252 | 412 | 454 | 138 | 269 | 468 | 1356 | 244 | 260 | 1409 | 15 |
| Arrive On Green | 0.03 | 0.13 | 0.13 | 0.13 | 0.24 | 0.24 | 0.13 | 0.45 | 0.45 | 0.07 | 0.40 | 0.40 |
| Sat Flow, veh/h | 1810 | 1900 | 1598 | 3510 | 576 | 1122 | 1810 | 3008 | 542 | 1810 | 3546 | 37 |
| Grp Volume(v), veh/h | 18 | 32 | 216 | 364 | 0 | 118 | 313 | 664 | 667 | 107 | 380 | 399 |
| Grp Sat Flow(s),veh/h/ln | 1810 | 1900 | 1598 | 1755 | 0 | 1698 | 1810 | 1777 | 1773 | 1810 | 1749 | 1834 |
| Q Serve(g_s), s | 0.8 | 1.3 | 10.5 | 9.1 | 0.0 | 5.1 | 8.6 | 29.7 | 30.0 | 3.0 | 15.2 | 15.2 |
| Cycle Q Clear(g_c), s | 0.8 | 1.3 | 10.5 | 9.1 | 0.0 | 5.1 | 8.6 | 29.7 | 30.0 | 3.0 | 15.2 | 15.2 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.66 | 1.00 | | 0.31 | 1.00 | | 0.02 |
| Lane Grp Cap(c), veh/h | 302 | 252 | 412 | 454 | 0 | 406 | 468 | 801 | 799 | 260 | 695 | 729 |
| V/C Ratio(X) | 0.06 | 0.13 | 0.52 | 0.80 | 0.00 | 0.29 | 0.67 | 0.83 | 0.83 | 0.41 | 0.55 | 0.55 |
| Avail Cap(c_a), veh/h | 393 | 252 | 412 | 620 | 0 | 406 | 723 | 1040 | 1037 | 319 | 741 | 778 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 32.2 | 34.7 | 28.8 | 38.3 | 0.0 | 28.2 | 14.3 | 21.8 | 21.9 | 18.3 | 21.0 | 21.0 |
| Incr Delay (d2), s/veh | 0.1 | 0.2 | 1.2 | 5.3 | 0.0 | 0.4 | 1.7 | 4.5 | 4.7 | 1.0 | 0.7 | 0.7 |
| Initial Q Delay(d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.3 | 0.6 | 4.1 | 4.2 | 0.0 | 2.1 | 3.2 | 11.9 | 12.0 | 1.2 | 5.8 | 6.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d), s/veh | 32.3 | 34.9 | 30.1 | 43.6 | 0.0 | 28.6 | 15.9 | 26.3 | 26.6 | 19.3 | 21.7 | 21.7 |
| LnGrp LOS | C | C | C | D | | C | B | C | C | B | C | C |
| Approach Vol, veh/h | | 266 | | | 482 | | | 1644 | | | 886 | |
| Approach Delay, s/veh | | 30.8 | | | 39.9 | | | 24.4 | | | 21.4 | |
| Approach LOS | | C | | | D | | | C | | | C | |

| Timer - Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | 11.0 | 45.8 | 16.7 | 17.0 | 15.9 | 41.0 | 7.0 | 26.7 |
| Change Period (Y+Rc), s | 4.5 | 5.0 | 5.0 | 5.0 | 4.5 | 5.0 | 4.5 | 5.0 |
| Max Green Setting (Gmax), s | 9.5 | 53.0 | 16.0 | 12.0 | 24.1 | 38.4 | 7.1 | 21.4 |
| Max Q Clear Time (g_c+I1), s | 5.0 | 32.0 | 11.1 | 12.5 | 10.6 | 17.2 | 2.8 | 7.1 |
| Green Ext Time (p_c), s | 0.1 | 8.8 | 0.6 | 0.0 | 0.7 | 4.4 | 0.0 | 0.5 |

| Intersection Summary | |
|---|---|
| HCM 7th Control Delay, s/veh | 26.4 |
| HCM 7th LOS | C |

# SR 267 (GREEN STREET)/ACRE LANE & PROPOSED DEVELOPMENT ACCESS DRIVE

## TRAFFIC VOLUME COUNTS
## CAPACITY ANALYSIS

## SR 267 & ACRE LANE - TMC

Tue May 21, 2024
AM Peak (7:15 AM - 8:15 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1189708, Location: 39.875959, -86.392414

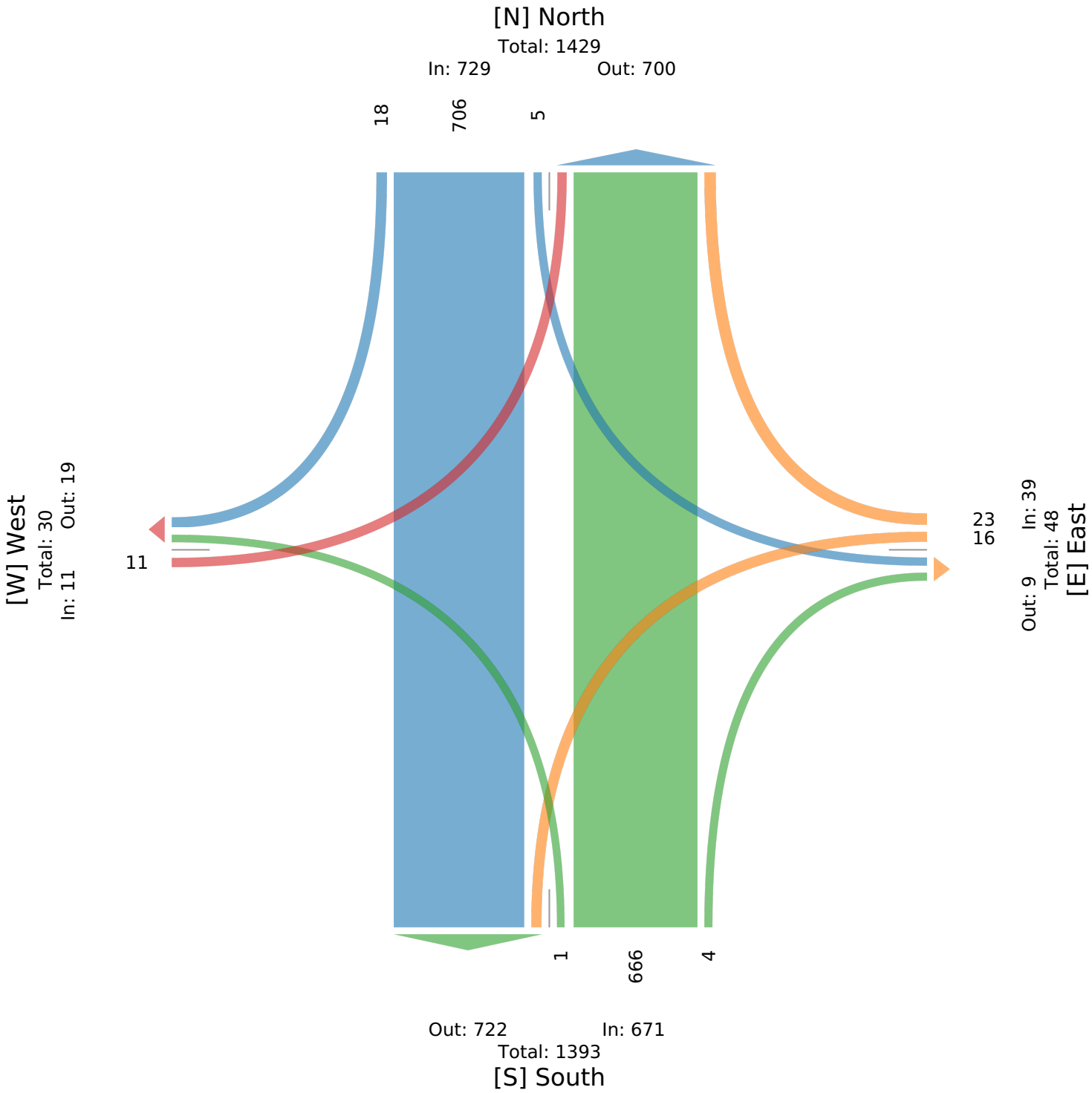
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg | South | | | | | North | | | | | West | | | | | East | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | Northbound | | | | | Southbound | | | | | Eastbound | | | | | Westbound | | | | | |
| Time | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | **Int** |
| 2024-05-21 7:15AM | 0 | 150 | 1 | 0 | **151** | 1 | 197 | 2 | 0 | **200** | 2 | 0 | 0 | 0 | **2** | 6 | 0 | 4 | 0 | **10** | **363** |
| 7:30AM | 0 | 186 | 2 | 0 | **188** | 1 | 164 | 5 | 0 | **170** | 4 | 0 | 0 | 0 | **4** | 2 | 0 | 8 | 0 | **10** | **372** |
| 7:45AM | 1 | 166 | 0 | 0 | **167** | 1 | 195 | 8 | 0 | **204** | 3 | 0 | 0 | 0 | **3** | 4 | 0 | 9 | 0 | **13** | **387** |
| 8:00AM | 0 | 164 | 1 | 0 | **165** | 2 | 150 | 3 | 0 | **155** | 2 | 0 | 0 | 0 | **2** | 4 | 0 | 2 | 0 | **6** | **328** |
| **Total** | 1 | 666 | 4 | 0 | **671** | 5 | 706 | 18 | 0 | **729** | 11 | 0 | 0 | 0 | **11** | 16 | 0 | 23 | 0 | **39** | **1450** |
| **% Approach** | 0.1% | 99.3% | 0.6% | 0% | **-** | 0.7% | 96.8% | 2.5% | 0% | **-** | 100% | 0% | 0% | 0% | **-** | 41.0% | 0% | 59.0% | 0% | **-** | - |
| **% Total** | 0.1% | 45.9% | 0.3% | 0% | **46.3%** | 0.3% | 48.7% | 1.2% | 0% | **50.3%** | 0.8% | 0% | 0% | 0% | **0.8%** | 1.1% | 0% | 1.6% | 0% | **2.7%** | - |
| **PHF** | 0.250 | 0.895 | 0.500 | - | **0.892** | 0.625 | 0.896 | 0.563 | - | **0.893** | 0.688 | - | - | - | **0.688** | 0.667 | - | 0.639 | - | **0.750** | 0.937 |
| **Lights and Motorcycles** | 1 | 638 | 3 | 0 | **642** | 5 | 678 | 18 | 0 | **701** | 11 | 0 | 0 | 0 | **11** | 16 | 0 | 23 | 0 | **39** | 1393 |
| **% Lights and Motorcycles** | 100% | 95.8% | 75.0% | 0% | **95.7%** | 100% | 96.0% | 100% | 0% | **96.2%** | 100% | 0% | 0% | 0% | **100%** | 100% | 0% | 100% | 0% | **100%** | 96.1% |
| **Heavy** | 0 | 28 | 1 | 0 | **29** | 0 | 28 | 0 | 0 | **28** | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | **0** | 57 |
| **% Heavy** | 0% | 4.2% | 25.0% | 0% | **4.3%** | 0% | 4.0% | 0% | 0% | **3.8%** | 0% | 0% | 0% | 0% | **0%** | 0% | 0% | 0% | 0% | **0%** | 3.9% |

*L: Left, R: Right, T: Thru, U: U-Turn

SR 267 & ACRE LANE - TMC
Tue May 21, 2024
AM Peak (7:15 AM - 8:15 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1189708, Location: 39.875959, -86.392414

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



## SR 267 & ACRE LANE - TMC

Tue May 21, 2024
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1189708, Location: 39.875959, -86.392414

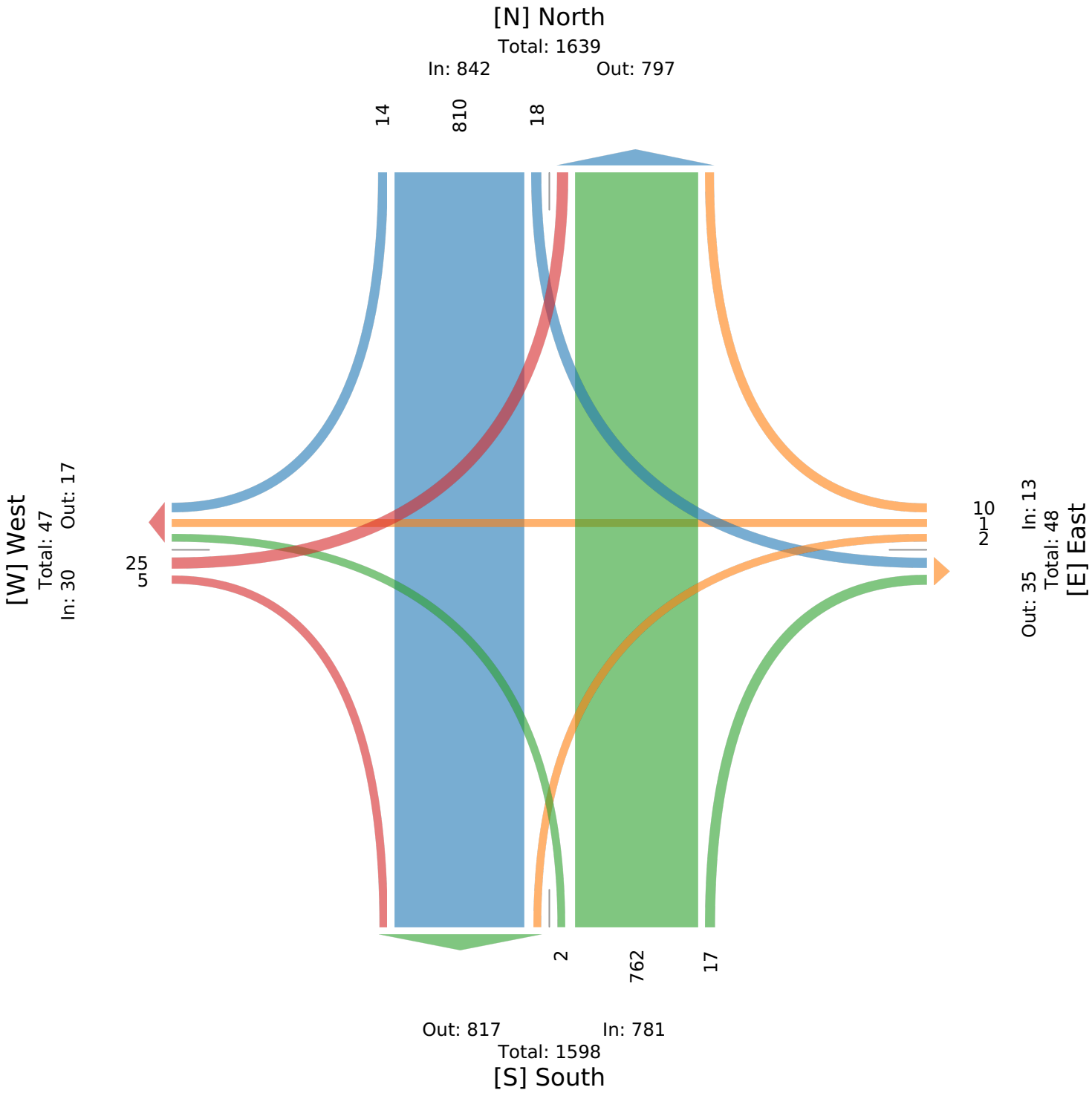
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

| Leg / Direction | South Northbound | | | | | North Southbound | | | | | West Eastbound | | | | | East Westbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | L | T | R | U | **App** | **Int** |
| 2024-05-21 4:15PM | 0 | 179 | 5 | 0 | **184** | 3 | 204 | 2 | 0 | **209** | 8 | 0 | 1 | 0 | **9** | 1 | 0 | 1 | 0 | **2** | **404** |
| 4:30PM | 1 | 197 | 2 | 0 | **200** | 7 | 198 | 4 | 0 | **209** | 4 | 0 | 0 | 0 | **4** | 1 | 0 | 4 | 0 | **5** | **418** |
| 4:45PM | 1 | 199 | 6 | 0 | **206** | 1 | 204 | 6 | 0 | **211** | 6 | 0 | 2 | 0 | **8** | 0 | 1 | 4 | 0 | **5** | **430** |
| 5:00PM | 0 | 187 | 4 | 0 | **191** | 7 | 204 | 2 | 0 | **213** | 7 | 0 | 2 | 0 | **9** | 0 | 0 | 1 | 0 | **1** | **414** |
| **Total** | 2 | 762 | 17 | 0 | **781** | 18 | 810 | 14 | 0 | **842** | 25 | 0 | 5 | 0 | **30** | 2 | 1 | 10 | 0 | **13** | **1666** |
| **% Approach** | 0.3% | 97.6% | 2.2% | 0% | **-** | 2.1% | 96.2% | 1.7% | 0% | **-** | 83.3% | 0% | 16.7% | 0% | **-** | 15.4% | 7.7% | 76.9% | 0% | **-** | - |
| **% Total** | 0.1% | 45.7% | 1.0% | 0% | **46.9%** | 1.1% | 48.6% | 0.8% | 0% | **50.5%** | 1.5% | 0% | 0.3% | 0% | **1.8%** | 0.1% | 0.1% | 0.6% | 0% | **0.8%** | - |
| **PHF** | 0.500 | 0.957 | 0.708 | - | **0.948** | 0.643 | 0.993 | 0.583 | - | **0.988** | 0.781 | - | 0.625 | - | **0.833** | 0.500 | 0.250 | 0.625 | - | **0.650** | 0.969 |
| **Lights and Motorcycles** | 2 | 745 | 17 | 0 | **764** | 17 | 788 | 14 | 0 | **819** | 25 | 0 | 5 | 0 | **30** | 2 | 1 | 10 | 0 | **13** | 1626 |
| **% Lights and Motorcycles** | 100% | 97.8% | 100% | 0% | **97.8%** | 94.4% | 97.3% | 100% | 0% | **97.3%** | 100% | 0% | 100% | 0% | **100%** | 100% | 100% | 100% | 0% | **100%** | 97.6% |
| **Heavy** | 0 | 17 | 0 | 0 | **17** | 1 | 22 | 0 | 0 | **23** | 0 | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | **0** | 40 |
| **% Heavy** | 0% | 2.2% | 0% | 0% | **2.2%** | 5.6% | 2.7% | 0% | 0% | **2.7%** | 0% | 0% | 0% | 0% | **0%** | 0% | 0% | 0% | 0% | **0%** | 2.4% |

*L: Left, R: Right, T: Thru, U: U-Turn

SR 267 & ACRE LANE - TMC
Tue May 21, 2024
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1189708, Location: 39.875959, -86.392414

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



| Intersection | |
|---|---|
| Int Delay, s/veh | 1.2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 11 | 0 | 0 | 16 | 0 | 23 | 1 | 666 | 4 | 5 | 706 | 18 |
| Future Vol, veh/h | 11 | 0 | 0 | 16 | 0 | 23 | 1 | 666 | 4 | 5 | 706 | 18 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 0 | - | - | 0 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 25 | 0 | 4 | 0 |
| Mvmt Flow | 12 | 0 | 0 | 17 | 0 | 24 | 1 | 709 | 4 | 5 | 751 | 19 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1482 | 1486 | 761 | 1474 | 1494 | 711 | 770 | 0 | 0 | 713 | 0 | 0 |
| Stage 1 | 771 | 771 | - | 713 | 713 | - | - | - | - | - | - | - |
| Stage 2 | 711 | 715 | - | 762 | 781 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 104 | 126 | 409 | 106 | 124 | 437 | 853 | - | - | 896 | - | - |
| Stage 1 | 396 | 412 | - | 426 | 439 | - | - | - | - | - | - | - |
| Stage 2 | 427 | 438 | - | 401 | 408 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 98 | 125 | 409 | 105 | 123 | 437 | 853 | - | - | 896 | - | - |
| Mov Cap-2 Maneuver | 98 | 125 | - | 105 | 123 | - | - | - | - | - | - | - |
| Stage 1 | 393 | 410 | - | 426 | 438 | - | - | - | - | - | - | - |
| Stage 2 | 403 | 437 | - | 398 | 406 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s/v | 46.71 | 29.15 | 0.01 | 0.06 |
| HCM LOS | E | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 853 | - | - | 98 | - | 190 | 896 | - | - |
| HCM Lane V/C Ratio | 0.001 | - | - | 0.12 | - | 0.218 | 0.006 | - | - |
| HCM Control Delay (s/veh) | 9.2 | - | - | 46.7 | 0 | 29.1 | 9 | - | - |
| HCM Lane LOS | A | - | - | E | A | D | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.4 | - | 0.8 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.5 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 25 | 0 | 5 | 2 | 1 | 10 | 2 | 762 | 17 | 18 | 810 | 14 |
| Future Vol, veh/h | 25 | 0 | 5 | 2 | 1 | 10 | 2 | 762 | 17 | 18 | 810 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 0 | - | - | 0 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 3 | 0 |
| Mvmt Flow | 26 | 0 | 5 | 2 | 1 | 10 | 2 | 786 | 18 | 19 | 835 | 14 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1670 | 1687 | 842 | 1671 | 1685 | 794 | 849 | 0 | 0 | 803 | 0 | 0 |
| Stage 1 | 879 | 879 | - | 798 | 798 | - | - | - | - | - | - | - |
| Stage 2 | 790 | 807 | - | 872 | 887 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.16 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.254 | - | - |
| Pot Cap-1 Maneuver | 77 | 95 | 367 | 77 | 95 | 391 | 797 | - | - | 803 | - | - |
| Stage 1 | 345 | 368 | - | 382 | 401 | - | - | - | - | - | - | - |
| Stage 2 | 386 | 397 | - | 348 | 365 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 73 | 92 | 367 | 74 | 93 | 391 | 797 | - | - | 803 | - | - |
| Mov Cap-2 Maneuver | 73 | 92 | - | 74 | 93 | - | - | - | - | - | - | - |
| Stage 1 | 337 | 359 | - | 381 | 400 | - | - | - | - | - | - | - |
| Stage 2 | 374 | 396 | - | 335 | 357 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s/v | 69.03 | 23.77 | 0.02 | 0.2 |
| HCM LOS | F | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 797 | - | - | 73 | 367 | 205 | 803 | - | - |
| HCM Lane V/C Ratio | 0.003 | - | - | 0.355 | 0.014 | 0.065 | 0.023 | - | - |
| HCM Control Delay (s/veh) | 9.5 | - | - | 79.8 | 14.9 | 23.8 | 9.6 | - | - |
| HCM Lane LOS | A | - | - | F | B | C | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 1.3 | 0 | 0.2 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 11 | 0 | 0 | 16 | 0 | 23 | 2 | 700 | 5 | 6 | 742 | 19 |
| Future Vol, veh/h | 11 | 0 | 0 | 16 | 0 | 23 | 2 | 700 | 5 | 6 | 742 | 19 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 0 | - | - | 0 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 25 | 0 | 4 | 0 |
| Mvmt Flow | 12 | 0 | 0 | 17 | 0 | 24 | 2 | 745 | 5 | 6 | 789 | 20 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1561 | 1566 | 799 | 1554 | 1574 | 747 | 810 | 0 | 0 | 750 | 0 | 0 |
| Stage 1 | 812 | 812 | - | 752 | 752 | - | - | - | - | - | - | - |
| Stage 2 | 749 | 754 | - | 802 | 822 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 92 | 112 | 388 | 93 | 111 | 416 | 825 | - | - | 868 | - | - |
| Stage 1 | 376 | 395 | - | 406 | 421 | - | - | - | - | - | - | - |
| Stage 2 | 407 | 420 | - | 380 | 391 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 86 | 111 | 388 | 92 | 110 | 416 | 825 | - | - | 868 | - | - |
| Mov Cap-2 Maneuver | 86 | 111 | - | 92 | 110 | - | - | - | - | - | - | - |
| Stage 1 | 373 | 392 | - | 405 | 420 | - | - | - | - | - | - | - |
| Stage 2 | 382 | 419 | - | 378 | 388 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s/v | 53.53 | 32.8 | 0.03 | 0.07 |
| HCM LOS | F | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 825 | - | - | 86 | - | 170 | 868 | - | - |
| HCM Lane V/C Ratio | 0.003 | - | - | 0.137 | - | 0.243 | 0.007 | - | - |
| HCM Control Delay (s/veh) | 9.4 | - | - | 53.5 | 0 | 32.8 | 9.2 | - | - |
| HCM Lane LOS | A | - | - | F | A | D | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.5 | - | 0.9 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.8 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 25 | 0 | 5 | 2 | 1 | 10 | 3 | 801 | 18 | 19 | 851 | 15 |
| Future Vol, veh/h | 25 | 0 | 5 | 2 | 1 | 10 | 3 | 801 | 18 | 19 | 851 | 15 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 0 | - | - | 0 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 3 | 0 |
| Mvmt Flow | 26 | 0 | 5 | 2 | 1 | 10 | 3 | 826 | 19 | 20 | 877 | 15 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1757 | 1775 | 885 | 1758 | 1773 | 835 | 893 | 0 | 0 | 844 | 0 | 0 |
| Stage 1 | 924 | 924 | - | 841 | 841 | - | - | - | - | - | - | - |
| Stage 2 | 832 | 851 | - | 916 | 932 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.16 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.254 | - | - |
| Pot Cap-1 Maneuver | 67 | 84 | 347 | 67 | 84 | 371 | 768 | - | - | 775 | - | - |
| Stage 1 | 326 | 351 | - | 362 | 383 | - | - | - | - | - | - | - |
| Stage 2 | 366 | 379 | - | 329 | 348 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 63 | 81 | 347 | 64 | 81 | 371 | 768 | - | - | 775 | - | - |
| Mov Cap-2 Maneuver | 63 | 81 | - | 64 | 81 | - | - | - | - | - | - | - |
| Stage 1 | 317 | 342 | - | 361 | 382 | - | - | - | - | - | - | - |
| Stage 2 | 354 | 378 | - | 316 | 339 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s/v | 84.3 | 26.04 | 0.04 | 0.21 |
| HCM LOS | F | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 768 | - | - | 63 | 347 | 184 | 775 | - | - |
| HCM Lane V/C Ratio | 0.004 | - | - | 0.412 | 0.015 | 0.073 | 0.025 | - | - |
| HCM Control Delay (s/veh) | 9.7 | - | - | 98.1 | 15.5 | 26 | 9.8 | - | - |
| HCM Lane LOS | A | - | - | F | C | D | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 1.6 | 0 | 0.2 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 17 | 0 | 10 | 16 | 0 | 23 | 5 | 711 | 5 | 6 | 773 | 21 |
| Future Vol, veh/h | 17 | 0 | 10 | 16 | 0 | 23 | 5 | 711 | 5 | 6 | 773 | 21 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 0 | - | - | 0 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 25 | 0 | 4 | 0 |
| Mvmt Flow | 18 | 0 | 11 | 17 | 0 | 24 | 5 | 756 | 5 | 6 | 822 | 22 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1613 | 1619 | 834 | 1605 | 1627 | 759 | 845 | 0 | 0 | 762 | 0 | 0 |
| Stage 1 | 846 | 846 | - | 770 | 770 | - | - | - | - | - | - | - |
| Stage 2 | 767 | 772 | - | 835 | 857 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 85 | 104 | 371 | 86 | 103 | 410 | 801 | - | - | 860 | - | - |
| Stage 1 | 360 | 381 | - | 396 | 413 | - | - | - | - | - | - | - |
| Stage 2 | 398 | 412 | - | 365 | 377 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 78 | 103 | 371 | 82 | 102 | 410 | 801 | - | - | 860 | - | - |
| Mov Cap-2 Maneuver | 78 | 103 | - | 82 | 102 | - | - | - | - | - | - | - |
| Stage 1 | 357 | 378 | - | 394 | 410 | - | - | - | - | - | - | - |
| Stage 2 | 372 | 409 | - | 352 | 374 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s/v | 45.94 | 36.39 | 0.07 | 0.07 |
| HCM LOS | E | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 801 | - | - | 78 | 371 | 155 | 860 | - | - |
| HCM Lane V/C Ratio | 0.007 | - | - | 0.231 | 0.029 | 0.267 | 0.007 | - | - |
| HCM Control Delay (s/veh) | 9.5 | - | - | 64.2 | 15 | 36.4 | 9.2 | - | - |
| HCM Lane LOS | A | - | - | F | B | E | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.8 | 0.1 | 1 | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 29 | 0 | 11 | 2 | 1 | 10 | 14 | 836 | 18 | 19 | 871 | 21 |
| Future Vol, veh/h | 29 | 0 | 11 | 2 | 1 | 10 | 14 | 836 | 18 | 19 | 871 | 21 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 0 | - | - | - | 0 | - | - | 0 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 3 | 0 |
| Mvmt Flow | 30 | 0 | 11 | 2 | 1 | 10 | 14 | 862 | 19 | 20 | 898 | 22 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1839 | 1857 | 909 | 1837 | 1859 | 871 | 920 | 0 | 0 | 880 | 0 | 0 |
| Stage 1 | 948 | 948 | - | 900 | 900 | - | - | - | - | - | - | - |
| Stage 2 | 891 | 909 | - | 937 | 959 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.16 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.254 | - | - |
| Pot Cap-1 Maneuver | 59 | 74 | 336 | 59 | 74 | 353 | 751 | - | - | 751 | - | - |
| Stage 1 | 316 | 342 | - | 336 | 360 | - | - | - | - | - | - | - |
| Stage 2 | 340 | 356 | - | 320 | 338 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 54 | 71 | 336 | 54 | 71 | 353 | 751 | - | - | 751 | - | - |
| Mov Cap-2 Maneuver | 54 | 71 | - | 54 | 71 | - | - | - | - | - | - | - |
| Stage 1 | 308 | 333 | - | 329 | 353 | - | - | - | - | - | - | - |
| Stage 2 | 322 | 350 | - | 301 | 329 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s/v | 102.9 | 28.87 | 0.16 | 0.21 |
| HCM LOS | F | D | | |

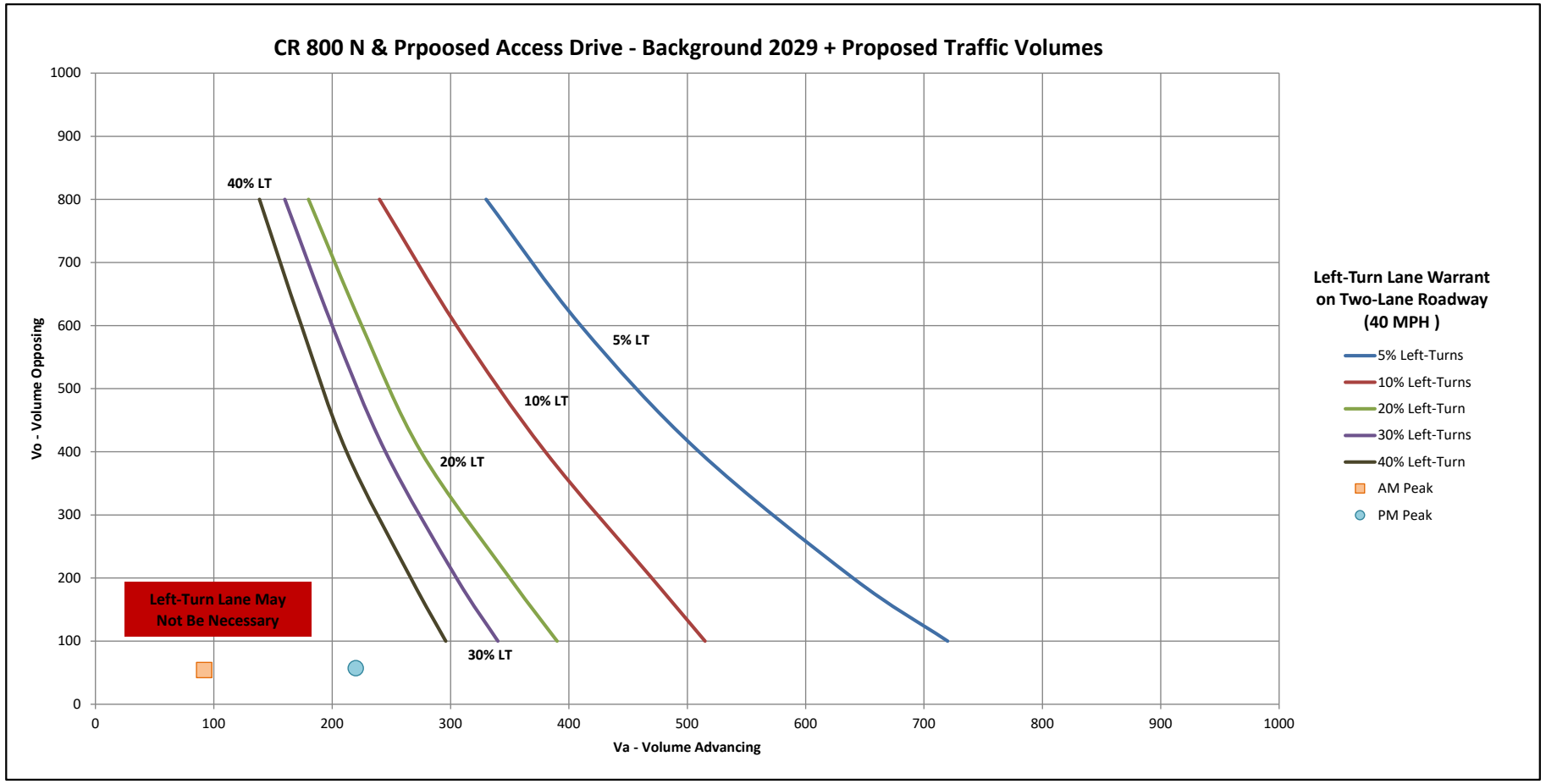
| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 751 | - | - | 54 | 336 | 164 | 751 | - | - |
| HCM Lane V/C Ratio | 0.019 | - | - | 0.557 | 0.034 | 0.082 | 0.026 | - | - |
| HCM Control Delay (s/veh) | 9.9 | - | - | 135.8 | 16.1 | 28.9 | 9.9 | - | - |
| HCM Lane LOS | A | - | - | F | C | D | A | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 2.2 | 0.1 | 0.3 | 0.1 | - | - |

# CR 800 N & PROPOSED DEVELOPMENT ACCESS DRIVE

## TURN LANE ANALYSIS
## CAPACITY ANALYSIS

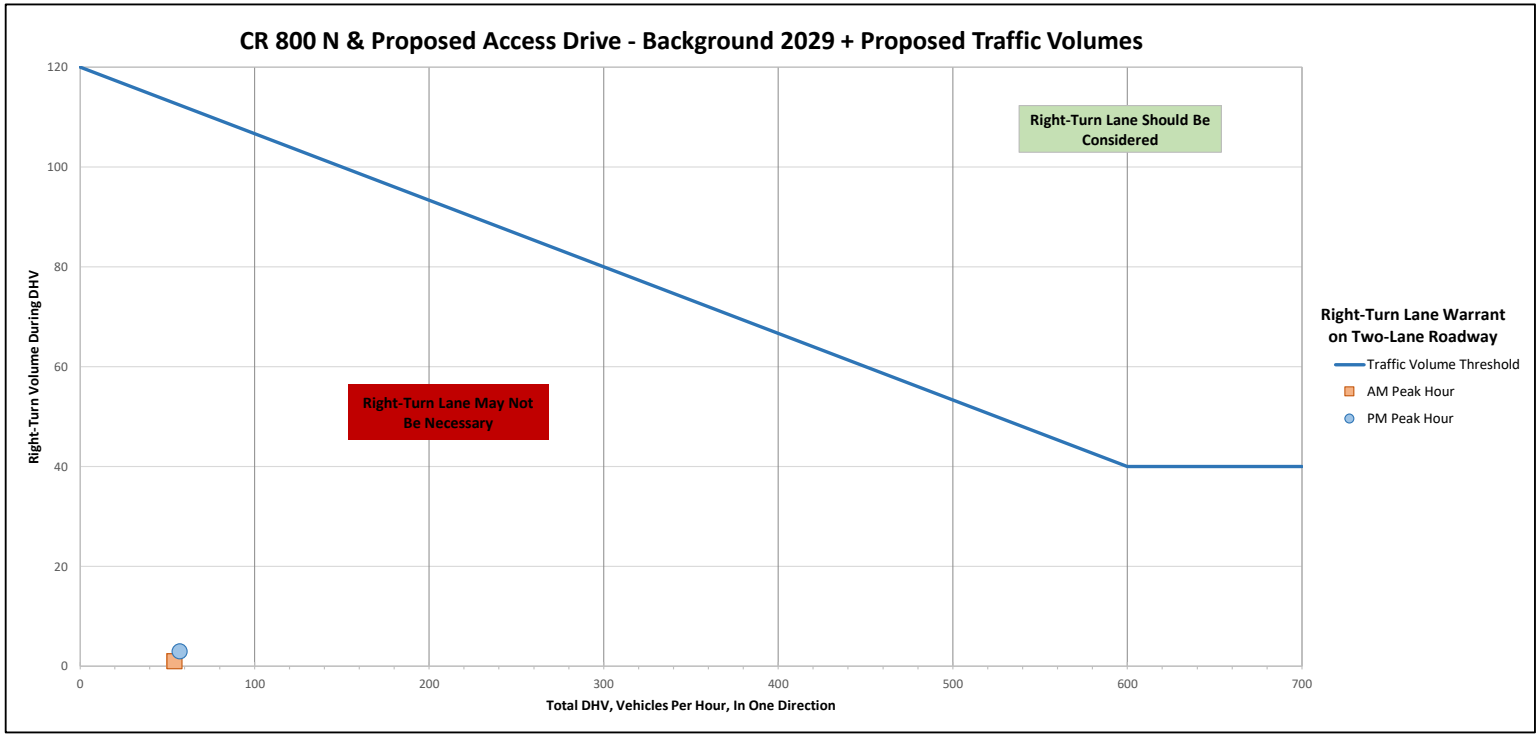
| Operating Speed (mph) | Opposing Volume (veh/h) | Advancing Volume (veh/h) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 5% Left Turns | 10% Left Turns | 15% Left Turns | 20% Left Turns | 25% Left Turns | 30% Left Turns | 35% Left Turns | 40% Left Turns |
| 40 | 800 | 330 | 240 | 207 | 180 | 168 | 160 | 146 | 139 |
| | 600 | 410 | 305 | 260 | 225 | 211 | 200 | 184 | 174 |
| | 400 | 510 | 380 | 320 | 275 | 258 | 245 | 224 | 212 |
| | 200 | 640 | 470 | 401 | 350 | 324 | 305 | 282 | 266 |
| | 100 | 720 | 515 | 446 | 390 | 360 | 340 | 313 | 296 |

| AM Peak Hour Traffic Volume Input | | PM Peak Hour Traffic Volume Input | |
|---|---|---|---|
| Advancing Volume (Va) | 92 | Advancing Volume (Va) | 220 |
| Opposing Volume (Vo) | 54 | Opposing Volume (Vo) | 57 |
| Left-Turn Volume | 16 | Left-Turn Volume | 52 |
| % Left-Turn | 17% | % Left-Turn | 24% |
| WARRANTED? | NO | WARRANTED? | NO |



| Total Approach Volume | Right-Turn Volume |
|---|---|
| 0 | 120 |
| 600 | 40 |
| 700 | 40 |

| AM Peak Hour Traffic Volume Input | | PM Peak Hour Traffic Volume Input | |
|---|---|---|---|
| Total Approach Volume | 54 | Total Approach Volume | 57 |
| Right-Turn Volume | 1 | Right-Turn Volume | 3 |
| WARRANTED? | NO | WARRANTED? | NO |




***NOTE : For highways with a design speed below 80 km/h (50 mph) with a DHV < 300 and where right turns > 40, an adjustment should be used. To read the vertical axis of the chart, subtract 20***

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.8 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 53 | 1 | 16 | 76 | 3 | 46 |
| Future Vol, veh/h | 53 | 1 | 16 | 76 | 3 | 46 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 58 | 1 | 17 | 83 | 3 | 50 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 59 | 0 | 176 | 58 |
| Stage 1 | - | - | - | - | 58 | - |
| Stage 2 | - | - | - | - | 117 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1545 | - | 814 | 1008 |
| Stage 1 | - | - | - | - | 964 | - |
| Stage 2 | - | - | - | - | 908 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1545 | - | 805 | 1008 |
| Mov Cap-2 Maneuver | - | - | - | - | 805 | - |
| Stage 1 | - | - | - | - | 964 | - |
| Stage 2 | - | - | - | - | 897 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s/v | 0 | 1.28 | 8.83 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 992 | - | - | 313 | - |
| HCM Lane V/C Ratio | 0.054 | - | - | 0.011 | - |
| HCM Control Delay (s/veh) | 8.8 | - | - | 7.4 | 0 |
| HCM Lane LOS | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.2 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 54 | 3 | 52 | 168 | 2 | 30 |
| Future Vol, veh/h | 54 | 3 | 52 | 168 | 2 | 30 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 59 | 3 | 57 | 183 | 2 | 33 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 62 | 0 | 356 | 60 |
| Stage 1 | - | - | - | - | 60 | - |
| Stage 2 | - | - | - | - | 296 | - |
| Critical Hdwy | - | - | 4.12 | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | - | - | 2.218 | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | - | - | 1541 | - | 642 | 1005 |
| Stage 1 | - | - | - | - | 962 | - |
| Stage 2 | - | - | - | - | 755 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1541 | - | 616 | 1005 |
| Mov Cap-2 Maneuver | - | - | - | - | 616 | - |
| Stage 1 | - | - | - | - | 962 | - |
| Stage 2 | - | - | - | - | 724 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s/v | 0 | 1.76 | 8.86 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 967 | - | - | 425 | - |
| HCM Lane V/C Ratio | 0.036 | - | - | 0.037 | - |
| HCM Control Delay (s/veh) | 8.9 | - | - | 7.4 | 0 |
| HCM Lane LOS | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.1 | - |

# Advisory Plan Commission
# TECHNICAL REVIEW COMMITTEE

TOWN OF Brownsburg
61 North Green Street | Brownsburg, Indiana 46112
Tel 317.852.1128 | Fax 317.852.1134

Project Name: Hawk's Landing Primary Plat
Record Number: PCPP-25-3
TECH Meeting Date: September 18, 2025

The following Technical Review Committee ("TECH") members provided comments for the project as detailed below:

Development Services
- ☐
- ☒ Lauren Bouslog, Planner I
- ☐ Steve Fletcher, Building Commissioner/Director
- ☐ Frank Wise, Senior Building Inspector

Town Administration
- ☐ Debbie Cook, Town Manager
- ☒ Aaron Kaytar, Capital Projects & Procurement Manager
- ☐ Ethan Pierce, Economic Development Manager

Water Department
- ☒ Frank Monts, Superintendent

Wastewater Department
- ☒ Kathy Dillon, Water Utilities Director
- ☐

Street Department
- ☐ Aaron Love, Superintendent
- ☐ Matt Griner, Asst. Superintendent

Parks Department
- ☐ Amber Lane, Director
- ☐

Fire Territory
- ☐ Paul Hudson, Fire Marshal
- ☐ Jeff Schlageter, Deputy Fire Marshal

Police Department
- ☐ Joe Grimes, Chief
- ☐ Pat Bullock, Captain
- ☐ Bryan Fultz, Major

External Agencies
- ☐ Regan Huff, BCSC
- ☐ Dave Gaston, P.S., Hend. Co. Surveyor
- ☐ John Ayers, Hendricks Co. Engineer
- ☐ Mary Atkins, Wessler Engineering
- ☐ Angie DeKemper, CountryMark
- ☐ Gerry Jones, Vectren

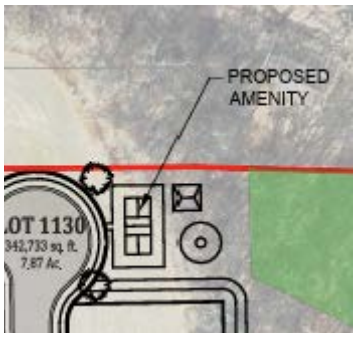
## 1) DEVELOPMENT SERVICES

a) A land surveyor, not an engineer needs to stamp the plat.

**Primary Plat Requirements.**

1. Preparation: The primary plat shall be prepared by a land surveyor licensed by the State of Indiana at a scale of no more than 1" = 100' and the sheets must be numbered in sequence if more than one sheet.

b) Label what the proposed amenities are on the legend or plat.

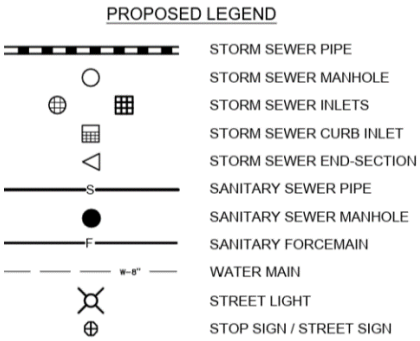



c) There need to be calculations for required and proposed vegetation on the landscape plan.

d) The tree preservation area is currently just being shown with a pale green outline. Adding a cross hatch would make it easier to see.

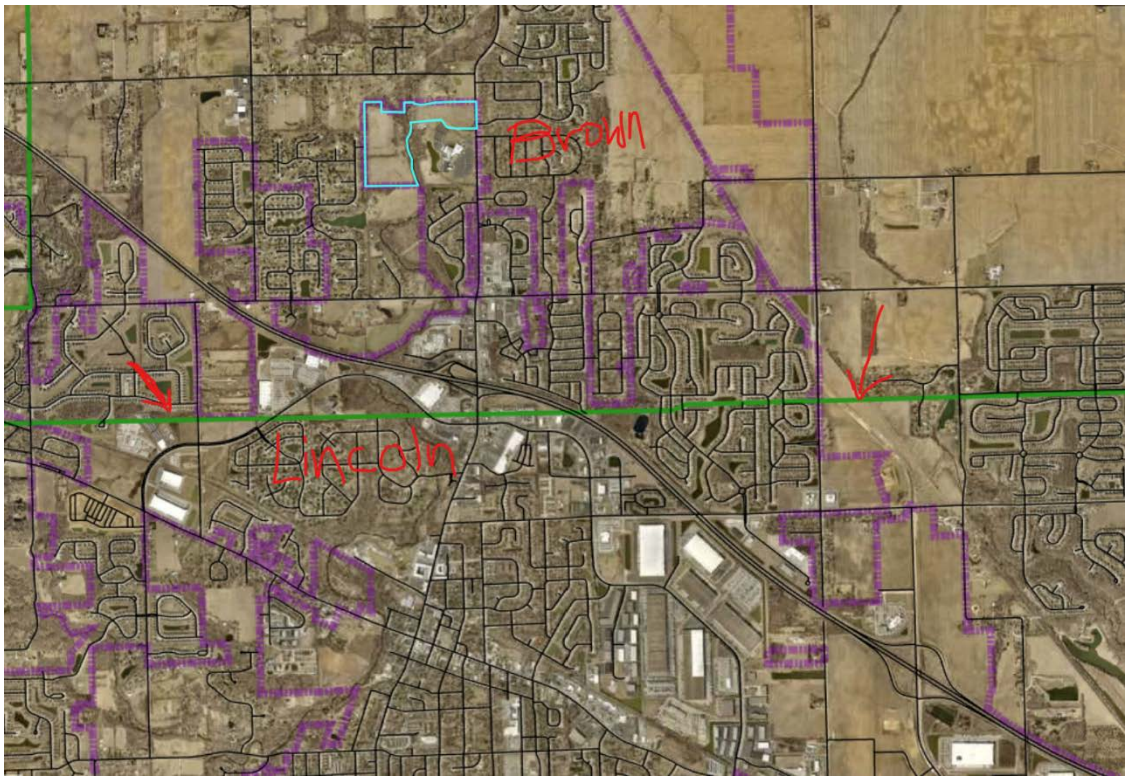
e) Add names to all new streets and write if the streets are public or private.

f) Mark the size of existing water, storm water, and sanitary sewer systems.




| | |
|---|---|
| D.E. | DRAINAGE EASEMENT |
| U.E. | UTILITY EASEMENT |
| T.W.U.E. | WATER EASEMENT |
| L.B.E. | LANDSCAPE BUFFER YARD EASEMENT |
| IRR. | IRREGULAR |
| R/W | RIGHT OF WAY |
| B.S.L. | BUILDING SETBACK LINE |
| L.E. | LANDSCAPE EASEMENT |
| sq. ft. | SQUARE FEET |

g) The Letter of Intent/ Project Info has Lincoln being the township, it needs changed to Brown Township. It changes at the green horizon line shown below.




**2) BUILDING**

a) None

**3) CAPITAL PROJECTS**

a) Depending on traffic, additional improvements may need to be done to N. Green St (SR 267).

**4) ECONOMIC DEVELOPMENT**

a) None

**5) WATER**

a) On the cover page and all future plans, the Water Dept. contact should be changed to Frank Monts.

b) I know this is just a primary plat and the water mains are just penciled in for now, but when construction plans are being drawn up, the water main coming in from SR 267 on Street "I" and around Street "G", across the creek and along Street "A" back out to CR 800 N all need to be 12" All other mains shall be 8". Please have valves on all sides of any tees, a valve on each side of the creek crossing, and hydrants spaced at 300' with hydrant locations at culdesacs per Town Standards.

c) As a reminder, the booster station on SR 267, at the SE corner of Connection Pointe Church, must be upgraded at the developer's cost before Hawk's Landing can be served.

**6) WASTEWATER**

a) The routing of the sanitary force main has changed significantly. The original layout provided accessibility. The updated layout has the force main placed in backyards and near the storm pond. How is safe accessibility going to be provided?

b) Please provide verification that the development cannot be served completely by gravity. Long-term operation of maintenance of a lift station when the area can be served by gravity is not cost effective for the community.

c) A reminder that downstream pump upgrades (Maple Lift Station) are needing completed at the time of sanitary line installation. The lift station is currently at capacity.

**7) STREET/PUBLIC WORKS**

a) None

**8) PARKS**

a) None

**9) FIRE TERRITORY**

a) None

**10) POLICE**

a) None

**11) STORMWATER**

a) See attached

**12) BROWNSBURG COMMUNITY SCHOOL CORPORATION**

a) None

13) **HENDRICKS COUNTY SURVEYOR**

a) None

14) **HENDRICKS COUNTY ENGINEER**

a) None

15) **COUNTRYMARK**

a) None

16) **VECTREN**

a) None

*Please provide a written response to this report addressing each issue and, if necessary, indicate where on the revised plans the modification has been made.*

## TOWN OF BROWNSBURG STORMWATER/DRAINAGE PLAN REVIEW

CO Comment Originator
CR Comment Respondee

**NAME OF PROJECT: Hawk's Landing**
**DESIGN PACKAGE: Primary Plat**
**DESIGNER: Weihe Engineers**

| | | Wessler - Reviewer to complete | | Designer to complete | |
|---|---|---|---|---|---|
| No. | PAGE/SHEET REFERENCE | CO | COMMENT | CR | RESPONSE |
| | General | MKA | We have no stormwater review comments for the Primary Plat. The following comments are for information and planning purposes when preparing development plans. Note that Chapter 151 was updated as of April 25, 2024. | | |
| 1 | Storm sewer design | MKA | For the future development plan submittal, refer to Chapter 151.21 D. for storm sewer design standards and drainage report requirements. | | |
| 2 | Flood routing | MKA | For development plans, evaluate stormwater ponding and overflow path routing for Ch. 151.21 I. | | |
| 3 | Drainage Report | MKA | Refer to Chapter 151.20.B (2)(f) for drainage report guidelines. Include runoff, storm sewer sizing calculations when preparing the drainage report. | | |
| 4 | Post-construction stormwater quality | MKA | Post-construction stormwater quality BMPs must be in accordance with Chapter 151.23 of the Brownsburg ordinances. An upstream BMP is required for detention ponds/underground. An Operation and Maintenance Manual will be required and easements for BMPs. | | |
| 5 | County approval | MKA | Coordinate with the Hendricks County Surveyor to determine if Drainage Board approval is necessary. | | |
| 6 | Details and specifications | MKA | Refer to the Town's Standard Details and Specifications when developing Construction Plans. | | |
| 7 | Stormwater detention | MKA | Detention design requirements follow Brownsburg's ordinance, Chapter 151.21 and Detail EW-04 "Detention/Retention Ponds" in the Town's Standard Details and Specifications. Ordinance revised in April 2024. | | |
| 8 | Adequate outlet | MKA | Ensure that there is an adequate outlet for drainage of stormwater. | | |
| 9 | Erosion control and SWPPP | MKA | A SWPPP and Construction Stormwater General Permit will be required for the development plan submittal. Refer also to Chapter 151.22 for SWPPP requirements. | | |

**These comments should not be construed as a comprehensive list of comments, and the reviewer may make additional comments based on subsequent submittals**

## MEMORANDUM OF UNDERSTANDING
## HAWK'S CREEK

This Memorandum of Understanding ("**Agreement**") is made and entered into on this day of July 8, 2025 ("**Effective Date**"), by and between **Weekley Homes, LLC**, a Delaware limited liability company, or its assigns ("**Developer**"), and the **Board of Commissioners of Hendricks County, Indiana** ("**Commissioners**"). Developer and Commissioners are sometimes referred to as the "**Parties**".

## WITNESSETH:

WHEREAS, Developer desires to develop a residential development consisting of not more than 117 single-family homes (western section) in Brown Township, Hendricks County, Indiana, known as Hawk's Creek (the "**Development**");

WHEREAS, Developer intends to construct and install an access drive for the Development along County Road 800 North (the "**Access Drive**");

WHEREAS, Developer has obtained a Traffic Impact Study, prepared by A&F Engineering Co., LLC and dated July 2024 (the "**Traffic Study**") for the Development;

WHEREAS, the Traffic Study finds, among other things, that all approaches to the Access Drive will operate at acceptable levels of service during the AM and PM peak hours with the following intersection conditions: (i) construction of the Access Drive with one inbound and one outbound lane, and (ii) the intersection should be stop-controlled with the Access Drive stopping for County Road 800 North;

WHEREAS, the Development is located entirely within the Town Brownsburg;

WHEREAS, since the county road provides ingress and egress to the Development a driveway permit is required to be issued by the County;

WHEREAS, the Commissioners believe that additional right-of-way and road improvements will be needed in the future along County Road 800 North, including without limitation acceleration and deceleration lanes and passing blisters; and

WHEREAS, Developer has agreed to contribute funds sufficient to pay a portion of the cost of such right-of-way and road improvements to County Road 800 North;

NOW THEREFORE, the Parties agree as follows:

## AGREEMENT

1. Incorporation. The Recitals above are incorporated herein by reference.

2. Developer Obligations. Developer agrees to:

a. At such time that Developer prepares construction plans for the Development, Developer shall prepare construction plans for the road improvements shown on the attached Exhibit A (the "**Road Improvements**").

b. At such time that Developer prepares construction plans for the Development, Developer shall have estimates prepared for the cost of the Road Improvements, which estimates shall include the cost right-of-way acquisition, acceleration lanes, deceleration lanes, passing blister, utility relocation, and drainage improvements, in the area depicted on Exhibit A (the "**Road Improvements Estimate**").

c. At such time that Developer obtains a land disturbance permit for the Development, Developer shall pay the amount of the Road Improvements Estimate to Commissioners.

3. Commissioners' Obligations. Commissioners agree to:

a. Construct the Road Improvements at such time that Hendricks County makes improvements to County Road 800 North adjacent to and near the Access Drive.

4. Applicable Laws. This Agreement shall be subject to, governed by, and construed under the laws of State of Indiana.

5. Severability. The illegality, invalidity or unenforceability under law of any covenant, restriction, condition or other provision of this Agreement shall not impair or affect in any manner the validity, enforceability or effect of the remaining provisions of this Agreement.

6. Notice. All notices, requests or other communications hereunder shall be effective upon receipt, shall be in writing and shall be delivered in person or by first class or certified mail, postage prepaid, by overnight courier service or by electronic mail to the parties at the following addresses or at such other address as either party may hereafter furnish to the other in accordance herewith:

If to Developer:

Weekley Homes, LLC
9310 N. Meridian Street
Indianapolis, Indiana 46260
Attn: Ed Freeman, Senior Land Acquisition Manager
EFreeman@dwhomes.com

If to Commissioners:

Hendricks County Board of Commissioners
Hendricks County Government Center
355 S. Washington Street, #100
Danville, Indiana 46122
Attn: Board President

With a copy to:

Gregory E. Steuerwald
Steuerwald, Witham & Youngs, LLP
106 N. Washington Street
P.O. Box 503
Danville, Indiana 46122
Email: gseuerwald@swylawyers.com

7. Modification. This Agreement may not be modified or amended, except pursuant to a written agreement in recordable form executed by each of the parties hereto.

8. Authority. Each person signing this Agreement on behalf of a party represents that he/she is duly authorized to do so, and that when executed, this Agreement shall be the duly executed, valid and binding agreement of such party.

9. Entire Agreement. The Parties agree that this Agreement represents the entire and integrated agreement between the Parties. It supersedes all prior and contemporaneous communications, representations, whether written or oral, relating to the subject matter of this Agreement. This Agreement may be modified only by written amendments signed by the Parties hereto.

[SIGNATURES ON THE FOLLOWING PAGE]

IN WITNESS WHEREOF, this Agreement has been duly executed by the parties:

**"Developer"**

Weekley Homes, LLC, a Delaware limited liability company

By: _____

Name: John Burchfield

Title: VP & General Counsel

Dated: July 25, 2025

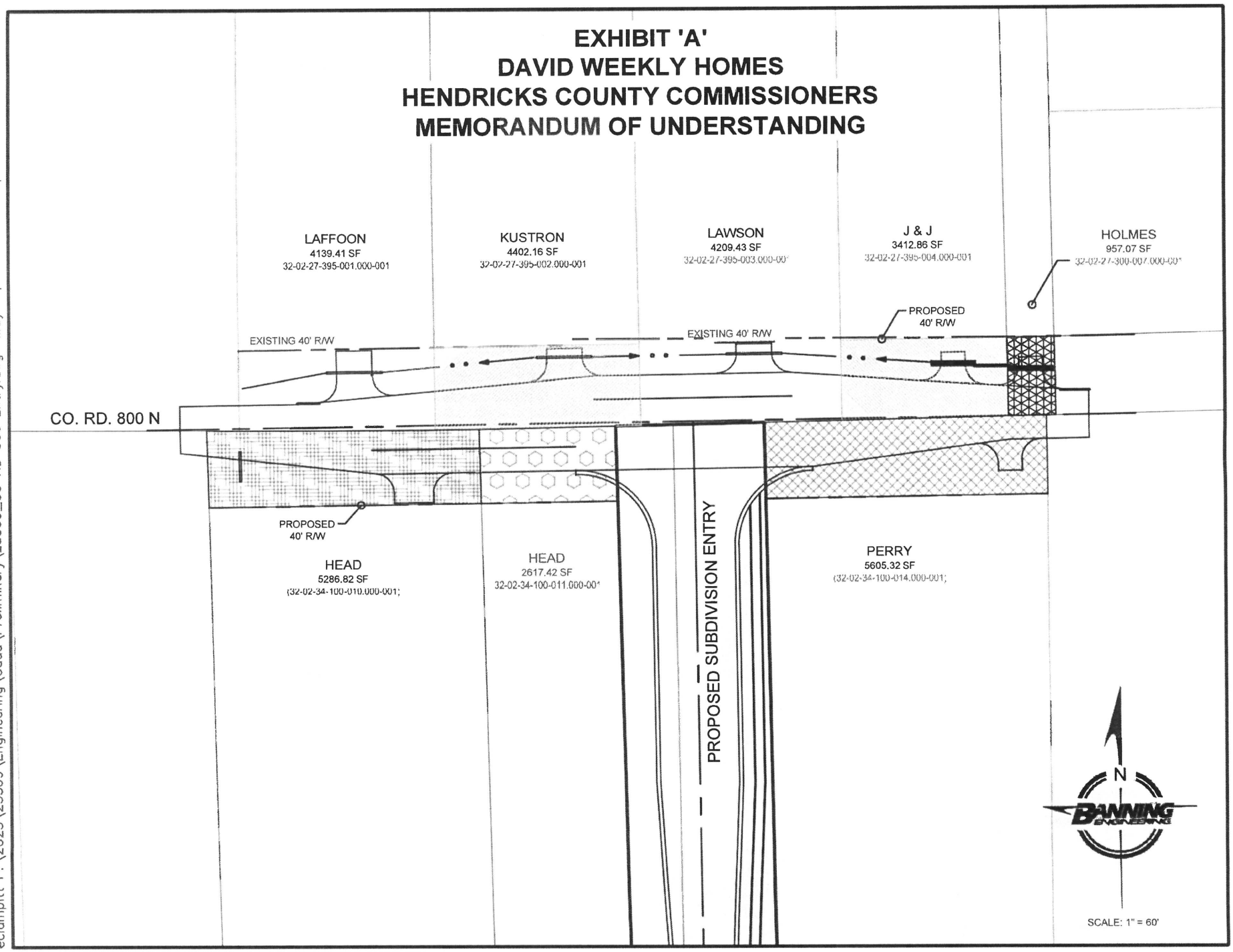
**"Commissioners"**

_____

Dennis W. Dawes, President

Dated: July 23, 2025

# EXHIBIT 'A'
# DAVID WEEKLY HOMES
# HENDRICKS COUNTY COMMISSIONERS
# MEMORANDUM OF UNDERSTANDING



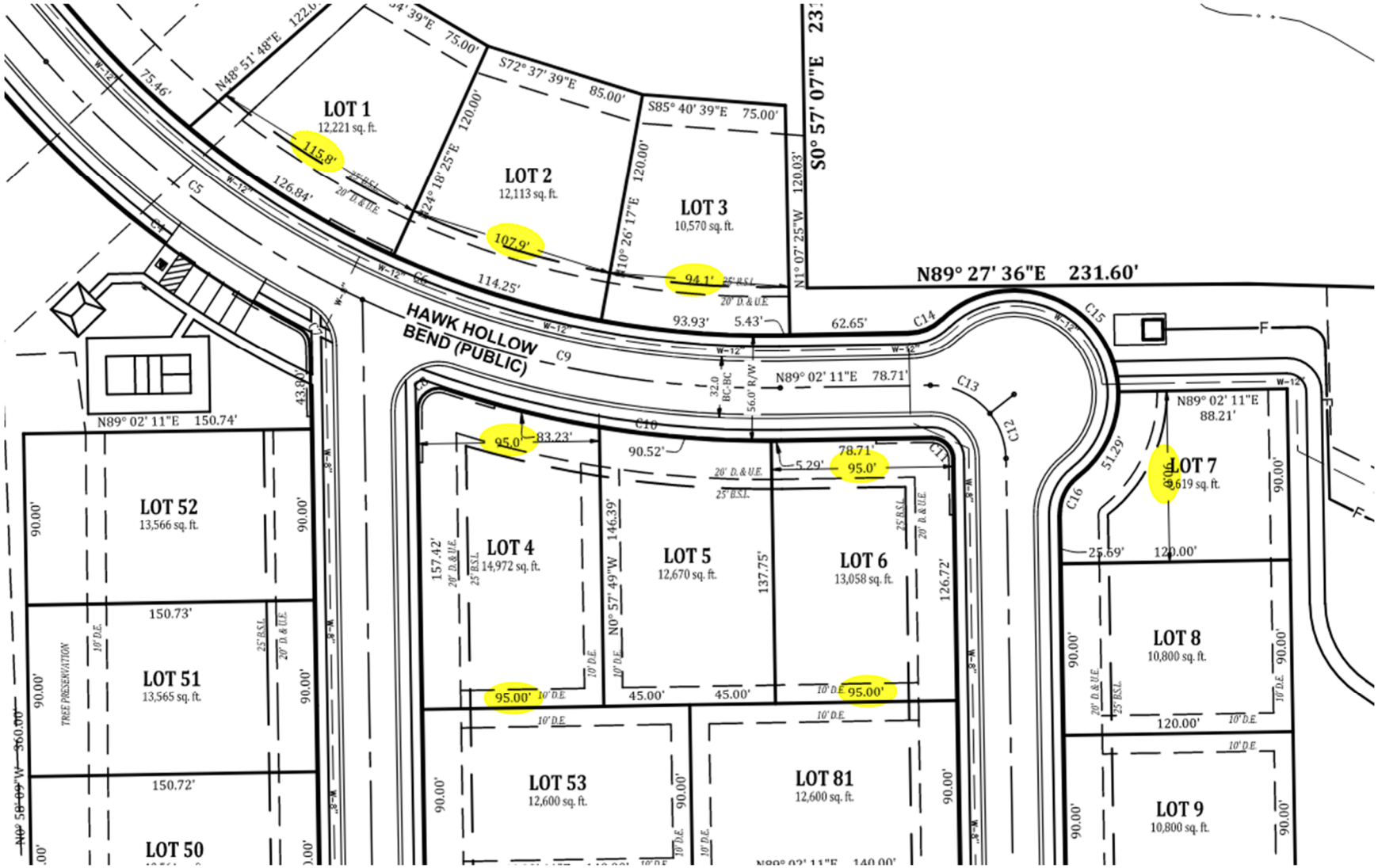

eclampitt P:\2023\23369\Engineering\Cadd\Preliminary\23369_CO RD 800 Entry.dwg May 12, 2025 - 12:00pm

**Town of Brownsburg Unified Development Ordinance:**

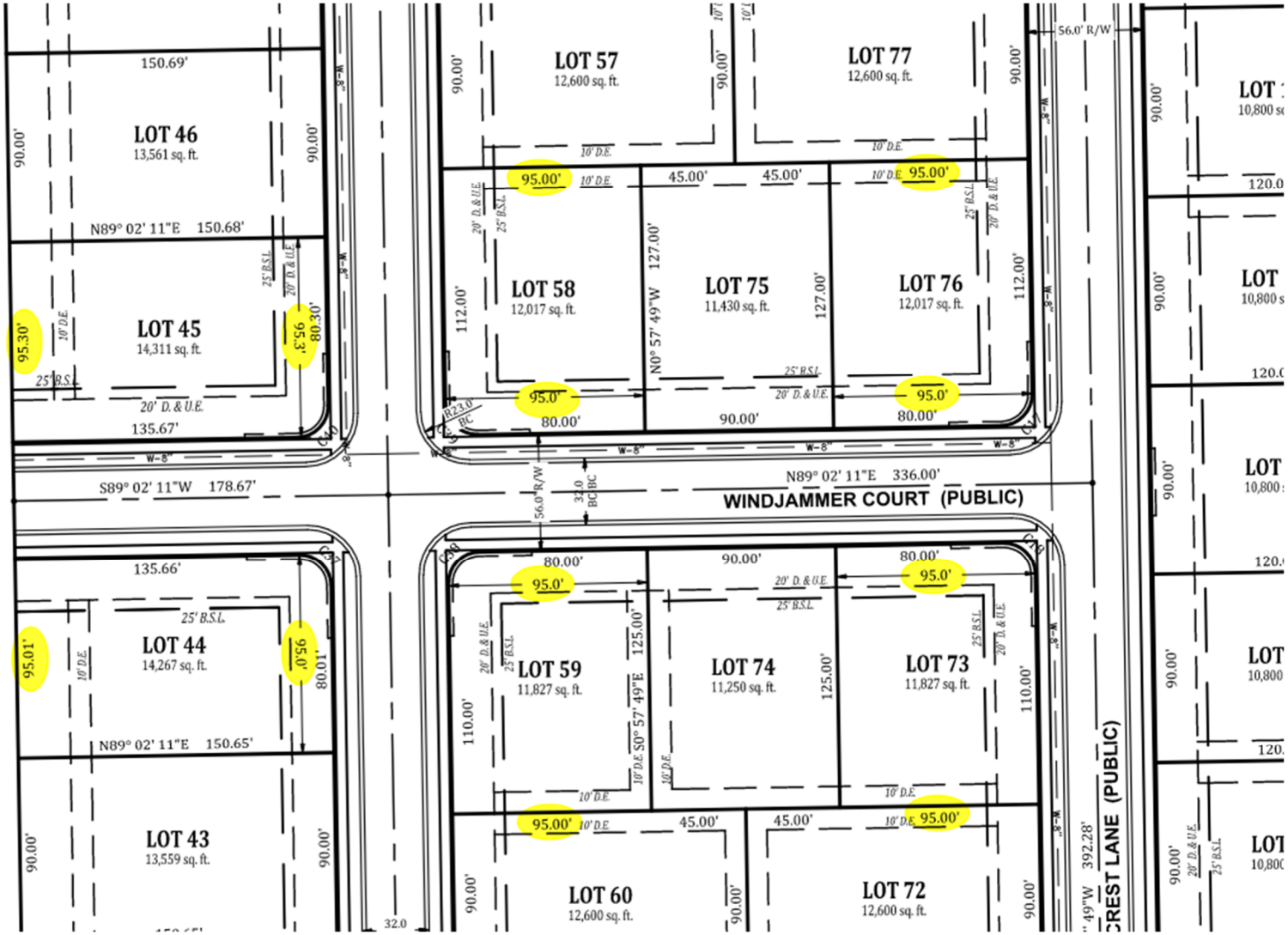
**<u>Lot Line, Front</u>: The line marking the boundary between the lot and each of the abutting streets.**

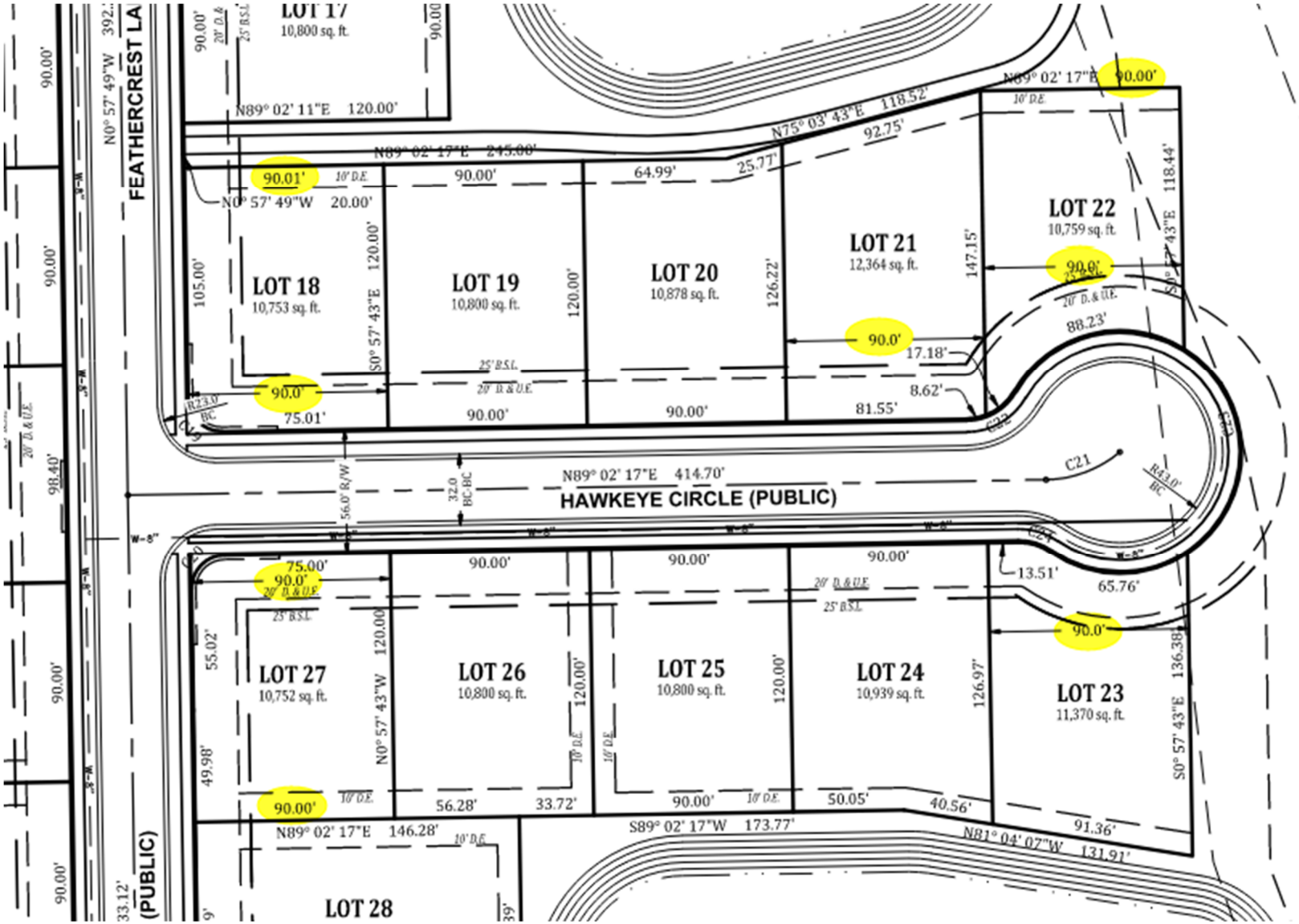
**<u>Lot Width</u>: The distance between the side lot lines as measured along the front lot line.**
**Cul-de-sac and irregularly shaped lots measure their front lot widths along the front yard setback line from one side lot line to the other.**

## <u>David Weekley Homes Primary Plat</u>

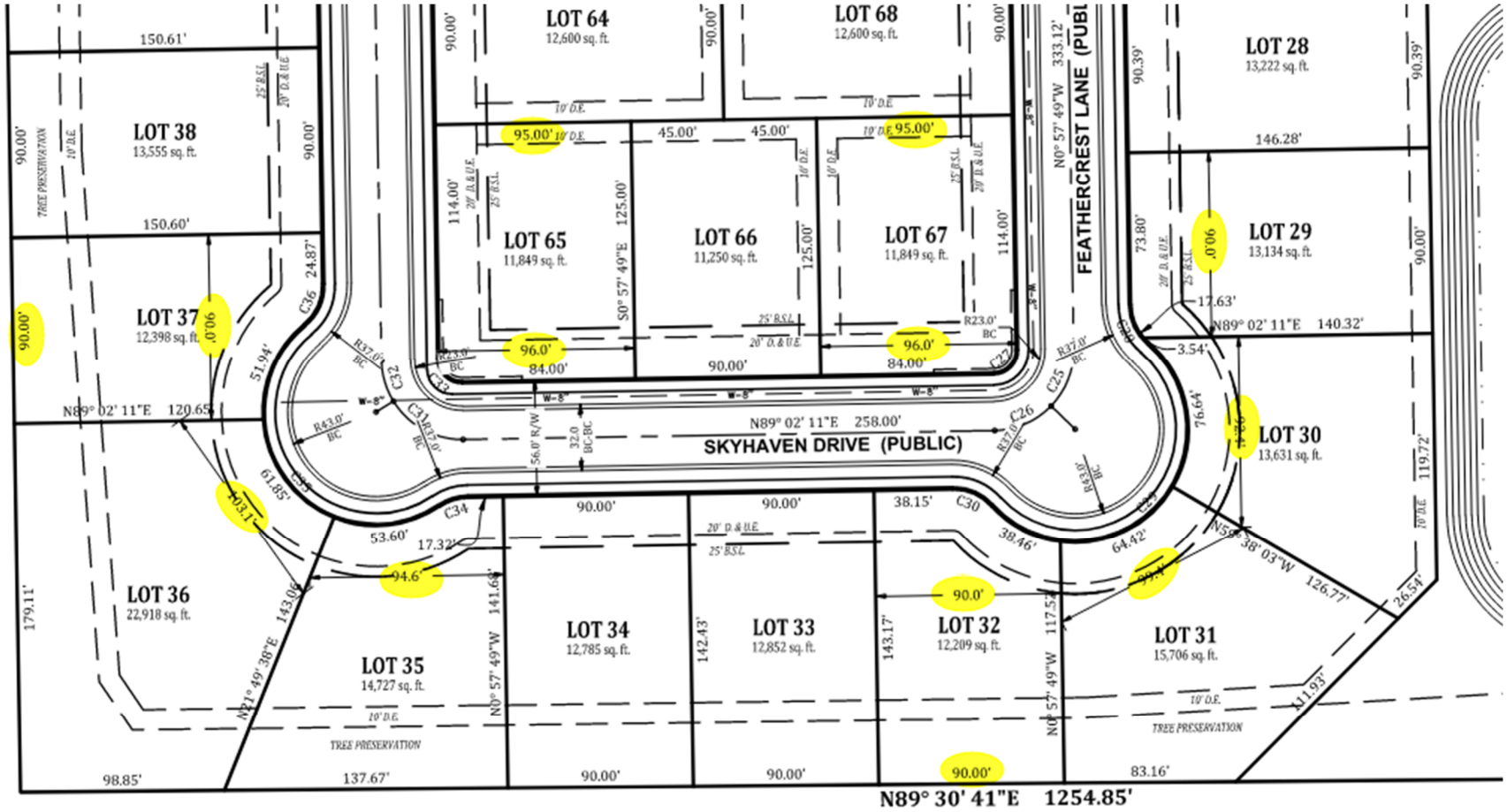


*NDJAMMER CT.*

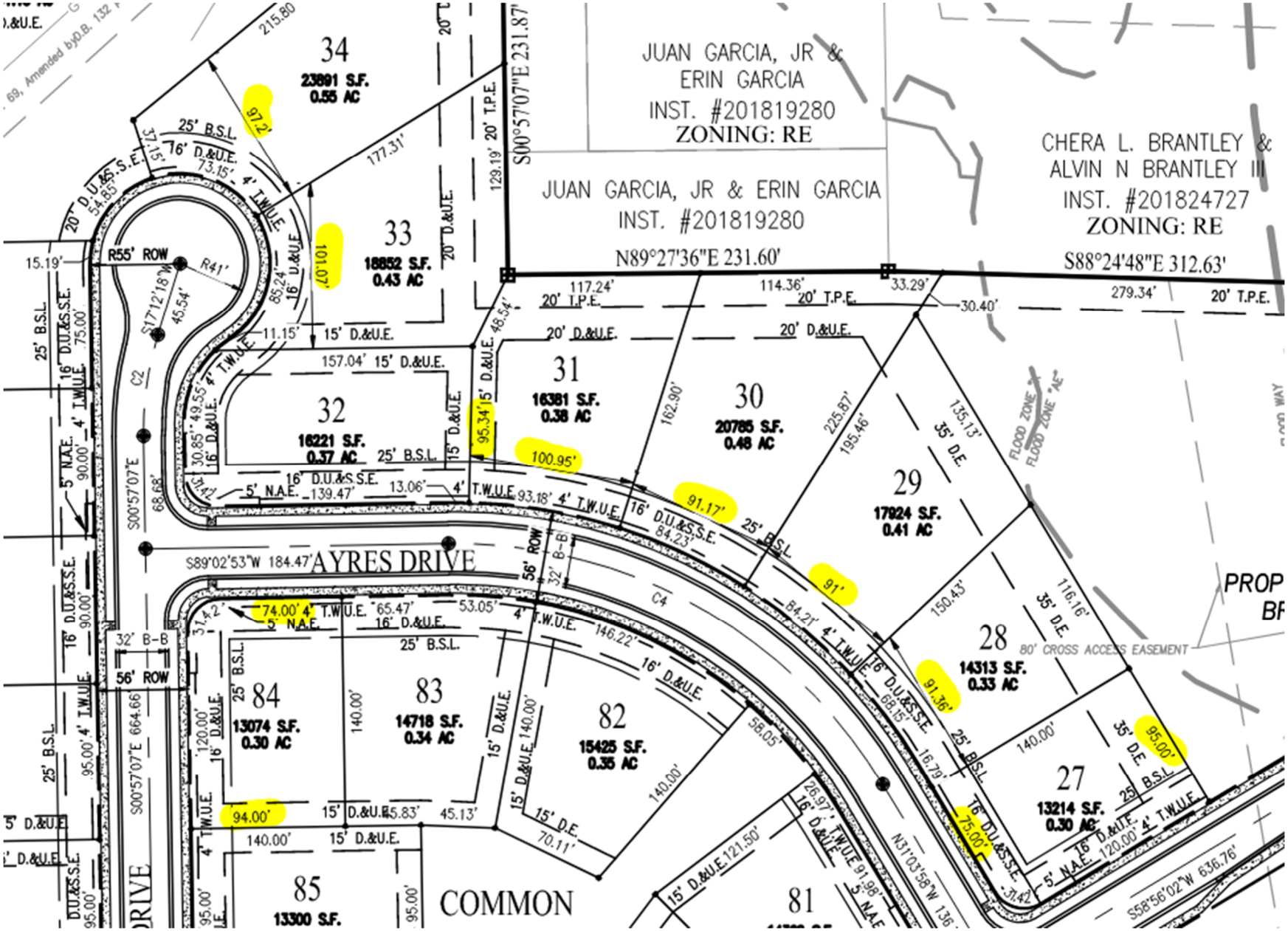

LOT 46
13,561 sq. ft.
150.69'
90.00'
N89° 02' 11"E 150.68'
LOT 45
14,311 sq. ft.
95.30'
95.3'
80.30'
135.67'
LOT 57
12,600 sq. ft.
LOT 77
12,600 sq. ft.
LOT 58
12,017 sq. ft.
LOT 75
11,430 sq. ft.
LOT 76
12,017 sq. ft.
N0° 57' 49"W 127.00'
112.00'
45.00'
80.00'
56.0' R/W
S89° 02' 11"W 178.67'
N89° 02' 11"E 336.00'
WINDJAMMER COURT (PUBLIC)
LOT 44
14,267 sq. ft.
95.01'
95.0'
80.01'
135.66'
N89° 02' 11"E 150.65'
LOT 43
13,559 sq. ft.
LOT 59
11,827 sq. ft.
LOT 74
11,250 sq. ft.
LOT 73
11,827 sq. ft.
S0° 57' 49"E 125.00'
110.00'
LOT 60
12,600 sq. ft.
LOT 72
12,600 sq. ft.
CREST LANE (PUBLIC)

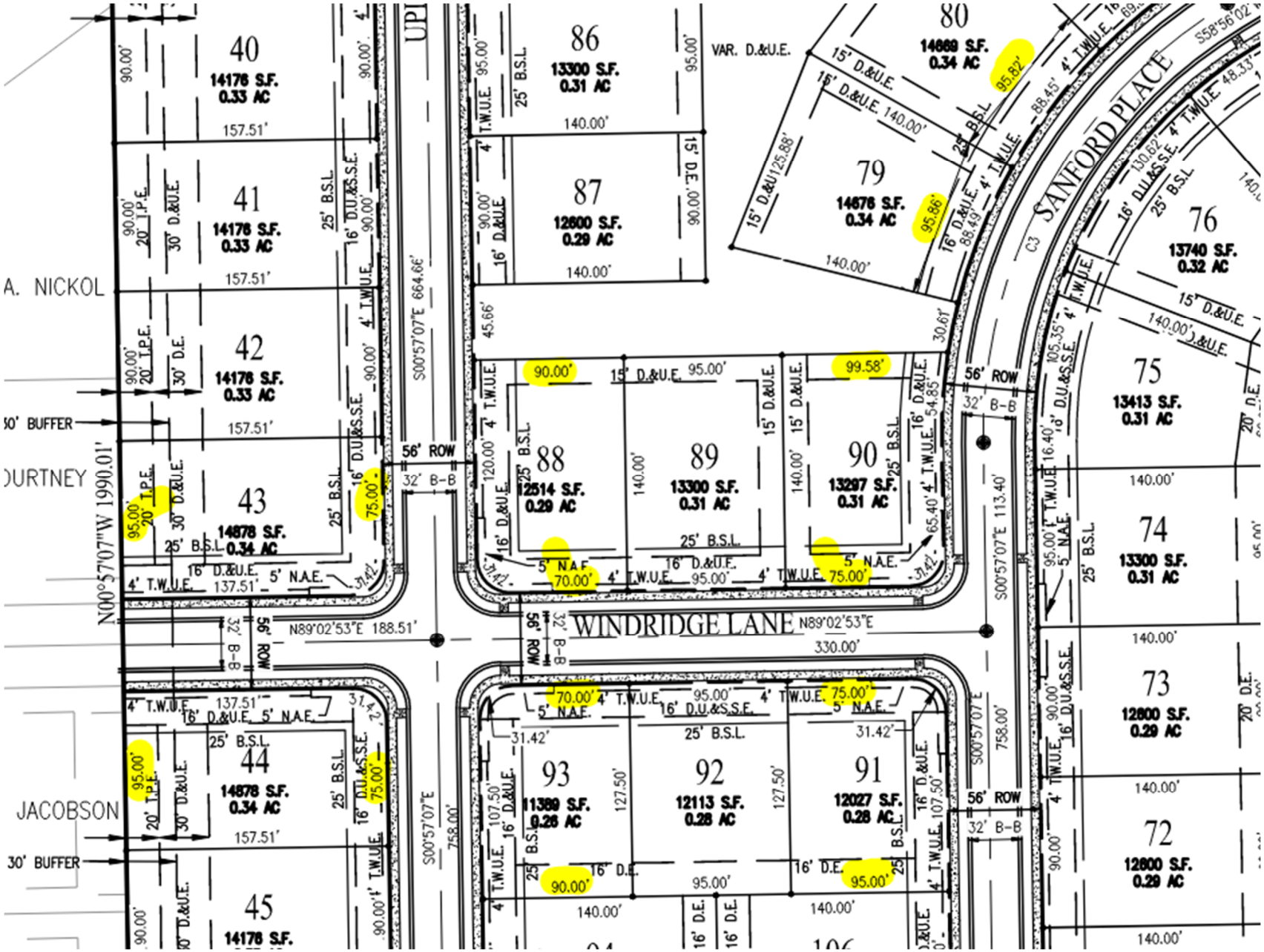


LOT 17
10,800 sq. ft.
N89° 02' 11"E 120.00'
N89° 02' 17"E 245.00'
N75° 03' 43"E 118.52'
N89° 02' 17"E
90.00'
92.75'
25.77'
64.99'
90.00'
90.01'
N0° 57' 49"W 20.00'
FEATHERCREST LA
N0° 57' 49"W
LOT 18
10,753 sq. ft.
LOT 19
10,800 sq. ft.
LOT 20
10,878 sq. ft.
LOT 21
12,364 sq. ft.
LOT 22
10,759 sq. ft.
105.00'
120.00'
126.22'
147.15'
118.44'
S0° 57' 43"E
90.0'
88.23'
17.18'
8.62'
81.55'
75.01'
90.00'
N89° 02' 17"E 414.70'
HAWKEYE CIRCLE (PUBLIC)
C21
C22
C24
13.51'
65.76'
75.00'
90.0'
LOT 27
10,752 sq. ft.
LOT 26
10,800 sq. ft.
LOT 25
10,800 sq. ft.
LOT 24
10,939 sq. ft.
LOT 23
11,370 sq. ft.
55.02'
49.98'
N0° 57' 43"W
126.97'
136.38'
S0° 57' 43"E
56.28'
33.72'
50.05'
40.56'
91.36'
N89° 02' 17"E 146.28'
S89° 02' 17"W 173.77'
N81° 04' 07"W 131.91'
LOT 28
(PUBLIC)
33.12'
98.40'

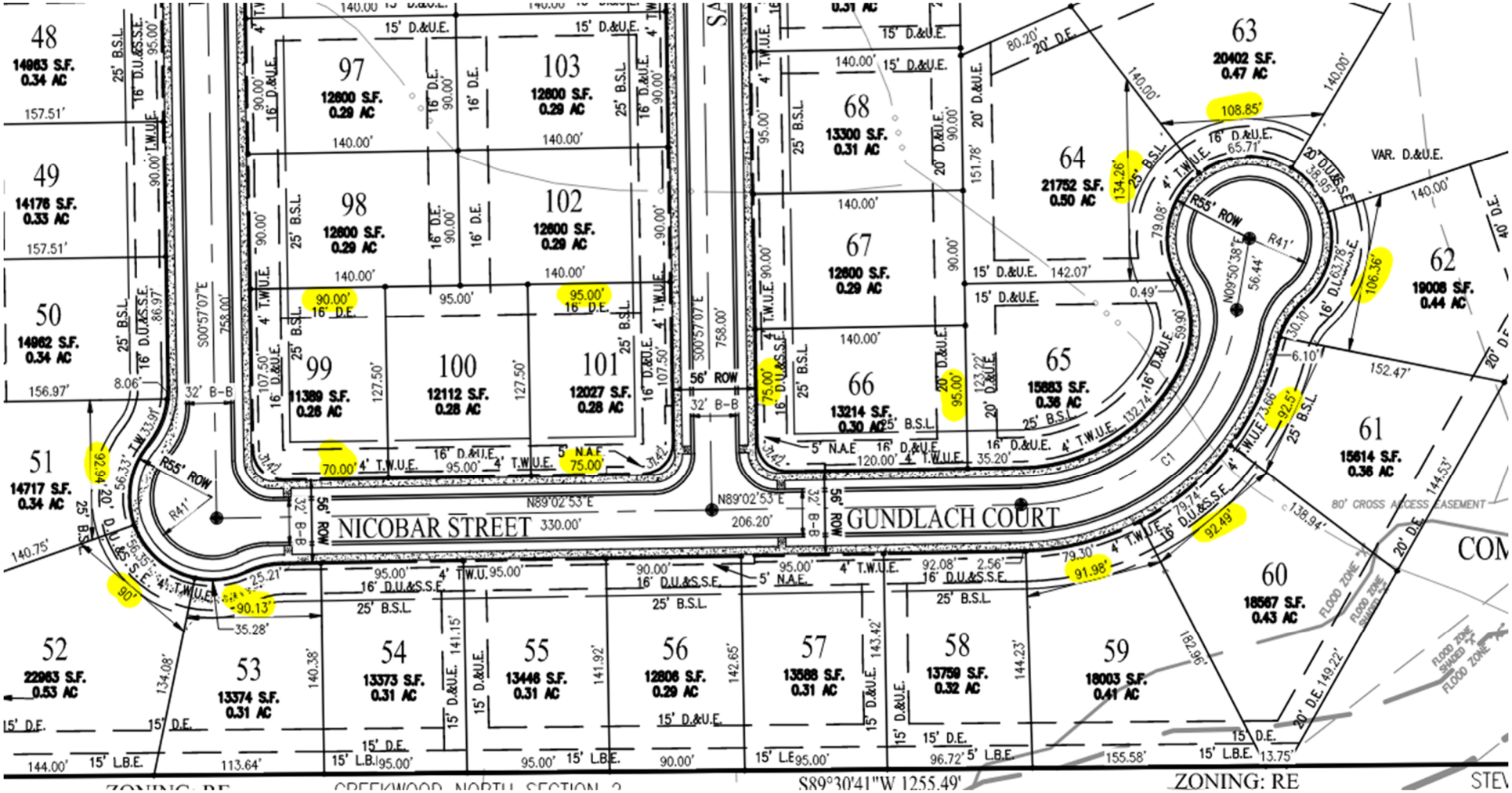

LOT 64
12,600 sq. ft.
LOT 68
12,600 sq. ft.
LOT 28
13,222 sq. ft.
LOT 38
13,555 sq. ft.
LOT 65
11,849 sq. ft.
LOT 66
11,250 sq. ft.
LOT 67
11,849 sq. ft.
LOT 29
13,134 sq. ft.
LOT 37
12,398 sq. ft.
FEATHERCREST LANE (PUBL
SKYHAVEN DRIVE (PUBLIC)
N89° 02' 11"E 258.00'
LOT 30
13,631 sq. ft.
LOT 36
22,918 sq. ft.
LOT 35
14,727 sq. ft.
LOT 34
12,785 sq. ft.
LOT 33
12,852 sq. ft.
LOT 32
12,209 sq. ft.
LOT 31
15,706 sq. ft.
TREE PRESERVATION
N89° 30' 41"E 1254.85'

**Approved Lennar Primary Plat**





40
14176 S.F.
0.33 AC
41
14176 S.F.
0.33 AC
42
14176 S.F.
0.33 AC
43
14878 S.F.
0.34 AC
44
14878 S.F.
0.34 AC
45
14176 S.F.
86
13300 S.F.
0.31 AC
87
12600 S.F.
0.29 AC
88
12514 S.F.
0.29 AC
89
13300 S.F.
0.31 AC
90
13297 S.F.
0.31 AC
91
12027 S.F.
0.28 AC
92
12113 S.F.
0.28 AC
93
11389 S.F.
0.26 AC
79
14676 S.F.
0.34 AC
80
14669 S.F.
0.34 AC
76
13740 S.F.
0.32 AC
75
13413 S.F.
0.31 AC
74
13300 S.F.
0.31 AC
73
12600 S.F.
0.29 AC
72
12600 S.F.
0.29 AC
A. NICKOL
DURTNEY
JACOBSON
30' BUFFER
30' BUFFER
WINDRIDGE LANE
SANFORD PLACE
N00°57'07"W 1990.01'
N89°02'53"E 188.51'
N89°02'53"E
330.00'
S00°57'07"E 664.66'
S00°57'07"E 113.40'
S00°57'07"E
758.00'
56' ROW
32' B-B
VAR. D.&U.E.


NICOBAR STREET
GUNDLACH COURT
56' ROW
330.00'
206.20'
N89°02'53"E
S89°30'41"W 1255.49'
ZONING: RE
48
14983 S.F.
0.34 AC
49
14176 S.F.
0.33 AC
50
14962 S.F.
0.34 AC
51
14717 S.F.
0.34 AC
52
22963 S.F.
0.53 AC
53
13374 S.F.
0.31 AC
54
13373 S.F.
0.31 AC
55
13446 S.F.
0.31 AC
56
12806 S.F.
0.29 AC
57
13588 S.F.
0.31 AC
58
13759 S.F.
0.32 AC
59
18003 S.F.
0.41 AC
60
18567 S.F.
0.43 AC
61
15614 S.F.
0.36 AC
62
19008 S.F.
0.44 AC
63
20402 S.F.
0.47 AC
64
21752 S.F.
0.50 AC
65
15883 S.F.
0.36 AC
66
13214 S.F.
0.30 AC
67
12600 S.F.
0.29 AC
68
13300 S.F.
0.31 AC
97
12600 S.F.
0.29 AC
98
12600 S.F.
0.29 AC
99
11389 S.F.
0.26 AC
100
12112 S.F.
0.28 AC
101
12027 S.F.
0.28 AC
102
12600 S.F.
0.29 AC
103
12600 S.F.
0.29 AC
R55' ROW
R41'
80' CROSS ACCESS EASEMENT
VAR. D.&U.E.
FLOOD ZONE
FLOOD ZONE SHADED X
FLOOD ZONE

202132848 ORDINANCE $25.00
10/05/2021 09:02:16A 5 PGS
Theresa D. Lynch
Hendricks County Recorder IN
Recorded as Presented

Ordinance No. 2021-30
Brownsburg, Indiana
Sept 23, 2021

**AN ORDINANCE TO AMEND THE OFFICIAL ZONING MAP OF THE TOWN OF BROWNSBURG, HENDRICKS COUNTY, INDIANA FOR CERTAIN REAL ESTATE LOCATED WEST OF AND ADJACENT TO N. GREEN STREET AND SOUTH OF CR 800 N.**

**WHEREAS,** Lennar Homes of Indiana (the "Applicant") has filed for an amendment to the Official Zoning Map for the Town of Brownsburg, Hendricks County, Indiana (the "Proposal") for certain real estate located on Parcel(s) 32-02-34-275-002.000-026, which is more particularly described on **Exhibit A** and generally depicted on **Exhibit B** (the "Property") pursuant to I.C. 36-7-4-608, *et seq.*; and

**WHEREAS,** the Property is zoned IS (institutional); and,

**WHEREAS,** the Applicant's Proposal is to rezone the property to R3 (high density single-family residential) for the purposes of constructing a5residential subdivision; and,

**WHEREAS,** the Applicant's Proposal is consistent with the goals, objectives and policies of the Comprehensive Plan, and the Owner's desired use of the Property; and,

**WHEREAS,** the Applicant's Proposal is compatible with the current conditions and overall character of the existing development in the immediate vicinity of the Property; and,

**WHEREAS,** the Applicant's Proposal is the most desirable use for which the land in each district is adapted; and,

**WHEREAS,** the Applicant's Proposal is expected to conserve property values throughout the jurisdiction; and,

**WHEREAS,** the Applicant's Proposal is deemed responsible development and growth; and,

**WHEREAS,** the Plan Commission (the "Commission") has considered said Proposal at a public meeting, on August 23rd, 2021 and forwards the request on the proposal to the Town Council (the "Council") with a (5-1) **FAVORABLE RECOMMENDATION** and with the following conditions:

(1) All lots west of the creek will have a have a minimum lot width of 90'.

(2) A minimum of 85% of the homes west of the creek shall include a side load garage or courtyard garage.

(3) The maximum number of Lots will not exceed 110 Lots.

(4) That the Preliminary Plat shall be in substantial compliance with the Concept Plan considered with the Rezone, subject to final engineering approval of the Preliminary Plat from the Town.

(5) In the event that the Plan Commission and Council do not desire a connection from the Real Estate to the stub street on Windjammer Drive, as part of any Plat application request, Lennar shall seek a TECH Waiver(s) and any other necessary approvals from the requirement(s) that the stub street connect. In the event the TECH Waiver(s) is granted and any other approvals are obtained for the stub street not to connect and the development to substantially comply with the Concept Plan, Lennar will not connect the stub street, but will install any treatment in this area as may be required by the TECH Committee and/or Plan Commission (i.e.: emergency access only, etc.).

(6) Building Permits for homes on Lots west of the creek shall not be issued until approved access is provided by means other than the stub street at Windjammer Drive.

(7) Regarding home construction traffic: Lennar will install "No Construction Traffic" signs at the entrances to the Windridge Neighborhood for the period of home construction subject to the granting of approval by the owner(s) of real estate at the subdivision entrances allowing placement of the sign(s).

(8) Regarding Landscaping:

(a) A twenty (20) foot Tree Preservation Area shall be provided along the west perimeter of the Real Estate as depicted on the Concept Plan. The 20' Tree Preservation area shall also be extended along the north perimeter of the real estate within the common areas.

(b) In the event the preservation of existing trees within the Tree Preservation Area does not meet the landscaping planting requirements of the UDO Evergreen trees will be installed in order to meet the planting standards of the UDO. In addition to meeting the planting standards of the UDO, one evergreen tree (minimum 6 feet tall) will be added to the rear yard of each lot abutting the west perimeter of the Real Estate.

(9) In regard to the proposed bridge: Lennar shall seek input from the Indiana Department of Environmental Management (IDEM) regarding standards they have, if any, regarding the number of vehicular access points required for subdivisions served by a bridge.

(10) The approval of the Findings of Fact and Report of Determination by the Plan Commission.

**NOW, THEREFORE, BE IT ORDAINED** by the Town Council of the Town of Brownsburg, Hendricks County, Indiana as follows:

1) The above recitals are incorporated herein by reference as though set forth fully herein below.

2) The Applicant shall assume and be responsible for payment of all costs incurred in the preparation and filing of all changes in this ordinance.

3) The zoning on the Property, as shown on the Official Zoning Map, shall be changed to R3 (High Density Single-family Residential).

This Ordinance is hereby passed by the Town Council of the Town of Brownsburg, Indiana, this 23rd day of Sept, 2021.

**BROWNSBURG TOWN COUNCIL**

Travis Tschaenn, President

**ATTEST:**

Ann Hathaway, Clerk-Treasurer

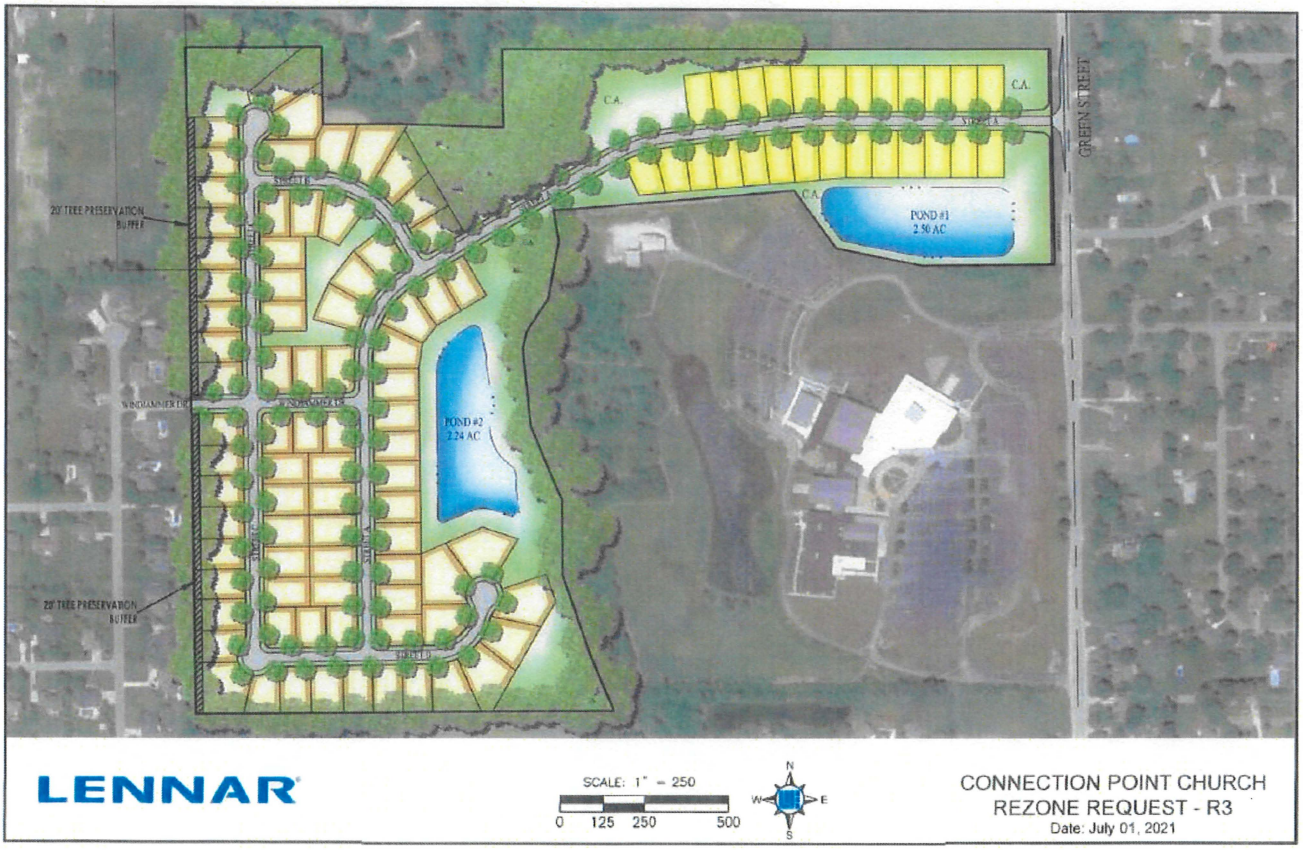
This instrument prepared by Jodi Dickey, Town of Brownsburg, 61 N. Green Street, Brownsburg, Indiana 46112. I affirm, under the penalties for perjury, that I have taken reasonable care to redact each social security number in this document, unless required by law. Jodi Dickey

## EXHIBIT "A"
## Legal Description

LEGAL DESCRIPTION

Lot Numbered Two (2) in the Replat of Connection Pointe, a subdivision in Town of Brownsburg, Brown Township, Hendricks County, Indiana, as per plat thereof recorded June 12, 2020, as Instrument No. 202015394 in Plat Cabinet 8, Slide 299, page 2ABCDEFGHI, in the office of the Recorder of Hendricks County, Indiana. Containing 65.920 acres more or less.

## EXHIBIT "B"
**General Depiction**



# Advisory Plan Commission

## Town of Brownsburg

**Assigned Staff: Elizabeth Williams, Planning Consultant**

**Report Date: 1/16/2026**

**Request Type:** Primary Plat

### General Information

| | |
|---|---|
| **CASE NUMBER** | PCPP-25-3 |
| **APPLICANT** | Lindsey Phipps on behalf of David Weekley Homes |
| **LOCATION** | 32-02-34-275-002.000-026, 32-02-34-100-012.000-001, 32-02-34-100-013.000-001 |
| **PARCEL SIZE** | 72.39 total subdivision acreage |

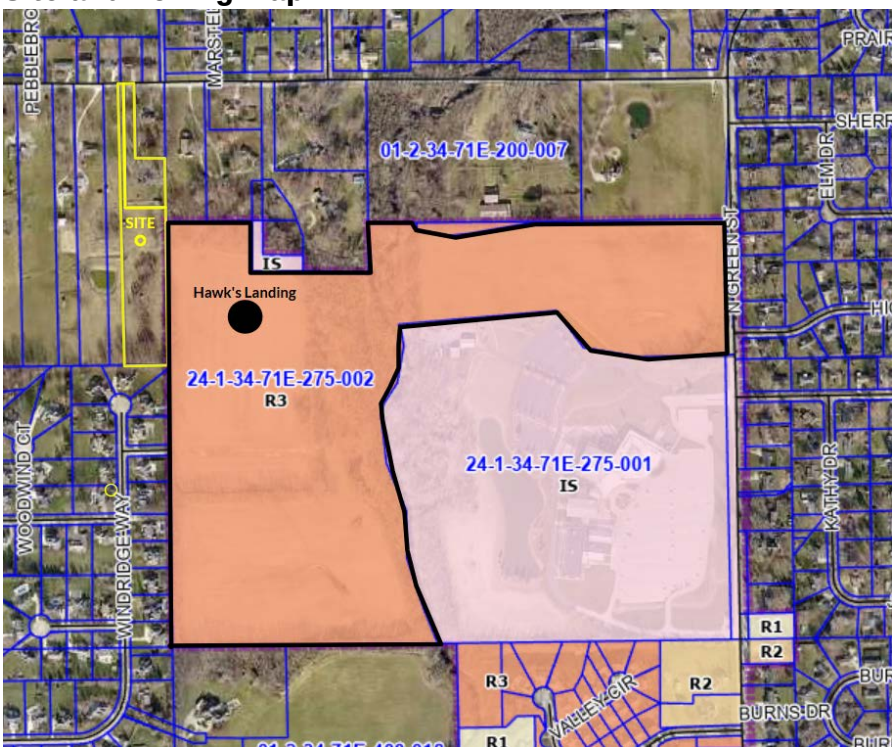
### Cross References

| | |
|---|---|
| **Previous APC Cases** | PCPP-03-18-1715/CPSP-05-19-1733 (Plat separating extra acreage)<br>PCMA-07-21-1929 (Rezone of extra acreage to R3)<br>PCPP-10-21-1954 (Hawk's Landing Primary Plat)<br>PCCZ-24-3 (Conditional Rezone to R-3, extension of Hawks Landing for entrance) |
| **Relevant BZA Cases** | N/A |
| **Other** | |

### Attachments

| | |
|---|---|
| ☒ | Tech Review & Response |
| ☒ | Site Plan/Civil |
| ☒ | Landscape Plan |
| ☐ | Architectural Plans |
| ☒ | Other: Traffic Study, Crossroad Engineer's Review Letter, Memorandum of Understanding, Updated Letter of Intent; Plat Lot Width Exhibit |

## Site and Zoning Map:




## Project and Site Background:

The two smaller parcels in the northwest corner were brought in to be used for an entrance on to County Road 800 for Hawk's Landing, a single-family residential subdivision. The proposed new access road is called Hawk Hollow Bend and is a public street. Right-of-ways do not require annexation in order to put an entrance on the land. The houses that were proposed along this new entrance at the April 28th APC meeting have since been removed. The new proposal breaks the development into two more distinct sections, this will help with traffic dispersion going onto other roads. The original development project has been revised and will not have a vehicular bridge being built across the creek. The bridge is not feasible nor desirable in terms of ongoing maintenance and infrastructure costs. The habitat disruption, erosion, stream maintenance and mitigation and the multi-million-dollar expense were all factors in the removal of the bridge from the design. The conditional rezone request (PCCZ-24-3) was withdrawn at the April 28th APC meeting. The church to the southeast of Hawk's Landing has attempted to sell their land for some time, but the balance of the site faces various hurdles regarding entrances due to the largely landlocked west side of the church parcel (32-02-34-275-001.000-026).

## New Information since October 2025:

Petitioners commissioned an update to the Traffic Study including new traffic counts both on a Thursday and Sunday. The traffic study has been reviewed by Crossroad Engineer's, the Town's consulting engineer and received feedback that the information provided is appropriate and the results on affects to selected intersections and recommended improvements meet acceptable performance standards. The study was also provided to the County Engineer. Petitioners previously worked with Indiana Department of

Transportation (INDOT), resulting in moving the location of the initial access point on SR 267 south to the current location. The petitioner entered into a Memorandum of Understanding with the Hendricks County Commissioners regarding the access point improvements on CR 800 North in July 2025.

The plat has been updated to meet the conditions of the 2021 rezoning. Petitioners have provided the following regarding the bridge connection: Linking the eastern and western portions of the development with any kind of bridge is not practical, would require the removal of trees within the riparian buffer along the creek as well as, disturbance of the floodway and wetlands.

It is staff's opinion that bridge location at this location and the resulting damage to the eco-system is not appropriate or desired. For these reasons it also the staff's opinion that the final engineering details support that the plat is as consistent as possible to the conceptual plan.

Petitioners have also provided an exhibit identifying and clarifying compliance with the lot width on the west side of the creek meeting the 90' width requirement.

## Technical Review:

The TECH review for this project took place on September 18, 2025. Planning Services commented that proposed amenities need to be labeled, calculations for required and proposed vegetation need to be added to the landscape plan, the tree preservation area needed to have a cross hatch added, and street names needed to be added with a public or private designation. The township information needed changed to reflect Brown Township and the size of existing water and sanitary sewer systems will have to be added to the legend. Capital Projects commented that depending on traffic, additional improvements may need to be done to N Green St (SR 267). The Fire Department discussed AutoTurn information for the Brownsburg Fire Territory ladder truck and has been working on a solution with the applicant for the Windjammer Court stub road that connects to the neighboring Windridge North subdivision. If a Knox Box was put in, that raised questions on emergency services maneuverability due to the lot count on the west side of Hawk's Landing. Other traffic calming mechanisms were suggested such as speed tables to not impede the second access point as substantially. The Wastewater Department mentioned that the routing of the sanitary force main has changed significantly from the original layout, safe accessibility will need to be provided. The development will need to complete downstream pump upgrades to the Maple Lift station at the time of sanitary line installation. The lift station is currently at capacity. The Water Department commented to make changes in water main sizes on future construction plans. Valves are needed on all sides of any tees, a valve on each side of the creek crossing, and hydrants should be spaced 300' apart with hydrant locations at cul-de-sacs per Town Standards.

The revised Traffic Study was provided to all Technical Review Committee members for review and comment.

## Criteria:

*Pursuant to Chapter 8 of the Brownsburg Unified Development Ordinance the Advisory Plan Commission shall make findings of fact on the following criteria:*

1) The subdivision of land meets the lot width, size, and area as provided in Chapter 2 or as modified by any waiver.

   https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=30

   a) The proposal meets the minimum dimensional requirements established for the R3 Single-Family Residential District in Chapter 2 of the UDO. Each lot provides a minimum lot area of 9,000 square feet, consistent with the required standard. Lot widths and depths have been designed to provide adequate building envelopes that accommodate required setbacks and easements.

      *Based on the above information, staff believes this criterion has been met.*

2) The subdivision of land provides appropriate areas and easements for necessary public utilities and drainage in accordance with **Chapter 7: Subdivision Regulations**.

   https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=168

   a) The project has been designed to comply with the development standards of the Brownsburg Unified Development Ordinance (UDO), including all applicable requirements for setbacks, easements, lot coverage, and building height. There is a large pipeline easement that causes a break in the landscaping on the west side by the Windridge subdivision. The subdivision layout provides adequate public utility and drainage easements in accordance with Chapter 7: Subdivision Regulations. These easements are located along property lines and within common areas as needed to accommodate stormwater infrastructure, sanitary sewer, water, electric, and communication facilities.

      *Based on the above information, staff believes this criterion has been met.*

3) The plat provides the appropriate right-of-way for the extension of public roads and infrastructure and access to internal or adjacent lots.

   a) The applicant was instructed to work with Hendricks County and INDOT to determine what road and entrance improvements would be required. The project will be broken up into two phases. The smaller east side will be constructed first, followed by the west side. The Thoroughfare Plan has SR 267 marked as a Principal Arterial and CR 800 as a Major Collector. Major collectors collect traffic from local streets and move it to larger arterial roads, reducing congestion on small neighborhood roads. The proposed new streets provide 56' of right-of-way width for a local road.

      *Based on the above information, staff believes this criterion has been met.*

4) The plat complies with any other applicable provision of **Chapter 7: Subdivision Regulations**.

   https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=168

   a) *7.4 Easement Standards*: A 20' drainage and utility easement is present along the front of the lots followed by the 25' building setback line. There are also 10' and 15' drainage easements on the back side of the lots visibly shown on the plat. The final plat shall include any applicable easement descriptions and required language from the UDO.

   b) *7.6 Open Space Standards*: The creek is a barrier to the connectivity of this subdivision. The subdivision will function as two separate entities, however the petitioner has amended the plat to

provide for larger amenity areas on the east and west sides of the creek, meeting the standards independently for each side. They have also provided parking at the west side amenity area for those wanting to utilize the shelter or game courts. The applicant put common areas, sidewalks, and trails in the submission. This project meets the open spaces standards for the district (12% minimum required 44% provided) and has also laid out an extensive tree preservation buffer (11.78 acres preserved).

c) *7.9 Pedestrian Network Standards:* All concrete sidewalks, asphalt pathways, and crosswalk improvements must be constructed per the Town's Construction Standards and comply with requirements of the Americans with Disabilities Act (ADA). Sidewalks should be at least five feet wide. When abutting a curb, sidewalks must be at least 6 feet wide. Sidewalks must be provided on both sides of internal streets in all developments. This project meets those standards and has two walking trails in addition to sidewalks for amenities.

d) 7.11 Access Standards: The east side of the subdivision will get access to the site from Connection Pointe Dr once turning off of SR 267. You can then either take Winghaven Way or Horizon Bend to meander around that side of the neighborhood. The west side of the subdivision has two access points. You first have to turn off of E County Rd 800 N to access Hawk Hollow Bend or go through the stub road on Windridge Ct. Subdivisions cannot be designed to alienate or perpetuate the land-locking of adjacent undeveloped land. Connectivity must be considered and appropriate stub streets created for future connectivity. Where a stub street exists from a previous development, any new development shall connect to the stub street and use the existing road name.

*Based on the above information, staff believes this criterion has been met.*

5) The Plat Satisfies any **other applicable provisions** of the Unified Development Ordinance.

a) No special provisions that relate to the plat are noted for this site. Overlay districts are not applicable to this project.

*Based on the above information, staff believes this criterion has been met.*

6) The Plat Satisfies the **construction requirements** of the Brownsburg Standard Details.

a) The project did not request any waivers. Any remaining TECH comments will need to be completed before permitting. This was added as a condition of approval.

*Based on the above information, staff believes this criterion has been met.*

## Recommendations:

*The Advisory Plan Commission may request conditions and commitments related to the project and criteria. Conditions or commitments must be made as part of the motion.*

***Based on the information provided and the criteria responses, staff recommends a motion to***

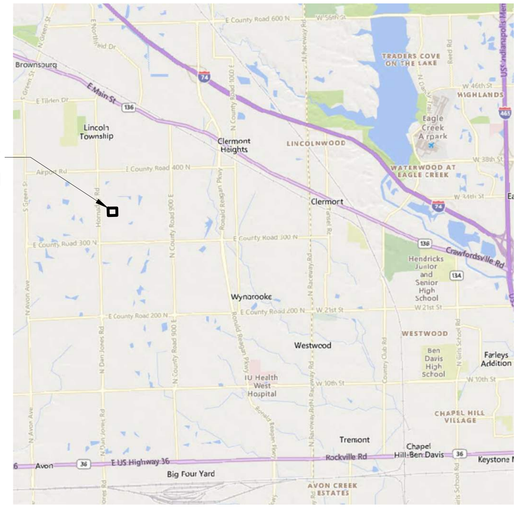
| | |
|---|---|
| ☐ | Approve PCPP-25-3 as presented. |
| ☒ | Approve PCPP-25-3 with the following staff conditions:<br>1. All remaining technical review comments will be addressed prior to stamping the Primary Plat. |

| | |
|---|---|
| | 2. The final plat shall be recorded in the Office of the Recorder of Hendricks County prior to issuance of any building permits.<br>3. The approval of the Findings of Fact and Report of Determination by the Plan Commission.<br>4. Petitioners shall comply with the Memorandum of Understanding with Hendricks County dated July 8, 2025.<br>5. Petitioners shall comply with the recommendations of the Traffic Study dated November 2025. |
| ☐ | Deny PCPP-25-3 based on the following criteria: |

# PROMENADE, SECTION 3
# PRIMARY PLAT

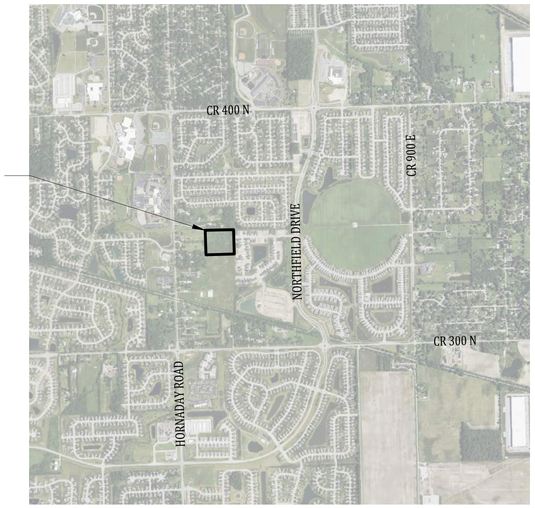
SW QUARTER, SECTION 24, TOWNSHIP 16N, RANGE 1E
LINCOLN TOWNSHIP, HENDRICKS COUNTY
BROWNSBURG, INDIANA

PROJECT LOCATION

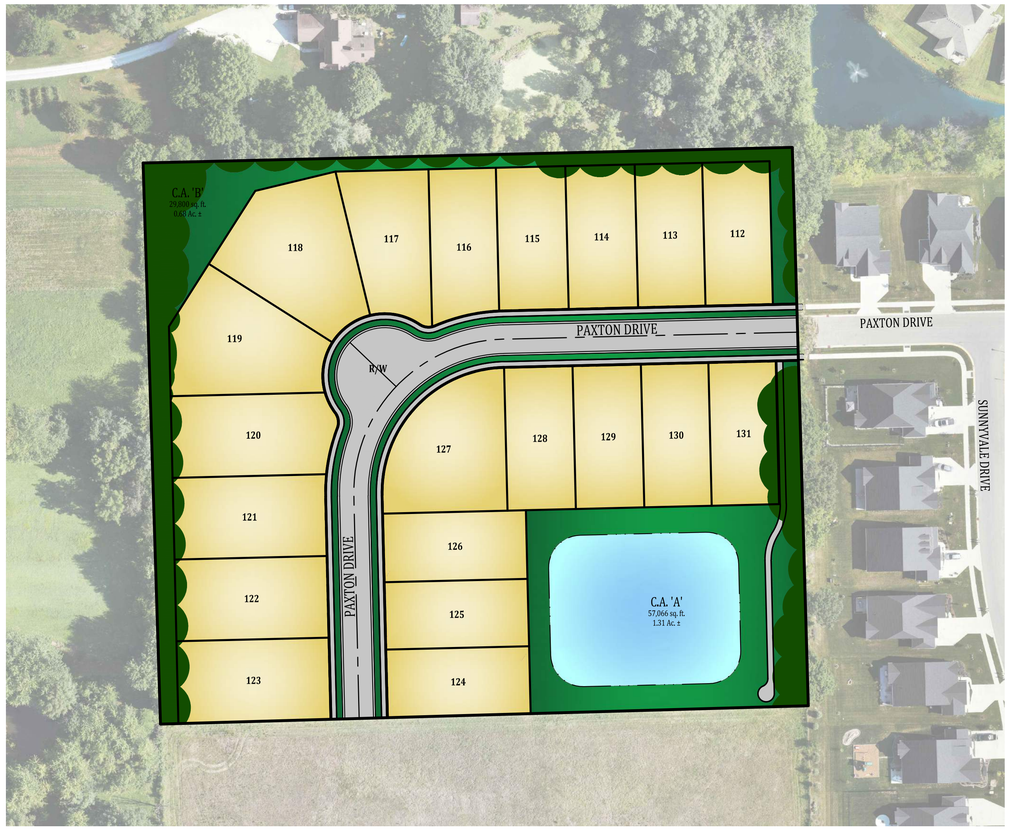



VICINITY MAP
NO SCALE

PROJECT LOCATION




LOCATION MAP
NO SCALE




SITE MAP
NO SCALE

OPERATING AUTHORITIES

| | | |
|---|---|---|
| GAS<br>Centerpoint<br>2345 E. Main Street<br>Danville, IN 46122<br>317-718-3639 | SANITARY<br>Town of Brownsburg<br>225 S. Mardale Drive<br>Brownsburg, IN 46112<br>317-852-1114 | SCHOOL DISTRICT<br>Brownsburg Community School Corp.<br>310 Stadium Drive<br>Brownsburg, IN 46112<br>317-852-5726 |
| ELECTRIC<br>Hendricks Power Cooperative<br>86 N. County Road 500 East<br>PO Box 39<br>Danville, IN 46122<br>317-745-5473 | STORM & MS4<br>Town of Brownsburg<br>61 North Green Street<br>Brownsburg, IN 46112<br>317-852-1128 | FIRE DEPARTMENT<br>Brownsburg Fire Territory<br>470 East Northfield Drive<br>Brownsburg, IN 46112<br>317-852-1190 |
| TELEPHONE<br>AT&T<br>240 North Meridian Street<br>Indianapolis, IN 46204<br>317-265-3050 | WATER<br>Town of Brownsburg<br>220 Mardale Drive<br>Brownsburg, IN 46112<br>317-858-4147 | POLICE DEPARTMENT<br>Brownsburg Police Department<br>31 North Green Street<br>Brownsburg, IN 46112<br>317-852-1109 |
| CABLE TELEVISION<br>Comcast Cablevision<br>5330 East 65th Street<br>Indianapolis, IN 46220<br>317-594-6509 | CABLE TELEVISION<br>Bright House Networks<br>3030 Roosevelt Ave.<br>Indianapolis, IN 46218<br>317-632-9077 | DEVELOPMENT SERVICES/<br>PERMITTING & PLANNING<br>Town of Brownsburg<br>61 North Green St.<br>Brownsburg, IN 46112<br>317-852-1128 |

**PLAN COMMISSION CERTIFICATE**

Pursuant to I.C. 36-7-4-700 et. seq., and all amendments thereof, the undersigned do hereby certify that the public notice of the hearing by the Town of Brownsburg Advisory Plan Commission (the "Commission"); on the application for approval of this plat duly complied with I.C. 36-7-4-706 and all amendments thereof, and said primary plat was granted primary approval by the Commission on the _____ day of _____, 20_____; pursuant to the Town of Brownsburg Unified Development Ordinance, with a majority of the members of the Commission concurring in said approval.

_____ Zoning Administrator

_____ Date

This approval is valid for a time period specified in Article 9 of the Town of Brownsburg Unified Development Ordinance.

Dated: _____

Certified this ___ day of _____, 20__.

Indiana 811. Know what's below. Call before you dig.

| REVISIONS | | |
|---|---|---|
| NUMBER | DESCRIPTION | DATE |
| 1 | TAC COMMENTS DATED DECEMBER 18, 2025 | 12/23/2025 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

| SHEET INDEX | |
|---|---|
| SHEET NO | DESCRIPTION |
| C100 | TITLE SHEET |
| C101 | EXISTING TOPOGRAPHY |
| C102 | PRIMARY PLAT |
| C103 | UTILITY PLAN |
| C104 | MISCELLANEOUS DETAILS |
| L1.0 | LANDSCAPING AND AMENITY PLAN |
| L2.0 | LANDSCAPING DETAILS |
| | |
| | |

PLANS PREPARED FOR:
PULTE GROUP
ATTN: REX RAMAGE - VP of LAND PLANNING & ENTITLEMENT
11595 MERIDIAN STREET, SUITE 700
CARMEL, INDIANA 46032
PHONE: (847) 489-8816
EMAIL: Rex.Ramage@PulteGroup.com


PLANS PREPARED BY:
BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com
CONTACT: PARKER MAYS
EMAIL: pmays@banning-eng.com


CERTIFIED BY: _____ _____

NOTE:

USERS OF THE EXISTING TOPOGRAPHY PLAN ARE CAUTIONED TO CONSIDER THAT ALL NATURAL SURFACES ARE SUBJECT TO DISPLACEMENT DUE TO THE EFFECTS OF ENVIRONMENTAL AND MECHANICAL FACTORS ON SOIL PROPERTIES. THE INTERPOLATED CONTOUR LINES DEPICTED HEREON ARE REPRESENTATIVE OF THE SURFACE OF THE SITE ON THE DATE(S) THE FIELD SURVEY WAS PERFORMED. CHANGES IN SURFACE ELEVATIONS VARYING UP TO 0.5 FEET AFTER THE DATE OF THE SURVEY MAY BE POSSIBLE WITHOUT ANY OBVIOUS VISIBLE INDICATIONS. THEREFORE, IT IS RECOMMENDED THAT THE SURFACE ELEVATIONS OF THIS SITE BE VERIFIED PRIOR TO CONSTRUCTION AND THAT ANY SIGNIFICANT DISCREPANCIES BE REPORTED TO THE ENGINEER FOR EVALUATION. THE SURVEYOR IS NOT RESPONSIBLE FOR ESTIMATING OR ACCOUNTING FOR ANY VERTICAL VARIANCE CAUSED BY SUCH ENVIRONMENTAL OR MECHANICAL INFLUENCES.

THIS EXISTING TOPOGRAPHY PLAN REFLECTS ABOVE GROUND INDICATIONS OF UTILITIES AND INFORMATION AVAILABLE FROM UTILITY COMPANIES. THE ENGINEER/SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE ENGINEER/SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH HE / SHE DOES CONFIRM THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION AVAILABLE. THE ENGINEER/SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

THESE PLANS ARE NOT INTENDED TO BE REPRESENTED AS A RETRACEMENT OR ORIGINAL BOUNDARY SURVEY, A ROUTE SURVEY, OR A SURVEYOR LOCATION REPORT.

| | |
|---|---|
| Date: | 12-08-25 |
| Project No: | 25155 |
| Sheet No: | C100 |

25155 PROMENADE, SECTION 3 - PRIMARY PLAT


pmays P:\2025\25155\Engineering\Cadd\Sheet Files\Primary Plat\25155_PP tit.dwg December 23, 2025 12:05 PM




EXISTING TOPOGRAPHY
PROMENADE, SECTION 3
LINCOLN TOWNSHIP, HENDRICKS COUNTY
BROWNSBURG, INDIANA

| Sym. | Revisions | Date |
|---|---|---|
| 1 | TAC COMMENTS DATED DECEMBER 18, 2025 | 12/23/2025 |

Designed: JET
Drawn: PEM
Checked: LGF
Scale: 1" = 40'
Date: 12-08-25

JACOB E. TOOLEY
REGISTERED
PE12400624
STATE
INDIANA
PROFESSIONAL ENGINEER
12-23-25

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN. 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Project No: 25155
Sheet No: C101

pmoys P:\2025\25155\Engineering\Cadd\Sheet Files\Primary Plat\25155_PP topo.dwg December 23, 2025 11:11 AM




## PROPOSED LEGEND

| | |
|---|---|
| — — — | BUILDING SETBACK |
| - - - - - | EASEMENT LINE |
| B.S.L. | BUILDING SETBACK LINE |
| D.E. | DRAINAGE EASEMENT |
| N.A.E. | NON ACCESS EASEMENT |
| D.&U.E. | DRAINAGE & UTILITY EASEMENT |

0 30' 60'

## NOTES:

* CONSISTENT WITH SECTION 7.10.E.3.F OF THE TOWN OF BROWNSBURG UNIFIED DEVELOPMENT ORDINANCE, IF THE PROPERTY IS DEVELOPED AS A RESIDENTIAL SUBDIVISION, A TEMPORARY TURNAROUND SHALL BE PROVIDED AS SHOWN ON SHEET C104. WHILE THE TEMPORARY TURNAROUND IS CURRENTLY DEPICTED ON LOT 122, IT MAY BE TRANSFERRED TO ANY LOT PROVIDED THAT THE ALTERNATIVE LOT MAY BE APPROVED BY THE BROWNSBURG FIRE DEPARTMENT. ANY SUCH LOT AFFECTED BY TEMPORARY TURNAROUND MAY BE PLATTED; HOWEVER, IT MAY NOT BE IMPROVED WITH RESIDENTIAL DWELLINGS UNTIL SUCH TIME AS EITHER (1) AN OFFSITE EASEMENT OR FEE SIMPLE RIGHTS FOR A TEMPORARY TURNAROUND ARE OBTAINED FROM THE LANDOWNER TO THE SOUTH OR (2) A CONNECTION TO THE STUB STREET IS MADE TO THE SOUTH. AT SUCH TIME AS THE EARLIER OF THESE TWO EVENTS OCCURS, THIS COMMITMENT STATED IN THIS PARAGRAPH SHALL AUTOMATICALLY TERMINATE PURSUANT TO IND. CODE § 36-7-4-1015(B)(4) AND AN IMPROVEMENT LOCATION PERMIT FOR THE LOT AFFECTED BY THE TEMPORARY TURNAROUND MAY ISSUE IMMEDIATELY THEREAFTER.

- EXCEPT IN THE EVENT OF CONFLICTS WITH DRAINAGE OR UTILITY IMPROVEMENTS OR REMOVAL OF DEAD, DYING, OR DISEASED VEGETATION, THE DEVELOPER SHALL NOT REMOVE EXISTING TREES WITHIN FIFTEEN FEET (15') OF THE EAST, WEST, AND NORTH PROPERTY BOUNDARIES. IN ADDITION, THE DEVELOPER SHALL PLANT SUPPLEMENTAL ADDITIONAL TREES WITHIN THIS SAME AREA AT THE RATE OF 7 PER 100 LINEAR FEET, WITH AT LEAST SEVENTY-FIVE PERCENT (75%) OF SUCH PLANTINGS BEING EVERGREEN VARIETIES.

- SEE SHEET C104 FOR PROPOSED STREET CROSS SECTION.




## KEY MAP

**LAND DESCRIPTION**

A PART OF THE SOUTHWEST QUARTER OF SECTION 24, TOWNSHIP 16 NORTH, RANGE 1 EAST OF THE SECOND PRINCIPAL MERIDIAN IN INDIANA, SAID PART BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHWEST CORNER OF SAID QUARTER SECTION, THENCE NORTH AND ALONG THE WEST LINE OF SAID QUARTER SECTION 2677.20 FEET; THENCE SOUTH 89 DEGREES 35 MINUTES 30 SECONDS EAST 700.00 FEET TO THE BEGINNING POINT OF THIS DESCRIPTION; THENCE CONTINUING SOUTH 89 DEGREES 35 MINUTES 30 SECONDS EAST 632.63 FEET; THENCE SOUTH 550.00 FEET; THENCE NORTH 89 DEGREES 35 MINUTES 30 SECONDS WEST 632.32 FEET; THENCE NORTH 550.00 FEET TO THE BEGINNING POINT OF THIS DESCRIPTION. CONTAINING IN ALL 7.99 ACRES. SUBJECT TO ALL LEGAL HIGHWAYS, RIGHTS-OF-WAY AND EASEMENTS OF RECORD.

| Sym. | Revisions | Date |
|---|---|---|
| 1 | TAC COMMENTS DATED DECEMBER 18, 2025 | 12/23/2025 |

Designed: JET
Drawn: PEM
Checked: LGF
Scale: 1" = 30'
Date: 12-08-25

# PRIMARY PLAT
# PROMENADE, SECTION 3
## LINCOLN TOWNSHIP, HENDRICKS COUNTY
## BROWNSBURG, INDIANA

COMMONWEALTH OF INDIANA · JACOB E. TOOLEY · REGISTERED · PE12100624 · STATE · INDIANA · PROFESSIONAL ENGINEER

BANNING ENGINEERING
853 COLUMBIA ROAD SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700 FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Project No: 25155
Sheet No: C102

pmoya P:\2025\25155\Engineering\Cadd\Sheet Files\Primary Plat\25155_PP plan.dwg December 23, 2025 12:05 PM

## NOTES:

- STREET SIGNAGE WILL BE IN ACCORDANCE WITH BROWNSBURG STANDARDS FOR LOCATION AND TYPE.
- THE EROSION CONTROL PLAN WILL MEET ALL LOCAL, CSGP, AND IDEM REQUIREMENTS AND WILL BE SUBMITTED TO IDEM
- THE MAIN DRAINAGE OUTLET FOR THIS PROJECT WILL UTILIZE THE PROMENADE, SECTION 1 EXISTING STORM SEWER SYSTEM TO THE EAST.
- ALL INFRASTRUCTURE TO MEET TOWN OF BROWNSBURG UTILITY STANDARDS AND REQUIREMENTS.
- WATER SERVICE LATERALS, METER PIT LOCATIONS, AND FINAL LOCATIONS OF ALL UTILITIES TO BE DETERMINED WITH THE CONSTRUCTION PLANS.
- SEE SHEET C104 FOR RIGHT OF WAY CROSS SECTION.

## PROPOSED LEGEND

| | |
|---|---|
| —W— | WATER MAIN |
| | WATER MAIN VALVE |
| | FIRE HYDRANT ASSEMBLY |
| —S— | SANITARY SEWER |
| | SANITARY MANHOLE |
| | STORM STRUCTURES / INLETS |
| | STORM SEWER |
| | STREET LIGHTS |
| B.S.L. | BUILDING SETBACK LINE |
| D.E. | DRAINAGE EASEMENT |
| N.A.E. | NON ACCESS EASEMENT |
| U.&D.E. | UTILITY & DRAINAGE EASEMENT |

0 30' 60'




| Sym. | Revisions | Date |
|---|---|---|
| 1 | TAC COMMENTS DATED DECEMBER 18, 2025 | 12/23/2025 |

Designed: JET
Drawn: PEM
Checked: LGF
Scale: 1"= 30'
Date: 12-08-25

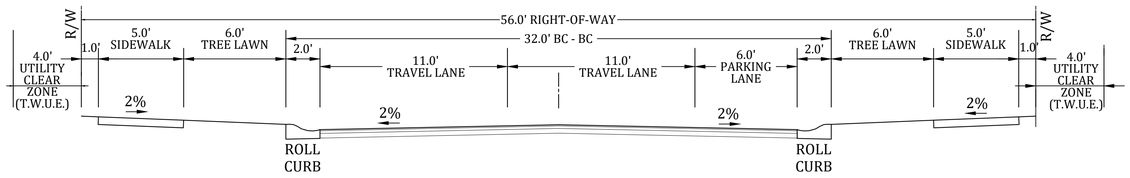
# UTILITY PLAN
# PROMENADE, SECTION 3
# LINCOLN TOWNSHIP, HENDRICKS COUNTY
# BROWNSBURG, INDIANA

JACOB E. TOOLEY
REGISTERED
PE12400024
STATE OF INDIANA
PROFESSIONAL ENGINEER

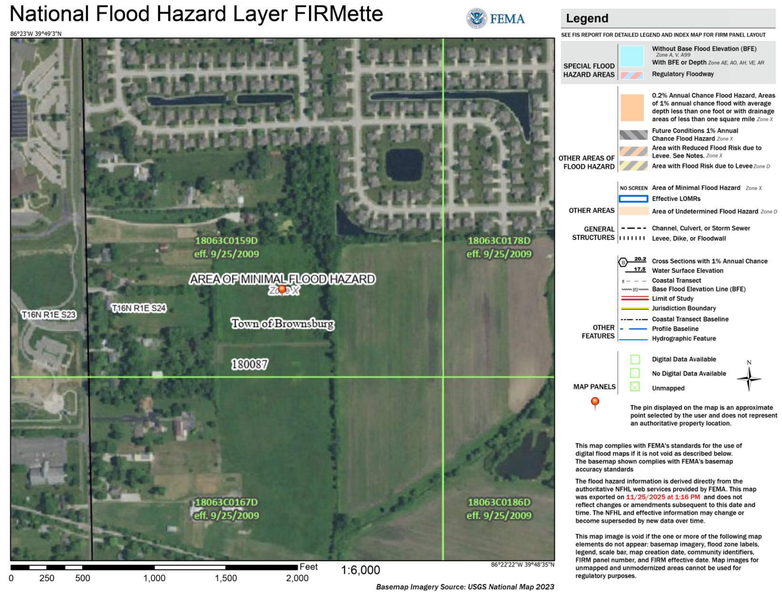

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com


Project No: 25155
Sheet No: C103

pmays P:\2025\25155\Engineering\Cadd\Sheet Files\Primary Plat\25155_PP utl.dwg December 23, 2025 12:06 PM



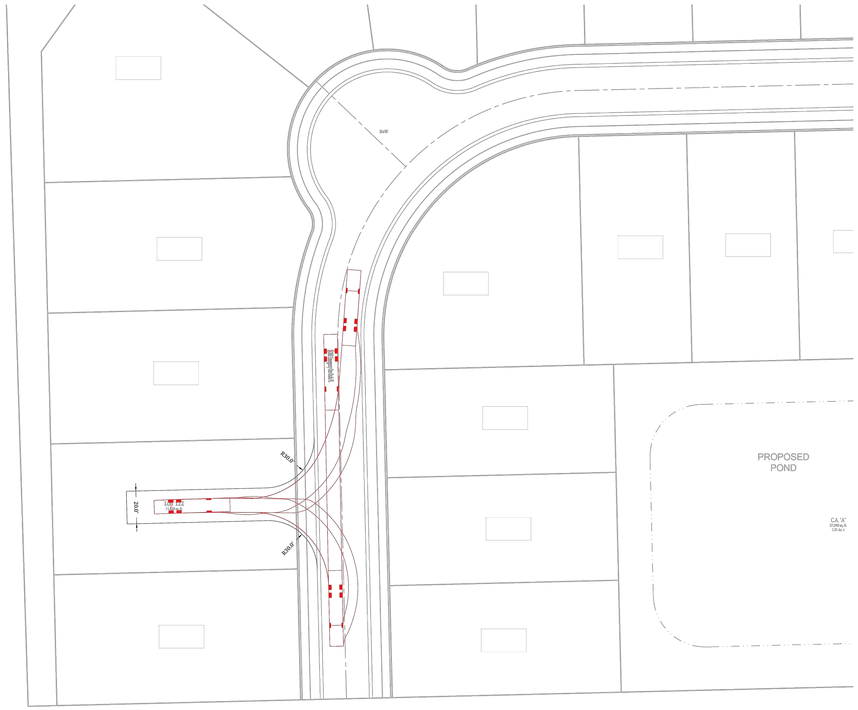

***TYPICAL LOCAL STREET SECTION***







| Map unit symbol | Map unit name |
|---|---|
| CrA | Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes |
| ThrA | Treaty silty clay loam, 0 to 1 percent slopes |
| YbvA | Brookston silty clay loam-Urban land complex, 0 to 2 percent slopes |
| YclA | Crosby silt loam, fine-loamy subsoil-Urban land complex, 0 to 2 percent slopes |




***TEMPORARY TURNAROUND***

| Revisions | | | Date |
|---|---|---|---|
| Sym. | | | |
| 1 | TAC COMMENTS DATED DECEMBER 18, 2025 | | 12/23/2025 |

Designed: JET
Drawn: PEM
Checked: LGF
Scale: NO SCALE
Date: 12-08-25

MISCELLANEOUS DETAILS
PROMENADE, SECTION 3
LINCOLN TOWNSHIP, HENDRICKS COUNTY
BROWNSBURG, INDIANA

JACOB E. TOOLEY
REGISTERED
PE12300024
STATE OF INDIANA
PROFESSIONAL ENGINEER
12/23/2025

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

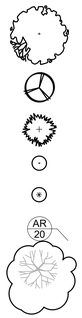
Project No: 25155
Sheet No: C104

pmoys P:\2025\25155\Engineering\Cadd\Sheet Files\Primary Plot\25155_PP dtls.dwg December 23, 2025 12:06 PM




LANDSCAPE PER COMMITMENTS CONCERNING THE PROPERTY. *EXCEPT IN THE EVENT OF CONFLICTS WITH DRAINAGE OR UTILITY IMPROVEMENTS OR REMOVAL OF DEAD,DYING OR DISEASED VEGETATION, THE DEVELOPER SHALL NOT REMOVE EXISTING TREES WITHIN FIFTEEN FEET (15') OF THE EAST, WEST AND NORTH BOUNDARIES. IN ADDITION, THE DEVELOPER SHALL PLANT SUPPLEMENTAL TREES WITHIN THIS SAME AREA AT A RATE OF 7 PER 100' LINEAR FEET WITH AT LEAST 75% OF SUCH PLANTINGS BEING EVERGREEN VARIETIES .

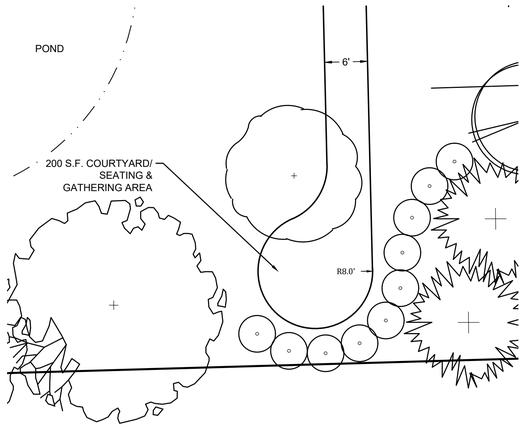
## *LANDSCAPE SYMBOLOGY*

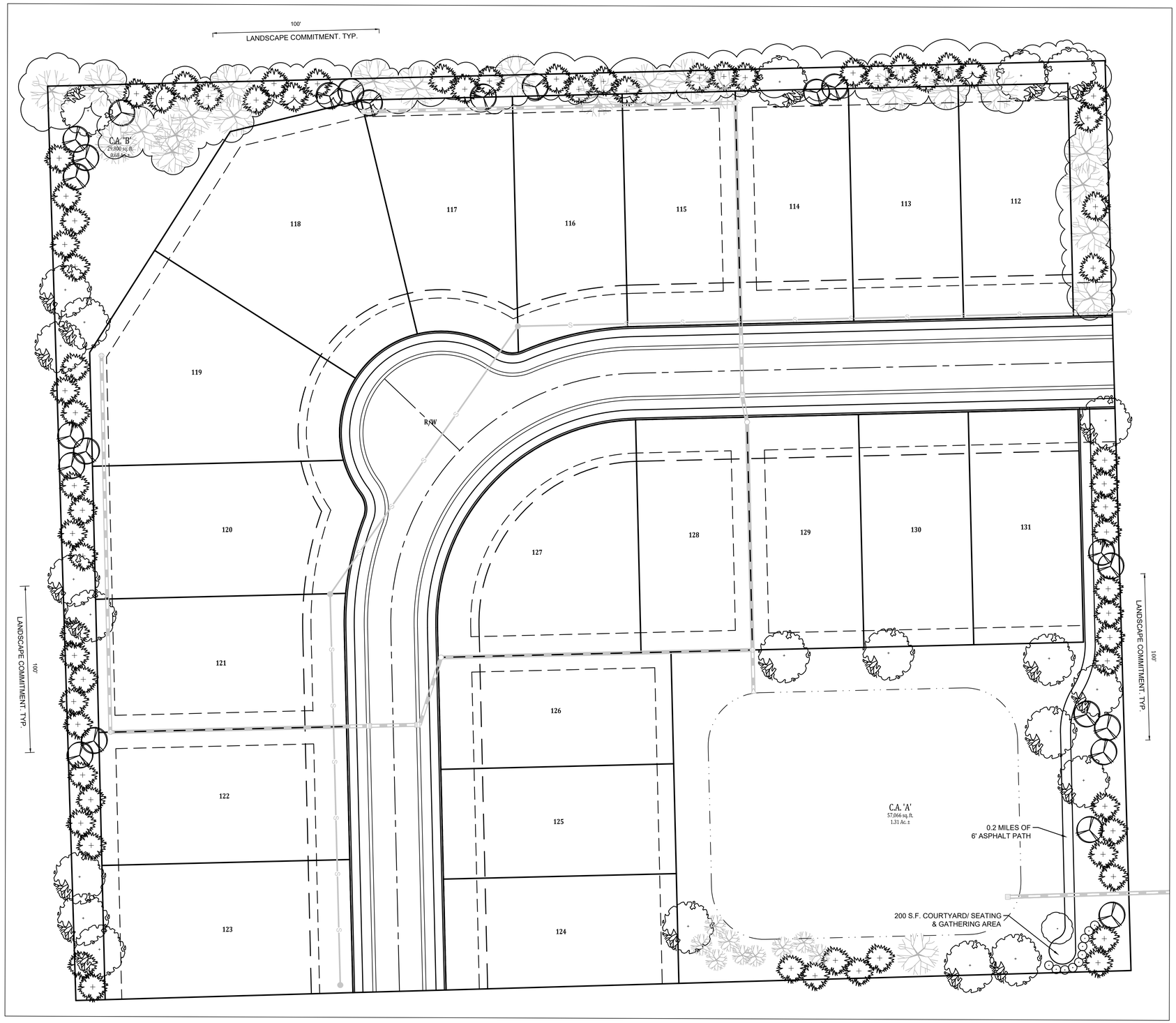



## PLANT SCHEDULE

| KEY | QTY | PLANT NAME<br>BOTANICAL NAME<br>COMMON NAME | SIZE | SPACING | REMARKS |
|---|---|---|---|---|---|
| AC | | Amelanchier canadensis<br>Serviceberry | 8' Height | SEE PLAN | FULL, DENSE BRANCHING, WIDTH NOT LESS THAN 60' OF HEIGHT |
| AR | | Acer rubrum 'Franksred'<br>Red Maple | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| CC | | Cercis canadensis<br>Eastern Redbud | 1.5" Caliper | SEE PLAN | FULL, DENSE BRANCHING, WIDTH NOT LESS THAN 60' OF HEIGHT |
| GD | | Gymnocladus dioicus<br>Kentucky Coffeetree | 2.5 " Caliper | SEE PLAN | CENTRAL LEADER |
| HM | | Hydrangea macrophylla 'All Summer Beauty'<br>All Summer Beauty Hydrangea | 24" Height | SEE PLAN | FULL IN POT |
| PAx | | Platanus x acerfolia<br>London Planetree | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| PA | | Picea abies<br>Norway Spruce | 8'-10' Height | SEE PLAN | CENTRAL LEADER |
| PAc | | Picea abies 'Cupresina<br>Columnar Norway Spruce | 6' Height | SEE PLAN | CENTRAL LEADER |
| PM | | Pseudotsuga menziesii<br>Douglas Fir | 8' Height | SEE PLAN | CENTRAL LEADER |
| PO | | Picea omorika<br>Serbian Spruce | 10'-12' Height | SEE PLAN | CENTRAL LEADER |
| QA | | Quercus alba<br>White Oak | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| QB | | Quercus bicolor<br>Swamp White Oak | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| QMA | | Quercus macrocarpa<br>Burr Oak | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| QM | | Quercus mulenbergii<br>Chinquapin Oak | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| TD | | Taxodium disticum<br>Common Baldcypress | 2.5" Caliper | SEE PLAN | CENTRAL LEADER |
| VJ | | Vibumum x juddii<br>Judd Vibumum | 30" Height | SEE PLAN | FULL IN POT |

PROPOSED AMENITIES:
AMENITIES FOR THIS PROJECT WILL INCLUDE 0.2 MILES OF 6' ASPHALT TRAIL AND A 200 S.F. COURTYARD SEATING & GATHERING AREA. THE COURTYARD WILL BE A HARD SURFACE TO SATISFY THE UDO REQUIREMENT FOR AMENITIES.




| Designed: | JET |
|---|---|
| Drawn: | PEM |
| Checked: | LGF |
| Scale: | 1" = 30' |
| Date: | 12-08-25 |

| Sym. | Revisions | Date |
|---|---|---|
| 1 | TAC COMMENTS DATED DECEMBER 18, 2025 | 12/23/2025 |

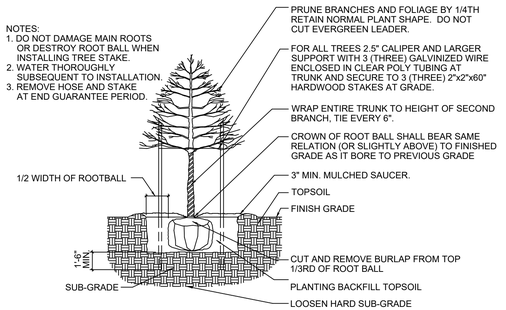
# LANDSCAPING AND AMENITY PLAN
## PROMENADE, SECTION 3
## LINCOLN TOWNSHIP, HENDRICKS COUNTY
## BROWNSBURG, INDIANA




BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN. 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

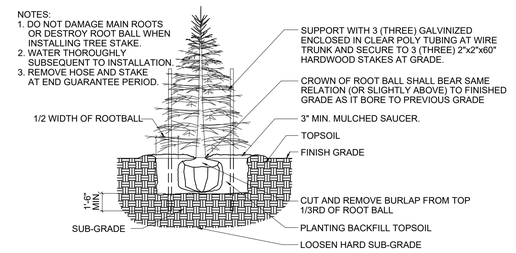
| Project No: | 25155 |
|---|---|
| Sheet No: | L1.0 |

Xrefs: P:\2025\25155\Engineering\Cadd\Sheet Files\Primary Plot\25155_PP Lnd.dwg December 23, 2025 12:06 PM



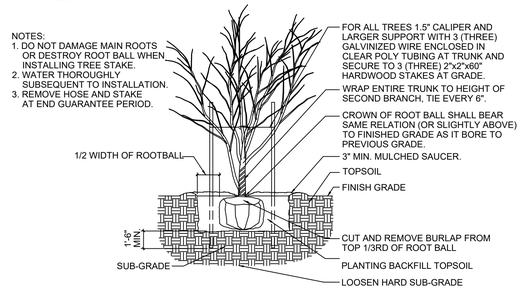

## CANOPY TREE PLANTING

**NO SCALE**



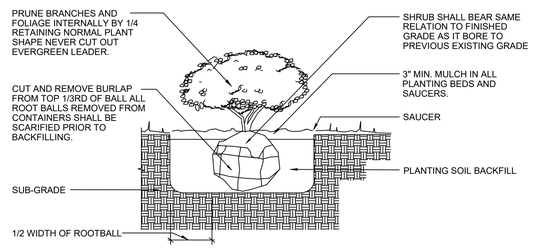

## EVERGREEN TREE PLANTING

**NO SCALE**




## ORNAMENTAL TREE PLANTING

**NO SCALE**




## SHRUB PLANTING

**NO SCALE**

## *LANDSCAPE SPECIFICATIONS*

GENERAL NOTES:

1. ALL UTILITIES SHALL BE LOCATED AND MARKED/FLAGGED BEFORE BEGINNING LANDSCAPE WORK RELOCATED PLANTS THAT ARE UNDER OR OVER UTILITIES. THE RELOCATED PLANTS TO BE APPROVED BY OWNER AND/OR LANDSCAPE ARCHITECT/DESIGNER PRIOR TO INSTALLATION. CONTRACTOR SHALL NOTIFY UTILITY LOCATE SERVICE (811) A MINIMUM OF TWO WORKING DAYS PRIOR TO EXCAVATION.
2. UTILITY LOCATION NOTE: ALL LOCATIONS SHOWN ON PLANS ARE APPROXIMATE AND BASED ON PROVIDED INFORMATION BY SURVEYOR OR CIVIL ENGINEER OR OWNER AND OR MEASURED IN THE FIELD. IF DISCREPANCIES EXIST OR ARE PRESENT, CONTRACTOR SHALL NOTIFY OWNER, OWNERS REPRESENTATIVE AND LANDSCAPE ARCHITECT/DESIGNER PRIOR TO BEGINNING ANY WORK.
3. IN CASE OF DISCREPANCIES BETWEEN THE PLANS AND PLANT LIST. THE PLAN SHALL DICTATE.
4. THESE SPECIFICATIONS COVER THE FURNISHING OF LABOR, PLANTS, EQUIPMENT, AND MATERIALS TO PERFORM LANDSCAPE OPERATIONS IN CONNECTION WITH THIS CONSTRUCTION PROJECT AT THE LOCATIONS SHOWN ON THE LANDSCAPE DRAWING.
5. PLANTS AND ALL LANDSCAPE MATERIAL TO BE STORED ON SITE WILL BE PLACED WHERE THEY ARE NOT IN CONFLICT WITH CONSTRUCTION OPERATIONS.
6. REMOVE AND CLEAN UP ALL DEBRIS AND REMOVE FROM SITE, REPAIR DAMAGED OR DISTURBED AREAS CAUSED BY LANDSCAPE CONTRACTOR.
7. TOPSOIL: TOPSOIL SHALL BE FRIABLE, NATURAL LOAM, SURFACE SOIL AND FREE OF SUBSOIL, CLAY LUMPS, BRUSH, WEEDS, LITTER, ROOTS, STONES DOMESTIC AND AGRICULTURE FERTILIZERS, HERBICIDES, AND OTHER TOXIC MATERIALS HARMFUL TO PLANT GROWTH AND ENVIRONMENT. WASTE SOILS, BORROW, OR HEAVY CLAY BASED SOILS WILL NOT BE ACCEPTED. TOPSOIL SHALL HAVE A PH VALUE OF 6.0-7.4. SUBMIT SOIL SAMPLES, PH SAMPLES, PH LEVELS AND NPK ANALYSIS PRIOR TO DELIVERY.

PLANTING NOTES:

1. REMOVE WEEDS, ORGANIC MATTER, ROCKS LARGER THAN 1.5" FROM SOIL.
2. LANDSCAPE MATERIALS: FERTILIZER: GRANULAR NON-BURNING PRODUCT COMPOSED OF NOT LESS THAN 50% ORGANIC SLOW ACTING, GUARANTEED ANALYSIS PROFESSIONAL FERTILIZER; 20% NITROGEN, 10% PHOSPHORIC ACID, AND 5% POTASH BY WEIGHT OR SIMILARLY APPROVED COMPOSITION.
3. PLANTING BACKFILL SOIL: BACKFILL PLANT PITS WITH THE FOLLOWING TOPSOIL MIXTURE: 1 PART ON-SITE TOPSOIL, 1 PART IMPORTED TOPSOIL, 1 PART COMPOST AND 1/2 POUND PLANT SPECIFIED FERTILIZER PER CUBIC YARD.
4. PLANT MATERIALS: PROVIDE TREES AND SHRUBS AS INDICATED. COMPLY WITH SIZING AND GRADING STANDARDS OF "AMERICAN STANDARD FOR NURSERY STOCK". PROVIDE ONLY SOUND, HEALTHY VIGOROUS PLANTS FREE FROM DEFECTS, DISFIGURING KNOTS, SUNSCALD INJURIES, FROST CRACKS, PLANT DISEASES, INSECTS OR ANY OTHER FORM OF DISEASE OR INFESTATION. ALL PLANTS SHALL HAVE FULLY DEVELOPED FORM WITHOUT VOIDS OR OPEN SPACES.
5. NO SUBSTITUTIONS OF PLANT MATERIAL WILL NOT BE ALLOWED. IF PLANTS ARE NOT AVAILABLE. THE CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT/DESIGNER, OWNERS REPRESENTATIVE IN WRITING. ALL PLANTS SHALL BE INSPECTED AND TAGGED WITH PROJECT I.D. AT NURSERY OR CONTRACTORS OPERATIONS PRIOR TO MOVING TO JOB SITE. PLANTS MAY BE INSPECTED AND APPROVED OR REJECTED ON THE JOB SITE BY LANDSCAPE ARCHITECT/DESIGNER OR OWNERS REPRESENTATIVE.
6. LANDSCAPE ARCHITECT/DESIGNER OR OWNERS REPRESENTATIVE RESERVES THE RIGHT TO REJECT ANY AND ALL PLANT MATERIALS DURING THE COURSE OF THE PROJECT.
7. PLANTING BED MULCH: 3 INCHES OF GRADE 'A' SHREDDED HARDWOOD MULCH WHERE PLANTING BED ADJOINS EITHER PAVEMENT OR TURF.
8. PLANTING BED FABRIC: DEWITT PRO 5 WEED BARRIER. INSTALL ONLY IN PLANTING BEDS.
9. SEE PLANTING DETAILS FOR PLANTING, PRUNING AND STAKING REQUIREMENTS.

SEEDING AND SODDING PREPARATION:

1. LANDSCAPE CONTRACTOR TO FINE GRADE AND PREPARE ALL SITE AREAS TO RECEIVE SODDING OR SEEDING. FINE GRADE SITE SMOOTH TO FINAL GRADING PLAN ELEVATIONS. FILL IN DEPRESSIONS, LOW SPOTS AND GRADE SMOOTH.
2. ALL TURF AREAS WITHIN LIMIT LINES TO RECEIVE 6" TOPSOIL PRIOR TO OPERATIONS. ONCE TOPSOIL HAS BEEN PLACED. CONSTRUCTION ACTIVITY OF ANY KIND (EXCLUDING LANDSCAPING) SHALL NOT BE PERMITTED ON OR ACROSS ANY PLANTING AREA.
3. TURF AREAS TO TO BE SCARIFIED/CULTIVATE TO A DEPTH OF 4" AND LIGHTLY ROLLED (NOT COMPACTED) PRIOR TO BEING SODDED OR SEEDED.
4. LAWNS TO BE FERTILIZED WITH 12-12-12 AT A RATE OF 10 LBS/1000 SQ.FT. PRIOR TO INSTALLATION.
5. WATER AND MAINTAIN GRASS STAND IS ESTABLISHED AND READY FOR MOWING AT A MINIMUM 4" HEIGHT. CONTRACTOR SHALL MAINTAIN LAWN FOR A PERIOD OF 60 DAYS BEYOND FINAL ACCEPTANCE BY MOWING AND WATERING AS REQUIRED TO MAINTAIN VIGOROUS GROWTH DURING ESTABLISHMENT.

SEEDED LAWN:

TURF TYPE TALL FESCUE - SEED

1. COMPLETE ALL OTHER LANDSCAPE PLANTINGS, MULCHING, FINE GRADING AND STAKING PRIOR TO SEEDING LAWN AREAS.
2. PROVIDE SEEDED LAWN FOR ALL LAWN AREAS UTILIZING AMER-TURF FRONT-RUNNER TURF TYPE TALL FESCUE BLEND SEED.
3. APPLY SEED AT A RATE OF 5 POUNDS PER 1000 SQUARE FEET.
4. SEED BED SHALL BE IN A FIRM BUT UNCOMPACTED CONDITION WITH A RELATIVELY FINE TEXTURE AT TIME OF SEEDING.
5. CONTRACTOR SHALL MAINTAIN SEEDING LAWN FOR A PERIOD OF 60 DAYS BEYOND FINAL ACCEPTANCE BY MOWING AND WATERING AS REQUIRED TO MAINTAIN VIGOROUS GROWTH DURING ESTABLISHMENT PERIOD.
6. LAWN AREAS SHALL NOT HAVE VOIDS LARGER THAN 6"X6". IF VOIDS ARE LARGER THAN ACCEPTABLE SIZE AN OVERSEEDING SHALL BE COMPLETED BY THE CONTRACTOR DURING THE NEXT AVAILABLE GROWING SEASON.
7. GROWING SEASON AUGUST 15TH - SEPTEMBER 20TH. SPRING GROWING SEASON MARCH 20TH - APRIL 20TH.

PROJECT WARRANTY:

1. CONTRACTOR SHALL WARRANT TREES, SHRUBS, AND PLANTS FOR A PERIOD OF ONE YEAR AFTER DATE OF SUBSTANTIAL COMPLETION AGAINST DEFECTS INCLUDING DEATH AND UNSATISFACTORY GROWTH, EXCEPT FOR DEFECTS RESULTING FROM NEGLECT BY THE OWNER, ABUSE OR DAMAGE BY OTHERS, OR UNUSUAL PHENOMENA OR INCIDENTS WHICH ARE BEYOND INSTALLER'S CONTROL. REMOVE AND REPLACE TREES, SHRUBS OR OTHER PLANTS FOUND TO BE DEAD OR IN UNHEALTHY CONDITION DURING WARRANTY PERIOD. REPLACE TREES AND SHRUBS WHICH ARE IN DOUBTFUL CONDITION AT END OF WARRANTY PERIOD.

| Sym. | Revisions | Date |
|---|---|---|
| 1 | TAC COMMENTS DATED DECEMBER 18, 2025 | 12/23/2025 |

| | |
|---|---|
| Designed: | JET |
| Drawn: | PEM |
| Checked: | LGF |
| Scale: | |
| Date: | 12-08-25 |

# LANDSCAPING DETAILS
# PROMENADE, SECTION 3
# LINCOLN TOWNSHIP, HENDRICKS COUNTY
# BROWNSBURG, INDIANA

JACOB TODLEY — REGISTERED — NO. PE12100014 — STATE OF INDIANA — PROFESSIONAL ENGINEER

BANNING ENGINEERING
653 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

Project No: 25155

Sheet No: L2.0

Plotted by: pmoya P:\2025\25155\Engineering\Cadd\Sheet Files\Primary Plat\25155_PP Lnd.dwg December 23, 2025 12:06 PM

202524700 MISC $25.00
12/9/2025 2:53:14 PM 5 PGS
Laura Herzog
Hendricks County Recorder IN
Recorded as Presented

# WRITTEN COMMITMENT CONCERNING THE USE OF PROPERTY

WHEREAS, pursuant to Ind. Code § 36-7-4-608, et seq., Joseph R. Daniels ("Owner") has applied for a zone map amendment from AG-Agriculture to PUD-Planned Unit Development for that certain real property located in the Lincoln Township, Hendricks County, Indiana, more particularly described on Exhibit A attached hereto and incorporated by reference herein (the "Property"); and

WHEREAS, Owner desires to make certain commitments in connection with such application;

NOW THEREFORE, in accordance with Ind. Code § 36-7-4-1015(a)(1), the Owner of the Property, hereby makes the following commitment ("Commitment") concerning the Property:

1. Consistent with Section 7.10.E.3.f of the Town of Brownsburg Unified Development Ordinance, if the Property is developed as a residential subdivision, a temporary turnaround shall be provided as depicted below:



While the temporary turnaround is currently depicted on Lot 122, it may be transferred to any lot provided that the alternative lot may be approved by the Brownsburg Fire Department. Any such lot affected by temporary turnaround may be platted; however, it may not be improved with residential Dwellings until such time as either (1) an offsite easement or fee simple rights for a temporary turnaround are obtained from the landowner to the south or (2) a connection to the stub street is made to the south. At such time as the earlier of these two events occurs, this commitment stated in this paragraph shall automatically terminate pursuant to Ind. Code § 36-7-4-1015(b)(4) and an improvement location permit for the lot affected by the temporary turnaround may issue immediately thereafter.

2. DarkSky or fully shielded lighting fixtures shall be used on the rear patios of Lots 119-123 depicted on Exhibit B attached hereto. Notice of this limitation shall be included on a supplemental set of covenants, conditions, and restrictions ("CCRs") applicable to the Property (Promenade Phase 3) only. These supplemental CCR's may be stated on the recorded plat for Promenade Phase 3. The commitment stated in this paragraph is for the benefit of and may be enforced directly by the owners of parcels immediate adjoining Lots 119-123 to the west.

3. With respect to the original construction of single-family homes on the Property, construction activity which is likely to generate noise impacting existing adjacent residential properties must not commence earlier than 7:00 a.m. nor continue past 8:00 p.m. Pursuant to Ind. Code § 36-7-4-1015(b)(4), the commitment stated in this paragraph shall automatically terminate as to each lot within the community after the original construction of the single-family home on that lot has been completed.

4. Except in the event of conflicts with drainage or utility improvements or removal of dead, dying, or diseased vegetation, the developer shall not remove existing trees within fifteen feet (15') of the east, west, and north property boundaries. In addition, the developer shall plant supplemental additional trees within this same area at the rate of 7 per 100 linear feet, with at least seventy-five percent (75%) of such plantings being evergreen varieties.

5. Lots 120-123 depicted on Exhibit B attached hereto shall be a minimum of eighty feet (80') wide at the building setback line.

6. To the extent that the Town of Brownsburg shall approve a 3-way stop at the intersection of Paxton Drive and Sunnyvale Drive in Promenade Section 1B, the developer, at developer's expense, shall arrange for the installation of appropriate signage during the site development of Promenade Phase 3.

7. These Commitments shall run with the land, be binding upon the Owner of the Property and subsequent owners of the Property. Except as provided in Section 1 hereof

(providing for automatic termination), these Commitments may be modified or terminated by a decision of the Brownsburg Plan Commission made at a public hearing after proper notice has been given. The Commitments contained in this instrument shall be effective upon the approval of Petition No. PCMA-25-4, pursuant to the Town of Brownsburg Unified Development Ordinance and shall continue in effect until modified or terminated by the Town of Brownsburg Plan Commission.

8. The undersigned hereby authorizes the Secretary of the Town of Brownsburg Plan Commission to record this Commitment in the Office of the Recorder of Hendricks County, Indiana upon final approval of Petition No. PCMA-25-4.

IN WITNESS WHEREOF, the Owner has executed these Written Commitment Concerning the of Property this 5 day of December, 2025.

Joseph R. Daniel

Joseph R. Daniel

STATE OF INDIANA )
)SS:
COUNTY OF HENDRICKS )

Before me, a Notary Public in and for said County and State, personally appeared Joseph R. Daniel, who acknowledged execution of the foregoing as his voluntary act and deed.

Witness my hand and Notarial Seal this 5th day of December, 2025.

Tabitha S Calvain

Notary Public

Tabitha S Calvain
Notary Public Seal State of Indiana
Johnson County
Commission Number NP0700980
My Commission Expires 5/30/2033

My Commission Expires: 5/30/33
My County of Residence: Johnson

I affirm, under the penalty of perjury, that I have taken reasonable care to redact each Social Security number in this document: Melissa R. Garrard

This instrument prepared by: Melissa R. Garrard, Pulte Homes of Indiana, LLC, 11595 N. Meridian Street, Suite 700, Carmel, Indiana 46032, Tel. (317) 593-4534

Exhibit A

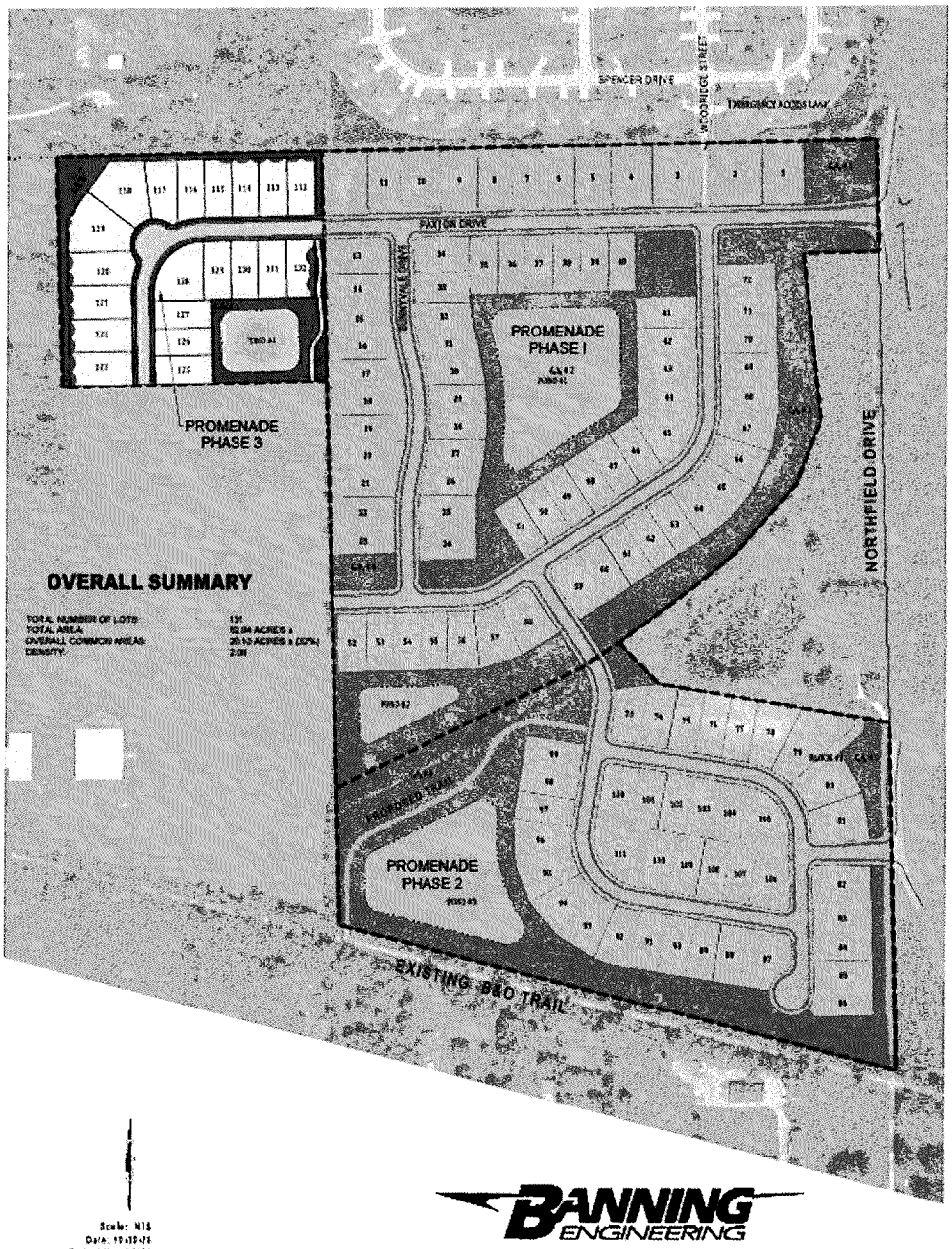
LEGAL DESCRIPTION

A PART OF THE SOUTHWEST QUARTER OF SECTION 24, TOWNSHIP 16 NORTH, RANGE 1 EAST OF THE SECOND PRINCIPAL MERIDIAN IN INDIANA. SAID PART BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHWEST CORNER OF SAID QUARTER SECTION, THENCE NORTH AND ALONG THE WEST LINE OF SAID QUARTER SECTION 2677.20 FEET; THENCE SOUTH 89 DEGREES 35 MINUTES 30 SECONDS EAST 700.00 FEET TO THE BEGINNING POINT OF THIS DESCRIPTION; THENCE CONTINUING SOUTH 89 DEGREES 35 MINUTES 30 SECONDS EAST 632.63 FEET; THENCE SOUTH 550.00 FEET; THENCE NORTH 89 DEGREES 35 MINUTES 30 SECONDS WEST 632.32 FEET; THENCE NORTH 550.00 FEET TO THE BEGINNING POINT OF THIS DESCRIPTION. CONTAINING IN ALL 7.99 ACRES. SUBJECT TO ALL LEGAL HIGHWAYS, RIGHTS-OF-WAY AND EASEMENTS OF RECORD.

Exhibit B

# PROMENADE

CONCEPTUAL PLANNED UNIT DEVELOPMENT
BROWNSBURG, INDIANA




BANNING ENGINEERING

TOWN OF Brownsburg

## AFFIDAVIT & CONSENT OF PROPERTY OWNER

That I/We Joseph Daniels after first being duly sworn, depose and say:

That I am/we are the owner(s) of Real Estate located at: (Legal and/or common address)

3495 N. CR 800 E, Brownsburg, IN

Parcel Number(s): 32-07-24-300-001.000-016 (7.99 acres)

That we have examined the application for a/an Rezone / Primary Plat / Construction Plans / on this property, and I/we are familiar with its contents. (application type)

That I/we have no objections to, and consent to such request as set forth in the application.

Joseph R Daniels
Signature of Affiant

Joseph Daniels
Printed Name

State of Indiana )

) SS:

County of Tippecanoe )

BEFORE ME, the undersigned, a Notary Public in and for said County and State, personally appeared Joseph Daniels, who acknowledged the execution of the above and foregoing instrument to its voluntary act and deed on the 19 day of August, 2025.

10-25-2031
Commission Expiration Date

Melissa L. Wilson
Notary

Warren
County of Residence

Melissa L. Wilson
Printed Name

MELISSA L WILSON
Notary Public - Seal
Warren County - State of Indiana
Commission Number NP0674625
My Commission Expires Oct 25, 2031

TOWN OF Brownsburg

## AFFIDAVIT & CONSENT OF PROPERTY OWNER

That I/We Joseph Daniels after first being duly sworn, depose and say:

That I am/we are the owner(s) of Real Estate located at: (Legal and/or common address)

3495 N. CR 800 E, Brownsburg, IN

Parcel Number(s): 32-07-24-300-001.000-016 (7.99 acres)

That we have examined the application for a/an Rezone / Primary Plat / Construction Plans / on this property, and I/we are familiar with its contents. (application type)

That I/we have no objections to, and consent to such request as set forth in the application.

Joseph R Daniels
Signature of Affiant

Joseph Daniels
Printed Name

State of Indiana )

) SS:

County of Tippecanoe )

BEFORE ME, the undersigned, a Notary Public in and for said County and State, personally appeared Joseph Daniels, who acknowledged the execution of the above and foregoing instrument to its voluntary act and deed on the 19 day of August, 2025.

10-25-2031
Commission Expiration Date

Melissa L. Wilson
Notary

Warren
County of Residence

Melissa L. Wilson
Printed Name

MELISSA L WILSON
Notary Public - Seal
Warren County - State of Indiana
Commission Number NP0674625
My Commission Expires Oct 25, 2031

# Advisory Plan Commission
# TECHNICAL REVIEW COMMITTEE

TOWN OF Brownsburg
61 North Green Street | Brownsburg, Indiana 46112
Tel 317.852.1128 | Fax 317.852.1134

Project Name: Promenade, Sec. 3 Primary Plat
Record Number: PCPP-25-5
TECH Meeting Date: December 18, 2025

The following Technical Review Committee ("TECH") members provided comments for the project as detailed below:

Development Services
- ☐ Kevin Tolloty, Senior Planner
- ☒ Lauren Bouslog, Planner I
- ☐ Steve Fletcher, Building Commissioner/Director
- ☐ Frank Wise, Senior Building Inspector

Town Administration
- ☐ Debbie Cook, Town Manager
- ☐ Aaron Kaytar, Capital Projects & Procurement Manager
- ☐ Ethan Pierce, Economic Development Manager

Water Department
- ☒ Frank Monts, Superintendent

Wastewater Department
- ☐ Kathy Dillon, Water Utilities Director
- ☐

Street Department
- ☐ Aaron Love, Superintendent
- ☐ Matt Griner, Asst. Superintendent

Parks Department
- ☐ Amber Lane, Director
- ☐

Fire Territory
- ☒ Paul Hudson, Fire Marshal
- ☐ Jeff Schlageter, Deputy Fire Marshal

Police Department
- ☐ Joe Grimes, Chief
- ☐ Pat Bullock, Captain
- ☐ Bryan Fultz, Major

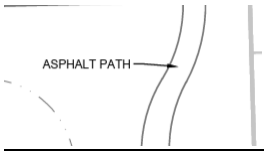
External Agencies
- ☐ Regan Huff, BCSC
- ☒ Dave Gaston, P.S., Hend. Co. Surveyor
- ☐ John Ayers, Hendricks Co. Engineer
- ☒ Mary Atkins, Wessler Engineering
- ☐ Angie DeKemper, CountryMark
- ☐ Gerry Jones, Vectren

**1) DEVELOPMENT SERVICES**

a) Paxton Drive needs to have a public or private road designation written under it and if it is a ROW, put the width (ex. 56' Public ROW)

b) Add acreage dimensions under the square feet calculations for each lot on page C102.

c) Note how wide and long this asphalt path is. I saw the sidewalks are labeled 5' wide on the street section.




d) You can combine your amenities plan and landscape plan since you are only required to have 1 amenity for 20 lots. I did not see a required vs proposed planting schedule table; that will need to be added to page L1.0. See below.

6. Additional Information for Residential Subdivision Plats: The following information shall be included with any primary plat for a residential subdivision:

   a. An amenities exhibit showing the location and type of amenities to be provided throughout the subdivision. The Amenities Plan may use a combination of text and representative images to convey the amenities that will be provided.

   b. Landscape plan and calculations showing the required landscaping and what is being proposed.

---

**2) BUILDING**

a) None

**3) CAPITAL PROJECTS**

a) None

**4) ECONOMIC DEVELOPMENT**

a) None

**5) WATER**

a) On the cover sheet, the phone number for the Water Dept. needs changed to 317-858-4147.

b) Please include all required valves and hydrants (no hydrant shown at dead-end of bump-out) on Development Plan submittal.

**6) WASTEWATER**

a) None

**7) STREET/PUBLIC WORKS**

a) None

**8) PARKS**

a) None

**9) FIRE TERRITORY**

a) Temporary fire turnaround noted.

**10) POLICE**

a) None

**11) STORMWATER**

a) See attached

**12) BROWNSBURG COMMUNITY SCHOOL CORPORATION**

a) None

13) **HENDRICKS COUNTY SURVEYOR**

a) This project will be required to receive Drainage Board approval.

14) **HENDRICKS COUNTY ENGINEER**

a) None

15) **COUNTRYMARK**

a) None

16) **VECTREN**

a) None

*Please provide a written response to this report addressing each issue and, if necessary, indicate where on the revised plans the modification has been made.*

## TOWN OF BROWNSBURG STORMWATER/DRAINAGE PLAN REVIEW

CO Comment Originator
CR Comment Respondee

**NAME OF PROJECT: Promenade Section 3**
**DESIGN PACKAGE: Primary Plat**
**DESIGNER: Banning Engineering**

| | | Wessler - Reviewer to complete | | Designer to complete | |
|---|---|---|---|---|---|
| No. | PAGE/SHEET REFERENCE | CO | COMMENT | CR | RESPONSE |
| | General | RS | The following comments are for information and planning purposes when preparing development plans. Note that Chapter 151 was updated April 25, 2024. | | |
| 1 | Storm Sewer | RS | For the future development plan submittal, refer to Ch. 151.21 D. for storm sewer design standards and drainage report requirements. | | |
| 2 | Flood routing | RS | For development plans, evaluate stormwater ponding and overflow path routing for Ch. 151.21 I. | | |
| 3 | Drainage Report | RS | Refer to Ch. 151.20.B (2)(f) for drainage report guidelines. Include runoff, storm sewer sizing calculations, etc. when preparing the drainage report. | | |
| 4 | Post-construction stormwater quality | RS | Refer to Ch. 151.23 for post-construction water quality volume and flow rate requirements. Upstream BMPs are required for ponds/underground detention. An Operation and Maintenance Manual and easements are required for BMPs. (Note: 30 minute minimum Tc for water quality flow rate calculations). | | |
| 5 | County approval | RS | Coordinate with the Hendricks County Surveyor to determine if Drainage Board approval is necessary. | | |
| 6 | Details and specifications | RS | Refer to the Town's Standard Details and Specifications when developing Construction Plans. | | |
| 7 | Stormwater detention | RS | Detention design requirements follow Chapter 151.21 and Detail EW-04 "Detention/Retention Ponds" in the Town's Standard Details and Specifications. Ordinance revised in April 2024. | | |
| 8 | Adequate outlet | RS | Ensure that there is an adequate outlet for drainage of stormwater. | | |
| 9 | Erosion control and SWPPP | MMT | If the project will disturb 1 acre or more of land then a SWPPP and Construction Stormwater General Permit will be required for the development plan submittal. Refer also to Chapter 151.22 for SWPPP requirements. | | |

**These comments should not be construed as a comprehensive list of comments, and the reviewer may make additional comments based on subsequent submittals**

BANNING ENGINEERING
Over 30 Years of Making Your Project Our Priority

December 23, 2025

Lauren Bouslog, Associate Planner
Town of Brownsburg
61 North Green St.
Brownsburg, IN 46112

RE: TECH Review Meeting – Promenade, Section 3 Primary Plat

Please find below our responses to the TECH review comments dated December 18, 2025:

**Development Services – Lauren Bouslog:**

a) Paxton Drive needs to have a public or private road designation written under it and if it is a ROW, put the width (ex. 56' Public ROW).

**Paxton Drive will be a 56' Public ROW. Notes have been added to Sheet C102 indicating the designation.**

b) Add acreage dimensions under the square feet calculations for each lot on page C102.

**Acreage dimensions have been added as requested.**

c) Note how wide and long this asphalt path is. I saw the sidewalks are labeled 5' wide on the street section.

**The asphalt path will be 6' wide and approximately 0.2 miles long. A 200 S.F. courtyard and seating area has been added at the south end of the trail to satisfy the UDO amenity requirements. Additional notes were added to the plans as well.**

d) You can combine your amenities plan and landscape plan since you are only required to have 1 amenity for 20 lots. I did not see a required vs proposed planting schedule table; that will need to be added to page L1.0. See below.

**The landscaping plan has be updated to include the amenity plans and planting schedule table.**



*Banning Engineering, Inc. • 853 Columbia Road, Suite 101 • Plainfield, IN 46168*
*Phone: (317) 707-3700 • Fax: (317) 707-3800 • E-mail: banning@BanningEngineering.com*

**Water – Frank Monts:**

a) On the cover sheet, the phone number for the Water Dept. needs changed to 317-858-4147.

**The phone number has been updated.**

b) Please include all required valves and hydrants (no hydrant shown at dead-end of bump-out) on Development Plan submittal.

**Valves and hydrants have been added to plans based off discussions with Frank Monts. Final locations to be determined with construction plan approval.**

**Fire Territory – Paul Hudson:**

a) Temporary fire turnaround noted.

**Noted.**

**Fire Territory – Paul Hudson:**

a) This project will be required to receive Drainage Board approval.

**Applications will be submitted to the Drainage Board for review.**

**Stormwater – Wessler Engineering:**

a) The following comments are for information and planning purposes when preparing development plans. Note that Chapter 151 was updated April 25, 2025.

**All Wessler comments have been received and will be taken into consideration when preparing construction plans.**

Please contact me at pmays@banning-eng.com or (317) 707-3741 if you have any questions.

Parker Mays

CC: Lance Ferrell – Banning Engineering

CC: Melissa Garrard – Pulte Homes



*Banning Engineering, Inc. • 853 Columbia Road, Suite 101 • Plainfield, IN 46168*
*Phone: (317) 707-3700 • Fax: (317) 707-3800 • E-mail: banning@BanningEngineering.com*

**"Your Project is Our Priority"**

# PRELIMINARY DRAINAGE REPORT

for

# PROMENADE, SECTION 3

In

Town of Brownsburg
Hendricks County, Indiana

Prepared for:

Pulte Group
11595 North Meridian St., Suite 700
Carmel, Indiana 46032
Phone: (847) 489-8816
Email: joseph.marx@pultegroup.com
Contact: Joe Marx

December 08, 2025

# TABLE OF CONTENTS

DRAINAGE NARRATIVE ..... 1
I. INTRODUCTION ..... 1
II. ADJOINING LAND CONDITIONS ..... 1
III. EXISTING SOIL TYPES ..... 1
IV. SITE DRAINAGE ANALYSIS ..... 1
a. STORMWATER DISCHARGE REQUIREMENTS ..... 1
b. DRAINAGE DESIGN ..... 2
i. EXISTING CONDITIONS ..... 2
ii. DEVELOPED CONDITIONS ..... 2
V. REFERENCES ..... 3

# APPENDICES

A. USGS AREA MAP ..... 4
B. SITE MAP ..... 6
C. SOILS MAP ..... 8
D. FLOOD MAP ..... 13
E. DRAINAGE DESIGN ..... 15
E1. EXISTING CONDITION BASIN MAP. ..... 16
E2. DEVELOPED CONDITION BASIN MAP. ..... 18
E3. DEVELOPED CONDITION CALCULATIONS. ..... 20
E4. DEVELOPED CONDITION Tc AND Cn VALUES ..... 24
E5. DEVELOPED CONDITION ICPR INPUT DATA. ..... 28
F. PREVIOUS DRAINAGE CALCULATIONS & SUPPORTING DOCUMENTS ..... 35

# Drainage Narrative for:
# **Promenade, Section 3**

## I. INTRODUCTION:

The Promenade, Section 3 project is an 8.0± acre proposed residential development that will serve as an additional section to existing Promenade subdivision which was finalized in the spring of 2024. The Promenade project is located about 0.3 miles east of Hornaday Road near the northwest corner of E County Rd 300N and the new extension of Northfield Dr., in the southwest quarter; Section 24; Township 16 North; Range 1 East; Town of Brownsburg; Hendricks County, Indiana. The Promenade, Section 3 project is a proposed residential development that will contain 20 single family residences. This report includes the results of a preliminary drainage analysis for the project, summarizing the existing and developed conditions of the site.

## II. ADJOINING LAND CONDITIONS:

North: Residential
South: Residential
East: Residential
West: Residential

## III. EXISTING SOIL TYPES:

| Symbol | Name | Hydrologic Soil Group |
|---|---|---|
| CrA | Crosby silt loam | C |
| ThrA | Treaty silty clay loam | B |
| YbvA | Brookston silty clay loam | B |
| YclA | Crosby silt loam | C |

## IV. SITE DRAINAGE ANALYSIS:

### a. Stormwater Discharge Requirements

Allowable Stormwater discharge is based on requirements found in the Hendricks County Stormwater Management Ordinance. Allowable discharge is based on a rate of discharge (CFS) per acre of development. The following **Table 1** are summaries of the stormwater discharge requirements.

**TABLE 1**
STORMWATER DISCHARGE REQUIREMENTS
HENDRICKS COUNTY

| | |
|---|---|
| **$Q_{10p} \leq$ 0.1 cfs / acre of development**<br>**$Q_{100p} \leq$ 0.3 cfs / acre of development** | Where:<br>**$Q_{10p}$** = Developed release rate up to and including 10-year return period storm event<br>**$Q_{100p}$** = Developed release rate for 11 to 100-year return period storm event |

## b. DRAINAGE DESIGN

### i. EXISTING CONDITIONS

The majority of the 8.0± acre site consists of wood and shrubs. The existing 8.0±acres to be developed (EX-1 & EX-2) currently drain into the Pollard Todd Legal Drain to an existing 48" culvert under a trail at the south end of the site (BNDY). Approximately 6.15± acres drain east to an existing 24" end section designed to capture the site in Promenade Sections 1A and 1B. Approximately 1.84± acres drains south along the west border of the Promenade Section 1A and 1B site directly to the Pollard Todd Legal Drain.

### ii. DEVELOPED CONDITIONS

In the developed condition, stormwater from the site will be routed to a proposed wet bottom pond to reduce the discharge rates. Approximately 8.0± acres of developed onsite area (DEV-1) drain through a proposed storm sewer system to the proposed Pond, which will outlet to Existing Storm Sewer System via an Inline structure connection just south of Existing Structure 130 from Promenade, Section 1A and 1B. Structure 130 drains south to existing "Pond 2" from Promenade Section A and 1B before out letting into the Pollard Todd Legal Drain. In addition, approximately 7.1± acres of offsite area (OFF-1) will be routed through a proposed storm sewer network into the proposed pond.

A preliminary hydrologic/hydraulic model of the developed site was completed to calculate the developed stormwater discharges and stage elevations. The discharge from the developed project site to the boundary is less than the allowable discharge. **Table 2** below provides a summary of the allowable and developed discharge rates for the project. **Table 3** below provides a summary of the developed 100-year detention pond stage elevations including offsite areas. Complete calculations can be found in the appendix.

**TABLE 2**
**MASTER DRAINAGE DESIGN DEVELOPED CONDITION**
**STORMWATER DISCHARGE (ONSITE ONLY)**

| Discharge Point | Developed Discharge (CFS) | | Allowable Discharge (CFS) | |
|---|---|---|---|---|
| BNDY | $Q_{10p}$ = 0.78 | < | 0.1 CFS / ACRE = 0.8 | OK |
| | $Q_{100p}$ = 2.35 | < | 0.3 CFS / ACRE = 2.4 | OK |

**TABLE 3**
**MASTER DRAINAGE DESIGN DEVELOPED CONDITION**
**DETENTION PONDS STAGES (WITH OFFSITE & TAILWATER)**

| Discharge Point | Normal Pool Elevation | 100-year Stage Elevation |
|---|---|---|
| POND 1 | 867.5 | 870.95 |

Storm sewers will be designed to provide capacity for a 10-year storm event. The rational method will be used to model the runoff rates, and Manning's Equation will be used to calculate the capacity of the pipes. Calculations will be provided with the final design

The wet bottom detention pond will provide a best management practice (BMP) for stormwater quality. A stormwater quality structure that treats 80% total suspended solids will be installed as a pre-treatment measure for the detention ponds. Calculations will be provided with the final design.

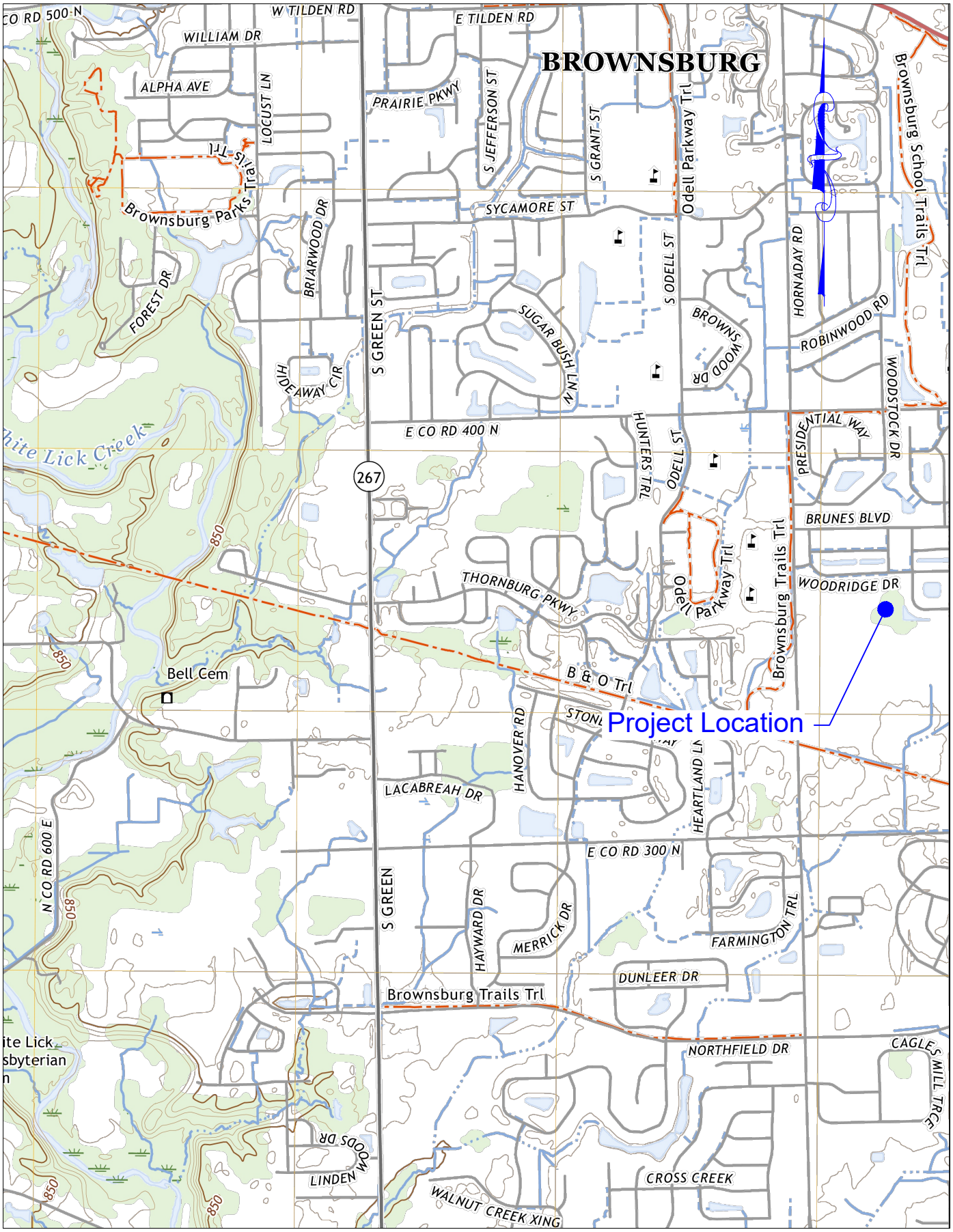
In conclusion, the calculations in this report show that drainage from the project will not cause any adverse impacts to the surrounding areas or the project site itself. We believe the project falls within the requirements of the Town of Brownsburg and Hendricks County drainage ordinances.

## References:

Design data and methods are based on the following reference materials:

1. NRCS Web Soil Survey (http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2. USGS Mapping
3. StormWise v4.08.03, Streamline Technologies, Inc.
4. Technical Report 55, Small Watershed Hydrology, NRCS
5. Hendricks County Stormwater Technical Standards Manual (December 2004 Edition)

# A. USGS AREA MAP

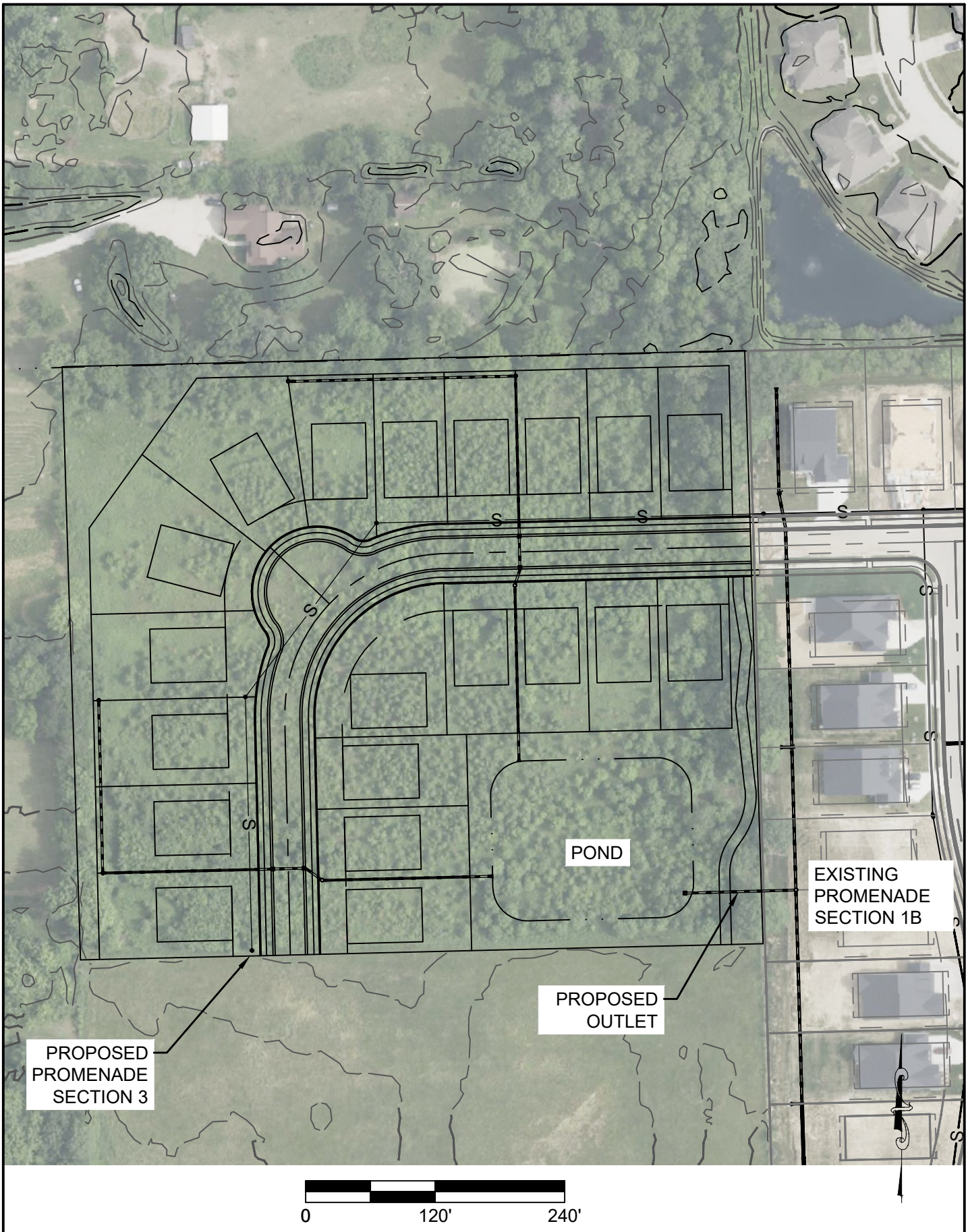



Drawn By: JET
Date: 12/02/2025
Project No.: 25155
Scale: NONE
Page: 1 of 1

# AREA MAP
# PROMENADE, SECTION 3
# HENDRICKS COUNTY
# AVON, INDIANA

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

# B. SITE MAP




Drawn By: JET
Date: 12/03/2025
Project No.: 25155
Scale: AS SHOWN
Page: 1 of 1

# SITE MAP
# PROMENADE, SECTION 3
# HENDRICKS COUNTY
# BROWNSBURG, INDIANA

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

# C. SOILS MAP


86° 22' 51" W
86° 22' 33" W
39° 49' 0" N
39° 48' 42" N
552990
553060
553130
553200
553270
553340
553410
4407610
4407540
4407470
4407400
4407330
4407260
4407190
4407120
4407050
Woodridge St
Pine Cone Dr
YclA
YbvA
ThrA
CrA
Soil Map may not be valid at this scale.
Map Scale: 1:2,750 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0 40 80 160 240
Feet
0 100 200 400 600
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

**Soil Rating Lines**
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

**Soil Rating Points**
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hendricks County, Indiana
Survey Area Data: Version 29, Sep 3, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 1, 2024—Jul 1, 2024

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Hydrologic Soil Group

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|---|---|---|---|---|
| CrA | Crosby silt loam, fine-loamy subsoil, 0 to 2 percent slopes | C/D | 1.6 | 4.9% |
| ThrA | Treaty silty clay loam, 0 to 1 percent slopes | B/D | 9.0 | 27.1% |
| YbvA | Brookston silty clay loam-Urban land complex, 0 to 2 percent slopes | B/D | 9.2 | 27.8% |
| YclA | Crosby silt loam, fine-loamy subsoil-Urban land complex, 0 to 2 percent slopes | C/D | 13.3 | 40.2% |
| **Totals for Area of Interest** | | | **33.2** | **100.0%** |

## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff: None Specified*

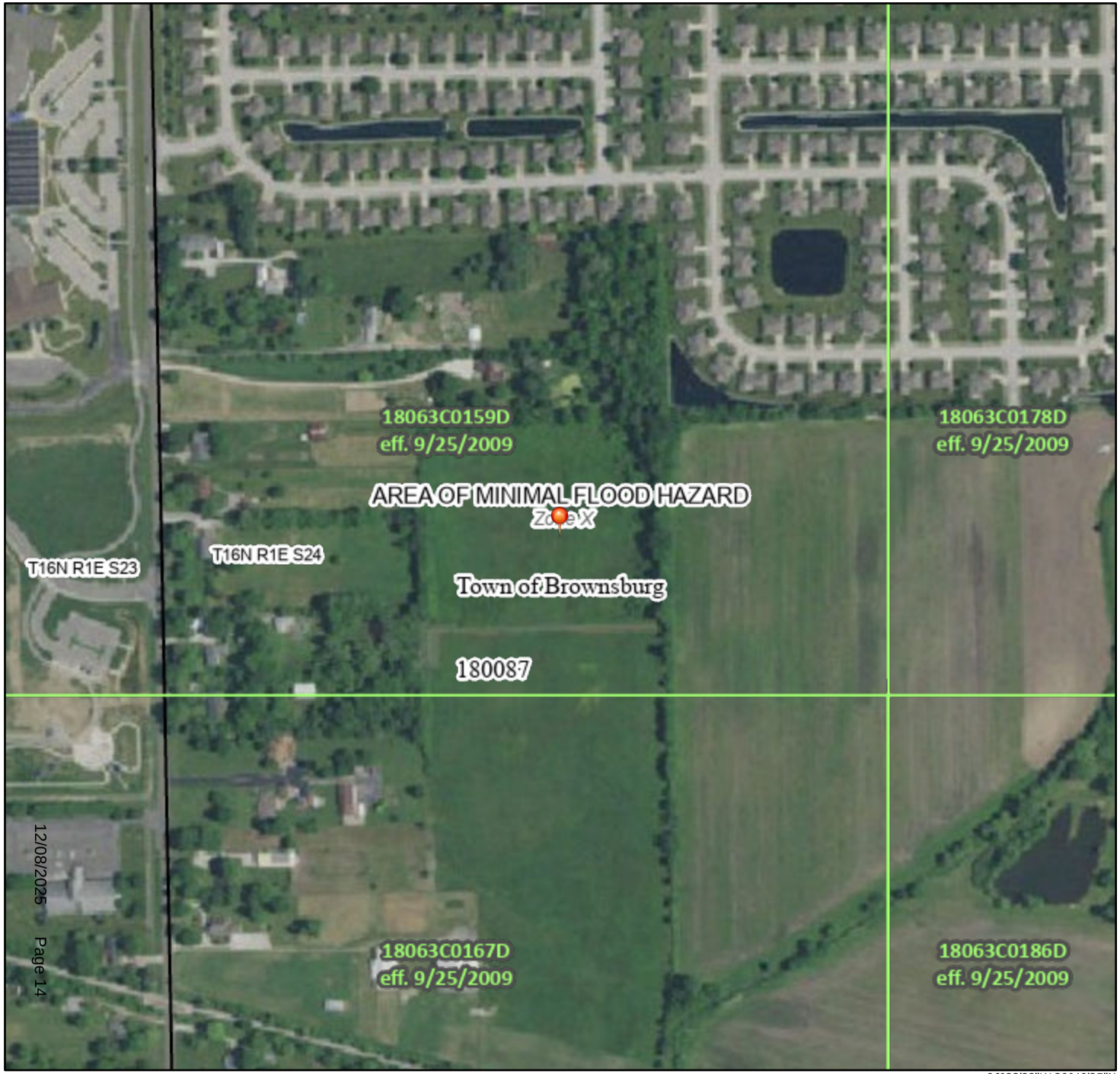
*Tie-break Rule:* Higher

# D. FLOOD MAP

# National Flood Hazard Layer FIRMette

FEMA

86°23'W 39°49'3"N




0 250 500 1,000 1,500 2,000 Feet

1:6,000

86°22'22"W 39°48'35"N

*Basemap Imagery Source: USGS National Map 2023*

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

**SPECIAL FLOOD HAZARD AREAS**
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

**OTHER AREAS OF FLOOD HAZARD**
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

**OTHER AREAS**
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

**GENERAL STRUCTURES**
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

**OTHER FEATURES**
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

**MAP PANELS**
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

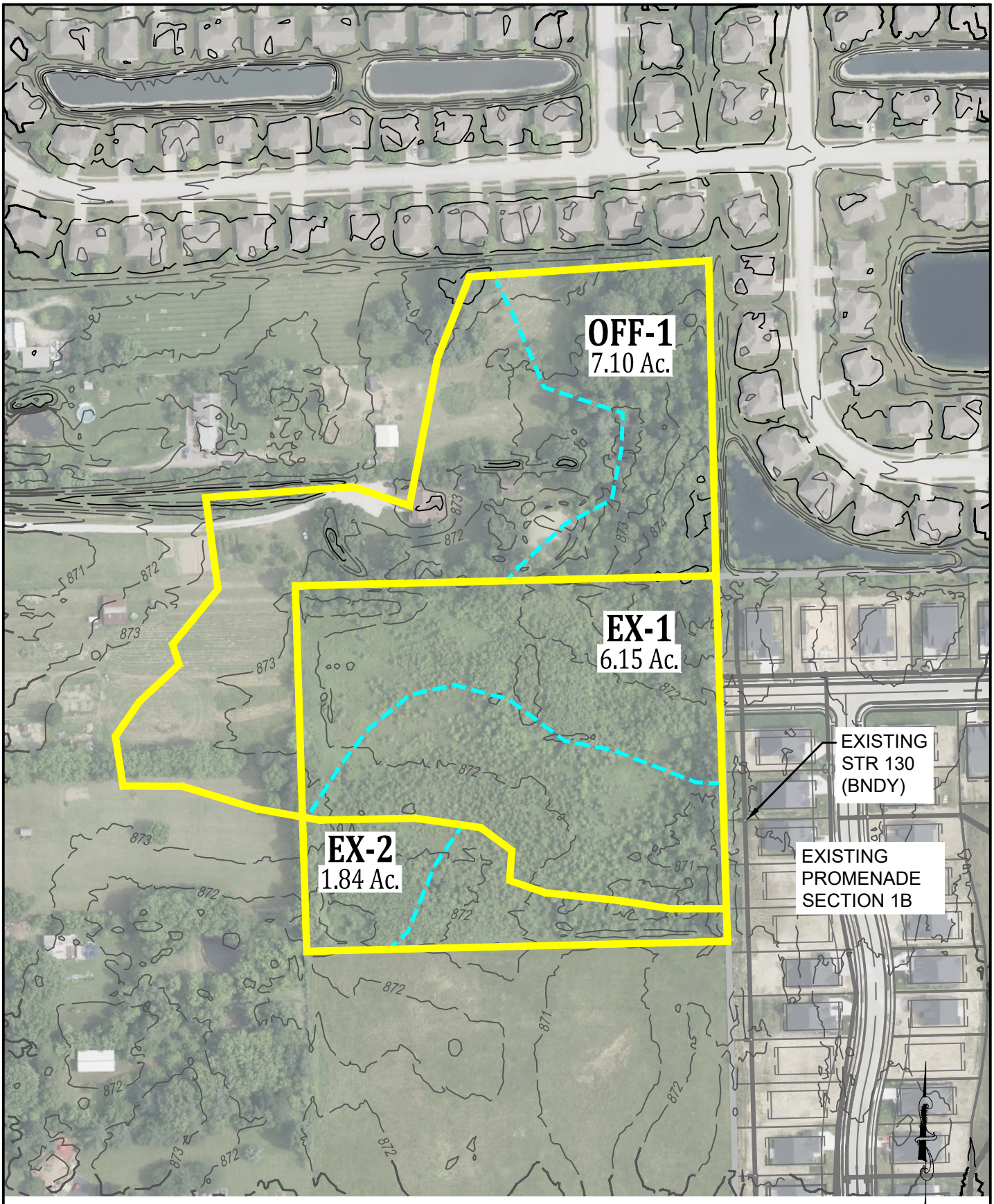
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/25/2025 at 1:16 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

# E. DRAINAGE DESIGN

# E1. EXISTING CONDITION BASIN MAP

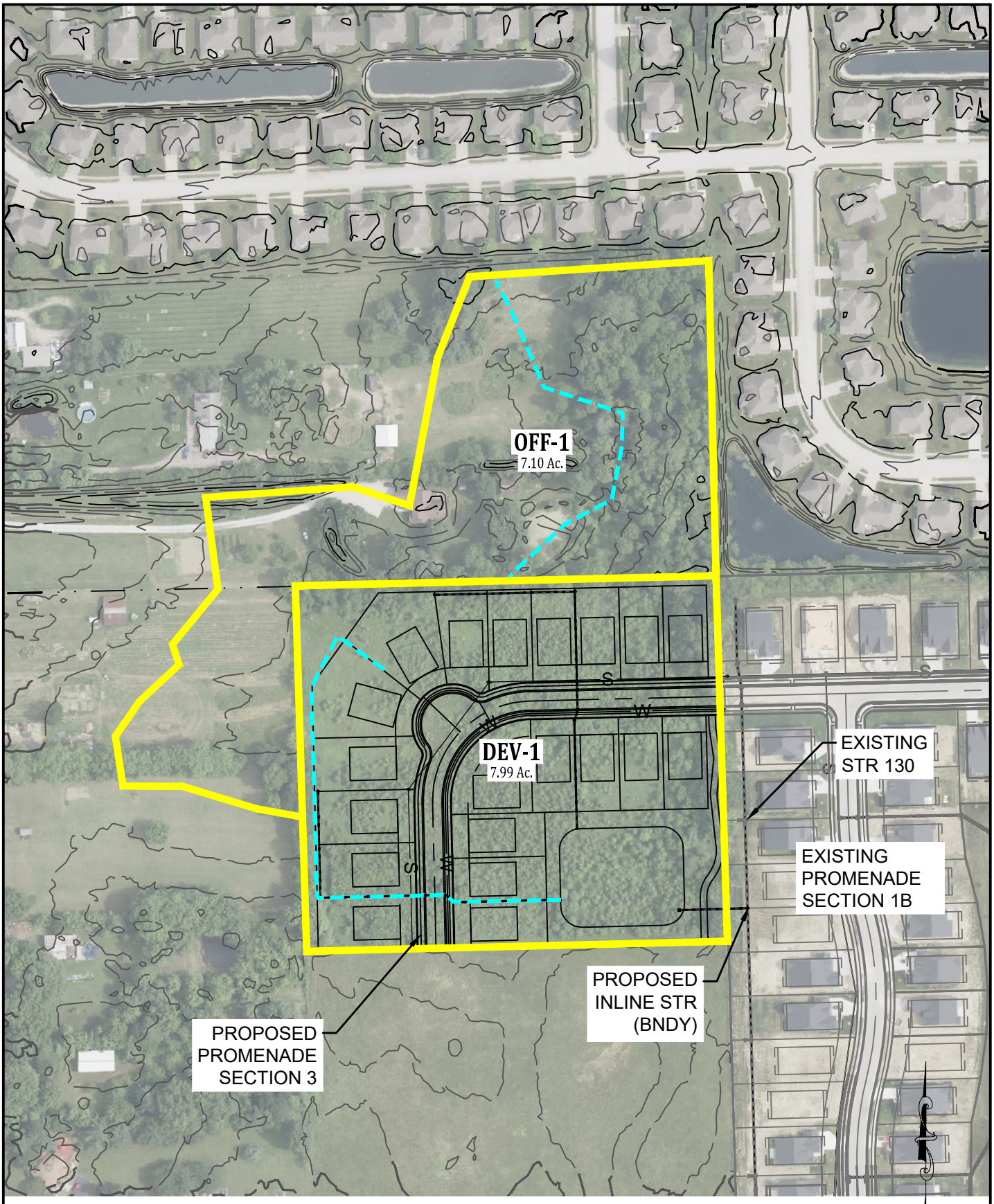



Drawn By: JET
Date: 11/26/2025
Project No.: 25155
Scale: AS SHOWN
Page: 1 of 1

# EXISTING BASIN MAP
# PROMENADE, SECTION 3
# HENDRICKS COUNTY
# BROWNSBURG, INDIANA

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

# E2. DEVELOPED CONDITION BASIN MAP



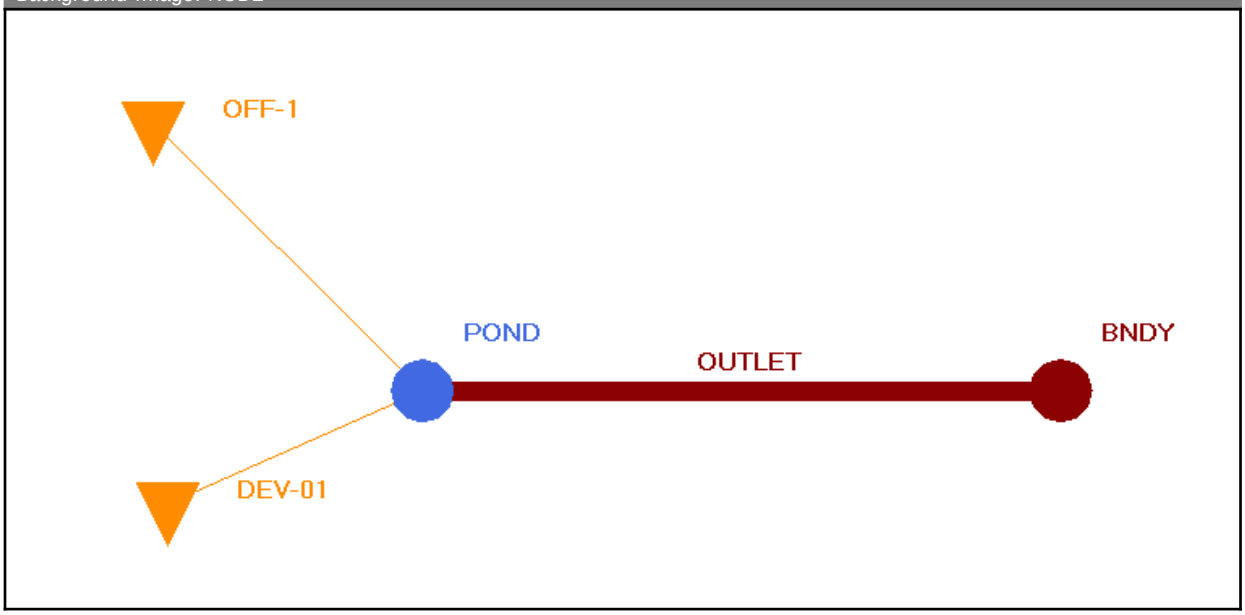

Drawn By: JET
Date: 11/26/2025
Project No.: 25155
Scale: AS SHOWN
Page: 1 of 1

# DEVELOPED BASIN MAP
# PROMENADE, SECTION 3
# HENDRICKS COUNTY
# BROWNSBURG, INDIANA

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BanningEngineering.com

# E3. DEVELOPED CONDITION CALCULATIONS

Background Image: NODE



Node Max Conditions : Multi Item | (name, sim) [Scenario1]

| Node Name | Sim Name | Warning Stage [ft] | Alert Stage [ft] | Max Stage [ft] | Min/Max Delta Stage [ft] | Max Total Inflow [cfs] | Max Total Outflow [cfs] | Max Surface Area [ft2] |
|---|---|---|---|---|---|---|---|---|
| BNDY | 010yr-24hr | 867.10 | 867.10 | 867.00 | 0.0000 | 0.78 | 0.00 | 0 |
| BNDY | 100yr-24hr | 867.10 | 867.10 | 867.00 | 0.0000 | 2.35 | 0.00 | 0 |
| POND | 010yr-24hr | 871.50 | 871.50 | 869.31 | 0.0010 | 23.54 | 0.78 | 31033 |
| POND | 100yr-24hr | 871.50 | 871.50 | 870.27 | 0.0010 | 39.49 | 2.35 | 33036 |

Node Max Conditions : Multi Item | (name, sim) [Scenario1]

| Node Name | Sim Name | Warning Stage [ft] | Alert Stage [ft] | Max Stage [ft] | Min/Max Delta Stage [ft] | Max Total Inflow [cfs] | Max Total Outflow [cfs] | Max Surface Area [ft2] |
|---|---|---|---|---|---|---|---|---|
| BNDY | 010yr-24hr | 867.10 | 867.10 | 867.00 | 0.0000 | 1.78 | 0.00 | 0 |
| BNDY | 100yr-24hr | 867.10 | 867.10 | 867.00 | 0.0000 | 9.48 | 0.00 | 0 |
| POND | 010yr-24hr | 871.50 | 871.50 | 869.86 | 0.0010 | 30.61 | 1.78 | 32156 |
| POND | 100yr-24hr | 871.50 | 871.50 | 870.95 | 0.0010 | 55.35 | 9.48 | 34521 |

# E4. DEVELOPED CONDITION Tc AND Cn VALUES

TR-55
-COMPOSITE CN-VALUES & TIME OF CONCENTRATION-

PROJECT: Promenade, Section 3
JOB #: 25155
DATE: 12/3/25
COMPUTED BY: JET

BASINS

| BASIN | Composite CN | Area ($ft^2$) | Area (acres) | Area (miles) | Tc |
|---|---|---|---|---|---|
| DEV-1 | 84.00 | 348044 | 7.99 | 0.01 | 17.3 |
| OFF-1 | 68.00 | 309276 | 7.10 | 0.01 | 26.5 |

| Basin | Cover Description | Soil Group | Area (Acres) | CN | CN * Acres |
|---|---|---|---|---|---|
| DEV-1 | Paved parking lots, roofs, driveways | C | 3 | 98 | 294 |
| DEV-1 | Good condition; grass cover > 75% | C | 3.65 | 74 | 270.1 |
| DEV-1 | Good condition; grass cover > 75% | D | 1.34 | 80 | 107.2 |
| OFF-1 | Paved parking lots, roofs, driveways | C | 0.2 | 98 | 19.6 |
| OFF-1 | Woods - grass combination GOOD | B | 1.27 | 58 | 73.66 |
| OFF-1 | Woods - grass combination GOOD | C | 2 | 72 | 144 |
| OFF-1 | Good condition; grass cover > 75% | B | 1.63 | 61 | 99.43 |
| OFF-1 | Good condition; grass cover > 75% | C | 2 | 74 | 148 |

**Time of Concentration Worksheet**
Based on TR-55

PROJECT: Promenade, Section 3
JOB #: 25155

Typical values for Manning's n

| Overland Flow | | Channel Flow | |
|---|---|---|---|
| short grass | 0.15 | grass | 0.03 |
| dense grass | 0.24 | concrete | 0.02 |
| pavement | 0.011 | rip-rap | 0.04 |
| woods light | 0.4 | | |
| cultivated > 20% | 0.17 | | |

2 year, 24 hour rainfall = 3.02 inches
minimum T_c = 5 minutes

| | **Overland flow** | | | | **Shallow Concentrated Flow (1)** | | | | | **Shallow Concentrated Flow (2)** | | | | | **Channel Flow** | | | | | | | | **T_c** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Basin name | Length (ft) | S % | n | T_t (min) | Length (ft) | S % | Paved/Un (P or U) | Vel. (ft/s) | T_t (min) | Length (ft) | S % | Paved/Un (P or U) | Vel. (ft/s) | T_t (min) | Length (ft) | a (s.f.) | Pw (ft) | r (ft) | S % | n | Vel. (ft/s) | T_t (min) | (min) |
| | | | | 0 | | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| | | | | 0 | | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| DEV-1 | 85 | 2.5 | 0.24 | 12 | 320 | 1 | U | 1.6 | 3 | | | | | 0 | 391 | | | | | | 3.00 | 2 | 17 |
| OFF-1 | 100 | 1 | 0.24 | 19 | 531 | 0.6 | U | 1.2 | 7 | | | | | 0 | | | | | | | | 0 | 26 |
| | | | | 0 | | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| | | | | 0 | | | | | 0 | | | | | 0 | | | | | | | | 0 | |

# E5. DEVELOPED CONDITION ICPR INPUT DATA

## Simple Basin: DEV-01

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | POND |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 17.3000 min |
| Max Allowable Q: | 9999.00 cfs |
| Time Shift: | 0.0000 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 7.9900 ac |
| Curve Number: | 84.0 |
| Ia/S: | 0.00 |
| % Impervious: | 0.00 |
| % DCIA: | 0.00 |
| % Direct: | 0.00 |
| Rainfall Name: | |

Comment:

## Simple Basin: OFF-1

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | POND |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 26.5000 min |
| Max Allowable Q: | 9999.00 cfs |
| Time Shift: | 0.0000 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 7.1000 ac |
| Curve Number: | 68.0 |
| Ia/S: | 0.00 |
| % Impervious: | 0.00 |
| % DCIA: | 0.00 |
| % Direct: | 0.00 |
| Rainfall Name: | |

Comment:

## Node: BNDY

| | |
|---|---|
| Scenario: | Scenario1 |
| Type: | Time/Stage |
| Base Flow: | 0.00 cfs |
| Initial Stage: | 867.00 ft |

Warning Stage: 867.10 ft
Alert Stage: 867.10 ft
Boundary Stage:

| Year | Month | Day | Hour | Stage [ft] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 867.00 |
| 0 | 0 | 0 | 30.0000 | 867.00 |

Comment:

## Node: POND

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 867.50 ft
Warning Stage: 871.50 ft
Alert Stage: 871.50 ft

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 867.50 | 0.5500 | 23958 |
| 868.50 | 0.6800 | 29621 |
| 869.50 | 0.7200 | 31363 |
| 870.50 | 0.7700 | 33541 |
| 871.50 | 0.8200 | 35719 |

Comment:

## Drop Structure Link: OUTLET

Scenario: Scenario1
From Node: POND
To Node: BNDY
Link Count: 1
Pipe Flow Direction: Both
Solution: Combine
Increments: 0
Pipe Count: 1
Damping: 0.0000 ft
Length: 100.00 ft
FHWA Code: 0
Entr Loss Coef: 1
Exit Loss Coef: 0
Bend Loss Coef: 0
Bend Location: 0.00 dec
Energy Switch: Energy

| Upstream Pipe | | Downstream Pipe | |
|---|---|---|---|
| Invert: | 867.50 ft | Invert: | 867.20 ft |
| Manning's N: | 0.0130 | Manning's N: | 0.0130 |
| Geometry: Circular | | Geometry: Circular | |
| Max Depth: | 1.25 ft | Max Depth: | 1.25 ft |
| Bottom Clip | | | |
| Default: | 0.00 ft | Default: | 0.00 ft |
| Op Table: | | Op Table: | |
| Ref Node: | | Ref Node: | |
| Manning's N: | 0.0000 | Manning's N: | 0.0000 |
| Top Clip | | | |
| Default: | 0.00 ft | Default: | 0.00 ft |
| Op Table: | | Op Table: | |
| Ref Node: | | Ref Node: | |
| Manning's N: | 0.0000 | Manning's N: | 0.0000 |

Pipe Comment:

| Weir Component | |
|---|---|
| Weir: | 1 |
| Weir Count: | 1 |
| Weir Flow Direction: | Both |
| Damping: | 0.0000 ft |
| Weir Type: | Sharp Crested Vertical |
| Geometry Type: | Circular |
| Invert: | 867.50 ft |
| Control Elevation: | 867.50 ft |
| Max Depth: | 0.42 ft |

| Bottom Clip | |
|---|---|
| Default: | 0.00 ft |
| Op Table: | |
| Ref Node: | |

| Top Clip | |
|---|---|
| Default: | 0.00 ft |
| Op Table: | |
| Ref Node: | |

| Discharge Coefficients | |
|---|---|
| Weir Default: | 3.200 |
| Weir Table: | |
| Orifice Default: | 0.600 |
| Orifice Table: | |

Weir Comment:

| Weir Component | |
|---|---|
| Weir: | 2 |
| Weir Count: | 1 |
| Weir Flow Direction: | Both |
| Damping: | 0.0000 ft |
| Weir Type: | Sharp Crested Vertical |
| Geometry Type: | Rectangular |
| Invert: | 869.30 ft |
| Control Elevation: | 869.30 ft |
| Max Depth: | 0.50 ft |
| Max Width: | 0.70 ft |
| Fillet: | 0.00 ft |

| Bottom Clip | |
|---|---|
| Default: | 0.00 ft |
| Op Table: | |
| Ref Node: | |

| Top Clip | |
|---|---|
| Default: | 0.00 ft |
| Op Table: | |
| Ref Node: | |

| Discharge Coefficients | |
|---|---|
| Weir Default: | 3.200 |
| Weir Table: | |
| Orifice Default: | 0.600 |
| Orifice Table: | |

Weir Comment:

| Weir Component | |
|---|---|
| Weir: | 3 |
| Weir Count: | 1 |
| Weir Flow Direction: | Both |
| Damping: | 0.0000 ft |
| Weir Type: | Horizontal |
| Geometry Type: | Rectangular |
| Invert: | 870.27 ft |
| Control Elevation: | 870.27 ft |
| Max Depth: | 3.00 ft |
| Max Width: | 3.00 ft |
| Fillet: | 0.00 ft |

| Bottom Clip | |
|---|---|
| Default: | 0.00 ft |
| Op Table: | |
| Ref Node: | |

| Top Clip | |
|---|---|
| Default: | 0.00 ft |
| Op Table: | |
| Ref Node: | |

| Discharge Coefficients | |
|---|---|
| Weir Default: | 3.200 |
| Weir Table: | |
| Orifice Default: | 0.600 |
| Orifice Table: | |

Weir Comment:

Drop Structure Comment:

## Simulation: 010yr-24hr

Scenario: Scenario1
Run Date/Time: 11/26/2025 3:25:10 PM
Program Version: StormWise 4.08.03

## General

Run Mode: Normal

| | Year | Month | Day | Hour [hr] |
|---|---|---|---|---|
| Start Time: | 0 | 0 | 0 | 0.0000 |
| End Time: | 0 | 0 | 0 | 24.0000 |

| | Hydrology [sec] | Surface Hydraulics [sec] |
|---|---|---|
| Min Calculation Time: | 60.0000 | 0.1000 |
| Max Calculation Time: | | 30.0000 |

## Output Time Increments

### Hydrology

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 15.0000 |

### Surface Hydraulics

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 15.0000 |

### Restart File

Save Restart: False

## Resources & Lookup Tables

### Resources

Rainfall Folder:
Unit Hydrograph Folder:

### Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

## Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft

IA Recovery Time: 24.0000 hr
Ia/S: 0.20 dec

| | | | |
|---|---|---|---|
| Max dZ: | 1.0000 ft | Smp/Man Basin Rain Opt: | Global |
| Link Optimizer Tol: | 0.0001 ft | | |
| | | Rainfall Name: | ~SCSII-24 |
| | | Rainfall Amount: | 4.28 in |
| | | Storm Duration: | 24.0000 hr |
| | | Dflt Damping (1D): | 0.0050 ft |
| | | Min Node Srf Area (1D): | 100 ft2 |
| | | Energy Switch (1D): | Energy |

Comment:

## Simulation: 100yr-24hr

Scenario: Scenario1
Run Date/Time: 11/26/2025 3:25:15 PM
Program Version: StormWise 4.08.03

### General

Run Mode: Normal

| | Year | Month | Day | Hour [hr] |
|---|---|---|---|---|
| Start Time: | 0 | 0 | 0 | 0.0000 |
| End Time: | 0 | 0 | 0 | 30.0000 |

| | Hydrology [sec] | Surface Hydraulics [sec] |
|---|---|---|
| Min Calculation Time: | 60.0000 | 0.1000 |
| Max Calculation Time: | | 30.0000 |

### Output Time Increments

#### Hydrology

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 15.0000 |

#### Surface Hydraulics

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0000 | 15.0000 |

#### Restart File

Save Restart: False

### Resources & Lookup Tables

| Resources | | Lookup Tables | |
|---|---|---|---|
| Rainfall Folder: | | Boundary Stage Set: | |
| | | Extern Hydrograph Set: | |
| Unit Hydrograph Folder: | | Curve Number Set: | |
| | | Green-Ampt Set: | |
| | | Vertical Layers Set: | |
| | | Impervious Set: | |

| Tolerances & Options | | | |
|---|---|---|---|
| Time Marching: | SAOR | IA Recovery Time: | 24.0000 hr |
| Max Iterations: | 6 | | |
| Over-Relax Weight Fact: | 0.5 dec | Ia/S: | 0.20 dec |
| dZ Tolerance: | 0.0010 ft | | |
| Max dZ: | 1.0000 ft | Smp/Man Basin Rain Opt: | Global |
| Link Optimizer Tol: | 0.0001 ft | | |
| | | Rainfall Name: | ~SCSII-24 |
| | | Rainfall Amount: | 6.30 in |
| | | Storm Duration: | 24.0000 hr |
| | | Dflt Damping (1D): | 0.0050 ft |
| | | Min Node Srf Area (1D): | 100 ft2 |
| | | Energy Switch (1D): | Energy |

Comment:

# F. PREVIOUS DRAINAGE CALCULATIONS & SUPPORTING DOCUMENTS

**"Your Project is Our Priority"**

# DRAINAGE REPORT

for

# PROMENADE, SECTIONS 1A & 1B

In

Town of Brownsburg
Hendricks County, Indiana

Prepared for:

Pulte Group – Indianapolis Division
11590 North Meridian St., Suite 530
Carmel, Indiana 46032
Phone: (317) 814-2251
Email: David.compton@pultegroup.com
Contact: David Compton

Revision 2: March 24, 2022
Revision 1: February 23, 2022
Original Submittal: January 10, 2022
(Submittal to Town of Brownsburg)

*Banning Engineering, P.C. • 853 Columbia Road, Suite 101 • Plainfield, IN 46168*
*Phone: (317) 707-3700 • Fax: (317) 707-3800 • E-mail: banning@BanningEngineering.com*
*Job #21113-S1*

# TABLE OF CONTENTS

DRAINAGE NARRATIVE ..... 1
I. INTRODUCTION ..... 1
II. ADJOINING LAND CONDITIONS ..... 1
III. EXISTING SOIL TYPES ..... 1
IV. SITE DRAINAGE ANALYSIS ..... 1
a. STORMWATER DISCHARGE REQUIREMENTS ..... 1
b. MASTER DRAINAGE DESIGN ..... 2
i. EXISTING CONDITIONS ..... 2
ii. DEVELOPED CONDITIONS ..... 2
c. SECTIONS 1A &1B DRAINAGE DESIGN ..... 3
V. REFERENCES ..... 4

# APPENDICES

A. USGS AREA MAP ..... 5
B. SOILS MAP ..... 7
C. FLOOD MAP ..... 12
D. MASTER DRAINAGE DESIGN ..... 14
D1. EXISTING CONDITION BASIN MAP. ..... 15
D2. EXISTING CONDITION CALCULATIONS. ..... 17
D3. EXISTING CONDITION Tc AND Cn VALUES. ..... 20
D4. EXISTING CONDITION ICPR INPUT DATA. ..... 24
D5. DEVELOPED CONDITION BASIN MAP. ..... 45
D6. DEVELOPED CONDITION CALCULATIONS. ..... 48
D7. DEVELOPED CONDITION Tc AND Cn VALUES. ..... 53
D8. DEVELOPED CONDITION ICPR INPUT DATA. ..... 57
E. SECTIONS 1A & 1B DRAINAGE DESIGN ..... 88
E1. DEVELOPED CONDITION BASIN MAP. ..... 89
E2. DEVELOPED CONDITION CALCULATIONS. ..... 92
E3. DEVELOPED CONDITION Tc AND Cn VALUES ..... 97
E4. DEVELOPED CONDITION ICPR INPUT DATA. ..... 101
E5. EMERGENCY OVERFLOW CALCULATIONS. ..... 131
E6. STORM SEWER CALCULATIONS. ..... 197
E7. STORMWATER QUALITY CALCULATIONS. ..... 215
F. PREVIOUS DRAINAGE CALCULATIONS & SUPPORTING DOCUMENTS ..... 228

# Drainage Narrative for:
# Promenade, Sections 1A & 1B

## I. INTRODUCTION:

This drainage report was prepared for a 54.2± acre residential subdivisions known as Promenade, located about 0.3 miles east of Hornaday Road near the northwest corner of E County Rd 300N and the new extension of Northfield Dr., in the southwest quarter; Section 24; Township 16 North; Range 1 East; Town of Brownsburg; Hendricks County, Indiana. The Promenade project is a proposed residential development that will contain 124 single family residences. The project will be developed in sections, with Sections 1A & 1B developed first. Sections 1A & 1B consists of 34.3± acres of development resulting in 72 lots of single-family dwellings. This report includes the result of a master drainage design for the entire development and the result of Sections 1A & 1B alone.

## II. ADJOINING LAND CONDITIONS:

North: Residential
South: Residential
East: Agricultural
West: Residential

## III. EXISTING SOIL TYPES:

| Symbol | Name | Hydrologic Soil Group |
|---|---|---|
| CrA | Crosby silt loam | C |
| ThrA | Treaty silty clay loam | B |
| YclA | Brookston silty clay loam | B |
| YbvA | Crosby silt loam | C |

## IV. SITE DRAINAGE ANALYSIS:

### a. Stormwater Discharge Requirements

Allowable Stormwater discharge is based on requirements found in the Hendricks County Stormwater Management Ordinance. Allowable discharge is based on a rate of discharge (CFS) per acre of development. The project is located within a watershed area that has a more restrictive release rate. The following **Table 1** are summaries of the stormwater discharge requirements.

**TABLE 1**
STORMWATER DISCHARGE REQUIREMENTS
HENDRICKS COUNTY

| | |
|---|---|
| **$Q_{10p}$ ≤ 0.025 cfs / acre of development**<br>**$Q_{100p}$ ≤ 0.073 cfs / acre of development** | Where:<br>**$Q_{10p}$** = Developed release rate up to and including 10-year return period storm event<br>**$Q_{100p}$** = Developed release rate for 11 to 100-year return period storm event |

## b. MASTER DRAINAGE DESIGN

### i. EXISTING CONDITIONS

The majority of the 54.2± acre site consists of farm field (row crops), with the Pollard Todd Legal Drain running from the northeast to southwest corner of the site. The existing 50.6± acres to be developed (EX-1 & EX-2) currently drain directly into the Pollard Todd Legal Drain to an existing 48" culvert under a trail at the south end of the site (BNDY). Several offsite/undeveloped areas also drain through the Pollard Todd legal drain. OFF-1 is a 13.3± acre area directly west of the site that drains east to the west property line, then south into the legal drain. OFF-2 is an 8.5± acre area located east of the site that drains west into the legal drain. OFF-3 is a 26.0± acre area located west of the site that drains southeast into the legal drain. UNDEV is a 0.7± acre area at the northeast corner of the site that drains into the legal drain. BEACON PND A is a 71.6± acre area that drains to Pond A in Beacon Point subdivision. Pond A routes to Pond B in Beacon Point, which receives 27.0± acres and outlets to the Pollard Todd Legal Drain. Calculations and supporting data from the previous Beacon Pointe drainage report and Northfield Drive drainage report can be found under Appendix F. About 39.3± acres in Holiday Pine subdivision (HOL PINE PND N1, HOL PINE PND N2, HOL PINE PND N3 & HOL PINE PND N4) are all interconnected and discharge into the Pollard Todd Legal Drain. Calculations and supporting data from the previous Holiday Pines drainage report can be found under Appendix F. A hydrologic/hydraulic model of the existing conditions for the entire watershed to BNDY was completed using Streamline Technologies Interconnected Channel and Pond Routing software (ICPR-4). Results can be found under Appendix D.

### ii. DEVELOPED CONDITIONS

In the developed condition, there are three ponds that will receive runoff from the development, providing stormwater detention (POND-1, POND-2, POND-3). Approximately 20.4± acres of developed onsite area (DEV-1) drains to POND-1, which outlets to POND-2. About 6.7± acres of developed onsite area (108, 110, 111 & 112) drains to the storm system that interconnects Pond-1 & Pond-2. About 5.6± acres of developed onsite area (DEV-2) and 13.3± acres of existing offsite area (OFF-1) drains to POND-2, which outlets into the Pollard Todd Legal Drain. About 0.7± acres of undeveloped area (UNDEV), located at the northeast corner of the site, drains directly to the legal drain. About 19.4± acres of developed onsite area (DEV-3) drains to POND-3, which outlets into the Pollard Todd Drain. The Pollard Todd Legal Drain and tributary watershed was included in the developed hydrologic/hydraulic model for analyzing the tailwater condition at the pond outlets. Results are provided in the appendix showing discharge from the site with onsite conditions only, and with offsite conditions that include tailwater conditions in the Pollard Todd Drain. There are two locations where a new roadway will cross the Pollard Todd Legal Drain. Box culverts will be installed at the crossings to ensure continuous flow through the legal drain. Design of the culverts are included in the hydrologic/hydraulic model. The allowable discharge rate at BNDY is based on the 50.6± acres that are being developed. The following **TABLE 2** shows the allowable and developed discharge rates. **TABLE 3** shows the developed 100-year detention pond stage elevations with offsite areas and tailwater from the Pollard Todd Legal Drain included.

| TABLE 2<br>MASTER DRAINAGE DESIGN DEVELOPED CONDITION<br>STORMWATER DISCHARGE (ONSITE ONLY) | | | | |
|---|---|---|---|---|
| **Discharge Point** | **Developed Discharge (CFS)** | | **Allowable Discharge (CFS)** | |
| **BNDY** | **$Q_{10p}$ = 1.2** | **<** | **0.025 CFS / ACRE = 1.3** | **OK** |
| | **$Q_{100p}$ = 2.6** | **<** | **0.073 CFS / ACRE = 3.7** | **OK** |

| TABLE 3<br>MASTER DRAINAGE DESIGN DEVELOPED CONDITION<br>DETENTION PONDS STAGES (WITH OFFSITE & TAILWATER) | | |
|---|---|---|
| **Discharge Point** | **Normal Pool Elevation** | **100-year Stage Elevation** |
| **POND 1** | **867** | **869.8** |
| **POND 2** | **865.5** | **870.2** |
| **POND 3** | **866** | **870.4** |

## c. SECTIONS 1A & 1B DRAINAGE DESIGN

Approximately 31.1± acres will be developed for Promenade, Sections 1A & 1B. Two ponds will be developed (POND-1, POND-2) to provide stormwater detention. Approximately 20.4± acres of developed onsite area (DEV-1) drains to POND-1, which outlets to POND-2. About 6.7± acres of developed onsite area (108, 110, 111 & 112) drains to the storm system that interconnects Pond-1 & Pond-2. About 5.6± acres of developed onsite area (DEV-2) and 13.3± acres of existing offsite area (OFF-1) drains to POND-2, which outlets into the Pollard Todd Legal Drain. About 0.7± acres of undeveloped area (UNDEV), located at the northeast corner of the site, drains directly to the legal drain. As with the Master Drainage Design, the Pollard Todd Legal Drain and tributary watershed was included in the developed Sections 1A & 1B hydrologic/hydraulic model for analyzing the tailwater condition at the pond outlet. Results are provided in the appendix showing discharge from the site with onsite conditions only, and with offsite conditions that include tailwater conditions in the Pollard Todd Drain. There is one location where a new roadway will cross the Pollard Todd Legal Drain in Sections 1A & 1B. A 6'x5' Box culvert (with on-foot sump below the flowline) will be installed at the crossings to ensure continuous flow through the legal drain. Design of the culvert is included in the hydrologic/hydraulic model. The allowable discharge rate at BNDY is based on the 31.1± acres that are being developed. The following **TABLE 4** on the following page shows the allowable and developed discharge rates. **TABLE 5** shows the developed 100-year detention pond stage elevations with offsite areas and tailwater from the Pollard Todd Legal Drain included.

| TABLE 4<br>SECTIONS 1A & 1B DEVELOPED CONDITION<br>STORMWATER DISCHARGE (ONSITE ONLY) | | | | |
|---|---|---|---|---|
| **Discharge Point** | **Developed Discharge (CFS)** | | **Allowable Discharge (CFS)** | |
| **BNDY** | **$Q_{10p}$ = 0.6** | **<** | **0.025 CFS / ACRE = 0.8** | **OK** |
| | **$Q_{100p}$ = 1.8** | **<** | **0.073 CFS / ACRE = 2.3** | **OK** |

| TABLE 5<br>SECTIONS 1A & 1B DEVELOPED CONDITION<br>DETENTION PONDS STAGES (WITH OFFSITE & TAILWATER) | | |
|---|---|---|
| **Discharge Point** | **Normal Pool Elevation** | **100-year Stage Elevation** |
| **POND 1** | **867** | **869.8** |
| **POND 2** | **865.5** | **870.3** |

Storm sewers were designed to provide capacity for a 10-year storm event. The rational method was used to model the runoff rates, and Manning's Equation was used to calculate the capacity of the pipes. Calculations can be found in the appendix. The proposed 6'x5' box culvert for the crossing of the Pollard Todd Legal Drain was designed with capacity to convey the emergency flood routing from the upstream watershed during a 100-yr storm event. About 98.6± acres (BEACON PND A & BEACON PND B) flood routes from Pond B in Beacon Point heading to the south along the east side of Northfield Rd. About 39.3± acres in Holiday Pine subdivision (HOL PINE PND N1, HOL PINE PND N2, HOL PINE PND N3 & HOL PINE PND N4) flood routes from Pond N1 and into the Pollard Todd Legal Drain just north of the proposed culvert. A hydrologic/hydraulic model was developed to analyze this scenario. In this model, all the links upstream of the proposed culvert are designed as broad crested weirs to simulate overland flow. The 24-inch outlet from Pond B in Beacon Pointe to the proposed culvert remains active to model the discharge from the headwater generated by the flood routing along the east side of Northfield Rd. Calculations can be found in the appendix.

The wet bottom detention pond will provide a best management practice (BMP) for stormwater quality. A stormwater quality structure that treats 80% total suspended solids will be installed as a pre-treatment measure for the detention ponds.

In conclusion, the calculations in this report show that drainage from the project will not cause any adverse impacts to the surrounding areas or the project site itself. We believe the project falls within the requirements of the Town of Brownsburg and Hendricks County drainage ordinances.

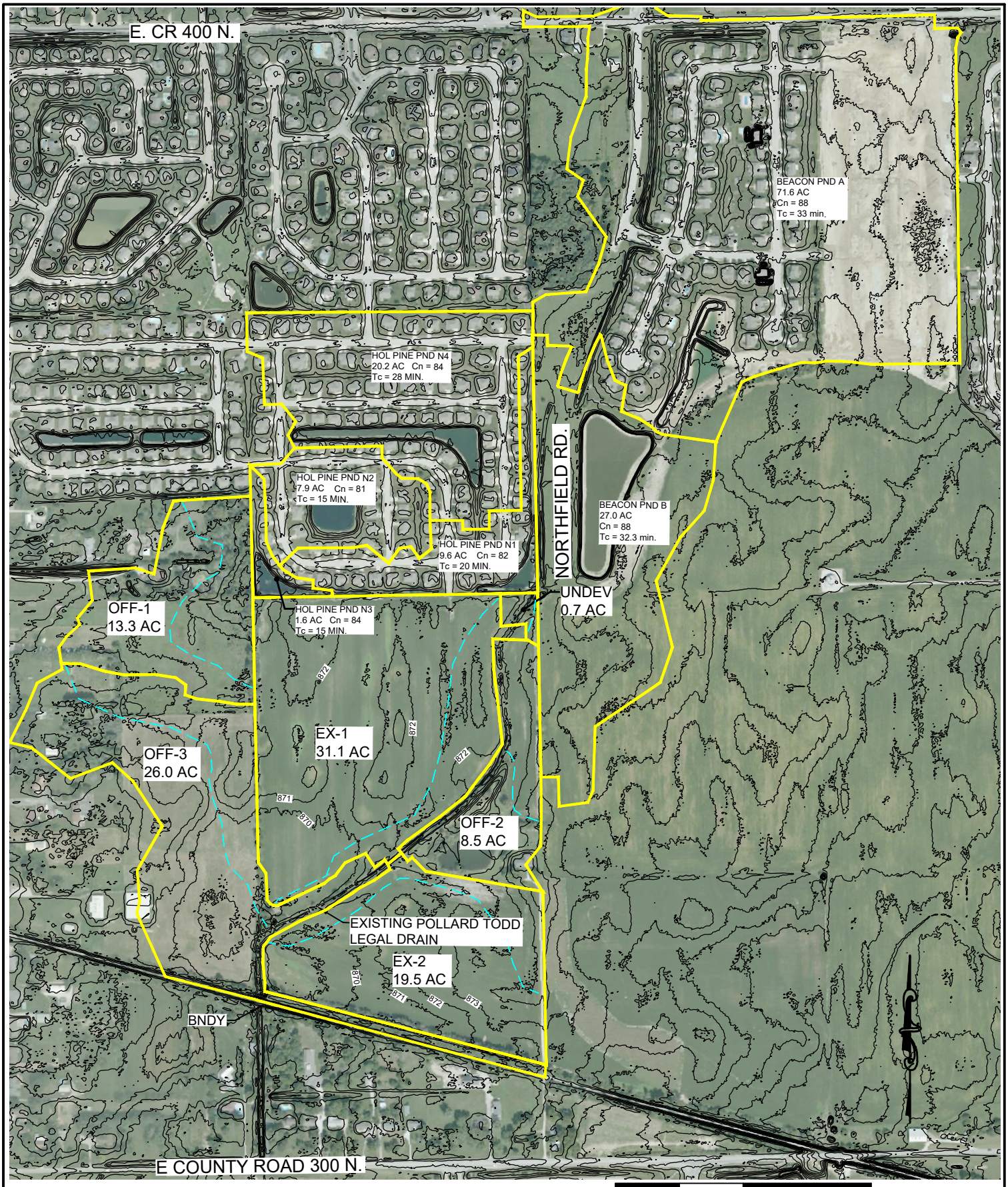
## References:

Design data and methods are based on the following reference materials:

1. NRCS Web Soil Survey (http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
2. USGS Mapping
3. ICPR v4.05.01, Streamline Technologies, Inc.
4. Technical Report 55, Small Watershed Hydrology, NRCS
5. Hendricks County Stormwater Technical Standards Manual (December 2004 Edition)

# D. MASTER DRAINAGE DESIGN

# D1. EXISTING CONDITION BASIN MAP

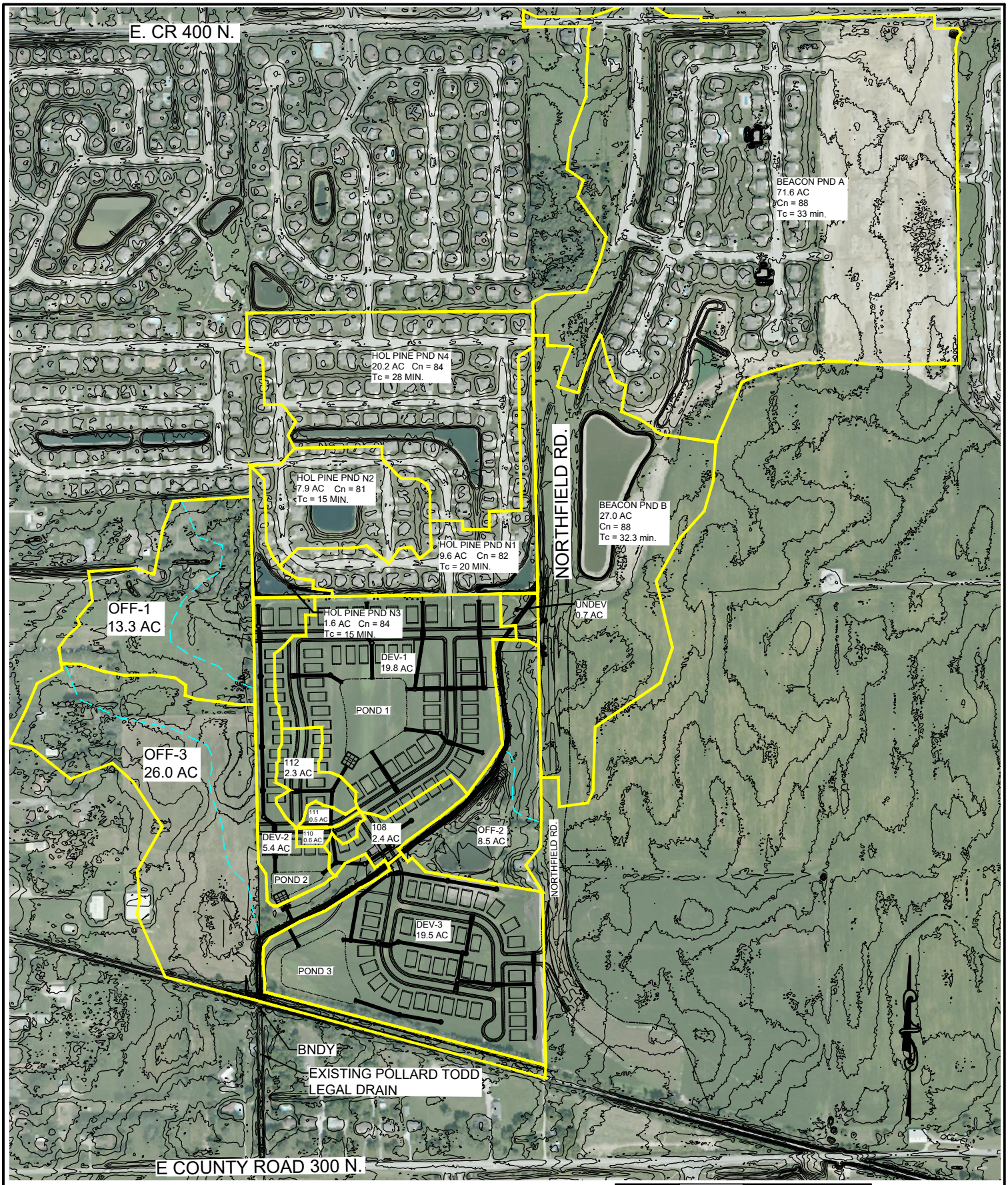



Drawn By: JET
Date: 12/31/2021
Project No.: 21113
Scale: AS SHOWN
Page: 1 of 1

# EXISTING CONDITIONS
# MASTER DRAINAGE DESIGN
# PROMENADE
# HENDRICKS COUNTY
# BROWNSBURG, INDIANA

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BannningEngineering.com

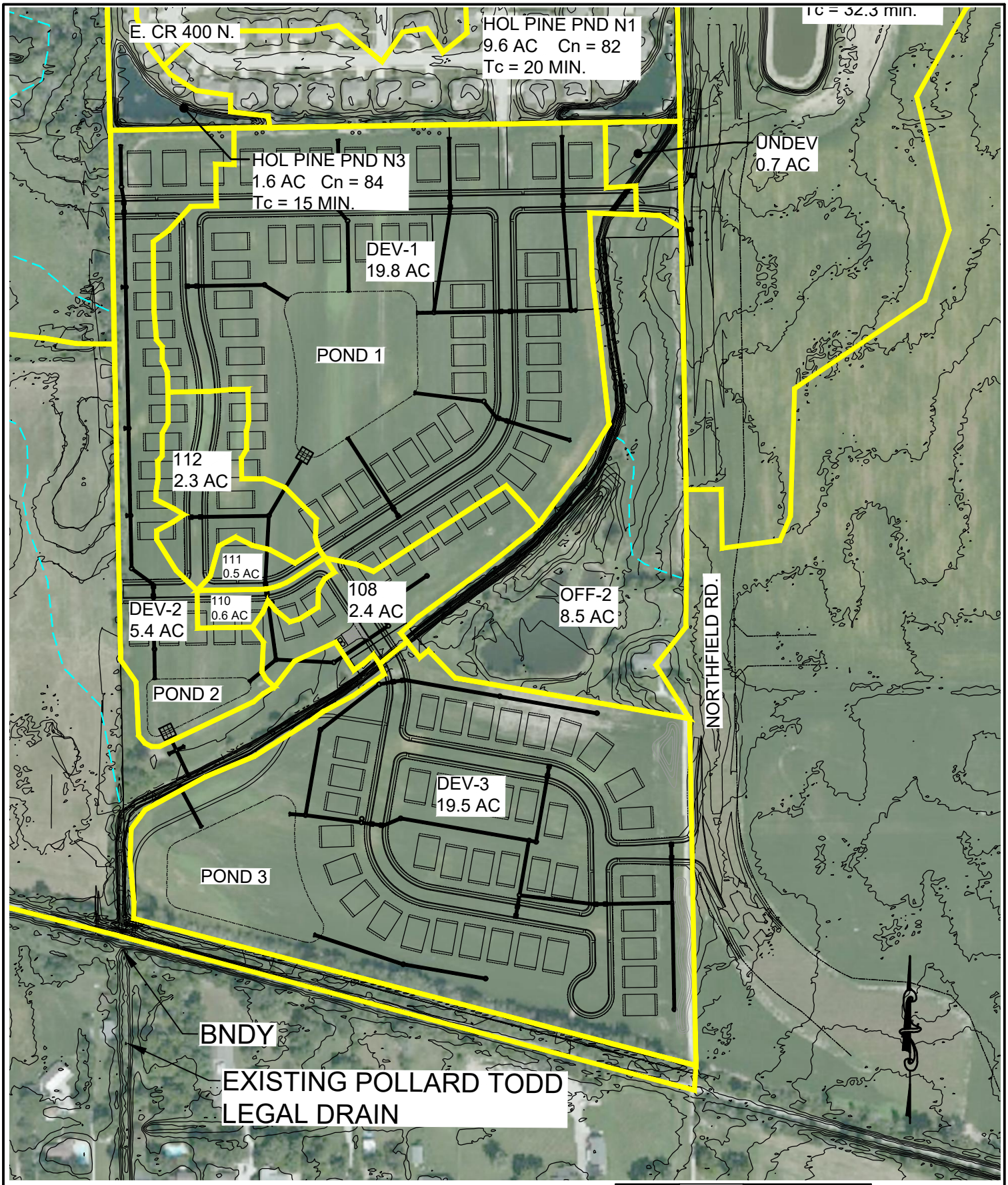
# D5. DEVELOPED CONDITION BASIN MAP




Drawn By: JET
Date: 11/30/2021
Project No.: 21113
Scale: AS SHOWN
Page: 1 of 1

# DEVELOPED OVERALL BASINS
# MASTER DRAINAGE DESIGN
# PROMENADE
# HENDRICKS COUNTY
# BROWNSBURG, INDIANA

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BannningEngineering.com




Drawn By: JET
Date: 11/30/2021
Project No.: 21113
Scale: AS SHOWN
Page: 1 of 1

DEVELOPED SITE BASINS
MASTER DRAINAGE DESIGN
PROMENADE
HENDRICKS COUNTY
BROWNSBURG, INDIANA

BANNING ENGINEERING
853 COLUMBIA ROAD, SUITE #101
PLAINFIELD, IN 46168
BUS: (317) 707-3700, FAX: (317) 707-3800
E-MAIL: Banning@BanningEngineering.com
WEB: www.BannningEngineering.com

# D6. DEVELOPED CONDITION CALCULATIONS

Node Max Conditions [Scenario1]

| Node Name | Sim Name | Warning Stage [ft] | Max Stage [ft] | Min/Max Delta Stage [ft] | Max Total Inflow [cfs] | Max Total Outflow [cfs] | Max Surface Area [ft2] |
|---|---|---|---|---|---|---|---|
| 0+06.69 | 10 -yr 24-hour | 867.00 | 864.49 | 0.00 | 1.23 | 1.23 | 234.9 |
| 0+06.69 | 100-yr 24-hour | 867.00 | 864.65 | 0.00 | 2.55 | 2.56 | 298.4 |
| 0+94.92 | 10 -yr 24-hour | 871.00 | 864.94 | 0.00 | 1.23 | 1.23 | 1475.4 |
| 0+94.92 | 100-yr 24-hour | 871.00 | 865.12 | 0.00 | 2.55 | 2.55 | 1944.3 |
| 10+49.75 | 10 -yr 24-hour | 871.00 | 865.40 | 0.00 | 0.00 | 0.00 | 454.4 |
| 10+49.75 | 100-yr 24-hour | 871.00 | 865.55 | 0.00 | 0.02 | 0.01 | 508.1 |
| 108 | 10 -yr 24-hour | 868.50 | 868.17 | 0.00 | 18.67 | 18.67 | 214.8 |
| 108 | 100-yr 24-hour | 868.50 | 869.15 | 0.00 | 27.30 | 27.40 | 214.8 |
| 109 | 10 -yr 24-hour | 870.60 | 868.59 | 0.00 | 11.00 | 11.25 | 151.9 |
| 109 | 100-yr 24-hour | 870.60 | 869.85 | 0.00 | 14.46 | 14.56 | 151.9 |
| 110 | 10 -yr 24-hour | 870.20 | 868.72 | 0.00 | 10.96 | 11.00 | 100.0 |
| 110 | 100-yr 24-hour | 870.20 | 870.09 | 0.00 | 14.44 | 14.46 | 100.0 |
| 111 | 10 -yr 24-hour | 870.20 | 868.83 | 0.00 | 8.68 | 8.73 | 186.8 |
| 111 | 100-yr 24-hour | 870.20 | 870.26 | 0.00 | 11.37 | 10.99 | 186.8 |
| 112 | 10 -yr 24-hour | 870.30 | 869.02 | 0.00 | 7.50 | 7.51 | 155.0 |
| 112 | 100-yr 24-hour | 870.30 | 870.50 | 0.00 | 12.15 | 12.19 | 155.0 |
| 15+76.08 | 10 -yr 24-hour | 871.00 | 866.06 | 0.00 | 0.00 | 0.00 | 318.1 |
| 15+76.08 | 100-yr 24-hour | 871.00 | 866.07 | 0.00 | 0.00 | 0.00 | 395.8 |
| 19+73.33 | 10 -yr 24-hour | 871.00 | 866.36 | 0.00 | 0.00 | 0.00 | 129.1 |
| 19+73.33 | 100-yr 24-hour | 871.00 | 866.36 | 0.00 | 0.00 | 0.00 | 141.1 |
| 22+28.59 | 10 -yr 24-hour | 871.00 | 866.52 | 0.00 | 0.00 | 0.00 | 283.3 |
| 22+28.59 | 100-yr 24-hour | 871.00 | 866.52 | 0.00 | 0.00 | 0.00 | 286.6 |
| 23+85.21 | 10 -yr 24-hour | 871.00 | 866.60 | 0.00 | 0.00 | 0.00 | 512.1 |
| 23+85.21 | 100-yr 24-hour | 871.00 | 866.60 | 0.00 | 0.00 | 0.00 | 512.1 |
| 24+96.7 | 10 -yr 24-hour | 871.00 | 866.63 | 0.00 | 0.00 | 0.00 | 100.0 |
| 24+96.7 | 100-yr 24-hour | 871.00 | 866.63 | 0.00 | 0.00 | 0.00 | 100.0 |

| Node Name | Sim Name | Warning Stage [ft] | Max Stage [ft] | Min/Max Delta Stage [ft] | Max Total Inflow [cfs] | Max Total Outflow [cfs] | Max Surface Area [ft2] |
|---|---|---|---|---|---|---|---|
| 4+70.06 | 10 -yr 24-hour | 871.00 | 865.37 | 0.00 | 1.23 | 1.23 | 2839.8 |
| 4+70.06 | 100-yr 24-hour | 871.00 | 865.55 | 0.00 | 2.56 | 2.55 | 3420.1 |
| 9+39.55 | 10 -yr 24-hour | 871.00 | 865.37 | 0.00 | 0.07 | 0.00 | 1023.1 |
| 9+39.55 | 100-yr 24-hour | 871.00 | 865.55 | 0.00 | 0.09 | 0.02 | 1259.4 |
| BNDY | 10 -yr 24-hour | 863.10 | 863.00 | 0.00 | 1.23 | 0.00 | 0.0 |
| BNDY | 100-yr 24-hour | 863.10 | 863.00 | 0.00 | 2.56 | 0.00 | 0.0 |
| Beacon Pnd A | 10 -yr 24-hour | 873.00 | 868.50 | 0.00 | 0.00 | 0.00 | 87296.4 |
| Beacon Pnd A | 100-yr 24-hour | 873.00 | 868.50 | 0.00 | 0.00 | 0.00 | 87302.7 |
| Beacon Pnd B | 10 -yr 24-hour | 872.00 | 868.50 | 0.00 | 0.00 | 0.00 | 152635.9 |
| Beacon Pnd B | 100-yr 24-hour | 872.00 | 868.50 | 0.00 | 0.00 | 0.00 | 152641.6 |
| HOL PINE N1 | 10 -yr 24-hour | 872.00 | 868.00 | 0.00 | 0.00 | 0.00 | 19230.8 |
| HOL PINE N1 | 100-yr 24-hour | 872.00 | 868.01 | 0.00 | 0.00 | 0.00 | 19282.2 |
| HOL PINE N2 | 10 -yr 24-hour | 873.00 | 869.00 | 0.00 | 0.00 | 0.00 | 31392.2 |
| HOL PINE N2 | 100-yr 24-hour | 873.00 | 869.00 | 0.00 | 0.00 | 0.00 | 31417.2 |
| HOL PINE N3 | 10 -yr 24-hour | 873.50 | 870.00 | 0.00 | 0.00 | 0.00 | 18764.0 |
| HOL PINE N3 | 100-yr 24-hour | 873.50 | 870.01 | 0.00 | 0.00 | 0.00 | 18788.8 |
| HOL PINE N4 | 10 -yr 24-hour | 873.00 | 869.00 | 0.00 | 0.00 | 0.00 | 61001.9 |
| HOL PINE N4 | 100-yr 24-hour | 873.00 | 869.00 | 0.00 | 0.00 | 0.00 | 61016.6 |
| POND 1 | 10 -yr 24-hour | 871.00 | 868.64 | 0.00 | 59.26 | 0.36 | 129092.9 |
| POND 1 | 100-yr 24-hour | 871.00 | 869.70 | 0.00 | 98.04 | 0.48 | 133707.5 |
| POND 2 | 10 -yr 24-hour | 870.00 | 867.97 | 0.00 | 33.33 | 0.60 | 47799.1 |
| POND 2 | 100-yr 24-hour | 870.00 | 868.74 | 0.00 | 51.59 | 1.77 | 49209.5 |
| POND 3 | 10 -yr 24-hour | 871.00 | 868.72 | 0.00 | 54.76 | 0.63 | 72849.7 |
| POND 3 | 100-yr 24-hour | 871.00 | 870.37 | 0.00 | 89.15 | 0.82 | 80028.6 |
| STR 101 | 10 -yr 24-hour | 870.00 | 865.48 | 0.00 | 0.60 | 0.60 | 100.0 |
| STR 101 | 100-yr 24-hour | 870.00 | 865.71 | 0.00 | 1.77 | 1.77 | 100.0 |

Node Max Conditions [Scenario1]

| Node Name | Sim Name | Warning Stage [ft] | Max Stage [ft] | Min/Max Delta Stage [ft] | Max Total Inflow [cfs] | Max Total Outflow [cfs] | Max Surface Area [ft2] |
|---|---|---|---|---|---|---|---|
| 0+06.69 | 10 -yr 24-hour | 867.00 | 867.11 | 0.00 | 59.04 | 58.80 | 2156.6 |
| 0+06.69 | 100-yr 24-hour | 867.00 | 868.04 | 0.00 | 88.52 | 85.99 | 8664.6 |
| 0+94.92 | 10 -yr 24-hour | 871.00 | 867.16 | 0.00 | 59.03 | 59.04 | 4001.9 |
| 0+94.92 | 100-yr 24-hour | 871.00 | 868.06 | 0.00 | 87.79 | 88.52 | 7697.5 |
| 10+49.75 | 10 -yr 24-hour | 871.00 | 867.84 | 0.00 | 29.42 | 28.15 | 2936.8 |
| 10+49.75 | 100-yr 24-hour | 871.00 | 868.60 | 0.00 | 54.00 | 51.71 | 3596.0 |
| 108 | 10 -yr 24-hour | 868.50 | 868.94 | 0.00 | 18.67 | 18.68 | 214.8 |
| 108 | 100-yr 24-hour | 868.50 | 870.20 | 0.00 | 26.65 | 26.52 | 214.7 |
| 109 | 10 -yr 24-hour | 870.60 | 868.95 | 0.00 | 11.00 | 11.27 | 151.9 |
| 109 | 100-yr 24-hour | 870.60 | 870.19 | 0.00 | 14.19 | 14.04 | 151.9 |
| 110 | 10 -yr 24-hour | 870.20 | 868.95 | 0.00 | 10.96 | 11.00 | 100.0 |
| 110 | 100-yr 24-hour | 870.20 | 870.27 | 0.00 | 14.37 | 14.19 | 100.0 |
| 111 | 10 -yr 24-hour | 870.20 | 868.95 | 0.00 | 8.70 | 8.74 | 186.8 |
| 111 | 100-yr 24-hour | 870.20 | 870.41 | 0.00 | 11.40 | 11.02 | 186.8 |
| 112 | 10 -yr 24-hour | 870.30 | 869.02 | 0.00 | 7.50 | 7.52 | 155.0 |
| 112 | 100-yr 24-hour | 870.30 | 870.62 | 0.00 | 12.15 | 12.13 | 155.0 |
| 15+76.08 | 10 -yr 24-hour | 871.00 | 868.39 | 0.00 | 31.17 | 29.42 | 5923.6 |
| 15+76.08 | 100-yr 24-hour | 871.00 | 869.12 | 0.00 | 56.90 | 54.00 | 7222.6 |
| 19+73.33 | 10 -yr 24-hour | 871.00 | 868.78 | 0.00 | 32.12 | 31.17 | 3709.7 |
| 19+73.33 | 100-yr 24-hour | 871.00 | 869.51 | 0.00 | 58.53 | 56.90 | 4538.6 |
| 22+28.59 | 10 -yr 24-hour | 871.00 | 868.98 | 0.00 | 24.37 | 24.38 | 1766.0 |
| 22+28.59 | 100-yr 24-hour | 871.00 | 869.64 | 0.00 | 37.52 | 37.73 | 2042.3 |
| 23+85.21 | 10 -yr 24-hour | 871.00 | 869.03 | 0.00 | 24.32 | 24.37 | 977.9 |
| 23+85.21 | 100-yr 24-hour | 871.00 | 869.71 | 0.00 | 37.43 | 37.52 | 1096.4 |
| 24+96.7 | 10 -yr 24-hour | 871.00 | 869.09 | 0.00 | 24.14 | 24.13 | 992.5 |
| 24+96.7 | 100-yr 24-hour | 871.00 | 869.76 | 0.00 | 36.64 | 36.74 | 1039.7 |

| Node Name | Sim Name | Warning Stage [ft] | Max Stage [ft] | Min/Max Delta Stage [ft] | Max Total Inflow [cfs] | Max Total Outflow [cfs] | Max Surface Area [ft2] |
|---|---|---|---|---|---|---|---|
| 4+70.06 | 10 -yr 24-hour | 871.00 | 867.58 | 0.00 | 59.60 | 59.03 | 6437.6 |
| 4+70.06 | 100-yr 24-hour | 871.00 | 868.36 | 0.00 | 90.86 | 87.79 | 7468.9 |
| 9+39.55 | 10 -yr 24-hour | 871.00 | 867.79 | 0.00 | 28.15 | 28.28 | 3341.5 |
| 9+39.55 | 100-yr 24-hour | 871.00 | 868.52 | 0.00 | 51.71 | 49.76 | 3872.6 |
| BNDY | 10 -yr 24-hour | 863.10 | 863.00 | 0.00 | 58.80 | 0.00 | 0.0 |
| BNDY | 100-yr 24-hour | 863.10 | 863.00 | 0.00 | 85.99 | 0.00 | 0.0 |
| Beacon Pnd A | 10 -yr 24-hour | 873.00 | 871.33 | 0.00 | 168.44 | 65.28 | 101642.1 |
| Beacon Pnd A | 100-yr 24-hour | 873.00 | 873.12 | 0.00 | 271.95 | 93.41 | 109434.7 |
| Beacon Pnd B | 10 -yr 24-hour | 872.00 | 871.32 | 0.00 | 123.07 | 12.45 | 174317.5 |
| Beacon Pnd B | 100-yr 24-hour | 872.00 | 873.03 | 0.00 | 185.62 | 19.82 | 187317.9 |
| HOL PINE N1 | 10 -yr 24-hour | 872.00 | 869.51 | 0.00 | 28.76 | 15.24 | 23825.0 |
| HOL PINE N1 | 100-yr 24-hour | 872.00 | 870.50 | 0.00 | 48.78 | 23.76 | 26631.3 |
| HOL PINE N2 | 10 -yr 24-hour | 873.00 | 870.14 | 0.00 | 22.39 | 2.19 | 33199.7 |
| HOL PINE N2 | 100-yr 24-hour | 873.00 | 871.20 | 0.00 | 38.83 | 2.62 | 34684.5 |
| HOL PINE N3 | 10 -yr 24-hour | 873.50 | 870.40 | 0.00 | 5.00 | 0.90 | 19953.6 |
| HOL PINE N3 | 100-yr 24-hour | 873.50 | 870.68 | 0.00 | 8.36 | 1.71 | 20676.6 |
| HOL PINE N4 | 10 -yr 24-hour | 873.00 | 870.63 | 0.00 | 46.46 | 5.30 | 70763.8 |
| HOL PINE N4 | 100-yr 24-hour | 873.00 | 871.89 | 0.00 | 78.39 | 6.89 | 78638.1 |
| POND 1 | 10 -yr 24-hour | 871.00 | 868.79 | 0.00 | 59.26 | 0.28 | 129783.7 |
| POND 1 | 100-yr 24-hour | 871.00 | 869.78 | 0.00 | 98.99 | 0.49 | 134090.1 |
| POND 2 | 10 -yr 24-hour | 870.00 | 868.94 | 0.00 | 44.44 | 2.19 | 49551.5 |
| POND 2 | 100-yr 24-hour | 870.00 | 870.19 | 0.00 | 71.42 | 23.87 | 53097.0 |
| POND 3 | 10 -yr 24-hour | 871.00 | 868.75 | 0.00 | 54.76 | 0.63 | 72983.1 |
| POND 3 | 100-yr 24-hour | 871.00 | 870.43 | 0.00 | 89.15 | 0.89 | 80264.0 |
| STR 101 | 10 -yr 24-hour | 870.00 | 868.31 | 0.00 | 32.53 | 32.52 | 106.7 |
| STR 101 | 100-yr 24-hour | 870.00 | 869.72 | -0.02 | 67.74 | 51.26 | 197099.2 |

# D7. DEVELOPED CONDITION
# Tc AND Cn VALUES

TR-55
-COMPOSITE CN-VALUES & TIME OF CONCENTRATION-

PROJECT: Promenade
JOB #: 21113
DATE: 1/7/22
COMPUTED BY: JET

BASINS

| BASIN | Composite CN | Area ($ft^2$) | Area (acres) | Area (miles) | Tc |
|---|---|---|---|---|---|
| DEV-1 | 88.00 | 862488 | 19.80 | 0.03 | 21.9 |
| DEV-2 | 84.00 | 235224 | 5.40 | 0.01 | 20.5 |
| DEV-3 | 87.00 | 849420 | 19.50 | 0.03 | 23.1 |
| 108 | 85.00 | 104544 | 2.40 | 0.00 | 14.4 |
| 110 | 92.00 | 26136 | 0.60 | 0.00 | 14.1 |
| 111 | 87.00 | 21780 | 0.50 | 0.00 | 13.8 |
| 112 | 87.00 | 100188 | 2.30 | 0.00 | 16.8 |

| Basin | Cover Description | Soil Group | Area (Acres) | CN | CN * Acres | number |
|---|---|---|---|---|---|---|
| DEV-1 | Good condition; grass cover > 75% | D | 10.5 | 80 | 840 | 5 |
| DEV-1 | Paved parking lots, roofs, driveways | D | 9.3 | 98 | 911.4 | 5 |
| DEV-2 | Good condition; grass cover > 75% | D | 4.1 | 80 | 328 | 5 |
| DEV-2 | Paved parking lots, roofs, driveways | D | 1.3 | 98 | 127.4 | 5 |
| DEV-3 | Good condition; grass cover > 75% | D | 11.6 | 80 | 928 | 5 |
| DEV-3 | Paved parking lots, roofs, driveways | D | 7.9 | 98 | 774.2 | 5 |
| 108 | Good condition; grass cover > 75% | D | 1.8 | 80 | 144 | 5 |
| 108 | Paved parking lots, roofs, driveways | D | 0.6 | 98 | 58.8 | 5 |
| 110 | Good condition; grass cover > 75% | D | 0.2 | 80 | 16 | 5 |
| 110 | Paved parking lots, roofs, driveways | D | 0.4 | 98 | 39.2 | 5 |
| 111 | Good condition; grass cover > 75% | D | 0.3 | 80 | 24 | 5 |
| 111 | Paved parking lots, roofs, driveways | D | 0.2 | 98 | 19.6 | 5 |
| 112 | Good condition; grass cover > 75% | D | 1.4 | 80 | 112 | 5 |
| 112 | Paved parking lots, roofs, driveways | D | 0.9 | 98 | 88.2 | 5 |

| Basin # | CN | Acres | CN * Acres |
|---|---|---|---|
| DEV-1 | 88 | 19.8 | 1751.4 |
| DEV-2 | 84 | 5.4 | 455.4 |
| DEV-3 | 87 | 19.5 | 1702.2 |
| 108 | 85 | 2.4 | 202.8 |
| 110 | 92 | 0.6 | 55.2 |
| 111 | 87 | 0.5 | 43.6 |
| 112 | 87 | 2.3 | 200.2 |

**Time of Concentration Worksheet**
Based on TR-55

PROJECT: Promenade
JOB #: 21113

Typical values for Manning's n

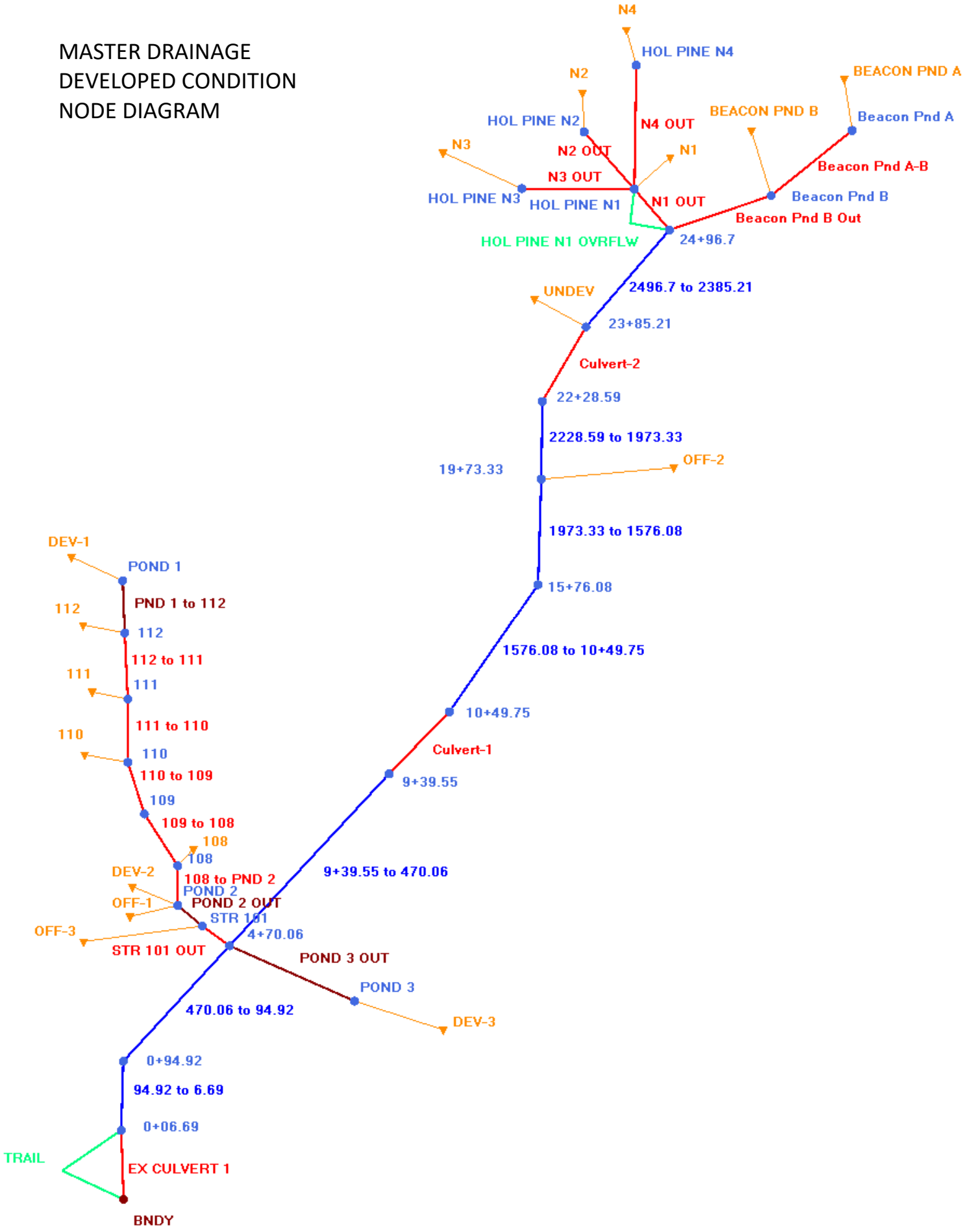
| Overland Flow | | Channel Flow | |
|---|---|---|---|
| short grass | 0.15 | grass | 0.03 |
| dense grass | 0.24 | concrete | 0.02 |
| pavement | 0.011 | rip-rap | 0.04 |
| woods light | 0.4 | | |
| cultivated > 20% | 0.17 | | |

2 year, 24 hour rainfall = 2.66 inches
minimum T_c = 5 minutes

| Basin | Overland flow | | | | Shallow Concentrated Flow (1) | | | | | Shallow Concentrated Flow (2) | | | | | Channel Flow | | | | | | | | T_c |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| name | Length (ft) | S % | n | T_t (min) | Length (ft) | S % | Paved/Un (P or U) | Vel. (ft/s) | T_t (min) | Length (ft) | S % | Paved/Un (P or U) | Vel. (ft/s) | T_t (min) | Length (ft) | a (s.f.) | Pw (ft) | r (ft) | S % | n | Vel. (ft/s) | T_t (min) | (min) |
| | | | | 0 | | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| DEV-1 | 75 | 2 | 0.24 | 12 | 175 | 1 | U | 1.6 | 2 | | | | | 0 | 1150 | | | | | | 2.50 | 8 | 22 |
| DEV-2 | 80 | 1 | 0.24 | 17 | 75 | 1 | P | 2 | 1 | | | | | 0 | 390 | | | | | | 2.50 | 3 | 20 |
| DEV-3 | 75 | 1.6 | 0.24 | 14 | 129 | 1 | U | 1.6 | 1 | 259 | 1 | P | 2 | 2 | 913.5 | | | | | | 2.50 | 6 | 23 |
| 108 | 75 | 2 | 0.24 | 12 | 195 | 1 | U | 1.6 | 2 | | | | | 0 | | | | | | | | 0 | 14 |
| 110 | 75 | 2 | 0.24 | 12 | 135 | 0.7 | U | 1.3 | 2 | | | | | 0 | | | | | | | | 0 | 14 |
| 111 | 80 | 2 | 0.24 | 13 | 60 | 0.7 | U | 1.3 | 1 | | | | | 0 | | | | | | | | 0 | 14 |
| 112 | 75 | 2 | 0.24 | 12 | 350 | 0.7 | U | 1.3 | 4 | | | | | 0 | | | | | | | | 0 | 17 |
| | | | | 0 | | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| | | | | 0 | | | | | 0 | | | | | 0 | | | | | | | | 0 | |

# D8. DEVELOPED CONDITION ICPR INPUT DATA

MASTER DRAINAGE
DEVELOPED CONDITION
NODE DIAGRAM



## Simple Basin: 108

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | 108 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 14.4 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 2.4 ac |
| Curve Number: | 85.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: 110

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | 110 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 14.1 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 0.6 ac |
| Curve Number: | 92.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: 111

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | 111 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 13.8 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 0.5 ac |
| Curve Number: | 87.0 |
| % Impervious: | 0.0 |

| | |
|---|---|
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: 112

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | 112 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 16.8 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 2.3 ac |
| Curve Number: | 87.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: BEACON PND A

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | Beacon Pnd A |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 33.0 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 71.6 ac |
| Curve Number: | 88.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: BEACON PND B

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | Beacon Pnd B |
| Hydrograph Method: | NRCS Unit Hydrograph |

| | |
|---|---|
| Infiltration Method: | Curve Number |
| Time of Concentration: | 32.3 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 27.0 ac |
| Curve Number: | 88.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: DEV-1

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | POND 1 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 21.9 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 19.8 ac |
| Curve Number: | 88.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: DEV-2

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | POND 2 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 20.5 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 5.4 ac |
| Curve Number: | 84.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: DEV-3

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | POND 3 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 23.1 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 19.5 ac |
| Curve Number: | 87.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: N1

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | HOL PINE N1 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 20.0 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 9.6 ac |
| Curve Number: | 82.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: N2

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | HOL PINE N2 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 15.0 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |

| | |
|---|---|
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 7.9 ac |
| Curve Number: | 81.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: N3

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | HOL PINE N3 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 15.0 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 1.6 ac |
| Curve Number: | 84.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: N4

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | HOL PINE N4 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 28.0 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 20.2 ac |
| Curve Number: | 84.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: OFF-1

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | POND 2 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 45.0 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 13.3 ac |
| Curve Number: | 78.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: OFF-2

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | 19+73.33 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 17.0 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 8.5 ac |
| Curve Number: | 78.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: OFF-3

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | STR 101 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 53.7 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 26.0 ac |
| Curve Number: | 79.0 |
| % Impervious: | 0.0 |

| | |
|---|---|
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Simple Basin: UNDEV

| | |
|---|---|
| Scenario: | Scenario1 |
| Node: | 23+85.21 |
| Hydrograph Method: | NRCS Unit Hydrograph |
| Infiltration Method: | Curve Number |
| Time of Concentration: | 18.1 min |
| Max Allowable Q: | 99999.00 cfs |
| Time Shift: | 0.0 hr |
| Unit Hydrograph: | UH484 |
| Peaking Factor: | 484.0 |
| Area: | 0.7 ac |
| Curve Number: | 74.0 |
| % Impervious: | 0.0 |
| % DCIA: | 0.0 |
| % Direct: | 0.0 |
| Rainfall Name: | |

Comment:

## Node: 0+06.69

| | |
|---|---|
| Scenario: | Scenario1 |
| Type: | Stage/Area |
| Base Flow: | 0.00 cfs |
| Initial Stage: | 864.10 ft |
| Warning Stage: | 867.00 ft |

Comment:

## Node: 0+94.92

| | |
|---|---|
| Scenario: | Scenario1 |
| Type: | Stage/Area |
| Base Flow: | 0.00 cfs |
| Initial Stage: | 864.46 ft |
| Warning Stage: | 871.00 ft |

Comment:

## Node: 10+49.75

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 865.38 ft
Warning Stage: 871.00 ft

Comment:

## Node: 108

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 865.68 ft
Warning Stage: 868.50 ft

Comment:

## Node: 109

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 865.94 ft
Warning Stage: 870.60 ft

Comment:

## Node: 110

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 866.06 ft
Warning Stage: 870.20 ft

Comment:

## Node: 111

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 866.20 ft
Warning Stage: 870.20 ft

Comment:

Node: 112

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 866.49 ft
Warning Stage: 870.30 ft

Comment:

Node: 15+76.08

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 866.03 ft
Warning Stage: 871.00 ft

Comment:

Node: 19+73.33

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 866.31 ft
Warning Stage: 871.00 ft

Comment:

Node: 22+28.59

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 866.49 ft
Warning Stage: 871.00 ft

Comment:

Node: 23+85.21

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 866.60 ft
Warning Stage: 871.00 ft

Comment:

Node: 24+96.7

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 866.61 ft
Warning Stage: 871.00 ft

Comment:

Node: 4+70.06

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 864.77 ft
Warning Stage: 871.00 ft

Comment:

Node: 9+39.55

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 864.88 ft
Warning Stage: 871.00 ft

Comment:

Node: BNDY

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 863.00 ft
Warning Stage: 863.10 ft

Boundary Stage:

| Year | Month | Day | Hour | Stage [ft] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0 | 863.00 |
| 0 | 0 | 0 | 30.0 | 863.00 |

Comment:

## Node: Beacon Pnd A

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 868.50 ft
Warning Stage: 873.00 ft

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 861.00 | 1.1 | 47916.0 |
| 868.50 | 2.0 | 87120.0 |
| 869.00 | 2.1 | 91476.0 |
| 872.00 | 2.4 | 104544.0 |
| 874.00 | 2.6 | 113256.0 |
| 875.00 | 2.8 | 121968.0 |

Comment:

## Node: Beacon Pnd B

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 868.50 ft
Warning Stage: 872.00 ft

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 861.00 | 2.2 | 95832.0 |
| 867.00 | 2.9 | 126324.0 |
| 868.00 | 3.3 | 143748.0 |
| 868.50 | 3.5 | 152460.0 |
| 873.00 | 4.3 | 187308.0 |

Comment:

## Node: HOL PINE N1

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 868.00 ft
Warning Stage: 872.00 ft

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 868.00 | 0.4 | 19166.4 |
| 869.00 | 0.5 | 22215.6 |
| 870.00 | 0.6 | 24829.2 |
| 871.00 | 0.7 | 28314.0 |

Comment:

## Node: HOL PINE N2

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 869.00 ft
Warning Stage: 873.00 ft

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 869.00 | 0.7 | 31363.2 |
| 870.00 | 0.8 | 32670.0 |
| 871.00 | 0.8 | 34412.4 |
| 872.00 | 0.8 | 35719.2 |

Comment:

## Node: HOL PINE N3

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 870.00 ft
Warning Stage: 873.50 ft

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 870.00 | 0.4 | 18730.8 |
| 871.00 | 0.5 | 21344.4 |
| 872.00 | 0.5 | 23522.4 |
| 872.50 | 0.6 | 26136.0 |

Comment:

## Node: HOL PINE N4

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 869.00 ft
Warning Stage: 873.00 ft

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 869.00 | 1.4 | 60984.0 |
| 870.00 | 1.5 | 66646.8 |

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 871.00 | 1.7 | 73180.8 |
| 872.00 | 1.8 | 79279.2 |

Comment:

## Node: POND 1

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 867.00 ft
Warning Stage: 871.00 ft

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 867.00 | 2.6 | 113256.0 |
| 868.00 | 2.9 | 126324.0 |
| 869.00 | 3.0 | 130680.0 |
| 870.00 | 3.1 | 135036.0 |
| 871.00 | 3.2 | 139392.0 |
| 872.00 | 3.3 | 143748.0 |

Comment:

## Node: POND 2

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 865.50 ft
Warning Stage: 870.00 ft

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 865.50 | 0.6 | 26136.0 |
| 866.00 | 0.8 | 34848.0 |
| 867.00 | 1.0 | 43560.0 |
| 868.00 | 1.1 | 47916.0 |
| 869.00 | 1.1 | 49658.4 |
| 870.00 | 1.2 | 52272.0 |
| 871.00 | 1.3 | 56628.0 |
| 872.00 | 1.4 | 60984.0 |

Comment:

## Node: POND 3

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 866.00 ft
Warning Stage: 871.00 ft

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 866.00 | 1.2 | 52272.0 |
| 867.00 | 1.5 | 65340.0 |
| 868.00 | 1.6 | 69696.0 |
| 869.00 | 1.7 | 74052.0 |
| 870.00 | 1.8 | 78408.0 |
| 871.00 | 1.9 | 82764.0 |

Comment:

**Node: STR 101**

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 865.19 ft
Warning Stage: 870.00 ft

| Stage [ft] | Area [ac] | Area [ft2] |
|---|---|---|
| 865.19 | 0.0 | 21.8 |
| 869.45 | 0.0 | 21.8 |
| 869.50 | 3.0 | 130680.0 |
| 870.00 | 6.5 | 283140.0 |

Comment:

| Pipe Link: 108 to PND 2 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 865.68 ft | Invert: | 865.50 ft |
| From Node: | 108 | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | POND 2 | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 2.0 ft | Max Depth: | 2.0 ft |
| Flow Direction: | Both | Bottom Clip | | | |
| Damping: | 0.0000 ft | Default: | 0.0 ft | Default: | 0.0 ft |
| Length: | 81.0 ft | Op Table: | | Op Table: | |
| FHWA Code: | 0 | Ref Node: | | Ref Node: | |
| Entr Loss Coef: | 0.50 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Exit Loss Coef: | 0.00 | Top Clip | | | |
| Bend Loss Coef: | 0.00 | Default: | 0.0 ft | Default: | 0.0 ft |
| Bend Location: | 0.0 dec | Op Table: | | Op Table: | |
| Energy Switch: | Energy | Ref Node: | | Ref Node: | |
| | | Manning's N: | 0.000 | Manning's N: | 0.000 |

Comment:

| Pipe Link: 109 to 108 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 865.94 ft | Invert: | 865.78 ft |
| From Node: | 109 | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | 108 | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 2.0 ft | Max Depth: | 2.0 ft |

| | | | | | |
|---|---|---|---|---|---|
| Flow Direction: | Both | Bottom Clip | | | |
| Damping: | 0.0000 ft | Default: | 0.0 ft | Default: | 0.0 ft |
| Length: | 134.0 ft | Op Table: | | Op Table: | |
| FHWA Code: | 0 | Ref Node: | | Ref Node: | |
| Entr Loss Coef: | 0.50 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Exit Loss Coef: | 0.00 | Top Clip | | | |
| Bend Loss Coef: | 0.00 | Default: | 0.0 ft | Default: | 0.0 ft |
| Bend Location: | 0.0 dec | Op Table: | | Op Table: | |
| Energy Switch: | Energy | Ref Node: | | Ref Node: | |
| | | Manning's N: | 0.000 | Manning's N: | 0.000 |

Comment:

| Pipe Link: 110 to 109 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 866.06 ft | Invert: | 866.04 ft |
| From Node: | 110 | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | 109 | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 2.0 ft | Max Depth: | 2.0 ft |
| Flow Direction: | Both | Bottom Clip | | | |
| Damping: | 0.0000 ft | Default: | 0.0 ft | Default: | 0.0 ft |
| Length: | 18.0 ft | Op Table: | | Op Table: | |
| FHWA Code: | 0 | Ref Node: | | Ref Node: | |
| Entr Loss Coef: | 0.50 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Exit Loss Coef: | 0.00 | Top Clip | | | |
| Bend Loss Coef: | 0.00 | Default: | 0.0 ft | Default: | 0.0 ft |
| Bend Location: | 0.0 dec | Op Table: | | Op Table: | |
| Energy Switch: | Energy | Ref Node: | | Ref Node: | |
| | | Manning's N: | 0.000 | Manning's N: | 0.000 |

Comment:

| Pipe Link: 111 to 110 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 866.20 ft | Invert: | 866.16 ft |
| From Node: | 111 | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | 110 | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 2.0 ft | Max Depth: | 2.0 ft |
| Flow Direction: | Both | Bottom Clip | | | |
| Damping: | 0.0000 ft | Default: | 0.0 ft | Default: | 0.0 ft |
| Length: | 32.0 ft | Op Table: | | Op Table: | |
| FHWA Code: | 0 | Ref Node: | | Ref Node: | |
| Entr Loss Coef: | 0.50 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Exit Loss Coef: | 0.00 | Top Clip | | | |
| Bend Loss Coef: | 0.00 | Default: | 0.0 ft | Default: | 0.0 ft |
| Bend Location: | 0.0 dec | Op Table: | | Op Table: | |
| Energy Switch: | Energy | Ref Node: | | Ref Node: | |
| | | Manning's N: | 0.000 | Manning's N: | 0.000 |

Comment:

| Pipe Link: 112 to 111 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 866.49 ft | Invert: | 866.30 ft |

| | | | | | |
|---|---|---|---|---|---|
| From Node: | 112 | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | 111 | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 2.0 ft | Max Depth: | 2.0 ft |
| Flow Direction: | Both | Bottom Clip | | | |
| Damping: | 0.0000 ft | Default: | 0.0 ft | Default: | 0.0 ft |
| Length: | 155.0 ft | Op Table: | | Op Table: | |
| FHWA Code: | 0 | Ref Node: | | Ref Node: | |
| Entr Loss Coef: | 0.50 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Exit Loss Coef: | 0.00 | Top Clip | | | |
| Bend Loss Coef: | 0.00 | Default: | 0.0 ft | Default: | 0.0 ft |
| Bend Location: | 0.0 dec | Op Table: | | Op Table: | |
| Energy Switch: | Energy | Ref Node: | | Ref Node: | |
| | | Manning's N: | 0.000 | Manning's N: | 0.000 |

Comment:

| Channel Link: 1576.08 to 10+49.75 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 866.03 ft | Invert: | 865.38 ft |
| From Node: | 15+76.08 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| To Node: | 10+49.75 | Geometry: Irregular | | Geometry: Irregular | |
| Link Count: | 1 | Cross Section: | 15+76.08 | Cross Section: | 10+49.75 |
| Flow Direction: | Both | | | | |
| Damping: | 0.0000 ft | | | | |
| Length: | 526.3 ft | | | | |
| Contraction Coef: | 0.10 | | | | |
| Expansion Coef: | 0.30 | | | | |
| Entr Loss Coef: | 0.00 | | | | |
| Exit Loss Coef: | 0.00 | | | | |
| Bend Loss Coef: | 0.00 | | | | |
| Bend Location: | 0.0 dec | | | | |
| Energy Switch: | Energy | | | | |

Comment:

| Channel Link: 1973.33 to 1576.08 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 866.31 ft | Invert: | 866.03 ft |
| From Node: | 19+73.33 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| To Node: | 15+76.08 | Geometry: Irregular | | Geometry: Irregular | |
| Link Count: | 1 | Cross Section: | 19+73.33 | Cross Section: | 15+76.08 |
| Flow Direction: | Both | | | | |
| Damping: | 0.0000 ft | | | | |
| Length: | 397.3 ft | | | | |
| Contraction Coef: | 0.10 | | | | |
| Expansion Coef: | 0.30 | | | | |
| Entr Loss Coef: | 0.00 | | | | |
| Exit Loss Coef: | 0.00 | | | | |
| Bend Loss Coef: | 0.00 | | | | |
| Bend Location: | 0.0 dec | | | | |
| Energy Switch: | Energy | | | | |

Comment:

| Channel Link: 2228.59 to 1973.33 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 866.49 ft | Invert: | 866.31 ft |
| From Node: | 22+28.59 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| To Node: | 19+73.33 | Geometry: | Irregular | Geometry: | Irregular |
| Link Count: | 1 | Cross Section: | 22+28.59 | Cross Section: | 19+73.33 |
| Flow Direction: | Both | | | | |
| Damping: | 0.0000 ft | | | | |
| Length: | 255.3 ft | | | | |
| Contraction Coef: | 0.10 | | | | |
| Expansion Coef: | 0.30 | | | | |
| Entr Loss Coef: | 0.00 | | | | |
| Exit Loss Coef: | 0.00 | | | | |
| Bend Loss Coef: | 0.00 | | | | |
| Bend Location: | 0.0 dec | | | | |
| Energy Switch: | Energy | | | | |
| Comment: | | | | | |

| Channel Link: 2496.7 to 2385.21 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 866.61 ft | Invert: | 866.60 ft |
| From Node: | 24+96.7 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| To Node: | 23+85.21 | Geometry: | Irregular | Geometry: | Irregular |
| Link Count: | 1 | Cross Section: | 24+96.7 | Cross Section: | 23+85.21 |
| Flow Direction: | Both | | | | |
| Damping: | 0.0000 ft | | | | |
| Length: | 111.5 ft | | | | |
| Contraction Coef: | 0.10 | | | | |
| Expansion Coef: | 0.30 | | | | |
| Entr Loss Coef: | 0.00 | | | | |
| Exit Loss Coef: | 0.00 | | | | |
| Bend Loss Coef: | 0.00 | | | | |
| Bend Location: | 0.0 dec | | | | |
| Energy Switch: | Energy | | | | |
| Comment: | | | | | |

| Channel Link: 470.06 to 94.92 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 864.77 ft | Invert: | 864.46 ft |
| From Node: | 4+70.06 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| To Node: | 0+94.92 | Geometry: | Irregular | Geometry: | Irregular |
| Link Count: | 1 | Cross Section: | 4+70.06 | Cross Section: | 0+94.92 |
| Flow Direction: | Both | | | | |
| Damping: | 0.0000 ft | | | | |
| Length: | 375.1 ft | | | | |
| Contraction Coef: | 0.10 | | | | |
| Expansion Coef: | 0.30 | | | | |
| Entr Loss Coef: | 0.00 | | | | |
| Exit Loss Coef: | 0.00 | | | | |
| Bend Loss Coef: | 0.00 | | | | |
| Bend Location: | 0.0 dec | | | | |
| Energy Switch: | Energy | | | | |
| Comment: | | | | | |

| Channel Link: 9+39.55 to 470.06 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 864.88 ft | Invert: | 864.77 ft |
| From Node: | 9+39.55 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| To Node: | 4+70.06 | Geometry: | Irregular | Geometry: | Irregular |
| Link Count: | 1 | Cross Section: | 9+39.55 | Cross Section: | 4+70.06 |
| Flow Direction: | Both | | | | |
| Damping: | 0.0000 ft | | | | |
| Length: | 469.5 ft | | | | |
| Contraction Coef: | 0.10 | | | | |
| Expansion Coef: | 0.30 | | | | |
| Entr Loss Coef: | 0.00 | | | | |
| Exit Loss Coef: | 0.00 | | | | |
| Bend Loss Coef: | 0.00 | | | | |
| Bend Location: | 0.0 dec | | | | |
| Energy Switch: | Energy | | | | |
| Comment: | | | | | |

| Channel Link: 94.92 to 6.69 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 864.46 ft | Invert: | 864.10 ft |
| From Node: | 0+94.92 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| To Node: | 0+06.69 | Geometry: | Irregular | Geometry: | Irregular |
| Link Count: | 1 | Cross Section: | 0+94.92 | Cross Section: | 0+06.69 |
| Flow Direction: | Both | | | | |
| Damping: | 0.0000 ft | | | | |
| Length: | 88.2 ft | | | | |
| Contraction Coef: | 0.10 | | | | |
| Expansion Coef: | 0.30 | | | | |
| Entr Loss Coef: | 0.00 | | | | |
| Exit Loss Coef: | 0.00 | | | | |
| Bend Loss Coef: | 0.00 | | | | |
| Bend Location: | 0.0 dec | | | | |
| Energy Switch: | Energy | | | | |
| Comment: | | | | | |

| Pipe Link: Beacon Pnd A-B | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 866.00 ft | Invert: | 866.00 ft |
| From Node: | Beacon Pnd A | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | Beacon Pnd B | Geometry: | Circular | Geometry: | Circular |
| Link Count: | 2 | Max Depth: | 3.0 ft | Max Depth: | 3.0 ft |
| Flow Direction: | Both | | Bottom Clip | | |
| Damping: | 0.0000 ft | Default: | 0.0 ft | Default: | 0.0 ft |
| Length: | 75.0 ft | Op Table: | | Op Table: | |
| FHWA Code: | 0 | Ref Node: | | Ref Node: | |
| Entr Loss Coef: | 0.50 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Exit Loss Coef: | 1.00 | | Top Clip | | |
| Bend Loss Coef: | 0.00 | Default: | 0.0 ft | Default: | 0.0 ft |
| Bend Location: | 0.0 dec | Op Table: | | Op Table: | |
| Energy Switch: | Energy | Ref Node: | | Ref Node: | |
| | | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Comment: | | | | | |

| Pipe Link: Beacon Pnd B Out | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 868.50 ft | Invert: | 868.20 ft |
| From Node: | Beacon Pnd B | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | 24+96.7 | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 2.0 ft | Max Depth: | 2.0 ft |
| Flow Direction: | Both | Bottom Clip | | | |
| Damping: | 0.0000 ft | Default: | 0.0 ft | Default: | 0.0 ft |
| Length: | 271.0 ft | Op Table: | | Op Table: | |
| FHWA Code: | 0 | Ref Node: | | Ref Node: | |
| Entr Loss Coef: | 0.20 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Exit Loss Coef: | 1.00 | Top Clip | | | |
| Bend Loss Coef: | 0.00 | Default: | 0.0 ft | Default: | 0.0 ft |
| Bend Location: | 0.0 dec | Op Table: | | Op Table: | |
| Energy Switch: | Energy | Ref Node: | | Ref Node: | |
| | | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Comment: | | | | | |

| Pipe Link: Culvert-1 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 865.40 ft | Invert: | 865.20 ft |
| From Node: | 10+49.75 | Manning's N: | 0.020 | Manning's N: | 0.020 |
| To Node: | 9+39.55 | Geometry: Rectangular | | Geometry: Rectangular | |
| Link Count: | 1 | Max Depth: | 4.0 ft | Max Depth: | 4.0 ft |
| Flow Direction: | Both | Max Width: | 6.0 ft | Max Width: | 6.0 ft |
| Damping: | 0.0000 ft | Fillet: | 0.0 ft | Fillet: | 0.0 ft |
| Length: | 65.0 ft | Bottom Clip | | | |
| FHWA Code: | 0 | Default: | 0.0 ft | Default: | 0.0 ft |
| Entr Loss Coef: | 0.50 | Op Table: | | Op Table: | |
| Exit Loss Coef: | 0.00 | Ref Node: | | Ref Node: | |
| Bend Loss Coef: | 0.00 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Bend Location: | 0.0 dec | Top Clip | | | |
| Energy Switch: | Energy | Default: | 0.0 ft | Default: | 0.0 ft |
| | | Op Table: | | Op Table: | |
| | | Ref Node: | | Ref Node: | |
| | | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Comment: | | | | | |

| Pipe Link: Culvert-2 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 866.60 ft | Invert: | 866.50 ft |
| From Node: | 23+85.21 | Manning's N: | 0.020 | Manning's N: | 0.020 |
| To Node: | 22+28.59 | Geometry: Rectangular | | Geometry: Rectangular | |
| Link Count: | 1 | Max Depth: | 4.0 ft | Max Depth: | 4.0 ft |
| Flow Direction: | Both | Max Width: | 6.0 ft | Max Width: | 6.0 ft |
| Damping: | 0.0000 ft | Fillet: | 0.0 ft | Fillet: | 0.0 ft |
| Length: | 85.0 ft | Bottom Clip | | | |
| FHWA Code: | 0 | Default: | 0.0 ft | Default: | 0.0 ft |
| Entr Loss Coef: | 0.50 | Op Table: | | Op Table: | |
| Exit Loss Coef: | 0.00 | Ref Node: | | Ref Node: | |
| Bend Loss Coef: | 0.00 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Bend Location: | 0.0 dec | Top Clip | | | |
| Energy Switch: | Energy | Default: | 0.0 ft | Default: | 0.0 ft |
| | | Op Table: | | Op Table: | |

| | | | |
|---|---|---|---|
| | Ref Node: | | Ref Node: |
| | Manning's N: | 0.000 | Manning's N: 0.000 |

Comment:

| Pipe Link: EX CULVERT 1 | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 864.10 ft | Invert: | 863.67 ft |
| From Node: | 0+06.69 | Manning's N: | 0.024 | Manning's N: | 0.024 |
| To Node: | BNDY | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 4.0 ft | Max Depth: | 4.0 ft |
| Flow Direction: | Both | Bottom Clip | | | |
| Damping: | 0.0000 ft | Default: | 0.0 ft | Default: | 0.0 ft |
| Length: | 45.0 ft | Op Table: | | Op Table: | |
| FHWA Code: | 0 | Ref Node: | | Ref Node: | |
| Entr Loss Coef: | 0.50 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Exit Loss Coef: | 0.00 | Top Clip | | | |
| Bend Loss Coef: | 0.00 | Default: | 0.0 ft | Default: | 0.0 ft |
| Bend Location: | 0.0 dec | Op Table: | | Op Table: | |
| Energy Switch: | Energy | Ref Node: | | Ref Node: | |
| | | Manning's N: | 0.000 | Manning's N: | 0.000 |

Comment:

| Weir Link: HOL PINE N1 OVRFLW | | | |
|---|---|---|---|
| Scenario: | Scenario1 | Bottom Clip | |
| From Node: | HOL PINE N1 | Default: | 0.0 ft |
| To Node: | 24+96.7 | Op Table: | |
| Link Count: | 1 | Ref Node: | |
| Flow Direction: | Both | Top Clip | |
| Damping: | 0.0000 ft | Default: | 0.0 ft |
| Weir Type: | Broad Crested Vertical | Op Table: | |
| Geometry Type: | Irregular | Ref Node: | |
| Invert: | 870.33 ft | Discharge Coefficients | |
| Control Elevation: | 870.33 ft | Weir Default: | 2.80 |
| Cross Section: | HOL PINE N1 OVRFLW | Weir Table: | |
| | | Orifice Default: | 0.60 |
| | | Orifice Table: | |

Comment:

| Pipe Link: N1 OUT | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 868.00 ft | Invert: | 867.50 ft |
| From Node: | HOL PINE N1 | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | 24+96.7 | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 2.0 ft | Max Depth: | 2.0 ft |
| Flow Direction: | Both | Bottom Clip | | | |
| Damping: | 0.0000 ft | Default: | 0.0 ft | Default: | 0.0 ft |
| Length: | 40.0 ft | Op Table: | | Op Table: | |
| FHWA Code: | 0 | Ref Node: | | Ref Node: | |
| Entr Loss Coef: | 0.50 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Exit Loss Coef: | 0.00 | Top Clip | | | |

| | | | | | |
|---|---|---|---|---|---|
| Bend Loss Coef: | 0.00 | Default: | 0.0 ft | Default: | 0.0 ft |
| Bend Location: | 0.0 dec | Op Table: | | Op Table: | |
| Energy Switch: | Energy | Ref Node: | | Ref Node: | |
| | | Manning's N: | 0.000 | Manning's N: | 0.000 |

Comment:

| Pipe Link: N2 OUT | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 869.00 ft | Invert: | 868.00 ft |
| From Node: | HOL PINE N2 | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | HOL PINE N1 | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 1.3 ft | Max Depth: | 1.3 ft |
| Flow Direction: | Both | Bottom Clip | | | |
| Damping: | 0.0000 ft | Default: | 0.0 ft | Default: | 0.0 ft |
| Length: | 902.0 ft | Op Table: | | Op Table: | |
| FHWA Code: | 0 | Ref Node: | | Ref Node: | |
| Entr Loss Coef: | 0.50 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Exit Loss Coef: | 0.00 | Top Clip | | | |
| Bend Loss Coef: | 0.00 | Default: | 0.0 ft | Default: | 0.0 ft |
| Bend Location: | 0.0 dec | Op Table: | | Op Table: | |
| Energy Switch: | Energy | Ref Node: | | Ref Node: | |
| | | Manning's N: | 0.000 | Manning's N: | 0.000 |

Comment:

| Pipe Link: N3 OUT | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 870.00 ft | Invert: | 869.00 ft |
| From Node: | HOL PINE N3 | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | HOL PINE N1 | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 1.3 ft | Max Depth: | 1.3 ft |
| Flow Direction: | Both | Bottom Clip | | | |
| Damping: | 0.0000 ft | Default: | 0.0 ft | Default: | 0.0 ft |
| Length: | 315.0 ft | Op Table: | | Op Table: | |
| FHWA Code: | 0 | Ref Node: | | Ref Node: | |
| Entr Loss Coef: | 0.50 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Exit Loss Coef: | 0.00 | Top Clip | | | |
| Bend Loss Coef: | 0.00 | Default: | 0.0 ft | Default: | 0.0 ft |
| Bend Location: | 0.0 dec | Op Table: | | Op Table: | |
| Energy Switch: | Energy | Ref Node: | | Ref Node: | |
| | | Manning's N: | 0.000 | Manning's N: | 0.000 |

Comment:

| Pipe Link: N4 OUT | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 869.00 ft | Invert: | 868.00 ft |
| From Node: | HOL PINE N4 | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | HOL PINE N1 | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 1.5 ft | Max Depth: | 1.5 ft |
| Flow Direction: | Both | Bottom Clip | | | |
| Damping: | 0.0000 ft | Default: | 0.0 ft | Default: | 0.0 ft |
| Length: | 504.0 ft | Op Table: | | Op Table: | |

| | | | | | |
|---|---|---|---|---|---|
| FHWA Code: | 0 | Ref Node: | | Ref Node: | |
| Entr Loss Coef: | 0.50 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Exit Loss Coef: | 0.00 | Top Clip | | | |
| Bend Loss Coef: | 0.00 | Default: | 0.0 ft | Default: | 0.0 ft |
| Bend Location: | 0.0 dec | Op Table: | | Op Table: | |
| Energy Switch: | Energy | Ref Node: | | Ref Node: | |
| | | Manning's N: | 0.000 | Manning's N: | 0.000 |

Comment:

| Drop Structure Link: PND 1 to 112 | | Upstream Pipe | | Downstream Pipe | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 867.00 ft | Invert: | 866.59 ft |
| From Node: | POND 1 | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | 112 | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 1.5 ft | Max Depth: | 1.5 ft |
| Flow Direction: | Both | Bottom Clip | | | |
| Solution: | Combine | Default: | 0.0 ft | Default: | 0.0 ft |
| Increments: | 0 | Op Table: | | Op Table: | |
| Pipe Count: | 1 | Ref Node: | | Ref Node: | |
| Damping: | 0.0000 ft | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Length: | 165.0 ft | Top Clip | | | |
| FHWA Code: | 0 | Default: | 0.0 ft | Default: | 0.0 ft |
| Entr Loss Coef: | 0.50 | Op Table: | | Op Table: | |
| Exit Loss Coef: | 0.00 | Ref Node: | | Ref Node: | |
| Bend Loss Coef: | 0.00 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Bend Location: | 0.0 dec | | | | |
| Energy Switch: | Energy | | | | |

Pipe Comment:

| Weir Component | | | |
|---|---|---|---|
| Weir: | 1 | Bottom Clip | |
| Weir Count: | 1 | Default: | 0.0 ft |
| Weir Flow Direction: | Both | Op Table: | |
| Damping: | 0.0000 ft | Ref Node: | |
| Weir Type: | Sharp Crested Vertical | Top Clip | |
| Geometry Type: | Circular | Default: | 0.0 ft |
| Invert: | 867.00 ft | Op Table: | |
| Control Elevation: | 867.00 ft | Ref Node: | |
| Max Depth: | 0.3 ft | Discharge Coefficients | |
| | | Weir Default: | 3.20 |
| | | Weir Table: | |
| | | Orifice Default: | 0.60 |
| | | Orifice Table: | |

Weir Comment:

| Weir Component | | | |
|---|---|---|---|
| Weir: | 2 | Bottom Clip | |
| Weir Count: | 1 | Default: | 0.0 ft |
| Weir Flow Direction: | Both | Op Table: | |
| Damping: | 0.0000 ft | Ref Node: | |
| Weir Type: | Horizontal | Top Clip | |
| Geometry Type: | Rectangular | Default: | 0.0 ft |
| Invert: | 870.00 ft | Op Table: | |
| Control Elevation: | 870.00 ft | Ref Node: | |
| Max Depth: | 3.0 ft | Discharge Coefficients | |

| | |
|---|---|
| Max Width: | 3.0 ft |
| Fillet: | 0.0 ft |

| | |
|---|---|
| Weir Default: | 3.20 |
| Weir Table: | |
| Orifice Default: | 0.60 |
| Orifice Table: | |

Weir Comment:

Drop Structure Comment:

| Drop Structure Link: POND 2 OUT | | Upstream Pipe | | Downstream Pipe | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 865.50 ft | Invert: | 865.39 ft |
| From Node: | POND 2 | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | STR 101 | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 2.0 ft | Max Depth: | 2.0 ft |
| Flow Direction: | Both | Bottom Clip | | | |
| Solution: | Combine | Default: | 0.0 ft | Default: | 0.0 ft |
| Increments: | 0 | Op Table: | | Op Table: | |
| Pipe Count: | 1 | Ref Node: | | Ref Node: | |
| Damping: | 0.0000 ft | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Length: | 48.0 ft | Top Clip | | | |
| FHWA Code: | 0 | Default: | 0.0 ft | Default: | 0.0 ft |
| Entr Loss Coef: | 0.50 | Op Table: | | Op Table: | |
| Exit Loss Coef: | 0.00 | Ref Node: | | Ref Node: | |
| Bend Loss Coef: | 0.00 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Bend Location: | 0.0 dec | | | | |
| Energy Switch: | Energy | | | | |

Pipe Comment:

| Weir Component | |
|---|---|
| Weir: | 1 |
| Weir Count: | 1 |
| Weir Flow Direction: | Both |
| Damping: | 0.0000 ft |
| Weir Type: | Sharp Crested Vertical |
| Geometry Type: | Circular |
| Invert: | 865.50 ft |
| Control Elevation: | 865.50 ft |
| Max Depth: | 0.3 ft |

| Bottom Clip | |
|---|---|
| Default: | 0.0 ft |
| Op Table: | |
| Ref Node: | |
| **Top Clip** | |
| Default: | 0.0 ft |
| Op Table: | |
| Ref Node: | |
| **Discharge Coefficients** | |
| Weir Default: | 3.20 |
| Weir Table: | |
| Orifice Default: | 0.60 |
| Orifice Table: | |

Weir Comment:

| Weir Component | |
|---|---|
| Weir: | 2 |
| Weir Count: | 1 |
| Weir Flow Direction: | Both |
| Damping: | 0.0000 ft |
| Weir Type: | Sharp Crested Vertical |
| Geometry Type: | Rectangular |
| Invert: | 868.10 ft |
| Control Elevation: | 868.10 ft |
| Max Depth: | 0.3 ft |

| Bottom Clip | |
|---|---|
| Default: | 0.0 ft |
| Op Table: | |
| Ref Node: | |
| **Top Clip** | |
| Default: | 0.0 ft |
| Op Table: | |
| Ref Node: | |
| **Discharge Coefficients** | |

| | | | |
|---|---|---|---|
| Max Width: | 1.0 ft | | |
| Fillet: | 0.0 ft | Weir Default: | 3.20 |
| | | Weir Table: | |
| | | Orifice Default: | 0.60 |
| | | Orifice Table: | |

Weir Comment:

| Weir Component | | | |
|---|---|---|---|
| Weir: | 3 | Bottom Clip | |
| Weir Count: | 1 | Default: | 0.0 ft |
| Weir Flow Direction: | Both | Op Table: | |
| Damping: | 0.0000 ft | Ref Node: | |
| Weir Type: | Horizontal | Top Clip | |
| Geometry Type: | Rectangular | Default: | 0.0 ft |
| Invert: | 868.90 ft | Op Table: | |
| Control Elevation: | 868.90 ft | Ref Node: | |
| Max Depth: | 3.0 ft | Discharge Coefficients | |
| Max Width: | 3.0 ft | Weir Default: | 3.20 |
| Fillet: | 0.0 ft | Weir Table: | |
| | | Orifice Default: | 0.60 |
| | | Orifice Table: | |

Weir Comment:

Drop Structure Comment:

| Drop Structure Link: POND 3 OUT | | Upstream Pipe | | Downstream Pipe | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 866.00 ft | Invert: | 865.50 ft |
| From Node: | POND 3 | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | 4+70.06 | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 1.0 ft | Max Depth: | 1.0 ft |
| Flow Direction: | Both | Bottom Clip | | | |
| Solution: | Combine | Default: | 0.0 ft | Default: | 0.0 ft |
| Increments: | 0 | Op Table: | | Op Table: | |
| Pipe Count: | 1 | Ref Node: | | Ref Node: | |
| Damping: | 0.0000 ft | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Length: | 114.0 ft | Top Clip | | | |
| FHWA Code: | 0 | Default: | 0.0 ft | Default: | 0.0 ft |
| Entr Loss Coef: | 0.50 | Op Table: | | Op Table: | |
| Exit Loss Coef: | 0.00 | Ref Node: | | Ref Node: | |
| Bend Loss Coef: | 0.00 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Bend Location: | 0.0 dec | | | | |
| Energy Switch: | Energy | | | | |

Pipe Comment:

| Weir Component | | | |
|---|---|---|---|
| Weir: | 1 | Bottom Clip | |
| Weir Count: | 1 | Default: | 0.0 ft |
| Weir Flow Direction: | Both | Op Table: | |
| Damping: | 0.0000 ft | Ref Node: | |
| Weir Type: | Sharp Crested Vertical | Top Clip | |
| Geometry Type: | Circular | Default: | 0.0 ft |
| Invert: | 866.00 ft | Op Table: | |
| Control Elevation: | 866.00 ft | Ref Node: | |
| Max Depth: | 0.3 ft | Discharge Coefficients | |

| | |
|---|---|
| Weir Default: | 3.20 |
| Weir Table: | |
| Orifice Default: | 0.60 |
| Orifice Table: | |

Weir Comment:

| Weir Component | |
|---|---|
| Weir: | 2 |
| Weir Count: | 1 |
| Weir Flow Direction: | Both |
| Damping: | 0.0000 ft |
| Weir Type: | Horizontal |
| Geometry Type: | Rectangular |
| Invert: | 870.40 ft |
| Control Elevation: | 870.40 ft |
| Max Depth: | 2.0 ft |
| Max Width: | 2.0 ft |
| Fillet: | 0.0 ft |

| Bottom Clip | |
|---|---|
| Default: | 0.0 ft |
| Op Table: | |
| Ref Node: | |

| Top Clip | |
|---|---|
| Default: | 0.0 ft |
| Op Table: | |
| Ref Node: | |

| Discharge Coefficients | |
|---|---|
| Weir Default: | 3.20 |
| Weir Table: | |
| Orifice Default: | 0.60 |
| Orifice Table: | |

Weir Comment:

Drop Structure Comment:

| Pipe Link: STR 101 OUT | | Upstream | | Downstream | |
|---|---|---|---|---|---|
| Scenario: | Scenario1 | Invert: | 865.19 ft | Invert: | 865.00 ft |
| From Node: | STR 101 | Manning's N: | 0.013 | Manning's N: | 0.013 |
| To Node: | 4+70.06 | Geometry: Circular | | Geometry: Circular | |
| Link Count: | 1 | Max Depth: | 2.5 ft | Max Depth: | 2.5 ft |
| Flow Direction: | Both | Bottom Clip | | | |
| Damping: | 0.0000 ft | Default: | 0.0 ft | Default: | 0.0 ft |
| Length: | 68.0 ft | Op Table: | | Op Table: | |
| FHWA Code: | 0 | Ref Node: | | Ref Node: | |
| Entr Loss Coef: | 0.50 | Manning's N: | 0.000 | Manning's N: | 0.000 |
| Exit Loss Coef: | 0.00 | Top Clip | | | |
| Bend Loss Coef: | 0.00 | Default: | 0.0 ft | Default: | 0.0 ft |
| Bend Location: | 0.0 dec | Op Table: | | Op Table: | |
| Energy Switch: | Energy | Ref Node: | | Ref Node: | |
| | | Manning's N: | 0.000 | Manning's N: | 0.000 |

Comment:

| Weir Link: TRAIL | |
|---|---|
| Scenario: | Scenario1 |
| From Node: | 0+06.69 |
| To Node: | BNDY |
| Link Count: | 1 |
| Flow Direction: | Both |
| Damping: | 0.0000 ft |
| Weir Type: | Broad Crested Vertical |
| Geometry Type: | Irregular |

| Bottom Clip | |
|---|---|
| Default: | 0.0 ft |
| Op Table: | |
| Ref Node: | |

| Top Clip | |
|---|---|
| Default: | 0.0 ft |
| Op Table: | |
| Ref Node: | |

Invert: 872.01 ft
Control Elevation: 872.01 ft
Cross Section: Trail

**Discharge Coefficients**

Weir Default: 2.80
Weir Table:
Orifice Default: 0.60
Orifice Table:

Comment:

## Simulation: 10 -yr 24-hour

Scenario: Scenario1
Run Date/Time: 2/22/2022 11:34:16 AM
Program Version: ICPR4 4.07.04

### General

Run Mode: Normal

| | Year | Month | Day | Hour [hr] |
|---|---|---|---|---|
| Start Time: | 0 | 0 | 0 | 0.0 |
| End Time: | 0 | 0 | 0 | 30.0 |

| | Hydrology [sec] | Surface Hydraulics [sec] |
|---|---|---|
| Min Calculation Time: | 60.0 | 0.1 |
| Max Calculation Time: | | 30.0 |

### Output Time Increments

#### Hydrology

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0 | 15.0 |

#### Surface Hydraulics

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0 | 15.0 |

#### Restart File

Save Restart: False

### Resources & Lookup Tables

**Resources**

Rainfall Folder:
Unit Hydrograph Folder:

**Lookup Tables**

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

### Tolerances & Options

Time Marching: SAOR
IA Recovery Time: 24.0 hr

| | | | |
|---|---|---|---|
| Max Iterations: | 6 | | |
| Over-Relax Weight Fact: | 0.5 dec | | |
| dZ Tolerance: | 0.0010 ft | Smp/Man Basin Rain Opt: | Global |
| Max dZ: | 1.00 ft | | |
| Link Optimizer Tol: | 0.0001 ft | Rainfall Name: | ~SCSII-24 |
| | | Rainfall Amount: | 4.3 in |
| Edge Length Option: | Automatic | Storm Duration: | 24.0 hr |
| | | Dflt Damping (1D): | 0.0050 ft |
| | | Min Node Srf Area (1D): | 100.0 ft2 |
| | | Energy Switch (1D): | Momentum |

Comment:

## Simulation: 100-yr 24-hour

Scenario: Scenario1
Run Date/Time: 2/22/2022 11:34:31 AM
Program Version: ICPR4 4.07.04

### General

Run Mode: Normal

| | Year | Month | Day | Hour [hr] |
|---|---|---|---|---|
| Start Time: | 0 | 0 | 0 | 0.0 |
| End Time: | 0 | 0 | 0 | 48.0 |

| | Hydrology [sec] | Surface Hydraulics [sec] |
|---|---|---|
| Min Calculation Time: | 60.0 | 0.1 |
| Max Calculation Time: | | 30.0 |

### Output Time Increments

#### Hydrology

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0 | 15.0 |

#### Surface Hydraulics

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0 | 15.0 |

#### Restart File

Save Restart: False

### Resources & Lookup Tables

#### Resources

Rainfall Folder:

#### Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:

| | | | |
|---|---|---|---|
| Unit Hydrograph Folder: | | Curve Number Set: | |
| | | Green-Ampt Set: | |
| | | Vertical Layers Set: | |
| | | Impervious Set: | |

## Tolerances & Options

| | | | |
|---|---|---|---|
| Time Marching: | SAOR | IA Recovery Time: | 24.0 hr |
| Max Iterations: | 6 | | |
| Over-Relax Weight Fact: | 0.5 dec | | |
| dZ Tolerance: | 0.0010 ft | Smp/Man Basin Rain Opt: | Global |
| Max dZ: | 1.00 ft | | |
| Link Optimizer Tol: | 0.0001 ft | Rainfall Name: | ~SCSII-24 |
| | | Rainfall Amount: | 6.3 in |
| Edge Length Option: | Automatic | Storm Duration: | 24.0 hr |
| | | Dflt Damping (1D): | 0.0050 ft |
| | | Min Node Srf Area (1D): | 100.0 ft2 |
| | | Energy Switch (1D): | Momentum |

Comment:

## Simulation: 2-yr 24-hour

| | |
|---|---|
| Scenario: | Scenario1 |
| Run Date/Time: | 1/26/2022 5:38:26 PM |
| Program Version: | ICPR4 4.07.04 |

## General

Run Mode: Normal

| | Year | Month | Day | Hour [hr] |
|---|---|---|---|---|
| Start Time: | 0 | 0 | 0 | 0.0 |
| End Time: | 0 | 0 | 0 | 30.0 |

| | Hydrology [sec] | Surface Hydraulics [sec] |
|---|---|---|
| Min Calculation Time: | 60.0 | 0.1 |
| Max Calculation Time: | | 30.0 |

## Output Time Increments

### Hydrology

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0 | 15.0 |

### Surface Hydraulics

| Year | Month | Day | Hour [hr] | Time Increment [min] |
|---|---|---|---|---|
| 0 | 0 | 0 | 0.0 | 15.0 |

## Restart File

Save Restart: False

## Resources & Lookup Tables

### Resources

Rainfall Folder:

Unit Hydrograph Folder:

### Lookup Tables

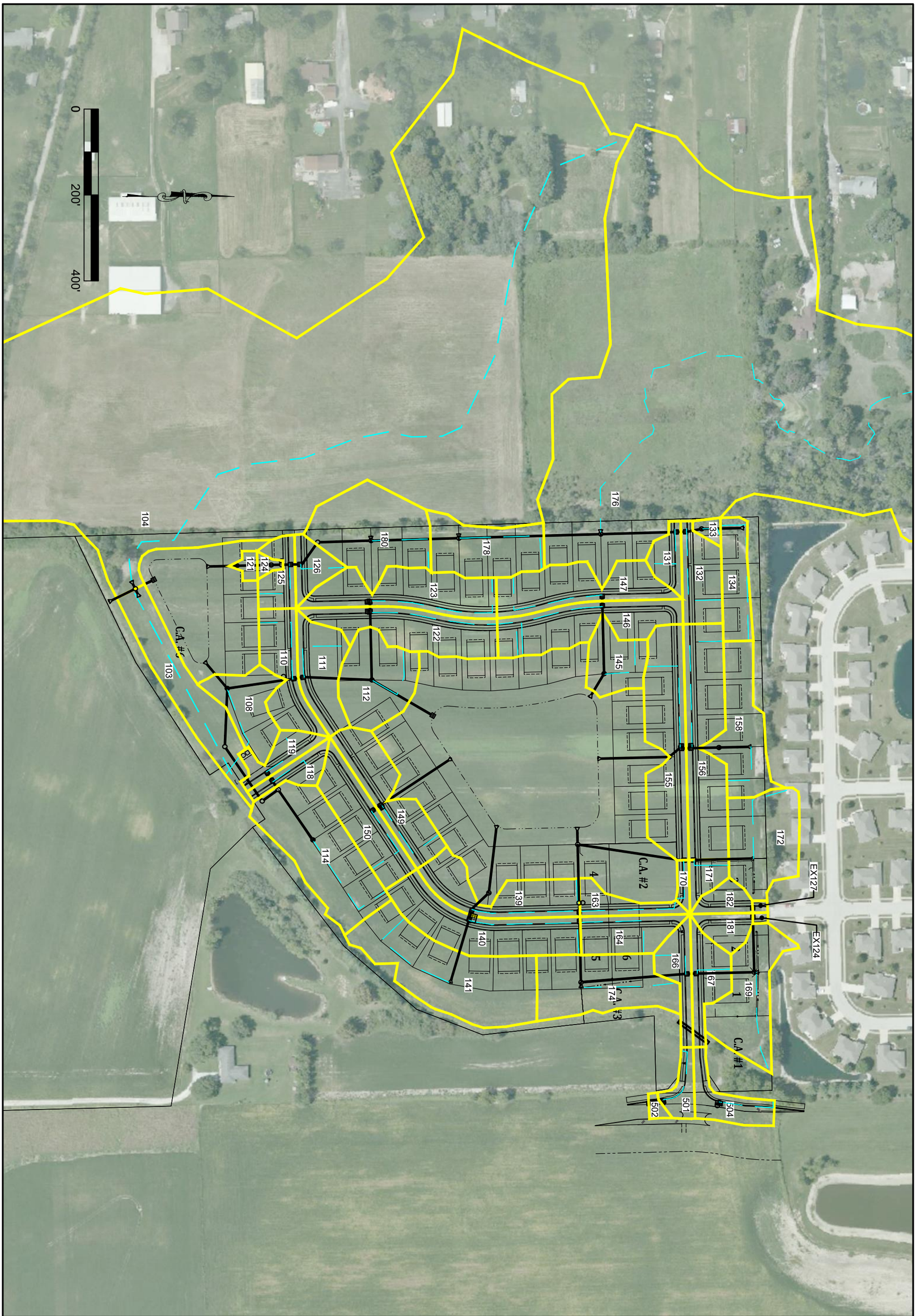
Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set:
Green-Ampt Set:
Vertical Layers Set:
Impervious Set:

## Tolerances & Options

| | | | |
|---|---|---|---|
| Time Marching: | SAOR | IA Recovery Time: | 24.0 hr |
| Max Iterations: | 6 | | |
| Over-Relax Weight Fact: | 0.5 dec | | |
| dZ Tolerance: | 0.0010 ft | Smp/Man Basin Rain Opt: | Global |
| Max dZ: | 1.00 ft | | |
| Link Optimizer Tol: | 0.0001 ft | Rainfall Name: | ~SCSII-24 |
| | | Rainfall Amount: | 3.0 in |
| Edge Length Option: | Automatic | Storm Duration: | 24.0 hr |
| | | Dflt Damping (1D): | 0.0050 ft |
| | | Min Node Srf Area (1D): | 100.0 ft2 |
| | | Energy Switch (1D): | Momentum |

Comment:

# E6. STORM SEWER CALCULATIONS




| | | |
|---|---|---|
| Drawn By: WCZ<br>Date: 03/04/2022<br>Project No.: 21113-S1<br>Scale: AS SHOWN<br>Page: 1 of 1 | STORM SEWER BASIN MAP<br>PROMENADE, SECTION 1A & 1B<br>HENDRICKS COUNTY<br>BROWNSBURG, INDIANA | BANNING ENGINEERING<br>853 COLUMBIA ROAD, SUITE #101<br>PLAINFIELD, IN 46168<br>BUS: (317) 707-3700, FAX: (317) 707-3800<br>E-MAIL: Banning@BanningEngineering.com<br>WEB: www.BannningEngineering.com |

STORM SEWER DESIGN CALCULATIONS
-PIPE DESIGN-

| | | | |
|---|---|---|---|
| PROJECT: | Promenade, Sections 1A & 1B | STORM: | 10 Year |
| JOB #: | 21113-S1 | COMPUTED BY: | JET |
| DATE: | 3/24/22 | SHEET NO.: | |

Manning's Roughness Coefficient (n) = 0.013

| STRUCTURE | | DESIGN | | | | CAP. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | Q (cfs) | L (ft) | DIA. (in) | SLOPE % | Q (cfs) | VEL. (ft/s) | RIM ELEV. UP | RIM ELEV. DOWN | INVERT ELEV. UP | INVERT ELEV. DOWN | COVER (ft) |
| 134 | 133 | 0.83 | 98 | 12 | 1.39 | 4.25 | 5.41 | ES | 871.90 | 870.00 | 868.64 | ES |
| 133 | 132 | 0.96 | 32 | 12 | 0.30 | 1.97 | 2.51 | 871.90 | 872.01 | 868.54 | 868.44 | 2.19 |
| 132 | 131 | 1.77 | 32 | 12 | 0.30 | 1.97 | 2.51 | 872.01 | 872.01 | 868.34 | 868.24 | 2.50 |
| 131 | 130 | 2.21 | 171 | 15 | 0.23 | 3.13 | 2.55 | 872.01 | 872.20 | 868.14 | 867.75 | 2.43 |
| 130 | 129 | 8.93 | 331 | 24 | 0.16 | 9.12 | 2.90 | 872.20 | 871.00 | 867.20 | 866.67 | 2.75 |
| 129 | 128 | 9.29 | 206 | 24 | 0.17 | 9.40 | 2.99 | 871.00 | 871.00 | 866.67 | 866.32 | 2.08 |
| 128 | 127 | 9.85 | 124 | 24 | 0.19 | 9.93 | 3.16 | 871.00 | 870.09 | 866.32 | 866.08 | 2.43 |
| 127 | 126 | 9.75 | 63 | 24 | 0.19 | 9.93 | 3.16 | 870.09 | 869.90 | 866.08 | 865.96 | 1.76 |
| 126 | 125 | 9.94 | 32 | 24 | 0.20 | 10.19 | 3.24 | 869.90 | 869.91 | 865.96 | 865.90 | 1.69 |
| 125 | 124A | 10.31 | 16 | 24 | 0.21 | 10.44 | 3.32 | 869.91 | 869.98 | 865.90 | 865.87 | 1.76 |
| 124A | 124 | 10.30 | 24 | 24 | 0.21 | 10.44 | 3.32 | 869.98 | 869.90 | 865.87 | 865.82 | 1.86 |
| 124 | 121 | 10.33 | 80 | 24 | 0.21 | 10.44 | 3.32 | 869.90 | 869.50 | 865.82 | 865.65 | 1.83 |
| 121 | 120 | 10.33 | 70 | 24 | 0.21 | 10.44 | 3.32 | 869.50 | ES | 865.65 | 865.50 | 1.60 |
| 176 | 130 | 7.59 | 10 | 24 | 1.50 | 27.91 | 8.88 | ES | 872.20 | 868.60 | 868.45 | ES |
| 178 | 129 | 1.15 | 10 | 12 | 2.00 | 5.10 | 6.49 | ES | 871.00 | 867.90 | 867.70 | ES |
| 180 | 128 | 1.31 | 10 | 12 | 2.00 | 5.10 | 6.49 | ES | 871.00 | 867.90 | 867.70 | ES |
| 158 | 157 | 1.33 | 75 | 12 | 2.26 | 5.42 | 6.90 | ES | 871.50 | 870.00 | 868.31 | ES |
| 157 | 156 | 1.32 | 60 | 12 | 0.30 | 1.97 | 2.51 | 871.50 | 871.71 | 868.21 | 868.03 | 2.12 |
| 156 | 155 | 3.64 | 32 | 15 | 0.32 | 3.69 | 3.01 | 871.71 | 871.71 | 867.93 | 867.83 | 2.34 |
| 155 | WQ8 | 5.93 | 23 | 18 | 0.42 | 6.87 | 3.89 | 871.71 | 872.04 | 867.73 | 867.63 | 2.27 |
| WQ8 | 153 | 5.92 | 177 | 18 | 0.36 | 6.32 | 3.57 | 872.04 | ES | 867.63 | 867.00 | 2.70 |
| 169 | 168 | 0.88 | 10 | 12 | 0.30 | 1.97 | 2.51 | ES | 874.61 | 870.00 | 869.97 | #VALUE! |
| 168 | 167 | 1.59 | 130 | 12 | 0.30 | 1.97 | 2.51 | 874.61 | 874.61 | 869.03 | 868.64 | 4.41 |
| 167 | 166 | 2.57 | 32 | 15 | 0.23 | 3.13 | 2.55 | 874.61 | 874.61 | 868.54 | 868.47 | 4.63 |
| 166 | 165 | 3.23 | 242 | 18 | 0.18 | 4.50 | 2.55 | 874.61 | 871.83 | 868.37 | 867.93 | 4.53 |
| 165 | 164 | 4.26 | 137 | 24 | 0.12 | 7.89 | 2.51 | 871.83 | 873.96 | 867.83 | 867.67 | 1.75 |
| 164 | 163 | 5.06 | 32 | 24 | 0.12 | 7.89 | 2.51 | 873.96 | 873.96 | 867.57 | 867.53 | 4.14 |
| 163 | 162A | 5.64 | 16 | 24 | 0.12 | 7.89 | 2.51 | 873.96 | 874.57 | 867.43 | 867.41 | 4.28 |
| 162A | 162 | 5.62 | 136 | 24 | 0.12 | 7.89 | 2.51 | 874.57 | 871.27 | 867.31 | 867.15 | 5.01 |
| 162 | 161 | 7.11 | 40 | 24 | 0.12 | 7.89 | 2.51 | 871.27 | ES | 867.05 | 867.00 | 1.97 |
| 174 | 165 | 1.19 | 12 | 12 | 3.00 | 6.25 | 7.95 | ES | 871.83 | 869.20 | 868.84 | ES |
| 172 | 171 | 1.48 | 135 | 15 | 0.23 | 3.13 | 2.55 | ES | 874.71 | 870.00 | 869.69 | ES |
| 171 | 170 | 1.93 | 32 | 15 | 0.23 | 3.13 | 2.55 | 874.71 | 874.71 | 869.59 | 869.52 | 3.68 |
| 170 | WQ7 | 2.19 | 13 | 15 | 0.99 | 6.49 | 5.29 | 874.71 | 875.10 | 869.42 | 869.29 | 3.85 |
| WQ7 | 162 | 2.19 | 232 | 15 | 0.92 | 6.26 | 5.10 | 875.10 | 871.27 | 869.29 | 867.16 | 4.37 |
| 147 | 146 | 1.60 | 32 | 12 | 0.30 | 1.97 | 2.51 | 871.51 | 871.51 | 867.97 | 867.87 | 2.37 |
| 146 | WQ9 | 3.25 | 13 | 15 | 0.27 | 3.39 | 2.76 | 871.51 | 871.99 | 867.77 | 867.73 | 2.30 |
| WQ9 | 145 | 3.24 | 140 | 15 | 0.27 | 3.36 | 2.74 | 871.99 | 870.80 | 867.73 | 867.36 | 2.82 |
| 145 | 144 | 3.85 | 64 | 15 | 0.40 | 4.13 | 3.36 | 870.80 | ES | 867.26 | 867.00 | 2.10 |
| 141 | 140 | 2.11 | 149 | 12 | 1.03 | 3.66 | 4.66 | ES | 871.21 | 869.50 | 867.97 | ES |
| 140 | 139 | 4.45 | 32 | 15 | 0.47 | 4.48 | 3.65 | 871.21 | 871.21 | 867.82 | 867.67 | 1.95 |
| 139 | WQ6 | 6.14 | 5 | 18 | 0.34 | 6.18 | 3.50 | 871.21 | 871.50 | 867.57 | 867.55 | 1.93 |
| WQ6 | 138 | 6.13 | 47 | 18 | 0.34 | 6.18 | 3.50 | 871.50 | 871.25 | 867.55 | 867.39 | 2.24 |
| 138 | 137 | 6.11 | 158 | 24 | 0.12 | 7.89 | 2.51 | 871.25 | ES | 867.19 | 867.00 | 1.81 |
| 150 | 149 | 1.69 | 32 | 12 | 0.30 | 1.97 | 2.51 | 871.21 | 871.21 | 867.75 | 867.65 | 2.29 |
| 149 | WQ5 | 3.41 | 4 | 15 | 0.30 | 3.58 | 2.91 | 871.21 | 871.47 | 867.55 | 867.54 | 2.22 |
| WQ5 | 148 | 3.41 | 188 | 15 | 0.29 | 3.49 | 2.84 | 871.47 | ES | 867.54 | 867.00 | 2.49 |

STORM SEWER DESIGN CALCULATIONS
-PIPE DESIGN-

| | | | |
|---|---|---|---|
| PROJECT: | Promenade, Sections 1A & 1B | STORM: | 10 Year |
| JOB #: | 21113-S1 | COMPUTED BY: | JET |
| DATE: | 3/24/22 | SHEET NO.: | |

Manning's Roughness Coefficient (n) = 0.013

| STRUCTURE | | DESIGN | | | | CAP. | | RIM ELEV. | | INVERT ELEV. | | COVER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | Q (cfs) | L (ft) | DIA. (in) | SLOPE % | Q (cfs) | VEL. (ft/s) | UP | DOWN | UP | DOWN | (ft) |
| 113 | 112 | 0.00 | 165 | 18 | 0.25 | 5.30 | 3.00 | OUTLET | 870.50 | 867.00 | 866.59 | OUTLET |
| 112 | 111 | 4.66 | 155 | 24 | 0.12 | 7.89 | 2.51 | 870.50 | 870.65 | 866.49 | 866.30 | 1.76 |
| 111 | 110 | 5.46 | 32 | 24 | 0.12 | 7.89 | 2.51 | 870.65 | 870.65 | 866.20 | 866.16 | 2.20 |
| 110 | 109 | 6.74 | 13 | 24 | 0.16 | 9.12 | 2.90 | 870.65 | 870.89 | 866.06 | 866.04 | 2.34 |
| 109 | 108 | 6.73 | 138 | 24 | 0.12 | 7.89 | 2.51 | 870.89 | 869.00 | 865.94 | 865.77 | 2.70 |
| 108 | 107 | 10.05 | 81 | 24 | 0.21 | 10.44 | 3.32 | 869.00 | ES | 865.67 | 865.50 | 1.08 |
| 123 | 122 | 1.74 | 32 | 18 | 0.18 | 4.50 | 2.55 | 871.21 | 871.21 | 867.03 | 866.97 | 2.47 |
| 122 | 112 | 3.39 | 155 | 18 | 0.18 | 4.50 | 2.55 | 871.21 | 870.50 | 866.87 | 866.59 | 2.63 |
| 119 | 118 | 1.01 | 32 | 12 | 0.30 | 1.97 | 2.51 | 870.46 | 870.46 | 866.95 | 866.85 | 2.34 |
| 118 | 117 | 1.71 | 20 | 12 | 0.30 | 1.97 | 2.51 | 870.46 | 870.88 | 866.75 | 866.69 | 2.54 |
| 117 | WQ4 | 3.83 | 47 | 18 | 0.18 | 4.50 | 2.55 | 870.88 | 871.45 | 866.49 | 866.41 | 2.68 |
| WQ4 | 115 | 3.77 | 145 | 18 | 0.19 | 4.62 | 2.62 | 871.45 | 870.88 | 866.41 | 866.13 | 3.33 |
| 115 | 108 | 3.62 | 136 | 18 | 0.18 | 4.50 | 2.55 | 870.88 | 869.00 | 866.03 | 865.79 | 3.14 |
| 114 | 117 | 1.74 | 141 | 12 | 0.30 | 1.97 | 2.51 | 869.56 | 870.88 | 867.12 | 866.70 | 1.27 |
| 104 | 101 | 13.84 | 20 | 24 | 0.40 | 14.41 | 4.59 | ES | 869.50 | 865.80 | 865.72 | ES |
| 103 | 101 | 0.64 | 20 | 12 | 0.30 | 1.97 | 2.51 | ES | 869.50 | 866.00 | 865.94 | ES |
| 502 | 501 | 0.24 | 34 | 12 | 0.30 | 1.97 | 2.51 | 874.86 | 874.90 | 871.55 | 871.45 | 2.14 |
| 501 | 500 | 1.22 | 10 | 12 | 0.30 | 1.97 | 2.51 | 874.90 | 874.56 | 871.45 | 871.42 | 2.28 |
| 500 | EX1 | 1.22 | 34 | 12 | 1.48 | 4.39 | 5.58 | 874.56 | 875.76 | 871.42 | 870.92 | 1.97 |
| 504 | 503 | 1.78 | 12 | 12 | 0.30 | 1.97 | 2.51 | 875.16 | 874.88 | 871.34 | 871.30 | 2.65 |
| 102 | 101 | 0.00 | 48 | 24 | 0.23 | 10.93 | 3.48 | OUTLET | 869.50 | 865.50 | 865.39 | OUTLET |
| 101 | 100 | 14.22 | 68 | 30 | 0.28 | 21.83 | 4.45 | 869.50 | ES | 865.19 | 865.00 | 1.52 |
| 182 | 181 | 0.55 | 32 | 12 | 0.30 | 1.97 | 2.51 | 872.92 | 872.92 | 869.70 | X 869.60 | 2.05 |
| 181 | 168 | 1.13 | 125 | 12 | 0.30 | 1.97 | 2.51 | 872.92 | 874.61 | 869.50 | 869.13 | 2.25 |
| EX127 | EX124 | 0.12 | 28 | 12 | 0.30 | 1.97 | 2.51 | 872.00 | 872.00 | 868.86 | 868.78 | 1.97 |
| EX124 | EX103 | 0.23 | 93 | 12 | 0.30 | 1.97 | 2.51 | 872.00 | 873.60 | 868.78 | 868.50 | 2.05 |

STORM SEWER DESIGN CALCULATIONS
-RATIONAL METHOD-

| | | | |
|---|---|---|---|
| PROJECT: | Promenade, Sections 1A & 1B | STORM: | 10 Year |
| JOB #: | 21113-S1 | COMPUTED BY: | JET |
| DATE: | 3/24/22 | SHEET NO.: | |

| STRUCTURE | | BASINS | | | | | | | COMPOSITE BASINS | | | | TRAVEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | BASIN # | c | A (acres) | c*A | Tc (min) | I (in/hr) | Q (cfs) | SUM (c*A) | Tc (min) | I (in/hr) | Q (cfs) | TIME (min) |
| 134 | 133 | 134 | 0.39 | 0.42 | 0.16 | 12 | 5.06 | 0.83 | 0.16 | 12 | 5.06 | 0.83 | 0.30 |
| 133 | 132 | 133 | 0.42 | 0.07 | 0.03 | 7 | 6.44 | 0.18 | 0.19 | 13 | 5.00 | 0.96 | 0.21 |
| 132 | 131 | 132 | 0.52 | 0.45 | 0.23 | 19 | 4.16 | 0.97 | 0.43 | 19 | 4.16 | 1.77 | 0.21 |
| 131 | 130 | 131 | 0.51 | 0.21 | 0.11 | 9 | 5.66 | 0.62 | 0.54 | 19 | 4.14 | 2.21 | 1.12 |
| 130 | 129 | 130 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 3.56 | 45 | 2.51 | 8.93 | 1.90 |
| 129 | 128 | 129 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 3.81 | 47 | 2.44 | 9.29 | 1.15 |
| 128 | 127 | 128 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 4.12 | 48 | 2.39 | 9.85 | 0.65 |
| 127 | 126 | 127 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 4.12 | 49 | 2.37 | 9.75 | 0.33 |
| 126 | 125 | 126 | 0.43 | 0.24 | 0.10 | 20 | 4.02 | 0.42 | 4.22 | 49 | 2.36 | 9.94 | 0.16 |
| 125 | 124A | 125 | 0.62 | 0.27 | 0.17 | 16 | 4.45 | 0.75 | 4.39 | 50 | 2.35 | 10.31 | 0.08 |
| 124A | 124 | 124A | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 4.39 | 50 | 2.35 | 10.30 | 0.12 |
| 124 | 121 | 124 | 0.41 | 0.05 | 0.02 | 8 | 6.12 | 0.13 | 4.41 | 50 | 2.34 | 10.33 | 0.40 |
| 121 | 120 | 121 | 0.43 | 0.06 | 0.03 | 12 | 5.13 | 0.14 | 4.44 | 50 | 2.33 | 10.33 | 0.35 |
| 176 | 130 | 176 | 0.22 | 13.92 | 3.03 | 45 | 2.51 | 7.59 | 3.03 | 45 | 2.51 | 7.59 | 0.02 |
| 178 | 129 | 178 | 0.34 | 0.73 | 0.25 | 15 | 4.61 | 1.15 | 0.25 | 15 | 4.61 | 1.15 | 0.03 |
| 180 | 128 | 180 | 0.29 | 1.07 | 0.30 | 18 | 4.29 | 1.31 | 0.30 | 18 | 4.29 | 1.31 | 0.03 |
| 158 | 157 | 158 | 0.36 | 0.75 | 0.27 | 13 | 4.94 | 1.33 | 0.27 | 13 | 4.94 | 1.33 | 0.18 |
| 157 | 156 | 157 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 0.27 | 13 | 4.91 | 1.32 | 0.40 |
| 156 | 155 | 156 | 0.52 | 1.12 | 0.58 | 18 | 4.26 | 2.49 | 0.85 | 18 | 4.26 | 3.64 | 0.18 |
| 155 | WQ8 | 155 | 0.51 | 1.07 | 0.54 | 16 | 4.43 | 2.41 | 1.40 | 18 | 4.24 | 5.93 | 0.10 |
| WQ8 | 153 | WQ8 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 1.40 | 18 | 4.23 | 5.92 | 0.83 |
| 169 | 168 | 169 | 0.25 | 0.82 | 0.20 | 17 | 4.36 | 0.88 | 0.20 | 17 | 4.36 | 0.88 | 0.07 |
| 168 | 167 | 168 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 0.36 | 17 | 4.35 | 1.59 | 0.86 |
| 167 | 166 | 167 | 0.63 | 0.38 | 0.24 | 15 | 4.55 | 1.08 | 0.60 | 18 | 4.27 | 2.57 | 0.21 |
| 166 | 165 | 166 | 0.50 | 0.31 | 0.16 | 8 | 5.96 | 0.94 | 0.76 | 18 | 4.25 | 3.23 | 1.58 |
| 165 | 164 | 165 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 1.04 | 20 | 4.09 | 4.26 | 0.91 |
| 164 | 163 | 164 | 0.51 | 0.43 | 0.22 | 14 | 4.72 | 1.05 | 1.26 | 21 | 4.01 | 5.06 | 0.21 |
| 163 | 162A | 163 | 0.60 | 0.25 | 0.15 | 5 | 6.91 | 1.05 | 1.41 | 21 | 3.98 | 5.64 | 0.11 |
| 162A | 162 | 162A | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 1.41 | 21 | 3.97 | 5.62 | 0.90 |
| 162 | 161 | 162 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 1.83 | 22 | 3.89 | 7.11 | 0.27 |
| 174 | 165 | 174 | 0.30 | 0.95 | 0.28 | 18 | 4.23 | 1.19 | 0.28 | 18 | 4.23 | 1.19 | 0.03 |
| 172 | 171 | 172 | 0.32 | 0.82 | 0.27 | 10 | 5.59 | 1.48 | 0.27 | 10 | 5.59 | 1.48 | 0.88 |
| 171 | 170 | 171 | 0.59 | 0.16 | 0.10 | 11 | 5.33 | 0.52 | 0.36 | 11 | 5.33 | 1.93 | 0.21 |
| 170 | WQ7 | 170 | 0.72 | 0.07 | 0.05 | 5 | 6.99 | 0.37 | 0.41 | 11 | 5.29 | 2.19 | 0.04 |
| WQ7 | 162 | WQ7 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 0.41 | 11 | 5.29 | 2.19 | 0.76 |
| 147 | 146 | 147 | 0.50 | 0.79 | 0.40 | 20 | 4.03 | 1.60 | 0.40 | 20 | 4.03 | 1.60 | 0.21 |
| 146 | WQ9 | 146 | 0.50 | 0.83 | 0.41 | 20 | 4.08 | 1.68 | 0.81 | 21 | 4.01 | 3.25 | 0.08 |
| WQ9 | 145 | WQ9 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 0.81 | 21 | 4.00 | 3.24 | 0.85 |
| 145 | 144 | 145 | 0.41 | 0.42 | 0.17 | 13 | 4.86 | 0.84 | 0.98 | 21 | 3.92 | 3.85 | 0.32 |
| 141 | 140 | 141 | 0.30 | 1.46 | 0.44 | 13 | 4.85 | 2.11 | 0.44 | 13 | 4.85 | 2.11 | 0.53 |
| 140 | 139 | 140 | 0.57 | 0.96 | 0.54 | 15 | 4.54 | 2.47 | 0.98 | 15 | 4.54 | 4.45 | 0.15 |
| 139 | WQ6 | 139 | 0.54 | 0.69 | 0.38 | 15 | 4.54 | 1.70 | 1.35 | 15 | 4.53 | 6.14 | 0.02 |
| WQ6 | 138 | WQ6 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 1.35 | 15 | 4.53 | 6.13 | 0.22 |
| 138 | 137 | 138 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 1.35 | 15 | 4.51 | 6.11 | 1.05 |
| 150 | 149 | 150 | 0.57 | 0.66 | 0.38 | 16 | 4.50 | 1.69 | 0.38 | 16 | 4.50 | 1.69 | 0.21 |
| 149 | WQ5 | 149 | 0.57 | 0.68 | 0.39 | 16 | 4.47 | 1.73 | 0.76 | 16 | 4.47 | 3.41 | 0.02 |
| WQ5 | 148 | WQ5 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 0.76 | 16 | 4.47 | 3.41 | 1.10 |
| 113 | 112 | 113 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 0.92 |
| 112 | 111 | 112 | 0.30 | 0.74 | 0.22 | 17 | 4.38 | 0.96 | 1.06 | 17 | 4.38 | 4.66 | 1.03 |
| 111 | 110 | 111 | 0.39 | 0.54 | 0.21 | 14 | 4.80 | 1.02 | 1.28 | 18 | 4.28 | 5.46 | 0.21 |
| 110 | 109 | 110 | 0.55 | 0.56 | 0.31 | 14 | 4.78 | 1.47 | 1.58 | 18 | 4.26 | 6.74 | 0.07 |
| 109 | 108 | 109 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 1.58 | 18 | 4.25 | 6.73 | 0.92 |
| 108 | 107 | 108 | 0.32 | 0.51 | 0.16 | 14 | 4.65 | 0.75 | 2.42 | 19 | 4.16 | 10.05 | 0.41 |
| 123 | 122 | 123 | 0.51 | 0.84 | 0.43 | 20 | 4.04 | 1.74 | 0.43 | 20 | 4.04 | 1.74 | 0.21 |
| 122 | 112 | 122 | 0.52 | 0.80 | 0.41 | 19 | 4.12 | 1.70 | 0.84 | 20 | 4.02 | 3.39 | 1.01 |

STORM SEWER DESIGN CALCULATIONS
-RATIONAL METHOD-

| | | | |
|---|---|---|---|
| PROJECT: | Promenade, Sections 1A & 1B | STORM: | 10 Year |
| JOB #: | 21113-S1 | COMPUTED BY: | JET |
| DATE: | 3/24/22 | SHEET NO.: | |

| STRUCTURE | | BASINS | | | | | | | COMPOSITE BASINS | | | | TRAVEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | BASIN # | c | A (acres) | c*A | Tc (min) | I (in/hr) | Q (cfs) | SUM (c*A) | Tc (min) | I (in/hr) | Q (cfs) | TIME (min) |
| 119 | 118 | 119 | 0.64 | 0.26 | 0.17 | 8 | 6.07 | 1.01 | 0.17 | 8 | 6.07 | 1.01 | 0.21 |
| 118 | 117 | 118 | 0.62 | 0.21 | 0.13 | 9 | 5.75 | 0.75 | 0.30 | 9 | 5.75 | 1.71 | 0.13 |
| 117 | WQ4 | 117 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 0.67 | 9 | 5.71 | 3.83 | 0.31 |
| WQ4 | 115 | WQ4 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 0.67 | 10 | 5.62 | 3.77 | 0.92 |
| 115 | 108 | 115 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 0.67 | 10 | 5.39 | 3.62 | 0.89 |
| 114 | 117 | 114 | 0.31 | 1.22 | 0.37 | 14 | 4.66 | 1.74 | 0.37 | 14 | 4.66 | 1.74 | 0.93 |
| 104 | 101 | 104 | 0.29 | 22.10 | 6.34 | 54 | 2.18 | 13.84 | 6.34 | 54 | 2.18 | 13.84 | 0.07 |
| 103 | 101 | 103 | 0.20 | 0.88 | 0.18 | 25 | 3.60 | 0.64 | 0.18 | 25 | 3.60 | 0.64 | 0.13 |
| 502 | 501 | 502 | 0.74 | 0.05 | 0.03 | 5 | 6.99 | 0.24 | 0.03 | 5 | 6.99 | 0.24 | 0.23 |
| 501 | 500 | 501 | 0.76 | 0.19 | 0.14 | 5 | 6.99 | 1.00 | 0.18 | 5 | 6.92 | 1.22 | 0.07 |
| 500 | EX1 | 500 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 0.18 | 5 | 6.90 | 1.22 | 0.10 |
| 504 | 503 | 504 | 0.74 | 0.34 | 0.25 | 5 | 6.99 | 1.78 | 0.25 | 5 | 6.99 | 1.78 | 0.08 |
| 503 | EX2 | 503 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 0.25 | 5 | 6.97 | 1.78 | 0.00 |
| 102 | 101 | 102 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 0.23 |
| 101 | 100 | 101 | 0.00 | 0.00 | 0.00 | 5 | 6.99 | 0.00 | 6.52 | 54 | 2.18 | 14.22 | 0.25 |
| 182 | 181 | 182 | 0.44 | 0.18 | 0.08 | 5 | 6.99 | 0.55 | 0.08 | 5 | 6.99 | 0.55 | 0.21 |
| 181 | 168 | 181 | 0.41 | 0.20 | 0.08 | 5 | 6.99 | 0.59 | 0.16 | 5 | 6.93 | 1.13 | 0.83 |
| EX127 | EX124 | EX127 | 0.72 | 0.02 | 0.02 | 5 | 6.99 | 0.12 | 0.02 | 5 | 6.99 | 0.12 | 0.19 |
| EX124 | EX103 | EX124 | 0.72 | 0.02 | 0.02 | 5 | 6.99 | 0.12 | 0.03 | 5 | 6.93 | 0.23 | 0.62 |

STORM SEWER DESIGN CALCULATIONS
-COMPOSITE C-VALUES-

PROJECT: Promenade, Sections 1A & STORM: 10 Year
JOB #: 21113-S1 COMPUTED BY: JET
DATE: 3/24/22

| BASINS | | | | | RUNOFF COEFFICIENTS | | | | |
|---|---|---|---|---|---|---|---|---|---|
| BASIN # | c | Area (ft2) | Area (acres) | c*A | Pavement 0.85 Area ($ft^2$) | Lawns 0.20 Area ($ft^2$) | Other 0.30 Area ($ft^2$) | Other Area ($ft^2$) | Other Area ($ft^2$) |
| 134 | 0.39 | 18279 | 0.42 | 0.16 | 5400 | 12879 | | | |
| 133 | 0.42 | 2913 | 0.07 | 0.03 | 1000 | 1913 | | | |
| 132 | 0.52 | 19475 | 0.45 | 0.24 | 9662 | 9813 | | | |
| 131 | 0.51 | 9237 | 0.21 | 0.11 | 4455 | 4782 | | | |
| 130 | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 129 | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 128 | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 127 | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 126 | 0.43 | 10506 | 0.24 | 0.10 | 3684 | 6822 | | | |
| 125 | 0.62 | 11863 | 0.27 | 0.17 | 7613 | 4250 | | | |
| 124A | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 124 | 0.41 | 2180 | 0.05 | 0.02 | 700 | 1480 | | | |
| 121 | 0.43 | 2828 | 0.06 | 0.03 | 1000 | 1828 | | | |
| 176 | 0.22 | 606511 | 13.92 | 3.03 | 16170 | 590341 | | | |
| 178 | 0.34 | 31833 | 0.73 | 0.25 | 7000 | 24833 | | | |
| 180 | 0.29 | 46482 | 1.07 | 0.31 | 6125 | 40357 | | | |
| 158 | 0.36 | 32727 | 0.75 | 0.27 | 8000 | 24727 | | | |
| 157 | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 156 | 0.52 | 48574 | 1.12 | 0.59 | 24194 | 24380 | | | |
| 155 | 0.51 | 46457 | 1.07 | 0.55 | 22160 | 24297 | | | |
| WQ8 | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 169 | 0.25 | 35794 | 0.82 | 0.20 | 2500 | 33294 | | | |
| 168 | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 167 | 0.63 | 16456 | 0.38 | 0.24 | 10889 | 5567 | | | |
| 166 | 0.50 | 13634 | 0.31 | 0.16 | 6341 | 7293 | | | |
| 165 | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 164 | 0.51 | 18864 | 0.43 | 0.22 | 9058 | 9806 | | | |
| 163 | 0.60 | 10953 | 0.25 | 0.15 | 6813 | 4140 | | | |
| 162A | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 162 | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 174 | 0.30 | 41405 | 0.95 | 0.28 | 6125 | 35280 | | | |
| 172 | 0.32 | 35897 | 0.82 | 0.26 | 6744 | 29153 | | | |
| 171 | 0.59 | 7175 | 0.16 | 0.09 | 4276 | 2899 | | | |
| 170 | 0.72 | 3159 | 0.07 | 0.05 | 2538 | 621 | | | |
| WQ7 | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 147 | 0.50 | 34516 | 0.79 | 0.40 | 16000 | 18516 | | | |
| 146 | 0.50 | 36137 | 0.83 | 0.41 | 16500 | 19637 | | | |
| WQ9 | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 145 | 0.41 | 18361 | 0.42 | 0.17 | 6000 | 12361 | | | |
| 141 | 0.30 | 63645 | 1.46 | 0.44 | 9625 | 54020 | | | |
| 140 | 0.57 | 41667 | 0.96 | 0.55 | 23621 | 18046 | | | |
| 139 | 0.54 | 30085 | 0.69 | 0.37 | 15883 | 14202 | | | |
| WQ6 | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 138 | 0.00 | 0 | 0.00 | 0.00 | | | | | |
| 150 | 0.57 | 28680 | 0.66 | 0.38 | 16403 | 12277 | | | |
| 149 | 0.57 | 29732 | 0.68 | 0.38 | 16747 | 12985 | | | |
| WQ5 | 0.00 | 0 | 0.00 | 0.00 | | | | | |

STORM SEWER DESIGN CALCULATIONS
-COMPOSITE C-VALUES-

PROJECT: Promenade, Sections 1A & STORM: 10 Year
JOB #: 21113-S1 COMPUTED BY: JET
DATE: 3/24/22

| BASINS | | | | | | RUNOFF COEFFICIENTS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| BASIN # | c | Area (ft2) | Area (acres) | c*A | | Pavement 0.85 Area ($ft^2$) | Lawns 0.20 Area ($ft^2$) | Other 0.30 Area ($ft^2$) | Other Area ($ft^2$) | Other Area ($ft^2$) |
| 113 | 0.00 | 0 | 0.00 | 0.00 | | | | | | |
| 112 | 0.30 | 32273 | 0.74 | 0.22 | | 4795 | 27478 | | | |
| 111 | 0.39 | 23600 | 0.54 | 0.21 | | 7000 | 16600 | | | |
| 110 | 0.55 | 24179 | 0.56 | 0.31 | | 13169 | 11010 | | | |
| 109 | 0.00 | 0 | 0.00 | 0.00 | | | | | | |
| 108 | 0.32 | 22057 | 0.51 | 0.16 | | 4000 | 18057 | | | |
| 123 | 0.51 | 36727 | 0.84 | 0.43 | | 17500 | 19227 | | | |
| 122 | 0.52 | 34837 | 0.80 | 0.41 | | 17000 | 17837 | | | |
| 119 | 0.64 | 11245 | 0.26 | 0.17 | | 7680 | 3565 | | | |
| 118 | 0.62 | 9257 | 0.21 | 0.13 | | 5916 | 3341 | | | |
| 117 | 0.00 | 0 | 0.00 | 0.00 | | | | | | |
| WQ4 | 0.00 | 0 | 0.00 | 0.00 | | | | | | |
| 115 | 0.00 | 0 | 0.00 | 0.00 | | | | | | |
| 114 | 0.31 | 53040 | 1.22 | 0.37 | | 8750 | 44290 | | | |
| 104 | 0.29 | 962551 | 22.10 | 6.34 | | 7000 | 162971 | 792580 | | |
| 103 | 0.20 | 38463 | 0.88 | 0.18 | | | 38463 | | | |
| 502 | 0.74 | 2008 | 0.05 | 0.04 | | 1658 | 350 | | | |
| 501 | 0.76 | 8222 | 0.19 | 0.14 | | 7022 | 1200 | | | |
| 500 | 0.00 | 0 | 0.00 | 0.00 | | | | | | |
| 504 | 0.74 | 14973 | 0.34 | 0.25 | | 12473 | 2500 | | | |
| 503 | 0.00 | 0 | 0.00 | 0.00 | | | | | | |
| 102 | 0.00 | 0 | 0.00 | 0.00 | | | | | | |
| 101 | 0.00 | 0 | 0.00 | 0.00 | | | | | | |
| 182 | 0.44 | 7698 | 0.18 | 0.08 | | 2876 | 4822 | | | |
| 181 | 0.41 | 8900 | 0.20 | 0.08 | | 2920 | 5980 | | | |
| EX127 | 0.72 | 1000 | 0.02 | 0.01 | | 800 | 200 | | | |
| EX124 | 0.72 | 1000 | 0.02 | 0.01 | | 800 | 200 | | | |

**Time of Concentration Worksheet**
Based on TR-55

PROJECT: Promenade, Sections 1A & 1B
JOB #: 21113-S1

| Typical values for Manning's n | | | |
|---|---|---|---|
| Overland Flow | | Channel Flow | |
| short grass | 0.15 | grass | 0.03 |
| dense grass | 0.24 | concrete | 0.015 |
| pavement | 0.011 | rip-rap | 0.035 |

2 year, 24 hour rainfall = 2.66 inches
minimum T_c = 5 minutes

| | Overland flow seg. 1 | | | | Overland flow seg. 2 | | | | Shallow Concentrated Flow | | | | | Channel Flow | | | | | | | | T_c |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Basin name | Length (ft) | S % | n | T_t (min) | Length (ft) | S % | n | T_t (min) | Length (ft) | S % | Paved/Un (P or U) | Vel. (ft/s) | T_t (min) | Length (ft) | a (s.f.) | Pw (ft) | r (ft) | S % | n | Vel. (ft/s) | T_t (min) | (min) |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 134 | 60 | 2 | 0.24 | 10 | | | | 0 | 180 | 1 | U | 1.6 | 2 | | | | | | | | 0 | 12 |
| 133 | 50 | 4 | 0.24 | 7 | | | | 0 | | | | | 0 | | | | | | | | 0 | 7 |
| 132 | 79 | 1 | 0.24 | 17 | | | | 0 | 157 | 0.6 | P | 1.6 | 2 | | | | | | | | 0 | 19 |
| 131 | 51 | 2.4 | 0.24 | 9 | | | | 0 | 81 | 0.6 | P | 1.6 | 1 | | | | | | | | 0 | 9 |
| 130 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 129 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 128 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 127 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 126 | 100 | 1.1 | 0.24 | 20 | | | | 0 | 18 | 1 | P | 2 | 0 | | | | | | | | 0 | 20 |
| 125 | 76 | 1.2 | 0.24 | 15 | | | | 0 | 69 | 1 | P | 2 | 1 | | | | | | | | 0 | 16 |
| 124A | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 124 | 30 | 1 | 0.24 | 8 | | | | 0 | | | | | 0 | | | | | | | | 0 | 8 |
| 121 | 50 | 1 | 0.24 | 12 | | | | 0 | | | | | 0 | | | | | | | | 0 | 12 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 176 | 100 | 1 | 0.24 | 21 | | | | 0 | 1200 | 0.3 | U | 0.8 | 25 | | | | | | | | 0 | 45 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 178 | 80 | 2.1 | 0.24 | 13 | | | | 0 | 189 | 1 | U | 1.6 | 2 | | | | | | | | 0 | 15 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 180 | 72 | 0.9 | 0.24 | 16 | | | | 0 | 133 | 1 | U | 1.6 | 1 | | | | | | | | 0 | 18 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 158 | 60 | 2 | 0.24 | 10 | | | | 0 | 240 | 1 | U | 1.6 | 2 | | | | | | | | 0 | 13 |
| 157 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 156 | 80 | 1.3 | 0.24 | 15 | | | | 0 | 248 | 0.7 | P | 1.6 | 3 | | | | | | | | 0 | 18 |
| 155 | 76 | 1.5 | 0.24 | 14 | | | | 0 | 193 | 0.7 | P | 1.6 | 2 | | | | | | | | 0 | 16 |
| WQ8 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 169 | 100 | 2 | 0.24 | 16 | | | | 0 | 127 | 1 | U | 1.6 | 1 | | | | | | | | 0 | 17 |
| 168 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 167 | 80 | 1.4 | 0.24 | 15 | | | | 0 | 9 | 0.7 | P | 1.6 | 0 | | | | | | | | 0 | 15 |
| 166 | 71 | 5.5 | 0.24 | 8 | | | | 0 | 45 | 0.7 | P | 1.6 | 0 | | | | | | | | 0 | 8 |
| 165 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 164 | 77 | 2.1 | 0.24 | 13 | | | | 0 | 148 | 0.6 | P | 1.6 | 2 | | | | | | | | 0 | 14 |
| 163 | 18 | 4.2 | 0.24 | 3 | | | | 0 | 219 | 0.6 | P | 1.6 | 2 | | | | | | | | 0 | 5 |
| 162A | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 174 | 77 | 1 | 0.24 | 17 | | | | 0 | 148 | 1 | U | 1.6 | 2 | | | | | | | | 0 | 18 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 172 | 85 | 7 | 0.24 | 8 | | | | 0 | 135 | 1.1 | U | 1.7 | 1 | | | | | | | | 0 | 10 |
| 171 | 78 | 3.2 | 0.24 | 11 | | | | 0 | 12 | 0.7 | P | 1.6 | 0 | | | | | | | | 0 | 11 |
| 170 | 17 | 3.2 | 0.24 | 3 | | | | 0 | 86 | 0.7 | P | 1.6 | 1 | | | | | | | | 0 | 5 |
| WQ7 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 147 | 87 | 1 | 0.24 | 18 | | | | 0 | 190 | 0.7 | P | 1.7 | 2 | | | | | | | | 0 | 20 |
| 146 | 84 | 1 | 0.24 | 18 | | | | 0 | 190 | 0.7 | P | 1.7 | 2 | | | | | | | | 0 | 20 |
| WQ9 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 145 | 75 | 2 | 0.25 | 13 | | | | 0 | 70 | 2 | U | 2.3 | 1 | | | | | | | | 0 | 13 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 141 | 75 | 2.5 | 0.24 | 11 | | | | 0 | 189 | 1 | U | 1.6 | 2 | | | | | | | | 0 | 13 |
| 140 | 75 | 1.7 | 0.24 | 13 | | | | 0 | 253 | 1.4 | P | 2.4 | 2 | | | | | | | | 0 | 15 |
| 139 | 75 | 1.7 | 0.24 | 13 | | | | 0 | 248 | 1.3 | P | 2.3 | 2 | | | | | | | | 0 | 15 |
| WQ6 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 138 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 150 | 75 | 1.4 | 0.24 | 14 | | | | 0 | 108 | 0.7 | P | 1.6 | 1 | | | | | | | | 0 | 16 |
| 149 | 76 | 1.4 | 0.24 | 14 | | | | 0 | 135 | 0.7 | P | 1.6 | 1 | | | | | | | | 0 | 16 |
| WQ5 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 113 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 112 | 75 | 2 | 0.24 | 12 | | | | 0 | 350 | 0.7 | U | 1.3 | 4 | | | | | | | | 0 | 17 |
| 111 | 80 | 2 | 0.24 | 13 | | | | 0 | 60 | 0.7 | P | 1.7 | 1 | | | | | | | | 0 | 14 |
| 110 | 75 | 2 | 0.24 | 12 | | | | 0 | 135 | 0.7 | P | 1.7 | 1 | | | | | | | | 0 | 14 |
| 109 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 108 | 75 | 2 | 0.24 | 12 | | | | 0 | 195 | 1 | U | 1.6 | 2 | | | | | | | | 0 | 14 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 123 | 82 | 1.1 | 0.24 | 17 | | | | 0 | 337 | 0.7 | P | 1.7 | 3 | | | | | | | | 0 | 20 |
| 122 | 81 | 1.2 | 0.24 | 16 | | | | 0 | 337 | 0.7 | P | 1.7 | 3 | | | | | | | | 0 | 19 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 119 | 41 | 2.3 | 0.24 | 7 | | | | 0 | 81 | 0.6 | P | 1.6 | 1 | | | | | | | | 0 | 8 |
| 118 | 41 | 1.7 | 0.24 | 8 | | | | 0 | 87 | 0.6 | P | 1.6 | 1 | | | | | | | | 0 | 9 |

**Time of Concentration Worksheet**
Based on TR-55

PROJECT: Promenade, Sections 1A & 1B
JOB #: 21113-S1

| Typical values for Manning's n | | | |
|---|---|---|---|
| Overland Flow | | Channel Flow | |
| short grass | 0.15 | grass | 0.03 |
| dense grass | 0.24 | concrete | 0.015 |
| pavement | 0.011 | rip-rap | 0.035 |

2 year, 24 hour rainfall = 2.66 inches
minimum T_c = 5 minutes

| | **Overland flow** | | | seg. 1 | **Overland flow** | | | seg. 2 | **Shallow Concentrated Flow** | | | | | **Channel Flow** | | | | | | | | **T_c** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Basin name | Length (ft) | S % | n | T_t (min) | Length (ft) | S % | n | T_t (min) | Length (ft) | S % | Paved/Un (P or U) | Vel. (ft/s) | T_t (min) | Length (ft) | a (s.f.) | Pw (ft) | r (ft) | S % | n | Vel. (ft/s) | T_t (min) | (min) |
| 117 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| WQ4 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 115 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 114 | 75 | 2 | 0.24 | 12 | | | | 0 | 190 | 1 | U | 1.6 | 2 | | | | | | | | 0 | 14 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 104 | 100 | 1 | 0.24 | 21 | | | | 0 | 1620 | 0.3 | U | 0.8 | 33 | | | | | | | | 0 | 54 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 103 | 100 | 1 | 0.24 | 21 | | | | 0 | 400 | 1 | U | 1.6 | 4 | | | | | | | | 0 | 25 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 502 | 15 | 2 | 0.24 | 3 | | | | 0 | 20 | 0.7 | P | 1.7 | 0 | | | | | | | | 0 | 5 |
| 501 | 15 | 2 | 0.24 | 3 | | | | 0 | 140 | 0.7 | P | 1.7 | 1 | | | | | | | | 0 | 5 |
| 500 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 504 | 15 | 2 | 0.24 | 3 | | | | 0 | 130 | 0.7 | P | 1.7 | 1 | | | | | | | | 0 | 5 |
| 503 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 102 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 101 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| 182 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| 181 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | |
| EX127 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |
| EX124 | | | | 0 | | | | 0 | | | | | 0 | | | | | | | | 0 | 5 |

STORM SEWER DESIGN CALCULATIONS
-INLET CAPACITY - 50% CLOGGED DEPTH OVER CASITING-

| | | | |
|---|---|---|---|
| PROJECT: | Promenade, Sections 1A & 1B | STORM: | 10 Year |
| JOB #: | 21113-S1 | COMPUTED BY: | JET |
| DATE: | 3/24/2022 | SHEET NO.: | |

*Takes into account inlet depression. Depth from curb flowline.

| Inlet # | Basin CFS | Bypass CFS to Inlet | Total CFS | Grade At Inlet | Cross Slope (ft/ft) | Longitudinal Slope (ft/ft) | Casting Model / Name | # of Castings | **SAG Only** Multiple Inlet Seperation (ft) | **SAG Only** Inlet Depression (ft) | Maximum Depth (ft) *At Gutter | Inlet Width (in) | Inlet Length (in) | 50% Clogged Inlet Perimeter (ft) | Bypass Inlet | Bypass CFS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 133 | 0.18 | 0.00 | 0.18 | SAG | 0.0208 | | R-4342 | 1 | | | 0.07 | | | 3.00 | | |
| 132 | 0.97 | 0.00 | 0.97 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 0.14 | 18.7 | 28.625 | 2.75 | | |
| 131 | 0.62 | 0.00 | 0.62 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 0.08 | 18.7 | 28.625 | 2.75 | | |
| 126 | 0.42 | 0.00 | 0.42 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 0.05 | 18.7 | 28.625 | 2.75 | | |
| 125 | 0.75 | 0.00 | 0.75 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 0.11 | 18.7 | 28.625 | 2.75 | | |
| 124 | 0.13 | 0.00 | 0.13 | SAG | 0.0208 | | R-4342 | 1 | | | 0.06 | | | 3.00 | | |
| 121 | 0.14 | 0.00 | 0.14 | SAG | 0.0208 | | R-4342 | 1 | | | 0.06 | | | 3.00 | | |
| 156 | 2.49 | 0.00 | 2.49 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 0.18 | 18.7 | 28.625 | 5.50 | | |
| 155 | 2.41 | 0.00 | 2.41 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 0.18 | 18.7 | 28.625 | 5.50 | | |
| 167 | 1.08 | 0.00 | 1.08 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 0.16 | 18.7 | 28.625 | 2.75 | | |
| 166 | 0.94 | 0.00 | 0.94 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 0.14 | 18.7 | 28.625 | 2.75 | | |
| 164 | 1.05 | 0.00 | 1.05 | Continuous | 0.0208 | 0.0080 | R-3501-R | 1 | | 0.083 | 0.06 | 18.7 | 28.625 | | | 0.00 |
| 163 | 1.05 | 0.00 | 1.05 | Continuous | 0.0208 | 0.0080 | R-3501-R | 1 | | 0.083 | 0.06 | 18.7 | 28.625 | | | 0.00 |
| 171 | 0.52 | 0.00 | 0.52 | Continuous | 0.0208 | 0.0130 | R-3501-R | 1 | | 0.083 | 0.02 | 18.7 | 28.625 | | | 0.00 |
| 170 | 0.37 | 0.00 | 0.37 | Continuous | 0.0208 | 0.0130 | R-3501-R | 1 | | 0.083 | 0.01 | 18.7 | 28.625 | | | 0.00 |
| 147 | 1.60 | 0.00 | 1.6 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 0.23 | 18.7 | 28.625 | 2.75 | | |
| 146 | 1.68 | 0.00 | 1.68 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 0.12 | 18.7 | 28.625 | 5.50 | | |
| WQ9 | 0.00 | 0.00 | 0 | SAG | 0.0208 | | R-4342 | 1 | | | 0.00 | | | 3.00 | | |
| 140 | 2.47 | 0.00 | 2.47 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 0.18 | 18.7 | 28.625 | 5.50 | | |
| 139 | 1.70 | 0.00 | 1.7 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 0.12 | 18.7 | 28.625 | 5.50 | | |
| 150 | 1.69 | 0.00 | 1.69 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 0.12 | 18.7 | 28.625 | 5.50 | | |
| 149 | 1.73 | 0.00 | 1.73 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 0.13 | 18.7 | 28.625 | 5.50 | | |
| 112 | 0.96 | 0.00 | 0.96 | SAG | 0.0208 | | R-4342 | 1 | | | 0.21 | | | 3.00 | | |
| 111 | 1.02 | 0.00 | 1.02 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 0.15 | 18.7 | 28.625 | 2.75 | | |
| 110 | 1.47 | 0.00 | 1.47 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 0.21 | 18.7 | 28.625 | 2.75 | | |
| 108 | 0.75 | 0.00 | 0.75 | SAG | 0.0208 | | R-4342 | 1 | | | 0.18 | | | 3.00 | | |
| 123 | 1.74 | 0.00 | 1.74 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 0.13 | 18.7 | 28.625 | 5.50 | | |
| 122 | 1.70 | 0.00 | 1.7 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 0.12 | 18.7 | 28.625 | 5.50 | | |
| 119 | 1.01 | 0.00 | 1.01 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 0.15 | 18.7 | 28.625 | 2.75 | | |
| 118 | 0.75 | 0.00 | 0.75 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 0.11 | 18.7 | 28.625 | 2.75 | | |
| 114 | 1.74 | 0.00 | 1.74 | SAG | 0.0208 | | R-4342 | 1 | | | 0.31 | | | 3.00 | | |
| 502 | 0.24 | 0.00 | 0.24 | Continuous | 0.0208 | 0.0050 | R-3287-15 | 1 | | | 0.09 | 22.5 | 45 | | | 0.00 |
| 501 | 1.00 | 0.00 | 1 | SAG | 0.0208 | | R-3287-15 | 1 | | | 0.19 | 22.5 | 45 | 3.75 | | |
| 504 | 1.78 | 0.00 | 1.78 | SAG | 0.0208 | | R-3287-15 | 2 | 2* Inlet Width | | 0.17 | 22.5 | 45 | 7.50 | | |
| 182 | 0.55 | 0.00 | 0.55 | Continuous | 0.0208 | 0.0070 | R-3501-R | 1 | | 0.083 | 0.03 | 18.7 | 28.625 | | | 0.00 |
| 181 | 0.59 | 0.00 | 0.59 | Continuous | 0.0208 | 0.0070 | R-3501-R | 1 | | 0.083 | 0.04 | 18.7 | 28.625 | | | 0.00 |

STORM SEWER DESIGN CALCULATIONS
-INLET CAPACITY - GUTTER SPREAD-

| | | | |
|---|---|---|---|
| PROJECT: | Promenade, Sections 1A & 1B | STORM: | 10 Year |
| JOB #: | 21113-S1 | COMPUTED BY: | JET |
| DATE: | 3/24/2022 | SHEET NO.: | |

*Takes into account inlet depression. Depth from curb flowline.

| Inlet # | Basin CFS | Bypass CFS to Inlet | Total CFS | Grade At Inlet | Cross Slope (ft/ft) | Longitudinal Slope (ft/ft) | Casting Model / Name | # of Castings | **SAG Only** Multiple Inlet Seperation (ft) | **SAG Only** Inlet Depression (ft) | Allowable Spread (ft) | Actual Spread (ft) | Maximum Depth (ft) *At Gutter | Inlet Width (in) | Inlet Length (in) | Inlet Perimeter (ft) | Bypass Inlet | Bypass CFS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 132 | 0.97 | 0.00 | 0.97 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 6 | 2.83 | 0.06 | 18.7 | 28.625 | 5.50 | | |
| 131 | 0.62 | 0.00 | 0.62 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 6 | 1.07 | 0.02 | 18.7 | 28.625 | 5.50 | | |
| 126 | 0.42 | 0.00 | 0.42 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 6 | -0.09 | 0.00 | 18.7 | 28.625 | 5.50 | | |
| 125 | 0.75 | 0.00 | 0.75 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 6 | 1.75 | 0.04 | 18.7 | 28.625 | 5.50 | | |
| 156 | 2.49 | 0.00 | 2.49 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 6 | 4.06 | 0.08 | 18.7 | 28.625 | 11.00 | | |
| 155 | 2.41 | 0.00 | 2.41 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 6 | 3.89 | 0.08 | 18.7 | 28.625 | 11.00 | | |
| 167 | 1.08 | 0.00 | 1.08 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 6 | 3.34 | 0.07 | 18.7 | 28.625 | 5.50 | | |
| 166 | 0.94 | 0.00 | 0.94 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 6 | 2.69 | 0.06 | 18.7 | 28.625 | 5.50 | | |
| 164 | 1.05 | 0.00 | 1.05 | Continuous | 0.0208 | 0.0080 | R-3501-R | 1 | | 0.083 | 6 | 2.93 | 0.06 | 18.7 | 28.625 | | | 0.00 |
| 163 | 1.05 | 0.00 | 1.05 | Continuous | 0.0208 | 0.0080 | R-3501-R | 1 | | 0.083 | 6 | 2.93 | 0.06 | 18.7 | 28.625 | | | 0.00 |
| 171 | 0.52 | 0.00 | 0.52 | Continuous | 0.0208 | 0.0130 | R-3501-R | 1 | | 0.083 | 6 | 0.86 | 0.02 | 18.7 | 28.625 | | | 0.00 |
| 170 | 0.37 | 0.00 | 0.37 | Continuous | 0.0208 | 0.0130 | R-3501-R | 1 | | 0.083 | 6 | 0.28 | 0.01 | 18.7 | 28.625 | | | 0.00 |
| 147 | 1.60 | 0.00 | 1.6 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 6 | 5.53 | 0.12 | 18.7 | 28.625 | 5.50 | | |
| 146 | 1.68 | 0.00 | 1.68 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 6 | 5.84 | 0.12 | 18.7 | 28.625 | 5.50 | | |
| 140 | 2.47 | 0.00 | 2.47 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 6 | 4.02 | 0.08 | 18.7 | 28.625 | 11.00 | | |
| 139 | 1.70 | 0.00 | 1.7 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 6 | 5.92 | 0.12 | 18.7 | 28.625 | 5.50 | | |
| 150 | 1.69 | 0.00 | 1.69 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 6 | 5.88 | 0.12 | 18.7 | 28.625 | 5.50 | | |
| 149 | 1.73 | 0.00 | 1.73 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 6 | 2.33 | 0.05 | 18.7 | 28.625 | 11.00 | | |
| 112 | 0.96 | 0.00 | 0.96 | | 0.0208 | | | | | | | | | | | | | |
| 111 | 1.02 | 0.00 | 1.02 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 6 | 3.06 | 0.06 | 18.7 | 28.625 | 5.50 | | |
| 110 | 1.47 | 0.00 | 1.47 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 6 | 5.01 | 0.10 | 18.7 | 28.625 | 5.50 | | |
| 123 | 1.74 | 0.00 | 1.74 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 6 | 2.35 | 0.05 | 18.7 | 28.625 | 11.00 | | |
| 122 | 1.70 | 0.00 | 1.7 | SAG | 0.0208 | | R-3501-R | 2 | 2* Inlet Width | 0.083 | 6 | 2.25 | 0.05 | 18.7 | 28.625 | 11.00 | | |
| 119 | 1.01 | 0.00 | 1.01 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 6 | 3.02 | 0.06 | 18.7 | 28.625 | 5.50 | | |
| 118 | 0.75 | 0.00 | 0.75 | SAG | 0.0208 | | R-3501-R | 1 | | 0.083 | 6 | 1.75 | 0.04 | 18.7 | 28.625 | 5.50 | | |
| 502 | 0.24 | 0.00 | 0.24 | SAG | 0.0208 | | R-3287-15 | 1 | | | 6 | 2.19 | 0.05 | 22.5 | 45 | 7.50 | | |
| 501 | 1.00 | 0.00 | 1 | SAG | 0.0208 | | R-3287-15 | 1 | | | 6 | 5.66 | 0.12 | 22.5 | 45 | 7.50 | | |
| 504 | 1.78 | 0.00 | 1.78 | SAG | 0.0208 | | R-3287-15 | 2 | 2* Inlet Width | | 6 | 5.24 | 0.11 | 22.5 | 45 | 15.00 | | |
| 182 | 0.55 | 0.00 | 0.55 | Continuous | 0.0208 | 0.0070 | R-3501-R | 1 | | 0.083 | 6 | 1.57 | 0.03 | 18.7 | 28.625 | | | 0.00 |
| 181 | 0.59 | 0.00 | 0.59 | Continuous | 0.0208 | 0.0070 | R-3501-R | 1 | | 0.083 | 6 | 1.72 | 0.04 | 18.7 | 28.625 | | | 0.00 |

# 10-YEAR HGL CALCULATION RESULTS

## Conduit FlexTable: Combined Pipe/Node Report

| Start Node | Stop Node | Flow (cfs) | Length (User Defined) (ft) | Diameter (in) | Slope (Calculated) (ft/ft) | Capacity (Design) (cfs) | Velocity (ft/s) | Elevation Ground (Start) (ft) | Hydraulic Grade Line (In) (ft) | Invert (Start) (ft) | Elevation Ground (Stop) (ft) | Hydraulic Grade Line (Out) (ft) | Invert (Stop) (ft) | Headloss (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 504 | 503 | 1.78 | 12.0 | 12.0 | 0.003 | 2.10 | 3.00 | 875.16 | 871.99 | 871.34 | 874.88 | 871.87 | 871.30 | 0.12 |
| 501 | 500 | 1.22 | 10.2 | 12.0 | 0.003 | 1.96 | 2.63 | 874.90 | 871.98 | 871.45 | 874.56 | 871.89 | 871.42 | 0.10 |
| 502 | 501 | 0.24 | 34.3 | 12.0 | 0.003 | 1.94 | 1.69 | 874.86 | 872.00 | 871.55 | 874.90 | 872.00 | 871.45 | 0.00 |
| 171 | 170 | 1.93 | 32.0 | 15.0 | 0.002 | 3.09 | 2.65 | 874.71 | 870.27 | 869.59 | 874.71 | 870.07 | 869.52 | 0.19 |
| 170 | WQ7 | 2.19 | 12.5 | 15.0 | 0.011 | 6.64 | 4.85 | 874.71 | 870.01 | 869.42 | 875.10 | 869.88 | 869.29 | 0.13 |
| 166 | 165 | 3.23 | 242.4 | 18.0 | 0.002 | 4.48 | 2.76 | 874.61 | 869.31 | 868.37 | 871.83 | 868.84 | 867.93 | 0.47 |
| 167 | 166 | 2.57 | 32.0 | 15.0 | 0.002 | 3.02 | 2.76 | 874.61 | 869.40 | 868.54 | 874.61 | 869.31 | 868.47 | 0.08 |
| 162A | 162 | 5.62 | 136.0 | 24.0 | 0.001 | 7.76 | 2.69 | 874.57 | 868.48 | 867.31 | 871.27 | 868.23 | 867.15 | 0.26 |
| 164 | 163 | 5.06 | 32.0 | 24.0 | 0.001 | 8.00 | 2.69 | 873.96 | 868.60 | 867.57 | 873.96 | 868.52 | 867.53 | 0.08 |
| 163 | 162A | 5.64 | 16.0 | 24.0 | 0.001 | 8.00 | 2.76 | 873.96 | 868.52 | 867.43 | 874.57 | 868.48 | 867.41 | 0.04 |
| 165 | 164 | 4.26 | 137.0 | 24.0 | 0.001 | 7.73 | 2.52 | 871.83 | 868.84 | 867.83 | 873.96 | 868.60 | 867.67 | 0.24 |
| WQ8 | 153 | 5.92 | 177.0 | 18.0 | 0.004 | 6.26 | 4.03 | 872.04 | 868.79 | 867.63 | 868.71 | 867.94 | 867.00 | 0.85 |
| 132 | 131 | 1.77 | 32.0 | 12.0 | 0.003 | 1.96 | 2.83 | 872.01 | 869.11 | 868.34 | 872.01 | 869.02 | 868.24 | 0.09 |
| 131 | 130 | 2.21 | 171.0 | 15.0 | 0.002 | 3.09 | 2.73 | 872.01 | 869.02 | 868.14 | 872.00 | 868.81 | 867.75 | 0.20 |
| 130 | 129 | 8.93 | 330.5 | 24.0 | 0.002 | 9.06 | 3.29 | 872.00 | 868.81 | 867.20 | 871.84 | 868.28 | 866.67 | 0.53 |
| 133 | 132 | 0.96 | 32.4 | 12.0 | 0.003 | 1.96 | 2.48 | 871.90 | 869.14 | 868.54 | 872.01 | 869.11 | 868.44 | 0.03 |
| 128 | 127 | 9.85 | 124.0 | 24.0 | 0.002 | 9.91 | 3.60 | 871.85 | 867.91 | 866.32 | 870.09 | 867.66 | 866.08 | 0.26 |
| 129 | 128 | 9.29 | 204.8 | 24.0 | 0.002 | 9.35 | 3.39 | 871.84 | 868.28 | 866.67 | 871.85 | 867.91 | 866.32 | 0.36 |
| 156 | 155 | 3.64 | 32.0 | 15.0 | 0.003 | 3.65 | 3.39 | 871.71 | 868.98 | 867.93 | 871.71 | 868.88 | 867.83 | 0.10 |
| 155 | WQ8 | 5.93 | 23.0 | 18.0 | 0.004 | 6.86 | 4.37 | 871.71 | 868.87 | 867.73 | 872.04 | 868.80 | 867.63 | 0.07 |
| 147 | 146 | 1.60 | 32.0 | 12.0 | 0.003 | 1.96 | 2.78 | 871.51 | 868.79 | 867.97 | 871.51 | 868.74 | 867.87 | 0.06 |
| 146 | WQ9 | 3.25 | 13.0 | 15.0 | 0.003 | 3.58 | 3.31 | 871.51 | 868.73 | 867.77 | 871.99 | 868.70 | 867.73 | 0.04 |
| 157 | 156 | 1.32 | 60.1 | 12.0 | 0.003 | 1.95 | 2.67 | 871.50 | 869.04 | 868.21 | 871.71 | 868.98 | 868.03 | 0.06 |
| 162 | 161 | 7.11 | 40.0 | 24.0 | 0.001 | 7.61 | 2.75 | 871.27 | 868.23 | 867.05 | 869.25 | 867.95 | 867.00 | 0.27 |
| 138 | 137 | 6.11 | 157.8 | 24.0 | 0.001 | 7.81 | 2.75 | 871.25 | 868.40 | 867.19 | 869.25 | 867.88 | 867.00 | 0.52 |
| 150 | 149 | 1.69 | 32.0 | 12.0 | 0.003 | 2.00 | 2.85 | 871.21 | 868.61 | 867.75 | 871.21 | 868.55 | 867.65 | 0.06 |
| 149 | WQ5 | 3.41 | 4.0 | 15.0 | 0.003 | 3.50 | 3.25 | 871.21 | 868.54 | 867.55 | 871.47 | 868.53 | 867.54 | 0.01 |
| 140 | 139 | 4.45 | 32.0 | 15.0 | 0.005 | 4.42 | 4.11 | 871.21 | 868.87 | 867.82 | 871.21 | 868.72 | 867.67 | 0.14 |
| 139 | WQ6 | 6.14 | 5.0 | 18.0 | 0.004 | 6.64 | 4.27 | 871.21 | 868.71 | 867.57 | 871.50 | 868.69 | 867.55 | 0.02 |
| 123 | 122 | 1.74 | 32.0 | 18.0 | 0.002 | 4.47 | 2.37 | 871.21 | 867.87 | 867.03 | 871.21 | 867.86 | 866.97 | 0.02 |
| 122 | 112 | 3.39 | 155.0 | 18.0 | 0.002 | 4.46 | 2.78 | 871.21 | 867.86 | 866.87 | 869.90 | 867.59 | 866.59 | 0.27 |
| 116 | 115 | 3.77 | 153.6 | 18.0 | 0.002 | 4.48 | 2.84 | 871.20 | 867.49 | 866.41 | 870.88 | 867.24 | 866.13 | 0.25 |
| 109 | 108 | 6.73 | 133.7 | 24.0 | 0.001 | 7.82 | 2.80 | 871.01 | 867.30 | 865.94 | 868.50 | 867.09 | 865.78 | 0.20 |
| 117 | 116 | 3.83 | 45.9 | 18.0 | 0.002 | 4.44 | 2.83 | 870.88 | 867.60 | 866.59 | 871.20 | 867.50 | 866.51 | 0.11 |
| 115 | 108 | 3.62 | 135.6 | 18.0 | 0.002 | 4.42 | 2.79 | 870.88 | 867.24 | 866.03 | 868.50 | 867.09 | 865.79 | 0.15 |

# 10-YEAR HGL CALCULATION RESULTS

## Conduit FlexTable: Combined Pipe/Node Report

| Start Node | Stop Node | Flow (cfs) | Length (User Defined) (ft) | Diameter (in) | Slope (Calculated) (ft/ft) | Capacity (Design) (cfs) | Velocity (ft/s) | Elevation Ground (Start) (ft) | Hydraulic Grade Line (In) (ft) | Invert (Start) (ft) | Elevation Ground (Stop) (ft) | Hydraulic Grade Line (Out) (ft) | Invert (Stop) (ft) | Headloss (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 145 | 144 | 3.85 | 64.2 | 15.0 | 0.004 | 4.10 | 3.80 | 870.80 | 868.20 | 867.26 | 868.44 | 867.80 | 867.00 | 0.41 |
| 110 | 109 | 6.74 | 17.6 | 24.0 | 0.001 | 7.82 | 2.80 | 870.65 | 867.33 | 866.06 | 871.01 | 867.30 | 866.04 | 0.03 |
| 111 | 110 | 5.46 | 32.0 | 24.0 | 0.001 | 8.00 | 2.74 | 870.65 | 867.38 | 866.20 | 870.65 | 867.33 | 866.16 | 0.05 |
| 119 | 118 | 1.01 | 32.0 | 12.0 | 0.003 | 1.96 | 2.52 | 870.46 | 867.67 | 866.95 | 870.46 | 867.65 | 866.85 | 0.02 |
| 118 | 117 | 1.71 | 20.1 | 12.0 | 0.003 | 1.94 | 2.79 | 870.46 | 867.65 | 866.75 | 870.88 | 867.61 | 866.69 | 0.04 |
| 127 | 126 | 9.75 | 63.1 | 24.0 | 0.002 | 9.87 | 3.58 | 870.09 | 867.65 | 866.08 | 869.91 | 867.51 | 865.96 | 0.13 |
| 114 | 117 | 1.74 | 140.9 | 12.0 | 0.003 | 1.95 | 2.80 | 869.56 | 867.91 | 867.12 | 870.88 | 867.61 | 866.70 | 0.30 |
| 124A | 124 | 10.30 | 24.0 | 24.0 | 0.002 | 10.30 | 3.74 | 869.98 | 867.38 | 865.87 | 869.60 | 867.32 | 865.82 | 0.06 |
| 125 | 124A | 10.31 | 16.0 | 24.0 | 0.002 | 10.30 | 3.74 | 869.91 | 867.43 | 865.90 | 869.98 | 867.39 | 865.87 | 0.04 |
| 126 | 125 | 9.94 | 32.0 | 24.0 | 0.002 | 10.04 | 3.64 | 869.91 | 867.50 | 865.96 | 869.91 | 867.43 | 865.90 | 0.07 |
| 112 | 111 | 4.66 | 155.4 | 24.0 | 0.001 | 7.91 | 2.62 | 869.90 | 867.58 | 866.49 | 870.65 | 867.38 | 866.30 | 0.20 |
| 124 | 121 | 10.33 | 80.0 | 24.0 | 0.002 | 10.43 | 3.78 | 869.60 | 867.32 | 865.82 | 869.50 | 867.08 | 865.65 | 0.24 |
| 121 | 120 | 10.33 | 70.0 | 24.0 | 0.002 | 10.47 | 3.80 | 869.50 | 867.07 | 865.65 | 867.75 | 866.65 | 865.50 | 0.42 |
| 101 | 100 | 14.48 | 68.0 | 30.0 | 0.003 | 21.68 | 4.73 | 869.42 | 866.65 | 865.19 | 867.79 | 866.28 | 865.00 | 0.37 |
| 108 | 107 | 10.05 | 81.3 | 24.0 | 0.002 | 10.64 | 3.85 | 868.50 | 867.09 | 865.68 | 867.75 | 866.64 | 865.50 | 0.45 |
| 134 | 133 | 0.83 | 98.0 | 12.0 | 0.014 | 4.20 | 4.16 | 871.17 | 870.38 | 870.00 | 871.90 | 869.14 | 868.64 | 1.24 |
| 176 | 130 | 7.59 | 10.0 | 24.0 | 0.015 | 27.70 | 7.52 | 870.85 | 869.58 | 868.60 | 872.00 | 869.27 | 868.45 | 0.32 |
| 178 | 129 | 1.15 | 10.0 | 12.0 | 0.020 | 5.04 | 5.20 | 869.78 | 868.35 | 867.90 | 871.84 | 868.29 | 867.70 | 0.06 |
| 180 | 128 | 1.31 | 10.0 | 12.0 | 0.020 | 5.04 | 5.39 | 869.77 | 868.38 | 867.90 | 871.85 | 868.07 | 867.70 | 0.31 |
| 174 | 165 | 1.19 | 12.0 | 12.0 | 0.030 | 6.17 | 6.07 | 871.17 | 869.66 | 869.20 | 871.83 | 869.16 | 868.84 | 0.50 |
| 172 | 171 | 1.48 | 135.0 | 15.0 | 0.002 | 3.10 | 2.50 | 871.44 | 870.61 | 870.00 | 874.71 | 870.27 | 869.69 | 0.34 |
| 141 | 140 | 2.11 | 148.8 | 12.0 | 0.010 | 3.61 | 4.78 | 871.17 | 870.12 | 869.50 | 871.21 | 868.87 | 867.97 | 1.25 |
| 113 | 112 | 0.00 | 164.7 | 18.0 | 0.002 | 5.24 | 0.00 | 870.00 | 867.59 | 867.00 | 869.90 | 867.59 | 866.59 | 0.00 |
| 104 | 101 | 13.84 | 20.0 | 24.0 | 0.004 | 14.31 | 5.19 | 868.05 | 867.27 | 865.80 | 869.42 | 867.06 | 865.72 | 0.21 |
| 103 | 101 | 0.64 | 20.0 | 12.0 | 0.003 | 1.95 | 2.22 | 868.00 | 866.67 | 866.00 | 869.42 | 866.66 | 865.94 | 0.01 |
| 102 | 101 | 0.00 | 47.9 | 24.0 | 0.002 | 10.84 | 0.00 | 868.90 | 866.65 | 865.50 | 869.42 | 866.65 | 865.39 | 0.00 |
| 158 | 157 | 1.33 | 74.9 | 12.0 | 0.023 | 5.35 | 5.65 | 871.17 | 870.49 | 870.00 | 871.50 | 869.04 | 868.31 | 1.44 |
| 168 | 167 | 1.59 | 130.0 | 12.0 | 0.003 | 1.95 | 2.77 | 874.61 | 869.73 | 869.03 | 874.61 | 869.40 | 868.64 | 0.33 |
| 169 | 168 | 0.88 | 10.0 | 12.0 | 0.003 | 1.95 | 2.42 | 873.00 | 870.45 | 870.00 | 874.61 | 870.36 | 869.97 | 0.08 |
| 182 | 181 | 0.55 | 32.0 | 12.0 | 0.003 | 1.99 | 2.17 | 872.92 | 870.09 | 869.70 | 872.92 | 870.05 | 869.60 | 0.04 |
| 181 | 168 | 1.13 | 125.0 | 12.0 | 0.003 | 1.94 | 2.56 | 872.92 | 870.05 | 869.50 | 874.61 | 869.73 | 869.13 | 0.32 |
| WQ5 | 148 | 3.41 | 188.0 | 15.0 | 0.003 | 3.46 | 3.21 | 871.47 | 868.53 | 867.54 | 868.44 | 867.75 | 867.00 | 0.78 |
| WQ6 | 138 | 6.13 | 47.0 | 18.0 | 0.003 | 6.13 | 3.95 | 871.50 | 868.69 | 867.55 | 871.25 | 868.40 | 867.39 | 0.29 |
| WQ7 | 162 | 2.19 | 233.2 | 15.0 | 0.009 | 6.17 | 4.60 | 875.10 | 869.88 | 869.29 | 871.27 | 868.23 | 867.16 | 1.65 |
| WQ9 | 145 | 3.24 | 140.0 | 15.0 | 0.003 | 3.32 | 3.08 | 871.99 | 868.70 | 867.73 | 870.80 | 868.21 | 867.36 | 0.48 |

# Advisory Plan Commission

## Town of Brownsburg

**Assigned Staff:** Lauren Bouslog, Planner I

**Report Date: 1/13/2026**

**Request Type:** Primary Plat

### General Information

| | |
|---|---|
| **CASE NUMBER** | PCPP-25-5 |
| **APPLICANT** | Melissa Garrard, Pulte Homes of Indiana LLC |
| **LOCATION** | 32-07-24-300-001.000-016 |
| **PARCEL SIZE** | 7.99 acres |

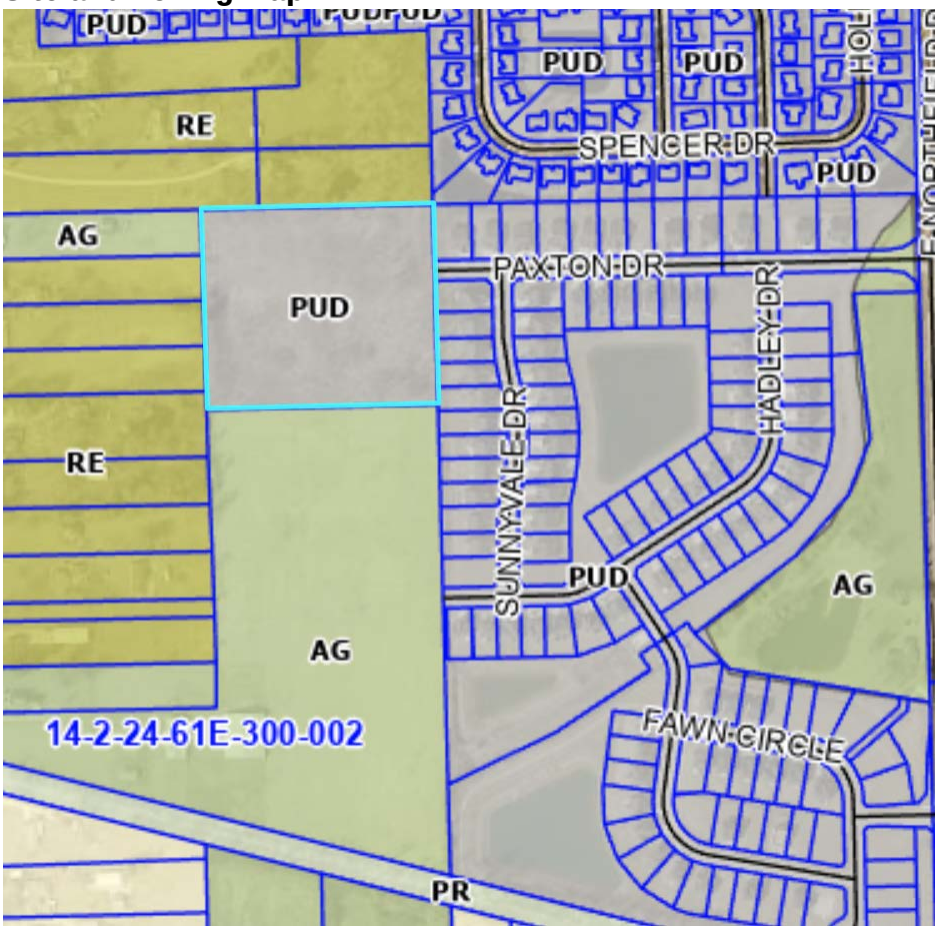
### Cross References

| | |
|---|---|
| **Previous APC Cases** | PCMA-25-4; Rezoning of AG land into the existing Promenade PUD (single-family residential)<br>PCZT-25-2; Promenade PUD Zoning Text Amendment |
| **Relevant BZA Cases** | N/A |
| **Other** | The parcel was annexed into the Town of Brownsburg under Ord. 2013-10 in 2014. |

### Attachments

| | |
|---|---|
| ☒ | Tech Review & Response |
| ☒ | Site Plan/Civil |
| ☐ | Landscape Plan |
| ☐ | Architectural Plans |
| ☒ | Other: Recorded commitments from rezone (PCMA-25-4) |

**Site and Zoning Map:**




## Project and Site Background:

This project (Promenade, Section 3) proposes a rezone of 7.99 acres of AG (agriculture) zoned land to be turned into 20 lots of single-family residential. This will be an extension of the existing Promenade PUD. The 20 new lots will get access from Paxton Road that leads to Northfield Drive. The parcel to the south (32-07-24-300-002.000-016) has not yet been acquired by the developer, but it is likely that another extension request will be made using this parcel in the future. One of the conditions of the rezone to be approved was to install a temporary turnaround (Lot 122 on the plat) until the stub road to the south can be connected. The site does not require any variances.

## Technical Review:

The TECH review took place on December 18, 2025. Development Services commented that Paxton Drive needs to have a public or private road designation, acreage needs added under the square feet calculations for each lot, and dimensions for the asphalt path need marked. The amenities needed added to the landscape plan as well as a required vs. proposed planting schedule table. The Water Department commented that the phone number for the Water Dept. on the cover sheet needs changed and all required valves and hydrants will need shown on the Development Plan submittal. The Fire Territory

mentioned that a temporary fire turnaround was noted. The Hendricks County Surveyor's Office commented that the project will be required to receive Drainage Board approval.

## Criteria:

*Pursuant to Chapter 8 of the Brownsburg Unified Development Ordinance the Advisory Plan Commission shall make findings of fact on the following criteria:*

1) The subdivision of land meets the lot width, size, and area as provided in Chapter 2 or as modified by any waiver.

   https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=30

   a) The proposal is within a PUD, so the approved ordinance lists out the standards the project must follow. The development standards of the Promenade PD are consistent with the intent of an R3 district in that the primary area of flexibility sought in the Promenade PD is limited to minimum lot width, lot area, and side yard setbacks resulting in the benefit of allowing for the creation of more open space, as well as activation of the open space areas by the installation of pedestrian paths. Every lot is over the minimum 9,000 sq. ft. that is required with at least 40' of lot frontage and 66' of lot width measured at the building setback line.

      *Based on the above information, staff believes this criterion has been met.*

2) The subdivision of land provides appropriate areas and easements for necessary public utilities and drainage in accordance with **Chapter 7: Subdivision Regulations**.

   https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=168

   a) The plat shows the required 25' B.S.L. (building setback line). As this project progresses into the Development Plan Review stage, the homes will need to stay under 50% of the lot area. The primary structures will be allowed a max height of 35' and accessory structures are capped at 20'.

      *Based on the above information, staff believes this criterion has been met.*

3) The plat provides the appropriate right-of-way for the extension of public roads and infrastructure and access to internal or adjacent lots.

   a) The plat has marked Paxton Drive as a 56' public ROW. This extension into the new section will match the existing road width on the east side that is completed. For 20 lots or fewer, only one street, driveway, or point of vehicle access is permitted from a residential development onto an arterial or collector. The closest road not in the PUD, Northfield Drive, is a minor arterial.

      *Based on the above information, staff believes this criterion has been met.*

4) The plat complies with any other applicable provision of **Chapter 7: Subdivision Regulations**.

   https://www.brownsburg.org/DocumentCenter/View/3743/Brownsburg-UDO-PDF#page=168

   a) *7.4 Easement Standards*: There is a 20' drainage and utility easement that runs along the front side of all the lots. The common area (C.A. 'A') has been marked on the plat as a drainage

easement. There is a 10' drainage easement to accommodate the storm sewer that runs in between lots 114 and 115, lots 121 and 122, and lots 128 and 129. There is a non-access easement marked in the legend, but not shown on the plat. If this type of easement will not be used later when the applicant gets to the driveway design stage, it can be removed from the legend.

b) *7.6 Open Space Standards*: The minimum open space required for the Promenade PUD is 25%. This is more intensive than what the 2025 Unified Development Ordinance requires (20%). There are two common areas marked, C.A. 'A' is on the southeast side of the new extension and C.A. 'B' is in the top northwest corner. Unless there is a conflict with drainage or utility improvements or removal of dead/diseased vegetation, the developer will not remove existing trees within 15' of the east, west, and north property boundaries.

c) *7.9 Pedestrian Network Standards:* The plat shows sidewalks on both sides of the street to satisfy the standards and the new sidewalks will connect to the existing sidewalks in the PUD to the east. The sidewalks running on either side of the street will be 5' wide and there will be a 0.2-mile-long asphalt path that is 6' wide that leads to a 200 s.f. courtyard seating and gathering area. The courtyard will be hard surface to satisfy the amenity requirement in the UDO (6-20 units require 1 amenity).

d) 7.11 Access Standards: The site will utilize one access point until the parcel below is acquired. The current access road is on the north east side of the site. Paxton Drive leads onto Northfield Drive. If more potential homes are added onto the parcel below in the future, there would more than likely be another access road that leads onto N 800 E. The B & O trail runs along the southern border of the unacquired parcel as well.

*Based on the above information, staff believes this criterion has been met.*

5) The Plat Satisfies any **other applicable provisions** of the Unified Development Ordinance.

a) No special provisions that relate to the plat are noted for this site. Overlay districts are not applicable to this project.

*Based on the above information, staff believes this criterion has been met.*

6) The Plat Satisfies the **construction requirements** of the Brownsburg Standard Details.

a) The project did not require any waivers. The applicant will need to complete any remaining TECH comments, and that will be added as a condition of approval. This project is on the February 10th agenda for preliminary drainage board approval. The site flows into the Pollard & Todd Regulated Drain.

*Based on the above information, staff believes this criterion has been met.*

## Recommendations:

*The Advisory Plan Commission may request conditions and commitments related to the project and criteria. Conditions or commitments must be made as part of the motion.*

***Based on the information provided and the criteria responses, staff recommends a motion to***

| | |
|---|---|
| ☐ | Approve PCPP-25-5 as presented. |
| ☒ | Approve PCPP-25-5 with the following staff conditions:<br>1. All remaining Technical Review comments will be addressed prior to stamping the Primary Plat.<br>2. The final plat shall be recorded in the Office of the Recorder of Hendricks County prior to issuance of any building permits.<br>3. The approval of the Findings of Fact and the Report of Determination by the Plan Commission.<br>4. The approval of the Hendricks County Drainage Board (per Hendricks County Surveyor's TECH comment) |
| ☐ | Deny PCPP-25-5 based on the following criteria: |

# Advisory Plan Commission

## Town of Brownsburg

**Report Date:** 12/2/2025

**Purpose: Westbranch PUD Ordinance Changes**

**From: Kevin Tolloty, Senior Planner**

### General Information

The following are proposed changes to the Westbranch PUD Ordinance for discussion by the Plan Commission. The applicant, Justin Mitchell, on behalf of Onyx + East, has submitted this zoning text amendment (PCZT-25-5) to reflect the change that would need to be made to the Westbranch PUD to allow a permanent wall sign on the clubhouse. The only proposed change is to the sign standards in the chart below.

### Section to be Amended

**Additional District Development Standards that Apply to the TR-2 District Area**
**(Single-Family Front Load Homes)**

| | |
|---|---|
| Accessory Structure Standards: | Same as TR District (Sections 5.02 and 5.06 of the UDO)** |
| Architectural Standards: | Same as TR District (Section 5.16 of the UDO)** See also Exhibit E and Exhibit H for Additional Architectural Standards* |
| Anti-monotony Standards: | See attached Exhibit I.* Same as TR District (Section 5.22 of the UDO)** |
| Environmental Standards: | Same as TR District of the UDO (Sections 5.23 and 5.26 of the UDO)** |
| Fence and Wall Standards: | Pool fences shall be permitted to be 6' in height. Fences in rear and side yards shall be permitted to be 42" in height. |
| Home Business Standards: | Same as TR District (Section 5.32 of the UDO).** |
| Landscaping Standards: | For the Perimeter Planting and Bufferyard Requirements, see attached Exhibit D.1. For each individual home unit, the landscaping standard shall require the following: (i) 1 deciduous shade tree placed as a street tree; (ii) 1 ornamental tree; and, 3 shrubs. See Ex. F.1 (Rear-Load Planting Exhibit) and Ex. F.2 (Front-Load Planting Exhibit).* |
| Lighting Standards: | Same as TR District (Sections 5.42 and 5.43 of the UDO).** |
| Minimum Open Space: | See Ex. D.3 for the overall TR District Open Space Standards, including 35% minimum open space for combined TR-1 District and TR-2 District.* |
| Outdoor Storage Standards: | Same as TR District (Section 5.51 of the UDO).** |

| | |
|---|---|
| Parking Standards: | Same as TR District (Sections 5.56 and 5.58 of the UDO).** |
| Sewer and Water Standards: | Same as TR District (Section 5.64 of the UDO).** |
| **Sign Standards:** | Same as TR District (Sections 5.66 and 5.69 of the UDO)**, **except as follows: Clubhouse shall be permitted one (1) permanent, non-illuminated wall sign, not to exceed 25 square feet in size.** |
| Temporary Use Standards: | Same as TR District (Section 5.85 of the UDO).** |
| Temporary Structure Standards: | Same as TR District (Section 5.87 of the UDO).** |
| Trash Receptacle Standards: | Same as TR District (Section 5.90 of the UDO).** |
| Vision Clearance Standards: | Same as TR District (Section 5.91 of the UDO).** |

*Exhibits refer to those in Ord. 2021-14

**UDO references are to the 2014 UDO, as amended

**Recommendations**:

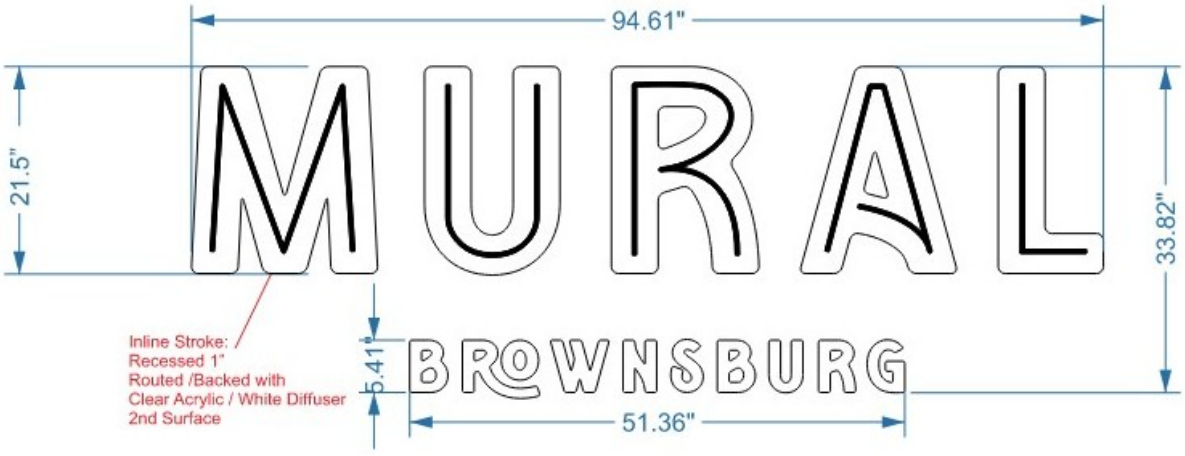
*The Advisory Plan Commission may request conditions and commitments related to the project and criteria. Conditions or commitments must be made as part of the motion. For this case type, a motion will be a favorable or unfavorable recommendation forwarded to the Town Council.*

***Based on the information provided and the criteria responses, staff recommends a motion to:***

| | |
|---|---|
| ☒ | Send a **Favorable** Recommendation for PCZT-25-5 as presented. |
| ☐ | Send a **Favorable** Recommendation for PCZT-25-5 with the following staff conditions:<br>1. |
| ☐ | Send an **Unfavorable** Recommendation for PCZT-25-5 based on the following criteria: |

**Proposed Clubhouse Sign**



TOWN OF Brownsburg

**AFFIDAVIT & CONSENT OF PROPERTY OWNER**

That I/We BOE BTR Westbranch Holdings, LLC after first being duly sworn, depose and say:

That I am/we are the owner(s) of Real Estate located at: (Legal and/or common address)
5942 Bristlecone Dr. Brownsburg, IN 46112

Parcel Number(s): 32-07-04-451-005.000-016

That we have examined the application for a/an PUD Text Amendment (application type) on this property, and I/we are familiar with its contents.

That I/we have no objections to, and consent to such request as set forth in the application.

Brett L

Signature of Affiant

Brett Davis

Printed Name

State of Indiana )
) SS:
County of Marion )

Ellie Miller
Notary Public, State of Indiana
Hancock County
Commission Number NP0755844
My Commission Expires
April 3, 2032

BEFORE ME, the undersigned, a Notary Public in and for said County and State, personally appeared Brett Davis who acknowledged the execution of the above and foregoing instrument to its voluntary act and deed on the 5th day of January, 2026.

4-3-32

Commission Expiration Date

Ellie Miller

Notary

Hancock

County of Residence

Ellie Miller

Printed Name

## EXHIBIT "A"
## Legal Description

A part of the Southeast quarter of Section 4, Township 16 North, Range 1 East of the Second Principal Meridian in Lincoln Township, Hendricks County, Indiana, and being more particularly described as follows, to-wit:

Beginning at a stone found marking the southeast corner of said quarter section; thence north 00 degrees 07 minutes 27 seconds west along the east line of said quarter section and the west line of Stony Brook, Subdivision, Section One, as per plat thereof recorded in Plat Book 12 Page 30 in the Office of the Recorder of Hendricks County, Indiana; 509.36 feet to the centerline of U.S.R. 136, as now located and established, also the northwest corner of said Stony Brook Subdivision; thence north 63 degrees 06 minutes 23 seconds west along said centerline 860.46 feet; thence north 63 degrees 38 minutes 05 seconds west along said centerline 319.35 feet; thence north 64 degrees 15 minutes 14 seconds west along said centerline 288.29 feet to the southeast corner of Rolling Acres Subdivision, Section One, as per plat thereof recorded in Plat Book 4 Page 134 in the Office of the Recorder of Hendricks County, Indiana; thence north 64 degrees 49 minutes 10 seconds west along said centerline and along the south line of said Rolling Acres, Section One 249.88 feet; thence south 00 degrees 19 minutes 12 seconds west parallel with the east line of the southwest quarter of the southeast quarter of said section 4 a distance of 1280.40 feet to the south line of said quarter section; thence north 89 degrees 41 minutes 16 seconds east along said south line 226.74 feet to a stone found marking the center south of said quarter section; thence continue north 89 degrees 41 minutes 16 seconds east along said south line 1320.88 feet to the point of beginning. Containing 31.93 acres, more or less, and subject to all legal highways, rights of way and easements of record.

EXCEPT
A part of the Southeast Quarter of Section 4, Township 16 North, Range 1 East, Lincoln Township, Hendricks County, Indiana, being bounded as follows:

Commencing at the Southeast Corner of said Quarter Section; thence North 00 degrees 03 minutes 45 seconds East (assumed bearing) along the East line of said Quarter Section 447.76 feet to POINT OF BEGINNING of this description, said point lying South 00 degrees 03 minutes 45 seconds West 63.33 feet from the centerline of US Highway 136 (as now located and established); thence continuing North 00 degrees 03 minutes 45 seconds East along said East line 63.33 feet to the centerline of US Highway 136; thence North 62 degrees 58 minutes 52 seconds West along said centerline 36.00 feet; thence South 27 degrees 01 minutes 08 seconds West perpendicular to said centerline 30.00 feet; thence South 28 degrees 49 minutes 10 seconds East 60.43 feet; thence South 89 degrees 56 minutes 15 seconds East perpendicular to the East line of said Quarter Section 16.50 feet to the POINT OF BEGINNING, containing 0.056 acres, more or less.

EXCEPT
A part of the Southeast Quarter of Section 4, Township 16 North, Range 1 East, Hendricks County, Indiana, and being that part of the grantors' land lying within the right-of-way lines depicted on the attached Right-of-Way Parcel Plat, marked Exhibit "B", described as follows: Beginning at the southeast corner of said section, designated as point "15" on the Location Control Route Survey recorded in Instrument 201112220 in the Office of the Recorder of said county; thence South 88 degrees 19 minutes 30 seconds West 45.00 feet along the south line of said section to point "48" designated on said Parcel Plat; thence North 01 degree 28 minutes 53 seconds West 30.98 feet to point "110" designated on said Parcel Plat; thence North 21 degrees 56 minutes 50 seconds East 32.70 feet to point "111" designated on said Parcel Plat; thence North 04 degrees 34 minutes 55 seconds West 240.35 feet to point "112" designated on said Parcel Plat; thence North 01 degree 55 minutes 58 seconds West 127.00 feet to point "47" designated on said Parcel Plat; thence North 18 degrees 25 minutes 23 seconds West 48.32 feet to point "46" designated on said Parcel Plat; thence North 37 degrees 59 minutes 27 seconds West 55.90 feet to point "49" designated on said Parcel Plat; thence North 64 degrees 33 minutes 21 seconds West 208.00 feet to point "71" designated on said Parcel Plat; thence North *25* degrees 26 minutes 39 seconds East 35.00 feet to the centerline of U.S.R 136; thence South 64 degrees 33 minutes 21 seconds East 259.00 feet along said centerline to a corner of the grantors' land; thence South 25 degrees 26 minutes 39 seconds West 30.00 feet along a line of the grantors' land to the southwestern boundary of the intersection of said U.S.R. 136 and County Road 600 East; thence South 30 degrees 12 minutes 00 seconds East 60.57 feet (60.43 feet by Instrument 94-8727, Deed Book 333, page 712) along the southwestern boundary of the intersection of said U.S.R. 136 and said county road to a corner of the grantors' land; thence North 88 degrees 31 minutes 07 seconds East 16.50 feet along a line of the grantors' land to the east line of said section; thence South 01 degree 28 minutes 53 seconds East 447.22 feet (447.76 feet by said Instrument 94-8727, Deed Book 333, page 712) along said east line to the point of beginning and containing 0.676 acres, more or less, inclusive of the presently existing right-of-way which contains 0.216 acres, more or less. The above-described land abuts the 0.56-acre parcel described in said Instrument 94-8727, Deed Book 333, page 712, and any seeming bearing discrepancies result merely from the different bearing systems upon which they are based.

ALSO
A part of the West half of the Southeast quarter of Section 4, Township 16 North, Range 1 East and described as follows:

Beginning at the Southwest corner of the said West half quarter; thence North with section bearing 101. 7 6 rods; thence South 80 degrees East 23 .2 7 rods; thence South 65 degrees East 63. 02 rods; thence South with section bearing 70 rods and 12.5 feet; thence West with the section bearing 80 rods to THE PLACE OF BEGINNING, estimated to contain 44.51 acres, more or less. EXCEPTING THE FOLLOWNG TRACT: Beginning at the Southeast corner of said half quarter; thence West on and along the South line thereof 3 .44 chains to a point; thence North parallel to the East line of said half quarter 19 .40 chains to the center of the Indianapolis and Crawfordsville Road; thence southeasterly in the center of said road to the

East line of said half quarter; thence South on and along the East line of said half quarter to the point of beginning. ALSO EXCEPT THE FOLOWING TRACT: Beginning at a stone at the Southwest corner of said half quarter section and run thence North on and along the West line thereof 7.394 chains, thence South 85 degrees 36 minutes East 7.51 chains; thence South parallel to the West line of said quarter quarter section 6.79 chains to the South line thereof; thence South 89 degrees 47.5 minutes West on and along said South line 7.488 chains to the point of beginning, containing 5.31 acres, more or less, containing in the above tract, exclusive of said exceptions 33.17 acres, more or less. Subject to all legal highways, rights of way and easements of record.

In all containing 64.368 acres, more or less.

This description is for zoning purposes only and not for the conveyance of title.

**Traditional Residential District (TR) Area – For TR-1 and TR-2 Areas**

| District Intent | Permitted Uses | Special Exception Uses |
|---|---|---|
| • The Traditional Residential District (TR) of the Westbranch PD is intended to be used as a high intensity single-family detached dwellings on small to medium sized lots. | • Residential Permitted Uses: dwelling, single-family detached; and, fair housing facility (small).<br>• Accessory Permitted Uses: home business (type 1). | • Accessory Special Exception Uses: home business (type 2) and wind turbine, small.<br>• Residential Special Exception Uses: assisted living facility; bed and breakfast; dwelling, duplex (2 units); and, dwelling, single-family, attached. |

**District Development Standards: TR-1 District Area (Single-Family Front Load Homes):**

| | |
|---|---|
| Minimum Lot Area: | NA |
| Minimum Lot Width: | NA |
| Minimum Lot Frontage: | NA |
| Minimum Front Yard Setback – | |
| All Structures: | 20 feet |
| Minimum Side Yard Setback – | NA – See below |
| Primary Structures: | NA |
| Accessory Structures: | NA |
| Minimum Aggregate Side Yard Setback between Dwellings | 20 feet |
| Minimum Rear Yard Setback – | |
| Primary Structures: | 20 feet |
| Accessory Structures: | 20 feet |
| Maximum Lot Coverage: | 65% (applicable to overall TR district) |
| Minimum Dwelling Unit Size (Excludes basement) | |
| One story dwelling: | 2,000 sq. ft. |
| Two story dwelling: | 2,000 sq. ft. |
| Maximum Number of TR-1 Units (Single-Family Front Load): | 42 units |
| Maximum Structure Height – | |
| Primary Structures: | 35 feet (2 ½ stories) |
| Accessory Structures: | 20 feet |

**Additional District Development Standards that Apply to the TR-1 District Area (Single-Family Front Load Homes):**

| | |
|---|---|
| Accessory Structure Standards: | Same as TR District (Sections 5.02 and 5.06 of the UDO) |
| Architectural Standards: | Same as TR District (Section 5.16 of the UDO)<br><br>See also Exhibit E and Exhibit H for Additional Architectural Standards |
| Anti-monotony Standards: | See attached Exhibit I. |
| Environmental Standards: | Same as TR District (Section 5.22 of the UDO). |
| Fence and Wall Standards: | Same as TR District of the UDO (Sections 5.23 and 5.26 of the UDO).<br><br>Pool fences shall be permitted to be 6' in height.<br><br>Fences in rear and side yards shall be permitted to be 42" in height.<br><br>The Developer shall install a privacy fence that is 6' in height along the southern perimeter of the Real Estate for that segment of the Real Estate that is between the two (2) ponds located along the southern perimeter. |
| Home Business Standards: | Same as TR District (Section 5.32 of the UDO). |
| Landscaping Standards: | For the Perimeter Planting and Bufferyard Requirements, see attached Exhibit D.1.<br><br>For the southern perimeter of the Real Estate that is adjacent to the Arbor Springs neighborhood, additional Perimeter Bufferyard Requirements are depicted in Exhibit D.2 which requires that the number of homes in the TR-1 District Area along the Real Estate's southern perimeter (between the two (2) ponds that are located along this segment) shall only include seven (7) homes.<br><br>For the northern perimeter of the Real Estate that is adjacent to US HWY 136, all homes shall be a minimum of 100' from US HWY 136.<br><br>For each individual home unit, the landscaping standard shall require the following: (i) 1 deciduous shade tree placed as a street tree; (ii) 1 ornamental tree; and, 3 shrubs<br><br>See Ex. F.1 (Rear-Load Planting Exhibit) and Ex. F.2 (Front-Load Planting Exhibit). |
| Lighting Standards: | Same as TR District (Sections 5.42 and 5.43 of the UDO). |

| | |
|---|---|
| Minimum Open Space: | See Ex. D.3 for the overall TR District Open Space Standards, including 35% minimum open space for combined TR-1 District and TR-2 District. |
| Outdoor Storage Standards: | Same as TR District (Section 5.51 of the UDO). |
| Parking Standards: | Same as TR District (Sections 5.56 and 5.58 of the UDO). |
| Sewer and Water Standards: | Same as TR District (Section 5.64 of the UDO). |
| Sign Standards: | Same as TR District (Sections 5.66 and 5.69 of the UDO). |
| Temporary Use Standards: | Same as TR District (Section 5.85 of the UDO). |
| Temporary Structure Standards: | Same as TR District (Section 5.87 of the UDO). |
| Trash Receptacle Standards: | Same as TR District (Section 5.90 of the UDO). |
| Vision Clearance Standards: | Same as TR District (Section 5.91 of the UDO). |
| Additional Standards: | See Ex. D for Additional Standards, as well as for the 1 Acre Neighborhood Commercial Flex Parcel that is located in the NC/TR-1 District Area. |

.

Note: All of the above standards shall be the standards that were in effect as of the date of the application submittal of this Ordinance (March 8, 2022).

**Street and Alley Cross Section Requirements:**

| | |
|---|---|
| Street cross sections: | See Ex. G.1 for the required street cross sections. |
| Private Alleys: | See Ex. G.2 for the required private alley cross sections. |

**District Development Standards: TR-2 District Area (Single-Family Rear Load Homes):**

| | |
|---|---|
| Minimum Lot Area: | NA |
| Minimum Lot Width: | NA |
| Minimum Lot Frontage: | NA |
| Minimum Front Yard Setback – | |
| All Structures: | 8 feet |
| Minimum Side Yard Setback – | NA – See below |
| Primary Structures: | NA |
| Accessory Structures: | NA |
| Minimum Aggregate Side Yard Setback between Dwellings | 12 feet |
| Minimum Rear Yard Setback – | |
| Primary Structures: | 8 feet |
| Accessory Structures: | 8 feet |
| Maximum Lot Coverage: | 65% (applicable to overall TR district) |
| Minimum Dwelling Unit Size (Excludes basement) | |
| One story dwelling: | 1,500 sq. ft. |
| Two story dwelling: | 1,500 sq. ft. |
| Maximum Number of TR-2 Units (Single-Family Rear Load homes): | 145 units |
| Maximum Structure Height – | |
| Primary Structures: | 35 feet (2 ½ stories) |
| Accessory Structures: | 20 feet |

**Additional District Development Standards that Apply to the TR-2 District Area (Single-Family Front Load Homes):**

| | |
|---|---|
| Accessory Structure Standards: | Same as TR District (Sections 5.02 and 5.06 of the UDO) |
| Architectural Standards: | Same as TR District (Section 5.16 of the UDO)<br>See also Exhibit E and Exhibit H for Additional Architectural Standards |
| Anti-monotony Standards: | See attached Exhibit I. |
| Environmental Standards: | Same as TR District (Section 5.22 of the UDO). |
| Fence and Wall Standards: | Same as TR District of the UDO (Sections 5.23 and 5.26 of the UDO).<br>Pool fences shall be permitted to be 6' in height.<br>Fences in rear and side yards shall be permitted to be 42" in height. |
| Home Business Standards: | Same as TR District (Section 5.32 of the UDO). |
| Landscaping Standards: | For the Perimeter Planting and Bufferyard Requirements, see attached Exhibit D.1.<br>For each individual home unit, the landscaping standard shall require the following: (i) 1 deciduous shade tree placed as a street tree; (ii) 1 ornamental tree; and, 3 shrubs.<br>See Ex. F.1 (Rear-Load Planting Exhibit) and Ex. F.2 (Front-Load Planting Exhibit). |
| Lighting Standards: | Same as TR District (Sections 5.42 and 5.43 of the UDO). |
| Minimum Open Space: | See Ex. D.3 for the overall TR District Open Space Standards, including 35% minimum open space for combined TR-1 District and TR-2 District. |
| Outdoor Storage Standards: | Same as TR District (Section 5.51 of the UDO). |
| Parking Standards: | Same as TR District (Sections 5.56 and 5.58 of the UDO). |
| Sewer and Water Standards: | Same as TR District (Section 5.64 of the UDO). |
| Sign Standards: | Same as TR District (Sections 5.66 and 5.69 of the UDO), **except as follows: Clubhouse shall be permitted one (1) permanent, non-illuminated wall sign, not to exceed 25 square feet in size.** |
| Temporary Use Standards: | Same as TR District (Section 5.85 of the UDO). |
| Temporary Structure Standards: | Same as TR District (Section 5.87 of the UDO). |

Trash Receptacle Standards: Same as TR District (Section 5.90 of the UDO).

Vision Clearance Standards: Same as TR District (Section 5.91 of the UDO).

Additional Standards: See Ex. D for Additional Standards.

Note: All of the above standards shall be the standards that were in effect as of the date of the application submittal of this Ordinance (March 8, 2022).

**Street and Alley Cross Section Requirements:**

Street cross sections: See Ex. G.1 for the required street cross sections.

Private Alleys: See Ex. G.2 for the required private alley cross sections.

## Exhibit A

(Location Exhibit)



# Exhibit B

(District Area Exhibit)




Westbranch Development PUD
**Exhibit B | District Map**

ONYX+EAST

# Exhibit C

(Concept Plan)




Westbranch Development PUD
**Exhibit C | Concept Plan**

ONYX+EAST

# Exhibit D

## (Additional Standards)

1. 1 Acre Neighborhood Commercial Flex Parcel located within the NC/TR-1 District Area: As shown on the District Map Plan, there is a "1 Acre Neighborhood Commercial Flex Parcel" that is located within the NC/TR-1 District Area. The below standards and requirements shall apply to the 1 Acre Neighborhood Commercial Flex Parcel:

    a. Upon approval of all zoning requests and acquisition of the Real Estate by the Developer, the Developer shall place the 1 Acre Neighborhood Commercial Flex Parcel for sale and shall market the same as a "Neighborhood Commercial" outlot.

    b. In the event the 1 Acre Neighborhood Commercial Flex Parcel is purchased and acquired by a third party (as evidenced by a recorded deed of transfer) on or before December 31, 2024, said 1 Acre Neighborhood Commercial Flex Parcel shall be required to be developed in accordance with the all applicable NC District Area development standards and requirements, as the same are set forth in this Westbranch PD Ordinance.

    c. In the event that the 1 Acre Neighborhood Commercial Flex Parcel is not purchased and acquired by a third party by January 1, 2025, the Developer shall submit the Town's required application and/or any and all other documents as may be required by the Town in its sole discretion necessary for the Council to consider approval or denial of such request in its sole discretion for the Developer to develop five (5) homes within the 1 Acre Neighborhood Commercial Flex Parcel pursuant to the TR-1 District standards and requirements after the Developer completes the following:

        i. The Developer shall appear before the Town Council any time after January 1, 2025, to inform and provide the Town Council of the following: (i) the Developer has not secured any third party purchasers for the 1 Acre Neighborhood Commercial Flex Area; (ii) the Developer shall submit a written explanation of their efforts to market and sell 1 Acre Neighborhood Commercial Flex Parcel; and, (iii) the Developer shall provide written minutes of any meetings/discussions with third party prospective buyers who expressed interest in the 1 Acre Neighborhood Commercial Flex Parcel.

        ii. Approval to permit the development of the 1 Acre Neighborhood Flex Parcel shall be solely at the discretion of the Town Council at the time they review such request. In addition, in the event the Developer's request requires Plan Commission consideration and approval, the Developer shall cooperate in that process.

d. Until it is finally determined if the 1 Acre Neighborhood Commercial Flex Parcel will be a commercial use or a residential use, the existing trees along this segment of US HWY 136 shall be preserved (notwithstanding any utility conflicts affecting the development of the Real Estate).

e. In the event the 1 Acre Neighborhood Commercial Flex Parcel becomes a residential use, the Developer shall provide a naturally enhanced buffer along this segment of US HWY 136 in the area of the five (5) homes.

2. Snow Removal: The property management company shall be responsible for and incur the expense of snow removal from all roads and alley ways within the TR-1 District and TR-2 District.

3. Fountains for Ponds: All ponds in the NC District, TR-1 District and TR-2 District shall be required to have fountains.

4. "Welcome to Brownsburg" Signage Along US HWY 136: The Developer shall coordinate with the Town of Brownsburg's Development Services Director to provide a mutually agreeable location along US HWY 136 for a "Welcome to Brownsburg" sign, but such sign shall not interfere with the development, sale and use of any of the Real Estate by the Developer. The final design and expense of installing the "Welcome to Brownsburg" sign shall be by the Town of Brownsburg.

5. Rental Rates: The Developer commits that the project will always be at or above market rates, and that there shall not be any government subsidies thereof. Further, occupancy rates shall comply with all applicable Town of Brownsburg ordinances and local code and to be enforced by the Westbranch Community Association.

6. Pools: Swimming pools shall be subject to the following standards:

   a. Only in an in-ground pools shall be permitted.
   b. Pools shall require an Improvement Location Permit.
   c. Pools shall be professionally managed by the property management company.

7. Development Amenities: Development Amenities to be installed by the Developer shall include: (i) an amenity area consisting of a pool house with restrooms, in ground swimming pool of at least 400 square feet in size within thirty (30) months of recording the primary plat for the Westbranch PD Ordinance; and, (ii) a playground.

8. Landscape Buffers: For the Perimeter Planting and Bufferyard Requirements, see attached Exhibit D.1.

9. Density: A maximum of 5.0 dwellings per acre (187 Dwellings) is permitted in the combined TR-1 and TR-2 Districts.

10. Open Space: See Ex. D.2 for the proposed Open Space plan and areas.

11. Shrub Sizes: There shall be a minimum of three (3) shrubs with a mature size of 3' to 5' diameter per each home.

# Exhibit D.1

(Perimeter Plantings and Buffers)



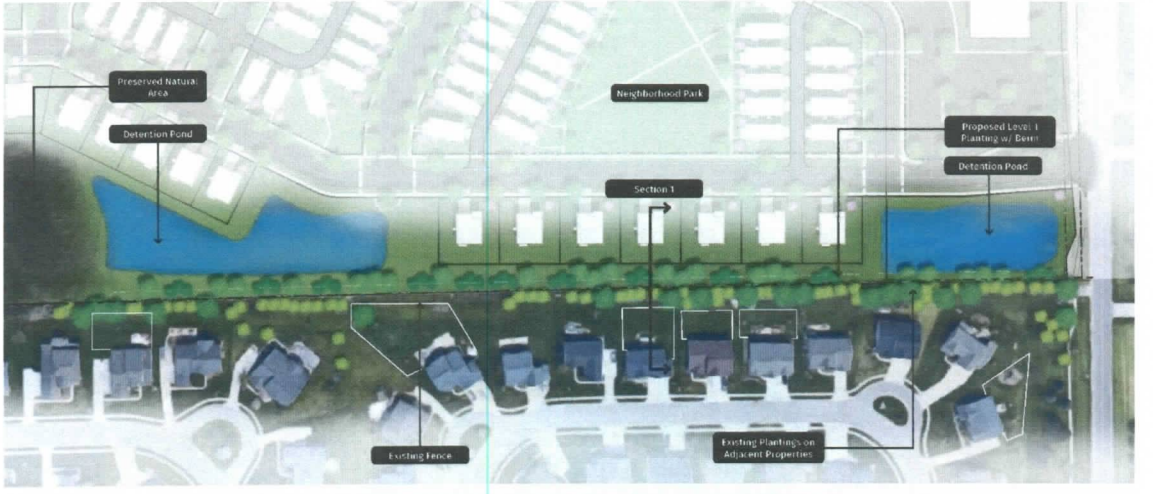

Westbranch Development PUD

**Exhibit D.1 | Perimeter Plantings and Buffers**

ONYX+EAST

# Exhibit D.2

(South Perimeter Buffer)






Westbranch Development PUD
**Exhibit D.2 | South Perimeter Buffer**

ONYX+EAST

# Exhibit D.3

(Open Space)




Westbranch Development PUD
**Exhibit D.3 | Open Space**

ONYX+EAST

## 5.66 SI-01: General Sign Standards

This Sign Standards (SI) section applies to the following zoning districts:

PR AG RE R1 R2 R3 TR M1 M2 M3 MP IS NC UC C1 C2 HC EC I1 I2 MS HI

The following standards apply:

A. Cross Reference:
   1. *Home Businesses*: Signs associated with a home business shall be exempt from the Sign Standards section, but shall comply with the *Home Businesses Standards (HB)*.
   2. *Lighting Standards*: When illumination of signs is permitted by this Sign Standards section, all illumination and lighting associated with signs shall meet the glare, light trespass, and any other applicable *Lighting Standards (LT)*.
   3. *Special Event Signs*: Signs associated with special events as permitted in *Section 5.88: Nonresidential Temporary Use and Structure Standards* shall be exempt from the Sign Standards section, but shall comply with that section's limitations.

B. Freedom of Speech: Any permanent sign or standard temporary sign permitted by the Sign Standards may be used for freedom of speech (i.e. the expression of opinions not including commercial messages) for any length of time.

C. Permits:
   1. *Improvement Location Permit*: An Improvement Location Permit shall be required for all signs located, erected, constructed, reconstructed, enlarged, moved, or altered, except as follows:
      a. Signs undergoing periodic or routine maintenance, including painting, repainting, cleaning and changing burnt-out light elements. Maintenance does not include changing the intensity or brightness of internal or external lighting.
      b. Changing of the sign's message (i.e. content) assuming the sign area, projection, dimension, materials (e.g. changing a wood sign to a LED sign), and other "time, place, and manner" standards are not changed.
      c. Standard Temporary Signs as may be permitted in each zoning district, but shall still comply with all applicable standards.
      d. Permitted and legally complying temporary signs that are replaced due to storms, mowing, or site maintenance; and when intentionally removed and replaced at a later time (e.g. at the end of business hours and replaced at the beginning of business hours).
      e. Permanent and legally complying signs damaged by accident or mother nature, when replaced with an effectively identical sign.
   2. *State Permit*: All signs proposed to be located along a State-owned interstate or highway shall obtain the proper State sign permit or written authorization from the Indiana Department of Transportation prior to seeking an Improvement Location Permit from the Town of Brownsburg.

D. Interim Sign:
   1. *Qualification*: Any new businesses may install an interim sign if their permanent sign is not able to be installed on or before the official occupancy date; or any business that has lost a pre-existing, legally established permanent sign due to fire, automobile accident, or act of mother nature may install an interim sign while a permanent sign is being fabricated to replace the lost sign. Under all circumstances, the following conditions shall be met:
      a. Proposal for Interim Sign: The property owner shall make a request for an interim sign, including the material, location, anchoring method, proposed installation date, and other information that may be requested by the Zoning Administrator.

b. Approval of Permanent Signs: A sign permit for one (1) or more permanent signs shall be fully approved prior to any interim signs being installed. If the permanent sign was pre-existing, evidence that the sign was legally established shall be confirmed before installing the interim sign.

c. Proof of Purchase: Proof shall be provided to the Zoning Administrator that the approved permanent sign has been officially commissioned or purchased from a sign manufacturer.

d. Size and Height: An interim sign shall not be larger in sign area or mounted higher than the corresponding approved permanent sign.

e. Location: The interim sign shall generally be in the same location as the approved permanent sign.

f. Quantity: No more than one (1) interim sign per approved (or lost) permanent sign shall be installed, with a maximum of two (2) interim signs in total.

g. Time Limitation: An interim sign may be in place for up to ninety (90) days. If evidence that unforeseen circumstances has prevented the permanent sign from being installed, the Zoning Administrator can grant a one-time thirty (30) day extension.

h. Building Inspector: An inspection of the interim sign is not required. However, if the building inspector becomes aware of any safety concerns, those concerns shall be addressed to his/her satisfaction within a time-frame consistent with the safety concern.

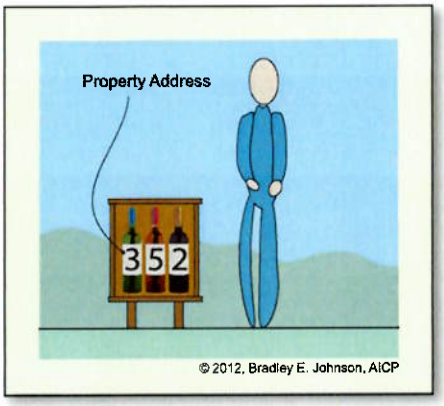
i. Maintenance: The interim sign shall be kept in good repair.

j. Removal: The interim sign shall be removed upon delivery and installation of the permanent sign(s).

E. Exempt: The following devices, as described, are not considered commercial messages and shall be exempt from the Sign Standards. However, the below described exemptions shall still meet all Vision Clearance Standards (VC) and other non-sign standards. Items that do not meet the description and that are used as part of, or fully as, a commercial message shall be regulated as a sign.

1. *Flags*: A flag or insignia of any nation, state, municipality, or other political unit is exempt. However, when a flag or insignia of any nation, state, municipality, or other political unit is used as an integral component of a commercial message, it shall comply with the sign standards for the applicable zoning district. For example, an American Flag integrated into a corporation's brand or logo.
2. *Political Signs*: Political campaign signs shall be exempt.
3. *Public Safety Message*: Posting of a public safety or privacy message by a private property owner shall be exempt, provided that no individual posting exceeds the maximum area permitted for a standard temporary sign in the applicable zoning district. Examples include "Beware of Dog," "Private Property," "No Trespassing," "Weight Limit," "Video Surveillance," and "No Turnaround."
4. *Operational Limitations or Information*: Posting of operational limitations and information shall be exempt, provided the letters are not greater than twelve (12) inches in height. Examples include hours of operation, admittance requirements, "Employees Only," "Men," "Women," "Visitor Parking," and "No deliveries."
5. *Indoor Commercial Messages*: Commercial messages displayed inside a building that cannot be viewed legibly by pedestrians or drivers outside the building shall be exempt. Examples include a commercial message on a scoreboard inside a gymnasium, a wall clock inside a restaurant with a branded logo, or product signs hanging or mounted on the wall of a retail store.
6. *Miniscule Commercial Messages*: Miniscule commercial messages displayed on or near a primary entrance shall be exempt, provided that the area of each miniscule commercial message does not exceed thirty (30) square inches and the cumulative area of all miniscule commercial messages does not exceed two (2) square feet per primary entrance. Examples include "Visa," "Master Card," "Diner's Club," "ATM Inside," and corporate logos of products sold inside.
7. *Price Tags*: A price tag in conjunction with outdoor merchandise shall not be considered a sign if less than eighty (80) square inches.

8. *Addresses*: Posting of a street address on a mailbox, building, or other prominent location to provide adequate property identification shall be exempt. However, when a street address is more than four times (4X) the minimum required address size required by the 2006 International Fire Code, or integrates graphics that convey a commercial message, then it shall be regulated as a sign. For example, an address posted on a sign illustrated with bottles of wine for a wine shop would not be exempt.




9. *Residential Nameplate*: Posting of the occupant's name in a single-family residential districts when the text is not greater than nine (9) inches in height is exempt (e.g. "Smith Family" or "Jones Place").
10. *Property Name*: A name given to a property and posted by the owners, and that does not exceed five (5) square feet in sign area is exempt. For example "Dream Cottage" or "Wild Wind Farm." However, if the sign is related to the property's use for a commercial purpose (e.g. a home business, bed and breakfast, vacation rental, or has agricultural tourism) the property name sign shall not be exempt.
11. *Required Postings*: Messages required by a State agency, State law, federal agency, or federal law shall be exempt, provided the area of the message and height of posting are consistent with the minimum requirement by the agency or law.
12. *Religious Symbols*: Religious symbols (e.g. Cross, Star of David, or Star and Crescent) incorporated into the architecture or site at places of worship occupied by the religious organizations shall be exempt. Logos, brands, or slogans used by religious organizations shall not be considered religious symbols.
13. *Murals*: A mural shall be exempt, provided it conveys no commercial message. Murals with a commercial message shall be regulated as a wall sign.
14. *Commercial Messages on a Permanent Display Board*: A commercial message attached to and contained within the sign area of a legally established permanent display board sign shall be exempt.
15. *Outdoor Sports Fields*: Any advertising or sponsor signs mounted on an outdoor scoreboard, dugout, press box, fence, bleachers, concession stand, restroom, or similar structures used in conjunction with a legally-established sport field shall be exempt if designed to be predominantly seen by the players and audience. However, if the advertising is visible from a public street and contains a commercial message intended for the non-attending public, it shall comply with the sign standards for the applicable zoning district.
16. *Directional Devices*: Directional devices used to mark the entrance or exit of an establishment for vehicle safety and information purposes that does not exceed the following limitations shall be exempt:
    a. Applicable Zoning Districts: The commercial, M2, M3, institutional, parks and recreation, or industrial zoning districts may utilize directional devices.
    b. Device Area: Directional devices shall not exceed four (4) square feet in area per face.
    c. Device Height: Directional devices shall not exceed three (3) feet in height.
    d. Quantity: Two (2) directional devices may be installed per street frontage in which the property has legally established curb cuts; with an absolute maximum of four (4).
    e. Location: Directional devices shall be subject to *Section 5.66(G): Prohibited Locations*.
    f. Message: Directional devices shall either contain the words "In," "Enter," "Entrance," "Out," "Exit," "Do Not Enter," or similar; and/or have directional arrows indicating desired traffic movement. Further, directional devices may include corporate colors or a corporate logo as long as the corporate logo does not exceed fifty percent (50%) of the device area.

17. *Wayfinding System Signs*: Wayfinding systems may be permitted for large developments that encompass multiple lots or multiple buildings, provided the following conditions are met.
    a. Wayfinding systems shall be used to direct vehicular and pedestrian traffic to specific neighborhood, amenity, or other major destinations.
    b. Wayfinding systems shall be required to have signs of consistent size, scale, and appearance.
    c. Wayfinding signs shall not exceed six (6) feet in height and two (2) square feet in sign area.
    d. Proposals for wayfinding systems shall be reviewed and approved at the discretion of the Zoning Administrator. The Zoning Administrator may take into account the need for the wayfinding system, the size and complexity of the development, quantity and location of signs, number of entrances and exits, and the appearance of signs.

F. Prohibited Signs: The following type of signs shall be prohibited.
1. *Animated*: Signs that gain attention through animation shall not be permitted, including any of the following.
    a. Signs that utilize any motion picture or animation from an LED display, LED projector, film projector, video projector, or the like.
    b. Signs that emit audible sound, odor, or visible matter.
    c. Signs that have blinking, flashing, scrolling, or fluttering lights; or changing light intensity, brightness, or color; or that give such illusion.
    d. Signs that "shoot" laser light, "cast" intense or visible light beams, or cast laser or projector-created light images onto the ground, sidewalk, wall or other visible surface.
2. *Vehicle Signs*: Vehicles with signs greater than eight (8) square feet in cumulative area shall not be permitted to be parked for the primary purpose of displaying the sign. Prohibited vehicle signs shall not be construed to include vehicles with signs on them that:
    a. Are lawfully parked overnight or during non-business hours in a discreet location.
    b. Are making deliveries, sales calls, transporting persons or property, or conducting customary practices relating to operating the business.
    c. Are used in conjunction with customary construction operations on a construction site.
3. *Lights*: Strobe lights, search lights, beacons, or any light that rapidly flashes, projects light in visible beams skyward, or projects light horizontally shall not be permitted regardless if the light is part of or independent of a sign.
4. *Signs with Moving or Movable Parts*: Signs or devices with visibly moving parts, including humans holding or acting as signs, shall not be permitted; except as may be permitted as a Special Temporary Sign.
5. *Obscene Content*: Signs that contain obscene content, indecent content, "fighting words," or profane words not allowable on broadcast television or radio during daytime hours according to the rules of the FCC; or content that would result in an NC-17 rating by the Motion Picture Association of America, shall not be permitted.
6. *Driver Hazard*: Signs that emulate emergency service vehicles or common traffic signs or signals shall not be permitted. For example, a sign that uses "Stop," "Slow," "Caution," "Danger," "Warning," or similar words mounted on a sign using similar shape, scale, color, and location resulting in driver confusion or otherwise creating an unsafe condition.
7. *Streamers*: Pennants, streamers, strings of flags, and the like with a commercial message shall be prohibited.
8. *Non-Permitted*: Any sign type not specifically permitted or that isn't clearly meeting the intent of the Sign Standards shall be prohibited.

G. Prohibited Locations: Signs regardless of type, shall not be permitted in any of the following locations, except as may be expressly permitted elsewhere in this Unified Development Ordinance:

1. *Vision Clearance*: Signs shall not be permitted in areas prohibited by *Vision Clearance Standards (VC)*.
2. *Right-of-way*: Signs shall not be permitted in any right-of-way unless authorized by the Town Council, except as allowed in *Section 5.73: Urban Commercial Sign Standards*.
3. *Poles*: Signs shall not be permitted on any traffic control device, street sign, construction sign, or utility pole.
4. *Fences*: Signs shall not be permitted on any fence.
5. *Trees*: Signs shall not be permitted to be attached to any tree, shrub, or other natural object.
6. *Benches*: Signs shall not be permitted to be attached to or integrated into any bench.
7. *Towers*: Signs shall not be permitted to be attached to or integrated into any telecommunication antennae, telecommunication tower, television antennae, or similar towers.
8. *Roofs*: Signs shall not be permitted to be placed on, set upon, attached to, or be perceived to be attached to the roof of a structure. This provision includes signs integrated into the roofing material.
9. *Fire Safety Devices*: Signs shall not be permitted on a fire escape or in a manner that substantially blocks view from the right-of-way to a fire door.
10. *Obstructs Circulation*: Signs that obstruct or interfere with safe internal or external movement of vehicular or pedestrian traffic shall not be permitted.
11. *Artificial Elevation*: Signs shall not be permitted to be installed on a berm, mound, or otherwise raised portion of the site unless the sign height is measured from the elevation at the base of the berm, mound, or raised portion of the site.
12. *Wall Signs over Windows*: No permanent wall sign shall be installed such that it covers windows in the building.

H. Maintenance: All signs and sign components shall be kept in good repair, in safe condition, and working condition. If landscaping is required around the base of a sign, it shall be maintained in living condition, consistent in character with the approval, and not overgrown. Landscaping shall be designed and maintained to be in compliance with the visibility restrictions for signs.

## 5.69 SI-04: Single-family and Two-family Residential Sign Standards

This Sign Standards (SI) section applies to the following zoning districts:

RE R1 R2 R3 TR M1

The following standards apply:

A. Temporary Signs: Temporary signs on individual lots shall be permitted as follows:
   1. *Location*: Temporary signs shall be located outside the Vision Clearance Triangle and a minimum of ten (10) feet from any right-of-way, or edge of pavement associated with a street or driveway.
   2. *Illumination*: Temporary signs shall not be illuminated.
   3. *Standard Temporary Signs*: Standard temporary signs shall be permitted as follows.
      a. Type: A standard temporary sign shall be a yard sign. Examples of standard temporary signs include sale of property, garage sale, and supporting school events.
      b. Quantity: One (1) standard temporary sign shall be permitted per lot frontage, plus one (1) additional sign for each 300 feet of street frontage. For corner lots, no two (2) standard temporary signs on separate frontages shall be closer than 150 feet, measured using the shortest tangent.
      c. Sign Area: The sign area for a standard temporary sign shall not exceed ten (10) square feet per side.
      d. Height Above Ground: The sign copy of a standard temporary sign shall be no more than six (6) feet above the ground. The sign structure shall not be greater than 120% taller than the sign copy.
      e. Duration: A standard temporary sign may stay in place for the duration of the temporary event. The standard temporary sign may be put in place up to seven (7) days prior to the temporary event. All standard temporary signs shall be taken down within five (5) days after the standard temporary sign's purpose no longer exists.

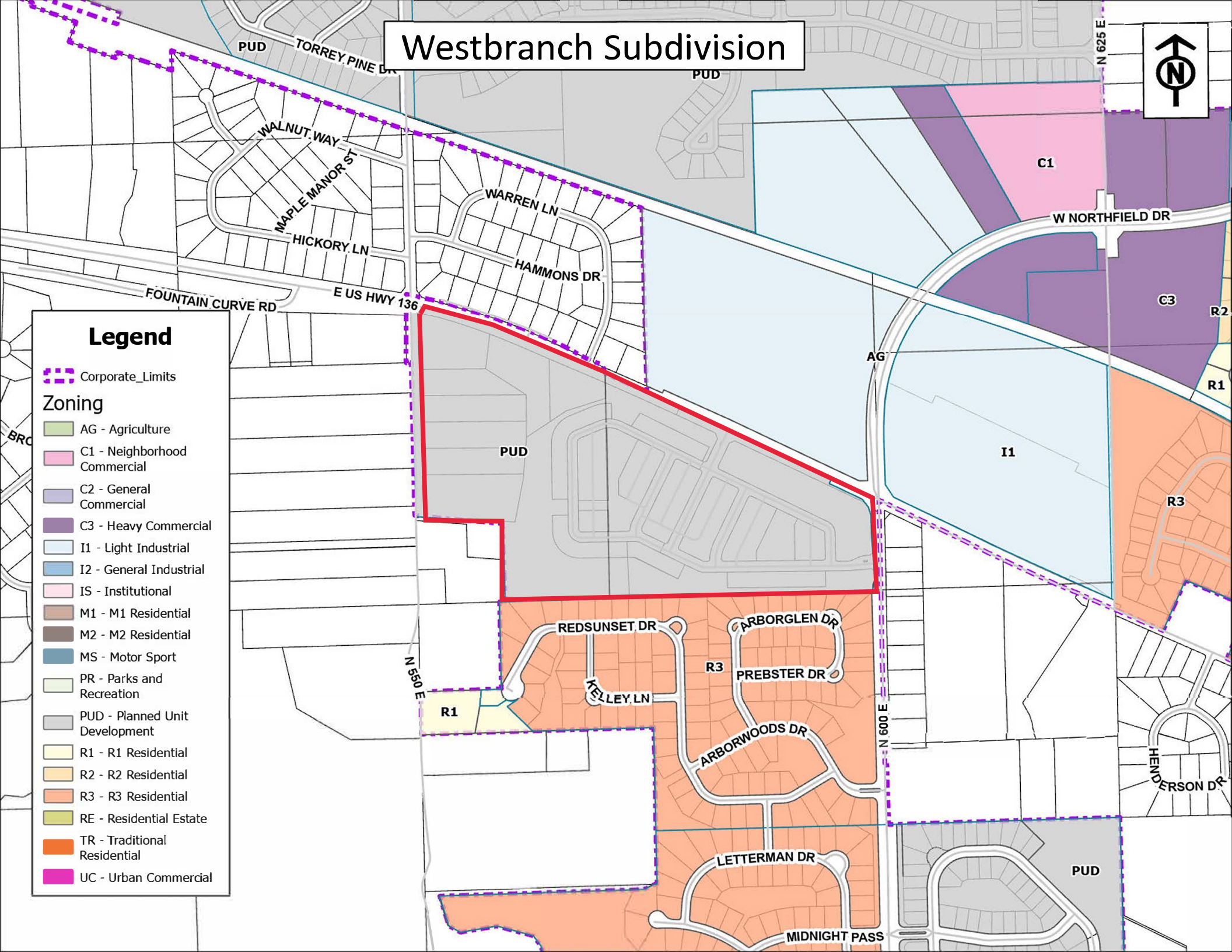

Westbranch Subdivision
PUD
TORREY PINE DR
PUD
N 625 E
WALNUT WAY
MAPLE MANOR ST
WARREN LN
HICKORY LN
HAMMONS DR
C1
W NORTHFIELD DR
C3
R2
FOUNTAIN CURVE RD
E US HWY 136
AG
R1
PUD
I1
R3
REDSUNSET DR
ARBORGLEN DR
R3
PREBSTER DR
KELLEY LN
N 550 E
R1
ARBORWOODS DR
N 600 E
HENDERSON DR
LETTERMAN DR
PUD
MIDNIGHT PASS
Legend
Corporate_Limits
Zoning
AG - Agriculture
C1 - Neighborhood Commercial
C2 - General Commercial
C3 - Heavy Commercial
I1 - Light Industrial
I2 - General Industrial
IS - Institutional
M1 - M1 Residential
M2 - M2 Residential
MS - Motor Sport
PR - Parks and Recreation
PUD - Planned Unit Development
R1 - R1 Residential
R2 - R2 Residential
R3 - R3 Residential
RE - Residential Estate
TR - Traditional Residential
UC - Urban Commercial

**Exhibit "D"**

**Statement of Intent, Project Description and Comprehensive Plan Statement for**

**the Westbranch PD Ordinance - 2023 Amendment**

The applicant, Onyx and East, LLC ("Onyx"), is seeking text amendment approval to the Westbranch Planned Development Ordinance, Ordinance #2022-14, which was adopted by the Brownsburg Town Council on August 25, 2022 (the "Westbranch PD"). The Westbranch PD is a mixed-use Planned Development District that consists of approximately 44 acres, which parcels are generally located at the southwest intersection of West Northfield Drive and E. US Highway 136 (collectively, the "Real Estate").

The purpose of the text amendment request (the "Westbranch Amendment Ordinance") is to add additional lot development standards that were not included in the Westbranch PD Ordinance in order to allow for the platting of individual lots in the TR-1 and TR-2 District Areas, as well as providing additional home design options for consideration.

The "Westbranch Amendment Ordinance" will meet or exceed all the requirements of *IC 36-7-4-1500* et seq. which sets forth the State of Indiana requirements for the consideration and adoption of Planned Unit Developments, and amendments thereto, by local jurisdictions. To this end the plan for the Real Estate is predominately consistent with the Goals and Objectives of the Brownsburg Comprehensive Plan and compatible with surrounding land uses and adjacent zoning districts. In this regard, The Town of Brownsburg's Comprehensive Plan Map classifies the subject Real Estate as "Single Family Detached" residential and "Neighborhood Commercial. Surrounding the Real Estate to the immediate south is the Arbor Springs residential neighborhood; (ii) to the immediate north is the US Hwy 136 and further to the north is a future industrial development; (iii) to the immediate west is N Country Road 550 E, also to the west is the Lincoln Park and estate residences; and, (iv) to the immediate east are single family residences. The Westbranch Amendment Ordinance provides a context sensitive transition residential adjacent to the surrounding residential uses and neighborhood commercial at the corner.

The Westbranch Amendment Ordinance meets the intent of the Brownsburg Zoning Ordinance, and specifically Article 4 Planned Development District in that the Westbranch Amendment Ordinance is intended to provide development standards for a mixed-use development which will include both residential and commercial uses in three (4) distinct use areas – (I) an NC District Area for neighborhood commercial uses; (ii) an RE District Area for estate lots; (iii) a TR-1 District Area; and, (iv) a TR-2 District Areas and these two (2) TR Areas will include two (2) different types of residential home offerings (single-family front load homes and single-family rear load homes).

The proposed NC District Area and RE District Area of the Westbranch Amendment Ordinance have development standards that are essentially consistent with the development standards and intent in the respective underlying zoning classifications of the Unified Development Ordinance ("UDO").

The Westbranch Amendment Ordinance for the proposed TR-1 and TR-2 District Areas adds additional lot development standards that were not included in the Westbranch PD Ordinance in order to allow for the platting of individual lots in the TR-1 and TR-2 District Areas, as well as providing additional home design options for consideration, as the development standards in the underlying TR zoning classification of the UDO do not easily comply with the development standards necessary to achieve the design intent for the TR-1 District Area (front load homes) and the TR-2 District Area (rear load homes). For the two (2) TR District Areas of the Westbranch Amendment Ordinance, the proposed development standards are limited to and only seek relief and flexibility from TR development standards of the UDO in order to produce the desired development for these two (2) TR District areas within the community.

The Westbranch Amendment Ordinance includes a mix and diversity of uses and residential home offerings. The NC District Area is intended for neighborhood commercial types of uses, the RE District Area is intended for estate lots and the TR-1 and TR-2 District Areas are intended for residential uses that offer different home offerings. The mix of uses offered within the community should benefit the immediate vicinity surrounding the Real Estate, as well as benefit the Town as a whole in providing a unique mixed-use development along an important corridor and roadway of the Town.

The NC District Area of the Westbranch Amendment Ordinance adopts the architectural standards and requirements of the UDO Section 5.18 AR-04 Commercial Architectural Standards, as those standards and requirements are more appropriate to apply to the proposed commercial buildings in the NC District Area of the Westbranch Amendment Ordinance. The RE District Area adopts the architectural standards and requirements of the UDO. For the TR-1 and TR-2 District Areas, the Westbranch Amendment Ordinance includes specific design and architectural standards (see Exhibit E and Exhibit H of the Westbranch TA Ordinance) – that, as applied, will be sensitive to the character of the surrounding area and uses and which will provide amenities for future residents.

The Westbranch TA Ordinance meets district intent and prerequisites of Article 4.1 in the following ways:

1. The Real Estate consists of two (2) parcels of that when combined are uniquely shaped with existing natural features, including the western portion of the Real Estate that includes mature tree areas, gently rolling terrain and features that deserve sensitivity. The eastern portion of the Real Estate is located at the southwest intersection of US Hwy 136 and Northfield Drive/N CR 600 E and the western portion is located south of and adjacent to US Hwy 136, and east of N. CR 550 E. The Westbranch Amendment Ordinance seeks to combine these parcels into a coherent development that is not disjointed and the subject of individual zoning requests on the various parcels that may not be part of an overall plan to effectively and appropriately develop the Real Estate.

2. The Westbranch Amendment Ordinance will provide for a mixed-use development that shall include both residential and commercial uses within in four (4) distinct use areas – NC District Area, RE District Area and the TR-1 and TR-2 District Areas for the two (2) different residential home offerings (single-family front load homes and single-family rear load homes). The two (2) TR District Areas are unique in that these areas are master-

planned and include a mixed-use lifestyle living experience in a premium residential community that shall be managed by a professional management company.

3. Because the eastern portion of the Real Estate is located in a prominent corridor of the southwest intersection of US Hwy 136 and Northfield Drive/N CR 600 E, this area is proposed to be the NC District use area which is intended per the Comprehensive Plan for neighborhood commercial types of uses area. The area just south of the NC District Use, will be the two (2) TR District Areas which will provide for a residential uses in the form of front load homes and rear load homes that will benefit the immediate vicinity area surrounding the Real Estate and the Town as a whole by providing another housing option.

4. By utilizing the unique location of the Real Estate, its unique size and taking into consideration the natural features of the Real Estate when developing a sensitive and thoughtful land plan, the Westbranch Amendment Ordinance seeks to avoid a disjointed development of the various parcels through separate rezone requests, and instead seeks to develop the parcels in a coherent and unified manner so that they live and feel more like a "micro-community" and not separate and unrelated developments.

5. Another aspect of utilizing the natural features of the site and seeking to have a connected and vibrant community, the Westbranch proposals includes a path system that allows residents in the estate section to utilize a path that will meander through some of the mature tree areas that will be preserved over to the commercial area and other residential area. Pathways such as this have the effect of creating community connection and engagement between the residents of the different areas of the development.

6. The sidewalk system within and around the community and the common areas and park areas provide the residents and public alike an opportunity to enjoy the natural features of the overall site, including the trees that will be preserved and the many new trees, shrubs and plants that will be installed upon development.

7. The original rezone to the Westbranch PD, as a "Planned Development", was desired in order to allow for the development of the Real Estate into a community that was planned with thought and the idea of connecting its residents to each other within the development and providing convenient and nearby appropriate neighborhood commercial types of uses for their enjoyment. If "straight rezone" were pursued for the development of the individual parcels to achieve the proposed Westbranch development, it would require separate rezone filings, various Board of Zoning Appeals ("BZA") approvals on various development standards from the Unified Development Ordinance for any underlying zoning district that was sought. Additionally, the platting standards would present various additional variances and waivers that would be required. Further, while rezones would require approval by the Council, the BZA is the

body that approves development standards variance requests. Further, a petitioner cannot file for a BZA variance until after the Council approves a rezone. This results in the BZA making the final land use decision/policy decision on the development of the land when that jurisdiction or role seems to rest more appropriately with the Council.

8. The Applicant chose a Planned Development rezone in order to present the Westbranch PD Ordinance and proposal as a comprehensive, master planned proposal for the Council's consideration, which proposal the Council adopted. The Applicant is now presenting the Council with a text amendment to the original Westbranch PD for the same purpose and to add additional lot development standards that were not included in the Westbranch PD Ordinance in order to allow for the platting of individual lots in the TR-1 and TR-2 District Areas, as well as providing additional home design options for consideration.

9. The Westbranch Amendment Ordinance includes a mix and diversity of uses (commercial and residential) and the proposal's intent is to provide a unique and innovative development design by providing a mix of uses in a coherent and complimentary overall design, while being sensitive to other surroundings uses, buffers and transitions.

10. Finally, the subject Real Estate meets the ownership, minimum site area and underlying zoning district prerequisites as set forth in Article 4 of the UDO and the Westbranch Amendment Ordinance is predominantly in-line with the permitted uses in the original zoning district and the Comprehensive Plan and is compatible with the land uses and adjacent zoning districts.