Planning and Zoning Department 616 Germantown Pike, Lafayette Hill, PA 19444-1821 484-594-2625 www.whitemarshtwp.org	Subdivision and Land Development Cover Page for SLD # 03-23
	Project Name: MileOne Fort Washington LLC
	Address: 500-512 Pennsylvania Avenue
	Date: March 16, 2023
	Status: Under Review

Updates:

Fire Marshal Review Letter - March 27, 2023
Flood Analysis - April 3, 2023
Zoning Ordinance Compliance Review Letter - April 6, 2023
No Position Letter from George Ozorowski - June 1, 2023
ZHB 2023-11 Decision – June 7, 2023
Township Engineer Review Letter - June 8, 2023
Waiver Request Letter Revised – June 9, 2023
Fee Waiver Request – July 10, 2023
Shade Tree Commission Memo – July 17, 2023
Traffic Impact Fee Analysis – July 20,2023
Traffic Impact Fee Review by Gilmore – July 28, 2023
MCPC Review – August 3, 2023
Draft Resolution-Preliminary Plan Approval – August 4, 2023

WHITEMARSH TOWNSHIP
SUBDIVISION and/or LAND DEVELOPMENT APPLICATION

The applicant, or applicant's authorized agent, for the Township to accept submission of the application, must complete each Application item and each Application Submission Checklist item.

Application Type: (check one)
☒ Minor Subdivision ☐ Minor Land Development
☐ Major Subdivision ☒ Major Land Development
☐ Land Development Waiver

Plan Type:
☐ Sketch ☒ Preliminary ☐ Final

INSERT "N/A" FOR NOT APPLICABLE WHERE APPROPRIATE

Name of Subdivision/Land Development: BMW Automotive Dealership Expansion

Location of Subdivision/Land Development: 500-512 Pennsylvania Avenue
(Primary Access Roadway Name)

Between: Commerce Drive (Roadway Name) and Indiana Avenue (Roadway Name)

Number of Parcels: 4 **Block Number(s):** 51 **Unit Number(s):** 44, 2, 41, 46

Parcel Number(s): 512 Pennsylvania Ave, 65-00-08776-006, 510 Pennsylvania Ave, 65-00-08773-00-9, 500 Pennsylvania Ave, 65-00-08770-00-3, 506 Pennsylvania Ave 65-00-08767-00-6 & 65-00-08767-10-5

Acreage: 4.886 **Total Lots Proposed:** 1 **Zoning District:** CR-L (Commercial Retail -Low District)

Water Service Proposed: ☒ Public ☐ Private Sewer Service Proposed: ☒ Public ☐ Private

Applicant Name: MileOne Fort Washington, LLC **Contact Name:** Dennis Turnbaugh

Phone #: 301-679-4062 Fax #: Email: dturnbaugh@mileone.com

Address: 3301 Briggs Chaney Road, Silver Spring, MD 20904

Owner of Record Name (If Different): Auto Properties Fort Washington, LLC

Phone #: Fax #: Email:

Address: 1 Olympic Place, Suite 1000, Towson, MD 21204

Engineer Name: Matthew Longenberger, P.E. **Firm Name:** Bohler Engineering PA, LLC

Phone #: 610-709-9971 Fax #: 610-709-9976 Email: mlongenberger@bohlereng.com

Address: 74 West Broad Street, Suite 500, Bethlehem, PA 18018

Fees and plans showing all public improvements are submitted with this application. Any additional plan information required by the Township Engineer will be submitted to the Director of Planning and Zoning for distribution. The undersigned applicant agrees to comply with all the provisions of Chapter 105 of the Code of the Township of Whitemarsh, as amended, and agrees to obtain all necessary permits in connection with the proposed subdivision and/or land development.

Whitemarsh Township employees, or township-authorized agents, are hereby granted permission to enter upon the land, if necessary, for site inspections.

Original preliminary and/or original final subdivision and/or land development applications submitted by 4:00pm on the last business day of the month will be reviewed by the Whitemarsh Township Planning Commission at a regular meeting two (2) months following the date of submission or other appropriate meeting date depending upon the results of Township reviews.

I hereby certify, as the undersigned applicant, that I am familiar with the provisions of: [1] Chapter 105, "Subdivision and Land Development", [2] Chapter 58, "Grading, Erosion Control, Stormwater Management and Best Management Practices", and [3] Chapter 55, "Tree Protection Standards" of the Code of the Township of Whitemarsh, as amended, and, to the best of my knowledge and belief, this application and the submitted plans conform to those provisions.

Date of Submission: 3/8/2023

Signature: _____

(Original Signature must be submitted)

Printed Name: Dennis L. Turnbaugh

I, (name) Dennis L. Turnbaugh **(title)** Division President of

(entity submitting application) MileOne Fort Washington, LLC do hereby affirm

that I am authorized by the applicant to affix my signature to this application.

Date: 3/8/2023 **Signature:** _____

(Original Signature must be submitted)

WHITEMARSH TOWNSHIP
SUBDIVISION and/or LAND DEVELOPMENT
TIME WAIVER FORM

Date: 3/8/2023

Granted to: Whitemarsh Township Board of Supervisors

Name of Subdivision and/or Land Development: BMW Automotive Dealership Expansion

On or about, _____, I/we submitted for official filing the above-reference application.

Notwithstanding any contrary provision of the Pennsylvania Municipalities Planning Code or the Code of the Township of Whitemarsh, this letter will serve as notice to Whitemarsh Township that the requirement that action be taken on this application within ninety (90) days is hereby waived, without limitation as to time. This waiver is granted to permit us to make revisions to the application during the application review process.

Further, with the understanding that this waiver is voluntarily given and will be relied upon by Whitemarsh Township, I/we will give Whitemarsh Township written notice (by certified mail or recognized overnight carrier) should we determine that limiting the time of the review process becomes necessary. Whitemarsh Township shall then have ninety (90) days from receipt of such written notice in which to act upon the application.

This waver is not transferable or assignable by the Applicants and shall apply to any and all revised submissions made in relation to the above-referenced application.

I/we represent that I/we have been duly authorized to execute this waiver on behalf of the Applicant.

Date: 3/8/2023

Signature: _____
(Original Signature must be submitted)

Printed Name: Dennis L. Turnbaugh

Firm Name: Mile One Fort Washington, LLC
(if applicable)

Title: Division President
(if applicable)

WHITEMARSH TOWNSHIP
REQUEST FOR MODIFICATION (WAIVER) OF
SUBDIVISION and/or LAND DEVELOPMENT ORDINANCE REQUIREMENTS

Pursuant to § 512.1.(b) of the Pennsylvania Municipalities Planning Code, all requests for a modification shall be in writing and shall accompany and be a part of the application for development. The request shall state in full the grounds and facts of unreasonableness or hardship on which the request is based, the provision or provisions of the ordinance involved and the minimum modification necessary.

Check the appropriate line:

☐ No modification (or waiver) of the Whitemarsh Township Subdivision and Land Development Ordinance is requested

☒ I/we hereby request the following modification[s] (or waiver[s]) of the Whitemarsh Township Subdivision and Land Development Ordinance. (The request must identify the applicable Section[s] of the Ordinance, modification[s] requested, and facts of unreasonableness or hardship upon which the request is made; attach additional sheets if necessary).

Please refer to enclosed Waiver Request Letter

Name of Subdivision and/or Land Development: BMW Automotive Dealership Expansion

Date: 3/8/2023

Signature: Division President

(Original Signature must be submitted)

74 W. Broad Street, Suite 500
Bethlehem, PA 18018
610.709.9971

March 15, 2023
Via FedEx Priority & Email

Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

Attention: Board of Supervisors

RE: BMW Automotive Dealership Expansion
500-512 Pennsylvania Ave.
Whitemarsh Township
Montgomery County, PA
PAB220113.00

Dear Supervisors:

On behalf of MileOne Autogroup, Inc., Bohler Engineering PA, LLC hereby requests the following Waivers from the Whitemarsh Township Board of Supervisors in regards to the above referenced Land Development Application:

1. From SALDO §55-4.B.(6) to permit fewer than the required number of replacement trees due to insufficient planting area.

2. From SALDO §105-12.(D), to permit the submission and review of Preliminary/Final Land Development Plans in lieu of separate Preliminary and Final Plan submissions.

3. From SALDO §105-20.(A).(12) from the requirement to show all utilities and significant man-made features within 500 feet of and within the site, to permit utilities and significant man-made features to be shown within the site and along frontage of project boundary, as off-site improvements are not proposed.

4. From SALDO §105-21.(B).(13) to permit the site survey to serve as the existing resources and site analysis (ERSA) plan.

5. From SALDO §105-39.(A) to permit fewer than the required number of parking lot trees due to insufficient planting area.

6. From Chapter 58 Section II.(E).(2).(g).(iv) to permit stormwater pipe sizes under 18 inches and to permit HDPE pipe in lieu of the required RCP pipe.

7. From Chapter 58 Section II.(E).(2).(g).(viii) to permit roof leader piping to have a minimum of 12 inches of cover over the top of the pipe where 18 inches is required.

Should you have any questions or require additional information, please do not hesitate to contact me at this office (610) 709-9971.

Sincerely,

BOHLER ENGINEERING PA, LLC

Matthew S. Longenberger, RLA

MSL/mb
CC: Dennis Turnbaugh (email)
John Iannozzi, Esq., Hamburg, Rubin, Mullin, Maxwell & Lupin, P.C. (email)
Jon Penney, Penney Design Group (email)
R:\2022\PAB220113.00\Admin\Correspondence\PAB220113_2023-03-15_L (Twp LD).doc

Applicant Request for County Review

This request should be filled out by the applicant and submitted to the municipality where the application is being filed along with digital copies of all plan sets/information. Municipal staff will electronically file the application with the county, and a notice for the prompt payment of any fees will be emailed to the Applicant's Representative.

MONTGOMERY COUNTY PLANNING COMMISSION
MCPC
P.O. Box 311, Norristown, PA 19404-0311
Phone: 610-278-3722
Business Hours: 8:30 A.M. to 4:15 P.M.
www.planning.montcopa.org

Date: _____
Municipality: Whitemarsh Township

Proposal Name: BMW Automotive Dealership Expansion

Applicant Name: MileOne Fort Washington, LLC
Address: 3301 Briggs Chaney Road
City/State/Zip: Silver Springs, MD 20904
Phone: 301-679-4062
Email: dturnbaugh@mileone.com

Applicant's Representative: Jeffrey Beavan, PE
Address: 74 West Broad Street, Suite 500
City/State/Zip: Bethlehem, PA 18018
Business Phone (required): 610-709-9971
Business Email (required): jbeavan@bohlereng.com

Type of Review Requested:

(Check All Appropriate Boxes)

- ☒ Land Development Plan
- ☒ Subdivision Plan
- ☐ Residential Lot Line Change
- ☐ Nonresidential Lot Line Change
- ☐ Zoning Ordinance Amendment
- ☐ Zoning Map Amendment
- ☐ Subdivision Ordinance Amendment
- ☐ Curative Amendment
- ☐ Comprehensive / Other Plan
- ☐ Special Review*

**(Not included in any other category - includes parking lot or structures that are not associated with new building square footage)*

Type of Plan:

- ☐ Tentative (Sketch)
- ☒ Preliminary / Final

Type of Submission:

- ☒ New Proposal
- ☐ Resubmission*

** A proposal is NOT a resubmission if A) The proposed land use changes, or B) The amount of residential units or square footage proposed changes more than 40%, or C) The previous submission was over 5 years ago.*

Zoning:

Existing District: CR-L (Commercial Retail-Low District)
Special Exception Granted ☐ Yes ☒ No
Variance Granted ☐ Yes ☒ No For _____

Plan Information:

Tax Parcel Number(s) 65-00-08776-006, 65-00-08773-00-9, 65-00-08770-00-3, 65-00-08767-00-6 & 65-00-08767-10-5

Location *(address or frontage)* 500-512 Pennsylvania Avenue
Nearest Cross Street Commerce Drive
Total Tract Area 4.886 AC
Total Tract Area Impacted By Development 4.886 AC

(If the development is a building expansion, or additional building on existing development, or only impacts a portion of the tract, please provide a rough estimate of the land impacted, including associated yards, drives, and facilities.)

Land Use(s)	Number of New		Senior Housing		Open Space Acres*	Nonresidential New Square Feet
	Lots	Units	Yes	No		
Single-Family						
Townhouses/Twins						
Apartments						
Commercial	0				0	87,812 SF
Industrial						
Office						
Institutional						
Other						

**Only indicate Open Space if it will be on a separate lot or deed restricted with an easement shown on the plan.*

Additional Information: Project Proposes to consolidate the 4 Existing Lots into 1 Lot



RECORDER OF DEEDS
MONTGOMERY COUNTY
Jeanne Sorg

One Montgomery Plaza
Swede and Airy Streets ~ Suite 303
P.O. Box 311 ~ Norristown, PA 19404
Office: (610) 278-3289 ~ Fax: (610) 278-3869

DEED BK 6226 PG 02464 to 02470
INSTRUMENT # : 2021060714
RECORDED DATE: 05/26/2021 08:29:13 AM

5956243-0012U

MONTGOMERY COUNTY ROD

OFFICIAL RECORDING COVER PAGE

Document Type:	Deed	**Transaction #:**	6344284 - 2 Doc(s)
Document Date:	05/14/2021	**Document Page Count:**	6
Reference Info:		**Operator Id:**	ncostello

RETURN TO: (Mail)
FIDELITY NATIONAL
1700 Market St Ste 2100
Philadelphia, PA 19103-3919

PAID BY:
CHICAGO TITLE INSURANCE COMPANY PA

*** PROPERTY DATA:**

Parcel ID #:	65-00-08770-00-3	65-00-08767-00-6	65-00-08773-00-9
Address:	500 PENNSYLVANIA AVE FT WASHINGTON PA 19034	506 PENNSYLVANIA AVE PA	510 PENNSYLVANIA AVE PA
Municipality:	Whitemarsh Township (100%)	Whitemarsh Township (0%)	Whitemarsh Township (0%)
School District:	Colonial	Colonial	Colonial

*** ASSOCIATED DOCUMENT(S):**

CONSIDERATION/SECURED AMT:
$14,054,016.00

FEES / TAXES:

Recording Fee:Deed	$86.75
Additional Pages Fee	$4.00
Additional Parcels Fee	$60.00
Affordable Housing Pages	$4.00
Affordable Housing Parcels	$2.00
State RTT	$140,540.16
Whitemarsh Township RTT	$70,270.08
Colonial School District RTT	$70,270.08
Total:	$281,237.07

DEED BK 6226 PG 02464 to 02470
Recorded Date: 05/26/2021 08:29:13 AM
I hereby CERTIFY that this document is recorded in the Recorder of Deeds Office in Montgomery County, Pennsylvania.

RECORDER'S OFFICE • MONTGOMERY COUNTY, PA •

Jeanne Sorg
Recorder of Deeds

Rev1a 2016-01-29

PLEASE DO NOT DETACH

THIS PAGE IS NOW PART OF THIS LEGAL DOCUMENT

NOTE: If document data differs from cover sheet, document data always supersedes.

Montgomery County

MAY 2 1 2021

Recorder of Deeds

PREPARED BY: McNEES WALLACE & NURICK LLC
RETURN TO: McNEES WALLACE & NURICK LLC
570 LAUSCH LANE, SUITE 200
LANCASTER, PA 17601

PARCEL ID NOs: 65-00-08770-00-3; 65-00-08767-00-6; 65-00-08773-00-9; & 65-00-08776-00-6

65-00-08767-10-5

THIS DEED

MADE this 14th day of May 2021 and effective as of the 17th day of May in the year Two Thousand Twenty One (2021).

BETWEEN CLEO-MAR, L.P., a Pennsylvania limited partnership (hereinafter called the "Grantor")

and

AUTO PROPERTIES FORT WASHINGTON, LLC, a Pennsylvania limited liability company (hereinafter called the "Grantee").

WITNESSETH, that in consideration of Fourteen Million Fifty-Four Thousand Sixteen and 00/100 Dollars ($14,054,016.00), in hand paid, the receipt whereof is hereby acknowledged, the Grantor hereby grants and conveys to the Grantee, its successors and assigns:

(Premises-A)

All those two certain pieces or parcels of ground, situate in Whitemarsh Township, Montgomery County, Pennsylvania, described according to a certain survey made for Delpost, Inc., Fort Washington Industrial Park, made by Frank A. Tebo, Registered Professional Engineer, dated September 12, 1966, as one parcel as follows to wit:

Beginning at a point formed by the intersection of the center line of Pennsylvania Avenue (60 feet wide) with the extended center line of Commerce Drive, thence extending said point of beginning, South 52 degrees 03 minutes 48 seconds East, along the center line of Pennsylvania Avenue, 43.00 feet to a point, a corner of lands now or late of Bankbill Corp., thence extending South 37 degrees 56 minutes 12 seconds West, along the aforesaid lands of Bankbill Corp., crossing the Southwesterly side of Pennsylvania Avenue, also crossing the bed of the Philadelphia Electric Co., Easement (30 feet wide), 507.62 feet to a point on the Northeasterly right of way line of the Reading Railroad, thence extending North 54 degrees 12 minutes 18 seconds West, along the Northeasterly right of way line of the Reading Railroad, 116.96 feet to a point, a corner of lands now or late of the Philadelphia Electric Co., thence extending North 38 degrees 56 minutes 12 seconds East along the aforesaid lands of the Philadelphia Electric Company, recrossing the aforesaid bed of the Philadelphia Electric Co., easement, also recrossing the Southeasterly side of Pennsylvania Avenue 512.07 feet to a point in the center line of Pennsylvania Avenue, thence extending South 52 degrees 03 minutes 48 seconds East, along the center line of

Pennsylvania Avenue, 65.00 feet to the first mentioned point of intersection and place of beginning.

(Premises-B)

All that certain irregular lot or parcel of ground, situate in the Township of Whitemarsh, County of Montgomery and Commonwealth of Pennsylvania, bounded and described in accordance with a survey and plan thereof made by C. Raymond Weir, Registered Professional Engineer, Ambler, Pennsylvania, dated March 31, 1958, as follows:

Beginning at a stone on the Southwesterly side of Pennsylvania Avenue (60 feet wide) a corner common to ground of Fort Washington Realty Corp., herein described, and ground now or late of Del-post, inc., thence extending from said point of beginning, along said ground now or late of Del-post Inc., South thirty-five degrees seventeen minutes West four hundred eighty-one feet and seventy-two one hundredths of a foot (481. 72 feet) to a stone set on the Northeasterly right of way line of the North Pennsylvania Railroad (Bethlehem Branch of the Reading Railroad) at a corner common ground herein described and ground now or late of Del-Post Inc., said point also being at the distance of thirty-three feet (33 feet) measured Northeastwardly from and at right angles to the center line on the aforementioned Railroad Company's right of way, thence on a line parallel with and thirty-three (33 feet) distant measured Northeastwardly from and at right angles to the center line of said right of way, North fifty-seven degrees forty-eight minutes West, one hundred fifty feet and twenty-two one-hundredths of a foot (150.22 feet) to a stone, thence through ground of Fort Washington Realty Corp., of which this is a part, the three (3) following courses and distances, (1) on a line parallel with the first course and distance above described North thirty-five degrees seventeen minutes East two hundred feet (200 feet), to a stone, (2) on a line parallel with the second course and distance above described, South fifty-seven degrees forty-eight minutes East, one hundred ten feet and sixteen one-hundredths of a foot (110.16 feet) to a stone, and (3) on a line parallel with the first course and distance above described, North thirty-five degrees seventeen minutes East, two hundred eighty-three feet and twenty-one one hundredths of a foot (283.21 feet) to a stone on the said southwesterly side of Pennsylvania Avenue, thence along the southwesterly side of Pennsylvania Avenue South fifty-five degrees forty minutes East forty feet (40 feet) to the first mentioned point and place of beginning.

(Premises-C)

ALL THAT CERTAIN lot or piece of ground with the buildings and improvements thereon erected, Situate in Whitemarsh Township, Montgomery County, Pennsylvania, bounded and described according to an As Built Survey Plot Plan made by Phillip C. Kretschman, P.E. made for Seltzer Development Corporation, dated July 1, 1986 as follows, to wit:

BEGINNING at a point on the title line in the bed of Pennsylvania Avenue (no width given), said point being South 52 degrees 03 minutes 48 seconds East the distance of 43.00 feet along the title line in the bed of Pennsylvania Avenue from its point of intersection with the center line of Commerce Drive (no width given); thence extending from said point of beginning along the title line in the bed of Pennsylvania Avenue the two following courses and distances: (1) South 52 degrees 03 minutes 48 seconds East 15.86 feet to a point, and

(2) South 52 degrees 09 minutes 18 seconds East and crossing a certain storm sewer easement 132.46 feet to a point; thence extending from said point South 37 degrees 56 minutes 12 seconds West and crossing the Southwesterly side of Pennsylvania Avenue and along a 5 foot wide parking easement and passing through a certain 20 foot storm drainage easement and passing through a certain Electric Company easement line and a certain Electric Company easement and another certain Electric Company easement line the distance of 502.65 feet to a point; thence extending from said point North 54 degrees 12 minutes 18 seconds West 148.42 feet to a point: thence extending from said point North 37 degrees 56 minutes 12 seconds East and recrossing the aforementioned Electric Company Easement line and the aforementioned Electric Company Easement line and recrossing the Southwesterly side of Pennsylvania Avenue the distance of 508.19 feet to a point on the title line in the bed of Pennsylvania Avenue, said point being the first mentioned point and place of beginning.

(Premises-D)

ALL THAT CERTAIN tract of land, situate in Whitemarsh Township, County of Montgomery and State of Pennsylvania, bounded and described as follows, to wit:

FROM a point on the intersection of the center lines of Commerce Drive and Pennsylvania Avenue and following the center line of Pennsylvania Avenue, South 52 degrees 3 minutes 48 seconds East, a distance of 58.86 feet to an angle point; thence continuing to follow the center line of Pennsylvania Avenue, South 52 degrees 9 minutes 18 seconds East, a distance of 132.46 feet to the point and place of beginning; from this point and following the center line of Pennsylvania Avenue, South 52 degrees 9 minutes 18 seconds East, a distance of 100 feet to a point; thence South 37 degrees 56 minutes 12 seconds West, a distance of 498.91 feet to a point on the right of way line of the Reading Railroad (Bethlehem Branch); thence following the right of way line of the Reading Railroad, North 54 degrees 12 minutes 18 seconds West, a distance of 100.07 feet to a point; thence North 37 degrees 56 minutes 12 seconds East, a distance of 502.65 feet to the point and place of beginning.

(As to Premises-A and B)

BEING THE SAME PREMISES which Rosalind T. Spodek by Deed dated November 17, 1999 and recorded December 9, 1999 in the Office of the Recorder of Deeds in and for Montgomery County, Pennsylvania, in Deed Book 5299, Page 1890, granted and conveyed unto CLEO-MAR, L.P., a Pennsylvania limited partnership, the Grantor herein.

(As to Premises-C)

BEING THE SAME PREMISES which PR Group III, LP, a Pennsylvania limited partnership, by Deed dated July 1, 2008 and recorded July 9, 2008 in the Office of the Recorder of Deeds in and for Montgomery County, Pennsylvania, in Deed Book 5699, Page 1401, granted and conveyed unto CLEO-MAR, L.P., a Pennsylvania limited partnership, the Grantor herein.

(As to Premises-D)

BEING THE SAME PREMISES which Geraldine Joan McCarron, Executrix of the Estate of Thomas F. McCarron, deceased, by Deed dated February 9, 2011 and recorded February 11, 2011 in the Office of the Recorder of Deeds in and for Montgomery County, Pennsylvania, in Deed Book 5793, Page 148, granted and conveyed unto CLEO-MAR, L.P., a Pennsylvania limited partnership, the Grantor herein.

UNDER AND SUBJECT to all exceptions, reservations, restrictions, limitations, conditions, covenants, agreements, rights-of-way and easements contained in, and/or conveyed and/or granted by, prior instruments of writing of record, insofar as they may still be in force and effect.

TOGETHER with all and singular the tenements, hereditaments, and appurtenances to the same belonging, or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof; **AND ALSO** all the estate, right, title, interest, property, claim and demand whatsoever, both in law and equity, of the said Grantor, of, in, to or out of the said premises and every part and parcel thereof.

TO HAVE AND TO HOLD the said hereditaments and premises, with all and singular the appurtenances unto the said Grantee, its successors and assigns, to and for the only proper use and behoof of said Grantee, its successors and assigns, forever.

AND the said Grantor, for itself and its successors and assigns, does by these presents, covenant, grant and agree to and with said Grantee, its successors and assigns, that it, the said Grantor, for itself and its successors and assigns, all and singular the hereditaments and premises hereinabove described and granted, or mentioned and intended so to be, with the appurtenances unto the said Grantee, its successors and assigns, against the said Grantor and its successors and assigns, and against all and every other person or persons, whomsoever, lawfully claiming or to claim the same or any part thereof, shall and will by these presents SPECIALLY WARRANT AND FOREVER DEFEND.

[Signatures on Following Page]

IN WITNESS WHEREOF, the Grantor has executed this deed on the date first above written.

CLEO-MAR, L.P., a Pennsylvania limited partnership

By and through its General Partner, BUNCHY, LLC, a Pennsylvania limited liability company

Witness: _____

By: _____
Name: MARIO P CESARINI
Title:

COMMONWEALTH OF PENNSYLVANIA :
: SS:
COUNTY OF MONTGOMERY :

On this, the 14 day of May, 2021, before me, a notary public, the undersigned officer, personally appeared Mario P. Cesarini, who acknowledged himself/herself to be the Sole Member of BUNCHY, LLC, a Pennsylvania limited liability company, the General Partner of **CLEO-MAR, L.P.**, a Pennsylvania limited partnership, and that he/she, as such officer, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the limited partnership by himself/herself as Sole Member of BUNCHY, LLC, its General Partner.

IN WITNESS WHEREOF, I have set my hand and official seal.

_____
Notary Public

My commission expires:

Commonwealth of Pennsylvania - Notary Seal
EVA M. GILETTE, Notary Public
Montgomery County
My Commission Expires April 14, 2022
Commission Number 1058588

CERTIFICATE OF ADDRESS

I hereby certify that the precise address of the Grantee herein is as follows:

1 Olympic Place, Suite 1000

Towson, Maryland 21204

On behalf of the Grantee

MONTGOMERY COUNTY COMMISSIONERS REGISTRY
65-00-08770-00-3 WHITEMARSH
500 PENNSYLVANIA AVE

CLEO-MAR LP $15.00
B 051 U 041 L 4238 DATE: 05/25/2021 JU

MONTGOMERY COUNTY COMMISSIONERS REGISTRY
65-00-08767-00-6 WHITEMARSH
506 PENNSYLVANIA AVE

CLEO-MAR LP $15.00
B 051 U 044 L 2900 DATE: 05/25/2021 JU

MONTGOMERY COUNTY COMMISSIONERS REGISTRY
65-00-08773-00-9 WHITEMARSH
510 PENNSYLVANIA AVE

CLEO-MAR LP $15.00
B 051 U 002 L 4237 DATE: 05/25/2021 JU

MONTGOMERY COUNTY COMMISSIONERS REGISTRY
65-00-08776-00-6 WHITEMARSH
512 PENNSYLVANIA AVE

CLEO-MAR LP $15.00
B 051 U 046 L 4000 DATE: 05/25/2021 JU

MONTGOMERY COUNTY COMMISSIONERS REGISTRY
65-00-08767-10-5 WHITEMARSH
506 PENNSYLVANIA AVE

CLEO-MAR LP $15.00
B 051 U 044 L 121 2205 DATE: 05/25/2021 JU

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

PROPOSED

BMW AUTOMOTIVE DEALERSHIP EXPANSION

LOCATION OF SITE

500 PENNSYLVANIA AVENUE,
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY
COMMONWEALTH OF PENNSYLVANIA

DRAWING SHEET INDEX

SHEET TITLE	SHEET NUMBER
COVER SHEET	C-101 *
NOTES SHEET	C-102 *
EXISTING CONDITIONS/DEMOLITION PLAN	C-201
RECORD PLAN	C-301 *
EASEMENT PLAN	C-302 *
SITE PLAN	C-303 *
TRUCK TURNING PLAN	C-304, C-305
GRADING PLAN	C-401
UTILITY PLAN	C-501
SOIL EROSION AND SEDIMENT POLLUTION CONTROL PLAN	C-601
SOIL EROSION AND SEDIMENT POLLUTION CONTROL NOTES & DETAILS	C-602, C-603
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN	C-604 *
POST CONSTRUCTION STORMWATER MANAGEMENT NOTES & DETAILS	C-605 *, C-606 *
LANDSCAPE PLAN	C-701
LANDSCAPE NOTES AND DETAILS	C-702
LIGHTING PLAN	C-703
PROFILES	C-801, C-802
DETAILS SHEET	C-901, C-902, C-903
DRAINAGE AREA PLANS	C-1001, C-1002, C-1003
LOT CONSOLIDATION PLAN	LC-01 *

* DENOTES PLAN SHEETS TO BE RECORDED

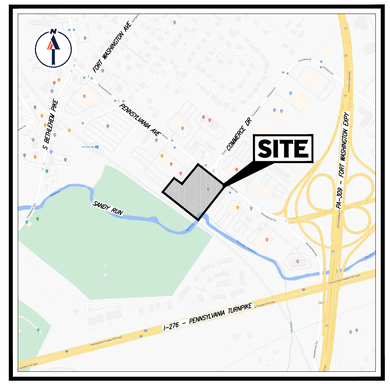


USGS MAP

AMBLER QUAD

SCALE: 1"=2,000'

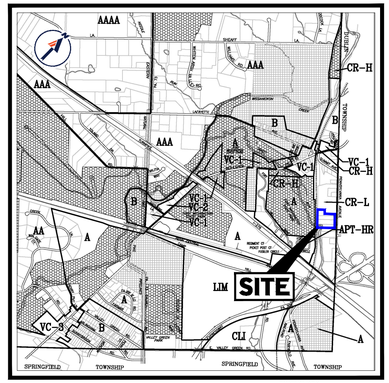
1000' 0 2000'



LOCATION MAP

SCALE: 1"=800'

400' 0 800'



ZONING MAP

SCALE: 1"=2,000'

1000' 0 2000'

ZONING KEY

CR-L - COMMERCIAL RETAIL

A - RESIDENTIAL (15,000 SF)

VC-1 - VILLAGE COMMERCIAL 1

▨ - RECREATION OVERLAY

PREPARED BY

BOHLER

THE FOLLOWING VARIANCES ARE REQUESTED FROM THE WHITEMARSH TOWNSHIP ZONING HEARING BOARD:

1. VARIANCES FROM §116-93.F AND 116-94 - TO PERMIT A SIDE YARD SETBACK OF 35.1 FEET WHERE A SETBACK OF 40.0 FEET IS REQUIRED FOR A BUILDING HEIGHT OF 55.0 FEET IN HEIGHT.
2. VARIANCES FROM §116-93.G AND 116-94 - TO PERMIT A REAR YARD SETBACK OF 20.0 FEET WHERE A SETBACK OF 70.0 FEET IS REQUIRED FOR A BUILDING HEIGHT OF 55.0 FEET IN HEIGHT.
3. VARIANCE FROM §116-165 AND §116-204 - TO PERMIT THE EXPANSION OF AN EXISTING AUTOMOBILE DEALERSHIP WITHIN THE FLOODPLAIN CONSERVATION OVERLAY DISTRICT.
4. VARIANCES FROM §116-259.A - TO PERMIT AN ENCROACHMENT INTO THE RIPARIAN CORRIDOR CONSERVATION DISTRICT, AND A SETBACK OF 0.0 FEET FROM THE DISTRICT, AS THE ENTIRE SITE IS LOCATED WITHIN THE RIPARIAN CORRIDOR CONSERVATION DISTRICT DUE TO THE 100-YEAR FLOODPLAIN DELINEATION.
5. A VARIANCE FROM §116-184.B - TO PERMIT THE MINIMUM PARKING COUNT TO BE EXCEEDED BY MORE THAN 110%, WHERE AN ADDITIONAL 546 SPACES ARE PROVIDED FOR INVENTORY STORAGE.
6. A VARIANCE FROM §116-184.D - REQUIRING A MAXIMUM OF 30 INDIVIDUAL PARKING SPACES PLACED TOGETHER IN ANY PARKING AREA, DIMENSIONS OF THE PARKING AREA NOT EXCEEDING 150', AND PLANTING STRIPS OF NOT LESS THAN 10' IN WIDTH BETWEEN PARKING ROWS, TO PERMIT THE PROPOSED PARKING DECK BUILDING.
7. A VARIANCE FROM §116-188.3 - TO PERMIT EV CHARGING SPACES PROVIDED ONLY BASED ON THE REQUIRED OFF-STREET PARKING SPACES, AND TO EXCLUDE INVENTORY STORAGE SPACES FROM THE REQUIREMENTS UNDER THIS ORDINANCE.
8. A VARIANCE FROM CHAPTER 101 OF THE CODE OF WHITEMARSH TOWNSHIP, §101-21.D AND §101-24.B - TO PERMIT CONSTRUCTION WITHIN AN IDENTIFIED FLOODPLAIN AREA CLOSER THAN 50 FEET TO THE TOP-OF-BANK OF A WATERCOURSE, IN ACCORDANCE WITH PADEP AND FEMA REQUIREMENTS.
9. A VARIANCE FROM CHAPTER 101 OF THE CODE OF WHITEMARSH TOWNSHIP, §101-24.A (12) - TO ALLOW THE PROPOSED USE TO HAVE A SUPPLY OF MORE THAN 550 GALLONS OF PETROLEUM PRODUCTS, MATERIALS, AND OTHER SUBSTANCES ASSOCIATED WITH AN AUTOMOTIVE USE WITHIN THE FLOODPLAIN, IN THAT THE APPLICANTS PROPOSE TO COMPLY WITH THE REQUIREMENTS OF SECTIONS §101-24.(B),(C),(D) AND (E).

THE FOLLOWING WAIVERS ARE REQUESTED FROM THE WHITEMARSH TOWNSHIP BOARD OF SUPERVISORS:

1. FROM SALDO §105-21.(B).(1).(n) - FROM THE REQUIREMENT TO SHOW ALL UTILITIES AND SIGNIFICANT MAN-MADE FEATURES WITHIN 500 FEET OF AND WITHIN THE SITE, TO PERMIT UTILITIES AND SIGNIFICANT MAN-MADE FEATURES TO BE SHOWN WITHIN THE SITE AND ALONG FRONTAGE OF PROJECT BOUNDARY, AS OFF-SITE IMPROVEMENTS ARE NOT PROPOSED.
2. FROM SALDO §105-39.(A) - FROM THE REQUIREMENT TO PROVIDE ONE TREE OF THREE INCHES MINIMUM CALIPER FOR EVERY TWO PARKING SPACES, TO PERMIT TREES TO BE PROVIDED AT A RATE OF ONE (1) TREE FOR EVERY THREE (3) EXTERIOR PARKING SPACES, EXCLUDING SPACES WITHIN THE PARKING GARAGE, WITH TWENTY TREES PROPOSED ON THE PLAN.
3. FROM SECTION II.(E).(2).(g).(viii) - TO PERMIT ROOF LEADER PIPING TO HAVE A MINIMUM OF 12 INCHES OF COVER OVER THE TOP OF THE PIPE WHERE 18 INCHES IS REQUIRED.
4. FROM SECTION 55-3.D - TO PERMIT THE REMOVAL OF MORE THAN 50% OF THE TREES ON A LOT.
5. FROM SECTION 55-4.B.(6).(c) - FROM THE REQUIREMENT TO PROVIDE DEER FENCING, CONDITIONED ONT HE APPLICANT PROVIDING AN 8-FOOT HIGH FENCE AROUND THE WETLAND MITIGATION AREA.
6. FROM SECTION 55-4.B.(6).(d) - FROM THE REQUIREMENT OF PROVIDING REPLACEMENT TREES WITH CALIPERS AT PLANTING OF 3-INCHES OR GREATER, TO ALLOW 137 ONE-HALF INCH CALIPER TREES IN THE WETLAND MITIGATION AREA WHICH IS UNDER A 5-YEAR GUARANTEE PERIOD, WITH THE ASSUMPTION THAT THE ONE-HALF INCH TREES WILL GROW TO BE THREE (3) CALIPER INCHES WITHIN FIVE (5) YEARS.

SITE SPECIFIC NOTES

(Rev. 1/2020)

1. PROPERTY OWNER:
   AUTO PROPERTIES FORT WASHINGTON
   1 OLYMPIC PL, SUITE 1000, TOWSON, MD 21204
2. EXISTING PROPERTY INFORMATION:
   65-00-08773-00-3 , 65-00-08767-00-6 , 65-00-08773-00-9 , 65-00-08776-00-6
   500-512 PENNSYLVANIA AVE, FORT WASHINGTON, PA 19034
   ZONED GC-2 AND R-4
3. APPLICANT/EQUITABLE OWNER:
   MILEONE FORT WASHINGTON, LLC
   C/O DENNIS TURNBAUGH
   3301 BRIGGS CHANEY ROAD, SILVER SPRING, MD 20904
   (301) 679-4062
4. SITE AREA:
   GROSS AREA = 223,558 S.F. OR 5.132 AC.

   PARCEL DATA (PIN AND ADDRESS): PROPERTY KNOWN AS BLOCK 51, UNIT 41, APN #65-00-08770-00-3; BLOCK 51, UNIT 46, APN #65-00-08767-00-6; BLOCK 51, UNIT 2, APN #65-00-08773-00-9 & BLOCK 51, UNIT 44, APN #65-00-08776-00-6 AS IDENTIFIED ON THE OFFICIAL TAX MAP OF WHITEMARSH TOWNSHIP, COMMONWEALTH OF PENNSYLVANIA.
5. EXISTING NUMBER OF LOTS: FIVE (5)
   5.a. EXISTING LOT 1: APN 650008770003
   5.b. EXISTING LOT 2: APN 650008767006
   5.c. EXISTING LOT 3: APN 650008773009
   5.d. EXISTING LOT 4: APN 650008776006
   5.e. EXISTING LOT 5: APN 650008767105
6. PROPOSED NUMBER OF LOTS: ONE (1)
7. SOURCE OF TITLE: TITLE REPORT PREPARED BY CHICAGO TITLE INSURANCE COMPANY. TITLE NUMBER PHI210770. EFFECTIVE DATE 05/17/2021.
8. HORIZONTAL DATUM <IS BASED ON PENNSYLVANIA STATE PLANE SOUTH COORDINATES, NAD 83. VERTICAL DATUM IS NAVD 1988, BENCHMARK: 166.06'>.
9. BY GRAPHIC PLOTTING ONLY, THE PROPERTY IS LOCATED IN FLOOD HAZARD ZONE AE (BASE FLOOD ELEVATIONS DETERMINED) AS SHOWN ON THE FLOOD INSURANCE RATE MAP (FIRM), MONTGOMERY COUNTY, PENNSYLVANIA, (ALL JURISDICTIONS), PANEL 289 OF 451/MAP NUMBER 42091C0289G, EFFECTIVE DATE: 03-02-2016.
10. THE AREA BETWEEN THE ULTIMATE AND LEGAL RIGHT-OF-WAY <OF THE ROAD SHALL BE OFFERED TO THE AGENCY HAVING JURISDICTION>.
11. ALL CURB AND PAVEMENT RADII ARE 5', UNLESS OTHERWISE NOTED.
12. ALL PROPOSED PINS AND MONUMENTS SHALL BE PLACED AND CERTIFIED BY A LICENSED PENNSYLVANIA PROFESSIONAL SURVEYOR.

RECORDER OF DEEDS

RECORDED IN THE OFFICE FOR THE RECORDING OF DEEDS IN AND FOR THE COUNTY OF MONTGOMERY, AT NORRISTOWN, PA, IN PLAN BOOK NO. _____ PAGE NO. _____ ON _____, 2017.

_____
RECORDER

OWNER CERTIFICATION AND ACKNOWLEDGEMENT OF PLAN

I, DENNIS TURNBAUGH, HEREBY CERTIFY THAT AUTO PROPERTIES FOR WASHINGTON, LLC, IS THE REGISTERED OWNER OF THE LAND HEREIN PROPOSED TO BE DEVELOPED, AND THAT SAID OWNER ADOPTS THIS PLAN AND DESIRES THE SAME TO BE RECORDED. WITNESS MY HAND AND SEAL THIS ____ DAY OF _____, 20____.

AUTO PROPERTIES FORT WASHINGTON, LLC
BY: MILEONE FORT WASHINGTON, LLC
MEMBER

_____ _____
DENNIS TURNBAUGH, DIVISION PRESIDENT ATTEST

COMMONWEALTH OF PENNSYLVANIA,
COUNTY OF MONTGOMERY:

ON THIS, THE _____ DAY OF _____, 20____, BEFORE ME, A NOTARY PUBLIC, THE UNDERSIGNED OFFICER, PERSONALLY APPEARED DENNIS TURNBAUGH, WHO ACKNOWLEDGED HIMSELF TO BE THE DIVISION PRESIDENT OF MILEONE FORT WASHINGTON, LLC, AND THAT HE AS SUCH, BEING AUTHORIZED TO DO SO, EXECUTED THE FOREGOING INSTRUMENT FOR THE PURPOSES THEREIN CONTAINED.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND AND OFFICIAL SEAL.

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES:_____

SURVEYOR'S CERTIFICATION

I, JAMES C. WEED, P.L.S., A REGISTERED PROFESSIONAL LAND SURVEYOR OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT THIS PLAN CORRECTLY REPRESENTS THE METES AND BOUNDS AS SURVEYED BY ME ON _____, 20____, AND THAT THE LOCATION, SIZE AND MATERIAL OF EXISTING MARKERS ARE ACCURATELY SHOWN HEREON.

_____
JAMES C. WEED

_____
REGISTERED No.: #SU075250

_____
DATE

MONUMENTATION CERTIFICATION:

I, JAMES C. WEED, P.L.S., A REGISTERED PROFESSIONAL LAND SURVEYOR OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT ALL CONCRETE MONUMENTS HAVE BEEN SET OR FOUND BY ME ON _____, 20____, AS INDICATED AND SHOWN HEREON.

_____
JAMES C. WEED

_____
REGISTERED No.: #SU075250

_____
DATE

ENGINEER'S CERTIFICATION

I, JEFFREY A. BEAVAN, P.E., A REGISTERED PROFESSIONAL ENGINEER OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT THIS PLAN CORRECT IN ALL DETAILS AS PREPARED BY ME ON _____, 20____.

_____
JEFFREY A. BEAVAN

_____
REGISTERED No.: #PE082005

_____
DATE

REVIEW OF THE TOWNSHIP ENGINEER, WHITEMARSH TOWNSHIP:

THIS SUBDIVISION AND/OR LAND DEVELOPMENT PLAN WAS REVIEWED BY THE APPOINTED TOWNSHIP ENGINEER FOR WHITEMARSH TOWNSHIP ON THIS _____ DAY OF _____, 20____.

_____
JAMES C. SULLIVAN, P.E.
TOWNSHIP ENGINEER

APPROVAL OF THE WHITEMARSH TOWNSHIP BOARD OF SUPERVISORS:

THIS SUBDIVISION AND/OR LAND DEVELOPMENT PLAN WAS APPROVED BY RESOLUTION OF THE BOARD OF SUPERVISORS OF WHITEMARSH TOWNSHIP ON THIS _____ DAY OF _____, 20____.

_____ _____
SECRETARY

STORMWATER BLANKET EASEMENT

A BLANKET STORMWATER EASEMENT IN FAVOR OF WHITEMARSH TOWNSHIP IS PROVIDED FOR ACCESS AND MAINTENANCE PURPOSES ON AND OVER THE PROPERTY, EXCEPT FOR THE PORTIONS OF THE PROPERTY ON WHICH BUILDINGS OR OTHER VERTICAL STRUCTURES HAVE BEEN ERECTED. THE TOWNSHIP OF WHITEMARSH SHALL HAVE THE RIGHT TO INSPECT ALL STORMWATER MANAGEMENT FEATURE AND FACILITIES AND TO REQUIRE REPAIRS, BUT NOT THE OBLIGATION TO MAKE SUCH REPAIRS.

MCPC No.: (14-0121-003)

PROCESSED and REVIEWED, Report prepared by
Montgomery County Planning Commission
in accordance with the Municipalities Planning Code.

Certified this date _____

_____
Montgomery County Planning Commission

RECORD PLAN 1 OF 9

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABILITY DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

THE INFORMATION, DESIGN AND CONTENT OF THIS PLAN ARE COPYRIGHTED AND SHALL NOT BE COPIED OR USED FOR ANY PURPOSE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM BOHLER. ONLY APPROVED, SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES.

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

Know what's below. Call before you dig.
PENNSYLVANIA
YOU MUST CALL 811 BEFORE ANY EXCAVATION
WHETHER IT'S ON PRIVATE OR PUBLIC LAND.
1-800-242-1776
www.pa1call.org

NOT APPROVED FOR CONSTRUCTION

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.:	PAB220113.00
DRAWN BY:	BS
CHECKED BY:	MSL
DATE:	03/15/2023
CAD I.D.:	PAB220113.00-CNDS-0A

PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

500 PENNSYLVANIA AVENUE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA

BOHLER
74 W BROAD STREET, SUITE 500
BETHLEHEM, PA 18018
Phone: (610) 709-9971
Fax: (610) 709-9976
www.BohlerEngineering.com

J.A. BEAVAN — PROFESSIONAL — JEFFREY A. BEAVAN — PROFESSIONAL ENGINEER — PENNSYLVANIA LICENSE No. PE082005 — NEW JERSEY LICENSE No. 24GE05436600

SHEET TITLE:

COVER SHEET

SHEET NUMBER:

C-101

ORG. DATE - 03/15/2023

I:\BOHLERENG\NETSHARES\PA PROJECTS\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-CNDS-0A-----LAYOUT: C-101 COVER
KP

GENERAL NOTES

(Rev. 2/2021)

1. THESE PLANS ARE SOLELY BASED ON INFORMATION THE OWNER AND OTHERS PROVIDED TO BOHLER ENGINEERING, PENNSYLVANIA, LLC (HEREIN "BOHLER") PRIOR TO THE DATE ON WHICH THE ENGINEER OF RECORD AND BOHLER PREPARED THESE PLANS. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING CONDITIONS AND IMMEDIATELY NOTIFY BOHLER, IN WRITING, IF ANY ACTUAL SITE CONDITIONS DIFFER FROM THOSE SHOWN ON THESE PLANS, OR IF THE PROPOSED WORK CONFLICTS WITH ANY OTHER SITE FEATURES.

2. THE CONTRACTOR MUST STRICTLY COMPLY WITH THESE NOTES AND ALL SPECIFICATIONS/REPORTS CONTAINED HEREIN. THE CONTRACTOR MUST ENSURE THAT ALL SUBCONTRACTORS FULLY AND COMPLETELY CONFORM TO AND COMPLY WITH THESE REQUIREMENTS. THESE NOTES, AND THE REQUIREMENTS ARTICULATED IN THE NOTES CONTAINED IN ALL THE OTHER DRAWINGS THAT COMPRISE THE PLAN SET OF DRAWINGS. ADDITIONAL NOTES AND SPECIFIC PLAN NOTES MAY BE FOUND ON THE INDIVIDUAL PLANS. THESE GENERAL NOTES APPLY TO THIS ENTIRE DOCUMENT PACKAGE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL CONSTRUCTION CONTRACT DOCUMENTS INCLUDING, BUT NOT LIMITED TO, ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THE PROJECT WORK SCOPE, PRIOR TO THE INITIATION AND COMMENCEMENT OF CONSTRUCTION.

3. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST CONFIRM WITH THE ENGINEER OF RECORD AND BOHLER THAT THE LATEST EDITION OF THE DOCUMENTS AND/OR REPORTS REFERENCED WITHIN THE PLAN REFERENCES ARE BEING USED FOR CONSTRUCTION. THIS IS THE CONTRACTOR'S SOLE AND COMPLETE RESPONSIBILITY.

4. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST ENSURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION IS TO BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED THE CONDITIONS OF APPROVAL TO ALL PERMITS AND APPROVALS BY THE PERMITTING AUTHORITIES AND HAS ALSO CONFIRMED THAT ALL NECESSARY AND REQUIRED PERMITS HAVE BEEN OBTAINED. THE CONTRACTOR MUST HAVE COPIES OF ALL PERMITS AND APPROVALS ON SITE AT ALL TIMES.

5. THE CONTRACTOR MUST ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS/REPORTS AND CONDITIONS OF APPROVAL AND ALL APPLICABLE REQUIREMENTS, RULES, REGULATIONS, STATUTES, REQUIREMENTS, CODES, LAWS AND STANDARDS OF ALL GOVERNMENTAL ENTITIES WITH JURISDICTION OVER THIS PROJECT, AND ALL PROVISIONS IN AND CONDITIONS OF THE CONSTRUCTION CONTRACT WITH THE OWNER/DEVELOPER INCLUDING ALL EXHIBITS, ATTACHMENTS AND ADDENDA TO SAME.

6. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST COORDINATE THE BUILDING LAYOUT BY CAREFULLY REVIEWING THE MOST CURRENT ARCHITECTURAL, LANDSCAPE ARCHITECTURAL, AND ALL OTHER APPLICABLE PLANS (INCLUDING, BUT NOT LIMITED TO, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE SUPPRESSION PLANS, WHERE APPLICABLE). THE CONTRACTOR MUST IMMEDIATELY NOTIFY OWNER, ARCHITECT AND ENGINEER OF RECORD AND BOHLER, IN WRITING, OF ANY CONFLICTS, DISCREPANCIES OR AMBIGUITIES WHICH EXIST BETWEEN THESE PLANS AND ANY OTHER PLANS THAT COMPRISE THE CONSTRUCTION DOCUMENTS.

7. CONTRACTOR MUST REFER TO AND ENSURE COMPLIANCE WITH THE APPROVED ARCHITECTURAL/BUILDING PLANS OF RECORD FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRY/EXIT POINTS, ELEVATIONS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY LOCATIONS.

8. THE CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS AND MEASUREMENTS SHOWN ON THESE PLANS, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR MUST IMMEDIATELY NOTIFY ENGINEER OF RECORD AND BOHLER, IN WRITING, IF ANY CONFLICTS, DISCREPANCIES, OR AMBIGUITIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. NO EXTRA COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR WORK WHICH HAS TO BE RE-DONE OR REPAIRED DUE TO DIMENSIONS, MEASUREMENTS OR GRADES SHOWN INCORRECTLY ON THESE PLANS PRIOR TO BOTH (A) THE CONTRACTOR GIVING ENGINEER OF RECORD AND BOHLER WRITTEN NOTIFICATION OF SAME AND (B) ENGINEER OF RECORD AND BOHLER, THEREAFTER, PROVIDING THE CONTRACTOR WITH WRITTEN AUTHORIZATION TO PROCEED WITH SUCH ADDITIONAL WORK.

9. THE CONTRACTOR MUST VERIFY ALL DIMENSIONS AND MEASUREMENTS INCLUDED ON DESIGN DOCUMENTS HEREIN AND MUST NOT SCALE OFF THE DRAWINGS SUCH INFORMATION IS NOT ENTIRELY INACCURATE. ALL DIMENSIONS MUST BE CHECKED AND CONFIRMED BY THE GENERAL CONTRACTOR PRIOR TO PREPARATION OF SHOP DRAWINGS, FABRICATION/ORDERING OF PARTS AND MATERIALS AND COMMENCEMENT OF SITE WORK. SITE PLAN DRAWINGS ARE NOT INTENDED AS SURVEY DOCUMENTS. DIMENSIONS SUPERSEDE GRAPHICAL REPRESENTATIONS. THE CONTRACTOR MUST MAKE CONTRACTOR'S OWN MEASUREMENTS AS NECESSARY FOR CONSTRUCTION.

10. THE OWNER AND CONTRACTOR MUST BE FAMILIAR WITH AND RESPONSIBLE FOR THE PROCUREMENT OF ANY AND ALL CERTIFICATIONS REQUIRED FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

11. WHEN INCLUDED AS ONE OF THE REFERENCED DOCUMENTS, THE GEOTECHNICAL REPORT, SPECIFICATIONS AND RECOMMENDATIONS SET FORTH THEREIN ARE A PART OF THE REQUIRED CONSTRUCTION DOCUMENTS AND, IN CASE OF CONFLICT, DISCREPANCY OR AMBIGUITY, THE MORE RESTRICTIVE OR STRINGENT REQUIREMENTS CONTAINED IN THE GEOTECHNICAL REPORT AND THE GEOTECHNICAL REPORT RECOMMENDATIONS, MUST TAKE PRECEDENCE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS. THE CONTRACTOR MUST NOTIFY THE ENGINEER OF RECORD AND BOHLER, IN WRITING, OF ANY SUCH CONFLICT, DISCREPANCY OR AMBIGUITY BETWEEN THE GEOTECHNICAL REPORT AND PLANS AND SPECIFICATIONS, PRIOR TO PROCEEDING WITH WORK. IF A GEOTECHNICAL REPORT WAS NOT CREATED, THEN THE CONTRACTOR MUST FOLLOW AND COMPLY WITH ALL OF THE REQUIREMENTS OF ANY AND ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE SPECIFICATIONS WHICH HAVE JURISDICTION OVER THIS PROJECT.

12. ENGINEER OF RECORD AND BOHLER ARE NEITHER LIABLE NOR RESPONSIBLE FOR ANY SUBSURFACE CONDITIONS AND FURTHER, HAS NO LIABILITY FOR ANY HAZARDOUS MATERIALS, HAZARDOUS SUBSTANCES, OR ARTIFACTS ON, ABOUT OR UNDER THE PROPERTY.

13. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING WHEN AND WHERE SHORING IS REQUIRED AND FOR INSTALLING ALL SHORING REQUIRED DURING EXCAVATION (TO BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS) AND ANY ADDITIONAL PRECAUTIONS TO BE TAKEN TO ASSURE THE STABILITY OF ADJACENT, NEARBY AND CONTIGUOUS STRUCTURES AND PROPERTIES. ALL OF THIS WORK IS TO BE PERFORMED AT CONTRACTOR'S COST AND EXPENSE.

14. THE CONTRACTOR MUST EXERCISE EXTREME CAUTION WHEN PERFORMING ANY WORK ACTIVITIES ADJACENT TO PAVEMENT, STRUCTURES, ETC. WHICH ARE TO REMAIN EITHER FOR AN INITIAL PHASE OF THE PROJECT OR AS PART OF THE FINAL CONDITION. THE CONTRACTOR IS RESPONSIBLE FOR TAKING ALL APPROPRIATE MEASURES REQUIRED TO ENSURE THE STRUCTURAL STABILITY OF SIDEWALKS AND PAVEMENT, UTILITIES, BUILDINGS, AND INFRASTRUCTURE WHICH ARE TO REMAIN, AND TO PROVIDE A SAFE WORK AREA FOR THIRD PARTIES, PEDESTRIANS AND ANYONE INVOLVED WITH THE PROJECT.

15. DEBRIS MUST NOT BE BURIED ON THE SUBJECT SITE. ALL DEMOLITION AND CONSTRUCTION WASTES, UNSUITABLE EXCAVATED MATERIAL, EXCESS SOIL AND DEBRIS (SOLID WASTE) MUST BE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF ANY AND ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE CODES WHICH HAVE JURISDICTION OVER THIS PROJECT OR OVER THE CONTRACTOR.

16. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO MAINTAIN RECORDS TO DEMONSTRATE PROPER AND FULLY COMPLIANT DISPOSAL ACTIVITIES, TO BE PROMPTLY PROVIDED TO THE OWNER UPON REQUEST.

17. THE CONTRACTOR MUST REPAIR, AT CONTRACTOR'S SOLE COST, ALL DAMAGE DONE TO ANY NEW OR EXISTING CONSTRUCTION OR PROPERTY DURING THE COURSE OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME TO INCLUDE, BUT NOT BE LIMITED TO, REDESIGN, RE-SURVEY, RE-PERMITTING AND CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR AND MUST REPLACE ALL SIGNAL INTERCONNECTION CABLE, WIRING CONDUITS, AND ANY UNDERGROUND ACCESSORY EQUIPMENT DAMAGED DURING CONSTRUCTION AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE REPAIR OF ANY SUCH NEW OR EXISTING CONSTRUCTION OR PROPERTY MUST RESTORE SUCH CONSTRUCTION OR PROPERTY TO A CONDITION EQUIVALENT TO OR BETTER THAN THE CONDITIONS PRIOR TO COMMENCEMENT OF THE CONSTRUCTION, AND IN CONFORMANCE WITH APPLICABLE CODES, LAWS, RULES, REGULATIONS, STATUTORY REQUIREMENTS AND STATUTES. THE CONTRACTOR MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE CONTRACTOR MUST, PROMPTLY, DOCUMENT ALL EXISTING DAMAGE AND NOTIFY, IN WRITING, THE OWNER AND THE CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.

18. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR AND HAVE NO CONTRACTUAL, LEGAL OR OTHER RESPONSIBILITIES FOR JOB SITE SAFETY JOB SITE SUPERVISION, OR ANYTHING RELATED TO SAME. THE ENGINEER OF RECORD AND BOHLER HAVE NOT BEEN RETAINED TO PERFORM OR TO BE RESPONSIBLE FOR JOB SITE SAFETY, SAME BEING WHOLLY OUTSIDE OF ENGINEER OF RECORD'S AND BOHLER SERVICES AS RELATED TO THIS PROJECT. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE TO IDENTIFY OR REPORT ANY JOB SITE SAFETY ISSUES OR ANY JOB SITE CONDITIONS, AT ANY TIME.

19. THE CONTRACTOR MUST IMMEDIATELY IDENTIFY IN WRITING, TO THE ENGINEER OF RECORD AND BOHLER , ANY DISCREPANCIES THAT MAY OR COULD AFFECT THE PUBLIC SAFETY, HEALTH OR GENERAL WELFARE OR PROJECT COST. IF THE CONTRACTOR PROCEEDS WITH CONSTRUCTION WITHOUT PROVIDING PROPER WRITTEN NOTIFICATION AS DESCRIBED ABOVE, IT WILL BE AT THE CONTRACTOR'S OWN RISK AND, FURTHER, THE CONTRACTOR MUST INDEMNIFY, DEFEND AND HOLD HARMLESS THE ENGINEER OF RECORD AND BOHLER FOR ANY AND ALL DAMAGES, COSTS, INJURIES, ATTORNEY'S FEES AND THE LIKE WHICH RESULT FROM OR ARE IN ANY WAY RELATED TO SAME INCLUDING, BUT NOT LIMITED TO, ANY THIRD PARTY AND FIRST PARTY CLAIMS.

20. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR ANY INJURY OR DAMAGES RESULTING FROM THE CONTRACTOR'S FAILURE TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH THE APPROVED PLANS, AND CURRENT CODES, RULES, STATUTES AND THE LIKE. IF THE CONTRACTOR AND/OR OWNER FAIL TO BUILD OR CONSTRUCT IN ACCORDANCE WITH THE APPROVED PLANS, AND CURRENT CODES, STATUTES AND THE LIKE, THE CONTRACTOR AND/OR OWNER AGREE TO AND MUST JOINTLY, INDEPENDENTLY, SEPARATELY, AND SEVERALLY INDEMNIFY AND HOLD THE ENGINEER OF RECORD AND BOHLER HARMLESS FOR AND FROM ALL INJURIES, CLAIMS AND DAMAGES THAT ENGINEER AND BOHLER SUFFER AND ANY AND ALL COSTS THAT ENGINEER AND BOHLER INCUR AS RELATED TO SAME.

21. ALL CONTRACTORS MUST CARRY AT LEAST THE MINIMUM AMOUNT OF THE SPECIFIED AND COMMERCIALLY REASONABLE STATUTORY WORKER'S COMPENSATION INSURANCE, EMPLOYER'S LIABILITY INSURANCE AND COMMERCIAL GENERAL LIABILITY INSURANCE (CGL) INCLUDING ALSO ALL UMBRELLA COVERAGES. ALL CONTRACTORS MUST HAVE THEIR CGL POLICIES ENDORSED TO NAME BOHLER , AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AS ADDITIONAL NAMED INSUREDS AND TO PROVIDE CONTRACTUAL LIABILITY COVERAGE SUFFICIENT TO INSURE (DEFEND, IF APPLICABLE) AND HOLD HARMLESS AND INDEMNIFY OBLIGATIONS ASSUMED AND AGREED TO BY THE CONTRACTOR HEREIN. ALL CONTRACTORS MUST FURNISH BOHLER WITH CERTIFICATIONS OF INSURANCE OR CERTIFICATES OF INSURANCE AS EVIDENCE OF THE REQUIRED INSURANCE COVERAGES PRIOR TO COMMENCING ANY WORK AND UPON RENEWAL OF EACH POLICY DURING THE ENTIRE PERIOD OF CONSTRUCTION AND FOR TWO YEARS AFTER THE COMPLETION OF CONSTRUCTION AND AFTER ALL PERMITS ARE ISSUED, WHICHEVER DATE IS LATER. IN ADDITION, ALL CONTRACTORS AGREE THAT THEY WILL, TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, INDEMNIFY, DEFEND AND HOLD BOHLER AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS FROM AND AGAINST ANY DAMAGES, INJURIES, CLAIMS, ACTIONS, PENALTIES, EXPENSES, PUNITIVE DAMAGES, STATUTORY CLAIMS, STATUTORY CAUSES OF ACTION, LOSSES, CAUSES OF ACTION, LIABILITIES OR COSTS, INCLUDING, BUT NOT LIMITED TO, REASONABLE ATTORNEYS' FEES AND DEFENSE COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH OR TO THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTOR(S), ALL CLAIMS BY THIRD PARTIES AND ALL CLAIMS RELATED TO THE PROJECT. THE CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, AT LEAST THIRTY (30) DAYS PRIOR TO ANY TERMINATION, SUSPENSION OR CHANGE OF ITS INSURANCE HEREUNDER.

22. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR CONSTRUCTION METHODS, MEANS, TECHNIQUES OR PROCEDURES, GENERALLY OR FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES OR PROCEDURES FOR COMPLETION OF THE WORK DEPICTED BOTH ON THESE PLANS, AND FOR ANY CONFLICTS IN SCOPE AND REVISIONS THAT RESULT FROM SAME. THE CONTRACTOR IS FULLY AND SOLELY RESPONSIBLE FOR DETERMINING THE MEANS AND METHODS FOR COMPLETION OF THE WORK, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

23. NEITHER THE PROFESSIONAL ACTIVITIES OF BOHLER, NOR THE PRESENCE OF BOHLER AND/OR ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AT A CONSTRUCTION/PROJECT SITE (HEREIN "BOHLER PARTIES"), RELIEVES OR WILL RELIEVE THE CONTRACTOR OF AND FROM CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, OVERSEEING, SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND COMPLIANCE WITH ALL HEALTH AND SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES WITH JURISDICTION OVER THE PROJECT AND/OR PROPERTY. BOHLER PARTIES HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER ANY CONSTRUCTION (OR ANY RESPONSIBILITY FOR) ANY CONSTRUCTION, THE CONTRACTOR OR ITS EMPLOYEES RELATING TO THEIR WORK AND ANY AND ALL HEALTH AND SAFETY PROGRAMS OR PROCEDURES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SITE SAFETY. THE CONTRACTOR MUST INDEMNIFY, DEFEND, PROTECT AND HOLD HARMLESS BOHLER PARTIES FOR AND FROM ANY LIABILITY TO BOHLER PARTIES RESULTING FROM THE CONTRACTOR'S WORK, SERVICES AND/OR VIOLATIONS OF THIS NOTE, THESE NOTES OR ANY NOTES IN THE PLAN SET AND, FURTHER, THE CONTRACTOR MUST NAME BOHLER AS AN ADDITIONAL INSURED UNDER THE GENERAL CONTRACTOR'S POLICIES OF GENERAL LIABILITY INSURANCE AS DESCRIBED ABOVE.

24. WHEN IT IS CLEARLY AND SPECIFICALLY WITHIN BOHLER'S SCOPE OF SERVICES CONTRACT WITH THE OWNER/DEVELOPER, BOHLER WILL REVIEW OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS, SUCH AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND OTHER DATA, WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF EVALUATING CONFORMANCE WITH THE DESIGN INTENT AND THE INFORMATION SHOWN IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONSTRUCTION MEANS AND METHODS AND/OR TECHNIQUES OR PROCEDURES, COORDINATION OF THE WORK WITH OTHER TRADES, AND CONSTRUCTION SAFETY PRECAUTIONS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND BOHLER HAS NO RESPONSIBILITY OR LIABILITY FOR SAME. BOHLER WILL PERFORM ITS SHOP DRAWING REVIEW WITH REASONABLE PROMPTNESS, AS CONDITIONS PERMIT. ANY DOCUMENT, DOCUMENTING BOHLER'S REVIEW OF A SPECIFIC ITEM OR LIMITED SCOPE, MUST NOT INDICATE THAT BOHLER HAS REVIEWED THE ENTIRE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. BOHLER IS NOT RESPONSIBLE FOR ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR MUST, IN WRITING, PROMPTLY AND IMMEDIATELY NOTIFY BOHLER OF ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS TO BOHLER'S ATTENTION. BOHLER IS NOT REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR THOSE FOR WHICH SUBMISSIONS OF CORRELATED ITEMS HAVE NOT BEEN RECEIVED.

25. IF THE CONTRACTOR DEVIATES FROM THESE PLANS AND/OR SPECIFICATIONS, INCLUDING THE NOTES CONTAINED HEREIN, WITHOUT FIRST OBTAINING THE PRIOR WRITTEN AUTHORIZATION OF THE ENGINEER OF RECORD AND BOHLER FOR ALL DEVIATIONS WITHIN ENGINEER'S SCOPE, THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK PERFORMED WHICH DEVIATES FROM THE PLANS, ALL FINES AND/OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM AND, FURTHER, MUST DEFEND, INDEMNIFY, PROTECT, AND HOLD HARMLESS THE ENGINEER OF RECORD AND BOHLER PARTIES TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, FOR AND FROM ALL FEES, ATTORNEYS' FEES, DAMAGES, COSTS, JUDGMENTS, CLAIMS, INJURIES, PENALTIES AND THE LIKE RELATED TO SAME.

26. THE CONTRACTOR IS RESPONSIBLE FOR A MAINTAINING AND PROTECTING THE TRAFFIC CONTROL PLAN AND ELEMENTS IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REQUIREMENTS, FOR ALL WORK THAT AFFECTS PUBLIC TRAVEL EITHER IN THE RIGHT OF WAY OR ON SITE. THE COST FOR THIS ITEM MUST BE INCLUDED IN THE CONTRACTOR'S PRICE AND IS THE CONTRACTOR'S SOLE RESPONSIBILITY.

27. OWNER MUST MAINTAIN AND PRESERVE ALL PHYSICAL SITE FEATURES AND DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS IN STRICT ACCORDANCE WITH THE APPROVED PLAN(S) AND DESIGN; AND, FURTHER, THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR ANY FAILURE TO SO MAINTAIN OR PRESERVE SITE AND/OR DESIGN FEATURES. IF OWNER FAILS TO MAINTAIN AND/OR PRESERVE ALL PHYSICAL SITE FEATURES AND/OR DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS, OWNER AGREES TO INDEMNIFY AND HOLD THE ENGINEER OF RECORD AND BOHLER PARTIES, HARMLESS FOR ALL INJURIES, DAMAGES AND COSTS THAT ENGINEER OF RECORD AND BOHLER INCUR AS A RESULT OF SAID FAILURE OR FAILURE TO PRESERVE.

28. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION ACTIVITIES AND MATERIALS COMPLY WITH AND CONFORM TO APPLICABLE FEDERAL, STATE AND LOCAL RULES AND REGULATIONS, LAWS, ORDINANCES, AND CODES, AND ALL APPLICABLE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, (29 U.S.C. 651 ET SEQ.) AS AMENDED, AND ANY MODIFICATIONS, AMENDMENTS OR REVISIONS TO SAME.

29. THE CONTRACTOR MUST STRICTLY COMPLY WITH THE LATEST AND CURRENT OSHA STANDARDS AND REGULATIONS, AND/OR ANY OTHER AGENCY WITH JURISDICTION OVER EXCAVATION AND TRENCHING PROCEDURES. ENGINEER OF RECORD AND BOHLER HAS NO RESPONSIBILITY FOR OR AS RELATED TO EXCAVATION AND TRENCHING PROCEDURES AND WORK.

30. THE CONTRACTOR AND THE OWNER MUST INSTALL ALL ELEMENTS AND COMPONENTS IN STRICT COMPLIANCE WITH AND IN ACCORDANCE WITH MANUFACTURER'S STANDARDS AND RECOMMENDED INSTALLATION CRITERIA AND SPECIFICATIONS. IF THE CONTRACTOR AND/OR OWNER FAIL TO DO SO, THEY AGREE TO JOINTLY, INDEPENDENTLY, SEPARATELY, COLLECTIVELY, AND SEVERALLY INDEMNIFY, DEFEND, PROTECT AND HOLD ENGINEER OF RECORD AND BOHLER AND ENGINEER PARTIES HARMLESS FOR ALL INJURIES AND DAMAGES THAT ENGINEER SUFFERS AND COSTS THAT ENGINEER INCURS AS A RESULT OF SAID FAILURE.

31. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN AN ON-SITE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN COMPLIANCE WITH THE ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIREMENTS OR LOCAL GOVERNING AGENCY FOR SITES WHERE ONE (1) ACRE OR MORE IS DISTURBED BY CONSTRUCTION ACTIVITIES. WHERE THE LOCAL JURISDICTION REQUIRES A DIFFERENT THRESHOLD, THE CONTRACTOR MUST ENSURE THAT ALL ACTIVITIES, INCLUDING THOSE OF ALL SUBCONTRACTORS, ARE IN COMPLIANCE WITH THE SWPPP, INCLUDING BUT NOT LIMITED TO LOGGING ACTIVITIES (MINIMUM ONCE PER WEEK AND AFTER RAINFALL EVENTS) AND CORRECTIVE MEASURES, AS APPROPRIATE AND FURTHER, THE CONTRACTOR IS SOLELY AND COMPLETELY RESPONSIBLE FOR FAILING TO DO SO.

32. AS CONTAINED IN THESE DRAWINGS AND ASSOCIATED DOCUMENTS PREPARED BY THE ENGINEER OF RECORD AND BOHLER, THE USE OF THE WORDS 'CERTIFY' OR 'CERTIFICATION' CONSTITUTE(S) AN EXPRESSION ONLY OF PROFESSIONAL OPINION REGARDING THE INFORMATION WHICH IS THE SUBJECT OF THE STATEMENT OF RECORD'S AND BOHLER KNOWLEDGE OR BELIEF AND IN ACCORDANCE WITH COMMON AND ACCEPTED PROCEDURE CONSISTENT WITH THE APPLICABLE STANDARDS OF PRACTICE, AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE OF ANY NATURE OR TYPE, EITHER EXPRESSED OR IMPLIED, UNDER ANY CIRCUMSTANCES.

33. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE SUBMITTALS PREPARED FOR ANY CONSTRUCTION DETAILED ITEMS AND TO COORDINATE THE SUBMITTALS WITH THE RESPECTIVE GOVERNING AGENCIES OR SERVICE PROVIDERS, WHO SHALL HAVE THE FINAL AUTHORITY IN APPROVING THE SUBMITTALS.

DEMOLITION NOTES

(Rev. 2/2021)

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.

2. THE CONTRACTOR MUST CONDUCT DEMOLITION/REMOVALS ACTIVITIES IN SUCH A MANNER AS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, SIDEWALKS, WALKWAYS, AND ALL OTHER ADJACENT FACILITIES TO THE EXTENT POSSIBLE. THE CONTRACTOR MUST OBTAIN ALL APPROPRIATE PERMITS FROM THE APPROPRIATE GOVERNMENTAL AUTHORITY(IES) PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION ACTIVITIES OR ANY EXCAVATION OR ADJACENT TO THE RIGHT-OF-WAY.

3. WHEN DEMOLITION-RELATED ACTIVITIES IMPACT ROADWAYS AND/OR ROADWAY RIGHT-OF-WAY, THE CONTRACTOR MUST PROVIDE TRAFFIC CONTROL AND GENERALLY ACCEPTED PRACTICES AS OUTLINED IN THE MOST RECENT EDITION OF THE FEDERAL HIGHWAY ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), AND THE FEDERAL, STATE, AND LOCAL REGULATIONS.

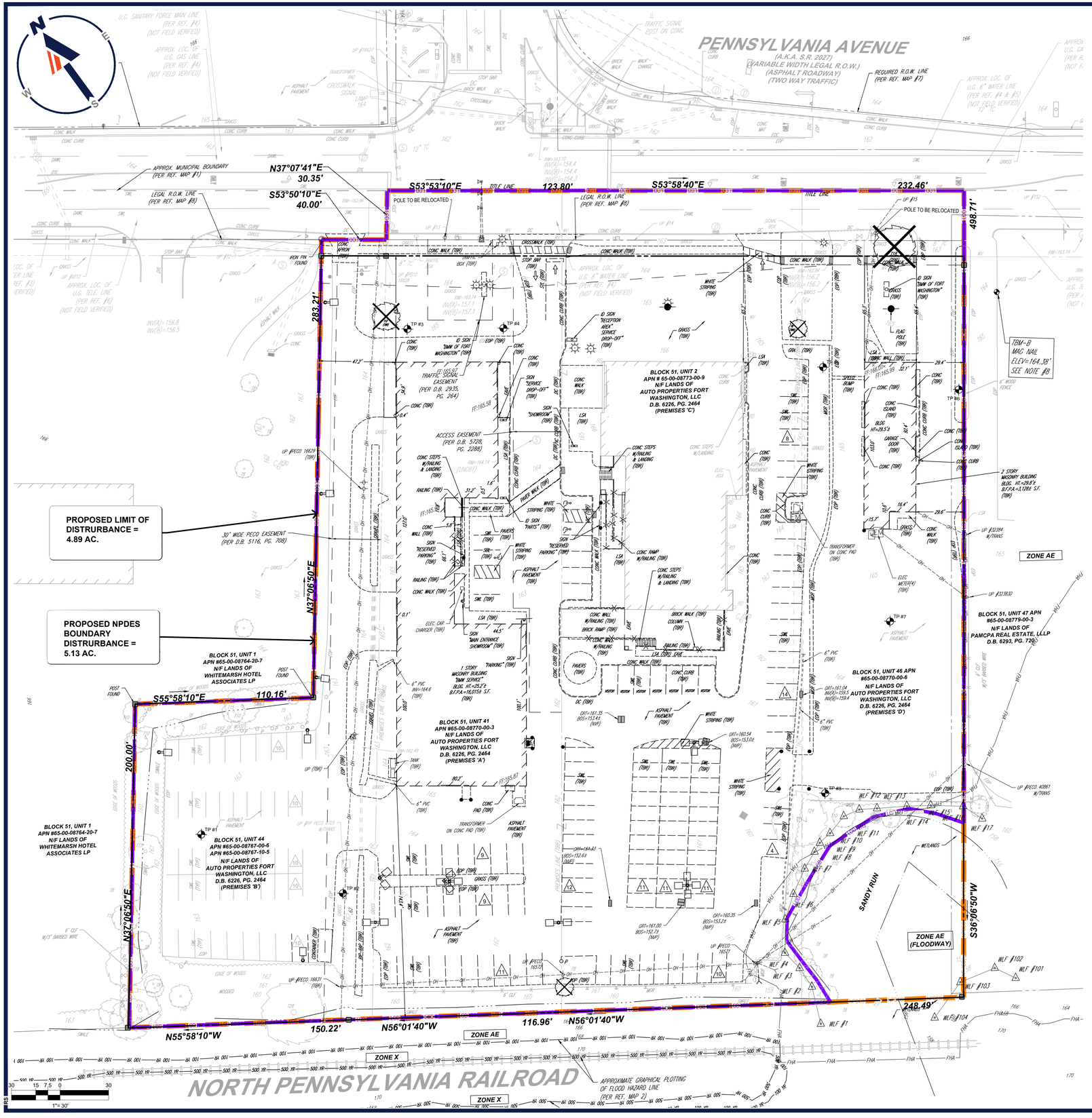
4. THE DEMOLITION (AND/OR REMOVALS) PLAN IS INTENDED TO PROVIDE GENERAL INFORMATION AND TO IDENTIFY ONLY CONDITIONS REGARDING ITEMS TO BE DEMOLISHED, REMOVED, AND/OR TO REMAIN.
   A. THE CONTRACTOR MUST ALSO REVIEW ALL CONSTRUCTION DOCUMENTS AND INCLUDE WITHIN THE DEMOLITION ACTIVITIES ALL INCIDENTAL WORK NECESSARY FOR THE CONSTRUCTION OF THE NEW SITE IMPROVEMENTS.
   B. THIS PLAN IS NOT INTENDED TO AND DOES NOT PROVIDE GUIDANCE REGARDING THE MEANS, METHODS, SEQUENCING, TECHNIQUES AND PROCEDURES TO BE EMPLOYED TO ACCOMPLISH THE WORK. ALL MEANS, METHODS, SEQUENCING, TECHNIQUES AND PROCEDURES TO BE USED MUST BE IN STRICT ACCORDANCE AND CONFORMANCE WITH ALL STATE, FEDERAL, LOCAL AND JURISDICTIONAL REQUIREMENTS. THE CONTRACTOR MUST COMPLY WITH ALL OSHA AND OTHER SAFETY PRECAUTIONS NECESSARY TO PROVIDE A SAFE WORK SITE FOR THE CONTRACTOR AND THE PUBLIC.

5. THE CONTRACTOR MUST PROVIDE ALL "METHODS AND MEANS" NECESSARY TO PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF EXISTING STRUCTURES AND IMPROVEMENTS THAT ARE REMAINING ON OR OFF SITE. THE CONTRACTOR, AT THE CONTRACTOR'S SOLE COST, MUST REPAIR ALL DAMAGE TO ALL ITEMS AND FEATURES THAT ARE TO REMAIN. CONTRACTOR MUST USE NEW MATERIAL FOR ALL REPAIRS. CONTRACTOR'S REPAIRS MUST INCLUDE THE RESTORATION OF ALL ITEMS AND FEATURES REPAIRED TO THEIR PRE-DEMOLITION CONDITION, OR BETTER. CONTRACTOR MUST PERFORM ALL REPAIRS AT CONTRACTOR'S SOLE EXPENSE.

6. ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR JOB SITE SAFETY OR SUPERVISION. THE CONTRACTOR MUST PROCEED WITH THE DEMOLITION IN A SYSTEMATIC AND SAFE MANNER, COMPLYING WITH ALL OSHA REQUIREMENTS, TO ENSURE PUBLIC AND CONTRACTOR SAFETY AND SAFETY TO ALL PROPERTY ON THE SITE OR ADJACENT OR NEAR TO THE SAME.

7. THE CONTRACTOR IS RESPONSIBLE FOR JOB SITE SAFETY, WHICH MUST INCLUDE, BUT IS NOT LIMITED TO, THE INSTALLATION AND MAINTENANCE OF BARRIERS, FENCING, OTHER APPROPRIATE AND/OR NECESSARY SAFETY FEATURES AND ITEMS NECESSARY TO PROTECT THE PUBLIC FROM AREAS OF CONSTRUCTION AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR MUST INSTALL ALL ITEMS NECESSARY TO PROTECT THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE ENTRY OF ALL UNAUTHORIZED PERSONS AT ANY TIME, TO OR NEAR THE DEMOLITION AREA.

8. PRIOR TO THE COMMENCEMENT OF ANY SITE ACTIVITY AND ANY DEMOLITION ACTIVITY, THE CONTRACTOR MUST, IN WRITING, RAISE ANY QUESTIONS CONCERNING THE ACCURACY OR INTENT OF THESE PLANS AND/OR SPECIFICATIONS, ALL CONCERNS OR QUESTIONS REGARDING THE APPL



LEGEND

TO BE REMOVED	
EASEMENT LINE	
SETBACK LINE	
LEASE LINE	
BUILDING	
RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
ACCESSIBLE SYMBOL	
CONCRETE MONUMENT/ IRON PIN	
SIGN	
PARKING COUNT	
AREA LIGHT	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
ROOF DRAIN/CLEANOUT	
FIRE HYDRANT	
UTILITY POLE W/ LIGHT	
UTILITY POLE	
OVERHEAD UTILITY WIRES	
ELECTRIC LINE	
TELEPHONE LINE	
GAS LINE	
WATER LINE	
SANITARY SEWER	
STORM PIPE	

LEGEND

EXISTING	
PROPERTY LINE	
R.O.W. LINE	
ADJACENT PROPERTY LINE	
LOD BOUNDARY	LOD
NPDES BOUNDARY	NPDES
EASEMENT LINE	
SETBACK LINE	
LEASE LINE	
BUILDING	
RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
ACCESSIBLE SYMBOL	
CONCRETE MONUMENT/ IRON PIN	
SIGN	
PARKING COUNT	
AREA LIGHT	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
ROOF DRAIN/CLEANOUT	
FIRE HYDRANT	
UTILITY POLE W/ LIGHT	
UTILITY POLE	
OVERHEAD UTILITY WIRES	
ELECTRIC LINE	
TELEPHONE LINE	
GAS LINE	
WATER LINE	
SANITARY SEWER	
STORM PIPE	
EDGE OF STREAM DELINEATION FLAGS	

SURVEY NOTES:

1. PROPERTY KNOWN AS BLOCK 51, UNIT 41, APN #65-00-08770-00-3; BLOCK 51, UNIT 46, APN #65-00-08767-00-6; BLOCK 51, UNIT 2, APN #65-00-08773-00-9 & BLOCK 51, UNIT 44, APN #65-00-08776-00-6 AS IDENTIFIED ON THE TAX MAPS OF WHITEMARSH TOWNSHIP, COMMONWEALTH OF PENNSYLVANIA.
2. TOTAL SITE AREA = 223,558 S.F. OR 5.132 AC.
3. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE, LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE AS-BUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.
4. THIS PLAN IS BASED ON INFORMATION PROVIDED BY CLIENT, A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, LLC. AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
5. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN. IT IS STRONGLY RECOMMENDED THAT A COMPLETE TITLE SEARCH BE PROVIDED TO THE SURVEYOR FOR REVIEW PRIOR TO THE PLACEMENT OF OR ALTERATION TO IMPROVEMENTS ON THIS PROPERTY.
6. BY GRAPHIC PLOTTING ONLY PROPERTY IS LOCATED IN FLOOD HAZARD ZONE AE (BASE FLOOD ELEVATIONS DETERMINED), PER REF #2.
7. THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE FIELD SURVEY.
8. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON GPS OBSERVATIONS UTILIZING THE KEYSTONE VRS NETWORK. (KEYNETGPS).
   TEMPORARY MARKS SET:
   TBM-A: MAG NAIL SET IN; ELEVATION = 166.06'
   TBM-B: MAG NAIL SET IN, ELEVATION = 164.38'
9. THE OFFSETS SHOWN ARE NOT TO BE USED FOR THE CONSTRUCTION OF ANY STRUCTURE, FENCE, PERMANENT ADDITION, ETC.
10. THERE ARE A TOTAL OF (167) DESIGNATED PARKING SPACES, INCLUDING (3) HC ACCESSIBLE SAPCES.

SURVEY REFRENCES:

1. THE OFFICIAL TAX ASSESSOR'S MAP OF WHITEMARSH TOWNSHIP, COMMONWEALTH OF PENNSYLVANIA, SHEET #51.
2. MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, MONTGOMERY COUNTY, PENNSYLVANIA, (ALL JURISDICTIONS), PANEL 289 OF 451", MAP NUMBER 42091C0289G, EFFECTIVE DATE: 03-02-2016.
3. MAPS SHOWING PIPELINES PREPARED BY AQUA PENNSYLVANIA.
4. MAP ENTITLED "DELAWARE VALLEY INDUSTRIAL SEWAGE INC. SANITARY SEWER SYSTEM, SHEET 3 OF 9" , PREPARED BY GEORGE A. GREEBY & ASSOC ENGINEERS, DATED: FEBRUARY 23, 1956.
5. MAP ENTITLED "WATER DISTRIBUTION PLAN FOR THE PENNSYLVANIA ONE CALL SYSTEM, PENNSYLVANIA AVE, UPPER DUBLIN TOWNSHIP, MONTGOMERY COUNTY, PA, SHEET 1 OF 1" PREPARED BY NORTH WALES WATER AUTHORITY, DATED: JANUARY 17, 2023.
6. MAPS SHOWING COMMUNICATION LINES PREPARED BY VERIZON.

UTILITY COMPANY	PHONE NUMBER
AMBLER BOROUGH	215-646-1009
AQUA PENNSYLVANIA, INC.	610-525-1400
AT & T	215-233-3474
BUCKS COUNTY WATER & SEWER	215-750-0585
COMCAST CABLE COMMUNICATIONS, INC.	215-918-3137
COMCAST CABLEVISION	215-961-3800
NORTH WALES WATER	215-699-4836
PECO	610-292-8057
SEPTA	215-580-7852
UPPER DUBLIN TWP.	215-643-1600
VERIZON	215-657-9260
WHITEMARSH TOWNSHIP	610-825-3535

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

THE INFORMATION, DESIGN AND CONTENT OF THIS PLAN IS PROPRIETARY AND SHALL NOT BE COPIED OR USED FOR ANY PURPOSE, WITHOUT PRIOR WRITTEN AUTHORIZATION FROM BOHLER. ONLY APPROVED AND SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES.
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REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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NOT APPROVED FOR CONSTRUCTION

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.:	PAB220113.00
DRAWN BY:	BS
CHECKED BY:	MSL
DATE:	03/15/2023
CAD I.D.:	PAB220113.00-LDVP-0A

PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

500 PENNSYLVANIA AVENUE WHITEMARSH TOWNSHIP MONTGOMERY COUNTY, PA

BOHLER
74 W BROAD STREET, SUITE 500
BETHLEHEM, PA 18018
Phone: (610) 709-9971
Fax: (610) 709-9976
www.BohlerEngineering.com

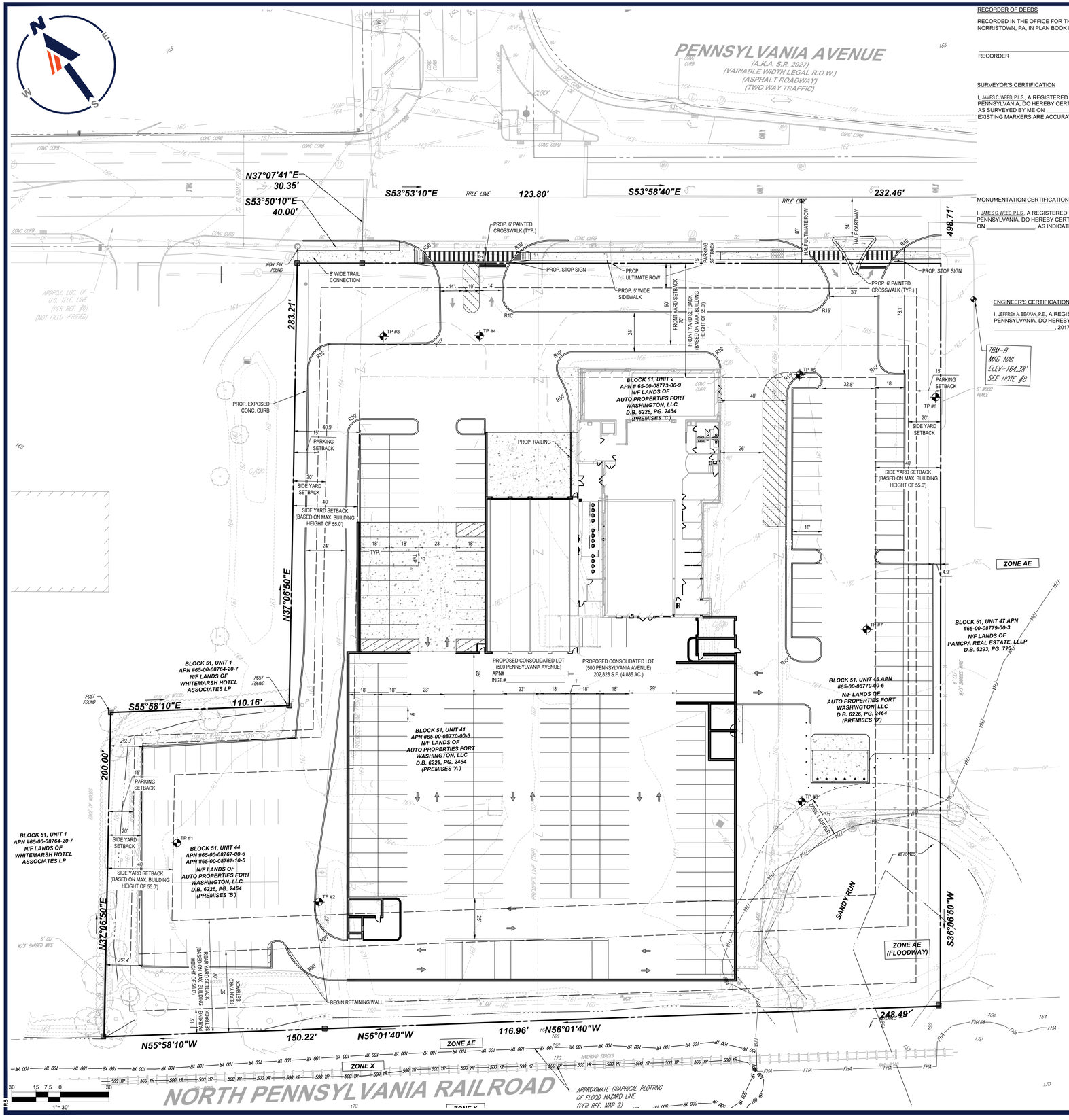
J.A. BEAVAN
PROFESSIONAL
JOSEPH A. BEAVAN
PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE No. PE081005
NEW YORK LICENSE No. 095404
NEW JERSEY LICENSE No. 24GE03336500

SHEET TITLE:
EXISTING CONDITIONS/ DEMOLITION PLAN

SHEET NUMBER:
C-201

ORG. DATE - 03/15/2023

R:\2023\PAB220113.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-LDVP-0A-----LAYOUT: C-201 EXIST



RECORDER OF DEEDS

RECORDED IN THE OFFICE FOR THE RECORDING OF DEEDS IN AND FOR THE COUNTY OF MONTGOMERY, AT NORRISTOWN, PA, IN PLAN BOOK NO. _____ PAGE NO. _____ ON _____, 2017.

_____
RECORDER

SURVEYOR'S CERTIFICATION

I, JAMES C. WEED, P.L.S., A REGISTERED PROFESSIONAL LAND SURVEYOR OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT THIS PLAN CORRECTLY REPRESENTS THE METES AND BOUNDS AS SURVEYED BY ME ON _____, AND THAT THE LOCATION, SIZE AND MATERIAL OF EXISTING MARKERS ARE ACCURATELY SHOWN HEREON.

_____
JAMES C. WEED

_____
REGISTERED No.: #SU075250

_____
DATE

MONUMENTATION CERTIFICATION:

I, JAMES C. WEED, P.L.S., A REGISTERED PROFESSIONAL LAND SURVEYOR OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT ALL CONCRETE MONUMENTS HAVE BEEN SET OR FOUND BY ME ON _____, AS INDICATED AND SHOWN HEREON.

_____
JAMES C. WEED

_____
REGISTERED No.: #SU075250

_____
DATE

ENGINEER'S CERTIFICATION

I, JEFFREY A. BEAVAN, P.E., A REGISTERED PROFESSIONAL ENGINEER OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT THIS PLAN CORRECT IN ALL DETAILS AS PREPARED BY ME ON _____, 2017.

_____
JEFFREY A. BEAVAN

_____
REGISTERED No.: #PE082005

_____
DATE

REVIEW OF THE TOWNSHIP ENGINEER, WHITEMARSH TOWNSHIP:

THIS SUBDIVISION AND/OR LAND DEVELOPMENT PLAN WAS REVIEWED BY THE APPOINTED TOWNSHIP ENGINEER FOR WHITEMARSH TOWNSHIP ON THIS _____ DAY OF _____, 20___.

_____
JAMES C. SULLIVAN, P.E.
TOWNSHIP ENGINEER

APPROVAL OF THE WHITEMARSH TOWNSHIP BOARD OF SUPERVISORS:

THIS SUBDIVISION AND/OR LAND DEVELOPMENT PLAN WAS APPROVED BY RESOLUTION OF THE BOARD OF SUPERVISORS OF WHITEMARSH TOWNSHIP ON THIS _____ DAY OF _____, 20___.

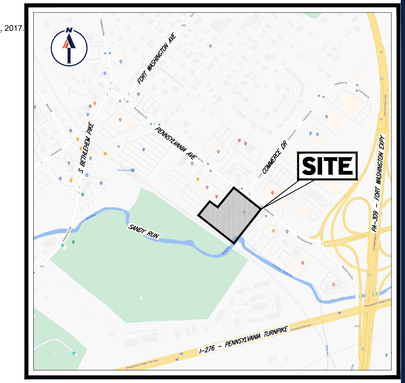
_____ _____
CHAIRMAN SECRETARY

MCPC No.: (14-0121-003)

PROCESSED and REVIEWED. Report prepared by
Montgomery County Planning Commission
in accordance with the Municipalities Planning Code.

Certified this date _____

_____
Montgomery County Planning Commission



LOCATION MAP

SCALE: 1" = 800'

800 400 200 0 800
1"=800'

ZONING REQUIREMENTS:

REQUIREMENTS TAKEN FROM: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, COMMONWEALTH OF PENNSYLVANIA. (6/22/2016)

ZONING: CR-L (COMMERCIAL RETAIL-LOW DISTRICT) WITH RIPARIAN CORRIDOR CONSERVATION AND STEEP SLOPES OVERLAY DISTRICTS
EXISTING USE: AUTOMOTIVE RETAIL, **PROPOSED USE:** AUTOMOTIVE RETAIL **(SPECIAL EXCEPTION GRANTED)**

OVERALL BULK REQUIREMENTS	REQUIRED	EXISTING (CONSOLIDATED LOTS)	PROPOSED CONSOLIDATED LOT
MINIMUM LOT AREA (TO ULT. ROW) [1]	5 AC. (MIN.)	208,647 SF (4.790 AC.)	NO CHANGE
MINIMUM LOT AREA (TO ULT. ROW)	[2]	208,647 SF (4.790 AC.)	NO CHANGE
MINIMUM BUILDING SETBACKS:			
FRONT YARD SETBACK: (PENNSYLVANIA AVE)	MIN. = 50 FT. *REQD = 70 FT	65.2 FT.	64.4 FT.
SIDE YARD SETBACK: [3]	MIN. = 20 FT. *REQD = 40 FT	47.2 FT.	35.1 FT.
REAR YARD SETBACK: [3]	MIN. = 50 FT. *REQD = 70 FT.	143.4 FT.	28.9 FT. **(V)**
MINIMUM PARKING SETBACKS:			
FRONT YARD SETBACK:	15 FT.	117.6 FT.	115.8 FT.
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REAR YARD SETBACK:	15 FT.	17.4 FT.	41.4 FT.
MAXIMUM REQUIREMENTS:			
MAXIMUM BUILDING COVERAGE:	40%	15.3% (11,370 SF.)	32.5% (69,182 SF.)
MAXIMUM IMPERVIOUS COVERAGE:	65%	74.8% (159,131 SF)	70.9% (147,985 SF.)**(V)**
MAXIMUM BUILDING HEIGHT: [3]	35 FT., 65 FT. MAX.	31 FT	55.0 FT
MINIMUM GREEN SPACE AREA:	35%		(29.1%) 60,662 **(V)**
REAR YARD COVERAGE (ACCESSORY USES/STRUCTURES) [4]	30%	28.4% (19,834 SF.)	8.2% (5,728 SF.)

[1] DISTRICT AREA. THE MINIMUM AREA WHICH MAY BE CLASSIFIED AS A CR COMMERCIAL RETAIL DISTRICT SHALL BE 5 ACRES.

[2] THE MINIMUM AREA FOR A SINGLE STRUCTURE OR DEVELOPMENT SHALL BE DETERMINED BY THE LAND USE, PARKING AND OTHER REQUIREMENTS.

[3] THE MAXIMUM HEIGHT OF ANY BUILDING ERECTED OR USED IN THIS DISTRICT SHALL BE 35 FEET, EXCEPT THAT THE HEIGHT OF ANY BUILDING MAY BE INCREASED TO A MAXIMUM OF 65 FEET, PROVIDED THAT FOR EVERY FOOT OF HEIGHT INCREASE IN EXCESS OF 35 FEET THERE SHALL BE ADDED TO EACH YARD REQUIREMENT ONE CORRESPONDING FOOT OF WIDTH OR DEPTH. STRUCTURES, EXCEPT CHIMNEYS AND FLAGPOLES, MAY BE ERECTED ABOVE THE ROOFLINE, SHALL BE ERECTED WITHIN A RECESSION OF ONE FOOT FOR EACH ONE FOOT OF ADDITIONAL HEIGHT, AND MUST BE DESIGNED TO BE COMPATIBLE WITH THE ARCHITECTURAL TREATMENT OF THE BUILDING.

*MINIMUM BUILDING SETBACKS ARE BASED ON A MAXIMUM STRUCTURE HEIGHT OF 70'. 35' HAS BEEN ADDED TO EACH MINIMUM SETBACK REQUIREMENT AND ARE DEPICTED ABOVE.
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[4] REAR YARD COVERAGE CALCULATION PER §116-24.D.3.IS BASED ON THE FOLLOWING AREAS:
EXISTING LOT: 72,268 SF. (1.66 AC.) TO REAR BUILDING LINE OF EXISTING STRUCTURE AT 500 PENNSYLVANIA AVE.
PROPOSED LOT: 37,601 SF. (0.86 AC.) TO REQUIRED SETBACK LINE FOR 58' BUILDING.

(ENC) = EXISTING NON-CONFORMITY
(V) = VARIANCE REQUESTED

LEGEND
EXISTING

PROPERTY LINE
R.O.W. LINE
BUILDING
CONCRETE CURB
FENCE
TREELINE
CONCRETE MONUMENT/ IRON PIN
SIGN
TREE
DRAINAGE INLET
STORM/SANITARY MANHOLE
WATER/GAS VALVES
FIRE HYDRANT
UTILITY POLE
OVERHEAD UTILITY WIRES
100 YEAR FLOOD PLAIN — 100 YR —
500 YEAR FLOOD PLAIN — 500 YR —
FLOOD WAY
EDGE OF STREAM DELINEATION FLAGS

LEGEND
PROPOSED

PROPERTY LINE
EASEMENT LINE
SETBACK LINE
BUILDING
RETAINING WALL
CONCRETE CURB
FLUSH CURB
FENCE
GUIDE RAIL
TREELINE
MAILBOX CLUSTER SYMBOL
SIDEWALK
RAMP
SIGN
BOLLARD
PARKING COUNT
AREA LIGHT
DRAINAGE INLET
MANHOLE
ENDWALL
FIRE HYDRANT
TRANSFORMER

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
LAND PLANNING
PERMITTING SERVICES
TRANSPORTATION SERVICES
THE INFORMATION, DESIGN AND CONTENT OF THIS PLAN IS PROPRIETARY AND SHALL NOT BE COPIED OR USED FOR ANY PURPOSE, WITHOUT THE WRITTEN AUTHORIZATION FROM BOHLER. ONLY APPROVED, SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES.

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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PROJECT No.:	PAB220113.00
DRAWN BY:	BS
CHECKED BY:	MSL
DATE:	03/15/2023
CAD I.D.:	PAB220113.00-LDVP-0A

PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

**500 PENNSYLVANIA AVENUE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA**

BOHLER
74 W BROAD STREET, SUITE 500
BETHLEHEM, PA 18018
Phone: (610) 709-9971
Fax: (610) 709-9976
www.BohlerEngineering.com

COMMONWEALTH OF PENNSYLVANIA
J. A. BEAVAN
PROFESSIONAL
JEFFREY A. BEAVAN
PROFESSIONAL ENGINEER
PE082005
PENNSYLVANIA LICENSE No. PE082005
NEW YORK LICENSE No. 101500-1
NEW JERSEY LICENSE No. GE49-036500

SHEET TITLE:

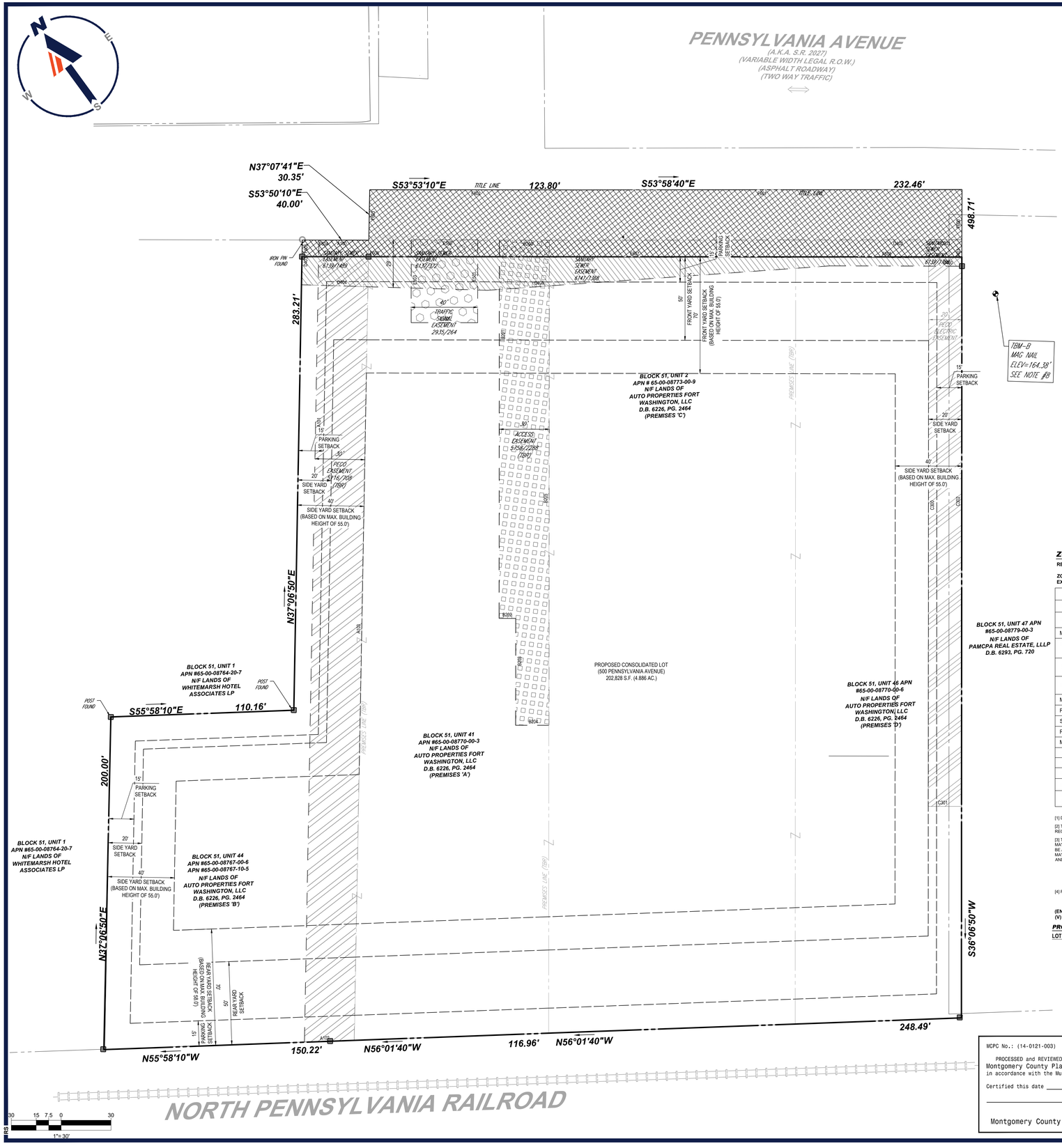
RECORD PLAN

SHEET NUMBER:

C-301

ORG. DATE - 03/15/2023

R:\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-LDVP-0A_---LAYOUT C-301 RECORD



PROPOSED PECO EASEMENT

Parcel Table			
Line #/Curve #	Length	Direction/Delta	Radius
A100	29.997	N53° 49' 18.99"W	
A101	482.794	S37° 07' 04.61"W	
A102	29.956	S55° 52' 51.08"E	
A103	481.718	N37° 07' 37.80"E	

PROPOSED PECO ELECTRIC EASEMENT

Parcel Table			
Line #/Curve #	Length	Direction/Delta	Radius
C300	341.098	S36° 08' 08.23"W	
C301	20.000	S53° 51' 51.77"E	
C302	341.132	N36° 08' 08.23"E	
C303	20.000	N53° 57' 43.48"W	

PROPOSED TRAFFIC SIGNAL EASEMENT

Parcel Table			
Line #/Curve #	Length	Direction/Delta	Radius
E500	40.000	N53° 52' 18.99"W	
E501	50.000	N36° 07' 41.01"E	
E502	40.000	S53° 52' 18.99"E	
E503	50.000	S36° 07' 41.01"W	

PROPOSED ACCESS EASEMENT

Parcel Table			
Line #/Curve #	Length	Direction/Delta	Radius
B200	30.000	N53° 52' 18.99"W	
B201	227.590	S36° 07' 40.01"W	
B202	10.000	S53° 52' 19.98"E	
B203	64.350	S36° 07' 40.01"W	
B204	20.000	S53° 52' 19.99"E	
B205	291.940	N36° 07' 40.01"E	

PROPOSED SANITARY SEWER EASEMENT

Parcel Table			
Line #/Curve #	Length	Direction/Delta	Radius
D400	79.530	S53° 45' 48.99"E	
D401	16.010	N36° 07' 36.22"E	
D402	99.997	N53° 57' 48.99"W	
D403	26.934	S37° 08' 02.57"W	
D404	40.000	S52° 12' 47.07"E	
D405	37.379	S57° 59' 36.99"E	

PROPOSED ULTIMATE RIGHT OF WAY

Parcel Table			
Line #/Curve #	Length	Direction/Delta	Radius
F600	40.941	N36° 12' 45.78"E	
F601	232.460	N53° 57' 48.99"W	
F602	65.000	N53° 52' 18.99"W	
F603	30.350	S37° 07' 41.01"W	
F604	40.004	N53° 49' 54.42"W	
F605	9.995	S37° 06' 50.01"W	
F606	356.797	S53° 50' 09.99"E	
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PROPOSED PARKING REQUIREMENTS

LOT 1 PARKING REQUIREMENTS (PER SECTION 116-184):

DESCRIPTION	UNIT	REQUIRED
RETAIL (11,370 SF SHOWROOM + 6,900 SF SERVICE RECEPTION)	1 SPACE/200 SF	92
OFFICE (5,915 SF - EXIST. BLDG 2ND FLR)	1 SPACE/200 SF	30
SERVICE BAYS (39)	1 SPACE PER BAY	39
OTHER COMMERCIAL (50,900 SF SRVC/PARTS/TECH)	1 SPACE/1000 SF	51
TOTAL SPACE REQUIRED:		212
TOTAL OFF-STREET PARKING SPACES PROPOSED (607 GARAGE + 171 OUTSIDE):		222
EV PARKING SPACES PROPOSED (8 REQUIRED PER §116-188.3):		10
TOTAL INVENTORY SPACES PROPOSED:		546
TOTAL SPACES PROPOSED:		**778**

MCPC No.: (14-0121-003)

PROCESSED and REVIEWED. Report prepared by
Montgomery County Planning Commission
in accordance with the Municipalities Planning Code.

Certified this date _____

_____
Montgomery County Planning Commission

STORMWATER BLANKET EASEMENT

A BLANKET STORMWATER EASEMENT IN FAVOR OF WHITEMARSH TOWNSHIP IS PROVIDED FOR ACCESS AND MAINTENANCE PURPOSES ON AND OVER THE PROPERTY, EXCEPT FOR THE PORTIONS OF THE PROPERTY ON WHICH BUILDINGS OR OTHER VERTICAL STRUCTURES HAVE BEEN ERECTED. THE TOWNSHIP OF WHITEMARSH SHALL HAVE THE RIGHT TO INSPECT ALL STORMWATER MANAGEMENT FEATURE AND FACILITIES AND TO REQUIRE REPAIRS, BUT NOT THE OBLIGATION TO MAKE SUCH REPAIRS.

GENERAL BLANKET COMMON ACCESS AND UTILITY EASEMENT NOTE:

A BLANKET EASEMENT IS TO BE ESTABLISHED FOR COMMON ACCESS AND UTILITIES WITHIN THE AREA DEFINED AND ILLUSTRATED ON SHEET C-601 UNLESS OTHERWISE SPECIFIED ON THIS PLAN.

LEGEND

EASEMENT

- PROPERTY BOUNDARY
- PREMISES LINE
- BUILDING SETBACK LINE
- EXISTING EASEMENT
- PROP. UTILITY EASEMENT
- PROP. BUILDING SETBACK
- PROP. PARKING SETBACK
- PROP. CONCRETE MONUMENT
- ROW EASEMENT
- SANITARY EASEMENT
- ACCESS EASEMENT
- TRAFFIC SIGNAL EASEMENT
- EXISTING PECO EASEMENT
- PROPOSED PECO EASEMENT

RECORD PLAN 4 OF 9

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
LAND PLANNING
PERMITTING SERVICES
TRANSPORTATION SERVICES

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REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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DRAWN BY:	BS
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PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

500 PENNSYLVANIA AVENUE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA

BOHLER
74 W BROAD STREET, SUITE 500
BETHLEHEM, PA 18018
Phone: (610) 709-9971
Fax: (610) 709-9976
www.BohlerEngineering.com

J. A. BEAVAN
PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE No. PE082005
NEW YORK LICENSE No. 110-090304
NEW JERSEY LICENSE No. 24GE05036600

SHEET TITLE:

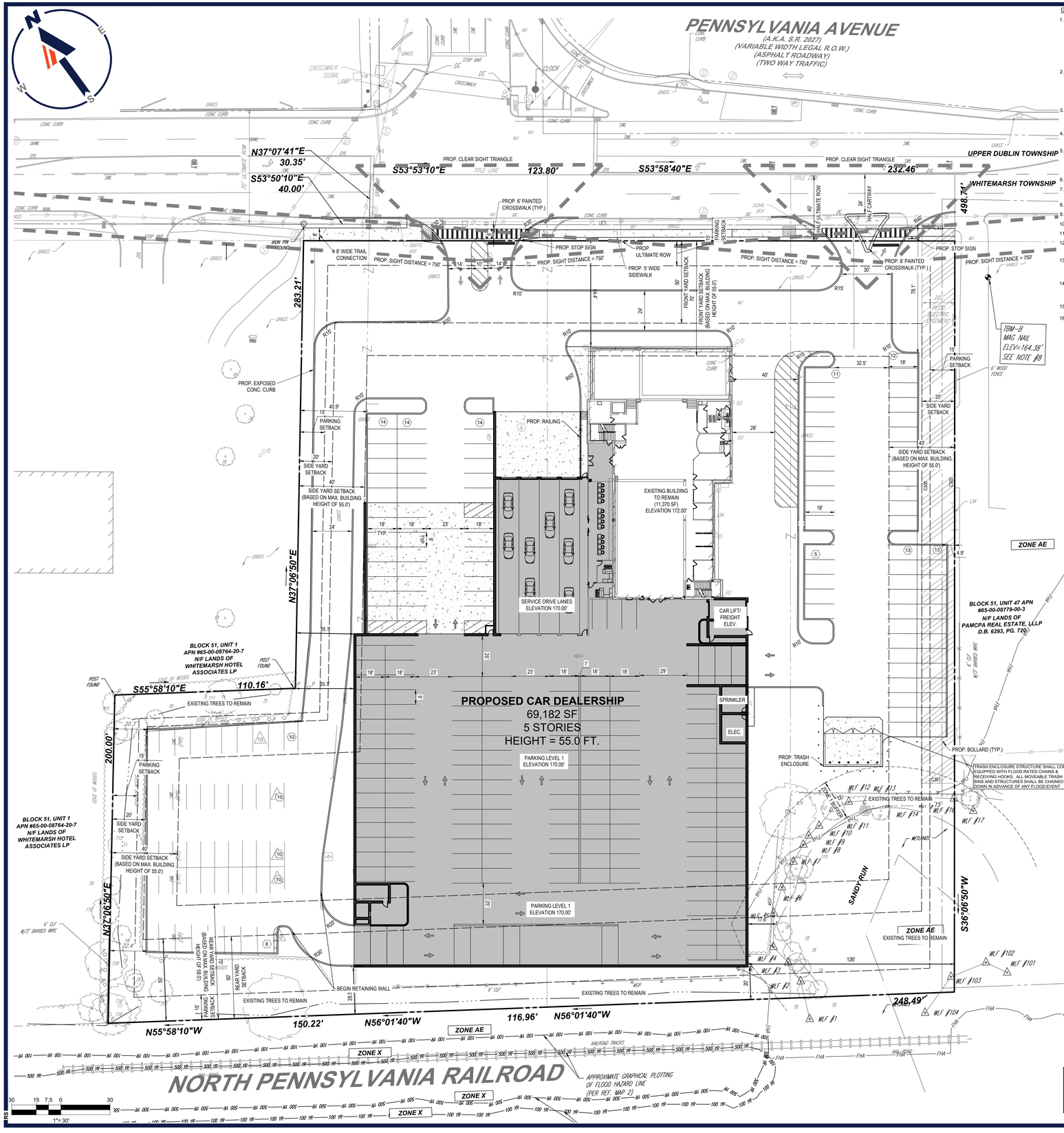
DEDICATION & EASEMENT PLAN

SHEET NUMBER:

C-302

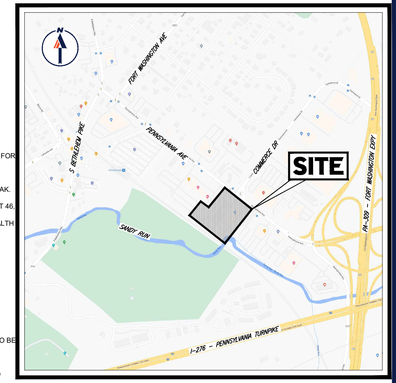
ORG. DATE - 03/15/2023

R:\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-LDVP-0A—LAYOUT C-302 EASEMENT



GENERAL NOTES

1. THIS PLAN REFERENCES DOCUMENTS AND INFORMATION BY:
   CONTROL POINT ASSOCIATE, LLC.
   1600 MANOR DRIVE, SUITE 210
   CHALFONT, PA 18914
   ENTITLED: "BOUNDARY & TOPOGRAPHIC SURVEY"
   PREPARED FOR: BMW OF FORT WASHINGTON
   FILE NO.: 02-220505-00
   DATED: 02/06/2023
2. APPLICANT/ EQUITABLE OWNER:
   BMW OF FORT WASHINGTON
   3301 BRIGGS CHANEY ROAD
   SILVER SPRING, MD 20904
   ATTENTION: DENNIS TURNBAUGH
   301-679-4062
3. CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL SPECIFIC RESOURCES, TECHNICAL REPORTS, AND DESIGN DOCUMENTS RELATED TO THIS PROJECT AND FAMILIARIZE HIMSELF WITH SAME FOR APPLICATION BOTH PRIOR TO AND DURING CONSTRUCTION.
4. ALL ELEVATIONS SHOWN ARE IN ACCORDANCE WITH THE REFERENCED SURVEYOR'S BENCHMARK AND MUST BE VERIFIED BY THE GENERAL CONTRACTOR PRIOR TO GROUNDBREAK.
5. PARCEL DATA: PROPERTY KNOWN AS BLOCK 51, UNIT 41, APN #65-00-08775-003; BLOCK 51 UNIT 46, APN #65-00-08767-00-6; BLOCK 51, UNIT 2, APN #65-00-08773-00-9 & BLOCK 51, UNIT 44, APN #65-00-08776-00-6 AS IDENTIFIED ON THE TAX MAP OF WHITEMARSH TOWNSHIP, COMMONWEALTH OF PENNSYLVANIA.
6. PARCEL AREA: TOTAL SITE AREA: 5.132 AC.
7. ALL A.D.A. ACCESSIBLE PARKING SPACES, RAMPS, AND ACCESSIBLE ROUTES SHALL BE CONSTRUCTED TO MEET CURRENT A.D.A. REQUIREMENTS, AS AMENDED.
8. ALL FEATURES ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
9. FEATURES TO BE REMOVED ARE NOTED (TBR).
10. MEASUREMENTS ARE TAKEN FROM FACE OF CURB, WHERE APPLICABLE.
11. NO DEBRIS SHALL BE BURIED ON-SITE.
12. ALL PUBLIC UTILITIES, INCLUDING WATER AND SEWER ARE CURRENTLY AVAILABLE. SITE IS TO BE SERVICED BY PUBLIC WATER AND SEWER UTILITIES.
13. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES.
14. THE ENTIRE SITE IS IN A SPECIAL FLOOD HAZARD AREA, ZONE (AE), WITHIN THE 100-YEAR FLOODPLAIN. BASE FLOOD ELEVATION = 169.00. AS SUCH, THE ENTIRE SITE IS LOCATED WITHIN THE RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT PER WHITEMARSH TOWNSHIP
15. THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, IS UNKNOWN.
16. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88, BASED ON GPS OBSERVATIONS UTILIZING THE KEYSTONE VRS NETWORK (KEYNET GPS).



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800 400 200 0 800

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MAXIMUM BUILDING HEIGHT: [3]	35 FT., 65 FT. MAX.	31 FT	55.0 FT
MINIMUM GREEN SPACE AREA:	35%		(29,1%) 60,662 **(V)**
REAR YARD COVERAGE (ACCESSORY USES/STRUCTURES) [4]	30%	28.4% (19,834 SF.)	8.2% (5,728 SF.)

[1] DISTRICT AREA. THE MINIMUM AREA WHICH MAY BE CLASSIFIED AS A CR COMMERCIAL RETAIL DISTRICT SHALL BE 5 ACRES.

[2] THE MINIMUM AREA FOR A SINGLE STRUCTURE OR DEVELOPMENT SHALL BE DETERMINED BY THE LAND USE, PARKING AND OTHER REQUIREMENTS.

[3] THE MAXIMUM HEIGHT OF ANY BUILDING ERECTED OR USED IN THIS DISTRICT SHALL BE 35 FEET, EXCEPT THAT THE HEIGHT OF ANY BUILDING MAY BE INCREASED TO A MAXIMUM OF 65 FEET, PROVIDED THAT FOR EVERY FOOT OF HEIGHT INCREASE IN EXCESS OF 35 FEET THERE SHALL BE ADDED TO EACH YARD REQUIREMENT ONE CORRESPONDING FOOT OF WIDTH OR DEPTH. STRUCTURES, EXCEPT CHIMNEYS AND FLAGPOLES, MAY BE ERECTED ABOVE THE ROOFLINE, SHALL BE ERECTED WITHIN A RECESSION OF ONE FOOT FOR EACH ONE FOOT OF ADDITIONAL HEIGHT, AND MUST BE DESIGNED TO BE COMPATIBLE WITH THE ARCHITECTURAL TREATMENT OF THE BUILDING.
*MINIMUM BUILDING SETBACKS ARE BASED ON A MAXIMUM STRUCTURE HEIGHT OF 70'. 35' HAS BEEN ADDED TO EACH MINIMUM SETBACK REQUIREMENT AND ARE DEPICTED ABOVE.
**MINIMUM BUILDING SETBACKS ARE BASED ON A MAXIMUM STRUCTURE HEIGHT OF 46.83'. 11.83' HAS BEEN ADDED TO EACH MINIMUM SETBACK REQUIREMENT AND ARE DEPICTED ABOVE.

[4] REAR YARD COVERAGE CALCULATION PER §116-24 D.3 IS BASED ON THE FOLLOWING AREAS:
EXISTING LOT: 72,268 SF. (1.66 AC.) TO REAR BUILDING LINE OF EXISTING STRUCTURE AT 500 PENNSYLVANIA AVE.
PROPOSED LOT: 37,601 SF. (0.86 AC.) TO REQUIRED SETBACK LINE FOR 58' BUILDING.

(ENC) = EXISTING NON-CONFORMITY
(V) = VARIANCE REQUESTED

PROPOSED PARKING REQUIREMENTS (PER SECTION 116-184)

DESCRIPTION	UNIT	REQUIRED
RETAIL (11,370 SF SHOWROOM + 6,900 SF SERVICE RECEPTION)	1 SPACE/200 SF	92
OFFICE (5,915 SF - EXIST. BLDG 2ND FLR)	1 SPACE/200 SF	30
SERVICE BAYS (39)	1 SPACE PER BAY	39
OTHER COMMERCIAL (50,900 SF SRVC/PARTS/TECH)	1 SPACE/1000 SF	51
TOTAL SPACES REQUIRED:		212
TOTAL OFF-STREET PARKING SPACES PROPOSED (129 GARAGE + 89 OUTSIDE):		218
EV PARKING SPACES PROPOSED (8 REQUIRED PER §116-188.3):		8
TOTAL INVENTORY SPACES PROPOSED:		538
TOTAL SPACES PROPOSED:		**764**

NOTE: REQUIRED 7 ADA SPACES LOCATED WITHIN PARKING GARAGE INTERIOR

ELEVATION CERTIFICATE NOTE:

ELEVATION CERTIFICATE(S) MUST BE SUBMITTED UPON COMPLETION OF THE PROPOSED IMPROVEMENTS.

FLOODPLAIN PERMIT NOTE:

IT SHALL BE UNLAWFUL FOR ANY PERSON, PARTNERSHIP, BUSINESS OR CORPORATION TO UNDERTAKE, OR CAUSE TO BE UNDERTAKEN, ANY CONSTRUCTION OR DEVELOPMENT ANYWHERE WITHIN THE FLOODPLAIN IN TOWNSHIP OF WHITEMARSH UNLESS A PERMIT HAS BEEN OBTAINED FROM THE FLOODPLAIN ADMINISTRATOR.

GENERAL BLANKET COMMON ACCESS AND UTILITY EASEMENT NOTE:

A BLANKET EASEMENT IS TO BE ESTABLISHED FOR COMMON ACCESS AND UTILITIES WITHIN THE AREA DEFINED AND ILLUSTRATED ON SHEET C-601 UNLESS OTHERWISE SPECIFIED ON THIS PLAN.

NOTE:

1. THE PROPERTY OWNER SHALL HAVE THE RESPONSIBILITY FOR THE PERPETUAL MAINTENANCE OF THE PERMANENT WATER DETENTION BASIN, BASIN OUTLET STRUCTURES AND PIPES WHICH ARE LOCATED ON HIS PROPERTY. NO CHANGES SHALL BE MADE TO THE STRUCTURES, PIPES OR FINISH GRADING WITHOUT PRIOR WRITTEN APPROVAL FROM THE TOWNSHIP. THE TOWNSHIP HAS THE RIGHT TO ENTER THE LOT TO PERFORM ANY REQUIRED MAINTENANCE WHICH HAS NOT BEEN PROPERLY PERFORMED OR CARRIED OUT IN A TIMELY MANNER THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE COST OF ANY MAINTENANCE WHICH IS PERFORMED BY THE TOWNSHIP. THE TOWNSHIP SHALL LIEN THE PROPERTY FOR SAID COSTS UNTIL THE TOWNSHIP HAS BEEN REIMBURSED IN FULL.
2. THE DEVELOPER OR PROPERTY OWNER SHALL PAY TO THE TOWNSHIP AND TO THE AUTHORITY WHICH TREATS THE SEWAGE THE CURRENT FEES FOR THE TREATMENT AND COLLECTION OF SEWAGE WHEN SUCH FACILITIES ARE MADE AVAILABLE TO THE APPLICANT'S SITE.

STORMWATER BLANKET EASEMENT

A BLANKET STORMWATER EASEMENT IN FAVOR OF WHITEMARSH TOWNSHIP IS PROVIDED FOR ACCESS AND MAINTENANCE PURPOSES ON AND OVER THE PROPERTY, EXCEPT FOR THE PORTIONS OF THE PROPERTY ON WHICH BUILDINGS OR OTHER VERTICAL STRUCTURES HAVE BEEN ERECTED. THE TOWNSHIP OF WHITEMARSH SHALL HAVE THE RIGHT TO INSPECT ALL STORMWATER MANAGEMENT FEATURE AND FACILITIES AND TO REQUIRE REPAIRS, BUT NOT THE OBLIGATION TO MAKE SUCH REPAIRS.

MCPC No.: (14-0121-003)

PROCESSED and REVIEWED. Report prepared by
Montgomery County Planning Commission
in accordance with the Municipalities Planning Code.

Certified this date _____

_____
Montgomery County Planning Commission

LEGEND — PROPOSED

PROPERTY LINE, EASEMENT LINE, SETBACK LINE, BUILDING, RETAINING WALL, CONCRETE CURB, FLUSH CURB, FENCE, GUIDE RAIL, TREELINE, MAILBOX CLUSTER SYMBOL (M), SIDEWALK (CONCRETE), RAMP, SIGN, BOLLARD, PARKING COUNT (10), AREA LIGHT, DRAINAGE INLET, MANHOLE, ENDWALL, FIRE HYDRANT, TRANSFORMER

LEGEND — EXISTING

PROPERTY LINE, R.O.W. LINE, BUILDING, CONCRETE CURB, FENCE, TREELINE, CONCRETE MONUMENT/ IRON PIN, SIGN, TREE, DRAINAGE INLET, STORM/SANITARY MANHOLE, WATER/GAS VALVES, FIRE HYDRANT, UTILITY POLE, OVERHEAD UTILITY WIRES, 100 YEAR FLOOD PLAIN (100 YR), 500 YEAR FLOOD PLAIN (500 YR), FLOOD WAY, EDGE OF STREAM, DELINEATION FLAGS

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PROJECT No.: PAB220113.00
DRAWN BY: BS
CHECKED BY: MSL
DATE: 03/15/2023
CAD I.D.: PAB220113.00-LDVP-0A

PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

500 PENNSYLVANIA AVENUE WHITEMARSH TOWNSHIP MONTGOMERY COUNTY, PA

BOHLER
74 W BROAD STREET, SUITE 500
BETHLEHEM, PA 18018
Phone: (610) 709-9971
Fax: (610) 709-9976
www.BohlerEngineering.com

J. A. BEAVAN — PROFESSIONAL — PROFESSIONAL ENGINEER — PENNSYLVANIA LICENSE No. PE061005 — NEW JERSEY LICENSE No. 24GE04036500

SHEET TITLE:

SITE PLAN

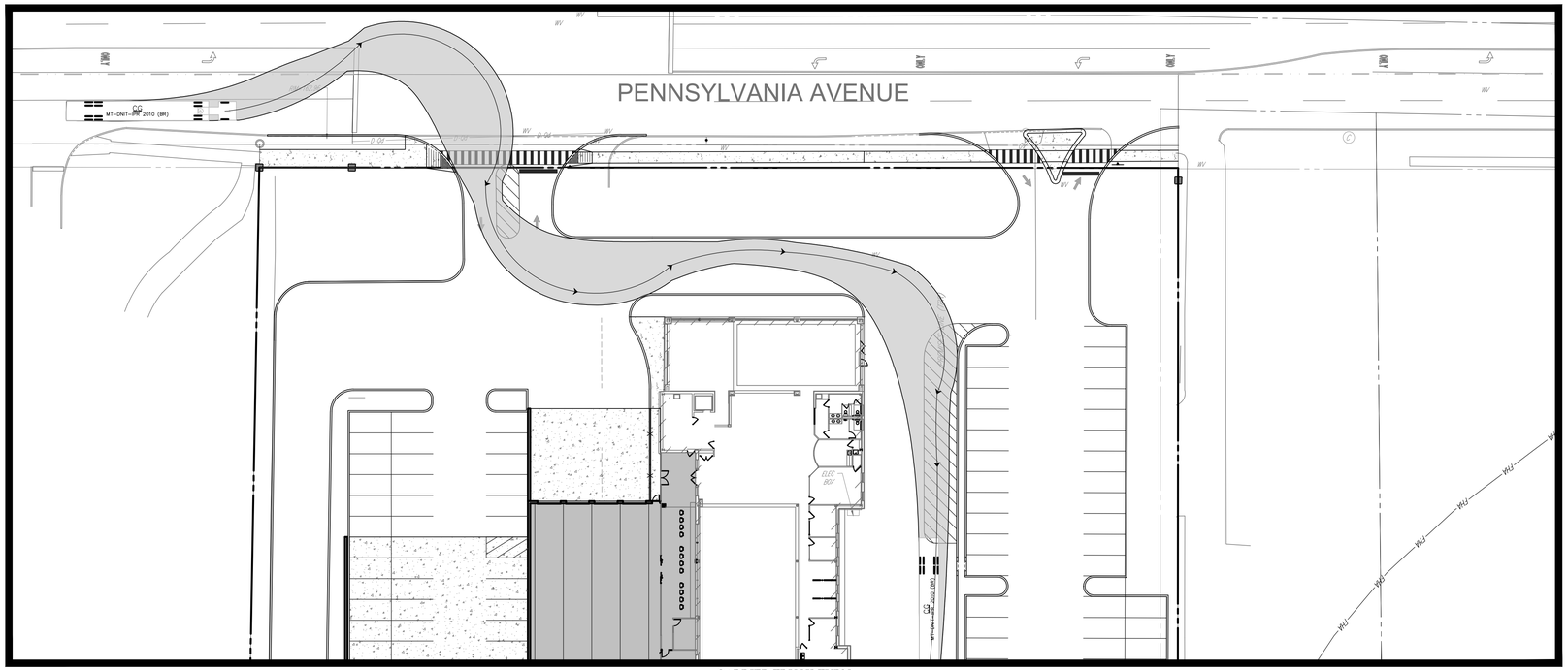
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C-303

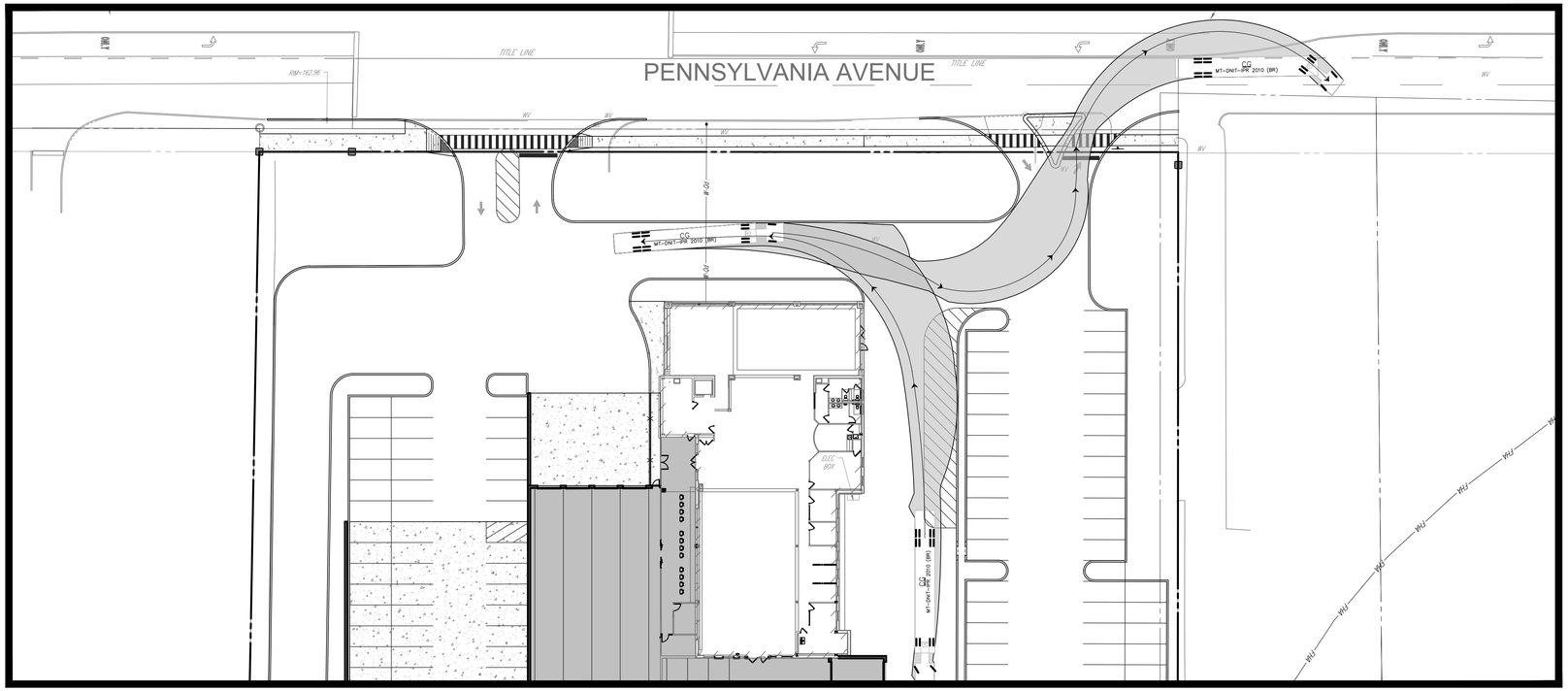
RECORD PLAN 5 OF 9

ORG. DATE - 03/15/2023

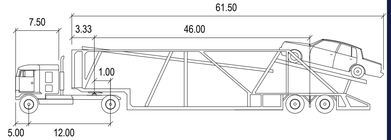
R:\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-LDVP-0A-----LAYOUT: C-303 SITE



CARRIER TRUCK TURN



CARRIER TRUCK TURN



Auto Carrier	feet		
Tractor Width	8.00	Lock to Lock Time	6.0
Trailer Width	8.53	Steering Angle	16.5
Tractor Track	8.00	Articulating Angle	70.0
Trailer Track	8.50		

30 15 7.5 0 30

1"= 30'

R:\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-LDVP-0A---LAYOUT, C-304 TRUCK TURNING

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PENNSYLVANIA LICENSE No. PE082005
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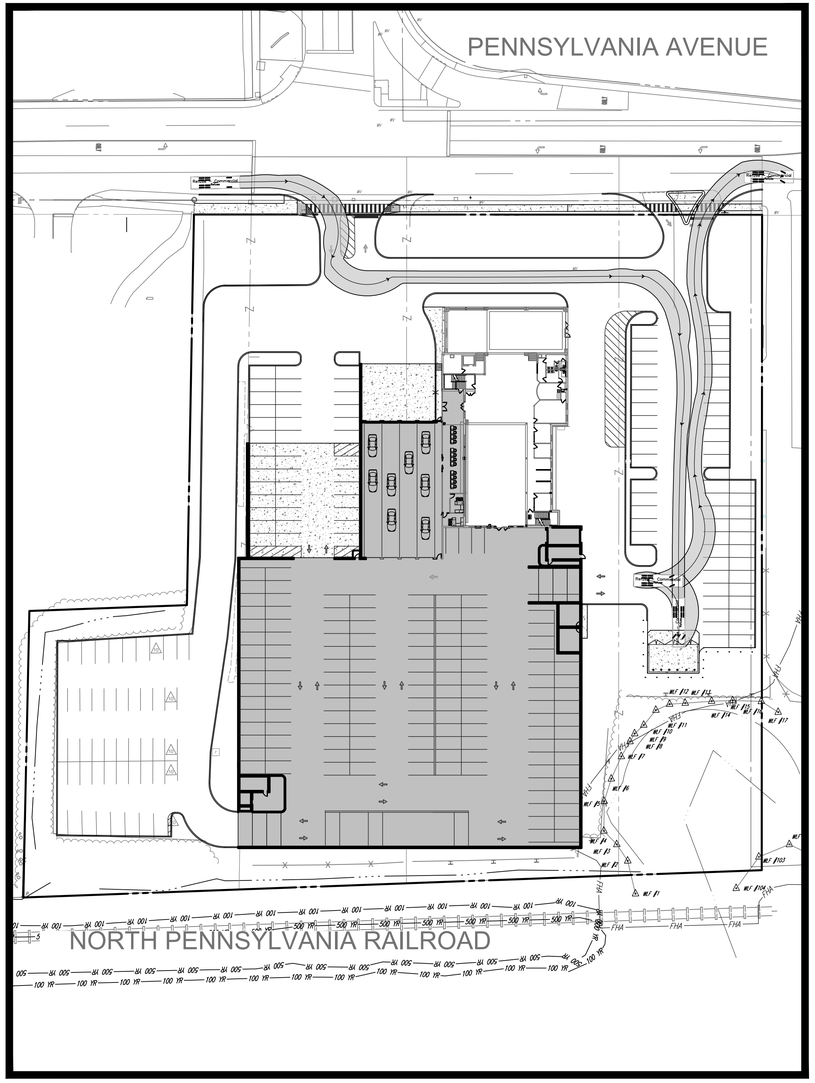
SHEET TITLE:

TRUCK TURNING PLAN - AUTO CARRIER

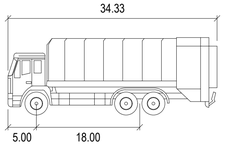
SHEET NUMBER:

C-304

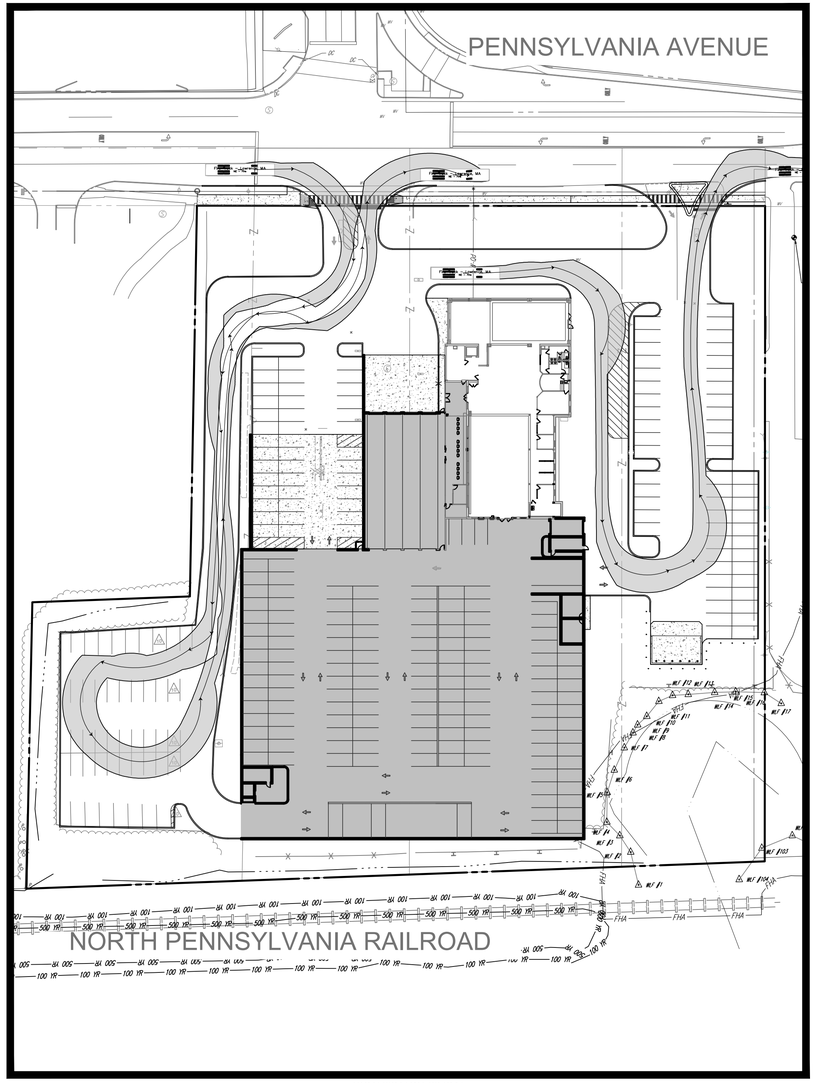
ORG. DATE - 03/15/2023



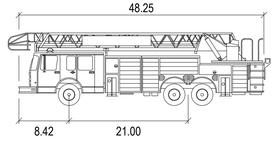
REFUSE TRUCK TURN



Garbage Truck	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.0



FIRE TRUCK TURN



Township Fire Truck	feet
Width	: 8.83
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 48.0

50 25 12.5 0 50
1"= 50'

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PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

**500 PENNSYLVANIA AVENUE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA**

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SHEET TITLE:

TRUCK TURNING PLAN - FIRE & REFUSE

SHEET NUMBER:

C-305

ORG. DATE - 03/15/2023

R:\2022\PAB220113.00\CAD\PA\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-LDVP-0A---LAYOUT: C-305 FIRE - REFUSE

PENNSYLVANIA AVENUE
(A.K.A. S.R. 2027)
(VARIABLE WIDTH LEGAL R.O.W.)
(ASPHALT ROADWAY)
(TWO WAY TRAFFIC)

REQUIRED R.O.W. LINE (PER REF. MAP #7)

APPROX. MUNICIPAL BOUNDARY (PER REF. MAP #1)

LEGAL R.O.W. LINE (PER REF. MAP #8)

N37°07'41"E 30.35'

S53°50'10"E 40.00'

S53°53'10"E 123.80'

S53°58'40"E 232.46'

498.71'

IRON PIN FOUND

PROP. ULTIMATE ROW

40' HALF ULTIMATE ROW

24' HALF DRIVEWAY

TBM-B
MAG NAIL
ELEV=164.38'
SEE NOTE #8

N37°06'50"E 383.21'

PROP. UNDERGROUND BASIN (UG2)

TRAFFIC SIGNAL EASEMENT (PER D.B. 2935, PG. 264)

ACCESS EASEMENT (PER D.B. 5728, PG. 2288)

PROP. RAILING

PROP. UNDERGROUND BASIN (UG3)

EXISTING BUILDING TO REMAIN (11,370 SF) FFE = 170.11'

SERVICE DRIVE LANES FFE = 170.00'

PROPOSED CAR DEALERSHIP
69,182 SF
5 STORIES
HEIGHT = 55.0 FT.

PARKING LEVEL 1 FFE = 170.00'

PROP. START FOR LOUVERED BUILDING FACE TO FLOOD STORAGE AREA

PROP. UNDERGROUND BASIN (UG1)

PROPOSED LIMIT OF DISTRURBANCE = 4.89 AC.

30' WIDE PECO EASEMENT (PER D.B. 5116, PG. 708)

PROPOSED NPDES BOUNDARY DISTRURBANCE = 5.13 AC.

BLOCK 51, UNIT 1
APN #65-00-08764-20-7
N/F LANDS OF
WHITEMARSH HOTEL ASSOCIATES LP

POST FOUND

S55°58'10"E 110.16'

N37°06'50"E 200.00'

S36°96'50"W

N55°58'10"W 150.22'

N56°01'40"W 116.96'

N56°01'40"W 248.49'

BEGIN RETAINING WALL

ZONE AE

ZONE X

ZONE AE (FLOODWAY)

SANDY RUN

WETLANDS

NORTH PENNSYLVANIA RAILROAD

APPROXIMATE GRAPHICAL PLOTTING OF FLOOD HAZARD LINE (PER RFF. MAP 2)

BLOCK 51, UNIT 47 APN #65-00-08779-00-3
N/F LANDS OF
PAMCPA REAL ESTATE, LLLP
D.B. 6293, PG. 720

6' WOOD FENCE

6' CLF

W/3' BARBED WIRE

EDGE OF WOODS

WOODED

SMILE

30 15 7.5 0 30
1"= 30'



USGS MAP

AMBLER QUAD

SCALE: 1"=2,000'

1000' 0 2000'

LEGEND — PROPOSED

SPOT ELEVATION	123.00 (TC 123.50 BC 123.00)
CONTOUR ELEVATION	100
BUILDING	
RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
RAMP	
AREA LIGHT	
DRAINAGE INLET	
MANHOLE	
ENDWALL	
FIRE HYDRANT	
TRANSFORMER	
STORM PIPE	
ELECTRIC	UGET&C
SANITARY SEWER PIPE	S
WATER PIPE	W
NPDES BOUNDARY	NPDES
LIMIT OF DISTURBANCE	LOD

LEGEND — EXISTING

PROPERTY LINE	
R.O.W. LINE	
BUILDING	
CONCRETE CURB	
FENCE	X
TREELINE	
CONCRETE MONUMENT/ IRON PIN	
SIGN	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
FIRE HYDRANT	
UTILITY POLE	
OVERHEAD UTILITY WIRES	OH
GAS LINE	G
WATER LINE	W
STORM PIPE	
CONTOUR ELEVATION	400
100 YEAR FLOOD PLAIN	100 YR
500 YEAR FLOOD PLAIN	500 YR
FLOOD WAY	FWA
EDGE OF STREAM DELINEATION FLAGS	WF

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NEW YORK LICENSE No. 095804
NEW JERSEY LICENSE No. 24GE03936500

SHEET TITLE:

GRADING PLAN

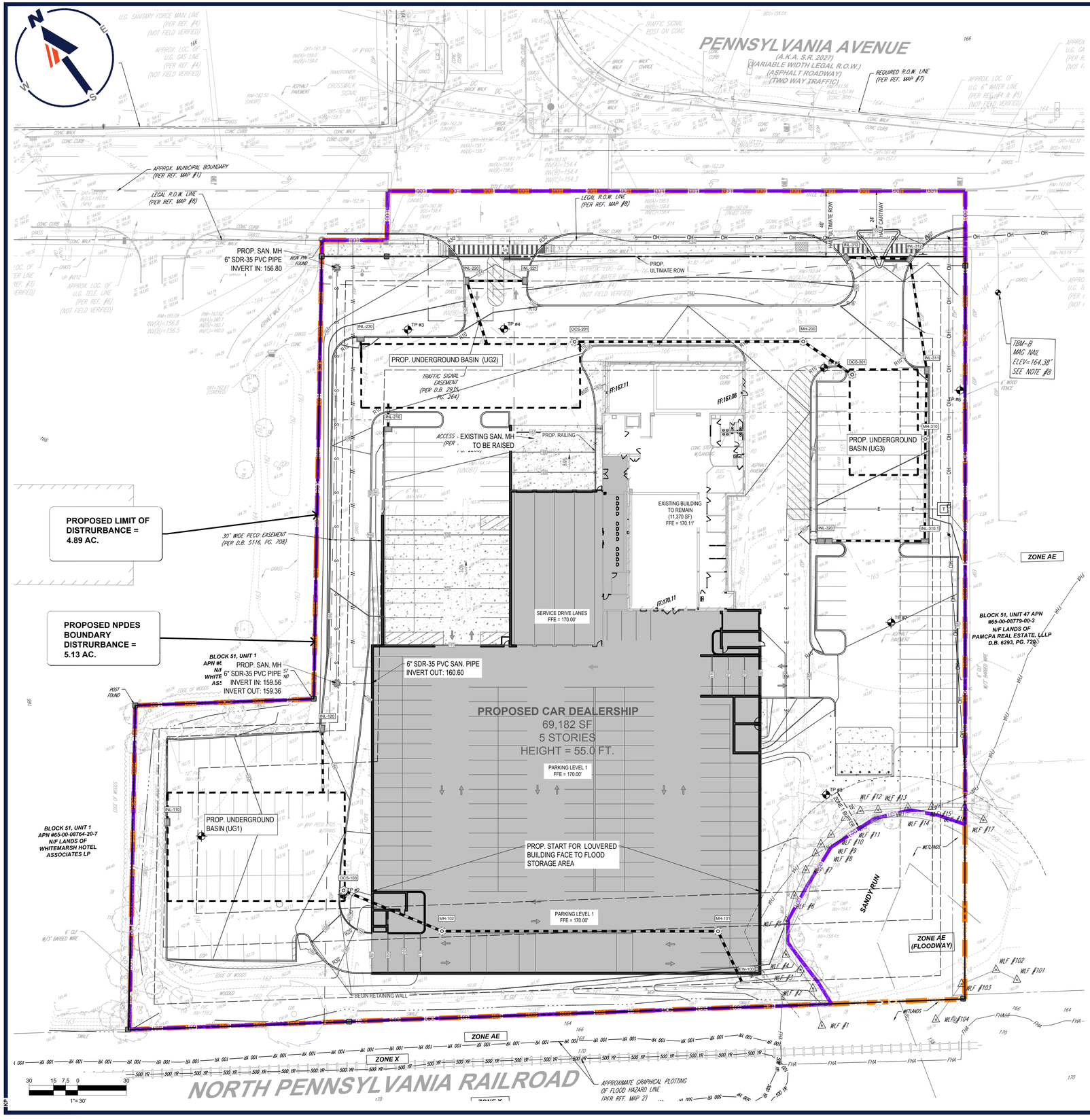
SHEET NUMBER:

C-401

ORG. DATE - 03/15/2023

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KP





USGS MAP

AMBLER QUAD

SCALE: 1"=2,000'

1000' 0 2000'

STORM SEWER PIPE SCHEDULE

FROM	TO	SIZE (IN.)	TYPE	LENGTH (FT.)	SLOPE(%)
INL-120	UG1	15"	HDPE	39	1.00%
INL-210	UG2.	15"	HDPE	17	1.00%
INL-220	UG2	18"	HDPE	42	0.67%
INL-220	INL-221	15"	HDPE	36	0.61%
INL-230	UG.2	15"	HDPE	12	1.50%
INL-310.1	MH-310	15"	HDPE	63	0.50%
INL-311	MH-310	15"	HDPE	42	0.50%
INL-312	INL-313	15"	HDPE	39	0.50%
INL-312	INL-311	15"	HDPE	70	0.50%
INL-320	INL-310.1	15"	HDPE	64	0.50%
MH-101	EW-100	18"	HDPE	34	0.50%
MH-102	MH-101	18"	HDPE	170	0.50%
MH-310	UG3	15"	HDPE	7	0.50%
OCS-103	MH-102	18"	HDPE	66	1.81%
OCS-201	MH-200	18"	HDPE	141	0.50%
OCS-301	MH-200	18"	HDPE	36	0.50%

STORM STRUCTURE SCHEDULE

NAME	TYPE	GRT/RIM ELEV. (FT.)	INVERTS
EW-100	ENDWALL	158.34'	INV IN = 156.18' (18" HDPE)
INL-110	TYPE C INLET	330.45'	
INL-120	TYPE C INLET	164.04'	INV OUT = 159.18' (15" HDPE)
INL-210	TYPE C INLET	166.25'	INV OUT = 159.97' (15" HDPE)
INL-220	TYPE C INLET	164.00'	INV IN = 160.08' (15" HDPE) INV OUT = 160.08' (18" HDPE)
INL-221	TYPE C INLET	164.04'	INV OUT = 160.30' (15" HDPE)
INL-230	TYPE C INLET	165.07'	INV OUT = 159.98' (15" HDPE)
INL-310.1	TYPE C INLET	164.28'	INV IN = 160.62' (15" HDPE) INV OUT = 160.62' (15" HDPE)
INL-311	TYPE C INLET	164.93'	INV IN = 160.52' (15" HDPE) INV OUT = 160.52' (15" HDPE)
INL-312	TYPE C INLET	163.83'	INV IN = 160.87' (15" HDPE) INV OUT = 160.87' (15" HDPE)
INL-313	TYPE C INLET	163.61'	INV OUT = 161.07' (15" HDPE)
INL-320	TYPE C INLET	164.97'	INV OUT = 160.94' (15" HDPE)
MH-101	MANHOLE	161.00'	INV IN = 156.35' (18" HDPE) INV OUT = 156.35' (18" HDPE)
MH-102	MANHOLE	161.02'	INV IN = 157.60' (18" HDPE) INV OUT = 157.20' (18" HDPE)
MH-200	MANHOLE	165.52'	INV IN = 159.09' (18" HDPE) INV IN = 160.10' (18" HDPE)
MH-310	MANHOLE	165.01'	INV IN = 160.31' (15" HDPE) INV IN = 160.31' (15" HDPE) INV OUT = 160.31' (15" HDPE)
OCS-103	MANHOLE	163.40'	INV OUT = 158.79' (18" HDPE)
OCS-201	MANHOLE	165.77'	INV OUT = 159.80' (18" HDPE)

LEGEND

PROPOSED

STORM PIPE
ELECTRIC
SANITARY SEWER PIPE
WATER PIPE
AREA LIGHT
DRAINAGE INLET
MANHOLE
ENDWALL
FIRE HYDRANT
TRANSFORMER
CONTOUR ELEVATION
BUILDING
RETAINING WALL
CONCRETE CURB
FLUSH CURB
NPDES BOUNDARY
LIMIT OF DISTURBANCE

LEGEND

EXISTING

PROPERTY LINE
R.O.W. LINE
BUILDING
CONCRETE CURB
FENCE
TREELINE
CONCRETE MONUMENT/ IRON PIN
SIGN
TREE
DRAINAGE INLET
STORM/SANITARY MANHOLE
WATER/GAS VALVES
FIRE HYDRANT
UTILITY POLE
OVERHEAD UTILITY WIRES
WATER LINE
STORM PIPE
CONTOUR ELEVATION
100 YEAR FLOOD PLAIN
500 YEAR FLOOD PLAIN
EDGE OF STREAM DELINEATION FLAGS
FLOOD WAY

UTILITY COMPANY	PHONE NUMBER
AMBLER BOROUGH	215-646-1000
AQUA PENNSYLVANIA, INC.	610-525-1400
AT & T	215-233-3474
BUCKS COUNTY WATER & SEWER	215-750-0585
COMCAST CABLE COMMUNICATIONS, INC.	215-918-3137
COMCAST CABLEVISION	215-961-3800
NORTH WALES WATER	215-699-4836
PECO	610-292-8057
SEPTA.	215-580-7852
UPPER DUBLIN TWP.	215-643-1600
VERIZON	215-657-9260
WHITEMARSH TOWNSHIP	610-825-3535

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
INDUSTRIAL DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

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ACT 287 OF 1974

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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PROJECT No.:	PAB220113.00
DRAWN BY:	BS
CHECKED BY:	MSL
DATE:	03/15/2023
CAD I.D.:	PAB220113.00-GDUL-0A

PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

500 PENNSYLVANIA AVENUE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA

BOHLER
74 W BROAD STREET, SUITE 500
BETHLEHEM, PA 18018
Phone: (610) 709-9971
Fax: (610) 709-9976
www.BohlerEngineering.com

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J. A. BEAVAN
PROFESSIONAL
JOSEPH A. BEAVAN
PROFESSIONAL ENGINEER
PE082005
PENNSYLVANIA LICENSE No. PE082005
NEW YORK LICENSE No. 110104
NEW JERSEY LICENSE No. GE49503600

SHEET TITLE:

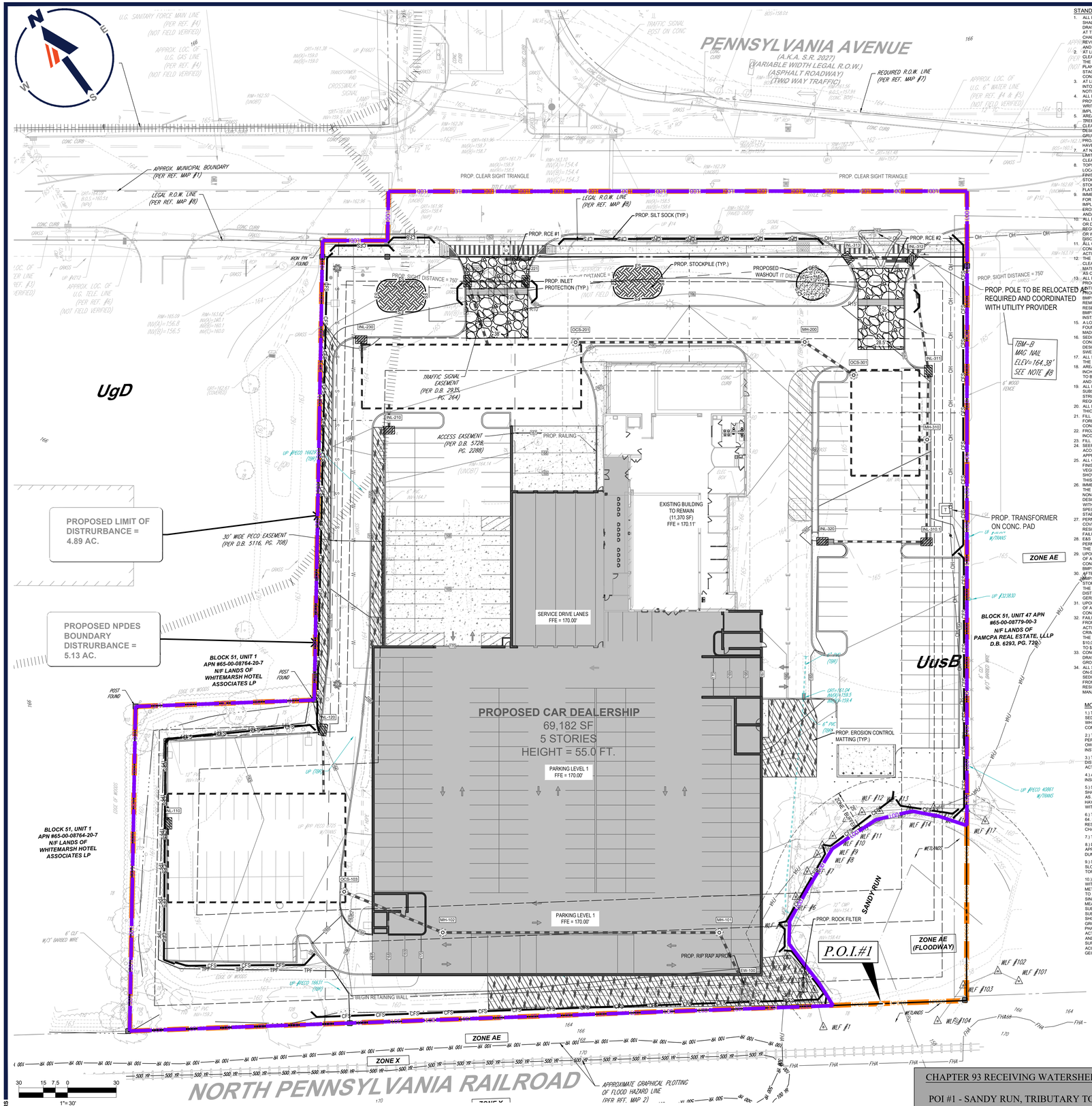
UTILITY PLAN

SHEET NUMBER:

C-501

ORG. DATE - 03/15/2023

R:\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-GDUL-0A—LAYOUT C-501 UTILITY



STANDARD E&S PLAN NOTES

1. ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.
2. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCTION MEETING.
3. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
4. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.
5. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.
6. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.
7. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
8. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAPS(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER.
9. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT.
10. ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260, 270, 271, 272, 273, 284, 285, 287, 1 ET. SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.
11. ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED.
12. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.
13. ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS.
14. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND RENETTING MUST BE PERFORMED IMMEDIATELY IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.
15. A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.
16. SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEPT INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.
17. ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS.
18. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES – 6 TO 12 INCHES ON COMPACTED SOILS – PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.
19. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.
20. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.
21. FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
22. FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.
23. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.
24. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.
25. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.
26. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN 1 YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.
27. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS.
28. E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT.
29. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPS.
30. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPS MUST BE REMOVED OR CONVERTED TO PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE BMPS SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON.
31. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT TO SCHEDULE A FINAL INSPECTION.
32. FAILURE TO CORRECTLY INSTALL E&S BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE, OR FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S BMPS MAY RESULT IN ADMINISTRATIVE, CIVIL, AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE PENNSYLVANIA CLEAN STREAMS LAW. THE CLEAN STREAMS LAW PROVIDES FOR UP TO $10,000 PER DAY IN CIVIL PENALTIES, UP TO $10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO $25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION.
33. CONCRETE WASH WATER SHALL BE HANDLED IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS. IN NO CASE SHALL IT BE ALLOWED TO ENTER ANY SURFACE WATERS OR GROUNDWATER SYSTEMS.
34. ALL SEDIMENT ACCUMULATED FROM AND REMOVED FROM TEMPORARY BMP'S WILL BE BURIED ON-SITE WITHIN THE PROPOSED LANDSCAPE AREAS OR OTHER ACCEPTABLE AREAS. SEDIMENT THAT IS DEEMED TO NOT BE ACCEPTABLE FOR REUSE ON-SITE WILL BE REMOVED FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 25 PA. CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE.

MONTGOMERY COUNTY SOIL E&S POLLUTION CONTROL NOTES:

1.) THIS PLAN REPRESENTS THE MINIMUM LEVEL OF IMPLEMENTATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROL STRUCTURES. ADDITIONAL FACILITIES OF MEASURES SHALL BE INSTALLED WHERE NECESSARY OR WHERE DIRECTED BY EITHER THE TOWNSHIP OR THE MONTGOMERY COUNTY CONSERVATION DISTRICT AS CONSTRUCTION PROGRESSES.

2.) THE EQUITABLE OWNER/CONSTRUCTION MANAGER IS RESPONSIBLE FOR ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROLS AND SITE STABILIZATION. THE EQUITABLE OWNER/CONSTRUCTION MANAGER SHALL ASSIGN ONE INDIVIDUAL TO BE RESPONSIBLE FOR PROPER INSTALLATION AND MAINTENANCE OF ALL FACILITIES AND MEASURES.

3.) THE PERMITTEE AND/OR THE CONTRACTOR SHALL NOTIFY THE MONTGOMERY COUNTY CONSERVATION DISTRICT THREE (3) DAYS PRIOR TO THE START OF EARTHMOVING ACTIVITY AND WHEN EARTHMOVING ACTIVITIES CEASE.

4.) AFTER EACH RUNOFF EVENT, ALL TEMPORARY SEDIMENTATION CONTROL FACILITIES SHALL BE INSPECTED, CLEANED AND REPAIRED AS NECESSARY.

5.) SHOULD UNFORSEEN EROSIVE CONDITIONS DEVELOP DURING CONSTRUCTION, THE CONTRACTOR SHALL TAKE ACTION TO REMEDY SUCH CONDITIONS AND TO PREVENT DAMAGE TO ADJACENT PROPERTIES AS A RESULT OF INCREASED RUNOFF AND/OR SEDIMENT DISPLACEMENT. STOCKPILES OF WOOD CHIPS, HAY BALES, CRUSHED STONE AND OTHER MULCHES SHALL BE HELD IN READINESS TO DEAL IMMEDIATELY WITH EMERGENCY PROBLEMS OF EROSION.

6.) THE CONTRACTOR IS ADVISED TO BECOME THOROUGHLY FAMILIAR WITH THE PROVISIONS OF APPENDIX 64. EROSION AND CONTROL RULES AND REGULATIONS, TITLE 25, PART 1, DEPARTMENT OF ENVIRONMENTAL RESOURCES, SUB-PART C, PROTECTION OF NATURAL RESOURCES, ARTICLE III, WATER RESOURCES, CHAPTER 102, EROSION CONTROL.

7.) THE CONTRACTOR SHALL DELINEATE, IN THE FIELD, AREAS OF DISTURBANCE AS SHOWN ON THE PLANS.

8.) DUMP SITES WHERE EXCESS EXCAVATED MATERIAL IS TO BE HAULED MUST BE COVERED UNDER MCCD APPROVED SEDIMENT AND EROSION CONTROL PLANS (FOR THAT SPECIFIC ACTIVITY) PRIOR TO ANY DUMPING / EARTH DISTURBANCE ON SAID SITE.

9.) SEDIMENT REMOVED FROM BMPS SHOULD BE DISPOSED OF IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WELANDS, FLOODPLAINS OR DRAINAGE SWALES AND IMMEDIATELY STABILZED, OR PLACED IN TOPSOIL STOCKPILES.

10.) SEVERAL METHODS EXIST TO REDUCE, BUT NOT ELIMINATE, THE INHERENT RISKS OF DEVELOPING WITHIN AN AREA GEOLOGICALLY PRONE TO SINKHOLE DEVELOPMENT. AT A MINIMUM, THE RECOMMENDED METHODS INCLUDE RELATIVELY MINOR SITE PLANNING CONSIDERATIONS AND CONSTRUCTION MEASURES TO MINIMIZE RISKS INHERENT TO THE REGION. DESIGN MEASURES TO REDUCE THE RISK OF TRIGGERING SINKHOLES SHOULD BE INCORPORATED INTO THE SITE PLAN FOR THE REFERENCED PROPERTY. SUCH MEASURES SHOULD INCLUDE USING WATER TIGHT UTILITY CONNECTIONS, AVOIDING THE PLACEMENT OF SUBSURFACE IRRIGATION SYSTEMS ADJACENT TO BUILDINGS OR OTHER STRUCTURES, AND PROPERTY SUBGRADE GRADING TO AVOID CONCENTRATIONS OF SURFACE RUNOFF. REGIONAL DEVELOPMENT ALSO SHOULD BE MONITORED DURING THE LIFE OF THE FACILITY TO IDENTIFY CONDITIONS WHICH MIGHT AFFECT GROUNDWATER LEVELS OR DRAINAGE PATTERNS. IF PRUDENT DESIGN MEASURES AND CONSTRUCTION PHASE CONSIDERATIONS ARE PROPERTY IMPLEMENTED, THE LONG TERM RISK OF POTENTIAL SINKHOLE ACTIVITY MAY BE REDUCED. HOWEVER, SINKHOLES CAN FORM UNDETECTED EVEN IF PRUDENT DESIGN AND CONSTRUCTION PRACTICES ARE IMPLEMENTED. IN THE EVENT THAT A SINKHOLE DEVELOPS ON SITE, SURFACE WATER SHALL BE DIVERTED AWAY FROM THE AREA AND THE SINKHOLE SHALL BE REPAIRED IN ACCORDANCE WITH THE RECOMMENDATIONS OF A PROFESSIONAL ENGINEER WITH EXPERIENCE IN GEOTECHNICAL ENGINEERING.

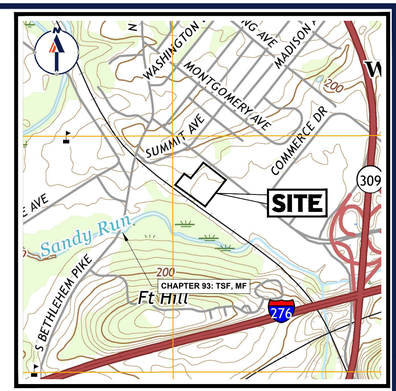
E&S PLANNING AND DESIGN NOTES

GENERALLY, THE PROPOSED BMPS WERE SELECTED TO:

- PRESERVE THE INTEGRITY OF THE SANDY RUN AND MAINTAIN AND PROTECT THE PHYSICAL, BIOLOGICAL AND CHEMICAL QUALITIES OF THE WATERS THROUGH MITIGATING ANY INCREASES IN STORMWATER RUNOFF VOLUME DUE TO THE PROPOSED DEVELOPMENT AND TREATING RUNOFF FOR WATER QUALITY PURPOSES PRIOR TO BEING DISCHARGED FROM THE SITE.
- PREVENT AN INCREASE IN RATE OF STORMWATER RUNOFF. THE PROPOSED STORMWATER MANAGEMENT DESIGN HAS MATCHED OR REDUCED THE POST-DEVELOPMENT PEAK RATE FROM THE PRE-DEVELOPMENT CONDITIONS, AS REQUIRED BY WHITEMARSH TOWNSHIP STORMWATER MANAGEMENT ORDINANCE DUE TO THE REDUCTION IN STORMWATER RUNOFF VOLUME.
- TO THE GREATEST EXTENT FEASIBLE, MINIMIZE ANY INCREASE IN STORMWATER RUNOFF VOLUME BY INCORPORATING ONE (1) SUBSURFACE INFILTRATION BEDS, ONE (1) UNDERGROUND DETENTION BASIN. RESULTANTLY, STORMWATER RUNOFF VOLUME HAS BEEN REDUCED BELOW PRE-DEVELOPMENT LEVELS.
- MINIMIZE IMPERVIOUS SURFACES AND BREAK UP OR DISCONNECT THE FLOW OF RUNOFF OVER IMPERVIOUS SURFACES. RUNOFF FROM IMPERVIOUS AREAS IS DIRECTED TO WATER QUALITY AND INFILTRATION BMPS IN ORDER TO PRE-TREAT RUNOFF PRIOR TO BEING DISCHARGED FROM THE SITE. THE SITE CONVEYS RUNOFF THROUGH A SERIES OF WATER QUALITY AND INFILTRATION BMPS IN ORDER TO MAXIMIZE PRE-TREATMENT OF RUNOFF AND FURTHER MITIGATE ANY IMPACT TO PEAK RATE AND VOLUME IN THE POST DEVELOPMENT CONDITIONS.
- MAXIMIZE THE PROTECTION OF EXISTING DRAINAGE FEATURES AND EXISTING VEGETATION. THE PROPOSED DEVELOPMENT HAS BEEN DESIGNED TO MAINTAIN THE GENERAL DRAINAGE PATTERNS OF THE SITE.
- MINIMIZE LAND CLEARING AND GRADING. THE CURRENT 3.64 AC. TRACT HAS BEEN DESIGNED TO ONLY IMPACT APPROXIMATELY 3.37 AC. OF EARTH DISTURBANCE WITHIN THE TRACT BOUNDARY (3.54 AC. TOTAL EARTH DISTURBANCE).
- MINIMIZE SOIL COMPACTION. THE SEQUENCE OF CONSTRUCTION HAS BEEN DESIGNED TO LIMIT THE EXTENT AND DURATION OF DISTURBANCE ACTIVITIES AND TO LIMIT THE EXTENT OF HEAVY TRAFFIC OVER SENSITIVE AREAS NECESSARY FOR THE PCSM DESIGN.
- UTILIZES OTHER MEASURES OR CONTROLS THAT PREVENT OR MINIMIZE GENERATION OF INCREASED STORMWATER RUNOFF.

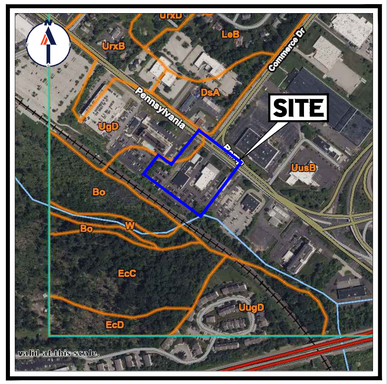
NOTES

1. WHENEVER SEDIMENTATION IS CAUSED BY AN EARTH DISTURBANCE ACTIVITY, IT SHALL BE THE RESPONSIBILITY OF THE PERSON CAUSING SUCH SEDIMENTATION TO REMOVE IT FROM ALL AFFECTED SURFACES, DRAINAGE SYSTEMS AND WATERCOURSES, ON SITE AND OFF SITE, AND TO REPAIR ANY DAMAGE AT HIS EXPENSE IMMEDIATELY.
2. PLANS FOR THE EARTH DISTURBANCE ACTIVITY, BEARING THE STAMP OF APPROVAL OF THE TOWNSHIP ENGINEER, SHALL BE MAINTAINED AT THE SITE DURING THE PROGRESS OF THE GRADING WORK AND UNTIL THE WORK HAS BEEN COMPLETED.
3. ALL EROSION AND SEDIMENTATION CONTROL DEVICES TO BE IN PLACE AND FUNCTIONING PRIOR TO ANY EARTH DISTURBANCE ACTIVITY.
4. DURING THE PERIOD OF LAND DISTURBANCE, RUNOFF SHALL BE CONTROLLED PRIOR TO ENTERING ANY PROPOSED INFILTRATION AREA. AREAS PROPOSED FOR INFILTRATION BMPS SHALL BE PROTECTED FROM SEDIMENTATION AND COMPACTION DURING THE CONSTRUCTION PHASE, SO AS TO MAINTAIN THEIR MAXIMUM INFILTRATION CAPACITY.



USGS MAP

AMBLER QUAD
SCALE: 1"=2,000'
1000' 0 2000'



SOIL MAP

SCALE: 1"=500'
250' 0 500'

LEGEND	
EXISTING	
PROPERTY LINE	
R.O.W. LINE	
BUILDING	
CONCRETE CURB	
FENCE	
TREELINE	
CONCRETE MONUMENT/ IRON PIN	
SIGN	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
FIRE HYDRANT	
UTILITY POLE	
OVERHEAD UTILITY WIRES	
GAS LINE	
WATER LINE	
STORM PIPE	
CONTOUR ELEVATION	
100 YEAR FLOOD PLAIN	100 YR
500 YEAR FLOOD PLAIN	500 YR
FLOOD WAY	FLWY
WETLAND FLAG	

LEGEND	
PROPOSED	
LIMIT OF DISTURBANCE	
PROJECT SITE BOUNDARY	
LIMIT OF DISTURBANCE / PROJECT SITE BOUNDARY	
COMPOST FILTER SOCK	
TREE PROTECTION FENCE	
BARRICADE	
INLET PROTECTION	
ROCK FILTER	
CONCRETE WASHOUT	
TEMPORARY STOCKPILE	
ROCK CONSTRUCTION ENTRANCE	
NAGSC150	

CHAPTER 93 RECEIVING WATERSHED AND STREAM CLASSIFICATION:

POI #1 - SANDY RUN, TRIBUTARY TO WISSAHICKON CREEK - TSF, MF

THIS PLAN IS FOR SOIL EROSION & SEDIMENT POLLUTION CONTROL PURPOSES ONLY

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
NEPA AND PLANNING
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PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

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SHEET TITLE:

SOIL EROSION & SEDIMENT POLLUTION CONTROL PLAN

SHEET NUMBER:

C-601

ORG. DATE - 03/15/2023

R:\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-SESC-0A-----LAYOUT: C-601 E&S

E&S - GENERAL NOTES:

1. THIS PLAN REPRESENTS THE MINIMUM LEVEL OF IMPLEMENTATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROL STRUCTURES. ADDITIONAL FACILITIES OR MEASURES SHALL BE INSTALLED WHERE NECESSARY OR WHERE DIRECTED BY EITHER THE TOWNSHIP OR THE COUNTY CONSERVATION DISTRICT AS CONSTRUCTION PROGRESSES.

2. THE OWNER/CONSTRUCTION MANAGER IS RESPONSIBLE FOR ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROLS AND SITE STABILIZATION. THE OWNER SHALL ASSIGN ONE INDIVIDUAL TO BE RESPONSIBLE FOR PROPER INSTALLATION AND MAINTENANCE OF ALL FACILITIES AND MEASURES.

3. PROTECTION TO THE EXISTING TREES AND SHRUBS SHALL BE TAKEN BY THE CONTRACTOR TO ELIMINATE UNNECESSARY DAMAGE.

4. ANY DRY FILL HAULED OFFSITE MUST BE TAKEN TO A LOCATION WITH AN EROSION AND SEDIMENTATION CONTROL PLAN WHICH HAS BEEN REVIEWED BY THE COUNTY CONSERVATION DISTRICT FOR ADEQUACY.

5. EROSION AND SEDIMENTATION CONTROLS MUST BE CONSTRUCTED, STABILIZED, AND FUNCTIONAL BEFORE SITE DISTURBANCE WITHIN TRIBUTARY AREAS OF THOSE CONTROLS.

6. STOCKPILES MUST BE STABILIZED IMMEDIATELY.

7. NO CHANGES SHALL BE MADE IN THE CONTOUR OF THE LAND. NO GRADING, EXCAVATING, REMOVAL OR DESTRUCTION OF THE TOPSOIL, TREES OR OTHER VEGETATIVE COVER OF THE LAND SHALL BE COMMENCED WITHIN A PROPOSED SUBDIVISION OR LAND DEVELOPMENT TRACT UNTIL SUCH TIME THAT A PLAN FOR SEDIMENTATION CONTROL AND MINIMIZING EROSION HAS BEEN REVIEWED AND FOUND SATISFACTORY BY THE COUNTY CONSERVATION DISTRICT AND REVIEWED AND APPROVED BY THE TOWNSHIP, OR THERE HAS BEEN A DETERMINATION BY THE TOWNSHIP, UPON RECOMMENDATION BY THE COUNTY CONSERVATION DISTRICT, THAT SUCH PLANS ARE NOT NECESSARY.

8. BEFORE INITIATING ANY REVISIONS TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED E&S CONTROL PLAN, THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE COUNTY CONSERVATION DISTRICT.

9. THE OPERATOR SHALL ASSURE THAT AN EROSION AND SEDIMENT CONTROL PLAN HAS BEEN PREPARED, APPROVED BY THE COUNTY CONSERVATION DISTRICT, AND IS BEING IMPLEMENTED AND MAINTAINED FOR ALL SOIL AND/OR ROCK SPOIL AND BORROW AREAS, REGARDLESS OF THEIR LOCATIONS.

10. CONTRACTOR SHALL USE TREADED MACHINERY AND MINIMIZE SOIL COMPACTION WHEREVER POSSIBLE.

MAINTENANCE, MONITORING & INSPECTION PROGRAM

§102.4(b)5)(x)

UNTIL THE SITE IS STABILIZED AND DURING CONSTRUCTION ACTIVITIES, ALL BMPs MUST BE MAINTAINED PROPERLY BY THE CONTRACTOR. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL BMPs AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS TO ENSURE THEIR EFFECTIVE AND EFFICIENT OPERATION. SEE EROSION AND SEDIMENT DETAILS FOR ADDITIONAL INSPECTION AND MAINTENANCE REQUIREMENTS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN-OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING, AND RENETTING MUST BE PERFORMED IMMEDIATELY AND IN ACCORDANCE WITH THESE PROCEDURES, PLANS AND DETAILS. ANY AREAS DISTURBED DURING MAINTENANCE MUST BE STABILIZED IMMEDIATELY IN ACCORDANCE WITH THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS. ALL SITE INSPECTIONS MUST BE DOCUMENTED IN AN INSPECTION LOG KEPT FOR THIS PURPOSE INDICATING THE COMPLIANCE ACTIONS AND THE DATE, TIME AND NAME OF THE PERSON CONDUCTING THE INSPECTION. THE INSPECTION LOG MUST BE KEPT ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE DISTRICT UPON REQUEST.

INSPECTIONS SHALL EVALUATE DISTURBED AREAS AND AREAS USED FOR STORING MATERIALS THAT ARE EXPOSED TO RAINFALL FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM OR DISCHARGING FROM THE SITE. IF NECESSARY, THE MATERIALS MUST BE COVERED OR ORIGINAL COVERS MUST BE REPAIRED OR SUPPLEMENTED. ALL AREAS DISTURBED DURING THE EARTHWORK PHASE OF CONSTRUCTION MUST BE TEMPORARILY SEEDED AND STABILIZED IF STABILIZATION CANNOT BE ACHIEVED WITHIN FOUR (4) DAYS. ALSO, PROTECTIVE BERMS MUST BE CONSTRUCTED, IF NEEDED, IN ORDER TO CONTAIN RUNOFF FROM MATERIAL STORAGE AREAS.

GRASSED AREAS SHALL BE INSPECTED TO CONFIRM THAT A HEALTHY STAND OF GRASS IS MAINTAINED. THE SITE HAS ACHIEVED FINAL STABILIZATION ONCE ALL AREAS ARE COVERED WITH BUILDING FOUNDATION OR PAVEMENT, OR HAVE A STAND OF GRASS WITH AT LEAST 70 PERCENT DENSITY OR GREATER IN ACCORDANCE WITH PERMIT REQUIREMENTS. THE VEGETATIVE DENSITY MUST BE MAINTAINED TO BE CONSIDERED STABILIZED. AREAS MUST BE WATERED, FERTILIZED, AND RESEEDED AS NEEDED TO ACHIEVE THIS REQUIREMENT.

ALL DISCHARGE POINTS MUST BE INSPECTED TO DETERMINE WHETHER EROSION AND SEDIMENT CONTROL MEASURES ARE EFFECTIVE IN PREVENTING DISCHARGE OF SEDIMENT FROM THE SITE OR IMPACTS TO RECEIVING WATERS.

VISUAL INSPECTIONS
THE PERMITTEE AND CO-PERMITTEE(S) MUST ENSURE THAT VISUAL SITE INSPECTIONS ARE CONDUCTED WEEKLY, AND WITHIN 24 HOURS AFTER EACH MEASURABLE RAINFALL EVENT THROUGHOUT THE DURATION OF CONSTRUCTION AND UNTIL THE RECEIPT AND ACKNOWLEDGEMENT OF THE NOT BY THE DEPARTMENT OR AUTHORIZED CONSERVATION DISTRICT. THE VISUAL SITE INSPECTIONS AND REPORTS SHALL BE COMPLETED IN A FORMAT PROVIDED BY THE DEPARTMENT, AND CONDUCTED BY QUALIFIED PERSONNEL TRAINED AND EXPERIENCED IN EROSION AND SEDIMENT CONTROL, TO ASCERTAIN THAT E&S BMPs AND PCSM BMPs ARE PROPERLY CONSTRUCTED AND MAINTAINED TO EFFECTIVELY MINIMIZE POLLUTION TO THE WATERS OF THIS COMMONWEALTH. A WRITTEN REPORT OF EACH INSPECTION SHALL BE KEPT AND INCLUDE AT A MINIMUM:

(1) A SUMMARY OF SITE CONDITIONS, E&S BMP AND PCSM BMP, IMPLEMENTATION AND MAINTENANCE AND COMPLIANCE ACTIONS; AND

(2) THE DATE, TIME, NAME AND SIGNATURE OF THE PERSON CONDUCTING THE INSPECTION.

NONCOMPLIANCE REPORTING
WHERE E&S, PCSM OR PPC BMPs ARE FOUND TO BE INOPERATIVE OR INEFFECTIVE DURING AN INSPECTION, OR ANY OTHER TIME, THE PERMITTEE AND CO_PERMITTEE(S) SHALL, WITHIN 24 HOURS, CONTACT THE DEPARTMENT OR AUTHORIZED CONSERVATION DISTRICT, BY PHONE OR PERSONAL CONTACT, FOLLOWED BY THE SUBMISSION OF A WRITTEN REPORT WITHIN 5 DAYS OF THE INITIAL CONTACT. NONCOMPLIANCE REPORTS SHALL INCLUDE THE FOLLOWING INFORMATION:

(1) ANY CONDITION ON THE PROJECT SITE WHICH MAY ENDANGER PUBLIC HEALTH, SAFETY, OR THE ENVIRONMENT, OR INVOLVE INCIDENTS WHICH CAUSE OR THREATEN POLLUTION;

(2) THE PERIOD OF NONCOMPLIANCE, INCLUDING EXACT DATES AND TIMES AND/OR ANTICIPATED TIME WHEN THE ACTIVITY WILL RETURN TO COMPLIANCE;

(3) STEPS BEING TAKEN TO REDUCE, ELIMINATE, AND PREVENT RECURRENCE OF THE NONCOMPLIANCE; AND

(4) THE DATE OR SCHEDULE OF DATES, AND IDENTIFYING REMEDIES FOR CORRECTING NONCOMPLIANCE CONDITIONS.

REDUCTION, LOSS, OR FAILURE OF THE BMPs
UPON REDUCTION, LOSS, OR FAILURE OF THE BMPs, THE PERMITTEE AND CO_PERMITTEE SHALL TAKE IMMEDIATE ACTION TO RESTORE THE BMPs OR PROVIDE AN ALTERNATIVE METHOD OF TREATMENT. SUCH RESTORED BMPs OR ALTERNATIVE TREATMENT SHALL BE AT LEAST AS EFFECTIVE AS THE ORIGINAL BMPs.

TERMINATION OF COVERAGE
NOT UPON PERMANENT STABILIZATION OF EARTH DISTURBANCE ACTIVITIES ASSOCIATED WITH CONSTRUCTION ACTIVITY THAT ARE AUTHORIZED BY THIS PERMIT AND WHEN BMPs IDENTIFIED IN THE PCSM PLAN HAVE BEEN PROPERLY INSTALLED, THE PERMITTEE AND/OR CO_PERMITTEE OF THE FACILITY MUST SUBMIT A NOT FORM THAT IS SIGNED IN ACCORDANCE WITH PART B, SECTION 1.C, SIGNATORY REQUIREMENTS, OF THIS PERMIT. ALL LETTERS CERTIFYING DISCHARGE TERMINATION ARE TO BE SENT TO THE DEPARTMENT OR AUTHORIZED CONSERVATION DISTRICT. THE NOT MUST CONTAIN THE FOLLOWING INFORMATION: FACILITY NAME, ADDRESS, AND LOCATION, OPERATOR NAME AND ADDRESS, PERMIT NUMBER, IDENTIFICATION AND PROOF OF ACKNOWLEDGEMENT FROM THE PERSON(S) WHO WILL BE RESPONSIBLE FOR OPERATION AND MAINTENANCE OF THE PCSM BMPs IN ACCORDANCE WITH THE APPROVED PCSM PLAN, AND THE REASON FOR PERMIT TERMINATION. UNTIL THE PERMITTEE HAS RECEIVED WRITTEN ACKNOWLEDGEMENT OF THE NOT, THE PERMITTEE WILL REMAIN RESPONSIBLE FOR OPERATING AND MAINTAINING ALL E&S BMPs AND PCSM BMPs ON THE PROJECT SITE AND WILL BE RESPONSIBLE FOR VIOLATIONS OCCURRING ON THE PROJECT SITE.

COMPLETION CERTIFICATE AND FINAL PLANS
WITHIN 30 DAYS AFTER THE COMPLETION OF EARTH DISTURBANCE ACTIVITIES AUTHORIZED BY THIS PERMIT, INCLUDING THE PERMANENT STABILIZATION OF THE SITE AND PROPER INSTALLATION OF PCSM BMPs IN ACCORDANCE WITH THE APPROVED PCSM PLAN, OR UPON SUBMISSION OF THE NOT IF SOONER, THE PERMITTEE SHALL FILE WITH THE DEPARTMENT OR AUTHORIZED CONSERVATION DISTRICT A STATEMENT SIGNED BY A LICENSED PROFESSIONAL AND BY THE PERMITTEE CERTIFYING THAT WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THIS PERMIT AND THE APPROVED E&S AND PCSM PLANS.

RECYCLING OR DISPOSAL OF MATERIALS

§102.4(b)5)(xi)

THE FOLLOWING IS A LIST THAT INCLUDES, BUT THAT IS NOT LIMITED TO, THE POTENTIAL CONSTRUCTION WASTES THAT MAY EXIST ON-SITE:
- CONCRETE CURB AND SIDEWALK
- ASPHALT
- E&S BMP - COMPOST FILTER SOCKS
- E&S BMP - TEMPORARY RISER
- E&S BMP - EROSION CONTROL MATTING
- E&S BMP - INLET PROTECTION

ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 Pa. CODE 260.1 ET SEQ., 271.1, AND 287.1 ET SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE. BELOW IS A LIST OF METHODS FOR THE PROPER RECYCLING/DISPOSAL OF VARIOUS MATERIALS:

1.) DUST CONTROL - CONSTRUCTION TRAFFIC MUST ENTER AND EXIT THE SITE AT THE STABILIZED CONSTRUCTION ENTRANCE. THE PURPOSE IS TO TRAP DUST AND MUD THAT WOULD OTHERWISE BE CARRIED OFF-SITE BY CONSTRUCTION TRAFFIC. WATER TRUCKS WILL BE USED AS NEEDED DURING CONSTRUCTION TO REDUCE DUST GENERATED ON THE SITE. DUST CONTROL MUST BE PROVIDED BY THE CONTRACTOR TO A DEGREE THAT IS ACCEPTABLE TO THE LOCAL CONSERVATION DISTRICT. AFTER CONSTRUCTION, THE SITE WILL BE STABILIZED, WHICH WILL REDUCE THE POTENTIAL FOR DUST GENERATION.

2.) SOLID WASTE DISPOSAL - NO SOLID MATERIALS, INCLUDING BUILDING MATERIALS, ARE ALLOWED TO BE DISCHARGED FROM THE SITE WITH STORMWATER. ALL SOLID WASTE, INCLUDING DISPOSABLE MATERIALS INCIDENTAL TO THE MAJOR CONSTRUCTION ACTIVITIES, MUST BE COLLECTED AND PLACED IN CONTAINERS. THE CONTAINERS WILL BE EMPTIED AS NECESSARY BY A CONTRACT TRASH DISPOSAL SERVICE AND HAULED AWAY FROM THE SITE.

3.) SANITARY FACILITIES - ALL PERSONNEL INVOLVED WITH CONSTRUCTION ACTIVITIES MUST COMPLY WITH STATE AND LOCAL SANITARY OR SEPTIC SYSTEM REGULATIONS. TEMPORARY SANITARY FACILITIES WILL BE PROVIDED AT THE SITE THROUGHOUT THE CONSTRUCTION PHASE. THEY MUST BE UTILIZED BY ALL CONSTRUCTION PERSONNEL AND WILL BE SERVICED BY A LICENSED COMMERCIAL OPERATOR.

4.) WATER SOURCE - NON-STORMWATER COMPONENTS OF SITE DISCHARGE MUST BE CLEAN WATER. WATER USED FOR CONSTRUCTION WHICH DISCHARGES FROM THE SITE MUST ORIGINATE FROM A PUBLIC WATER SUPPLY OR PRIVATE WELL APPROVED BY THE STATE HEALTH DEPARTMENT. WATER USED FOR CONSTRUCTION THAT DOES NOT ORIGINATE FROM AN APPROVED PUBLIC SUPPLY MUST NOT DISCHARGE FROM THE SITE.

5.) CONCRETE WASTE FROM CONCRETE READY-MIX TRUCKS - DISCHARGE OF EXCESS OR WASTE CONCRETE AND/OR WASH WATER FROM CONCRETE TRUCKS WILL BE ALLOWED ON THE CONSTRUCTION SITE, BUT ONLY IN SPECIFICALLY DESIGNATED DIKED AREAS PREPARED TO PREVENT CONTACT BETWEEN THE CONCRETE AND/OR WASH WATER AND STORMWATER THAT WILL BE DISCHARGED FROM THE SITE.

E&S THERMAL IMPACT ANALYSIS

THE POTENTIAL FOR THERMAL IMPACTS FROM STORMWATER RUNOFF AS A RESULT OF INCREASED IMPERVIOUS HAVE BEEN AVOIDED OR MINIMIZED THROUGH THE DESIGN OF LANDSCAPING, ONE (1) UNDERGROUND DETENTION FACILITY, AND CAPTURE/REUSE FOR IRRIGATION. THE SHADING EFFECTS OF THE PROPOSED AND EXISTING LANDSCAPING WILL PROVIDE THERMAL WATER QUALITY BENEFITS BY ALLOWING THE STORMWATER THAT HAS RUN ACROSS PAVED AREAS TO DECREASE IN TEMPERATURE PRIOR TO ENTERING THE DOWNSTREAM WATERSHED. THE FACILITIES WILL DETAIN, FILTER AND SHADE THE SURFACE WATER BEFORE CAPTURE/REUSE VIA IRRIGATION AND WILL HELP COOL DOWN THE SURFACE WATER BEFORE EVAPOTRANSPIRATION AND RECHARGE. THERMAL IMPACTS WILL BE REDUCED DURING CONSTRUCTION BY MEANS OF VARIOUS SOIL EROSION BMP'S THAT WILL REDUCE SEDIMENT LOADING TO SURFACE RUNOFF BEFORE IT LEAVES THE SITE (I.E. COMPOST FILTER SOCKS, INLET FILTER PROTECTION AT EXISTING AND PROPOSED INLETS, EROSION CONTROL MATTING BEING INSTALLED IMMEDIATELY FOLLOWING GRADING). EXISTING TREES AND VEGETATION ON SITE WILL ALSO BE PRESERVED AND PROTECTED WHICH WILL REDUCE THERMAL IMPACTS DURING CONSTRUCTION.

EROSION & SEDIMENT BMP INSPECTION SCHEDULE

- COMPOST FILTER SOCKS - DAILY.
- ROCK CONSTRUCTION ENTRANCE - DAILY AND AFTER EACH STORM EVENT.
- INLET PROTECTION (FILTER BAGS) - WEEKLY AND AFTER EACH STORM EVENT.
- ROCK FILTER - WEEKLY AND AFTER EACH STORM EVENT

I. GENERAL INFORMATION

A. THIS EROSION AND SEDIMENT CONTROL PLAN SHALL BE AVAILABLE AT THE SITE.
B. NO SEDIMENT OR SEDIMENT LADEN WATER MUST BE ALLOWED TO LEAVE THE SITE WITHOUT FIRST BEING PROPERLY FILTERED.
C. ANY SEDIMENT THAT IS TRACKED ONTO THE ROAD MUST BE CLEANED OFF BEFORE THE END OF THE DAY.
D. DISTURBED AREAS ON WHICH EARTHMOVING ACTIVITIES HAVE CEASED AND WHICH WILL REMAIN EXPOSED SHALL BE STABILIZED IMMEDIATELY, EITHER TEMPORARILY OR PERMANENTLY, INCLUDING THE RESTORATION OF DRIVEWAYS, STOCKPILES, OFF-SITE UNDERGROUND UTILITY LINES AND GRADED PERIMETER AREAS. DURING NON-GERMINATION PERIODS, MULCH MUST BE APPLIED AT RECOMMENDED RATES. CRUSHED STONE ON PAVEMENT SUBGRADES IS CONSIDERED ADEQUATE PROTECTION.
E. AREAS THAT FAIL TO GERMINATE MUST BE RE-SEEDED OR MULCHED.
F. WHERE DISTURBED AREAS ARE DIFFICULT TO STABILIZE, NETTING SHOULD BE USED TO HOLD SEED AND MULCH IN PLACE; THIS IS ESPECIALLY IMPORTANT AROUND WATERCOURSES, IN SWALES AND AREAS OF CONCENTRATED FLOWS, STEEP SLOPES.
G. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENTATION MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT CONTROL AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, RE-GRADING, RE-SEEDING, RE-MULCHING, AND RE-NETTING, MUST BE PERFORMED IMMEDIATELY. IF AT ANY TIME PRIOR TO SITE STABILIZATION ANY E&SP PROBLEMS OCCUR WHICH REQUIRE ADDITIONAL CONTROLS, IMMEDIATE ACTION MUST BE TAKEN TO CORRECT THE PROBLEMS.
H. THE CONTRACTOR MUST DEVELOP AND COORDINATE WITH OWNER AND HAVE APPROVED BY THE COUNTY CONSERVATION DISTRICT, A SEPARATE EROSION AND SEDIMENT POLLUTION CONTROL PLAN FOR EACH SPOIL, BORROW OR OTHER WORK AREA NOT DETAILED ON THE PERMITTED PLANS, WHETHER LOCATED WITHIN OR OUTSIDE OF THE LIMITS OF CONSTRUCTION.
CONTRACTOR SHALL NOTIFY THE COUNTY CONSERVATION DISTRICT OF DISPOSAL METHOD AND LOCATION OF MATERIALS (IF ANY) TO BE REMOVED FROM SITE.
J. ALL MATERIALS TO BE RECYCLED OR DISPOSED OF MUST DO SO IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL REGULATIONS. STOCKPILES TO BE HAULED OFF SITE MUST HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN AT THE DESTINATION LOCATION.
K. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN SOIL STABILIZATION THROUGHOUT CONSTRUCTION. ADDITIONAL MEASURES REQUIRED TO ENSURE ON-SITE AND OFF-SITE STABILIZATION IN AND ADJACENT TO CONSTRUCTION ACTIVITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE AT NO COST TO THE OWNER. IMMEDIATE NOTIFICATION SHALL BE GIVEN TO THE OWNER AND ENGINEER SHOULD ADDITION STABILIZATION MEASURES BE NECESSARY; IN ACCORDANCE WITH THE NPDES AND/OR SWPPP REQUIREMENTS FOR THE PROJECT.

II. STANDARD FOR LAND GRADING

A. DEFINITION: RESHAPING THE GROUND SURFACE BY GRADING TO PLAN GRADES, WHICH ARE DETERMINED BY TOPOGRAPHIC SURVEY AND LAYOUT.
A.1. PROVISIONS SHALL BE MADE TO SAFELY CONDUCT SURFACE WATER TO STORM DRAINS OR SUITABLE WATER COURSES AND TO PREVENT SURFACE RUNOFF FROM DAMAGING CUT FACES AND FULL SLOPES.
A.2. ADJOINING PROPERTY SHALL BE PROTECTED FROM EXCAVATION AND FILLING OPERATIONS.
B. INSTALLATION REQUIREMENTS
B.1. TIMBER, LOGS, BRUSH, RUBBISH, ROCKS, STUMPS AND VEGETABLE MATTER WHICH WILL INTERFERE WITH THE GRADING OPERATION OR AFFECT THE PLANNED STABILITY OR FILL AREAS SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH STANDARD FOR DISPOSAL OF MATERIALS.
B.2. FILL MATERIAL IS TO BE FREE OF BRUSH, RUBBISH, TIMBER, LOGS, VEGETATIVE MATTER AND STUMPS IN AMOUNTS THAT WILL BE DETRIMENTAL TO CONSTRUCTING STABLE FILLS.
B.3. ALL FILLS SHALL BE COMPACTED SUFFICIENTLY FOR THEIR INTENDED PURPOSE AND AS REQUIRED TO REDUCE SLIPPING, EROSION OR EXCESS SATURATION.
B.4. ALL DISTURBED AREAS SHALL BE LEFT WITH A NEAT AND FINISHED APPEARANCE AND SHALL BE PROTECTED FROM EROSION.
B.5. (SEE I. D.)

III. STANDARD FOR UTILITY TRENCH EXCAVATION

A. LIMIT ADVANCE CLEARING AND GRUBBING OPERATIONS TO A DISTANCE EQUAL TO TWO TIMES THE LENGTH OF PIPE INSTALLATION THAT CAN BE COMPLETED IN ONE DAY.
B. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT, PLUG INSTALLATION AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY. DAILY BACKFILLING OF THE TRENCH MAY BE DELAYED FOR A MAX. OF SIX DAYS FOR CERTAIN CASES REQUIRING TESTING OF THE INSTALLED PIPE.
C. WATER WHICH ACCUMULATES IN THE OPEN TRENCH WILL BE COMPLETELY REMOVED BY PUMPING TO A FACILITY FOR REMOVAL OF SEDIMENT (SEDIMENT FILTER BAG, SEE DETAIL) BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS.
D. ON THE DAY FOLLOWING PIPE PLACEMENT AND TRENCH BACKFILLING, THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS AND APPROPRIATE TEMPORARY EROSION AND SEDIMENT POLLUTION CONTROL MEASURES / FACILITIES WILL BE INSTALLED. SEEDING AND MULCHING OF ALL DISTURBED AREAS WILL BE DONE IMMEDIATELY.
E. WORK CREWS AND EQUIPMENT FOR TRENCHING, PLACEMENT OF PIPE, PLUG CONSTRUCTION AND BACKFILLING WILL BE SELF CONTAINED AND SEPARATE FORM CLEARING AND GRUBBING AND SITE RESTORATION AND STABILIZATION OPERATIONS.
F. ALL SOIL EXCAVATED FROM THE TRENCH WILL BE PLACED ON THE UPHILL SIDE OF THE TRENCH.

IV. STANDARD FOR TEMPORARY STABILIZATION

A. STANDARD FOR TEMPORARY STABILIZATION WITH FIBERMULCH
A.1. MULCHING IS MOST APPLICABLE TO THOSE AREAS SUBJECT TO PERIODIC DISTURBANCE AND REWORKING IN ADDITION, STABILIZATION WITH FIBER MULCH SHALL BE USED DURING NON-GERMINATION PERIODS.
A.2. PERFORM ALL CULTURAL OPERATIONS AT RIGHT ANGLES TO THE SLOPE.
A.3. GRADE AS NEARLY AS FEASIBLE, SEE STANDARD FOR LAND GRADING.
A.4. PROTECTIVE MATERIALS TO BE USED:
A.4.a. UNROTTED SMALL-GRAIN UN-CHOPPED STRAW OR HAY AT 3.0 TONS PER ACRE (4 TONS PER ACRE BETWEEN NOVEMBER 1 AND MARCH 1) SPREAD UNIFORMLY AND ANCHORED WITH LIQUID MULCH BINDER. BINDER PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE PRODUCT MANUFACTURER'S SPECIFICATIONS.
A.4.b. HYDROMULCHER. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL. LIQUID MULCH BINDERS: APPLY IMMEDIATELY AFTER PLACEMENT OF HAY OR STRAW MULCH TO MINIMIZE LOSS BY WIND OR WATER. PRODUCTS TO BE INSTALLED AT A RATE OF 1 TON PER ACRE (MINIMUM) OR PER MANUFACTURER'S SPECIFICATIONS.

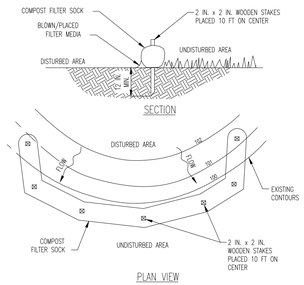
B. STANDARD FOR TEMPORARY STABILIZATION WITH SEED
B.1. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN TWELVE (12) MONTHS MUST BE SEEDED AND MULCHED IMMEDIATELY WITH A TEMPORARY COVER.
B.2. ALL AREAS TO BE PERMANENTLY SEEDED SHALL ALSO RECEIVE TEMPORARY SEEDING CONCURRENTLY.
B.3. SEEDBED PREPARATION FOR TEMPORARY SEEDING
B.3.A PERFORM ALL CULTURAL OPERATIONS AT RIGHT ANGLES TO SLOPE.
B.3.B APPLY AGRICULTURAL LIME AT A RATE OF 1 TONE PER ACRE
B.3.C APPLY 10-10-10 FERTILIZER A RATE OF 500 POUNDS PER ACRE
B.3.D. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF FOUR (4) INCHES.

C. SEEDING: SEE SEEDING SPECIFICATIONS

V. STANDARD FOR PERMANENT STABILIZATION

A. SPECIFICATION FOR SEEDING & SOIL TREATMENT FOR PERMANENT VEGETATIVE COVER
A.1. SITE PREPARATION
A.1.a. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION AND ANCHORING, AND MAINTENANCE.
A.1.b. SUBSOIL SHOULD BE TESTED FOR LIME REQUIREMENT AND LIMESTONE. IF NEEDED, SHOULD BE APPLIED TO BRING SOIL PH TO BETWEEN 5.5 AND 7 AND INCORPORATED INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES.
A.1.c. IMMEDIATELY PRIOR TO TOPSOIL DISTRIBUTION, THE SURFACE SHOULD BE SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3-5 INCHES TO PROVIDE A GOOD BOND WITH THE TOPSOIL.
A.2. APPLYING TOPSOIL
A.2.a. TOPSOIL SHOULD BE HANDLED ONLY WHEN IT IS DRY ENOUGH TO WORK WITHOUT DAMAGING SOIL STRUCTURE.
A.2.b. ALL DISTURBED TOPSOIL ON-SITE IS TO BE REDISTRIBUTED ON-SITE IN AREAS NOT COVERED BY IMPERVIOUS SURFACES. NO REMOVAL OF TOPSOIL IS ALLOWED UNLESS APPROVED BY WHITEMARSH TOWNSHIP . UNIFORM APPLICATION TO A DEPTH OF 6-8 INCHES (UNSETTLED) IS RECOMMENDED. SOILS WITH A PH OF 4.0 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM DEPTH OF 12 INCHES OF SOIL HAVING A PH OF 5.0 OR MORE.
A.3. SEEDBED PREPARATION
A.3.a. A SOIL TEST SHALL BE CONDUCTED TO ACCURATELY DETERMINE NECESSARY SOIL AMENDMENTS.
A.3.b. PERFORM ALL CULTURAL OPERATIONS AT RIGHT ANGLES TO SLOPE.
A.3.c. SOIL MODIFICATIONS:
A.3.c.1. APPLY 10-20-20 RATED FERTILIZER AT A RATE OF 1000 POUNDS PER ACRE OR 25 POUNDS PER 1000 SQUARE FEET, OR AS DIRECTED BY SOIL TEST.
A.3.c.2. APPLY AGRICULTURAL LIME AT A RATE OF 6 TONS PER ACRE OR 240 POUNDS PER 1000 SQUARE FEET, OR AS DIRECTED BY SOIL TEST.
A.3.d. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM FINE SEEDBED IS PREPARED.
A.3.e. REMOVE FROM THE SURFACE ALL STONES ONE INCH (1") OR LARGER IN ANY DIMENSION, REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLODS, LUMPS OR OTHER UNSUITABLE MATERIAL
A.3.f. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RE-TILLED AND FIRMED AS ABOVE.
A.4. SEEDING: SEE SEEDING SPECIFICATIONS
A.5. SEED BED AREAS SHALL ALSO BE STABILIZED USING AN APPROVED METHOD (EG: HYDROMULCHING) AS OUTLINED IN ITEM IV.A. HEREIN.

B. STANDARD FOR PERMANENT STABILIZATION WITH SOD
B.1. METHODS AND MATERIALS
B.1.a. CULTIVATED SOD IS PREFERRED OVER NATIVE OR PASTURE SOD. SPECIFY "CERTIFIED SOD," OR OTHER HIGH QUALITY CULTIVATED SOD.
B.1.b. SOD SHOULD BE FREE OF WEEDS AND UNDESIRABLE COARSE WEEDY GRASSES.
B.1.c. SOD SHOULD BE OF UNIFORM THICKNESS, APPROXIMATELY 5/8 INCH, PLUS OR MINUS 1/4 INCH, AT TIME OF CUTTING. (EXCLUDES TOP GROWTH).
B.1.d. SOD SHOULD BE VIGOROUS AND DENSE AND BE ABLE TO RETAIN ITS OWN SHAPE AND WEIGHT WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP FROM THE UPPER 0% OF THE STRIP. SOD PADS OR TORN AND UNEVEN ENDS WILL NOT BE ACCEPTABLE.
B.1.e. A SOD OF KENTUCKY 31 TALL FESCUE WITH BLUEGRASS, OR A FESCUE BLEND IS PREFERRED.
B.1.f. ONLY MOIST, FRESH UNHEATED SOD SHOULD BE USED. SOD SHOULD BE HARVESTED, DELIVERED AND INSTALLED WITHIN A PERIOD OF 36 HOURS.
B.2. SITE PREPARATIONS: SEE SPECIFICATION FOR SEEDING & SOIL TREATMENT FOR PERMANENT VEGETATIVE COVER (ITEM V.A. ABOVE)
B.3. SOD PLACEMENT
B.3.a. SOD STRIPS SHOULD BE LAID ON THE CONTOUR, NEVER UP AND DOWN THE SLOPE. STARTING AT THE BOTTOM OF THE SLOPE AND WORKING UP. ON STEEP SLOPES, THE USE OF LADDERS WILL FACILITATE THE WORK AND PREVENT DAMAGE TO THE SOD. DURING PERIODS OF HIGH TEMPERATURE, LIGHTLY IRRIGATE THE SOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
B.3.b. PLACE SOD STRIPS WITH SNUG EVEN JOINTS THAT ARE STAGGERED. OPEN SPACES INVITE EROSION.
B.3.c. ROLL OR TAMP SOD IMMEDIATELY FOLLOWING PLACEMENT TO INSURE SOLID CONTACT OF ROOT MAT AND SOIL SURFACE. DO NOT OVERLAP SOD. ALL JOINTS SHOULD BE BUTTED TIGHTLY IN ORDER TO PREVENT VOIDS, WHICH WOULD CAUSE DRYING OF THE ROOTS.
B.3.d. ON SLOPES GREATER THAN 3 TO 1, SECURE SOD TO SURFACE SOIL WITH WOOD PEGS, WIRE STAPLES OR A BIODEGRADABLE FASTENER.
B.3.e. SURFACE WATER CANNOT ALWAYS BE DIVERTED FROM FLOWING OVER THE FACE OF THE SLOPE, BUT A CAPPING STRIP OF HEAVY JUTE OR PLASTIC NETTING, PROPERLY SECURED, ALONG THE CROWN OF THE SLOPE AND EDGES WILL PROVIDE EXTRA PROTECTION AGAINST LIFTING AND UNDERCUTTING OF SOD. THE SAME TECHNIQUE CAN BE USED TO ANCHOR SOD IN WATER-CARRYING CHANNELS AND OTHER CRITICAL AREAS. WIRE STAPLES MUST BE USED TO ANCHOR NETTING IN CHANNEL WORK.
B.



NOTES:

SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.

COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE, BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

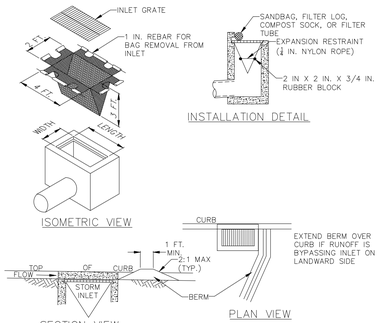
COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED, IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

STANDARD CONSTRUCTION DETAIL #4-1
COMPOST FILTER SOCK

NOT TO SCALE



NOTES:

MAXIMUM DRAINAGE AREA = 1/2 ACRE.

INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.

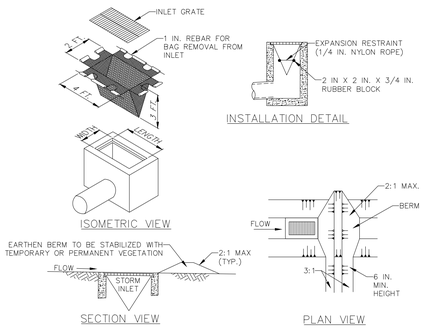
ROLLED EARTHEN BERM SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. SIX INCH MINIMUM HEIGHT ASPHALT BERM SHALL BE MAINTAINED UNTIL ROADWAY SURFACE RECEIVES FINAL COAT.
AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS, A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.

INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.

DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

STANDARD CONSTRUCTION DETAIL #4-15
FILTER BAG INLET PROTECTION - TYPE C INLET

NOT TO SCALE



NOTES:

MAXIMUM DRAINAGE AREA = 1/2 ACRE.

INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.

ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAIN PERMANENTLY.

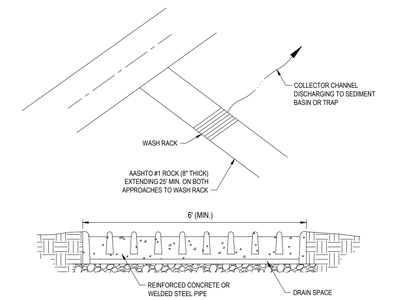
AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS., A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.

INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.

DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

STANDARD CONSTRUCTION DETAIL #4-16
FILTER BAG INLET PROTECTION - TYPE M INLET

NOT TO SCALE



MODIFIED FROM SMITH CATTLEGUARD COMPANY

NOTES:
WASH RACK SHALL BE 20 FEET (MIN.) WIDE OR TOTAL WIDTH OF ACCESS.

WASH RACK SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE ANTICIPATED CONSTRUCTION VEHICULAR TRAFFIC.

A WATER SUPPLY SHALL BE MADE AVAILABLE TO WASH THE WHEELS OF ALL VEHICLES EXITING THE SITE.

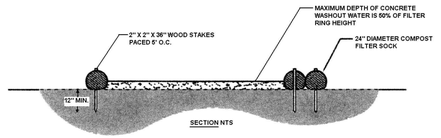
MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE OF ROCK MATERIAL SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. DRAIN SPACE UNDER WASH RACK SHALL BE KEPT OPEN AT ALL TIMES. DAMAGE TO THE WASH RACK SHALL BE REPAIRED PRIOR TO FURTHER USE OF THE RACK. ALL SEDIMENT DEPOSITED ON ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

#3-2

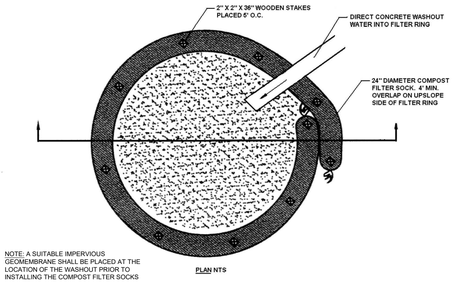
STANDARD CONSTRUCTION DETAIL #3-2
ROCK CONSTRUCTION ACCESS WITH WASH RACK

NOT TO SCALE

FIGURE 3.18
Typical Compost Sock Washout Installation



NOTES:
1. INSTALL ON FLAT GRADE FOR OPTIMUM PERFORMANCE
2. 18" DIAMETER FILTER SOCK MAY BE STACKED ONTO DOUBLE 24" DIAMETER SOCKS IN PYRAMIDAL CONFIGURATION FOR ADDED HEIGHT.



NOTE: A SUITABLE IMPERVIOUS GEOMEMBRANE SHALL BE PLACED AT THE LOCATION OF THE WASHOUT PRIOR TO INSTALLING THE COMPOST FILTER SOCKS

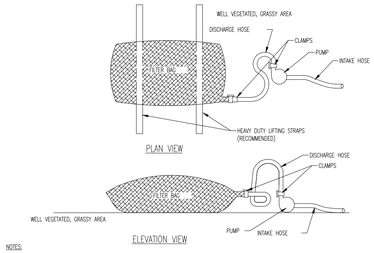
TABLE 4.1
Compost Sock Fabric Minimum Specifications

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/2"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years
Two-ply systems					
Inner Containment Netting			HDPE biaxial net		
			Continuously wound Fusion-welded junctures		
			3/4" X 3/4" Max. aperture size		
Outer Filtration Mesh			Composite Polypropylene Fabric (Woven layer and non-woven fleece mechanically fused via needle punch)		
			3/16" Max. aperture size		

Sock fabrics composed of burlap may be used on projects lasting 6 months or less.
Fitness & 2880

TABLE 4.2
Compost Standards

ORGANIC MATTER CONTENT	25%-100% (DRY WEIGHT BASE)
ORGANIC PORTION	FIBROUS AND ELONGATED
pH	5.5-8.5
MOISTURE CONTENT	30%-60%
PARTICLE SIZE	30%-50% PASS THROUGH 3/8" SIEVE
SOLUBLE SALT CONCENTRATION	5.0 dS/m (mmhos/cm) MAXIMUM



NOTES:

LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS, WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%, FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS, COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

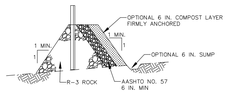
THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

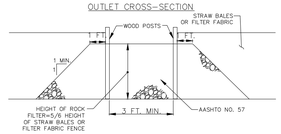
THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

STANDARD CONSTRUCTION DETAIL #3-16
PUMPED WATER FILTER BAG

NOT TO SCALE





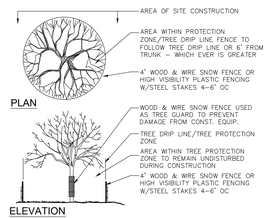
NOTES:

A ROCK FILTER OUTLET SHALL BE INSTALLED WHERE FAILURE OF A SILT FENCE OR STRAW BALE BARRIER HAS OCCURRED DUE TO CONCENTRATED FLOW. ANCHORED COMPOST LAYER SHALL BE USED ON UPSLOPE FACE IN HQ AND EV WATERSHEDS.

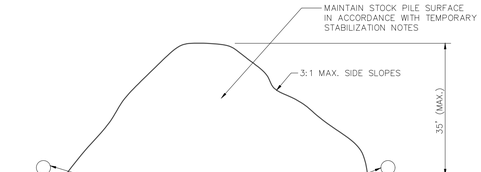
SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.

STANDARD CONSTRUCTION DETAIL #4-6
ROCK FILTER OUTLET

NOT TO SCALE



TREE PROTECTION
X S11 DURING SITE CONSTRUCTION
SCALE: N.T.S. REV.: 2015.03.09



TEMPORARY SOIL STOCKPILE DETAIL
X S11
SCALE: N.T.S. REV.: 2015.03.09

R:\2022\PAB220113.00\CAD\PDA\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-SESC-0A——LAYOUT: C-603 ESS DETAILS

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LAND SURVEYING
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PROJECT No.: PAB220113.00
DRAWN BY: BS
CHECKED BY: MSL
DATE: 03/15/2023
CAD I.D.: PAB220113.00-SESC-0A

PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

500 PENNSYLVANIA AVENUE WHITEMARSH TOWNSHIP MONTGOMERY COUNTY, PA

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74 W BROAD STREET, SUITE 500
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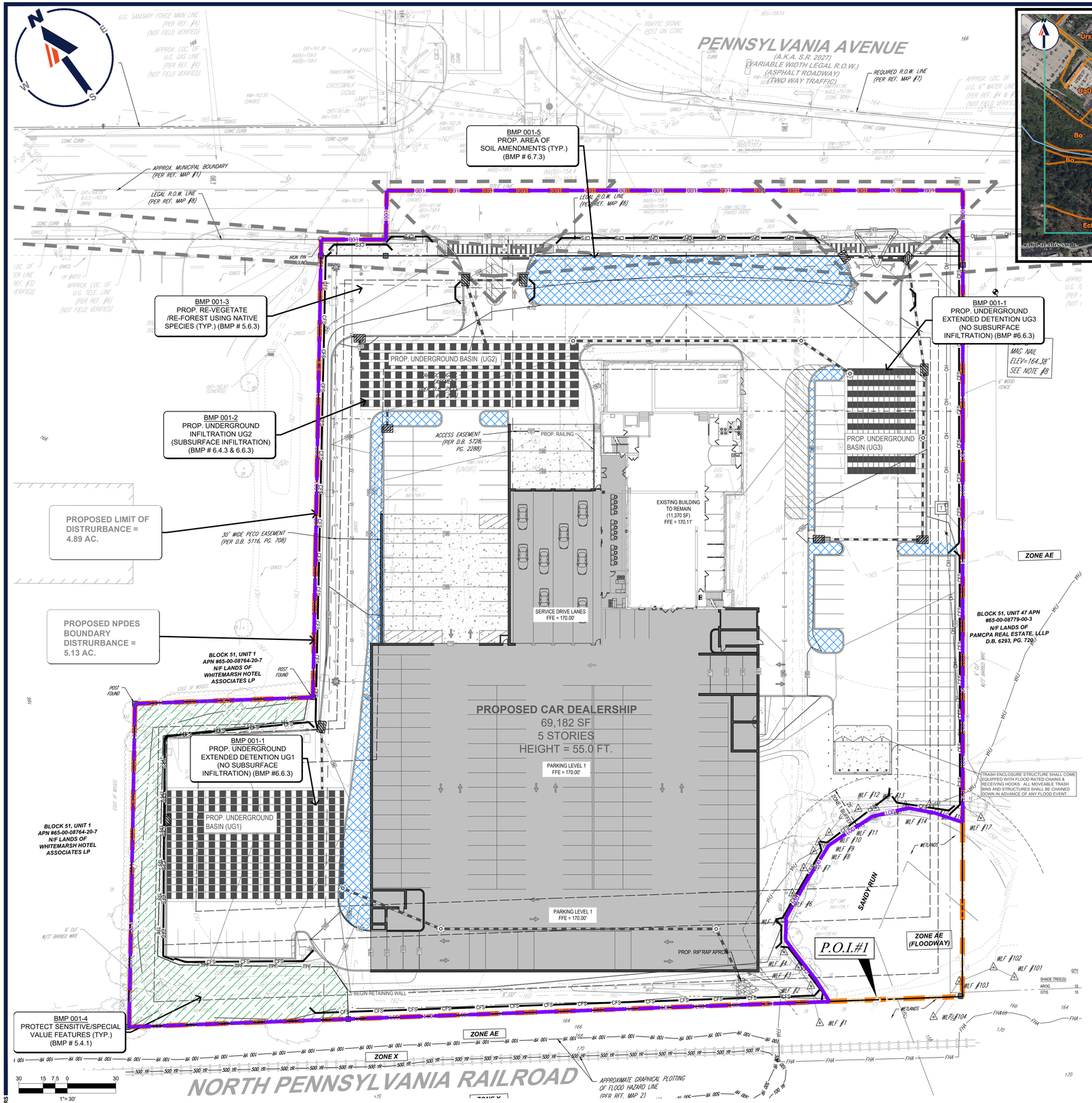
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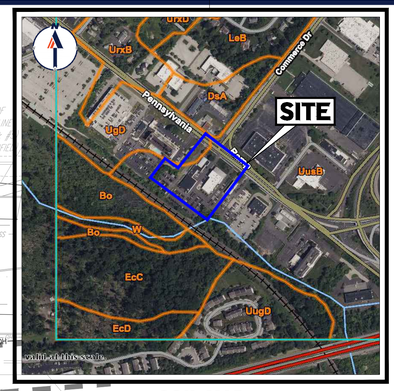
SOIL EROSION & SEDIMENT POLLUTION CONTROL DETAILS

SHEET NUMBER:

C-603

ORG. DATE - 03/15/2023

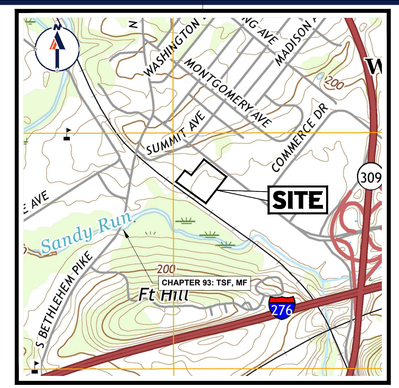




SOIL MAP

SCALE: 1"=500'

250' 0 500'



USGS MAP

AMBLER QUAD

SCALE: 1"=2,000'

1000' 0 2000'

GENERAL NOTES

1. THIS PLAN REFERENCES DOCUMENTS AND INFORMATION BY:
   CONTROL POINT ASSOCIATES, LLC.
   1600 MANOR DRIVE, SUITE 210
   CHALFONT, PA 18914
   ENTITLED: "BOUNDARY & TOPOGRAPHIC SURVEY"
   PREPARED FOR: BMW OF FORT WASHINGTON
   FILE NO.: 02-220505-00
   DATED: 02/06/2023
2. APPLICANT/ EQUITABLE OWNER:
   MILEONE FORT WASHINGTON , LLC.
   3301 BRIGGS CHANEY ROAD
   SILVER SPRING, MD 20904
   ATTENTION: DENNIS TURNBAUGH
   301-679-4062
3. CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL SPECIFIC RESOURCES, TECHNICAL REPORTS, AND DESIGN DOCUMENTS RELATED TO THIS PROJECT AND FAMILIARIZE HIMSELF WITH SAME FOR APPLICATION BOTH PRIOR TO AND DURING CONSTRUCTION.
4. ALL ELEVATIONS SHOWN ARE IN ACCORDANCE WITH THE REFERENCED SURVEYOR'S BENCHMARK AND MUST BE VERIFIED BY THE GENERAL CONTRACTOR PRIOR TO GROUNDBREAK.
5. PARCEL DATA: PROPERTY KNOWN AS BLOCK 51, UNIT 41, APN #65-00-08770-00-3; BLOCK 51, UNIT 46, APN #65-00-08767-00-6; BLOCK 51, UNIT 2, APN #65-00-08773-00-9 & BLOCK 51, UNIT 44, APN #65-00-08776-00-4 AS IDENTIFIED ON THE TAX MAP OF WHITEMARSH TOWNSHIP, COMMONWEALTH OF PENNSYLVANIA.
6. PARCEL AREA: TOTAL SITE AREA: 5.132 AC.
7. ALL A.D.A. ACCESSIBLE PARKING SPACES, RAMPS, AND ACCESSIBLE ROUTES SHALL BE CONSTRUCTED TO MEET CURRENT A.D.A. REQUIREMENTS, AS AMENDED.
8. ALL FEATURES ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
9. FEATURES TO BE REMOVED ARE NOTED (TBR).
10. MEASUREMENTS ARE TAKEN FROM FACE OF CURB, WHERE APPLICABLE.
11. NO DEBRIS SHALL BE BURIED ON-SITE.
12. ALL PUBLIC UTILITIES, INCLUDING WATER AND SEWER ARE CURRENTLY AVAILABLE. SITE IS TO BE SERVICED BY PUBLIC WATER AND SEWER UTILITIES.
13. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES.
14. THE ENTIRE SITE IS IN A SPECIAL FLOOD HAZARD AREA, ZONE (AE), WITHIN THE 100-YEAR FLOODPLAIN. BASE FLOOD ELEVATION = 169.00. AS SUCH, THE ENTIRE SITE IS LOCATED WITHIN THE RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT PER WHITEMARSH TOWNSHIP
15. THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, IS UNKNOWN.
16. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88, BASED ON GPS OBSERVATIONS UTILIZING THE KEYSTONE VRS NETWORK (KEYNET GPS).

POST-CONSTRUCTION STORM WATER MANAGEMENT B.M.P. NOTES

THE STORM DRAINAGE SYSTEM HAS BEEN DESIGNED TO INTERCEPT RUNOFF AT TOPOGRAPHIC LOW POINTS AND AREAS OF SIGNIFICANT RUNOFF QUANTITIES AND CONVEY STORMWATER TO THE STORMWATER MANAGEMENT BASIN.

THE PROPOSED STORMWATER MANAGEMENT PROGRAM DESCRIBED ABOVE HAS BEEN DESIGNED TO COMPLY WITH THE WHITEMARSH TOWNSHIP STORMWATER MANAGEMENT ORDINANCE, NPDES AND THE STORMWATER MANAGEMENT ACT OF 1978.

THE PCSWM AND BMP APPROACH OF THIS DEVELOPMENT IS MEANT TO PREVENT ADVERSE STORMWATER IMPACTS AND PROVIDE THE NECESSARY TREATMENT OF RUNOFF CLOSE TO THE ORIGIN OF THE IMPACT. THE PRIMARY GOAL OF THIS DEVELOPMENT'S STORMWATER MANAGEMENT PROGRAM WAS TO MIMIC, AS BEST AS POSSIBLE, THE PRE-DEVELOPMENT SITE HYDROLOGY BY USING BOTH STRUCTURAL AND NON-STRUCTURAL BMPS TO PREVENT OR MINIMIZE CHANGES IN STORMWATER RUNOFF.

5.4.1 - PROTECT SENSITIVE AND SPECIAL VALUE FEATURES - TO MINIMIZE STORMWATER IMPACTS, LAND DEVELOPMENT SHOULD AVOID AFFECTING AND ENCROACHING UPON AREAS WITH IMPORTANT NATURAL STORMWATER FUNCTIONAL VALUES (FLOODPLAINS, WETLANDS, RIPARIAN AREAS, DRIVEWAYS, OTHERS) WHEREVER PRACTICABLE. THIS AVOIDANCE SHOULD OCCUR SITE-BY-SITE AND ON AN AREA WIDE BASIS. DEVELOPMENT SHOULD NOT OCCUR IN AREAS WHERE SENSITIVE/SPECIAL VALUE RESOURCES EXIST SO THAT THEIR VALUABLE NATURAL FUNCTIONS ARE NOT LOST, THEREBY DOUBLING OR TRIPLING STORMWATER IMPACTS. RESOURCES MAY BE WEIGHTED ACCORDING TO THEIR FUNCTIONAL VALUES SPECIFIC TO MUNICIPALITY AND WATERSHED CONTEXT.

BMP 5.6.3 - RE-VEGETATE AND RE-FOREST DISTURBED AREAS, USING NATIVE SPECIES - SITES THAT REQUIRE LANDSCAPING AND RE-VEGETATION SHOULD SELECT AND USE VEGETATION (I.E., NATIVE SPECIES) THAT DOES NOT REQUIRE SIGNIFICANT CHEMICAL MAINTENANCE BY FERTILIZERS, HERBICIDES, AND PESTICIDES. THE INTRODUCTION OF THESE CHEMICALS RESULTS IN A NEGATIVE IMPACT ON THE WATER QUALITY. THE EXISTING SITE CONSISTS OF A GRASSED, VACANT FIELD FOR A FUTURE DEVELOPMENT. THE PROPOSAL INCLUDES THE IMPLEMENTATION OF MEADOW MIX SEED MIXTURE ALONG THE REAR OF THE PROPERTY AND WITHIN THE PROPOSED WETLANDS. ADDITIONALLY, NATIVE SPECIES PLANTINGS (TREES AND SHRUBS) ARE BEING PROPOSED THROUGHOUT THE DEVELOPMENT.

BMP 6.4.3 - SUBSURFACE INFILTRATION BED - SUBSURFACE INFILTRATION BEDS PROVIDE TEMPORARY STORAGE AND INFILTRATION OF STORMWATER RUNOFF BY PLACING STORAGE MEDIA OF VARYING TYPES BENEATH THE PROPOSED SURFACE GRADE. STORMWATER RUNOFF FROM NEARBY IMPERVIOUS AREAS CAN BE CONVEYED TO THE SUBSURFACE STORAGE MEDIA, WHERE IT IS THEN DISTRIBUTED VIA A NETWORK OF PERFORATED PIPING.

BMP 6.6.3 - SUBSURFACE DETENTION BASIN - SUBSURFACE DETENTION FACILITIES PROVIDE TEMPORARY STORAGE OF STORMWATER RUNOFF BY PLACING STORAGE MEDIA OF VARYING TYPES BENEATH THE PROPOSED SURFACE GRADE. STORMWATER RUNOFF FROM NEARBY IMPERVIOUS AREAS ARE CONVEYED TO THE SUBSURFACE STORAGE MEDIA WHERE IT THEN REDUCES THE POST DEVELOPMENT RUNOFF RATE AT OR BELOW THE PRE-DEVELOPMENT CONDITION. THIS IS A SUBSURFACE STORMWATER STRUCTURE THAT PROVIDES FOR THE TEMPORARY STORAGE OF STORMWATER RUNOFF TO PREVENT DOWNSTREAM FLOODING IMPACTS. WATER QUALITY BENEFITS ARE ACHIEVED WITH EXTENDED DETENTION (DEWATERING BETWEEN 24 HRS AND 72 HRS) OF THE RUNOFF VOLUME FROM THE WATER QUALITY DESIGN STORM.

BMP 6.7.3 - SOIL AMENDMENT & RESTORATION - SOIL AMENDMENT AND RESTORATION IS THE PROCESS OF IMPROVING DISTURBED SOILS AND LOW ORGANIC SOILS BY RESTORING SOIL POROSITY AND/OR ADDING A SOIL AMENDMENT, FOR THE PURPOSE OF REESTABLISHING THE SOIL'S LONG-TERM CAPACITY FOR INFILTRATION AND POLLUTION REMOVAL. THIS BMP ADDRESSES MINOR AND MAJOR COMPACTION FROM VARIOUS SOURCES. COMPACTION TYPICALLY LEADS TO LIMITED ROOT GROWTH AND IS DEPENDENT ON BULK DENSITY. LIMITING ROOT GROWTH WILL REDUCE THE UPTAKE OF WATER AND NUTRIENTS BY VEGETATION. SOIL ORGANISMS ARE ALSO AFFECTED BY COMPACTION; BIOLOGICAL ACTIVITY IS GREATLY REDUCED, DECREASING THEIR ABILITY TO INTAKE AND RELEASE NUTRIENTS.

LEGEND
EXISTING

PROPERTY LINE	
R.O.W. LINE	
BUILDING	
CONCRETE CURB	
FENCE	
TREELINE	
CONCRETE MONUMENT/ IRON PIN	
SIGN	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
FIRE HYDRANT	
UTILITY POLE	
OVERHEAD UTILITY WIRES	
GAS LINE	
WATER LINE	
STORM PIPE	
CONTOUR ELEVATION	
100 YEAR FLOOD PLAIN	100 YR
500 YEAR FLOOD PLAIN	500 YR
FLOOD WAY	FDWY
WETLAND FLAG	WF#

LEGEND
PROPOSED

LIMIT OF DISTURBANCE	
PROJECT SITE BOUNDARY	
COMPOST FILTER SOCK	
TREE PROTECTION FENCE	
BARRICADE	
INLET PROTECTION	
ROCK FILTER	
CONCRETE WASHOUT	
TEMPORARY STOCKPILE	
ROCK CONSTRUCTION ENTRANCE	
NAGSC150	

RECORD PLAN 6 OF 9

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
NEPA AND PLANNING
PERMITTING SERVICES
TRANSPORTATION SERVICES

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PROJECT No.:	PAB220113.00
DRAWN BY:	BS
CHECKED BY:	MSL
DATE:	03/15/2023
CAD I.D.:	PAB220113.00-SESC-0A

PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

500 PENNSYLVANIA AVENUE WHITEMARSH TOWNSHIP MONTGOMERY COUNTY, PA

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NEW JERSEY LICENSE No. GE54603536500

SHEET TITLE:

POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

SHEET NUMBER:

C-604

ORG. DATE - 03/15/2023

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PCSM - GENERAL BMP NOTES

1. A SITE INSPECTION AND APPROVAL BY THE COUNTY CONSERVATION DISTRICT IS REQUIRED PRIOR TO THE REMOVAL OR CONVERSION OF SEDIMENT BASINS AND TRAPS.

2. BOHLER ENGINEERING SHALL BE NOTIFIED OF PRE-CONSTRUCTION MEETING DATE AND BMP CONSTRUCTION SCHEDULE.

3. THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO LIMIT THE COMPACTION IN THE PROPOSED BMP BOTTOMS.

4. REFER TO THE BMP CONSTRUCTION DETAILS FOR THE CONSTRUCTION OF ALL PROPOSED STORMWATER MANAGEMENT BMPs.

5. REFER TO THE PCSWM PLAN AND DETAILS FOR SPECIFIC BMP CONSTRUCTION GUIDELINES.

6. AS-BUILT PLANS OF THE STORMWATER BMPs FOR EACH PROJECT PHASE SHALL BE PROVIDED WITHIN SIX MONTHS FOLLOWING THE COMPLETION OF EACH PHASE. THE AS-BUILT PLANS SHALL BE SIGNED AND SEALED BY A PA REGISTERED PROFESSIONAL SURVEYOR.

7. A NOTICE OF TERMINATION (NOT) WILL BE REQUIRED TO BE SUBMITTED FOLLOWING APPROVAL OF THE FINAL AS-BUILT PLANS. PRIOR TO ACCEPTING THE NOT, THE DEPARTMENT AND/OR CONSERVATION DISTRICT STAFF WILL PERFORM A FINAL INSPECTION TO ENSURE SITE STABILIZATION AND VERIFY ADEQUATE INSTALLATION AND FUNCTION OF STORMWATER BMPs.

LONG-TERM OPERATION AND MAINTENANCE SCHEDULE

§102.8(f)(10)

1. UNTIL THE SITE IS STABILIZED AND DURING THE CONSTRUCTION ACTIVITIES, ALL BMPs MUST BE MAINTAINED PROPERLY BY CONTRACTOR. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL BMPs AS SPECIFIED, ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN-OUT, REPAIR, REPLACEMENT, RE-GRADING, RE-SEEDING, RE-MULCHING AND RE-NETTING MUST BE PERFORMED IMMEDIATELY AND IN ACCORDANCE WITH THESE PROCEDURES, PLANS, AND DETAILS. ANY AREAS DISTURBED DURING MAINTENANCE MUST BE STABILIZED IMMEDIATELY IN ACCORDANCE WITH THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS.

2. ALL SITE INSPECTIONS MUST BE DOCUMENTED IN AN INSPECTION LOG KEPT FOR THIS PURPOSE INDICATING THE COMPLIANCE ACTIONS AND THE DATE, TIME AND NAME OF THE PERSON CONDUCTING THE INSPECTION. THE INSPECTION LOG MUST BE KEPT ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE DISTRICT UPON REQUEST.

3. SHOULD ON-SITE EROSION OCCUR FROM THE LANDSCAPED AREAS, THE SOURCE OF EROSION SHALL BE IMMEDIATELY STABILIZED AND THE INLETS AND STORMWATER PIPING SHALL BE CHECKED FOR ACCUMULATION AND CLEARED IF ACCUMULATION OF SEDIMENT EXISTS.

4. HEAVY CONSTRUCTION VEHICLES SHALL NOT BE PARKED ON OR DRIVEN OVER BMP FACILITIES AND CARE SHOULD BE TAKEN TO AVOID EXCESSIVE COMPACTION BY EQUIPMENT, INCLUDING MOWERS.

5. INSPECT INFILTRATION FACILITIES AFTER RUNOFF EVENTS AND MAKE SURE THAT RUNOFF DRAINS DOWN WITHIN 72 HOURS. INSPECT FOR ACCUMULATION OF SEDIMENT, DAMAGE TO OUTLET CONTROL STRUCTURES, SIGNS OF WATER CONTAMINATION/SPILLS, AND SIGNS OF EROSION.

6. REMOVE ACCUMULATED SEDIMENT FROM THE FACILITIES AS REQUIRED. RESTORE ORIGINAL CROSS-SECTION IF NECESSARY. PROPERLY DISPOSE OF SEDIMENT AS SPECIFIED. FOR ABOVE-GROUND INFILTRATION FACILITIES, REMOVE AND REPLACE SAND/STONE LAYER AS NECESSARY IF FACILITY DEWATERING TIME EXCEEDS 72 HOURS.

_____ IS RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF THE STORMWATER MANAGEMENT BMPs AS DESCRIBED HEREIN.

ANTICIPATED CONSTRUCTION WASTES NOTES

THE OPERATOR SHALL REMOVE FROM SITE, RECYCLE OR DISPOSE OF ALL BUILDING MATERIAL AND WASTES IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1 ET SEQ. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP OR DISCHARGE AND BUILDING MATERIAL OR WASTE AT THIS SITE. THE FOLLOWING IS A LIST OF POTENTIAL CONSTRUCTION WASTES, BUT NOT LIMITED TO THE LISTED MATERIALS BELOW:

- E&S BMP - COMPOST FILTER SOCKS
- E&S BMP - EROSION CONTROL MATTING
- E&S BMP - ROCK FILTERS
- E&S BMP - TREE PROTECTION FENCE
- INLET PROTECTION
- REGULATED FILL MATERIALS
- SEDIMENT
- TRASH/DEBRIS

PCSM ENVIRONMENTAL DUE DILIGENCE NOTES

1. CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE).

2. CLEAN FILL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE: FILL MATERIALS AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE STILL QUALIFIES AS CLEAN FILL PROVIDED THE TESTING REVEALS THAT THE FILL MATERIAL CONTAINS CONCENTRATIONS OF REGULATED SUBSTANCES THAT ARE BELOW THE RESIDENTIAL LIMITS IN TABLES FP-1A AND FP-1B FOUND IN THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL". ANY PERSON PLACING CLEAN FILL THAT HAS BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE MUST USE FORM FP-001 TO CERTIFY THE ORIGIN OF THE FILL MATERIAL AND THE RESULTS OF THE ANALYTICAL TESTING TO QUALIFY THE MATERIAL AS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE OWNER OF THE PROPERTY RECEIVING THE FILL. A COPY OF FORM FP-001 CAN BE FOUND AT THE END OF THESE INSTRUCTIONS.

3. ENVIRONMENTAL DUE DILIGENCE: THE APPLICANT MUST PERFORM ENVIRONMENTAL DUE DILIGENCE TO DETERMINE IF THE FILL MATERIALS ASSOCIATED WITH THE PROJECT QUALIFY AS CLEAN FILL. ENVIRONMENTAL DUE DILIGENCE IS DEFINED AS: INVESTIGATIVE TECHNIQUES, INCLUDING, BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILIGENCE UNLESS VISUAL INSPECTION AND/OR REVIEW OF THE PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECTED TO A SPILL OR RELEASE OF REGULATED SUBSTANCE. IF THE FILL MAY HAVE BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE, IT MUST BE TESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL".

4. FILL MATERIAL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE DEPARTMENT'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 25 PA. CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE.

5. SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF ON-SITE IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED OR PLACED IN SOIL STOCKPILES AND STABILIZED.

6. ALL BUILDING MATERIAL AND WASTES MUST BE REMOVED FROM THE SITE AND RECYCLED OR RECYCLED IN ACCORDANCE WITH DEP'S SOLID WASTE REGULATIONS (25 PA CODE 260.1 ET SEQ., 271.1 ET SEQ., AND 287.1 ET SEQ., AND/OR ANY ADDITIONAL LOCAL, STATE OR FEDERAL REGULATIONS. NO BUILDING MATERIALS (USED OR UNUSED) OR WASTE MATERIALS SHALL BE BURNED, BURIED, DUMPED OR DISCHARGED AT THE SITE.

GENERAL MAINTENANCE AND INSPECTION NOTES

1. CATCH BASINS AND INLETS (UPGRADIENT OF INFILTRATION BASIN) SHOULD BE INSPECTED AND CLEANED AT LEAST TWO TIMES PER YEAR AND AFTER RUNOFF EVENTS.
2. THE VEGETATION SHOULD BE MAINTAINED IN GOOD CONDITION, AND ANY BARE SPOTS REVEGETATED AS SOON AS POSSIBLE.
3. VEHICLES SHOULD NOT BE PARKED OR DRIVEN ON THE SPRAY AREA, AND CARE SHOULD BE TAKEN TO AVOID EXCESSIVE COMPACTION BY MOWERS.
4. INSPECT THE UNDERGROUND BASINS AFTER RUNOFF EVENTS AND MAKE SURE THAT RUNOFF DRAINS DOWN WITHIN 72 HOURS. MOSQUITO'S SHOULD NOT BE A PROBLEM IF THE WATER DRAINS IN 72 HOURS. MOSQUITOES REQUIRE A CONSIDERABLY LONG BREEDING PERIOD WITH RELATIVELY STATIC WATER LEVELS.
5. INSPECT FOR ACCUMULATION OF SEDIMENT, DAMAGE TO OUTLET CONTROL STRUCTURES, EROSION CONTROL MEASURES, AND SIGNS OF WATER CONTAMINATION/SPILLS.
6. MOW ONLY AS APPROPRIATE FOR VEGETATIVE COVER SPECIES.
7. REMOVE ACCUMULATED SEDIMENT FROM BASIN AS REQUIRED. PROPERLY DISPOSE OF SEDIMENT.

CRITICAL STAGES

THE CONTRACTOR SHALL NOTIFY THE PROFESSIONAL RESPONSIBLE FOR THE PROPER IMPLEMENTATION OF THE STORMWATER BMP'S PRIOR TO COMMENCING CONSTRUCTION OF THE FOLLOWING CRITICAL STAGES:

1. INSTALL UNDERGROUND FACILITY UG1
2. INSTALL UNDERGROUND FACILITY UG2
3. INSTALL UNDERGROUND FACILITY UG3
4. VERIFICATION OF AS-BUILT GRADING PER PCSM PLAN
5. VERIFICATION OF AS-BUILT POST CONSTRUCTION DRAINAGE AREAS
6. VERIFICATION OF AS-BUILT INFILTRATION RATES
7. FINAL INSPECTION/ PUNCH LIST

REFERENCE THE SEQUENCE OF CONSTRUCTION AND DETAILS CONTAINED ON THE E&S AND PCSM PLAN SETS FOR PROPER CONSTRUCTION TECHNIQUES.

RIPARIAN FOREST BUFFER MANAGEMENT PLAN

§102.8(f)(14)

REGARDING EXISTING OR PROPOSED RIPARIAN FOREST BUFFERS, NOTE THE FOLLOWING:

- THERE ARE NO EXISTING/PROPOSED RIPARIAN FOREST BUFFERS LOCATED WITHIN OR OUTSIDE THE LIMITS OF DISTURBANCE FOR THIS PROJECT.

RECYCLING OR DISPOSAL OF MATERIALS

§102.8(f)(11)

THE FOLLOWING IS A LIST THAT INCLUDES, BUT THAT IS NOT LIMITED TO, THE POTENTIAL CONSTRUCTION WASTES THAT MAY EXIST ON-SITE:
- TRASH (CANS, BOTTLES, ETC.)
- YARD WASTE (LEAVES, GRASS CLIPPINGS, ETC.)
- ANTI-ICING MATERIALS
- DEBRIS COLLECTED IN INLETS
- SEDIMENT CAPTURED IN ANY PCSM BMP

1.) SOLID WASTE DISPOSAL - NO SOLID MATERIALS ARE ALLOWED TO BE DISCHARGED FROM THE SITE WITH STORMWATER. ALL SOLID WASTE, INCLUDING DISPOSABLE MATERIALS, MUST BE COLLECTED AND PLACED IN CONTAINERS. THE CONTAINERS WILL BE EMPTIED AS NECESSARY BY A CONTRACT TRASH DISPOSAL SERVICE AND HAULED AWAY FROM THE SITE.
2.) COMPOSTING - MATERIALS SUCH AS YARD WASTE THAT ARE BIO-DEGRADABLE CAN BE COMPOSTED AND USED ON SITE TO RESTORE SOIL NUTRIENTS FOR THE VEGETATION.

PCSM PLANNING AND DESIGN NOTES

THE FOLLOWING MEASURES WERE TAKEN TO PRESERVE THE INTEGRITY OF STREAM CHANNELS AND MAINTAIN AND PROTECT THE PHYSICAL, BIOLOGICAL, AND CHEMICAL QUALITIES OF THE RECEIVING STREAMS:
- DIRECT RUNOFF FROM IMPERVIOUS SURFACES INCLUDING ROADWAYS TO BMPS.
- THE USE OF NATIVE SPECIES REQUIRES LESS FERTILIZATION AND CHEMICAL APPLICATION THAN NONNATIVE SPECIES.

THE FOLLOWING MEASURES WERE TAKEN TO PREVENT AN INCREASE IN THE RATE OF STORM WATER RUNOFF:
- DIRECT RUNOFF TO AN ABOVE GROUND AND AN UNDERGROUND STORMWATER DETENTION FACILITY TO CONTROL RUNOFF RATES.
- PROVIDE AN UNDERGROUND DETENTION FACILITY FOR RATE REDUCTION
- MINIMIZE IMPERVIOUS AREAS WHERE PRACTICAL.

THE FOLLOWING MEASURES WERE TAKEN TO MINIMIZE ANY INCREASE IN STORM WATER RUNOFF VOLUME:
- PROVIDE AN UNDERGROUND INFILTRATION FACILITY FOR VOLUME REDUCTION
- REVEGETATE-REFOREST WITH NATIVE SPACES AND PROTECT EXISTING TREES WITHIN 100' OF IMPERVIOUS SURFACES TO HELP REDUCE RUNOFF VOLUME.
- MINIMIZE IMPERVIOUS AREAS WHERE PRACTICAL.

THE FOLLOWING MEASURES WERE TAKEN TO MINIMIZE IMPERVIOUS AREAS:
- CONFIGURE AS EFFICIENTLY AS POSSIBLE AND CONSOLIDATE IMPERVIOUS COVERAGE.
- LIMIT PROJECT DEVELOPMENT AREA BY PROTECTING CREEK, WETLANDS, RIPARIAN BUFFER AND FLOODPLAIN.

THE FOLLOWING MEASURES ARE TAKEN TO MAXIMIZE PROTECTION OF EXISTING DRAINAGE FEATURES AND VEGETATION:
- ACCESS THE SITE THRU DESIGNATED CONSTRUCTION ENTRANCES.
- PROTECT WOODLANDS WITH TREE PROTECTION FENCING.

THE FOLLOWING MEASURES WERE TAKEN TO MINIMIZE LAND CLEARING AND GRADING:
- PROTECT WOODLANDS WITH TREE PROTECTION FENCING.
- ADJUST SITE GRADING TO REDUCE EXTENT OF CUTS OR FILLS TO EXISTING GRADES.

THE FOLLOWING MEASURES ARE TAKEN TO MINIMIZE SOIL COMPACTION:
- ACCESS THE SITE THRU DESIGNATED CONSTRUCTION ENTRANCES.
- USE OF TREADED MACHINERY WHERE PRACTICAL DURING EARTHMOVING OPERATIONS.
- GRADE SITE TO MINIMIZE EXTENT OF CUTS/FILLS.

THE FOLLOWING MEASURES WERE TAKEN TO UTILIZE OTHER STRUCTURAL OR NONSTRUCTURAL BMPS THAT PREVENT OR MINIMIZE CHANGES IN STORM WATER RUNOFF:
- PROVIDE UNDERGROUND DETENTION FACILITIES TO HELP REDUCE RUNOFF VOLUME AND RATES.
- PROVIDE VEGETATED SWALE
- MINIMIZE IMPERVIOUS AREAS WHERE PRACTICAL.

P.C.S.M. STANDARD NOTES

PERMIT TERMINATION

UPON PERMANENT STABILIZATION OF THE EARTH DISTURBANCE ACTIVITY UNDER § 102.22(A)(2) (RELATING TO PERMANENT STABILIZATION), AND INSTALLATION OF BMPS IN ACCORDANCE WITH AN APPROVED PLAN PREPARED AND IMPLEMENTED IN ACCORDANCE WITH §§ 102.4 AND 102.8 (RELATING TO EROSION AND SEDIMENT CONTROL REQUIREMENTS; AND PCSM REQUIREMENTS), THE PERMITTEE OR CO-PERMITTEE SHALL SUBMIT A NOTICE OF TERMINATION TO THE DEPARTMENT OR CONSERVATION DISTRICT.

THE NOTICE OF TERMINATION MUST INCLUDE:
(1) THE FACILITY NAME, ADDRESS AND LOCATION.
(2) THE OPERATOR NAME AND ADDRESS.
(3) THE PERMIT NUMBER.
(4) THE REASON FOR PERMIT TERMINATION.
(5) IDENTIFICATION OF THE PERSONS WHO HAVE AGREED TO AND WILL BE RESPONSIBLE FOR LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMPS IN ACCORDANCE WITH § 102.8(M) AND PROOF OF COMPLIANCE WITH § 102.8(M)(2).

PCSM REQUIREMENTS

PCSM REPORTING AND RECORDKEEPING. THE PCSM PLAN, INSPECTION REPORTS AND MONITORING RECORDS SHALL BE AVAILABLE FOR REVIEW AND INSPECTION BY THE DEPARTMENT OR THE CONSERVATION DISTRICT.

LICENSED PROFESSIONAL OVERSIGHT OF CRITICAL STAGES. A LICENSED PROFESSIONAL OR A DESIGNEE SHALL BE PRESENT ONSITE AND BE RESPONSIBLE DURING CRITICAL STAGES OF IMPLEMENTATION OF THE APPROVED PCSM PLAN. THE CRITICAL STAGES MAY INCLUDE THE INSTALLATION OF UNDERGROUND TREATMENT OR STORAGE BMPS, STRUCTURALLY ENGINEERED BMPS, OR OTHER BMPS AS DEEMED APPROPRIATE BY THE DEPARTMENT OR THE CONSERVATION DISTRICT.

FINAL CERTIFICATION. THE PERMITTEE SHALL INCLUDE WITH THE NOTICE OF TERMINATION "RECORD DRAWINGS" WITH A FINAL CERTIFICATION STATEMENT FROM A LICENSED PROFESSIONAL, WHICH READS AS FOLLOWS:
"I (NAME) DO HEREBY CERTIFY PURSUANT TO THE PENALTIES OF 18 PA.C.S.A. § 4904 TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THE ACCOMPANYING RECORD DRAWINGS ACCURATELY REFLECT THE AS-BUILT CONDITIONS, ARE TRUE AND CORRECT, AND ARE IN CONFORMANCE WITH CHAPTER 102 OF THE RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THAT THE PROJECT SITE WAS CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PCSM PLAN, ALL APPROVED PLAN CHANGES AND ACCEPTED CONSTRUCTION PRACTICES."

(1) THE PERMITTEE SHALL RETAIN A COPY OF THE RECORD DRAWINGS AS A PART OF THE APPROVED PCSM PLAN.
(2) THE PERMITTEE SHALL PROVIDE A COPY OF THE RECORD DRAWINGS AS A PART OF THE APPROVED PCSM PLAN TO THE PERSON IDENTIFIED IN THIS SECTION AS BEING RESPONSIBLE FOR THE LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMPS.

PCSM LONG TERM OPERATIONS AND MAINTENANCE REQUIREMENTS

UNTIL THE PERMITTEE OR CO-PERMITTEE HAS RECEIVED WRITTEN APPROVAL OF A NOTICE OF TERMINATION, THE PERMITTEE OR CO-PERMITTEE WILL REMAIN RESPONSIBLE FOR COMPLIANCE WITH THE PERMIT TERMS AND CONDITIONS INCLUDING LONG-TERM OPERATION AND MAINTENANCE OF ALL PCSM BMPS ON THE PROJECT SITE AND IS RESPONSIBLE FOR VIOLATIONS OCCURRING ON THE PROJECT SITE. THE DEPARTMENT OR CONSERVATION DISTRICT WILL CONDUCT A FINAL INSPECTION AND APPROVE OR DENY THE NOTICE OF TERMINATION WITHIN 30 DAYS.

THE PERMITTEE OR CO-PERMITTEE SHALL BE RESPONSIBLE FOR LONG-TERM OPERATION AND MAINTENANCE OF PCSM BMPS UNLESS A DIFFERENT PERSON IS IDENTIFIED IN THE NOTICE OF TERMINATION AND HAS AGREED TO LONG-TERM OPERATION AND MAINTENANCE OF PCSM BMPS.

FOR ANY PROPERTY CONTAINING A PCSM BMP, THE PERMITTEE OR CO-PERMITTEE SHALL RECORD AN INSTRUMENT WITH THE RECORDER OF DEEDS WHICH WILL ASSURE DISCLOSURE OF THE PCSM BMP AND THE RELATED OBLIGATIONS IN THE ORDINARY COURSE OF A TITLE SEARCH OF THE SUBJECT PROPERTY. THE RECORDED INSTRUMENT MUST IDENTIFY THE PCSM BMP, PROVIDE FOR NECESSARY ACCESS RELATED TO LONG-TERM OPERATION AND MAINTENANCE FOR PCSM BMPS AND PROVIDE NOTICE THAT THE RESPONSIBILITY FOR LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMP IS A COVENANT THAT RUNS WITH THE LAND THAT IS BINDING UPON AND ENFORCEABLE BY SUBSEQUENT GRANTEES, AND PROVIDE PROOF OF FILING WITH THE NOTICE OF TERMINATION UNDER § 102.7(B)(5) (RELATING TO PERMIT TERMINATION

THE PERSON RESPONSIBLE FOR PERFORMING LONG-TERM OPERATION AND MAINTENANCE MAY ENTER INTO AN AGREEMENT WITH ANOTHER PERSON INCLUDING A CONSERVATION DISTRICT, NONPROFIT ORGANIZATION, MUNICIPALITY, AUTHORITY, PRIVATE CORPORATION OR OTHER PERSON, TO TRANSFER THE RESPONSIBILITY FOR PCSM BMPS OR TO PERFORM LONG-TERM OPERATION AND MAINTENANCE AND PROVIDE NOTICE THEREOF TO THE DEPARTMENT.

A PERMITTEE OR CO-PERMITTEE THAT FAILS TO TRANSFER LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMP OR OTHERWISE FAILS TO COMPLY WITH THIS REQUIREMENT SHALL REMAIN JOINTLY AND SEVERALLY RESPONSIBLE WITH THE LANDOWNER FOR LONG-TERM OPERATION AND MAINTENANCE OF THE PCSM BMPS LOCATED ON THE PROPERTY.

RESPONSIBLE PARTY:

MILEONE FORT WASHINGTON
3301 BRIGGS CHANEY ROAD,
SILVER SPRING, MD 20904
C/O DENNIS TURNBAUGH

SEQUENCE OF BMP INSTALLATION AND REMOVAL

§102.4(b)(5)(vii)

ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED IN COMPLIANCE WITH CHAPTER 102 REGULATIONS BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY THAT WILL EXCEED FOUR (4) DAYS IMMEDIATELY FOR HQ/EV WATERSHEDS), OR ANY STAGE THEREOF, THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION.

AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES INCLUDING, BUT NOT LIMITED TO THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS AND A REPRESENTATIVE OF THE _____ COUNTY CONSERVATION DISTRICT FOR AN ON-SITE PRE-CONSTRUCTION MEETING. ALSO, AT LEAST THREE (3) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM INC. AT 1-800-242-1776 FOR BURIED UTILITIES LOCATION.

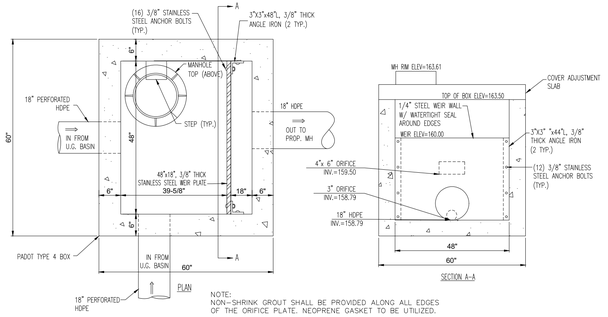
BEFORE INITIATING ANY REVISION TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED E&S CONTROL PLAN, THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE _____ COUNTY CONSERVATION DISTRICT. THE OPERATOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.

1. INSTALL CONSTRUCTION ENTRANCE AND STAGING AREAS AS DESIGNATED ON THE PLANS.
2. INSTALL ALL PERIMETER COMPOST FILTER SOCKS, TREE PROTECTION FENCING, INLET PROTECTION WITHIN THE DESIGNATED LIMIT OF DISTURBANCE AS INDICATED ON THE PLANS. ONLY LIMITED CLEARING AND GRUBBING NECESSARY TO INSTALL THE PERIMETER EROSION AND SEDIMENT POLLUTION CONTROLS IS PERMITTED.
3. INITIATE THE NECESSARY EARTHWORK TO REACH THE GRADES INDICATED ON THE PLANS. BUILDING CONSTRUCTION MAY COMMENCE UPON ACCEPTANCE OF BUILDING PAD BY OWNER. THE CONCRETE WASHOUT MUST BE INSTALLED BEFORE ANY CONCRETE CAN BE POURED ON-SITE. CONTRACTOR MUST PERFORM BULK OF EARTHWORK TO BALANCE CUTS AND FILLS TO THE GREATEST EXTENT POSSIBLE. ALL AREAS DISTURBED DURING THE EARTHWORK PHASE OF CONSTRUCTION MUST BE TEMPORARILY SEEDED AND STABILIZED IN ACCORDANCE WITH THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS AND SEEDING SPECIFICATIONS IF PERMANENT STABILIZATION CANNOT BE ACHIEVED WITHIN FOUR (4) DAYS.
4. INITIATE STORM SEWER AND SUBSURFACE BASIN INSTALLATIONS FOR THE FEATURES SHOWN ON THE PLANS STARTING AT THE FURTHEST DOWNSTREAM STRUCTURE. [SEE ADDITIONAL INFILTRATION FACILITY SEQUENCING, INSTALLATION AND MAINTENANCE & INSPECTION NOTES PROVIDED ON THE POST CONSTRUCTION STORMWATER MANAGEMENT PLANS FOR CONSTRUCTION OF THE SUBSURFACE INFILTRATION BASINS. **THE PERMITTEE SHALL PROVIDE ENGINEERING OVERSIGHT FOR THE CONSTRUCTION OF SUBSURFACE INFILTRATION BASINS. A LICENSED PROFESSIONAL OR DESIGNEE KNOWLEDGEABLE IN THE DESIGN AND CONSTRUCTION OF SUBSURFACE INFILTRATION BASINS, PREFERABLY THE DESIGN ENGINEER, SHALL CONDUCT THE OVERSIGHT.** INLETS DISCHARGING TO SUBSURFACE INFILTRATION BASINS MUST BE BLOCKED IMMEDIATELY AFTER INSTALLATION AND REMAIN BLOCKED UNTIL SITE IS FULLY STABILIZED TO PREVENT SEDIMENT FROM ENTERING THE SUBSURFACE [INFILTRATION, DETENTION] BASINS. NO CONSTRUCTION EQUIPMENT, SUCH AS CRANES DURING BUILDING CONSTRUCTION, SHALL BE PARKED ON TOP OF THE SUBSURFACE BASINS TO AVOID DAMAGING THE SUBSURFACE BASINS OR OVER-COMPACTING THE SUBSURFACE SOILS.]
5. CONTINUE WITH THE BALANCE OF EARTHWORK INCLUDING UTILITY INSTALLATION (SANITARY, ELECTRIC, TELEPHONE, CABLE AND GAS) WHERE APPLICABLE.
6. INSTALL ALL CURBING SHOWN IN THIS PHASE AND INSTALL STONE BASE COURSE IN THE DRIVEWAY AND PARKING AREAS.
7. INITIATE FINAL GRADING AND PLACEMENT OF TOPSOIL IN ALL LANDSCAPE AREAS. AS SOON AS SLOPES, CHANNELS, DITCHES AND OTHER DISTURBED AREAS REACH FINAL GRADE, THEY MUST BE STABILIZED. ALL LANDSCAPE AREAS MUST BE STABILIZED AND PERMANENT SEEDING OR PLACEMENT OF SOD MUST BE APPLIED. WHEN FINAL GRADE IS ACHIEVED DURING NON-GERMINATING MONTHS, THE AREA SHOULD BE MULCHED UNTIL THE BEGINNING OF THE NEXT PLANTING SEASON. HOWEVER, THE AREA WILL NOT BE CONSIDERED STABILIZED UNTIL A MINIMUM UNIFORM 70% VEGETATIVE COVER OF EROSION RESISTANT PERENNIAL SPECIES HAS BEEN ACHIEVED. AS DISTURBED AREAS WITHIN A PROJECT APPROACH FINAL GRADE, PREPARATIONS SHOULD BE MADE FOR SEEDING AND MULCHING TO BEGIN (I.E. ANTICIPATE THE COMPLETION DATE AND SCHEDULE THE SEEDER). IN NO CASE SHOULD AN AREA EXCEEDING 15,000 SQUARE FEET, WHICH IS TO BE STABILIZED BY VEGETATION, REACH FINAL GRADE WITHOUT BEING SEEDED AND MULCHED. WAITING UNTIL EARTHMOVING IS COMPLETED BEFORE MAKING PREPARATIONS FOR SEEDING AND MULCHING IS NOT ACCEPTABLE. SEEDING AND MULCHING REQUIREMENTS ARE SPECIFIED IN THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS.
8. A SITE INSPECTION AND APPROVAL BY THE CONSERVATION DISTRICT IS REQUIRED PRIOR TO REMOVAL OR CONVERSION OF SEDIMENT TRAPS AND BASINS. ONCE STONE BASE COURSE HAS BEEN SPREAD IN ALL PAVED AREAS AND ALL LANDSCAPE AREAS HAVE BEEN STABILIZED, BEGIN CONVERTING [SEDIMENT BASIN, SEDIMENT TRAP, BIO-RETENTION FACILITIES, RAINGARDENS, BIO-INFILTRATION FACILITIES] TO FINAL GRADES IN ACCORDANCE WITH BMP SEQUENCE OF CONSTRUCTION. **THE PERMITTEE SHALL PROVIDE ENGINEERING OVERSIGHT FOR THE CONVERSION OF [INSERT BMPS]. A LICENSED PROFESSIONAL OR DESIGNEE KNOWLEDGEABLE IN THE DESIGN AND CONSTRUCTION OF [INSERT BMPS], PREFERABLY THE DESIGN ENGINEER, SHALL CONDUCT THE OVERSIGHT.**
9. INSTALL BITUMINOUS PAVEMENT AND CONCRETE INCLUDING SIDEWALKS.
10. INSTALL FINAL VEGETATION AND LANDSCAPING SPECIFIED ON THE LANDSCAPE PLAN.
11. UPON SITE STABILIZATION (UNIFORM COVERAGE OR DENSITY OF 70% ACROSS ALL DISTURBED AREAS) AND NOTIFICATION OF THE MONTGOMERY COUNTY CONSERVATION DISTRICT, REMOVE EROSION AND SEDIMENT CONTROL FACILITIES. ANY AREA DISTURBED DURING THE REMOVAL OF EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE STABILIZED IMMEDIATELY.
12. CLEAR SITE OF DEBRIS AND ALL UNWANTED MATERIALS. OPERATOR SHALL REMOVE FROM SITE, RECYCLE OR DISPOSE OF ALL BUILDING MATERIALS AND WASTES IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1 ET SEQ. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP OR DISCHARGE ANY BUILDING MATERIAL OR WASTE AT THIS SITE.
13. DEMOBILIZE.
14. A NOTICE OF TERMINATION FORM SHOULD BE SUBMITTED TO THE MONTGOMERY COUNTY CONSERVATION DISTRICT UPON STABILIZATION AND FINAL COMPLETION OF THIS PROJECT.

RECORD PLAN 7 OF 9

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
INDUSTRIAL ENGINEERING
PERMITTING SERVICES
TRANSPORTATION SERVICES

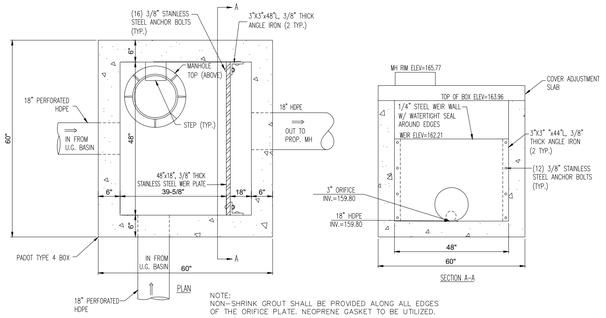
THE INFORMATION, DESIGN AND CONTENT OF THIS PLAN IS PROPRIETARY AND SHALL NOT BE COPIED OR USED FOR ANY PURPOSE, WITHOUT PRIOR WRITTEN AUTHORIZATION FROM BOHLER. ONLY APPROVED AND SIGNED AND SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES. © BOHLER, PE



NOTE:
NON-SHRINK GROUT SHALL BE PROVIDED ALONG ALL EDGES OF THE ORIFICE PLATE. NEOPRENE GASKET TO BE UTILIZED.

UNDERGROUND DETENTION BASIN OUTLET STRUCTURE DETAIL UG1 (OCS-102)

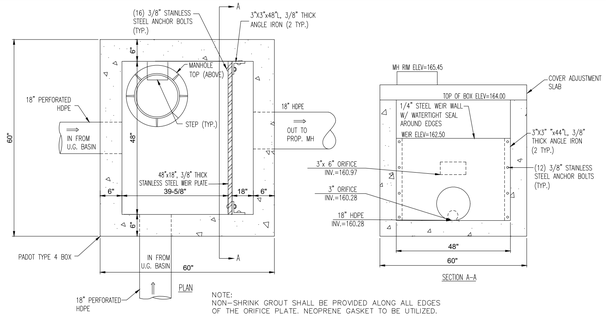
N.T.S.



NOTE:
NON-SHRINK GROUT SHALL BE PROVIDED ALONG ALL EDGES OF THE ORIFICE PLATE. NEOPRENE GASKET TO BE UTILIZED.

UNDERGROUND DETENTION BASIN OUTLET STRUCTURE DETAIL UG2 (OCS-201)

N.T.S.



NOTE:
NON-SHRINK GROUT SHALL BE PROVIDED ALONG ALL EDGES OF THE ORIFICE PLATE. NEOPRENE GASKET TO BE UTILIZED.

UNDERGROUND DETENTION BASIN OUTLET STRUCTURE DETAIL UG3 (OCS-301)

N.T.S.

UNDERGROUND DETENTION BASIN SEQUENCE OF CONSTRUCTION:

1.) THE EXISTING SUBGRADE UNDER THE BED AREAS SHOULD NOT BE COMPACTED OR SUBJECT TO EXCESSIVE CONSTRUCTION EQUIPMENT TRAFFIC PRIOR TO GEOTEXTILE AND STONE BED PLACEMENT.

2.) WHERE EROSION OF SUBGRADE HAS CAUSED ACCUMULATION OF FINE MATERIAL AND/OR SURFACE PONDING, THIS MATERIAL SHOULD BE REMOVED WITH LIGHT EQUIPMENT AND THE UNDERLYING SOILS

3.) INSTALL UPSTREAM AND DOWNSTREAM CONTROL STRUCTURES, CLEANOUTS, PERFORATED PIPING, AND ALL OTHER NECESSARY STORMWATER STRUCTURES. REFER TO THE SUBSURFACE INFILTRATION BASIN PLAN FOR ELEVATIONS.

4.) GEOTEXTILE, IMPERMEABLE LINER (IF APPLICABLE), AND BED AGGREGATE SHOULD BE PLACED IMMEDIATELY AFTER APPROVAL OF SUBGRADE PREPARATION AND INSTALLATION OF STRUCTURES. STRIPS OF GEOTEXTILE SHOULD OVERLAP A MINIMUM OF 16-INCHES. IT SHOULD BE SECURED AT LEAST 4 FEET OUTSIDE OF BED IN ORDER TO PREVENT ANY RUNOFF OR SEDIMENT FROM ENTERING THE STORAGE BED. THIS EDGE STRIP SHOULD REMAIN IN PLACE UNTIL ALL BARE SOILS CONTIGUOUS TO BEDS ARE STABILIZED AND VEGETATED. AS THE SITE IS FULLY STABILIZED, EXCESS GEOTEXTILE ALONG BED EDGES CAN BE CUT BACK TO THE EDGE OF THE BED.

5.) CLEAN-WASHED, UNIFORMLY GRADED AGGREGATE SHOULD BE PLACED IN THE BED IN MAXIMUM 8-INCH LIFTS. EACH LAYER SHOULD BE LIGHTLY COMPACTED, WITH CONSTRUCTION EQUIPMENT KEPT OFF OF THE BED BOTTOM AS MUCH AS POSSIBLE.

6.)UPON COMPLETION OF BACKFILLED STONE, COMPLETE PLACEMENT OF GEOTEXTILE FABRIC AND BEGIN PAVEMENT SUBBASE INSTALLATION.

7.)DO NOT REMOVE INLET PROTECTION OR OTHER EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.

SUBSURFACE DETENTION BASIN INSTALLATION NOTES BMP 6.6.3

2.) ALL SEDIMENT LADEN STORMWATER RUNOFF SHALL BE DIRECTED AROUND THE DETENTION AREA TO THE NEAREST TEMPORARY BMP. WHEN INSPECTION INDICATES THAT SOIL/SEDIMENT HAS ENTERED THE BED, THE AREA SHALL BE FULLY CLEANED AS NECESSARY.

3.) THE SUBSURFACE DETENTION BED SHOULD BE COMPRISED OF A 8 INCH MINIMUM SECTION OF AGGREGATE. AGGREGATE IS TO BE UNIFORMLY GRADED, CLEAN-WASHED, AND CONTAIN AT LEAST 40% VOID SPACE.

4.) A 0.50% SLOPE BOTTOM OF STONE IS REQUIRED TO ASSURE NO STANDING WATER. INSTALLED PIPES SHALL BE AT A MINIMUM OF 0.5% TO PROMOTE POSITIVE FLOW.

SUBSURFACE DETENTION BASIN SPECIFICATIONS BMP 6.6.3

UTILIZE A UNIFORMLY GRADED CRUSHED STONE (AASHTO #3), PROVIDED THAT THE STONE IS PROPERLY CLEANED AND THAT A MINIMUM VOID RATIO OF 40% IS PROVIDED. HIGHER VOID RATIOS MAY BE SELECTED BY THE DESIGN ENGINEER, AND IF SO, THE DESIGN VOID RATIO SHALL GOVERN. IN ORDER TO INSURE THAT THE STONE USED IS PROPERLY CLEANED, IN ADDITION TO AASHTO DESIGNATION: M43-88 GRADATION, THE PERCENT PASSING THE NO. 200 SIEVE SHALL NOT EXCEED 0.2%

1. A CERTIFICATION FROM THE MANUFACTURER DOCUMENTING THE FULL GRADATION AND VOID RATIO SHALL BE OBTAINED.
2. WHEN IN THE OPINION OF THE TOWNSHIP INSPECTOR OR THE GEOTECHNICAL ENGINEER THE STONE IS NOT CONSISTENT WITH THE APPROVED SAMPLE, IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THE STONE RETESTED AND CERTIFIED BEFORE ANY ADDITIONAL STONE IS INSTALLED OR DELIVERED.
3. ALL STONE SAMPLES AND CERTIFICATIONS SHALL BE SUBMITTED TO THE TOWNSHIP 14 DAYS PRIOR TO THE START OF THE SUBSURFACE INFILTRATION BED CONSTRUCTION.
4. THE BOTTOM OF THE EXCAVATION SHALL BE SCARIFIED PRIOR TO THE PLACEMENT OF AGGREGATE.
5. ONLY CLEAN AGGREGATE, FREE OF DEBRIS, SHALL BE ALLOWED.
6. THE TOP, SIDES, AND BOTTOM OF THE BEDS SHALL BE COVERED WITH CONTINUOUS 40 MIL NON-REINFORCED PVC SHEETING OR APPROVED EQUIVALENT.
7. CONSTRUCTION OF THE FACILITY SHALL PREVENT SILT FROM CLOGGING THE AGGREGATE BACKFILL.
8. CONTRACTOR TO REVIEW AND IMPLEMENT PIPE BEDDING AND BACKFILL REQUIREMENTS RECOMMENDED BY THE SPECIFIC PIPE MANUFACTURER.
9. THE BEDS SHALL BE BACKFILLED WITH CLEAN WASHED AGGREGATE AND SHALL BE KEPT CLEAN OF SOIL/SEDIMENT DURING THE INSTALLATION PROCESS. IF INSPECTION INDICATES THAT SOIL/SEDIMENT HAS CONTAMINATED THESE ITEMS, THE MATERIALS SHALL BE REPLACED AND/OR CLEANED AS NECESSARY.

SUBSURFACE INFILTRATION BED INSTALLATION NOTES BMP 6.4.3

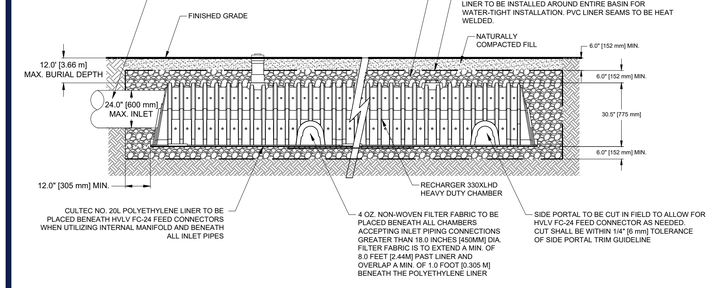
1. **UPON COMPLETION OF EXISTING BUILDING/STRUCTURE DEMOLITION, G.C. TO EXCAVATE TEST PIT WITHIN VICINITY/DEPTH OF THE PROPOSED SUBSURFACE STONE INFILTRATION BED. SHOULD INFILTRATION TESTING RESULT IN RATES OF LESS THAN 2 IN/HR (WITHOUT A FACTOR OF SAFETY), AN ALTERNATE DESIGN WILL NEED TO BE REVIEWED AND APPROVED BY LEHIGH COUNTY CONSERVATION DISTRICT/PADEP PRIOR TO CONSTRUCTION OF INFILTRATION FACILITIES. G.C. TO SUBMIT INFILTRATION TESTING RESULTS TO PROFESSIONAL RESPONSIBLE TO INSTALLATION OVERSIGHT AT LEAST 3 DAYS PRIOR TO INSTALLATION OF SUBSURFACE INFILTRATION STONE BED.**
2. ALL SEDIMENT LADEN STORMWATER RUNOFF SHALL BE DIRECTED AROUND THE INFILTRATION AREA TO THE NEAREST TEMPORARY BMP. WHEN INSPECTION INDICATES THAT SOIL/SEDIMENT HAS ENTERED THE BED, THE AREA SHALL BE FULLY CLEANED AS NECESSARY.
3. THE SUBSURFACE INFILTRATION BED SHOULD BE COMPRISED OF A 18 INCH MINIMUM SECTION OF AGGREGATE. AGGREGATE IS TO BE UNIFORMLY GRADED, CLEAN-WASHED, AND CONTAIN AT LEAST 40% VOID SPACE.

SPECIFICATIONS FOR CRUSHED STONE AGGREGATE FORE USE IN THE SUBSURFACE INFILTRATION STONE BED & SUBSURFACE DETENTION BASIN 6.4.3

1. A UNIFORMLY GRADED CRUSHED STONE (AASHTO#3) PROVIDED THAT STONE IS PROPERLY CLEANED AND THAT A MINIMUM VOID RATIO OF 40% IS PROVIDED. HIGHER VOID THE RATIOS MAY BE SELECTED BY THE DESIGN ENGINEER, AND IF SO, THE DESIGN VOID RATIO SHALL GOVERN. IN ORDER TO INSURE THAT THE STONE USED IS PROPERLY CLEANED, IN ADDITION TO AASHTO DESIGNATION: M43-88 GRADATION, THE PERCENT PASSING THE NO. 200 SIEVE SHALL NOT EXCEED 0.2%
2. A CERTIFICATION FROM THE MANUFACTURER DOCUMENTING THE FULL GRADATION AND VOID RATIO SHALL BE OBTAINED.
3. WHEN, IN THE OPINION OF THE TOWNSHIP INSPECTOR OR THE GEOTECHNICAL ENGINEER, THE STONE IS NOT CONSISTENT WITH THE APPROVED SAMPLE, IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THE STONE RETESTED AND CERTIFIED BEFORE ANY ADDITIONAL STONE IS INSTALLED OR DELIVERED.
4. ALL STONE SAMPLES AND CERTIFICATIONS SHALL BE SUBMITTED TO THE TOWNSHIP 14 DAYS PRIOR TO THE START OF STORMWATER INFILTRATION BASIN CONSTRUCTION.
5. THE BOTTOM OF THE TRENCH SHALL BE SCARIFIED PRIOR TO THE PLACEMENT OF AGGREGATE.
6. ONLY CLEAN AGGREGATE, FREE OF DEBRIS, SHALL BE ALLOWED.
7. THE ENTIRE SUBSURFACE INFILTRATION BED FACILITIES SHALL BE COVERED WITH CONTINUOUS NON-WOVEN GEOTEXTILE MIRAFI 140N, OR APPROVED EQUIVALENT.
8. CONSTRUCTION OF ALL SUBSURFACE FACILITIES SHALL PREVENT SILT FROM CLOGGING THE AGGREGATE BACKFILL.
9. CONTRACTOR TO REVIEW AND IMPLEMENT PIPE BEDDING AND BACKFILL REQUIREMENTS RECOMMENDED BY THE SPECIFIC PIPE MANUFACTURER.

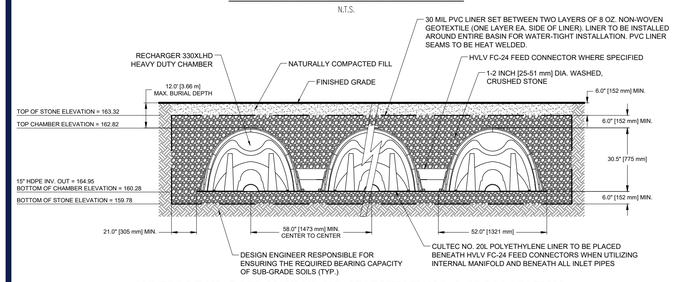
SUBSURFACE INFILTRATION STONE BED & SUBSURFACE DETENTION BASIN CONSTRUCTION SEQUENCE 6.4.3

1. THE EXISTING SUBGRADE UNDER THE BED AREAS SHOULD NOT BE COMPACTED OR SUBJECT TO EXCESSIVE CONSTRUCTION EQUIPMENT TRAFFIC PRIOR TO GEOTEXTILE AND STONE BED PLACEMENT. **(REFER TO SUBSURFACE INFILTRATION BED INSTALLATION NOTE #1 REGARDING ADDITIONAL INFILTRATION TESTING PRIOR TO INSTALLATION)**
2. INSTALL AND MAINTAIN ADEQUATE EROSION AND SEDIMENT CONTROL MEASURES (PER APPROVED E&S PLAN) DURING THE INSTALLATION OF THE BMP.
3. WHERE EROSION OF SUBGRADE HAS CAUSED ACCUMULATION OF FINE MATERIAL AND/OR SURFACE PONDING, THIS MATERIAL SHOULD BE REMOVED WITH LIGHT EQUIPMENT AND THE UNDERLYING SOILS SCARIFIED TO A MINIMUM DEPTH OF 6-INCHES, WITH A YORK RAKE (OR EQUIVALENT) AND LIGHT TRACTOR. ALL FINE GRADING SHOULD BE DONE BY HAND.
4. INSTALL UPSTREAM AND DOWNSTREAM CONTROL STRUCTURES, CLEANOUTS, PERFORATED PIPING, AND ALL OTHER NECESSARY STORMWATER STRUCTURES. REFER TO THE SUBSURFACE DETENTION BASIN PLAN FOR ELEVATIONS.
5. GEOTEXTILE AND BED AGGREGATE SHOULD BE PLACED IMMEDIATELY AFTER APPROVAL OF SUBGRADE PREPARATION AND INSTALLATION OF STRUCTURES. STRIPS OF GEOTEXTILE SHOULD OVERLAP A MINIMUM OF 16-INCHES. IT SHOULD BE SECURED AT LEAST 4 FEET OUTSIDE OF BED IN ORDER TO PREVENT ANY RUNOFF OR SEDIMENT FROM ENTERING THE STORAGE BED. THIS EDGE STRIP SHOULD REMAIN IN PLACE UNTIL ALL BARE SOILS CONTIGUOUS TO BEDS ARE STABILIZED AND VEGETATED. AS THE SITE IS FULLY STABILIZED, EXCESS GEOTEXTILE ALONG BED EDGES CAN BE CUT BACK TO THE EDGE OF THE BED.
6. CLEAN-WASHED, UNIFORMLY GRADED AGGREGATE SHOULD BE PLACED IN THE BED IN MAXIMUM 8-INCH LIFTS. EACH LAYER SHOULD BE LIGHTLY COMPACTED, WITH CONSTRUCTION EQUIPMENT KEPT OFF OF THE BED BOTTOM AS MUCH AS POSSIBLE.
7. UPON COMPLETION OF BACKFILLED STONE, COMPLETE PLACEMENT OF GEOTEXTILE FABRIC AND BEGIN PAVEMENT SUBBASE INSTALLATION.
8. DO NOT REMOVE INLET PROTECTION OR OTHER EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.



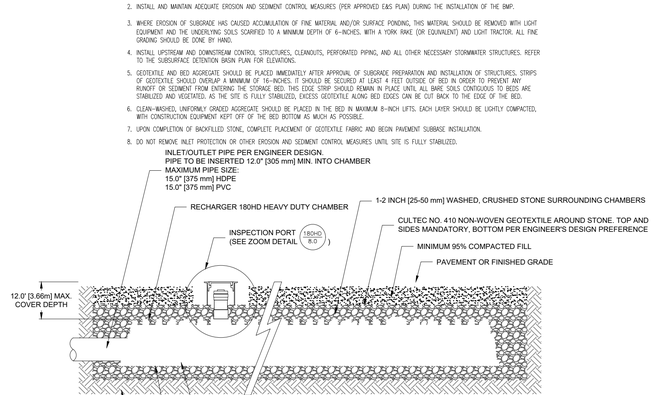
CULTEC INTERNAL MANIFOLD DETAIL

N.T.S.



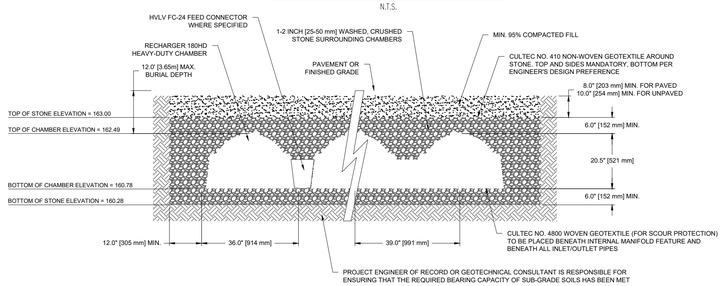
CULTEC RECHARGER 330XLHD HEAVY DUTY TYPICAL CROSS SECTION

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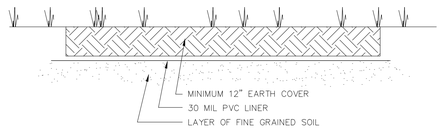
CULTEC INTERNAL MANIFOLD DETAIL

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CULTEC RECHARGER 180HD HEAVY DUTY TYPICAL CROSS SECTION

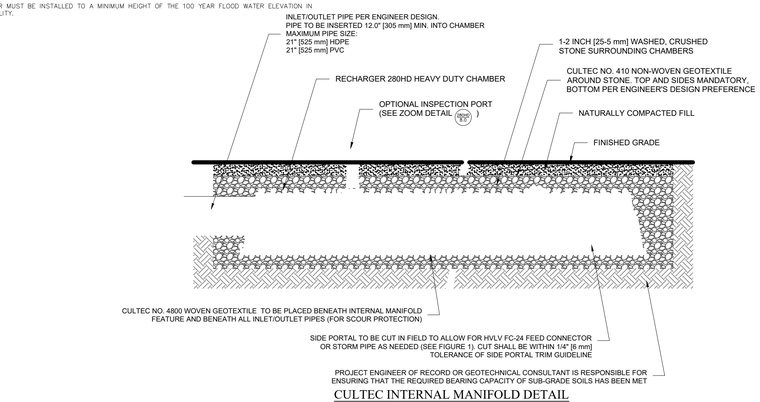
N.T.S.



DETENTION BASIN LINER DETAIL

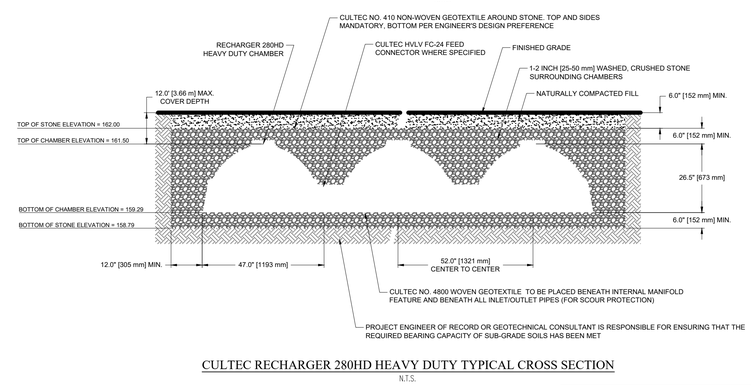
NO SCALE

NOTES:
1. PROVIDE A 30 MIL PVC LINER. SPECIFICATIONS ARE TO BE PROVIDED BY THE MANUFACTURER FOR THE BASIN.
2. THE LINER MUST BE PLACED ON A LAYER OF FINE GRAINED SOIL THAT HAS BEEN ROLLED WITH A SMOOTH DRUM ROLLER IN BOTH DIRECTIONS TO PRODUCE A SMOOTH LEVEL BASE FOR THE LINER.
3. THE SOIL MAY NOT CONTAIN SHARP ANGULAR ROCK OR OTHER DEBRIS WHICH COULD PUNCTURE THE LINER, AND MUST MEET ALL MANUFACTURER'S SPECIFICATIONS FOR A LINER BEDDING.
4. ALL VEGETATION, ROOTS AND GRASS MUST BE REMOVED AND ANY CRACKS OR VOIDS SHALL BE FILLED.
5. IF ROCK IS ENCOUNTERED IN THE BEDDING AREA, THIS ROCK MUST BE EXCAVATED TO DEPTH OF 6" BELOW THE LINER AND BACKFILLED WITH A FINE GRAINED SOIL. THIS AREA SHOULD THEN BE COVERED WITH GEOTEXTILE FABRIC EXTENDING 3' BEYOND THE LIMITS OF THE ROCK OUTCROP BEFORE PLACING THE POND LINER.
6. INSTALLATION OF THE LINER MAY ONLY TAKE PLACE WHEN THE AMBIENT TEMPERATURE IS WITHIN THE MANUFACTURER'S RECOMMENDED RANGE.
7. INSTALLATION AND TESTING SHALL BE IN ACCORDANCE WITH MANUFAACTURER'S SPECIFICATIONS.
8. THE NUMBER OF FIELD SEAMS SHALL BE MINIMIZED BY REQUIRING FACTORY FABRICATION OF LARGE PANELS. ANY FIELD SEAMS PERFORMED MUST BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
9. ALL STRUCTURES (ie. HEADWALL, PIPES, OUTLET STRUCTURES) WHICH COME IN CONTACT WITH THE LINER MUST HAVE A WATERPROOF SEAL INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
10. A MINIMUM OF 12" OF EARTH COVER SHALL BE PLACED OVER THE LINING.
11. SOIL CONTAINING SHARP JAGGED ROCKS, ROOTS, DEBRIS OR ANY OTHER MATERIAL WHICH MAY PUNCTURE THE LINER SHALL NOT BE USED AS COVER MATERIAL.
12. THE LINER MUST BE INSTALLED TO A MINIMUM HEIGHT OF THE 100 YEAR FLOOD WATER ELEVATION IN THE FACILITY.



CULTEC INTERNAL MANIFOLD DETAIL

N.T.S.



CULTEC RECHARGER 280HD HEAVY DUTY TYPICAL CROSS SECTION

N.T.S.

RECORD PLAN 8 OF 9

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
INDUSTRIAL AND MUNICIPAL ENGINEERING
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PROJECT No.:	PAB220113.00
DRAWN BY:	BS
CHECKED BY:	MSL
DATE:	03/15/2023
CAD I.D.:	PAB220113.00-SESC-0A

PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

500 PENNSYLVANIA AVENUE WHITEMARSH TOWNSHIP MONTGOMERY COUNTY, PA

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74 W BROAD STREET, SUITE 500
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PENNSYLVANIA LICENSE No. PE081005
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SHEET TITLE:

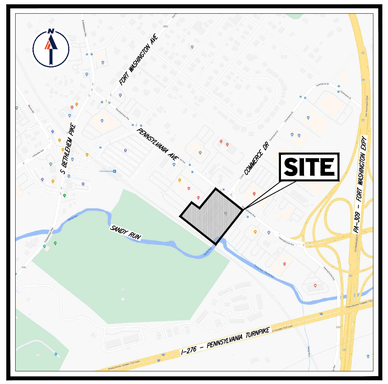
POST CONSTRUCTION STORMWATER MANAGEMENT DETAILS

SHEET NUMBER:

C-606

ORG. DATE - 03/15/2023

R:\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-SESC-0A---LAYOUT C-606 PCSM DETAILS

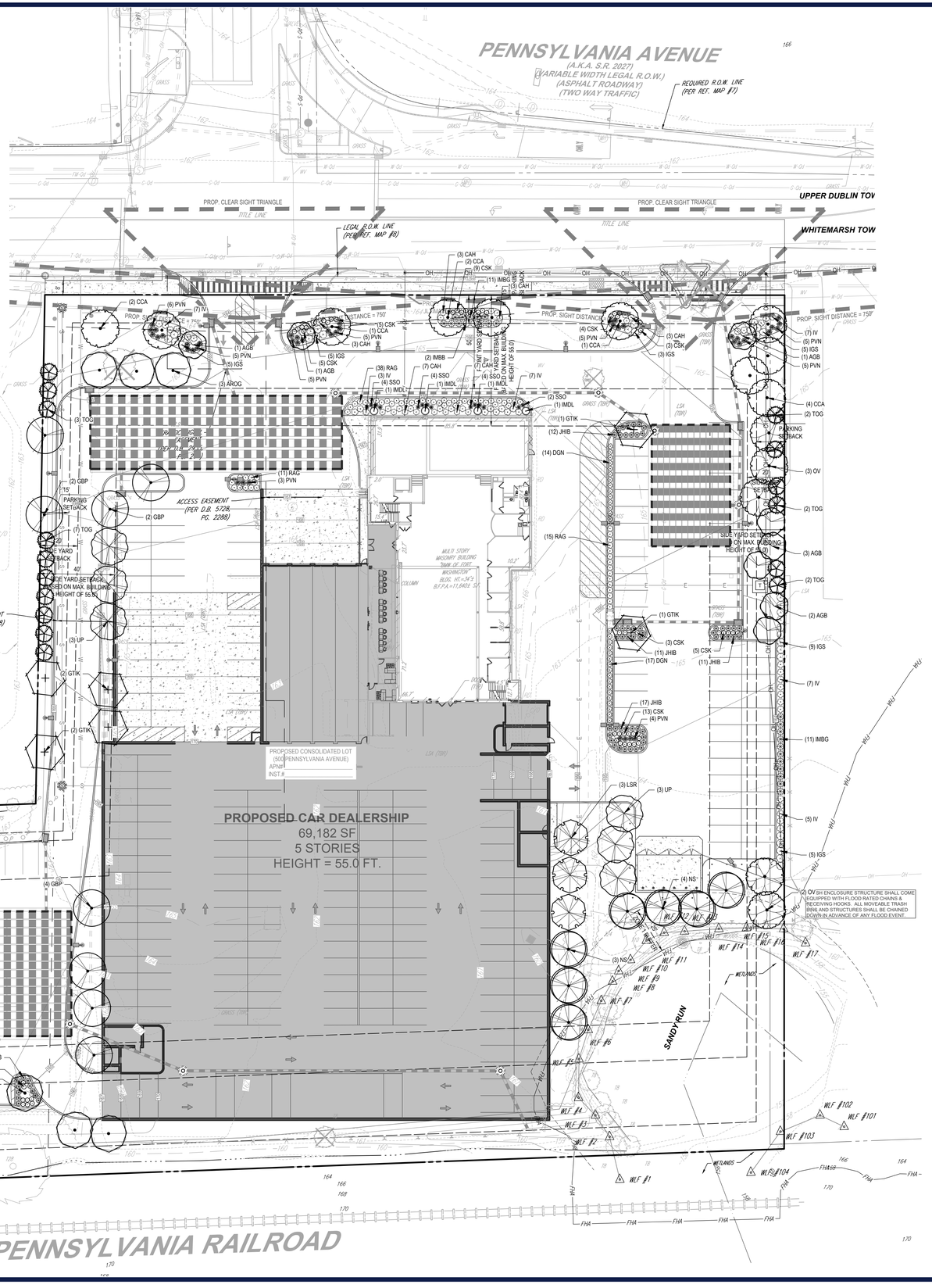


LOCATION MAP

SCALE: 1" = 800'

800 400 200 0 800

1"=800'



N

30 15 7.5 0 30

1"= 30'

GENERAL NOTES:

1. THIS PLAN IS TO BE UTILIZED FOR LANDSCAPE PURPOSES ONLY.
2. ALL DISTURBED UNPAVED AREAS, EXCLUDING PLANTING BEDS, ARE TO BE INSTALLED AS LAWN IN ACCORDANCE WITH LANDSCAPE SPECIFICATION #2.C., UNLESS OTHERWISE STATED ON THIS PLAN.
3. SHRUBS PLANTED ALONG HEAD-IN PARKING STALLS SHALL BE INSTALLED TO ALLOW A CLEARANCE OF TWO FEET FROM FACE OF CURB TO ALLOW FOR BUMPER OVERHANG.
4. IF IRRIGATION IS REQUIRED BY THE OWNER OR APPROVING MUNICIPALITY, THE CONTRACTOR SHALL PROVIDE AN IRRIGATION SYSTEM MEETING THE SPECIFICATIONS OF THE CHOSEN PRODUCT'S MANUFACTURER. THE IRRIGATION DESIGN SHALL ACCOMMODATE LAWN AND BED AREAS EACH UNDER SEPARATE ZONES TO MAXIMIZE WATER EFFICIENCY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ANY PERMITS REQUIRED FOR THE INSTALLATION OF AN IRRIGATION SYSTEM.
5. PLANT MATERIAL SUBSTITUTIONS MUST BE FORMALLY SUBMITTED TO BOHLER AND THE MUNICIPAL ENGINEER AND LANDSCAPE CONSULTANTS FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION. ANY PLANT MATERIAL THAT ARE TO BE INSTALLED WITHIN STORMWATER BMP FEATURES MUST BE NATIVE SPECIES.
6. WITHOUT EXCEPTION, WEED BARRIER FABRIC SHALL NOT BE INSTALLED WITHIN ANY BMP FACILITY. BMP FACILITIES INCLUDE RAINGARDENS, INFILTRATION TRENCHES, VEGETATIVE SWALES AND STORMWATER BASINS.

COMPLIANCE CHART

SECTION	REQUIREMENT	CALCULATIONS (REQUIRED / PROVIDED)	COMPLIANCE
ZONING: 116-99 LANDSCAPING AND SCREENING	FRONT, REAR AND SIDE YARDS SHALL BE LANDSCAPED AND, WHERE ADJACENT TO RESIDENTIAL DISTRICTS OR WHERE OTHERWISE REQUIRED, SCREENED BY USE OF PLANTINGS AND/OR WALLS, BERMS OR FENCES OF SUITABLE HEIGHT AND COMPOSITION TO EFFECTIVELY PROTECT ADJACENT PROPERTIES. ALL LANDSCAPING AND SCREENING PLANS SHALL BE REVIEWED BY THE SHADE TREE COMMISSION AND SHALL INCLUDE SIZE, LOCATION AND SPECIES OF ALL NEW OR EXISTING PLANT MATERIALS PROPOSED TO BE USED AND SIZE AND LOCATION OF ALL WALLS, BERMS OR FENCES.	LANDSCAPING HAS BEEN PROVIDED THROUGHOUT THE SITE.	COMPLIES
116-264 MANAGEMENT	A. RIPARIAN CORRIDOR PLANTING. REESTABLISHMENT OF FOREST COVER AND WOODLAND HABITAT SHALL BE REQUIRED CONSISTENT WITH THE REQUIREMENTS OF THE LANDSCAPE REGULATION WITHIN THE TOWNSHIP SUBDIVISION AND LAND DEVELOPMENT ORDINANCE.	EXISTING VEGETATION TO REMAIN ALONG SANDY RUN TO MEET THE INTENT OF THIS REQUIREMENT.	COMPLIES
SALDO: 105-39 LANDSCAPING OF PARKING FACILITIES	A. ALL PARKING AREAS SHALL HAVE AT LEAST ONE, THREE-INCH-CALIPER TREE FOR EVERY TWO PARKING SPACES PROVIDED.	TOTAL OPEN AIR PARKING SPACES = 89 (EXCLUDING GARAGE PARKING AND INVENTORY SPACES) REQUIRED: 89 / 2 = 44.5 OR 45 TREES PROVIDED: 6 AROG, 8 GBP, 6 GTIK, 3 NS, 6 UP (29 TREES)	WAIVER
	B. A MINIMUM OF 10% OF ANY PARKING LOT FACILITY OVER 2,000 SQUARE FEET IN GROSS AREA SHALL BE DEVOTED TO LANDSCAPING, INCLUSIVE OF REQUIRED TREES.	OPEN AIR PARKING AREA = 48,730± SF REQUIRED (10%): 4,873 SF LANDSCAPE AREA PROVIDED: 5,075± SF (10.4%) LANDSCAPE AREA	COMPLIES
105-48 STREET TREES	B. SHADE STREET TREES SHALL BE PLANTED AT INTERVALS OF NOT MORE THAN 45 FEET, AND FLOWERING STREET TREES AT INTERVALS OF NOT MORE THAN 30 FEET ALONG BOTH SIDES OF NEW STREETS AND ALONG ONE OR BOTH SIDES OF AN EXISTING STREET WITHIN THE PROPOSED SUBDIVISION OR LAND DEVELOPMENT. AN EQUIVALENT NUMBER MAY BE PLANTED IN AN INFORMAL ARRANGEMENT, SUBJECT TO THE APPROVAL OF THE BOARD OF SUPERVISORS.	LENGTH ALONG PENNSYLVANIA AVE = 304± LF (EXCLUDING DRIVEWAY WIDTHS) REQUIRED: 304 / 45 = 6.8 OR 7 SHADE TREES PROVIDED: 7 CCA (7 SHADE TREES)	COMPLIES
105-52 BUFFER YARDS	A. BUFFER YARDS ARE REQUIRED BETWEEN SUBDIVISIONS AND LAND DEVELOPMENTS AND ALONG STREETS TO SOFTEN VISUAL IMPACT, TO SCREEN GLARE, AND TO CREATE A VISUAL BARRIER BETWEEN CONFLICTING LAND USES. THE EXTENT OF BUFFERING REQUIRED SHALL BE DETERMINED BY THE TYPE OF USE PROPOSED AND THE ADJACENT USES OR STREETS SURROUNDING THE PROPOSED DEVELOPMENT. THE IMPACT OF THE PROPOSED USE ON ADJOINING PROPERTIES IS THE BASIS FOR ESTABLISHING BUFFER YARD STANDARDS. THE APPLICANT IS ENCOURAGED TO ENGAGE A LANDSCAPE ARCHITECT IN ORDER TO PROMOTE THE PROPER USE AND ARRANGEMENT OF PLANT MATERIALS.	SEE 105-52.B.(2) BELOW FOR REQUIREMENTS.	COMPLIES
	B.(2) STEP 2: SELECTION OF THE PLANTING OPTION FOR THE BUFFER CLASS. AFTER DETERMINING THE BUFFER CLASS, THE APPLICANT SHALL SELECT A PLANTING OPTION FROM TABLE 2. FOR EACH BUFFER CLASS SEVERAL PLANTING OPTIONS ARE AVAILABLE, ONE OF WHICH THE APPLICANT SHALL SELECT TO MEET THE BUFFER YARD REQUIREMENT FOR EACH BOUNDARY. THE BOARD OF SUPERVISORS MAY PERMIT AN ALTERNATIVE PLANTING OPTION WHICH SHALL HAVE A SCREENING CAPABILITY EQUAL TO OR GREATER THAN ANY OF THE AVAILABLE OPTIONS. ADJACENT USE PROPOSED USE: RETAIL AND CONSUMER SERVICE; UTILITIES + PUBLIC SERVICE; NON-RESIDENTIAL PARKING A; ADJ. STREET MAJOR COLLECTOR * RETAIL AND CONSUMER SERVICE: -- -- -- * *STREET TREES AS REQUIRED BY 105-48. CLASS A OPTION (1) 1 CANOPY TREE PER 40 FEET ALONG BOUNDARY LINE +1 FLOWERING TREE PER 60 FEET +1 EVERGREEN PER 60 FEET (2) 1 CANOPY TREE PER 40 FEET +1 EVERGREEN PER 30 FEET	LENGTH ALONG SOUTHEAST PROPERTY LINE ADJACENT NON-RESIDENTIAL PARKING = 337± LF (EXCLUDING EXISTING VEGETATION TO REMAIN) REQUIRED: BUFFER CLASS A (337 / 40) x 1 = 8.4 OR 8 CANOPY TREES (337 / 60) x 1 = 5.6 OR 6 FLOWERING TREES (337 / 60) x 1 = 5.6 OR 6 EVERGREEN TREES PROVIDED: 3 CCA, 5 OV (8 CANOPY TREES); 6 AGB (6 FLOWERING TREES); 6 TOG (6 EVERGREEN TREES)	COMPLIES
		LENGTH ALONG SOUTHWEST PROPERTY LINE ADJACENT TO RAILROAD (UTILITIES AND PUBLIC SERVICE) = 515± LF REQUIRED: NO BUFFER REQUIRED PROVIDED: NONE	COMPLIES
		LENGTH ALONG NORTHWEST PROPERTY LINES ADJACENT TO HOTEL (RETAIL AND CONSUMER SERVICE) = 584± LF REQUIRED: NO BUFFER REQUIRED PROVIDED: NONE	COMPLIES
TREE PROTECTION STANDARDS: 55-4 TREE PRESERVATION, PROTECTION AND REPLACEMENT	B.(6) EVERY TREE DETERMINED TO BE LIVING AND HEALTHY, WITH A DBH OF SIX INCHES OR GREATER AND WHICH IS DESIGNATED TO BE REMOVED OR WHICH IS DESTROYED, SHALL BE REPLACED WITH ONE OR MORE NEW SHADE TREES OF A TYPE APPROVED BY THE TOWNSHIP WITH A TRUNK DIAMETER OF NOT LESS THAN THREE INCHES IN CALIPER. THE TOTAL CALIPER OF REPLACEMENT TREES, MEASURED AT SIX INCHES ABOVE THE GROUND LINE, SHALL EQUAL OR EXCEED THE DBH OF THE TREE REMOVED.	TOTAL DBH INCHES PROPOSED TO BE REMOVED = 46 REQUIRED: 46 CALIPER INCHES REPLACEMENT 46 / 3 = 15.3 OR 16 SHADE TREES PROVIDED: 3 LSR, 4 NS (7 SHADE TREES)	WAIVER

PLANT SCHEDULE

CANOPY TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
AROG	6	ACER RUBRUM `OCTOBER GLORY`	OCTOBER GLORY RED MAPLE	3" CAL. MIN.	B&B
CCA	10	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	3" CAL. MIN.	B&B
GBP	8	GINKGO BILOBA 'PRINCETON SENTRY'	PRINCETON SENTRY MAIDENHAIR TREE	3" CAL. MIN.	B&B
GTIK	6	GLEDITSIA TRIACANTHOS INERMIS `SKYCOLE`	SKYLINE THORNLESS HONEY LOCUST	3" CAL. MIN.	B&B
LSR	3	LIQUIDAMBAR STYRACIFLUA `ROTUNDILOBA`	ROUND-LOBED SEEDLESS SWEET GUM	3" CAL. MIN.	B&B
NS	7	NYSSA SYLVATICA	SOUR GUM	3" CAL. MIN.	B&B
OV	5	OSTRYA VIRGINIANA	AMERICAN HOPHORNBEAM	3" CAL. MIN.	B&B
UP	6	ULMUS AMERICANA `PRINCETON`	AMERICAN ELM	3" CAL. MIN.	B&B
EVERGREEN TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
TOG	16	THUJA OCCIDENTALIS `GREEN GIANT`	GREEN GIANT ARBORVITAE	6-8'	B&B
ORNAMENTAL TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
AGB	8	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	2-2 1/2" CAL.	B&B
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
CAH	26	CLETHRA ALNIFOLIA `HUMMINGBIRD`	HUMMINGBIRD SUMMERSWEET (DWARF)	24-30"	CONTAINER
CSK	55	CORNUS SERICEA `KELSEYI`	KELSEYI DOGWOOD	15-18"	CONTAINER
DGN	31	DEUTZIA GRACILIS `NIKKO`	SLENDER DEUTZIA	18-24"	CONTAINER
IGS	32	ILEX GLABRA `SHAMROCK`	SHAMROCK INKBERRY	24-30"	CONTAINER
IMBB	2	ILEX X MESERVEAE `BLUE BOY`	BLUE BOY HOLLY	24-30"	CONTAINER
IMBG	22	ILEX X MESERVEAE `BLUE GIRL`	BLUE GIRL HOLLY	24-30"	CONTAINER
IMDL	4	ILEX AQUIPERNYI `MESCHICK`	DRAGON LADY HOLLY	3-4`	CONTAINER
IV	36	ITEA VIRGINICA `HENRY`S GARNET`	HENRY`S GARNET SWEETSPIRE	24-30"	CONTAINER
JHIB	62	JUNIPERUS HORIZONTALIS `MONBER`	ICEE BLUE JUNIPER	15-18" SPRD	CONTAINER
RAG	64	RHUS AROMATICA `GRO-LOW`	GRO-LOW FRAGRANT SUMAC	15-18"	CONTAINER
GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
PVN	43	PANICUM VIRGATUM `NORTH WIND`	NORTHWIND SWITCH GRASS	1 GAL.	CONTAINER
SSO	14	SCHIZACHYRIUM SCOPARIUM `STANDING OVATION`	STANDING OVATION LITTLE BLUESTEM GRASS	1 GAL.	CONTAINER

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PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

500 PENNSYLVANIA AVENUE
WHITEMARSH TOWNSHIP
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BETHLEHEM, PA 18018
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D.T. NORTH
REGISTERED LANDSCAPE ARCHITECT
PENNSYLVANIA LICENSE No. LA002729

SHEET TITLE:

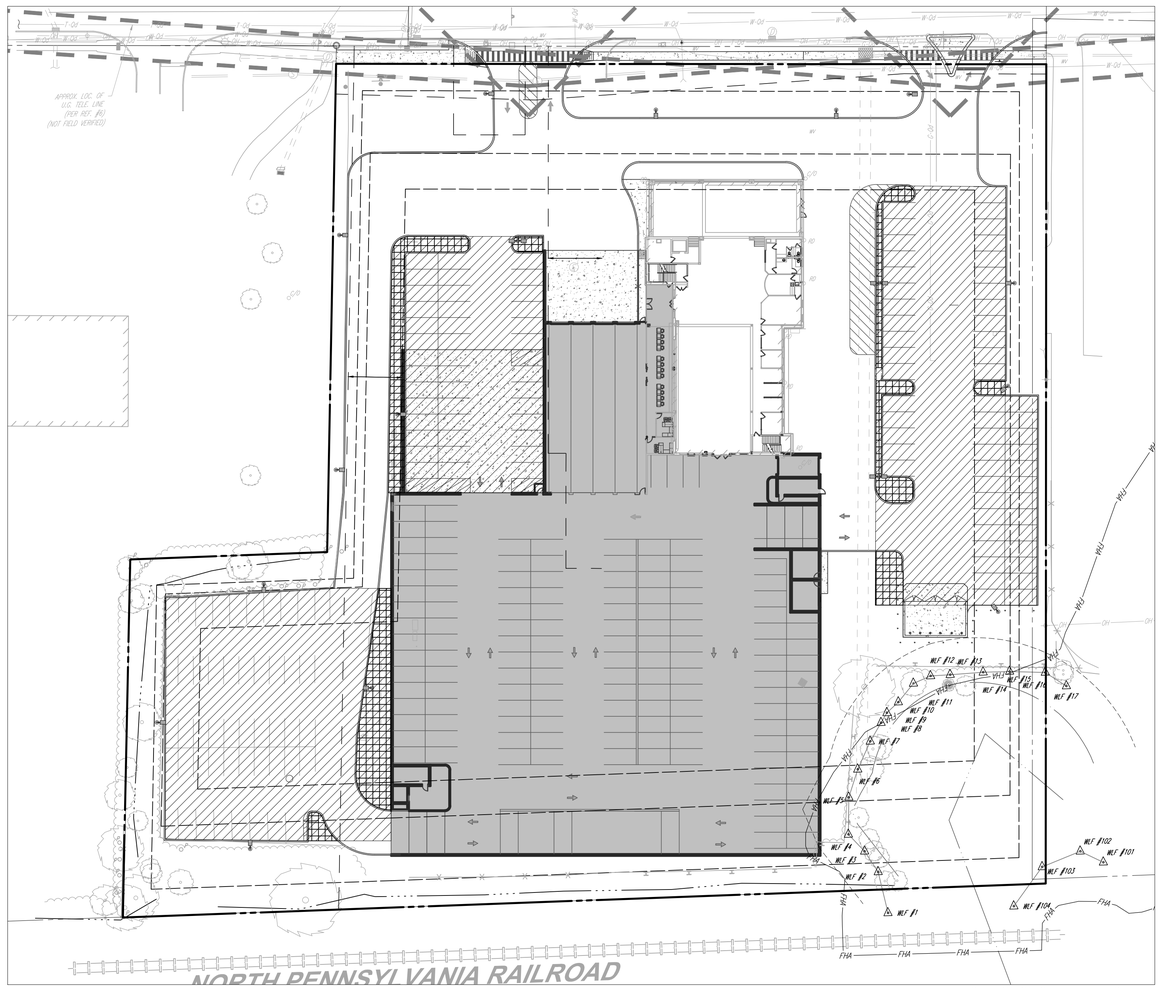
LANDSCAPE PLAN

SHEET NUMBER:

C-701

ORG. DATE - 03/15/2023

R:\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-LLGT-0A.dwg — LAYOUT: C-701 LSCP



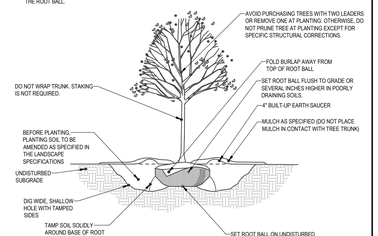
PARKING LOT LANDSCAPE REQUIREMENT

TOTAL OPEN AIR PARKING AREA
(48,730± SF)

TOTAL OPEN AIR PARKING AREA LANDSCAPE AREA
(5,075± SF (10.4%))

NOTES:

1.) NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
2.) REMOVE ALL NON-BIODEGRADABLE MATERIAL AND ROPE FROM TRUNK & TOP OF ROOT BALL. FOLD OR CUT BURLAP BACK FROM TOP 1/3 OF ROOT BALL.
3.) PLANTING DEPTH SHALL BE THE SAME AS GROWN IN NURSERY.
4.) THOUROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
5.) THE BOTTOM OF PLANTING PIT EXCAVATIONS SHOULD BE SCARIFIED TO AVOID MATTING OF SOIL.
6.) THE MINIMUM DIAMETER OF THE TREE PIT SHALL BE 3 TIMES THE DIAMETER OF THE ROOT BALL.

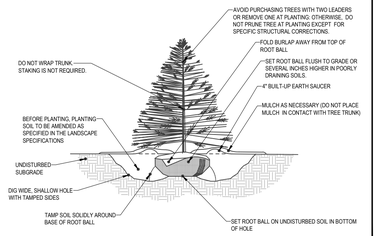


L-1 DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

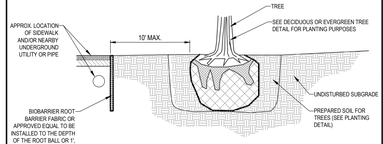
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5.) THE BOTTOM OF PLANTING PIT EXCAVATIONS SHOULD BE SCARIFIED TO AVOID MATTING OF SOIL.
6.) THE MINIMUM DIAMETER OF THE TREE PIT SHALL BE 3 TIMES THE DIAMETER OF THE ROOT BALL.



L-2 EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

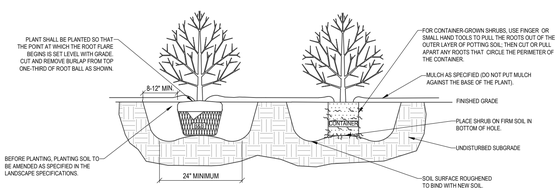


NOTES:

1. ANY TREE INSTALLED WITHIN 10 FT. OF NEW CONCRETE SIDEWALKS AND/OR NEARBY UNDERGROUND UTILITY OR PIPE SHOULD BE INSTALLED WITH BIOBARRIER ROOT BARRIER FABRIC AS SHOWN.
2. TREES SHALL BE INSTALLED ACCORDING TO THE APPROPRIATE PLANTING DETAIL.

L-12 BIOBARRIER ROOT BARRIER DETAIL

NOT TO SCALE



L-5 SHRUB PLANTING DETAIL

NOT TO SCALE

LANDSCAPE SPECIFICATIONS:

1. SCOPE OF WORK:
THE CONTRACTOR SHALL BE REQUIRED TO PERFORM ALL CLEARING, FINISHED GRADING, SOIL PREPARATION, PERMANENT SEEDING OR SODDING, PLANTING AND MULCHING INCLUDING ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT NECESSARY FOR THE COMPLETION OF THIS PROJECT, UNLESS OTHERWISE CONTRACTED BY THE GENERAL CONTRACTOR.

2. MATERIALS
A. GENERAL - ALL HARDSCAPE MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.

B. TOPSOIL - NATURAL, FRIABLE, LOAMY SILT SOIL HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, A PH RANGE BETWEEN 5.5-7.0. IT SHALL BE FREE OF DEBRIS, ROCKS LARGER THAN ONE INCH (1"), WOOD, ROOTS, VEGETABLE MATTER AND CLAY CLODS.

C. LAWN - LAWN AREAS SHALL BE SEEDED OR SODDED IN ACCORDANCE WITH THE PERMANENT STABILIZATION METHODS INDICATED WITHIN THE SOIL EROSION AND SEDIMENT CONTROL NOTES. FOR SOIL BED PREPARATIONS, REFER TO ITEM B BELOW:
I. LAWN SEED MIXTURE SHALL BE FRESH, CLEAN NEW CROP SEED.
II. SOD SHALL BE STRONGLY ROOTED, WEED AND DISEASE/PEST FREE WITH A UNIFORM THICKNESS. SOD INSTALLED ON SLOPES GREATER THAN 4:1 SHALL BE PEGGED TO HOLD SOD IN PLACE.

D. MULCH - ALL PLANTING BEDS SHALL BE MULCHED WITH A 3" THICK LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH, UNLESS OTHERWISE STATED ON THE LANDSCAPE PLAN.

E. FERTILIZER
I. FERTILIZER SHALL BE DELIVERED TO THE SITE MIXED AS SPECIFIED IN THE ORIGINAL UNOPENED STANDARD BAGS SHOWING WEIGHT, ANALYSIS AND NAME OF MANUFACTURER. FERTILIZER SHALL BE STORED IN A WEATHERPROOF PLACE SO THAT IT CAN BE KEPT DRY PRIOR TO USE.
II. FOR THE PURPOSE OF BIDDING, ASSUME THAT FERTILIZER SHALL BE 10% NITROGEN, 6% PHOSPHORUS AND 4% POTASSIUM BY WEIGHT. A FERTILIZER SHOULD NOT BE SELECTED WITHOUT A SOIL TEST PERFORMED BY A CERTIFIED SOIL LABORATORY.

F. PLANT MATERIAL
I. ALL PLANTS SHALL IN ALL CASES CONFORM TO THE REQUIREMENTS OF THE "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1), LATEST EDITION, AS PUBLISHED BY AMERICAN HORT (FORMERLY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION).
II. IN ALL CASES, BOTANICAL NAMES SHALL TAKE PRECEDENCE OVER COMMON NAMES FOR ANY AND ALL PLANT MATERIAL.
III. PLANTS SHALL BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE. TAGS ARE TO REMAIN AT LEAST ONE PLANT OF EACH SPECIES FOR VERIFICATION PURPOSES DURING THE FINAL INSPECTION.
IV. TREES WITH ABRASION OF THE BARK, SUN SCALDS, DISFIGURATION OR FRESH CUTS OF LIMBS OVER 1½", WHICH HAVE NOT BEEN COMPLETELY CALLUSED, SHALL BE REJECTED. PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES.
V. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH. WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE OF DISEASE, INSECTS, PESTS, EGGS OR LARVAE.
VI. CALIPER MEASUREMENTS OF NURSERY GROWN TREES SHALL BE TAKEN AT A POINT ON THE TRUNK SIX INCHES (6") ABOVE THE NATURAL GRADE FOR TREES UP TO AND INCLUDING A FOUR INCH (4") CALIPER SIZE. IF THE CALIPER AT SIX INCHES (6") ABOVE THE GROUND EXCEEDS FOUR INCHES (4") IN CALIPER, THE CALIPER SHOULD BE MEASURED AT A POINT 12" ABOVE THE NATURAL GRADE.
VII. SHRUBS SHALL BE MEASURED TO THE AVERAGE HEIGHT OR SPREAD OF THE SHRUB, AND NOT TO THE LONGEST BRANCH.
VIII. TREES AND SHRUBS SHALL BE HANDLED WITH CARE BY THE ROOT BALL.

3. GENERAL WORK PROCEDURES
A. CONTRACTOR TO UTILIZE WORKMANLIKE INDUSTRY STANDARDS IN PERFORMING ALL LANDSCAPE CONSTRUCTION. THE SITE IS TO BE LEFT IN A CLEAN STATE AT THE END OF EACH WORKDAY. ALL DEBRIS, MATERIALS AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF.

B. WASTE MATERIALS AND DEBRIS SHALL BE COMPLETELY DISPOSED OF AT THE CONTRACTOR'S EXPENSE. DEBRIS SHALL NOT BE BURIED, INCLUDING ORGANIC MATERIALS, BUT SHALL BE REMOVED COMPLETELY FROM THE SITE.

4. SITE PREPARATIONS
A. BEFORE AND DURING PRELIMINARY GRADING AND FINISHED GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES OUTLINED HEREIN.

B. ALL EXISTING TREES TO REMAIN SHALL BE PRUNED TO REMOVE ANY DAMAGED BRANCHES. THE ENTIRE LIMB OF ANY DAMAGED BRANCH SHALL BE CUT OFF AT THE BRANCH COLLAR. CONTRACTOR SHALL ENSURE THAT CUTS ARE SMOOTH AND STRAIGHT. ANY EXPOSED ROOTS SHALL BE CUT BACK WITH CLEAN, SHARP TOOLS AND TOPSOIL SHALL BE PLACED AROUND THE REMAINDER OF THE ROOTS. EXISTING TREES SHALL BE MONITORED ON A REGULAR BASIS FOR ADDITIONAL ROOT OR BRANCH DAMAGE AS A RESULT OF CONSTRUCTION. ROOTS SHALL NOT BE LEFT EXPOSED FOR MORE THAN ONE (1) DAY. CONTRACTOR SHALL WATER EXISTING TREES AS NEEDED TO PREVENT SHOCK OR DECLINE.

C. CONTRACTOR SHALL ARRANGE TO HAVE A UTILITY STAKE-OUT TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF ANY LANDSCAPE MATERIAL. UTILITY COMPANIES SHALL BE CONTACTED THREE (3) DAYS PRIOR TO THE BEGINNING OF WORK.

5. TREE PROTECTION
A. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING TREES TO REMAIN. A TREE PROTECTION ZONE SHALL BE ESTABLISHED AT THE DRIP LINE OR 15 FEET FROM THE TRUNK OR AT THE LIMIT OF CONSTRUCTION DISTURBANCE, WHICHEVER IS GREATER. LOCAL STANDARDS THAT MAY REQUIRE A MORE STRICT TREE PROTECTION ZONE SHALL BE HONORED.

B. A FORTY-EIGHT INCH (48") HIGH WOODEN SNOW FENCE OR ORANGE COLORED HIGH-DENSITY 'VISI-FENCE', OR APPROVED EQUAL, MOUNTED ON STEEL POSTS SHALL BE PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION ZONE. POSTS SHALL BE LOCATED AT A MAXIMUM OF EIGHT FEET (8') ON CENTER OR AS INDICATED WITHIN THE TREE PROTECTION DETAIL.

C. WHEN THE TREE PROTECTION FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED BY THE APPROVING AGENCY PRIOR TO DEMOLITION, GRADING, TREE CLEARING OR ANY OTHER CONSTRUCTION. THE FENCING ALONG THE TREE PROTECTION ZONE SHALL BE REGULARLY INSPECTED BY THE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.

D. AT NO TIME SHALL MACHINERY, DEBRIS, FALLEN TREES OR OTHER MATERIALS BE PLACED, STOCKPILED OR LEFT STANDING IN THE TREE PROTECTION ZONE.

6. SOIL MODIFICATIONS
A. CONTRACTOR SHALL ATTAIN A SOIL TEST FOR ALL AREAS OF THE SITE PRIOR TO CONDUCTING ANY PLANTING. SOIL TESTS SHALL BE PERFORMED BY A CERTIFIED SOIL LABORATORY.

B. CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL. SOIL MODIFICATIONS, AS SPECIFIED HEREIN, MAY NEED TO BE CONDUCTED BY THE CONTRACTOR DEPENDING ON SITE CONDITIONS.

C. THE FOLLOWING AMENDMENTS AND QUANTITIES ARE APPROXIMATE AND ARE FOR BIDDING PURPOSES ONLY. COMPOSITION OF AMENDMENTS SHOULD BE REVISED DEPENDING ON THE OUTCOME OF A TOPSOIL ANALYSIS PERFORMED BY A CERTIFIED SOIL LABORATORY.
I. TO INCREASE A SANDY SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS, THOROUGHLY TILL ORGANIC MATTER INTO THE TOP 6-12". USE COMPOSTED BARK, COMPOSTED LEAF MULCH OR PEAT MOSS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A PH HIGHER THAN 7.5.
II. TO INCREASE DRAINAGE, MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR AGRICULTURAL GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. SUBSURFACE DRAINAGE LINES MAY NEED TO BE ADDED TO INCREASE DRAINAGE.
III. MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.

7. FINISHED GRADING
A. UNLESS OTHERWISE CONTRACTED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBANCE AREA OF THE SITE.

B. CONTRACTOR SHALL VERIFY THAT SUBGRADE FOR INSTALLATION OF TOPSOIL HAS BEEN ESTABLISHED. THE SUBGRADE OF THE SITE MUST MEET THE FINISHED GRADE LESS THE REQUIRED TOPSOIL THICKNESS (7"+).

C. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THIS SET OF CONSTRUCTION PLANS, UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER OR LANDSCAPE ARCHITECT.

D. ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER IN AND AROUND THE PLANTING BEDS. STANDING WATER SHALL NOT BE PERMITTED IN PLANTING BEDS.

8. TOPSOILING
A. CONTRACTOR SHALL PROVIDE A SIX INCH (6") THICK MINIMUM LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, IN ALL PLANTING AND LAWN AREAS. TOPSOIL SHOULD BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS.

B. ON-SITE TOPSOIL MAY BE USED TO SUPPLEMENT THE TOTAL AMOUNT REQUIRED. TOPSOIL FROM THE SITE MAY BE REJECTED IF IT HAS NOT BEEN PROPERLY REMOVED, STORED AND PROTECTED PRIOR TO CONSTRUCTION.

C. CONTRACTOR SHALL FURNISH TO THE APPROVING AGENCY AN ANALYSIS OF BOTH IMPORTED AND ON-SITE TOPSOIL TO BE UTILIZED IN ALL PLANTING AREAS. THE PH AND NUTRIENT LEVELS MAY NEED TO BE ADJUSTED THROUGH SOIL MODIFICATIONS AS NEEDED TO ACHIEVE THE REQUIRED LEVELS AS SPECIFIED IN THE MATERIALS SECTION ABOVE.

D. ALL LAWN AREAS ARE TO BE CULTIVATED TO A DEPTH OF SIX INCHES (6"). ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES SECTION ABOVE. THE FOLLOWING SHALL BE TILLED INTO THE TOP FOUR INCHES (4") IN TWO DIRECTIONS (QUANTITIES BASED ON A 1,000 SQUARE FOOT AREA - FOR BID PURPOSES ONLY (SEE SPECIFICATION 6.A.3):
I. 20 POUNDS 10/20/POWDY OR APPROVED EQUAL SOIL CONDITIONER/FERTILIZER
II. 20 POUNDS 'NITRO-FORM' (COURSE) 38-0-0 BLUE CHIP OR APPROVED NITROGEN FERTILIZER

E. THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN CONDITIONS.

9. PLANTING
A. INSOFAR THAT IT IS FEASIBLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE, CONTRACTOR SHALL PROTECT UNINSTALLED PLANT MATERIAL. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. PLANTS THAT WILL NOT BE PLANTED FOR A PERIOD OF TIME GREATER THAN THREE DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH TO HELP PRESERVE ROOT MOISTURE.

B. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION.

C. ANY INJURED ROOTS OR BRANCHES SHALL BE PRUNED TO MAKE CLEAN CUT ENDS PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY INJURED OR DISEASED BRANCHING SHALL BE REMOVED.

D. ALL PLANTING CONTAINERS, BASKETS AND NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED FROM ROOT BALLS DURING PLANTING. NATURAL FIBER BURLAP MUST BE CUT FROM AROUND THE TRUNK OF THE TREE AND FOLDED DOWN AGAINST THE ROOT BALL PRIOR TO BACKFILLING.

E. POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.

F. PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE, AS SHOWN ON THE APPROVED LANDSCAPE PLAN, MUST BE INSTALLED, INSPECTED AND APPROVED BY THE APPROVING AGENCY. THE APPROVING AGENCY SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER SHALL OCCUR ONLY DURING THE FOLLOWING PLANTING SEASONS:
I. PLANTS: MARCH 15TH TO DECEMBER 15TH
II. LAWN AND MEADOW SEED MIXES: MARCH 1ST TO MAY 15TH OR BETWEEN AUGUST 15TH AND OCTOBER 15TH

PLANTINGS REQUIRED FOR A CERTIFICATE OF OCCUPANCY SHALL BE PROVIDED DURING THE NEXT APPROPRIATE SEASON AT THE MUNICIPALITY'S DISCRETION. CONTRACTOR SHOULD CONTACT APPROVING AGENCY FOR POTENTIAL SUBSTITUTIONS.

G. FURTHERMORE, THE FOLLOWING TREE VARIETIES ARE UNUSUALLY SUSCEPTIBLE TO WINTER DAMAGE. WITH TRANSPLANT SHOCK AND THE SEASONAL LACK OF NITROGEN AVAILABILITY, THE RISK OF PLANT DEATH IS GREATLY INCREASED. IT IS NOT RECOMMENDED THAT THESE SPECIES BE PLANTED DURING THE FALL PLANTING SEASON.

ACER RUBRUM	PLATANUS X ACERIFOLIA
BETULA VARIETIES	POPULUS VARIETIES
CARPINUS VARIETIES	PRUNUS VARIETIES
CRATAEGUS VARIETIES	PYRUS VARIETIES
KOELREUTERIA	QUERCUS VARIETIES
LIQUIDAMBAR STYRACIFLUA	TILIA TOMENTOSA
LIRIODENDRON TULIPIFERA	ZELKOVA VARIETIES

H. PLANTING PITS SHALL BE DUG WITH LEVEL OR CONVEX BOTTOMS, WITH THE WIDTH THREE TIMES THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACKFILLED IN LAYERS WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:
I. 1 PART PEAT MOSS
II. 1 PART COMPOSTED COW MANURE BY VOLUME
III. 3 PARTS TOPSOIL BY VOLUME
IV. 21 GRAMS 'AGRIFORM' PLANTING TABLETS (OR APPROVED EQUAL) AS FOLLOWS:
A) 2 TABLETS PER 1 GALLON PLANT
B) 3 TABLETS PER 5 GALLON PLANT
C) 4 TABLETS PER 15 GALLON PLANT
D) LARGER PLANTS: 2 TABLETS PER ½" CALIPER OF TRUNK

I. FILL PREPARED SOIL AROUND BALL OF PLANT HALF-WAY AND INSERT PLANT TABLETS. COMPLETE BACKFILL AND WATER THOROUGHLY.

J. ALL PLANTS SHALL BE PLANTED SO THAT THE TOP OF THE ROOT BALL, THE POINT AT WHICH THE ROOT FLARE BEGINS, IS SET AT GROUND LEVEL AND IN THE CENTER OF THE PIT. NO SOIL IS TO BE PLACED DIRECTLY ON TOP OF THE ROOT BALL.

K. ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS OR DRIVEWAYS SHALL BE PRUNED AND MAINTAINED TO A MINIMUM BRANCHING HEIGHT OF 7' FROM GRADE. NO PRUNING SHALL BE CONDUCTED WITHIN THE FIRST YEAR OF PLANTING.

L. GROUND COVER AREAS SHALL RECEIVE A ½" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING. ALL GROUND COVER AREAS SHALL BE WEEDED AND TREATED WITH A PRE-EMERGENT CHEMICAL AS PER MANUFACTURER'S RECOMMENDATION.

M. NO PLANT, EXCEPT GROUND COVERS, GRASSES OR VINES, SHALL BE PLANTED LESS THAN TWO FEET (2') FROM EXISTING STRUCTURES AND SIDEWALKS.

N. ALL PLANTING AREAS AND PLANTING PITS SHALL BE MULCHED AS SPECIFIED HEREIN TO FILL THE ENTIRE BED AREA OR SAUCER. NO MULCH IS TO TOUCH THE TRUNK OF THE TREE OR SHRUB.

O. ALL PLANTING AREAS SHALL BE WATERED IMMEDIATELY UPON INSTALLATION IN ACCORDANCE WITH THE WATERING SPECIFICATIONS AS LISTED HEREIN.

10. TRANSPLANTING (WHEN REQUIRED)
A. ALL TRANSPLANTS SHALL BE DUG WITH INTACT ROOT BALLS CAPABLE OF SUSTAINING THE PLANT. (SEE SPECIFICATION 2.F. ABOVE)

B. IF PLANTS ARE TO BE STOCKPILED BEFORE REPLANTING, THEY SHALL BE HEALED IN WITH MULCH OR SOIL, ADEQUATELY WATERED AND PROTECTED FROM EXTREME HEAT, SUN AND WIND.

C. PLANTS SHALL NOT BE DUG FOR TRANSPLANTING BETWEEN APRIL 10TH AND JUNE 30TH.

D. UPON REPLANTING, BACKFILL SOIL SHALL BE AMENDED WITH FERTILIZER AND ROOT GROWTH HORMONE.

E. TRANSPLANTS SHALL BE GUARANTEED FOR THE LENGTH OF THE GUARANTEE PERIOD SPECIFIED HEREIN.

F. IF TRANSPLANTS DIE, SHRUBS AND TREES LESS THAN SIX INCHES (6") DBH SHALL BE REPLACED IN KIND. TREES GREATER THAN SIX INCHES (6") DBH MAY BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE MUNICIPALITY'S TREE REPLACEMENT GUIDELINES.

11. WATERING
A. NEW PLANTINGS OR LAWN AREAS SHALL BE ADEQUATELY IRRIGATED BEGINNING IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACKFILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED. WATERING SHALL CONTINUE AT LEAST UNTIL PLANTS ARE ESTABLISHED.

B. SITE OWNER SHALL PROVIDE WATER IF AVAILABLE ON SITE AT TIME OF PLANTING. IF WATER IS NOT AVAILABLE ON SITE, CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER. THE USE OF WATERING BAGS IS RECOMMENDED FOR ALL NEWLY PLANTED TREES.

C. IF AN IRRIGATION SYSTEM HAS BEEN INSTALLED ON THE SITE, IT SHALL BE USED TO WATER PROPOSED PLANT MATERIAL, BUT ANY FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE CONTRACTOR'S RESPONSIBILITY OF MAINTAINING THE DESIRED MOISTURE LEVEL FOR VIGOROUS, HEALTHY GROWTH.

12. GUARANTEE
A. THE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF EIGHTEEN (18) MONTHS FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE APPROVING AGENCY. CONTRACTOR SHALL SUPPLY THE OWNER WITH A MAINTENANCE BOND FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE CONCLUSION OF THE GUARANTEE PERIOD AND WHEN A FINAL INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

B. ANY DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED FOR THE LENGTH OF THE GUARANTEE PERIOD. REPLACEMENT OF PLANT MATERIAL SHALL BE CONDUCTED AT THE FIRST SUCCEEDING PLANTING SEASON. ANY DEBRIS SHALL BE DISPOSED OF OFF-SITE, WITHOUT EXCEPTION. A PLANT SHALL BE CONSIDERED "DEAD OR DYING" IF MORE THAN 30% OF ITS BRANCHES ARE DEAD.

C. TREES AND SHRUBS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND UNTIL TURNOVER TO THE OWNER/OPERATOR. CULTIVATION, WEEDING, WATERING AND THE PREVENTATIVE TREATMENTS SHALL BE PERFORMED AS NECESSARY TO KEEP PLANT MATERIAL IN GOOD CONDITION AND FREE OF INSECTS AND DISEASE.

D. LAWNS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND UNTIL TURNOVER TO THE OWNER/OPERATOR THROUGH WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING AND OTHER OPERATIONS SUCH AS ROLLING, REGARDING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.

13. CLEANUP
A. UPON THE COMPLETION OF ALL LANDSCAPE INSTALLATION AND BEFORE THE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL UNUSED MATERIALS, EQUIPMENT AND DEBRIS FROM THE SITE. ALL PAVED AREAS ARE TO BE CLEANED.

B. THE SITE SHALL BE CLEANED AND LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABILITY SERVICES
PERMITTING SERVICES
TRANSPORTATION SERVICES
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PROJECT No.:	PAB220113.00
DRAWN BY:	BS
CHECKED BY:	MSL
DATE:	03/15/2023
CAD I.D.:	PAB220113.00-LLGT-0A

PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

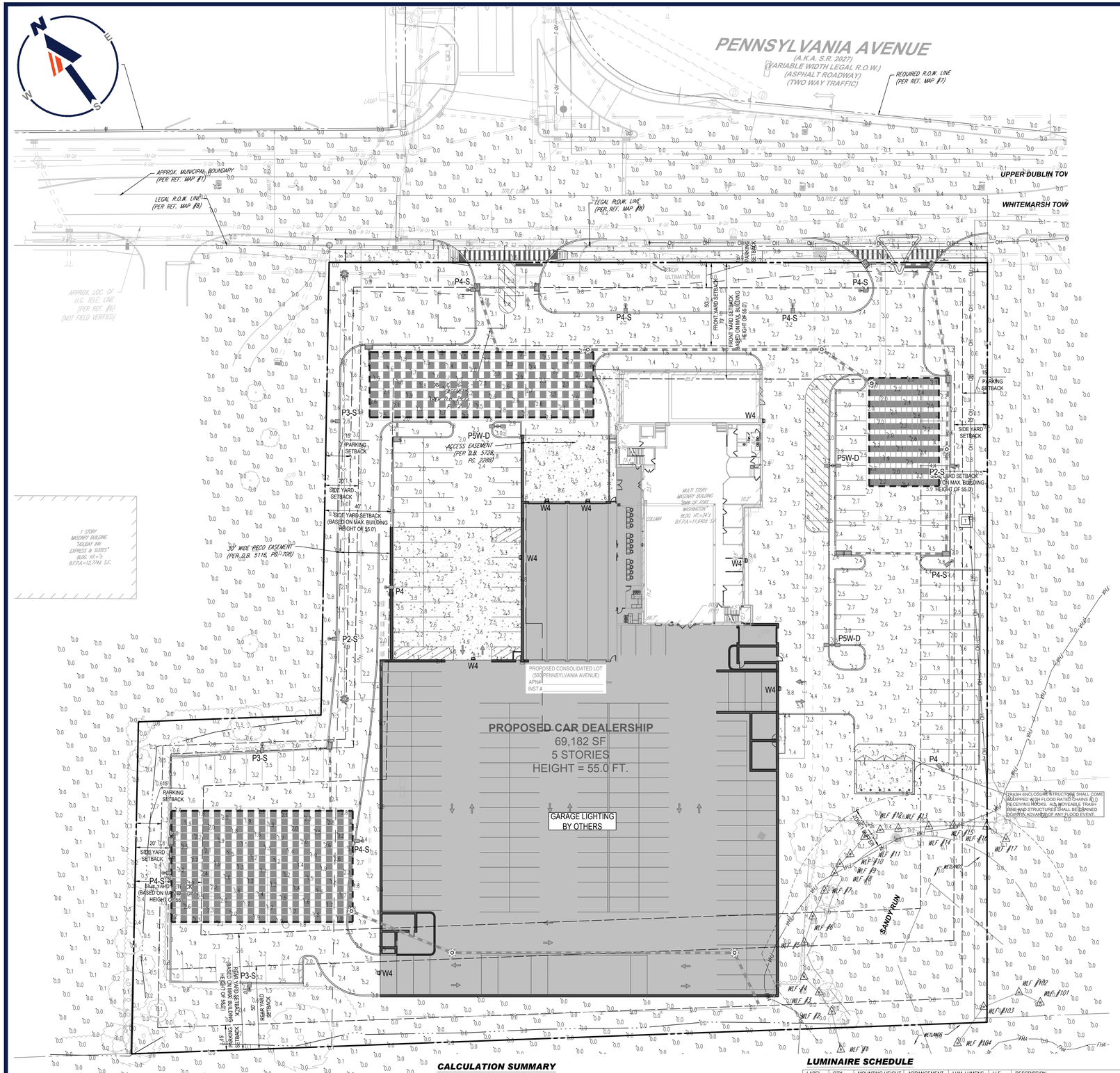
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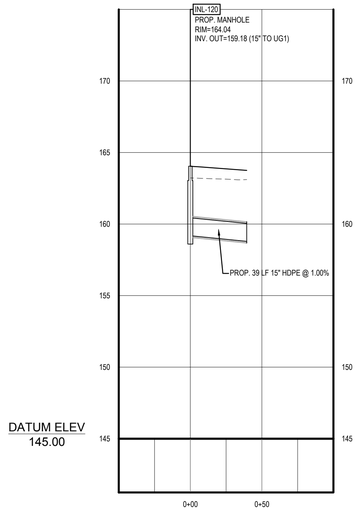
MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

**500 PENNSYLVANIA AVENUE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA**

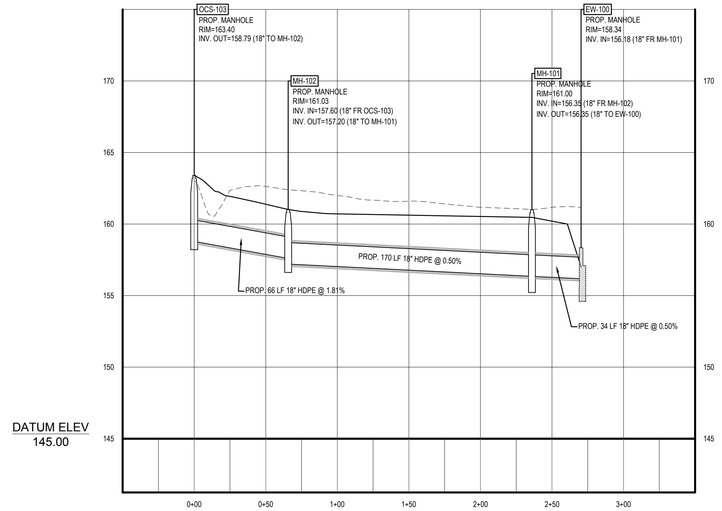
BOH


PENNSYLVANIA AVENUE
(A.K.A. S.R. 2027)
(VARIABLE WIDTH LEGAL R.O.W.)
(ASPHALT ROADWAY)
(TWO WAY TRAFFIC)
REQUIRED R.O.W. LINE (PER REF. MAP #7)
APPROX. MUNICIPAL BOUNDARY (PER REF. MAP #1)
LEGAL R.O.W. LINE (PER REF. MAP #8)
LEGAL R.O.W. LINE (PER REF. MAP #8)
UPPER DUBLIN TOV
WHITEMARSH TOW
APPROX. LOC. OF U.G. TELE. LINE (PER REF. #6) (NOT FIELD VERIFIED)
1 STORY MASONRY BUILDING "HOLIDAY INN EXPRESS & SUITES" BLDG. HT.= 0 B.F.P.A.= 12,774± S.F.
30' WIDE PECO EASEMENT (PER D.B. 5116, PG. 708)
DROP ULTIMATE R/W
PARKING SETBACK
FRONT YARD SETBACK 70'
FRONT YARD SETBACK (BASED ON MAX. BUILDING HEIGHT OF 55.0')
P4-S
P3-S
P2-S
P5W-D
P4
W4
SIDE YARD SETBACK
SIDE YARD SETBACK (BASED ON MAX. BUILDING HEIGHT OF 55.0')
REAR YARD SETBACK
ACCESS EASEMENT (PER D.B. 5728, PG. 2288)
MULTI STORY MASONRY BUILDING "BANK OF FORT WASHINGTON" BLDG. HT.=34'± B.F.P.A.=11,642± S.F.
PROPOSED CONSOLIDATED LOT (500 PENNSYLVANIA AVENUE) APN#: INST.#:
PROPOSED CAR DEALERSHIP
69,182 SF
5 STORIES
HEIGHT = 55.0 FT.
GARAGE LIGHTING BY OTHERS
TRASH ENCLOSURE STRUCTURE SHALL COME EQUIPPED WITH FLOOD RATED CHAINS & D RECEIVING HOOKS. ALL MOVEABLE TRASH BINS AND STRUCTURES SHALL BE CHAINED DOWN IN ADVANCE OF ANY FLOOD EVENT.
TOWNES RUN
SANDY RUN
WETLANDS
WLF #1
WLF #2
WLF #3
WLF #4
WLF #5
WLF #6
WLF #7
WLF #8
WLF #9
WLF #10
WLF #11
WLF #12
WLF #13
WLF #14
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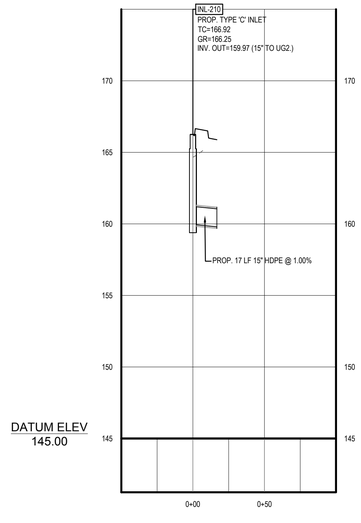
INL-120 TO UG1

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL



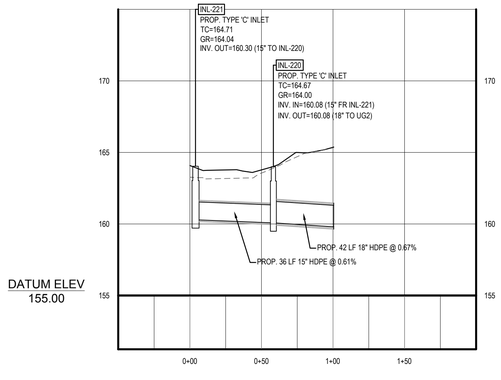
OCS-102 TO EW-100

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL



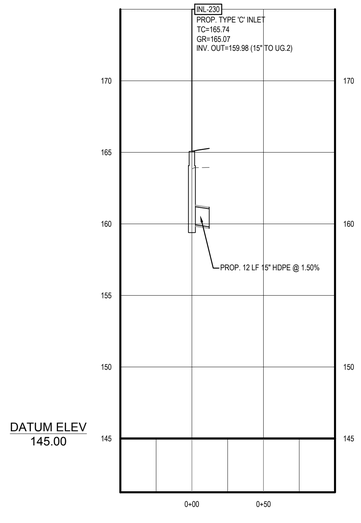
INL-210 TO UG2

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL



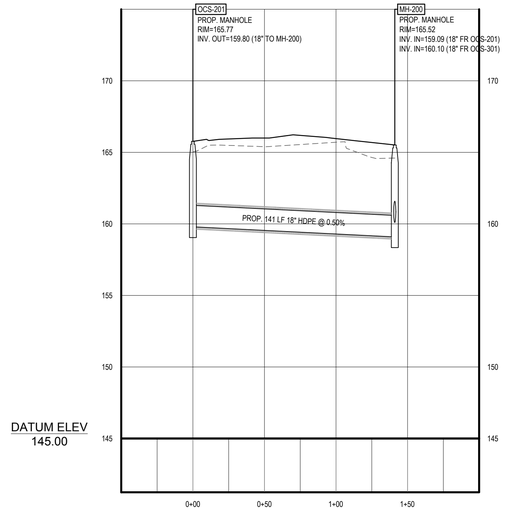
INL-221 TO UG2

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL



INL-230 TO UG2

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL



OCS-201 TO MH-200

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL

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PROJECT No.:	PAB220113.00
DRAWN BY:	BS
CHECKED BY:	MSL
DATE:	03/15/2023
CAD I.D.:	PAB220113.00-PROF-0A

PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

500 PENNSYLVANIA AVENUE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA

BOHLER
74 W BROAD STREET, SUITE 500
BETHLEHEM, PA 18018
Phone: (610) 709-9971
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JEFFREY A. BEAVAN
PROFESSIONAL ENGINEER
PE082005
PENNSYLVANIA LICENSE No. PE082005
NEW YORK LICENSE No. 086404
NEW JERSEY LICENSE No. GE49536600

SHEET TITLE:

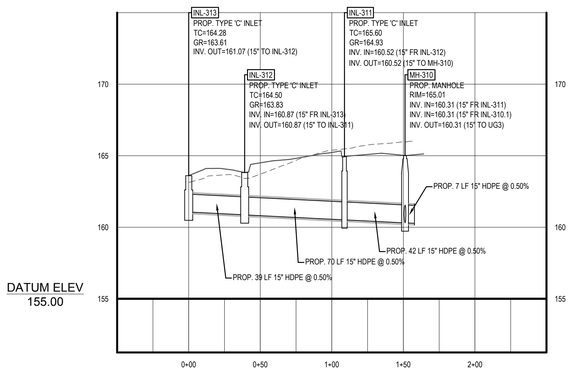
STORM SEWER PROFILES

SHEET NUMBER:

C-801

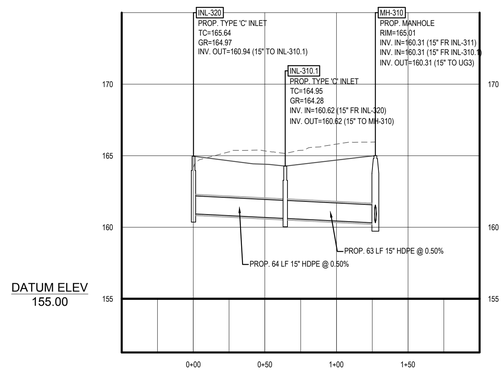
ORG. DATE - 03/15/2023

I:\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-PROF-0A-----LAYOUT C-801 STM PROFILES



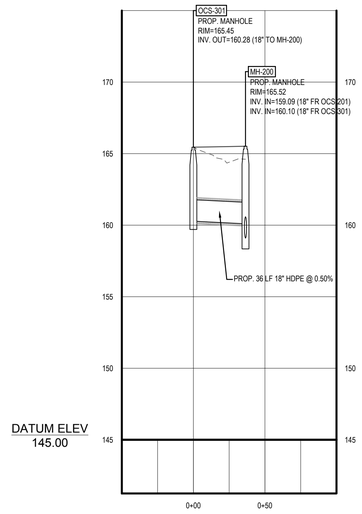
INL-313 TO UG3

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL



INL-320 TO MH-310

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL



OCS-301 TO MH-200

SCALE: 1"= 50 ' HORIZONTAL
1"= 5 ' VERTICAL

R:\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-PROF-0A---LAYOUT: C-802 STM PROFILES
ACP

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NEW JERSEY LICENSE No. 24GE05036600

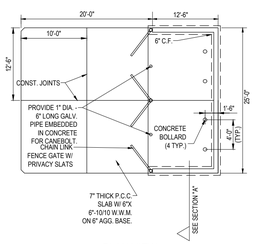
SHEET TITLE:

STORM SEWER PROFILES

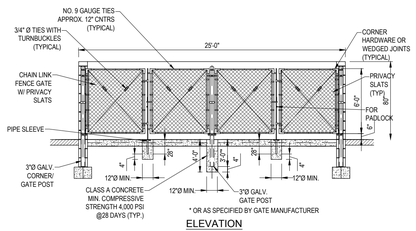
SHEET NUMBER:

C-802

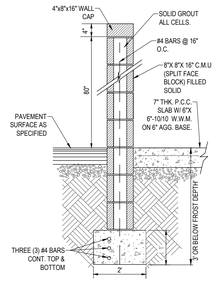
ORG. DATE - 03/15/2023



PLAN VIEW



ELEVATION

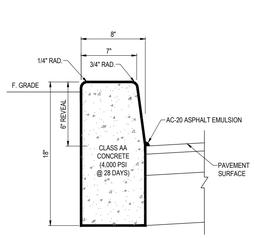


SECTION "A"

NOTE: TRASH ENCLOSURE FINISH TO BE COORDINATED WITH OWNER.

A-10 ***12'-6" x 25'-0" CMU TRASH ENCLOSURE DETAIL***

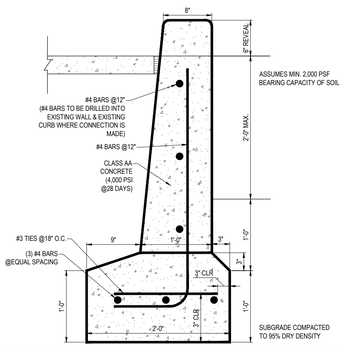
NOT TO SCALE



TRANSVERSE JOINTS 3/4" WIDE SHALL BE INSTALLED IN THE CURB 20' APART AND SHALL BE FILLED WITH CELLULAR COMPRESSION MATERIAL AS SPECIFIED RECESSED 1/4" IN FROM FRONT FACE AND TOP OF CURB.

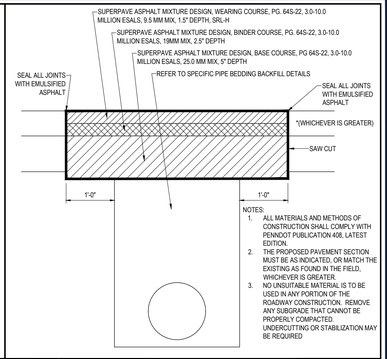
P-1 ***TYPICAL CONCRETE CURB DETAIL***

NOT TO SCALE



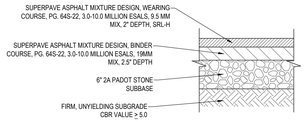
P-4 ***TYPICAL EXTENDED CONCRETE CURB DETAIL***

NOT TO SCALE



P-14 ***FLEXIBLE PAVEMENT RESTORATION***

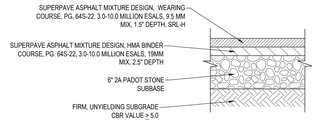
NOT TO SCALE



NOTE:
ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL COMPLY WITH THE LATEST EDITIONS OF PENNDOT PUBLICATION 408 AND 242 (PAVEMENT POLICY MANUAL).

P-18 ***HEAVY DUTY ASPHALT PAVEMENT DETAIL***

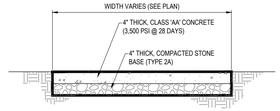
NOT TO SCALE



NOTE:
ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL COMPLY WITH THE LATEST EDITIONS OF PENNDOT PUBLICATION 408 AND 242 (PAVEMENT POLICY MANUAL).

P-17 ***STANDARD ASPHALT PAVEMENT DETAIL***

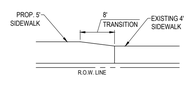
NOT TO SCALE



EXPANSION JOINTS 1/2" WIDE PREMOULDED BIT. MATERIAL SHALL BE INSTALLED AT 30' INTERVALS. CONTRACTION JOINTS TO BE SPACED AT EQUAL INTERVALS, 5' MAXIMUM LENGTH.

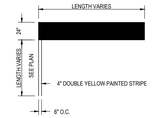
P-21 ***CONCRETE SIDEWALK DETAIL***

NOT TO SCALE



P-22 ***SIDEWALK TIE-IN DETAIL***

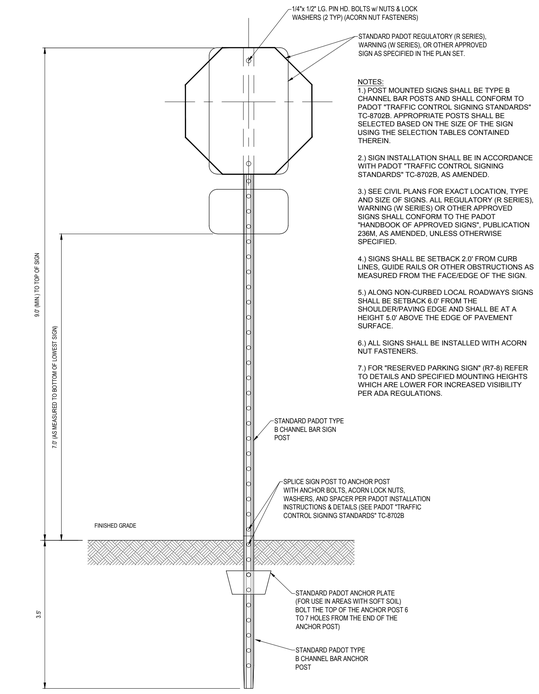
NOT TO SCALE



T-6 ***WHITE PAINTED STOP BAR DETAIL***

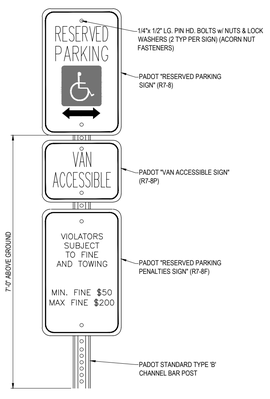
NOT TO SCALE





T-11 ***STANDARD POLE MOUNTED SIGN INSTALLATION DETAIL***

NOT TO SCALE



NOTES:
1. POST MOUNTED SIGNS SHALL BE TYPE B CHANNEL BAR POSTS AND SHALL CONFORM TO PADOT "TRAFFIC CONTROL SIGNING STANDARDS" TC-8702B. APPROPRIATE POSTS SHALL BE SELECTED BASED ON THE SIZE OF THE SIGN USING THE SELECTION TABLES CONTAINED THEREIN.
2. SIGN INSTALLATION SHALL BE IN ACCORDANCE WITH PADOT "TRAFFIC CONTROL SIGNING STANDARDS" TC-8702B, AS AMENDED.
3. SEE CIVIL PLANS FOR EXACT LOCATION, TYPE AND SIZE OF SIGNS. ALL REGULATORY (R SERIES), SIGNS SHALL CONFORM TO THE PADOT "HANDBOOK OF APPROVED SIGNS", PUBLICATION 236M, AS AMENDED, UNLESS OTHERWISE SPECIFIED.
4. SIGNS SHALL BE SETBACK 2.0' FROM CURB LINES OR OTHER OBSTRUCTIONS AS MEASURED FROM THE FACE/EDGE OF THE SIGN.
5. RESERVED PARKING SPACE SIGNS SHALL CONFORM TO DEPARTMENT OF JUSTICE "ADA STANDARDS FOR ACCESSIBLE DESIGN" AS AMENDED.
6. ALL SIGNS SHALL BE INSTALLED WITH ACORN NUT FASTENERS.

T-14 ***RESERVED PARKING SPACE WITH PENALTIES & VAN ACCESSIBLE SIGNS***

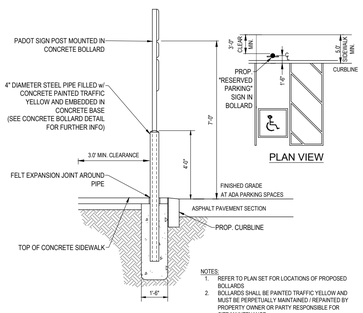
NOT TO SCALE



NOTES:
1. DETECTABLE WARNINGS SHALL BE A PRE-MANUFACTURED ARMOUR-TILE TACTILE SYSTEM OR APPROVED EQUIVALENT.
2. CONTRACTOR TO COORDINATE SPECIFIC SYSTEM AND MATERIALS TO BE UTILIZED WITH THE ENGINEER TO ENSURE LOCAL, STATE AND A.D.A. COMPLIANCE PRIOR TO CONSTRUCTION.

T-16 ***TRUNCATED DOME PATTERN FOR ADA DETECTABLE WARNING SURFACES (FOR USE IN DOT ROADWAYS)***

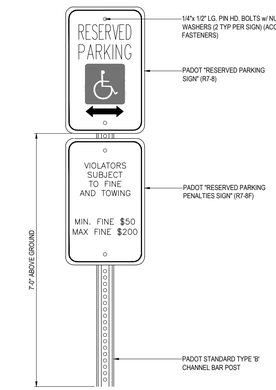
NOT TO SCALE



NOTES:
1. REFER TO PLAN SET FOR LOCATIONS OF PROPOSED BOLLARDS
2. BOLLARDS SHALL BE PAINTED TRAFFIC YELLOW AND MUST BE PERPETUALLY MAINTAINED / REPAINTED BY PROPERTY OWNER OR PARTY RESPONSIBLE FOR SITE MAINTENANCE.

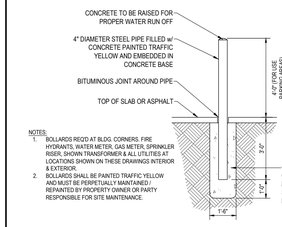
T-18 ***RESERVED PARKING SIGN WITHIN BOLLARD DETAIL***

NOT TO SCALE



T-15 ***RESERVED PARKING SPACE & PENALTIES SIGNS***

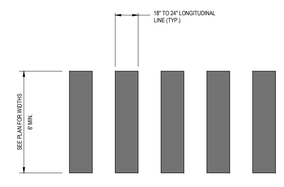
NOT TO SCALE



NOTES:
1. BOLLARDS REQ'D AT BLDG. CORNERS, FIRE HYDRANTS, WATER METER, GAS METER, SPRINKLER RISER, SHOWN TRANSFORMER & ALL UTILITIES AT LOCATIONS SHOWN ON THESE DRAWINGS INTERIOR & EXTERIOR.
2. BOLLARDS SHALL BE PAINTED TRAFFIC YELLOW AND MUST BE PERPETUALLY MAINTAINED / REPAINTED BY PROPERTY OWNER OR PARTY RESPONSIBLE FOR SITE MAINTENANCE.

T-20 ***BOLLARD DETAIL***

NOT TO SCALE



NOTES:
1. THIS TYPE OF MARKING SHOULD BE USED AT LOCATIONS WHERE SUBSTANTIAL NUMBERS OF PEDESTRIANS CROSS WITHOUT ANY OTHER TRAFFIC CONTROL DEVICE, AT LOCATIONS WHERE PHYSICAL CONDITIONS ARE SUCH THAT ADDED VISIBILITY OF THE CROSSWALK IS NECESSARY, OR AT PLACES WHERE PEDESTRIANS MIGHT NOT BE EXPECTED.
2. ALL CROSSWALKS SHALL COMPLY WITH THE FEDERAL HIGHWAY ADMINISTRATION'S "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), AS AMENDED.
3. LONGITUDINAL LINES SHALL BE PERPENDICULAR TO TRAVELLED WAY THE EXTEND ACROSS THE FULL WIDTH OF PAVEMENT OR TO THE EDGE OF THE INTERSECTING CROSSWALK TO DISCOURAGE DIAGONAL WALKING BETWEEN CROSSWALKS.
4. ALL CROSSWALK LONGITUDINAL LINES SHALL BE WHITE THERMOPLAST. ALL LINES AND NEUTRAL AREAS SHALL BE OF EQUAL WIDTHS.
5. WARNING SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH MUTCD, AS AMENDED.
6. THE SPACING OF THE LINES SHALL BE SELECTED TO AVOID THE WHEEL PATH.

T-22 ***HIGH VISIBILITY CROSSWALK (PERPENDICULAR TO INTERSECTION)***

NOT TO SCALE

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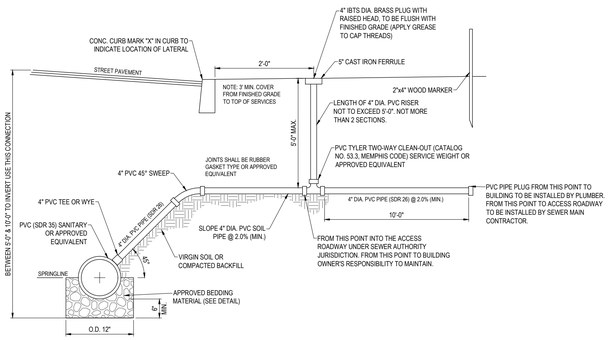
DETAIL SHEET

SHEET NUMBER:

C-901

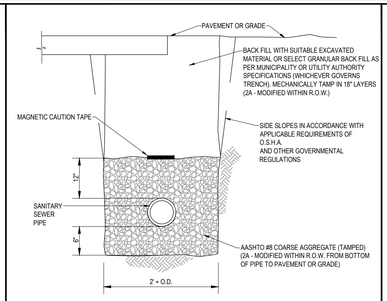
ORG. DATE - 03/15/2023

\\BOHLERENG.NET\SHARES\PA-PROJECTS\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-CNDS-0A.----LAYOUT: C-901 DETAILS



S-1 ***TYPICAL SANITARY SEWER LATERAL DETAIL***

NOT TO SCALE

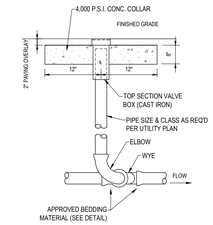


EXCAVATIONS IN EXISTING PAVED ROADWAYS SHALL BE COORDINATED WITH THE LOCAL PERMITTING AGENCY, AND ALL EXCAVATION SHALL BE PAVED WITH TEMPORARY BITUMINOUS PAVEMENT FROM THE DATE OF ORIGINAL EXCAVATION UNTIL PERMANENT PAVEMENT IS INSTALLED. (MINIMUM = 90 DAYS, MAXIMUM = 120 DAYS)

THIS DETAIL IS NOT FOR USE WITHIN A STATE RIGHT-OF-WAY. REFER TO THE LATEST APPROVED DOT SPECIFICATIONS FOR TRENCH BEDDING WITHIN A STATE RIGHT-OF-WAY.

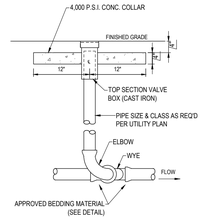
S-8 ***TRENCH BEDDING CLASSIFICATION (SANITARY MAIN)***

NOT TO SCALE



S-12 ***TYPICAL CLEANOUT DETAIL (PAVED AREAS)***

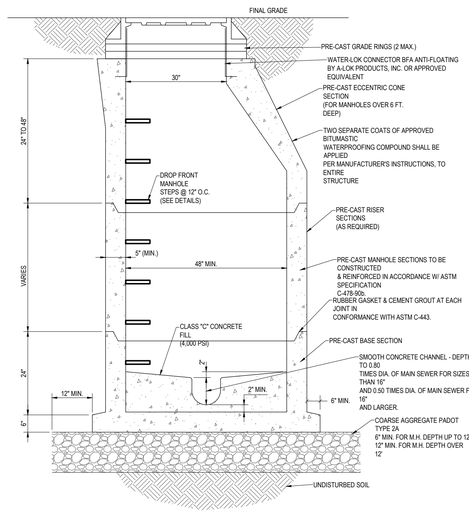
NOT TO SCALE



S-13 ***TYPICAL CLEANOUT DETAIL (LANDSCAPE AREAS)***

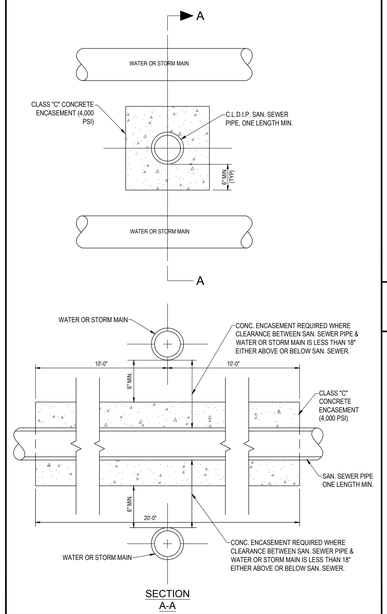
NOT TO SCALE

SANITARY LATERAL PIPE AND MH STRUCTURE WITHIN FLOODPLAIN SHALL BE WATERTIGHT / WATERPROOF AND BE CONSTRUCTED WITH WATERTIGHT / WATERPROOF FITTINGS AND COMPONENTS. MH SHALL HAVE A BOLT DOWN WATERTIGHT / WATERPROOF LID.



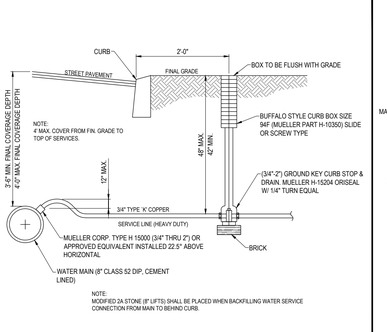
S-3 ***PRECAST SANITARY MANHOLE DETAILS***

NOT TO SCALE



S-11 ***CONCRETE ENCASEMENT DETAIL***

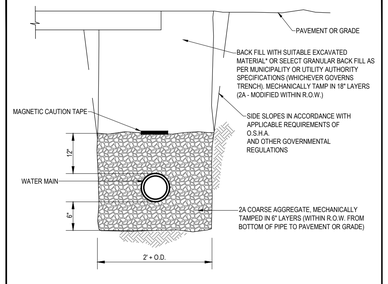
NOT TO SCALE



NOTE:
MODIFIED 2A STONE (8" LIFTS) SHALL BE PLACED WHEN BACKFILLING WATER SERVICE CONNECTION FROM MAIN TO BEHIND CURB.

W-2 ***WATER SERVICES CONNECTION DETAIL***

NOT TO SCALE



EXCAVATIONS IN EXISTING PAVED ROADWAYS SHALL BE COORDINATED WITH THE LOCAL PERMITTING AGENCY, AND ALL EXCAVATION SHALL BE PAVED WITH TEMPORARY BITUMINOUS PAVEMENT FROM THE DATE OF ORIGINAL EXCAVATION UNTIL PERMANENT PAVEMENT IS INSTALLED. (MINIMUM = 90 DAYS, MAXIMUM = 120 DAYS)

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W-4 ***TRENCH BEDDING CLASSIFICATION (WATER MAIN)***

NOT TO SCALE

LIST OF APPLICABLE PADOT DETAILS

SIGNAGE: PA.D.O.T. PUBLICATION 236
ADDITIONAL DETAILS ASSOCIATED WITH PADOT ROAD IMPROVEMENTS ARE ON THE FOLLOWING STANDARD DETAILS FROM PennDOT PUBLICATION 72M:
(THE PERMITTEE IS REQUIRED TO PROVIDE THE CONTRACTOR WITH COPIES OF THE MOST CURRENT APPLICABLE RC DRAWINGS FROM THE PennDOT PUBLICATION 72M)

STANDARD DRAWING NUMBER	DRAWING DATE
RC – 28M	JUNE 10, 2013
RC – 39M	JUNE 10, 2013
RC – 45M	JUNE 10, 2013
RC – 46M	JUNE 10, 2013
RC – 64M	JUNE 10, 2013
RC – 67M	JUNE 10, 2013

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DATE:	03/15/2023
CAD I.D.:	PAB220113.00-CNDS-0A

PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

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BMW AUTOMOTIVE DEALERSHIP EXPANSION

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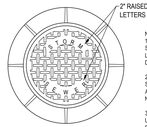
DETAIL SHEET

SHEET NUMBER:

C-902

ORG. DATE - 03/15/2023

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KP



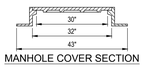
PLAN

NOTES:
1.) STANDARD MANHOLE FRAMES & COVERS SHALL BE USED ON ALL MANHOLES NOT LOCATED WITHIN EASEMENTS UNLESS DIRECTED OTHERWISE BY THE ENGINEER.

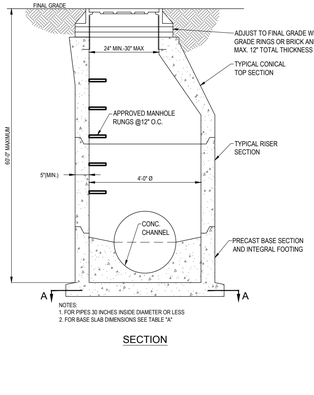
2.) STANDARD MANHOLE FRAME & COVER SHALL BE BRODIESTATE PATTERN #1012B, OR APPROVED EQUIVALENT, WITH NON-PENETRATING PICK HOLES.

3.) "FLOW-SEAL" MANHOLE COVERS SHALL BE USED ON MANHOLES LOCATED WITHIN EASEMENTS, IN UNPAVED AREAS, AND OUTSIDE OF THE CENTERLINE OF PAVED ROADS.

4.) ALL MANHOLE FRAME AND COVERS SHALL BE MADE IN THE USA.

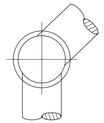


MANHOLE COVER SECTION



NOTES:
1. FOR PIPES 30 INCHES INSIDE DIAMETER OR LESS
2. FOR BASE SLAB DIMENSIONS SEE TABLE "A"

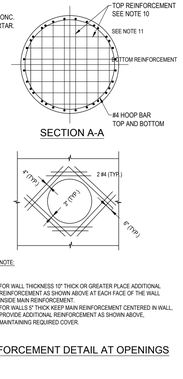
SECTION



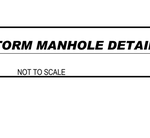
PLAN VIEW

TABLE A
BASE SLAB DIMENSIONS

MAX. DEPTH FROM TOP OF MANHOLE TO TOP OF FOOTING	AS DESIGNED (SEE NOTE 12)	
	FOOTING DIAMETER	FOOTING THICKNESS
10'-0"	6'-9"	1'-0"
20'-0"	6'-9"	1'-0"
30'-0"	6'-9"	1'-3"
40'-0"	7'-3"	1'-3"
50'-0"	8'-0"	1'-3"
60'-0"	8'-6"	1'-3"



SECTION A-A



NOTE:

FOR WALL THICKNESS 10" THICK OR GREATER PLACE ADDITIONAL REINFORCEMENT AS SHOWN ABOVE AT EACH FACE OF THE WALL INSIDE MAIN REINFORCEMENT.
FOR WALLS 5" THICK KEEP MAIN REINFORCEMENT CENTERED IN WALL, PROVIDE ADDITIONAL REINFORCEMENT AS SHOWN ABOVE, MAINTAINING REQUIRED COVER.

REINFORCEMENT DETAIL AT OPENINGS

NOTES:
1. PRECAST MANHOLES, MEETING THE REQUIREMENTS OF PUBLICATION 408 SPECIFICATIONS, SECTION 714, MAY BE SUBSTITUTED FOR THE STANDARD CAST-IN-PLACE MANHOLE.

2. CONSTRUCTION NOTES:
A. CONSTRUCT IN ACCORDANCE WITH: PENNDOT PUBLICATION 408 SPECIFICATIONS; SECTIONS 605, 606, 714 AND ASTM C-478-90, STANDARD SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS, AS MODIFIED HERE IN:
B. MINIMUM CONCRETE CLASS AA.
C. PROVIDE EPOXY COATED STEEL REINFORCEMENT (IN ACCORDANCE WITH ASTM A1060), STEEL WELDED WIRE FABRIC (IN ACCORDANCE WITH ASTM A820 & A675), PLAIN BILLET STEEL BARS (IN ACCORDANCE WITH ASTM A615) OR DEFORMED BILLET STEEL BARS. PROVIDE MINIMUM YIELD STRENGTH OF 60,000 PSI.
D. CLEAR COVER FOR STEEL: WALLS: 2" FOOTINGS: 2" (TOP BARS), 1 1/2" (BOTTOM BARS) 1 1/2" (SIDE COVER)

3. PROVIDE 12" MINIMUM HORIZONTAL CLEARANCE BETWEEN OPENINGS LOCATED AT THE SAME DEPTH. PIPES NOT LOCATED AT THE SAME DEPTH MUST BE LOCATED VERTICALLY AT LEAST ONE TIMES MAXIMUM OPENING DIAMETER APART.

4. FOR RISERS OR BASE SECTIONS WITH OPENINGS, PROVIDE A MINIMUM HEIGHT OF SECTION EQUAL TO TWO TIMES THE LARGEST OPENING, CENTER OF OPENING TO BE LOCATED AT LEAST ONE TIMES THE OPENING FROM THE CLOSEST JOINT BETWEEN RISERS.

5. FOR PRECAST RISER OR BASE SECTIONS WITH ONE OPENING LOCATED AT DEPTHS TO 60' OR FOR SECTIONS WITH TWO OR MORE OPENINGS, LOCATED AT A DEPTH OF 15 FEET AND LESS, PROVIDE CIRCUMFERENTIAL REINFORCEMENT IN ACCORDANCE WITH REINFORCEMENT DETAIL AT OPENINGS.

FOR RISERS OR BASE SECTIONS WITH 2 OR MORE OPENINGS, LOCATED AT A DEPTH GREATER THAN 15 FEET, BUT LESS THAN OR EQUAL TO 30 FEET, PROVIDE CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.44 SQ/IN VERTICAL FOOT FOR THE DEPTH OF THE RISER OR BASE SECTION

FOR RISERS OR BASE SECTIONS WITH 2 OR MORE OPENINGS, LOCATED AT DEPTHS GREATER THAN 30 FEET, USE A 10 INCH THICK WALL RISER OR BASE SECTION WITH CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ/IN VERTICAL FOOT EACH FACE

RISERS OR BASE SECTIONS WITH HOLES TO BE CLEARLY MARKED WITH MAXIMUM ALLOWABLE DEPTH.

6. PROVIDE ADDITIONAL REINFORCEMENT BARS AROUND OPENINGS AS SHOWN ON REINFORCEMENT DETAILS AT OPENINGS

7. PROVIDE MANHOLE STEPS MEETING THE REQUIREMENTS OF PUBLICATION 408 SPECIFICATIONS, SECTION 605.2(C), ALTERNATE CONFIGURATIONS AND DIMENSIONS, AS APPROVED BY THE ENGINEER, MAY BE USED.

8. PROVIDE MINIMUM 1" SECTION DIMENSION FOR METAL STEPS. PROVIDE MAXIMUM 3/4" SECTION DIMENSION FOR NON-DETERIORATING MATERIAL STEPS.

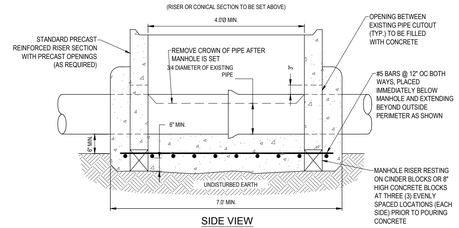
9. MECHANICAL ANCHOR REQUIRED FOR INSTALLATION OF STEPS WITHOUT HOOKS.

10. FOR FOOTING TOP REINFORCEMENT, BOTH DIRECTIONS, USE NO. 19 (6) BARS AT 12" FOR DEPTHS TO 60' OR 0.30 IN/FT WWF FOR DEPTHS TO 30' AND 0.32 IN/FT WWF FOR DEPTHS GREATER THAN 30'. 6" MAXIMUM SPACING FOR WWF.

11. FOR FOOTING BOTTOM REINFORCEMENT, BOTH DIRECTIONS, USE NO. 13 (4) BARS AT 18" FOR DEPTHS TO 60' OR 0.15 IN/FT WWF FOR DEPTHS TO 30' AND 0.16 IN/FT WWF FOR DEPTHS GREATER THAN 30'. 6" MAXIMUM SPACING FOR WWF.

12. A SAFE BEARING CAPACITY OF (1.5 TONS PER SF) UNDER THE ENTIRE SLAB IS ASSUMED TO DETERMINE THE BASE SIZE. WHEN THE SUBSOIL IS EXTREMELY POOR, PROCEED WITH CONSTRUCTION ONLY AFTER THE ENGINEER SPECIFIES ADEQUATE BASE DESIGN.

R-4	PRECAST STORM MANHOLE DETAILS	NOT TO SCALE



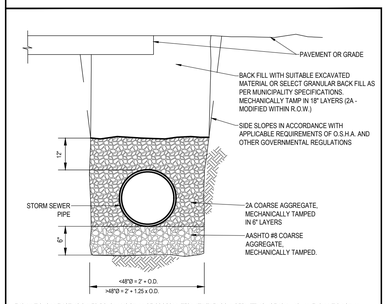
SIDE VIEW

FRONT VIEW

NOTES:
1.) EXISTING PIPE TO REMAIN UNTIL EXFILTRATION OR VACUUM TEST ON MANHOLE IS ACCEPTABLE TO AUTHORITY.

2.) REMOVE CROWN OF EXISTING PIPE FLUSH WITH CONCRETE SHELF.

R-5	DOGHOUSE MANHOLE DETAIL	NOT TO SCALE



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R-11	TRENCH BEDDING CLASSIFICATION (STORM)	NOT TO SCALE

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PRELIMINARY LAND DEVELOPMENT PLANS

FOR

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BMW AUTOMOTIVE DEALERSHIP EXPANSION

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MONTGOMERY COUNTY, PA

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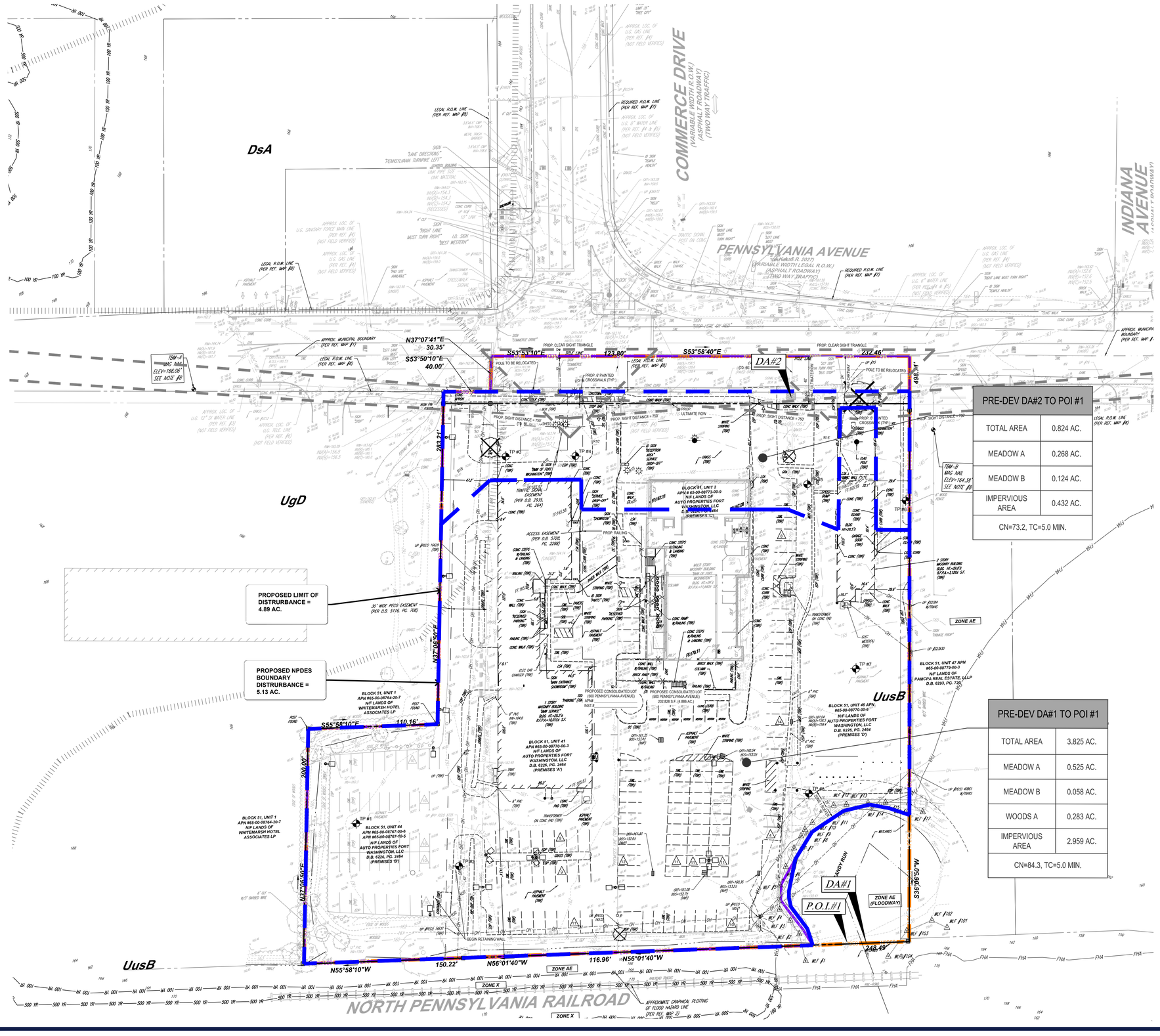
DETAIL SHEET

SHEET NUMBER:

C-903

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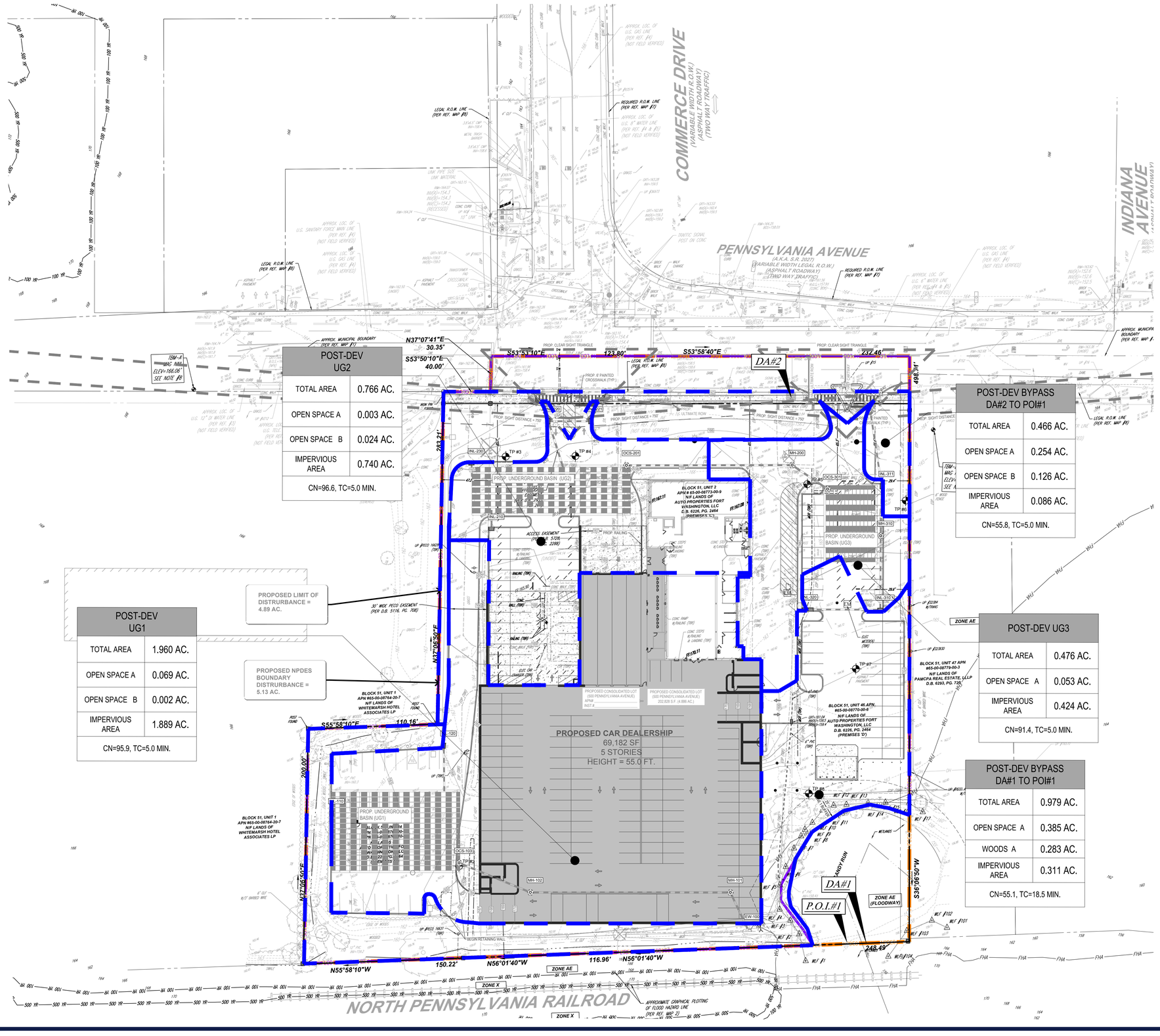
PRE DEVELOPMENT DRAINAGE AREA PLAN

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C-1001

ORG. DATE - 03/15/2023

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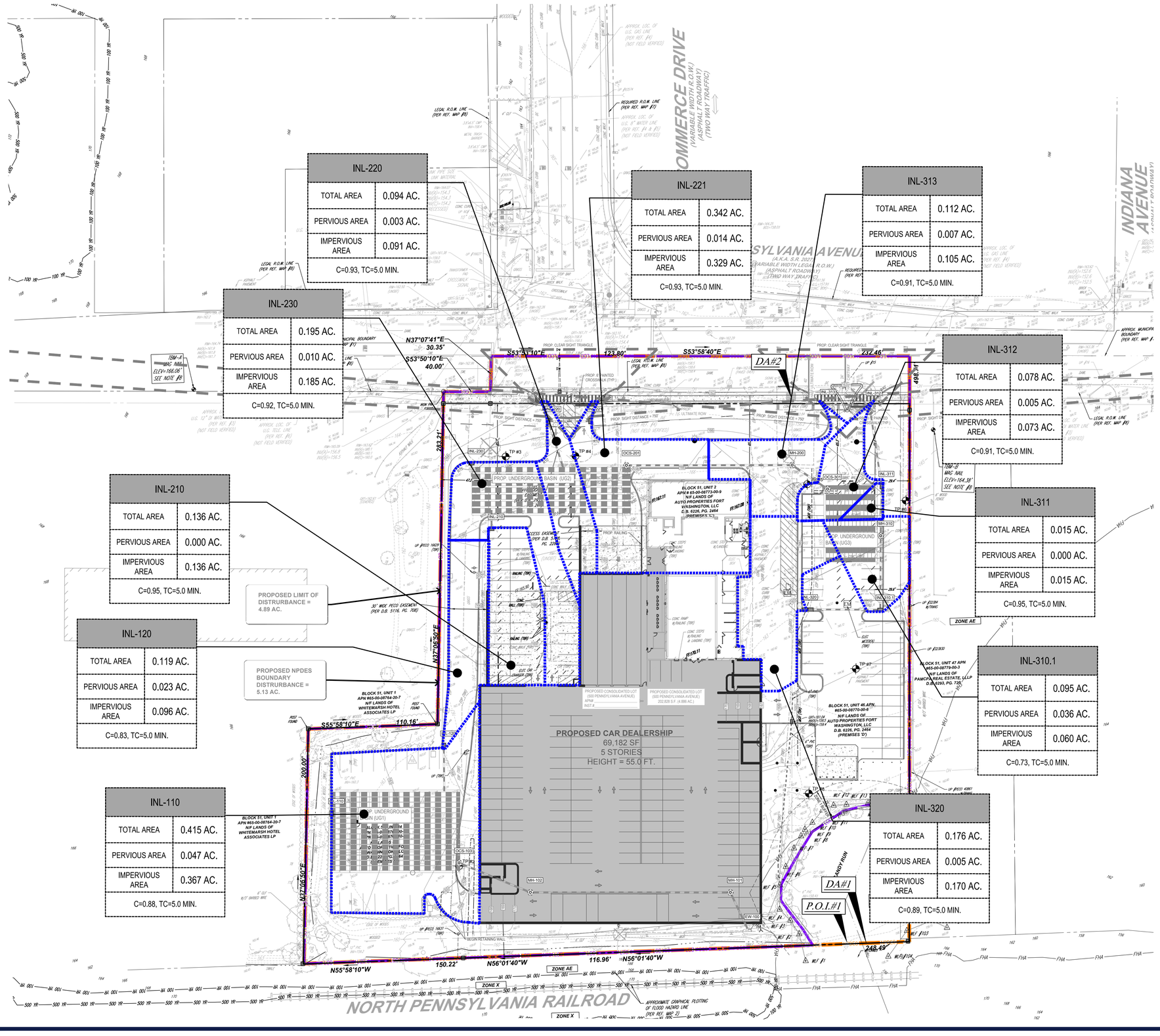
POST DEVELOPMENT DRAINAGE AREA PLAN

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ORG. DATE - 03/15/2023

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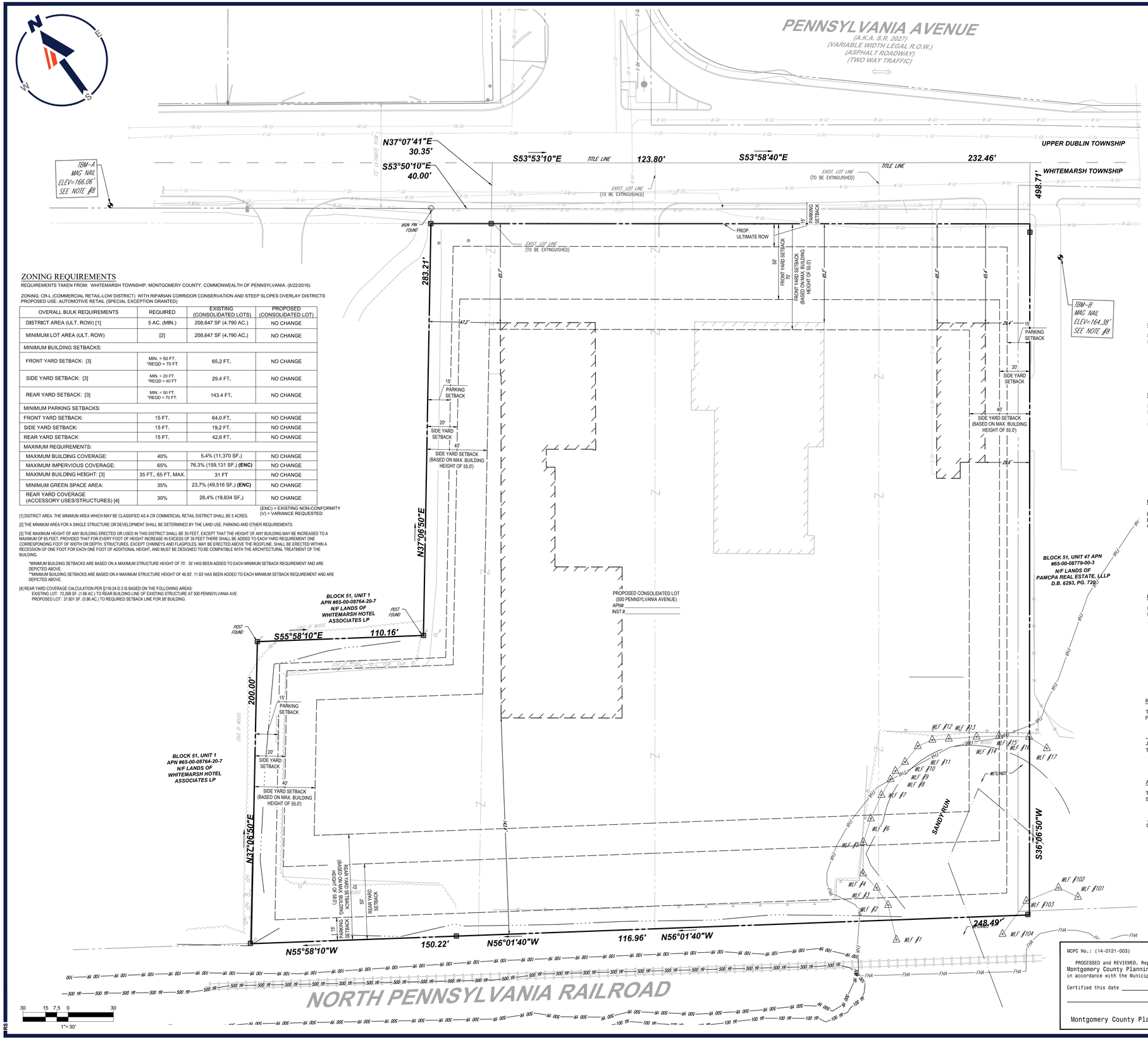
INLET DRAINAGE AREA PLAN

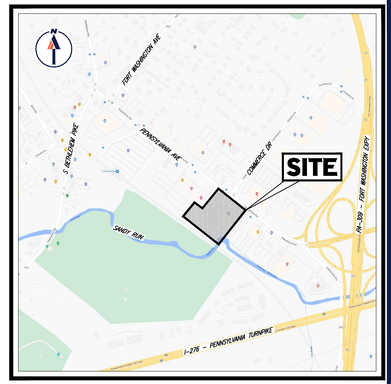
SHEET NUMBER:

C-1003

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LOCATION MAP

SCALE: 1" = 800'

ZONING REQUIREMENTS

REQUIREMENTS TAKEN FROM: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, COMMONWEALTH OF PENNSYLVANIA. (6/22/2016)

ZONING: CR-L (COMMERCIAL RETAIL-LOW DISTRICT) WITH RIPARIAN CORRIDOR CONSERVATION AND STEEP SLOPES OVERLAY DISTRICTS
PROPOSED USE: AUTOMOTIVE RETAIL (SPECIAL EXCEPTION GRANTED)

OVERALL BULK REQUIREMENTS	REQUIRED	EXISTING (CONSOLIDATED LOTS)	PROPOSED (CONSOLIDATED LOT)
DISTRICT AREA (ULT. ROW) [1]	5 AC. (MIN.)	208,647 SF (4.790 AC.)	NO CHANGE
MINIMUM LOT AREA (ULT. ROW)	[2]	208,647 SF (4.790 AC.)	NO CHANGE
MINIMUM BUILDING SETBACKS:			
FRONT YARD SETBACK: [3]	MIN. = 50 FT. *REQD = 70 FT	65.2 FT.	NO CHANGE
SIDE YARD SETBACK: [3]	MIN. = 20 FT. *REQD = 40 FT	29.4 FT.	NO CHANGE
REAR YARD SETBACK: [3]	MIN. = 50 FT. *REQD = 70 FT.	143.4 FT.	NO CHANGE
MINIMUM PARKING SETBACKS:			
FRONT YARD SETBACK:	15 FT.	64.0 FT.	NO CHANGE
SIDE YARD SETBACK:	15 FT.	19.2 FT.	NO CHANGE
REAR YARD SETBACK:	15 FT.	42.6 FT.	NO CHANGE
MAXIMUM REQUIREMENTS:			
MAXIMUM BUILDING COVERAGE:	40%	5.4% (11,370 SF.)	NO CHANGE
MAXIMUM IMPERVIOUS COVERAGE:	65%	76.3% (159,131 SF.) **(ENC)**	NO CHANGE
MAXIMUM BUILDING HEIGHT: [3]	35 FT., 65 FT. MAX.	31 FT	NO CHANGE
MINIMUM GREEN SPACE AREA:	35%	23.7% (49,516 SF.) **(ENC)**	NO CHANGE
REAR YARD COVERAGE (ACCESSORY USES/STRUCTURES) [4]	30%	28.4% (19,834 SF.)	NO CHANGE

(ENC) = EXISTING NON-CONFORMITY
(V) = VARIANCE REQUESTED

[1] DISTRICT AREA. THE MINIMUM AREA WHICH MAY BE CLASSIFIED AS A CR COMMERCIAL RETAIL DISTRICT SHALL BE 5 ACRES.

[2] THE MINIMUM AREA FOR A SINGLE STRUCTURE OR DEVELOPMENT SHALL BE DETERMINED BY THE LAND USE, PARKING AND OTHER REQUIREMENTS.

[3] THE MAXIMUM HEIGHT OF ANY BUILDING ERECTED OR USED IN THIS DISTRICT SHALL BE 35 FEET, EXCEPT THAT THE HEIGHT OF ANY BUILDING MAY BE INCREASED TO A MAXIMUM OF 65 FEET, PROVIDED THAT FOR EVERY FOOT OF HEIGHT INCREASE IN EXCESS OF 35 FEET THERE SHALL BE ADDED TO EACH YARD REQUIREMENT ONE CORRESPONDING FOOT OF WIDTH OR DEPTH. STRUCTURES, EXCEPT CHIMNEYS AND FLAGPOLES, MAY BE ERECTED ABOVE THE ROOFLINE, SHALL BE ERECTED WITHIN A RECESSION OF ONE FOOT FOR EACH ONE FOOT OF ADDITIONAL HEIGHT, AND MUST BE DESIGNED TO BE COMPATIBLE WITH THE ARCHITECTURAL TREATMENT OF THE BUILDING.

*MINIMUM BUILDING SETBACKS ARE BASED ON A MAXIMUM STRUCTURE HEIGHT OF 70'. 35' HAS BEEN ADDED TO EACH MINIMUM SETBACK REQUIREMENT AND ARE DEPICTED ABOVE.
**MINIMUM BUILDING SETBACKS ARE BASED ON A MAXIMUM STRUCTURE HEIGHT OF 46.83'. 11.83' HAS BEEN ADDED TO EACH MINIMUM SETBACK REQUIREMENT AND ARE DEPICTED ABOVE.

[4] REAR YARD COVERAGE CALCULATION PER §116-24.D.3 IS BASED ON THE FOLLOWING AREAS:
EXISTING LOT: 72,268 SF. (1.66 AC.) TO REAR BUILDING LINE OF EXISTING STRUCTURE AT 500 PENNSYLVANIA AVE.
PROPOSED LOT: 37,601 SF. (0.86 AC.) TO REQUIRED SETBACK LINE FOR SF BUILDING.

RECORDER OF DEEDS

RECORDED IN THE OFFICE FOR THE RECORDING OF DEEDS IN AND FOR THE COUNTY OF MONTGOMERY, AT NORRISTOWN, PA, IN PLAN BOOK NO. _____ PAGE NO. _____ ON _____ 2017.

_____
RECORDER

SURVEYOR'S CERTIFICATION

I, JAMES C. WEED, P.L.S., A REGISTERED PROFESSIONAL LAND SURVEYOR OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT THIS PLAN CORRECTLY REPRESENTS THE METES AND BOUNDS AS SURVEYED BY ME ON _____ AND THAT THE LOCATION, SIZE AND MATERIAL OF EXISTING MARKERS ARE ACCURATELY SHOWN HEREON.

_____
JAMES C. WEED

_____
REGISTERED No.: #SU075250

_____
DATE

MONUMENTATION CERTIFICATION:

I, JAMES C. WEED, P.L.S., A REGISTERED PROFESSIONAL LAND SURVEYOR OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT ALL CONCRETE MONUMENTS HAVE BEEN SET OR FOUND BY ME ON _____, AS INDICATED AND SHOWN HEREON.

_____
JAMES C. WEED

_____
REGISTERED No.: #SU075250

_____
DATE

ENGINEER'S CERTIFICATION

I, JEFFREY A. BEAVAN, P.E., A REGISTERED PROFESSIONAL ENGINEER OF THE COMMONWEALTH OF PENNSYLVANIA, DO HEREBY CERTIFY THAT THIS PLAN CORRECT IN ALL DETAILS AS PREPARED BY ME ON _____, 2017.

_____
JEFFREY A. BEAVAN

_____
REGISTERED No.: #PE082005

_____
DATE

REVIEW OF THE TOWNSHIP ENGINEER, WHITEMARSH TOWNSHIP:

THIS SUBDIVISION AND/OR LAND DEVELOPMENT PLAN WAS REVIEWED BY THE APPOINTED TOWNSHIP ENGINEER FOR WHITEMARSH TOWNSHIP ON THIS _____ DAY OF _____, 20____.

_____
JAMES C. SULLIVAN, P.E.
TOWNSHIP ENGINEER

APPROVAL OF THE WHITEMARSH TOWNSHIP BOARD OF SUPERVISORS:

THIS SUBDIVISION AND/OR LAND DEVELOPMENT PLAN WAS APPROVED BY RESOLUTION OF THE BOARD OF SUPERVISORS OF WHITEMARSH TOWNSHIP ON THIS _____ DAY OF _____, 20____.

_____
CHAIRMAN

_____
SECRETARY

MCPC No.: (14-0121-003)

PROCESSED and REVIEWED, Report prepared by
Montgomery County Planning Commission
in accordance with the Municipalities Planning Code.

Certified this date _____

_____
Montgomery County Planning Commission

LEGEND

EXISTING	
PROPERTY LINE	
R.O.W. LINE	
BUILDING	
CONCRETE CURB	
FENCE	
TREELINE	
CONCRETE MONUMENT/ IRON PIN	
SIGN	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
FIRE HYDRANT	
UTILITY POLE	
OVERHEAD UTILITY WIRES	
100 YEAR FLOOD PLAIN	100 YR
500 YEAR FLOOD PLAIN	500 YR
FLOOD WAY	
EDGE OF STREAM DELINEATION FLAGS	

LEGEND

TO BE REMOVED	
PROPERTY LINE	
BUILDING	

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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PROJECT No.: PAB220113.00
DRAWN BY: BS
CHECKED BY: MSL
DATE: 03/15/2023
CAD I.D.: PAB220113.00-LDVP-0A

PROJECT:

PRELIMINARY/FINAL LOT LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

**500 PENNSYLVANIA AVENUE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA**

BOHLER
74 W BROAD STREET, SUITE 500
BETHLEHEM, PA 18018
Phone: (610) 709-9971
Fax: (610) 709-9976
www.BohlerEngineering.com

COMMONWEALTH OF PENNSYLVANIA
J.A. BEAVAN
PROFESSIONAL
ENGINEER
PROFESSIONAL ENGINEER
PE082005
PENNSYLVANIA LICENSE No. PE082005
NEW YORK LICENSE No. 096004
NEW JERSEY LICENSE No. 24GE05039500

SHEET TITLE:

LOT CONSOLIDATION PLAN

SHEET NUMBER:

LC-01

ORG. DATE - 03/15/2023

RECORD PLAN 9 OF 9

R:\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\CIVIL SITE PLANS\PAB220113.00-LDVP-0A----\LAYOUT\ LC-01 LOT CONSOLIDATION
RS

pennsylvania
DEPARTMENT OF TRANSPORTATION

TRANSPORTATION IMPACT STUDY (TIS) DETERMINATION & SCOPING MEETING APPLICATION

Scoping Meeting Application: Draft

Scoping Meeting Date: _____ Scoping Number: S0620220106

Tax Parcel Number: _____

Project/Development Name: BMW Fort Washington

Applicant Information:

Business Partner ID: _____

Applicant Name: MileOne Autogroup

Phone: 3016794062 Email 1: dturnbaugh@mileone.com

Primary Contact: Dennis Turnbaugh Email 2: _____

Additional Engineering Firm Information:

Business Partner ID: _____

Engineering Firm: Traffic Planning and Design Inc

Phone: 6103263100 Email 1: mhammond@trafficpd.com

Primary Contact: Matthew Hammond Email 2: mbressler@trafficpd.com

Creator Information:

Business Partner ID: 000094 Firm Name: Traffic Planning and Design, Inc.

Phone: 610-326-3100 Email 1: bhaesler@trafficpd.com

(1) LOCATION OF PROPOSED DEVELOPMENT:

PennDOT Engineering District: 06 Email: _____

County: Montgomery Email: planning@montcopa.org

Municipality: WHITEMARSH Email: rmellor@whitemarshtwp.org; kheinrich@gilmore-assoc.com

NO.	SR	Segment	Offset	Average Daily Trips	Driveway Classification	Local Road
1	2037	0013	1017	1415	Medium Volume	No
2	2037	0013	0897	707	Low Volume	No

Are there any vehicle weight or size restrictions along the SR in accordance with 75 PA C.S. ss 4902? : No

(2) DESCRIPTION OF PROPOSED DEVELOPMENT (Attach site plan if available):

Proposed site access:
Per preliminary discussion with PennDOT, with redevelopment of the site, the five existing access points to Pennsylvania Avenue (SR 2037) will be reduced to two access points to Pennsylvania Avenue (SR 2037); One full-movement opposite Commerce Drive and one right-in/right-out to the southeast of the signal.

Proposed land uses:
The redevelopment of the site will replace the 22,065 SF existing car dealership with a 75,085 SF New car sales and service facility. The resultant net increase in dealership area will be 53,020 SF.

Community linkages *(access to neighboring properties, cross easements, pedestrian and transit accommodations):*
None

(3) DEVELOPMENT SCHEDULE AND STAGING:

Anticipated Opening Date: 04-07-2025
Full Buildout Date: 04-07-2025

Describe Proposed Development Schedule/Staging:
None

(4) TRIP GENERATION:

Land Use & Size	Land Use Code	Were ITE results used?	Daily Trips	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
				Enter	Exit	Enter	Exit	Enter	Exit
New Car Sales / 75.09 KSF	840	Yes	2122	102	38	73	109	274	274
		TOTAL:	2122	102	38	73	109	274	274

(5) TRANSPORTATION IMPACT STUDY REQUIRED?

Transportation Impact Study Required? Yes

If Yes, based on:
During any one-hour time period, 100 or more additional vehicle trips entering or exiting an existing development. During any one-hour time period, 100 or more vehicle trips entering or exiting a development.

Other considerations as described below:
None

(6) TRANSPORTATION IMPACT ASSESSMENT REQUIRED?

Transportation Impact Assessment Required? No

(7) STUDY AREA:

Roadway and Study Intersections:
Pennsylvania Avenue (SR 2037) and Commerce Drive; Pennsylvania Avenue (SR 2037) and Existing Site Driveways

Land use context (Refer to PennDOT Design Manual, Part 1X, Appendix B):

Suburban Corridor

Known Congestion Areas:
To be determined

Known Safety Concerns:
To be determined

Known Environmental Constraints:
To be determined

Pedestrian/Bike Review (Community Centers, Parks, Schools, etc.):
To be addressed in TIS

Transit Review (Current routes/stops):
To be addressed in TIS

(8) STUDY AREA TYPE:

Study Area Type: Urban

(9) TIS ANALYSIS PERIODS AND TIMES:

Analysis period and times notes:
2022 Existing Conditions 2025 Base Conditions; 2025 Projected Conditions; Weekday A.M. Peak Hour (7-9 AM); Weekday P.M. Peak Hour (4-6 PM); Saturday Midday Peak Hour (11 AM - 1 PM)

(10) TRAFFIC ADJUSTMENT FACTORS:

(a) Seasonal Adjustment (Identify counts requiring adjustment and methodology):
None

(b) Annual Base Traffic Growth: 0.27 %/yr. **Source:** PennDOT BPR

(c) Pass-By Trips (Attach justification where required):

NO.	Land Use	%	Source

(d) Captured Trips for Multi-Use Sites:
None

(e) Modal Split Reductions:
None

(f) Other Reductions:
None

(11) OTHER PROJECTS WITHIN STUDY AREA TO BE ADDED TO BASE TRAFFIC:

Notes:
To be determined through scoping process

(12) TRIP DISTRIBUTION AND ASSIGNMENT:

Trip Distribution Notes:
To be based on existing traffic patterns in the study area.

(13) APPROVAL OF DATA COLLECTION ELEMENTS AND METHODOLOGIES:

NO.	Location	Period	Type

1	Pennsylvania Avenue and Existing Site Accesses	AM Peak, PM Peak, SAT Peak	Turning Movement Counts
2	Pennsylvania Avenue (SR 2037) and Commerce Drive	AM Peak, PM Peak, SAT Peak	Turning Movement Counts

(14) CAPACITY/LOS ANALYSIS:

NO.	Location	Period	Type
1	Pennsylvania Avenue (SR 2037) and Commerce Drive	AM Peak, PM Peak, SAT Peak	HCM 6th edition from Synchro 11
2	Pennsylvania Avenue (SR 2037) and Site Driveways	AM Peak, PM Peak, SAT Peak	HCM 6th edition from Synchro 11

(15) ROADWAY IMPROVEMENTS/MODIFICATIONS BY OTHERS TO BE INCLUDED:

Roadway Improvements:
To be determined

(16) OTHER NEEDED ANALYSES:

(a) Sight Distance Analysis:
Will be addressed in TIS

(b) Signal Warrant Analysis (Identify locations):
As needed

(c) Required Signal Phasing/Timing Modifications (Determine for all signalized intersections; specify methodology):
As needed

(d) Traffic Signal Corridor/Network Analysis (Identify locations/methodology):
As needed

(e) Analysis of the Need for Turning Lanes (Identify locations/methodology):
Will be addressed in TIS

(f) Turning Lane Lengths (Identify methodology to be used):
Will be addressed in TIS

(g) Left Turn Signal Phasing Analysis (Identify locations/methodology):
As needed

(h) Queuing Analysis (Identify locations/methodology):
As needed

(i) Gap Studies (Identify locations/methodology):
As needed

(j) Crash Analysis (Identify locations):
Will be addressed in TIS

(k) Weaving Analysis (Identify locations):
As needed

(l) Other Required Studies (Specify locations/methodology):
As needed

(17) ADDITIONAL COMMENTS OR RECOMMENDATIONS RELATIVE TO THE SCOPE OF THE TIS:

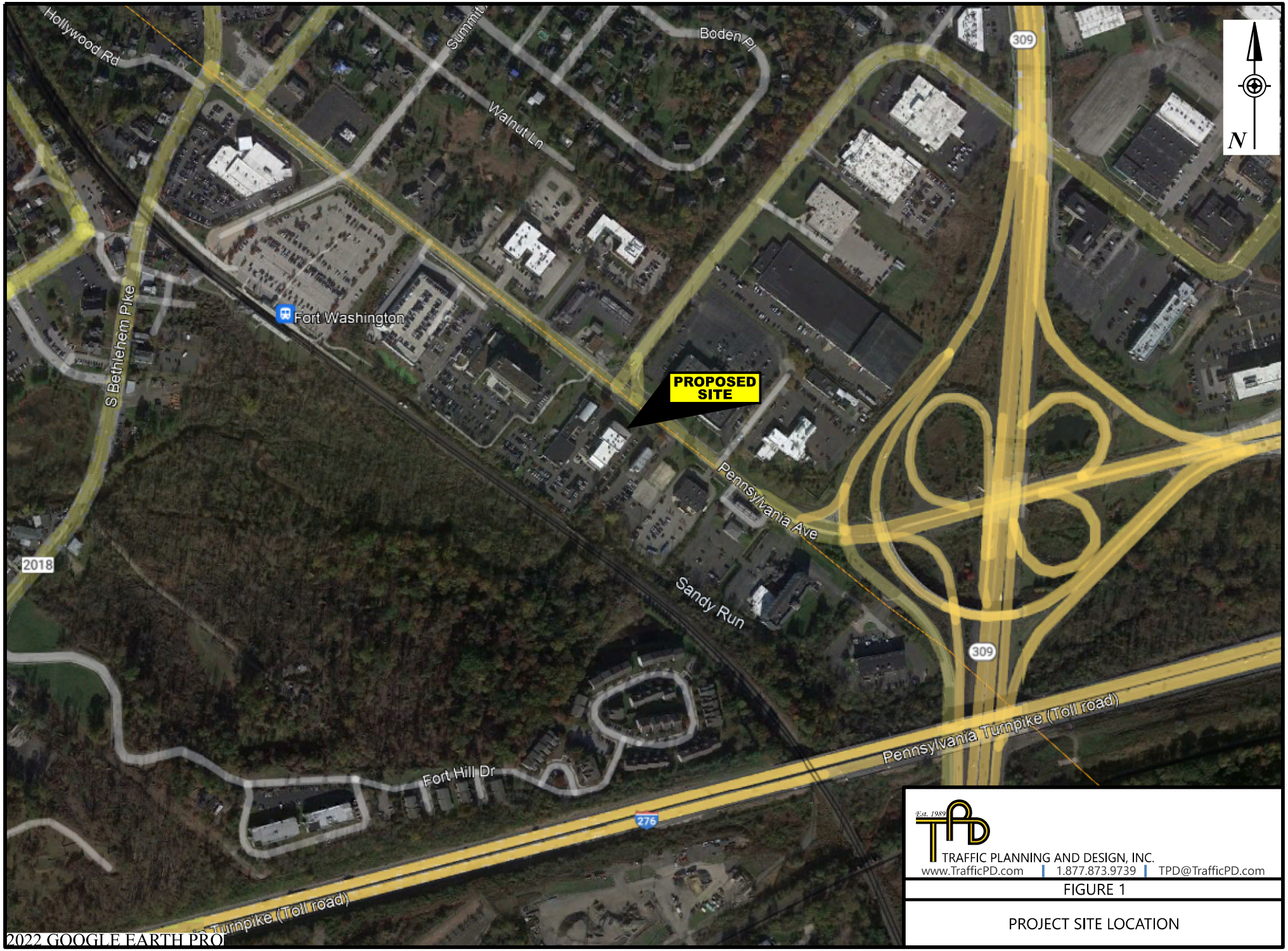
Additional Comments:

None

PennDOT Review Comments: (Current Cycle Comments)

After review of the scoping meeting application, the Department will contact the applicant regarding the need for a scoping meeting prior to applying for a highway occupancy permit.

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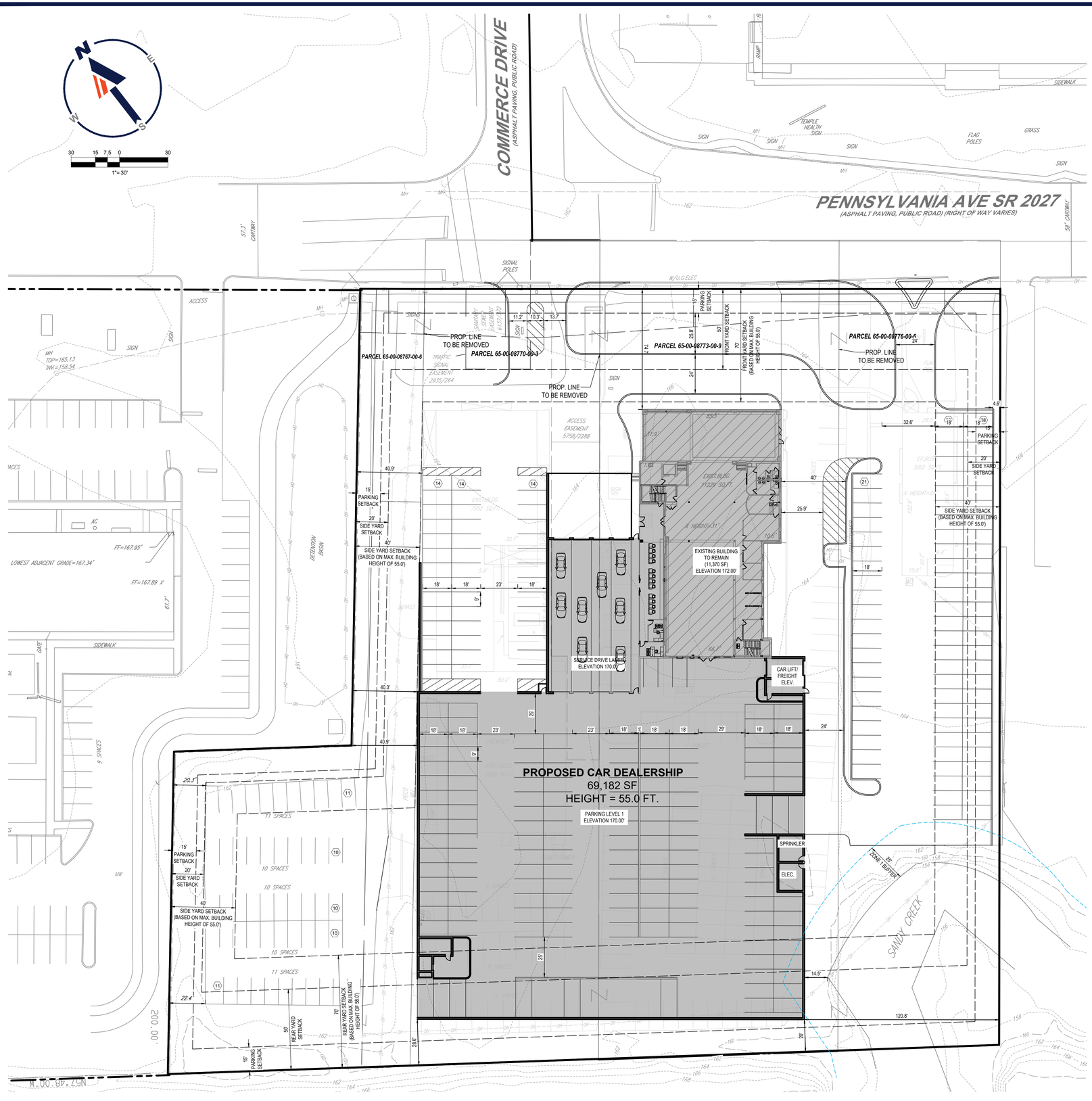
Est. 1989

TRAFFIC PLANNING AND DESIGN, INC.

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FIGURE 1

PROJECT SITE LOCATION



LEGEND

PROPOSED

SETBACK LINE	
BUILDING	
CONCRETE CURB	
EDGE OF ASPHALT	

LEGEND

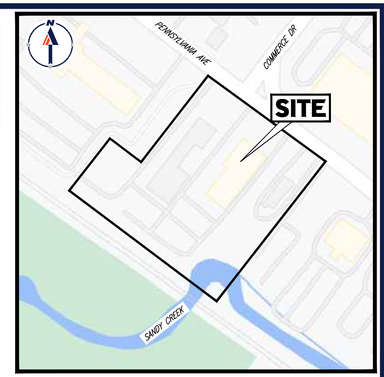
EXISTING

PROPERTY LINE	
EASEMENT LINE	
BUILDING	
CONCRETE CURB	
EDGE OF ASPHALT	
STORM/SANITARY MANHOLE	MH
OVERHEAD UTILITY WIRES	OH

LEGEND

TO BE REMOVED

PROPERTY LINE	
EASEMENT LINE	
BUILDING	
CONCRETE CURB	
EDGE OF ASPHALT	
STORM/SANITARY MANHOLE	MH
OVERHEAD UTILITY WIRES	OH



LOCATION MAP
1"=200'
100' 0 200'

GENERAL NOTES

1. THIS SITE IS LOCATED AT PENNSYLVANIA AVENUE, WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, COMMONWEALTH OF PENNSYLVANIA.
2. CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL SPECIFIC RESOURCES, TECHNICAL REPORTS, AND DESIGN DOCUMENTS RELATED TO THIS PROJECT AND FAMILIARIZE HIMSELF WITH SAME FOR APPLICATION BOTH PRIOR TO AND DURING CONSTRUCTION.
3. ALL ELEVATIONS SHOWN ARE IN ACCORDANCE WITH THE REFERENCED SURVEYOR'S BENCHMARK AND MUST BE VERIFIED BY THE GENERAL CONTRACTOR PRIOR TO GROUNDBREAK.
4. APPLICANT/EQUITABLE OWNER:
   MILE-ONE AUTO-GROUP
   3301 BRIGGS CHANEY ROAD
   SILVER SPRING, MD 20904
5. PARCEL IDs:
   65-00-08776-00-6 (512 PENNSYLVANIA AVE)
   65-00-08773-00-9 (510 PENNSYLVANIA AVE)
   65-00-08770-00-3 (500 PENNSYLVANIA AVE)
   65-00-08767-00-6 & 65-00-08767-10-5 (506 PENNSYLVANIA AVE)
6. TOTAL SITE AREA: 4.886 AC.
7. **THE ENTIRE SITE IS IN A SPECIAL FLOOD HAZARD AREA, ZONE (AE), WITHIN THE 100-YEAR FLOODPLAIN, BASE FLOOD ELEVATION = 169.00. AS SUCH, THE ENTIRE SITE IS LOCATED WITHIN THE RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT PER WHITEMARSH TOWNSHIP.**
8. THE PROPOSED DEVELOPMENT AREA WILL BE SERVICED BY PUBLIC WATER AND SEWER.

ZONING REQUIREMENTS

REQUIREMENTS TAKEN FROM: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, COMMONWEALTH OF PENNSYLVANIA.

ZONING: CR-L (COMMERCIAL RETAIL-LOW DISTRICT) WITH RIPARIAN CORRIDOR CONSERVATION OVERLAY
PROPOSED USE: AUTOMOTIVE RETAIL **(SPECIAL EXCEPTION PER SECTION 116-104.B(6))**

OVERALL BULK REQUIREMENTS	REQUIRED	EXISTING	PROPOSED CONSOLIDATED LOT
DISTRICT AREA [1]	5 AC. (MIN.)	212,828 SF (4.886 AC.)	NO CHANGE
MINIMUM LOT AREA	[2]	212,828 SF (4.886 AC.)	NO CHANGE
MINIMUM BUILDING SETBACKS:			
FRONT YARD SETBACK: [3]	MIN. = 50 FT. *REQ'D = 70 FT	N/A	74.7 FT.
SIDE YARD SETBACK: [3]	MIN. = 20 FT. *REQ'D = 40 FT	40.9 FT.	40.3 FT.
REAR YARD SETBACK: [3]	MIN. = 50 FT. *REQ'D = 70 FT	N/A	20 FT. **(V)**
MINIMUM PARKING SETBACKS:			
FRONT YARD SETBACK:	15 FT.	N/A	N/A
SIDE YARD SETBACK:	15 FT.	N/A	N/A
REAR YARD SETBACK:	15 FT.	N/A	N/A
MAXIMUM REQUIREMENTS:			
MAXIMUM BUILDING COVERAGE:	40%	15.3% (11,370 SF.)	32.5% (69,182 SF.)
MAXIMUM IMPERVIOUS COVERAGE:	65%	74.8% (159,131 SF.)	73.5% (156,430 SF.) **(V)**
MAXIMUM BUILDING HEIGHT: [3]	35 FT., 65 FT. MAX.	31 FT.	55.0 FT.
MINIMUM GREEN SPACE AREA:	35%		(26.5%) 56,388 SF. **(V)**
REAR YARD COVERAGE (ACCESSORY USES/STRUCTURES) [4]	30%	57.6% (41,665 SF.) **(ENC)**	40.2% (15,124 SF.) **(ENC-I)**

(ENC) - EXISTING NONCONFORMITY
(ENC - I) - EXISTING NONCONFORMITY, IMPROVED

[1] DISTRICT AREA. THE MINIMUM AREA WHICH MAY BE CLASSIFIED AS A CR COMMERCIAL RETAIL DISTRICT SHALL BE 5 ACRES.

[2] THE MINIMUM AREA FOR A SINGLE STRUCTURE OR DEVELOPMENT SHALL BE DETERMINED BY THE LAND USE, PARKING AND OTHER REQUIREMENTS.

[3] THE MAXIMUM HEIGHT OF ANY BUILDING ERECTED OR USED IN THIS DISTRICT SHALL BE 35 FEET, EXCEPT THAT THE HEIGHT OF ANY BUILDING MAY BE INCREASED TO A MAXIMUM OF 65 FEET, PROVIDED THAT FOR EVERY FOOT OF HEIGHT INCREASE IN EXCESS OF 35 FEET THERE SHALL BE ADDED TO EACH YARD REQUIREMENT ONE CORRESPONDING FOOT OF WIDTH OR DEPTH. STRUCTURES, EXCEPT CHIMNEYS AND FLAGPOLES, MAY BE ERECTED ABOVE THE ROOFLINE, SHALL BE ERECTED WITHIN A RECESSION OF ONE FOOT FOR EACH ONE FOOT OF ADDITIONAL HEIGHT, AND MUST BE DESIGNED TO BE COMPATIBLE WITH THE ARCHITECTURAL TREATMENT OF THE BUILDING.

*MINIMUM BUILDING SETBACKS ARE BASED ON A MAXIMUM STRUCTURE HEIGHT OF **55 FT**. 20' HAS BEEN ADDED TO EACH MINIMUM SETBACK REQUIREMENT AND ARE DEPICTED ABOVE.

[4] REAR YARD COVERAGE CALCULATION PER §116-24.D.3 IS BASED ON THE FOLLOWING AREAS:
EXISTING LOT: 72,288 SF. (1.66 AC.) TO REAR BUILDING LINE OF EXISTING STRUCTURE AT 500 PENNSYLVANIA AVENUE.
PROPOSED LOT: 37,601 SF. (0.86 AC.) TO REQUIRED REAR SETBACK LINE FOR 58' BUILDING

PROPOSED PARKING REQUIREMENTS (PER SECTION 116-184)

DESCRIPTION	UNIT	REQUIRED
RETAIL (11,370 SF SHOWROOM + 6,900 SF SERVICE RECEPTION)	1 SPACE/200 SF	92
OFFICE (5,915 SF - EXIST. BLDG 2ND FLR)	1 SPACE/200 SF	30
SERVICE BAYS (39)	1 SPACE PER BAY	39
OTHER COMMERCIAL (50,900 SF SRVC/PARTS/TECH)	1 SPACE/1000 SF	51
TOTAL SPACES REQUIRED:		212
TOTAL OFF-STREET PARKING SPACES PROPOSED (607 GARAGE + 171 OUTSIDE):		222
EV PARKING SPACES PROPOSED (8 REQUIRED PER §116-188.3):		10
TOTAL INVENTORY SPACES PROPOSED:		546
TOTAL SPACES PROPOSED:		**778**

THE FOLLOWING VARIANCES ARE REQUESTED FROM THE WHITEMARSH TOWNSHIP ZONING HEARING BOARD:

1. VARIANCES FROM SECTIONS 116-93.G AND 116-94 - TO PERMIT A REAR YARD SETBACK OF 20.0 FEET WHERE A SETBACK OF 70.0 FEET IS REQUIRED FOR A BUILDING HEIGHT OF 55.0 FEET IN HEIGHT.
2. VARIANCES FROM SECTION 116-259A - TO PERMIT AN ENCROACHMENT INTO THE RIPARIAN CORRIDOR CONSERVATION DISTRICT, AND A SETBACK OF 0.0 FEET FROM THE DISTRICT, AS THE ENTIRE SITE IS LOCATED WITHIN THE RIPARIAN CORRIDOR CONSERVATION DISTRICT DUE TO THE 100-YEAR FLOODPLAIN DELINEATION.
3. A VARIANCE FROM SECTION 116-184D - REQUIRING A MAXIMUM OF 30 INDIVIDUAL PARKING SPACES PLACED TOGETHER IN ANY PARKING AREA, DIMENSIONS OF THE PARKING AREA NOT EXCEEDING 150', AND PLANTING STRIPS OF NOT LESS THAN 10' IN WIDTH BETWEEN PARKING ROWS, TO PERMIT THE PROPOSED PARKING DECK BUILDING.
4. A VARIANCE FROM CHAPTER 101 OF THE CODE OF WHITEMARSH TOWNSHIP, ARTICLE V, SECTION 5.04(A)(2) - TO ALLOW THE PROPOSED USE TO HAVE A SUPPLY OF MORE THAN 550 GALLONS OF PETROLEUM PRODUCTS, MATERIALS, AND OTHER SUBSTANCES ASSOCIATED WITH AN AUTOMOTIVE USE WITHIN THE FLOODPLAIN, IN THAT THE APPLICANTS PROPOSE TO COMPLY WITH THE REQUIREMENTS OF SECTIONS 5.04(B),(C),(D) AND (E)
5. A VARIANCE FROM CHAPTER 116-24.D (3) TO PERMIT A REAR YARD COVERAGE OF 40.2%, WHERE THE REQUIREMENT IS 30% AND THE EXISTING COVERAGE IS 57.6%.

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
INDUSTRIAL DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

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REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY
1	10/26/2022	REV. DRIVEWAY LOCATIONS & HEIGHT	JAB / JAB

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PROJECT No.: PAB220113.00
DRAWN BY: BS
CHECKED BY: JAB
DATE: 10/10/2022
CAD I.D.: PAB220113.00-ZONE-1A

PROJECT:

ZONING PLAN

FOR

MILEONE AUTOGROUP, INC.

PROPOSED AUTOMOTIVE DEALERSHIP

500 - 512 PENNSYLVANIA AVE, WHITEMARSH TOWNSHIP MONTGOMERY COUNTY, PA

BOHLER
74 W BROAD STREET, SUITE 500
BETHLEHEM, PA 18018
Phone: (610) 709-9971
Fax: (610) 709-9976
www.BohlerEngineering.com

M.E. JEITNER
PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE No. PE055573
NEW JERSEY LICENSE No. 24GE04493300
DELAWARE LICENSE No. 18318

SHEET TITLE:

ZONING PLAN

SHEET NUMBER:

C-301

REVISION 1 - 10/26/2022

\\BOHLERENG.NET\SHARES\PA-PROJECTS\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\ZONING PLAN\PAB220113.00-ZONE-1A-----1A-LAYOUT_C-301 ZONING

General Project Description and Stormwater Management Calculations

Project: BMW Automotive Dealership Expansion
500 Pennsylvania Avenue
Whitemarsh Township
Montgomery County, PA

Project Number: PAB220113.00

Client: MileOne Fort Washington, LLC
3301 Briggs Chaney Road
Silver Spring, MD 20904

Date: 03/15/2023

Design Professional: Jeff A. Beavan
PA License #PE082005

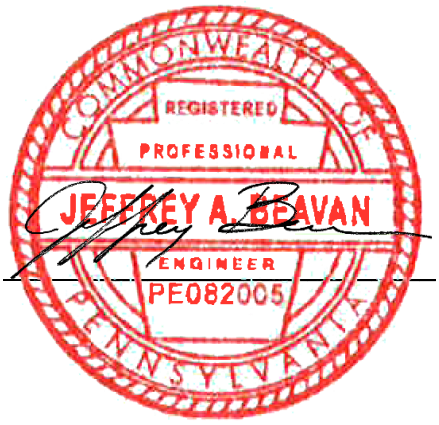


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Appendix A - Drainage Area Plans ..... A
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General Project Description/Stormwater Management

GENERAL PROJECT DESCRIPTION

BMW of Fort Washington proposes to consolidate and subdivide four existing lots totaling 5.133 acres along Pennsylvania Avenue into one proposed lot. The proposed lot will contain a proposed automobile dealership. Pertinent data characterizing the existing and future site conditions are shown on the accompanying Final Land Development & Major Subdivision Plans.

The site drains to two points of interest, both of which ultimately drain to Sandy Run, which is tributary to the Wissahickon Creek, with a Chapter 93 designation of TSF, MF, or trout-stocking fishes, migratory fishes.

Waters of the US are present on the project site and have been delineated by survey. Detailed report and scope of the floodplain impacts and encroachments are contained in the DEP joint 105 permit package and is outside the scope of this report.

STORMWATER MANAGEMENT

The pre-development condition of the site consists one Point of Interest (POI) #1, which is indicated on the attached Pre-Development Drainage Area Plan. The POI is further broken down into two sub drainage areas (DA#1 and DA#2). DA#1, taking the south and western portions of the site in the pre-development condition, drains through two distinct areas of cover to an open channel running along the south of the property; one area being predominately wooded area and the other area being predominately parking area. The flow through the wooded area takes place via sheet flow and channeled flow to an existing open channel located along the southwestern portion of the site. Flow then discharges out of the existing open channel and runs via channel flow (off-site) to the point of interest located at Sandy Run, which is tributary to Wissahickon Creek. The flow through the parking area drains via sheet flow and shallow concentrated flow to an existing inlet and 18-inch pipe located in the southeast corner of the site. Flow then discharges out of the existing 18-inch pipe and runs via channel flow in an existing open channel to the point of interest. DA#2 takes flow from the north and eastern portions of the site and drains to an existing 72-inch culvert. Flow then discharges out of the existing 72-inch culvert directly to the point of interest.

The on and off-site area tributary to these points of interest have been delineated and hydrographs have been generated for the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year storms. The pre-development conditions were analyzed based on existing conditions for all areas tributary to the points of interest.

The post-development condition of the site maintains the same Points of Interest and relative drainage patterns as the existing condition. Overall, there is an increase in impervious surface on the site. The drainage areas to POI#1 have been analyzed, and stormwater BMPs are proposed to control rate and runoff to required levels. The areas tributary to each basin have been delineated and hydrographs have been generated for the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year storms. For DA#1, three underground basins (UG1, UG2, and UG3) have been designed to manage the runoff to required discharge rates. Basins UG2 and UG3 outfall pipes connect to an existing 72-inch culvert, which discharges into Sandy Run, and Basin UG1 discharges directly into Sandy Run. Volume reduction will be managed on the site through infiltration, landscape restoration, preservation of existing trees, and soil amendments. The drainage area and impervious cover to DA#2 has been significantly reduced in the post development condition, decreasing rate and volume runoff to this drainage area for each storm event analyzed.

In accordance with the Whitemarsh Township Stormwater Management Chapter 58, stormwater peak flow rates have been designed to reduce the post development peak rate for each sub drainage area individually and the POI as a whole to the required predevelopment peak rates. In addition, the stormwater peak flow rates have been further designed to comply with the Wissahickon Creek Watershed Act 167 Plan, District B requirements.

Calculation Methodology

The SCS Method was utilized for calculating the peak runoff rates and generating hydrographs for the pre- and post-development conditions as defined in the computer watershed software Hydraflow Hydrographs. The hydrographs were generated based on the precipitation amounts dictated by the NOAA Precipitation Frequency Data Server for Upper Dublin Twp, PA. Runoff curve numbers were obtained from the USDA NRCS TR-55 manual, and are contained at the end of this report. The Whitemarsh Township Stormwater Management Chapter 58 was adopted on February 26, 2004. The Wissahickon Creek Watershed Act 167 Plan was last revised and approved November 2014.

Times of concentration (TOC) were calculated using the methodology indicated in the Whitemarsh Township Stormwater Management Ordinance, with a minimum TOC of 5 minutes. Detailed TOC calculations are included within this report. All drainage areas that do not have detailed TOC calculations included in the report are assumed to have a minimum TOC of 5 minutes.

Wissahickon Creek Watershed Act 167 Plan, District B requires the reduction of the stormwater post development peak rates to the predevelopment peak rates as follows:

POST		PRE
2-yr	reduced to	1-yr
5-yr	reduced to	2-yr
10-yr	reduced to	5-yr
25-yr	reduced to	10-yr
50-yr	reduced to	25-yr
100-yr	reduced to	50-yr

Allowable release rate calculations are contained later in this report for the point of interest.

Volume Control

The volume increase resulting from development will be controlled through the combination of an underground infiltration bed, landscape restoration, and soil amendments. The 2-yr volume increase for POI#1 is 8,101 CF due to an increase in impervious drainage area.

Underground infiltration basin UG 2 has been designed to capture, treat, and infiltrate the entire tributary flow from the 2-year storm. For Basin UG2, the impervious loading ratio t is 5.4:1 (out of an allowable ratio of 5:1), and the total loading ratio for this facility is 5.6:1 (out of an allowable ratio of 8:1). The design infiltration rate for UG2 is conservatively assumed at 0.1 in/hr (infiltration testing is in progress, and this report will be updated to reflect the testing results upon receipt). The total volume reduction from this facility is 8,227 CF.

Soil amendment and restoration area is proposed for the perimeter areas of the site. Soil amendment/restoration areas are also provided on the plan, which will account for an additional stormwater volume reduction of 547 CF.

The proposed site landscaping was designed to revegetate the site with native species. A volume credit of 10 CF is provided for evergreen trees and 6 CF for deciduous trees. The site landscaping will provide an additional volume reduction of 272 CF.

Non-structural BMP for protection of existing trees within 100 feet of proposed impervious accounts for an additional volume reduction of 378 CF.

Total volume reduction is 9,424 CF of the 8,101 CF requirement, which complies with the volume reduction requirements per CG-1 and the Whitemarsh Township Stormwater Management Ordinance.

Water Quality

Multiple BMPs are proposed for their water quality benefits in order to treat the stormwater runoff prior to it leaving the site. These BMPs are as follows:

Underground infiltration basins UG1, UG2, and UG3 will take runoff from impervious areas of the site for treatment prior to discharge. The facility will be designed to promote infiltration practices. Native landscaping is proposed across the site and soil amendments are proposed around the perimeter of the site to decrease runoff and increase water quality. Existing mature trees within 100' of impervious area are being preserved which will decrease runoff and increase surface water uptake. Lastly, total disturbed area has been minimized to preserve a portion of wetlands on the western side of the site.

Storm Sewer Conveyance Calculations

The storm drainage system has been designed to intercept runoff at topographic low points and areas of significant runoff quantities and convey stormwater to the stormwater management basins. Hydraflow Storm Sewers 2020 has been utilized for designing the storm conveyance system. Conveyance design flows are based on the Rational Method for the 100-year, utilizing runoff coefficients and the IDF information from NOAA Precipitation Frequency Data Server for Upper Dublin Twp, PA. Additional calculations are provided for the 25-year storm with flood tailwater conditions (50-year flood elevation from HEC-RAS), as well as the 100-year storm with flood tailwater conditions (100-year flood elevation from HEC-RAS), which shows that the flood water will not cause backups in other portions of the system.

Conclusion

The proposed stormwater management program described above has been designed to comply with the Whitemarsh Township Stormwater Management Requirements of the Whitemarsh Township Chapter 58, the Wissahickon Creek Watershed Act 167 Plan, District B and NPDES Phase II (where applicable) and the Stormwater Management Act of 1978.



USGS MAP

SCALE: 1" = 2,000'
AMBLER QUAD

Stormwater Management Calculation Summary

ALLOWABLE RELEASE RATE WORKSHEET

PROJECT: ***BMW Fort Washington***
500, 506, 510 & 512 Pennsylvania Avenue
Whitemarsh Township
Montgomery County, PA

DATE: ***3/15/2023***
BY: ***KMP***
CHECKED BY: ***MSL***
SHEET NO.: ***Summary***
REVISION: ***0***

Release Rate Summary

Stormwater Peak Rate & Volume Summary - DA#1

	Storm Event (years)													
Hydrograph	**1**		**2**		**5**		**10**		**25**		**50**		**100**	
	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)
Pre-Development (cfs)	5.819	18,287	7.868	24,608	11.140	34,883	13.890	43,653	17.960	56,886	21.410	68,273	25.090	80,590
Post Development Total (cfs)	1.721	18,589	3.646	23,554	6.876	33,608	8.709	42,248	13.600	55,283	16.760	66,527	19.540	78,731
Required Release Rate Percentage														
Required Release Rate (cfs)	N/A	N/A	5.819	18,287	7.868	24,608	11.140	34,883	13.890	43,653	17.960	56,886	21.410	68,273
Pre to Post Change (cfs)	-4.098	302	-4.222	-1,054	-4.264	-1,275	-5.181	-1,405	-4.360	-1,603	-4.650	-1,746	-5.550	-1,859

Stormwater Peak Rate & Volume Summary - DA#2

	Storm Event (years)													
Hydrograph	**1**		**2**		**5**		**10**		**25**		**50**		**100**	
	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)
Pre-Development (cfs)	0.970	1,978	1.462	2,932	2.292	4,586	3.018	6,069	4.152	8,389	5.150	10,444	6.236	12,710
Post Development Total (cfs)	0.026	229	0.140	474	0.419	982	0.699	1,496	1.165	2,377	1.597	3,214	2.090	4,182
Required Release Rate Percentage														
Required Release Rate (cfs)	N/A	N/A	0.970	1,978	1.462	2,932	2.292	4,586	3.018	6,069	4.152	8,389	5.150	10,444
Pre to Post Change (cfs)	-0.944	-1,749	-1.322	-2,458	-1.873	-3,604	-2.319	-4,573	-2.987	-6,012	-3.553	-7,230	-4.146	-8,528

Stormwater Peak Rate & Volume Summary - POI#1

	Storm Event (years)													
Hydrograph	**1**		**2**		**5**		**10**		**25**		**50**		**100**	
	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)	Rate (cfs)	Volume (cf)
Pre-Development (cfs)	6.125	20,265	8.348	27,539	11.970	39,469	15.020	49,722	19.570	65,276	23.480	78,716	27.700	93,300
Post Development Total (cfs)	1.742	18,818	3.747	24,028	7.135	34,590	8.906	43,743	14.370	57,660	18.080	69,740	21.260	82,914
Required Release Rate Percentage														
Required Release Rate (cfs)	N/A	N/A	6.125	20,265	8.348	27,539	11.970	39,469	15.020	49,722	19.570	65,276	23.480	78,716
Pre to Post Change (cfs)	-4.383	-1,447	-4.601	-3,511	-4.835	-4,879	-6.114	-5,979	-5.200	-7,616	-5.400	-8,976	-6.440	-10,386

Hydrograph Return Period Recap

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	------	5.819	7.868	-------	11.14	13.89	17.96	21.41	25.09	PRE-DEV DA #1 TO POI#1
2	SCS Runoff	------	0.970	1.462	-------	2.292	3.018	4.152	5.150	6.236	PRE-DEV DA#2 TO POI#1
3	Combine	1, 2	6.125	8.348	-------	11.97	15.02	19.57	23.48	27.70	TOTAL PRE TO POI#1
5	SCS Runoff	------	6.887	8.407	-------	10.74	12.65	15.45	17.80	20.32	POST-DEV UG1 TO POI#1
6	Reservoir	5	1.493	3.231	-------	6.014	6.970	7.866	8.527	9.381	UG1 (ROUTED)
8	SCS Runoff	------	2.737	3.327	-------	4.233	4.976	6.066	6.984	7.964	POST-DEV UG2 TO POI#1
9	Reservoir	8	0.000	0.000	-------	0.160	0.656	3.766	5.880	7.304	UG2 (ROUTED)
11	SCS Runoff	------	1.447	1.825	-------	2.407	2.884	3.581	4.166	4.788	POST-DEV UG3 TO POI#1
12	Reservoir	11	0.222	0.356	-------	0.527	0.631	0.765	0.871	0.988	UG3 (ROUTED)
14	SCS Runoff	------	0.028	0.130	-------	0.449	0.813	1.462	2.077	2.784	POST-DEV BYPASS DA#1 to POI#1
16	Combine	6, 9, 12, 14,	1.721	3.646	-------	6.876	8.709	13.60	16.76	19.54	POST-DEV TO DA#1 (TOTAL)
18	SCS Runoff	------	0.026	0.140	-------	0.419	0.699	1.165	1.597	2.090	POST-DEV TO DA#2 (TOTAL)
20	Combine	16, 18,	1.742	3.747	-------	7.135	8.906	14.37	18.08	21.26	TOTAL POST TO POI#1

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	5.819	2	724	18,287	------	------	------	PRE-DEV DA #1 TO POI#1
2	SCS Runoff	0.970	2	718	1,978	------	------	------	PRE-DEV DA#2 TO POI#1
3	Combine	6.125	2	724	20,265	1, 2	------	------	TOTAL PRE TO POI#1
5	SCS Runoff	6.887	2	716	15,184	------	------	------	POST-DEV UG1 TO POI#1
6	Reservoir	1.493	2	724	15,140	5	160.14	7,242	UG1 (ROUTED)
8	SCS Runoff	2.737	2	716	6,123	------	------	------	POST-DEV UG2 TO POI#1
9	Reservoir	0.000	2	3592	0	8	161.81	5,284	UG2 (ROUTED)
11	SCS Runoff	1.447	2	716	3,005	------	------	------	POST-DEV UG3 TO POI#1
12	Reservoir	0.222	2	726	2,985	11	161.06	1,270	UG3 (ROUTED)
14	SCS Runoff	0.028	2	742	464	------	------	------	POST-DEV BYPASS DA#1 to POI#1
16	Combine	1.721	2	724	18,589	6, 9, 12, 14,	------	------	POST-DEV TO DA#1 (TOTAL)
18	SCS Runoff	0.026	2	722	229	------	------	------	POST-DEV TO DA#2 (TOTAL)
20	Combine	1.742	2	724	18,818	16, 18,	------	------	TOTAL POST TO POI#1

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	7.868	2	724	24,608	------	------	------	PRE-DEV DA #1 TO POI#1
2	SCS Runoff	1.462	2	718	2,932	------	------	------	PRE-DEV DA#2 TO POI#1
3	Combine	8.348	2	722	27,539	1, 2	------	------	TOTAL PRE TO POI#1
5	SCS Runoff	8.407	2	716	18,793	------	------	------	POST-DEV UG1 TO POI#1
6	Reservoir	3.231	2	722	18,748	5	160.32	8,371	UG1 (ROUTED)
8	SCS Runoff	3.327	2	716	7,540	------	------	------	POST-DEV UG2 TO POI#1
9	Reservoir	0.000	2	786	0	8	162.31	6,613	UG2 (ROUTED)
11	SCS Runoff	1.825	2	716	3,840	------	------	------	POST-DEV UG3 TO POI#1
12	Reservoir	0.356	2	726	3,820	11	161.18	1,594	UG3 (ROUTED)
14	SCS Runoff	0.130	2	730	986	------	------	------	POST-DEV BYPASS DA#1 to POI#1
16	Combine	3.646	2	724	23,554	6, 9, 12, 14,	------	------	POST-DEV TO DA#1 (TOTAL)
18	SCS Runoff	0.140	2	720	474	------	------	------	POST-DEV TO DA#2 (TOTAL)
20	Combine	3.747	2	722	24,028	16, 18,	------	------	TOTAL POST TO POI#1

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	11.14	2	724	34,883	------	------	------	PRE-DEV DA #1 TO POI#1
2	SCS Runoff	2.292	2	718	4,586	------	------	------	PRE-DEV DA#2 TO POI#1
3	Combine	11.97	2	722	39,469	1, 2	------	------	TOTAL PRE TO POI#1
5	SCS Runoff	10.74	2	716	24,398	------	------	------	POST-DEV UG1 TO POI#1
6	Reservoir	6.014	2	722	24,354	5	160.54	9,779	UG1 (ROUTED)
8	SCS Runoff	4.233	2	716	9,738	------	------	------	POST-DEV UG2 TO POI#1
9	Reservoir	0.160	2	788	2,033	8	162.40	6,822	UG2 (ROUTED)
11	SCS Runoff	2.407	2	716	5,155	------	------	------	POST-DEV UG3 TO POI#1
12	Reservoir	0.527	2	724	5,135	11	161.38	2,089	UG3 (ROUTED)
14	SCS Runoff	0.449	2	728	2,086	------	------	------	POST-DEV BYPASS DA#1 to POI#1
16	Combine	6.876	2	722	33,608	6, 9, 12, 14,	------	------	POST-DEV TO DA#1 (TOTAL)
18	SCS Runoff	0.419	2	718	982	------	------	------	POST-DEV TO DA#2 (TOTAL)
20	Combine	7.135	2	722	34,590	16, 18,	------	------	TOTAL POST TO POI#1

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	13.89	2	724	43,653	------	------	------	PRE-DEV DA #1 TO POI#1
2	SCS Runoff	3.018	2	718	6,069	------	------	------	PRE-DEV DA#2 TO POI#1
3	Combine	15.02	2	722	49,722	1, 2	------	------	TOTAL PRE TO POI#1
5	SCS Runoff	12.65	2	716	29,030	------	------	------	POST-DEV UG1 TO POI#1
6	Reservoir	6.970	2	722	28,986	5	160.64	10,908	UG1 (ROUTED)
8	SCS Runoff	4.976	2	716	11,553	------	------	------	POST-DEV UG2 TO POI#1
9	Reservoir	0.656	2	728	3,823	8	162.48	7,012	UG2 (ROUTED)
11	SCS Runoff	2.884	2	716	6,252	------	------	------	POST-DEV UG3 TO POI#1
12	Reservoir	0.631	2	724	6,232	11	161.55	2,515	UG3 (ROUTED)
14	SCS Runoff	0.813	2	726	3,207	------	------	------	POST-DEV BYPASS DA#1 to POI#1
16	Combine	8.709	2	726	42,248	6, 9, 12, 14,	------	------	POST-DEV TO DA#1 (TOTAL)
18	SCS Runoff	0.699	2	718	1,496	------	------	------	POST-DEV TO DA#2 (TOTAL)
20	Combine	8.906	2	724	43,743	16, 18,	------	------	TOTAL POST TO POI#1

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	17.96	2	724	56,886	------	------	------	PRE-DEV DA #1 TO POI#1
2	SCS Runoff	4.152	2	716	8,389	------	------	------	PRE-DEV DA#2 TO POI#1
3	Combine	19.57	2	722	65,276	1, 2	------	------	TOTAL PRE TO POI#1
5	SCS Runoff	15.45	2	716	35,862	------	------	------	POST-DEV UG1 TO POI#1
6	Reservoir	7.866	2	722	35,817	5	161.06	12,788	UG1 (ROUTED)
8	SCS Runoff	6.066	2	716	14,227	------	------	------	POST-DEV UG2 TO POI#1
9	Reservoir	3.766	2	720	6,468	8	162.78	7,585	UG2 (ROUTED)
11	SCS Runoff	3.581	2	716	7,880	------	------	------	POST-DEV UG3 TO POI#1
12	Reservoir	0.765	2	724	7,861	11	161.82	3,156	UG3 (ROUTED)
14	SCS Runoff	1.462	2	726	5,137	------	------	------	POST-DEV BYPASS DA#1 to POI#1
16	Combine	13.60	2	722	55,283	6, 9, 12, 14,	------	------	POST-DEV TO DA#1 (TOTAL)
18	SCS Runoff	1.165	2	718	2,377	------	------	------	POST-DEV TO DA#2 (TOTAL)
20	Combine	14.37	2	720	57,660	16, 18,	------	------	TOTAL POST TO POI#1

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	21.41	2	724	68,273	------	------	------	PRE-DEV DA #1 TO POI#1
2	SCS Runoff	5.150	2	716	10,444	------	------	------	PRE-DEV DA#2 TO POI#1
3	Combine	23.48	2	720	78,716	1, 2	------	------	TOTAL PRE TO POI#1
5	SCS Runoff	17.80	2	716	41,640	------	------	------	POST-DEV UG1 TO POI#1
6	Reservoir	8.527	2	722	41,596	5	161.40	14,386	UG1 (ROUTED)
8	SCS Runoff	6.984	2	716	16,489	------	------	------	POST-DEV UG2 TO POI#1
9	Reservoir	5.880	2	720	8,709	8	162.93	7,823	UG2 (ROUTED)
11	SCS Runoff	4.166	2	716	9,264	------	------	------	POST-DEV UG3 TO POI#1
12	Reservoir	0.871	2	724	9,245	11	162.07	3,707	UG3 (ROUTED)
14	SCS Runoff	2.077	2	726	6,977	------	------	------	POST-DEV BYPASS DA#1 to POI#1
16	Combine	16.76	2	720	66,527	6, 9, 12, 14,	------	------	POST-DEV TO DA#1 (TOTAL)
18	SCS Runoff	1.597	2	718	3,214	------	------	------	POST-DEV TO DA#2 (TOTAL)
20	Combine	18.08	2	720	69,740	16, 18,	------	------	TOTAL POST TO POI#1

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

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	25.09	2	724	80,590	------	------	------	PRE-DEV DA #1 TO POI#1
2	SCS Runoff	6.236	2	716	12,710	------	------	------	PRE-DEV DA#2 TO POI#1
3	Combine	27.70	2	720	93,300	1, 2	------	------	TOTAL PRE TO POI#1
5	SCS Runoff	20.32	2	716	47,823	------	------	------	POST-DEV UG1 TO POI#1
6	Reservoir	9.381	2	722	47,779	5	161.93	16,070	UG1 (ROUTED)
8	SCS Runoff	7.964	2	716	18,908	------	------	------	POST-DEV UG2 TO POI#1
9	Reservoir	7.304	2	718	11,108	8	163.02	8,001	UG2 (ROUTED)
11	SCS Runoff	4.788	2	716	10,750	------	------	------	POST-DEV UG3 TO POI#1
12	Reservoir	0.988	2	726	10,730	11	162.38	4,302	UG3 (ROUTED)
14	SCS Runoff	2.784	2	726	9,114	------	------	------	POST-DEV BYPASS DA#1 to POI#1
16	Combine	19.54	2	720	78,731	6, 9, 12, 14,	------	------	POST-DEV TO DA#1 (TOTAL)
18	SCS Runoff	2.090	2	718	4,182	------	------	------	POST-DEV TO DA#2 (TOTAL)
20	Combine	21.26	2	720	82,914	16, 18,	------	------	TOTAL POST TO POI#1

Pre-Development to Post-Development Analysis

COMPUTATION SHEET : COMPOSITE CURVE NUMBER (CN)

PROJECT: ***BMW Fort Washington***
500 Pennsylvania Ave
Whitemarsh Township, Montgomery County

DATE: ***3/15/2023***
BY: ***KMP***
CHECKED BY: ***MSL***
REVISION: ***0***

Cover Type Description	Soil HSG	CN	Pre-Development DA#1 (Acres)	Pre-Development DA#2 (Acres)	Pre-Development POI#1 (Acres)	
Meadow	A	39	0.525	0.268	0.793	
Wooded	A	30	0.283	0.000	0.283	
Meadow	B	61	0.058	0.124	0.182	
Wooded	B	55	0.000	0.000	0.000	
Meadow	C	74	0.000	0.000	0.000	
Wooded	C	70	0.000	0.000	0.000	
Meadow	D	80	0.000	0.000	0.000	
Wooded	D	77	0.000	0.000	0.000	
Impervious	ALL	98	2.959	0.432	3.391	
		Total Area	3.825	0.824	4.649	
		Composite CN	**84.3**	**73.2**	**82.3**	
		Time of Concentration (Tc)	18.50	9.10	9.10	

COMPUTATION SHEET : COMPOSITE CURVE NUMBER (CN)

PROJECT: *BMW Fort Washington*
500 Pennsylvania Ave
Whitemarsh Township, Montgomery County

DATE: *3/15/2023*
BY: *KMP*
CHECKED BY: *MSL*
REVISION: *0*

Cover Type Description	Soil HSG	CN	UG1 TO POI#1 (Acres)	UG2 TO POI#1 (Acres)	UG3 TO POI#1 (Acres)	BYPASS #1 TO POI#1 (Acres)	DA#1 TOTAL (Acres)	DA#2 TO POI#1 (Acres)	Post-Development POI#1 (Acres)
Open Space	A	39	0.069	0.003	0.053	0.385	0.510	0.254	0.764
Wooded	A	30	0.000	0.000	0.000	0.283	0.283	0.000	0.283
Open Space	B	61	0.002	0.024	0.000	0.000	0.026	0.126	0.152
Wooded	B	55	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Open Space	C	74	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Wooded	C	70	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Open Space	D	80	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Wooded	D	77	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Impervious	ALL	98	1.889	0.740	0.424	0.311	3.364	0.086	3.450
		Total Area	1.960	0.767	0.477	0.979	4.183	0.466	4.649
		Composite CN	**95.9**	**96.6**	**91.4**	**55.1**	**86.0**	**55.8**	**83.0**
		Time of Concentration (Tc)	5.00	5.00	5.00	5.00	5.00	5.00	5.00

TR55 Tc Worksheet

Hyd. No. 1

PRE-DEV DA #1 TO POI#1

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 45.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.23		0.00		0.00		
Land slope (%)	= 0.75		0.00		0.00		
Travel Time (min)	**= 16.70**	**+**	**0.00**	**+**	**0.00**	**=**	**16.70**
Shallow Concentrated Flow							
Flow length (ft)	= 0.00		0.00		0.00		
Watercourse slope (%)	= 0.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=0.00		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Channel Flow							
X sectional flow area (sqft)	= 22.00		22.00		0.00		
Wetted perimeter (ft)	= 17.65		17.65		0.00		
Channel slope (%)	= 1.10		1.40		0.00		
Manning's n-value	= 0.040		0.024		0.015		
Velocity (ft/s)	=4.53						
			8.51				
					0.00		
Flow length (ft)	({0})325.0		303.0		0.0		
Travel Time (min)	**= 1.20**	**+**	**0.59**	**+**	**0.00**	**=**	**1.79**

Total Travel Time, Tc ..... 18.50 min

TR55 Tc Worksheet

Hyd. No. 14

POST-DEV BYPASS DA#1 to POI#1

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 45.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.23		0.00		0.00		
Land slope (%)	= 0.75		0.00		0.00		
Travel Time (min)	**= 16.70**	**+**	**0.00**	**+**	**0.00**	**=**	**16.70**
Shallow Concentrated Flow							
Flow length (ft)	= 0.00		0.00		0.00		
Watercourse slope (%)	= 0.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=0.00		0.00		0.00		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Channel Flow							
X sectional flow area (sqft)	= 22.00		22.00		0.00		
Wetted perimeter (ft)	= 17.65		17.65		0.00		
Channel slope (%)	= 1.10		1.40		0.00		
Manning's n-value	= 0.040		0.024		0.015		
Velocity (ft/s)	=4.53						
			8.51				
					0.00		
Flow length (ft)	({0})325.0		303.0		0.0		
Travel Time (min)	**= 1.20**	**+**	**0.59**	**+**	**0.00**	**=**	**1.79**

Total Travel Time, Tc ..... 18.50 min

Pond Report

Pond No. 1 - UG1

Pond Data

UG Chambers -Invert elev. = 159.29 ft, Rise x Span = 2.21 x 3.92 ft, Barrel Len = 110.00 ft, No. Barrels = 15, Slope = 0.00%, Headers = No
Encasement -Invert elev. = 158.79 ft, Width = 4.50 ft, Height = 3.20 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	158.79	n/a	0	0
0.32	159.11	n/a	951	951
0.64	159.43	n/a	1,494	2,444
0.96	159.75	n/a	2,180	4,624
1.28	160.07	n/a	2,142	6,766
1.60	160.39	n/a	2,073	8,839
1.92	160.71	n/a	1,969	10,808
2.24	161.03	n/a	1,816	12,624
2.56	161.35	n/a	1,576	14,201
2.88	161.67	n/a	1,092	15,293
3.20	161.99	n/a	951	16,243

Culvert / Orifice Structures

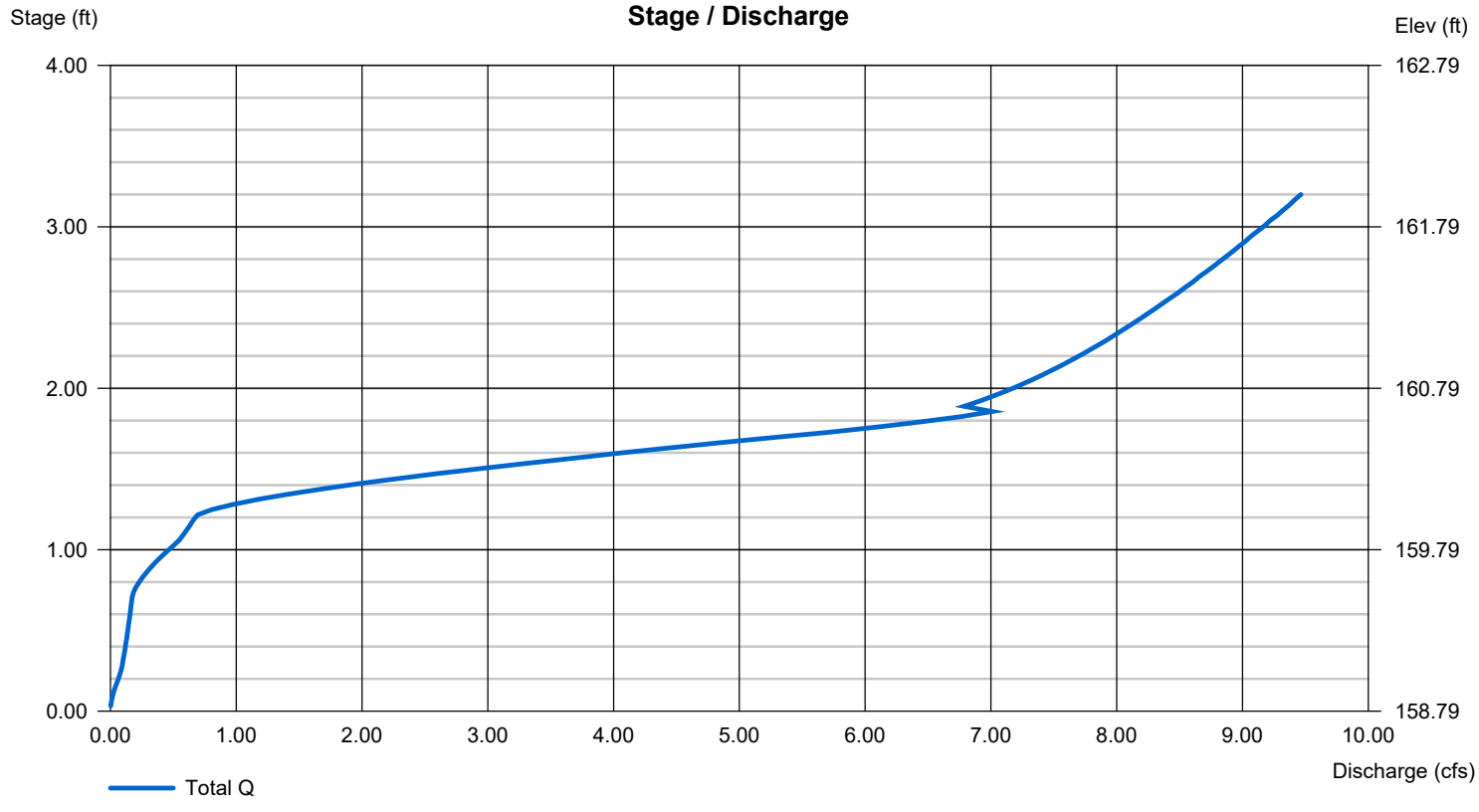
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	3.00	4.00	0.00
Span (in)	= 18.00	3.00	6.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 158.79	158.79	159.50	0.00
Length (ft)	= 325.00	0.50	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 11.33	4.00	Inactive	0.00
Crest El. (ft)	= 163.50	160.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Contour)
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

Pond No. 2 - UG2

Pond Data

UG Chambers -Invert elev. = 160.28 ft, Rise x Span = 2.54 x 4.30 ft, Barrel Len = 100.00 ft, No. Barrels = 7, Slope = 0.00%, Headers = No
Encasement -Invert elev. = 159.80 ft, Width = 4.83 ft, Height = 3.54 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	159.80	n/a	0	0
0.35	160.15	n/a	479	479
0.71	160.51	n/a	890	1,369
1.06	160.86	n/a	1,110	2,479
1.42	161.22	n/a	1,088	3,567
1.77	161.57	n/a	1,053	4,620
2.12	161.92	n/a	1,000	5,620
2.48	162.28	n/a	923	6,543
2.83	162.63	n/a	805	7,348
3.19	162.99	n/a	565	7,913
3.54	163.34	n/a	479	8,392

Culvert / Orifice Structures

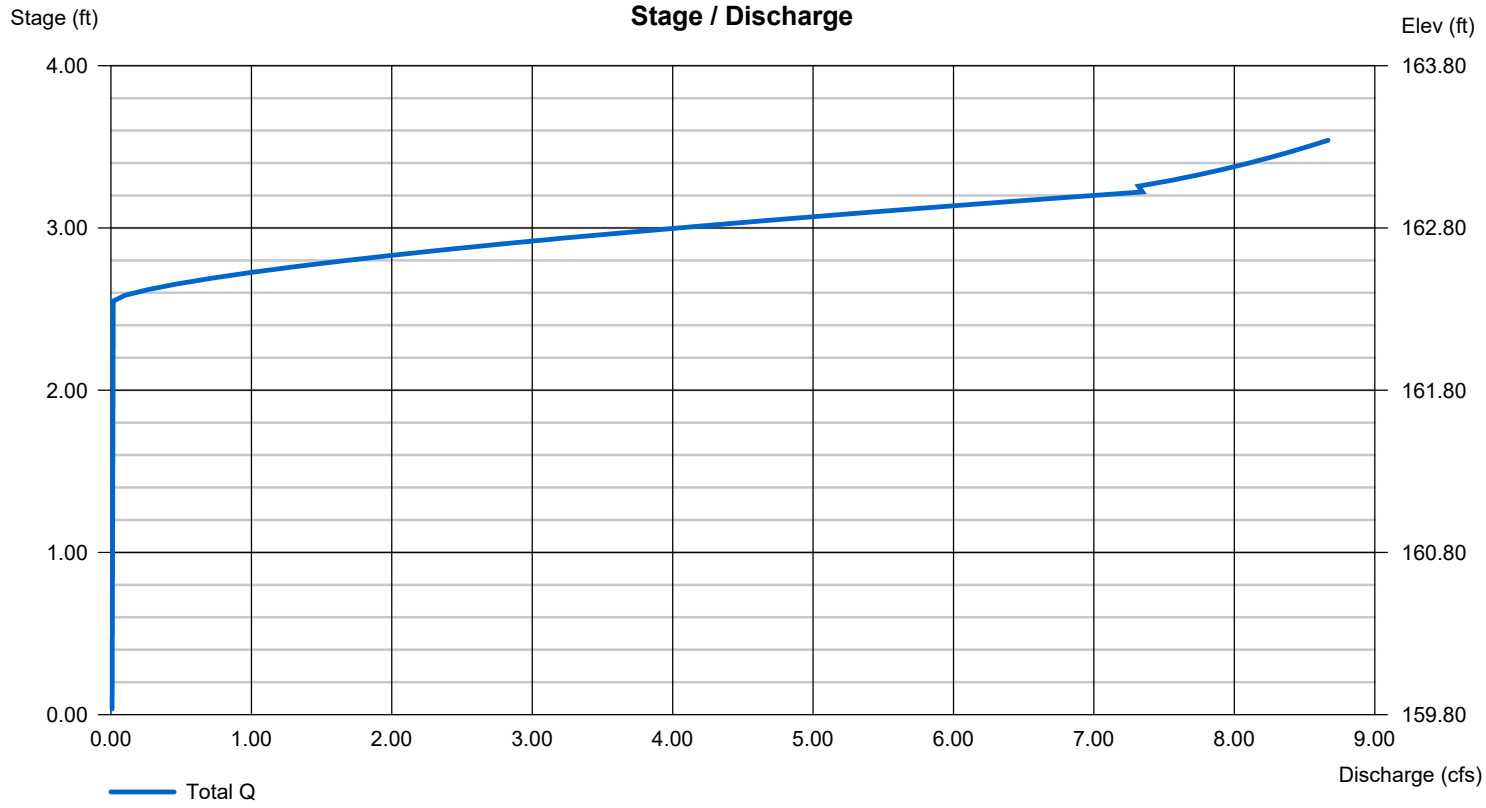
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	0.00	0.00	0.00
Span (in)	= 18.00	0.00	0.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 159.80	0.00	0.00	0.00
Length (ft)	= 185.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 11.33	4.00	0.00	0.00
Crest El. (ft)	= 163.96	162.35	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.100 (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

Pond No. 3 - UG3

Pond Data

UG Chambers -Invert elev. = 160.78 ft, Rise x Span = 1.71 x 3.00 ft, Barrel Len = 65.00 ft, No. Barrels = 13, Slope = 0.00%, Headers = No
Encasement -Invert elev. = 160.28 ft, Width = 3.25 ft, Height = 2.71 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	160.28	n/a	0	0
0.27	160.55	n/a	298	298
0.54	160.82	n/a	362	659
0.81	161.09	n/a	707	1,367
1.08	161.36	n/a	695	2,062
1.36	161.63	n/a	671	2,733
1.63	161.91	n/a	633	3,366
1.90	162.18	n/a	575	3,941
2.17	162.45	n/a	475	4,416
2.44	162.72	n/a	307	4,723
2.71	162.99	n/a	298	5,021

Culvert / Orifice Structures

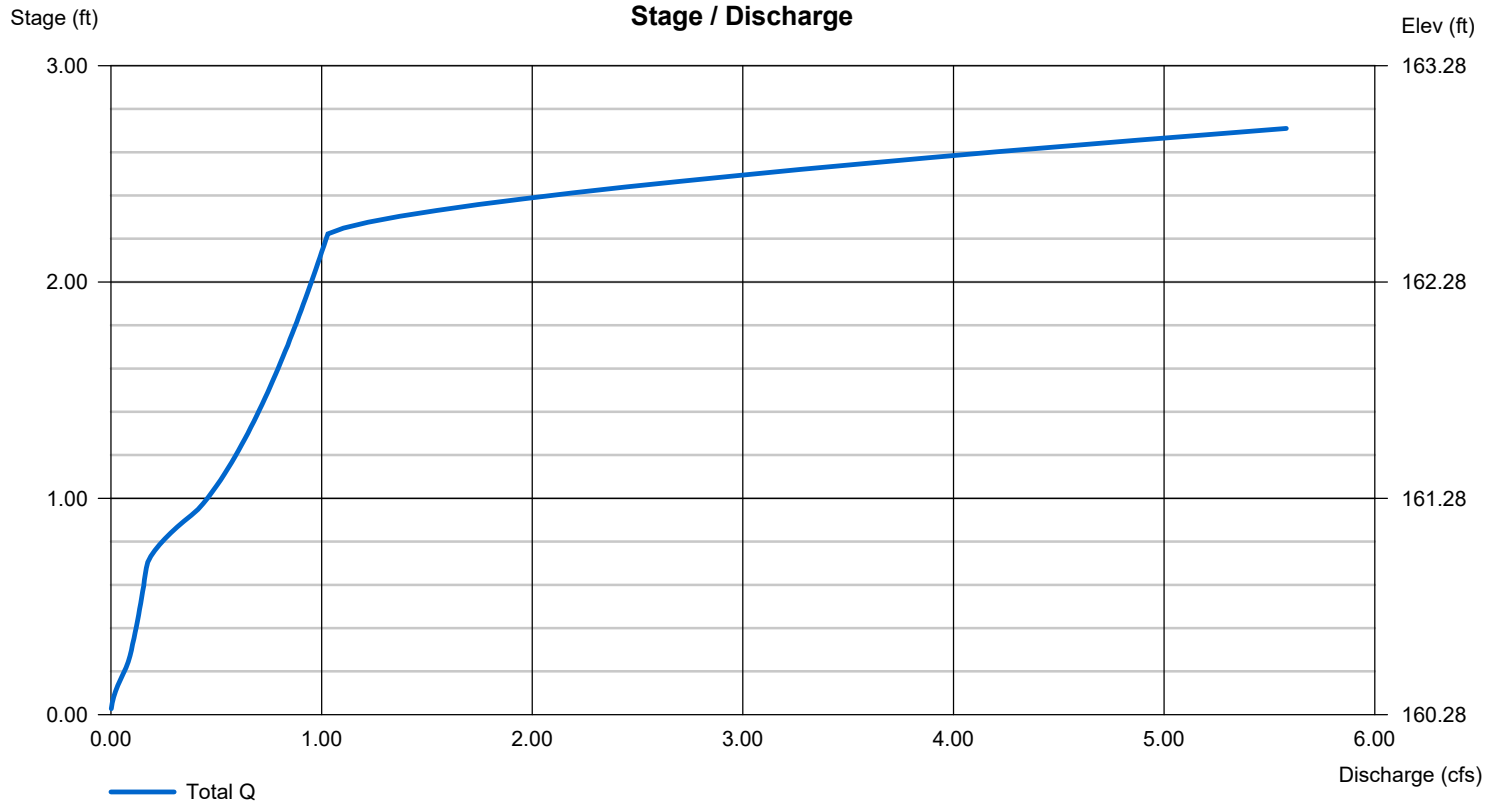
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	3.00	3.00	0.00
Span (in)	= 18.00	3.00	6.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 160.28	160.28	160.97	0.00
Length (ft)	= 125.00	0.50	0.50	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 11.33	4.00	0.00	0.00
Crest El. (ft)	= 164.00	162.50	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	Rect	---	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Contour)
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).



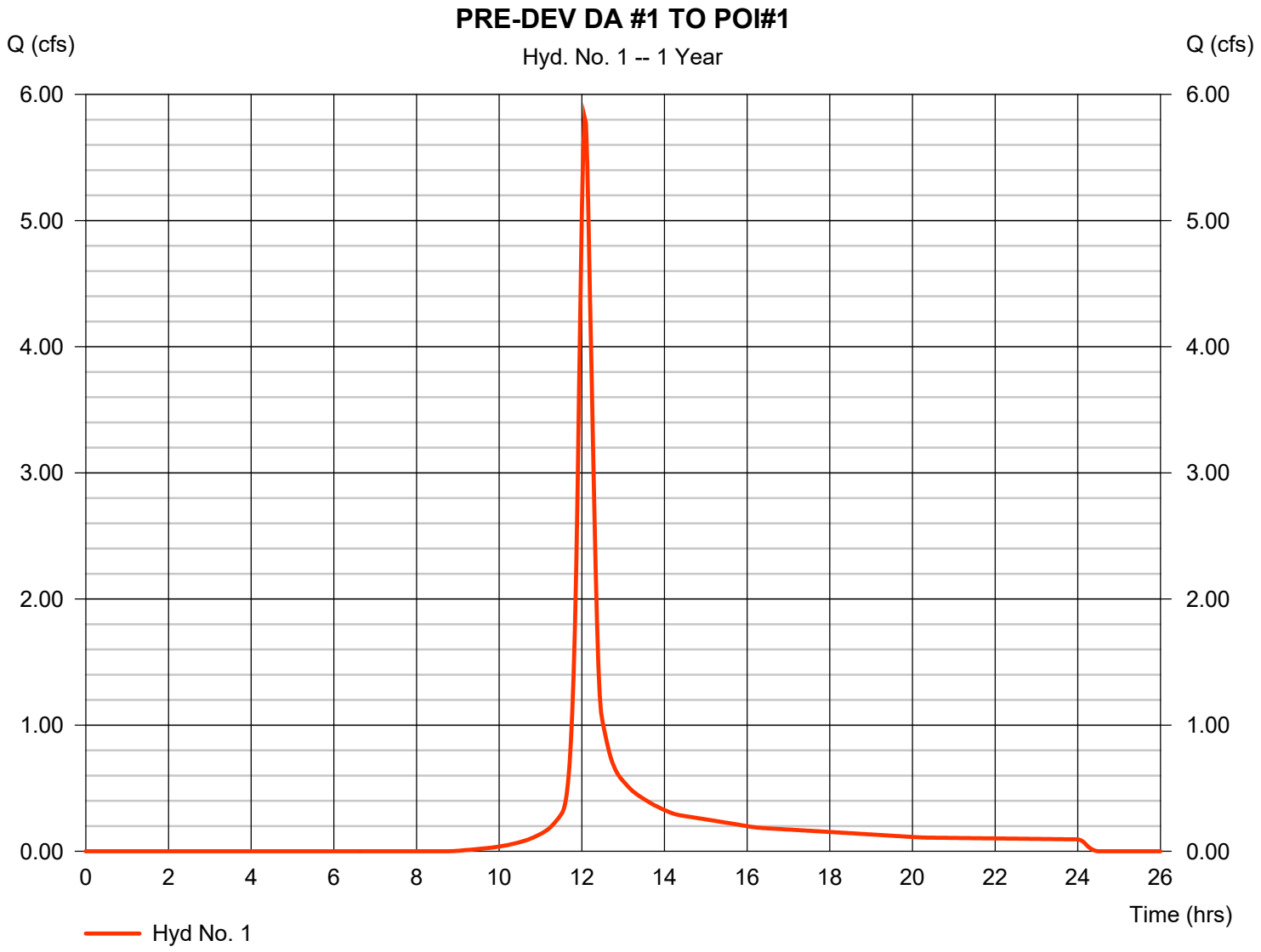
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 1

PRE-DEV DA #1 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.819 cfs
Storm frequency	=	1 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	18,287 cuft
Drainage area	=	3.825 ac	Curve number	=	84.3
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	18.50 min
Total precip.	=	2.73 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



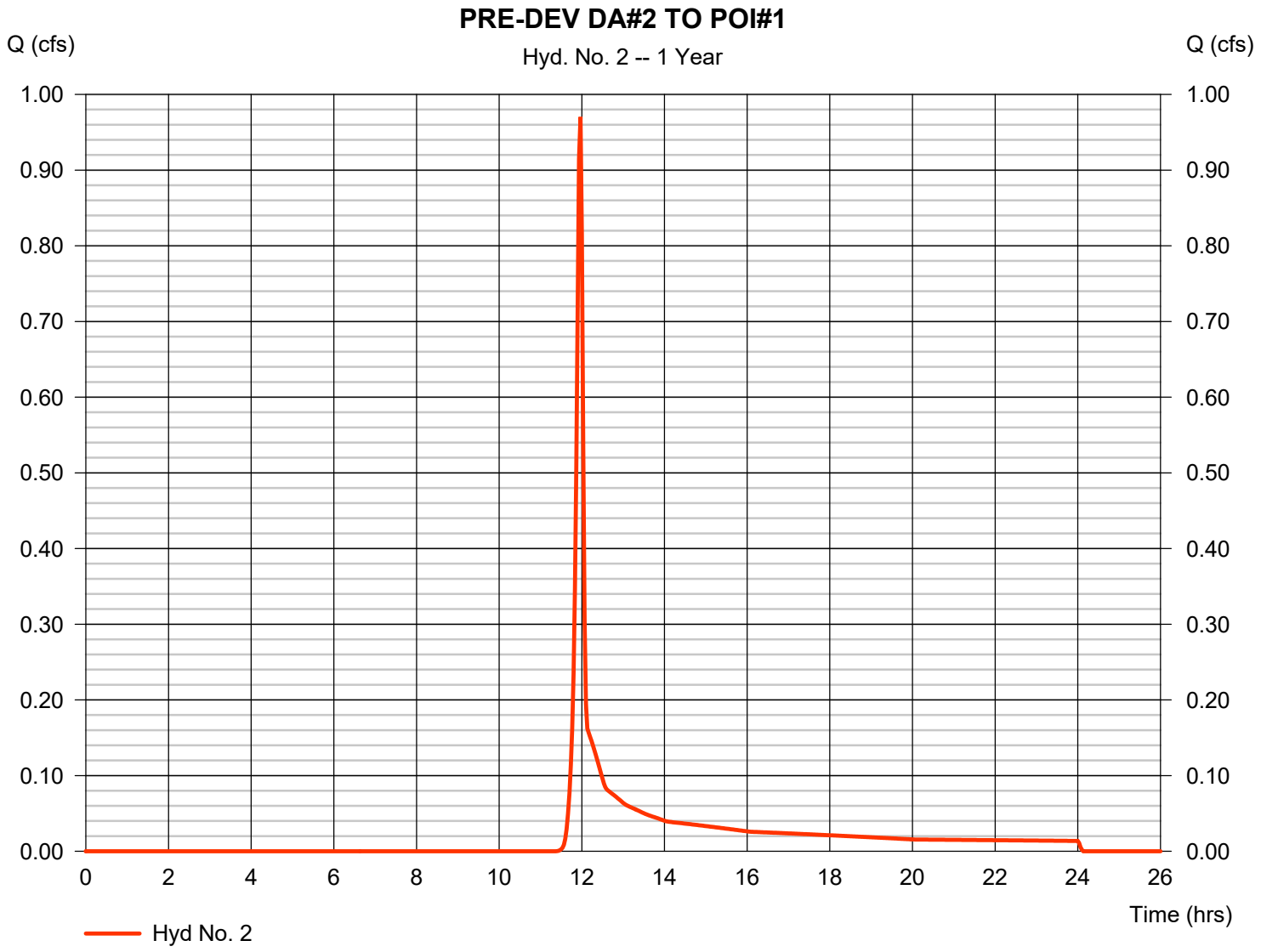
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 2

PRE-DEV DA#2 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	0.970 cfs
Storm frequency	=	1 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	1,978 cuft
Drainage area	=	0.824 ac	Curve number	=	73.2
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.73 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

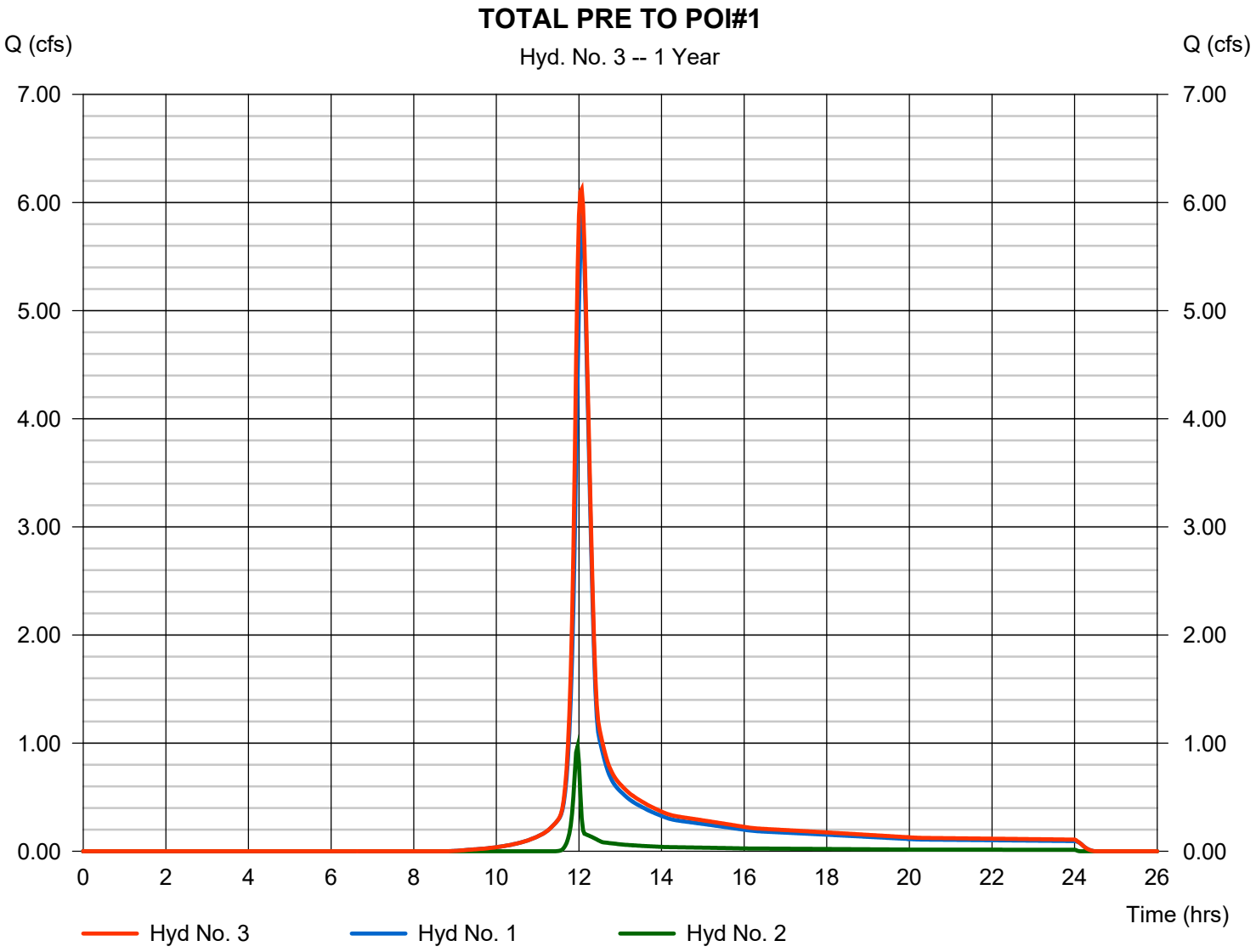


Hydrograph Report

Hyd. No. 3

TOTAL PRE TO POI#1

Hydrograph type	= Combine	Peak discharge	= 6.125 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 20,265 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.649 ac



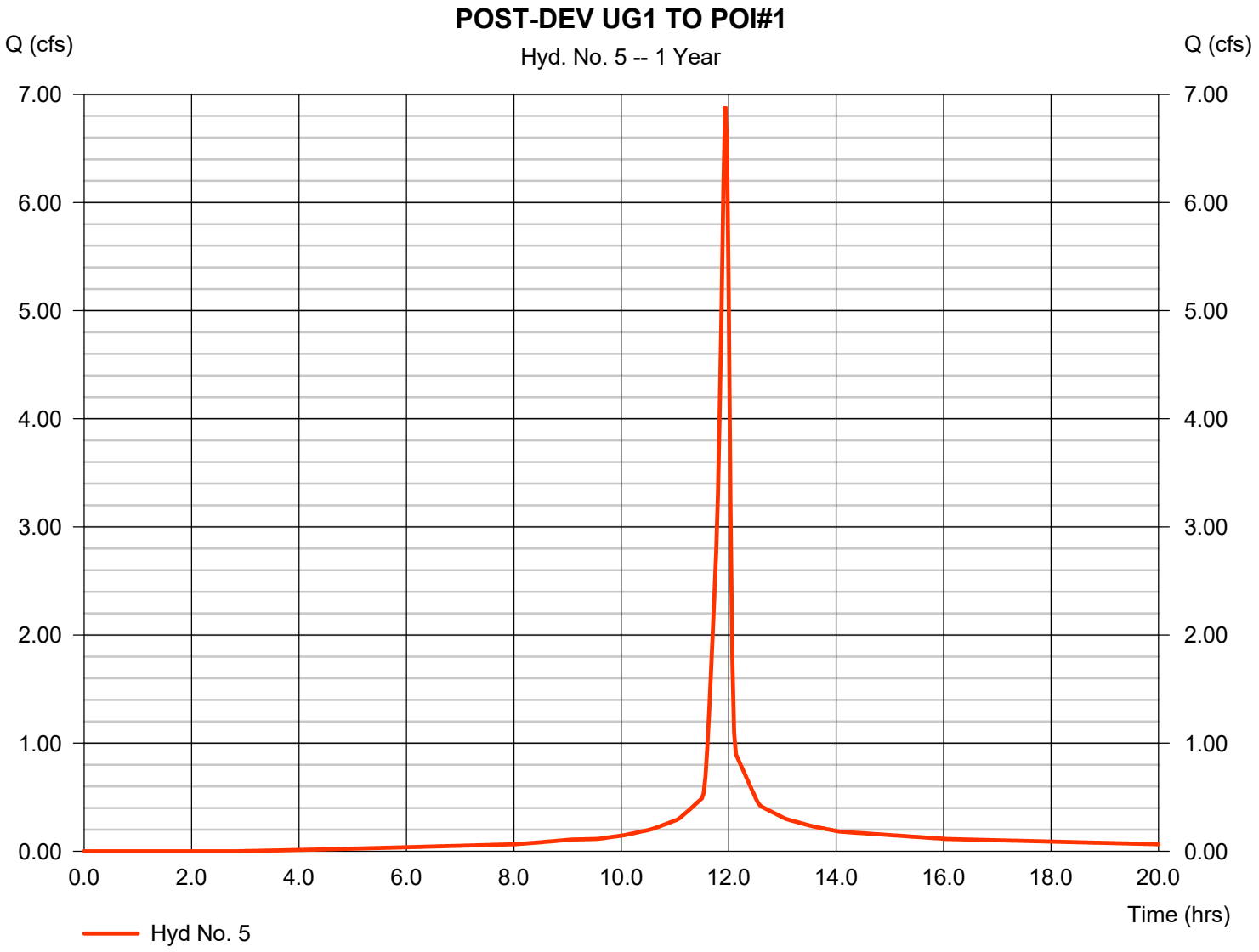
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 5

POST-DEV UG1 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.887 cfs
Storm frequency	=	1 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	15,184 cuft
Drainage area	=	1.960 ac	Curve number	=	95.9
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.73 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

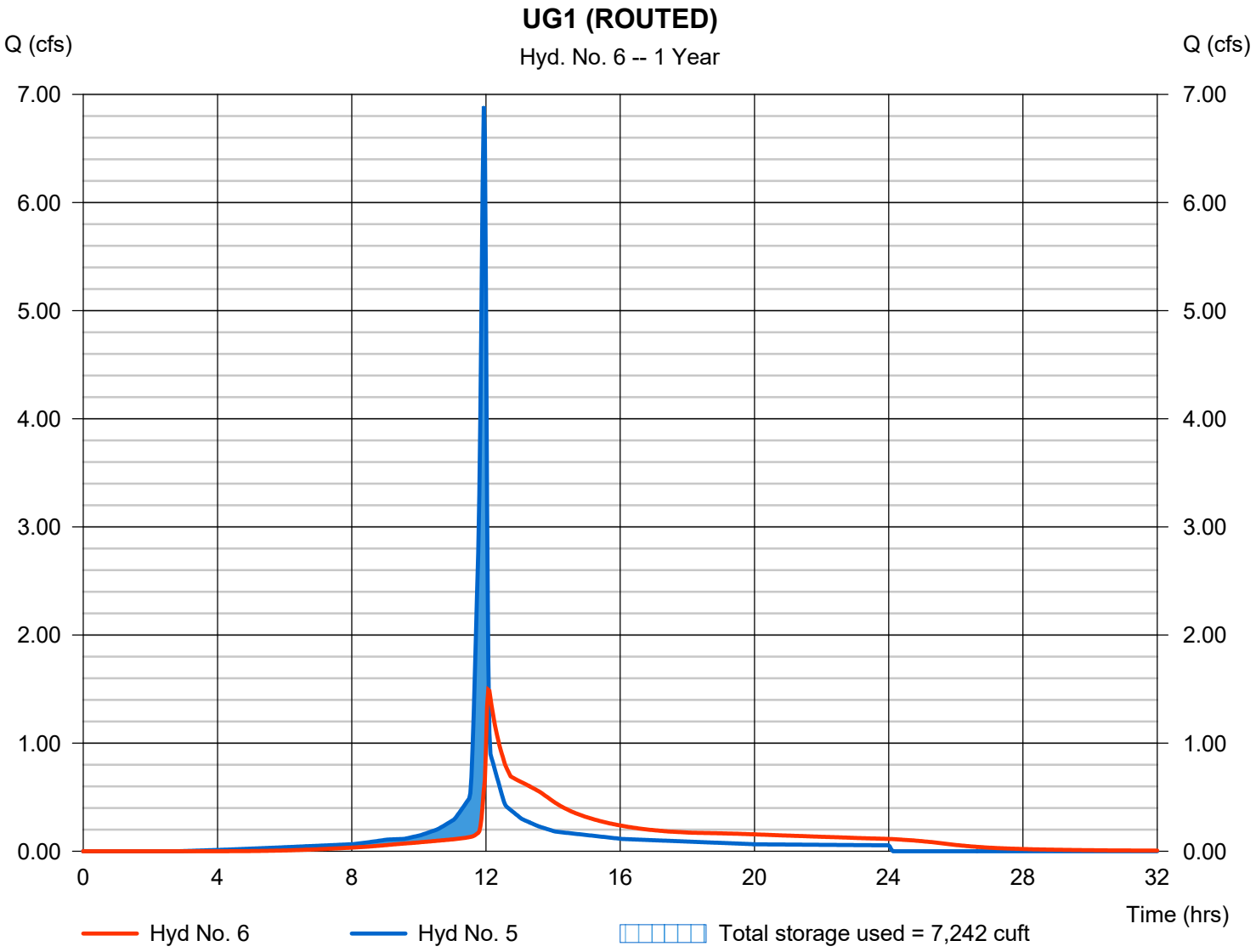
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 6

UG1 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	1.493 cfs
Storm frequency	=	1 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	15,140 cuft
Inflow hyd. No.	=	5 - POST-DEV UG1 TO POI#1	Max. Elevation	=	160.14 ft
Reservoir name	=	UG1	Max. Storage	=	7,242 cuft

Storage Indication method used.

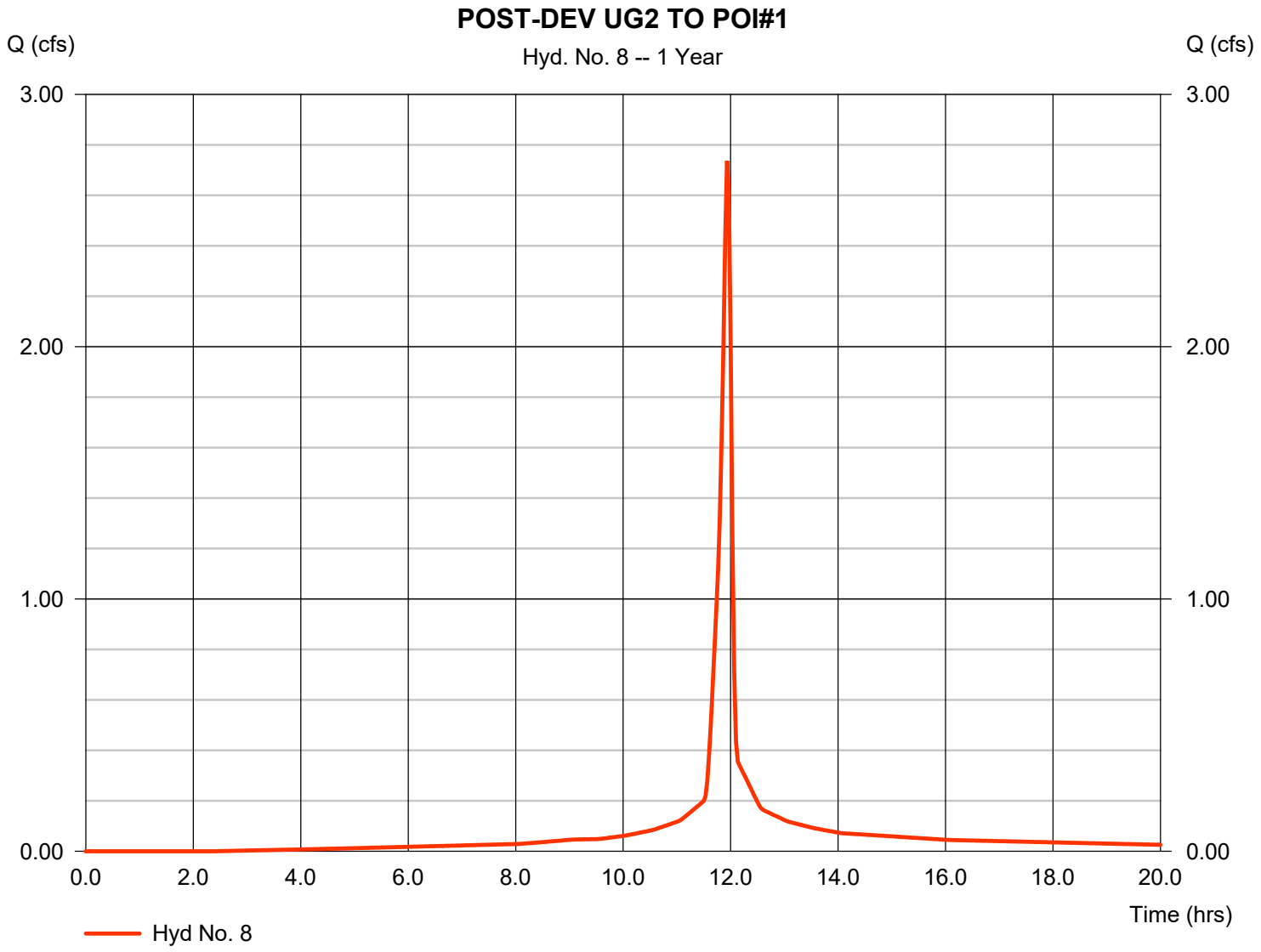


Hydrograph Report

Hyd. No. 8

POST-DEV UG2 TO POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 2.737 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 6,123 cuft
Drainage area	= 0.766 ac	Curve number	= 96.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

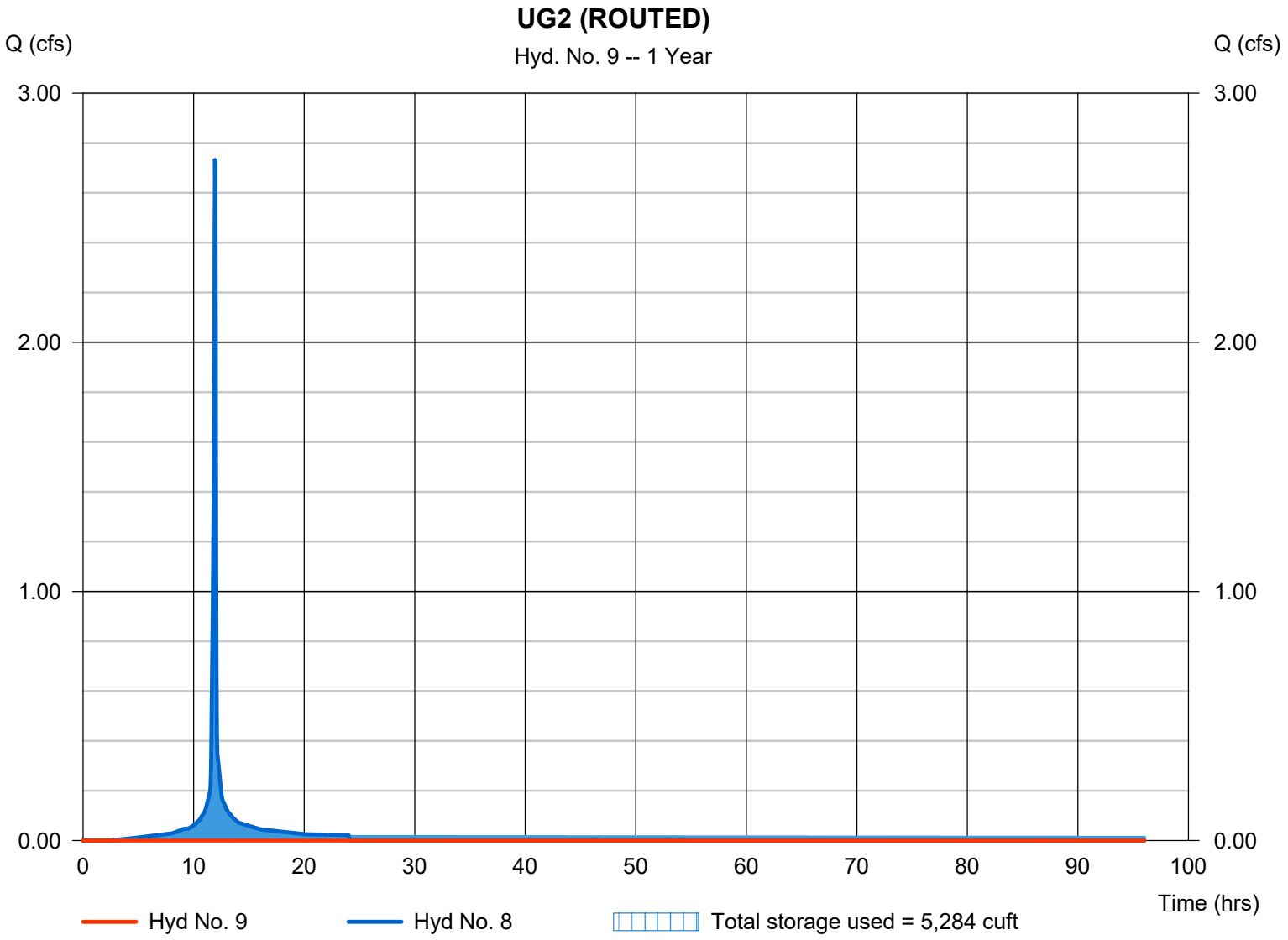
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 9

UG2 (ROUTED)

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 1 yrs	Time to peak	= 59.83 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 8 - POST-DEV UG2 TO POI#1	Max. Elevation	= 161.81 ft
Reservoir name	= UG2	Max. Storage	= 5,284 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



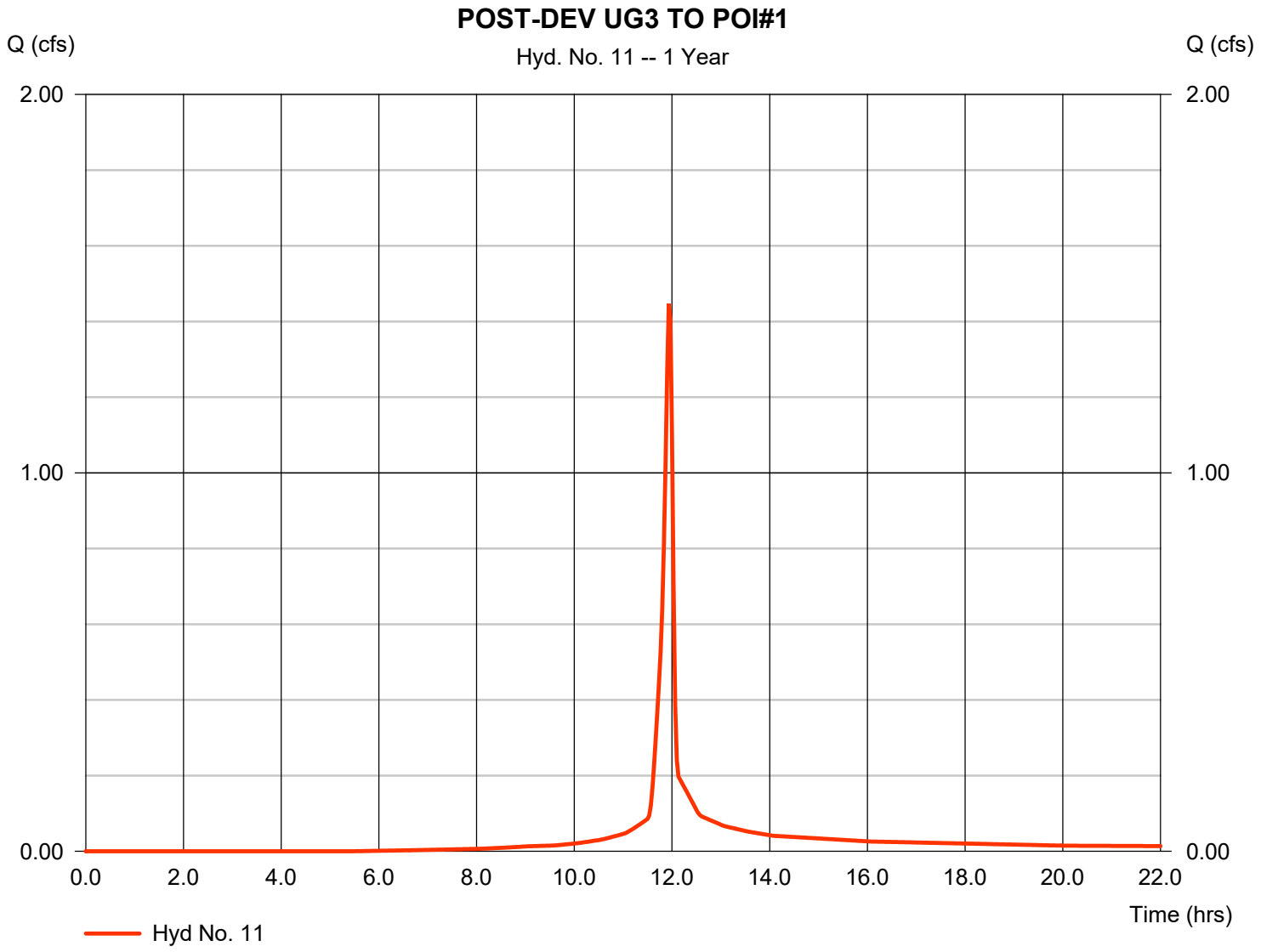
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 11

POST-DEV UG3 TO POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 1.447 cfs
Storm frequency	= 1 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 3,005 cuft
Drainage area	= 0.476 ac	Curve number	= 91.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

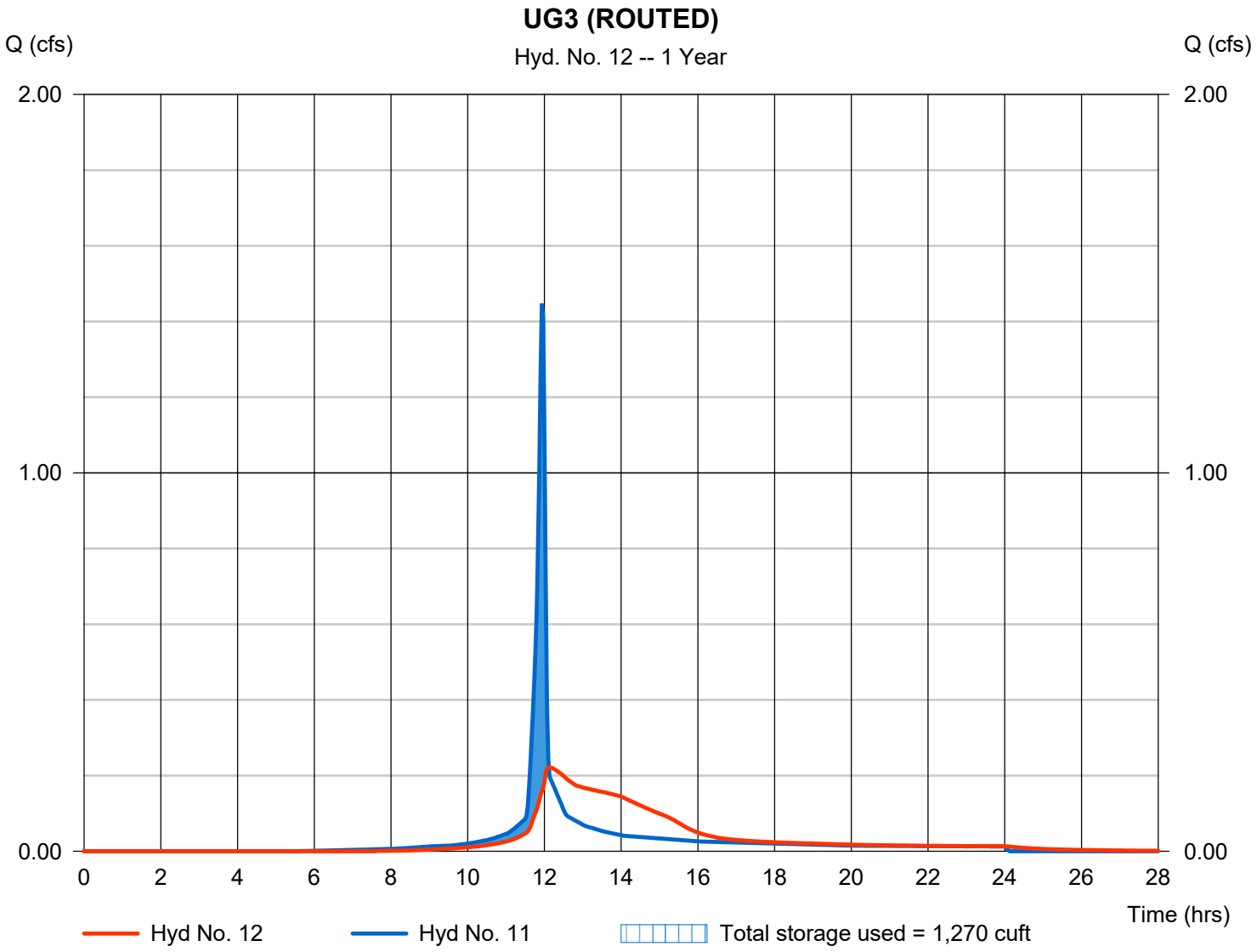
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 12

UG3 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	0.222 cfs
Storm frequency	=	1 yrs	Time to peak	=	12.10 hrs
Time interval	=	2 min	Hyd. volume	=	2,985 cuft
Inflow hyd. No.	=	11 - POST-DEV UG3 TO POI #1	Max. Elevation	=	161.06 ft
Reservoir name	=	UG3	Max. Storage	=	1,270 cuft

Storage Indication method used.



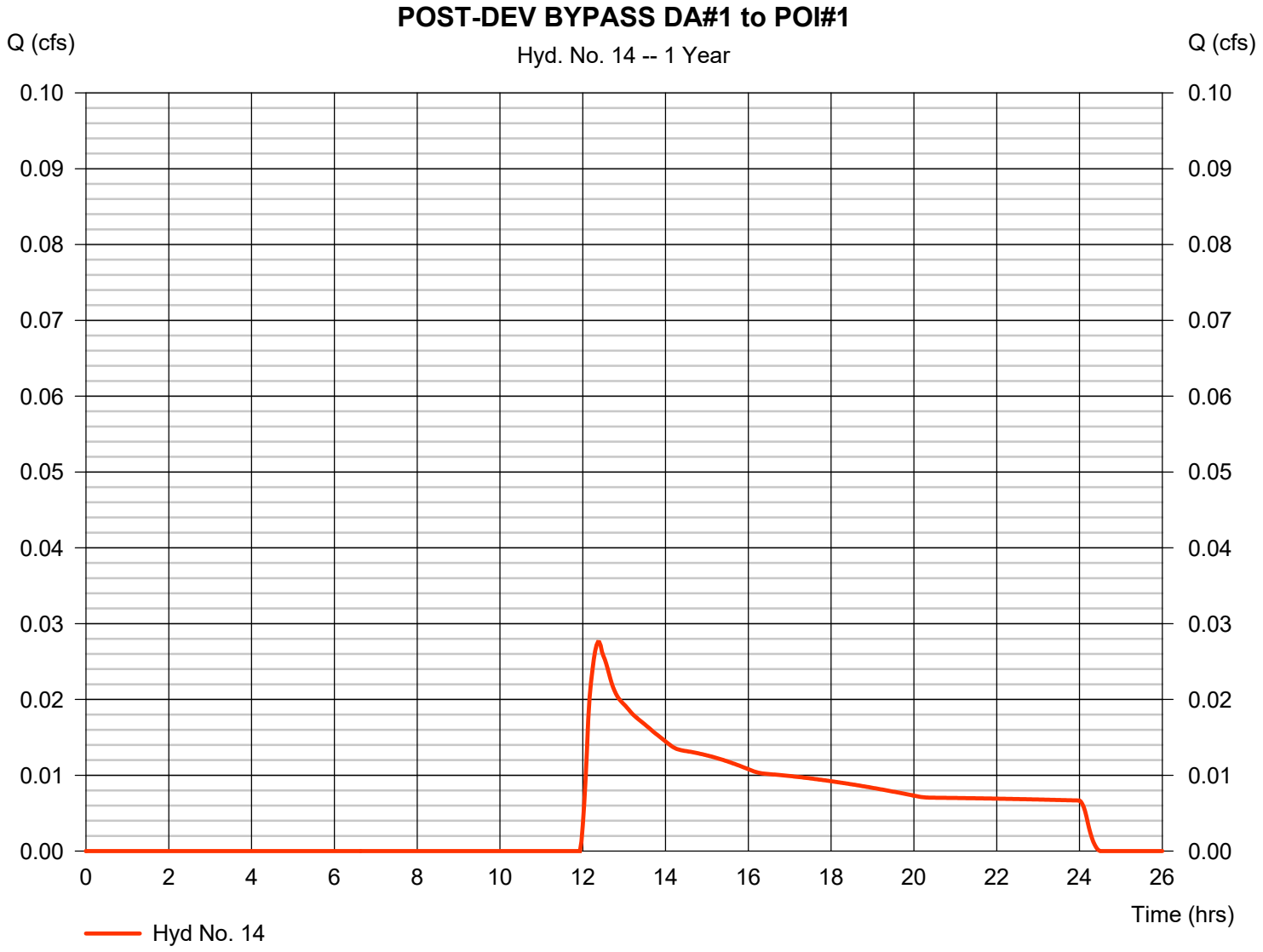
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 14

POST-DEV BYPASS DA#1 to POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.028 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.37 hrs
Time interval	= 2 min	Hyd. volume	= 464 cuft
Drainage area	= 0.979 ac	Curve number	= 55.1
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.50 min
Total precip.	= 2.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

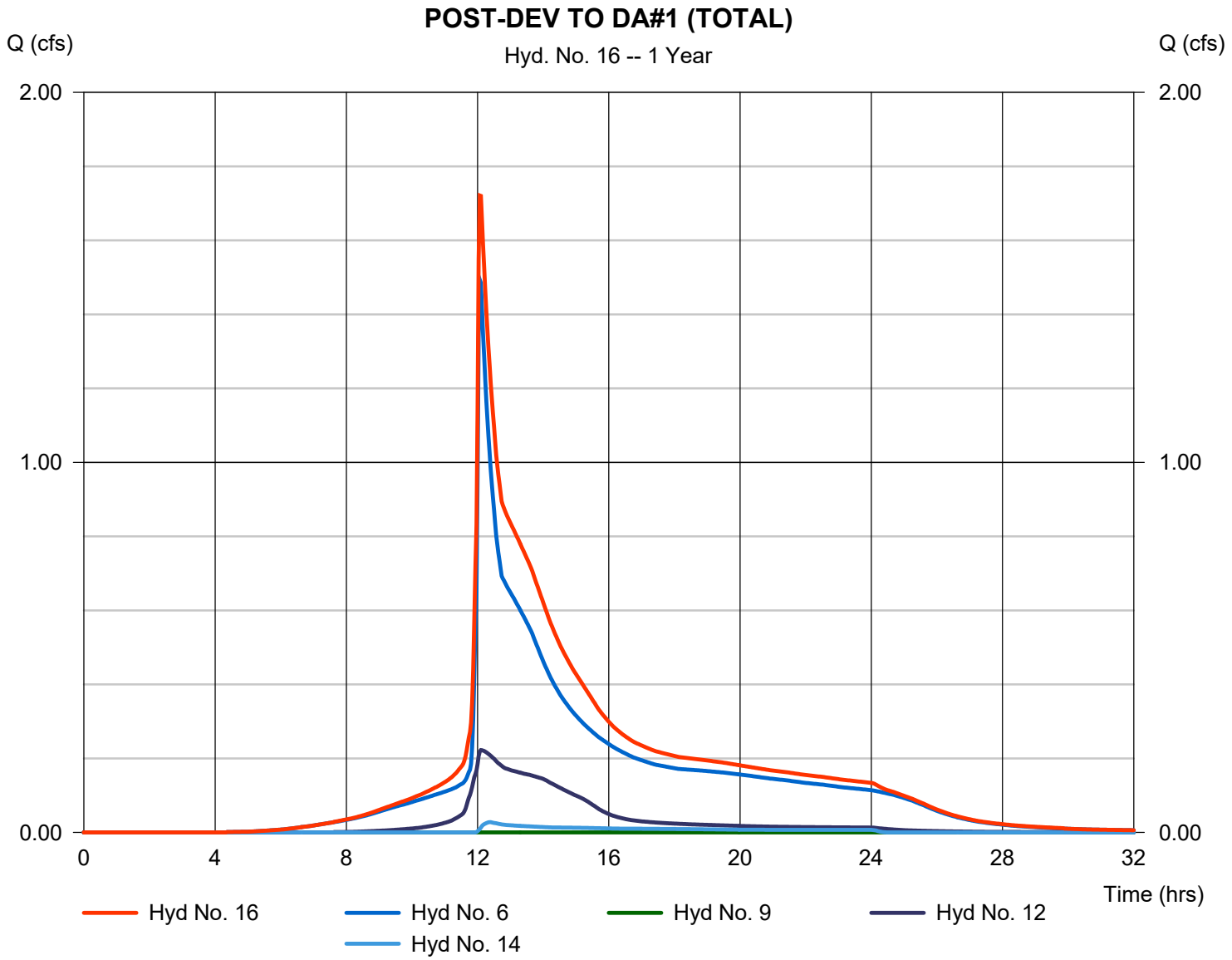


Hydrograph Report

Hyd. No. 16

POST-DEV TO DA#1 (TOTAL)

Hydrograph type	= Combine	Peak discharge	= 1.721 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 18,589 cuft
Inflow hyds.	= 6, 9, 12, 14	Contrib. drain. area	= 0.979 ac

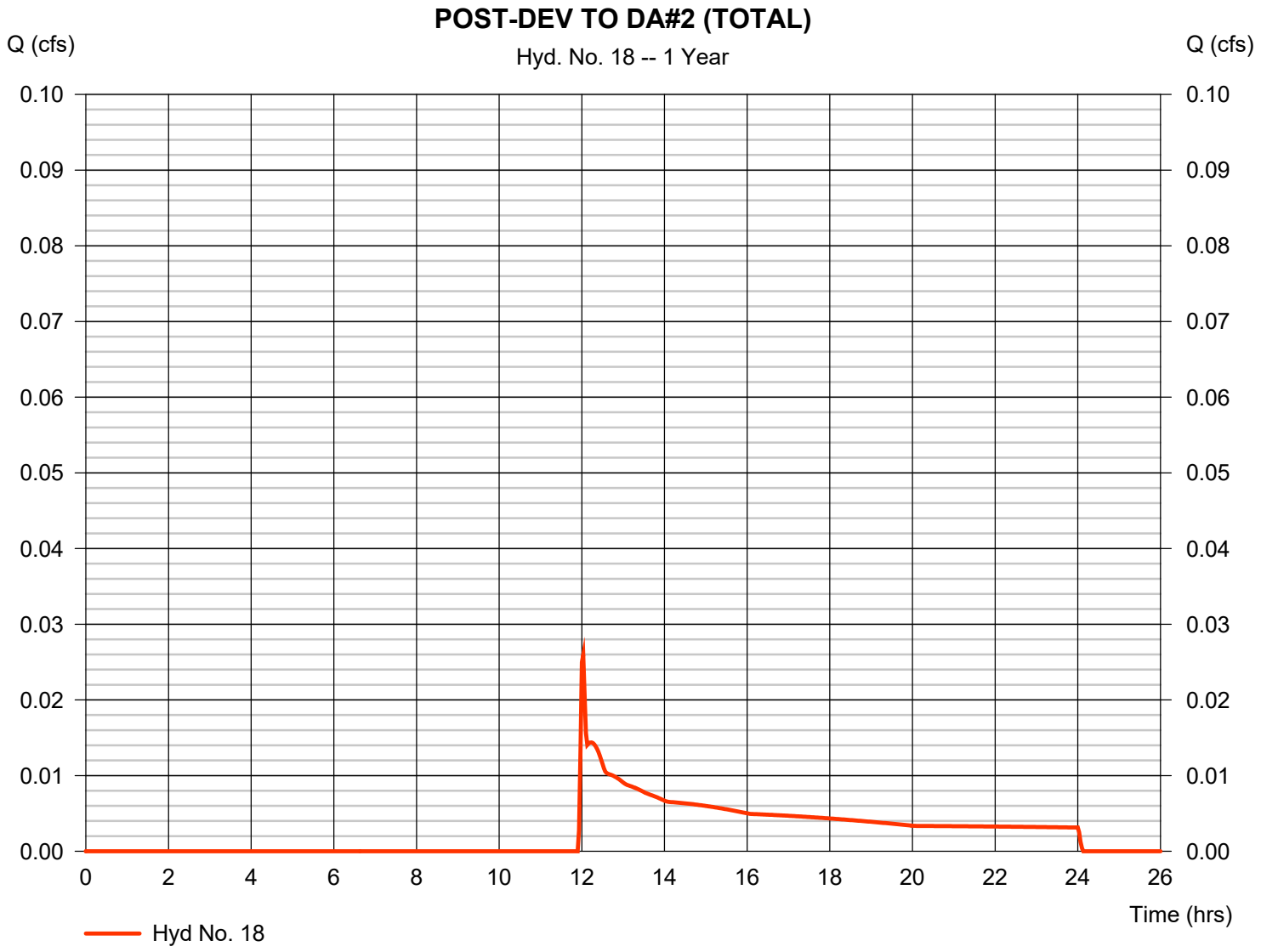


Hydrograph Report

Hyd. No. 18

POST-DEV TO DA#2 (TOTAL)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.026 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 229 cuft
Drainage area	= 0.466 ac	Curve number	= 55.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

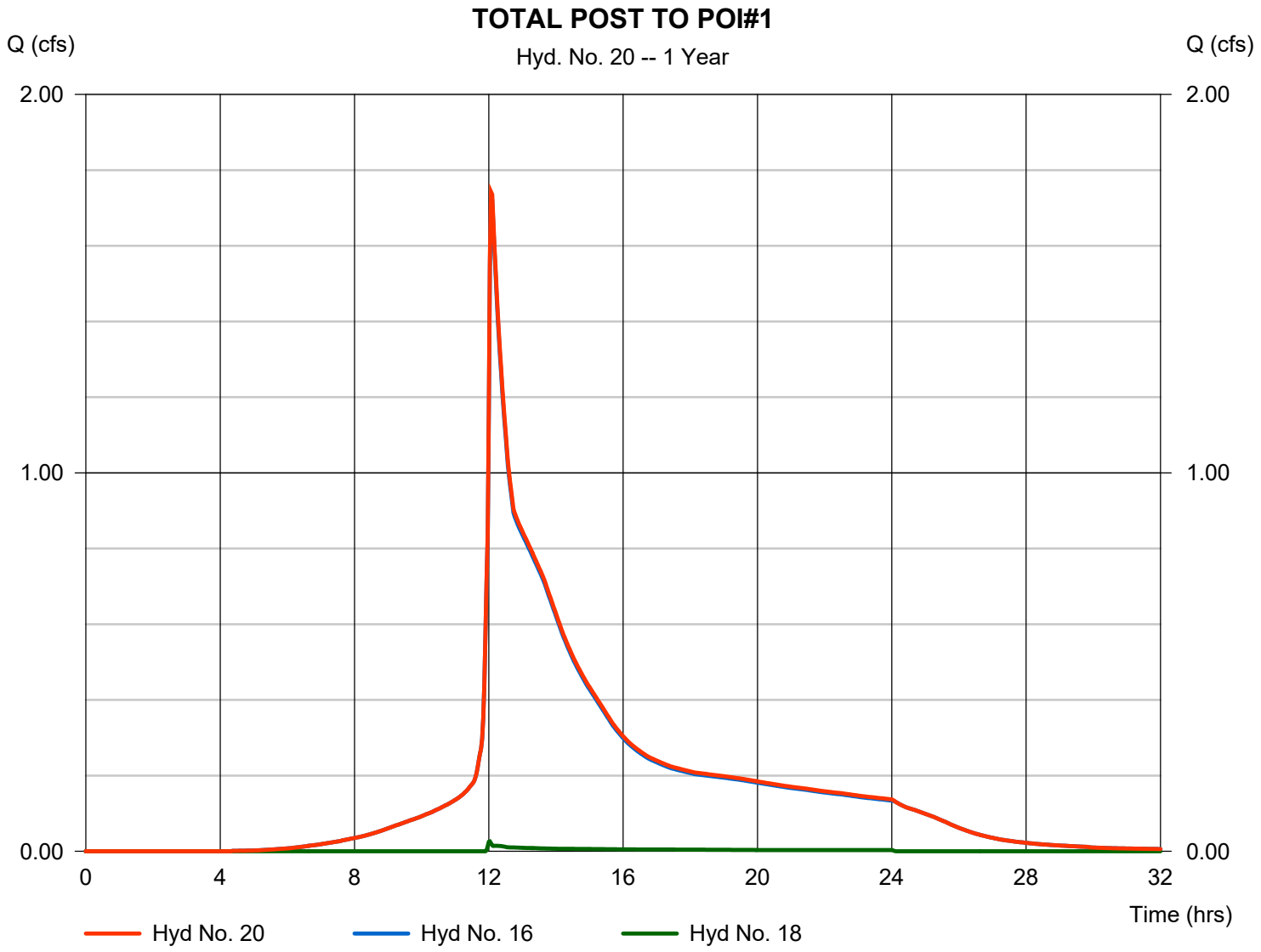


Hydrograph Report

Hyd. No. 20

TOTAL POST TO POI#1

Hydrograph type	= Combine	Peak discharge	= 1.742 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 18,818 cuft
Inflow hyds.	= 16, 18	Contrib. drain. area	= 0.466 ac



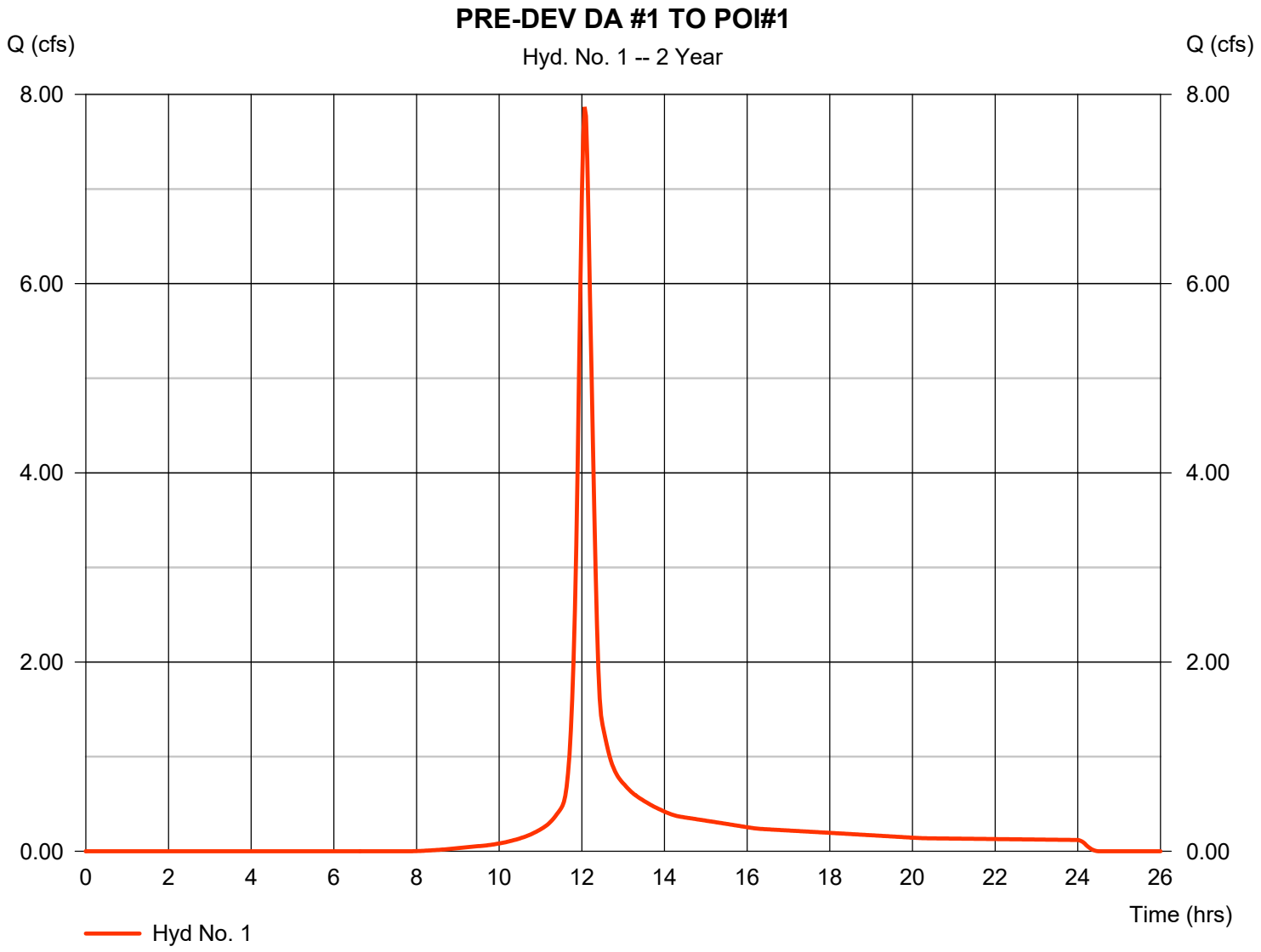
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 1

PRE-DEV DA #1 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	7.868 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	24,608 cuft
Drainage area	=	3.825 ac	Curve number	=	84.3
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	18.50 min
Total precip.	=	3.28 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



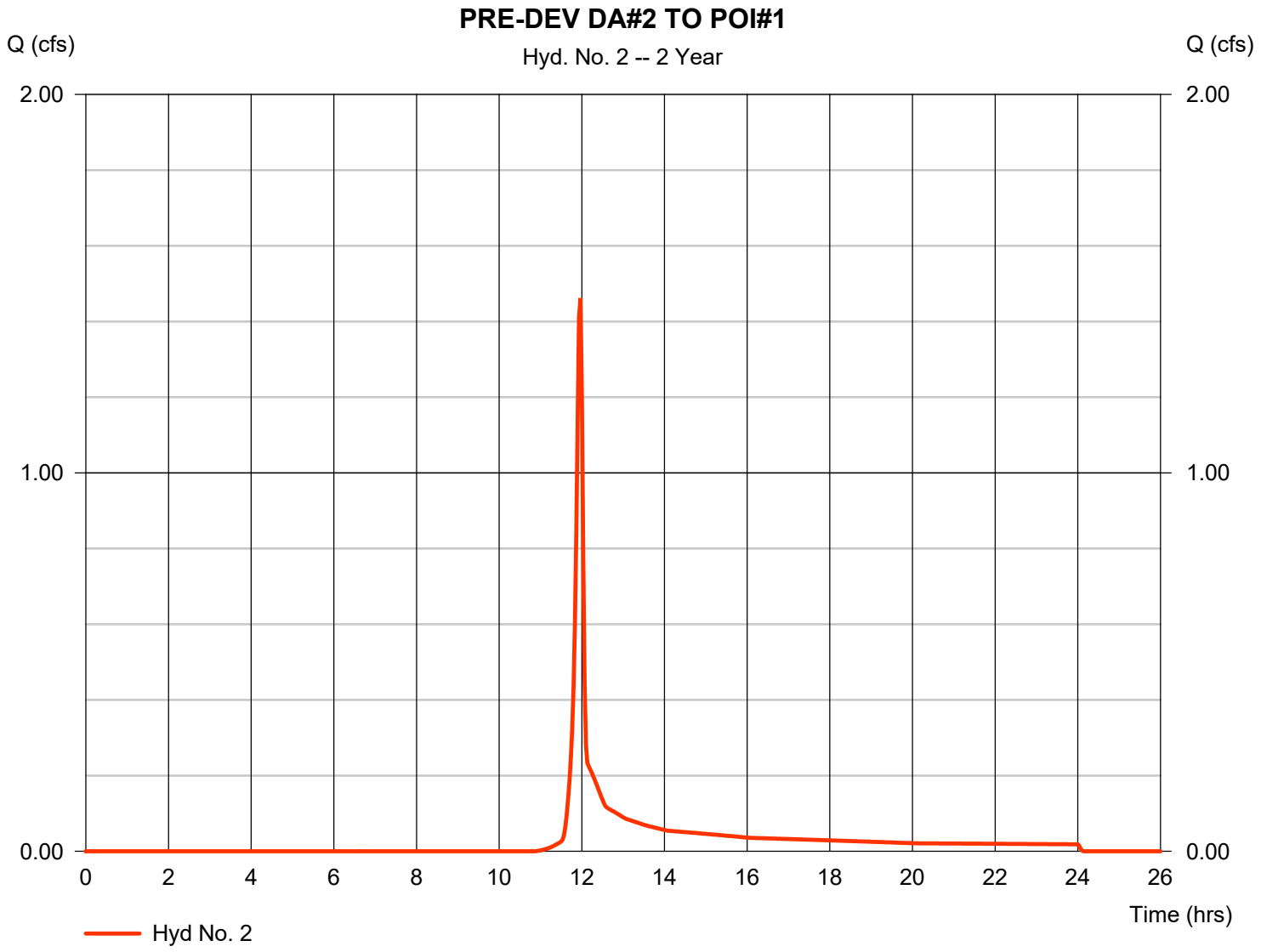
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 2

PRE-DEV DA#2 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.462 cfs
Storm frequency	=	2 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	2,932 cuft
Drainage area	=	0.824 ac	Curve number	=	73.2
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.28 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

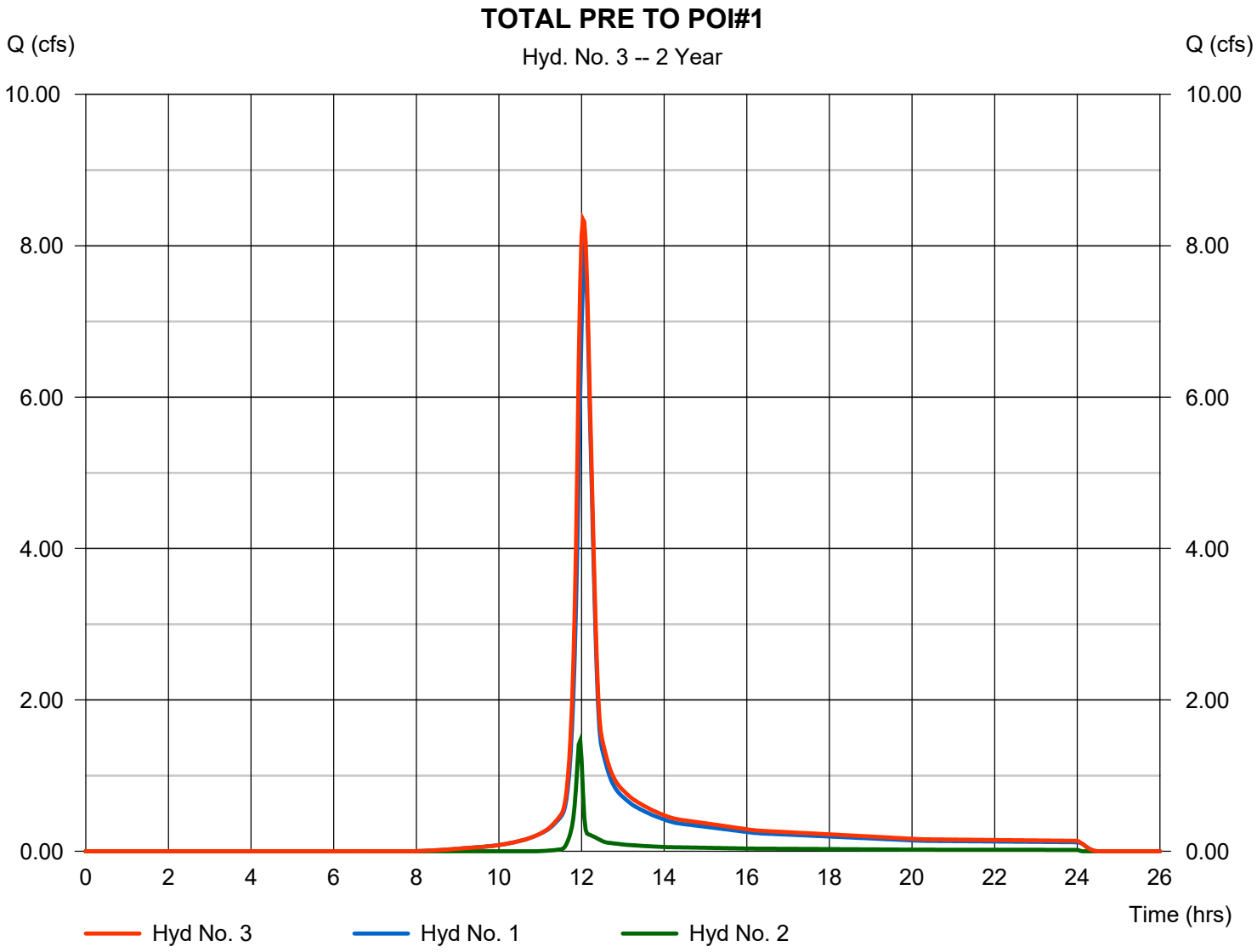


Hydrograph Report

Hyd. No. 3

TOTAL PRE TO POI#1

Hydrograph type	= Combine	Peak discharge	= 8.348 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 27,539 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.649 ac



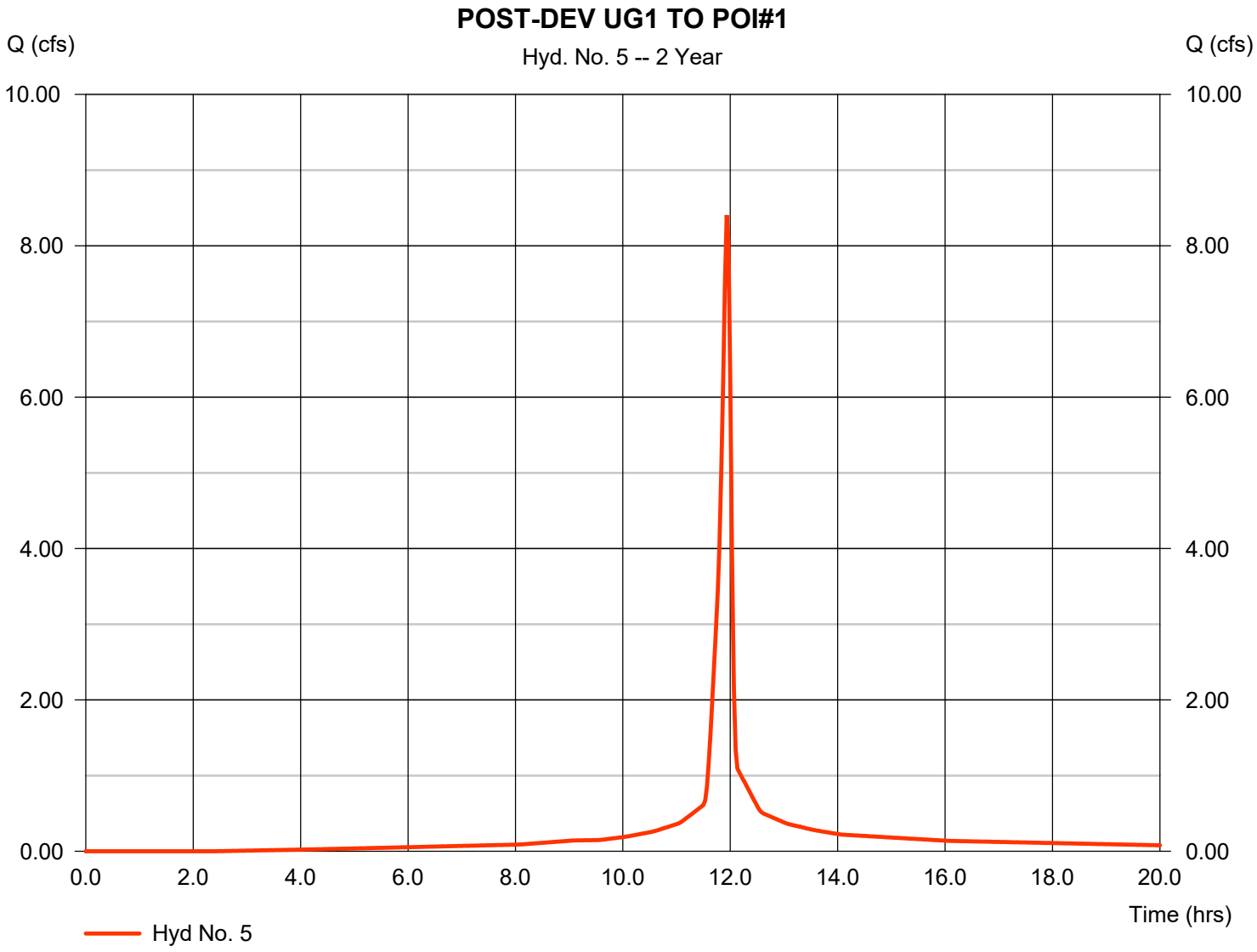
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 5

POST-DEV UG1 TO POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 8.407 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 18,793 cuft
Drainage area	= 1.960 ac	Curve number	= 95.9
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.28 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

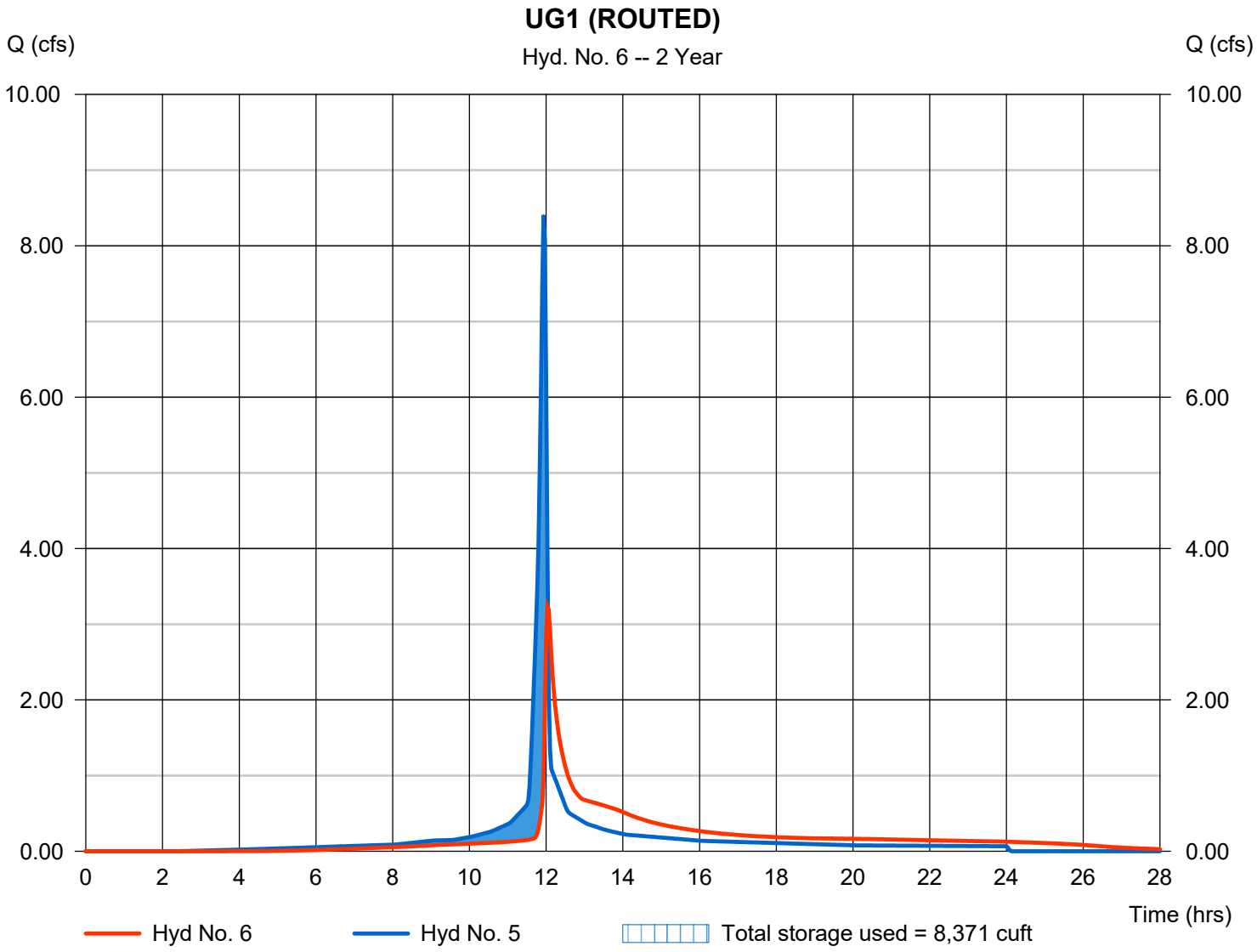
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 6

UG1 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	3.231 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	18,748 cuft
Inflow hyd. No.	=	5 - POST-DEV UG1 TO POI#1	Max. Elevation	=	160.32 ft
Reservoir name	=	UG1	Max. Storage	=	8,371 cuft

Storage Indication method used.



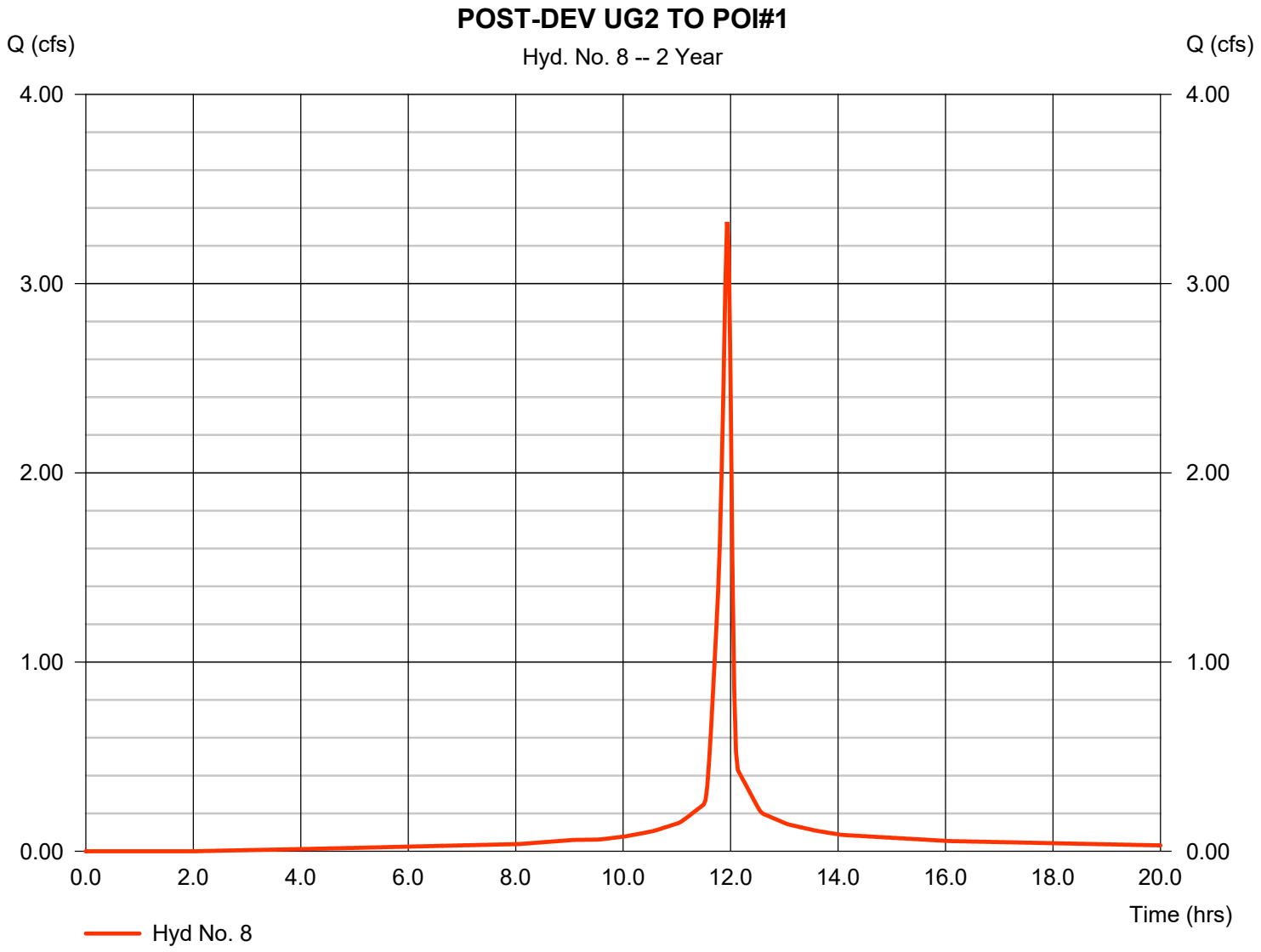
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 8

POST-DEV UG2 TO POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 3.327 cfs
Storm frequency	= 2 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 7,540 cuft
Drainage area	= 0.766 ac	Curve number	= 96.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.28 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

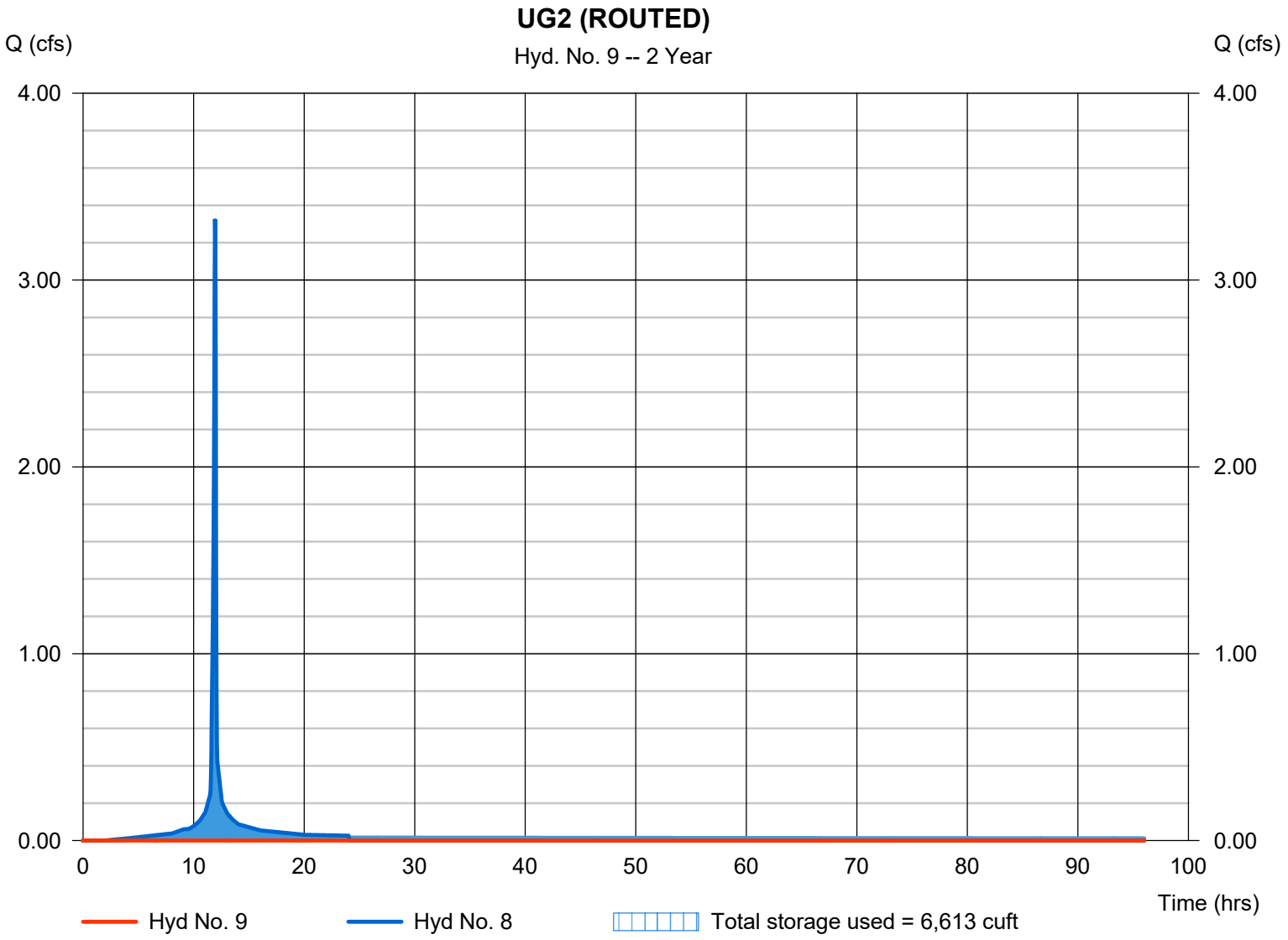
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 9

UG2 (ROUTED)

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 13.10 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 8 - POST-DEV UG2 TO POI#1	Max. Elevation	= 162.31 ft
Reservoir name	= UG2	Max. Storage	= 6,613 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



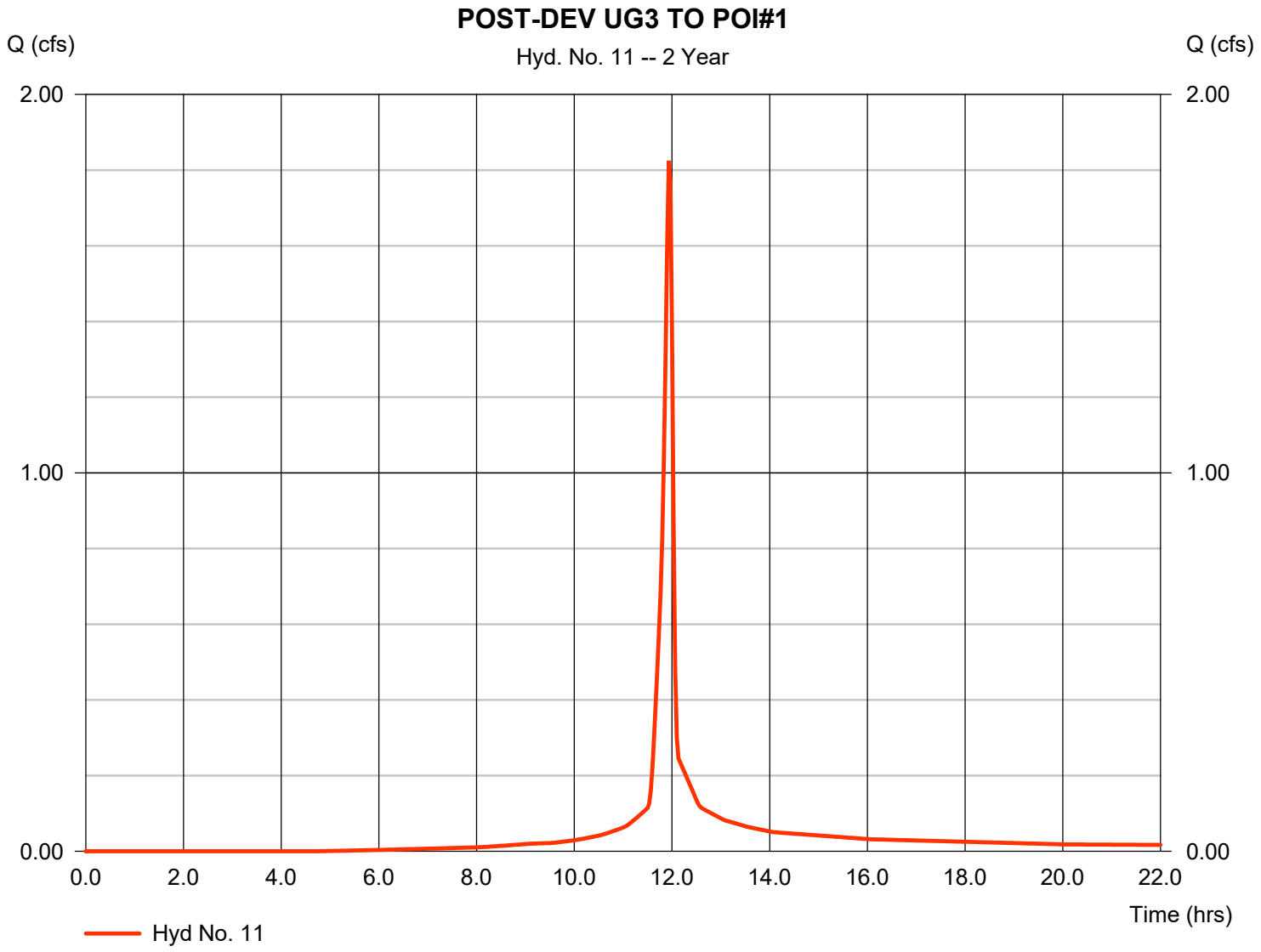
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 11

POST-DEV UG3 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.825 cfs
Storm frequency	=	2 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	3,840 cuft
Drainage area	=	0.476 ac	Curve number	=	91.4
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.28 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

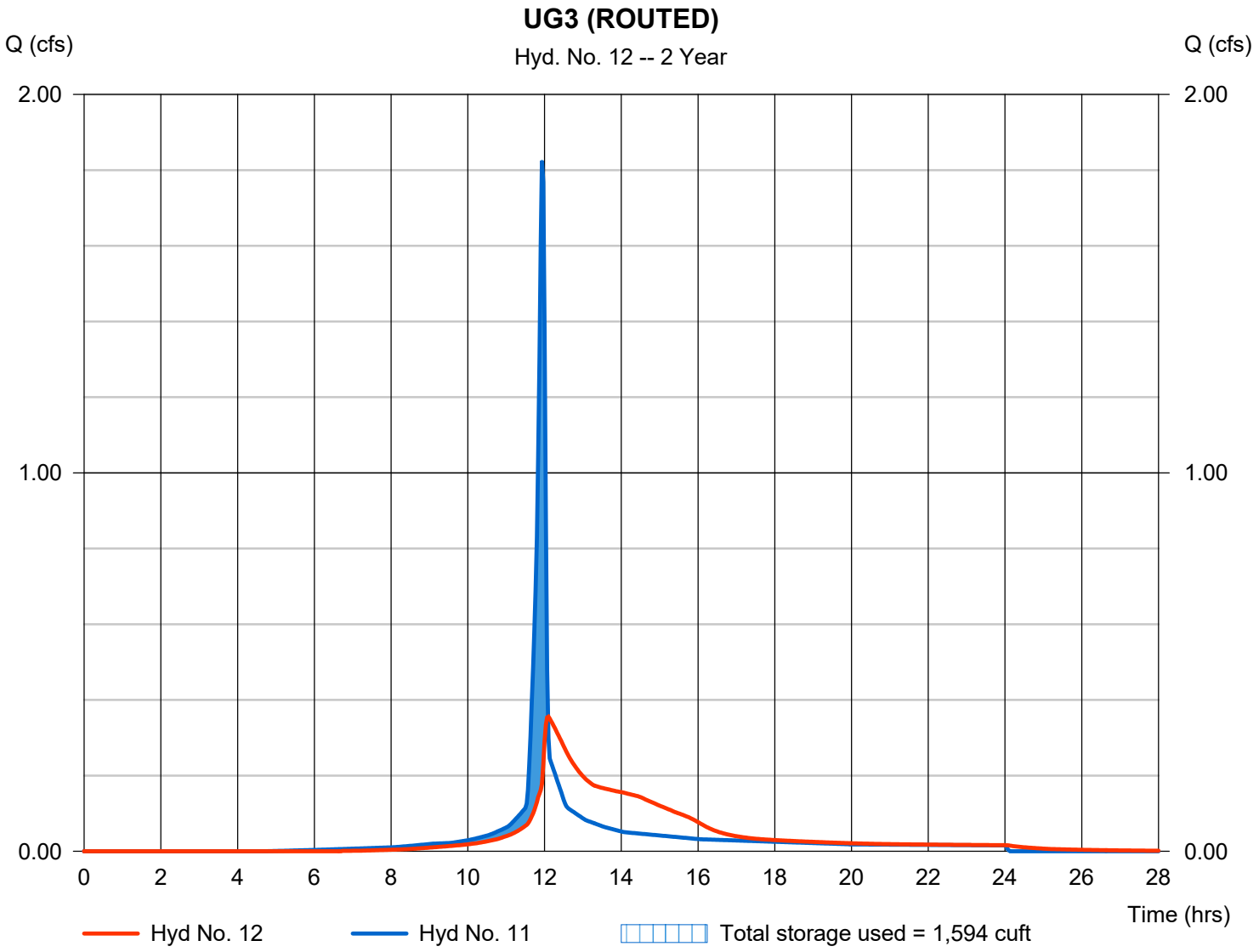
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 12

UG3 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	0.356 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.10 hrs
Time interval	=	2 min	Hyd. volume	=	3,820 cuft
Inflow hyd. No.	=	11 - POST-DEV UG3 TO POI #1	Max. Elevation	=	161.18 ft
Reservoir name	=	UG3	Max. Storage	=	1,594 cuft

Storage Indication method used.



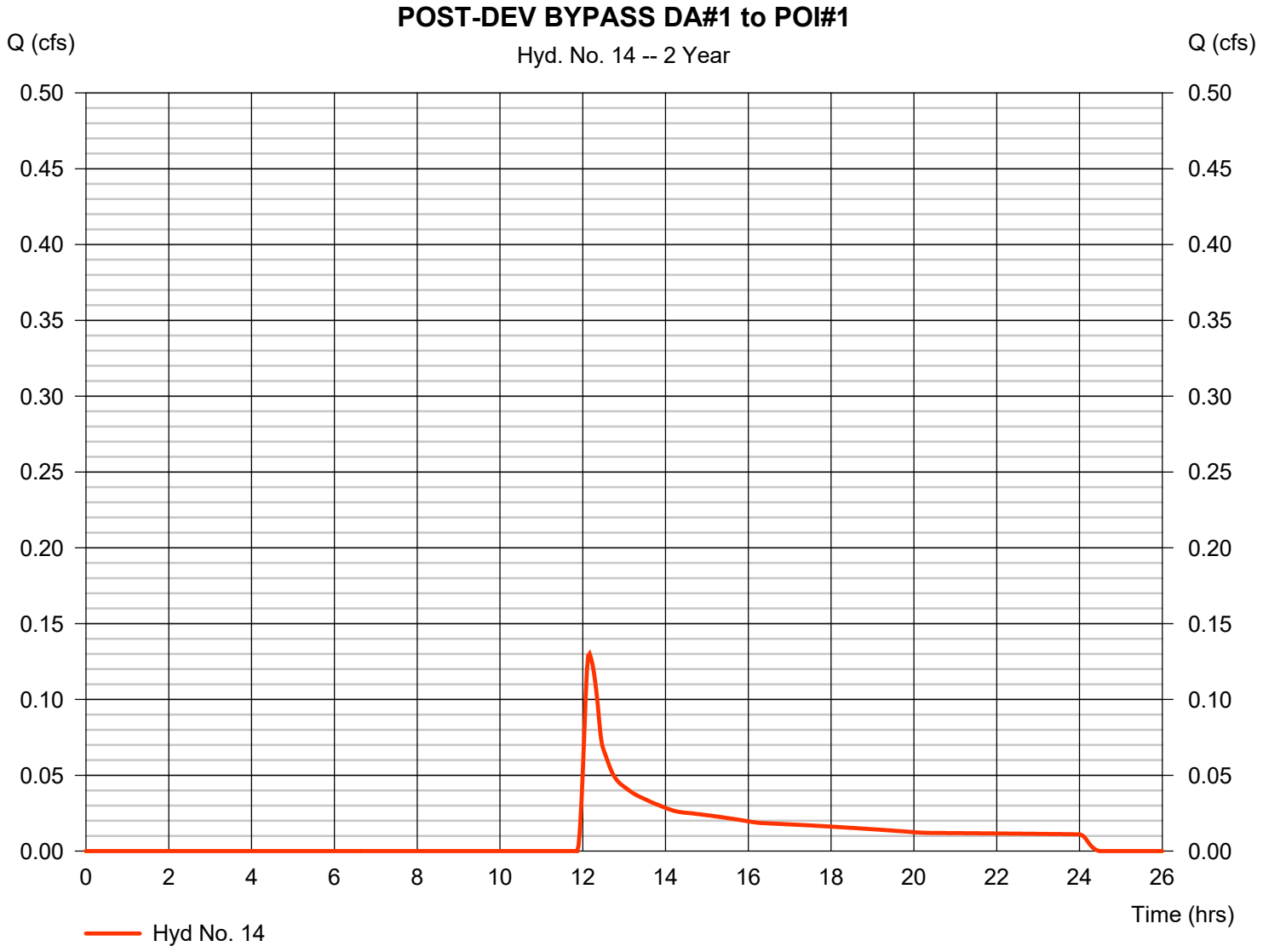
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 14

POST-DEV BYPASS DA#1 to POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.130 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 986 cuft
Drainage area	= 0.979 ac	Curve number	= 55.1
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.50 min
Total precip.	= 3.28 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

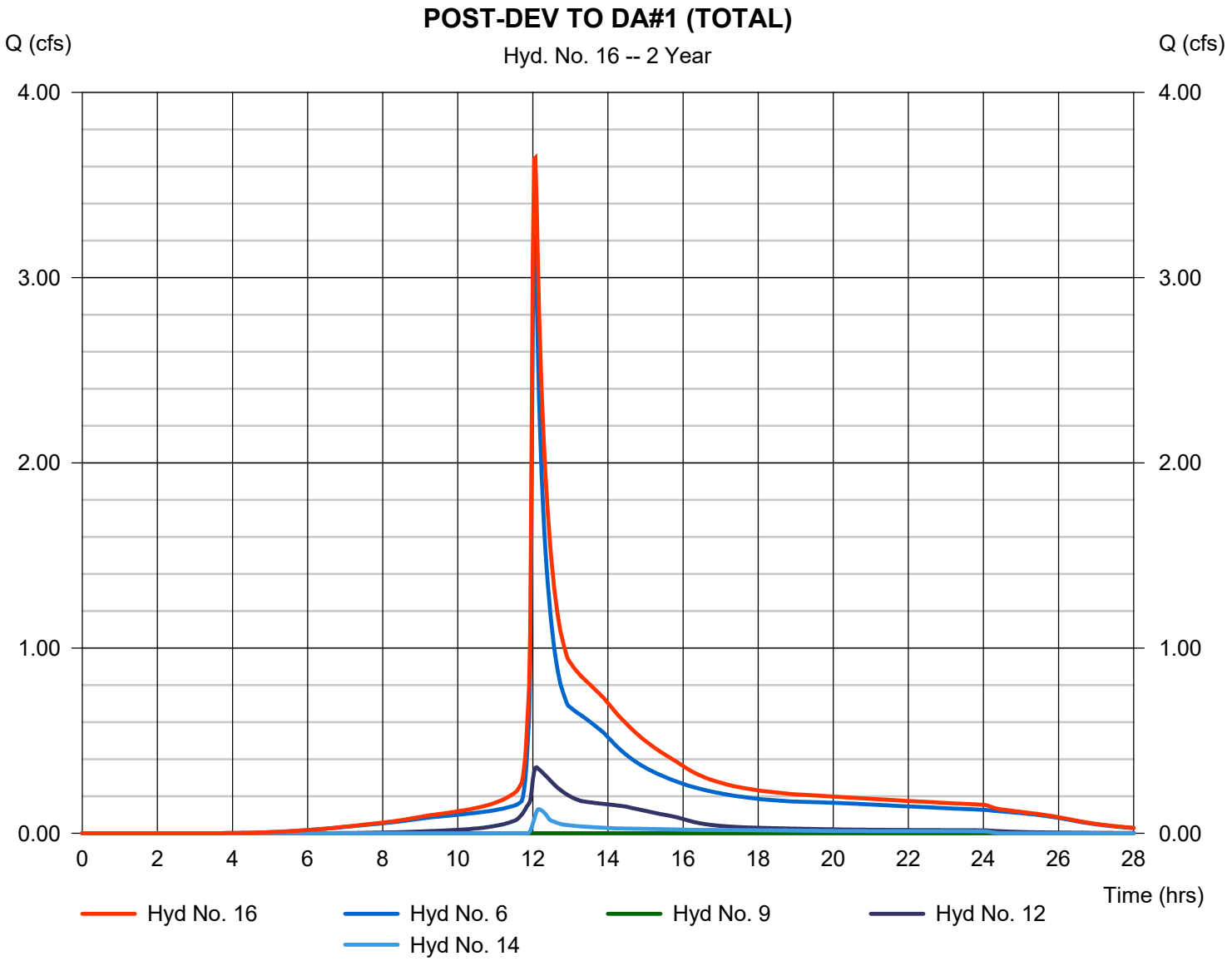


Hydrograph Report

Hyd. No. 16

POST-DEV TO DA#1 (TOTAL)

Hydrograph type	= Combine	Peak discharge	= 3.646 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 23,554 cuft
Inflow hyds.	= 6, 9, 12, 14	Contrib. drain. area	= 0.979 ac

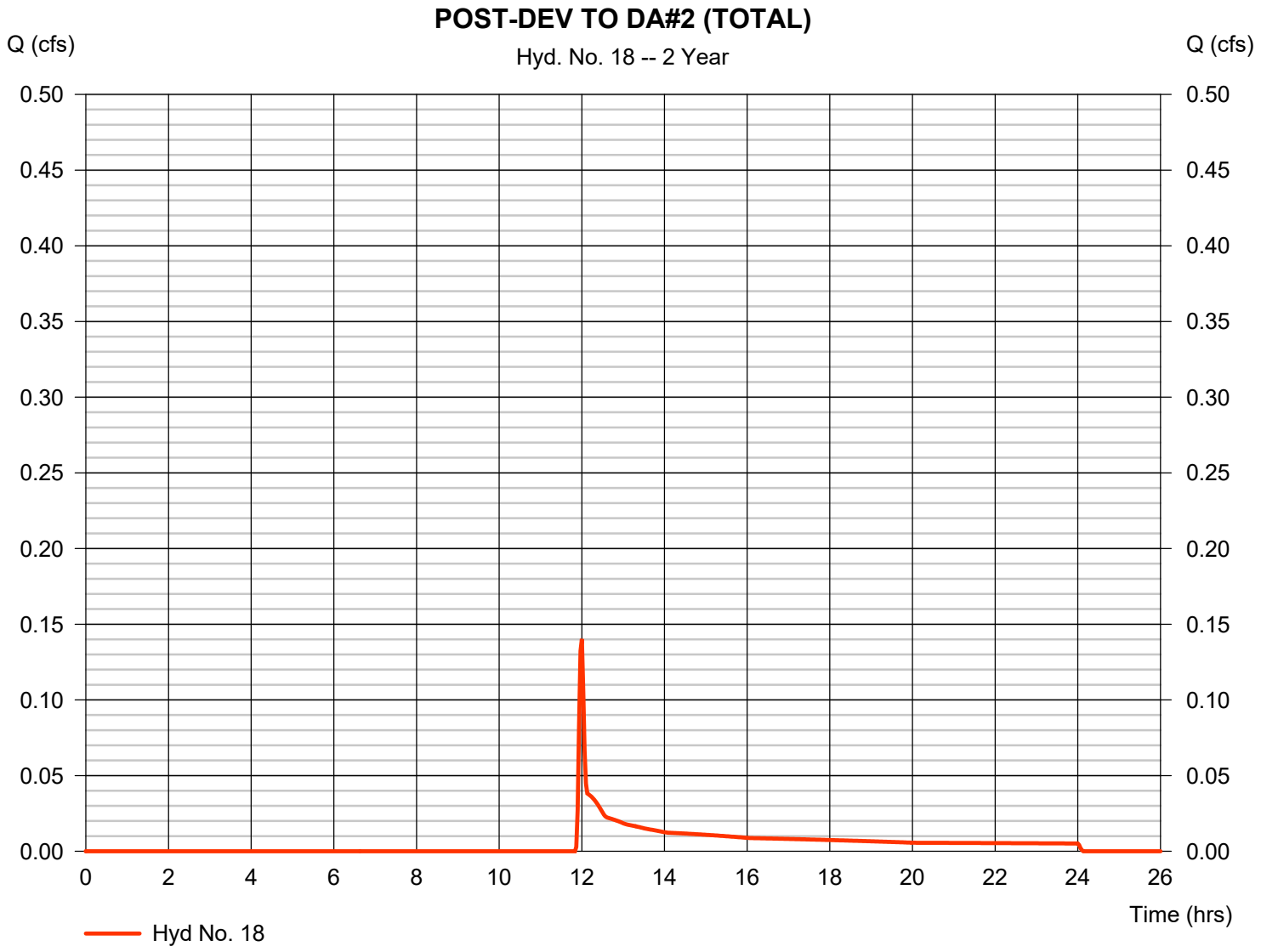


Hydrograph Report

Hyd. No. 18

POST-DEV TO DA#2 (TOTAL)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.140 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 474 cuft
Drainage area	= 0.466 ac	Curve number	= 55.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.28 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

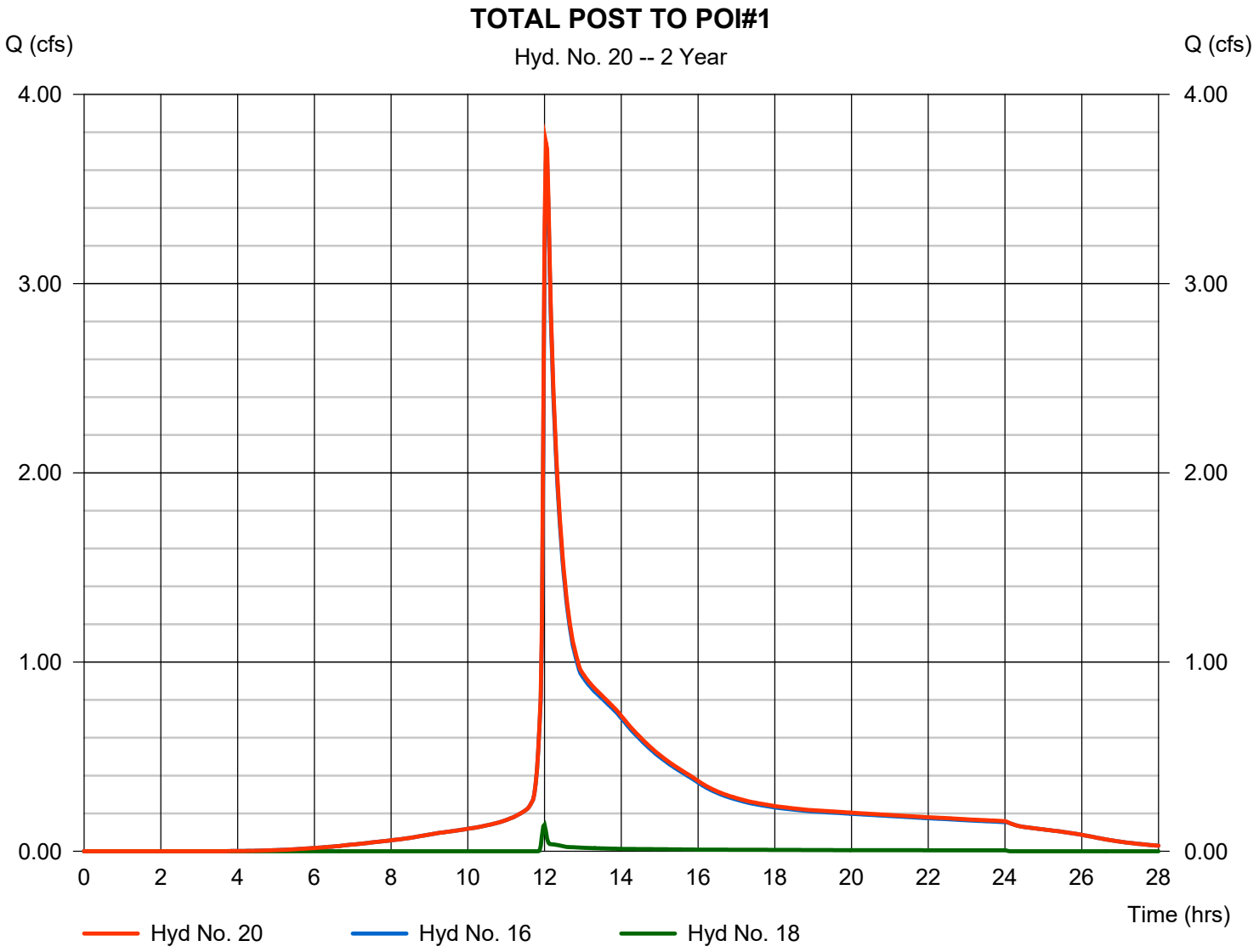


Hydrograph Report

Hyd. No. 20

TOTAL POST TO POI#1

Hydrograph type	= Combine	Peak discharge	= 3.747 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 24,028 cuft
Inflow hyds.	= 16, 18	Contrib. drain. area	= 0.466 ac



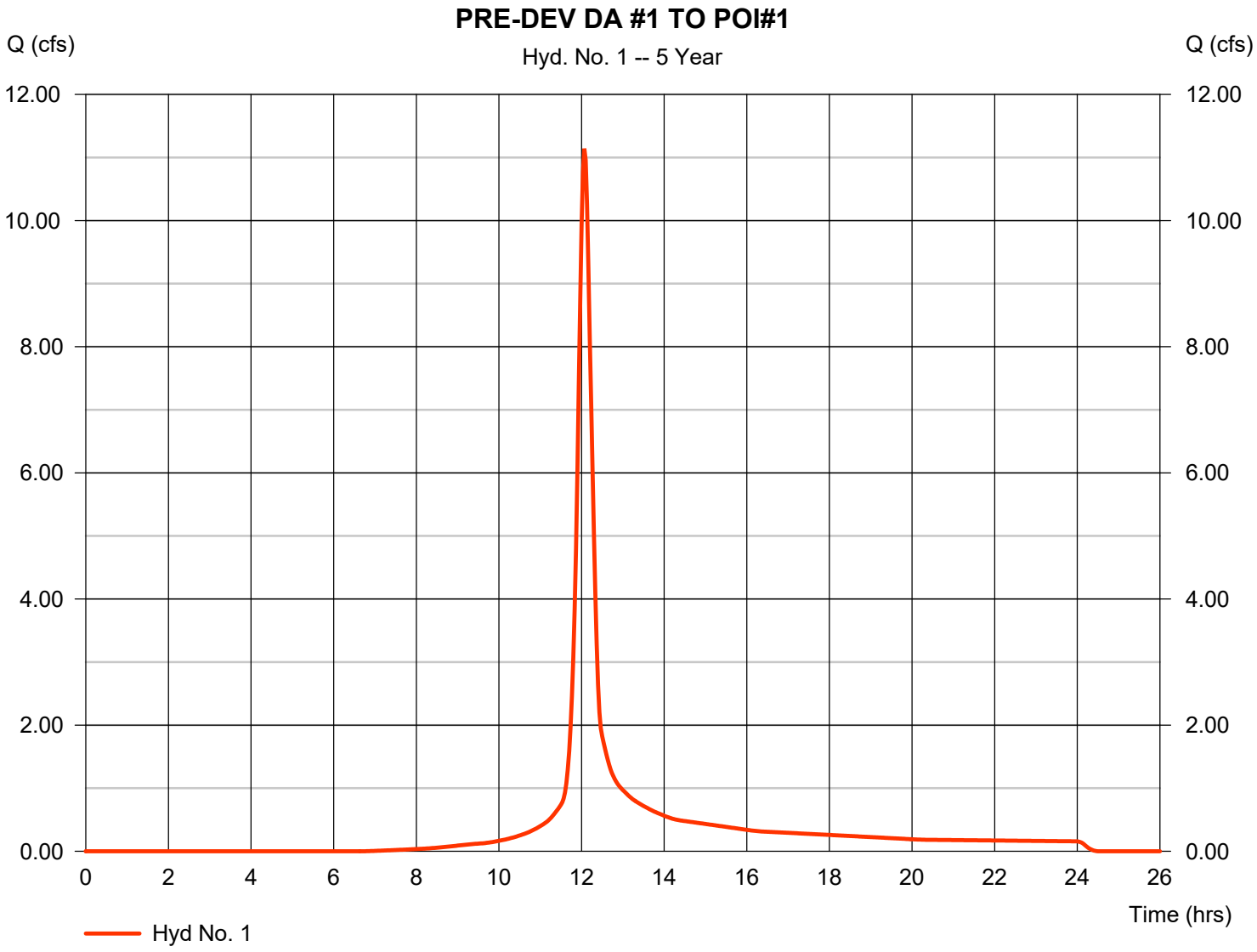
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 1

PRE-DEV DA #1 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	11.14 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	34,883 cuft
Drainage area	=	3.825 ac	Curve number	=	84.3
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	18.50 min
Total precip.	=	4.13 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



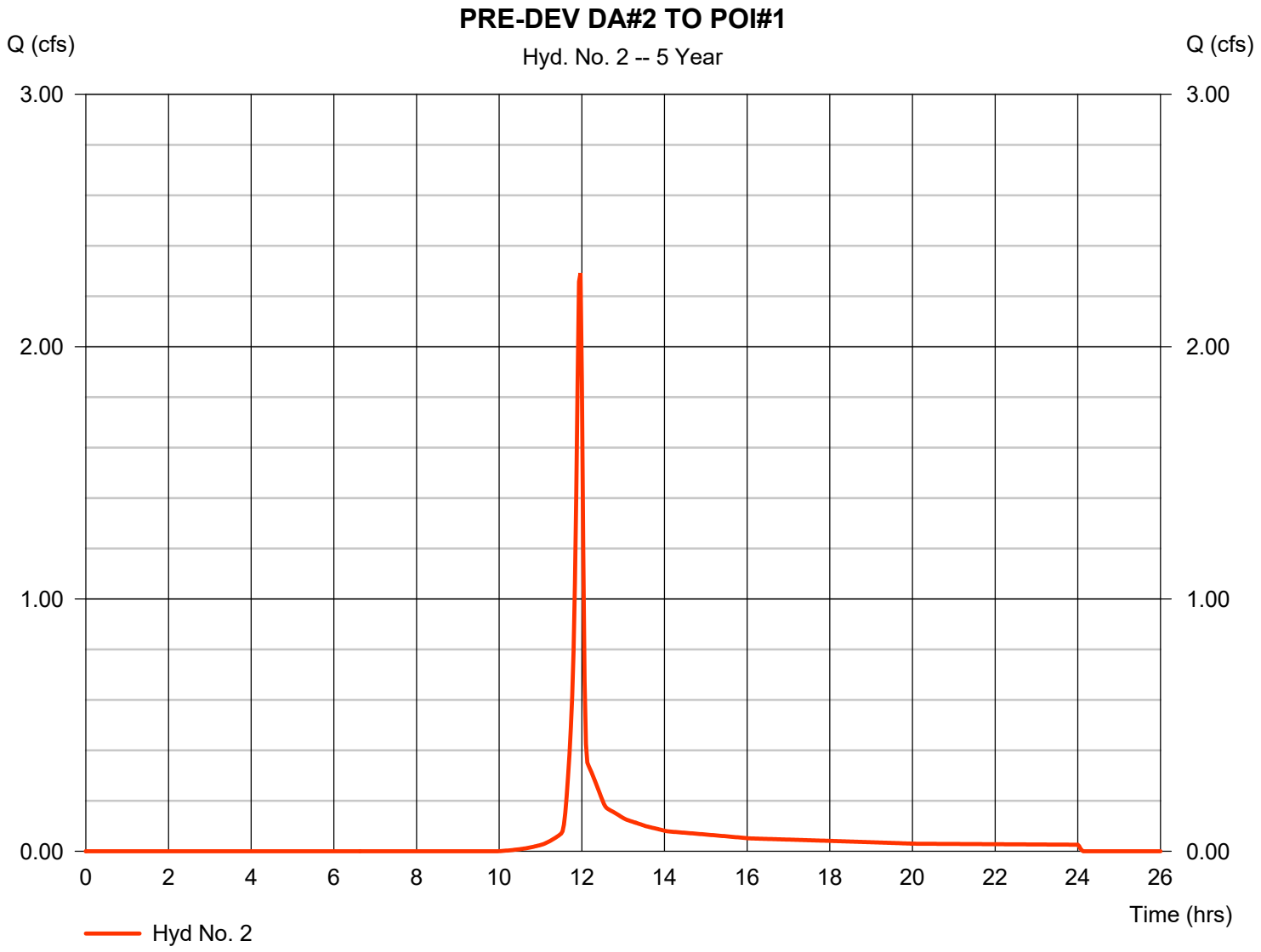
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 2

PRE-DEV DA#2 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.292 cfs
Storm frequency	=	5 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	4,586 cuft
Drainage area	=	0.824 ac	Curve number	=	73.2
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.13 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



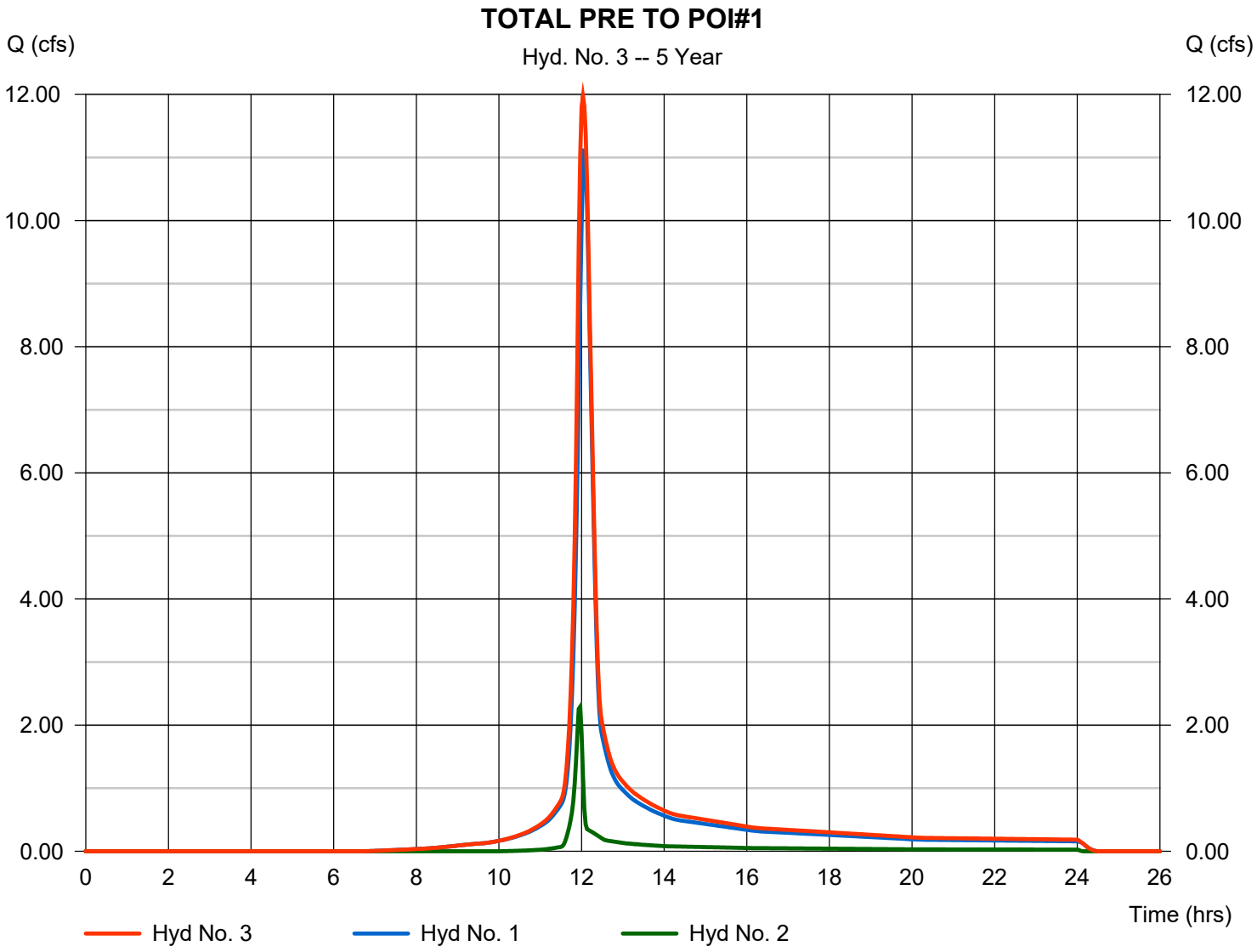
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 3

TOTAL PRE TO POI#1

Hydrograph type	= Combine	Peak discharge	= 11.97 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 39,469 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.649 ac



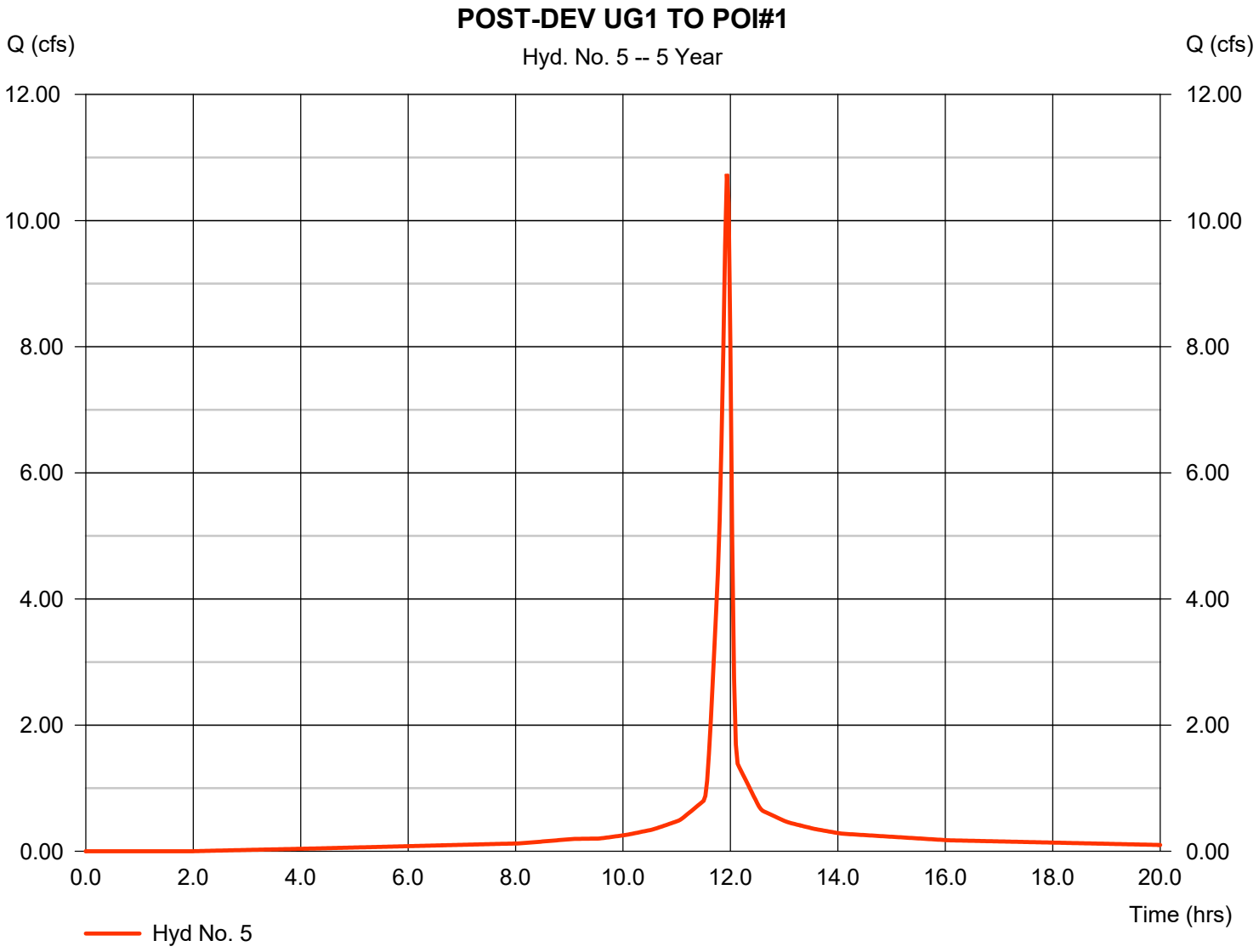
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 5

POST-DEV UG1 TO POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 10.74 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 24,398 cuft
Drainage area	= 1.960 ac	Curve number	= 95.9
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.13 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

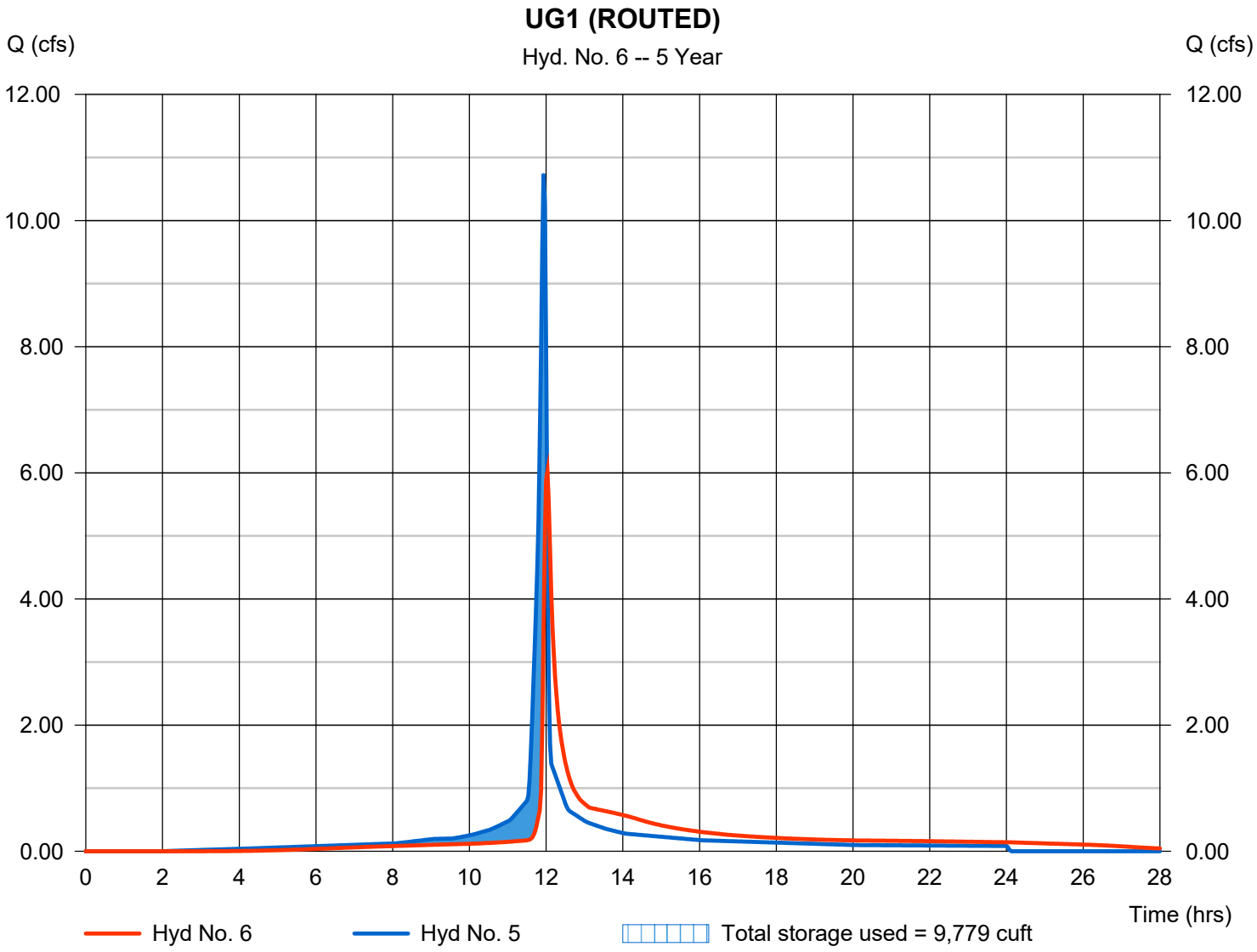
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 6

UG1 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	6.014 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	24,354 cuft
Inflow hyd. No.	=	5 - POST-DEV UG1 TO POI#1	Max. Elevation	=	160.54 ft
Reservoir name	=	UG1	Max. Storage	=	9,779 cuft

Storage Indication method used.



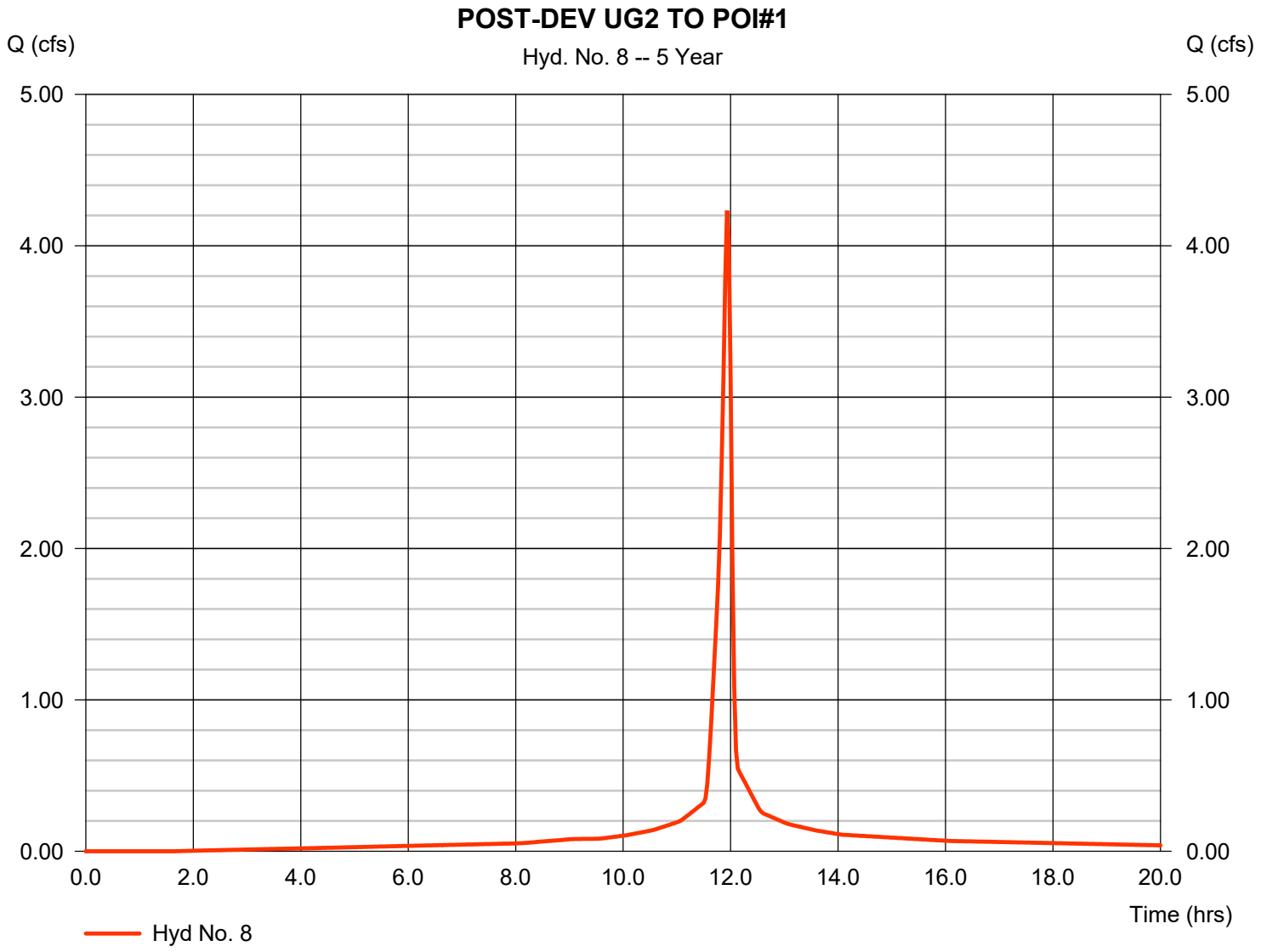
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 8

POST-DEV UG2 TO POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 4.233 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 9,738 cuft
Drainage area	= 0.766 ac	Curve number	= 96.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.13 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

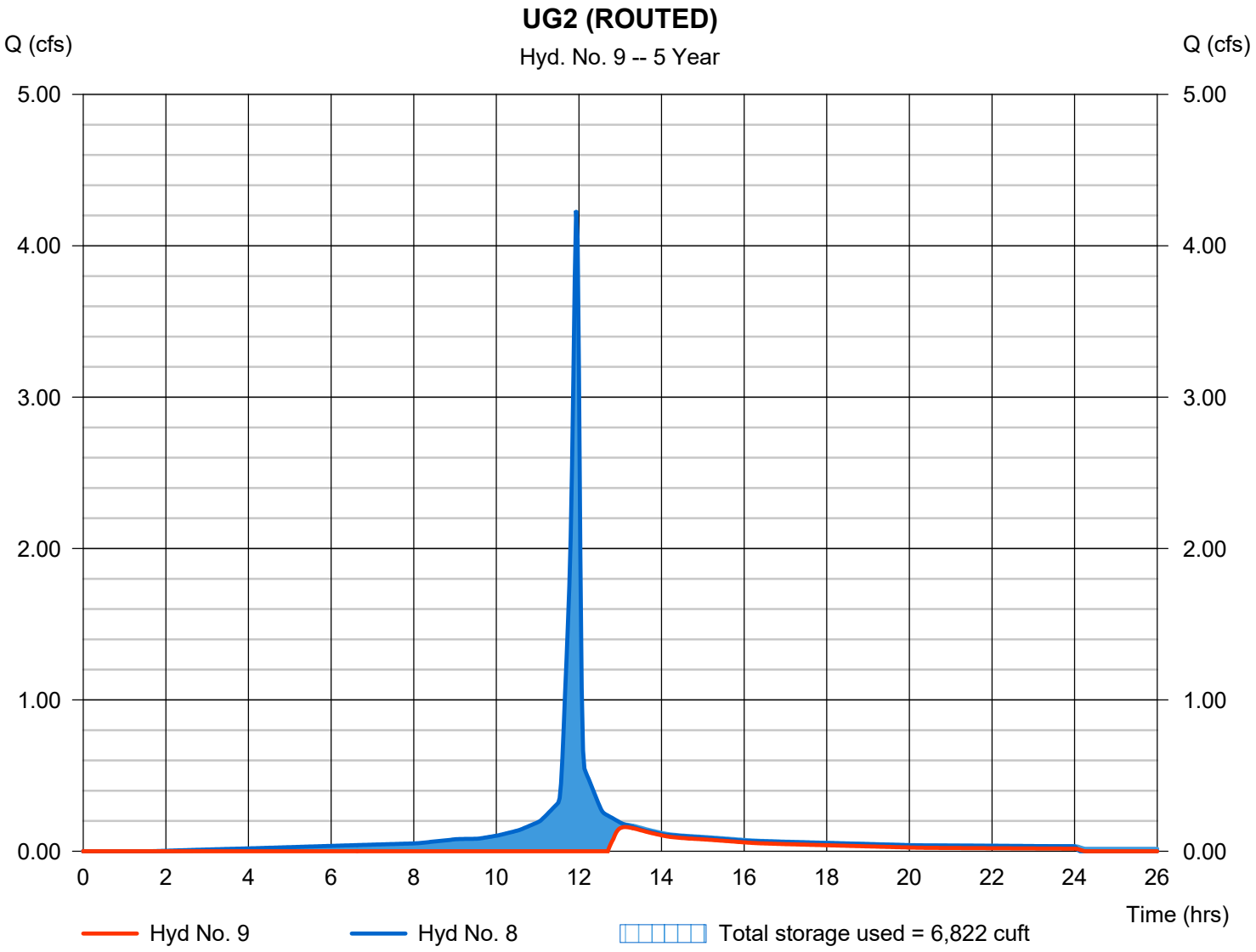
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 9

UG2 (ROUTED)

Hydrograph type	= Reservoir	Peak discharge	= 0.160 cfs
Storm frequency	= 5 yrs	Time to peak	= 13.13 hrs
Time interval	= 2 min	Hyd. volume	= 2,033 cuft
Inflow hyd. No.	= 8 - POST-DEV UG2 TO POI#1	Max. Elevation	= 162.40 ft
Reservoir name	= UG2	Max. Storage	= 6,822 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

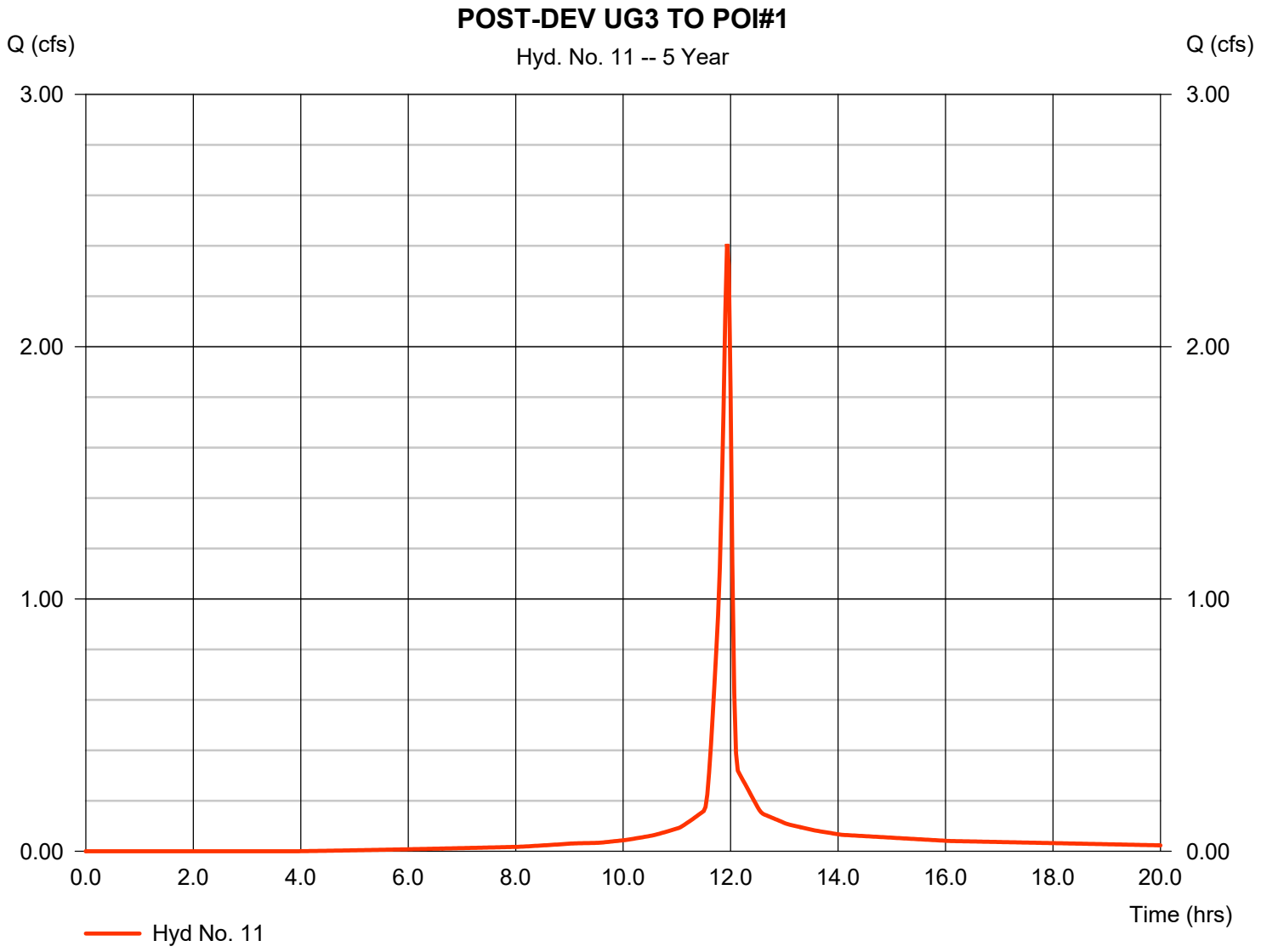


Hydrograph Report

Hyd. No. 11

POST-DEV UG3 TO POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 2.407 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 5,155 cuft
Drainage area	= 0.476 ac	Curve number	= 91.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.13 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

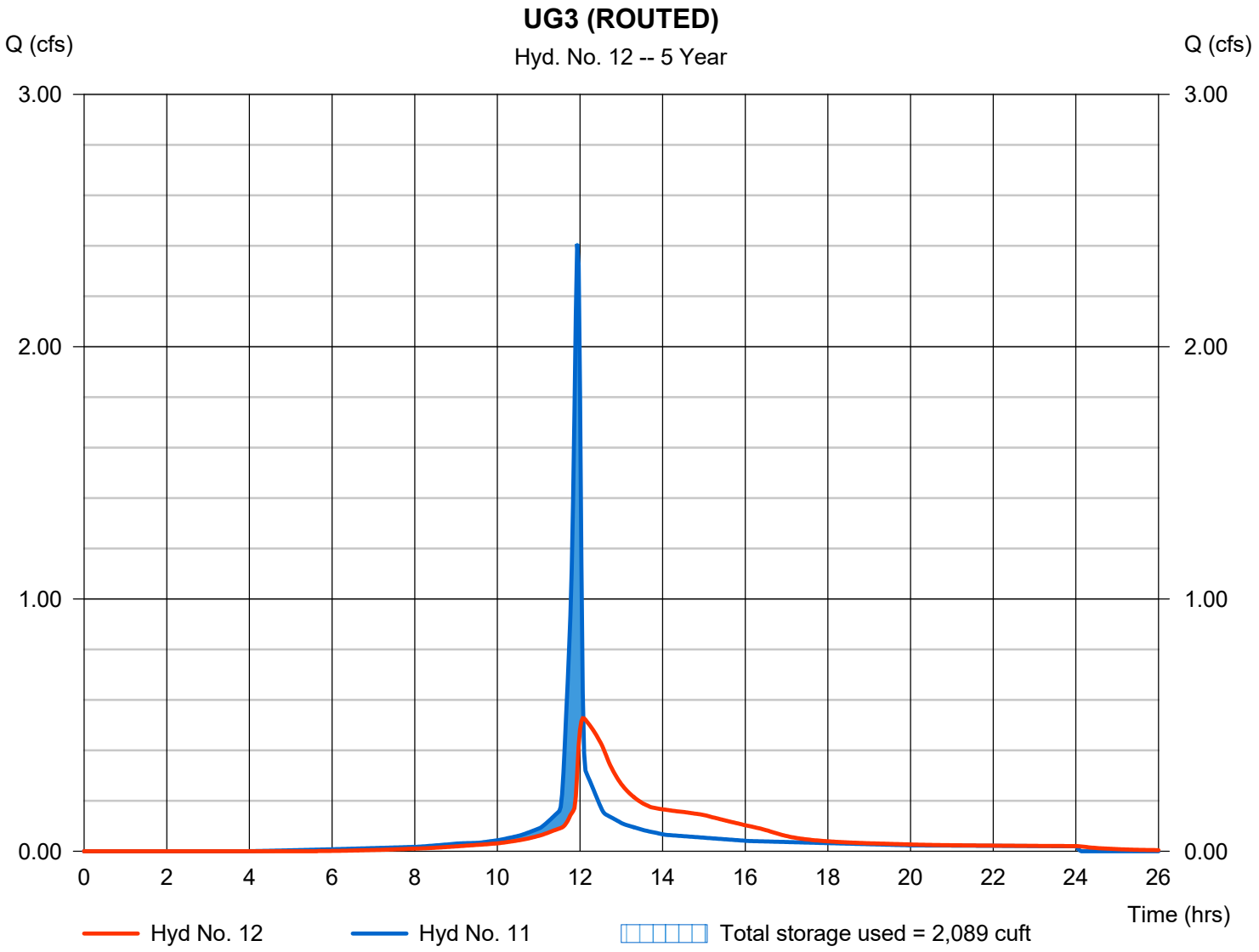
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 12

UG3 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	0.527 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	5,135 cuft
Inflow hyd. No.	=	11 - POST-DEV UG3 TO POI #1	Max. Elevation	=	161.38 ft
Reservoir name	=	UG3	Max. Storage	=	2,089 cuft

Storage Indication method used.



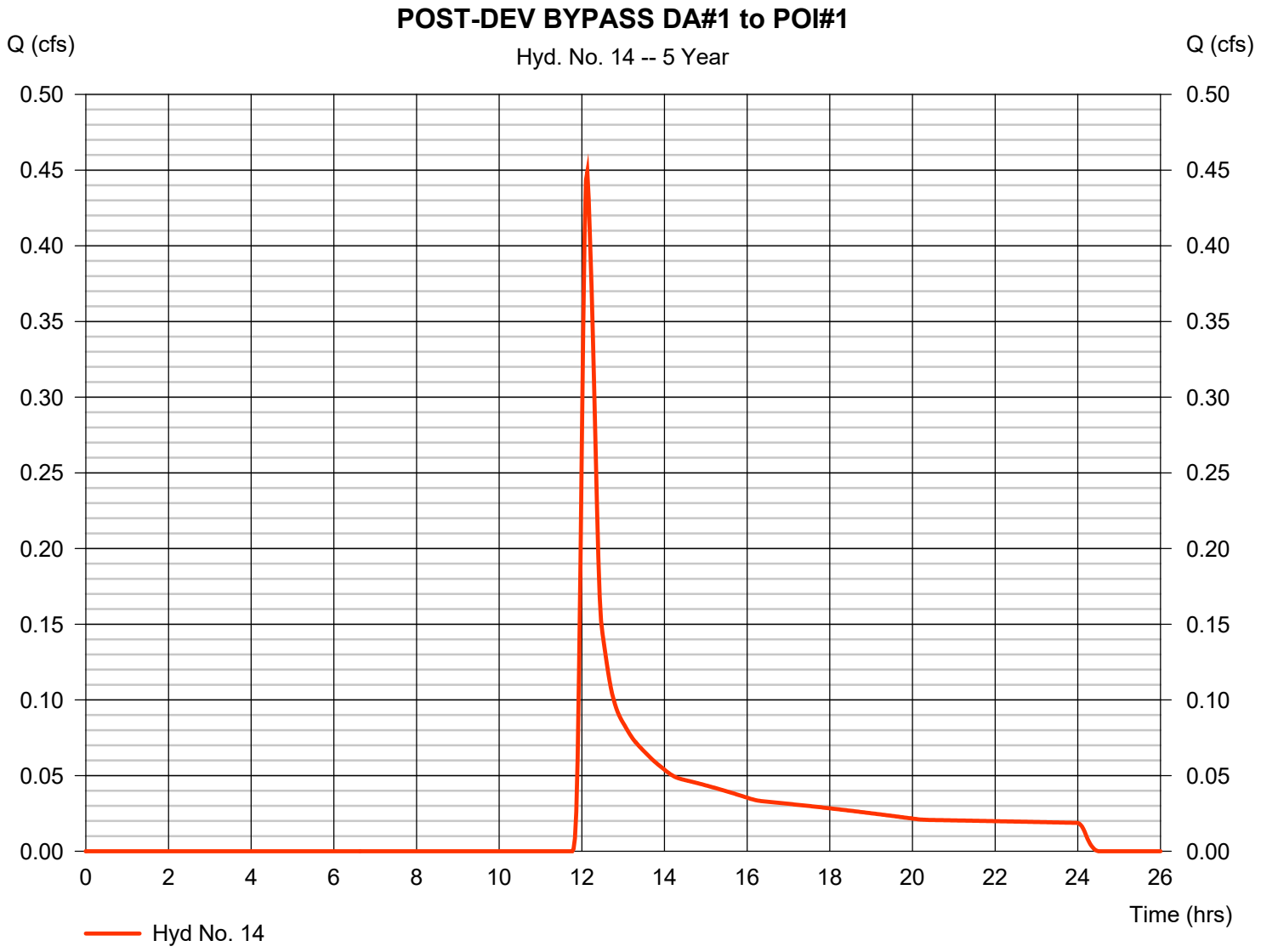
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 14

POST-DEV BYPASS DA#1 to POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.449 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 2,086 cuft
Drainage area	= 0.979 ac	Curve number	= 55.1
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.50 min
Total precip.	= 4.13 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

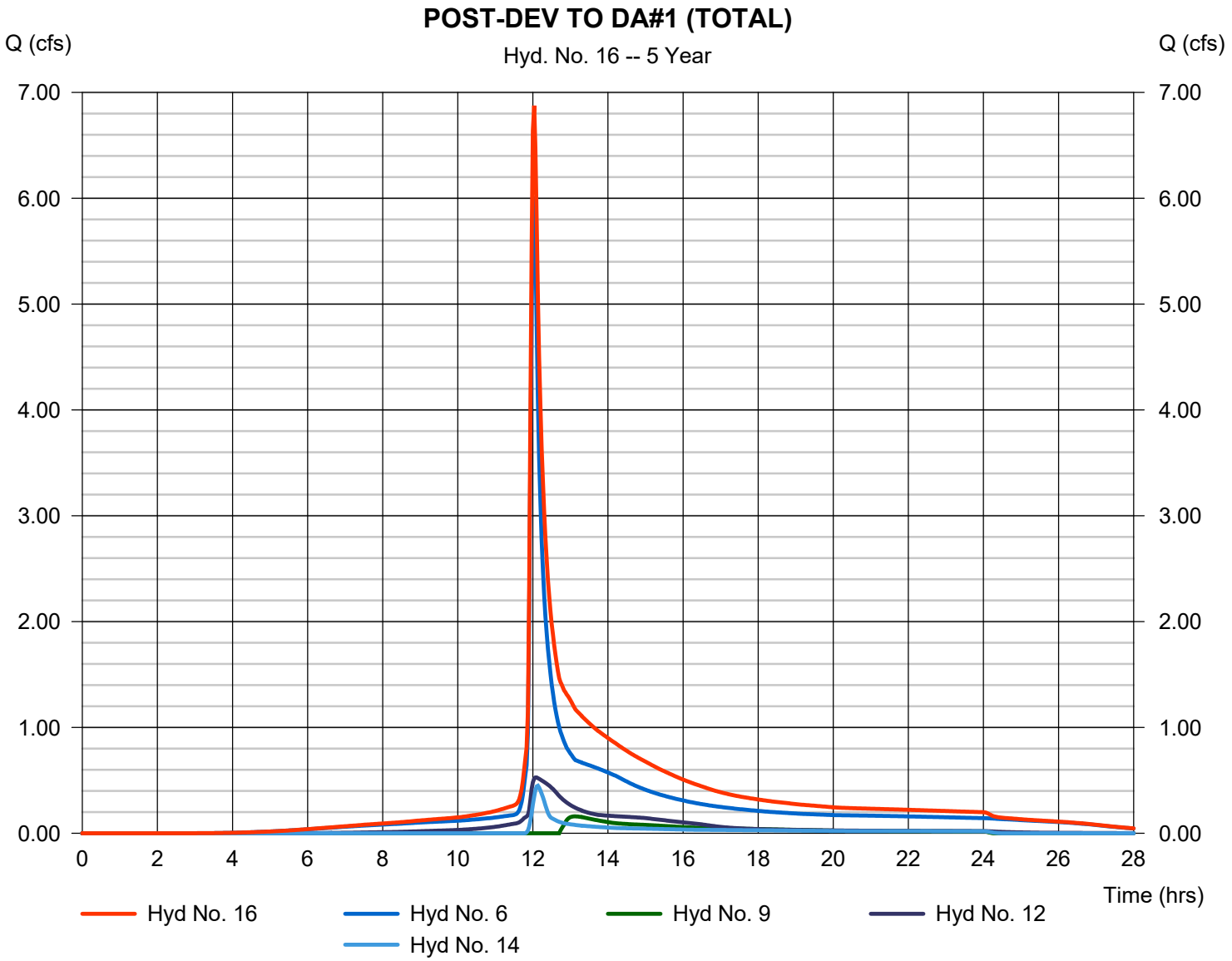


Hydrograph Report

Hyd. No. 16

POST-DEV TO DA#1 (TOTAL)

Hydrograph type	= Combine	Peak discharge	= 6.876 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 33,608 cuft
Inflow hyds.	= 6, 9, 12, 14	Contrib. drain. area	= 0.979 ac



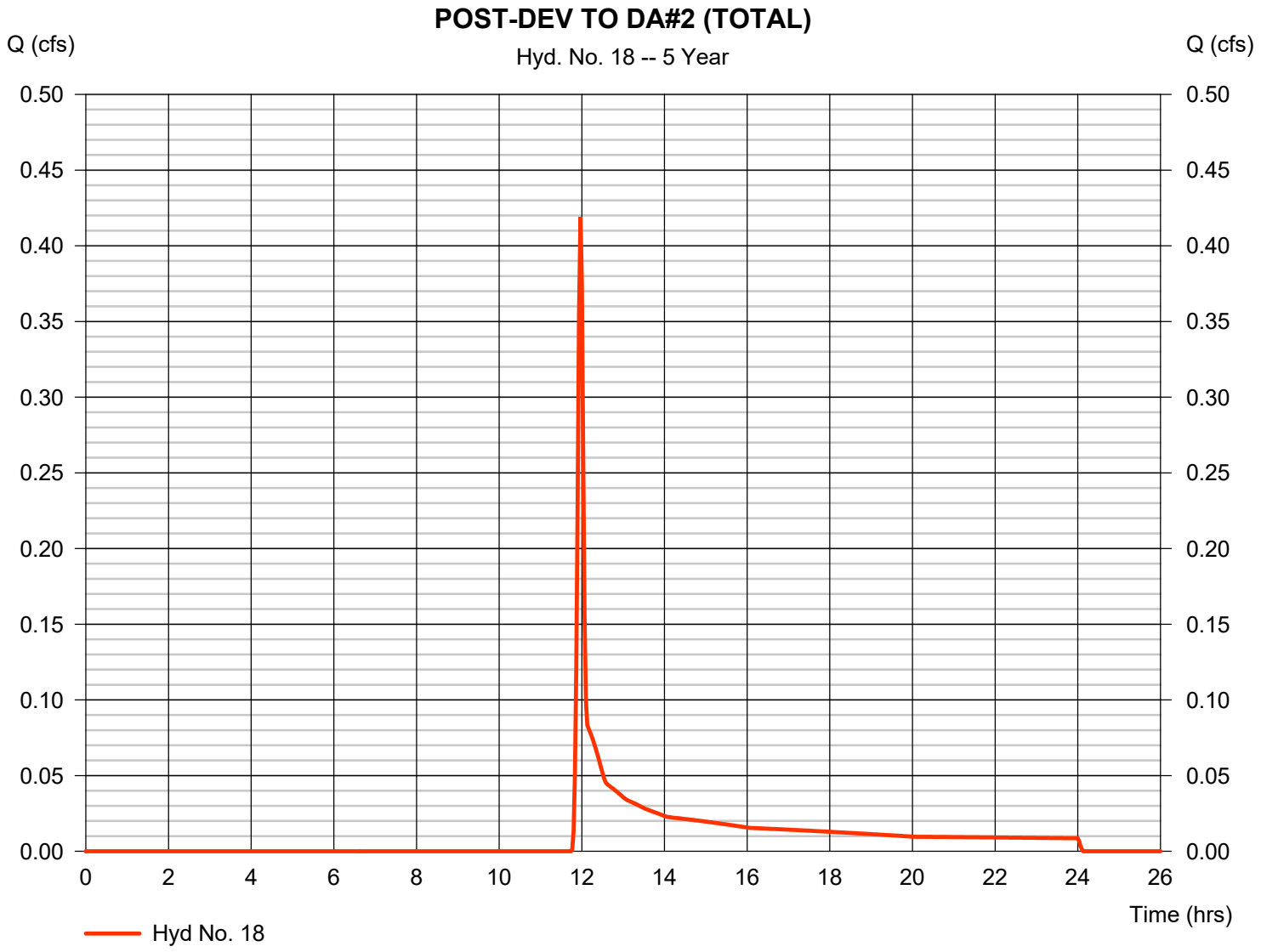
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 18

POST-DEV TO DA#2 (TOTAL)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.419 cfs
Storm frequency	= 5 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 982 cuft
Drainage area	= 0.466 ac	Curve number	= 55.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.13 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

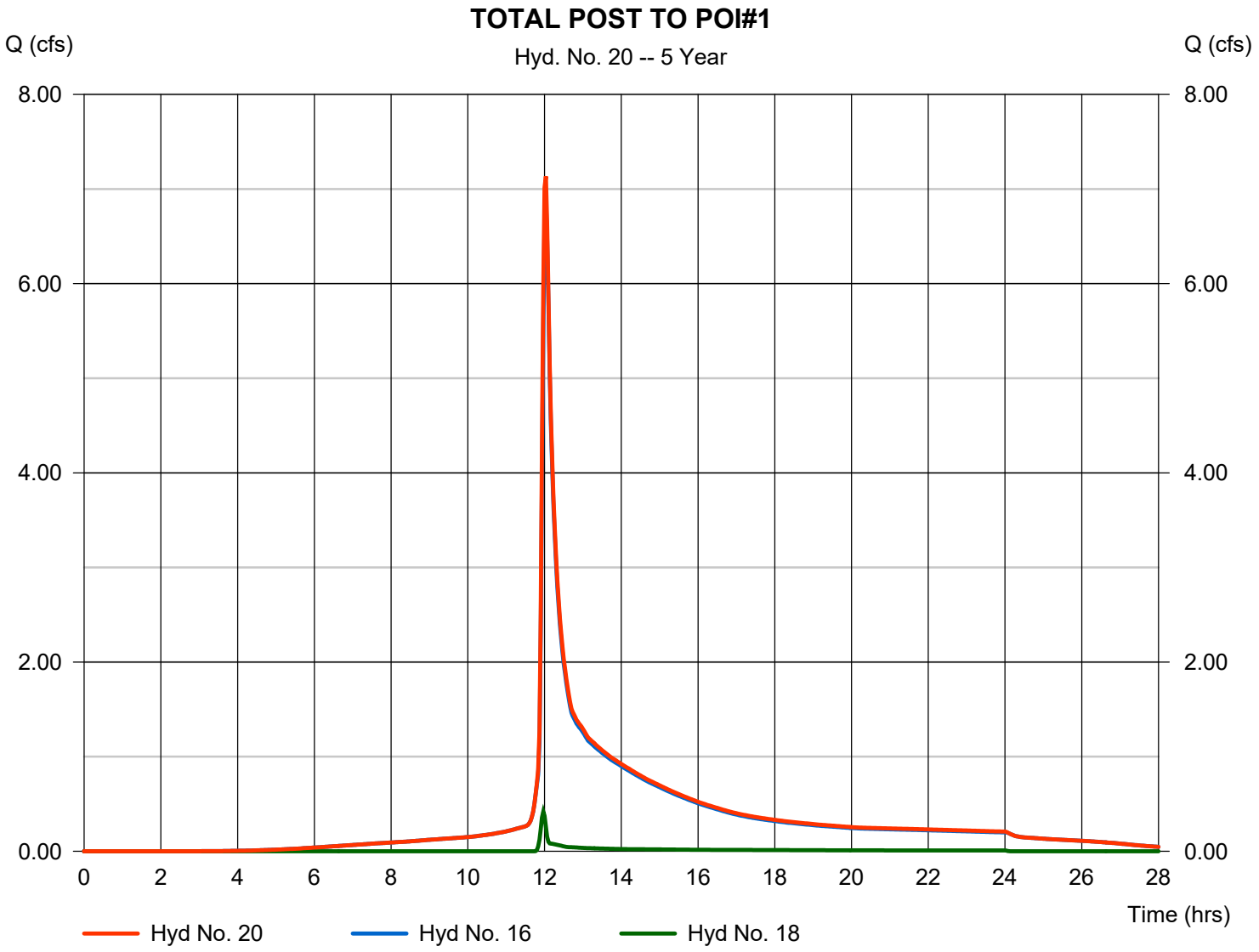


Hydrograph Report

Hyd. No. 20

TOTAL POST TO POI#1

Hydrograph type	= Combine	Peak discharge	= 7.135 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 34,590 cuft
Inflow hyds.	= 16, 18	Contrib. drain. area	= 0.466 ac



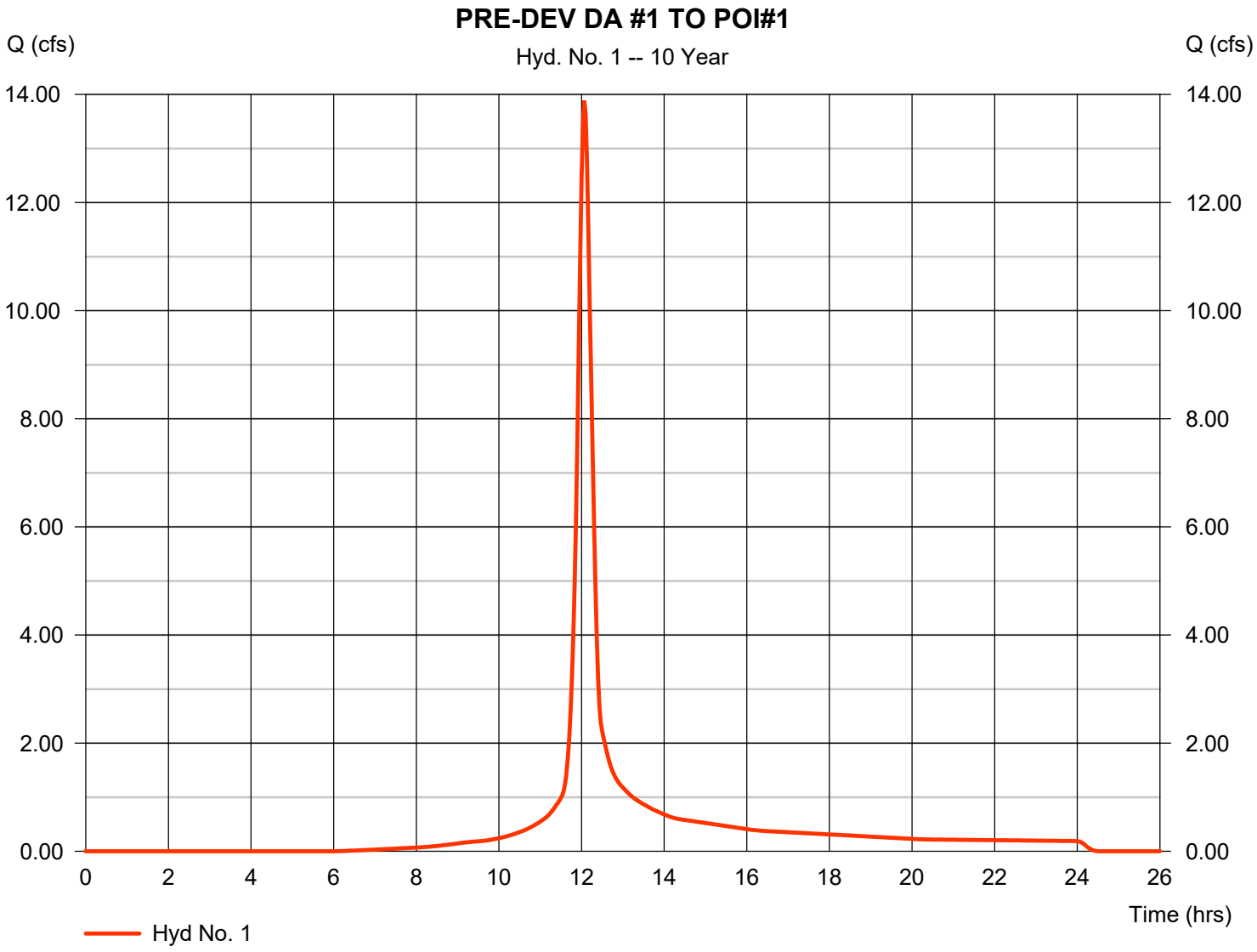
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 1

PRE-DEV DA #1 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	13.89 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	43,653 cuft
Drainage area	=	3.825 ac	Curve number	=	84.3
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	18.50 min
Total precip.	=	4.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



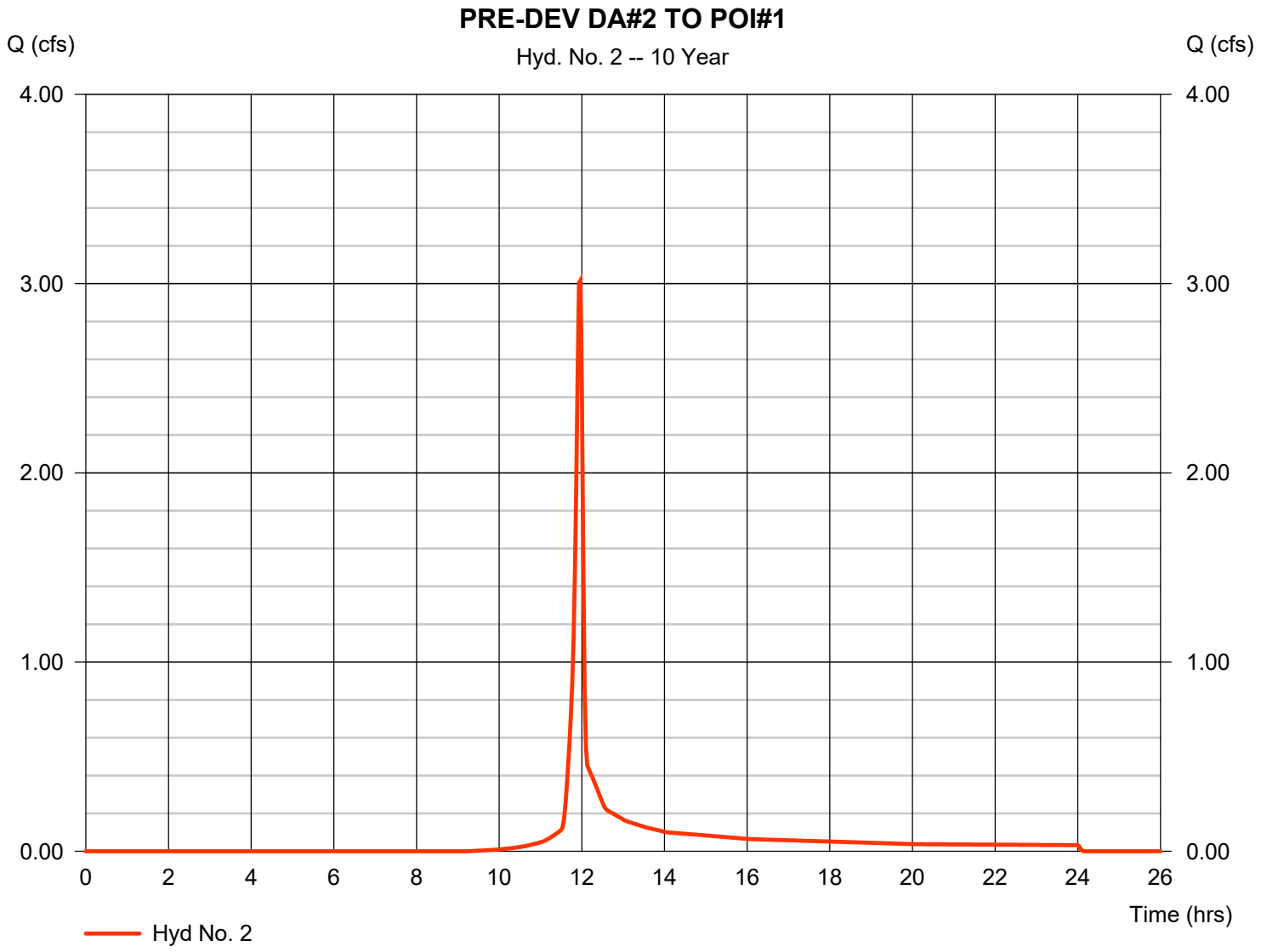
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 2

PRE-DEV DA#2 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.018 cfs
Storm frequency	=	10 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	6,069 cuft
Drainage area	=	0.824 ac	Curve number	=	73.2
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

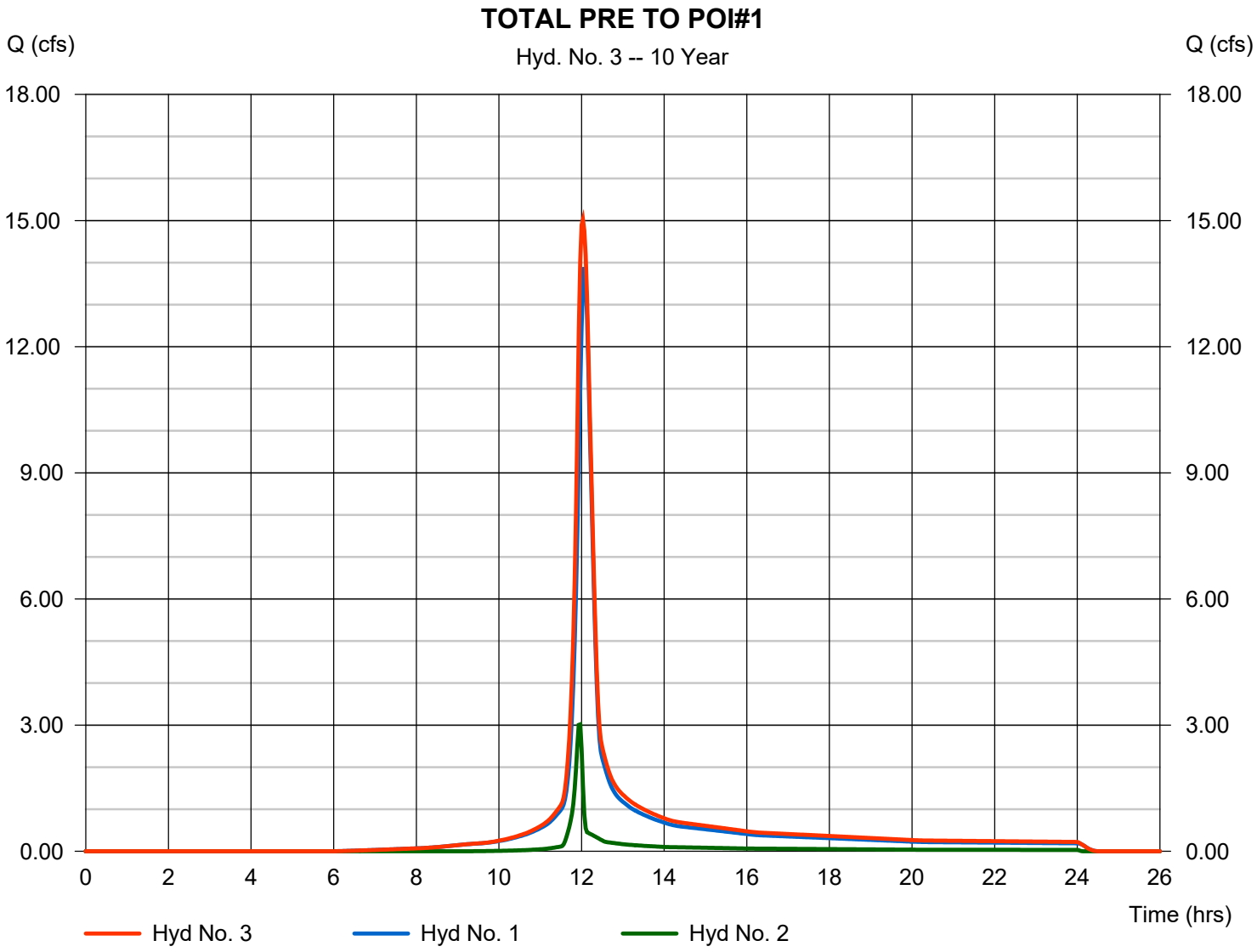


Hydrograph Report

Hyd. No. 3

TOTAL PRE TO POI#1

Hydrograph type	= Combine	Peak discharge	= 15.02 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 49,722 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.649 ac

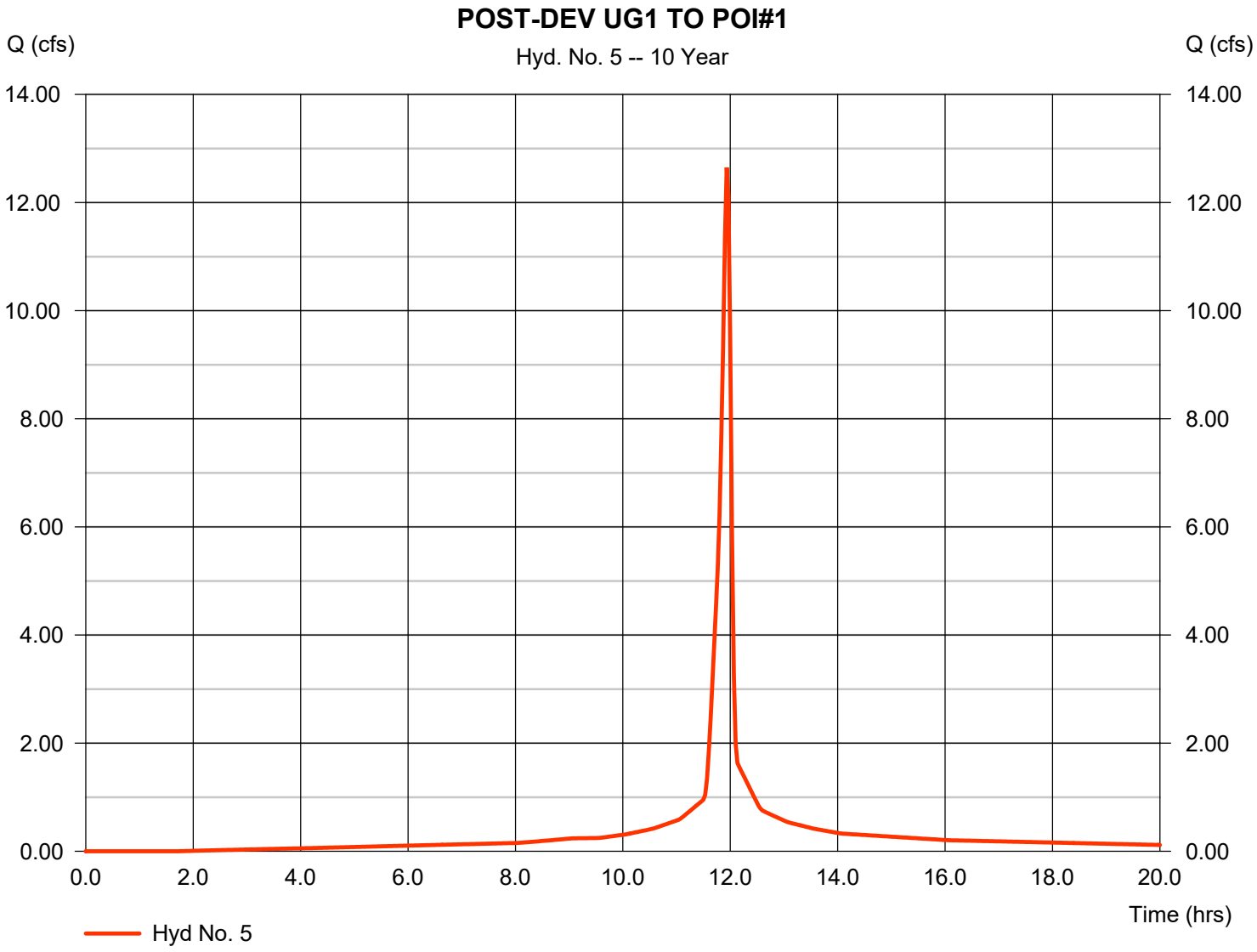


Hydrograph Report

Hyd. No. 5

POST-DEV UG1 TO POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 12.65 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 29,030 cuft
Drainage area	= 1.960 ac	Curve number	= 95.9
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

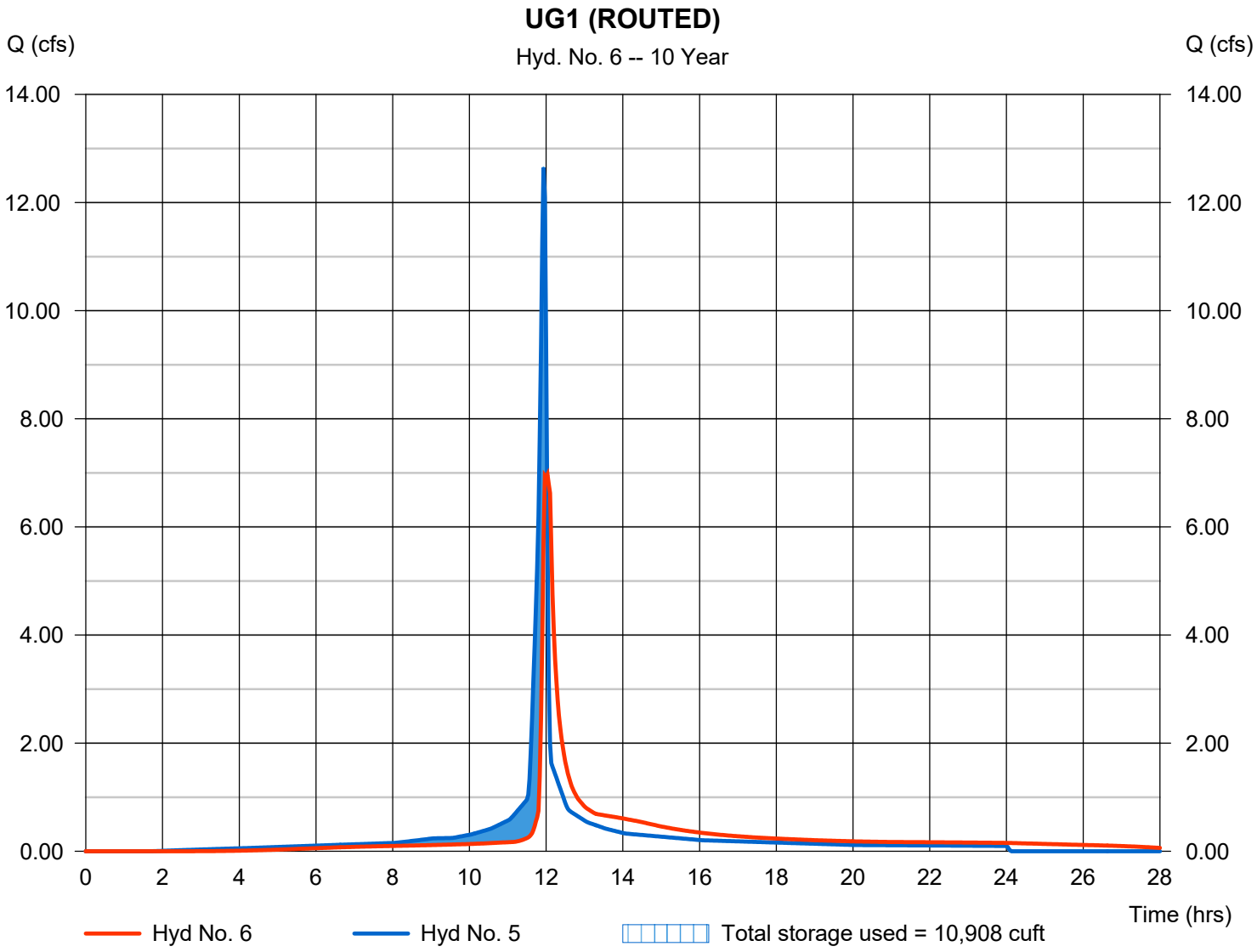
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 6

UG1 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	6.970 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	28,986 cuft
Inflow hyd. No.	=	5 - POST-DEV UG1 TO POI#1	Max. Elevation	=	160.64 ft
Reservoir name	=	UG1	Max. Storage	=	10,908 cuft

Storage Indication method used.



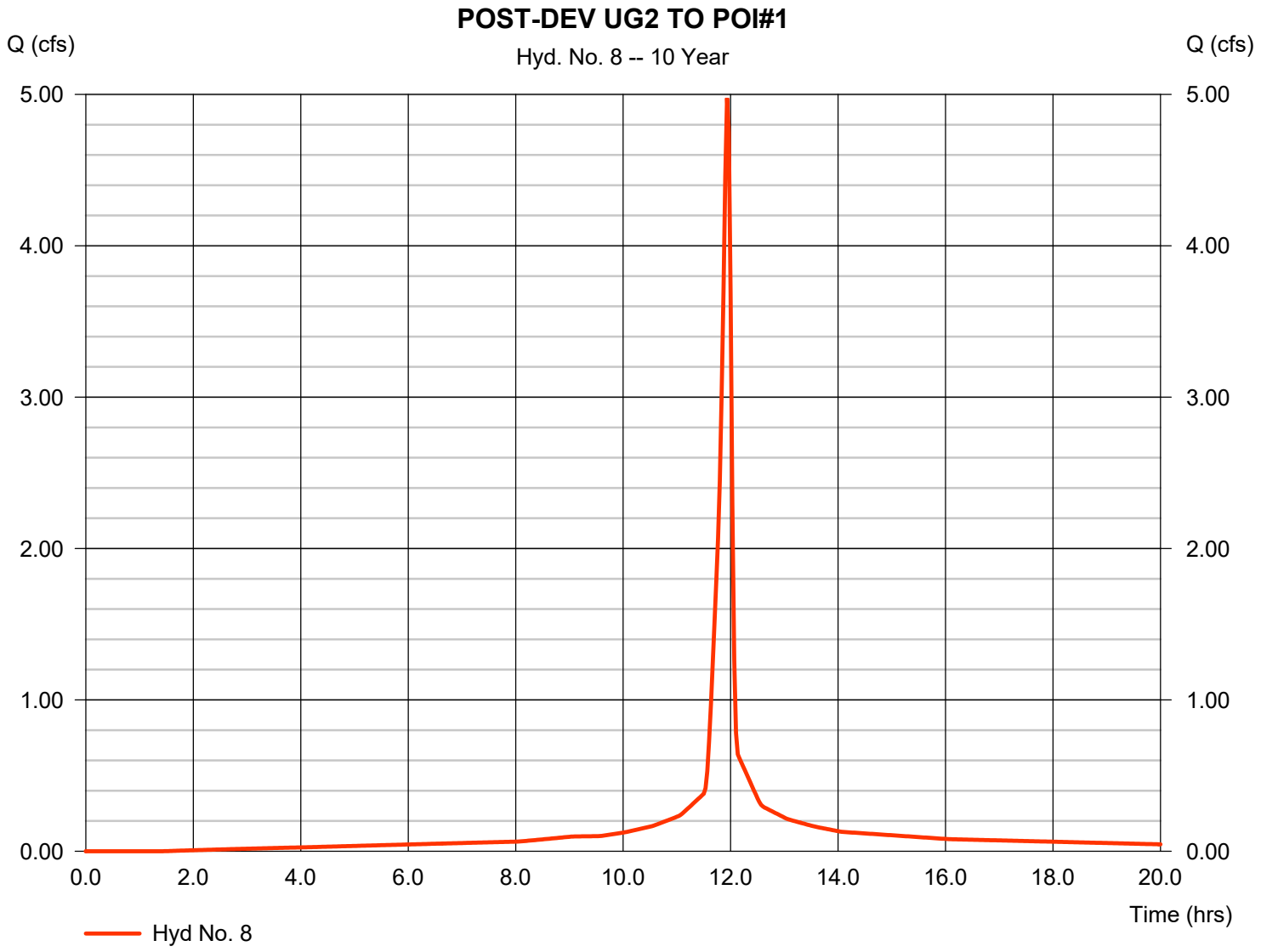
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 8

POST-DEV UG2 TO POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 4.976 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 11,553 cuft
Drainage area	= 0.766 ac	Curve number	= 96.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

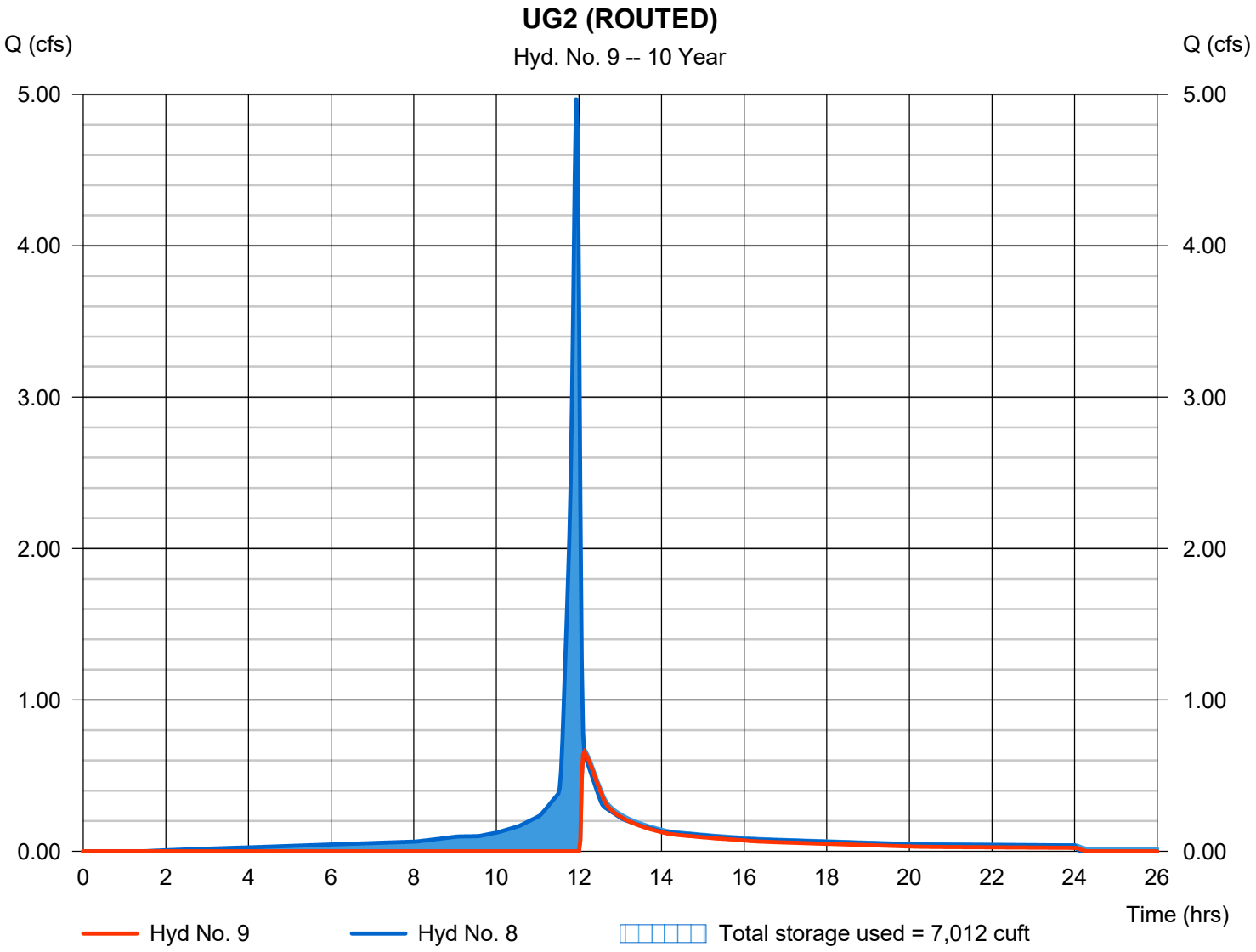
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 9

UG2 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	0.656 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.13 hrs
Time interval	=	2 min	Hyd. volume	=	3,823 cuft
Inflow hyd. No.	=	8 - POST-DEV UG2 TO POI#1	Max. Elevation	=	162.48 ft
Reservoir name	=	UG2	Max. Storage	=	7,012 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



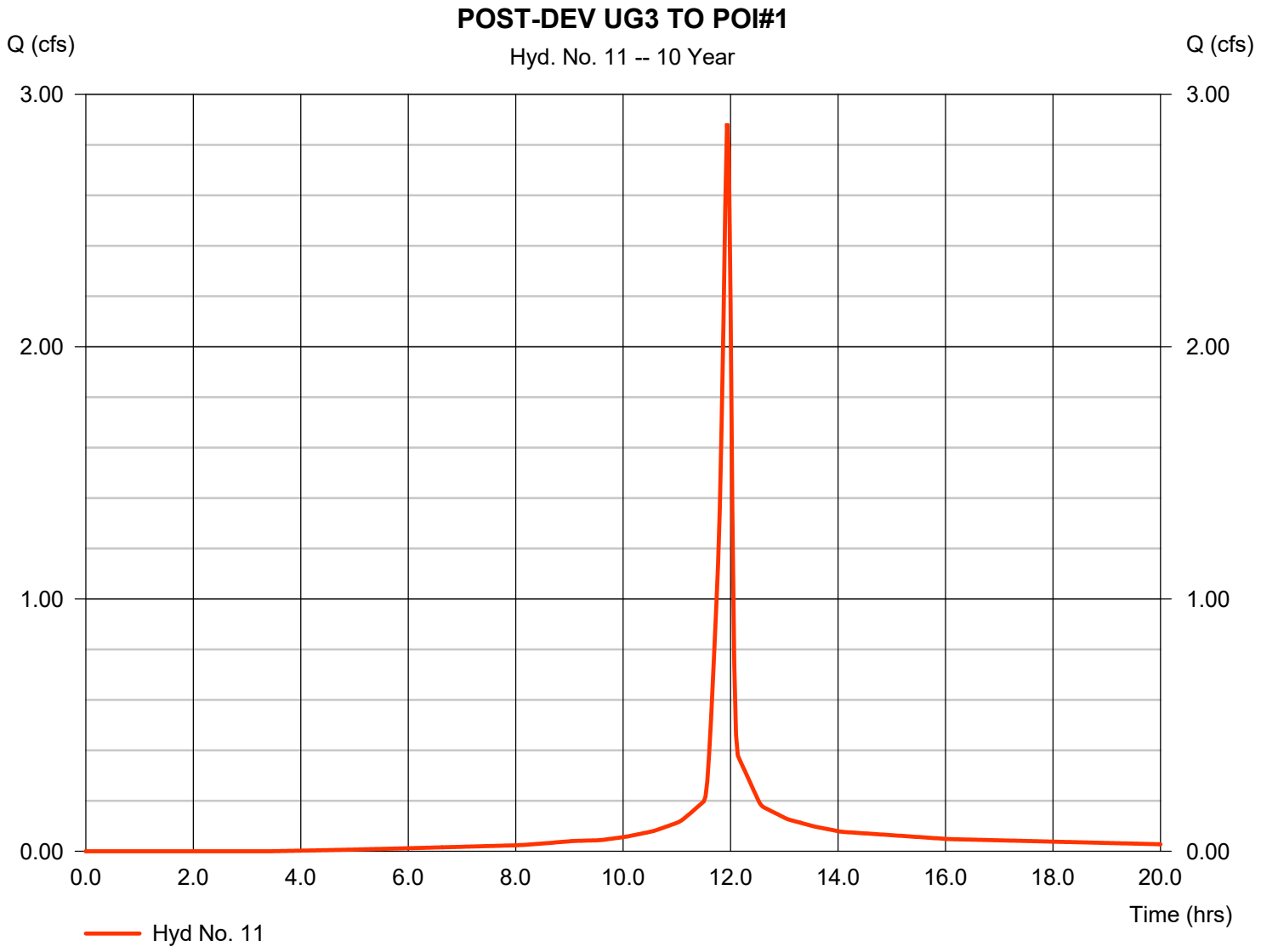
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 11

POST-DEV UG3 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.884 cfs
Storm frequency	=	10 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	6,252 cuft
Drainage area	=	0.476 ac	Curve number	=	91.4
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.83 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

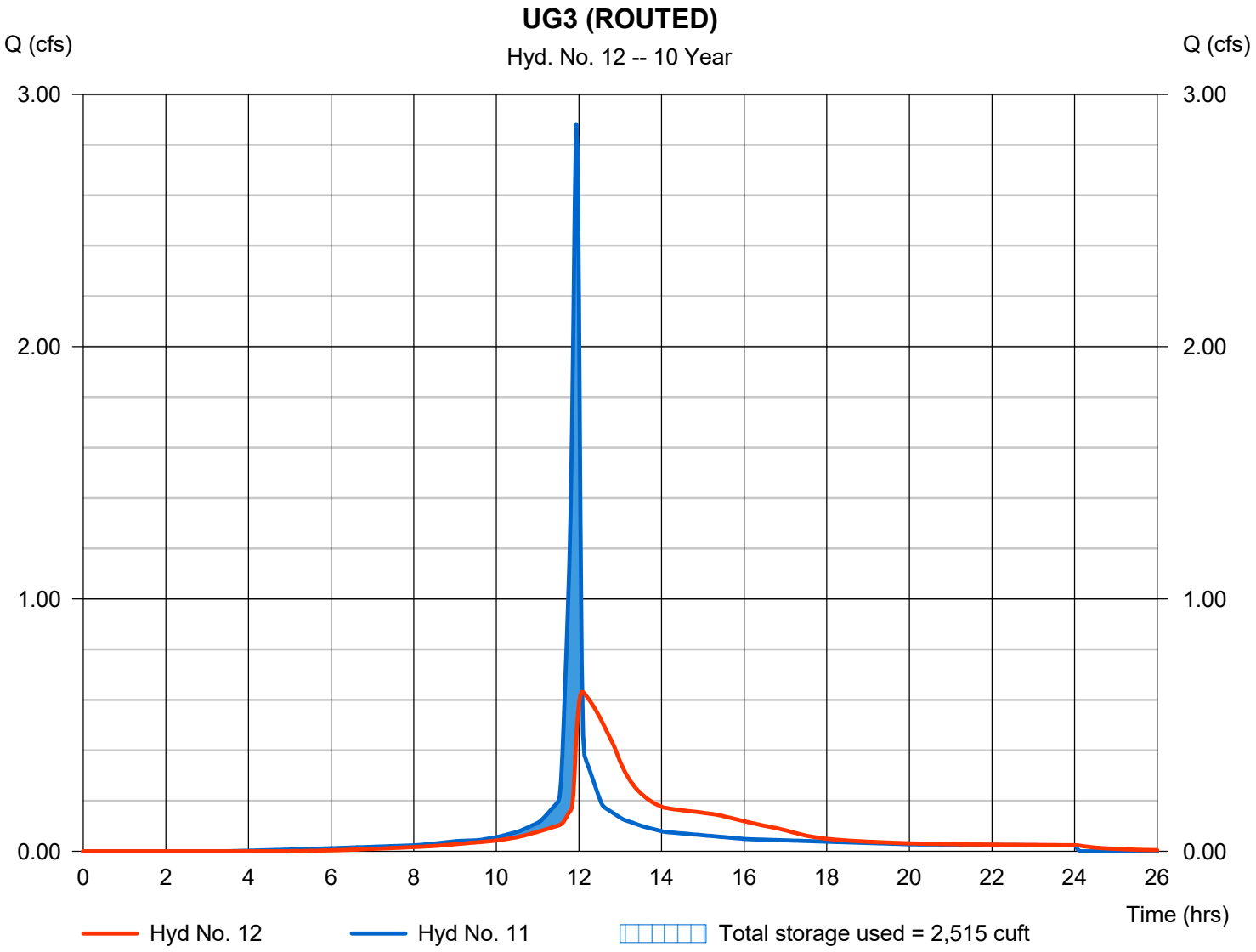
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 12

UG3 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	0.631 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	6,232 cuft
Inflow hyd. No.	=	11 - POST-DEV UG3 TO POI #1	Max. Elevation	=	161.55 ft
Reservoir name	=	UG3	Max. Storage	=	2,515 cuft

Storage Indication method used.



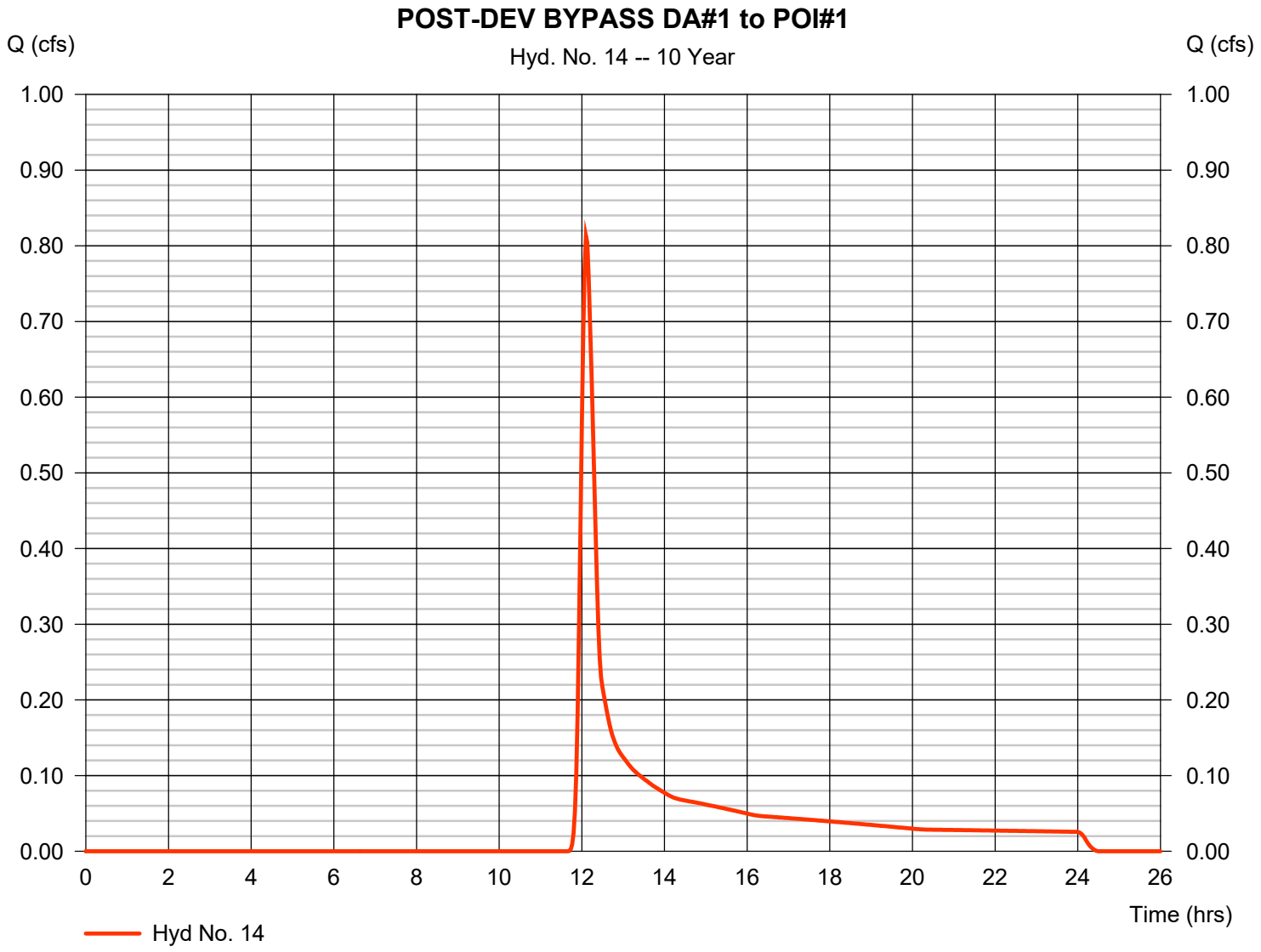
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 14

POST-DEV BYPASS DA#1 to POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 0.813 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 3,207 cuft
Drainage area	= 0.979 ac	Curve number	= 55.1
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.50 min
Total precip.	= 4.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

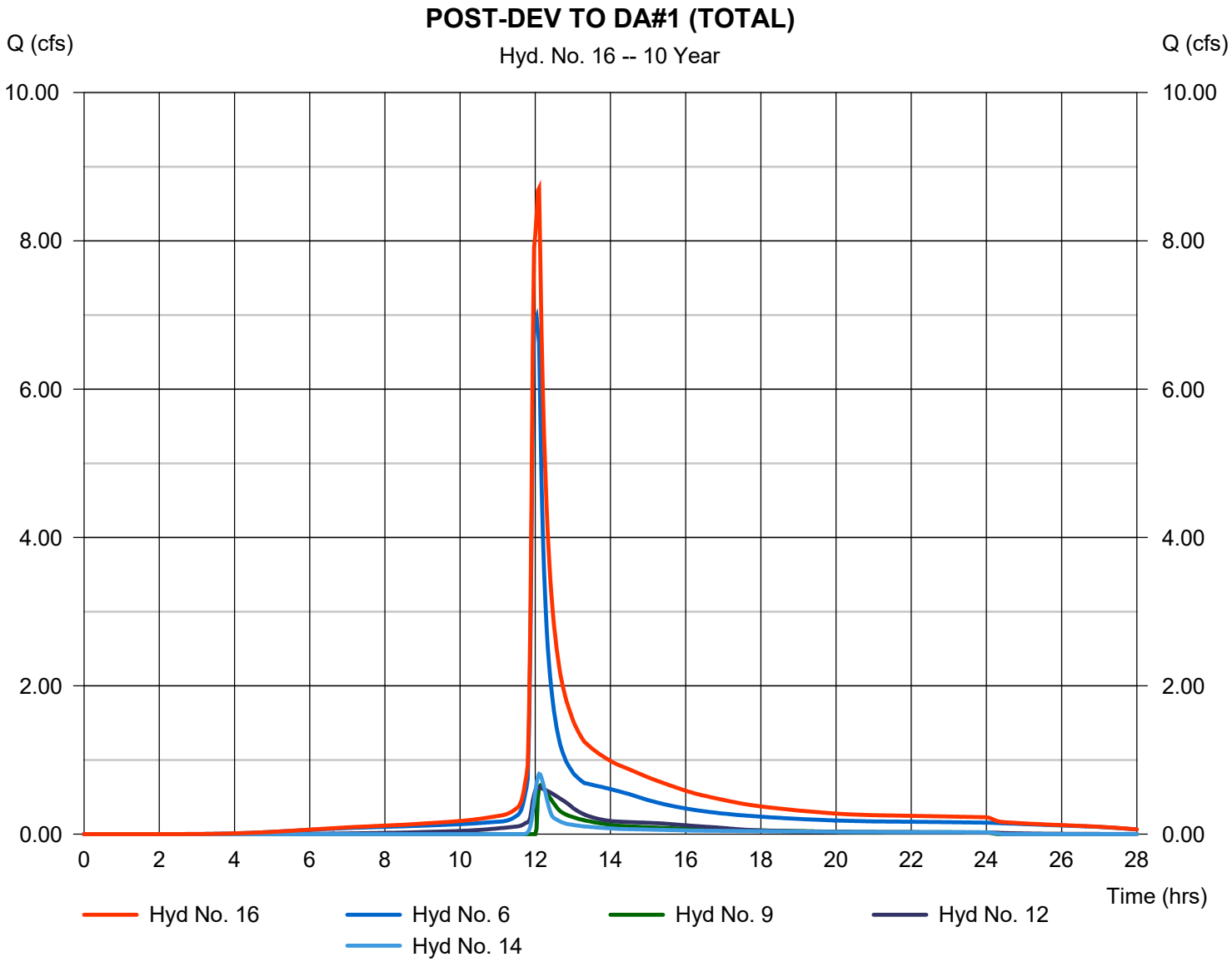


Hydrograph Report

Hyd. No. 16

POST-DEV TO DA#1 (TOTAL)

Hydrograph type	= Combine	Peak discharge	= 8.709 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 42,248 cuft
Inflow hyds.	= 6, 9, 12, 14	Contrib. drain. area	= 0.979 ac



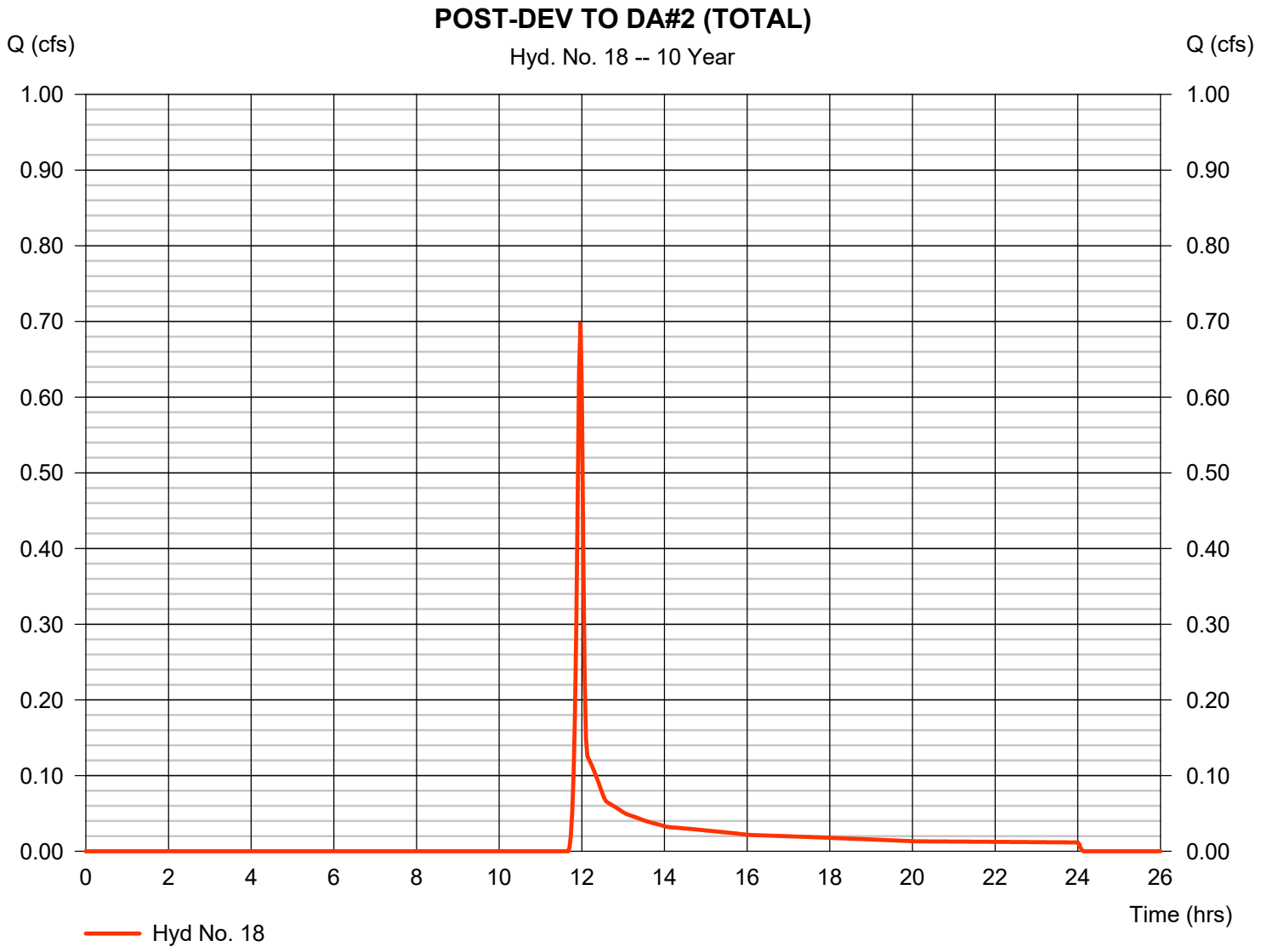
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 18

POST-DEV TO DA#2 (TOTAL)

Hydrograph type	= SCS Runoff	Peak discharge	= 0.699 cfs
Storm frequency	= 10 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 1,496 cuft
Drainage area	= 0.466 ac	Curve number	= 55.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.83 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

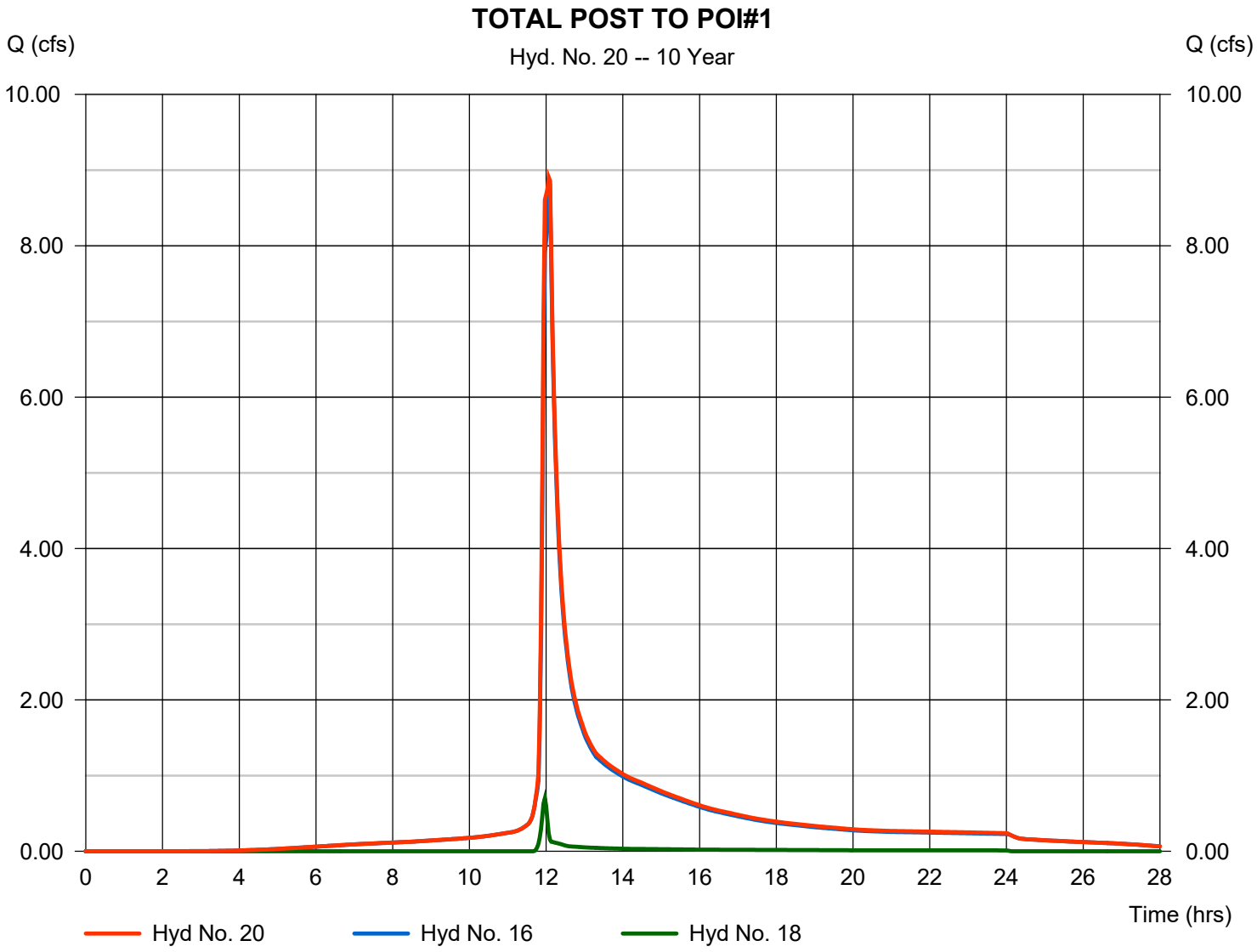


Hydrograph Report

Hyd. No. 20

TOTAL POST TO POI#1

Hydrograph type	= Combine	Peak discharge	= 8.906 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 43,743 cuft
Inflow hyds.	= 16, 18	Contrib. drain. area	= 0.466 ac



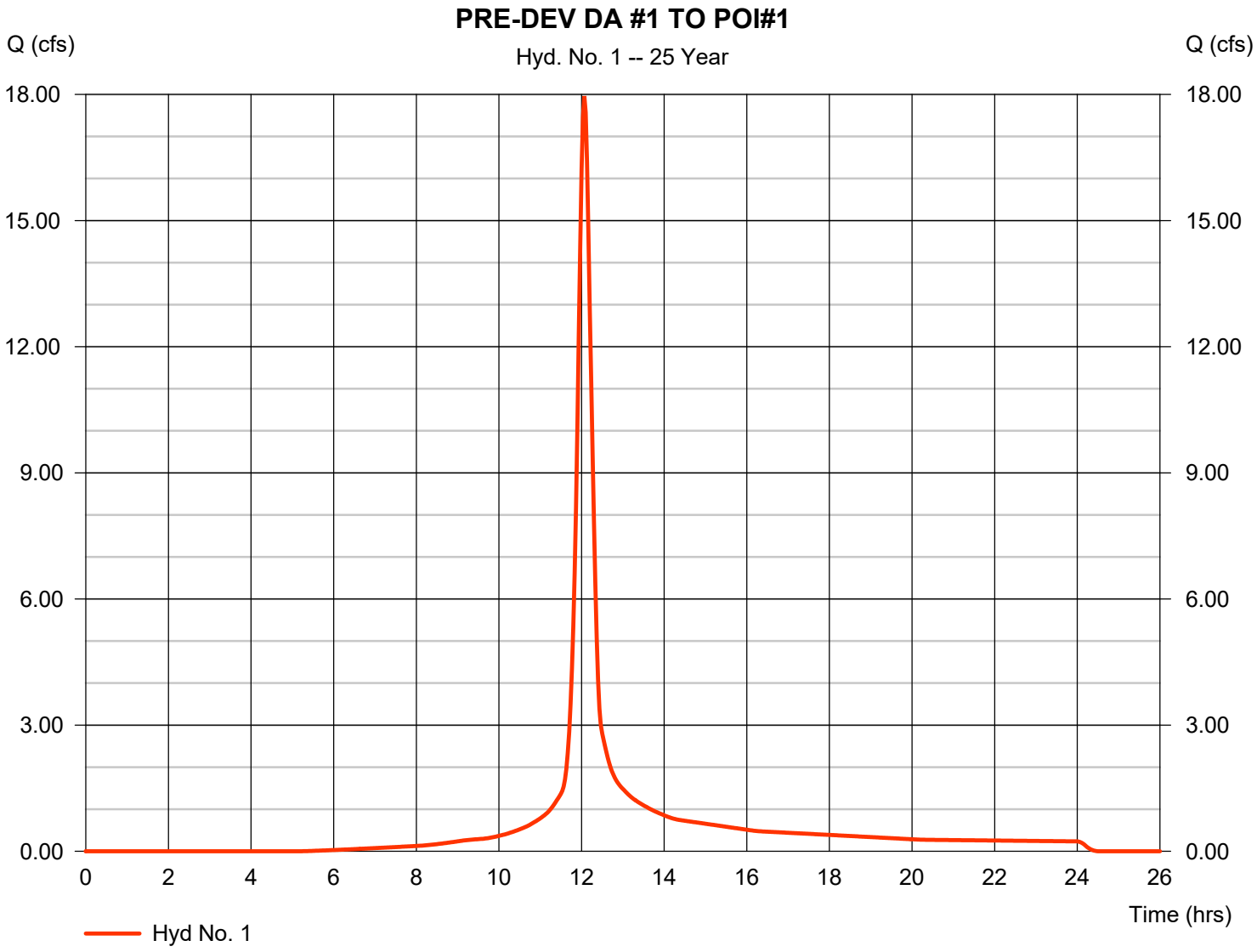
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 1

PRE-DEV DA #1 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	17.96 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	56,886 cuft
Drainage area	=	3.825 ac	Curve number	=	84.3
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	18.50 min
Total precip.	=	5.86 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

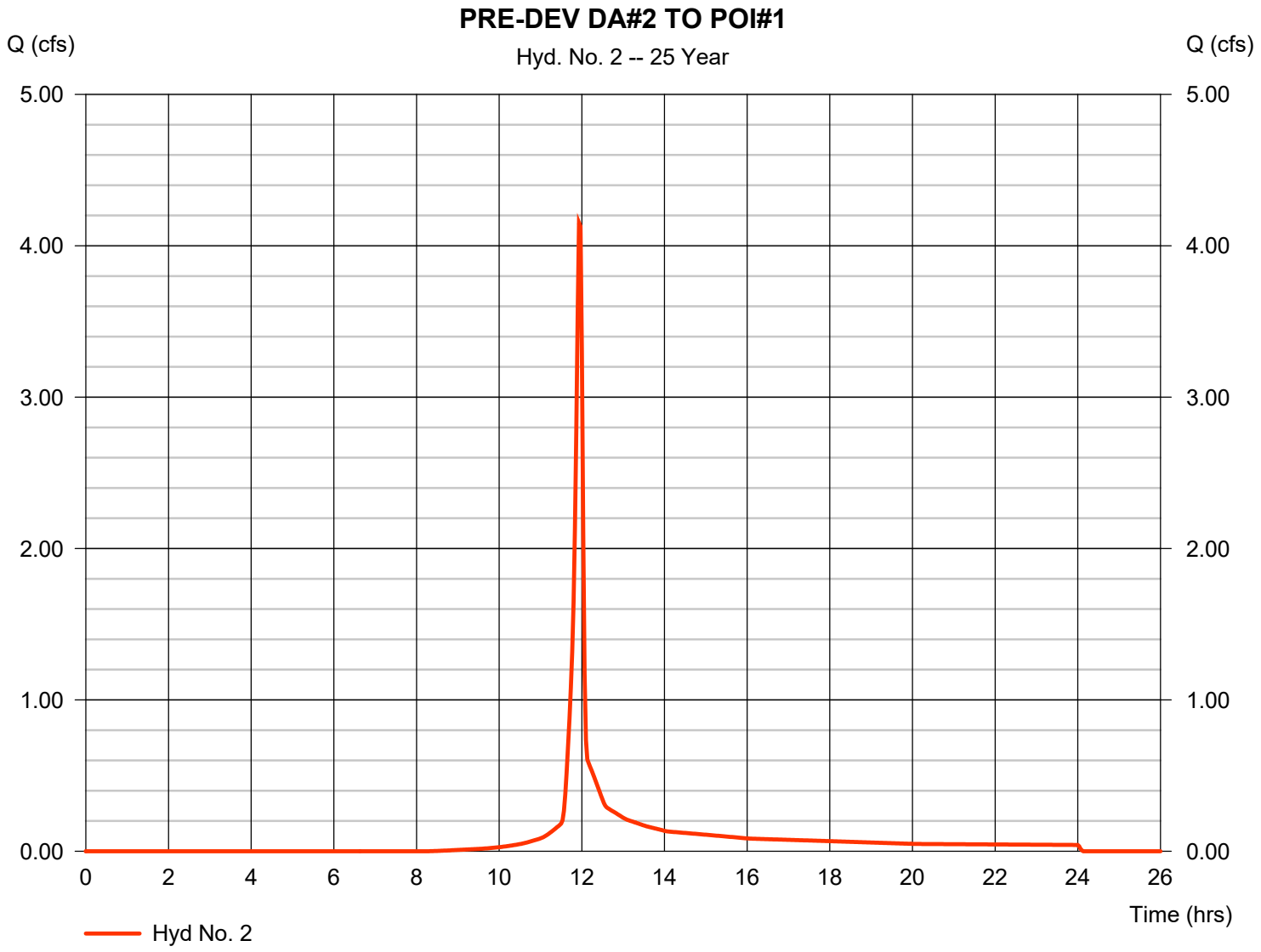


Hydrograph Report

Hyd. No. 2

PRE-DEV DA#2 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.152 cfs
Storm frequency	=	25 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	8,389 cuft
Drainage area	=	0.824 ac	Curve number	=	73.2
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.86 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

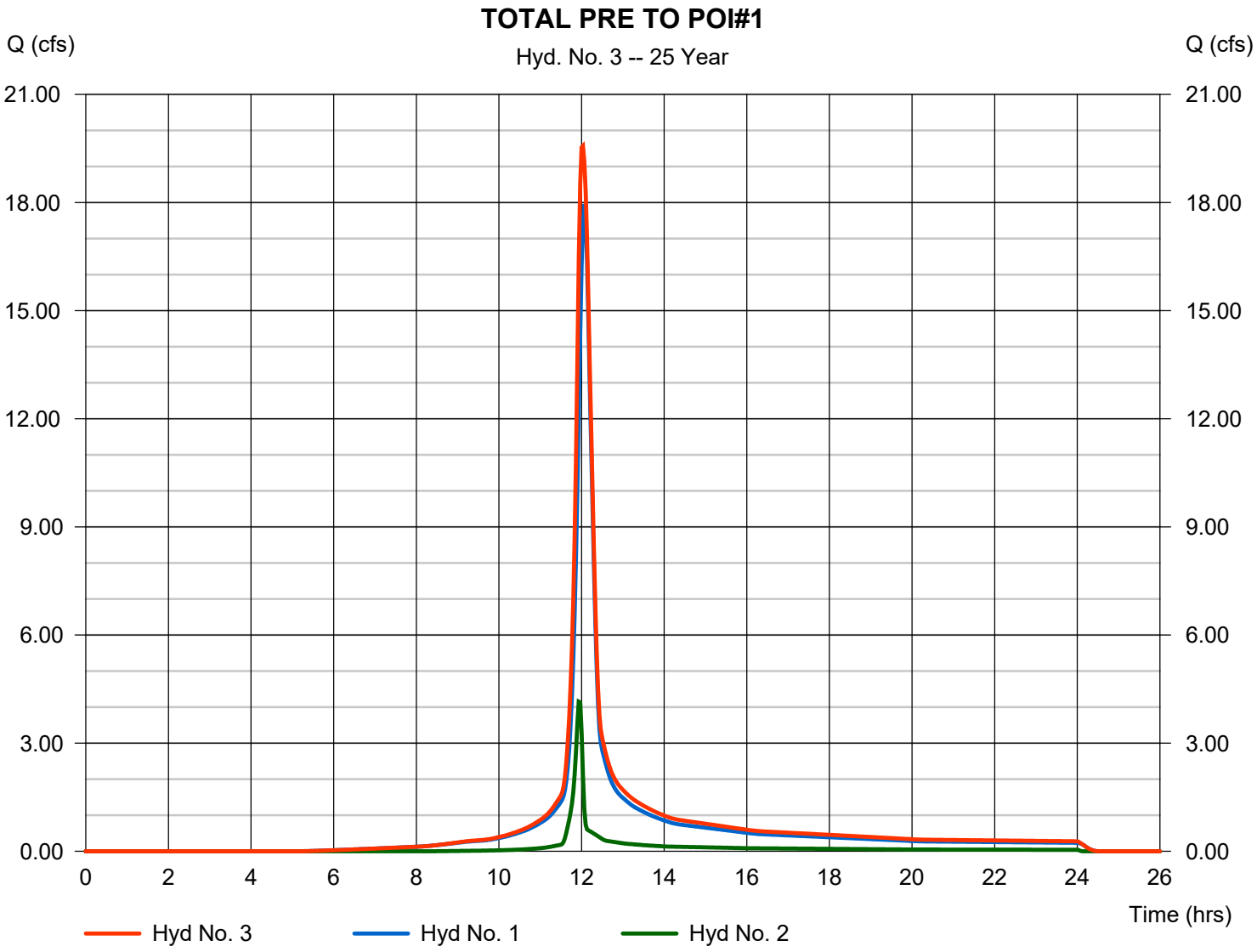


Hydrograph Report

Hyd. No. 3

TOTAL PRE TO POI#1

Hydrograph type	= Combine	Peak discharge	= 19.57 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 65,276 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.649 ac



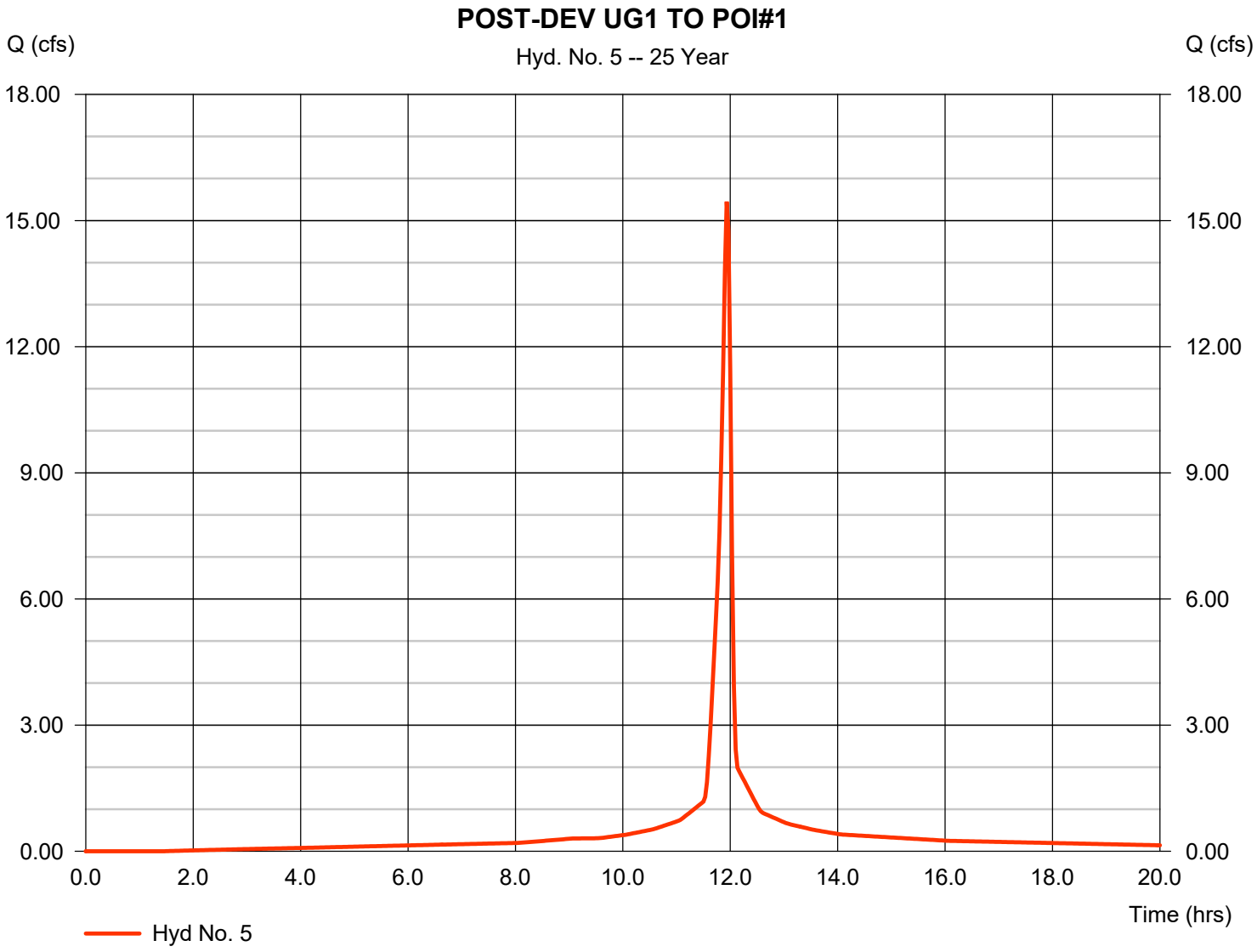
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 5

POST-DEV UG1 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	15.45 cfs
Storm frequency	=	25 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	35,862 cuft
Drainage area	=	1.960 ac	Curve number	=	95.9
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.86 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

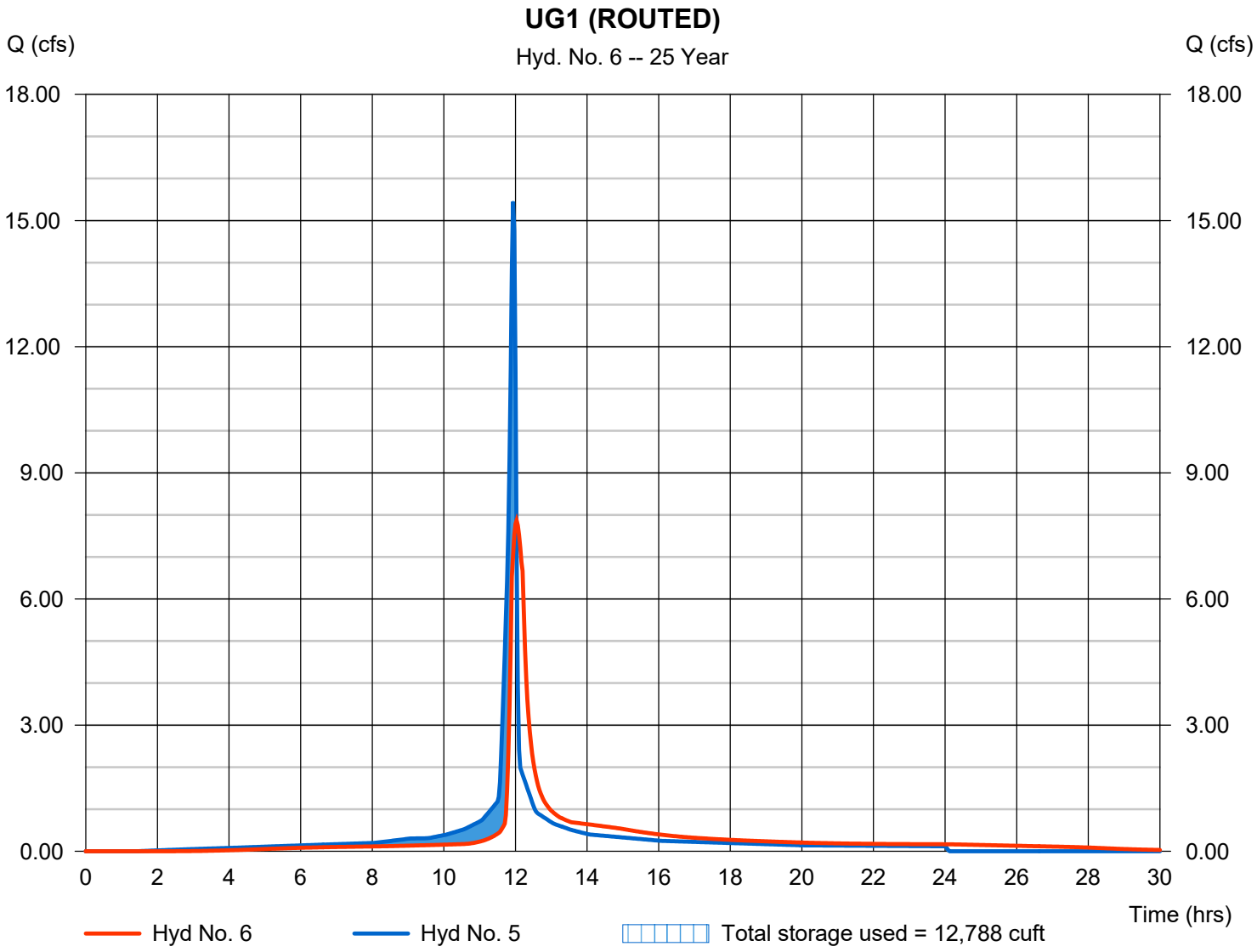
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 6

UG1 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	7.866 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	35,817 cuft
Inflow hyd. No.	=	5 - POST-DEV UG1 TO POI#1	Max. Elevation	=	161.06 ft
Reservoir name	=	UG1	Max. Storage	=	12,788 cuft

Storage Indication method used.

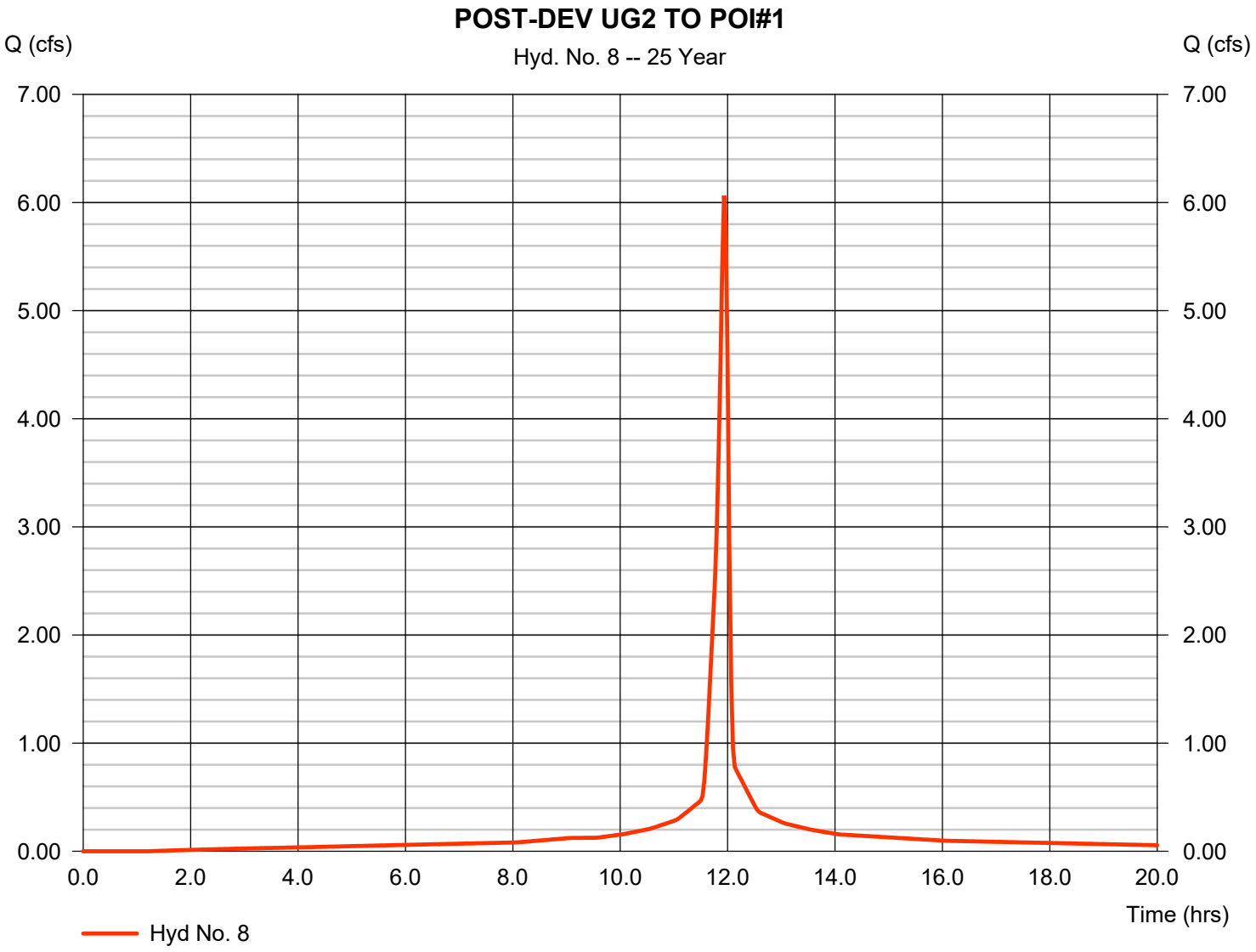


Hydrograph Report

Hyd. No. 8

POST-DEV UG2 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.066 cfs
Storm frequency	=	25 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	14,227 cuft
Drainage area	=	0.766 ac	Curve number	=	96.6
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.86 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

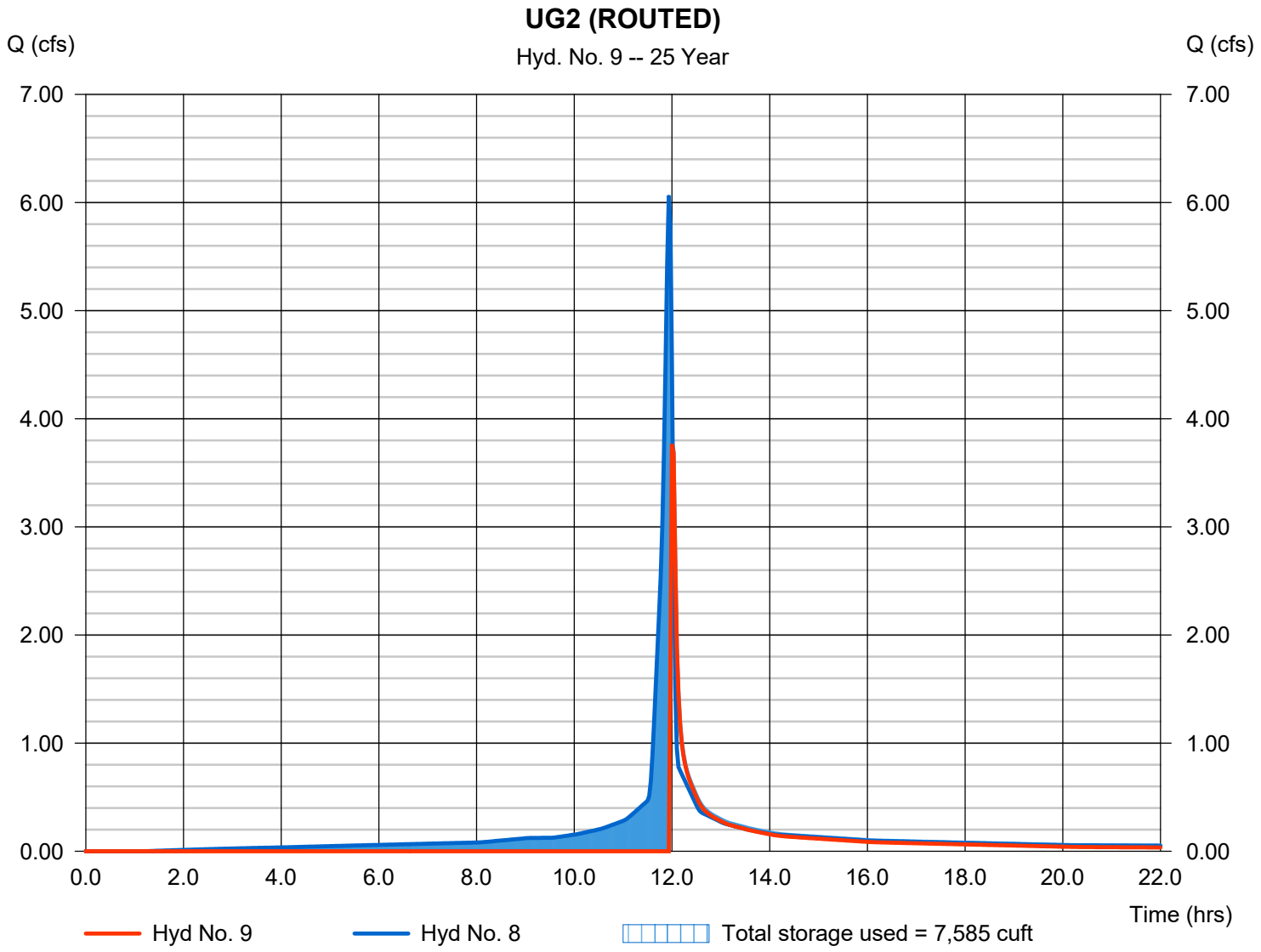
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 9

UG2 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	3.766 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	6,468 cuft
Inflow hyd. No.	=	8 - POST-DEV UG2 TO POI#1	Max. Elevation	=	162.78 ft
Reservoir name	=	UG2	Max. Storage	=	7,585 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



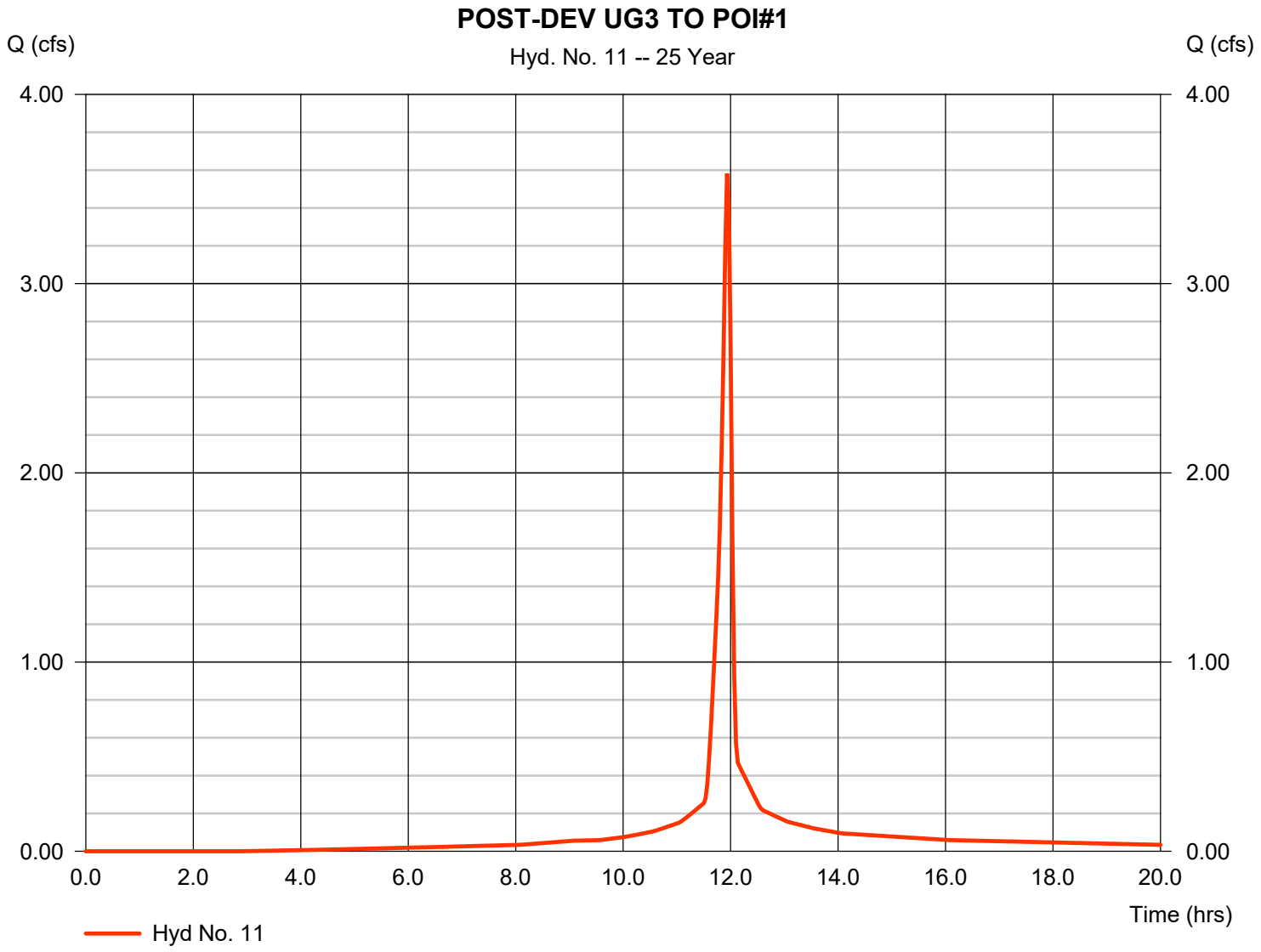
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 11

POST-DEV UG3 TO POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 3.581 cfs
Storm frequency	= 25 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 7,880 cuft
Drainage area	= 0.476 ac	Curve number	= 91.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 5.86 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

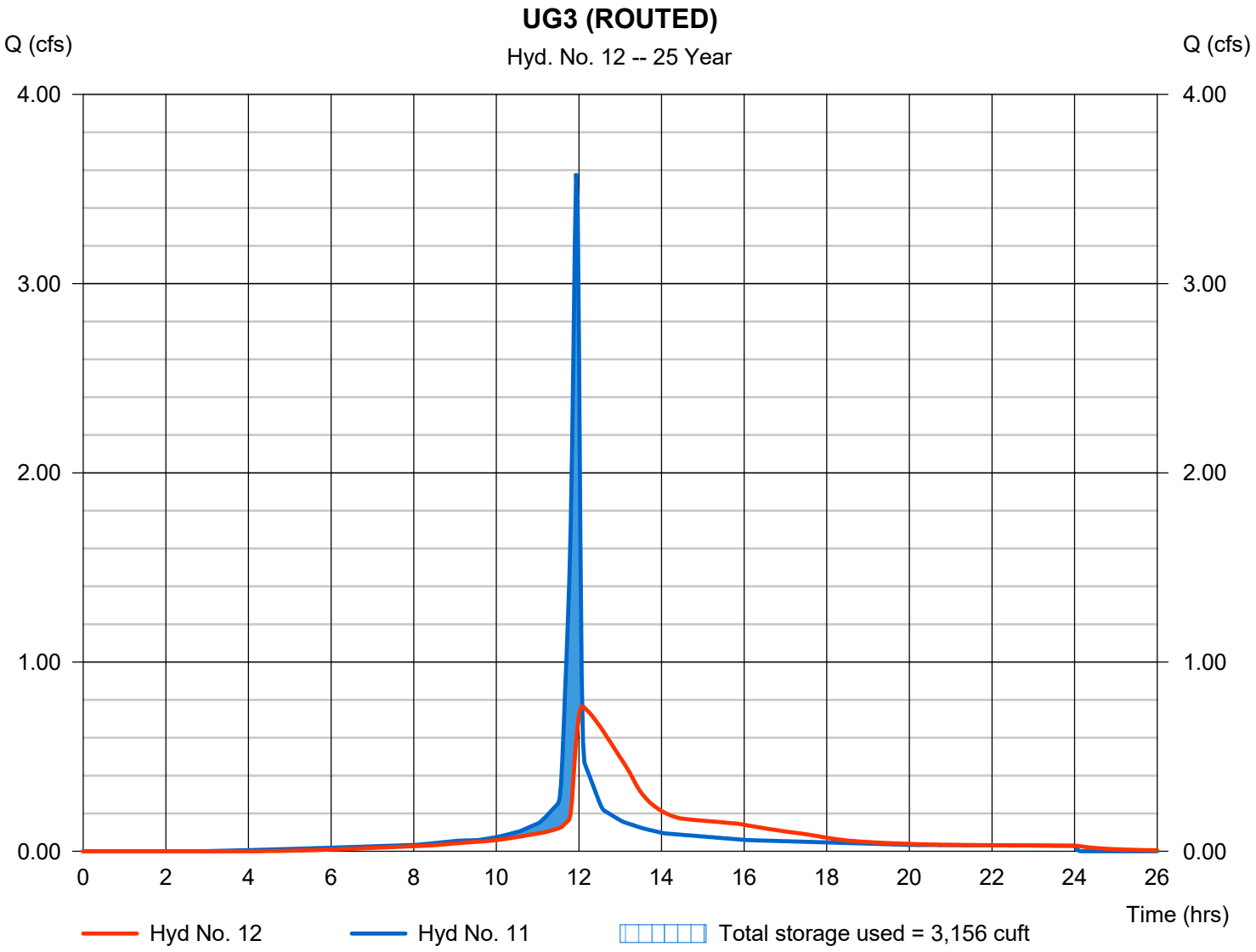
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 12

UG3 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	0.765 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	7,861 cuft
Inflow hyd. No.	=	11 - POST-DEV UG3 TO POI #1	Max. Elevation	=	161.82 ft
Reservoir name	=	UG3	Max. Storage	=	3,156 cuft

Storage Indication method used.



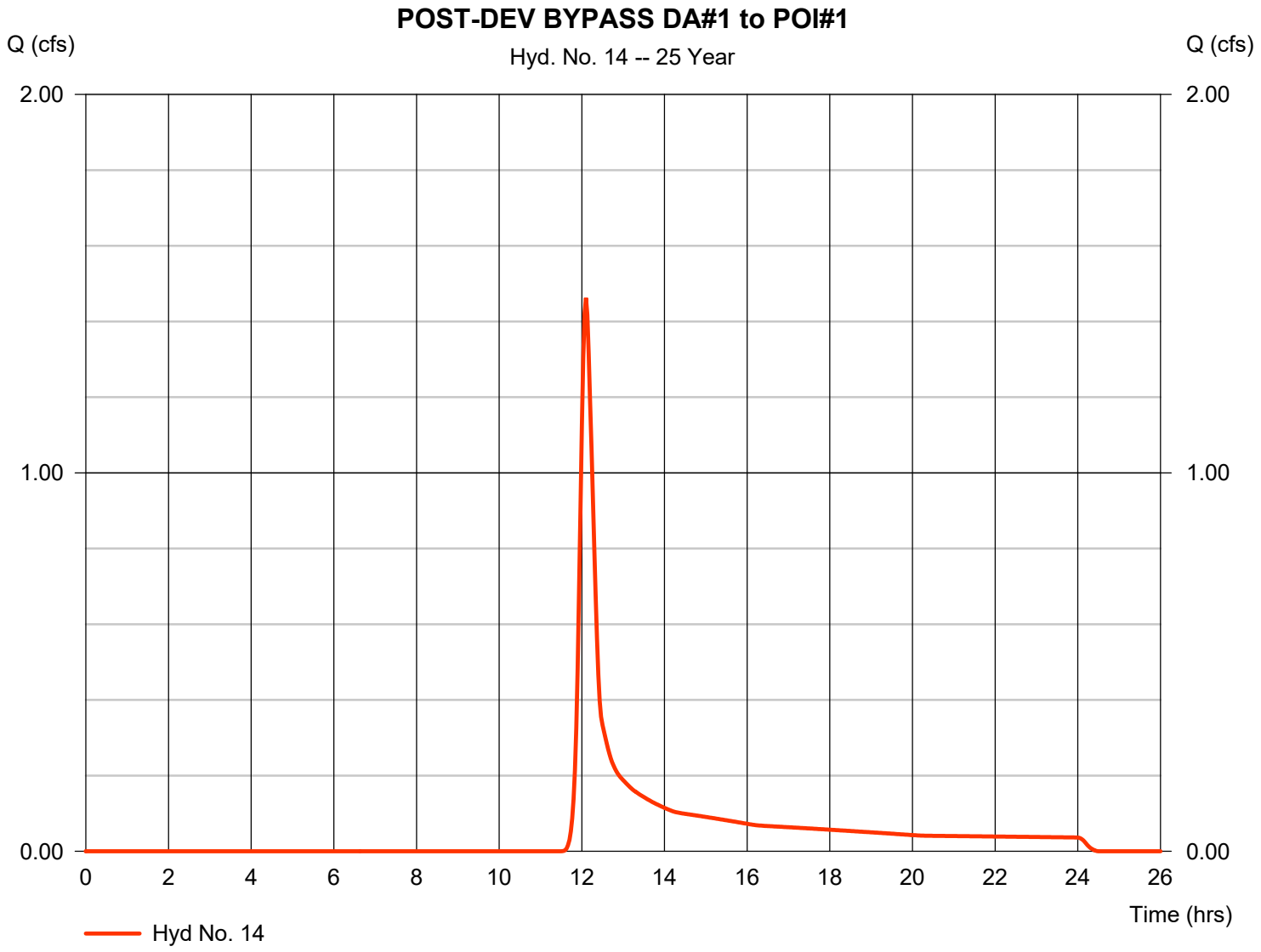
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 14

POST-DEV BYPASS DA#1 to POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 1.462 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 5,137 cuft
Drainage area	= 0.979 ac	Curve number	= 55.1
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.50 min
Total precip.	= 5.86 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

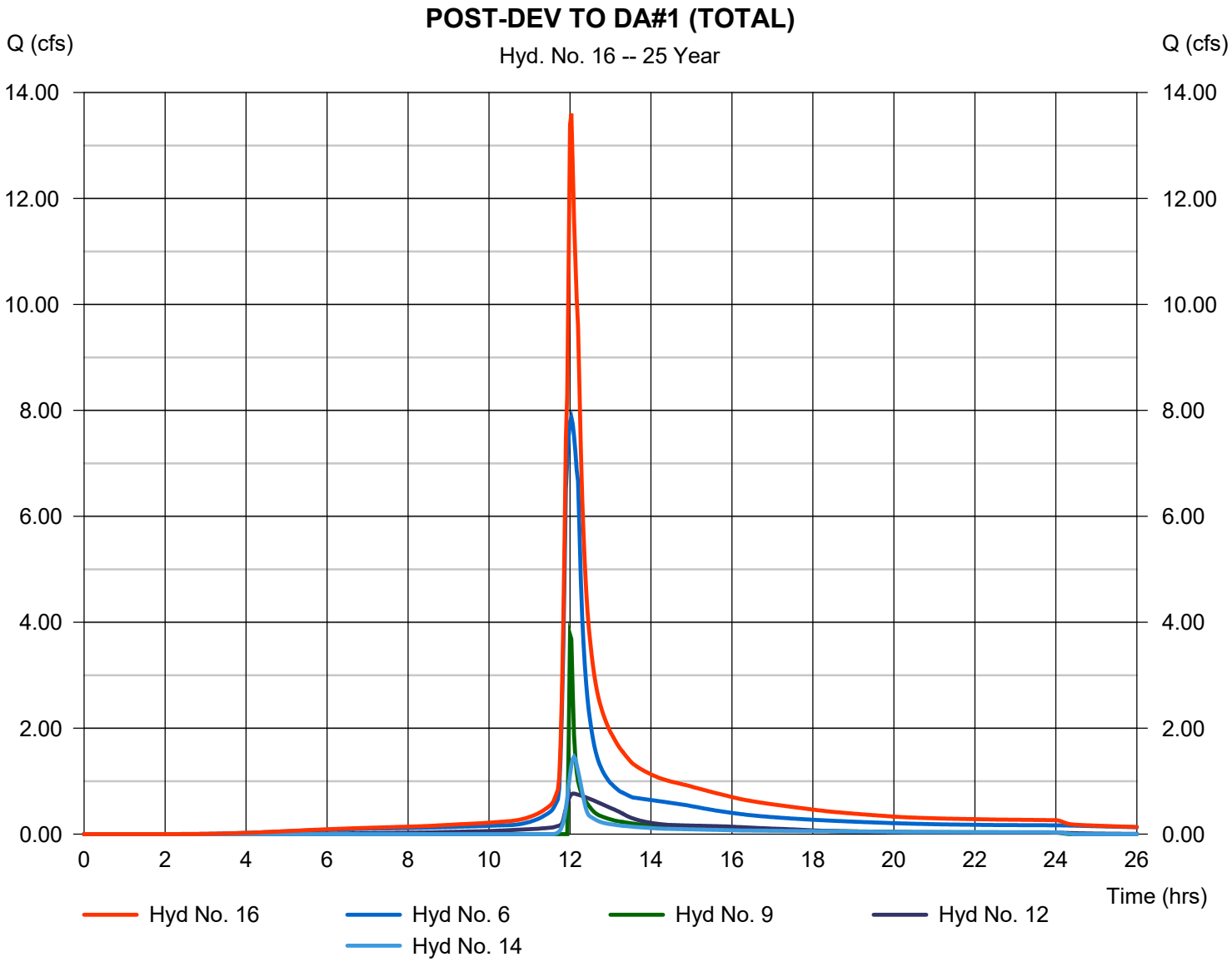


Hydrograph Report

Hyd. No. 16

POST-DEV TO DA#1 (TOTAL)

Hydrograph type	= Combine	Peak discharge	= 13.60 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 55,283 cuft
Inflow hyds.	= 6, 9, 12, 14	Contrib. drain. area	= 0.979 ac



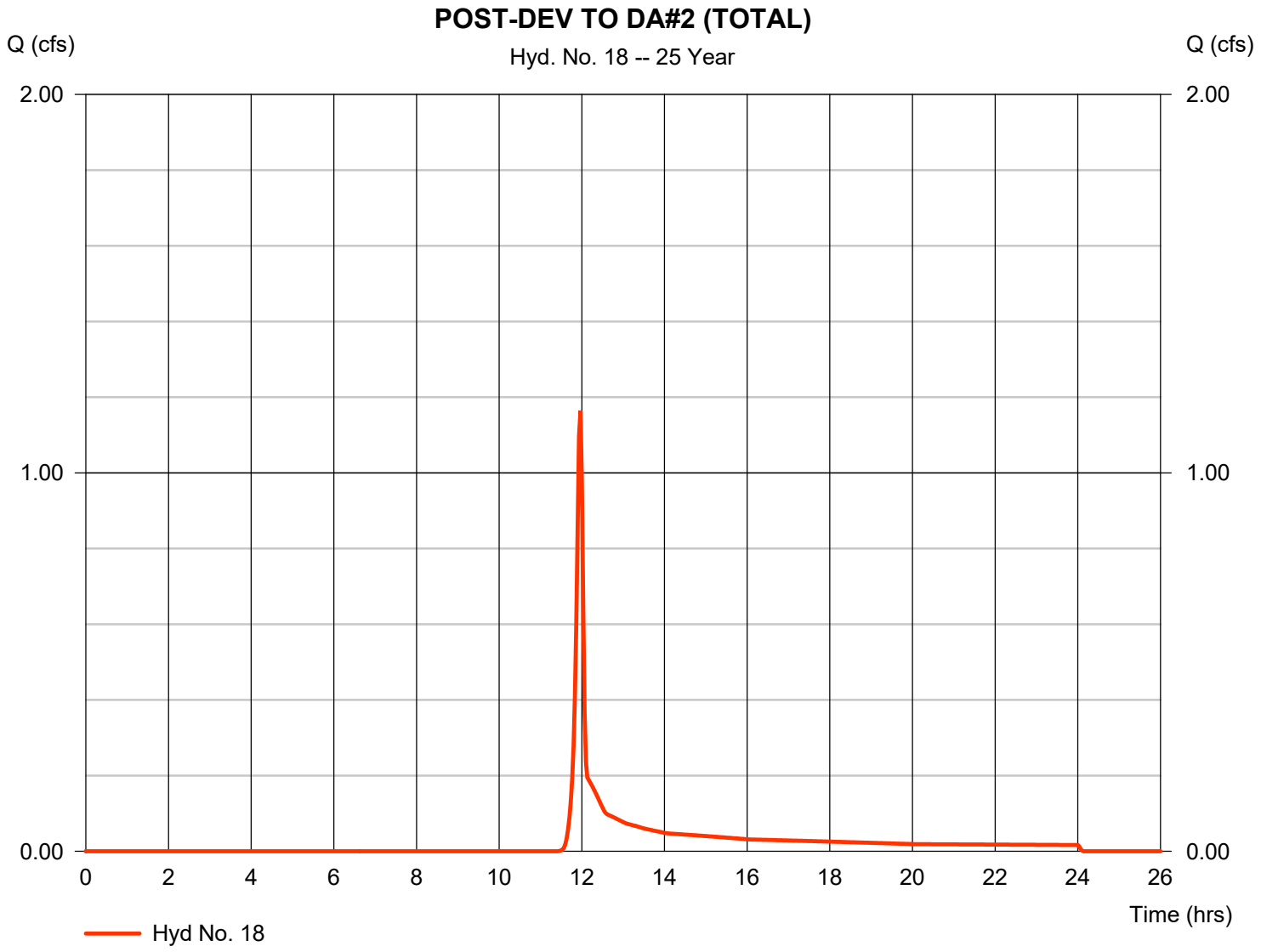
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 18

POST-DEV TO DA#2 (TOTAL)

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.165 cfs
Storm frequency	=	25 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	2,377 cuft
Drainage area	=	0.466 ac	Curve number	=	55.8
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.86 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

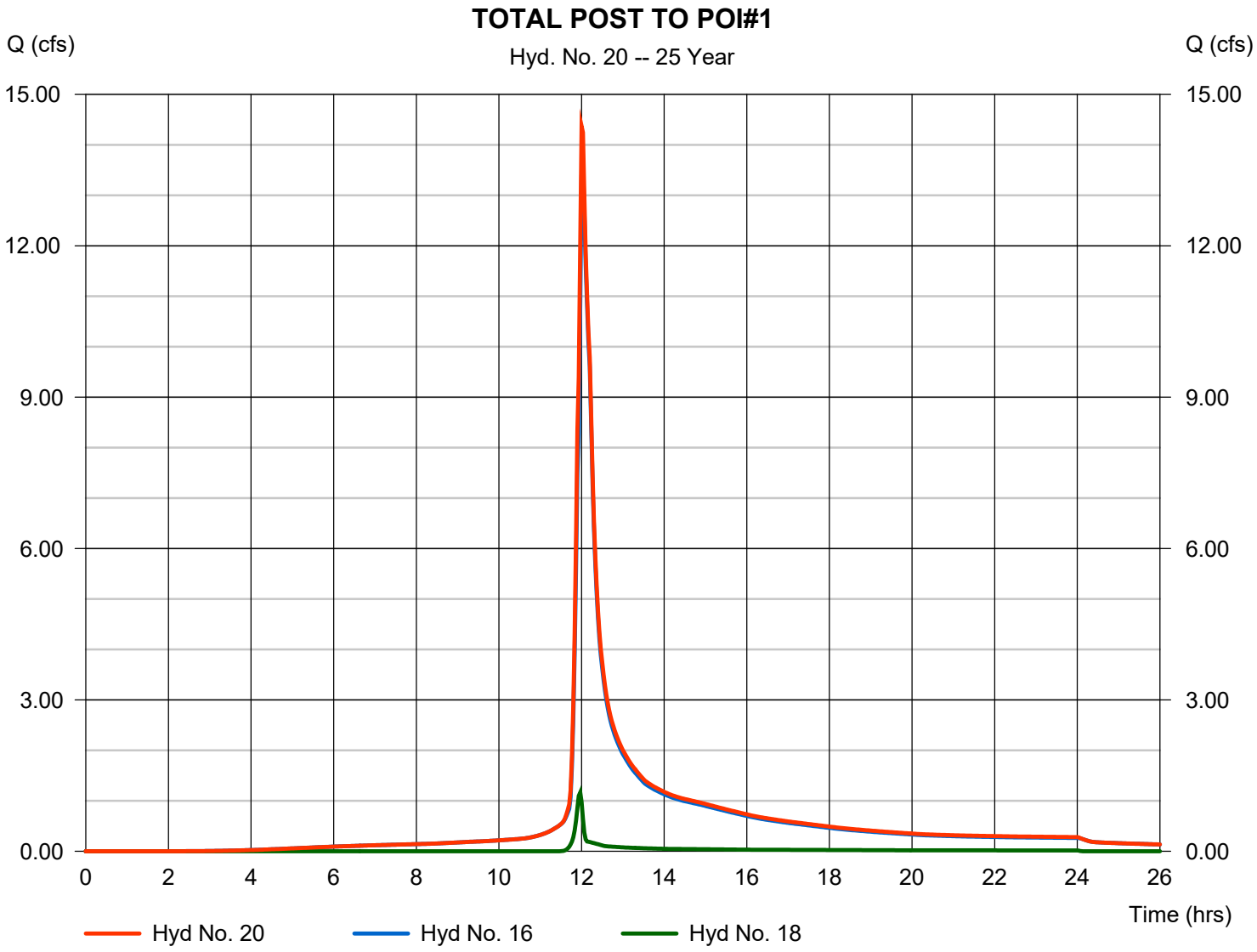


Hydrograph Report

Hyd. No. 20

TOTAL POST TO POI#1

Hydrograph type	= Combine	Peak discharge	= 14.37 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 57,660 cuft
Inflow hyds.	= 16, 18	Contrib. drain. area	= 0.466 ac



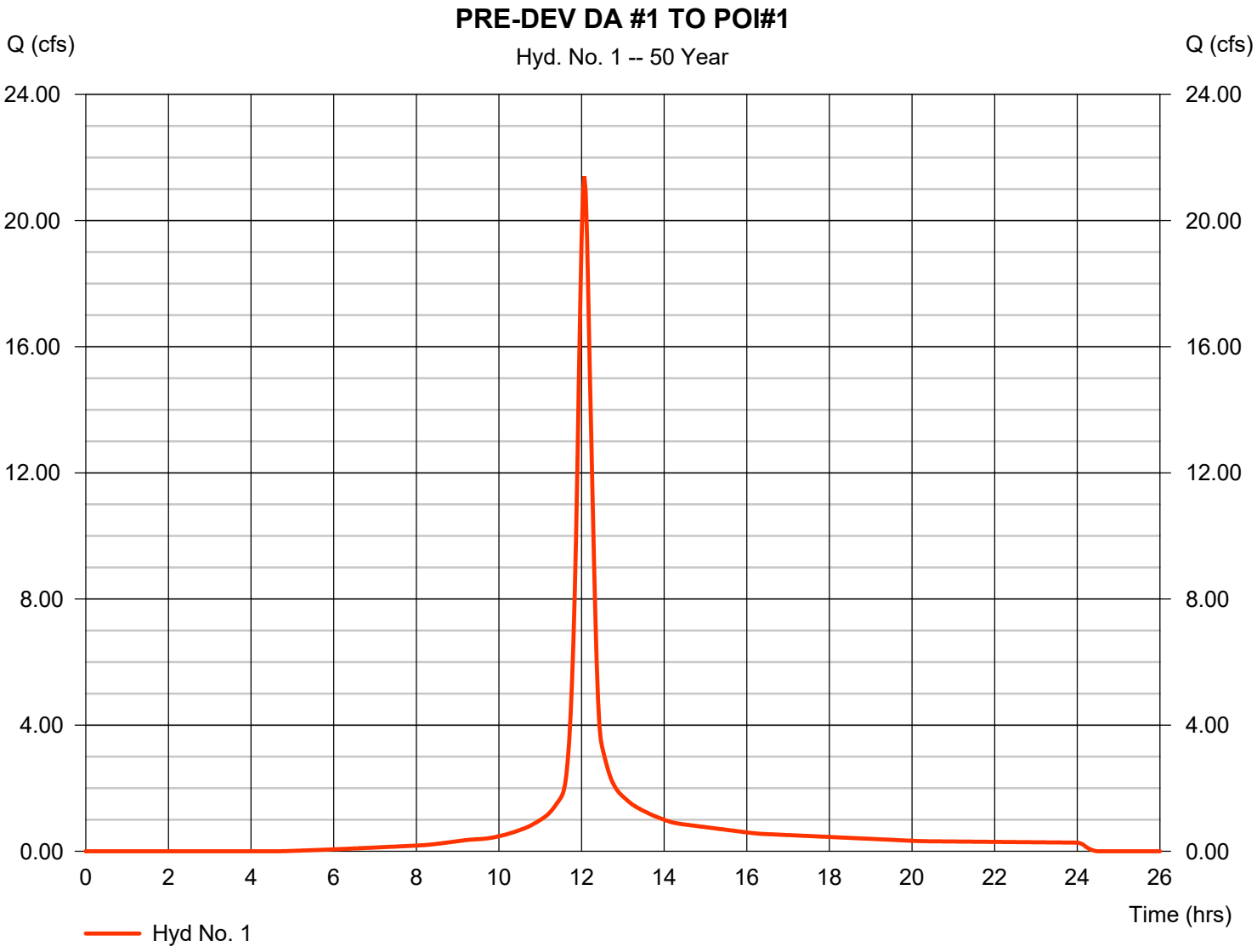
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 1

PRE-DEV DA #1 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	21.41 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	68,273 cuft
Drainage area	=	3.825 ac	Curve number	=	84.3
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	18.50 min
Total precip.	=	6.73 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



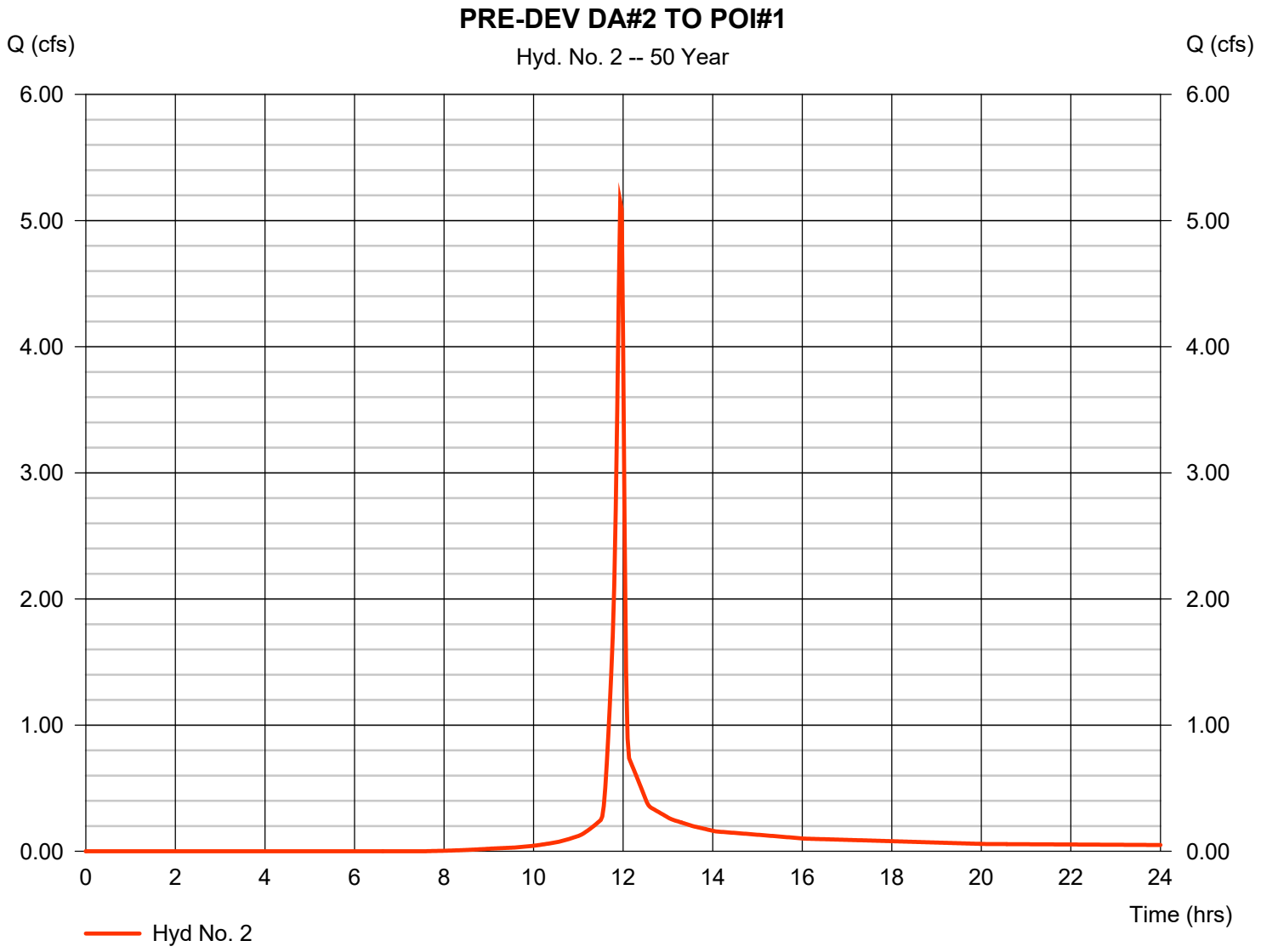
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 2

PRE-DEV DA#2 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.150 cfs
Storm frequency	=	50 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	10,444 cuft
Drainage area	=	0.824 ac	Curve number	=	73.2
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.73 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



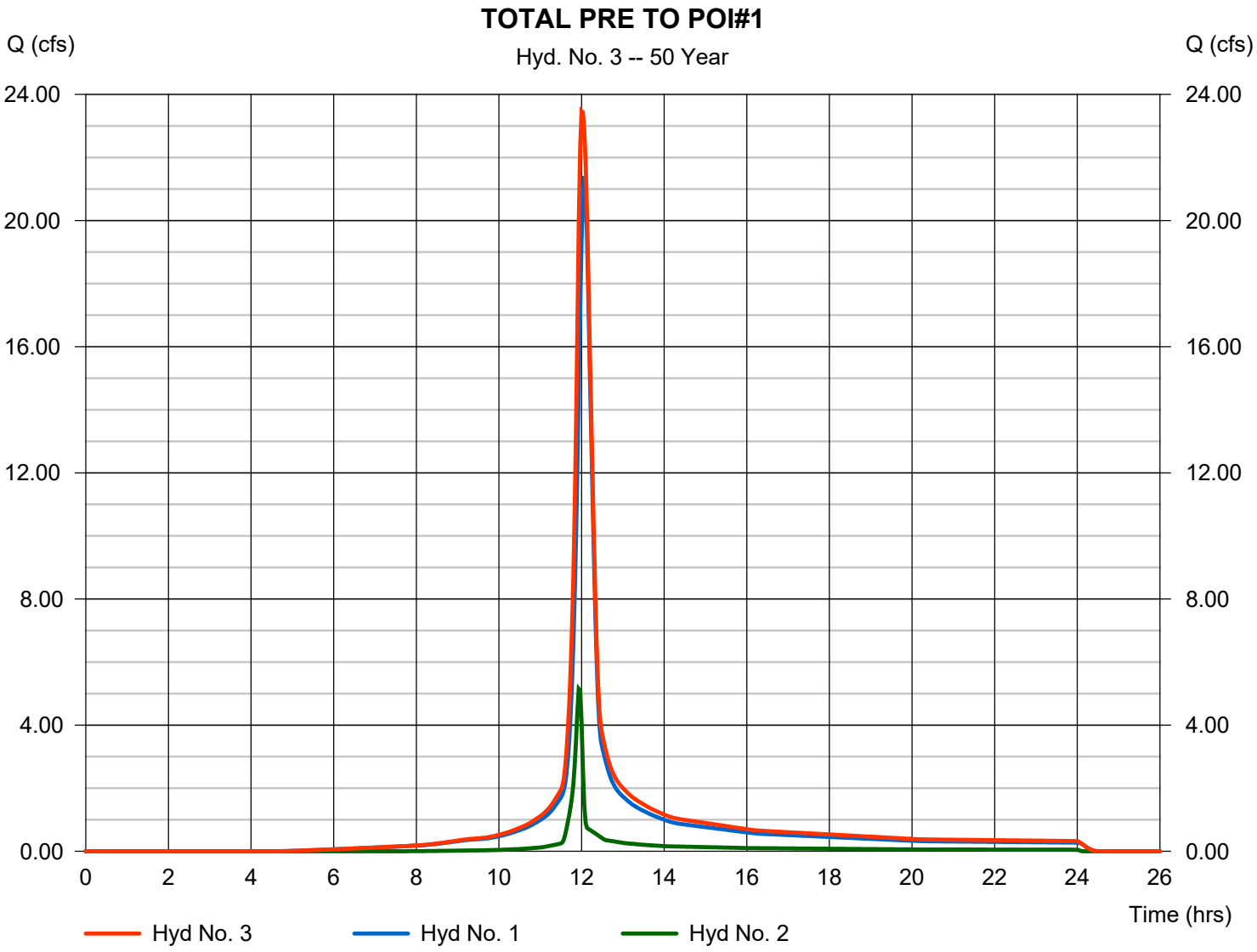
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 3

TOTAL PRE TO POI#1

Hydrograph type	= Combine	Peak discharge	= 23.48 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 78,716 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.649 ac

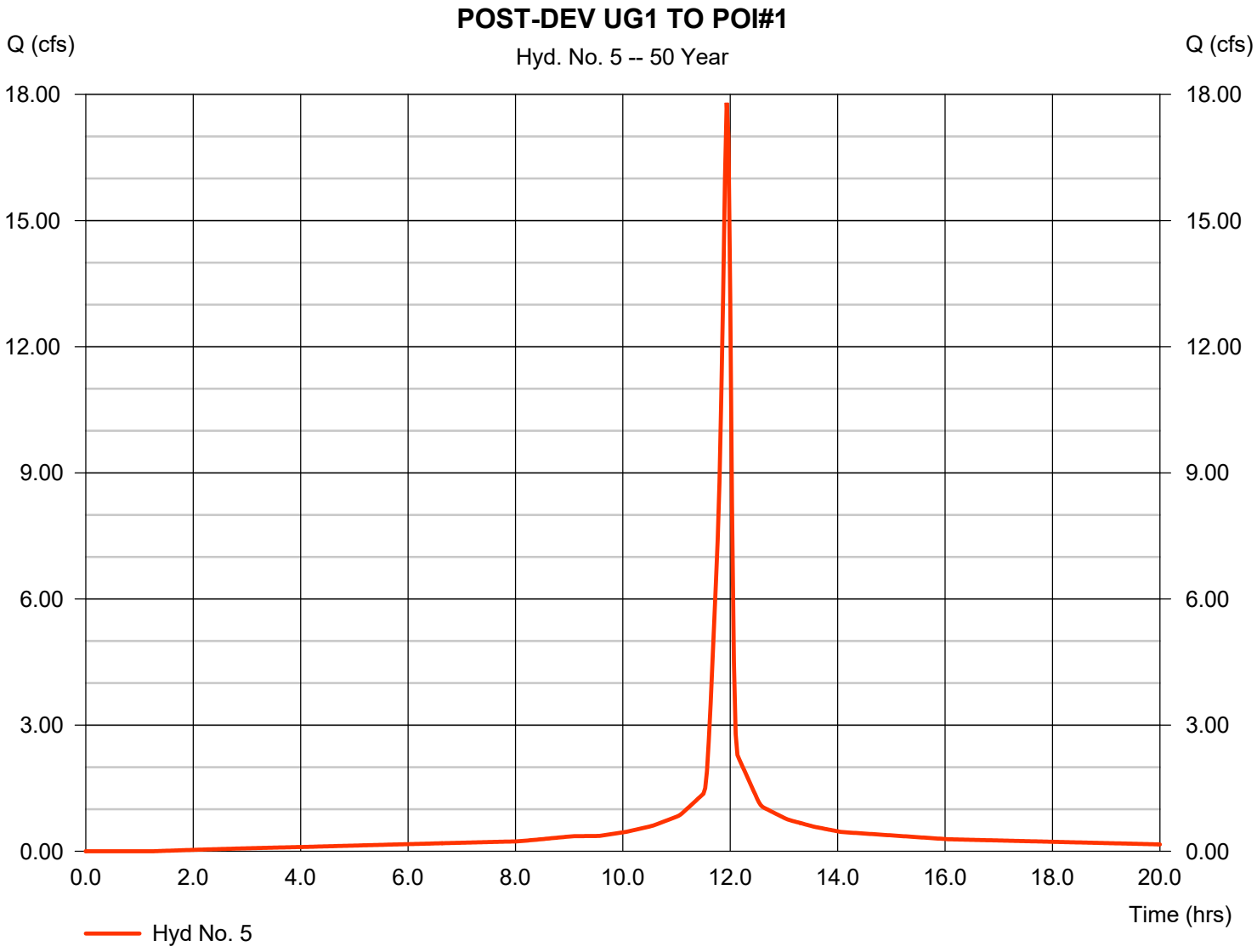


Hydrograph Report

Hyd. No. 5

POST-DEV UG1 TO POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 17.80 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 41,640 cuft
Drainage area	= 1.960 ac	Curve number	= 95.9
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

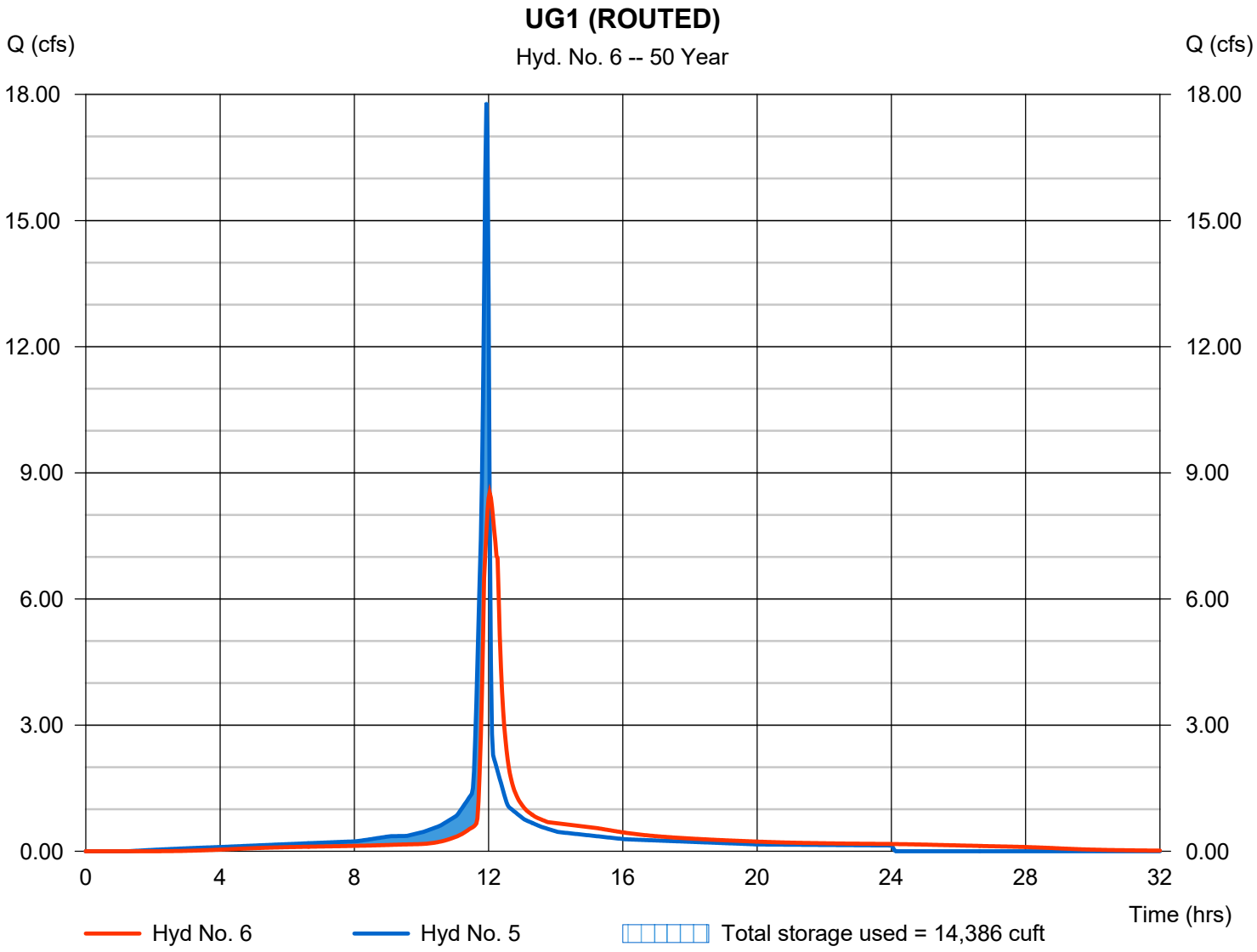
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 6

UG1 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	8.527 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	41,596 cuft
Inflow hyd. No.	=	5 - POST-DEV UG1 TO POI#1	Max. Elevation	=	161.40 ft
Reservoir name	=	UG1	Max. Storage	=	14,386 cuft

Storage Indication method used.



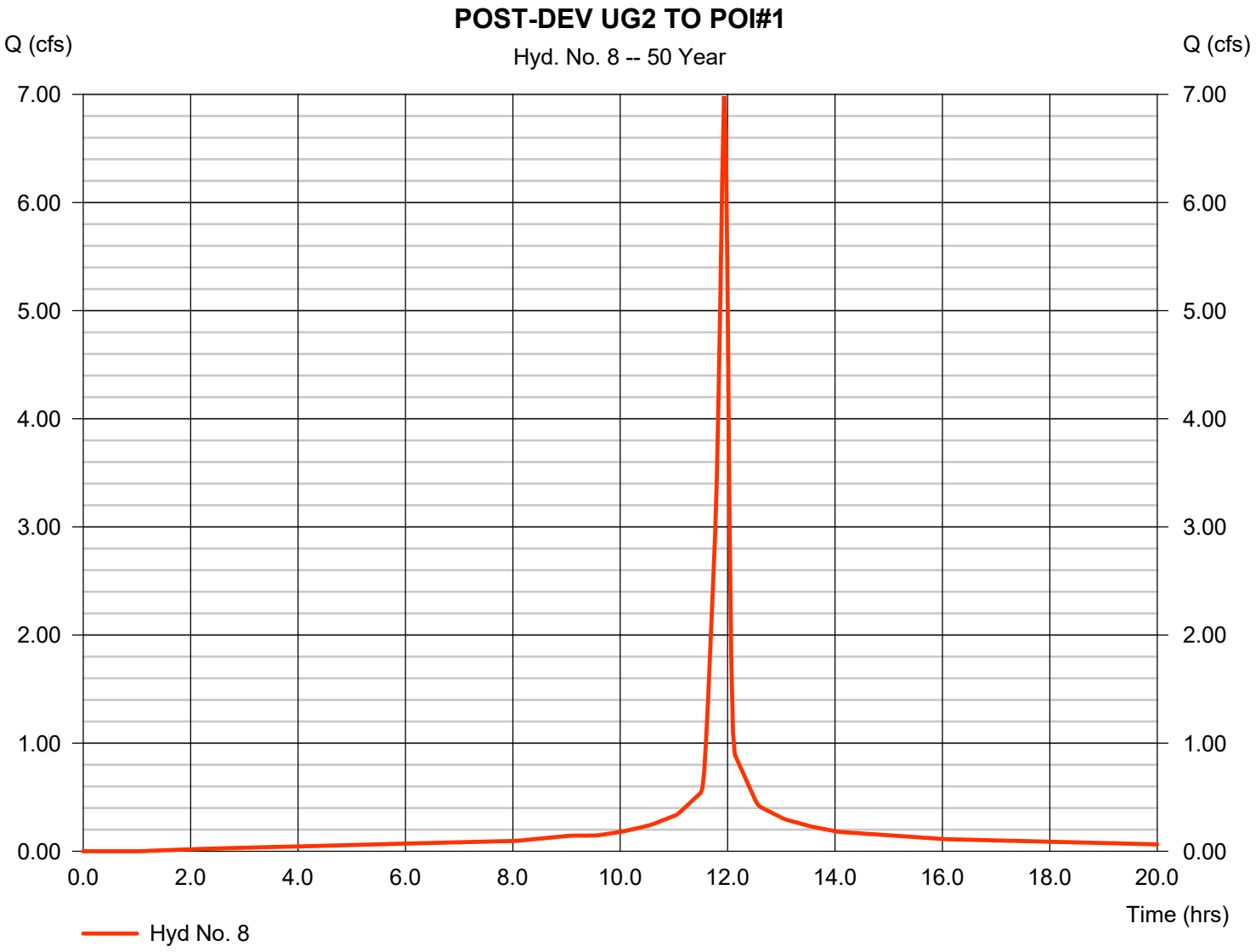
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 8

POST-DEV UG2 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.984 cfs
Storm frequency	=	50 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	16,489 cuft
Drainage area	=	0.766 ac	Curve number	=	96.6
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.73 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

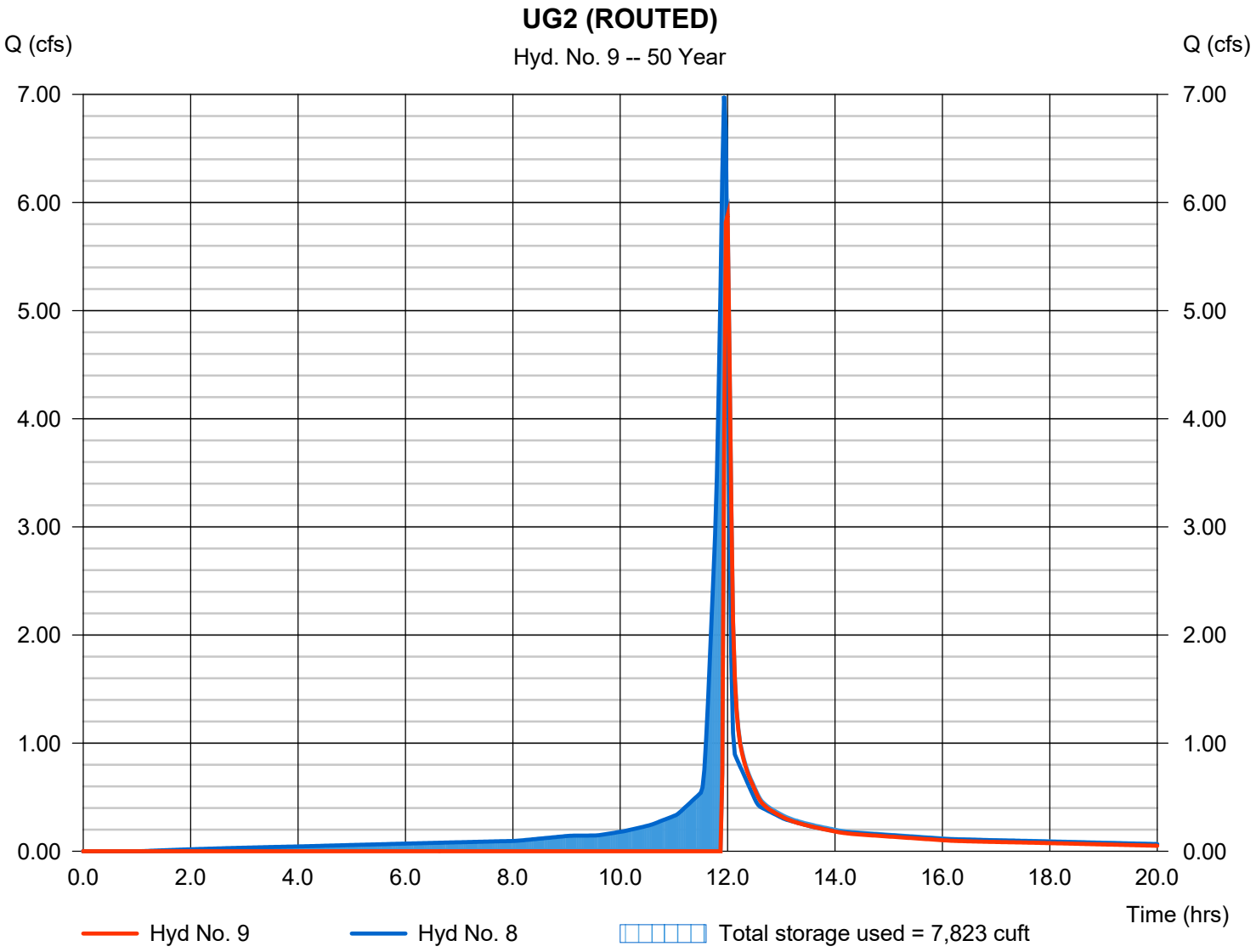
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 9

UG2 (ROUTED)

Hydrograph type	= Reservoir	Peak discharge	= 5.880 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 8,709 cuft
Inflow hyd. No.	= 8 - POST-DEV UG2 TO POI#1	Max. Elevation	= 162.93 ft
Reservoir name	= UG2	Max. Storage	= 7,823 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



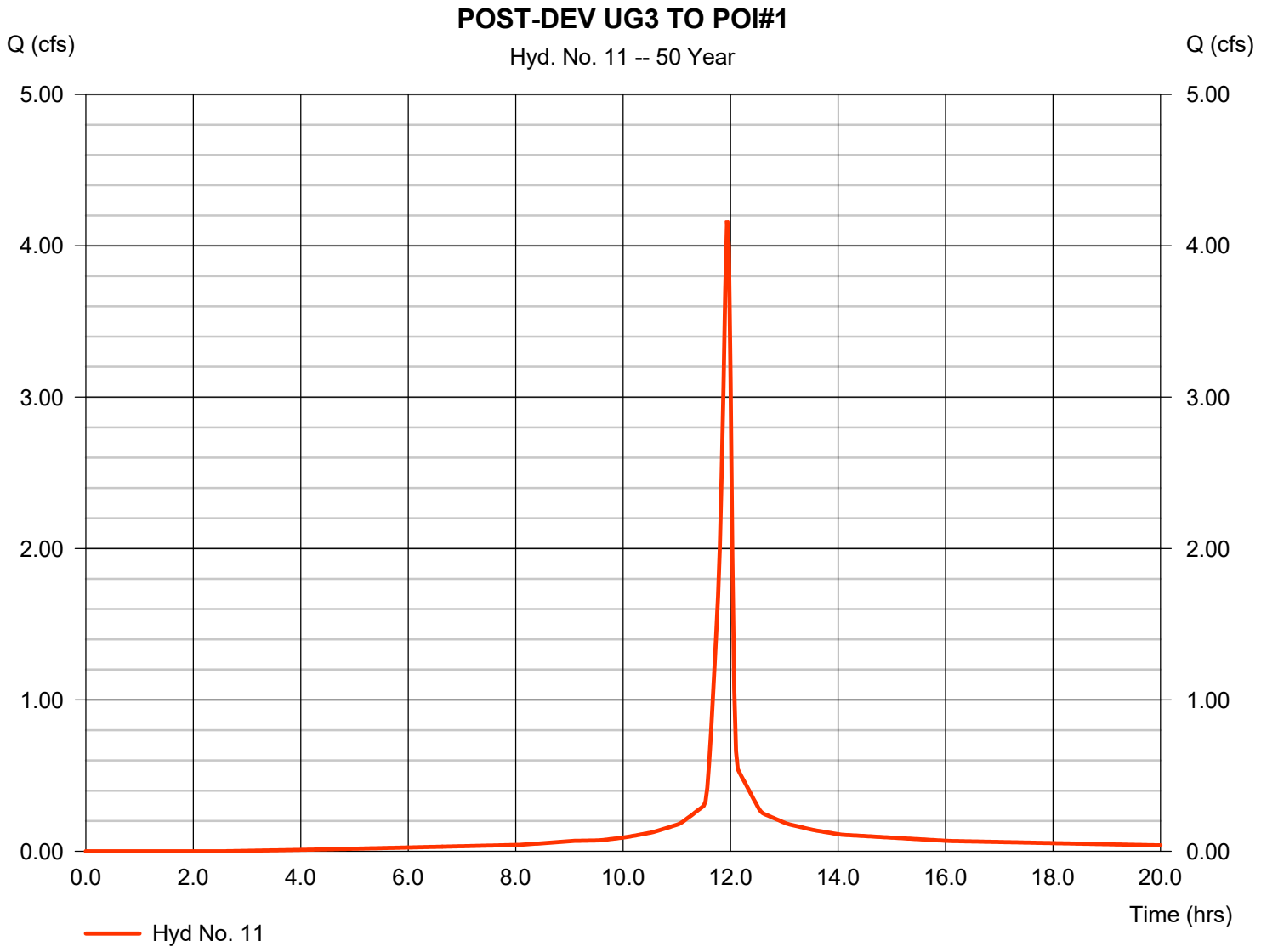
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 11

POST-DEV UG3 TO POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 4.166 cfs
Storm frequency	= 50 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 9,264 cuft
Drainage area	= 0.476 ac	Curve number	= 91.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 6.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

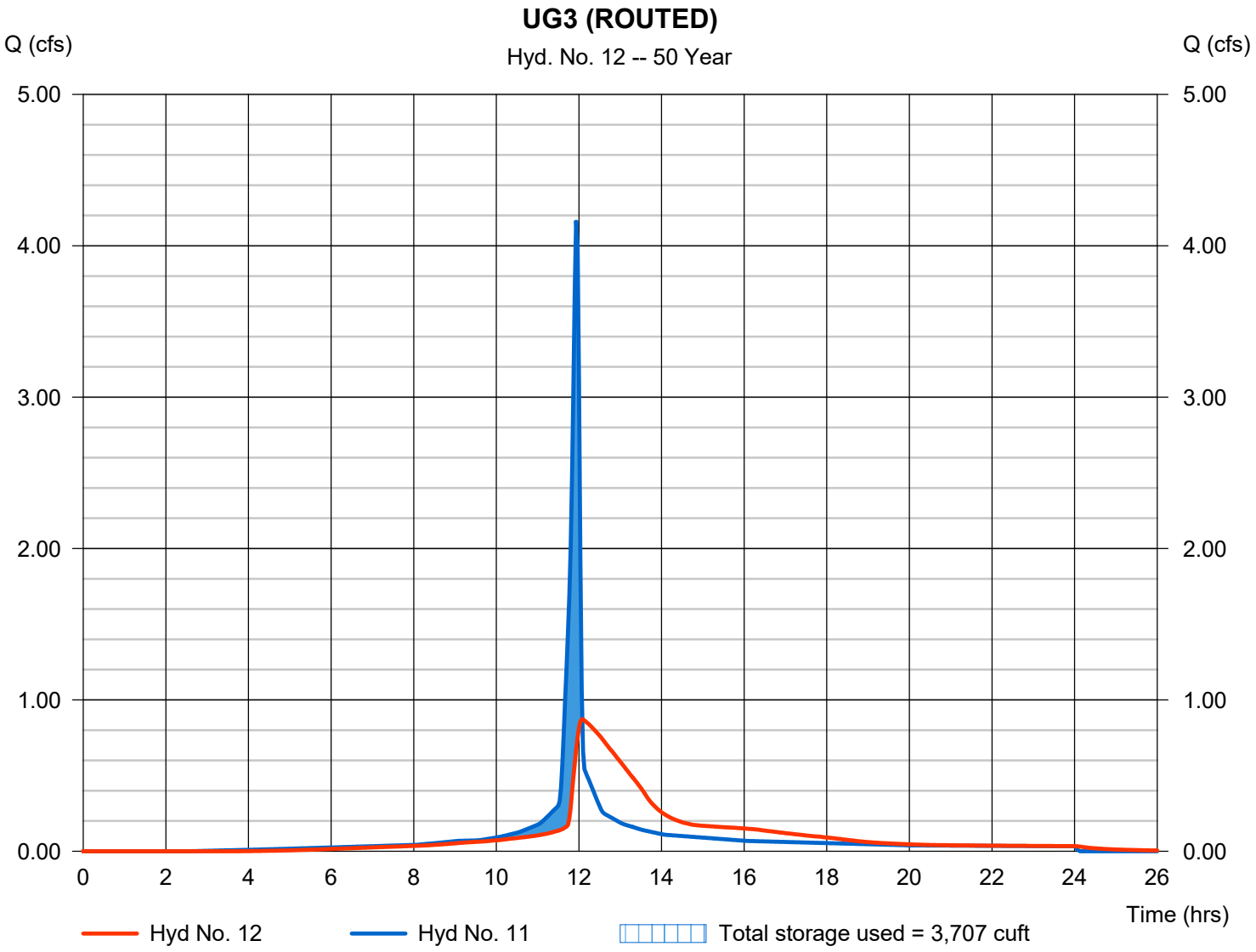
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 12

UG3 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	0.871 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	9,245 cuft
Inflow hyd. No.	=	11 - POST-DEV UG3 TO POI #1	Max. Elevation	=	162.07 ft
Reservoir name	=	UG3	Max. Storage	=	3,707 cuft

Storage Indication method used.



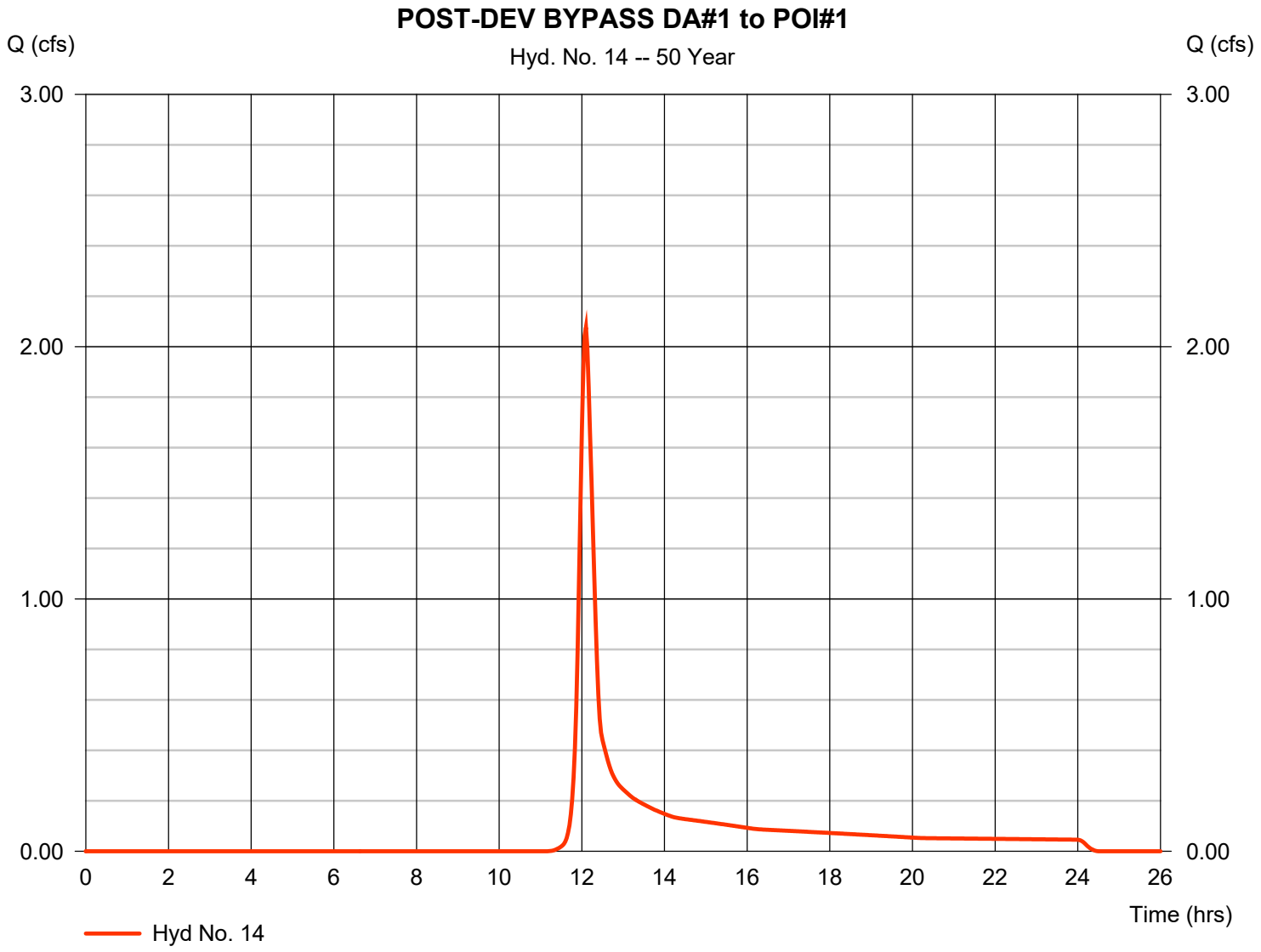
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 14

POST-DEV BYPASS DA#1 to POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 2.077 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 6,977 cuft
Drainage area	= 0.979 ac	Curve number	= 55.1
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.50 min
Total precip.	= 6.73 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



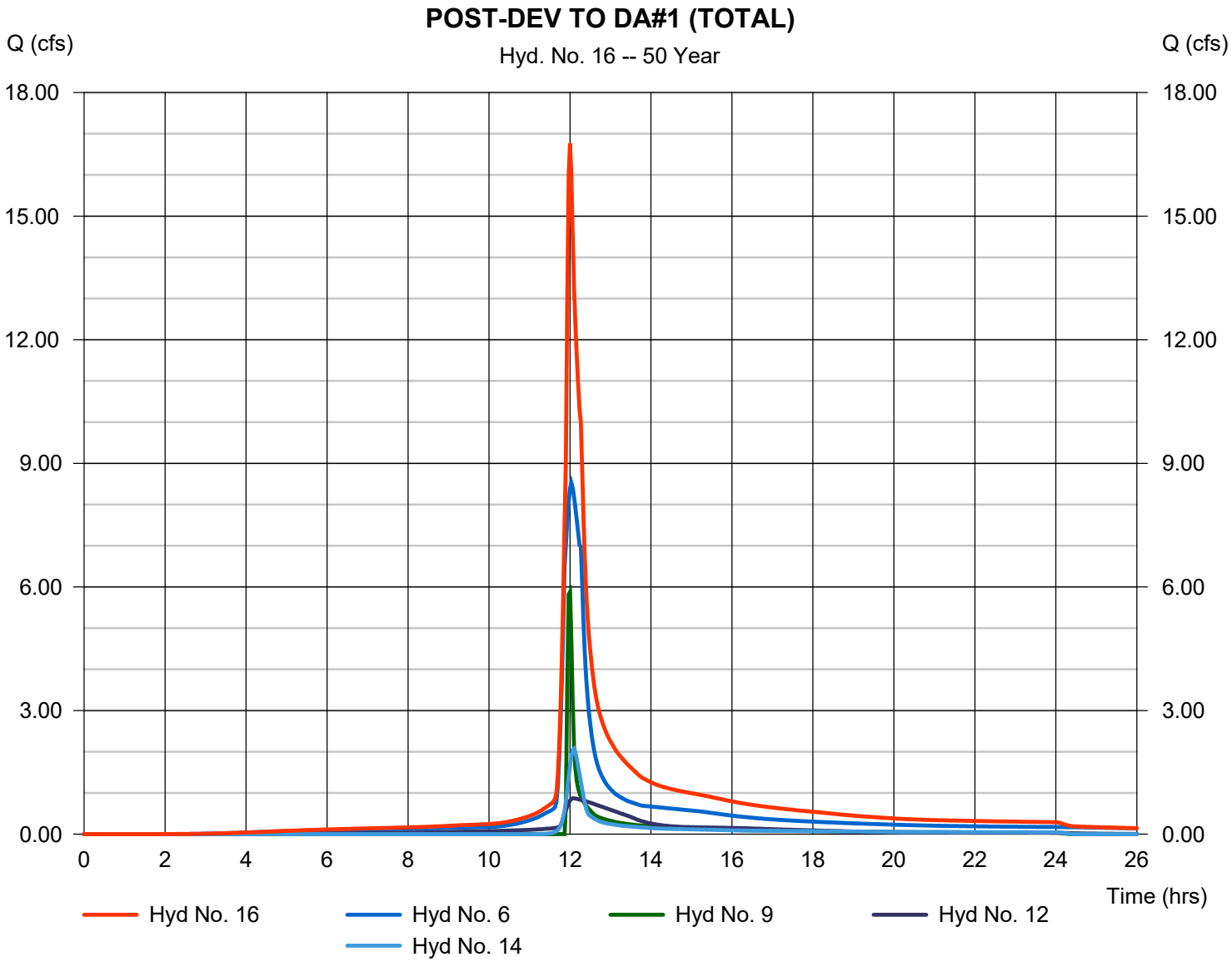
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 16

POST-DEV TO DA#1 (TOTAL)

Hydrograph type	= Combine	Peak discharge	= 16.76 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 66,527 cuft
Inflow hyds.	= 6, 9, 12, 14	Contrib. drain. area	= 0.979 ac



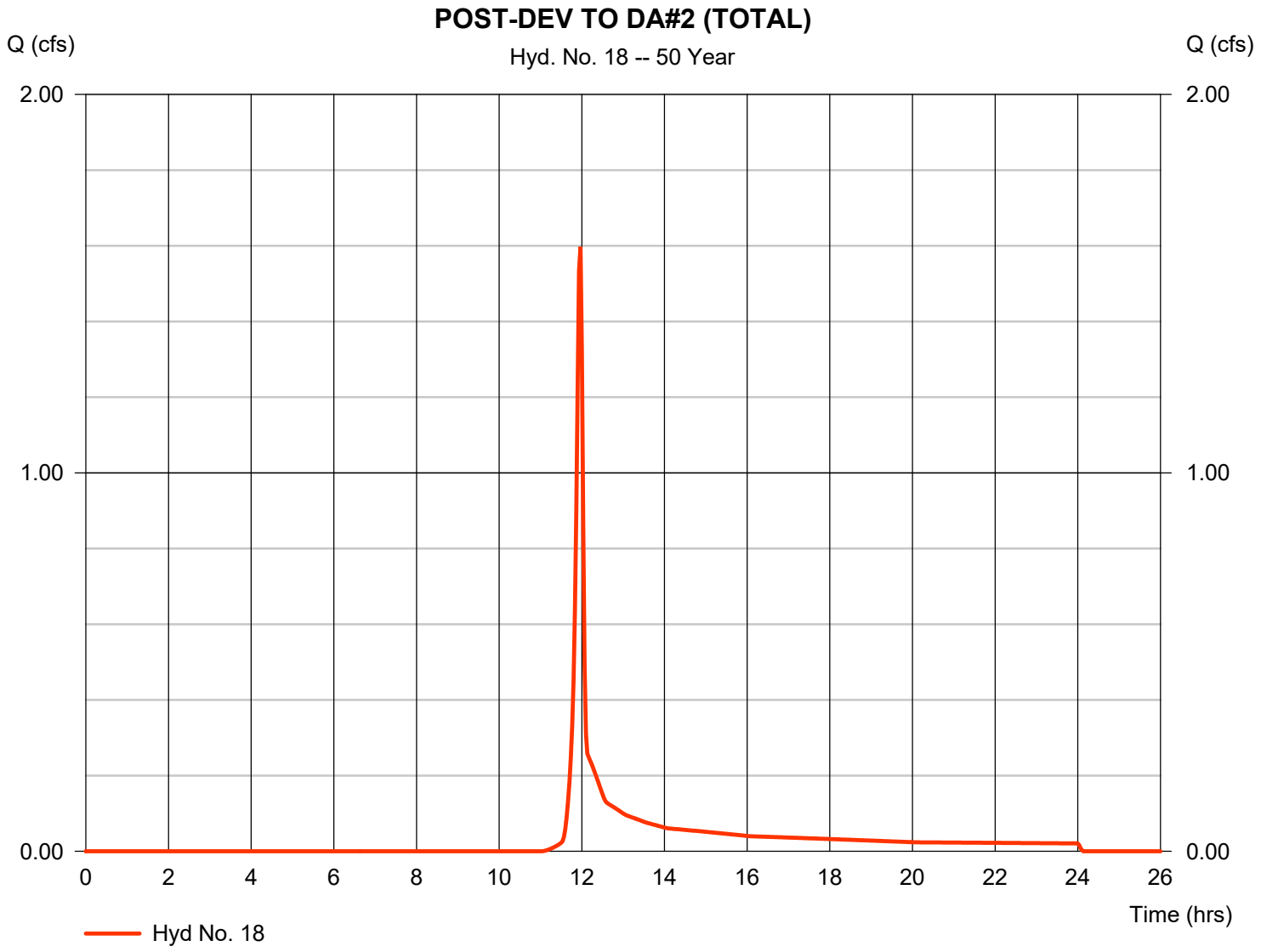
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 18

POST-DEV TO DA#2 (TOTAL)

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.597 cfs
Storm frequency	=	50 yrs	Time to peak	=	11.97 hrs
Time interval	=	2 min	Hyd. volume	=	3,214 cuft
Drainage area	=	0.466 ac	Curve number	=	55.8
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.73 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

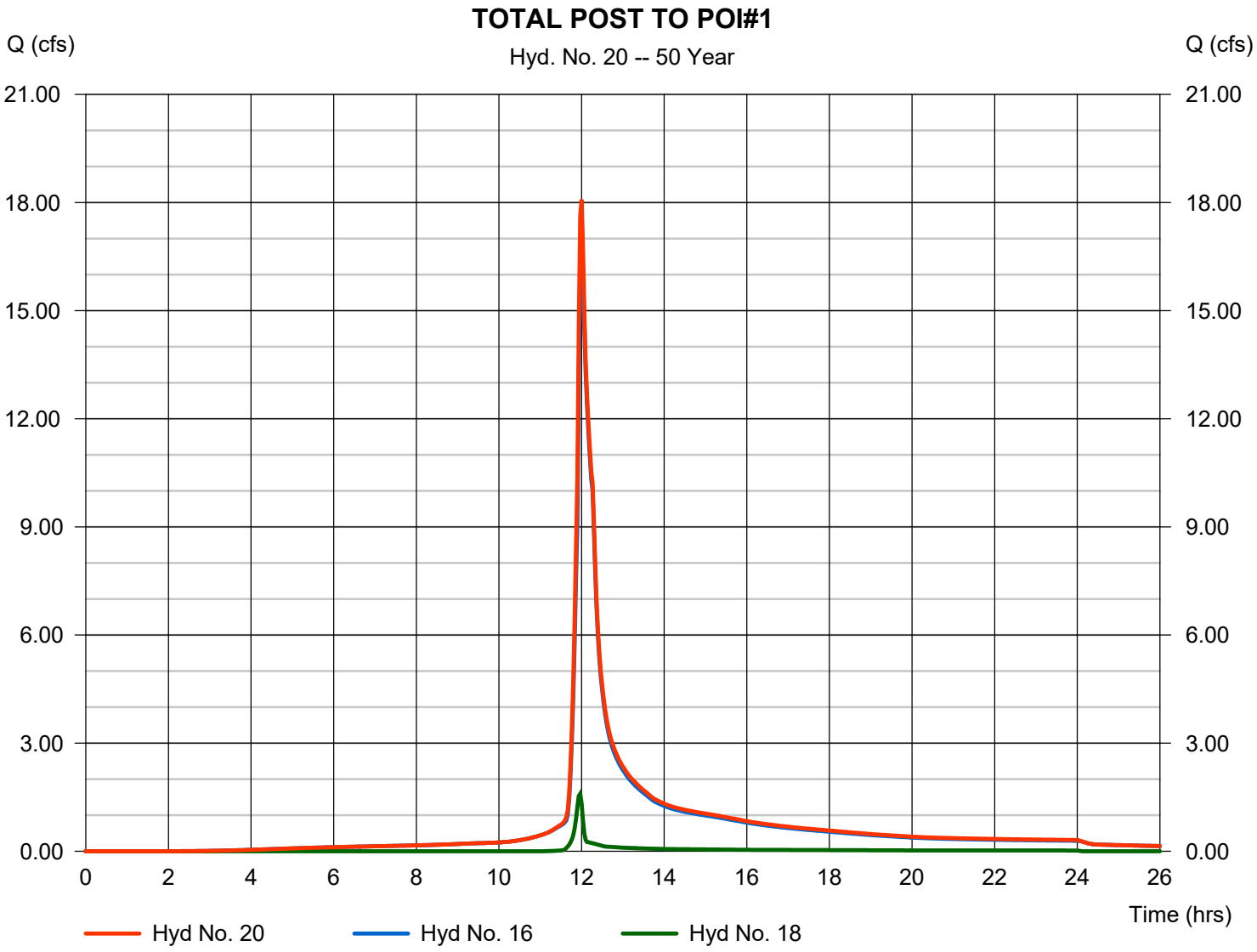


Hydrograph Report

Hyd. No. 20

TOTAL POST TO POI#1

Hydrograph type	= Combine	Peak discharge	= 18.08 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 69,740 cuft
Inflow hyds.	= 16, 18	Contrib. drain. area	= 0.466 ac



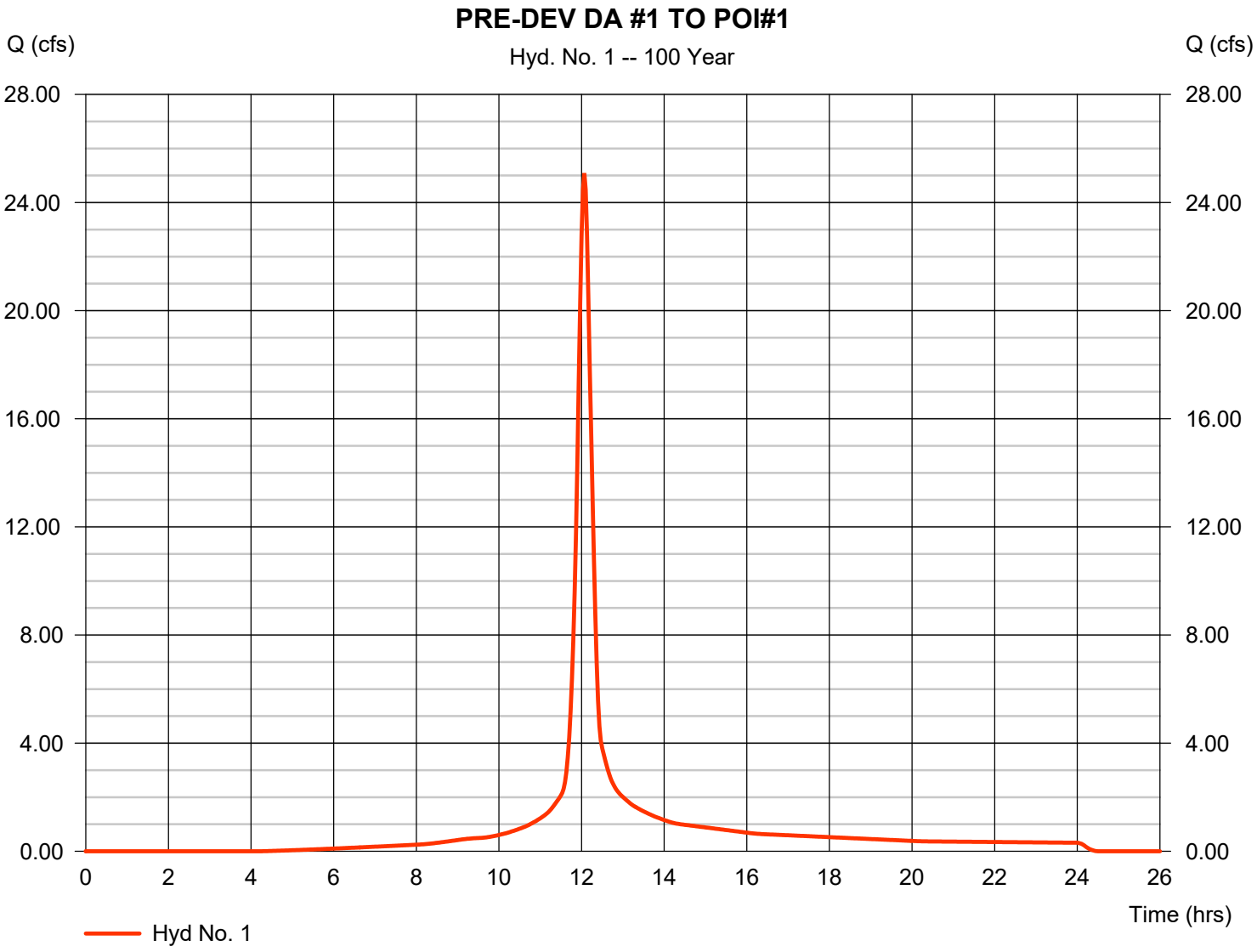
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 1

PRE-DEV DA #1 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	25.09 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	80,590 cuft
Drainage area	=	3.825 ac	Curve number	=	84.3
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	18.50 min
Total precip.	=	7.66 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



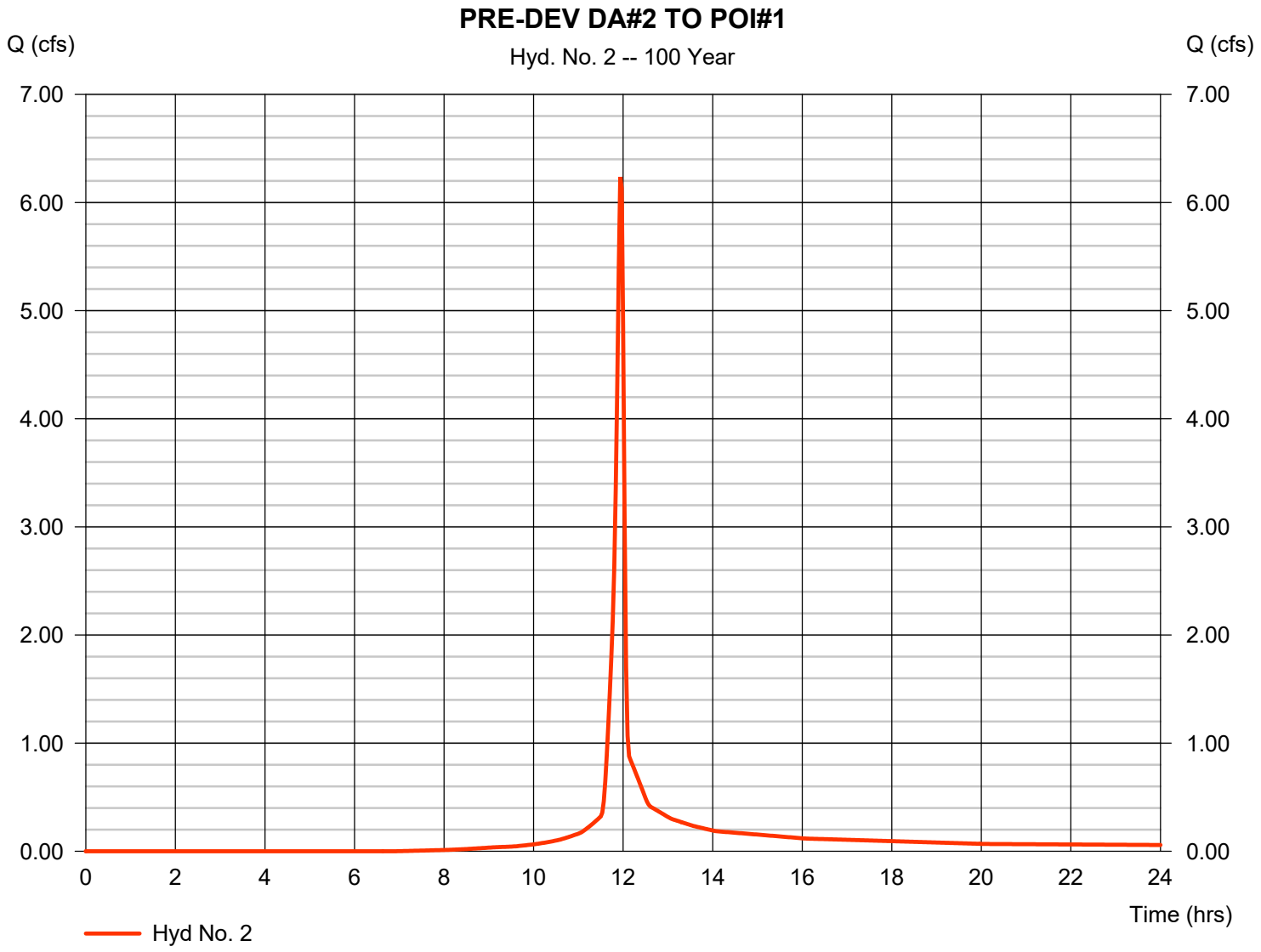
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 2

PRE-DEV DA#2 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.236 cfs
Storm frequency	=	100 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	12,710 cuft
Drainage area	=	0.824 ac	Curve number	=	73.2
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	7.66 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



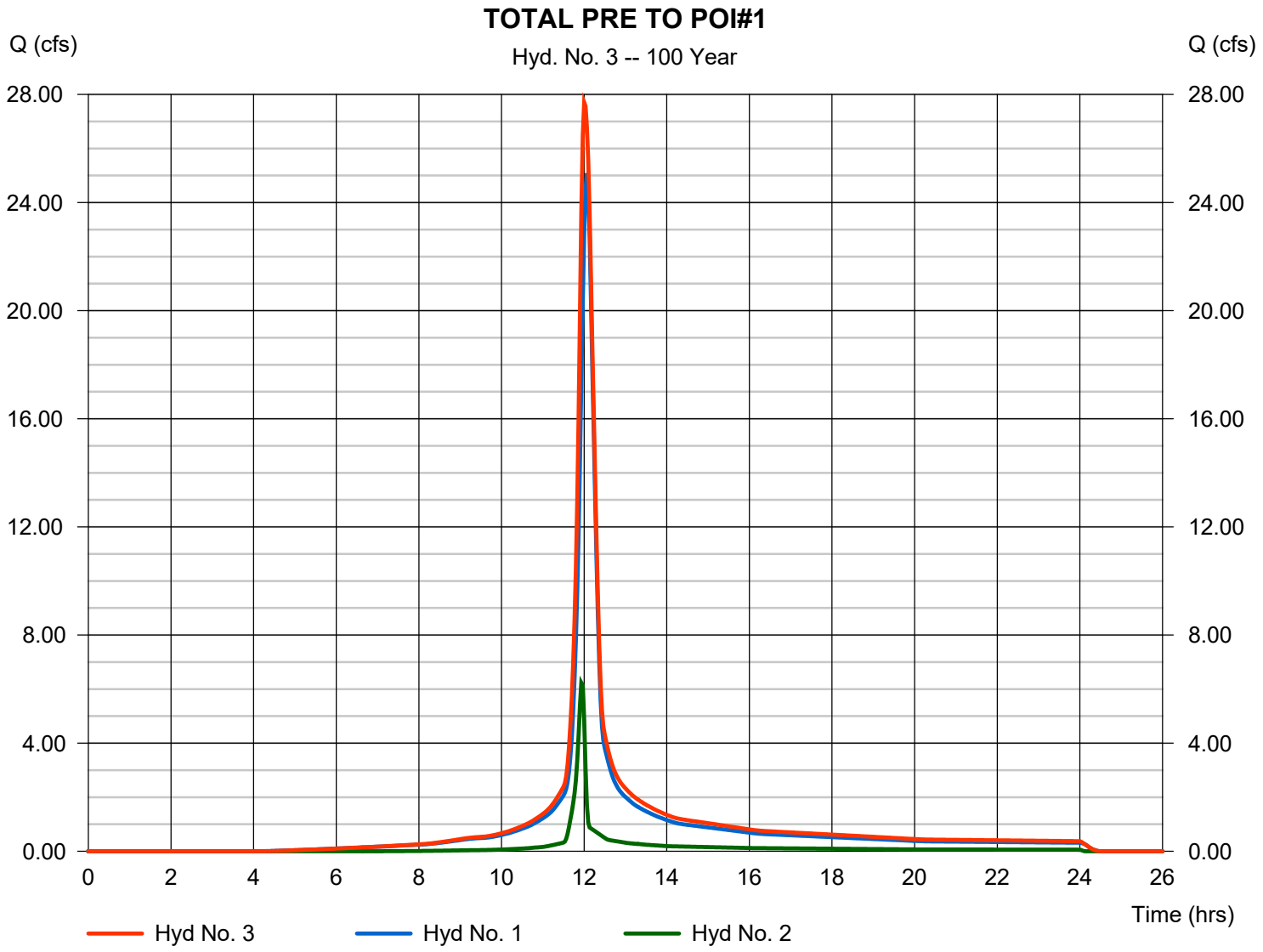
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 3

TOTAL PRE TO POI#1

Hydrograph type	= Combine	Peak discharge	= 27.70 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 93,300 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 4.649 ac



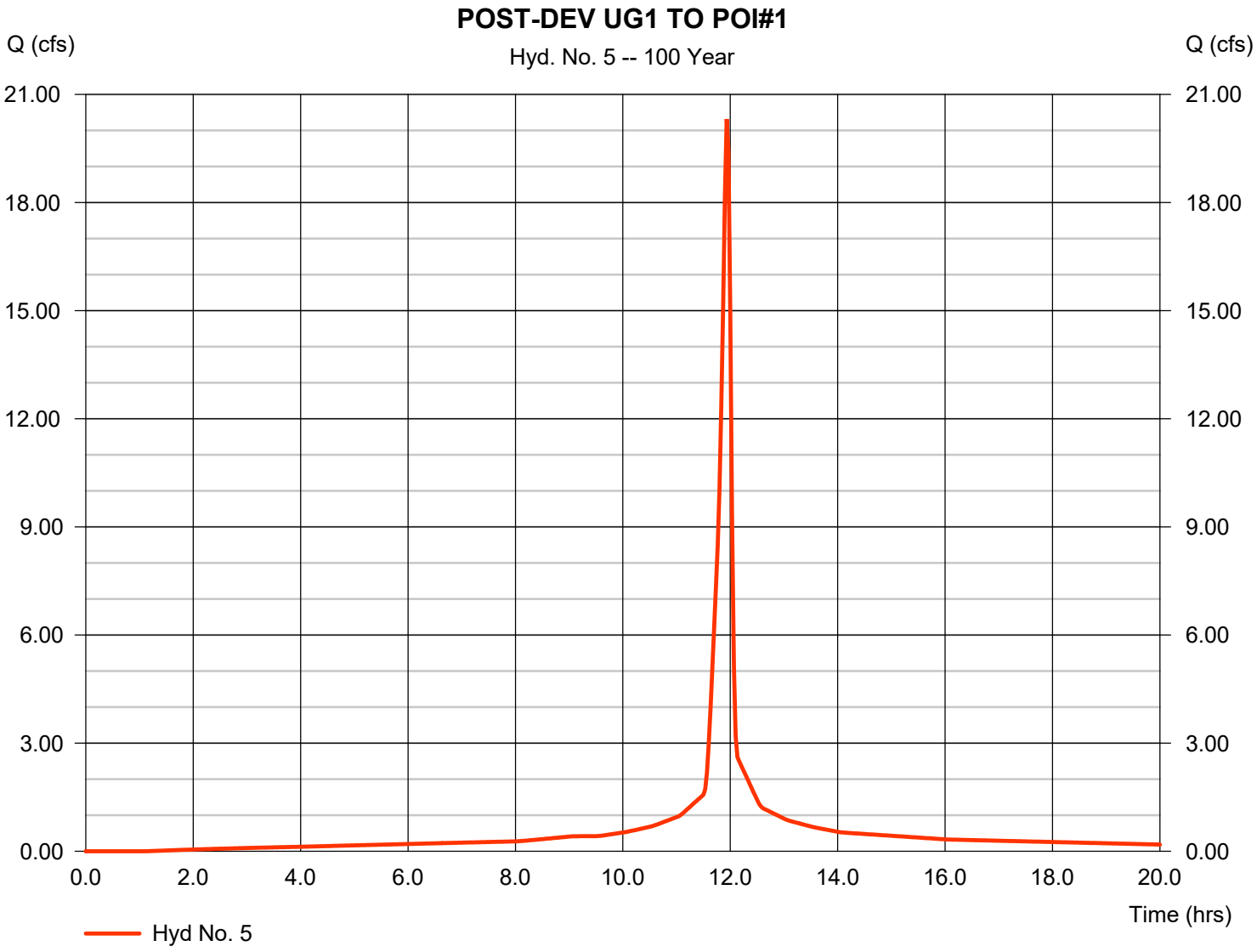
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 5

POST-DEV UG1 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	20.32 cfs
Storm frequency	=	100 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	47,823 cuft
Drainage area	=	1.960 ac	Curve number	=	95.9
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	7.66 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

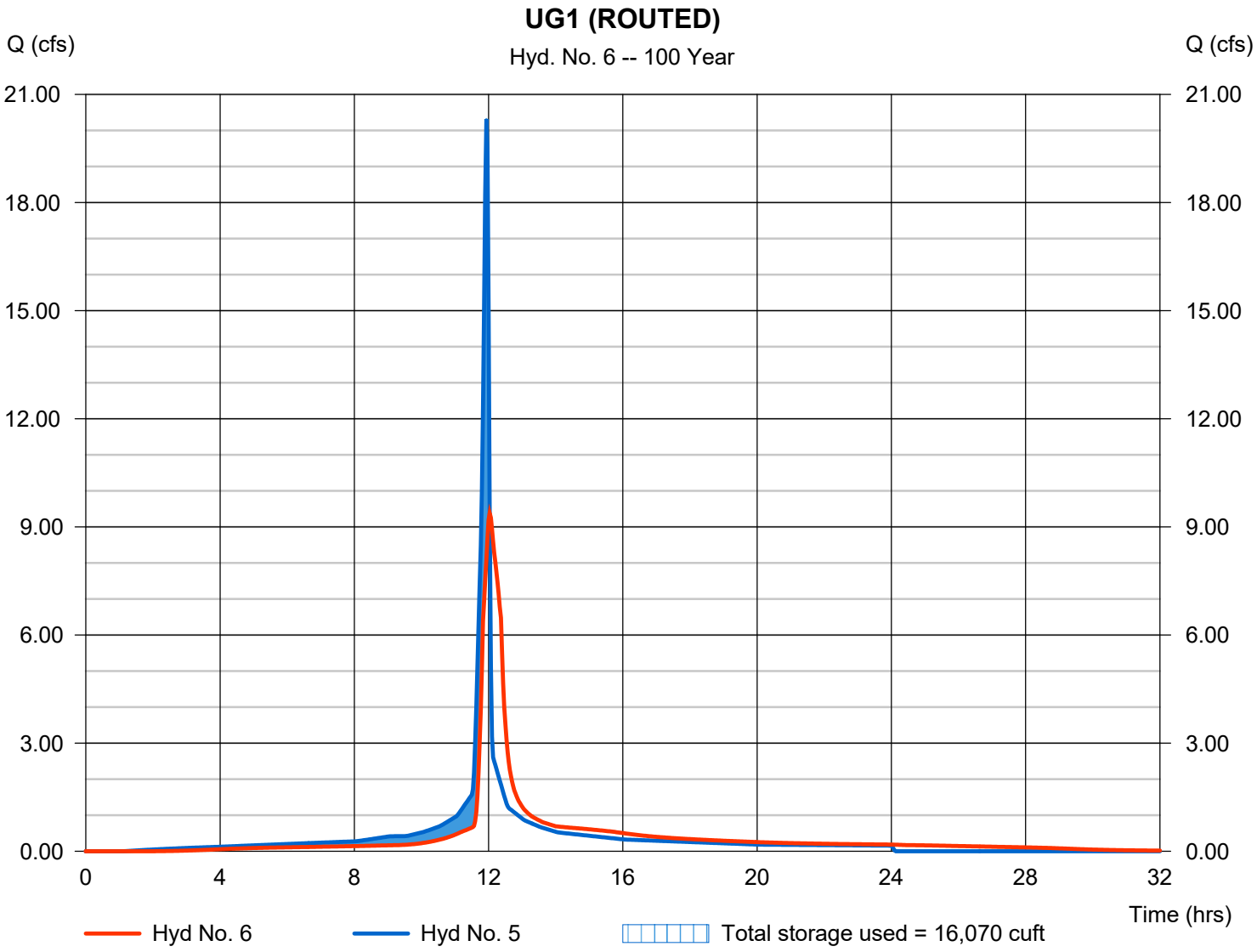
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 6

UG1 (ROUTED)

Hydrograph type	=	Reservoir	Peak discharge	=	9.381 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	47,779 cuft
Inflow hyd. No.	=	5 - POST-DEV UG1 TO POI#1	Max. Elevation	=	161.93 ft
Reservoir name	=	UG1	Max. Storage	=	16,070 cuft

Storage Indication method used.



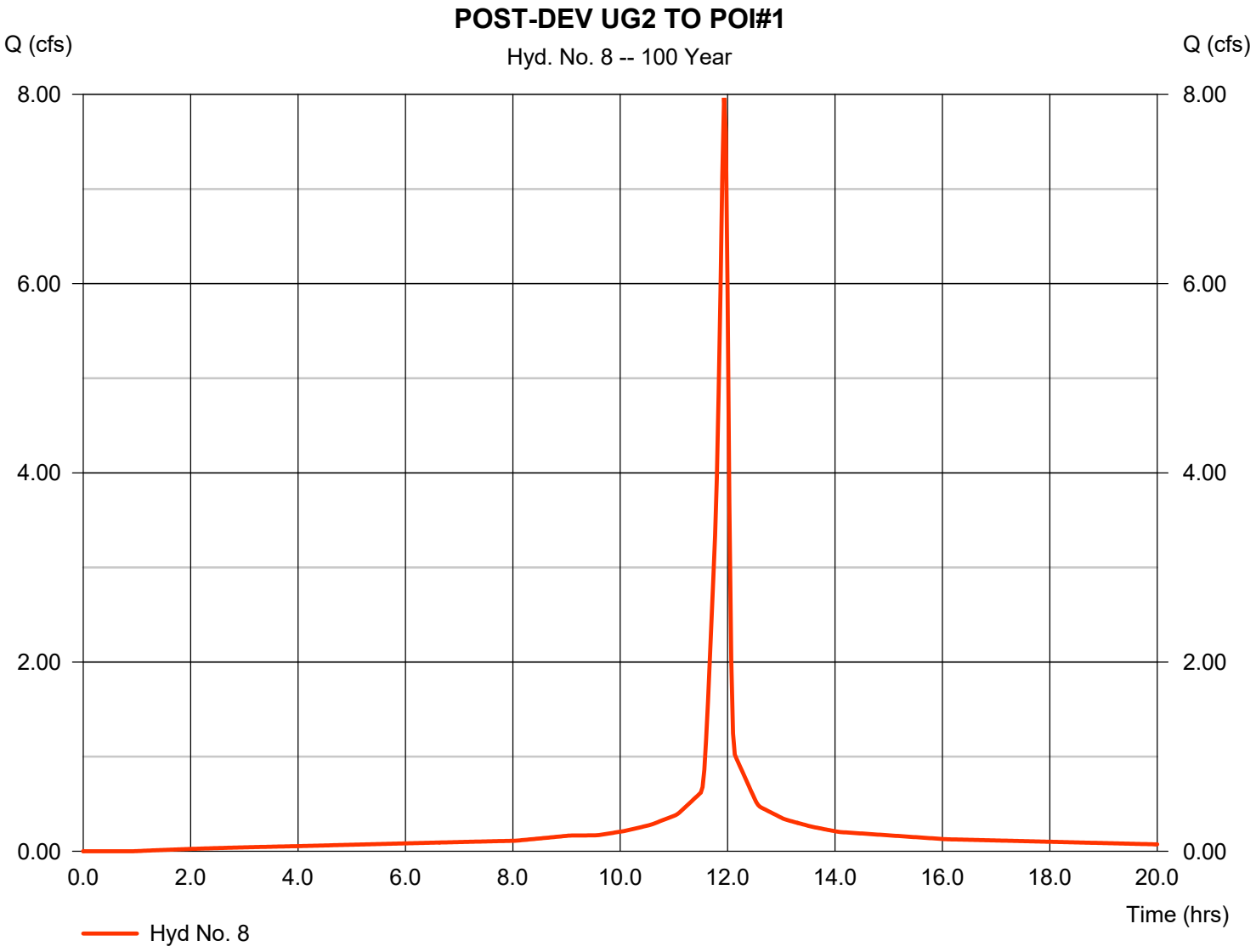
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 8

POST-DEV UG2 TO POI#1

Hydrograph type	=	SCS Runoff	Peak discharge	=	7.964 cfs
Storm frequency	=	100 yrs	Time to peak	=	11.93 hrs
Time interval	=	2 min	Hyd. volume	=	18,908 cuft
Drainage area	=	0.766 ac	Curve number	=	96.6
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	7.66 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

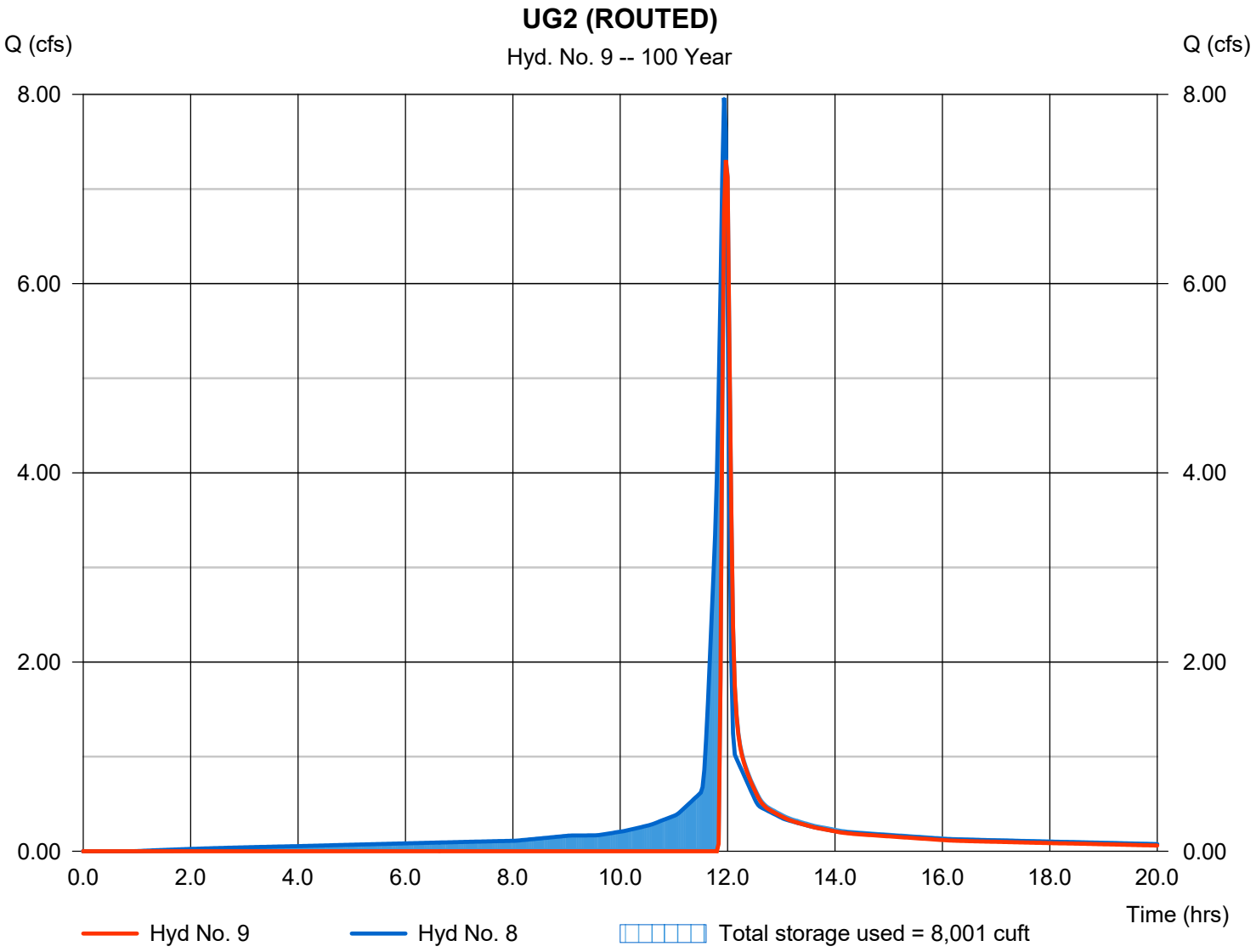
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 9

UG2 (ROUTED)

Hydrograph type	= Reservoir	Peak discharge	= 7.304 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 11,108 cuft
Inflow hyd. No.	= 8 - POST-DEV UG2 TO POI#1	Max. Elevation	= 163.02 ft
Reservoir name	= UG2	Max. Storage	= 8,001 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



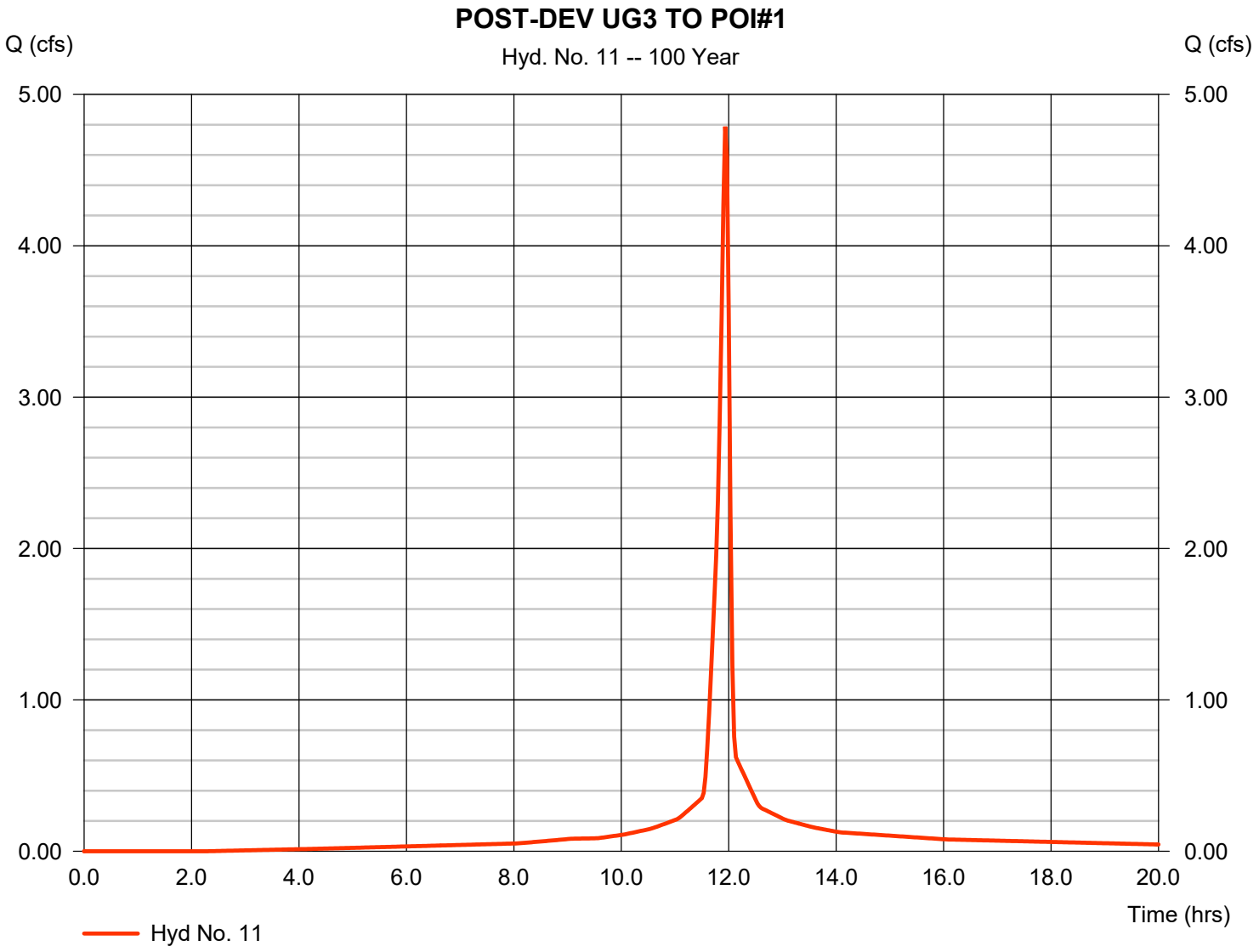
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 11

POST-DEV UG3 TO POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 4.788 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.93 hrs
Time interval	= 2 min	Hyd. volume	= 10,750 cuft
Drainage area	= 0.476 ac	Curve number	= 91.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.66 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

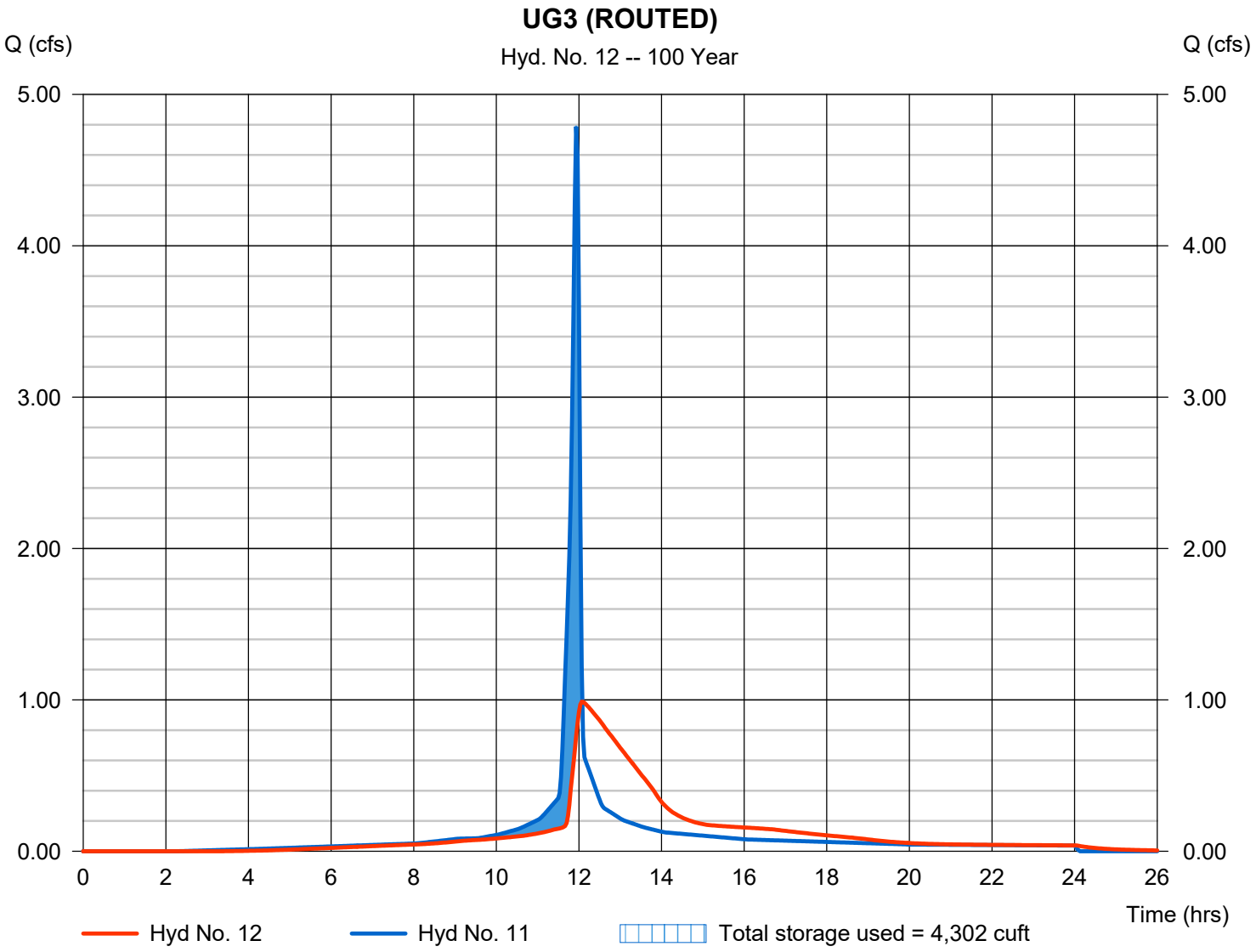
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 12

UG3 (ROUTED)

Hydrograph type	= Reservoir	Peak discharge	= 0.988 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 10,730 cuft
Inflow hyd. No.	= 11 - POST-DEV UG3 TO POI #1	Max. Elevation	= 162.38 ft
Reservoir name	= UG3	Max. Storage	= 4,302 cuft

Storage Indication method used.



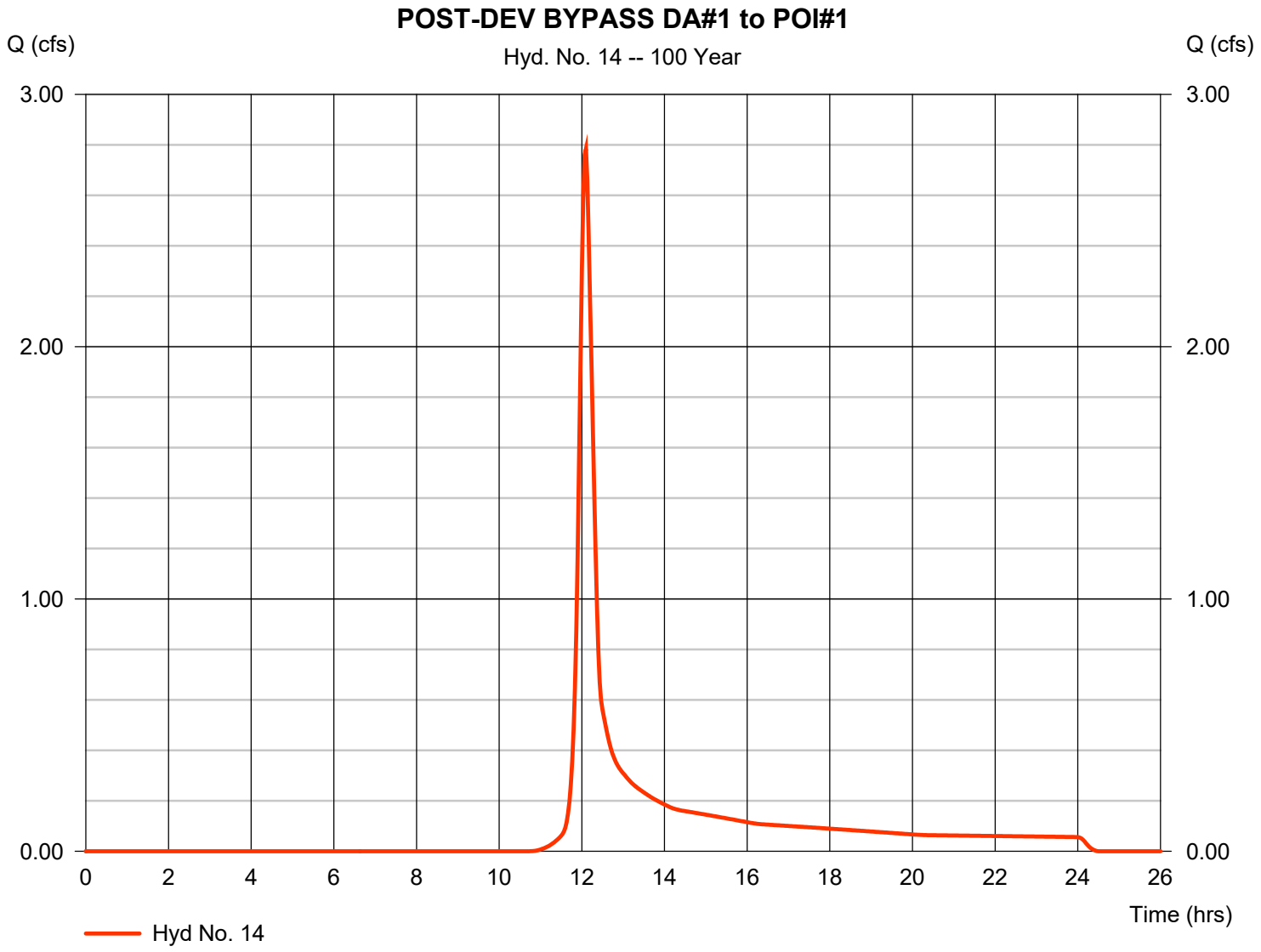
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 14

POST-DEV BYPASS DA#1 to POI#1

Hydrograph type	= SCS Runoff	Peak discharge	= 2.784 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 9,114 cuft
Drainage area	= 0.979 ac	Curve number	= 55.1
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 18.50 min
Total precip.	= 7.66 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



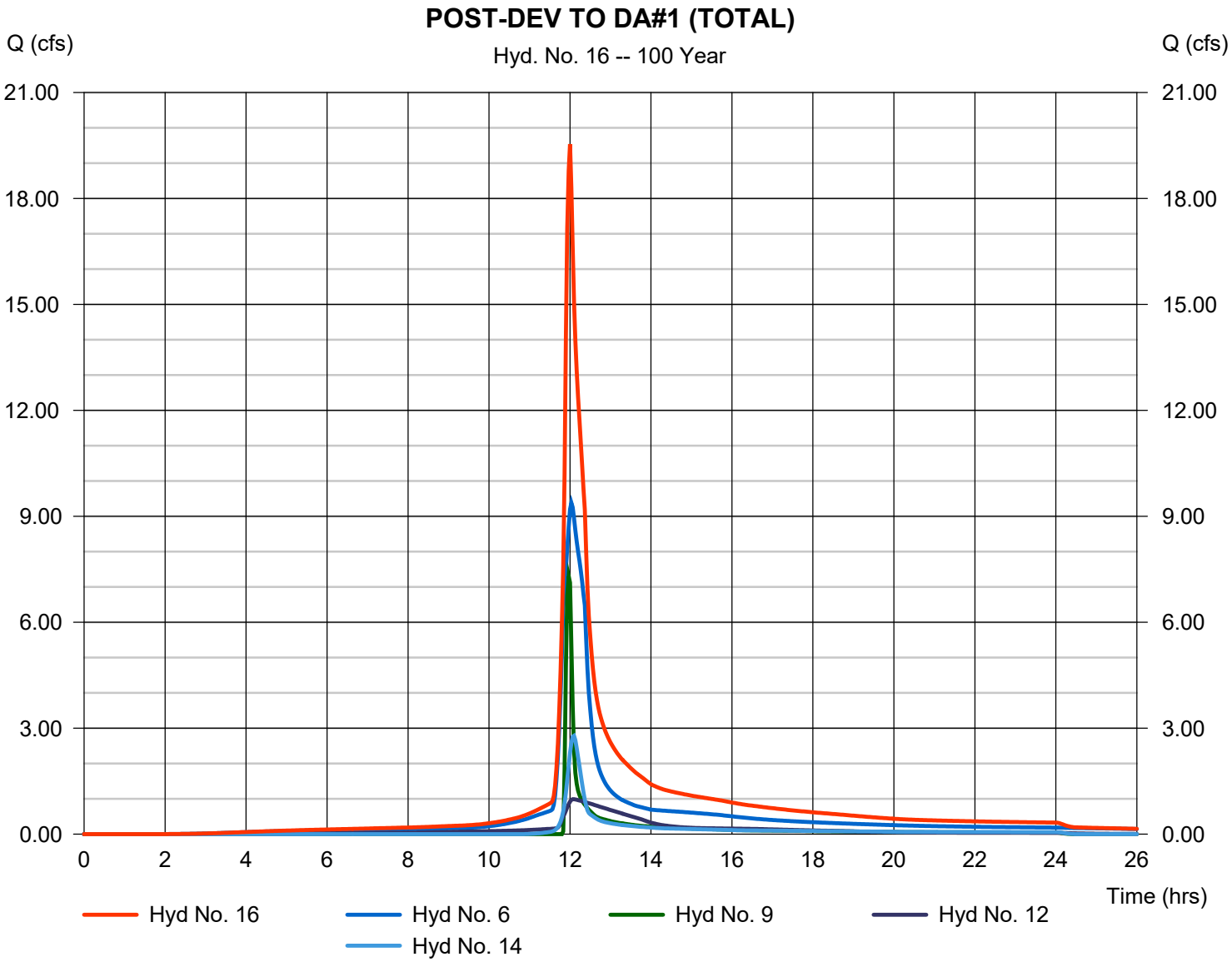
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 16

POST-DEV TO DA#1 (TOTAL)

Hydrograph type	= Combine	Peak discharge	= 19.54 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 78,731 cuft
Inflow hyds.	= 6, 9, 12, 14	Contrib. drain. area	= 0.979 ac



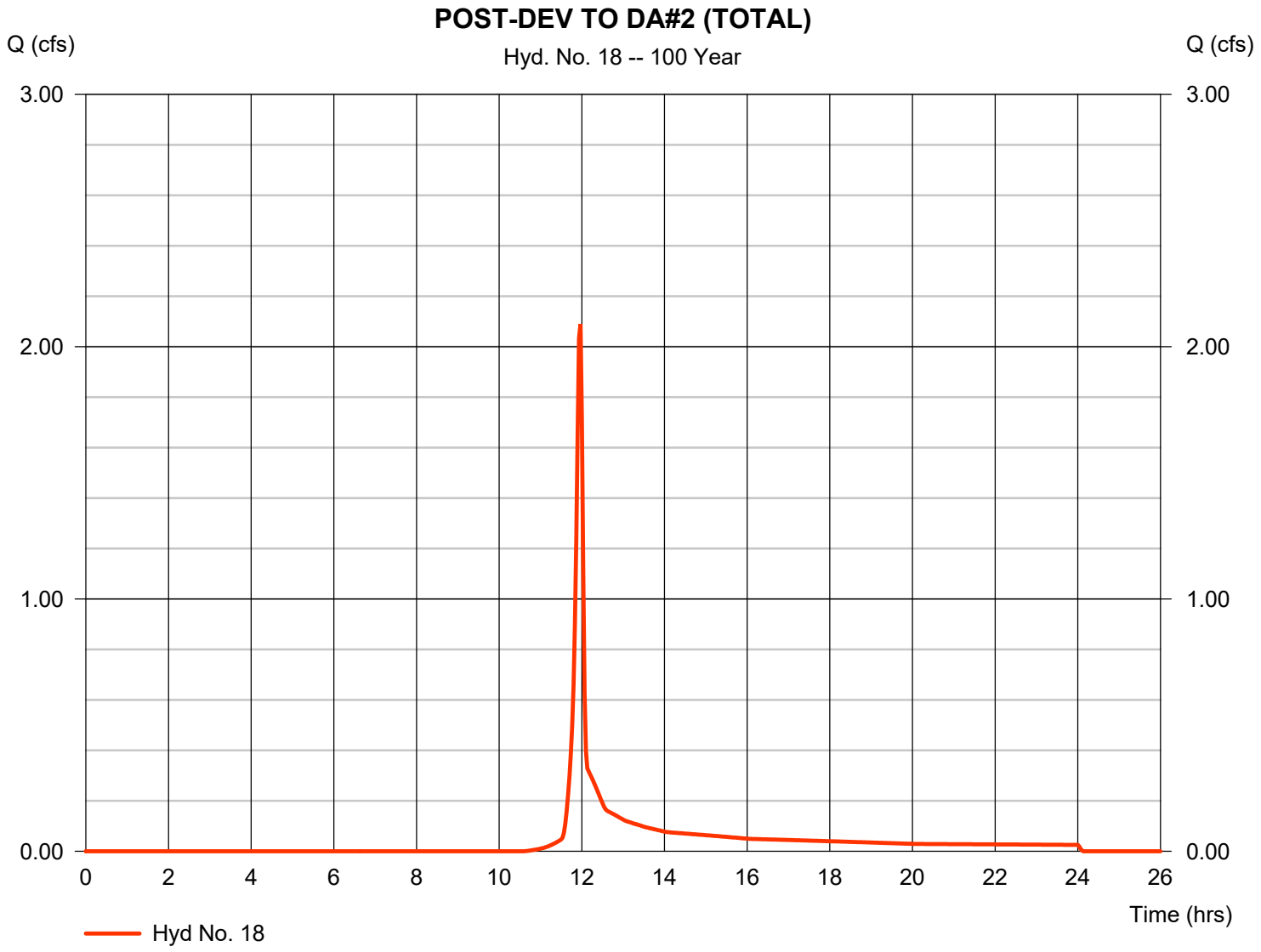
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 18

POST-DEV TO DA#2 (TOTAL)

Hydrograph type	= SCS Runoff	Peak discharge	= 2.090 cfs
Storm frequency	= 100 yrs	Time to peak	= 11.97 hrs
Time interval	= 2 min	Hyd. volume	= 4,182 cuft
Drainage area	= 0.466 ac	Curve number	= 55.8
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 7.66 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



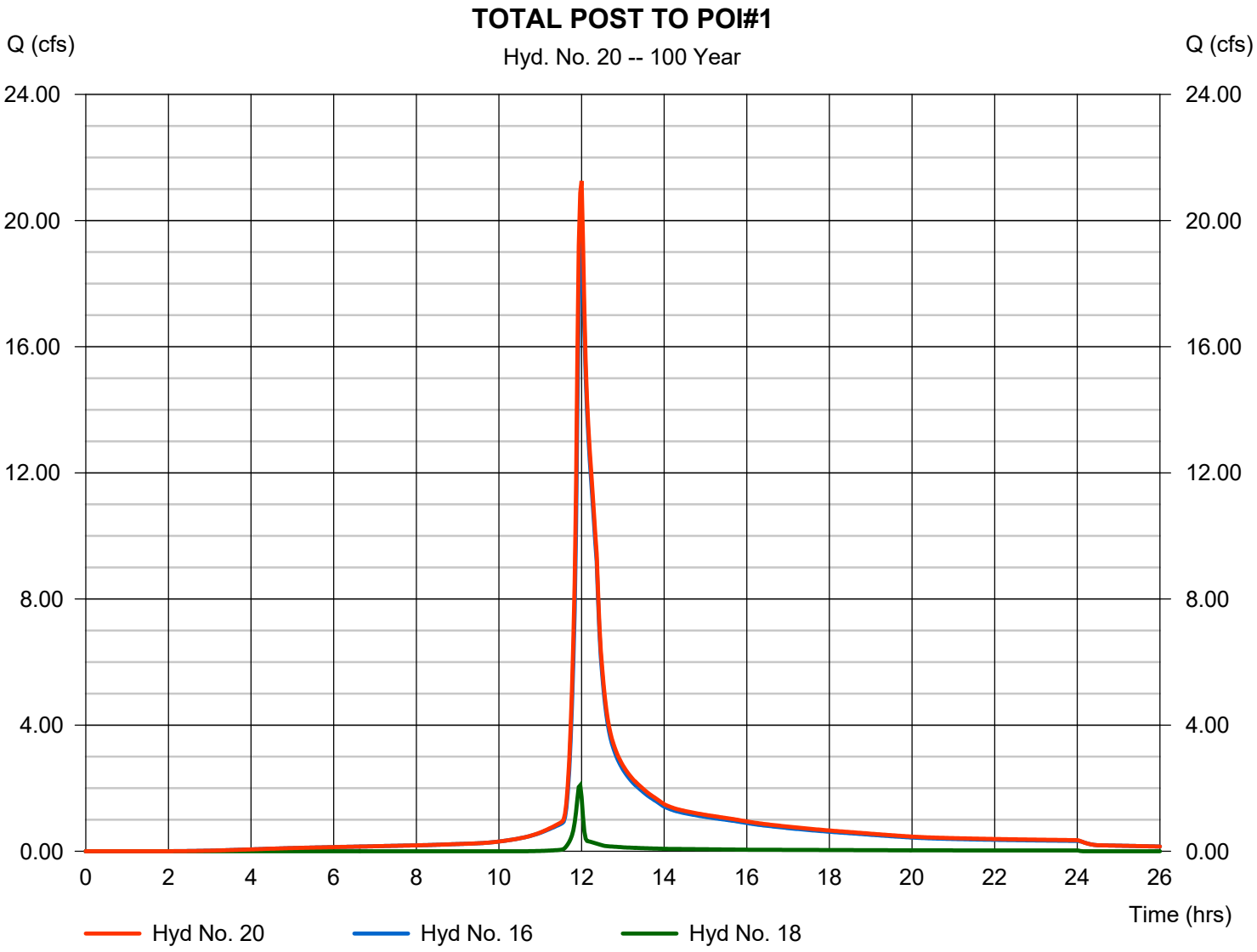
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Tuesday, 03 / 14 / 2023

Hyd. No. 20

TOTAL POST TO POI#1

Hydrograph type	= Combine	Peak discharge	= 21.26 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 82,914 cuft
Inflow hyds.	= 16, 18	Contrib. drain. area	= 0.466 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	57.7753	12.8000	0.8761	--------
3	0.0000	0.0000	0.0000	--------
5	60.6959	12.8000	0.8366	--------
10	57.8706	12.1000	0.7949	--------
25	53.3562	11.1000	0.7425	--------
50	48.3617	10.1000	0.6971	--------
100	44.9968	9.3000	0.6586	--------

File name: NOAA (INTENSITY).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	4.64	3.73	3.14	2.71	2.40	2.15	1.95	1.79	1.65	1.54	1.44	1.35
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	5.46	4.44	3.76	3.27	2.91	2.62	2.39	2.20	2.04	1.90	1.78	1.68
10	6.06	4.94	4.20	3.67	3.27	2.96	2.71	2.50	2.32	2.17	2.04	1.93
25	6.78	5.55	4.74	4.16	3.72	3.38	3.10	2.88	2.68	2.52	2.38	2.25
50	7.29	5.97	5.12	4.51	4.05	3.69	3.40	3.16	2.96	2.78	2.63	2.50
100	7.80	6.41	5.50	4.87	4.39	4.01	3.71	3.45	3.24	3.06	2.90	2.76

Tc = time in minutes. Values may exceed 60.

e name: R:\2022\PAB220113.00\CAD\Drawings\Plan Sets\Preliminary Grading and SWM analysis\NOAA (DEPTH).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	2.73	3.28	0.00	4.13	4.83	5.86	6.73	7.66
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

Volume Calculations

Volume Management

Project: Proposed Automotive Dealership

Instructions | General | *Volume* | Rate | Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): **3.28** inches

Alternative 2-Year / 24-Hour Storm Event _____ inches

Alternative Source: _____

Pre-Construction Conditions: *No. Rows:* **6** ☐ *Exempt from Meadow in Good Condition* ☑ *Automatically Calculate CN, Ia, Runoff and Volume*

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	0.79	A	30	4.667	0.00	0
Forested (Good Condition)	0.28	A	30	4.667	0.00	0
Pervious as Meadow	0.18	B	58	1.448	0.37	244
Impervious as Meadow	0.62	A	30	4.667	0.00	0
Impervious as Meadow	0.06	B	58	1.448	0.37	74
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	2.71	N/A	98	0.041	3.05	30,009
TOTAL (ACRES):	**4.65**				**TOTAL (CF):**	**30,328**

Post-Construction Conditions: *No. Rows:* **4**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.76	A	39	3.128	0.00	4

116

Woods (Good Condition)	0.28	A	30	4.667	0.00	0
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.15	B	61	1.279	0.48	263
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	3.45	N/A	98	0.041	3.05	38,162
TOTAL (ACRES):	**4.65**				**TOTAL (CF):**	**38,429**

NET CHANGE IN VOLUME TO MANAGE (CF): **8,101**

Non-Structural BMP Volume Credits:

☑ Tree Planting Credit

Number of new deciduous trees that will be planted within disturbed area: 32 — **CREDIT (CF):** **192**

Number of new evergreen trees that will be planted within disturbed area: 8 — **CREDIT (CF):** **80**

☑ Other (attach calculations):

Description: Protect Sensitive/Special Features & Soil Amendments — **CREDIT (CF):** **925**

Structural BMP Volume Credits: *No. Structural BMPs:* **1** *Start BMP Numbering at:* **1**

DP No.	BMP No.	BMP Name	MRC?	Discharge	Incremental BMP DA (acres)	Volume Routed to BMP (CF)	Infiltration / Vegetated Area (SF)	Infiltration Rate (in/hr)	Infiltration Period (hrs)	Vegeta-ted?	Media Depth (ft)	Storage Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
001	1	Infiltration Basin	-	Off-Site	0.77	8,227	6,000	2.40	12	No	2.5	8,227	**8,227**	
												Totals:	**8,227**	

INFILTRATION & ET CREDITS (CF): **8,227**

NET CHANGE IN VOLUME TO MANAGE (CF): **8,101**

TOTAL CREDITS (CF): **9,424**

VOLUME REQUIREMENT SATISFIED

117

Actual Runoff Volume for 2-Year Storm Event

BMP: **UG#2**
Drainage Area: **0.77**
2-Year Rainfall: **3.28** in.

Developed Conditions The Shoppes at Upper Providence

Cover Type/Condition	Soil Type	Area (Ac)	CN	S	Ia (0.2 x S)	Q Runoff[1] (in)	Runoff Volume[2] (cuft)
Open Space (Lawns), Good Condition	A	0.00	39	15.641	3.128	0.001	0
Open Space (Lawns), Good Condition	B	0.02	61	6.393	1.279	0.477	42
Impervious		0.74	98	0.204	0.041	3.047	8,185
	Total	**0.77**					**8,227**

1. Runoff (in) = Q = (P - 0.2S)^2 / (P + 0.8S) where:
P = 2-year Rainfall (in)
S = (1000/CN) - 10

2. Runoff Volume (cf) = Q x Area x 1/12
Q = Runoff (in)
Area = Land use area (s.f.)

Bottom Contour Area	6,000.00	S.F.
Impervious Area to BMP	32,234.40	S.F.
Total Area to BMP	33,410.52	S.F.

	Design	Maximum
Impervious Loading Ratio =	5.4	5
Total Area Loading Ratio =	5.6	8

NON-STRUCTURAL BMP CREDITS

REVEGTATE AND REFOREST VOLUME CREDITS (BMP 5.6.3)

For Deciduous Trees:
Volume Reduction (ft^3) = $6ft^3$

Deciduous Trees	32	# of trees	x	6	ft^3	=	192.00	cuft

For Evergreen Trees:
Volume Reduction (ft^3) = $10ft^3$

Evergreen Trees	8	# of trees	x	10	ft^3	=	80.00	cuft

For Evergreen Shrubs:
Volume Reduction (ft^3) = $3ft^3$

Evergreen Surubs	0	# of shrubs	x	2	ft^3	=	0.00	cuft

Total Volume Credit = **272.00 cuft**

PROTECT SENSITIVE/SPECIAL FEATURES CREDITS (BMP 5.4.1)

For trees within 100 feet of impervious area:

Tree Canopy	9,064	s.f.	x	1/2"	x	1/12	=	**377.67**	**cuft**

AMENDED SOILS CREDITS (BMP 6.7.3)

Volume = Amended area (ft2) x 0.5 in x 1/12

Area of Amended Soils	13,133	S.F.
Volume	**547**	cuft

TOTAL NON-STRUCTURAL BMP CREDIT: **1,196.88 cuft**

Storm Drainage Calculations

Runoff Calculations C Worksheet

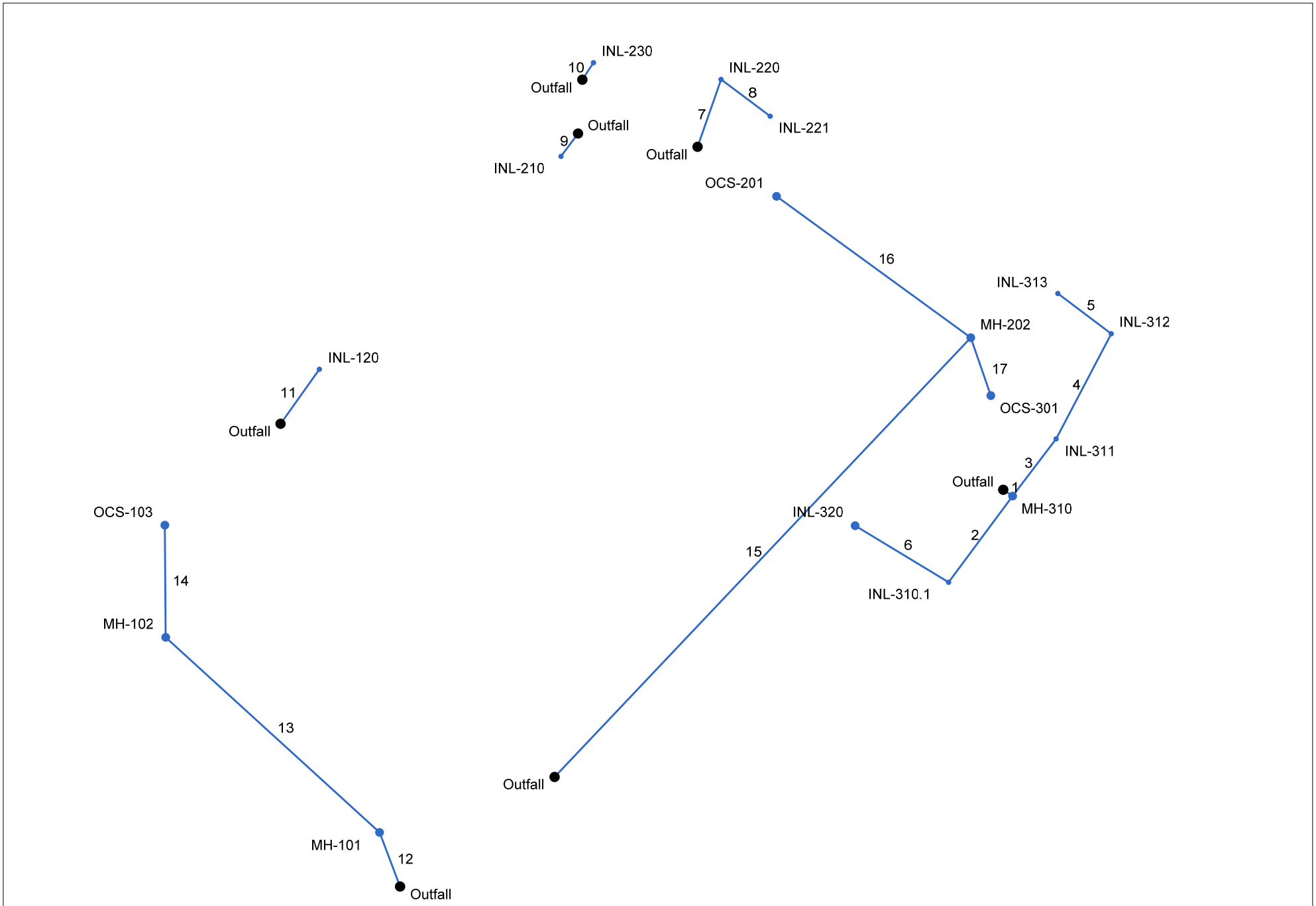
Project: **BMW Fort Washington**

Description: **510 Pennsylvania Ave, Whitemarsh Township, Montgomery County**

Drainage Area	Land Use Description	C	Area (Acres)	Total Area (Acres)	Weighted C
INL-110	Impervious	0.95	0.367	0.41	0.88
	Pervious	0.35	0.047		
INL-120	Impervious	0.95	0.096	0.12	0.83
	Pervious	0.35	0.023		
INL-210	Impervious	0.95	0.136	0.14	0.95
INL-220	Impervious	0.95	0.091	0.09	0.93
	Pervious	0.35	0.003		
INL-221	Impervious	0.95	0.329	0.34	0.93
	Pervious	0.35	0.014		
INL-230	Impervious	0.95	0.185	0.20	0.92
	Pervious	0.35	0.010		
INL-310.1	Impervious	0.95	0.060	0.10	0.73
	Pervious	0.35	0.036		
INL-311	Impervious	0.95	0.015	0.02	0.95

INL-312	Impervious	0.95	0.073	**0.08**	**0.91**
	Pervious	0.35	0.005		
INL-313	Impervious	0.95	0.105	**0.11**	**0.91**
	Pervious	0.35	0.007		
INL-320	Impervious	0.95	0.170	**0.18**	**0.93**
	Pervious	0.35	0.005		

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: PAB220113.00-Storm(25-yr)_Rev0.stm	Number of lines: 17	Date: 3/13/2023

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	MH-310	Manhole	165.01	Cir	4.00	4.00	15	Cir	160.31	15 15	Cir Cir	160.31 160.31
2	INL-310.1	Combination	164.28	Cir	2.00	2.00	15	Cir	160.62	15	Cir	160.62
3	INL-311	Combination	164.93	Cir	2.00	2.00	15	Cir	160.52	15	Cir	160.52
4	INL-312	Combination	163.83	Cir	2.00	2.00	15	Cir	160.87	15	Cir	160.87
5	INL-313	Combination	163.61	Cir	2.00	2.00	15	Cir	161.07			
6	INL-320	Combination	164.97	Cir	4.00	4.00	15	Cir	160.94			
7	INL-220	Combination	164.00	Cir	2.00	2.00	18	Cir	160.08	15	Cir	160.08
8	INL-221	Combination	164.04	Cir	2.00	2.00	15	Cir	160.30			
9	INL-210	Combination	166.25	Cir	2.00	2.00	15	Cir	159.97			
10	INL-230	Combination	165.07	Cir	2.00	2.00	15	Cir	159.98			
11	INL-120	Combination	164.04	Cir	2.00	2.00	15	Cir	159.18			
12	MH-101	Manhole	161.00	Cir	4.00	4.00	18	Cir	156.35	18	Cir	156.35
13	MH-102	Manhole	161.02	Cir	4.00	4.00	18	Cir	157.20	18	Cir	157.60
14	OCS-103	Manhole	164.07	Cir	4.00	4.00	18	Cir	158.79			
15	MH-202	Manhole	165.52	Cir	4.00	4.00	72	Cir	155.88	18 18	Cir Cir	159.09 160.10
16	OCS-201	Manhole	165.77	Cir	4.00	4.00	18	Cir	159.80			
17	OCS-301	Manhole	165.45	Cir	4.00	4.00	18	Cir	160.28			

Project File: PAB220113.00-Storm(25-yr)_Rev0.stm | Number of Structures: 17 | Run Date: 3/13/2023

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
1	UG3 - MH-310	2.73	15	Cir	6.564	160.28	160.31	0.457	161.00	161.01	0.23	161.24	End	Manhole
2	MH-310 - INL-310.1	1.64	15	Cir	62.971	160.31	160.62	0.492	161.24	161.13	n/a	161.13	1	Combination
3	MH-310 - INL-311	1.24	15	Cir	42.283	160.31	160.52	0.497	161.24	160.96	0.08	160.96	1	Combination
4	INL-311 - INL-312	1.18	15	Cir	69.738	160.52	160.87	0.502	160.96	161.30	n/a	161.30 j	3	Combination
5	INL-312 - INL-313	0.72	15	Cir	39.117	160.87	161.07	0.511	161.30	161.40	0.12	161.40	4	Combination
6	INL-310.1 - INL-320	1.20	15	Cir	64.130	160.62	160.94	0.499	161.13	161.37	0.16	161.37	2	Combination
7	UG2 - INL-220	2.82	18	Cir	42.000	159.80	160.08	0.667	160.48	160.72	n/a	160.72 j	End	Combination
8	INL-220 - INL-221	2.26	15	Cir	36.000	160.08	160.30	0.611	160.72	160.90	n/a	160.90 j	7	Combination
9	UG2 - INL-210	0.95	15	Cir	16.760	159.80	159.97	1.014	161.04	160.35	0.14	160.35	End	Combination
10	UG2 - INL-230	1.32	15	Cir	12.044	159.80	159.98	1.494	160.21	160.43	n/a	160.43	End	Combination
11	UG1 - INL-120	0.71	15	Cir	39.385	158.79	159.18	0.990	160.29	160.29	0.01	160.30	End	Combination
12	EW-100 - MH-101	7.87	18	Cir	34.000	156.18	156.35	0.500	158.35*	158.51*	0.16	158.67	End	Manhole
13	MH-101 - MH-102	7.87	18	Cir	170.000	156.35	157.20	0.500	158.67*	159.48*	0.24	159.72	12	Manhole
14	MH-102 - OCS-103	7.87	18	Cir	66.000	157.60	158.79	1.803	159.72	159.89	0.50	160.39	13	Manhole
15	EX-1 - MH-202	4.53	72	Cir	355.370	154.10	155.88	0.501	160.59	160.59	0.00	160.59	End	Manhole
16	MH-200 - OCS-201	3.77	18	Cir	141.000	159.09	159.80	0.504	160.59	160.76	0.15	160.91	15	Manhole
17	MH-200 - OCS-301	0.77	18	Cir	36.000	160.10	160.28	0.500	160.59	160.62	0.10	160.72	15	Manhole

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Project File: PAB220113.00-Storm(25-yr)_Rev0.stm | Number of lines: 17 | Run Date: 3/13/2023

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

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	6.564	0.00	0.49	0.00	0.00	0.43	0.0	7.9	6.3	2.73	4.73	3.79	15	0.46	160.28	160.31	161.00	161.01	165.07	165.01	UG3 - MH-310
2	1	62.971	0.10	0.28	0.73	0.07	0.24	5.0	6.1	6.8	1.64	4.91	2.59	15	0.49	160.31	160.62	161.24	161.13	165.01	164.28	MH-310 - INL-310
3	1	42.283	0.02	0.21	0.95	0.02	0.19	5.0	7.3	6.5	1.24	4.93	2.25	15	0.50	160.31	160.52	161.24	160.96	165.01	164.93	MH-310 - INL-311
4	3	69.738	0.08	0.19	0.91	0.07	0.17	5.0	6.1	6.8	1.18	4.96	3.12	15	0.50	160.52	160.87	160.96	161.30	164.93	163.83	INL-311 - INL-312
5	4	39.117	0.11	0.11	0.91	0.10	0.10	5.0	5.0	7.2	0.72	5.00	2.34	15	0.51	160.87	161.07	161.30	161.40	163.83	163.61	INL-312 - INL-313
6	2	64.130	0.18	0.18	0.93	0.17	0.17	5.0	5.0	7.2	1.20	4.94	2.88	15	0.50	160.62	160.94	161.13	161.37	164.28	164.97	INL-310.1 - INL-3
7	End	42.000	0.09	0.43	0.93	0.08	0.40	5.0	5.3	7.0	2.82	9.29	3.78	18	0.67	159.80	160.08	160.48	160.72	165.46	164.00	UG2 - INL-220
8	7	36.000	0.34	0.34	0.93	0.32	0.32	5.0	5.0	7.2	2.26	5.47	3.74	15	0.61	160.08	160.30	160.72	160.90	164.00	164.04	INL-220 - INL-221
9	End	16.760	0.14	0.14	0.95	0.13	0.13	5.0	5.0	7.2	0.95	7.05	1.88	15	1.01	159.80	159.97	161.04	160.35	165.89	166.25	UG2 - INL-210
10	End	12.044	0.20	0.20	0.92	0.18	0.18	5.0	5.0	7.2	1.32	8.55	3.52	15	1.49	159.80	159.98	160.21	160.43	165.28	165.07	UG2 - INL-230
11	End	39.385	0.12	0.12	0.83	0.10	0.10	5.0	5.0	7.2	0.71	6.96	0.60	15	0.99	158.79	159.18	160.29	160.29	163.75	164.04	UG1 - INL-120
12	End	34.000	0.00	0.00	0.00	0.00	0.00	0.0	5.9	0.0	7.87	8.04	4.45	18	0.50	156.18	156.35	158.35	158.51	158.34	161.00	EW-100 - MH-101
13	12	170.000	0.00	0.00	0.00	0.00	0.00	0.0	5.2	0.0	7.87	8.04	4.45	18	0.50	156.35	157.20	158.67	159.48	161.00	161.02	MH-101 - MH-102
14	13	66.000	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	7.87	15.28	5.06	18	1.80	157.60	158.79	159.72	159.89	161.02	164.07	MH-102 - OCS-10
15	End	355.370	0.00	0.00	0.00	0.00	0.00	0.0	6.4	0.0	4.53	324.8	0.18	72	0.50	154.10	155.88	160.59	160.59	0.00	165.52	EX-1 - MH-202
16	15	141.000	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	3.77	7.45	2.64	18	0.50	159.09	159.80	160.59	160.76	165.52	165.77	MH-200 - OCS-20
17	15	36.000	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.77	7.43	2.05	18	0.50	160.10	160.28	160.59	160.62	165.52	165.45	MH-200 - OCS-30

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Project File: PAB220113.00-Storm(25-yr)_Rev0.stm

Number of lines: 17

Run Date: 3/13/2023

NOTES:Intensity = 55.41 / (Inlet time + 11.00) ^ 0.74; Return period =Yrs. 25 ; c = cir e = ellip b = box

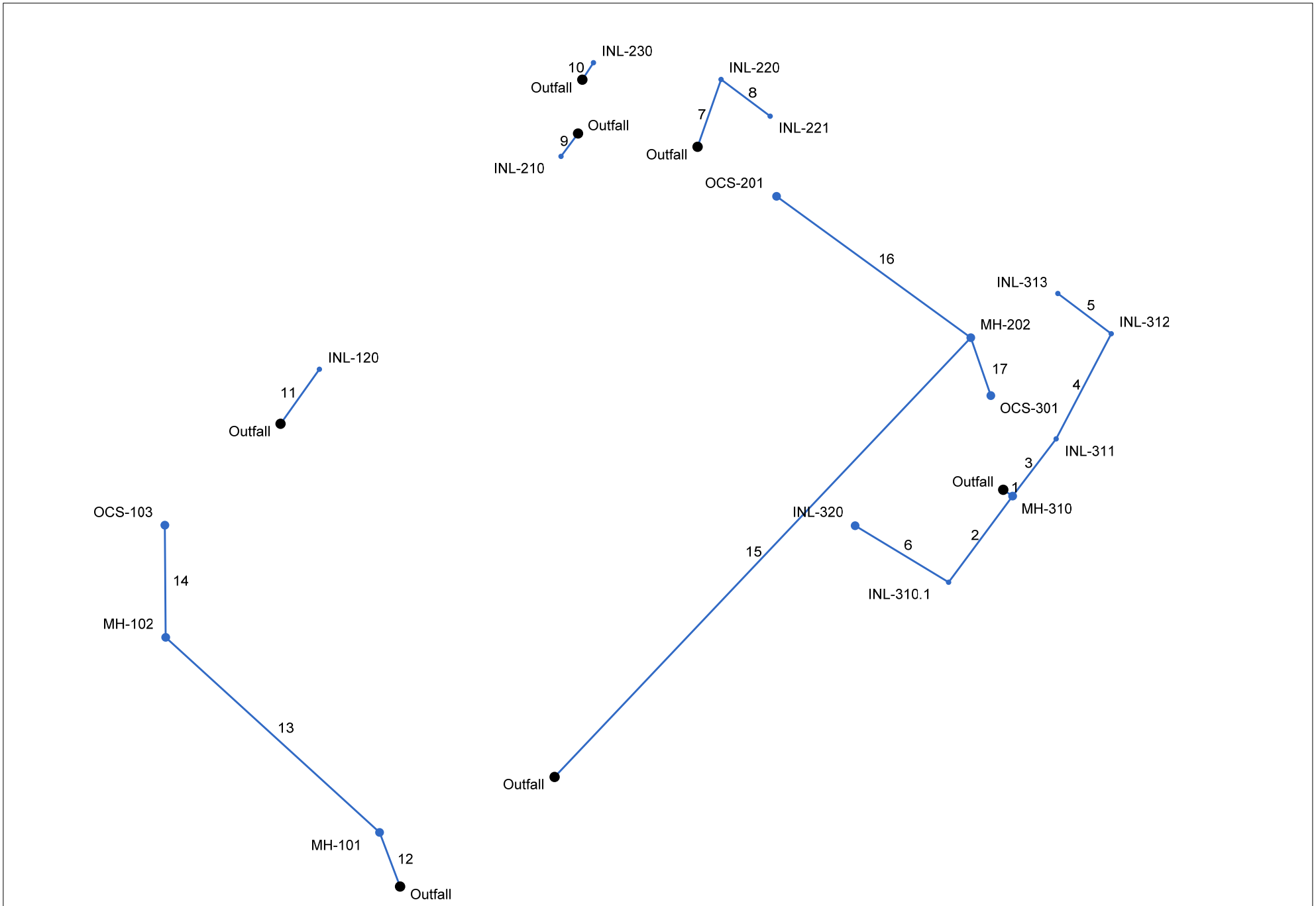
Inlet Report

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)	
1	MH-310	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	INL-310.1	0.52	0.00	0.52	0.00	Comb	4.0	4.00	7.54	4.00	2.00	Sag	2.00	0.050	0.020	0.000	0.13	3.40	0.13	3.40	0.0	Off
3	INL-311	0.14	0.00	0.14	0.00	Comb	4.0	4.00	0.00	4.00	2.00	0.005	2.00	0.050	0.020	0.013	0.10	2.07	0.00	0.00	0.0	4
4	INL-312	0.52	0.00	0.51	0.01	Comb	4.0	4.00	0.00	4.00	2.00	0.030	2.00	0.050	0.020	0.013	0.12	2.97	0.02	0.49	0.0	Off
5	INL-313	0.72	0.00	0.68	0.03	Comb	4.0	4.00	0.00	4.00	2.00	0.030	2.00	0.050	0.020	0.013	0.13	3.66	0.04	0.85	0.0	Off
6	INL-320	1.20	0.00	1.20	0.00	Comb	4.0	8.00	15.08	8.00	2.00	Sag	2.00	0.050	0.020	0.000	0.15	4.68	0.15	4.68	0.0	Off
7	INL-220	0.60	0.00	0.58	0.02	Comb	4.0	4.00	0.00	4.00	2.00	0.030	2.00	0.050	0.020	0.013	0.13	3.27	0.03	0.64	0.0	Off
8	INL-221	2.26	0.00	1.72	0.55	Comb	4.0	4.00	0.00	4.00	2.00	0.030	2.00	0.050	0.020	0.013	0.19	6.67	0.12	3.07	0.0	Off
9	INL-210	0.95	0.00	0.95	0.00	Comb	4.0	4.00	7.54	4.00	2.00	Sag	2.00	0.050	0.020	0.000	0.17	5.32	0.17	5.32	0.0	Off
10	INL-230	1.32	0.00	1.32	0.00	Comb	4.0	4.00	7.54	4.00	2.00	Sag	2.00	0.050	0.020	0.000	0.19	6.72	0.19	6.72	0.0	Off
11	INL-120	0.71	0.00	0.65	0.07	Comb	4.0	4.00	0.00	4.00	2.00	0.010	2.00	0.050	0.020	0.013	0.16	4.97	0.07	1.37	0.0	Off
12	MH-101	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
13	MH-102	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
14	OCS-103	7.87*	0.00	0.00	7.87	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
15	MH-202	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
16	OCS-201	3.77*	0.00	0.00	3.77	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off
17	OCS-301	0.77*	0.00	0.00	0.77	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

Project File: PAB220113.00-Storm(25-yr)_Rev0.stm | Number of lines: 17 | Run Date: 3/13/2023

NOTES: Inlet N-Values = 0.016; Intensity = 55.41 / (Inlet time + 11.00) ^ 0.74; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: PAB220113.00-Storm(25-yr-Tailwater)_Rev0.stm	Number of lines: 17	Date: 3/15/2023

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	MH-310	Manhole	165.01	Cir	4.00	4.00	15	Cir	160.31	15 15	Cir Cir	160.31 160.31
2	INL-310.1	Combination	164.28	Cir	2.00	2.00	15	Cir	160.62	15	Cir	160.62
3	INL-311	Combination	164.93	Cir	2.00	2.00	15	Cir	160.52	15	Cir	160.52
4	INL-312	Combination	163.83	Cir	2.00	2.00	15	Cir	160.87	15	Cir	160.87
5	INL-313	Combination	163.61	Cir	2.00	2.00	15	Cir	161.07			
6	INL-320	Combination	164.97	Cir	4.00	4.00	15	Cir	160.94			
7	INL-220	Combination	164.00	Cir	2.00	2.00	18	Cir	160.08	15	Cir	160.08
8	INL-221	Combination	164.04	Cir	2.00	2.00	15	Cir	160.30			
9	INL-210	Combination	166.25	Cir	2.00	2.00	15	Cir	159.97			
10	INL-230	Combination	165.07	Cir	2.00	2.00	15	Cir	159.98			
11	INL-120	Combination	164.04	Cir	2.00	2.00	15	Cir	159.18			
12	MH-101	Manhole	161.00	Cir	4.00	4.00	18	Cir	156.35	18	Cir	156.35
13	MH-102	Manhole	161.02	Cir	4.00	4.00	18	Cir	157.20	18	Cir	157.60
14	OCS-103	Manhole	164.07	Cir	4.00	4.00	18	Cir	158.79			
15	MH-202	Manhole	165.52	Cir	4.00	4.00	72	Cir	155.88	18 18	Cir Cir	159.09 160.10
16	OCS-201	Manhole	165.77	Cir	4.00	4.00	18	Cir	159.80			
17	OCS-301	Manhole	165.45	Cir	4.00	4.00	18	Cir	160.28			

Project File: PAB220113.00-Storm(25-yr-Tailwater)_Rev0.stm | Number of Structures: 17 | Run Date: 3/15/2023

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	6.564	0.00	0.49	0.00	0.00	0.43	0.0	7.9	6.3	2.73	4.73	3.79	15	0.46	160.28	160.31	161.00	161.01	165.07	165.01	UG3 - MH-310
2	1	62.971	0.10	0.28	0.73	0.07	0.24	5.0	6.1	6.8	1.64	4.91	2.59	15	0.49	160.31	160.62	161.24	161.13	165.01	164.28	MH-310 - INL-310
3	1	42.283	0.02	0.21	0.95	0.02	0.19	5.0	7.3	6.5	1.24	4.93	2.25	15	0.50	160.31	160.52	161.24	160.96	165.01	164.93	MH-310 - INL-311
4	3	69.738	0.08	0.19	0.91	0.07	0.17	5.0	6.1	6.8	1.18	4.96	3.12	15	0.50	160.52	160.87	160.96	161.30	164.93	163.83	INL-311 - INL-312
5	4	39.117	0.11	0.11	0.91	0.10	0.10	5.0	5.0	7.2	0.72	5.00	2.34	15	0.51	160.87	161.07	161.30	161.40	163.83	163.61	INL-312 - INL-313
6	2	64.130	0.18	0.18	0.93	0.17	0.17	5.0	5.0	7.2	1.20	4.94	2.88	15	0.50	160.62	160.94	161.13	161.37	164.28	164.97	INL-310.1 - INL-3
7	End	42.000	0.09	0.43	0.93	0.08	0.40	5.0	5.3	7.0	2.82	9.29	3.78	18	0.67	159.80	160.08	160.48	160.72	165.46	164.00	UG2 - INL-220
8	7	36.000	0.34	0.34	0.93	0.32	0.32	5.0	5.0	7.2	2.26	5.47	3.74	15	0.61	160.08	160.30	160.72	160.90	164.00	164.04	INL-220 - INL-221
9	End	16.760	0.14	0.14	0.95	0.13	0.13	5.0	5.0	7.2	0.95	7.05	1.88	15	1.01	159.80	159.97	161.04	160.35	165.89	166.25	UG2 - INL-210
10	End	12.044	0.20	0.20	0.92	0.18	0.18	5.0	5.0	7.2	1.32	8.55	3.52	15	1.49	159.80	159.98	160.21	160.43	165.28	165.07	UG2 - INL-230
11	End	39.385	0.12	0.12	0.83	0.10	0.10	5.0	5.0	7.2	0.71	6.96	0.60	15	0.99	158.79	159.18	160.29	160.29	163.75	164.04	UG1 - INL-120
12	End	34.000	0.00	0.00	0.00	0.00	0.00	0.0	5.9	0.0	7.87	8.04	4.45	18	0.50	156.18	156.35	167.95	168.11	158.34	161.00	EW-100 - MH-101
13	12	170.000	0.00	0.00	0.00	0.00	0.00	0.0	5.2	0.0	7.87	8.04	4.45	18	0.50	156.35	157.20	168.27	169.08	161.00	161.02	MH-101 - MH-102
14	13	66.000	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	7.87	15.28	4.45	18	1.80	157.60	158.79	169.32	169.64	161.02	164.07	MH-102 - OCS-10
15	End	355.370	0.00	0.00	0.00	0.00	0.00	0.0	6.4	0.0	4.53	324.8	0.16	72	0.50	154.10	155.88	167.95	167.95	0.00	165.52	EX-1 - MH-202
16	15	141.000	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	3.77	7.45	2.13	18	0.50	159.09	159.80	167.95	168.13	165.52	165.77	MH-200 - OCS-20
17	15	36.000	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.77	7.43	0.43	18	0.50	160.10	160.28	167.95	167.95	165.52	165.45	MH-200 - OCS-30

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Project File: PAB220113.00-Storm(25-yr-Tailwater)_Rev0.stm | Number of lines: 17 | Run Date: 3/15/2023

NOTES:Intensity = 55.41 / (Inlet time + 11.00) ^ 0.74; Return period =Yrs. 25 ; 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)	
1	MH-310	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	INL-310.1	0.52	0.00	0.52	0.00	Comb	4.0	4.00	7.54	4.00	2.00	Sag	2.00	0.050	0.020	0.000	0.13	3.40	0.13	3.40	0.0	Off
3	INL-311	0.14	0.00	0.14	0.00	Comb	4.0	4.00	0.00	4.00	2.00	0.005	2.00	0.050	0.020	0.013	0.10	2.07	0.00	0.00	0.0	4
4	INL-312	0.52	0.00	0.51	0.01	Comb	4.0	4.00	0.00	4.00	2.00	0.030	2.00	0.050	0.020	0.013	0.12	2.97	0.02	0.49	0.0	Off
5	INL-313	0.72	0.00	0.68	0.03	Comb	4.0	4.00	0.00	4.00	2.00	0.030	2.00	0.050	0.020	0.013	0.13	3.66	0.04	0.85	0.0	Off
6	INL-320	1.20	0.00	1.20	0.00	Comb	4.0	8.00	15.08	8.00	2.00	Sag	2.00	0.050	0.020	0.000	0.15	4.68	0.15	4.68	0.0	Off
7	INL-220	0.60	0.00	0.58	0.02	Comb	4.0	4.00	0.00	4.00	2.00	0.030	2.00	0.050	0.020	0.013	0.13	3.27	0.03	0.64	0.0	Off
8	INL-221	2.26	0.00	1.72	0.55	Comb	4.0	4.00	0.00	4.00	2.00	0.030	2.00	0.050	0.020	0.013	0.19	6.67	0.12	3.07	0.0	Off
9	INL-210	0.95	0.00	0.95	0.00	Comb	4.0	4.00	7.54	4.00	2.00	Sag	2.00	0.050	0.020	0.000	0.17	5.32	0.17	5.32	0.0	Off
10	INL-230	1.32	0.00	1.32	0.00	Comb	4.0	4.00	7.54	4.00	2.00	Sag	2.00	0.050	0.020	0.000	0.19	6.72	0.19	6.72	0.0	Off
11	INL-120	0.71	0.00	0.65	0.07	Comb	4.0	4.00	0.00	4.00	2.00	0.010	2.00	0.050	0.020	0.013	0.16	4.97	0.07	1.37	0.0	Off
12	MH-101	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
13	MH-102	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
14	OCS-103	7.87*	0.00	0.00	7.87	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
15	MH-202	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
16	OCS-201	3.77*	0.00	0.00	3.77	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off
17	OCS-301	0.77*	0.00	0.00	0.77	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

Project File: PAB220113.00-Storm(25-yr-Tailwater)_Rev0.stm | Number of lines: 17 | Run Date: 3/15/2023

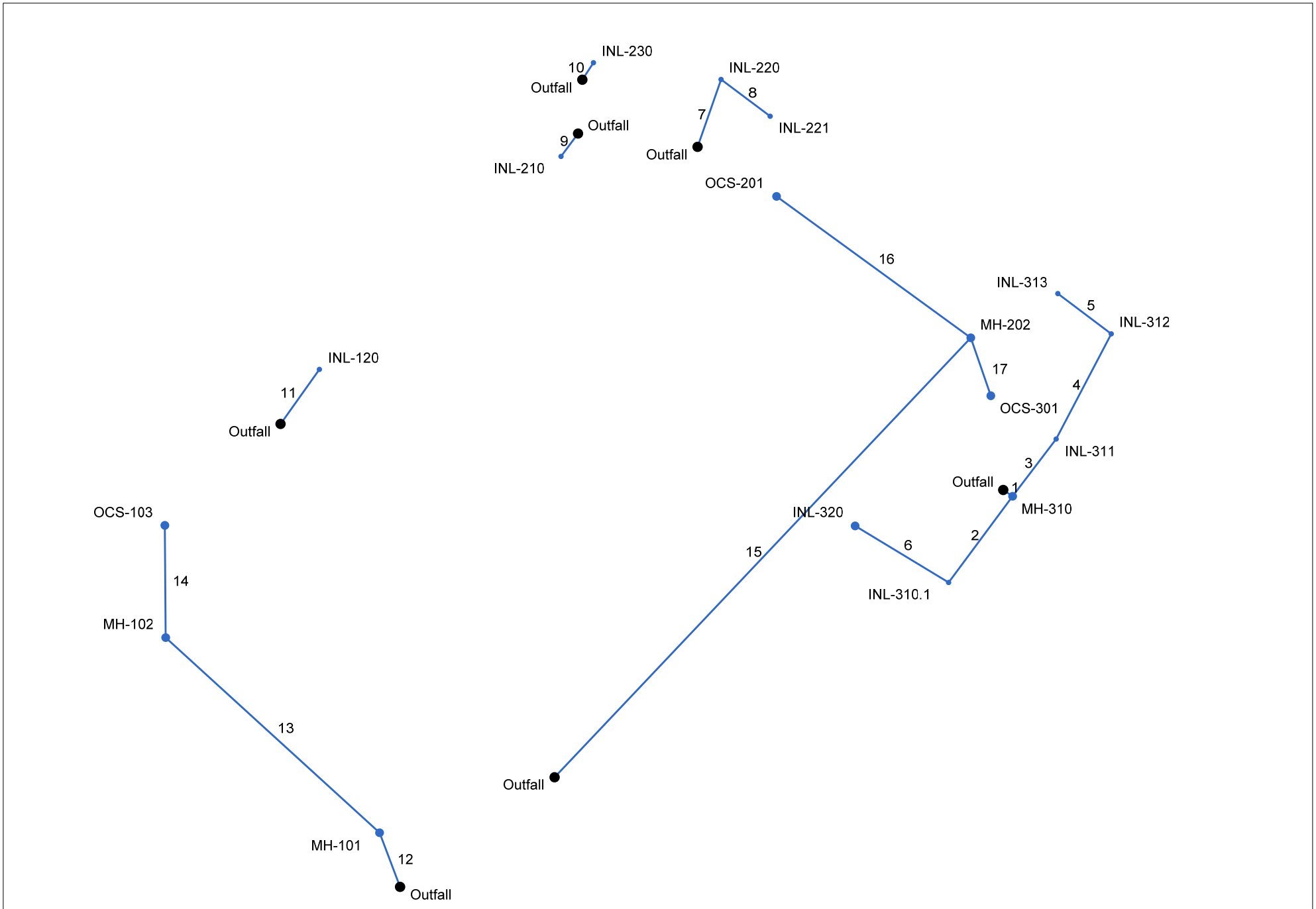
NOTES: Inlet N-Values = 0.016; Intensity = 55.41 / (Inlet time + 11.00) ^ 0.74; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Storm Sewer Inlet Time Tabulation

Line No.	Line ID	Tc Method	Sheet Flow					Shallow Concentrated Flow					Channel Flow							Total Travel Time (min)
			n-Value	flow Length (ft)	2-yr 24h P (in)	Land Slope (%)	Travel Time (min)	flow Length (ft)	Water Slope (%)	Surf Descr	Ave Vel (ft/s)	Travel Time (min)	X-sec Area (sqft)	Wetted Perim (ft)	Chan Slope (%)	n-Value	Vel	flow Length (ft)	Travel Time (min)	
1	UG3 - MH-310	User																		0.00
2	MH-310 - INL-310	User																		5.00
3	MH-310 - INL-311	User																		5.00
4	INL-311 - INL-312	User																		5.00
5	INL-312 - INL-313	User																		5.00
6	INL-310.1 - INL-3	User																		5.00
7	UG2 - INL-220	User																		5.00
8	INL-220 - INL-221	User																		5.00
9	UG2 - INL-210	User																		5.00
10	UG2 - INL-230	User																		5.00
11	UG1 - INL-120	User																		5.00
12	EW-100 - MH-101	User																		0.00
13	MH-101 - MH-102	User																		0.00
14	MH-102 - OCS-10	User																		5.00
15	EX-1 - MH-202	User																		0.00
16	MH-200 - OCS-20	User																		5.00
17	MH-200 - OCS-30	User																		5.00

Project File: PAB220113.00-Storm(25-yr-Tailwater)_Rev0.stm Min. Tc used for intensity calculations = 5 min Number of lines: 17 Date: 3/15/2023

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: PAB220113.00-Storm(100-yr-Tailwater)_Rev0.stm	Number of lines: 17	Date: 3/15/2023

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	MH-310	Manhole	165.01	Cir	4.00	4.00	15	Cir	160.31	15 15	Cir Cir	160.31 160.31
2	INL-310.1	Combination	164.28	Cir	2.00	2.00	15	Cir	160.62	15	Cir	160.62
3	INL-311	Combination	164.93	Cir	2.00	2.00	15	Cir	160.52	15	Cir	160.52
4	INL-312	Combination	163.83	Cir	2.00	2.00	15	Cir	160.87	15	Cir	160.87
5	INL-313	Combination	163.61	Cir	2.00	2.00	15	Cir	161.07			
6	INL-320	Combination	164.97	Cir	4.00	4.00	15	Cir	160.94			
7	INL-220	Combination	164.00	Cir	2.00	2.00	18	Cir	160.08	15	Cir	160.08
8	INL-221	Combination	164.04	Cir	2.00	2.00	15	Cir	160.30			
9	INL-210	Combination	166.25	Cir	2.00	2.00	15	Cir	159.97			
10	INL-230	Combination	165.07	Cir	2.00	2.00	15	Cir	159.98			
11	INL-120	Combination	164.04	Cir	2.00	2.00	15	Cir	159.18			
12	MH-101	Manhole	161.00	Cir	4.00	4.00	18	Cir	156.35	18	Cir	156.35
13	MH-102	Manhole	161.02	Cir	4.00	4.00	18	Cir	157.20	18	Cir	157.60
14	OCS-103	Manhole	164.07	Cir	4.00	4.00	18	Cir	158.79			
15	MH-202	Manhole	165.52	Cir	4.00	4.00	72	Cir	155.88	18 18	Cir Cir	159.09 160.10
16	OCS-201	Manhole	165.77	Cir	4.00	4.00	18	Cir	159.80			
17	OCS-301	Manhole	165.45	Cir	4.00	4.00	18	Cir	160.28			

Project File: PAB220113.00-Storm(100-yr-Tailwater)_Rev0.stm | Number of Structures: 17 | Run Date: 3/15/2023

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	6.564	0.00	0.49	0.00	0.00	0.43	0.0	7.6	7.3	3.18	4.73	4.24	15	0.46	160.28	160.31	161.00	161.06	165.07	165.01	UG3 - MH-310
2	1	62.971	0.10	0.28	0.73	0.07	0.24	5.0	6.0	7.8	1.89	4.91	2.72	15	0.49	160.31	160.62	161.32	161.17	165.01	164.28	MH-310 - INL-310
3	1	42.283	0.02	0.21	0.95	0.02	0.19	5.0	7.0	7.5	1.44	4.93	2.36	15	0.50	160.31	160.52	161.32	160.99	165.01	164.93	MH-310 - INL-311
4	3	69.738	0.08	0.19	0.91	0.07	0.17	5.0	6.0	7.8	1.36	4.96	3.24	15	0.50	160.52	160.87	160.99	161.33	164.93	163.83	INL-311 - INL-312
5	4	39.117	0.11	0.11	0.91	0.10	0.10	5.0	5.0	8.2	0.82	5.00	2.43	15	0.51	160.87	161.07	161.33	161.42	163.83	163.61	INL-312 - INL-313
6	2	64.130	0.18	0.18	0.93	0.17	0.17	5.0	5.0	8.2	1.37	4.94	2.99	15	0.50	160.62	160.94	161.17	161.40	164.28	164.97	INL-310.1 - INL-3
7	End	42.000	0.09	0.43	0.93	0.08	0.40	5.0	5.3	8.1	3.23	9.29	4.14	18	0.67	159.80	160.08	160.48	160.76	165.46	164.00	UG2 - INL-220
8	7	36.000	0.34	0.34	0.93	0.32	0.32	5.0	5.0	8.2	2.59	5.47	3.91	15	0.61	160.08	160.30	160.76	160.94	164.00	164.04	INL-220 - INL-221
9	End	16.760	0.14	0.14	0.95	0.13	0.13	5.0	5.0	8.2	1.09	7.05	2.00	15	1.01	159.80	159.97	161.04	160.38	165.89	166.25	UG2 - INL-210
10	End	12.044	0.20	0.20	0.92	0.18	0.18	5.0	5.0	8.2	1.51	8.55	3.86	15	1.49	159.80	159.98	160.21	160.47	165.28	165.07	UG2 - INL-230
11	End	39.385	0.12	0.12	0.83	0.10	0.10	5.0	5.0	8.2	0.82	6.96	0.69	15	0.99	158.79	159.18	160.29	160.29	163.75	164.04	UG1 - INL-120
12	End	34.000	0.00	0.00	0.00	0.00	0.00	0.0	5.7	0.0	9.38	8.04	5.31	18	0.50	156.18	156.35	169.20	169.43	158.34	161.00	EW-100 - MH-101
13	12	170.000	0.00	0.00	0.00	0.00	0.00	0.0	5.2	0.0	9.38	8.04	5.31	18	0.50	156.35	157.20	169.65	170.81	161.00	161.02	MH-101 - MH-102
14	13	66.000	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	9.38	15.28	5.31	18	1.80	157.60	158.79	171.15	171.60	161.02	164.07	MH-102 - OCS-10
15	End	355.370	0.00	0.00	0.00	0.00	0.00	0.0	6.1	0.0	8.29	324.8	0.29	72	0.50	154.10	155.88	169.20	169.20	0.00	165.52	EX-1 - MH-202
16	15	141.000	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	7.30	7.45	4.13	18	0.50	159.09	159.80	169.20	169.88	165.52	165.77	MH-200 - OCS-20
17	15	36.000	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	0.99	7.43	0.56	18	0.50	160.10	160.28	169.20	169.21	165.52	165.45	MH-200 - OCS-30

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Project File: PAB220113.00-Storm(100-yr-Tailwater)_Rev0.stm | Number of lines: 17 | Run Date: 3/15/2023

NOTES:Intensity = 46.91 / (Inlet time + 9.20) ^ 0.66; Return period =Yrs. 100 ; 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)	
1	MH-310	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	INL-310.1	0.60	0.00	0.60	0.00	Comb	4.0	4.00	7.54	4.00	2.00	Sag	2.00	0.050	0.020	0.000	0.14	3.77	0.14	3.77	0.0	Off
3	INL-311	0.16	0.00	0.16	0.00	Comb	4.0	4.00	0.00	4.00	2.00	0.005	2.00	0.050	0.020	0.013	0.11	2.33	0.00	0.08	0.0	4
4	INL-312	0.60	0.00	0.58	0.01	Comb	4.0	4.00	0.00	4.00	2.00	0.030	2.00	0.050	0.020	0.013	0.13	3.26	0.03	0.62	0.0	Off
5	INL-313	0.82	0.00	0.77	0.05	Comb	4.0	4.00	0.00	4.00	2.00	0.030	2.00	0.050	0.020	0.013	0.14	3.98	0.05	1.00	0.0	Off
6	INL-320	1.37	0.00	1.37	0.00	Comb	4.0	8.00	15.08	8.00	2.00	Sag	2.00	0.050	0.020	0.000	0.16	5.17	0.16	5.17	0.0	Off
7	INL-220	0.69	0.00	0.66	0.03	Comb	4.0	4.00	0.00	4.00	2.00	0.030	2.00	0.050	0.020	0.013	0.13	3.57	0.04	0.79	0.0	Off
8	INL-221	2.59	0.00	1.90	0.69	Comb	4.0	4.00	0.00	4.00	2.00	0.030	2.00	0.050	0.020	0.013	0.20	7.09	0.13	3.60	0.0	Off
9	INL-210	1.09	0.00	1.09	0.00	Comb	4.0	4.00	7.54	4.00	2.00	Sag	2.00	0.050	0.020	0.000	0.18	5.87	0.18	5.87	0.0	Off
10	INL-230	1.51	0.00	1.51	0.00	Comb	4.0	4.00	7.54	4.00	2.00	Sag	2.00	0.050	0.020	0.000	0.21	7.40	0.21	7.40	0.0	Off
11	INL-120	0.82	0.00	0.72	0.09	Comb	4.0	4.00	0.00	4.00	2.00	0.010	2.00	0.050	0.020	0.013	0.17	5.33	0.08	1.54	0.0	Off
12	MH-101	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
13	MH-102	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
14	OCS-103	9.38*	0.00	0.00	9.38	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off
15	MH-202	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
16	OCS-201	7.30*	0.00	0.00	7.30	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off
17	OCS-301	0.99*	0.00	0.00	0.99	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off

Project File: PAB220113.00-Storm(100-yr-Tailwater)_Rev0.stm | Number of lines: 17 | Run Date: 3/15/2023

NOTES: Inlet N-Values = 0.016; Intensity = 46.91 / (Inlet time + 9.20) ^ 0.66; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Storm Sewer Inlet Time Tabulation

Line No.	Line ID	Tc Method	Sheet Flow					Shallow Concentrated Flow					Channel Flow							Total Travel Time (min)
			n-Value	flow Length (ft)	2-yr 24h P (in)	Land Slope (%)	Travel Time (min)	flow Length (ft)	Water Slope (%)	Surf Descr	Ave Vel (ft/s)	Travel Time (min)	X-sec Area (sqft)	Wetted Perim (ft)	Chan Slope (%)	n-Value	Vel	flow Length (ft)	Travel Time (min)	
1	UG3 - MH-310	User																		0.00
2	MH-310 - INL-310	User																		5.00
3	MH-310 - INL-311	User																		5.00
4	INL-311 - INL-312	User																		5.00
5	INL-312 - INL-313	User																		5.00
6	INL-310.1 - INL-3	User																		5.00
7	UG2 - INL-220	User																		5.00
8	INL-220 - INL-221	User																		5.00
9	UG2 - INL-210	User																		5.00
10	UG2 - INL-230	User																		5.00
11	UG1 - INL-120	User																		5.00
12	EW-100 - MH-101	User																		0.00
13	MH-101 - MH-102	User																		0.00
14	MH-102 - OCS-10	User																		5.00
15	EX-1 - MH-202	User																		0.00
16	MH-200 - OCS-20	User																		5.00
17	MH-200 - OCS-30	User																		5.00

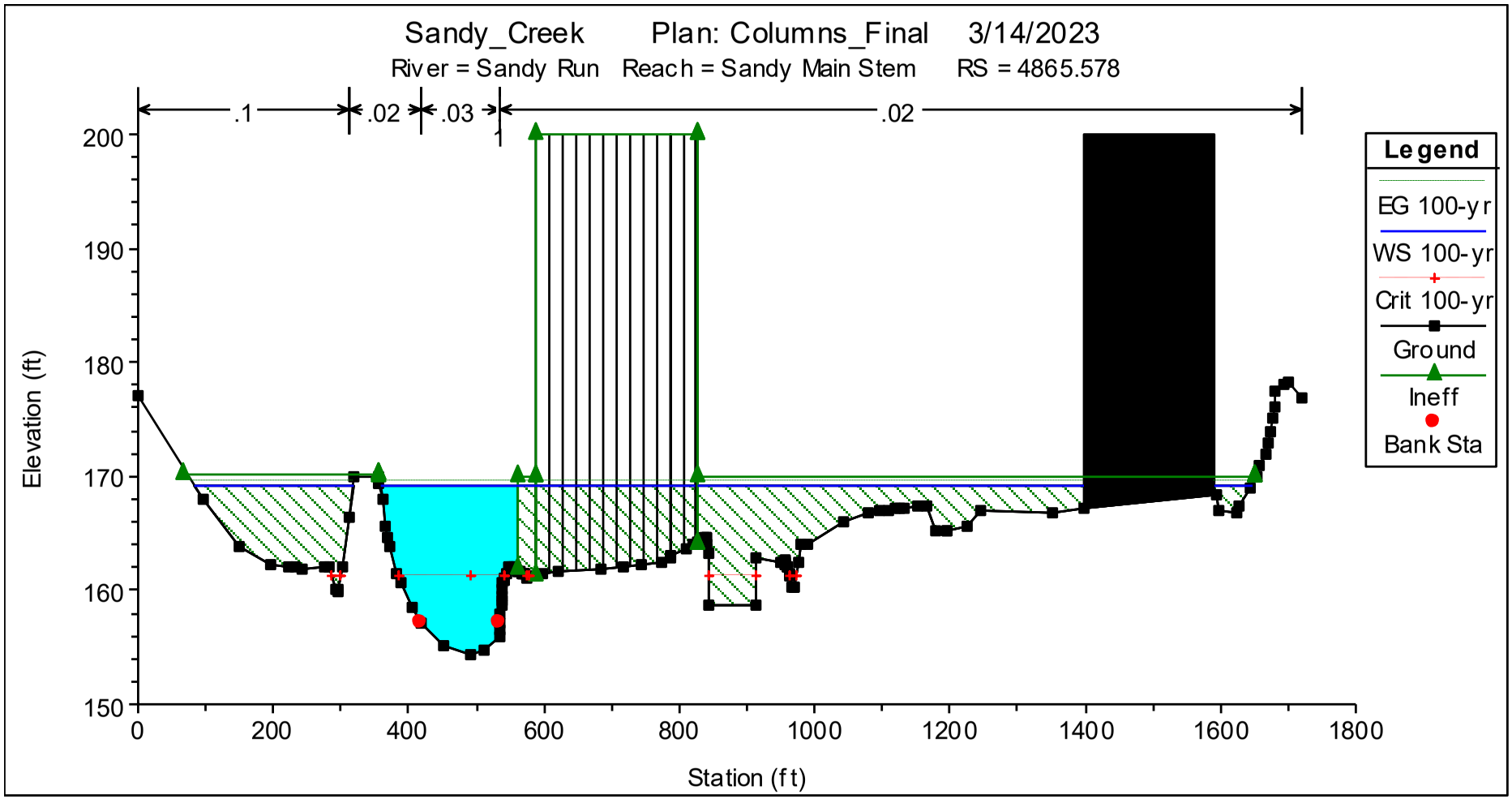
Project File: PAB220113.00-Storm(100-yr-Tailwater)_Rev0.stm Min. Tc used for intensity calculations = 5 min | Number of lines: 17 | Date: 3/15/2023

Plan: Columns_Final Sandy Run Sandy Main Stem RS: 4865.578 Profile: 50-yr

E.G. Elev (ft)	168.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.	0.02	0.03	0.021
W.S. Elev (ft)	167.95	Reach Len. (ft)	54.72	88.7	126.71
Crit W.S. (ft)	160.38	Flow Area (sq ft)	396.74	1488.94	164.22
E.G. Slope (ft/ft)	0.000199	Area (sq ft)	1421.52	1488.94	3344.01
Q Total (cfs)	7709	Flow (cfs)	1490.25	5653.7	565.04
Top Width (ft)	1269.61	Top Width (ft)	276.4	117.19	876.02
Vel Total (ft/s)	3.76	Avg. Vel. (ft/s)	3.76	3.8	3.44
Max Chl Dpth (ft)	13.7	Hydr. Depth (ft)	6.94	12.71	6.63
Conv. Total (cfs)	545909.5	Conv. (cfs)	105531.7	400364.6	40013.3
Length Wtd. (ft)	86.15	Wetted Per. (ft)	58.56	117.71	26.28
Min Ch El (ft)	154.25	Shear (lb/sq ft)	0.08	0.16	0.08
Alpha	1	Stream Power (lb/ft s)	0.32	0.6	0.27
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	95.8	41.85	202.51
C & E Loss (ft)	0.08	Cum SA (acres)	26.9	4.26	44.08

Plan: Columns_Final Sandy Run Sandy Main Stem RS: 4865.578 Profile: 100-yr

E.G. Elev (ft)	169.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.02	0.03	0.021
W.S. Elev (ft)	169.2	Reach Len. (ft)	54.72	88.7	126.71
Crit W.S. (ft)	161.2	Flow Area (sq ft)	470.48	1635.51	195.17
E.G. Slope (ft/ft)	0.00022	Area (sq ft)	1779.5	1635.51	4453.24
Q Total (cfs)	9741	Flow (cfs)	1994.3	6951.71	794.99
Top Width (ft)	1307.93	Top Width (ft)	295.98	117.19	894.76
Vel Total (ft/s)	4.23	Avg. Vel. (ft/s)	4.24	4.25	4.07
Max Chl Dpth (ft)	14.95	Hydr. Depth (ft)	7.73	13.96	7.89
Conv. Total (cfs)	656038.3	Conv. (cfs)	134312.3	468184.6	53541.4
Length Wtd. (ft)	86.06	Wetted Per. (ft)	62.46	117.71	26.28
Min Ch El (ft)	154.25	Shear (lb/sq ft)	0.1	0.19	0.1
Alpha	1	Stream Power (lb/ft s)	0.44	0.81	0.42
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	111.16	44.75	231.65
C & E Loss (ft)	0.11	Cum SA (acres)	27.95	4.26	44.93

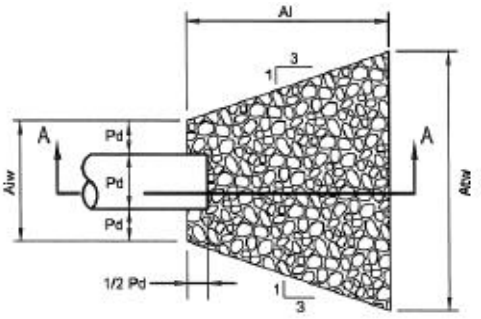

Sandy_Creek Plan: Columns_Final 3/14/2023
River = Sandy Run Reach = Sandy Main Stem RS = 4865.578
.1
.02
.03
.02
Elevation (ft)
200
190
180
170
160
150
0
200
400
600
800
1000
1200
1400
1600
1800
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
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Bank Sta

Supporting Documentation

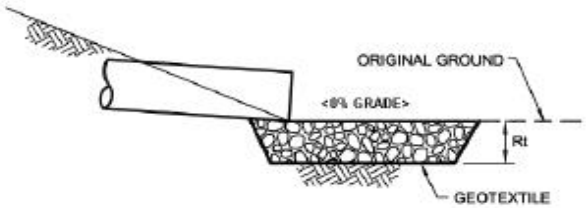
Rip-rap Apron Summary Sheet

Project: **BMW Fort Washington**

Description: **510 Pennsylvania Ave, Whitemarsh Township, Montgomery County**



PLAN VIEW



SECTION A - A

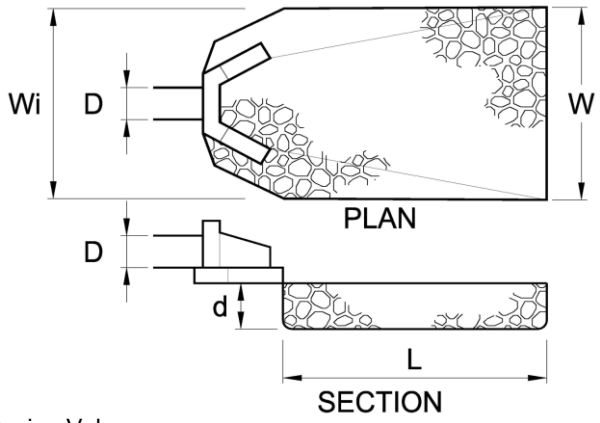
Outlet Name	Pipe						Apron					
	Dia. In.	Tail Water Condition Min or Max	Manning's "n" For Pipe	Slope	Q cfs	V^1 fps	d_{50} R-	in.	Rt in.	Al ft.	Aiw ft.	Atw ft
EW-100	18	MIN	0.013	0.0050	7.87	4.45	3	6	9.0	9.00	4.5	13.5

Rip-Rap Apron Worksheet

Project: **BMW Fort Washington**

Description: **EW-100**

510 Pennsylvania Ave, Whitemarsh Township, Montgomery County



Rip-Rap Dimensions:

L=	9.0	ft
W =	13.5	ft
Wi =	4.5	ft
Rip-rap Size =	R-3	
d50 =	6.0	in
d=	9.0	in

Design Values:

n =	*Manning's n*	0.013	
D =	*Diameter of Pipe*	18	in.
S =	*Slope of Pipe*	0.0050	ft/ft
Q_d =	*Design Discharge*	7.87	cfs***
V_d =	*Velocity*	4.45	fps***
T_w =	*Tailwater Condition*	MIN	either MIN or MAX
A =	*Full Flow Area of Pipe*	1.77	sf

Rise (in.)		Span (in.)		Barrels
18	x	18		1

7.87	
4.45	

*** *Formulas based on full-flow capacity.*

Full Flow Pipe Discharge:

Q_f = *0.464/n * D $^{8/3}$ * S $^{1/2}$ =* 7.44 cfs

Ratio of Part-Full to Full Flow Discharge:

d/D = Q_d/Q_f = 1.06

Figure 20 Ratios:

Area of Flow =	1.09
Depth of Flow =	0.89

Calculate Equivalent Flow:

*A * Ratio* =	1.92	sf
Equivalent Pipe Size full-flow =	18	in (smaller size = larger rip-rap (factor of safety))

CULTEC Stormwater Design Calculator for UG1

Date:	March 14, 2023

Project Information:

BMW Fort Washington
500 Pennsylvania Ave
Fort Washington
Pennsylvania
United States

Project Number:	PAB220113.00

Calculations Performed By:

Kaitlyn Peterson
Bohler Engineering
74 W Broad Street, Suite 500
Bethlehem Pennsylvania
18018
United States
(610) 709-9976
kpeterson@hanovereng.com

RECHARGER 280HD

Recharger 280HD Chamber Specifications

Height	**26.5**	inches
Width	**47.0**	inches
Length	**8.00**	feet
Installed Length	**7.00**	feet
Bare Chamber Volume	**42.55**	cu. feet
Installed Chamber Volume	**65.96**	cu. feet



Breakdown of Storage Provided by Recharger 280HD Stormwater System

Within Chambers	**10,808.46**	cu. feet
Within Feed Connectors	**6.92**	cu. feet
Within Stone	**6,338.02**	cu. feet
Total Storage Provided	**17,153.4**	**cu. feet**
Total Storage Required	16243.00	cu. feet

Materials List

Recharger 280HD

Total Number of Chambers Required	**252**	**pieces**
Separator Row Chambers	**18**	pieces
Starter Chambers	**14**	pieces
Intermediate Chambers	**224**	pieces
End Chambers	**14**	pieces
HVLV FC-24 Feed Connectors	**13**	pieces
CULTEC No. 410 Non-Woven Geotextile	**2481**	sq. yards
CULTEC No. 4800 Woven Geotextile	**198**	feet
Stone	**587**	cu. yards

Separator Row Qty Included in Total

Based on 1 Internal Manifold

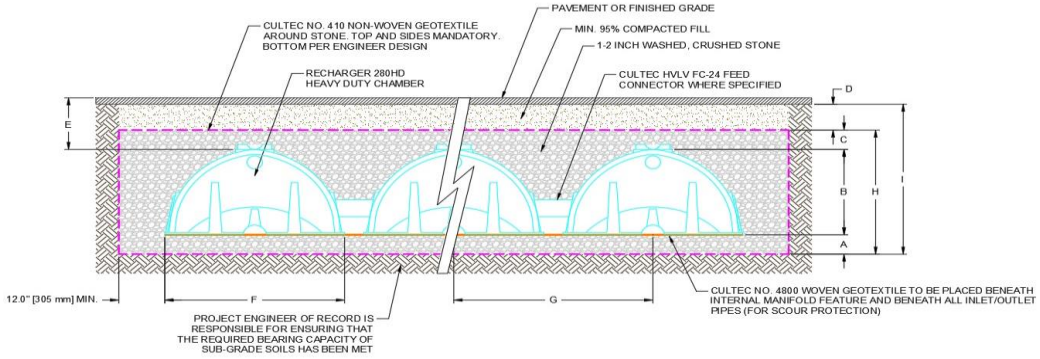
Bed Detail



Bed Layout Information

Number of Rows Wide	**14**	pieces
Number of Chambers Long	**18**	pieces
Chamber Row Width	**62.42**	feet
Chamber Row Length	**127.00**	feet
Bed Width	**64.42**	feet
Bed Length	**129.00**	feet
Bed Area Required	**8309.75**	sq. feet
Length of Separator Row	**127.00**	feet

Bed detail for reference only. Not project specific. Not to scale.



Conceptual graphic only. Not job specific.

Cross Section Table Reference

A	Depth of Stone Base	**6.0**	inches
B	Chamber Height	**26.5**	inches
C	Depth of Stone Above Units	**6.0**	inches
D	Depth of 95% Compacted Fill	**10.0**	inches
E	Max. Depth Allowed Above the Chamber	**12.00**	feet
F	Chamber Width	**47.0**	inches
G	Center to Center Spacing	**4.50**	feet
H	Effective Depth	**3.21**	feet
I	Bed Depth	**4.04**	feet

CULTEC Stormwater Design Calculator for UG2

Date:	March 14, 2023

Project Information:

BMW Fort Washington
500 Pennsylvania Ave
Fort Washington
Pennsylvania
United States

Project Number:	PAB220113.00

Calculations Performed By:

Kaitlyn Peterson
Bohler Engineering
74 W Broad Street, Suite 500
Bethlehem Pennsylvania
18018
United States
(610) 709-9976
kpeterson@hanovereng.com

RECHARGER 330XLHD



Recharger 330XLHD Chamber Specifications

Height	**30.5**	inches
Width	**52.0**	inches
Length	**8.50**	feet
Installed Length	**7.00**	feet
Bare Chamber Volume	**52.21**	cu. feet
Installed Chamber Volume	**89.18**	cu. feet

Breakdown of Storage Provided by Recharger 330XLHD Stormwater System

Within Chambers	**5,079.58**	cu. feet
Within Feed Connectors	**-**	cu. feet
Within Stone	**3,776.86**	cu. feet
Total Storage Provided	**8,856.4**	**cu. feet**
Total Storage Required	8392.00	cu. feet

Materials List

Recharger 330XLHD

Total Number of Chambers Required	**96**	**pieces**
Separator Row Chambers	**16**	pieces
Starter Chambers	**6**	pieces
Intermediate Chambers	**84**	pieces
End Chambers	**6**	pieces
HVLV FC-24 Feed Connectors	**10**	pieces
CULTEC No. 410 Non-Woven Geotextile	**1288**	sq. yards
CULTEC No. 4800 Woven Geotextile	**191**	feet
Stone	**350**	cu. yards

Separator Row Qty Included in Total

Based on 2 Internal Manifolds

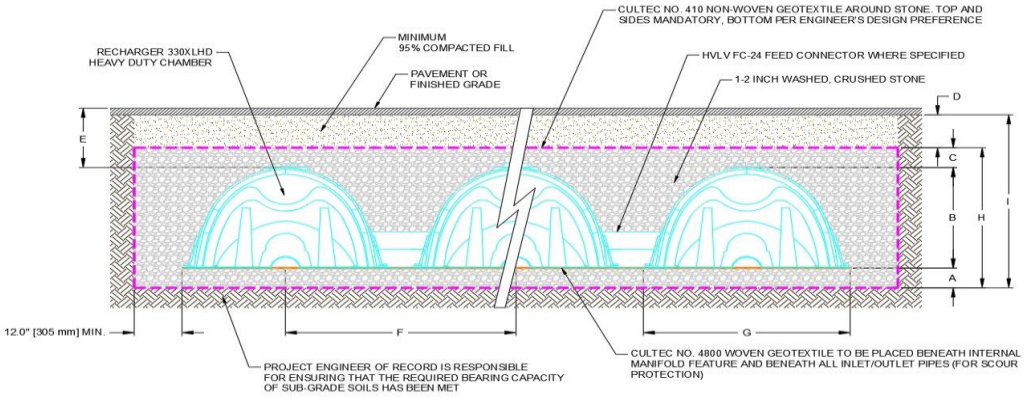
Bed Detail



Bed Layout Information

Number of Rows Wide	**6**	pieces
Number of Chambers Long	**16**	pieces
Chamber Row Width	**33.50**	feet
Chamber Row Length	**113.50**	feet
Bed Width	**35.50**	feet
Bed Length	**115.50**	feet
Bed Area Required	**4100.25**	sq. feet
Length of Separator Row	**113.50**	feet

Bed detail for reference only. Not project specific. Not to scale.



Conceptual graphic only. Not job specific.

Cross Section Table Reference

A	Depth of Stone Base	**6.0**	inches
B	Chamber Height	**30.5**	inches
C	Depth of Stone Above Units	**6.0**	inches
D	Depth of 95% Compacted Fill	**10.0**	inches
E	Max. Depth Allowed Above the Chamber	**12.00**	feet
F	Chamber Width	**52.0**	inches
G	Center to Center Spacing	**5.83**	feet
H	Effective Depth	**3.54**	feet
I	Bed Depth	**4.38**	feet

CULTEC Stormwater Design Calculator for UG3

Date:	March 14, 2023

Project Information:

BMW Fort Washington
500 Pennsylvania Ave
Fort Washington
Pennsylvania
United States

Project Number:	PAB220113.00

Calculations Performed By:

Kaitlyn Peterson
Bohler Engineering
74 W Broad Street, Suite 500
Bethlehem Pennsylvania
18018
United States
(610) 709-9976
kpeterson@hanovereng.com

RECHARGER 180HD

Recharger 180HD Chamber Specifications

Height	**20.5**	inches
Width	**36.0**	inches
Length	**7.33**	feet
Installed Length	**6.33**	feet
Bare Chamber Volume	**21.84**	cu. feet
Installed Chamber Volume	**61.11**	cu. feet



Breakdown of Storage Provided by Recharger 180HD Stormwater System

Within Chambers	**1,855.13**	cu. feet
Within Feed Connectors	**36.40**	cu. feet
Within Stone	**3,213.59**	cu. feet
Total Storage Provided	**5,105.1**	**cu. feet**
Total Storage Required	5021.00	cu. feet

Materials List

Recharger 180HD

Total Number of Chambers Required	**84**	**pieces**
Separator Row Chambers	**14**	pieces
Starter Chambers	**6**	pieces
Intermediate Chambers	**72**	pieces
End Chambers	**6**	pieces
HVLV FC-24 Feed Connectors	**10**	pieces
CULTEC No. 410 Non-Woven Geotextile	**1117**	sq. yards
CULTEC No. 4800 Woven Geotextile	**175**	feet
Stone	**298**	cu. yards

Separator Row Qty Included in Total

Based on 2 Internal Manifolds

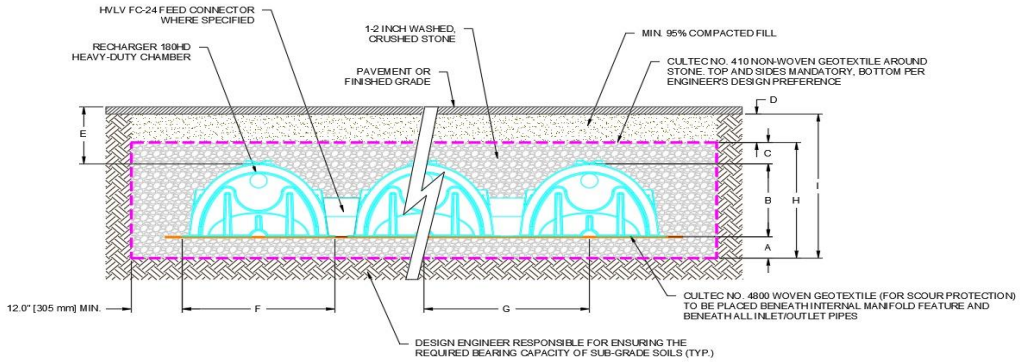
Bed Detail



Bed Layout Information

Number of Rows Wide	**6**	pieces
Number of Chambers Long	**14**	pieces
Chamber Row Width	**38.00**	feet
Chamber Row Length	**89.62**	feet
Bed Width	**40.00**	feet
Bed Length	**91.62**	feet
Bed Area Required	**3664.80**	sq. feet
Length of Separator Row	**89.62**	feet

Bed detail for reference only. Not project specific. Not to scale.

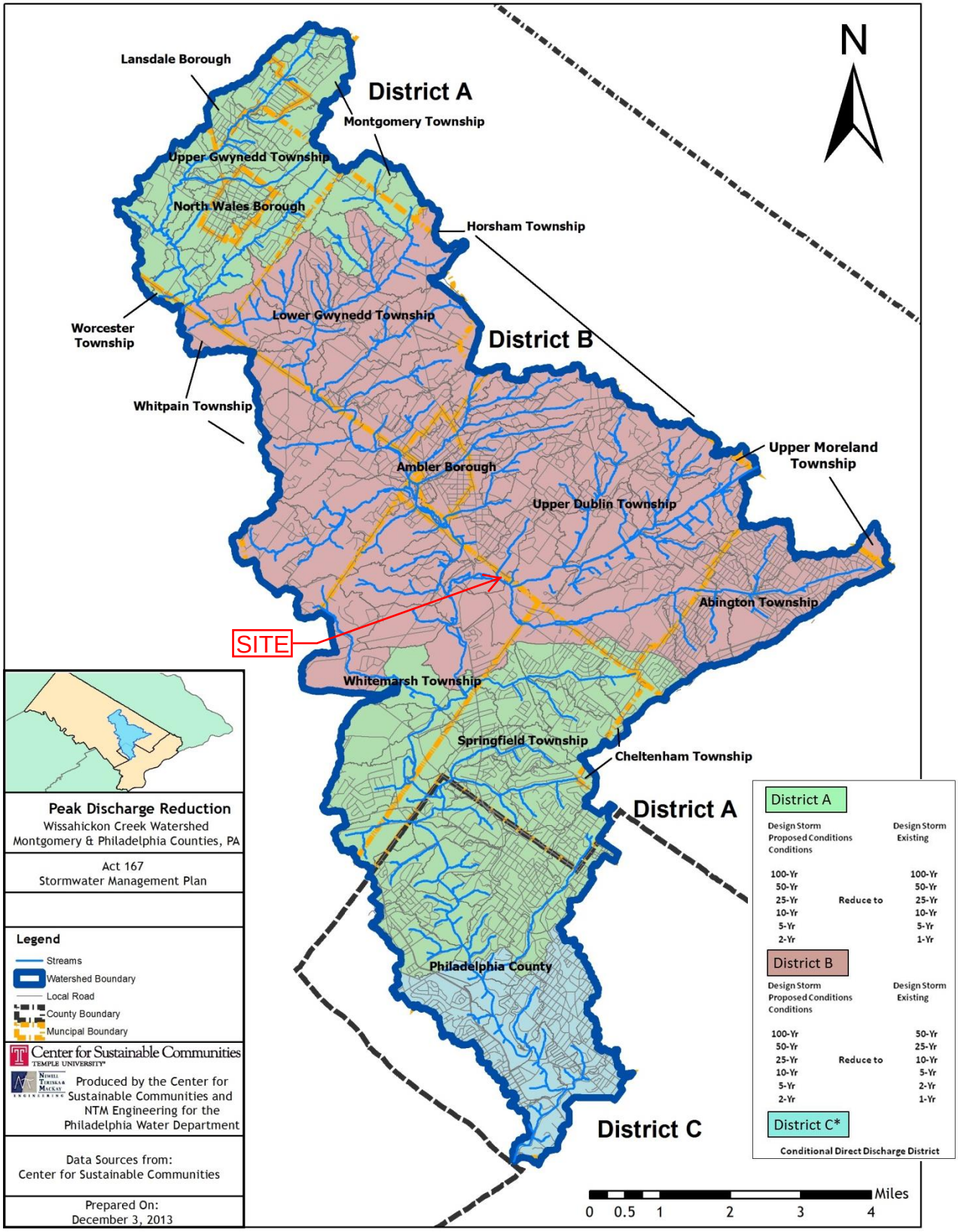


Conceptual graphic only. Not job specific.

Cross Section Table Reference

A	Depth of Stone Base	**6.0**	inches
B	Chamber Height	**20.5**	inches
C	Depth of Stone Above Units	**6.0**	inches
D	Depth of 95% Compacted Fill	**8.0**	inches
E	Max. Depth Allowed Above the Chamber	**12.00**	feet
F	Chamber Width	**36.0**	inches
G	Center to Center Spacing	**7.00**	feet
H	Effective Depth	**2.71**	feet
I	Bed Depth	**3.38**	feet

Figure 4.4.E Peak Rate Management District Map for the Wissahickon Watershed



NOAA Atlas 14, Volume 2, Version 3
Location name: Fort Washington, Pennsylvania, USA*
Latitude: 40.134°, Longitude: -75.207°
Elevation: m/ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**4.13** (3.78-4.52)	**4.92** (4.50-5.39)	**5.80** (5.28-6.32)	**6.41** (5.84-7.01)	**7.16** (6.49-7.82)	**7.68** (6.92-8.40)	**8.20** (7.36-8.98)	**8.65** (7.72-9.50)	**9.19** (8.12-10.1)	**9.59** (8.42-10.6)
10-min	**3.29** (3.02-3.61)	**3.94** (3.60-4.30)	**4.64** (4.23-5.07)	**5.13** (4.67-5.60)	**5.71** (5.17-6.23)	**6.12** (5.51-6.69)	**6.51** (5.84-7.13)	**6.85** (6.12-7.53)	**7.27** (6.43-8.02)	**7.55** (6.63-8.37)
15-min	**2.75** (2.52-3.01)	**3.30** (3.02-3.61)	**3.91** (3.57-4.27)	**4.32** (3.94-4.73)	**4.82** (4.37-5.27)	**5.16** (4.66-5.65)	**5.48** (4.92-6.01)	**5.76** (5.15-6.34)	**6.10** (5.40-6.73)	**6.32** (5.55-7.00)
30-min	**1.88** (1.72-2.06)	**2.28** (2.08-2.49)	**2.78** (2.54-3.04)	**3.13** (2.86-3.43)	**3.57** (3.24-3.90)	**3.89** (3.51-4.25)	**4.20** (3.77-4.60)	**4.49** (4.01-4.93)	**4.85** (4.29-5.36)	**5.12** (4.49-5.67)
60-min	**1.17** (1.08-1.29)	**1.43** (1.31-1.56)	**1.78** (1.63-1.95)	**2.04** (1.86-2.23)	**2.38** (2.15-2.60)	**2.64** (2.38-2.88)	**2.89** (2.60-3.17)	**3.15** (2.81-3.46)	**3.48** (3.08-3.84)	**3.73** (3.28-4.14)
2-hr	**0.703** (0.640-0.772)	**0.854** (0.779-0.938)	**1.07** (0.972-1.17)	**1.23** (1.12-1.35)	**1.46** (1.31-1.59)	**1.63** (1.46-1.79)	**1.81** (1.61-1.98)	**1.98** (1.75-2.18)	**2.23** (1.94-2.46)	**2.41** (2.09-2.67)
3-hr	**0.512** (0.466-0.565)	**0.622** (0.566-0.685)	**0.781** (0.709-0.860)	**0.903** (0.818-0.994)	**1.07** (0.962-1.18)	**1.20** (1.07-1.32)	**1.34** (1.19-1.47)	**1.47** (1.30-1.62)	**1.66** (1.44-1.84)	**1.81** (1.55-2.01)
6-hr	**0.322** (0.294-0.355)	**0.390** (0.356-0.431)	**0.487** (0.444-0.537)	**0.567** (0.514-0.623)	**0.678** (0.610-0.745)	**0.769** (0.687-0.845)	**0.866** (0.766-0.952)	**0.968** (0.847-1.07)	**1.11** (0.955-1.23)	**1.23** (1.04-1.37)
12-hr	**0.195** (0.178-0.216)	**0.235** (0.215-0.261)	**0.296** (0.270-0.327)	**0.347** (0.315-0.383)	**0.422** (0.379-0.464)	**0.485** (0.432-0.533)	**0.554** (0.487-0.610)	**0.629** (0.544-0.695)	**0.738** (0.626-0.821)	**0.831** (0.692-0.927)
24-hr	**0.114** (0.105-0.124)	**0.137** (0.126-0.149)	**0.172** (0.158-0.187)	**0.201** (0.185-0.219)	**0.244** (0.223-0.265)	**0.280** (0.254-0.304)	**0.319** (0.288-0.346)	**0.362** (0.324-0.392)	**0.424** (0.374-0.459)	**0.475** (0.415-0.515)
2-day	**0.065** (0.060-0.072)	**0.079** (0.072-0.086)	**0.100** (0.091-0.109)	**0.116** (0.106-0.127)	**0.140** (0.128-0.153)	**0.160** (0.145-0.174)	**0.181** (0.163-0.197)	**0.204** (0.182-0.222)	**0.236** (0.209-0.258)	**0.263** (0.231-0.287)
3-day	**0.046** (0.042-0.050)	**0.056** (0.051-0.061)	**0.070** (0.064-0.076)	**0.081** (0.075-0.088)	**0.098** (0.089-0.106)	**0.111** (0.101-0.121)	**0.126** (0.114-0.136)	**0.141** (0.127-0.153)	**0.163** (0.145-0.177)	**0.181** (0.160-0.197)
4-day	**0.036** (0.034-0.040)	**0.044** (0.041-0.048)	**0.055** (0.051-0.060)	**0.064** (0.059-0.069)	**0.076** (0.070-0.083)	**0.087** (0.079-0.094)	**0.098** (0.089-0.106)	**0.109** (0.099-0.119)	**0.126** (0.113-0.137)	**0.140** (0.124-0.152)
7-day	**0.024** (0.023-0.026)	**0.029** (0.027-0.032)	**0.036** (0.033-0.039)	**0.042** (0.039-0.045)	**0.050** (0.046-0.054)	**0.056** (0.052-0.061)	**0.064** (0.058-0.069)	**0.071** (0.065-0.077)	**0.082** (0.074-0.088)	**0.091** (0.081-0.098)
10-day	**0.019** (0.018-0.021)	**0.023** (0.022-0.025)	**0.028** (0.026-0.030)	**0.032** (0.030-0.035)	**0.038** (0.035-0.041)	**0.043** (0.039-0.046)	**0.047** (0.044-0.051)	**0.052** (0.048-0.056)	**0.059** (0.054-0.064)	**0.065** (0.058-0.070)
20-day	**0.013** (0.012-0.014)	**0.016** (0.015-0.017)	**0.019** (0.017-0.020)	**0.021** (0.020-0.022)	**0.024** (0.023-0.026)	**0.027** (0.025-0.028)	**0.029** (0.027-0.031)	**0.032** (0.029-0.034)	**0.035** (0.032-0.037)	**0.038** (0.034-0.040)
30-day	**0.011** (0.010-0.011)	**0.013** (0.012-0.014)	**0.015** (0.014-0.016)	**0.017** (0.016-0.017)	**0.019** (0.018-0.020)	**0.020** (0.019-0.022)	**0.022** (0.021-0.023)	**0.024** (0.022-0.025)	**0.026** (0.024-0.027)	**0.027** (0.025-0.029)
45-day	**0.009** (0.009-0.010)	**0.011** (0.010-0.011)	**0.012** (0.012-0.013)	**0.014** (0.013-0.014)	**0.015** (0.014-0.016)	**0.016** (0.016-0.017)	**0.017** (0.016-0.018)	**0.018** (0.017-0.019)	**0.020** (0.019-0.021)	**0.021** (0.019-0.022)
60-day	**0.008** (0.008-0.009)	**0.010** (0.009-0.010)	**0.011** (0.011-0.012)	**0.012** (0.012-0.013)	**0.013** (0.013-0.014)	**0.014** (0.014-0.015)	**0.015** (0.014-0.016)	**0.016** (0.015-0.017)	**0.017** (0.016-0.018)	**0.018** (0.017-0.019)

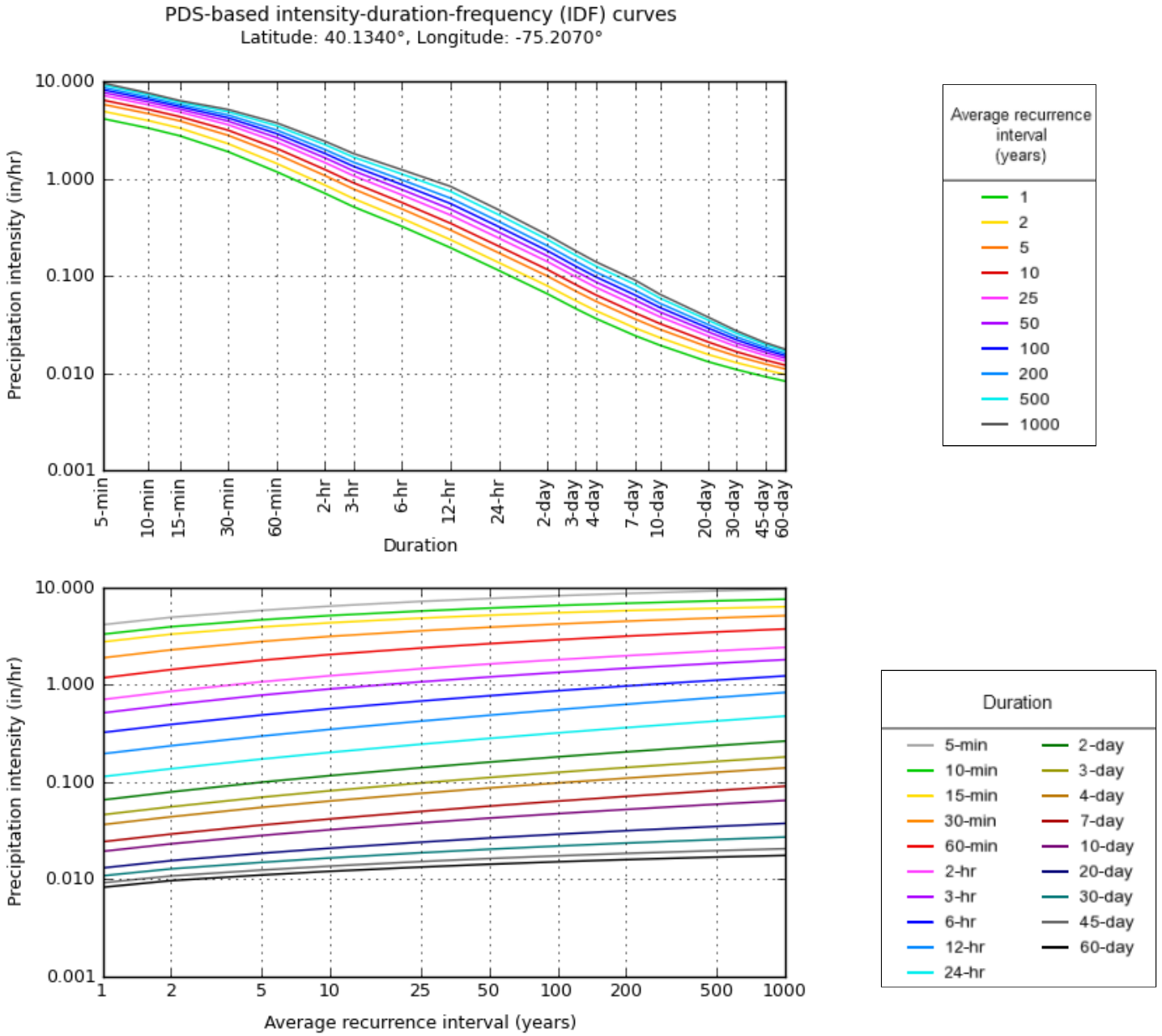
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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.

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PF graphical



NOAA Atlas 14, Volume 2, Version 3

Created (GMT): Mon Mar 6 18:23:54 2023

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Maps & aerials

Small scale terrain

NOAA Atlas 14, Volume 2, Version 3
Location name: Fort Washington, Pennsylvania, USA*
Latitude: 40.134°, Longitude: -75.207°
Elevation: m/ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point 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	**0.344** (0.315-0.377)	**0.410** (0.375-0.449)	**0.483** (0.440-0.527)	**0.534** (0.487-0.584)	**0.597** (0.541-0.652)	**0.640** (0.577-0.700)	**0.683** (0.613-0.748)	**0.721** (0.643-0.792)	**0.766** (0.677-0.845)	**0.799** (0.702-0.886)
10-min	**0.549** (0.503-0.601)	**0.656** (0.600-0.717)	**0.773** (0.705-0.845)	**0.855** (0.779-0.934)	**0.951** (0.862-1.04)	**1.02** (0.919-1.12)	**1.09** (0.974-1.19)	**1.14** (1.02-1.25)	**1.21** (1.07-1.34)	**1.26** (1.11-1.40)
15-min	**0.687** (0.629-0.752)	**0.825** (0.754-0.902)	**0.978** (0.892-1.07)	**1.08** (0.985-1.18)	**1.21** (1.09-1.32)	**1.29** (1.16-1.41)	**1.37** (1.23-1.50)	**1.44** (1.29-1.58)	**1.52** (1.35-1.68)	**1.58** (1.39-1.75)
30-min	**0.942** (0.862-1.03)	**1.14** (1.04-1.25)	**1.39** (1.27-1.52)	**1.57** (1.43-1.71)	**1.79** (1.62-1.95)	**1.95** (1.75-2.13)	**2.10** (1.89-2.30)	**2.24** (2.00-2.47)	**2.43** (2.15-2.68)	**2.56** (2.25-2.84)
60-min	**1.17** (1.08-1.29)	**1.43** (1.31-1.56)	**1.78** (1.63-1.95)	**2.04** (1.86-2.23)	**2.38** (2.15-2.60)	**2.64** (2.38-2.88)	**2.89** (2.60-3.17)	**3.15** (2.81-3.46)	**3.48** (3.08-3.84)	**3.73** (3.28-4.14)
2-hr	**1.41** (1.28-1.54)	**1.71** (1.56-1.88)	**2.14** (1.95-2.35)	**2.47** (2.24-2.70)	**2.91** (2.62-3.19)	**3.26** (2.92-3.57)	**3.61** (3.22-3.96)	**3.97** (3.51-4.36)	**4.45** (3.89-4.91)	**4.82** (4.17-5.34)
3-hr	**1.54** (1.40-1.70)	**1.87** (1.70-2.06)	**2.35** (2.13-2.58)	**2.71** (2.46-2.98)	**3.21** (2.89-3.53)	**3.60** (3.23-3.96)	**4.01** (3.56-4.42)	**4.42** (3.89-4.88)	**4.98** (4.33-5.53)	**5.43** (4.66-6.04)
6-hr	**1.93** (1.76-2.13)	**2.33** (2.13-2.58)	**2.92** (2.66-3.22)	**3.39** (3.08-3.73)	**4.06** (3.65-4.46)	**4.61** (4.11-5.06)	**5.19** (4.58-5.70)	**5.80** (5.07-6.38)	**6.66** (5.72-7.38)	**7.36** (6.23-8.19)
12-hr	**2.35** (2.15-2.60)	**2.84** (2.60-3.14)	**3.57** (3.26-3.94)	**4.18** (3.80-4.62)	**5.08** (4.57-5.59)	**5.84** (5.20-6.43)	**6.67** (5.86-7.35)	**7.57** (6.56-8.37)	**8.90** (7.54-9.89)	**10.0** (8.33-11.2)
24-hr	**2.73** (2.51-2.97)	**3.28** (3.03-3.58)	**4.13** (3.80-4.49)	**4.83** (4.43-5.26)	**5.86** (5.35-6.36)	**6.73** (6.10-7.29)	**7.66** (6.91-8.30)	**8.68** (7.76-9.40)	**10.2** (8.98-11.0)	**11.4** (9.97-12.4)
2-day	**3.14** (2.88-3.43)	**3.79** (3.48-4.14)	**4.78** (4.38-5.22)	**5.58** (5.10-6.09)	**6.73** (6.12-7.32)	**7.68** (6.96-8.36)	**8.70** (7.83-9.46)	**9.79** (8.74-10.7)	**11.4** (10.0-12.4)	**12.6** (11.1-13.8)
3-day	**3.32** (3.06-3.62)	**4.00** (3.69-4.37)	**5.02** (4.62-5.47)	**5.85** (5.37-6.37)	**7.03** (6.42-7.64)	**8.01** (7.29-8.70)	**9.04** (8.18-9.82)	**10.1** (9.12-11.0)	**11.7** (10.4-12.8)	**13.0** (11.5-14.2)
4-day	**3.50** (3.24-3.81)	**4.22** (3.90-4.59)	**5.27** (4.86-5.73)	**6.12** (5.64-6.65)	**7.33** (6.72-7.96)	**8.33** (7.61-9.04)	**9.39** (8.54-10.2)	**10.5** (9.50-11.4)	**12.1** (10.8-13.2)	**13.4** (11.9-14.6)
7-day	**4.09** (3.80-4.43)	**4.90** (4.56-5.32)	**6.06** (5.63-6.57)	**7.01** (6.49-7.60)	**8.37** (7.72-9.06)	**9.49** (8.72-10.3)	**10.7** (9.76-11.5)	**11.9** (10.9-12.9)	**13.7** (12.4-14.9)	**15.2** (13.6-16.5)
10-day	**4.65** (4.34-5.01)	**5.56** (5.19-5.98)	**6.78** (6.31-7.29)	**7.75** (7.21-8.34)	**9.12** (8.45-9.80)	**10.2** (9.44-11.0)	**11.4** (10.4-12.2)	**12.5** (11.5-13.5)	**14.2** (12.9-15.3)	**15.5** (14.0-16.7)
20-day	**6.29** (5.91-6.70)	**7.46** (7.01-7.95)	**8.90** (8.36-9.49)	**10.0** (9.40-10.7)	**11.6** (10.8-12.3)	**12.7** (11.9-13.6)	**13.9** (13.0-14.9)	**15.2** (14.1-16.2)	**16.8** (15.5-17.9)	**18.0** (16.5-19.3)
30-day	**7.83** (7.41-8.27)	**9.23** (8.74-9.74)	**10.8** (10.2-11.4)	**11.9** (11.3-12.6)	**13.5** (12.7-14.2)	**14.7** (13.8-15.5)	**15.8** (14.9-16.7)	**17.0** (15.9-18.0)	**18.5** (17.2-19.6)	**19.6** (18.2-20.8)
45-day	**9.96** (9.47-10.5)	**11.7** (11.1-12.3)	**13.4** (12.8-14.1)	**14.8** (14.0-15.5)	**16.4** (15.6-17.3)	**17.7** (16.7-18.6)	**18.8** (17.8-19.8)	**19.9** (18.8-21.0)	**21.3** (20.1-22.4)	**22.3** (20.9-23.5)
60-day	**11.9** (11.4-12.5)	**14.0** (13.3-14.7)	**15.9** (15.2-16.7)	**17.4** (16.6-18.3)	**19.2** (18.3-20.2)	**20.6** (19.6-21.6)	**21.8** (20.7-22.9)	**23.0** (21.8-24.1)	**24.4** (23.1-25.7)	**25.4** (24.0-26.7)

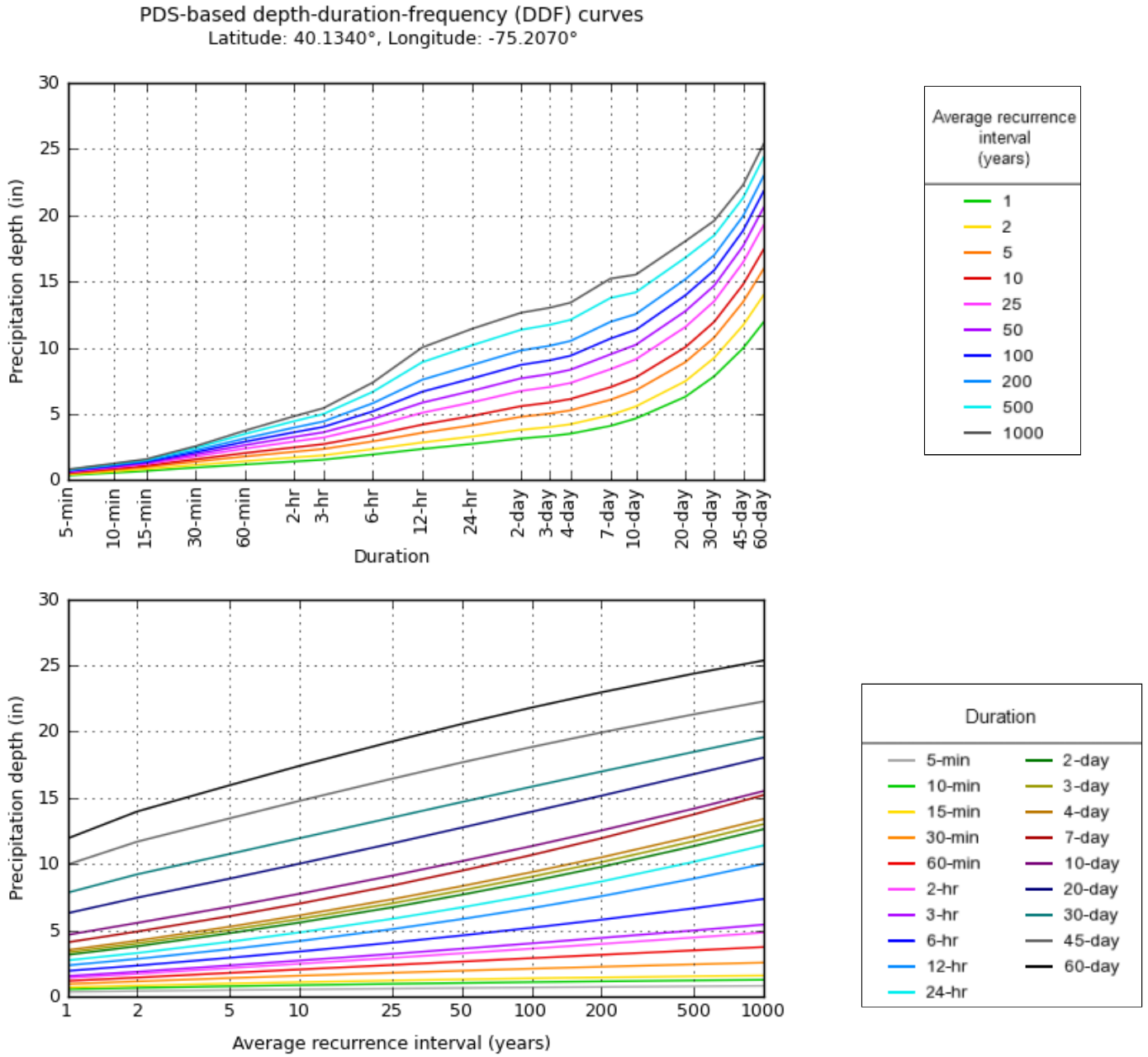
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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.

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PF graphical



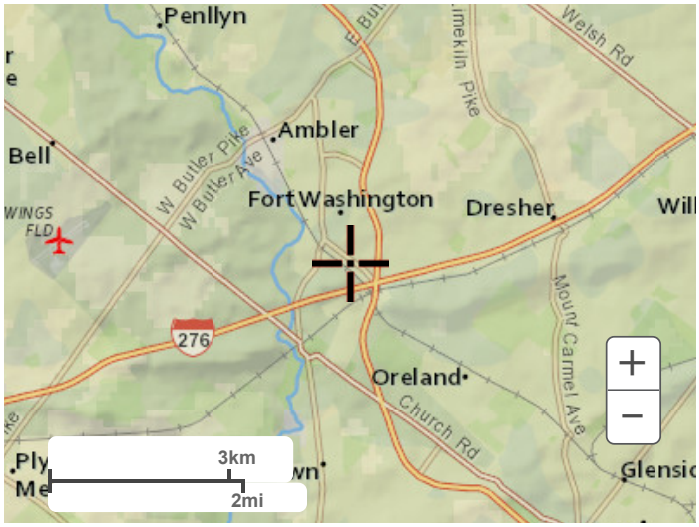
NOAA Atlas 14, Volume 2, Version 3

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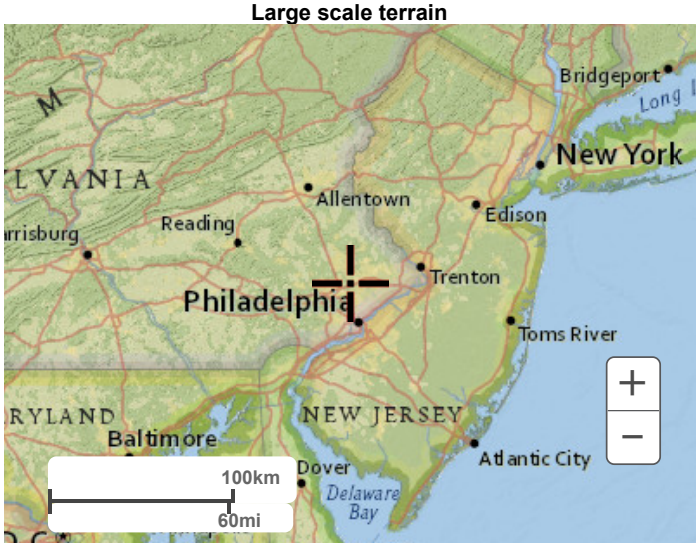
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Maps & aerials

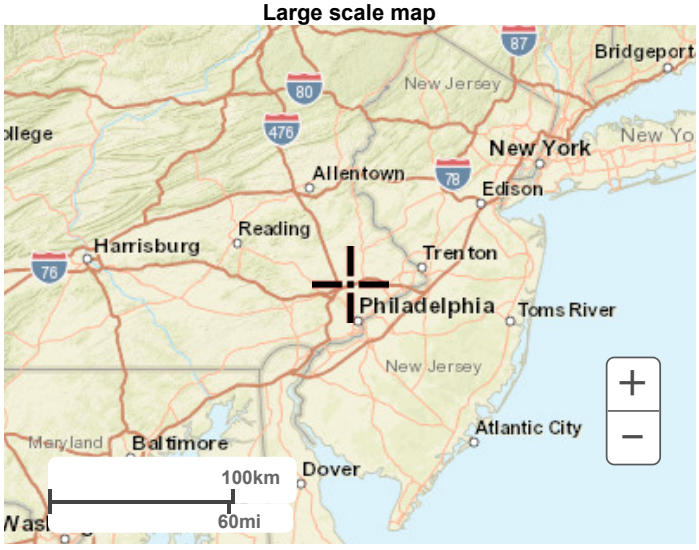
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

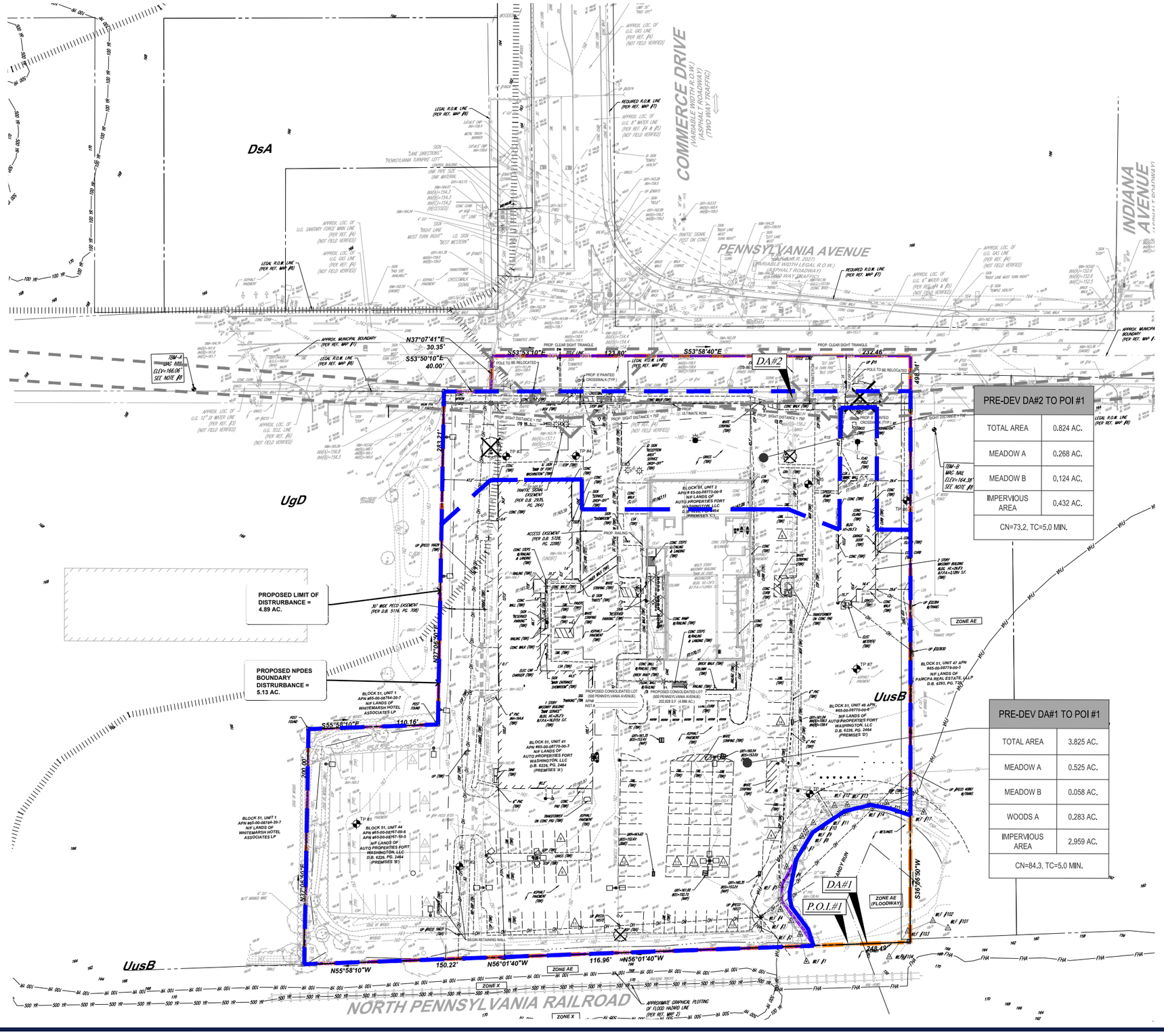


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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Appendix A – Drainage Area Plans



R:\2023\PAB220113.00\CAD\DRAWING\SITE PLAN\PAB220113.00-DRN-0A——LAYOUT: C-1001 PRE

KP

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DRAWN BY: BS
CHECKED BY: MSL
DATE: 03/15/2023
CAD I.D.: PAB220113.00-DRIN-0A

PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

**500 PENNSYLVANIA AVENUE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA**

BOHLER
74 W BROAD STREET, SUITE 500
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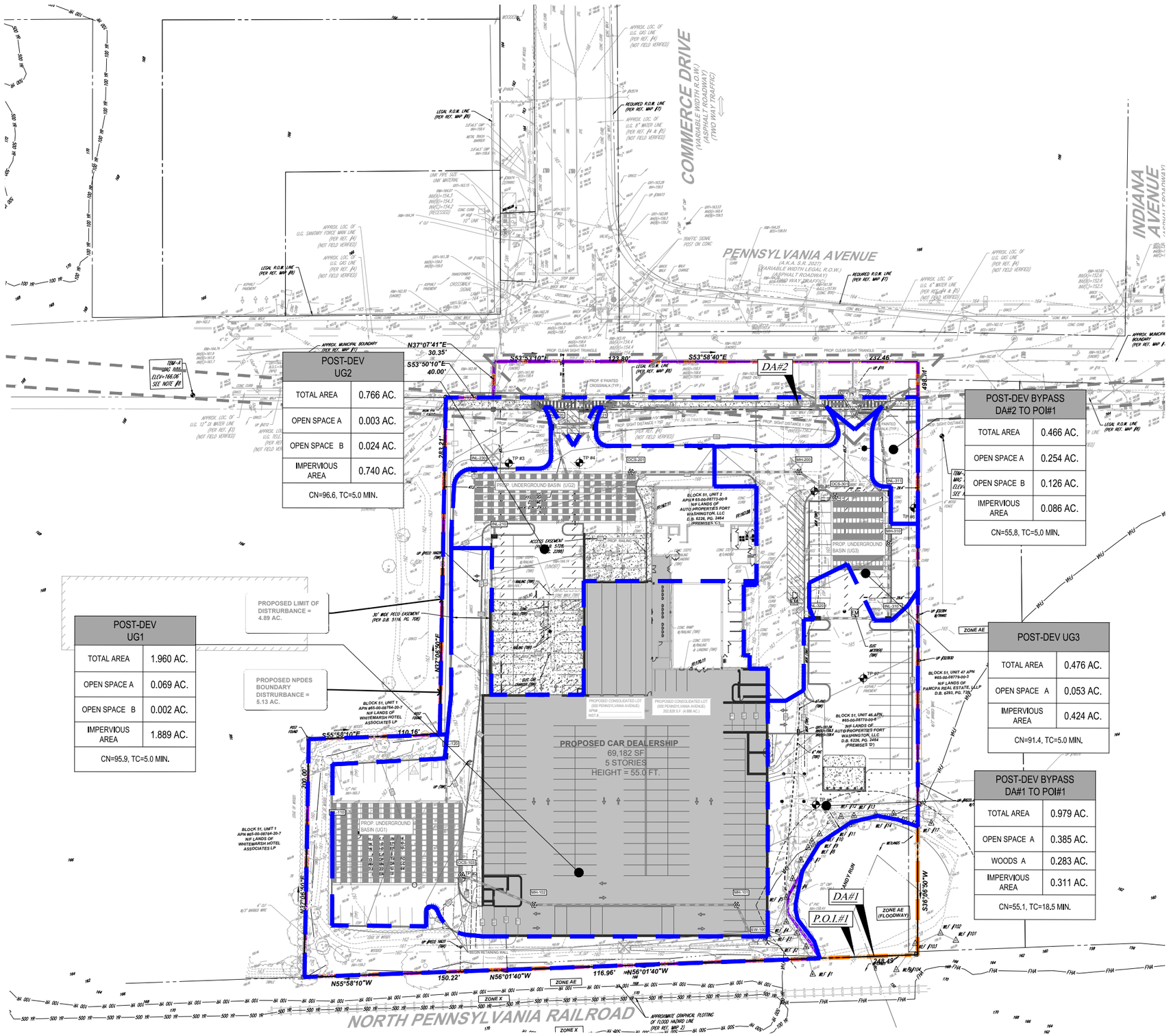
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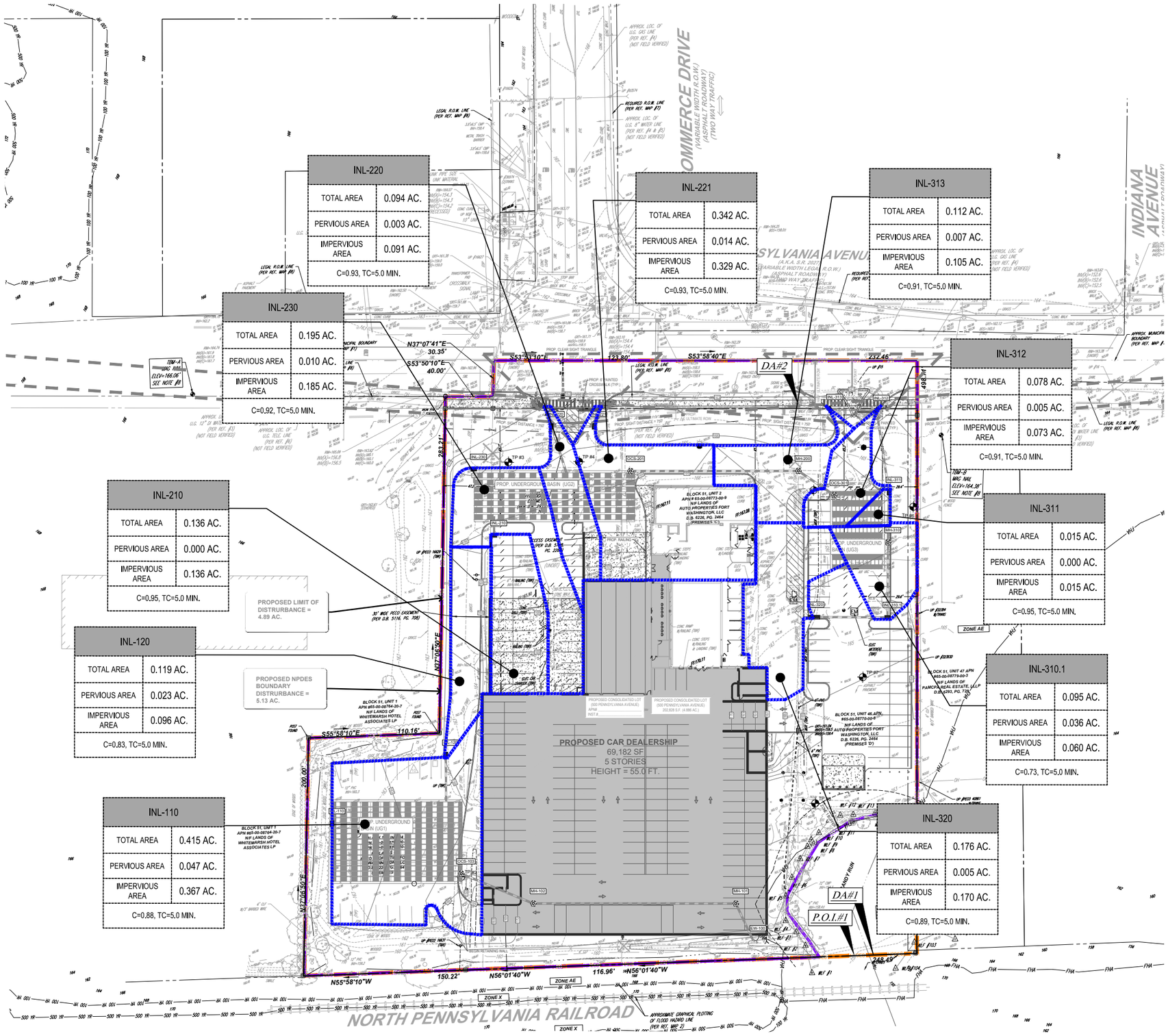
PRE DEVELOPMENT DRAINAGE AREA PLAN

SHEET NUMBER:

C-1001

ORG. DATE - 03/15/2023


COMMERCE DRIVE
(VARIABLE WIDTH R.O.W.)
(ASPHALT ROADWAY)
(TWO WAY TRAFFIC)
PENNSYLVANIA AVENUE
(A.K.A. S.R. 2027)
(VARIABLE WIDTH LEGAL R.O.W.)
(ASPHALT ROADWAY)
INDIANA AVENUE
(ASPHALT ROADWAY)
DA#2
DA#1
P.O.I.#1
PROPOSED CAR DEALERSHIP
69,182 SF
5 STORIES
HEIGHT = 55.0 FT.
PROPOSED LIMIT OF DISTRURBANCE = 4.89 AC.
PROPOSED NPDES BOUNDARY DISTRURBANCE = 5.13 AC.
PROP. UNDERGROUND BASIN (UG1)
PROP. UNDERGROUND BASIN (UG2)
PROP. UNDERGROUND BASIN (UG3)
NORTH PENNSYLVANIA RAILROAD
ZONE AE
ZONE AE (FLOODWAY)
ZONE X
N37°07'41"E 30.35'
S53°50'10"E 40.00'
S53°34'40"E 123.80'
S53°58'40"E 252.46'
N37°06'50"E 283.21'
S37°06'50"E 490.41'
S55°58'10"E 110.16'
N37°06'50"E 200.00'
S38°06'50"W 248.49'
N55°58'10"W 150.22'
N56°01'40"W 116.96'
N56°01'40"W
TBM-A MAG NAIL ELEV=166.06' SEE NOTE #8
TBM-B MAG NAIL ELEV=166.06' SEE NOTE #8
TBM-C MAG NAIL ELEV=166.06' SEE NOTE #8
TBM-D MAG NAIL ELEV=166.06' SEE NOTE #8
BLOCK 51, UNIT 1 APN #65-00-08764-20-7 N/F LANDS OF WHITEMARSH HOTEL ASSOCIATES LP
BLOCK 51, UNIT 2 APN # 65-00-08773-00-9 N/F LANDS OF AUTO PROPERTIES FORT WASHINGTON, LLC D.B. 6226, PG. 2464 (PREMISES 'C')
BLOCK 51, UNIT 47 APN 965-00-08779-00-7 N/F LANDS OF PAMCPA REAL ESTATE, LLLP D.B. 6293, PG. 726
BLOCK 51, UNIT 46 APN 965-00-08770-00-9 N/F LANDS OF AUTO PROPERTIES FORT WASHINGTON, LLC D.B. 6226, PG. 2464 (PREMISES 'D')
PROPOSED CONSOLIDATED LOT (500 PENNSYLVANIA AVENUE) 302,828 S.F. (6.886 AC.)
30' WIDE PECO EASEMENT (PER D.B. 3716, PG. 100)
ACCESS EASEMENT (PER D.B. 5726, PG. 2068)
APPROX. LOC. OF U.G. GAS LINE (PER REF. #A) (NOT FIELD VERIFIED)
APPROX. LOC. OF U.G. 6" WATER LINE (PER REF. #A & #5) (NOT FIELD VERIFIED)
APPROX. LOC. OF U.G. SANITARY FORCE MAIN LINE (PER REF. #A) (NOT FIELD VERIFIED)
APPROX. LOC. OF U.G. 12" DI WATER LINE (PER REF. #3) (NOT FIELD VERIFIED)
APPROX. LOC. OF U.G. TELE (PER REF. #A) (NOT FIELD VERIFIED)
APPROX. MUNICIPAL BOUNDARY (PER REF. MAP #1)
LEGAL R.O.W. LINE (PER REF. MAP #8)
REQUIRED R.O.W. LINE (PER REF. MAP #7)
TRAFFIC SIGNAL POST ON CONC.
PROP. 6" PAINTED CROSSWALK (TYP.)
PROP. CLEAR SIGHT TRIANGLE
PROP. SIGHT DISTANCE = 750'
APPROXIMATE GRAPHICAL PLOTTING OF FLOOD HAZARD LINE (PER REF. MAP #1)
LIMIT OF RETAINING WALL
INL-230
INL-310
INL-311
OCS-201
OCS-301
OCS-103
OCS-203
MH-200
MH-310
MH-102
MH-101
S.W.-100
TP #3
TP #4
TP #5
TP #6
TP #7
TP #8
TP #9
TP #10
TP #11
TP #12
TP #13
TP #14
TP #15
TP #16
TP #17
TP #18
TP #19
TP #20
TP #21
TP #22
TP



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CHECKED BY: MSL
DATE: 03/15/2023
CAD I.D.: PAB220113.00-DRIN-0A

PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

500 PENNSYLVANIA AVENUE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA

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SHEET TITLE:

INLET DRAINAGE AREA PLAN

SHEET NUMBER:

C-1003

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KP

Last Revised: March 9, 2023
TPD# MILE.00001

Est. 1989

TRAFFIC PLANNING AND DESIGN, INC.

BMW CAR DEALERSHIP REDEVELOPMENT

Transportation Impact Assessment
Whitemarsh Township, Montgomery County

For Submission To:
PennDOT District 6-0 & Whitemarsh Township

2500 East High Street, Suite 650, Pottstown, PA 19464 | 610.326.3100 | TPD@TrafficPD.com

BMW CAR DEALERSHIP REDEVELOPMENT
TRANSPORTATION IMPACT ASSESSMENT

FOR SUBMISSION TO:

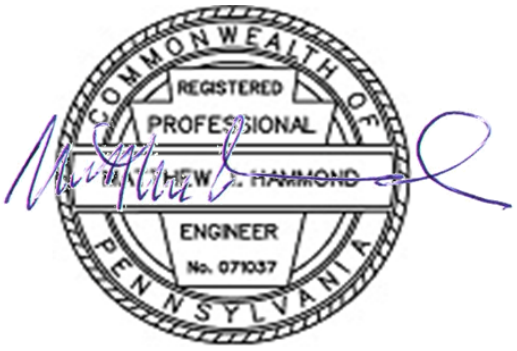
Whitemarsh Township, Montgomery County, PA
& PennDOT District 6-0

Prepared For:
MileOne Autogroup
Mr. Dennis Turnbaugh
510 Pennsylvania Avenue
Fort Washington, PA 19034

March 9, 2023
TPD # MILE.00001

Prepared By:
Traffic Planning and Design, Inc.
Sanatoga Commons
2500 East High Street, Suite 650
Pottstown, Pennsylvania 19464

Phone: (610) 326-3100
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Matthew I. Hammond, P.E.
Executive Vice President
Pennsylvania License Number 071037

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EXECUTIVE SUMMARY

The purpose of this study is to examine the potential traffic impact associated with the Proposed BMW Car Dealership Redevelopment in Whitemarsh Township, Montgomery County, Pennsylvania. Based on this evaluation, the following conclusions were reached:

- The Project Site is located on the southern side of Pennsylvania Avenue (SR 2037), in the vicinity of, opposite, Commerce Drive.
- The Proposed Redevelopment will consist of a consolidation/reorganization of the Existing Facility into a 75,085 s.f. New Car Sales and Service facility.
- Access to the Existing Facility is provided by five (5) access points to Pennsylvania Avenue (SR 2037).
- Access to the Proposed Redevelopment will be consolidated into two (2) access points as follows: one (1) re-aligned full-movement driveway opposite Commerce Drive (signalized) and one (1) right-in/right-out driveway further east.
- With development, all proposed driveway locations will exceed PennDOT sight distance criteria.
- The Proposed Redevelopment will generate 140 new trips during the weekday A.M. Peak Hour, 182 new trips during the weekday P.M. Peak Hour and 302 new trips during the Saturday Peak Hour.
- Based on the counts conducted at the existing driveways, the Existing Facility generated 67 new trips during the weekday A.M. Peak Hour, 65 new trips during the weekday P.M. Peak Hour and 47 new trips during the Saturday Peak Hour.
- It should be noted that these trip generation estimates are extremely conservative based on the data collected at the existing facility during the peak hours. The trips generated as part of this study, and utilized in all subsequent analysis, propose an increase of between 2x-6x the amount of traffic currently generated by the site. The redevelopment project is a consolidation of the existing buildings/uses on site and it is not expected that a significant increase in trip generation is likely.
- Under all projected (build) conditions with the development of the proposed site and with site-related recommendations outlined in **Table II**, all the study area intersections will satisfy PennDOT ILOS Standards
- Levels of Service (LOS) for the study area intersections have been summarized in matrix form. **Table I** details the overall intersection LOS for each study area intersection:

TABLE I
INTERSECTION LEVEL OF SERVICE DELAY (SECONDS) SUMMARY

Intersection	Peak Hour	2022 Exist	2025		2030		ILOS STANDARD
			Base	Proj.[1]	Base	Proj.[1]	
Pennsylvania Avenue (SR 2037) & Commerce Drive/ Site Driveway	Weekday AM	B (15.3)	B (15.4)	B (15.4)	B (15.4)	B (15.5)	Yes
	Weekday PM	C (25.7)	C (25.8)	C (27.8)	C (25.8)	C (27.9)	
	Saturday	B (13.9)	B (14.0)	B (17.2)	B (14.0)	B (17.2)	
Pennsylvania Avenue (SR 2037) & Western Exit-Only Driveway	Weekday AM	A (0.0)	A (0.0)	--	A (0.0)	--	Yes
	Weekday PM	A (0.0)	A (0.0)	--	A (0.0)	--	
	Saturday	A (0.0)	A (0.0)	--	A (0.0)	--	
Pennsylvania Avenue (SR 2037) & Central Exit-only Driveway	Weekday AM	A (0.0)	A (0.0)	--	A (0.0)	--	Yes
	Weekday PM	A (0.0)	A (0.0)	--	A (0.0)	--	
	Saturday	A (0.0)	A (0.0)	--	A (0.0)	--	
Pennsylvania Avenue (SR 2037) & Existing Access/ Proposed RI-RO Driveway	Weekday AM	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	Yes
	Weekday PM	A (0.0)	A (0.0)	A (0.1)	A (0.0)	A (0.1)	
	Saturday	A (0.0)	A (0.0)	A (0.2)	A (0.0)	A (0.2)	
Pennsylvania Avenue (SR 2037) & Existing Eastern Full-Movement Driveway	Weekday AM	A (0.0)	A (0.0)	--	A (0.0)	--	Yes
	Weekday PM	A (0.0)	A (0.0)	--	A (0.0)	--	
	Saturday	A (0.0)	A (0.0)	--	A (0.0)	--	

Base = No-Build scenario, Proj. = Build scenario, 1 = With Site-Related Recommendations

» Site-related recommendations are summarized in **Table II**:

TABLE II
RECOMMENDATIONS

Intersection	Recommendations
Pennsylvania Avenue (SR 2037) & Commerce Drive/Site Driveway	Align the main site driveway directly opposite Commerce Drive
	Design the resultant NB driveway approach to provide a separate left-turn lane and a separate thru/right-turn lane
	Design the resultant SB Commerce Drive approach to provide dual left-turn lanes and a separate thru/right-turn lane
	With lane changes and realignment, remove split phasing and optimize signal timings
	Provide adequate turning radii to facilitate ingress/egress
	Provide required sight distances
	Work with PennDOT and Whitemarsh Township to provide ADA/Pedestrian Facilities to the extent feasible, including providing the "missing link" on the site side as part of the Cross County Trail project.
Pennsylvania Avenue (SR 2037) & Proposed RI-RO Driveway	Provide adequate turning radii to facilitate ingress/egress
	Provide a "STOP" sign on the NB egress approach
	Provide required sight distances
	Work with PennDOT and Whitemarsh Township to provide ADA/Pedestrian Facilities to the extent feasible

INTRODUCTION

Traffic Planning and Design, Inc. (TPD) has completed a Transportation Impact Study (TIS) for the Proposed BMW Car Dealership Redevelopment in Whitemarsh Township, Montgomery County, Pennsylvania. The Project Site is located on the southern side of Pennsylvania Avenue (SR 2037), in the vicinity of Commerce Drive, as shown in **Figure 1**. As shown in **Figure 2**, the Proposed Redevelopment will consist of a consolidation/reorganization of the Existing Facility into a 75,085 s.f. New Car Sales and Service facility. Access to the Existing Facility is provided by five (5) access points to Pennsylvania Avenue (SR 2037). Access to the Proposed Redevelopment will be consolidated into two (2) access points as follows: one (1) re-aligned full-movement driveway opposite Commerce Drive (signalized) and one (1) right-in/right-out driveway further east. TPD assumed an opening year of 2025 and a design year of 2030.

This report has been prepared in accordance with PennDOT's *Policies and Procedures for Transportation Impact Studies*, found in PennDOT's Publication 282, Appendix A, dated July 2017. A PennDOT Scoping Application, dated November 3, 2022, was sent to PennDOT 6-0 and Whitemarsh Township for review. The PennDOT Scoping Review was received in an email dated December 2, 2022, and Whitemarsh Township did not have any scoping comments. Project Correspondence is included in **Appendix A**.

EXISTING ROADWAY NETWORK

A field review of the existing roadway system in the study area was conducted. The existing roadway characteristics within the study area are summarized in **Table 1**. Photographs of the study area intersections are included in **Appendix B**.

TABLE 1
ROADWAY CHARACTERISTICS WITHIN STUDY AREA

Roadway	Route Ownership	Functional Classification/ Roadway Type	Predominant Directional Orientation	Average Daily Traffic[1]	Posted Speed Limit
Pennsylvania Avenue	State (SR 2037)	Minor Arterial	East-West	22,444	35 mph
Commerce Drive	(G217)	Urban Collector	North-South	4,643	35 mph

1 = PennDOT TIRe Website (December 2022)

Bicycle and Pedestrian Facilities

Based on field observations, the intersections do not have bicycle specific accommodations. The pedestrian accommodations of the study area intersections are described below.

- Pennsylvania Avenue (SR 2037) and Commerce Drive/Site Driveway – There is sidewalk on the northern and southern sides of Pennsylvania Avenue (SR 2037) and the eastern side of Commerce Drive. There are pedestrian curb ramps, pedestrian push buttons, and crosswalks on the western and northern legs of the intersection. There are pedestrian curb ramps and a crosswalk on the site driveway.
- Pennsylvania Avenue (SR 2037) and Western Right-out Driveway – There is sidewalk on the northern and southern sides of Pennsylvania Avenue (SR 2037) with a driveway apron/sidewalk across the driveway.
- Pennsylvania Avenue (SR 2037) and Central Exit-only Driveway – There is sidewalk on the northern and southern sides of Pennsylvania Avenue (SR 2037) with pedestrian curb ramps and a crosswalk across the site access.

- Pennsylvania Avenue (SR 2037) and Site Driveway/Proposed RI-RO Driveway - There is sidewalk on the northern and southern sides of Pennsylvania Avenue (SR 2037) with pedestrian curb ramps at the site access.
- Pennsylvania Avenue (SR 2037) and Eastern Site Driveway - There is sidewalk on the northern and southern sides of Pennsylvania Avenue (SR 2037) with pedestrian curb ramps on the western side of the site access.

Crash Data Investigation

Crash data were obtained from PennDOT for the study area intersections. PennDOT defines a reportable crash as follows, "A reportable (crash) is one in which an injury or fatality occurs or if at least one of the vehicles involved requires towing from the scene." Reportable crashes were tabulated for the six-year time period beginning 01/01/2016 and ending 12/31/2021. For a given intersection, PennDOT considers a crash occurrence of 5 reportable, correctable crashes over a continuous twelve-month period during the past six years to be a threshold value, above which the intersection design should be reviewed to examine if corrective measures can be taken to enhance safety. The number of reportable crashes at the study area intersections is shown in **Table 2.**

TABLE 2
PENNDOT REPORTABLE CRASH DATA

Study Area Intersection	Total Number of Reportable Crashes					
	2016	2017	2018	2019	2020	2021
Pennsylvania Avenue & Commerce Drive/ Site Driveway	1	3	2	4	1	5
Pennsylvania Avenue & Western Exit-Only Driveway	1	0	0	0	0	0
Pennsylvania Avenue & Central Exit-only Driveway	0	0	0	1	0	0
Pennsylvania Avenue & Existing Access/Proposed RI-RO Driveway	0	0	0	0	0	0
Pennsylvania Avenue & Existing Eastern Full-Movement Driveway	0	0	0	0	0	0

Based on a review of the crash data in **Table 3**, there were no twelve-month periods during the past six years where 5 or more crashes occurred that were deemed correctable, except for the following:

- Pennsylvania Avenue (SR 2037) & Commerce Drive/Site Driveway – In 2021, there were 5 crashes in which the primary type of crash was angle crashes. The primary causation of the crashes was driver errors such as improper/careless turn, driver inexperienced, and distracted driving. However, based on the proposed re-alignment of the existing main access driveway serving the BMW dealership, and subsequent removal of the existing split phasing, it is TPD's opinion this intersection will be improved from a safety perspective.

EXISTING TRAFFIC CONDITIONS

Manual traffic counts were conducted on 15-minute intervals during the weekday morning (7:00 to 9:00 A.M.), weekday evening (4:00 to 6:00 P.M.) and Saturday midday (11:00 A.M. to 1:00 P.M.) peak periods. Data pertaining to heavy vehicles, pedestrians and transit vehicles were observed during the manual counts. Peak hours and count dates for the study area intersections are identified in **Table 3**.

TABLE 3
MANUAL TRAFFIC COUNT INFORMATION

Intersection	Date of Traffic Counts	Time Period	Intersection Peak Hour[1]
Pennsylvania Avenue (SR 2037) & Commerce Drive/ Site Driveway	Thursday, October 27, 2022	Weekday A.M.	8:00 to 9:00 A.M.
		Weekday P.M.	5:00 to 6:00 P.M.
	Saturday, October 29, 2022	Saturday Midday	11:30 A.M. to 12:30 P.M.
Pennsylvania Avenue (SR 2037) & Western Exit-Only Driveway	Thursday, October 27, 2022	Weekday A.M.	7:45 to 8:45 A.M.
		Weekday P.M.	5:00 to 6:00 P.M.
	Saturday, October 29, 2022	Saturday Midday	11:30 A.M. to 12:30 P.M.
Pennsylvania Avenue (SR 2037) & Central Exit-only Driveway	Thursday, October 27, 2022	Weekday A.M.	8:00 to 9:00 A.M.
		Weekday P.M.	5:00 to 6:00 P.M.
	Saturday, October 29, 2022	Saturday Midday	11:45 A.M. to 12:45 P.M.
Pennsylvania Avenue (SR 2037) & Existing Access/Proposed RI-RO Driveway	Thursday, October 27, 2022	Weekday A.M.	8:00 to 9:00 A.M.
		Weekday P.M.	5:00 to 6:00 P.M.
	Saturday, October 29, 2022	Saturday Midday	11:30 A.M. to 12:30 P.M.
Pennsylvania Avenue (SR 2037) & Existing Eastern Full-Movement Driveway	Thursday, October 27, 2022	Weekday A.M.	8:00 to 9:00 A.M.
		Weekday P.M.	5:00 to 6:00 P.M.
	Saturday, October 29, 2022	Saturday Midday	11:30 A.M. to 12:30 P.M.

1 =Peak Hour consists of the four consecutive 15-minute intervals where the highest traffic volumes occur

2022 Existing Condition traffic volumes for the weekday A.M., weekday P.M., and Saturday midday peak hours are illustrated in **Figures 3-5**. All traffic count data sheets are provided in **Appendix C**.

BASE (NO-BUILD) CONDITIONS

Annual Background Growth

A background growth factor for the roadways in the study area was developed based on growth factors for August 2022 to July 2023 obtained from the PennDOT Bureau of Planning and Research (BPR). The PennDOT BPR suggests using a background growth trend factor of 0.27% per year in Montgomery County for urban non-interstate roadways. As such, the background growth factor was applied annually to yield overall growth percentages of 0.81% (0.27% per year compounded for 3 years) for the 2025 opening year and 2.18% (0.27% per year compounded for 8 years) for the 2030 design year.

Nearby Proposed Developments

Base (no-build) traffic conditions were calculated to include traffic volumes from proposed developments, which, though not operating under existing conditions, may be operating by the future year (2030) of the proposed development. Based on the scoping application, there were no nearby developments specifically included in the study.

The additional traffic volumes due to the background growth, were added to the 2022 Existing Conditions to produce the 2025 and 2030 Base Condition (no-build) traffic volumes as shown in **Figures 6-11**.

SCHEDULED ROADWAY IMPROVEMENTS

Based on a review of the DVRPC TIP and PennDOT 12-Year Plan, there are no planned roadway improvements in the Study Area.

PROPOSED SITE ACCESS

The site is currently served by five (5) accesses to Pennsylvania Avenue (SR 2037). With redevelopment, the access points will be reduced to two (2) as follows; one (1) realigned full-movement driveway, opposite Commerce Drive (signalized) and one (1) Right-in/Right-out Driveway, east of the signal.

Sight Distance Analysis

A sight distance analysis was prepared for the proposed site driveway locations. In general, recommended safe sight distances depend upon the posted speed limit and roadway grades. The existing sight distances at the proposed driveways were measured in accordance with PennDOT Publication 282 Highway Occupancy Permit Guidelines and compared to PennDOT's desirable sight distance standard, which is identified in 67 PA Code Chapter 441.8(h), "Access to and Occupancy of Highways by Driveways and Local Roads." In addition, measured sight distances at the proposed driveways were compared to PennDOT's safe stopping sight distance standard, which is calculated by the following equation:

$$\mathbf{SSSD = 1.47VT + V^2/[30(f \pm g)]}$$

SSSD = safe stopping sight distance (acceptable sight distance)
V = Vehicle Speed
T = Perception Reaction Time of Driver (2.5 seconds)
f = Coefficient of Friction for Wet Pavements
g = Percent of Roadway Grade Divided by 100

Table 4 shows the measured, intersection, desirable, and acceptable (SSSD) sight distances at the site driveways for vehicles entering and exiting the site.

TABLE 4
SIGHT DISTANCE ANALYSIS - PROPOSED SITE DRIVEWAYS

	Direction	Posted Speed (mph)	Sight Distances (feet)			
			Grade[1] (%)	DES[2]	SSSD[3]	EXIST
Pennsylvania Avenue – Proposed Site Driveway, Opposite Commerce Drive						
Exiting Movements	*To the left*	35	0%	440′	314′	**700′+**
	To the right	35	-1%	350′	319′	**700′+**
Entering Left Turns	*Approaching same direction*	35	-1%	N/A	319′	**700′+**
	Approaching opposite direction	35	0%	320′	314′	**700′+**
Pennsylvania Avenue – Proposed RI-RO Site Driveway						
Exiting Movements	*To the left*	35	0%	440′	314′	**600′+**

DES = PennDOT Desirable Sight Distance
SSSD = PennDOT Acceptable Sight Distance
EXIST = Existing (measured) Sight Distance
1 = Roadway Grade Approaching Driveway
2 = Based on the posted speed
3 = Based on the posted speed plus 5 mph

As shown in **Table 4** above, the measured sight distances at the site driveways will satisfy all PennDOT Sight Distance Criteria.

TRIP GENERATION

The trip generation rates for the proposed site were obtained from the manual *Trip Generation*, eleventh Edition, 2021, an Institute of Transportation Engineers (ITE) Informational Report. **Table 5** shows the rates and directional percentages utilized for the analyzed time periods.

TABLE 5
TRIP GENERATION DATA – PROPOSED REDEVELOPMENT

Land Use (ITE #)	Time Period	Size (X)	Equation/Rate	Enter %
New Car Sales (ITE #840)	Average Weekday	75.085 ksf	T = 28.65*(X) – 29.45	50%
	Weekday AM Peak Hour		T = 1.86*(X)	73%
	Weekday PM Peak Hour		T = 2.42*(X)	40%
	Saturday Midday Peak Hour		T = 4.02*(X)	50%

T = Total Trips; X = Independent variable (ksf = 1000sf)

The results of the trip generation calculations are summarized in **Table 6**.

TABLE 6
TRIP GENERATION – PROPOSED REDEVELOPMENT

Time Period	Size	New Trips		
		Total	Enter	Exit
Average Weekday	75.085 ksf	2122	1061	1061
Weekday A.M. Peak Hour		140	102	38
Weekday P.M. Peak Hour		182	73	109
Saturday Midday Peak Hour		302	151	151

Based on the information contained in Table 6, the Proposed Redevelopment will generate 140 new trips during the weekday A.M. Peak Hour, 182 new trips during the weekday P.M. Peak Hour and 302 new trips during the Saturday Peak Hour.

Based on the counts conducted at the existing driveways (Figures 2-4), the Existing Facility generated 67 new trips during the weekday A.M. Peak Hour, 65 new trips during the weekday P.M. Peak Hour and 47 new trips during the Saturday Peak Hour. A base redistribution was developed to account for the occupancy of the Existing Facility. These redistributions are shown in Figures 12-14.

However, it should be noted that these trip generation estimates are extremely conservative based on the data collected at the existing facility during the peak hours. The trips generated as part of this study, and utilized in all subsequent analysis, propose an increase of between 2x-6x the amount of traffic currently generated by the site. The redevelopment project is a consolidation of the existing buildings/uses on site and it is not expected that a significant increase in trip generation is likely.

TRIP DISTRIBUTION

The distribution and assignment of new trips generated by the Proposed Redevelopment was based upon existing traffic patterns in the Study Area. Based on this evaluation, the new trips for the proposed development were distributed to the local roadway network based on the percentages shown in **Table 7.**

TABLE 7
TRIP DISTRIBUTION PERCENTAGES – NEW TRIPS

Direction – To/From	Assignment – To/From	Distribution Percentage AM/PM/SAT
East	via Pennsylvania Avenue (SR 2037)	51%
West	via Pennsylvania Avenue (SR 2037)	30%
North	via Commerce Drive	19%

The distribution of site-generated trips for the Proposed Redevelopment during the weekday A.M., weekday P.M., and Saturday midday peak hours are shown in **Figures 15-17.** The trip assignment percentage information is included with the Volume Development in **Appendix D**.

PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES

The site-generated trips for the Proposed Redevelopment were added to the 2025 and 2030 Base (no-build) Conditions to develop the 2025 and 2030 Projected (build) Condition traffic volumes, as shown in **Figures 18-23**. Volume development spreadsheets are also contained in **Appendix D.**

LEVELS OF SERVICE FOR AN INTERSECTION

For analysis of intersections, level of service is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. LOS criteria is stated in terms of control delay per vehicle for a one-hour analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The criteria are shown in **Table 8**. Delay, as it relates to level of service, is a complex measure and is dependent upon a number of variables. For signalized intersections, these variables include the quality of vehicle progression, the cycle length, the green time ratio, and the volume/capacity ratio for the lane group in question. For unsignalized intersections, delay is related to the availability of gaps in the flow of traffic on the major street and the driver's discretion in selecting an appropriate gap for a particular movement from the minor street (straight across, left or right turn).

TABLE 8
LEVEL OF SERVICE CRITERIA
UNSIGNALIZED AND SIGNALIZED INTERSECTIONS[1]

Level of Service	Control Delay Per Vehicle (Seconds)	
	Signalized	Unsignalized
A	< 10	< 10
B	> 10 and < 20	> 10 and < 15
C	> 20 and < 35	> 15 and < 25
D	> 35 and < 55	> 25 and < 35
E	> 55 and < 80	> 35 and < 50
F	> 80 or v/c > 1.0	> 50 or v/c > 1.0

[1]Obtained from Exhibits 19-8 and 20-2 of the Transportation Research Board's Highway Capacity Manual 6th Edition

CAPACITY ANALYSIS METHODOLOGY

Capacity analyses were conducted for the weekday A.M., weekday P.M., and Saturday midday peak hours at the study area intersections. These analyses were conducted according to the methodologies contained in the *6th Edition Highway Capacity Manual* (HCM) using *Synchro 11* software, a Trafficware product.

The following conditions were analyzed, as applicable:

- 2022 Existing conditions;
- 2025 Base Conditions (Build-out year without development);
- 2030 Base Conditions (Build-out year without development);
- 2025 Projected conditions (Build-out year with development);
- 2030 Projected conditions (Build-out year with development).

It should be noted that based on methodologies contained in Chapter 10 of PennDOT's Publication 46, TPD adjusted the following HCM default values in the *Synchro 11* capacity analysis. These adjustments were made at the signalized intersections within the study area for all time periods based on the study area location being classified as Urban:

- Base saturation flow rates for signalized intersections. The saturation flow rate was changed from the default value of 1900 to 1800 based on Exhibit 10-9.
- Critical and Follow-Up Gap times were adjusted relative to the difference between default and PA Default values contained in Exhibits 10-11 and 10-12. As requested by PennDOT, worksheets/tables showing how these values were calculated are included in **Appendix E**.
- Per PennDOT standards, the signal timings at the study area intersections were optimized under the base and projected (build) conditions.

In addition, capacity analyses were conducted at the proposed site driveway under the projected conditions. The capacity analysis worksheets are included in **Appendix F**. The existing signal timing plans are included in **Appendix G.**

PennDOT's *Policies and Procedures for Transportation Impact Studies*, found in PennDOT's Publication 282, Appendix A, dated July 2017, contain the following criteria regarding levels of service:

- Page 29 of the Guidelines state that if evaluation of the With Development Horizon Year Scenario to the Without Development Horizon Year Scenario indicates that the overall intersection level of service has dropped, the applicant will be required to mitigate the level of service if the increase in overall intersection delay is greater than 10-seconds. If the overall intersection delay increase is less than or equal to 10-seconds, mitigation of the intersection will not be required.
- Page 29 of the Guidelines state that for mitigation scenarios, applicants are expected to mitigate the overall intersection LOS to the original Without Development LOS; the 10-second delay variance is not applied to mitigation scenarios. Applicants may be required to address available storage and queue lengths at critical movements or approaches even if the overall LOS requirements are met.
- Page 31 of the Guidelines state that if signalization is the preferred alternative for mitigation, overall intersection LOS C in rural areas and LOS D in urban areas is acceptable.
- Page 31 of the Guidelines states new signalized or unsignalized intersection established to serve as access to the development shall be designed to operate at minimum LOS C for rural areas, and minimum LOS D for urban areas.

LEVELS OF SERVICE IN THE STUDY AREA

Level of service (LOS) matrices for the study area intersections are shown in **Tables 9-11**.

TABLE 9
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY

Intersection	Movement	Weekday AM Peak Hour				
		2022 Exist	2025 Opening Year		2030 Design Year	
			Base	Proj.[1]	Base	Proj.[1]
Pennsylvania Avenue (SR 2037) & Commerce Drive/Site Driveway	EBL	A	A	A	A	A
	EBT	A	A	A	A	A
	EBTR	A	A	A	A	A
	WBL	A	A	A	A	A
	WBT	A	A	B	A	B
	NBL	E (60.2)	E (60.2)	D	E (60.2)	D
	NBTR			D		D
	SBL (SBLL)	D	D	D	D	D
	SBLT (SBTR)	A	A	D	A	D
	SBR	D	D	--	D	--
	ILOS	**B (15.3)**	**B (15.4)**	**B (15.4)**	**B (15.4)**	**B (15.5)**
Pennsylvania Avenue (SR 2037) & Western Exit-Only Driveway	NBR	B	B	--	B	--
	ILOS	**A (0.0)**	**A (0.0)**	**--**	**A (0.0)**	**--**
Pennsylvania Avenue (SR 2037) & Central Exit-only Driveway	WBLT	A	A	--	A	--
	NBLR	C	C	--	C	--
	ILOS	**A (0.0)**	**A (0.0)**	**--**	**A (0.0)**	**--**
Pennsylvania Avenue (SR 2037) & Existing Access/ Proposed RI-RO Driveway	WBLT	A	A	--	A	--
	NBLR	A	A	A	A	A
	ILOS	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**
Pennsylvania Avenue (SR 2037) & Existing Eastern Full-Movement Driveway	WBLT	A	A	--	A	--
	NBLR	A	A	--	A	--
	ILOS	**A (0.0)**	**A (0.0)**	**--**	**A (0.0)**	**--**

Exist. = Existing Condition, Base = No-Build scenario, Proj. = Build scenario
1 = With Proposed Recommendations

TABLE 10
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY

Intersection	Movement	Weekday PM Peak Hour				
		2022 Exist	2025 Opening Year		2030 Design Year	
			Base	Proj.[1]	Base	Proj.[1]
Pennsylvania Avenue (SR 2037) & Commerce Drive/Site Driveway	EBL	B	B	B	B	B
	EBT	B	B	B	B	B
	EBTR	B	B	B	B	B
	WBL	B	B	B	B	B
	WBT	B	B	B	B	B
	NBL	E (63.0)	E (63.0)	E (57.6)	E (63.0)	E (57.6)
	NBTR			E (60.5)		E (60.5)
	SBL (SBLL)	D	D	D	D	D
	SBLT (SBTR)	A	A	C	A	C
	SBR	D	D	--	D	--
	ILOS	**C (25.7)**	**C (25.8)**	**C (27.8)**	**C (25.8)**	**C (27.9)**
Pennsylvania Avenue (SR 2037) & Western Exit-Only Driveway	NBR	B	B	--	B	--
	ILOS	**A (0.0)**	**A (0.0)**	**--**	**A (0.0)**	**--**
Pennsylvania Avenue (SR 2037) & Central Exit-only Driveway	WBLT	A	A	--	A	--
	NBLR	B	B	--	B	--
	ILOS	**A (0.0)**	**A (0.0)**	**--**	**A (0.0)**	**--**
Pennsylvania Avenue (SR 2037) & Existing Access/ Proposed RI-RO Driveway	WBLT	A	A	--	A	--
	NBLR	A	A	B	A	B
	ILOS	**A (0.0)**	**A (0.0)**	**A (0.1)**	**A (0.0)**	**A (0.1)**
Pennsylvania Avenue (SR 2037) & Existing Eastern Full-Movement Driveway	WBLT	A	A	--	A	--
	NBLR	A	A	--	A	--
	ILOS	**A (0.0)**	**A (0.0)**	**--**	**A (0.0)**	**--**

Exist. = Existing Condition, Base = No-Build scenario, Proj. = Build scenario
1 = With Proposed Recommendations

TABLE 11
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY

Intersection	Movement	Saturday Midday Peak Hour				
		2022 Exist	2025 Opening Year		2030 Design Year	
			Base	Proj.[1]	Base	Proj.[1]
Pennsylvania Avenue (SR 2037) & Commerce Drive/Site Driveway	EBL	A	A	A	A	A
	EBT	A	A	A	A	A
	EBTR	A	A	A	A	A
	WBL	A	A	B	A	B
	WBT	A	A	B	A	B
	NBL	D	D	D	D	D
	NBTR			D		D
	SBL (SBLL)	D	D	D	D	D
	SBLT (SBTR)	A	A	C	A	C
	SBR	D	D	--	D	--
	ILOS	**B (13.9)**	**B (14.0)**	**B (17.2)**	**B (14.0)**	**B (17.2)**
Pennsylvania Avenue (SR 2037) & Western Exit-Only Driveway	NBR	A	A	--	A	--
	ILOS	**A (0.0)**	**A (0.0)**	**--**	**A (0.0)**	**--**
Pennsylvania Avenue (SR 2037) & Central Exit-only Driveway	WBLT	A	A	--	A	--
	NBLR	B	B	--	B	--
	ILOS	**A (0.0)**	**A (0.0)**	**--**	**A (0.0)**	**--**
Pennsylvania Avenue (SR 2037) & Existing Access/ Proposed RI-RO Driveway	WBLT	A	A	--	A	--
	NBLR	A	A	A	A	A
	ILOS	**A (0.0)**	**A (0.0)**	**A (0.2)**	**A (0.0)**	**A (0.2)**
Pennsylvania Avenue (SR 2037) & Existing Eastern Full-Movement Driveway	WBLT	A	A	--	A	--
	NBLR	A	A	--	A	--
	ILOS	**A (0.0)**	**A (0.0)**	**--**	**A (0.0)**	**--**

Exist. = Existing Condition, Base = No-Build scenario, Proj. = Build scenario
1 = With Proposed Recommendations

As shown in **Tables 9-11**, under all projected (build) conditions with the development of the proposed site and with site-related recommendations outlined in **Table 16**, all of the study area intersections will satisfy PennDOT ILOS Standards.

95TH PERCENTILE QUEUE ANALYSIS

Queue analyses were conducted at the study area intersections using *Synchro 11* software. For this analysis, the 95th percentile queue is defined as the queue length that is exceeded in 5% of the signal cycles. As an example, for a signal with a 90-second cycle, this means that the 95th percentile queue length will be exceeded during 2 of the 40 signal cycles that occur during the peak hour. The queue analysis results are summarized in **Tables 12-14.**

TABLE 12
95TH PERCENTILE QUEUE

Intersection	Movement	Available Storage	Weekday AM Peak Hour				
			2022 Exist	2025 Opening Year		2030 Design Year	
				Base	Proj.[1]	Base	Proj.[1]
Pennsylvania Avenue (SR 2037) & Commerce Drive/ Site Driveway	EBL	200′	70′	70′	73′	73′	75′
	EBT	[1000′+]	60′	63′	68′	63′	68′
	EBTR	[1000′+]	65′	65′	70′	65′	70′
	WBL	240′	10′	10′	25′	10′	25′
	WBT	[380′]	115′	118′	118′	120′	120′
	NBL	--	20′	20′	15′	20′	15′
	NBTR	--			20′		20′
	SBL (SBLL)	150′	93′	93′	95′	95′	95′
	SBLT (SBTR)	[1000′+]	0′	0′	143′	0′	145′
	SBR	[1000′+]	135′	135′	--	140′	--
Pennsylvania Avenue (SR 2037) & Western Exit-Only Driveway	NBR	--	0′	0′	--	0′	--
Pennsylvania Avenue (SR 2037) & Central Exit-only Driveway	WBLT	30′[2]	0′	0′	--	0′	--
	NBLR	--	0′	0′	--	0′	--
Pennsylvania Avenue (SR 2037) & Existing Access/ Proposed RI-RO Driveway	WBLT	30′[2]	0′	0′	--	0′	--
	NBLR	--	0′	0′	0′	0′	0′
Pennsylvania Avenue (SR 2037) & Existing Eastern Full-Movement Driveway	WBLT	--	0′	0′	--	0′	--
	NBLR	--	0′	0′	--	0′	--

[Distance to next Public intersection]
1 = With Proposed Recommendations
2 = Distance to next site Driveway

TABLE 13
95TH PERCENTILE QUEUE

Intersection	Movement	Available Storage	Weekday PM Peak Hour				
			2022 Exist	2025 Opening Year		2030 Design Year	
				Base	Proj.[1]	Base	Proj.[1]
Pennsylvania Avenue (SR 2037) & Commerce Drive/ Site Driveway	EBL	200′	115′	118′	125′	120′	128′
	EBT	[1000′+]	168′	170′	190′	175′	193′
	EBTR	[1000′+]	175′	178′	195′	183′	198′
	WBL	240′	10′	10′	30′	10′	30′
	WBT	[380′]	138′	140′	148′	143′	153′
	NBL	--	33′	33′	50′	33′	50′
	NBTR	--			78′		78′
	SBL (SBLL)	150′	340′	343′	353′	345′	355′
	SBLT (SBTR)	[1000′+]	0′	0′	168′	0′	173′
	SBR	[1000′+]	180′	183′	--	185′	--
Pennsylvania Avenue (SR 2037) & Western Exit-Only Driveway	NBR	--	0′	0′	--	0′	--
Pennsylvania Avenue (SR 2037) & Central Exit-only Driveway	WBLT	30′[2]	0′	0′	--	0′	--
	NBLR	--	0′	0′	--	0′	--
Pennsylvania Avenue (SR 2037) & Existing Access/ Proposed RI-RO Driveway	WBLT	30′[2]	0′	0′	--	0′	--
	NBLR	--	0′	0′	3′	0′	3′
Pennsylvania Avenue (SR 2037) & Existing Eastern Full-Movement Driveway	WBLT	--	0′	0′	--	0′	--
	NBLR	--	0′	0′	--	0′	--

[Distance to next Study Area intersection]
1 = With Proposed Recommendations
2 = Distance to next site Driveway

TABLE 14
95TH PERCENTILE QUEUE

Intersection	Movement	Available Storage	Saturday Peak Hour				
			2022 Exist	2025 Opening Year		2030 Design Year	
				Base	Proj.[1]	Base	Proj.[1]
Pennsylvania Avenue (SR 2037) & Commerce Drive/ Site Driveway	EBL	200′	30′	30′	40′	33′	40′
	EBT	[1000′+]	45′	45′	68′	48′	68′
	EBTR	[1000′+]	48′	48′	70′	50′	70′
	WBL	240′	5′	5′	40′	5′	40′
	WBT	[380′]	88′	88′	103′	90′	105′
	NBL	--	15′	15′	48′	15′	48′
	NBTR	--			88′		88′
	SBL (SBLL)	150′	83′	83′	83′	85′	85′
	SBLT (SBTR)	[1000′+]	0′	0′	70′	0′	73′
	SBR	[1000′+]	63′	63′	--	65′	--
Pennsylvania Avenue (SR 2037) & Western Exit-Only Driveway	NBR	--	0′	0′	--	0′	--
Pennsylvania Avenue (SR 2037) & Central Exit-only Driveway	WBLT	30′[2]	0′	0′	--	0′	--
	NBLR	--	0′	0′	--	0′	--
Pennsylvania Avenue (SR 2037) & Existing Access/ Proposed RI-RO Driveway	WBLT	30′[2]	0′	0′	--	0′	--
	NBLR	--	0′	0′	3′	0′	3′
Pennsylvania Avenue (SR 2037) & Existing Eastern Full-Movement Driveway	WBLT	--	0′	0′	--	0′	--
	NBLR	--	0′	0′	--	0′	--

[Distance to next Study Area intersection]
1 = With Proposed Recommendations
2 = Distance to next site Driveway

Queue analysis worksheets are included with the capacity analysis worksheets provided in the **Appendix F**.

AUXILIARY TURN LANE ANALYSIS

Methodology

TPD evaluated auxiliary turn lane warrants at the Proposed Driveway. The warrant analysis methodology contained within Chapter 11 of PennDOT's *Publication 46*, Section 11.17 and Strike-Off Letter 470-08-07 was utilized for this evaluation.

Findings

Table 15 summarizes the results of the auxiliary turn lane analysis at the site access intersections.

TABLE 15
AUXILIARY TURN LANE ANALYSIS SUMMARY

Intersection	Auxiliary Lane	Warrant Satisfied?	Required Storage	Available Storage
Pennsylvania Avenue (SR 2037) & Commerce Drive/Site Driveway	WB Left-Turn Lane	Yes	100′	240′
	EB Right-Turn Lane	No	--	--
Pennsylvania Avenue (SR 2037) & Proposed RI-RO Driveway	EB Right-Turn Lane	No	--	--

The calculations for the auxiliary turn lane warrants are included in **Appendix H**.

RECOMMENDATIONS

TPD has made the following recommendations in relation to the Proposed Redevelopment, as outlined in **Table 16**:

TABLE 16
RECOMMENDATIONS

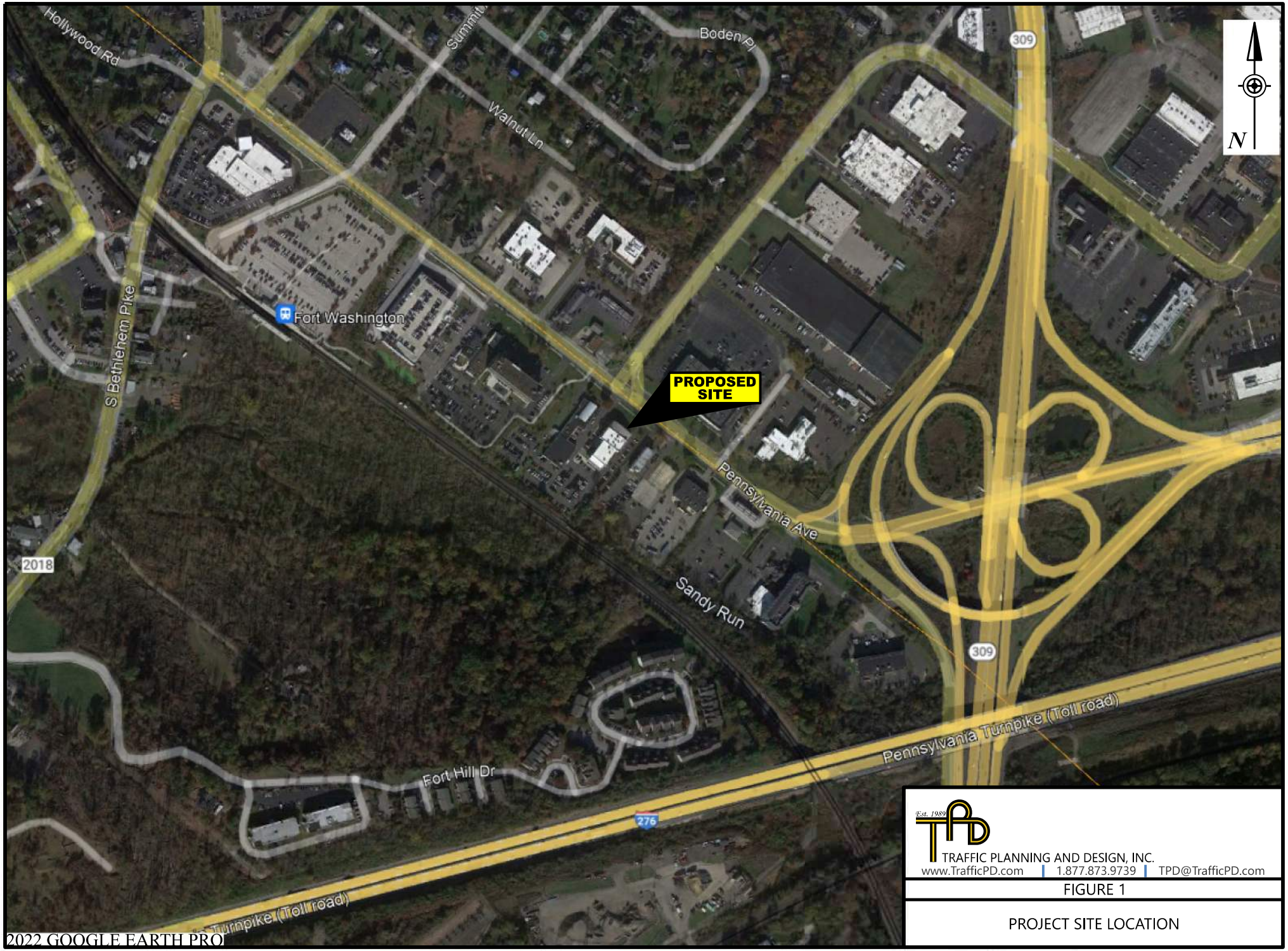
Intersection	Recommendations
Pennsylvania Avenue (SR 2037) & Commerce Drive/Site Driveway	Align the main site driveway directly opposite Commerce Drive
	Design the resultant NB driveway approach to provide a separate left-turn lane and a separate thru/right-turn lane
	Design the resultant SB Commerce Drive approach to provide dual left-turn lanes and a separate thru/right-turn lane
	With lane changes and realignment, remove split phasing and optimize signal timings
	Provide adequate turning radii to facilitate ingress/egress
	Provide required sight distances
	Work with PennDOT and Whitemarsh Township to provide ADA/Pedestrian Facilities to the extent feasible, including providing the "missing link" on the site side as part of the Cross County Trail project.
Pennsylvania Avenue (SR 2037) & Proposed RI-RO Driveway	Provide adequate turning radii to facilitate ingress/egress
	Provide a "STOP" sign on the NB egress approach
	Provide required sight distances
	Work with PennDOT and Whitemarsh Township to provide ADA/Pedestrian Facilities to the extent feasible

CONCLUSIONS

Based on the results of the Transportation Impact Study, TPD offers the following conclusions:

- The Project Site is located on the southern side of Pennsylvania Avenue (SR 2037), in the vicinity of, opposite, Commerce Drive.
- The Proposed Redevelopment will consist of a consolidation/reorganization of the Existing Facility into a 75,085 s.f. New Car Sales and Service facility.
- Access to the Existing Facility is provided by five (5) access points to Pennsylvania Avenue (SR 2037).
- Access to the Proposed Redevelopment will be consolidated into two (2) access points as follows: one (1) re-aligned full-movement driveway opposite Commerce Drive (signalized) and one (1) right-in/right-out driveway further east.
- With development, all proposed driveway locations will exceed PennDOT sight distance criteria.
- The Proposed Redevelopment will generate 140 new trips during the weekday A.M. Peak Hour, 182 new trips during the weekday P.M. Peak Hour and 302 new trips during the Saturday Peak Hour.

- Based on the counts conducted at the existing driveways, the Existing Facility generated 67 new trips during the weekday A.M. Peak Hour, 65 new trips during the weekday P.M. Peak Hour and 47 new trips during the Saturday Peak Hour.
- It should be noted that these trip generation estimates are extremely conservative based on the data collected at the existing facility during the peak hours. The trips generated as part of this study, and utilized in all subsequent analysis, propose an increase of between 2x-6x the amount of traffic currently generated by the site. The redevelopment project is a consolidation of the existing buildings/uses on site and it is not expected that a significant increase in trip generation is likely.
- Under all projected (build) conditions with the development of the proposed site and with site-related recommendations outlined in **Table 16**, all the study area intersections will satisfy PennDOT ILOS Standards.



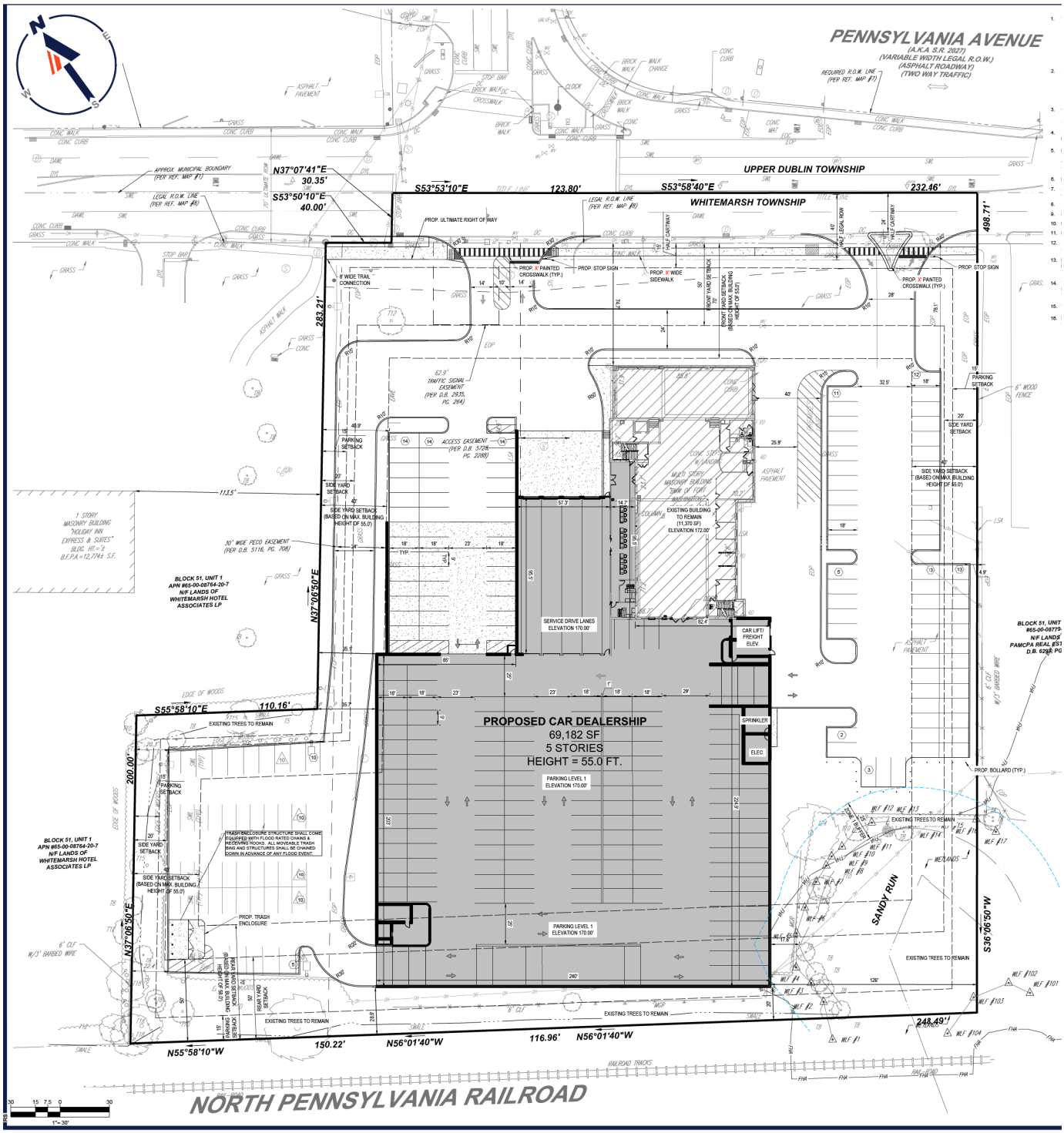
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FIGURE 1

PROJECT SITE LOCATION



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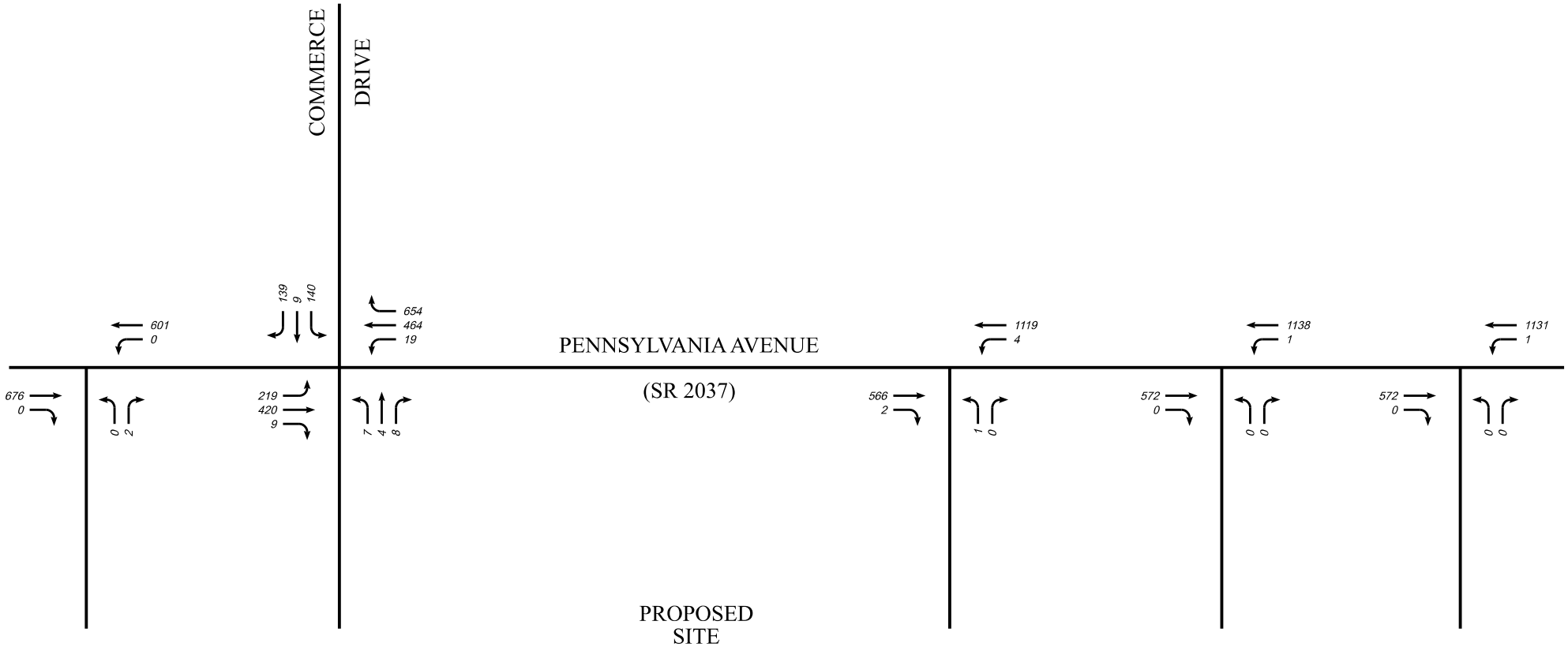
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FIGURE 2

PROPOSED SITE PLAN



KEY:

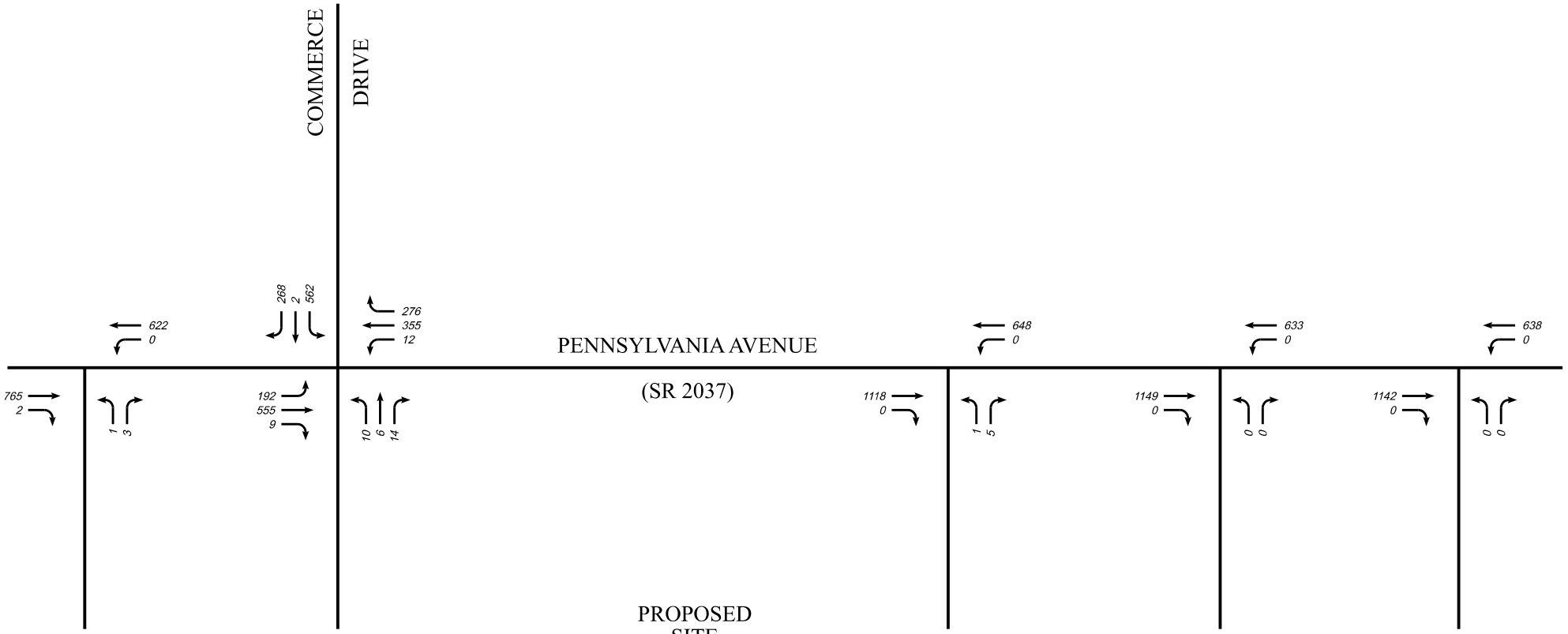
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FIGURE 3

2022 EXISTING CONDITIONS
WEEKDAY A.M. PEAK HOUR
TRAFFIC VOLUMES



KEY:

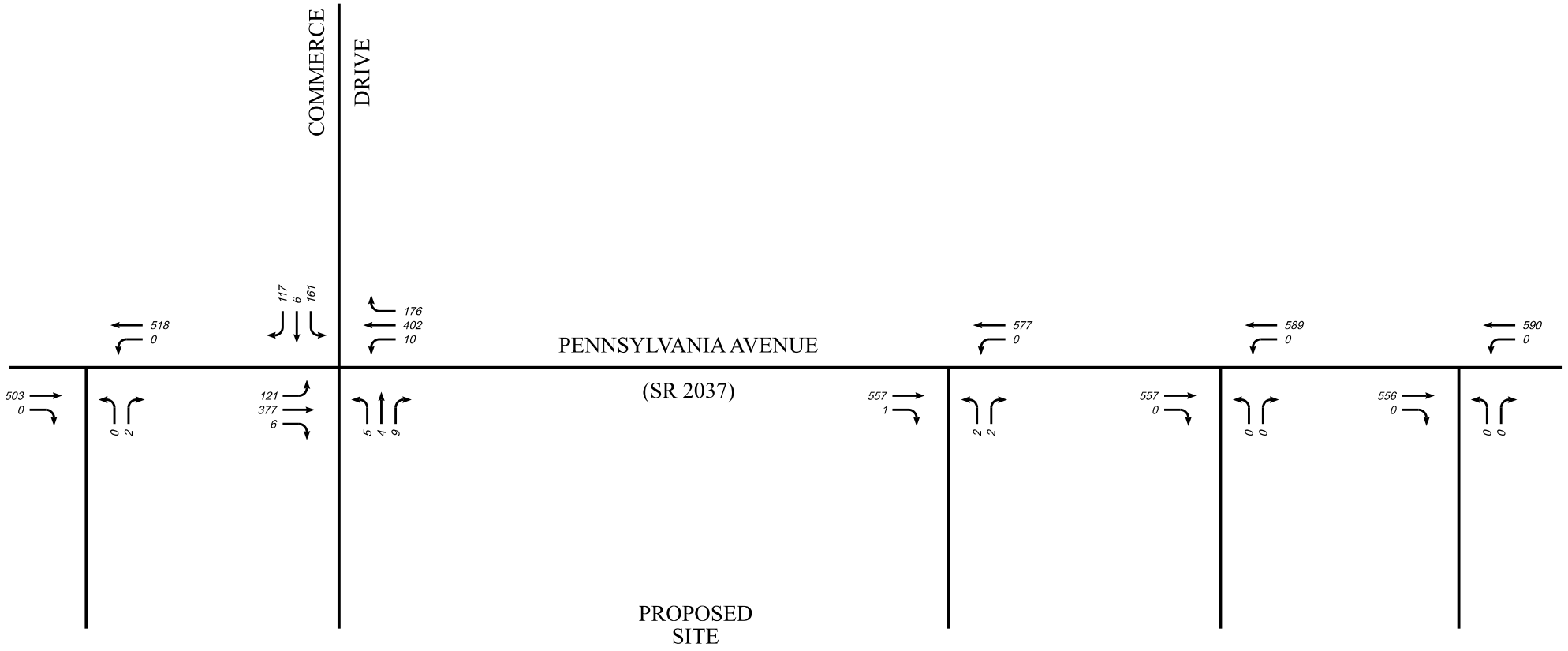
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FIGURE 4

2022 EXISTING CONDITIONS
WEEKDAY P.M. PEAK HOUR
TRAFFIC VOLUMES



KEY:

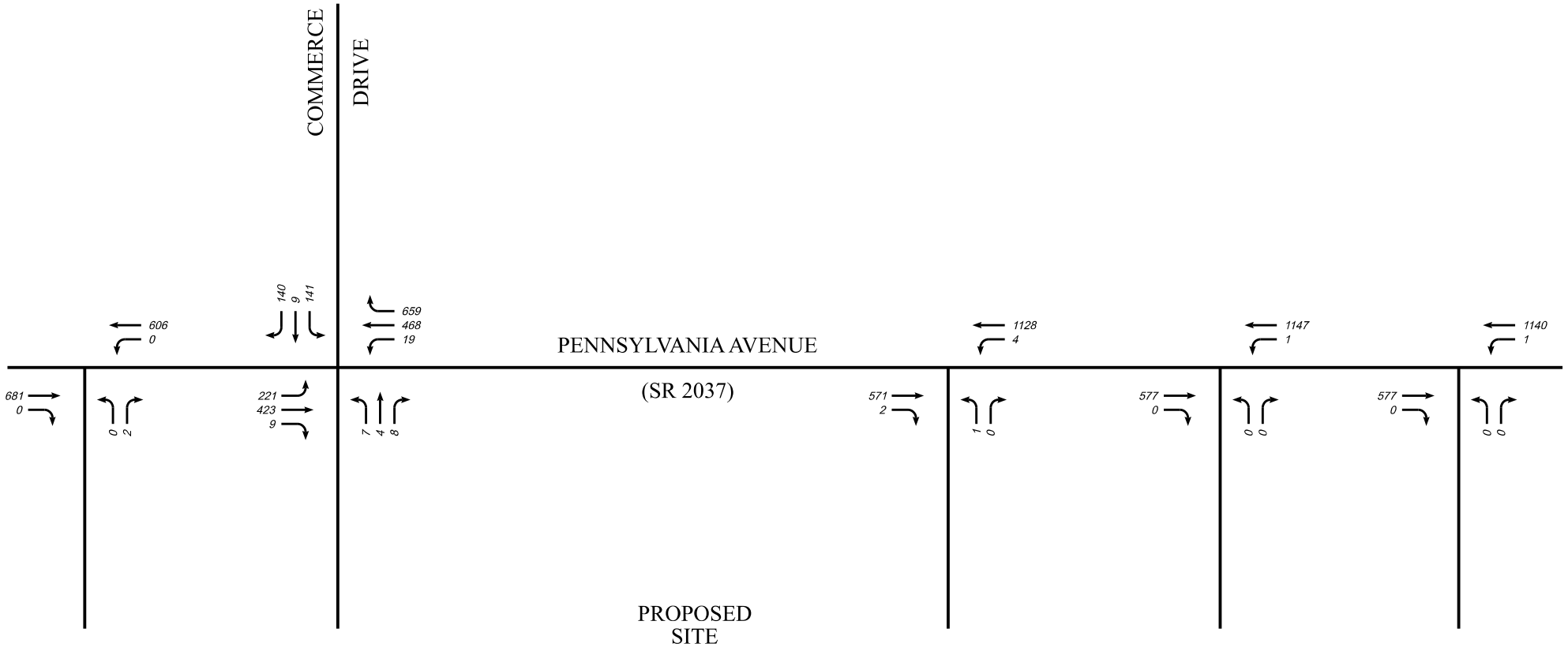
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FIGURE 5

2022 EXISTING CONDITIONS
SATURDAY MIDDAY PEAK HOUR
TRAFFIC VOLUMES



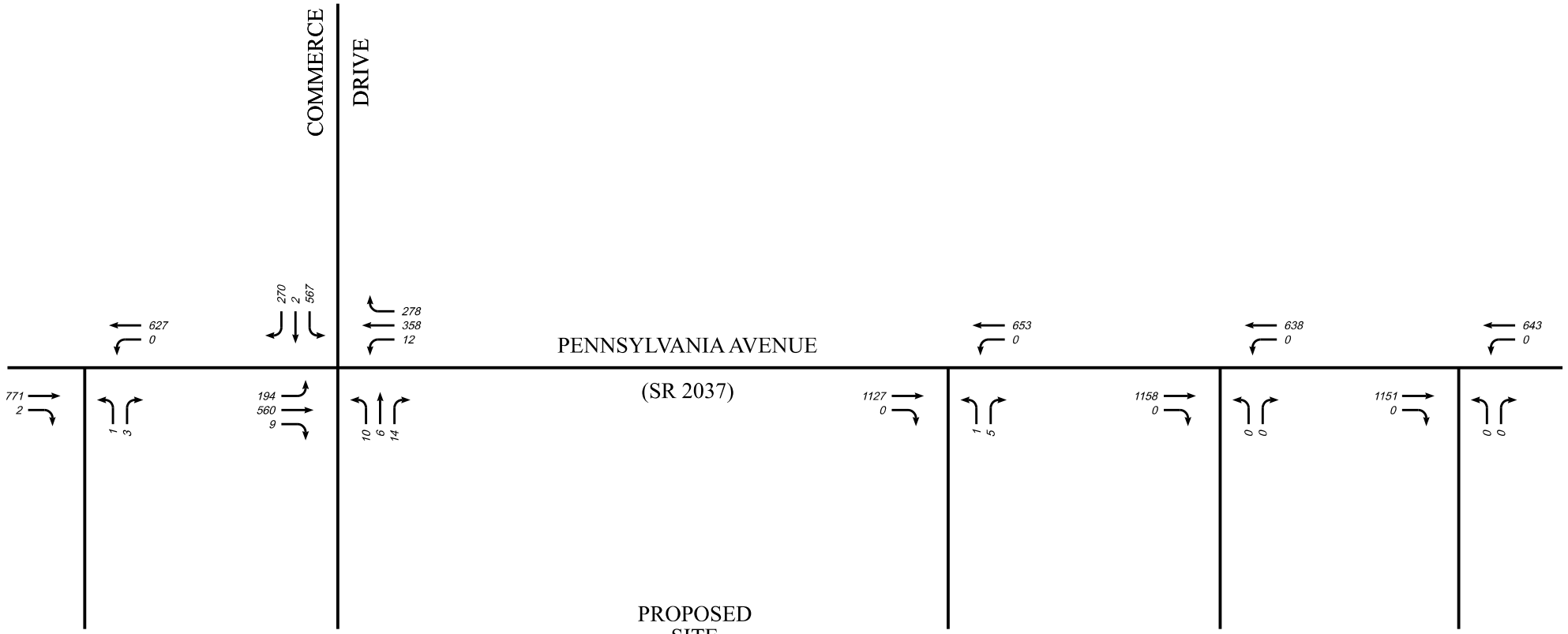
KEY:
SCHEMATIC DRAWING:NOT TO SCALE

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FIGURE 6

2025 BASE CONDITIONS
WEEKDAY A.M. PEAK HOUR
TRAFFIC VOLUMES



KEY:

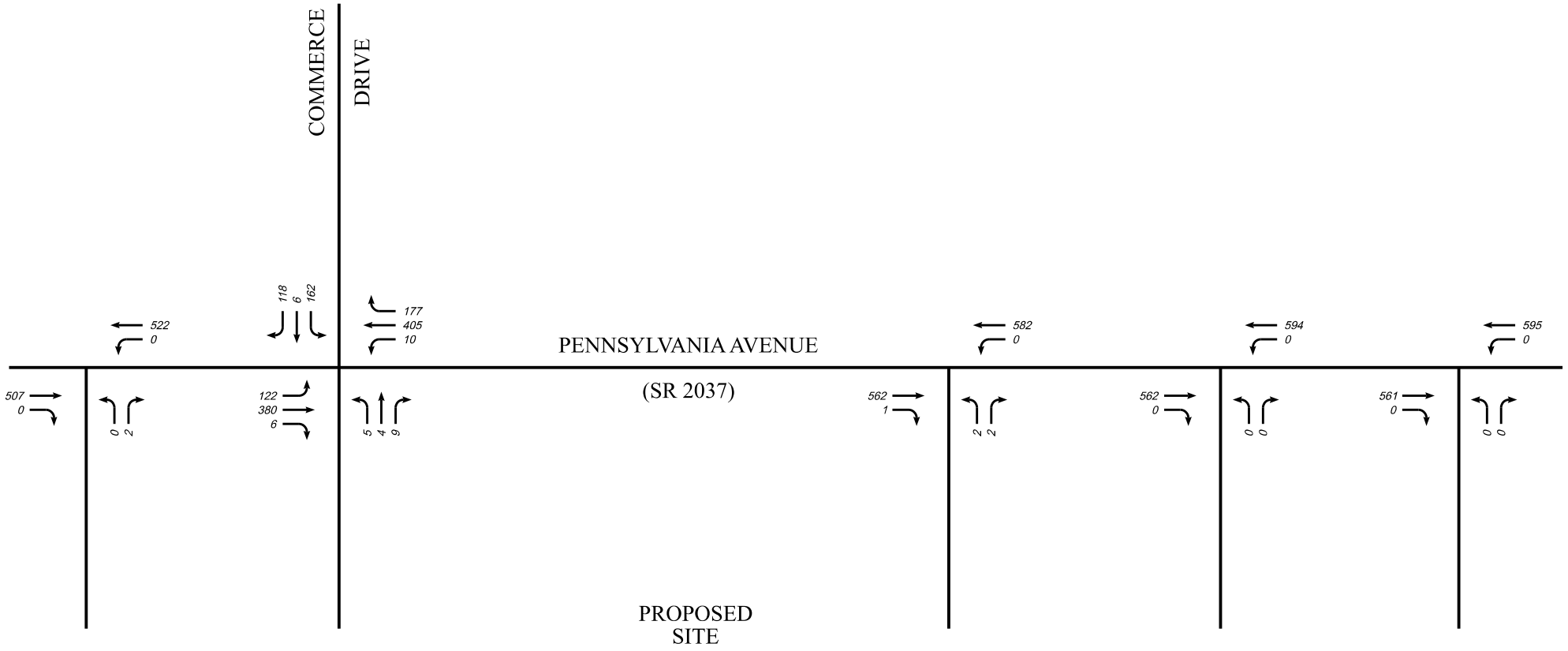
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FIGURE 7

2025 BASE CONDITIONS
WEEKDAY P.M. PEAK HOUR
TRAFFIC VOLUMES



KEY:

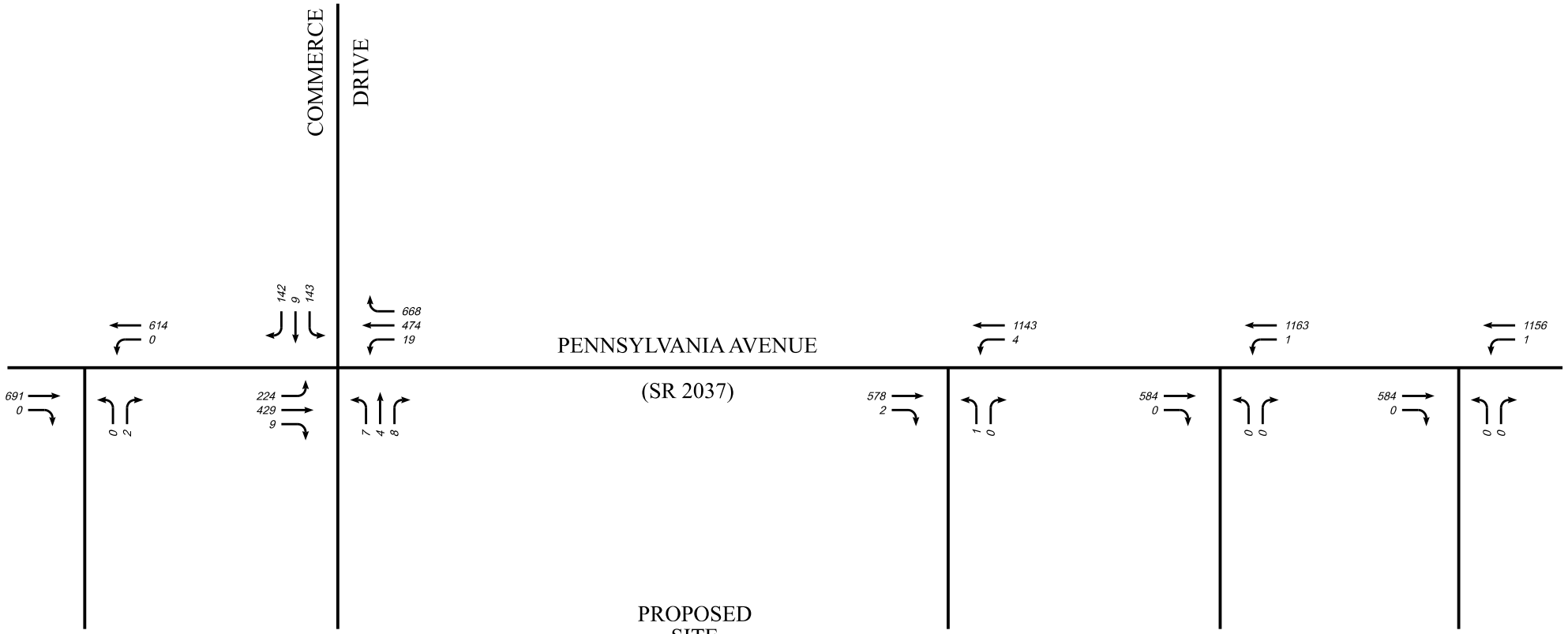
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FIGURE 8

2025 BASE CONDITIONS
SATURDAY MIDDAY PEAK HOUR
TRAFFIC VOLUMES



KEY:

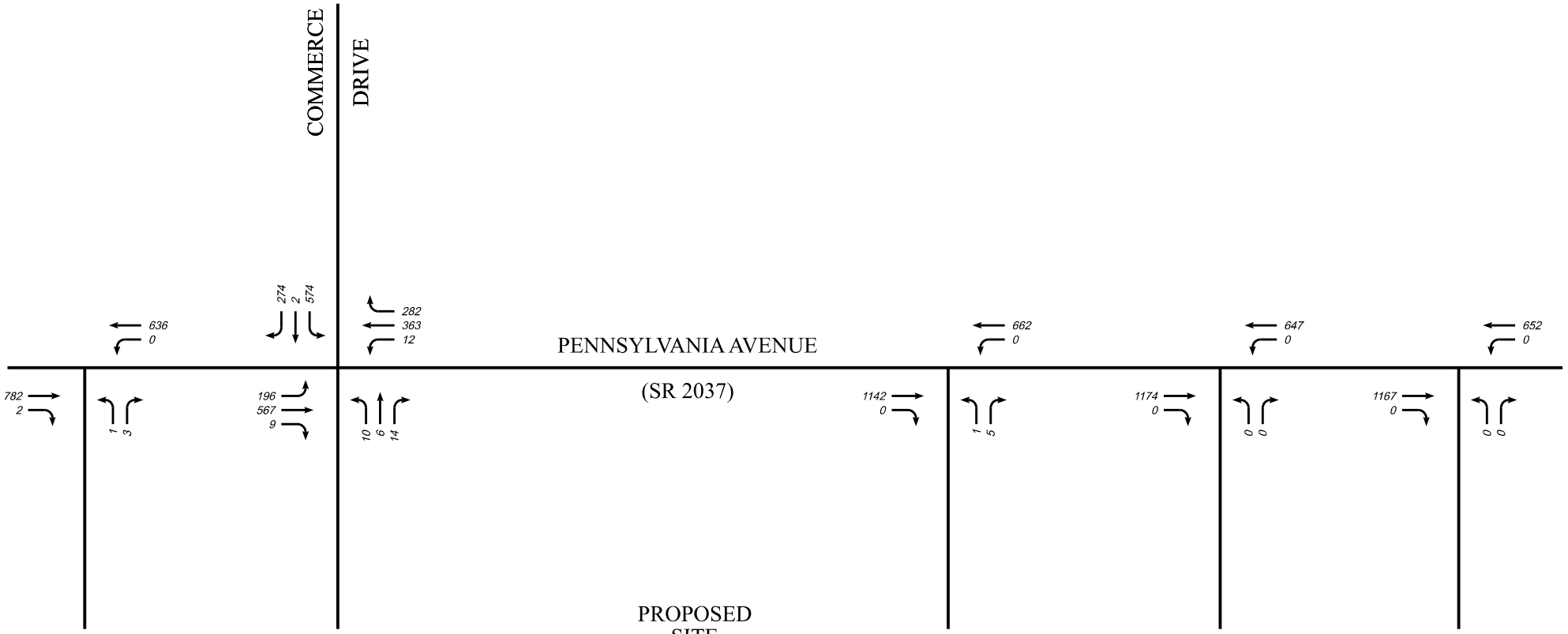
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FIGURE 9

2030 BASE CONDITIONS
WEEKDAY A.M. PEAK HOUR
TRAFFIC VOLUMES



KEY:

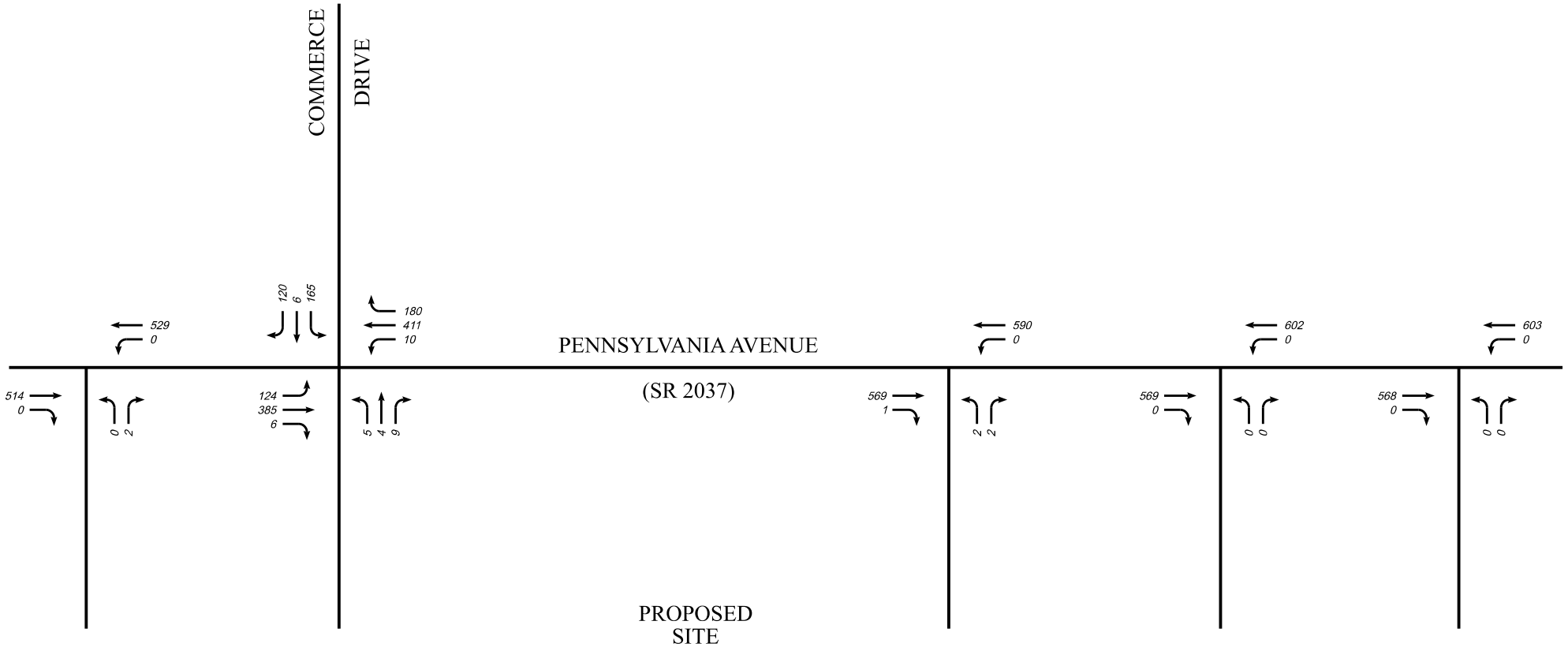
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FIGURE 10

2030 BASE CONDITIONS
WEEKDAY P.M. PEAK HOUR
TRAFFIC VOLUMES



KEY:

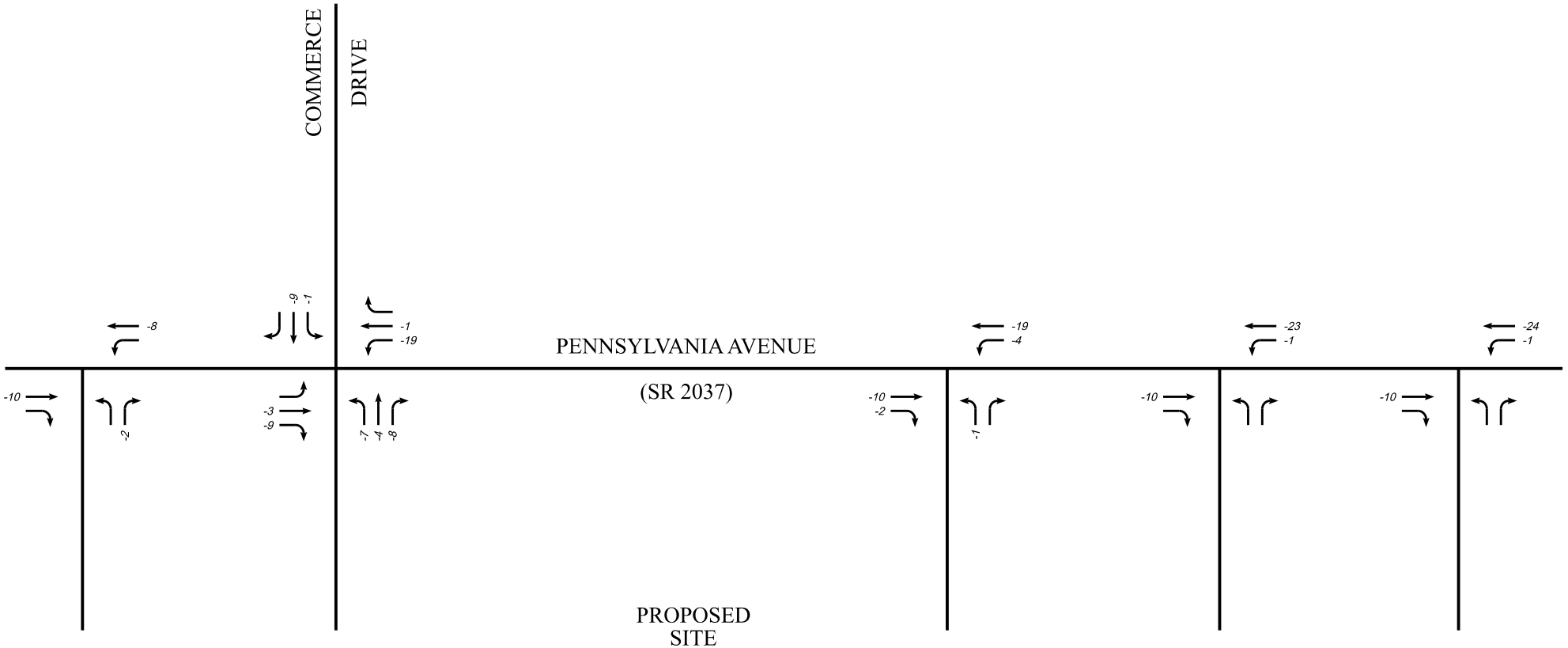
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FIGURE 11

2030 BASE CONDITIONS
SATURDAY MIDDAY PEAK HOUR
TRAFFIC VOLUMES



KEY:

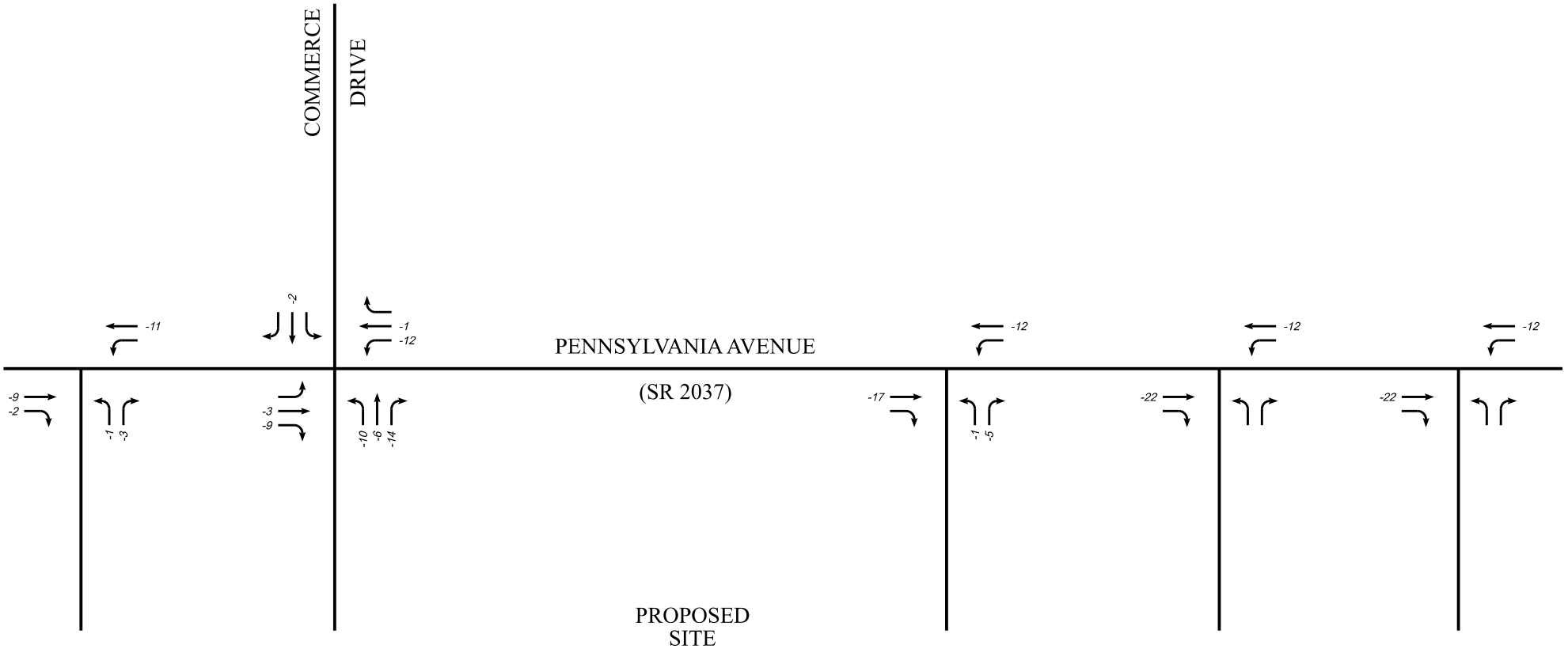
SCHEMATIC DRAWING:NOT TO SCALE

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FIGURE 12

EXISTING TRIP REDISTRIBUTION
WEEKDAY A.M. PEAK HOUR
TRAFFIC VOLUMES



KEY:

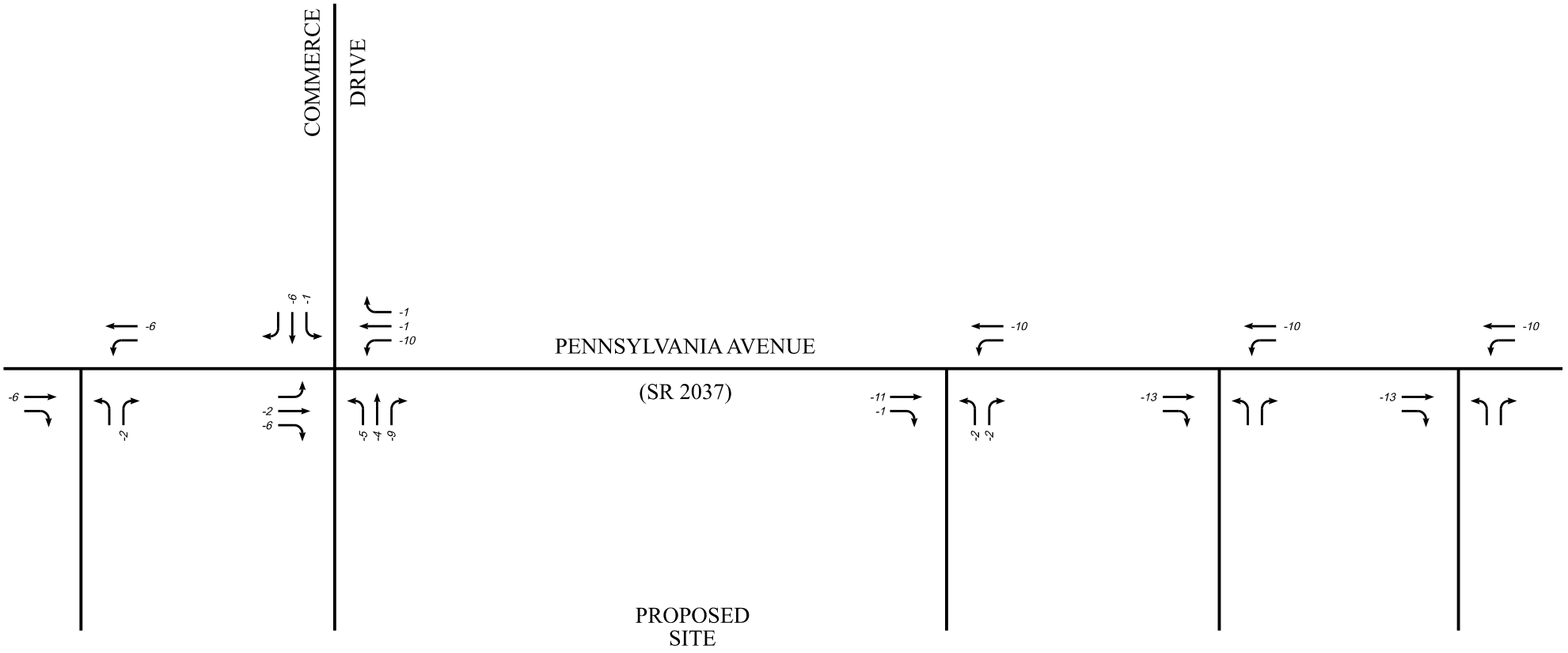
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FIGURE 13

EXISTING TRIP REDISTRIBUTION
WEEKDAY P.M. PEAK HOUR
TRAFFIC VOLUMES



KEY:

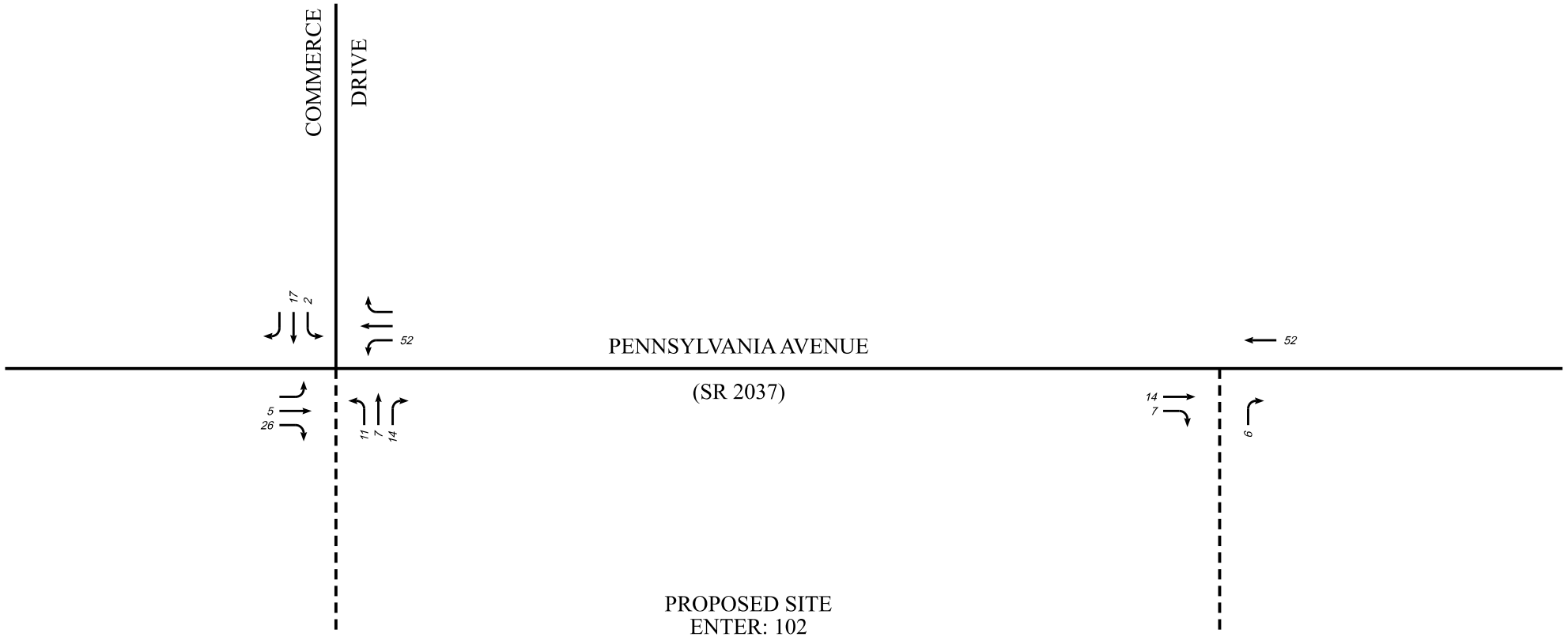
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FIGURE 14

EXISTING TRIP REDISTRIBUTION
SATURDAY MIDDAY PEAK HOUR
TRAFFIC VOLUMES



KEY:

- - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

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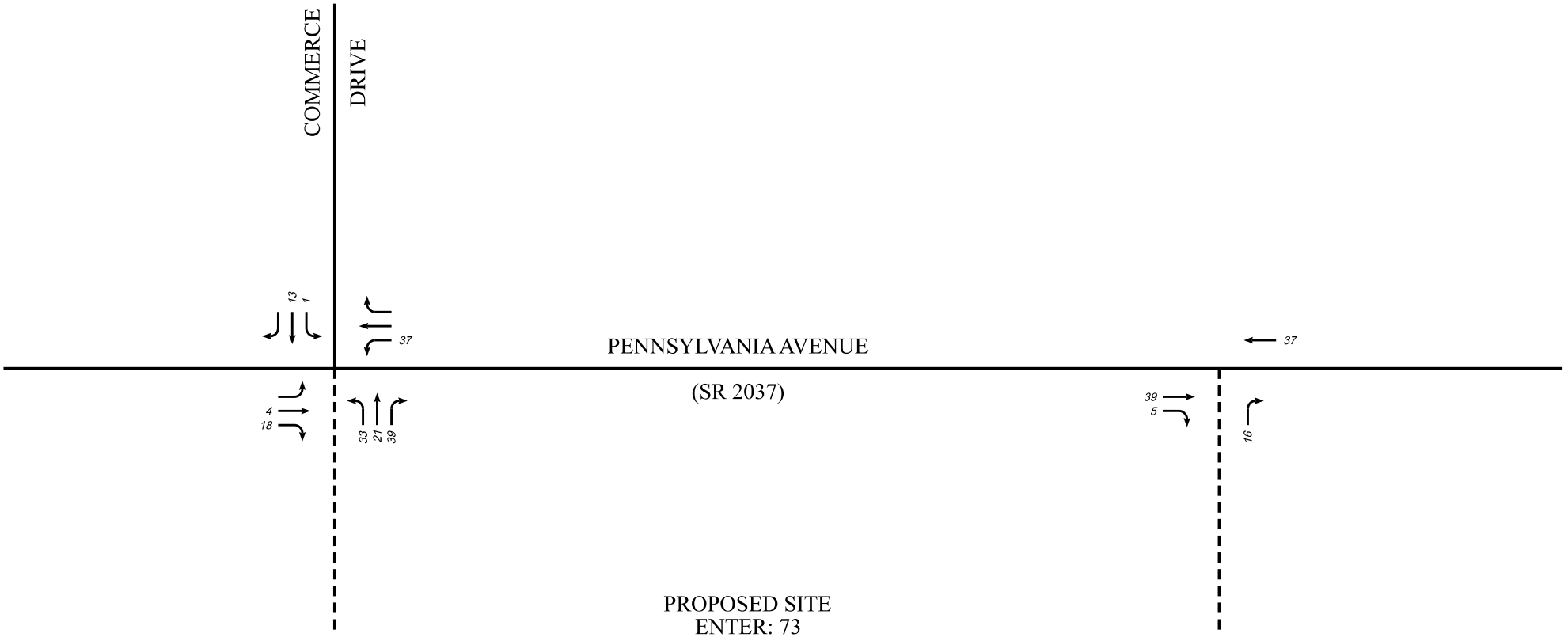
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FIGURE 15

BMW CAR DEALERSHIP REDEVELOPMENT
WEEKDAY A.M. PEAK HOUR
TRIP DISTRIBUTION



KEY:

- - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

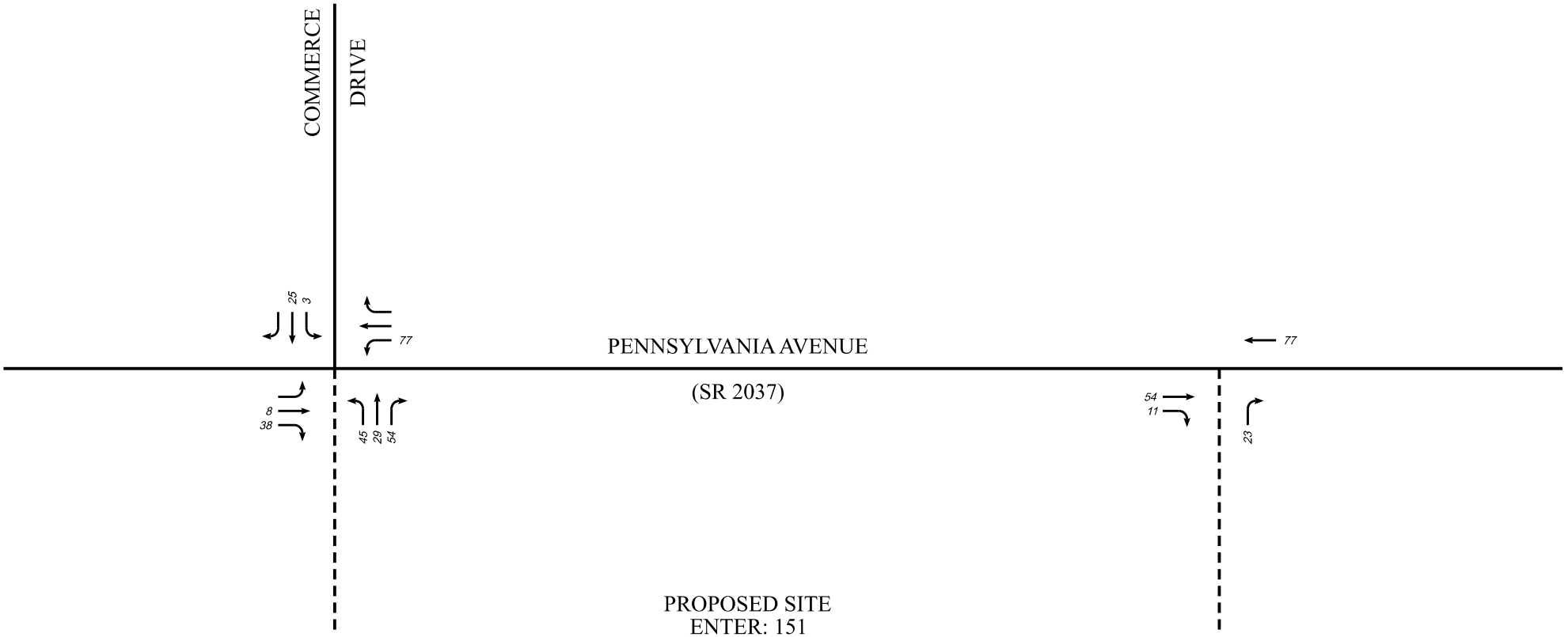
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FIGURE 16

BMW CAR DEALERSHIP REDEVELOPMENT
WEEKDAY P.M. PEAK HOUR
TRIP DISTRIBUTION



KEY:

- - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

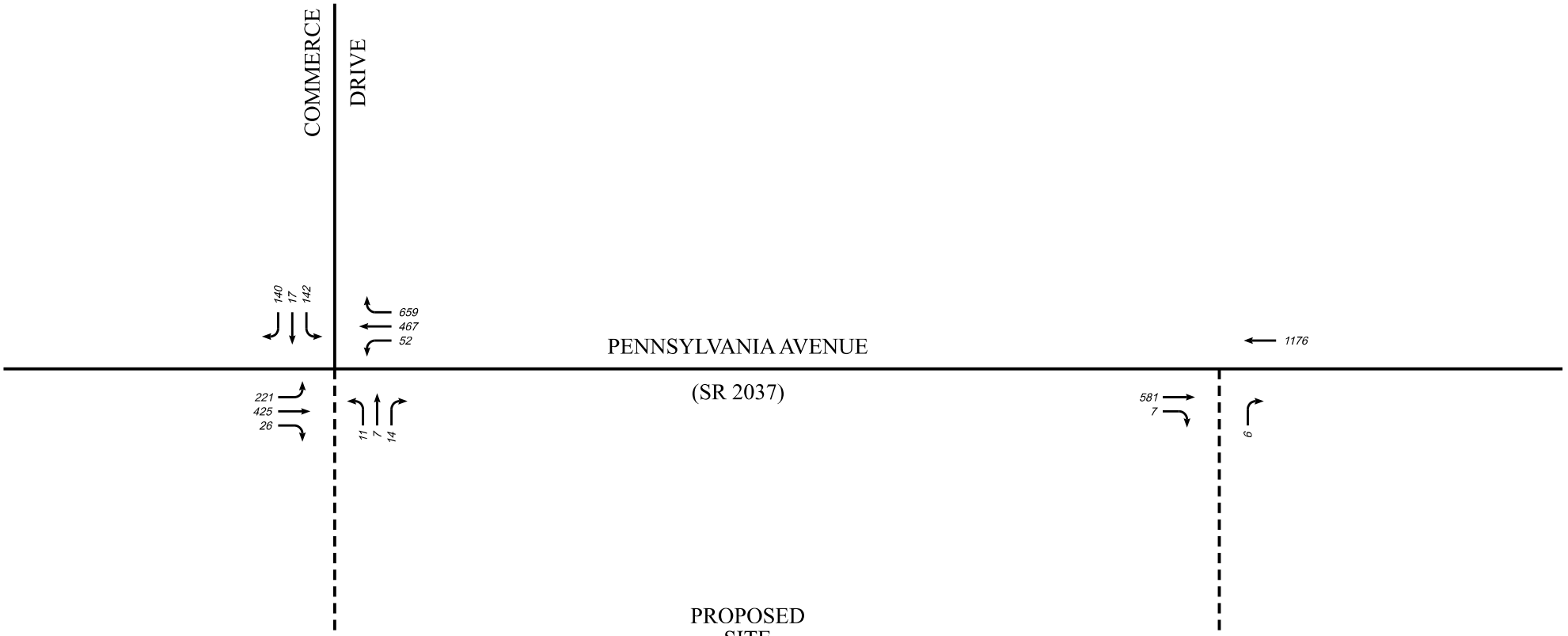
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FIGURE 17

BMW CAR DEALERSHIP REDEVELOPMENT
SATURDAY MIDDAY PEAK HOUR
TRIP DISTRIBUTION



KEY:

- - - - - PROPOSED DRIVEWAY

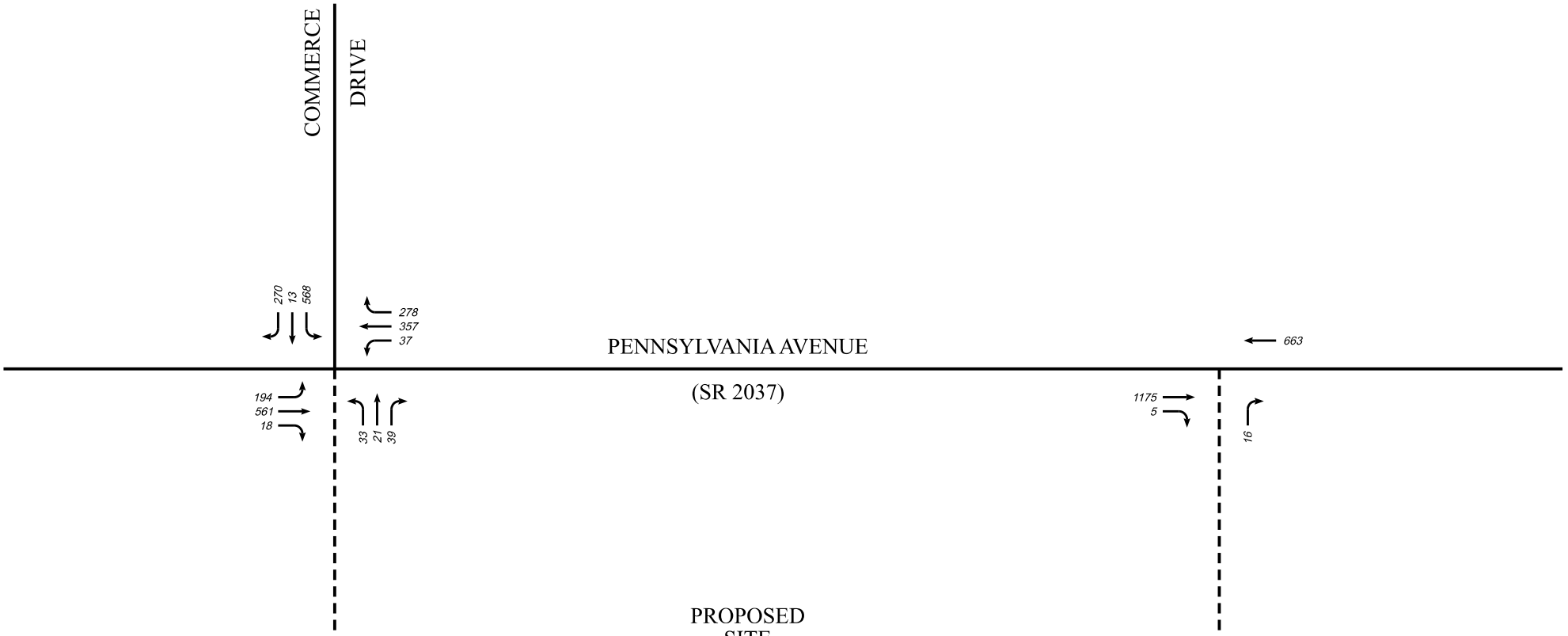
SCHEMATIC DRAWING:NOT TO SCALE

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FIGURE 18

2025 PROJECTED CONDITIONS
WEEKDAY A.M. PEAK HOUR
TRAFFIC VOLUMES



KEY:

- - - - - PROPOSED DRIVEWAY

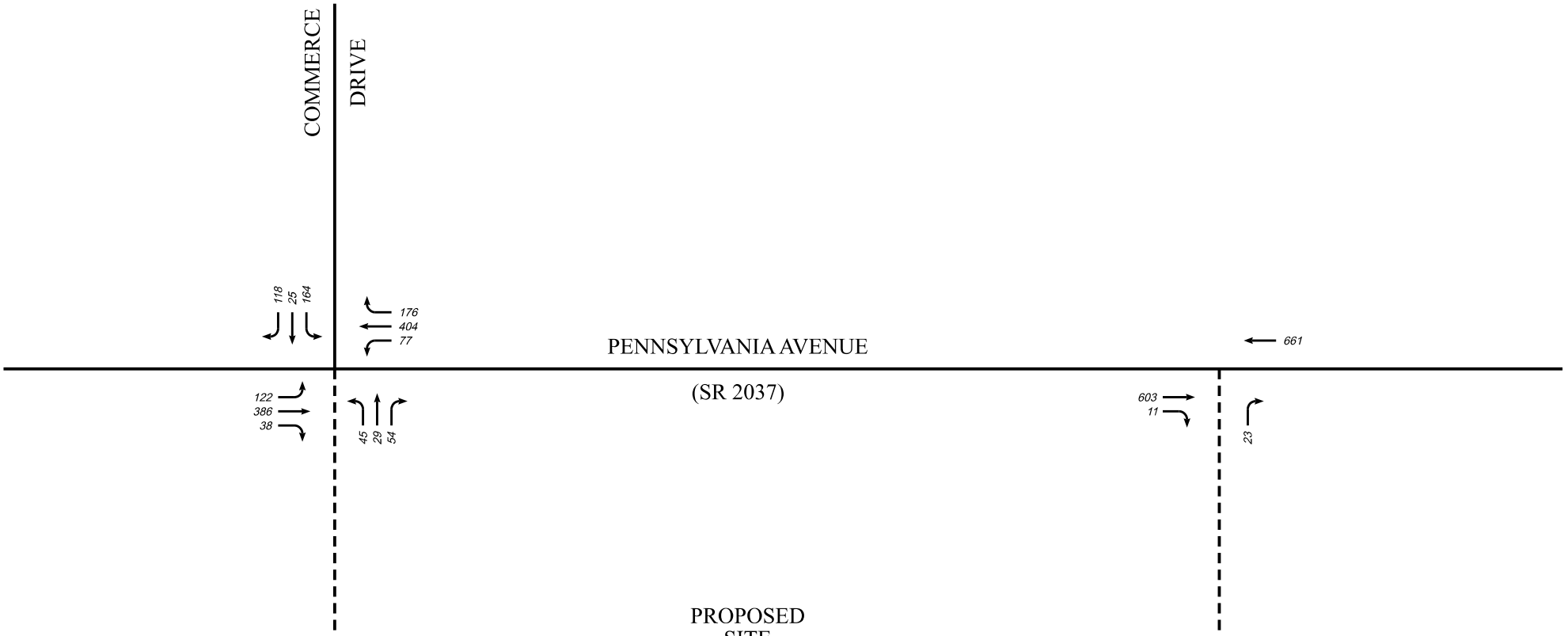
SCHEMATIC DRAWING:NOT TO SCALE

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FIGURE 19

2025 PROJECTED CONDITIONS
WEEKDAY P.M. PEAK HOUR
TRAFFIC VOLUMES



KEY:

- - - - - PROPOSED DRIVEWAY

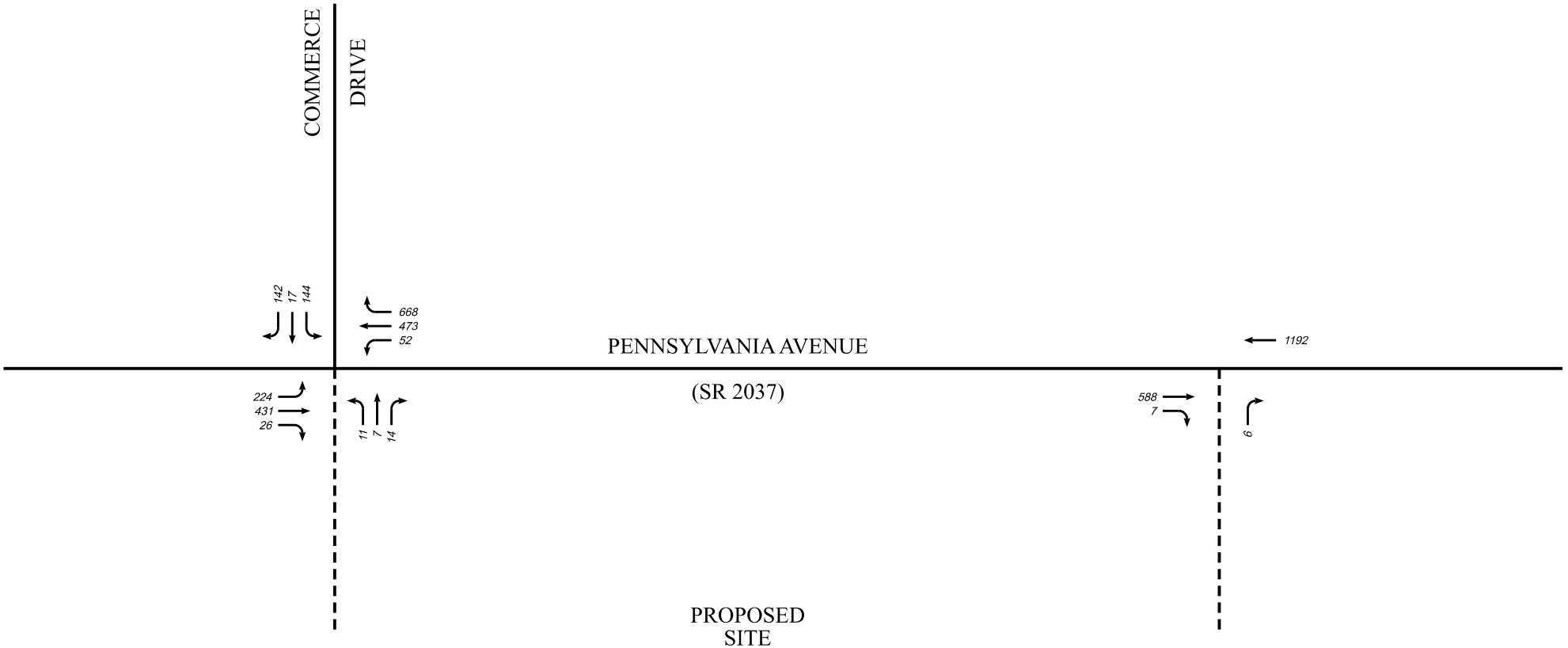
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FIGURE 20

2025 PROJECTED CONDITIONS
SATURDAY MIDDAY PEAK HOUR
TRAFFIC VOLUMES



KEY:

- - - - - PROPOSED DRIVEWAY

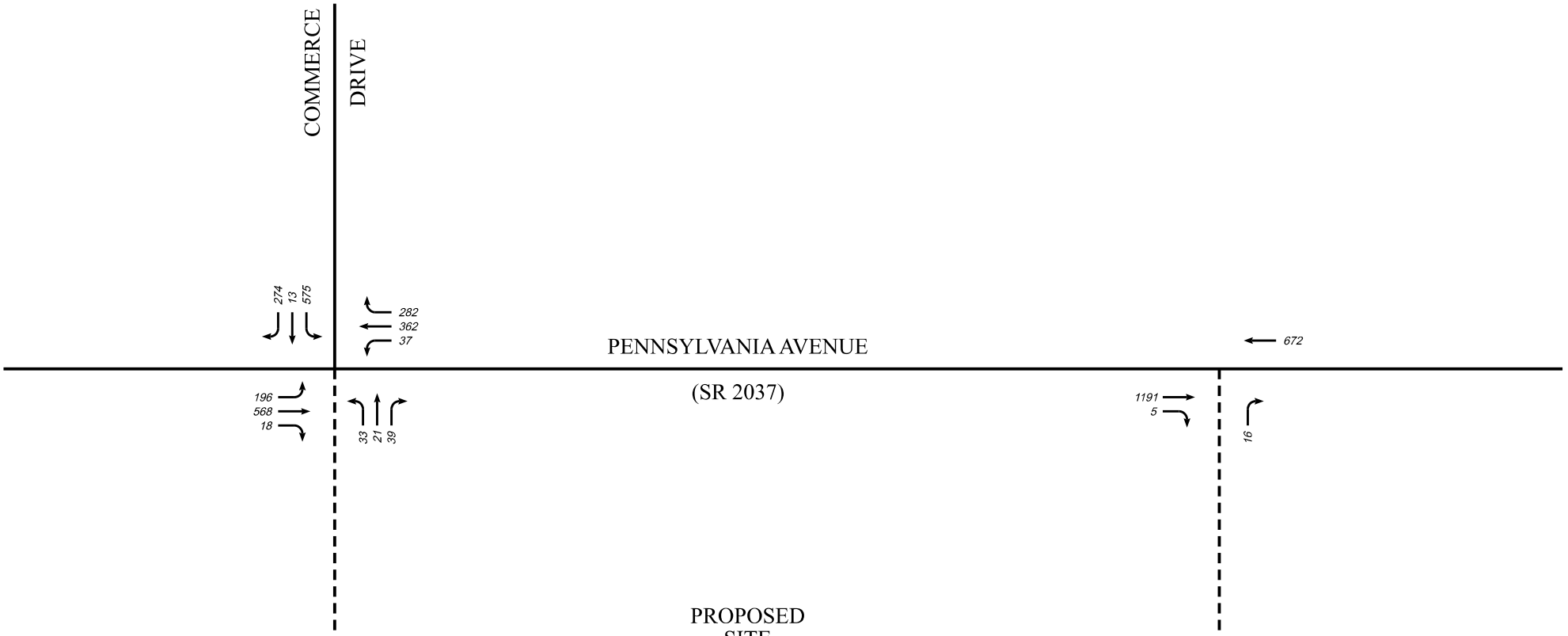
SCHEMATIC DRAWING:NOT TO SCALE

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FIGURE 21

2030 PROJECTED CONDITIONS
WEEKDAY A.M. PEAK HOUR
TRAFFIC VOLUMES



KEY:

- - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

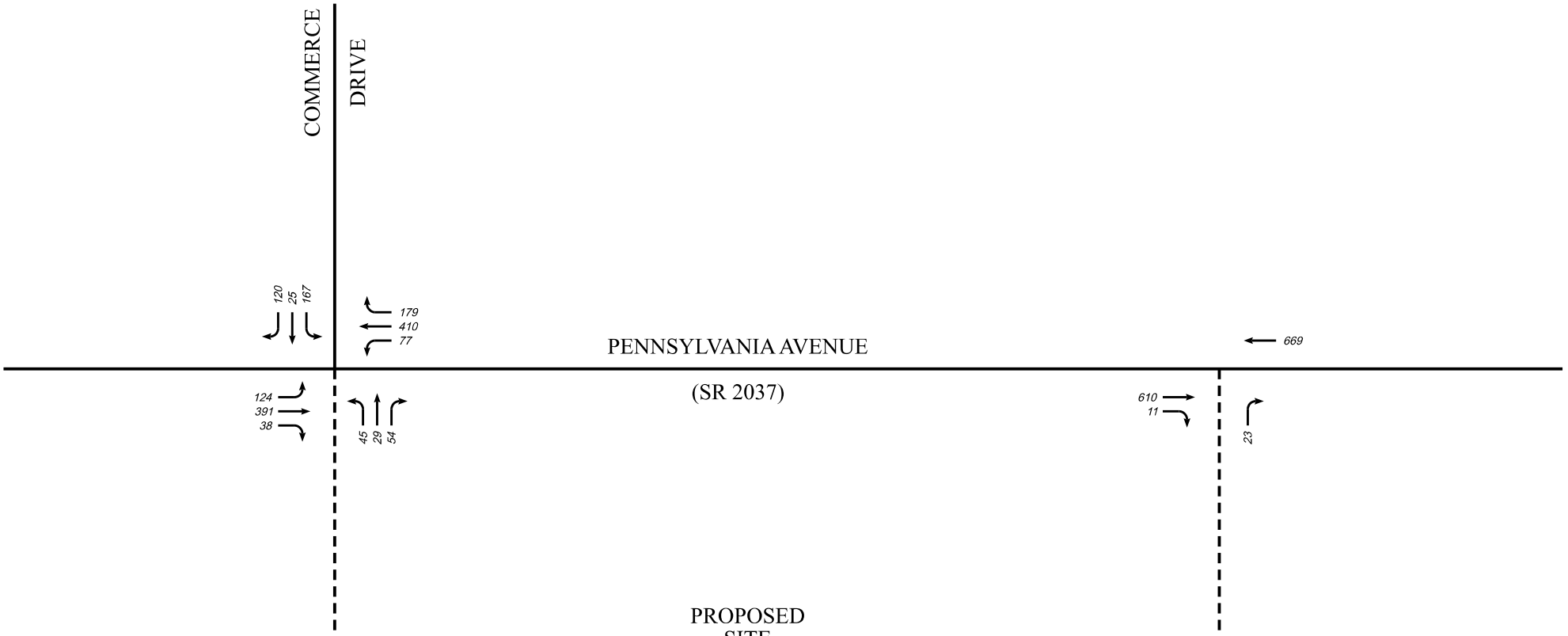
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FIGURE 22

2030 PROJECTED CONDITIONS
WEEKDAY P.M. PEAK HOUR
TRAFFIC VOLUMES



KEY:

- - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

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FIGURE 23

2030 PROJECTED CONDITIONS
SATURDAY MIDDAY PEAK HOUR
TRAFFIC VOLUMES

APPENDIX A

Project Correspondence

From: Krista Heinrich <kheinrich@gilmore-assoc.com>
Sent: Tuesday, December 13, 2022 3:12 PM
To: Hammond, Matt; rmellor@whitemarshtwp.org
Cc: Bressler, Matt; Haesler, Brian
Subject: RE: BMW of Fort Washington - PennDOT Scoping Meeting Application

Matt-
We do not have any comments at this time; but would be interested in attending a scoping meeting, once scheduled.

Thanks,
Krista Heinrich, PE
Township Engineer
Gilmore & Associates

From: Hammond, Matt <mhammond@trafficpd.com>
Sent: Tuesday, December 13, 2022 3:08 PM
To: Krista Heinrich <kheinrich@gilmore-assoc.com>; rmellor@whitemarshtwp.org
Cc: Bressler, Matt <mbressler@trafficpd.com>; Haesler, Brian <bhaesler@trafficpd.com>
Subject: BMW of Fort Washington - PennDOT Scoping Meeting Application

Krista & Mr. Mellor,

Good afternoon. I hope all is well with you both.

I am following up on the below Scoping Application submission (attached) that was made to PennDOT and Whitemarsh Township on November 3rd in regards to the above referenced project. We have received the PennDOT comments and are looking to commence with the Traffic Study. Will you be providing comments or should we just address the PennDOT comments in the traffic study and in accordance with the Ordinance?

When you have a chance, could you let me know?

Thank you,
Matt

Matthew Hammond, P.E., *Executive Vice President*

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O: 610.326.3100 | www.TrafficPD.com |

From: ePermitting Help <penndotepermittinghelp@pa.gov>
Sent: Thursday, November 3, 2022 1:03 PM
To: dturnbaugh@mileone.com; Hammond, Matt <mhammond@trafficpd.com>; Bressler, Matt <mbressler@trafficpd.com>; Haesler, Brian <bhaesler@trafficpd.com>; fhanney@pa.gov; jotten@pa.gov;

slapenta@pa.gov; c-smccutch@pa.gov; scburton@pa.gov; ajparker@mccormicktaylor.com; planning@montcopa.org; kheinrich@gilmore-assoc.com; rmellor@whitemarshtwp.org
Cc: RA-PDEPSPROD@pa.gov
Subject: :: Scoping Meeting Application - Submitted - Application Number is : S0620220106 (Sent on: 11/03/2022 01:03:01 PM)

CAUTION: External email - do not click links or open attachments unless you recognize the sender and know the content is safe.

The TIS Determination and Scoping Meeting Application has been submitted to PennDOT successfully.

PennDOT will review the scoping meeting application (attached) and associated material (listed below) and respond via e-mail.

To access the application in EPS, please click on the below link.

The Following documents can be accessed in the ePermitting System:

1 : Figure 1.pdf
2 : C-301 Zoning.pdf

Click here to access the Scoping Application

PENNDOT EPERMIT - PLEASE DO NOT REPLY TO THIS EMAIL

From: ePermitting Help <penndotepermittinghelp@pa.gov>
Sent: Friday, December 02, 2022 10:14 AM
To: dturnbaugh@mileone.com; Hammond, Matt; Bressler, Matt; Haesler, Brian; fhanney@pa.gov; jotten@pa.gov; slapenta@pa.gov; c-smccutch@pa.gov; scburton@pa.gov; ajparker@mccormicktaylor.com; planning@montcopa.org; kheinrich@gilmore-assoc.com; rmellor@whitemarshtwp.org
Cc: RA-PDEPSPROD@pa.gov
Subject: :: Scoping Meeting Application - Returned - Application Number is : S0620220106 (Sent on: 12/02/2022 10:13:36 AM)

CAUTION: External email - do not click links or open attachments unless you recognize the sender and know the content is safe.

PennDOT has completed its review of the TIS Determination and Scoping Meeting Application.

Please address the following comments below, and resubmit the application to PennDOT for review.

PennDOT Review Comments :

1. The PennDOT project number for this scoping application review, S0620220106, must be referenced when the formal Highway Occupancy Permit (HOP) application is submitted.
2. The segment and offset for the low volume driveway are inconsistent with the straight line diagram. The low volume driveway appears to be 236 feet from the main access across from Commerce Drive. Review and revise accordingly.
3. Verify that the full movement access lane configuration will align with the lane configuration of Commerce Drive.
4. Replace all existing depressed curb accesses along the property frontage with full height curb.
5. Provide documentation of scope concurrence from Whitemarsh Township.
6. Upgrade the Traffic Signal and pedestrian facilities at the intersection of the main access and along the property frontage as required.
7. With respect to the formal permit application, please ensure that the following items are addressed:a. Please be advised that pursuant to and in accordance with Title 67, Chapter 441.8(h)(2)(iv) of the code, the Safe Stopping Sight Distance is the absolute minimum acceptable sight distance for driveways. It is the designer?s responsibility to ensure that this minimum requirement is satisfied. b. It should be understood that in accordance with PennDOT Strike-Off Letter 470-10-03 and pursuant to section 421 of the State Highway Law (36 P.S. ? 670-421) the installation of any drainage facilities within the Legal Right-of-Way may necessitate additional permitting requirements, including, but not limited to, a separate Highway Occupancy Permit from the Municipality for the future maintenance of the new drainage facilities.c. ADA compliance within the limits of work (along the access frontage at a minimum) must be evaluated in the TIS (i.e. new/modified facilities, impact to SEPTA bus stops, etc.). If driveway modifications are proposed, the existing curb ramps must be upgraded to be ADA compliant. At a minimum, the ramp adjacent to the curb replacement would need to be reconstructed. d. Consistent with current Department Policy, applicants for Highway Occupancy Permits must apply for an EPS Business Partner ID (BPID). The BPID is to be used in the establishment of a billing account for the invoicing of inspection costs. For information on obtaining a BPID, you may visit: https://www.dot14.state.pa.us/EPS/home/manageBPRegistration.jsp
8. Provide 14-foot curb lanes on the full movement access and a 28-foot throat at the right-in/right-out access.

Click here to access the Scoping Application

PENNDOT EPERMIT - PLEASE DO NOT REPLY TO THIS EMAIL

pennsylvania
DEPARTMENT OF TRANSPORTATION

TRANSPORTATION IMPACT STUDY (TIS) DETERMINATION & SCOPING MEETING APPLICATION

Scoping Meeting Application: Draft

Scoping Meeting Date: _____ Scoping Number: S0620220106

Tax Parcel Number: _____

Project/Development Name: BMW Fort Washington

Applicant Information:

Business Partner ID: _____

Applicant Name: MileOne Autogroup

Phone: 3016794062 Email 1: dturnbaugh@mileone.com

Primary Contact: Dennis Turnbaugh Email 2: _____

Additional Engineering Firm Information:

Business Partner ID: _____

Engineering Firm: Traffic Planning and Design Inc

Phone: 6103263100 Email 1: mhammond@trafficpd.com

Primary Contact: Matthew Hammond Email 2: mbressler@trafficpd.com

Creator Information:

Business Partner ID: 000094 Firm Name: Traffic Planning and Design, Inc.

Phone: 610-326-3100 Email 1: bhaesler@trafficpd.com

(1) LOCATION OF PROPOSED DEVELOPMENT:

PennDOT Engineering District: 06 Email: _____

County: Montgomery Email: planning@montcopa.org

Municipality: WHITEMARSH Email: rmellor@whitemarshtwp.org; kheinrich@gilmore-assoc.com

NO.	SR	Segment	Offset	Average Daily Trips	Driveway Classification	Local Road
1	2037	0013	1017	1415	Medium Volume	No
2	2037	0013	0897	707	Low Volume	No

Are there any vehicle weight or size restrictions along the SR in accordance with 75 PA C.S. ss 4902? : No

(2) DESCRIPTION OF PROPOSED DEVELOPMENT (Attach site plan if available):

Proposed site access:
Per preliminary discussion with PennDOT, with redevelopment of the site, the five existing access points to Pennsylvania Avenue (SR 2037) will be reduced to two access points to Pennsylvania Avenue (SR 2037); One full-movement opposite Commerce Drive and one right-in/right-out to the southeast of the signal.

Proposed land uses:
The redevelopment of the site will replace the 22,065 SF existing car dealership with a 75,085 SF New car sales and service facility. The resultant net increase in dealership area will be 53,020 SF.

Community linkages *(access to neighboring properties, cross easements, pedestrian and transit accommodations):*
None

(3) DEVELOPMENT SCHEDULE AND STAGING:

Anticipated Opening Date: 04-07-2025
Full Buildout Date: 04-07-2025

Describe Proposed Development Schedule/Staging:
None

(4) TRIP GENERATION:

Land Use & Size	Land Use Code	Were ITE results used?	Daily Trips	AM Peak Hour		PM Peak Hour		Saturday Peak Hour	
				Enter	Exit	Enter	Exit	Enter	Exit
New Car Sales / 75.09 KSF	840	Yes	2122	102	38	73	109	274	274
		TOTAL:	2122	102	38	73	109	274	274

(5) TRANSPORTATION IMPACT STUDY REQUIRED?

Transportation Impact Study Required? Yes

If Yes, based on:
During any one-hour time period, 100 or more additional vehicle trips entering or exiting an existing development. During any one-hour time period, 100 or more vehicle trips entering or exiting a development.

Other considerations as described below:
None

(6) TRANSPORTATION IMPACT ASSESSMENT REQUIRED?

Transportation Impact Assessment Required? No

(7) STUDY AREA:

Roadway and Study Intersections:
Pennsylvania Avenue (SR 2037) and Commerce Drive; Pennsylvania Avenue (SR 2037) and Existing Site Driveways

Land use context (Refer to PennDOT Design Manual, Part 1X, Appendix B):

Suburban Corridor

Known Congestion Areas:
To be determined

Known Safety Concerns:
To be determined

Known Environmental Constraints:
To be determined

Pedestrian/Bike Review (Community Centers, Parks, Schools, etc.):
To be addressed in TIS

Transit Review (Current routes/stops):
To be addressed in TIS

(8) STUDY AREA TYPE:

Study Area Type: Urban

(9) TIS ANALYSIS PERIODS AND TIMES:

Analysis period and times notes:
2022 Existing Conditions 2025 Base Conditions; 2025 Projected Conditions; Weekday A.M. Peak Hour (7-9 AM); Weekday P.M. Peak Hour (4-6 PM); Saturday Midday Peak Hour (11 AM - 1 PM)

(10) TRAFFIC ADJUSTMENT FACTORS:

(a) Seasonal Adjustment (Identify counts requiring adjustment and methodology):
None

(b) Annual Base Traffic Growth: 0.27 %/yr. **Source:** PennDOT BPR

(c) Pass-By Trips (Attach justification where required):

NO.	Land Use	%	Source

(d) Captured Trips for Multi-Use Sites:
None

(e) Modal Split Reductions:
None

(f) Other Reductions:
None

(11) OTHER PROJECTS WITHIN STUDY AREA TO BE ADDED TO BASE TRAFFIC:

Notes:
To be determined through scoping process

(12) TRIP DISTRIBUTION AND ASSIGNMENT:

Trip Distribution Notes:
To be based on existing traffic patterns in the study area.

(13) APPROVAL OF DATA COLLECTION ELEMENTS AND METHODOLOGIES:

NO.	Location	Period	Type

1	Pennsylvania Avenue and Existing Site Accesses	AM Peak, PM Peak, SAT Peak	Turning Movement Counts
2	Pennsylvania Avenue (SR 2037) and Commerce Drive	AM Peak, PM Peak, SAT Peak	Turning Movement Counts

(14) CAPACITY/LOS ANALYSIS:

NO.	Location	Period	Type
1	Pennsylvania Avenue (SR 2037) and Commerce Drive	AM Peak, PM Peak, SAT Peak	HCM 6th edition from Synchro 11
2	Pennsylvania Avenue (SR 2037) and Site Driveways	AM Peak, PM Peak, SAT Peak	HCM 6th edition from Synchro 11

(15) ROADWAY IMPROVEMENTS/MODIFICATIONS BY OTHERS TO BE INCLUDED:

Roadway Improvements:
To be determined

(16) OTHER NEEDED ANALYSES:

(a) Sight Distance Analysis:
Will be addressed in TIS

(b) Signal Warrant Analysis (Identify locations):
As needed

(c) Required Signal Phasing/Timing Modifications (Determine for all signalized intersections; specify methodology):
As needed

(d) Traffic Signal Corridor/Network Analysis (Identify locations/methodology):
As needed

(e) Analysis of the Need for Turning Lanes (Identify locations/methodology):
Will be addressed in TIS

(f) Turning Lane Lengths (Identify methodology to be used):
Will be addressed in TIS

(g) Left Turn Signal Phasing Analysis (Identify locations/methodology):
As needed

(h) Queuing Analysis (Identify locations/methodology):
As needed

(i) Gap Studies (Identify locations/methodology):
As needed

(j) Crash Analysis (Identify locations):
Will be addressed in TIS

(k) Weaving Analysis (Identify locations):
As needed

(l) Other Required Studies (Specify locations/methodology):
As needed

(17) ADDITIONAL COMMENTS OR RECOMMENDATIONS RELATIVE TO THE SCOPE OF THE TIS:

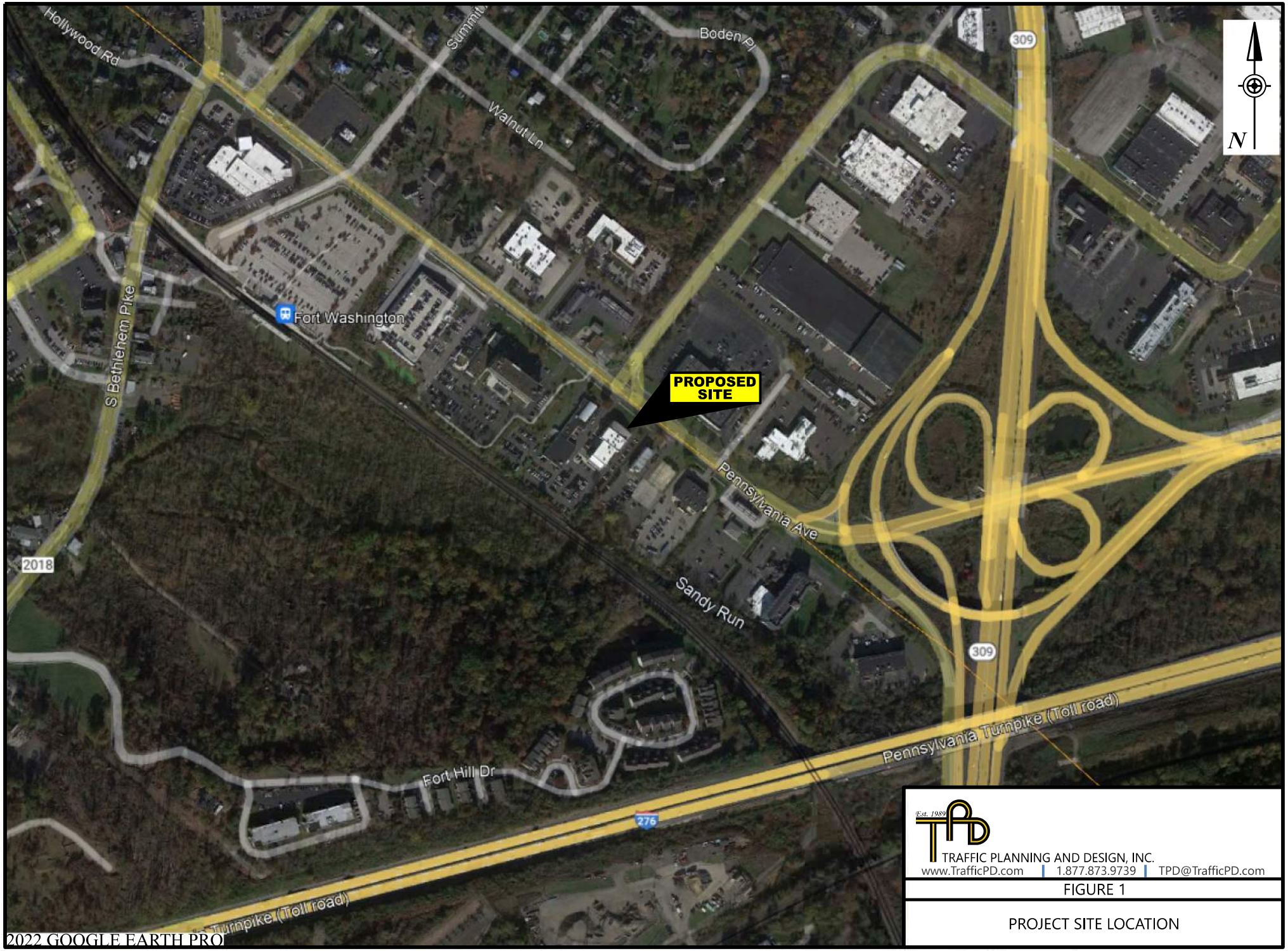
Additional Comments:

None

PennDOT Review Comments: (Current Cycle Comments)

After review of the scoping meeting application, the Department will contact the applicant regarding the need for a scoping meeting prior to applying for a highway occupancy permit.

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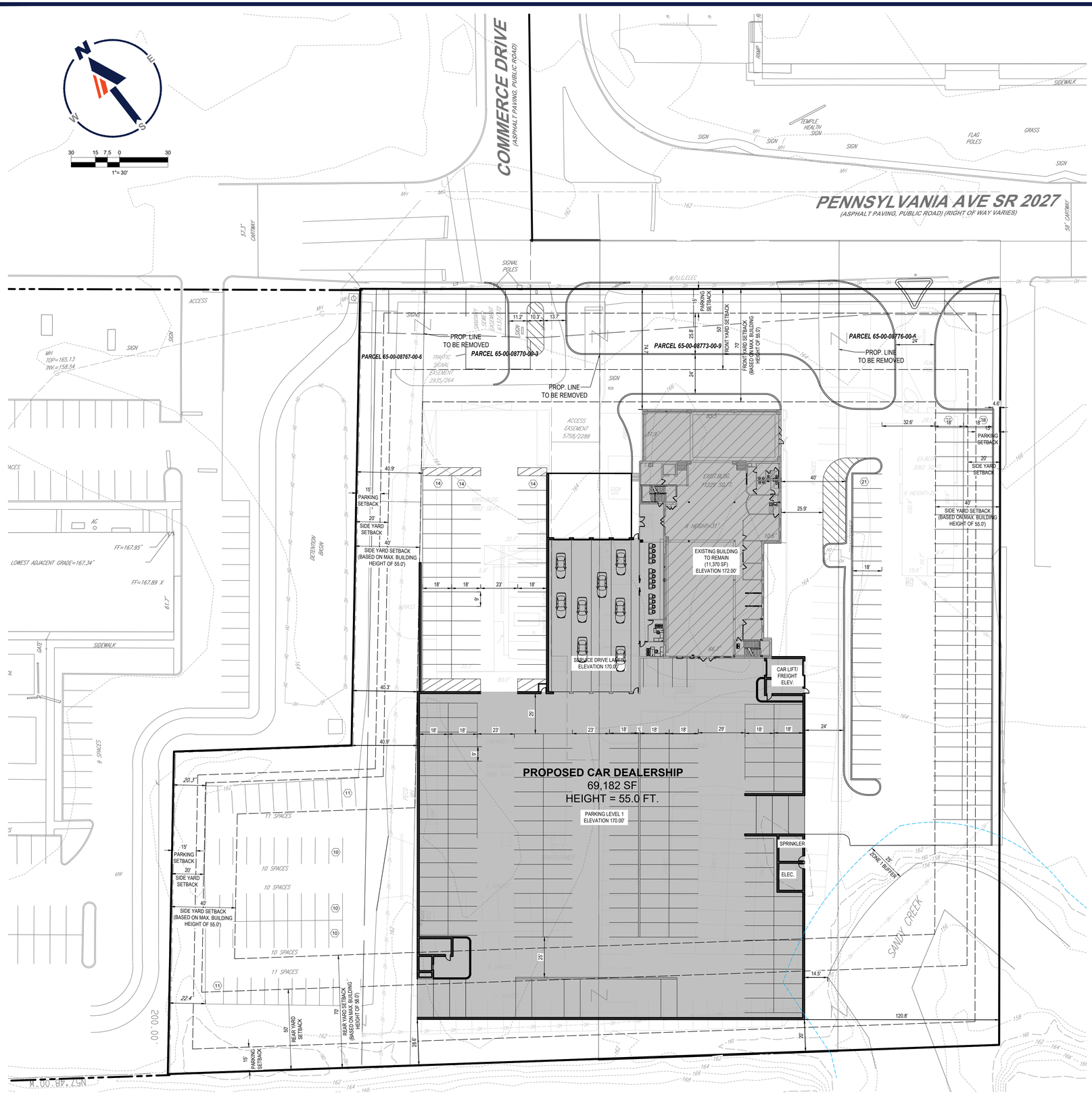
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FIGURE 1

PROJECT SITE LOCATION



LEGEND

PROPOSED

SETBACK LINE	
BUILDING	
CONCRETE CURB	
EDGE OF ASPHALT	

LEGEND

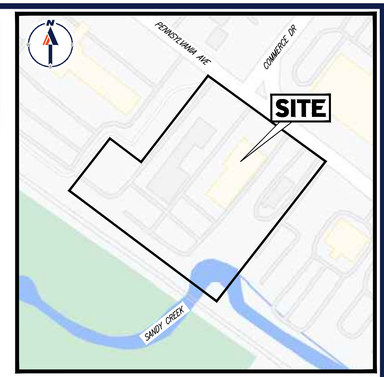
EXISTING

PROPERTY LINE	
EASEMENT LINE	
BUILDING	
CONCRETE CURB	
EDGE OF ASPHALT	
STORM/SANITARY MANHOLE	MH
OVERHEAD UTILITY WIRES	OH

LEGEND

TO BE REMOVED

PROPERTY LINE	
EASEMENT LINE	
BUILDING	
CONCRETE CURB	
EDGE OF ASPHALT	
STORM/SANITARY MANHOLE	MH
OVERHEAD UTILITY WIRES	OH



LOCATION MAP
1"=200'
100' 0 200'

GENERAL NOTES

1. THIS SITE IS LOCATED AT PENNSYLVANIA AVENUE, WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, COMMONWEALTH OF PENNSYLVANIA.
2. CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL SPECIFIC RESOURCES, TECHNICAL REPORTS, AND DESIGN DOCUMENTS RELATED TO THIS PROJECT AND FAMILIARIZE HIMSELF WITH SAME FOR APPLICATION BOTH PRIOR TO AND DURING CONSTRUCTION.
3. ALL ELEVATIONS SHOWN ARE IN ACCORDANCE WITH THE REFERENCED SURVEYOR'S BENCHMARK AND MUST BE VERIFIED BY THE GENERAL CONTRACTOR PRIOR TO GROUNDBREAK.
4. APPLICANT/EQUITABLE OWNER:
   MILE-ONE AUTO-GROUP
   3301 BRIGGS CHANEY ROAD
   SILVER SPRING, MD 20904
5. PARCEL IDs:
   65-00-08776-00-6 (512 PENNSYLVANIA AVE)
   65-00-08773-00-9 (510 PENNSYLVANIA AVE)
   65-00-08770-00-3 (500 PENNSYLVANIA AVE)
   65-00-08767-00-6 & 65-00-08767-10-5 (506 PENNSYLVANIA AVE)
6. TOTAL SITE AREA: 4.886 AC.
7. **THE ENTIRE SITE IS IN A SPECIAL FLOOD HAZARD AREA, ZONE (AE), WITHIN THE 100-YEAR FLOODPLAIN, BASE FLOOD ELEVATION = 169.00. AS SUCH, THE ENTIRE SITE IS LOCATED WITHIN THE RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT PER WHITEMARSH TOWNSHIP.**
8. THE PROPOSED DEVELOPMENT AREA WILL BE SERVICED BY PUBLIC WATER AND SEWER.

ZONING REQUIREMENTS

REQUIREMENTS TAKEN FROM: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, COMMONWEALTH OF PENNSYLVANIA.

ZONING: CR-L (COMMERCIAL RETAIL-LOW DISTRICT) WITH RIPARIAN CORRIDOR CONSERVATION OVERLAY
PROPOSED USE: AUTOMOTIVE RETAIL **(SPECIAL EXCEPTION PER SECTION 116-104.B(6))**

OVERALL BULK REQUIREMENTS	REQUIRED	EXISTING	PROPOSED CONSOLIDATED LOT
DISTRICT AREA [1]	5 AC. (MIN.)	212,828 SF (4.886 AC.)	NO CHANGE
MINIMUM LOT AREA	[2]	212,828 SF (4.886 AC.)	NO CHANGE
MINIMUM BUILDING SETBACKS:			
FRONT YARD SETBACK: [3]	MIN. = 50 FT. *REQ'D = 70 FT	N/A	74.7 FT.
SIDE YARD SETBACK: [3]	MIN. = 20 FT. *REQ'D = 40 FT	40.9 FT.	40.3 FT.
REAR YARD SETBACK: [3]	MIN. = 50 FT. *REQ'D = 70 FT	N/A	20 FT. **(V)**
MINIMUM PARKING SETBACKS:			
FRONT YARD SETBACK:	15 FT.	N/A	N/A
SIDE YARD SETBACK:	15 FT.	N/A	N/A
REAR YARD SETBACK:	15 FT.	N/A	N/A
MAXIMUM REQUIREMENTS:			
MAXIMUM BUILDING COVERAGE:	40%	15.3% (11,370 SF.)	32.5% (69,182 SF.)
MAXIMUM IMPERVIOUS COVERAGE:	65%	74.8% (159,131 SF.)	73.5% (156,430 SF.) **(V)**
MAXIMUM BUILDING HEIGHT: [3]	35 FT., 65 FT. MAX.	31 FT.	55.0 FT.
MINIMUM GREEN SPACE AREA:	35%		(26.5%) 56,388 SF. **(V)**
REAR YARD COVERAGE (ACCESSORY USES/STRUCTURES) [4]	30%	57.6% (41,665 SF.) **(ENC)**	40.2% (15,124 SF.) **(ENC-I)**

(ENC) - EXISTING NONCONFORMITY
(ENC - I) - EXISTING NONCONFORMITY, IMPROVED

[1] DISTRICT AREA. THE MINIMUM AREA WHICH MAY BE CLASSIFIED AS A CR COMMERCIAL RETAIL DISTRICT SHALL BE 5 ACRES.

[2] THE MINIMUM AREA FOR A SINGLE STRUCTURE OR DEVELOPMENT SHALL BE DETERMINED BY THE LAND USE, PARKING AND OTHER REQUIREMENTS.

[3] THE MAXIMUM HEIGHT OF ANY BUILDING ERECTED OR USED IN THIS DISTRICT SHALL BE 35 FEET, EXCEPT THAT THE HEIGHT OF ANY BUILDING MAY BE INCREASED TO A MAXIMUM OF 65 FEET, PROVIDED THAT FOR EVERY FOOT OF HEIGHT INCREASE IN EXCESS OF 35 FEET THERE SHALL BE ADDED TO EACH YARD REQUIREMENT ONE CORRESPONDING FOOT OF WIDTH OR DEPTH. STRUCTURES, EXCEPT CHIMNEYS AND FLAGPOLES, MAY BE ERECTED ABOVE THE ROOFLINE, SHALL BE ERECTED WITHIN A RECESSION OF ONE FOOT FOR EACH ONE FOOT OF ADDITIONAL HEIGHT, AND MUST BE DESIGNED TO BE COMPATIBLE WITH THE ARCHITECTURAL TREATMENT OF THE BUILDING.

*MINIMUM BUILDING SETBACKS ARE BASED ON A MAXIMUM STRUCTURE HEIGHT OF **55 FT**. 20' HAS BEEN ADDED TO EACH MINIMUM SETBACK REQUIREMENT AND ARE DEPICTED ABOVE.

[4] REAR YARD COVERAGE CALCULATION PER §116-24.D.3 IS BASED ON THE FOLLOWING AREAS:
EXISTING LOT: 72,288 SF. (1.66 AC.) TO REAR BUILDING LINE OF EXISTING STRUCTURE AT 500 PENNSYLVANIA AVENUE.
PROPOSED LOT: 37,601 SF. (0.86 AC.) TO REQUIRED REAR SETBACK LINE FOR 58' BUILDING

PROPOSED PARKING REQUIREMENTS (PER SECTION 116-184)

DESCRIPTION	UNIT	REQUIRED
RETAIL (11,370 SF SHOWROOM + 6,900 SF SERVICE RECEPTION)	1 SPACE/200 SF	92
OFFICE (5,915 SF - EXIST. BLDG 2ND FLR)	1 SPACE/200 SF	30
SERVICE BAYS (39)	1 SPACE PER BAY	39
OTHER COMMERCIAL (50,900 SF SRVC/PARTS/TECH)	1 SPACE/1000 SF	51
TOTAL SPACES REQUIRED:		212
TOTAL OFF-STREET PARKING SPACES PROPOSED (607 GARAGE + 171 OUTSIDE):		222
EV PARKING SPACES PROPOSED (8 REQUIRED PER §116-188.3):		10
TOTAL INVENTORY SPACES PROPOSED:		546
TOTAL SPACES PROPOSED:		**778**

THE FOLLOWING VARIANCES ARE REQUESTED FROM THE WHITEMARSH TOWNSHIP ZONING HEARING BOARD:

1. VARIANCES FROM SECTIONS 116-93.G AND 116-94 - TO PERMIT A REAR YARD SETBACK OF 20.0 FEET WHERE A SETBACK OF 70.0 FEET IS REQUIRED FOR A BUILDING HEIGHT OF 55.0 FEET IN HEIGHT.
2. VARIANCES FROM SECTION 116-259A - TO PERMIT AN ENCROACHMENT INTO THE RIPARIAN CORRIDOR CONSERVATION DISTRICT, AND A SETBACK OF 0.0 FEET FROM THE DISTRICT, AS THE ENTIRE SITE IS LOCATED WITHIN THE RIPARIAN CORRIDOR CONSERVATION DISTRICT DUE TO THE 100-YEAR FLOODPLAIN DELINEATION.
3. A VARIANCE FROM SECTION 116-184D - REQUIRING A MAXIMUM OF 30 INDIVIDUAL PARKING SPACES PLACED TOGETHER IN ANY PARKING AREA, DIMENSIONS OF THE PARKING AREA NOT EXCEEDING 150', AND PLANTING STRIPS OF NOT LESS THAN 10' IN WIDTH BETWEEN PARKING ROWS, TO PERMIT THE PROPOSED PARKING DECK BUILDING.
4. A VARIANCE FROM CHAPTER 101 OF THE CODE OF WHITEMARSH TOWNSHIP, ARTICLE V, SECTION 5.04(A)(2) - TO ALLOW THE PROPOSED USE TO HAVE A SUPPLY OF MORE THAN 550 GALLONS OF PETROLEUM PRODUCTS, MATERIALS, AND OTHER SUBSTANCES ASSOCIATED WITH AN AUTOMOTIVE USE WITHIN THE FLOODPLAIN, IN THAT THE APPLICANTS PROPOSE TO COMPLY WITH THE REQUIREMENTS OF SECTIONS 5.04(B),(C),(D) AND (E)
5. A VARIANCE FROM CHAPTER 116-24.D (3) TO PERMIT A REAR YARD COVERAGE OF 40.2%, WHERE THE REQUIREMENT IS 30% AND THE EXISTING COVERAGE IS 57.6%.

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
INDUSTRIAL DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

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REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY
1	10/26/2022	REV. DRIVEWAY LOCATIONS & HEIGHT	JAB / JAB

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FOR CONCEPT PURPOSES ONLY

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: PAB220113.00
DRAWN BY: BS
CHECKED BY: JAB
DATE: 10/10/2022
CAD I.D.: PAB220113.00-ZONE-1A

PROJECT:

ZONING PLAN

FOR

MILEONE AUTOGROUP, INC.

PROPOSED AUTOMOTIVE DEALERSHIP

500 - 512 PENNSYLVANIA AVE, WHITEMARSH TOWNSHIP MONTGOMERY COUNTY, PA

BOHLER
74 W BROAD STREET, SUITE 500
BETHLEHEM, PA 18018
Phone: (610) 709-9971
Fax: (610) 709-9976
www.BohlerEngineering.com

M.E. JEITNER
PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE No. PE055573
NEW JERSEY LICENSE No. 24GE04493300
DELAWARE LICENSE No. 18315

SHEET TITLE:

ZONING PLAN

SHEET NUMBER:

C-301

REVISION 1 - 10/26/2022

\\BOHLERENG.NET\SHARES\PA-PROJECTS\2022\PAB220113.00\CAD\DRAWINGS\PLAN SETS\ZONING PLAN\PAB220113.00-ZONE-1A-----1A-LAYOUT C-301 ZONING

APPENDIX B

Study Area Photographs

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Commerce Drive-Driveway & Pennsylvania Ave*



Direction / Road: **Eb. Pennsylvania Ave**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Eb. Pennsylvania Ave**
Approach / Departure: Approach
Distance: 200 Feet

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Commerce Drive-Driveway & Pennsylvania Ave*



Direction / Road: **Wb. Pennsylvania Ave**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Wb. Pennsylvania Ave**
Approach / Departure: Approach
Distance: 200 Feet

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Commerce Drive-Driveway & Pennsylvania Ave*



Direction / Road: **Nb. Existing Driveway**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Nb. Existing Driveway**
Approach / Departure: Approach
Distance: 200 Feet

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Commerce Drive-Driveway & Pennsylvania Ave*



Direction / Road: **Sb. Commerce Drive**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Sb. Commerce Drive**
Approach / Departure: Approach
Distance: 200 Feet

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Western-most Exit-only Driveway & Pennsylvania Ave*



Direction / Road: **Eb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Eb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 200 Feet

Job #: MILE.00001 *Date Taken:* 10/31/2022 *Intersection Of:* Western-most Exit-only Driveway & Pennsylvania Ave



Direction / Road: **Wb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Wb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 200 Feet

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Western-most Exit-only Driveway & Pennsylvania Ave*



Direction / Road: **Nb. Western-most Exit-only Driveway**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Nb. Western-most Exit-only Driveway**
Approach / Departure: Approach
Distance: 200 Feet

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Exit-only Driveway & Pennsylvania Avenue*



Direction / Road: **Eb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Eb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 200 Feet

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Exit-only Driveway & Pennsylvania Avenue*



Direction / Road: **Wb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Wb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 200 Feet

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Exit-only Driveway & Pennsylvania Avenue*



Direction / Road: **Nb. Exit-only Driveway**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Nb. Exit-only Driveway**
Approach / Departure: Approach
Distance: 200 Feet

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Existing Driveway & Pennsylvania Avenue*



Direction / Road: **Eb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Eb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 200 Feet

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Existing Driveway & Pennsylvania Avenue*



Direction / Road: **Wb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Wb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 200 Feet

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Existing Driveway & Pennsylvania Avenue*



Direction / Road: **Nb. Existing Driveway**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Nb. Existing Driveway**
Approach / Departure: Approach
Distance: 200 Feet

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Existing Driveway & Pennsylvania Avenue*



Direction / Road: **Eb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Eb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 200 Feet

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Existing Driveway & Pennsylvania Avenue*



Direction / Road: **Wb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Wb. Pennsylvania Avenue**
Approach / Departure: Approach
Distance: 200 Feet

Job #: *MILE.00001* *Date Taken:* *10/31/2022* *Intersection Of:* *Existing Driveway & Pennsylvania Avenue*



Direction / Road: **Nb. Existing Driveway**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **Nb. Existing Driveway**
Approach / Departure: Approach
Distance: 200 Feet

APPENDIX C

Manual Traffic Count Printouts

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

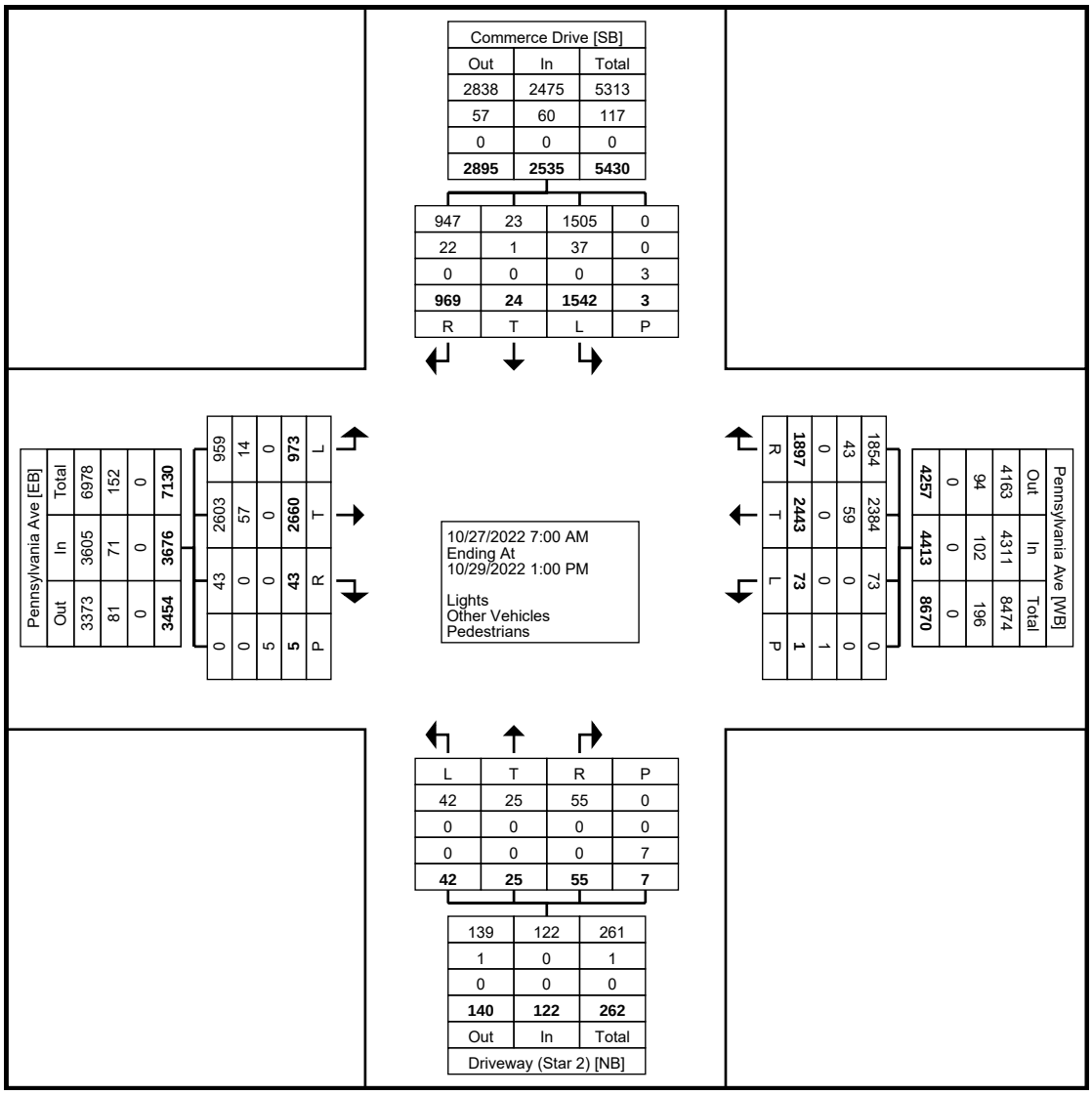
Turning Movement Data

Start Time	Pennsylvania Ave Eastbound						Pennsylvania Ave Westbound						Driveway (Star 2) Northbound						Commerce Drive Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
7:00 AM	23	94	0	0	0	117	0	128	41	18	0	187	0	0	0	0	2	0	24	0	16	23	0	63	367
7:15 AM	51	98	1	0	0	150	1	111	62	15	1	189	0	0	0	0	0	0	35	0	10	19	0	64	403
7:30 AM	43	101	1	0	0	145	4	134	75	28	0	241	3	1	2	0	0	6	37	0	14	13	0	64	456
7:45 AM	59	110	3	0	0	172	1	120	97	36	0	254	2	0	1	0	0	3	30	1	19	23	0	73	502
Hourly Total	176	403	5	0	0	584	6	493	275	97	1	871	5	1	3	0	2	9	126	1	59	78	0	264	1728
8:00 AM	52	119	1	0	0	172	6	104	126	31	0	267	1	2	0	3	0	6	37	2	30	6	0	75	520
8:15 AM	55	106	1	0	0	162	3	111	125	45	0	284	2	0	1	1	0	4	33	2	14	14	0	63	513
8:30 AM	63	101	4	0	4	168	6	132	136	26	0	300	1	0	1	1	4	3	28	4	23	12	2	67	538
8:45 AM	49	94	3	0	0	146	4	117	123	42	0	286	3	2	0	1	0	6	42	1	31	9	0	83	521
Hourly Total	219	420	9	0	4	648	19	464	510	144	0	1137	7	4	2	6	4	19	140	9	98	41	2	288	2092
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	38	163	3	0	0	204	3	106	50	18	0	177	3	1	2	1	0	7	88	1	21	17	0	127	515
4:15 PM	41	122	0	0	0	163	2	91	60	15	0	168	5	1	1	0	0	7	81	1	11	35	0	128	466
4:30 PM	39	131	2	0	0	172	2	85	44	12	0	143	3	2	1	3	0	9	116	1	17	28	0	162	486
4:45 PM	39	137	3	0	0	179	6	76	45	24	0	151	1	2	1	1	0	5	107	1	18	38	0	164	499
Hourly Total	157	553	8	0	0	718	13	358	199	69	0	639	12	6	5	5	0	28	392	4	67	118	0	581	1966
5:00 PM	41	140	0	0	0	181	4	75	44	32	0	155	1	2	2	1	0	6	199	0	37	46	0	282	624
5:15 PM	28	142	3	0	0	173	2	89	49	15	0	155	1	1	0	2	0	4	137	0	45	37	0	219	551
5:30 PM	64	145	2	0	1	211	3	94	48	16	0	161	3	0	1	2	0	6	123	1	30	23	1	177	555
5:45 PM	59	128	4	0	0	191	3	97	49	23	0	172	5	3	0	6	0	14	103	1	28	22	0	154	531
Hourly Total	192	555	9	0	1	756	12	355	190	86	0	643	10	6	3	11	0	30	562	2	140	128	1	832	2261
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	28	85	0	0	0	113	2	71	24	9	0	106	0	0	0	0	0	0	49	0	15	26	0	90	309
11:15 AM	27	84	2	0	0	113	4	89	29	9	0	131	0	1	0	2	1	3	35	1	22	13	0	71	318
11:30 AM	31	103	2	0	0	136	2	105	24	14	0	145	2	1	2	1	0	6	31	0	16	14	0	61	348
11:45 AM	35	85	2	0	0	122	1	107	40	15	0	163	1	0	2	0	0	3	45	1	12	21	0	79	367
Hourly Total	121	357	6	0	0	484	9	372	117	47	0	545	3	2	4	3	1	12	160	2	65	74	0	301	1342
12:00 PM	23	96	1	1	0	121	4	94	38	11	0	147	1	2	1	3	0	7	55	2	15	10	0	82	357
12:15 PM	32	93	0	0	0	125	3	96	30	4	0	133	1	1	0	0	0	2	30	3	17	12	0	62	322
12:30 PM	31	102	3	0	0	136	3	98	29	5	0	135	2	1	2	3	0	8	41	1	9	13	0	64	343
12:45 PM	22	81	1	0	0	104	4	113	43	3	0	163	1	2	2	2	0	7	36	0	12	13	0	61	335
Hourly Total	108	372	5	1	0	486	14	401	140	23	0	578	5	6	5	8	0	24	162	6	53	48	0	269	1357
Grand Total	973	2660	42	1	5	3676	73	2443	1431	466	1	4413	42	25	22	33	7	122	1542	24	482	487	3	2535	10746
Approach %	26.5	72.4	1.1	0.0	-	-	1.7	55.4	32.4	10.6	-	-	34.4	20.5	18.0	27.0	-	-	60.8	0.9	19.0	19.2	-	-	-
Total %	9.1	24.8	0.4	0.0	-	34.2	0.7	22.7	13.3	4.3	-	41.1	0.4	0.2	0.2	0.3	-	1.1	14.3	0.2	4.5	4.5	-	23.6	-
Lights	959	2603	42	1	-	3605	73	2384	1403	451	-	4311	42	25	22	33	-	122	1505	23	469	478	-	2475	10513
% Lights	98.6	97.9	100.0	100.0	-	98.1	100.0	97.6	98.0	96.8	-	97.7	100.0	100.0	100.0	100.0	-	100.0	97.6	95.8	97.3	98.2	-	97.6	97.8
Other Vehicles	14	57	0	0	-	71	0	59	28	15	-	102	0	0	0	0	-	0	37	1	13	9	-	60	233
% Other Vehicles	1.4	2.1	0.0	0.0	-	1.9	0.0	2.4	2.0	3.2	-	2.3	0.0	0.0	0.0	0.0	-	0.0	2.4	4.2	2.7	1.8	-	2.4	2.2
Pedestrians	-	-	-	-	5	-	-	-	-	-	1	-	-	-	-	-	7	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Data Plot

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

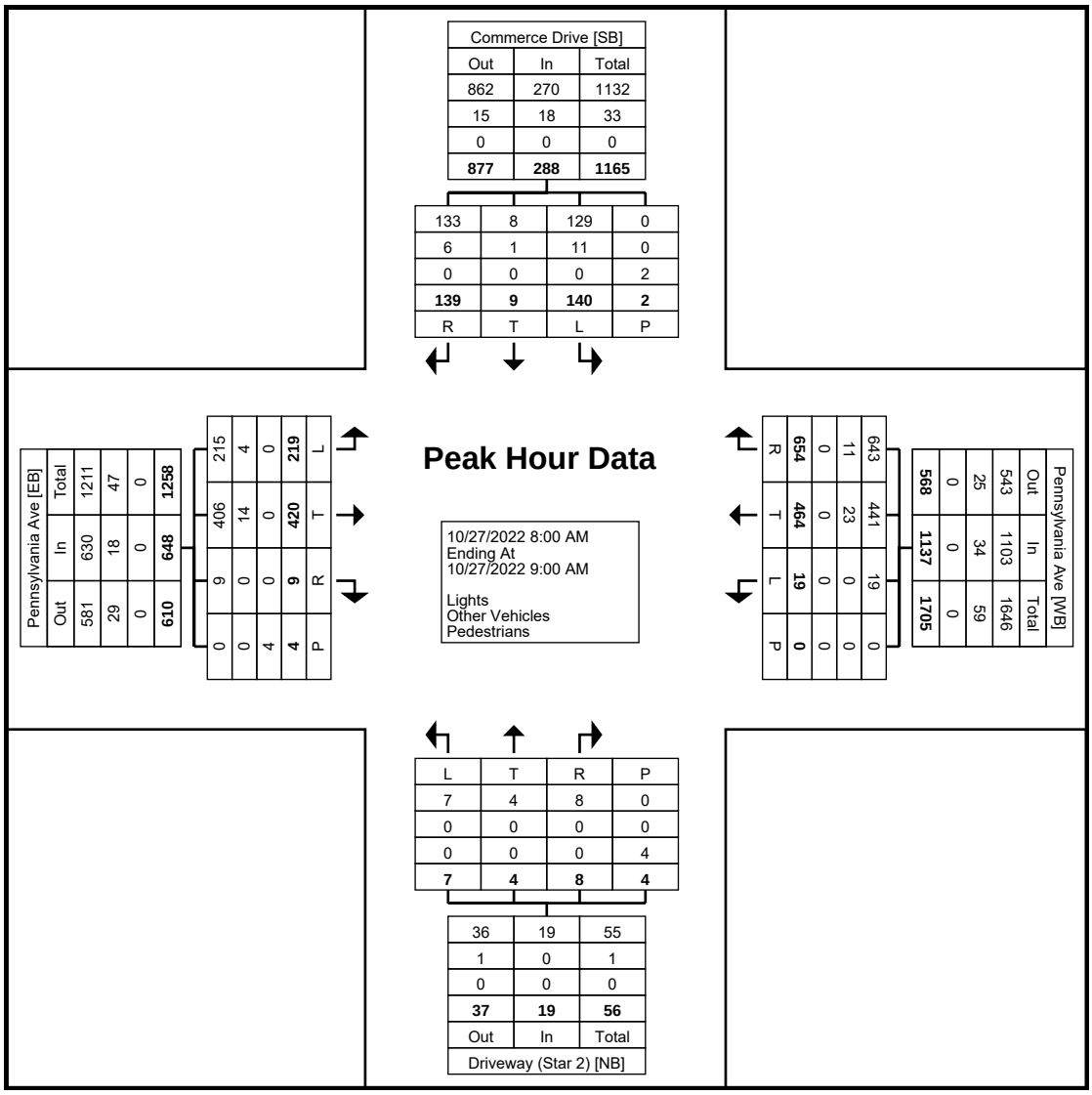
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Pennsylvania Ave Eastbound						Pennsylvania Ave Westbound						Driveway (Star 2) Northbound						Commerce Drive Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
8:00 AM	52	119	1	0	0	172	6	104	126	31	0	267	1	2	0	3	0	6	37	2	30	6	0	75	520
8:15 AM	55	106	1	0	0	162	3	111	125	45	0	284	2	0	1	1	0	4	33	2	14	14	0	63	513
8:30 AM	63	101	4	0	4	168	6	132	136	26	0	300	1	0	1	1	4	3	28	4	23	12	2	67	538
8:45 AM	49	94	3	0	0	146	4	117	123	42	0	286	3	2	0	1	0	6	42	1	31	9	0	83	521
Total	219	420	9	0	4	648	19	464	510	144	0	1137	7	4	2	6	4	19	140	9	98	41	2	288	2092
Approach %	33.8	64.8	1.4	0.0	-	-	1.7	40.8	44.9	12.7	-	-	36.8	21.1	10.5	31.6	-	-	48.6	3.1	34.0	14.2	-	-	-
Total %	10.5	20.1	0.4	0.0	-	31.0	0.9	22.2	24.4	6.9	-	54.3	0.3	0.2	0.1	0.3	-	0.9	6.7	0.4	4.7	2.0	-	13.8	-
PHF	0.869	0.882	0.563	0.000	-	0.942	0.792	0.879	0.938	0.800	-	0.948	0.583	0.500	0.500	0.500	-	0.792	0.833	0.563	0.790	0.732	-	0.867	0.972
Lights	215	406	9	0	-	630	19	441	504	139	-	1103	7	4	2	6	-	19	129	8	92	41	-	270	2022
% Lights	98.2	96.7	100.0	-	-	97.2	100.0	95.0	98.8	96.5	-	97.0	100.0	100.0	100.0	100.0	-	100.0	92.1	88.9	93.9	100.0	-	93.8	96.7
Other Vehicles	4	14	0	0	-	18	0	23	6	5	-	34	0	0	0	0	-	0	11	1	6	0	-	18	70
% Other Vehicles	1.8	3.3	0.0	-	-	2.8	0.0	5.0	1.2	3.5	-	3.0	0.0	0.0	0.0	0.0	-	0.0	7.9	11.1	6.1	0.0	-	6.3	3.3
Pedestrians	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

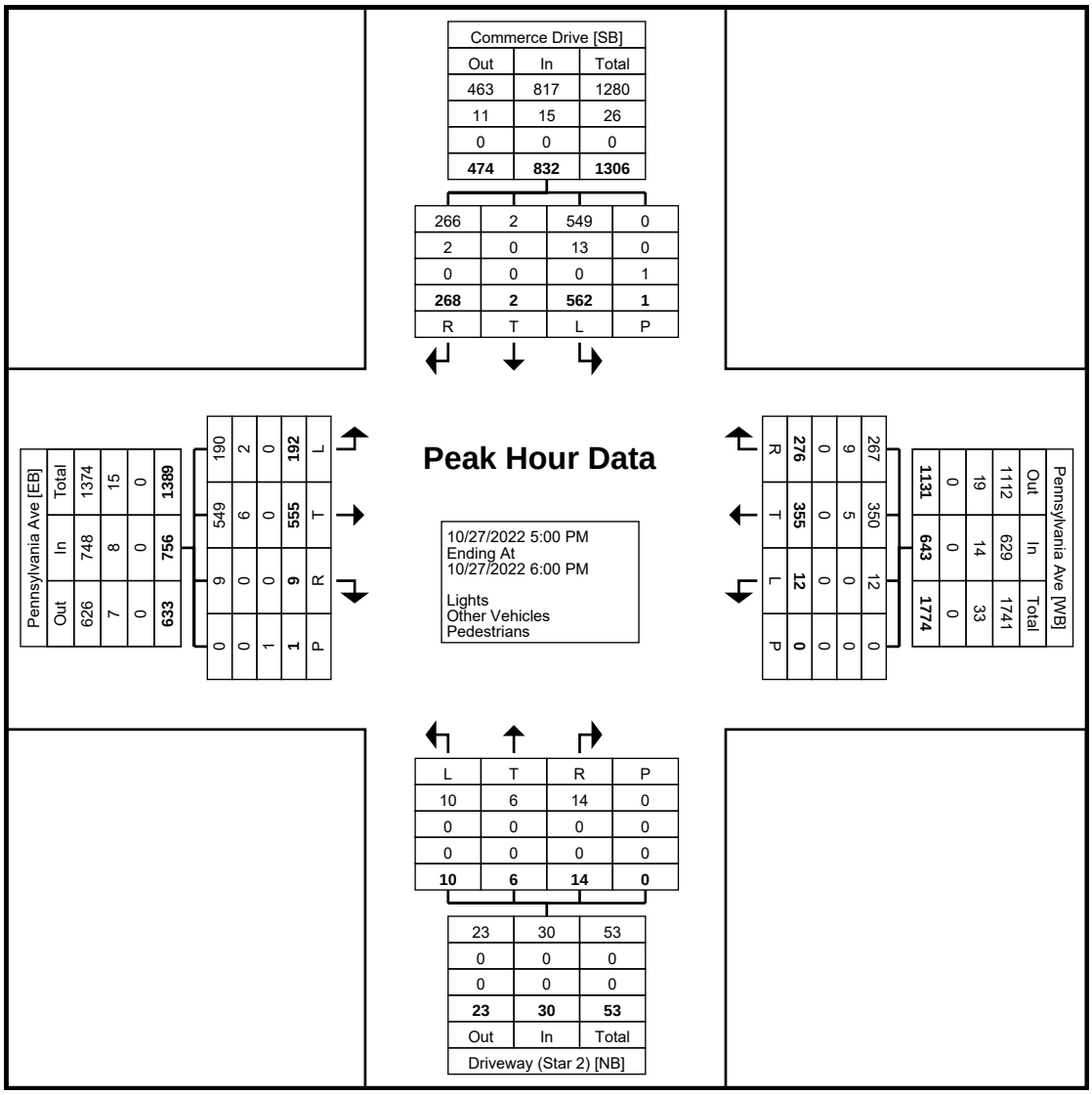
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Pennsylvania Ave Eastbound						Pennsylvania Ave Westbound						Driveway (Star 2) Northbound						Commerce Drive Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
5:00 PM	41	140	0	0	0	181	4	75	44	32	0	155	1	2	2	1	0	6	199	0	37	46	0	282	624
5:15 PM	28	142	3	0	0	173	2	89	49	15	0	155	1	1	0	2	0	4	137	0	45	37	0	219	551
5:30 PM	64	145	2	0	1	211	3	94	48	16	0	161	3	0	1	2	0	6	123	1	30	23	1	177	555
5:45 PM	59	128	4	0	0	191	3	97	49	23	0	172	5	3	0	6	0	14	103	1	28	22	0	154	531
Total	192	555	9	0	1	756	12	355	190	86	0	643	10	6	3	11	0	30	562	2	140	128	1	832	2261
Approach %	25.4	73.4	1.2	0.0	-	-	1.9	55.2	29.5	13.4	-	-	33.3	20.0	10.0	36.7	-	-	67.5	0.2	16.8	15.4	-	-	-
Total %	8.5	24.5	0.4	0.0	-	33.4	0.5	15.7	8.4	3.8	-	28.4	0.4	0.3	0.1	0.5	-	1.3	24.9	0.1	6.2	5.7	-	36.8	-
PHF	0.750	0.957	0.563	0.000	-	0.896	0.750	0.915	0.969	0.672	-	0.935	0.500	0.500	0.375	0.458	-	0.536	0.706	0.500	0.778	0.696	-	0.738	0.906
Lights	190	549	9	0	-	748	12	350	183	84	-	629	10	6	3	11	-	30	549	2	139	127	-	817	2224
% Lights	99.0	98.9	100.0	-	-	98.9	100.0	98.6	96.3	97.7	-	97.8	100.0	100.0	100.0	100.0	-	100.0	97.7	100.0	99.3	99.2	-	98.2	98.4
Other Vehicles	2	6	0	0	-	8	0	5	7	2	-	14	0	0	0	0	-	0	13	0	1	1	-	15	37
% Other Vehicles	1.0	1.1	0.0	-	-	1.1	0.0	1.4	3.7	2.3	-	2.2	0.0	0.0	0.0	0.0	-	0.0	2.3	0.0	0.7	0.8	-	1.8	1.6
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (5:00 PM)

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

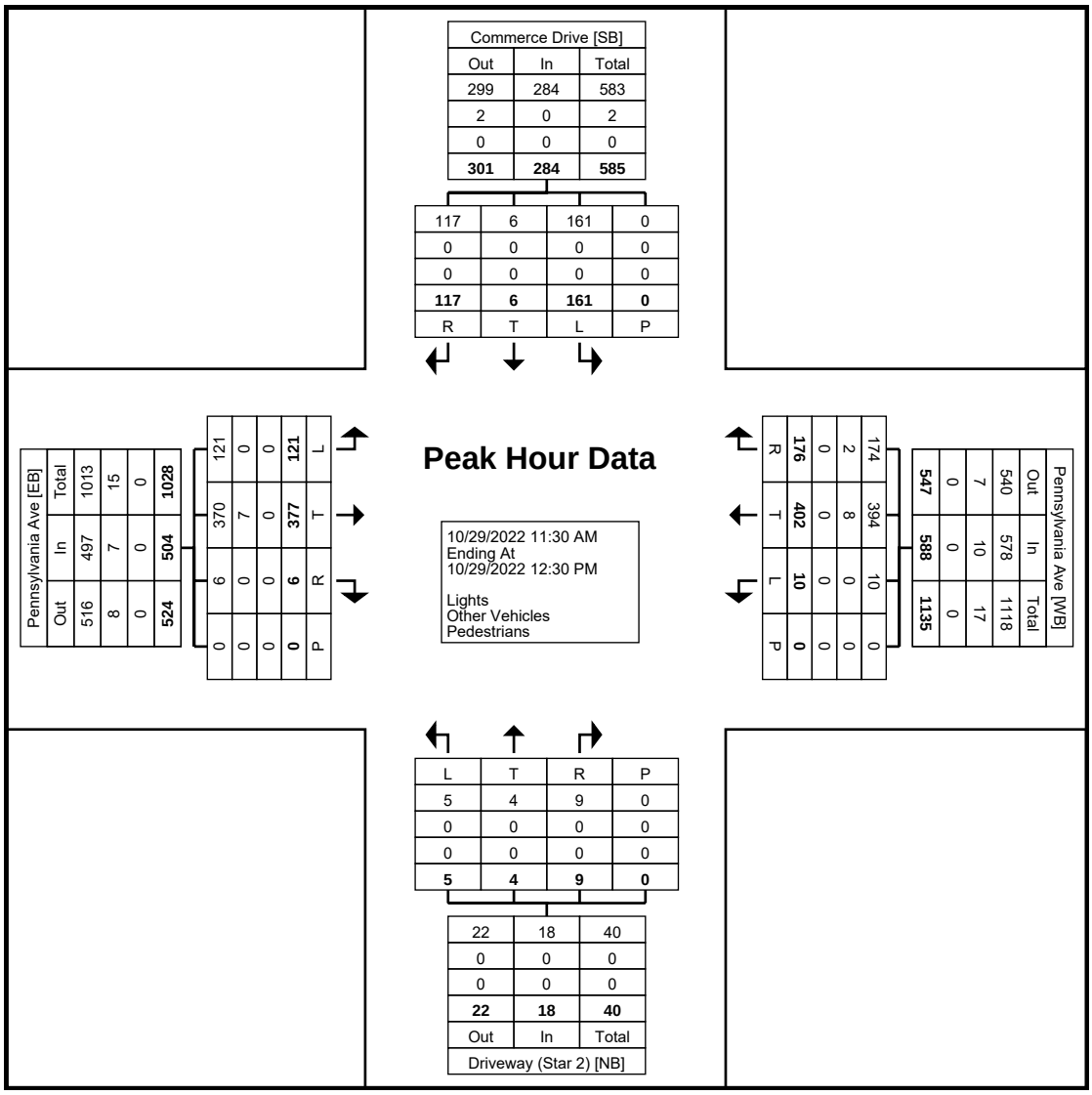
Turning Movement Peak Hour Data (11:30 AM)

Start Time	Pennsylvania Ave Eastbound						Pennsylvania Ave Westbound						Driveway (Star 2) Northbound						Commerce Drive Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
11:30 AM	31	103	2	0	0	136	2	105	24	14	0	145	2	1	2	1	0	6	31	0	16	14	0	61	348
11:45 AM	35	85	2	0	0	122	1	107	40	15	0	163	1	0	2	0	0	3	45	1	12	21	0	79	367
12:00 PM	23	96	1	1	0	121	4	94	38	11	0	147	1	2	1	3	0	7	55	2	15	10	0	82	357
12:15 PM	32	93	0	0	0	125	3	96	30	4	0	133	1	1	0	0	0	2	30	3	17	12	0	62	322
Total	121	377	5	1	0	504	10	402	132	44	0	588	5	4	5	4	0	18	161	6	60	57	0	284	1394
Approach %	24.0	74.8	1.0	0.2	-	-	1.7	68.4	22.4	7.5	-	-	27.8	22.2	27.8	22.2	-	-	56.7	2.1	21.1	20.1	-	-	-
Total %	8.7	27.0	0.4	0.1	-	36.2	0.7	28.8	9.5	3.2	-	42.2	0.4	0.3	0.4	0.3	-	1.3	11.5	0.4	4.3	4.1	-	20.4	-
PHF	0.864	0.915	0.625	0.250	-	0.926	0.625	0.939	0.825	0.733	-	0.902	0.625	0.500	0.625	0.333	-	0.643	0.732	0.500	0.882	0.679	-	0.866	0.950
Lights	121	370	5	1	-	497	10	394	131	43	-	578	5	4	5	4	-	18	161	6	60	57	-	284	1377
% Lights	100.0	98.1	100.0	100.0	-	98.6	100.0	98.0	99.2	97.7	-	98.3	100.0	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	100.0	-	100.0	98.8
Other Vehicles	0	7	0	0	-	7	0	8	1	1	-	10	0	0	0	0	-	0	0	0	0	0	-	0	17
% Other Vehicles	0.0	1.9	0.0	0.0	-	1.4	0.0	2.0	0.8	2.3	-	1.7	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	1.2
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Planning and Design, Inc
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Counter: MIO:
Set up By JH::

Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (11:30 AM)

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

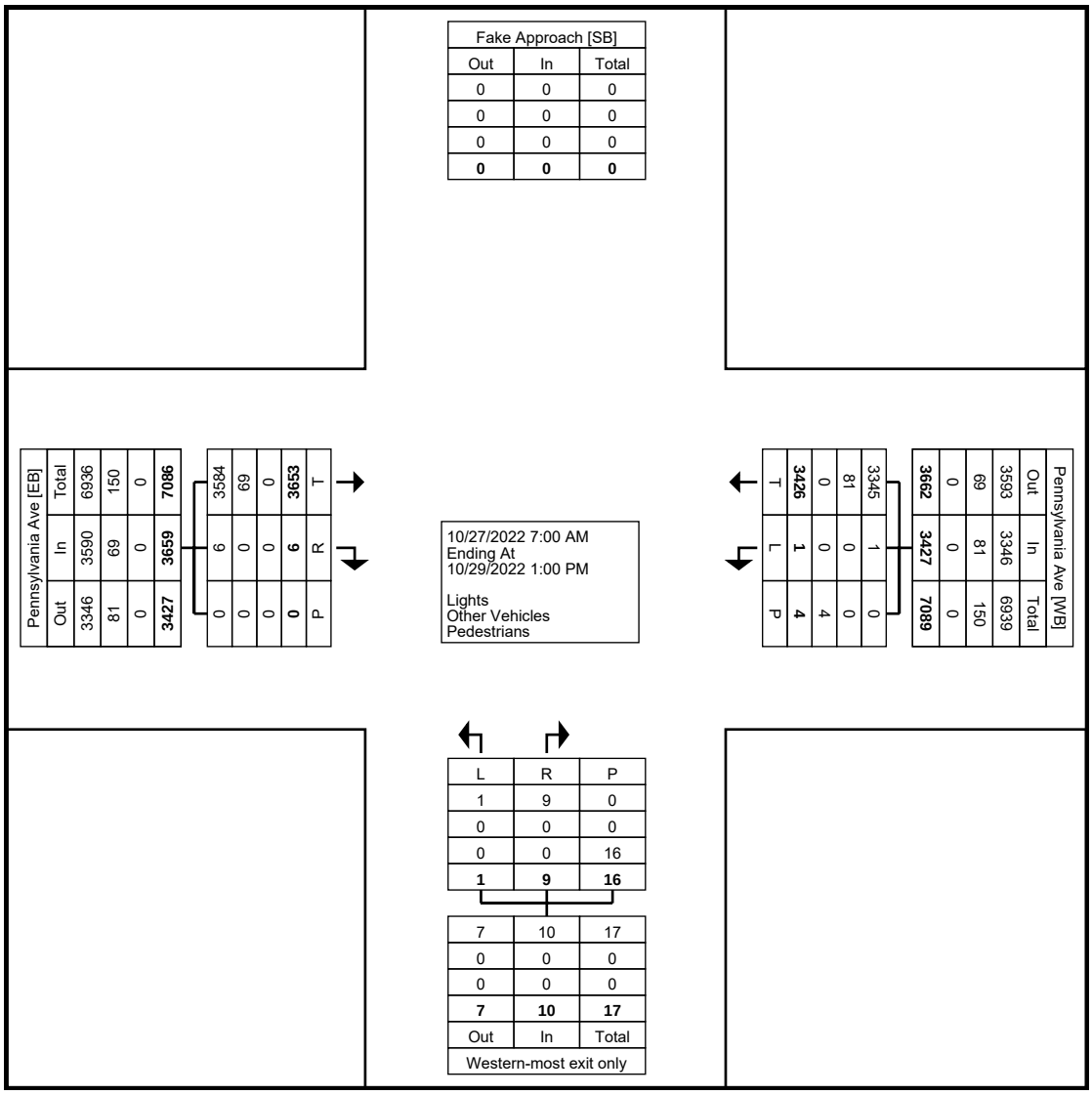
Turning Movement Data

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Western-most exit only DW (Star 1) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
7:00 AM	118	1	0	119	0	167	0	167	0	1	1	1	287
7:15 AM	152	1	0	153	0	138	0	138	0	0	2	0	291
7:30 AM	138	0	0	138	0	163	0	163	0	0	0	0	301
7:45 AM	168	0	0	168	0	153	0	153	0	1	1	1	322
Hourly Total	576	2	0	578	0	621	0	621	0	2	4	2	1201
8:00 AM	174	0	0	174	0	146	0	146	0	1	0	1	321
8:15 AM	165	0	0	165	0	140	0	140	0	0	0	0	305
8:30 AM	169	0	0	169	0	162	4	162	0	0	8	0	331
8:45 AM	147	0	0	147	0	164	0	164	0	0	0	0	311
Hourly Total	655	0	0	655	0	612	4	612	0	1	8	1	1268
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	197	1	0	198	0	146	0	146	0	0	0	0	344
4:15 PM	170	1	0	171	0	143	0	143	0	0	0	0	314
4:30 PM	159	0	0	159	0	133	0	133	0	0	0	0	292
4:45 PM	173	0	0	173	0	133	0	133	0	0	0	0	306
Hourly Total	699	2	0	701	0	555	0	555	0	0	0	0	1256
5:00 PM	186	1	0	187	0	155	0	155	0	1	1	1	343
5:15 PM	172	1	0	173	0	170	0	170	1	1	0	2	345
5:30 PM	213	0	0	213	0	146	0	146	0	0	2	0	359
5:45 PM	194	0	0	194	0	151	0	151	0	1	0	1	346
Hourly Total	765	2	0	767	0	622	0	622	1	3	3	4	1393
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	111	0	0	111	0	111	0	111	0	0	0	0	222
11:15 AM	111	0	0	111	0	128	0	128	0	0	1	0	239
11:30 AM	135	0	0	135	0	131	0	131	0	0	0	0	266
11:45 AM	113	0	0	113	0	140	0	140	0	1	0	1	254
Hourly Total	470	0	0	470	0	510	0	510	0	1	1	1	981
12:00 PM	129	0	0	129	0	120	0	120	0	1	0	1	250
12:15 PM	126	0	0	126	0	127	0	127	0	0	0	0	253
12:30 PM	135	0	0	135	1	120	0	121	0	0	0	0	256
12:45 PM	98	0	0	98	0	139	0	139	0	1	0	1	238
Hourly Total	488	0	0	488	1	506	0	507	0	2	0	2	997
Grand Total	3653	6	0	3659	1	3426	4	3427	1	9	16	10	7096
Approach %	99.8	0.2	-	-	0.0	100.0	-	-	10.0	90.0	-	-	-
Total %	51.5	0.1	-	51.6	0.0	48.3	-	48.3	0.0	0.1	-	0.1	-
Lights	3584	6	-	3590	1	3345	-	3346	1	9	-	10	6946
% Lights	98.1	100.0	-	98.1	100.0	97.6	-	97.6	100.0	100.0	-	100.0	97.9
Other Vehicles	69	0	-	69	0	81	-	81	0	0	-	0	150
% Other Vehicles	1.9	0.0	-	1.9	0.0	2.4	-	2.4	0.0	0.0	-	0.0	2.1
Pedestrians	-	-	0	-	-	-	4	-	-	-	16	-	-
% Pedestrians	-	-	-	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Data Plot

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

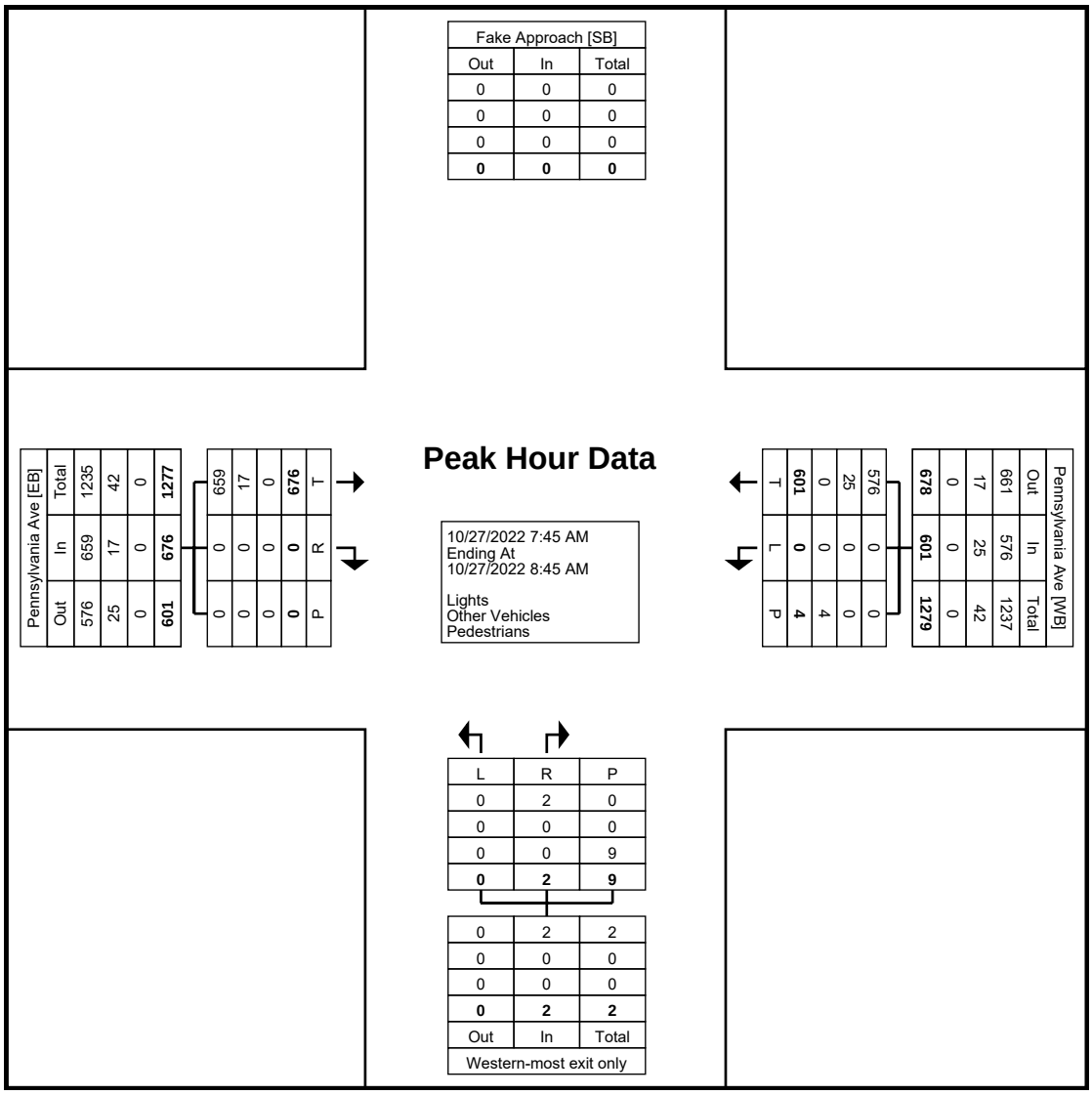
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Western-most exit only DW (Star 1) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
7:45 AM	168	0	0	168	0	153	0	153	0	1	1	1	322
8:00 AM	174	0	0	174	0	146	0	146	0	1	0	1	321
8:15 AM	165	0	0	165	0	140	0	140	0	0	0	0	305
8:30 AM	169	0	0	169	0	162	4	162	0	0	8	0	331
Total	676	0	0	676	0	601	4	601	0	2	9	2	1279
Approach %	100.0	0.0	-	-	0.0	100.0	-	-	0.0	100.0	-	-	-
Total %	52.9	0.0	-	52.9	0.0	47.0	-	47.0	0.0	0.2	-	0.2	-
PHF	0.971	0.000	-	0.971	0.000	0.927	-	0.927	0.000	0.500	-	0.500	0.966
Lights	659	0	-	659	0	576	-	576	0	2	-	2	1237
% Lights	97.5	-	-	97.5	-	95.8	-	95.8	-	100.0	-	100.0	96.7
Other Vehicles	17	0	-	17	0	25	-	25	0	0	-	0	42
% Other Vehicles	2.5	-	-	2.5	-	4.2	-	4.2	-	0.0	-	0.0	3.3
Pedestrians	-	-	0	-	-	-	4	-	-	-	9	-	-
% Pedestrians	-	-	-	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
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610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (7:45 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

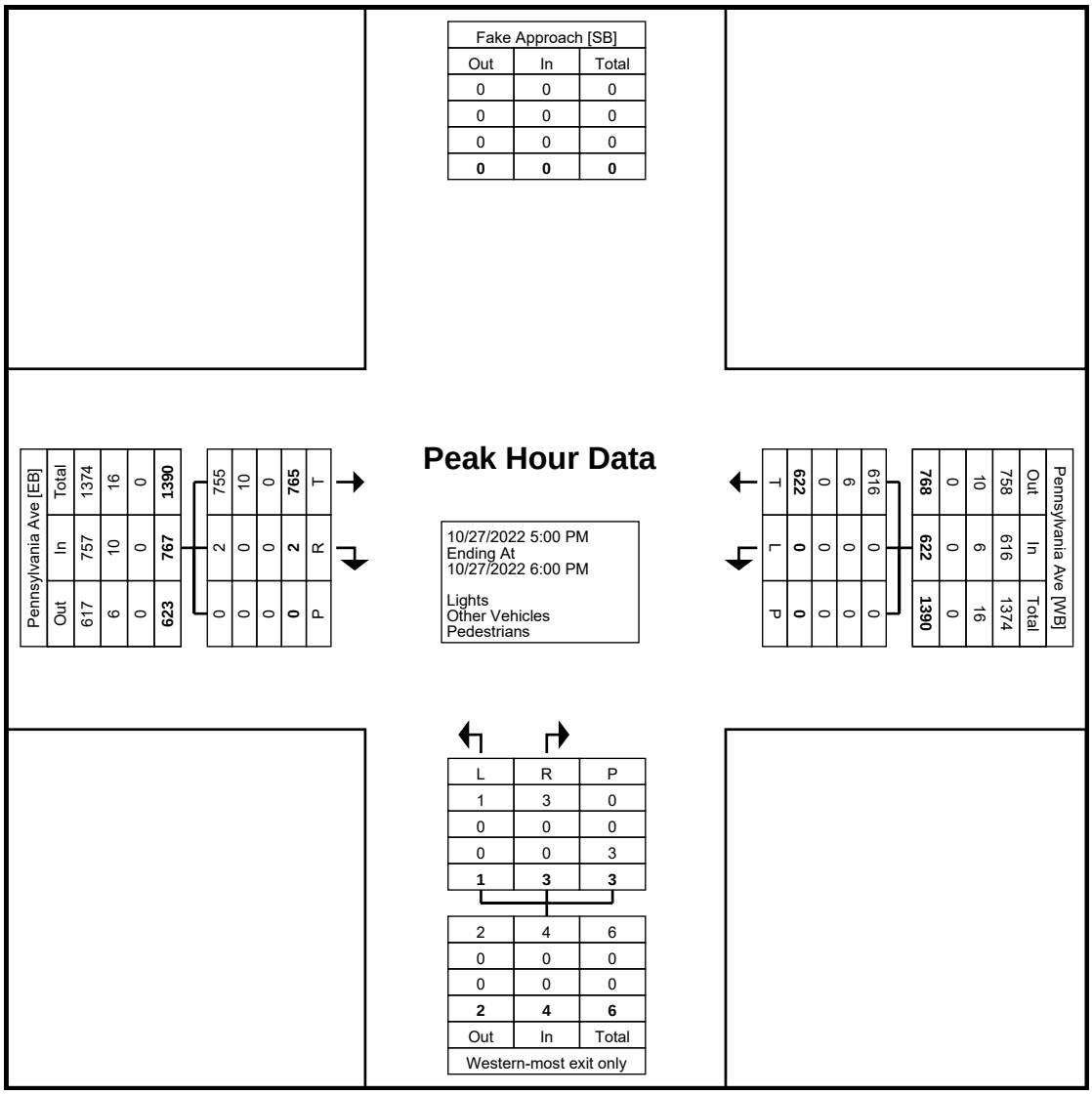
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Western-most exit only DW (Star 1) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
5:00 PM	186	1	0	187	0	155	0	155	0	1	1	1	343
5:15 PM	172	1	0	173	0	170	0	170	1	1	0	2	345
5:30 PM	213	0	0	213	0	146	0	146	0	0	2	0	359
5:45 PM	194	0	0	194	0	151	0	151	0	1	0	1	346
Total	765	2	0	767	0	622	0	622	1	3	3	4	1393
Approach %	99.7	0.3	-	-	0.0	100.0	-	-	25.0	75.0	-	-	-
Total %	54.9	0.1	-	55.1	0.0	44.7	-	44.7	0.1	0.2	-	0.3	-
PHF	0.898	0.500	-	0.900	0.000	0.915	-	0.915	0.250	0.750	-	0.500	0.970
Lights	755	2	-	757	0	616	-	616	1	3	-	4	1377
% Lights	98.7	100.0	-	98.7	-	99.0	-	99.0	100.0	100.0	-	100.0	98.9
Other Vehicles	10	0	-	10	0	6	-	6	0	0	-	0	16
% Other Vehicles	1.3	0.0	-	1.3	-	1.0	-	1.0	0.0	0.0	-	0.0	1.1
Pedestrians	-	-	0	-	-	-	0	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
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Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (5:00 PM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

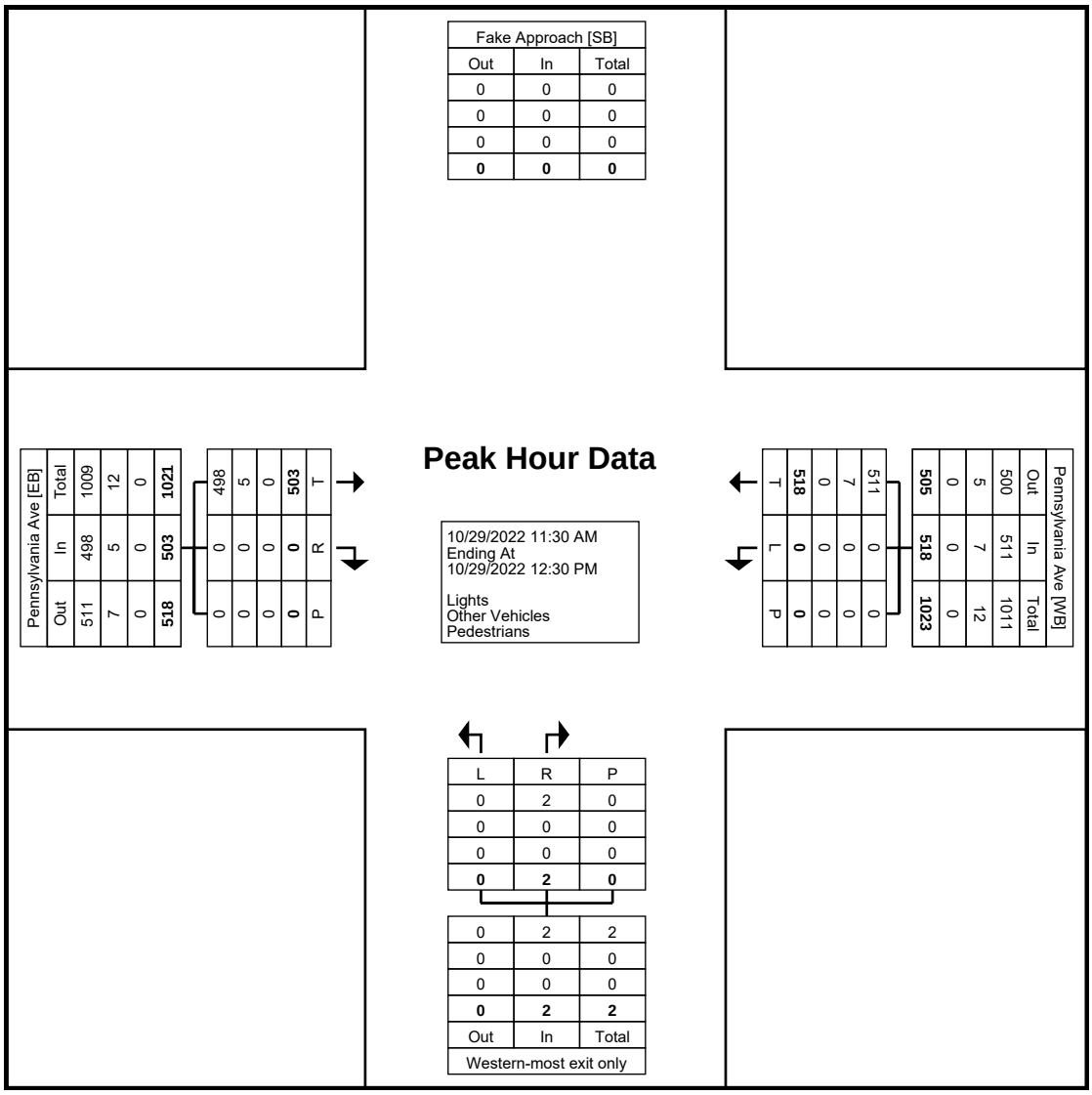
Turning Movement Peak Hour Data (11:30 AM)

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Western-most exit only DW (Star 1) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
11:30 AM	135	0	0	135	0	131	0	131	0	0	0	0	266
11:45 AM	113	0	0	113	0	140	0	140	0	1	0	1	254
12:00 PM	129	0	0	129	0	120	0	120	0	1	0	1	250
12:15 PM	126	0	0	126	0	127	0	127	0	0	0	0	253
Total	503	0	0	503	0	518	0	518	0	2	0	2	1023
Approach %	100.0	0.0	-	-	0.0	100.0	-	-	0.0	100.0	-	-	-
Total %	49.2	0.0	-	49.2	0.0	50.6	-	50.6	0.0	0.2	-	0.2	-
PHF	0.931	0.000	-	0.931	0.000	0.925	-	0.925	0.000	0.500	-	0.500	0.961
Lights	498	0	-	498	0	511	-	511	0	2	-	2	1011
% Lights	99.0	-	-	99.0	-	98.6	-	98.6	-	100.0	-	100.0	98.8
Other Vehicles	5	0	-	5	0	7	-	7	0	0	-	0	12
% Other Vehicles	1.0	-	-	1.0	-	1.4	-	1.4	-	0.0	-	0.0	1.2
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (11:30 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022
Page No: 1

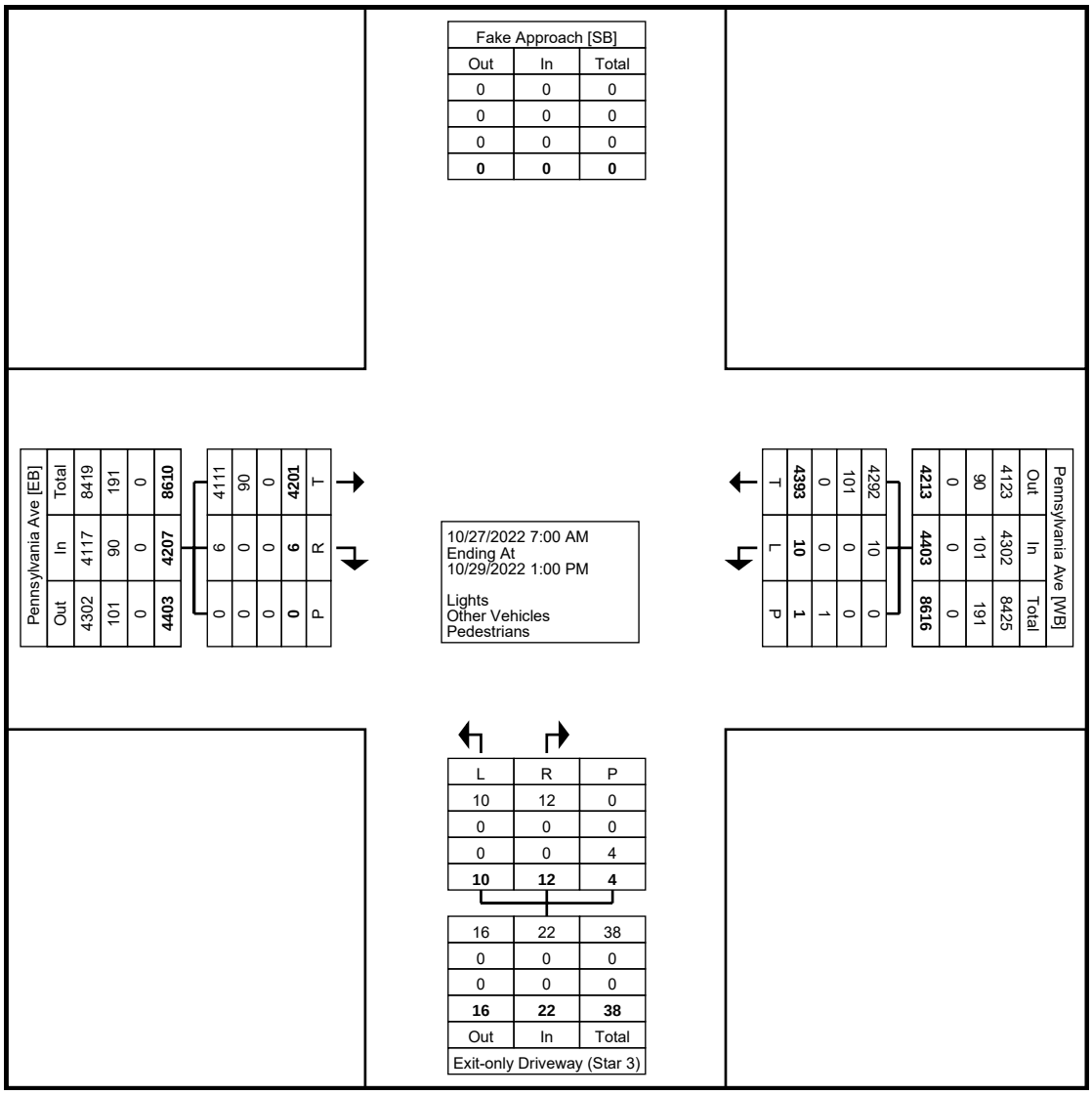
Turning Movement Data

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Exit-only Driveway (Star 3) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
7:00 AM	117	0	0	117	0	185	0	185	0	0	1	0	302
7:15 AM	130	1	0	131	2	191	0	193	0	0	0	0	324
7:30 AM	139	0	0	139	1	245	0	246	0	0	0	0	385
7:45 AM	137	1	0	138	0	254	0	254	0	0	0	0	392
Hourly Total	523	2	0	525	3	875	0	878	0	0	1	0	1403
8:00 AM	157	0	0	157	1	269	1	270	0	0	0	0	427
8:15 AM	142	0	0	142	1	280	0	281	0	0	0	0	423
8:30 AM	130	1	0	131	0	283	0	283	1	0	2	1	415
8:45 AM	137	1	0	138	2	287	0	289	0	0	0	0	427
Hourly Total	566	2	0	568	4	1119	1	1123	1	0	2	1	1692
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	255	0	0	255	1	177	0	178	0	3	0	3	436
4:15 PM	200	0	0	200	0	174	0	174	1	0	0	1	375
4:30 PM	235	1	0	236	0	140	0	140	1	0	0	1	377
4:45 PM	243	0	0	243	0	144	0	144	0	1	0	1	388
Hourly Total	933	1	0	934	1	635	0	636	2	4	0	6	1576
5:00 PM	340	0	0	340	0	154	0	154	0	0	0	0	494
5:15 PM	275	0	0	275	0	158	0	158	1	4	0	5	438
5:30 PM	271	0	0	271	0	156	0	156	0	1	0	1	428
5:45 PM	232	0	0	232	0	180	0	180	0	0	0	0	412
Hourly Total	1118	0	0	1118	0	648	0	648	1	5	0	6	1772
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	130	0	0	130	1	107	0	108	2	0	0	2	240
11:15 AM	121	0	0	121	0	128	0	128	0	0	1	0	249
11:30 AM	135	0	0	135	1	141	0	142	1	1	0	2	279
11:45 AM	126	0	0	126	0	168	0	168	0	1	0	1	295
Hourly Total	512	0	0	512	2	544	0	546	3	2	1	5	1063
12:00 PM	155	0	0	155	0	137	0	137	1	0	0	1	293
12:15 PM	125	0	0	125	0	133	0	133	0	0	0	0	258
12:30 PM	151	1	0	152	0	139	0	139	1	1	0	2	293
12:45 PM	118	0	0	118	0	163	0	163	1	0	0	1	282
Hourly Total	549	1	0	550	0	572	0	572	3	1	0	4	1126
Grand Total	4201	6	0	4207	10	4393	1	4403	10	12	4	22	8632
Approach %	99.9	0.1	-	-	0.2	99.8	-	-	45.5	54.5	-	-	-
Total %	48.7	0.1	-	48.7	0.1	50.9	-	51.0	0.1	0.1	-	0.3	-
Lights	4111	6	-	4117	10	4292	-	4302	10	12	-	22	8441
% Lights	97.9	100.0	-	97.9	100.0	97.7	-	97.7	100.0	100.0	-	100.0	97.8
Other Vehicles	90	0	-	90	0	101	-	101	0	0	-	0	191
% Other Vehicles	2.1	0.0	-	2.1	0.0	2.3	-	2.3	0.0	0.0	-	0.0	2.2
Pedestrians	-	-	0	-	-	-	1	-	-	-	4	-	-
% Pedestrians	-	-	-	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Data Plot

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

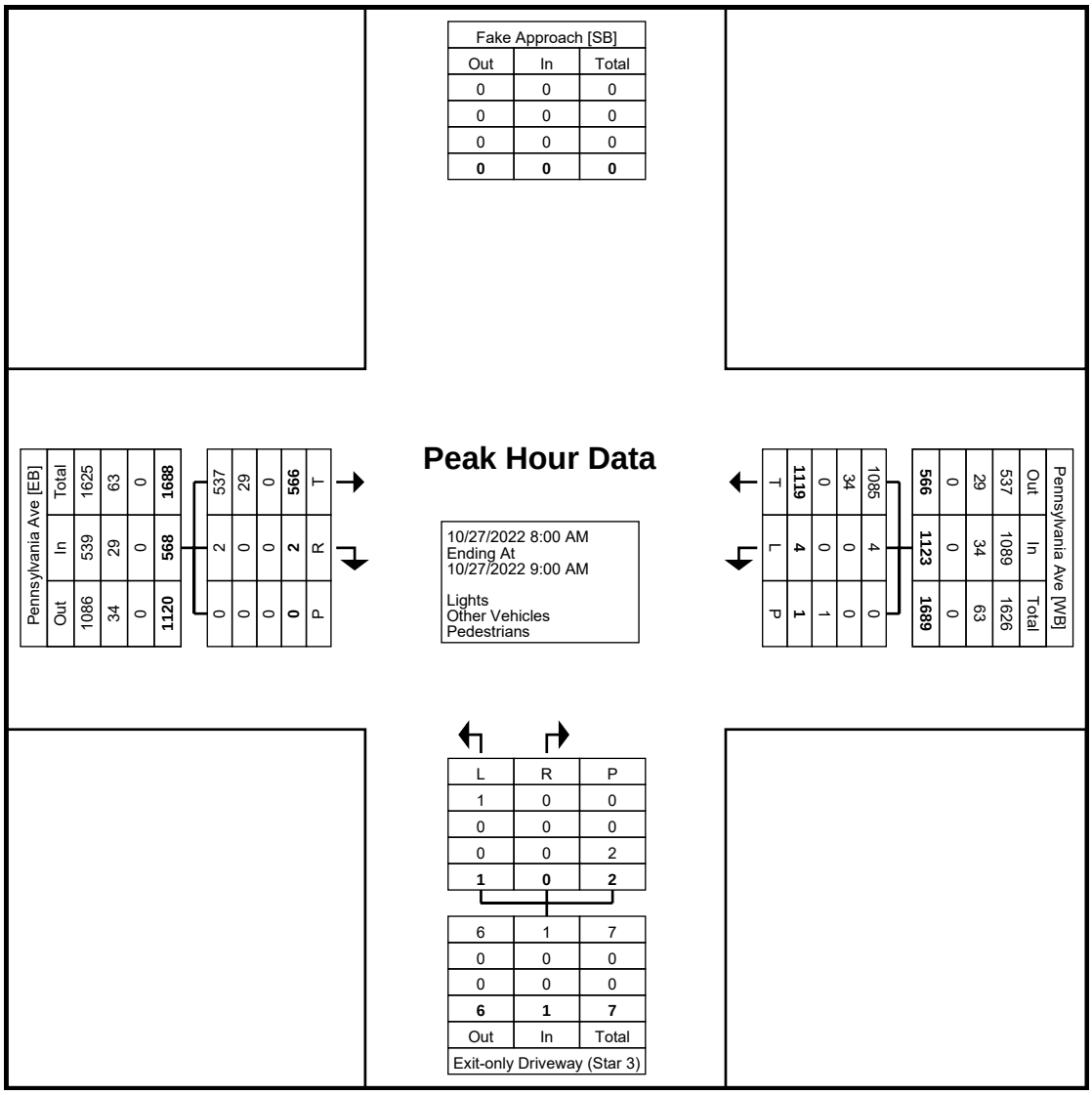
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Exit-only Driveway (Star 3) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
8:00 AM	157	0	0	157	1	269	1	270	0	0	0	0	427
8:15 AM	142	0	0	142	1	280	0	281	0	0	0	0	423
8:30 AM	130	1	0	131	0	283	0	283	1	0	2	1	415
8:45 AM	137	1	0	138	2	287	0	289	0	0	0	0	427
Total	566	2	0	568	4	1119	1	1123	1	0	2	1	1692
Approach %	99.6	0.4	-	-	0.4	99.6	-	-	100.0	0.0	-	-	-
Total %	33.5	0.1	-	33.6	0.2	66.1	-	66.4	0.1	0.0	-	0.1	-
PHF	0.901	0.500	-	0.904	0.500	0.975	-	0.971	0.250	0.000	-	0.250	0.991
Lights	537	2	-	539	4	1085	-	1089	1	0	-	1	1629
% Lights	94.9	100.0	-	94.9	100.0	97.0	-	97.0	100.0	-	-	100.0	96.3
Other Vehicles	29	0	-	29	0	34	-	34	0	0	-	0	63
% Other Vehicles	5.1	0.0	-	5.1	0.0	3.0	-	3.0	0.0	-	-	0.0	3.7
Pedestrians	-	-	0	-	-	-	1	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
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610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

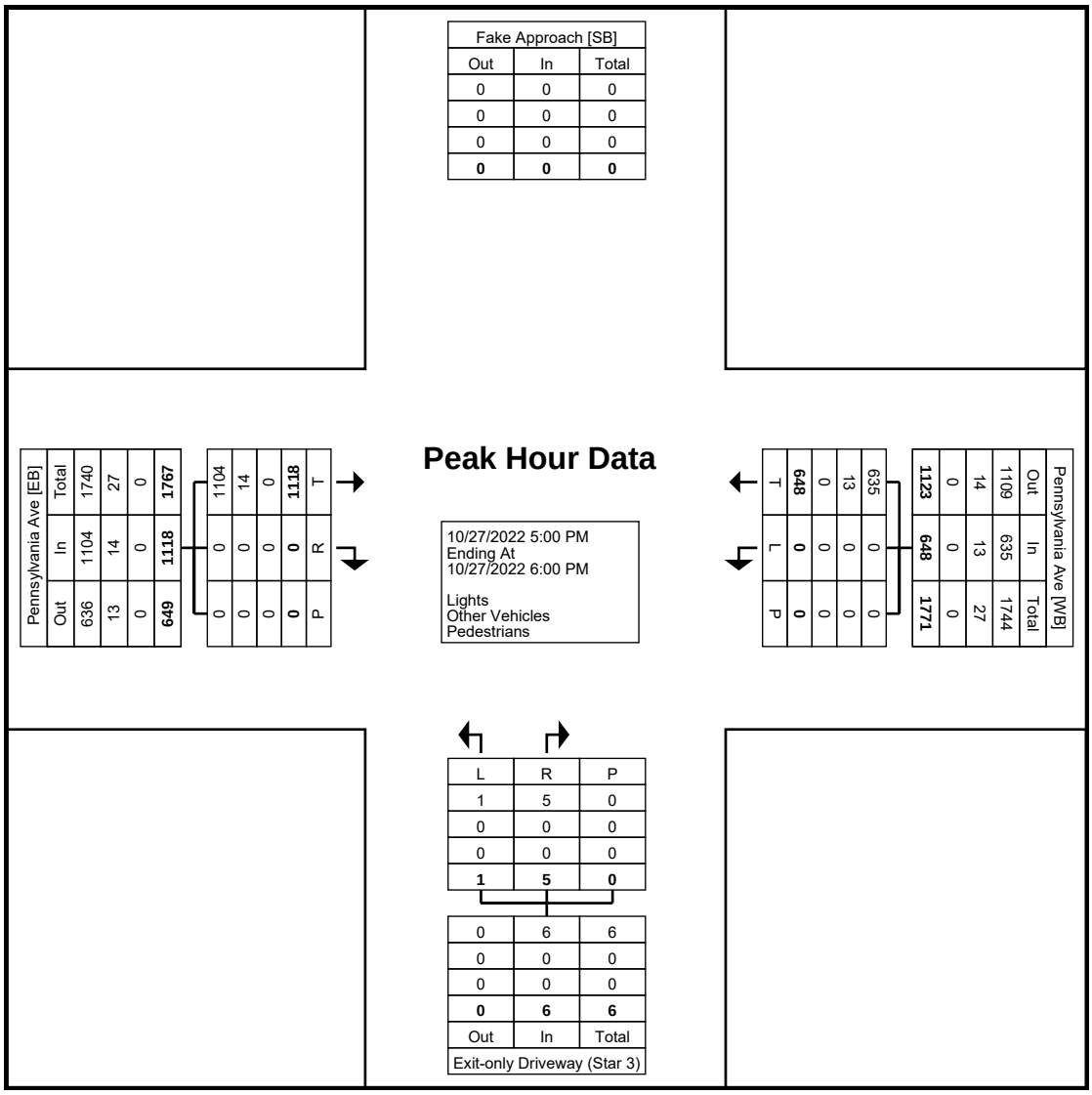
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Exit-only Driveway (Star 3) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
5:00 PM	340	0	0	340	0	154	0	154	0	0	0	0	494
5:15 PM	275	0	0	275	0	158	0	158	1	4	0	5	438
5:30 PM	271	0	0	271	0	156	0	156	0	1	0	1	428
5:45 PM	232	0	0	232	0	180	0	180	0	0	0	0	412
Total	1118	0	0	1118	0	648	0	648	1	5	0	6	1772
Approach %	100.0	0.0	-	-	0.0	100.0	-	-	16.7	83.3	-	-	-
Total %	63.1	0.0	-	63.1	0.0	36.6	-	36.6	0.1	0.3	-	0.3	-
PHF	0.822	0.000	-	0.822	0.000	0.900	-	0.900	0.250	0.313	-	0.300	0.897
Lights	1104	0	-	1104	0	635	-	635	1	5	-	6	1745
% Lights	98.7	-	-	98.7	-	98.0	-	98.0	100.0	100.0	-	100.0	98.5
Other Vehicles	14	0	-	14	0	13	-	13	0	0	-	0	27
% Other Vehicles	1.3	-	-	1.3	-	2.0	-	2.0	0.0	0.0	-	0.0	1.5
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (5:00 PM)

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

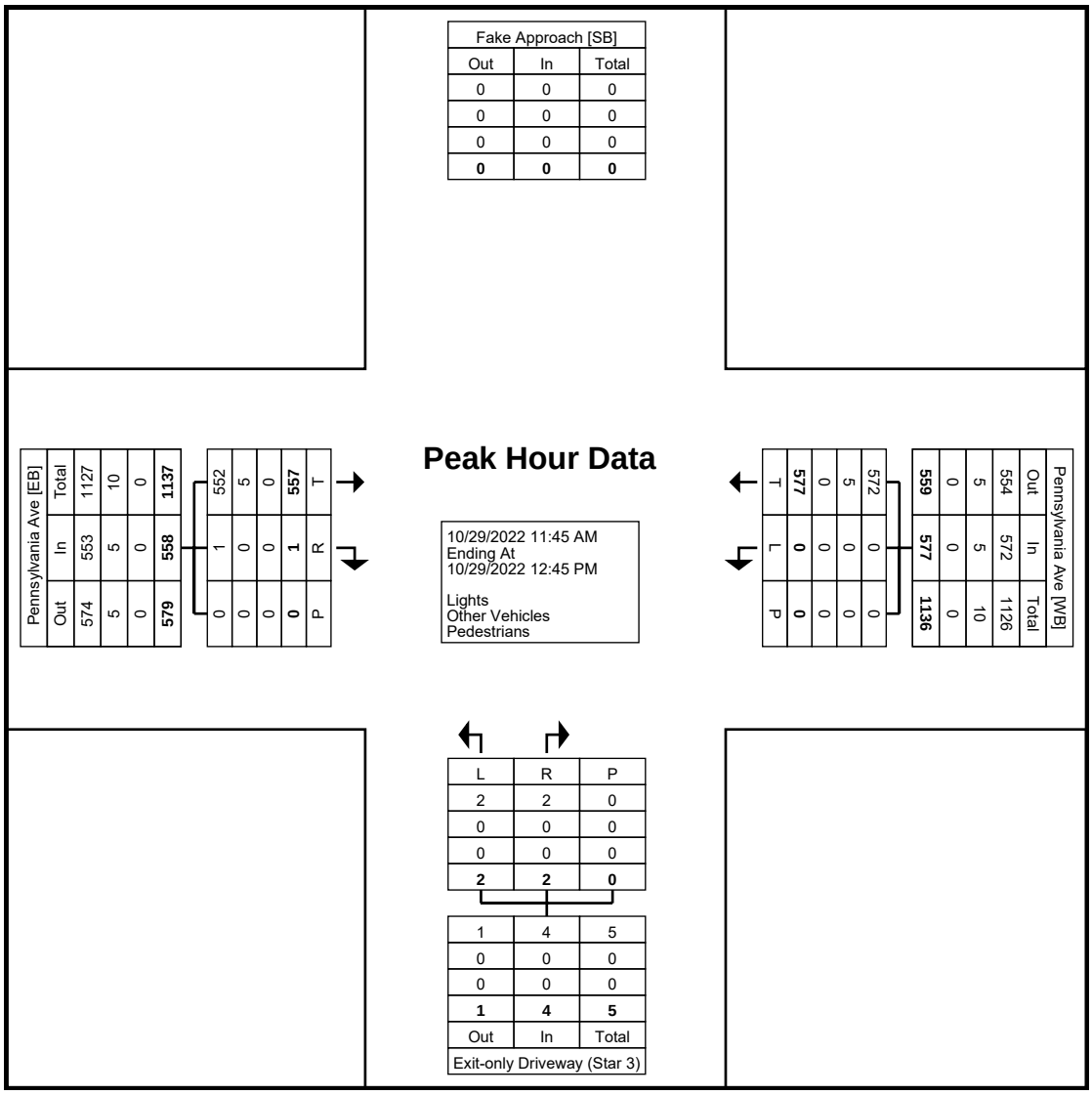
Turning Movement Peak Hour Data (11:45 AM)

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Exit-only Driveway (Star 3) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
11:45 AM	126	0	0	126	0	168	0	168	0	1	0	1	295
12:00 PM	155	0	0	155	0	137	0	137	1	0	0	1	293
12:15 PM	125	0	0	125	0	133	0	133	0	0	0	0	258
12:30 PM	151	1	0	152	0	139	0	139	1	1	0	2	293
Total	557	1	0	558	0	577	0	577	2	2	0	4	1139
Approach %	99.8	0.2	-	-	0.0	100.0	-	-	50.0	50.0	-	-	-
Total %	48.9	0.1	-	49.0	0.0	50.7	-	50.7	0.2	0.2	-	0.4	-
PHF	0.898	0.250	-	0.900	0.000	0.859	-	0.859	0.500	0.500	-	0.500	0.965
Lights	552	1	-	553	0	572	-	572	2	2	-	4	1129
% Lights	99.1	100.0	-	99.1	-	99.1	-	99.1	100.0	100.0	-	100.0	99.1
Other Vehicles	5	0	-	5	0	5	-	5	0	0	-	0	10
% Other Vehicles	0.9	0.0	-	0.9	-	0.9	-	0.9	0.0	0.0	-	0.0	0.9
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Planning and Design, Inc
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Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (11:45 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

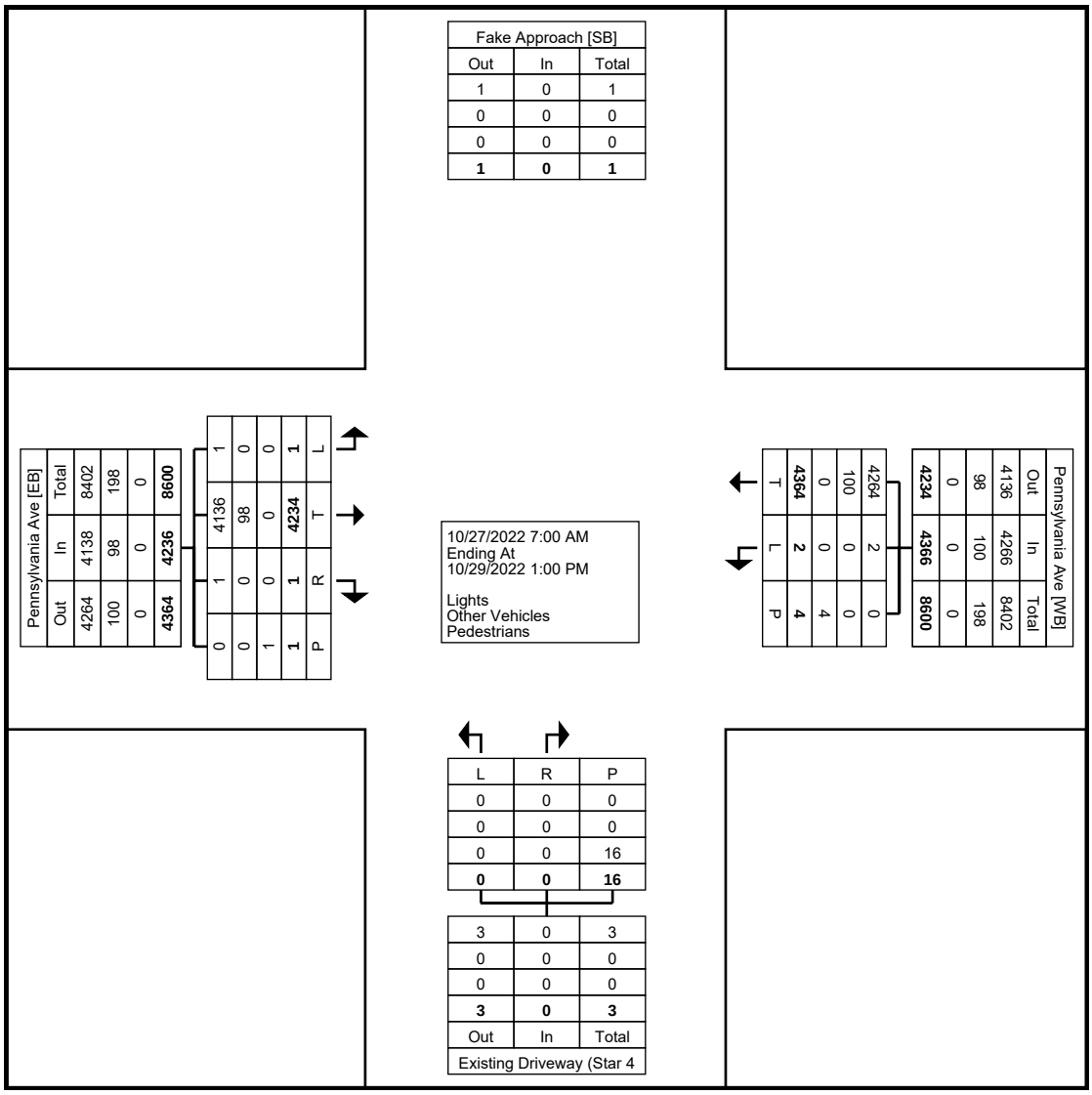
Turning Movement Data

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				Existing Driveway (Star 4 Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
7:00 AM	0	117	1	0	118	0	184	0	184	0	0	1	0	302
7:15 AM	0	130	0	0	130	0	183	1	183	0	0	0	0	313
7:30 AM	0	137	0	0	137	0	239	0	239	0	0	1	0	376
7:45 AM	0	132	0	0	132	0	236	0	236	0	0	1	0	368
Hourly Total	0	516	1	0	517	0	842	1	842	0	0	3	0	1359
8:00 AM	0	161	0	1	161	0	268	3	268	0	0	4	0	429
8:15 AM	0	142	0	0	142	0	280	0	280	0	0	0	0	422
8:30 AM	0	138	0	0	138	0	298	0	298	0	0	2	0	436
8:45 AM	0	131	0	0	131	1	292	0	293	0	0	0	0	424
Hourly Total	0	572	0	1	572	1	1138	3	1139	0	0	6	0	1711
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	256	0	0	256	0	176	0	176	0	0	0	0	432
4:15 PM	0	204	0	0	204	0	169	0	169	0	0	0	0	373
4:30 PM	0	240	0	0	240	0	146	0	146	0	0	3	0	386
4:45 PM	0	236	0	0	236	0	141	0	141	0	0	1	0	377
Hourly Total	0	936	0	0	936	0	632	0	632	0	0	4	0	1568
5:00 PM	0	343	0	0	343	0	150	0	150	0	0	0	0	493
5:15 PM	0	288	0	0	288	0	149	0	149	0	0	1	0	437
5:30 PM	0	279	0	0	279	0	158	0	158	0	0	1	0	437
5:45 PM	0	239	0	0	239	0	176	0	176	0	0	0	0	415
Hourly Total	0	1149	0	0	1149	0	633	0	633	0	0	2	0	1782
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	126	0	0	126	1	105	0	106	0	0	0	0	232
11:15 AM	0	119	0	0	119	0	132	0	132	0	0	1	0	251
11:30 AM	1	141	0	0	142	0	143	0	143	0	0	0	0	285
11:45 AM	0	120	0	0	120	0	167	0	167	0	0	0	0	287
Hourly Total	1	506	0	0	507	1	547	0	548	0	0	1	0	1055
12:00 PM	0	167	0	0	167	0	144	0	144	0	0	0	0	311
12:15 PM	0	128	0	0	128	0	135	0	135	0	0	0	0	263
12:30 PM	0	146	0	0	146	0	132	0	132	0	0	0	0	278
12:45 PM	0	114	0	0	114	0	161	0	161	0	0	0	0	275
Hourly Total	0	555	0	0	555	0	572	0	572	0	0	0	0	1127
Grand Total	1	4234	1	1	4236	2	4364	4	4366	0	0	16	0	8602
Approach %	0.0	100.0	0.0	-	-	0.0	100.0	-	-	0.0	0.0	-	-	-
Total %	0.0	49.2	0.0	-	49.2	0.0	50.7	-	50.8	0.0	0.0	-	0.0	-
Lights	1	4136	1	-	4138	2	4264	-	4266	0	0	-	0	8404
% Lights	100.0	97.7	100.0	-	97.7	100.0	97.7	-	97.7	-	-	-	-	97.7
Other Vehicles	0	98	0	-	98	0	100	-	100	0	0	-	0	198
% Other Vehicles	0.0	2.3	0.0	-	2.3	0.0	2.3	-	2.3	-	-	-	-	2.3
Pedestrians	-	-	-	1	-	-	-	4	-	-	-	16	-	-
% Pedestrians	-	-	-	100.0	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
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610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Data Plot

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2500 East High Street
Suite 650
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610.326.3100

Counter: MIO:
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Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
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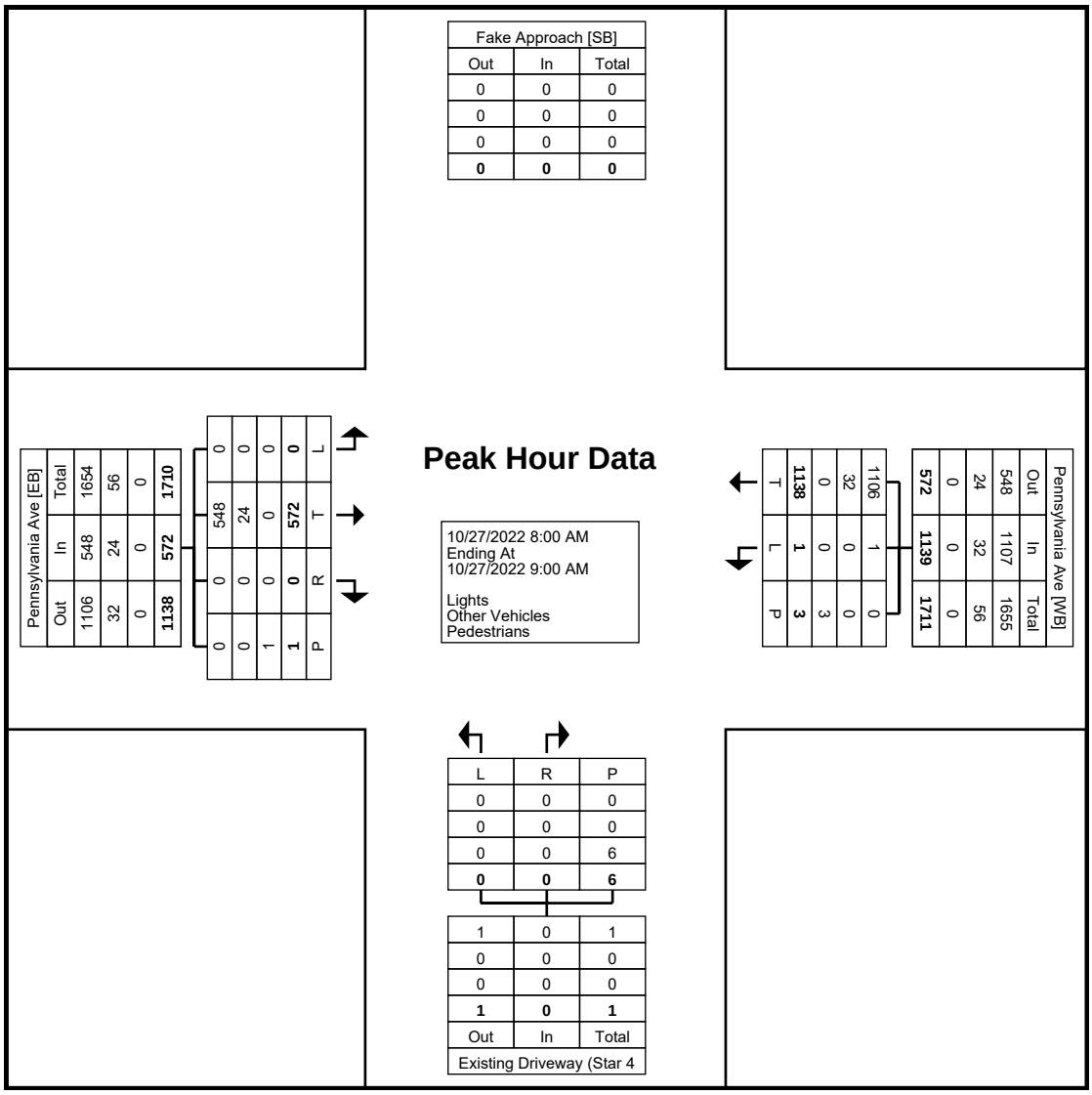
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				Existing Driveway (Star 4 Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
8:00 AM	0	161	0	1	161	0	268	3	268	0	0	4	0	429
8:15 AM	0	142	0	0	142	0	280	0	280	0	0	0	0	422
8:30 AM	0	138	0	0	138	0	298	0	298	0	0	2	0	436
8:45 AM	0	131	0	0	131	1	292	0	293	0	0	0	0	424
Total	0	572	0	1	572	1	1138	3	1139	0	0	6	0	1711
Approach %	0.0	100.0	0.0	-	-	0.1	99.9	-	-	0.0	0.0	-	-	-
Total %	0.0	33.4	0.0	-	33.4	0.1	66.5	-	66.6	0.0	0.0	-	0.0	-
PHF	0.000	0.888	0.000	-	0.888	0.250	0.955	-	0.956	0.000	0.000	-	0.000	0.981
Lights	0	548	0	-	548	1	1106	-	1107	0	0	-	0	1655
% Lights	-	95.8	-	-	95.8	100.0	97.2	-	97.2	-	-	-	-	96.7
Other Vehicles	0	24	0	-	24	0	32	-	32	0	0	-	0	56
% Other Vehicles	-	4.2	-	-	4.2	0.0	2.8	-	2.8	-	-	-	-	3.3
Pedestrians	-	-	-	1	-	-	-	3	-	-	-	6	-	-
% Pedestrians	-	-	-	100.0	-	-	-	100.0	-	-	-	100.0	-	-

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Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
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610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

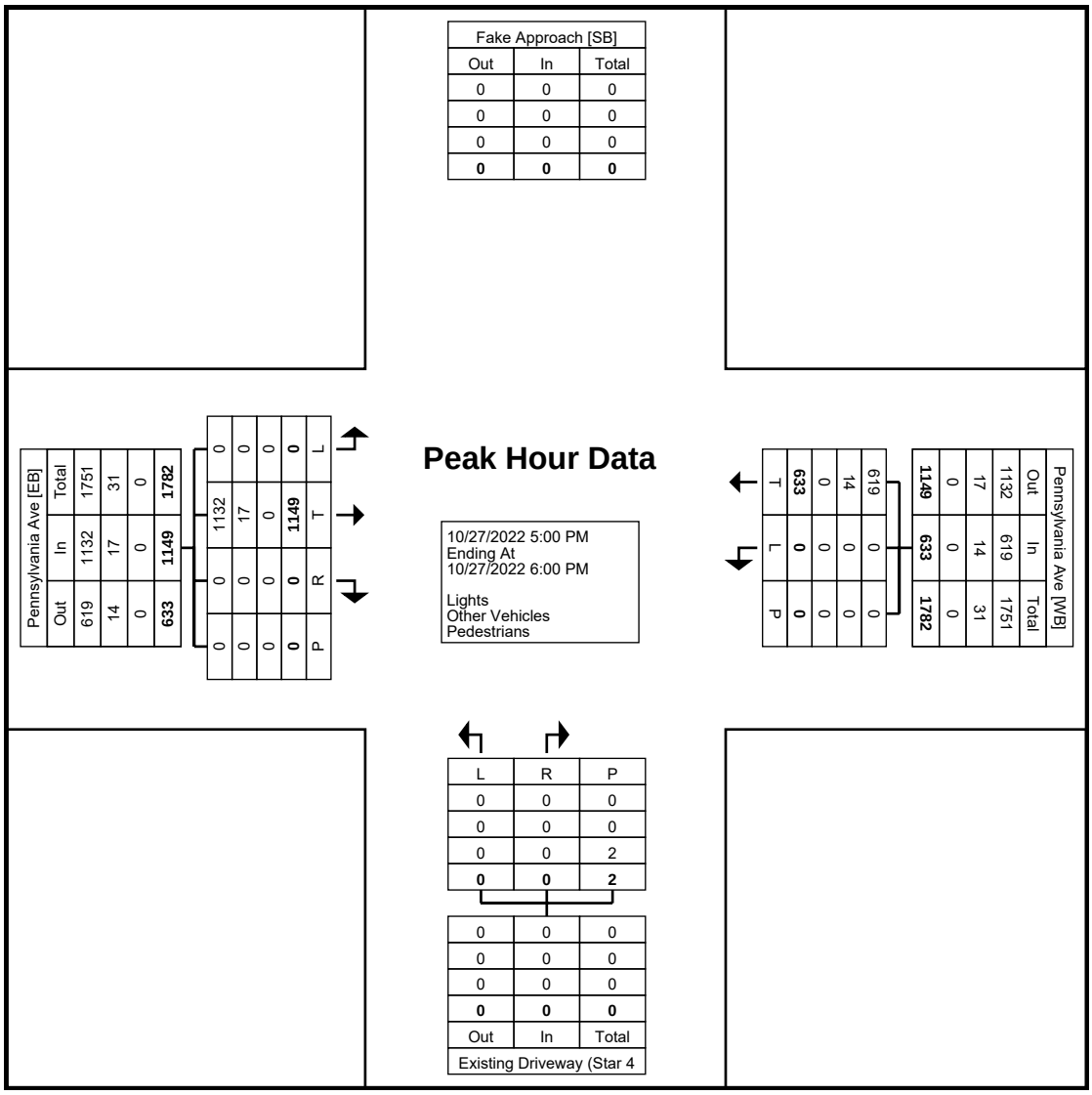
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				Existing Driveway (Star 4 Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
5:00 PM	0	343	0	0	343	0	150	0	150	0	0	0	0	493
5:15 PM	0	288	0	0	288	0	149	0	149	0	0	1	0	437
5:30 PM	0	279	0	0	279	0	158	0	158	0	0	1	0	437
5:45 PM	0	239	0	0	239	0	176	0	176	0	0	0	0	415
Total	0	1149	0	0	1149	0	633	0	633	0	0	2	0	1782
Approach %	0.0	100.0	0.0	-	-	0.0	100.0	-	-	0.0	0.0	-	-	-
Total %	0.0	64.5	0.0	-	64.5	0.0	35.5	-	35.5	0.0	0.0	-	0.0	-
PHF	0.000	0.837	0.000	-	0.837	0.000	0.899	-	0.899	0.000	0.000	-	0.000	0.904
Lights	0	1132	0	-	1132	0	619	-	619	0	0	-	0	1751
% Lights	-	98.5	-	-	98.5	-	97.8	-	97.8	-	-	-	-	98.3
Other Vehicles	0	17	0	-	17	0	14	-	14	0	0	-	0	31
% Other Vehicles	-	1.5	-	-	1.5	-	2.2	-	2.2	-	-	-	-	1.7
Pedestrians	-	-	-	0	-	-	-	0	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
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610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (5:00 PM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

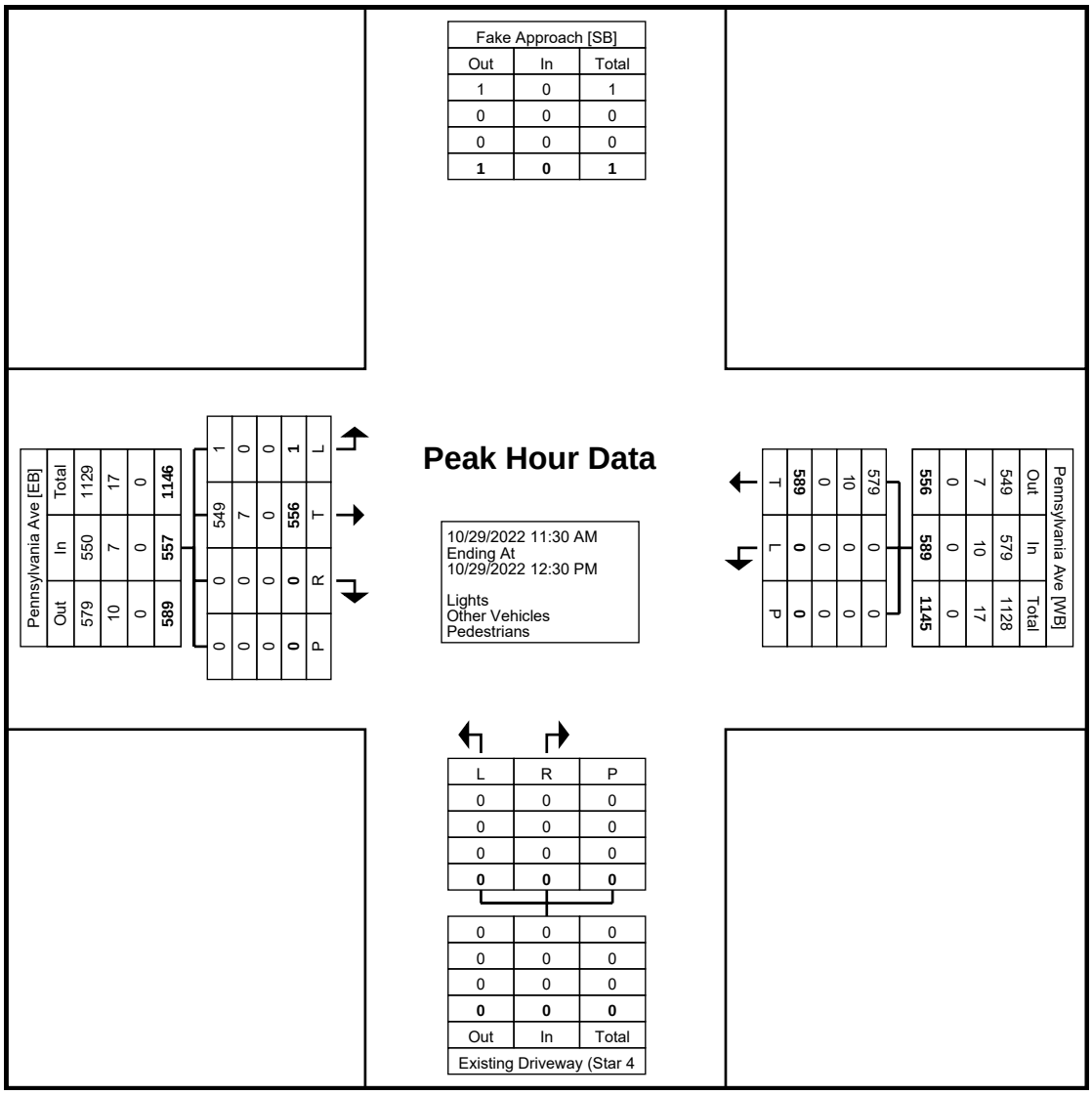
Turning Movement Peak Hour Data (11:30 AM)

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				Existing Driveway (Star 4 Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
11:30 AM	1	141	0	0	142	0	143	0	143	0	0	0	0	285
11:45 AM	0	120	0	0	120	0	167	0	167	0	0	0	0	287
12:00 PM	0	167	0	0	167	0	144	0	144	0	0	0	0	311
12:15 PM	0	128	0	0	128	0	135	0	135	0	0	0	0	263
Total	1	556	0	0	557	0	589	0	589	0	0	0	0	1146
Approach %	0.2	99.8	0.0	-	-	0.0	100.0	-	-	0.0	0.0	-	-	-
Total %	0.1	48.5	0.0	-	48.6	0.0	51.4	-	51.4	0.0	0.0	-	0.0	-
PHF	0.250	0.832	0.000	-	0.834	0.000	0.882	-	0.882	0.000	0.000	-	0.000	0.921
Lights	1	549	0	-	550	0	579	-	579	0	0	-	0	1129
% Lights	100.0	98.7	-	-	98.7	-	98.3	-	98.3	-	-	-	-	98.5
Other Vehicles	0	7	0	-	7	0	10	-	10	0	0	-	0	17
% Other Vehicles	0.0	1.3	-	-	1.3	-	1.7	-	1.7	-	-	-	-	1.5
Pedestrians	-	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Planning and Design, Inc
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610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (11:30 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

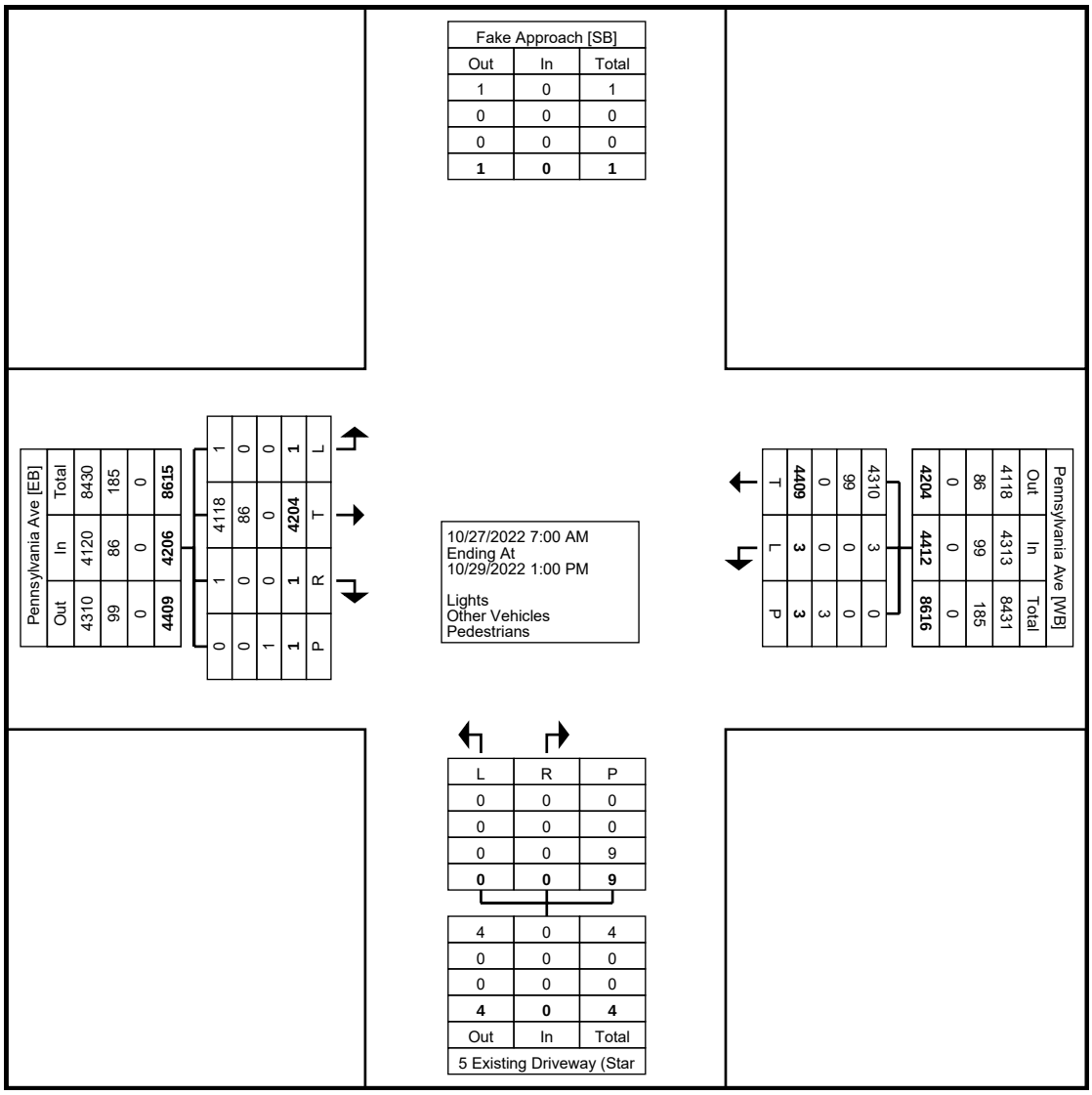
Turning Movement Data

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				5 Existing Driveway (Star 5) Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
7:00 AM	0	118	1	0	119	0	186	0	186	0	0	1	0	305
7:15 AM	0	130	0	0	130	0	189	0	189	0	0	0	0	319
7:30 AM	0	138	0	0	138	1	244	0	245	0	0	0	0	383
7:45 AM	0	132	0	0	132	0	256	0	256	0	0	0	0	388
Hourly Total	0	518	1	0	519	1	875	0	876	0	0	1	0	1395
8:00 AM	0	161	0	1	161	0	265	3	265	0	0	3	0	426
8:15 AM	0	143	0	0	143	0	282	0	282	0	0	0	0	425
8:30 AM	0	137	0	0	137	0	290	0	290	0	0	4	0	427
8:45 AM	0	131	0	0	131	1	294	0	295	0	0	0	0	426
Hourly Total	0	572	0	1	572	1	1131	3	1132	0	0	7	0	1704
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	237	0	0	237	0	179	0	179	0	0	0	0	416
4:15 PM	0	199	0	0	199	0	172	0	172	0	0	0	0	371
4:30 PM	0	232	0	0	232	0	144	0	144	0	0	0	0	376
4:45 PM	0	239	0	0	239	0	149	0	149	0	0	0	0	388
Hourly Total	0	907	0	0	907	0	644	0	644	0	0	0	0	1551
5:00 PM	0	344	0	0	344	0	153	0	153	0	0	0	0	497
5:15 PM	0	286	0	0	286	0	153	0	153	0	0	0	0	439
5:30 PM	0	275	0	0	275	0	157	0	157	0	0	1	0	432
5:45 PM	0	237	0	0	237	0	175	0	175	0	0	0	0	412
Hourly Total	0	1142	0	0	1142	0	638	0	638	0	0	1	0	1780
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	128	0	0	128	1	103	0	104	0	0	0	0	232
11:15 AM	0	123	0	0	123	0	132	0	132	0	0	0	0	255
11:30 AM	1	144	0	0	145	0	141	0	141	0	0	0	0	286
11:45 AM	0	119	0	0	119	0	169	0	169	0	0	0	0	288
Hourly Total	1	514	0	0	515	1	545	0	546	0	0	0	0	1061
12:00 PM	0	166	0	0	166	0	144	0	144	0	0	0	0	310
12:15 PM	0	126	0	0	126	0	136	0	136	0	0	0	0	262
12:30 PM	0	146	0	0	146	0	134	0	134	0	0	0	0	280
12:45 PM	0	113	0	0	113	0	162	0	162	0	0	0	0	275
Hourly Total	0	551	0	0	551	0	576	0	576	0	0	0	0	1127
Grand Total	1	4204	1	1	4206	3	4409	3	4412	0	0	9	0	8618
Approach %	0.0	100.0	0.0	-	-	0.1	99.9	-	-	0.0	0.0	-	-	-
Total %	0.0	48.8	0.0	-	48.8	0.0	51.2	-	51.2	0.0	0.0	-	0.0	-
Lights	1	4118	1	-	4120	3	4310	-	4313	0	0	-	0	8433
% Lights	100.0	98.0	100.0	-	98.0	100.0	97.8	-	97.8	-	-	-	-	97.9
Other Vehicles	0	86	0	-	86	0	99	-	99	0	0	-	0	185
% Other Vehicles	0.0	2.0	0.0	-	2.0	0.0	2.2	-	2.2	-	-	-	-	2.1
Pedestrians	-	-	-	1	-	-	-	3	-	-	-	9	-	-
% Pedestrians	-	-	-	100.0	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
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610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Data Plot

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2500 East High Street
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Counter: MIO:
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Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
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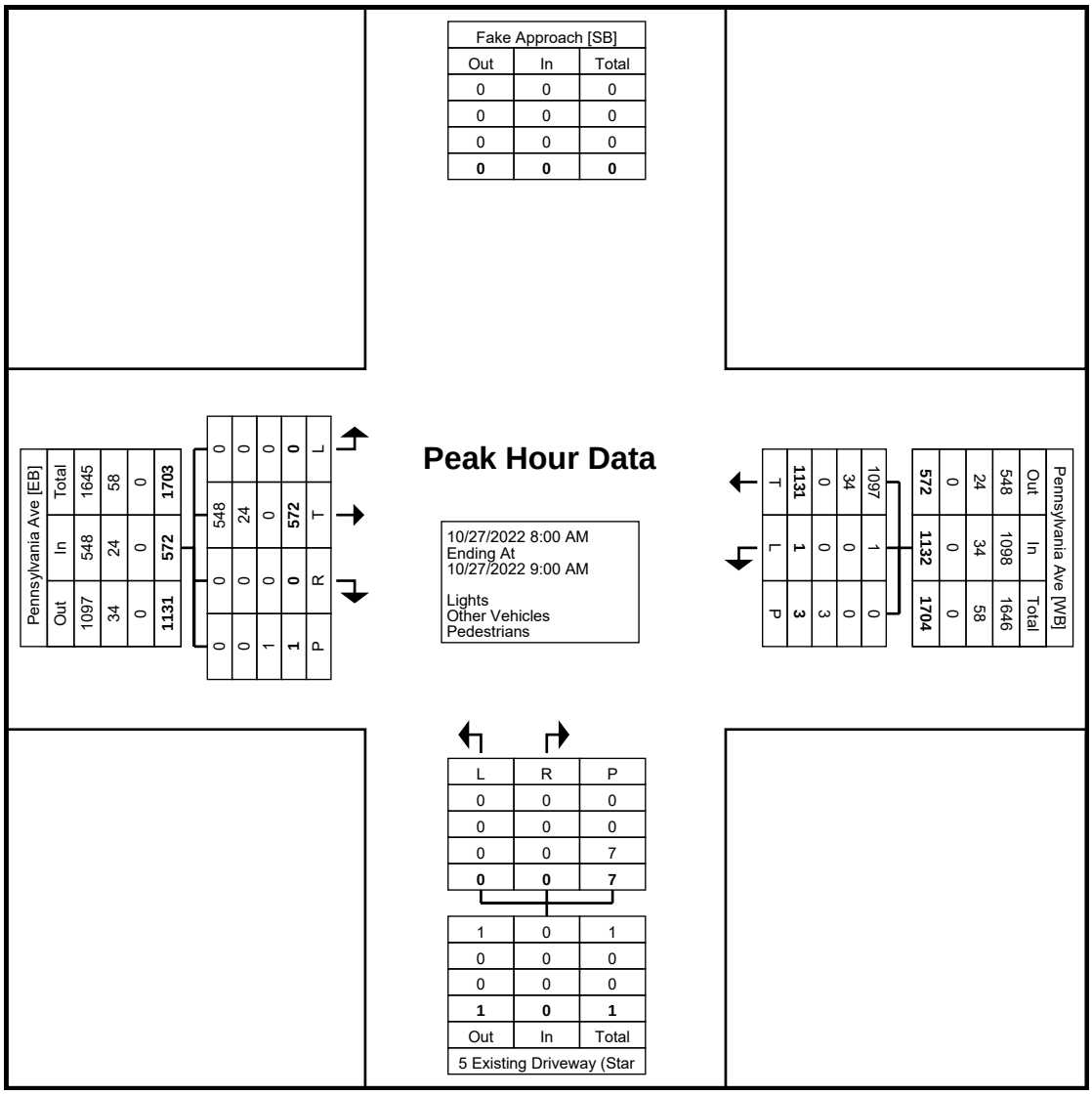
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				5 Existing Driveway (Star 5) Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
8:00 AM	0	161	0	1	161	0	265	3	265	0	0	3	0	426
8:15 AM	0	143	0	0	143	0	282	0	282	0	0	0	0	425
8:30 AM	0	137	0	0	137	0	290	0	290	0	0	4	0	427
8:45 AM	0	131	0	0	131	1	294	0	295	0	0	0	0	426
Total	0	572	0	1	572	1	1131	3	1132	0	0	7	0	1704
Approach %	0.0	100.0	0.0	-	-	0.1	99.9	-	-	0.0	0.0	-	-	-
Total %	0.0	33.6	0.0	-	33.6	0.1	66.4	-	66.4	0.0	0.0	-	0.0	-
PHF	0.000	0.888	0.000	-	0.888	0.250	0.962	-	0.959	0.000	0.000	-	0.000	0.998
Lights	0	548	0	-	548	1	1097	-	1098	0	0	-	0	1646
% Lights	-	95.8	-	-	95.8	100.0	97.0	-	97.0	-	-	-	-	96.6
Other Vehicles	0	24	0	-	24	0	34	-	34	0	0	-	0	58
% Other Vehicles	-	4.2	-	-	4.2	0.0	3.0	-	3.0	-	-	-	-	3.4
Pedestrians	-	-	-	1	-	-	-	3	-	-	-	7	-	-
% Pedestrians	-	-	-	100.0	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

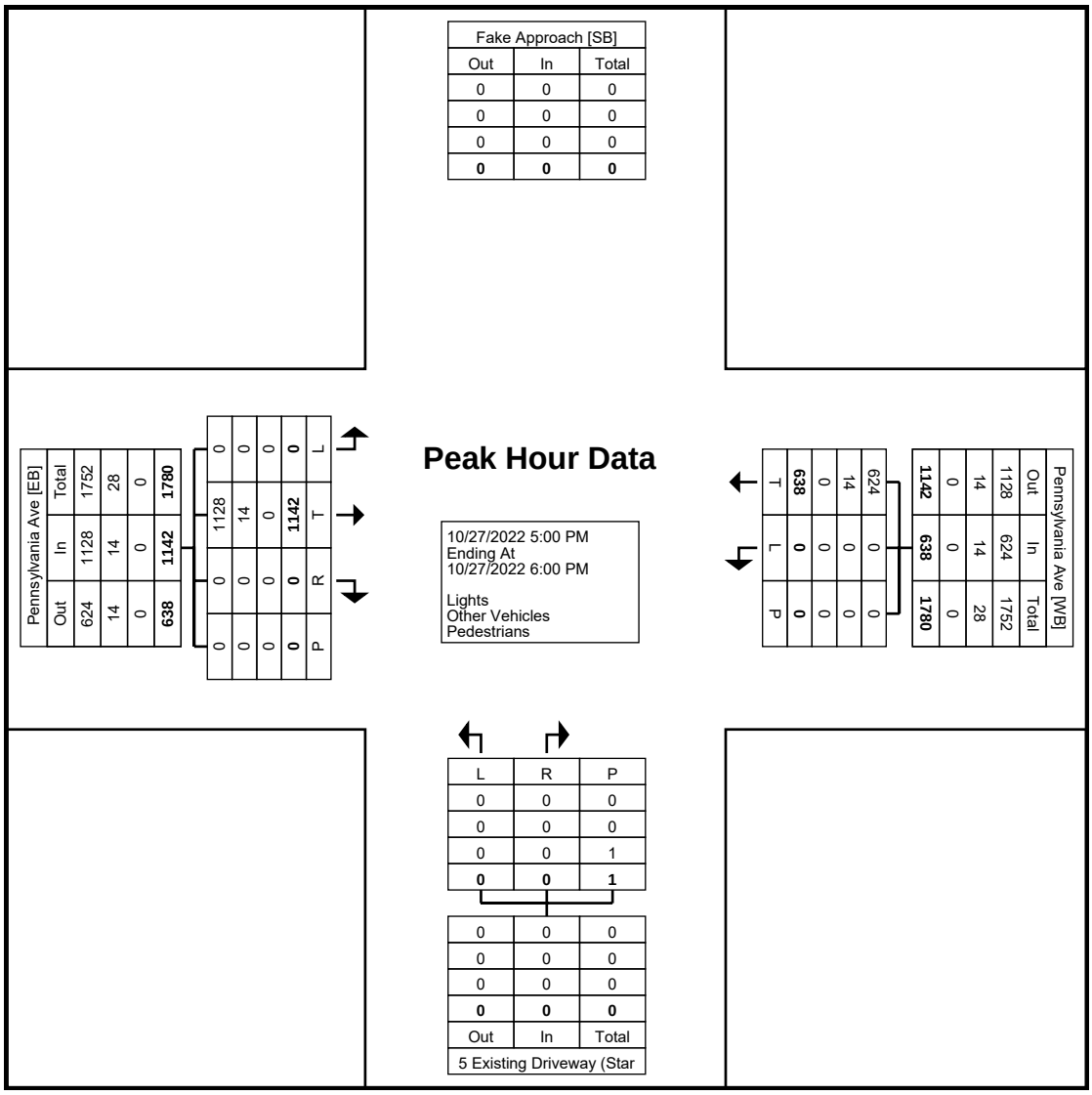
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				5 Existing Driveway (Star 5) Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
5:00 PM	0	344	0	0	344	0	153	0	153	0	0	0	0	497
5:15 PM	0	286	0	0	286	0	153	0	153	0	0	0	0	439
5:30 PM	0	275	0	0	275	0	157	0	157	0	0	1	0	432
5:45 PM	0	237	0	0	237	0	175	0	175	0	0	0	0	412
Total	0	1142	0	0	1142	0	638	0	638	0	0	1	0	1780
Approach %	0.0	100.0	0.0	-	-	0.0	100.0	-	-	0.0	0.0	-	-	-
Total %	0.0	64.2	0.0	-	64.2	0.0	35.8	-	35.8	0.0	0.0	-	0.0	-
PHF	0.000	0.830	0.000	-	0.830	0.000	0.911	-	0.911	0.000	0.000	-	0.000	0.895
Lights	0	1128	0	-	1128	0	624	-	624	0	0	-	0	1752
% Lights	-	98.8	-	-	98.8	-	97.8	-	97.8	-	-	-	-	98.4
Other Vehicles	0	14	0	-	14	0	14	-	14	0	0	-	0	28
% Other Vehicles	-	1.2	-	-	1.2	-	2.2	-	2.2	-	-	-	-	1.6
Pedestrians	-	-	-	0	-	-	-	0	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
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Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (5:00 PM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

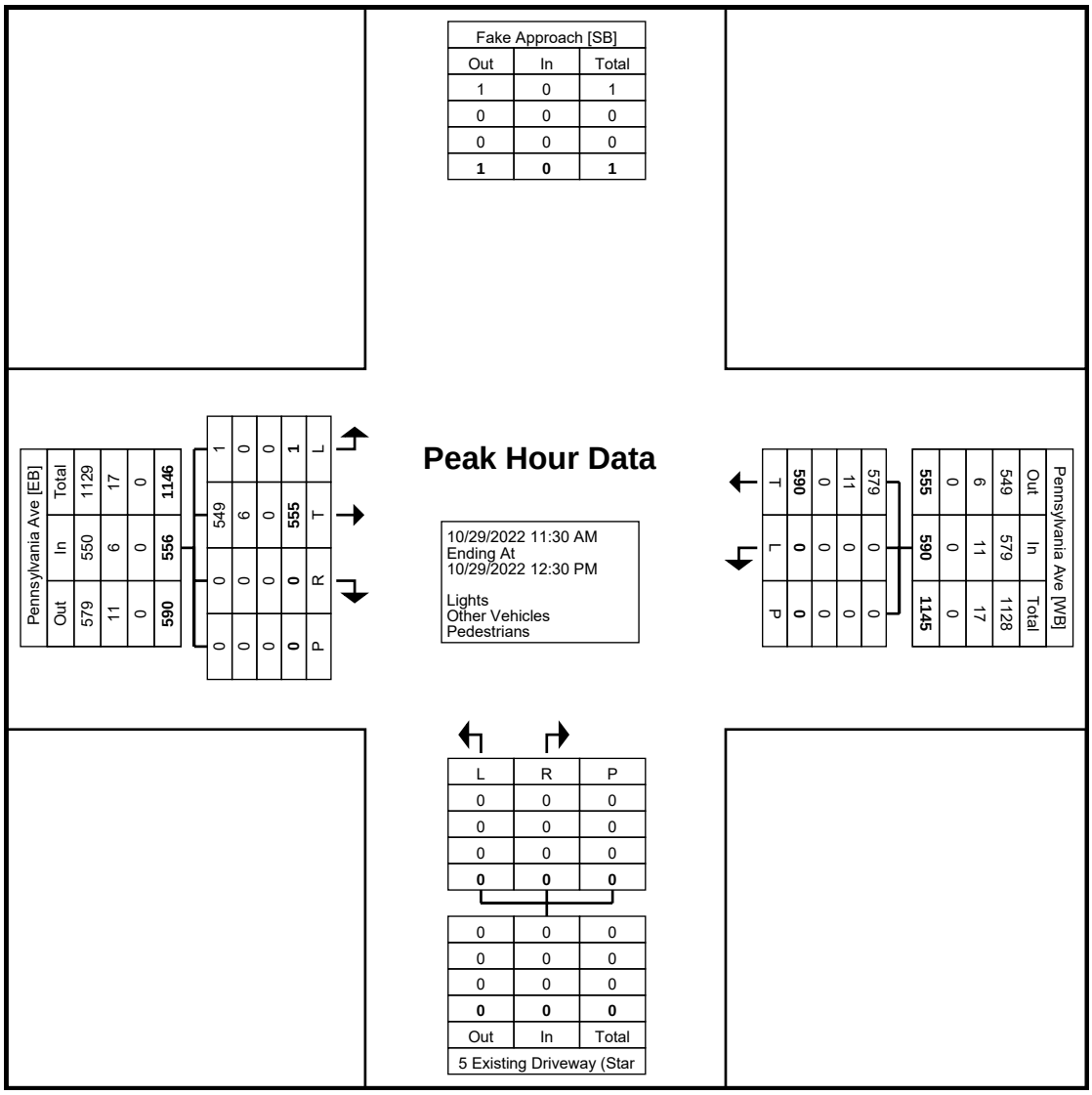
Turning Movement Peak Hour Data (11:30 AM)

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				5 Existing Driveway (Star 5) Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
11:30 AM	1	144	0	0	145	0	141	0	141	0	0	0	0	286
11:45 AM	0	119	0	0	119	0	169	0	169	0	0	0	0	288
12:00 PM	0	166	0	0	166	0	144	0	144	0	0	0	0	310
12:15 PM	0	126	0	0	126	0	136	0	136	0	0	0	0	262
Total	1	555	0	0	556	0	590	0	590	0	0	0	0	1146
Approach %	0.2	99.8	0.0	-	-	0.0	100.0	-	-	0.0	0.0	-	-	-
Total %	0.1	48.4	0.0	-	48.5	0.0	51.5	-	51.5	0.0	0.0	-	0.0	-
PHF	0.250	0.836	0.000	-	0.837	0.000	0.873	-	0.873	0.000	0.000	-	0.000	0.924
Lights	1	549	0	-	550	0	579	-	579	0	0	-	0	1129
% Lights	100.0	98.9	-	-	98.9	-	98.1	-	98.1	-	-	-	-	98.5
Other Vehicles	0	6	0	-	6	0	11	-	11	0	0	-	0	17
% Other Vehicles	0.0	1.1	-	-	1.1	-	1.9	-	1.9	-	-	-	-	1.5
Pedestrians	-	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (11:30 AM)

APPENDIX D

Volume Development Spreadsheets & Trip Assignment Data

TPD# MILE.00001
3/6/2023
Traffic Volumes Worksheet
Intersection: **Pennsylvania Avenue (SR 2027) & Commerce Drive/Main Site Driveway**
Synchro Node: **1** **Adjacent intersections:** **West** **0** **East** **0** **North** **0** **South** **0**

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts	**219**	**420**	**9**	**19**	**464**	**654**	**7**	**4**	**8**	**140**	**9**	**139**	**2092**
Balancing													0
2022 Existing Volumes (Balanced)	**219**	**420**	**9**	**19**	**464**	**654**	**7**	**4**	**8**	**140**	**9**	**139**	**2092**
Base growth (0.27% compounded for 3 yrs)	2	3			4	5				1		1	16
Base growth (0.27% compounded for 8 yrs)	5	9			10	14				3		3	44
													0
													0
2025 Base Volumes	**221**	**423**	**9**	**19**	**468**	**659**	**7**	**4**	**8**	**141**	**9**	**140**	**2108**
2030 Base Volumes	**224**	**429**	**9**	**19**	**474**	**668**	**7**	**4**	**8**	**143**	**9**	**142**	**2136**

ENTER = **102**
EXIT = **38**

Trip Assignment % - New Enter		5.0%	25.0%	51.0%						2.0%	17.0%		
Trip Assignment % - New Exit							30.0%	19.0%	36.0%				
New Trips		5	26	52			11	7	14	2	17		**134**
Base Redistribution		-3	-9	-19	-1		-7	-4	-8	-1	-9		**-61**
2025 Projected Volumes	**221**	**425**	**26**	**52**	**467**	**659**	**11**	**7**	**14**	**142**	**17**	**140**	**2181**
2030 Projected Volumes	**224**	**431**	**26**	**52**	**473**	**668**	**11**	**7**	**14**	**144**	**17**	**142**	**2209**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts	**192**	**555**	**9**	**12**	**355**	**276**	**10**	**6**	**14**	**562**	**2**	**268**	**2261**
Balancing													0
2022 Existing Volumes (Balanced)	**192**	**555**	**9**	**12**	**355**	**276**	**10**	**6**	**14**	**562**	**2**	**268**	**2261**
Base growth (0.27% compounded for 3 yrs)	2	5			3	2				5		2	19
Base growth (0.27% compounded for 8 yrs)	4	12			8	6				12		6	48
													0
													0
2025 Base Volumes	**194**	**560**	**9**	**12**	**358**	**278**	**10**	**6**	**14**	**567**	**2**	**270**	**2280**
2030 Base Volumes	**196**	**567**	**9**	**12**	**363**	**282**	**10**	**6**	**14**	**574**	**2**	**274**	**2309**

ENTER = **73**
EXIT = **109**

Trip Assignment % - New Enter		5.0%	25.0%	51.0%						2.0%	17.0%		
Trip Assignment % - New Exit							30.0%	19.0%	36.0%				
New Trips		4	18	37			33	21	39	1	13		**166**
Base Redistribution		-3	-9	-12	-1		-10	-6	-14		-2		**-57**
2025 Projected Volumes	**194**	**561**	**18**	**37**	**357**	**278**	**33**	**21**	**39**	**568**	**13**	**270**	**2389**
2030 Projected Volumes	**196**	**568**	**18**	**37**	**362**	**282**	**33**	**21**	**39**	**575**	**13**	**274**	**2418**

Time Period: Saturday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts	**121**	**377**	**6**	**10**	**402**	**176**	**5**	**4**	**9**	**161**	**6**	**117**	**1394**
Balancing													0
2022 Existing Volumes (Balanced)	**121**	**377**	**6**	**10**	**402**	**176**	**5**	**4**	**9**	**161**	**6**	**117**	**1394**
Base growth (0.27% compounded for 3 yrs)	1	3			3	1				1		1	10
Base growth (0.27% compounded for 8 yrs)	3	8			9	4				4		3	31
													0
													0
2025 Base Volumes	**122**	**380**	**6**	**10**	**405**	**177**	**5**	**4**	**9**	**162**	**6**	**118**	**1404**
2030 Base Volumes	**124**	**385**	**6**	**10**	**411**	**180**	**5**	**4**	**9**	**165**	**6**	**120**	**1425**

ENTER = **151**
EXIT = **151**

Trip Assignment % - New Enter		5.0%	25.0%	51.0%						2.0%	17.0%		
Trip Assignment % - New Exit							30.0%	19.0%	36.0%				
New Trips		8	38	77			45	29	54	3	25		**279**
Base Redistribution		-2	-6	-10	-1	-1	-5	-4	-9	-1	-6		**-45**
2025 Projected Volumes	**122**	**386**	**38**	**77**	**404**	**176**	**45**	**29**	**54**	**164**	**25**	**118**	**1638**
2030 Projected Volumes	**124**	**391**	**38**	**77**	**410**	**179**	**45**	**29**	**54**	**167**	**25**	**120**	**1659**

TPD# MILE.00001
3/6/2023
Traffic Volumes Worksheet
Intersection: **Pennsylvania Avenue (SR 2027) & Existing Westernmost Driveway (Exit Only)**
Synchro Node: **2** **Adjacent intersections:** **West** **0** **East** **0** **North** **0** **South** **0**

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts		**676**	**0**	**0**	**601**		**0**		**2**				**1279**
Balancing													0
2022 Existing Volumes (Balanced)		**676**	**0**	**0**	**601**		**0**		**2**				**1279**
Base growth (0.27% compounded for 3 yrs)		5			5								10
Base growth (0.27% compounded for 8 yrs)		15			13								28
													0
													0
2025 Base Volumes		**681**	**0**	**0**	**606**		**0**		**2**				**1289**
2030 Base Volumes		**691**	**0**	**0**	**614**		**0**		**2**				**1307**

ENTER = **102**
EXIT = **38**

Trip Assignment % - New Enter		30.0%											
Trip Assignment % - New Exit					30.0%								
New Trips		31			11								**42**
Base Redistribution		-10			-8				-2				**-20**
2025 Projected Volumes		**702**			**609**								**1311**
2030 Projected Volumes		**712**			**617**								**1329**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts		**765**	**2**	**0**	**622**		**1**		**3**				**1393**
Balancing													0
2022 Existing Volumes (Balanced)		**765**	**2**	**0**	**622**		**1**		**3**				**1393**
Base growth (0.27% compounded for 3 yrs)		6			5								11
Base growth (0.27% compounded for 8 yrs)		17			14								31
													0
													0
2025 Base Volumes		**771**	**2**	**0**	**627**		**1**		**3**				**1404**
2030 Base Volumes		**782**	**2**	**0**	**636**		**1**		**3**				**1424**

ENTER = **73**
EXIT = **109**

Trip Assignment % - New Enter		30.0%											
Trip Assignment % - New Exit					30.0%								
New Trips		22			33								**55**
Base Redistribution		-9	-2		-11		-1		-3				**-26**
2025 Projected Volumes		**784**			**649**								**1433**
2030 Projected Volumes		**795**			**658**								**1453**

Time Period: Saturday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts		**503**	**0**	**0**	**518**		**0**		**2**				**1023**
Balancing													0
2022 Existing Volumes (Balanced)		**503**	**0**	**0**	**518**		**0**		**2**				**1023**
Base growth (0.27% compounded for 3 yrs)		4			4								8
Base growth (0.27% compounded for 8 yrs)		11			11								22
													0
													0
2025 Base Volumes		**507**	**0**	**0**	**522**		**0**		**2**				**1031**
2030 Base Volumes		**514**	**0**	**0**	**529**		**0**		**2**				**1045**

ENTER = **151**
EXIT = **151**

Trip Assignment % - New Enter		30.0%											
Trip Assignment % - New Exit					30.0%								
New Trips		45			45								**90**
Base Redistribution		-6			-6				-2				**-14**
2025 Projected Volumes		**546**			**561**								**1107**
2030 Projected Volumes		**553**			**568**								**1121**

TPD# MILE.00001
3/6/2023
Traffic Volumes Worksheet

Intersection:	**Pennsylvania Avenue (SR 2027) & Existing Secondary Driveway**								
Synchro Node:	**3**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**South**	**0**

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts		**566**	**2**	**4**	**1119**		**1**		**0**				**1692**
Balancing													0
2022 Existing Volumes (Balanced)		**566**	**2**	**4**	**1119**		**1**		**0**				**1692**
Base growth (0.27% compounded for 3 yrs)		5			9								14
Base growth (0.27% compounded for 8 yrs)		12			24								36
													0
													0
2025 Base Volumes		**571**	**2**	**4**	**1128**		**1**		**0**				**1706**
2030 Base Volumes		**578**	**2**	**4**	**1143**		**1**		**0**				**1728**

ENTER =	**102**	
EXIT =	**38**	

Trip Assignment % - New Enter		7.0%			51.0%								
Trip Assignment % - New Exit		36.0%											
New Trips		21			52								**73**
Base Redistribution		-10	-2	-4	-19		-1						**-36**
2025 Projected Volumes		**582**			**1161**								**1743**
2030 Projected Volumes		**589**			**1176**								**1765**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts		**1118**	**0**	**0**	**648**		**1**		**5**				**1772**
Balancing													0
2022 Existing Volumes (Balanced)		**1118**	**0**	**0**	**648**		**1**		**5**				**1772**
Base growth (0.27% compounded for 3 yrs)		9			5								14
Base growth (0.27% compounded for 8 yrs)		24			14								38
													0
													0
2025 Base Volumes		**1127**	**0**	**0**	**653**		**1**		**5**				**1786**
2030 Base Volumes		**1142**	**0**	**0**	**662**		**1**		**5**				**1810**

ENTER =	**73**	
EXIT =	**109**	

Trip Assignment % - New Enter		7.0%			51.0%								
Trip Assignment % - New Exit		36.0%											
New Trips		44			37								**81**
Base Redistribution		-17			-12		-1		-5				**-35**
2025 Projected Volumes		**1154**			**678**								**1832**
2030 Projected Volumes		**1169**			**687**								**1856**

Time Period: Saturday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts		**557**	**1**	**0**	**577**		**2**		**2**				**1139**
Balancing													0
2022 Existing Volumes (Balanced)		**557**	**1**	**0**	**577**		**2**		**2**				**1139**
Base growth (0.27% compounded for 3 yrs)		5			5								10
Base growth (0.27% compounded for 8 yrs)		12			13								25
													0
													0
2025 Base Volumes		**562**	**1**	**0**	**582**		**2**		**2**				**1149**
2030 Base Volumes		**569**	**1**	**0**	**590**		**2**		**2**				**1164**

ENTER =	**151**	
EXIT =	**151**	

Trip Assignment % - New Enter		7.0%			51.0%								
Trip Assignment % - New Exit		36.0%											
New Trips		65			77								**142**
Base Redistribution		-11	-1		-10		-2		-2				**-26**
2025 Projected Volumes		**616**			**649**								**1265**
2030 Projected Volumes		**623**			**657**								**1280**

TPD# MILE.00001
3/6/2023
Traffic Volumes Worksheet
Intersection: **Pennsylvania Avenue (SR 2027) & Existing Driveway/Proposed RIRO Driveway**
Synchro Node: **4** **Adjacent intersections:** **West** **0** **East** **0** **North** **0** **South** **0**

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts		**572**	**0**	**1**	**1138**		**0**		**0**				**1711**
Balancing													0
2022 Existing Volumes (Balanced)		**572**	**0**	**1**	**1138**		**0**		**0**				**1711**
Base growth (0.27% compounded for 3 yrs)		5			9								14
Base growth (0.27% compounded for 8 yrs)		12			25								37
													0
													0
2025 Base Volumes		**577**	**0**	**1**	**1147**		**0**		**0**				**1725**
2030 Base Volumes		**584**	**0**	**1**	**1163**		**0**		**0**				**1748**

ENTER = **102**
EXIT = **38**

Trip Assignment % - New Enter			7.0%		51.0%								
Trip Assignment % - New Exit		36.0%							15.0%				
New Trips		14	7		52				6				**79**
Base Redistribution		-10		-1	-23								**-34**
2025 Projected Volumes		**581**	**7**		**1176**				**6**				**1770**
2030 Projected Volumes		**588**	**7**		**1192**				**6**				**1793**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts		**1149**	**0**	**0**	**633**		**0**		**0**				**1782**
Balancing													0
2022 Existing Volumes (Balanced)		**1149**	**0**	**0**	**633**		**0**		**0**				**1782**
Base growth (0.27% compounded for 3 yrs)		9			5								14
Base growth (0.27% compounded for 8 yrs)		25			14								39
													0
													0
2025 Base Volumes		**1158**	**0**	**0**	**638**		**0**		**0**				**1796**
2030 Base Volumes		**1174**	**0**	**0**	**647**		**0**		**0**				**1821**

ENTER = **73**
EXIT = **109**

Trip Assignment % - New Enter			7.0%		51.0%								
Trip Assignment % - New Exit		36.0%							15.0%				
New Trips		39	5		37				16				**97**
Base Redistribution		-22			-12								**-34**
2025 Projected Volumes		**1175**	**5**		**663**				**16**				**1859**
2030 Projected Volumes		**1191**	**5**		**672**				**16**				**1884**

Time Period: Saturday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts		**557**	**0**	**0**	**589**		**0**		**0**				**1146**
Balancing													0
2022 Existing Volumes (Balanced)		**557**	**0**	**0**	**589**		**0**		**0**				**1146**
Base growth (0.27% compounded for 3 yrs)		5			5								10
Base growth (0.27% compounded for 8 yrs)		12			13								25
													0
													0
2025 Base Volumes		**562**	**0**	**0**	**594**		**0**		**0**				**1156**
2030 Base Volumes		**569**	**0**	**0**	**602**		**0**		**0**				**1171**

ENTER = **151**
EXIT = **151**

Trip Assignment % - New Enter			7.0%		51.0%								
Trip Assignment % - New Exit		36.0%							15.0%				
New Trips		54	11		77				23				**165**
Base Redistribution		-13			-10								**-23**
2025 Projected Volumes		**603**	**11**		**661**				**23**				**1298**
2030 Projected Volumes		**610**	**11**		**669**				**23**				**1313**

TPD# MILE.00001
3/6/2023
Traffic Volumes Worksheet
Intersection: **Pennsylvania Avenue (SR 2027) & Existing Easternmost Driveway**
Synchro Node: **5** **Adjacent intersections:** **West** **0** **East** **0** **North** **0** **South** **0**

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts		**572**	**0**	**1**	**1131**		**0**		**0**				**1704**
Balancing													0
2022 Existing Volumes (Balanced)		**572**	**0**	**1**	**1131**		**0**		**0**				**1704**
Base growth (0.27% compounded for 3 yrs)		5			9								14
Base growth (0.27% compounded for 8 yrs)		12			25								37
													0
													0
2025 Base Volumes		**577**	**0**	**1**	**1140**		**0**		**0**				**1718**
2030 Base Volumes		**584**	**0**	**1**	**1156**		**0**		**0**				**1741**

ENTER = **102**
EXIT = **38**

Trip Assignment % - New Enter					51.0%								
Trip Assignment % - New Exit		51.0%											
New Trips		19			52								**71**
Base Redistribution		-10		-1	-24								**-35**
2025 Projected Volumes		**586**			**1168**								**1754**
2030 Projected Volumes		**593**			**1184**								**1777**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts		**1142**	**0**	**0**	**638**		**0**		**0**				**1780**
Balancing													0
2022 Existing Volumes (Balanced)		**1142**	**0**	**0**	**638**		**0**		**0**				**1780**
Base growth (0.27% compounded for 3 yrs)		9			5								14
Base growth (0.27% compounded for 8 yrs)		25			14								39
													0
													0
2025 Base Volumes		**1151**	**0**	**0**	**643**		**0**		**0**				**1794**
2030 Base Volumes		**1167**	**0**	**0**	**652**		**0**		**0**				**1819**

ENTER = **73**
EXIT = **109**

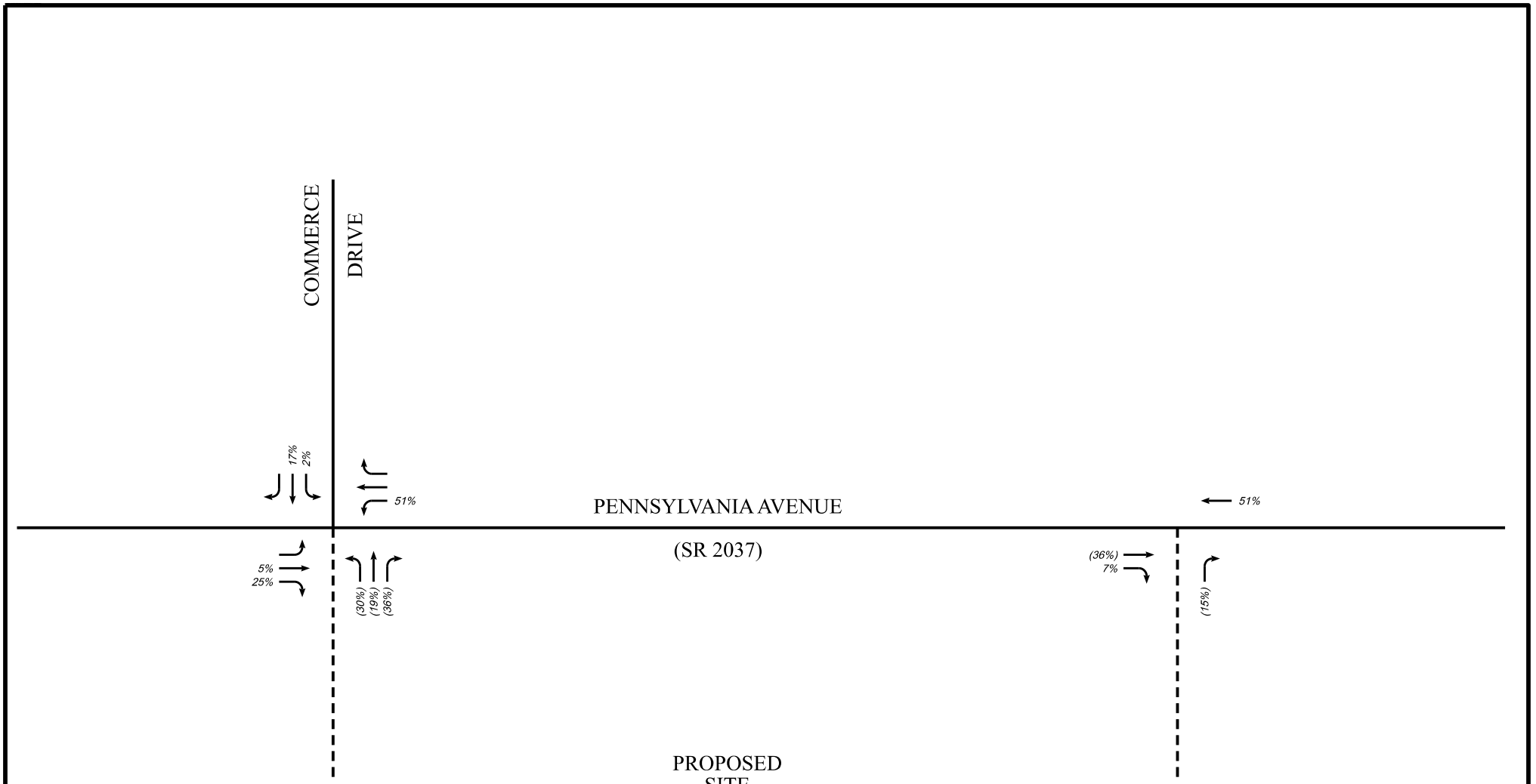
Trip Assignment % - New Enter					51.0%								
Trip Assignment % - New Exit		51.0%											
New Trips		56			37								**93**
Base Redistribution		-22			-12								**-34**
2025 Projected Volumes		**1185**			**668**								**1853**
2030 Projected Volumes		**1201**			**677**								**1878**

Time Period: Saturday Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing Counts		**556**	**0**	**0**	**590**		**0**		**0**				**1146**
Balancing													0
2022 Existing Volumes (Balanced)		**556**	**0**	**0**	**590**	**0**	**0**		**0**				**1146**
Base growth (0.27% compounded for 3 yrs)		5			5								10
Base growth (0.27% compounded for 8 yrs)		12			13								25
													0
													0
2025 Base Volumes		**561**	**0**	**0**	**595**		**0**		**0**				**1156**
2030 Base Volumes		**568**	**0**	**0**	**603**		**0**		**0**				**1171**

ENTER = **151**
EXIT = **151**

Trip Assignment % - New Enter					51.0%								
Trip Assignment % - New Exit		51.0%											
New Trips		77			77								**154**
Base Redistribution		-13			-10								**-23**
2025 Projected Volumes		**625**			**662**								**1287**
2030 Projected Volumes		**632**			**670**								**1302**



KEY:

- - - - - PROPOSED DRIVEWAY

SCHEMATIC DRAWING:NOT TO SCALE

N

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FIGURE D-1

BMW CAR DEALERSHIP REDEVELOPMENT
WEEKDAY AND WEEKEND PEAK HOUR
NEW TRIP ASSIGNMENT

APPENDIX E

Critical/Follow-Up Gap Data

CRITICAL HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46

$t_{c,x} = t_{c,\,base} + t_{c,HV} * P_{HV} + t_{c,G} * G - t_{3,LT}$

where:

$t_{c,x}$ = critical headway for movement x (s)
$t_{c,base}$ = base crtitcal headway from Chapter 10 of PennDOT Publication 46
$t_{c,HV}$ = adjustment factor for heavy vehciles (1.0 for major streets with one lane in each direction; 2.0 for major streets with two or three lanes in each direction) (s)
P_{HV} = proportion of heavy vehciles for movement (expressed as a decimal; e.g., P_{HV}=0.02 for 2% heavy vehciles)
$t_{c,G}$ = adjustment factor for grade (0.1 for Movement 9 and 12; 0.2 for Movements 7,8,10, and 11) (s)
G = percent grade (expressed as an integer; e.g., G= -2 for a 2% downhill grade)
$t_{c,base}$ = adjustment factor for intersction geometry (0.7 for minor street left-turn movement at three-leg intersections; 0.0 otherwise) (s)

LEFT TURN FROM MAJOR ROADWAY - TWO LANES ($t_{c,\,base}$ = 4.3)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
5	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
7	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
8	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
9	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
10	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4

LEFT TURN FROM MINOR ROADWAY - TWO LANES - 4-LEG INTERSECTION ($t_{c,\,base}$ = 7.1)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
1	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
2	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
3	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
4	7.1	6.9	7.3	6.7	7.5	6.5	7.7	6.3	7.9	6.1	8.1	5.9	8.3	5.7	8.5	5.5	8.7	5.3	8.9	5.1	9.1
5	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
6	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
7	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
8	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
9	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2
10	7.2	7.0	7.4	6.8	7.6	6.6	7.8	6.4	8.0	6.2	8.2	6.0	8.4	5.8	8.6	5.6	8.8	5.4	9.0	5.2	9.2

THROUGH TRAFFIC ON MINOR ROADWAY - TWO LANES ($t_{c,\,base}$ = 6.5)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
1	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
2	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
3	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
4	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
5	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
6	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
7	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
8	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
9	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6
10	6.6	6.4	6.8	6.2	7.0	6.0	7.2	5.8	7.4	5.6	7.6	5.4	7.8	5.2	8.0	5.0	8.2	4.8	8.4	4.6	8.6

RIGHT TURN FROM MINOR ROADWAY - TWO LANES ($t_{c,\,base}$ = 6.2)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
1	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
2	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
3	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
4	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
5	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
6	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
7	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
8	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
9	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
10	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3

CRITICAL HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46

$t_{c,x} = t_{c,\,base} + t_{c,HV} * P_{HV} + t_{c,G} * G - t_{3,LT}$

where:

$t_{c,x}$ = critical headway for movement x (s)
$t_{c,base}$ = base crtitcal headway from Chapter 10 of PennDOT Publication 46
$t_{c,HV}$ = adjustment factor for heavy vehciles (1.0 for major streets with one lane in each direction; 2.0 for major streets with two or three lanes in each direction) (s)
P_{HV} = proportion of heavy vehciles for movement (expressed as a decimal; e.g., P_{HV}=0.02 for 2% heavy vehciles)
$t_{c,G}$ = adjustment factor for grade (0.1 for Movement 9 and 12; 0.2 for Movements 7,8,10, and 11) (s)
G = percent grade (expressed as an integer; e.g., G= -2 for a 2% downhill grade)
$t_{c,base}$ = adjustment factor for intersction geometry (0.7 for minor street left-turn movement at three-leg intersections; 0.0 otherwise) (s)

LEFT TURN FROM MAJOR ROADWAY - TWO LANES ($t_{c,\,base}$ = 4.3)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
5	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
7	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
8	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
9	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
10	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4

LEFT TURN FROM MINOR ROADWAY - TWO LANES - 3-LEG INTERSECTION ($t_{c,\,base}$ = 7.1)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
1	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
2	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
3	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
4	6.4	6.2	6.6	6.0	6.8	5.8	7.0	5.6	7.2	5.4	7.4	5.2	7.6	5.0	7.8	4.8	8.0	4.6	8.2	4.4	8.4
5	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
6	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
7	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
8	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
9	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5
10	6.5	6.3	6.7	6.1	6.9	5.9	7.1	5.7	7.3	5.5	7.5	5.3	7.7	5.1	7.9	4.9	8.1	4.7	8.3	4.5	8.5

RIGHT TURN FROM MINOR ROADWAY - TWO LANES ($t_{c,\,base}$ = 6.2)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
1	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
2	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
3	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
4	6.2	6.1	6.3	6.0	6.4	5.9	6.5	5.8	6.6	5.7	6.7	5.6	6.8	5.5	6.9	5.4	7.0	5.3	7.1	5.2	7.2
5	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
6	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
7	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
8	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
9	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3
10	6.3	6.2	6.4	6.1	6.5	6.0	6.6	5.9	6.7	5.8	6.8	5.7	6.9	5.6	7.0	5.5	7.1	5.4	7.2	5.3	7.3

FOLLOW-UP HEADWAY CALCULATIONS FOR TWSC INTERSECTION WITHIN SUBURBAN LAND USE CONTEXT
BASED ON PENNSYLVANIA DEFAULT VALUES FROM CHAPTER 10 OF PENNDOT PUBLICATION 46

$t_{f,x} = t_{f,\,base} + t_{f,HV} * P_{HV}$

where:

$t_{f,x}$ = follow-up headway for movement x (s)
$t_{f,base}$ = base follow-up headway from Chapter 10 of PennDOT Publication 46
$t_{f,HV}$ = adjustment factor for heavy vehciles (0.9 for major streets with one lane in each direction; 1.0 for major streets with two or three lanes in each direction) (s)
P_{HV} = proportion of heavy vehciles for movement (expressed as a decimal; e.g., P_{HV}=0.02 for 2% heavy vehciles)

LEFT TURN FROM MAJOR ROADWAY - TWO LANES ($t_{f,\,base}$ = 3.0)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
6	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
7	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
8	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
9	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
10	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1

LEFT TURN FROM MINOR ROADWAY - TWO LANES ($t_{f,\,base}$ = 3.0)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
4	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
6	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
7	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
8	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
9	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
10	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1

THROUGH TRAFFIC ON MINOR ROADWAY - TWO LANES ($t_{f,\,base}$ = 4.0)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
1	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
2	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
3	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
6	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
7	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
8	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
9	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
10	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1

RIGHT TURN FROM MINOR ROADWAY - TWO LANES ($t_{f,\,base}$ = 3.1)

GRADE	0	-1	1	-2	2	-3	3	-4	4	-5	5	-6	6	-7	7	-8	8	-9	9	-10	10
HV %																					
0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
2	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
3	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
4	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
5	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
6	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
7	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
8	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
9	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
10	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2

APPENDIX F

Capacity Analyses

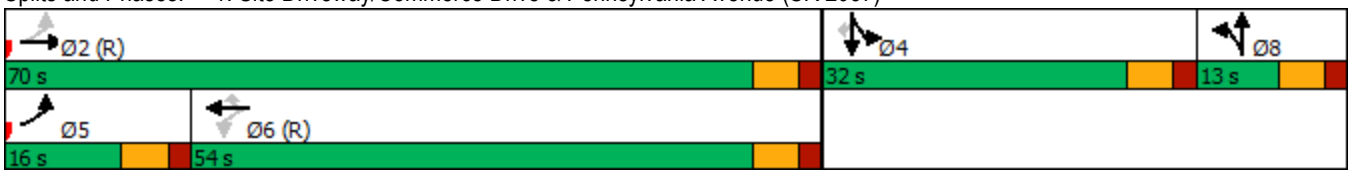
2022 Existing Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	420	9	19	464	654	7	4	8	140	9	139
Future Volume (vph)	219	420	9	19	464	654	7	4	8	140	9	139
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	12	12	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	1.00						0.98		1.00	1.00	0.99
Frt		0.997				0.850		0.943				0.850
Flt Protected	0.950			0.950				0.982		0.950	0.958	
Satd. Flow (prot)	1573	3549	0	1588	3133	1492	0	1647	0	1404	1462	1422
Flt Permitted	0.426			0.496				0.982		0.950	0.958	
Satd. Flow (perm)	704	3549	0	829	3133	1492	0	1637	0	1400	1458	1401
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				674		8				143
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		92			155			162			498	
Travel Time (s)		1.8			3.0			3.7			9.7	
Confl. Peds. (#/hr)	4		4				4		4	2		2
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
Heavy Vehicles (%)	2%	3%	0%	0%	5%	2%	0%	0%	0%	8%	11%	4%
Adj. Flow (vph)	226	433	9	20	478	674	7	4	8	144	9	143
Shared Lane Traffic (%)										47%		
Lane Group Flow (vph)	226	442	0	20	478	674	0	19	0	76	77	143
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	11.0
Total Split (s)	16.0	70.0		54.0	54.0	54.0	13.0	13.0		32.0	32.0	32.0
Total Split (%)	13.9%	60.9%		47.0%	47.0%	47.0%	11.3%	11.3%		27.8%	27.8%	27.8%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	

Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Avenue (SR 2037)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	219	420	9	19	464	654	7	4	8	140	9	139
Future Volume (veh/h)	219	420	9	19	464	654	7	4	8	140	9	139
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.99
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	1809	1866	1911	1794	1724	1766	1800	1800	1800	1688	1646	1744
Adj Flow Rate, veh/h	226	433	9	20	478	0	7	4	2	150	0	101
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, %	2	3	0	0	5	2	0	0	0	8	11	4
Cap, veh/h	687	2636	55	629	2045		21	12	6	334	0	153
Arrive On Green	0.07	0.74	0.73	0.62	0.62	0.00	0.01	0.02	0.01	0.10	0.00	0.10
Sat Flow, veh/h	1723	3552	74	907	3276	1497	915	523	261	3215	0	1469
Grp Volume(v), veh/h	226	216	226	20	478	0	13	0	0	150	0	101
Grp Sat Flow(s),veh/h/ln	1723	1773	1853	907	1638	1497	1698	0	0	1607	0	1469
Q Serve(g_s), s	4.9	4.1	4.1	1.0	7.4	0.0	0.9	0.0	0.0	5.0	0.0	7.6
Cycle Q Clear(g_c), s	4.9	4.1	4.1	1.0	7.4	0.0	0.9	0.0	0.0	5.0	0.0	7.6
Prop In Lane	1.00		0.04	1.00		1.00	0.54		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	687	1316	1375	629	2045		40	0	0	334	0	153
V/C Ratio(X)	0.33	0.16	0.16	0.03	0.23		0.33	0.00	0.00	0.45	0.00	0.66
Avail Cap(c_a), veh/h	724	1316	1375	629	2045		118	0	0	755	0	345
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.7	4.4	4.4	8.3	9.5	0.0	55.6	0.0	0.0	48.4	0.0	49.6
Incr Delay (d2), s/veh	0.3	0.3	0.3	0.1	0.3	0.0	4.6	0.0	0.0	0.9	0.0	4.8
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(95%),veh/ln	2.8	2.4	2.6	0.4	4.6	0.0	0.8	0.0	0.0	3.7	0.0	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.0	4.6	4.6	8.4	9.8	0.0	60.2	0.0	0.0	49.4	0.0	54.4
LnGrp LOS	A	A	A	A	A		E	A	A	D	A	D
Approach Vol, veh/h		668			498			13			251	
Approach Delay, s/veh		5.1			9.7			60.2			51.4	
Approach LOS		A			A			E			D	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		90.3		17.0	13.5	76.8		7.7				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		64.0		26.0	10.0	48.0		7.0				
Max Q Clear Time (g_c+I1), s		6.6		10.1	7.4	9.9		2.9				
Green Ext Time (p_c), s		1.6		0.9	0.2	2.2		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	15.3	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	676	0	0	601	0	2
Future Volume (vph)	676	0	0	601	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	15
Grade (%)	0%			0%	-1%	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3320	0	0	3288	0	1721
Flt Permitted						
Satd. Flow (perm)	3320	0	0	3288	0	1721
Link Speed (mph)	35			35	30	
Link Distance (ft)	1190			92	164	
Travel Time (s)	23.2			1.8	3.7	
Confl. Peds. (#/hr)			4		9	9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	4%	0%	0%
Adj. Flow (vph)	697	0	0	620	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	697	0	0	620	0	2
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	676	0	0	601	0	2
Future Vol, veh/h	676	0	0	601	0	2
Conflicting Peds, #/hr	0	0	4	0	9	9
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	-1	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	0	0	4	0	0
Mvmt Flow	697	0	0	620	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	358
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.8
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.1
Pot Cap-1 Maneuver	-	0	0	-	0	686
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	680
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	680	-	-
HCM Lane V/C Ratio	0.003	-	-
HCM Control Delay (s)	10.3	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	566	2	4	1119	1	0
Future Volume (vph)	566	2	4	1119	1	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	15	12	10	16	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.999					
Flt Protected					0.950	
Satd. Flow (prot)	3254	0	0	3099	1957	0
Flt Permitted					0.950	
Satd. Flow (perm)	3254	0	0	3099	1957	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	155			113	194	
Travel Time (s)	3.0			2.2	4.4	
Confl. Peds. (#/hr)			1		2	2
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	5%	0%	0%	3%	0%	0%
Adj. Flow (vph)	572	2	4	1130	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	574	0	0	1134	1	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↾	
Traffic Vol, veh/h	566	2	4	1119	1	0
Future Vol, veh/h	566	2	4	1119	1	0
Conflicting Peds, #/hr	0	0	1	0	2	2
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	-2	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	5	0	0	3	0	0
Mvmt Flow	572	2	4	1130	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	575	0	1149	290
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	575	-
Critical Hdwy	-	-	4.3	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	*967	-	*366	*936
Stage 1	-	-	-	-	*967	-
Stage 2	-	-	-	-	*638	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*966	-	*360	*933
Mov Cap-2 Maneuver	-	-	-	-	*360	-
Stage 1	-	-	-	-	*966	-
Stage 2	-	-	-	-	*630	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	360	-	-	* 966	-
HCM Lane V/C Ratio	0.003	-	-	0.004	-
HCM Control Delay (s)	15	-	-	8.7	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	572	0	1	1138	0	0
Future Volume (vph)	572	0	1	1138	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	3288	0	0	3542	1697	0
Flt Permitted						
Satd. Flow (perm)	3288	0	0	3542	1697	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	113			65	161	
Travel Time (s)	2.2			1.3	3.7	
Confl. Peds. (#/hr)		1	3		6	6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	0%	0%	3%	0%	0%
Adj. Flow (vph)	584	0	1	1161	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	584	0	0	1162	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	572	0	1	1138	0	0
Future Vol, veh/h	572	0	1	1138	0	0
Conflicting Peds, #/hr	0	1	3	0	6	6
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	-2	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	4	0	0	3	0	0
Mvmt Flow	584	0	1	1161	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	587	0	1176	301
Stage 1	-	-	-	-	587	-
Stage 2	-	-	-	-	589	-
Critical Hdwy	-	-	4.3	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	*955	-	*359	*924
Stage 1	-	-	-	-	*955	-
Stage 2	-	-	-	-	*628	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*952	-	*355	*915
Mov Cap-2 Maneuver	-	-	-	-	*355	-
Stage 1	-	-	-	-	*953	-
Stage 2	-	-	-	-	*622	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	* 952	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	8.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	572	0	1	1131	0	0
Future Volume (vph)	572	0	1	1131	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	11	11	12	12
Grade (%)	0%			-1%	-1%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	3288	0	0	3226	1809	0
Flt Permitted						
Satd. Flow (perm)	3288	0	0	3226	1809	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	65			652	111	
Travel Time (s)	1.3			12.7	2.5	
Confl. Peds. (#/hr)		1	3		7	7
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	4%	0%	0%	3%	0%	0%
Adj. Flow (vph)	578	0	1	1142	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	578	0	0	1143	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	572	0	1	1131	0	0
Future Vol, veh/h	572	0	1	1131	0	0
Conflicting Peds, #/hr	0	1	3	0	7	7
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	-	-	-1	-1	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	4	0	0	3	0	0
Mvmt Flow	578	0	1	1142	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	581	0	1161	299
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	580	-
Critical Hdwy	-	-	4.3	-	6.6	6.8
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	*955	-	*354	*924
Stage 1	-	-	-	-	*955	-
Stage 2	-	-	-	-	*614	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*952	-	*350	*915
Mov Cap-2 Maneuver	-	-	-	-	*350	-
Stage 1	-	-	-	-	*952	-
Stage 2	-	-	-	-	*608	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	* 952	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	8.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

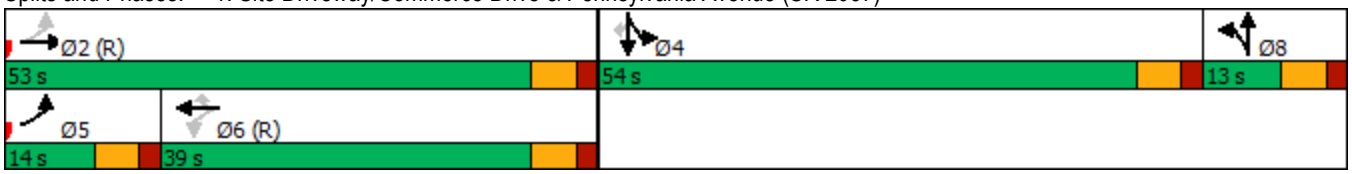
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	555	9	12	355	276	10	6	14	562	2	268
Future Volume (vph)	192	555	9	12	355	276	10	6	14	562	2	268
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	12	12	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	1.00								1.00	1.00	0.99
Frt		0.998				0.850		0.939				0.850
Flt Protected	0.950			0.950				0.984		0.950	0.953	
Satd. Flow (prot)	1588	3622	0	1588	3257	1478	0	1663	0	1486	1545	1464
Flt Permitted	0.431			0.417				0.984		0.950	0.953	
Satd. Flow (perm)	720	3622	0	697	3257	1478	0	1663	0	1485	1544	1446
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				303		15				295
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		92			155			162			498	
Travel Time (s)		1.8			3.0			3.7			9.7	
Confl. Peds. (#/hr)	1		1							1		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	0%	0%	1%	3%	0%	0%	0%	2%	0%	1%
Adj. Flow (vph)	211	610	10	13	390	303	11	7	15	618	2	295
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	211	620	0	13	390	303	0	33	0	309	311	295
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	11.0
Total Split (s)	14.0	53.0		39.0	39.0	39.0	13.0	13.0		54.0	54.0	54.0
Total Split (%)	11.7%	44.2%		32.5%	32.5%	32.5%	10.8%	10.8%		45.0%	45.0%	45.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 108 (90%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	

Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Avenue (SR 2037)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	555	9	12	355	276	10	6	14	562	2	268
Future Volume (veh/h)	192	555	9	12	355	276	10	6	14	562	2	268
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1823	1896	1911	1794	1780	1752	1800	1800	1800	1772	1800	1786
Adj Flow Rate, veh/h	211	610	10	13	390	0	11	7	3	619	0	154
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	0	0	1	3	0	0	0	2	0	1
Cap, veh/h	609	2230	37	444	1685		26	17	7	779	0	349
Arrive On Green	0.08	0.61	0.61	0.50	0.50	0.00	0.02	0.03	0.02	0.23	0.00	0.23
Sat Flow, veh/h	1736	3627	59	771	3383	1485	896	570	244	3375	0	1512
Grp Volume(v), veh/h	211	303	317	13	390	0	21	0	0	619	0	154
Grp Sat Flow(s),veh/h/ln	1736	1801	1885	771	1691	1485	1711	0	0	1688	0	1512
Q Serve(g_s), s	6.7	9.3	9.4	1.0	7.8	0.0	1.5	0.0	0.0	20.7	0.0	10.5
Cycle Q Clear(g_c), s	6.7	9.3	9.4	1.0	7.8	0.0	1.5	0.0	0.0	20.7	0.0	10.5
Prop In Lane	1.00		0.03	1.00		1.00	0.52		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	609	1107	1159	444	1685		50	0	0	779	0	349
V/C Ratio(X)	0.35	0.27	0.27	0.03	0.23		0.42	0.00	0.00	0.79	0.00	0.44
Avail Cap(c_a), veh/h	609	1107	1159	444	1685		114	0	0	1378	0	617
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.8	10.7	10.7	15.4	17.1	0.0	57.6	0.0	0.0	43.5	0.0	39.5
Incr Delay (d2), s/veh	0.3	0.6	0.6	0.1	0.3	0.0	5.5	0.0	0.0	1.9	0.0	0.9
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(95%),veh/ln	4.6	6.7	7.0	0.4	5.5	0.0	1.3	0.0	0.0	13.6	0.0	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	11.3	11.3	15.5	17.4	0.0	63.0	0.0	0.0	45.3	0.0	40.4
LnGrp LOS	B	B	B	B	B		E	A	A	D	A	D
Approach Vol, veh/h		831			403			21			773	
Approach Delay, s/veh		11.5			17.3			63.0			44.4	
Approach LOS		B			B			E			D	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		78.8		32.7	14.0	64.8		8.5				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		47.0		48.0	8.0	33.0		7.0				
Max Q Clear Time (g_c+I1), s		11.8		23.2	9.2	10.3		3.5				
Green Ext Time (p_c), s		2.3		3.5	0.0	1.6		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			25.7									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	765	2	0	622	1	3
Future Volume (vph)	765	2	0	622	1	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	15
Grade (%)	0%			0%	-1%	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected					0.950	
Satd. Flow (prot)	3386	0	0	3386	0	1721
Flt Permitted					0.950	
Satd. Flow (perm)	3386	0	0	3386	0	1721
Link Speed (mph)	35			35	30	
Link Distance (ft)	1190			92	164	
Travel Time (s)	23.2			1.8	3.7	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	789	2	0	641	1	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	791	0	0	641	1	3
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	765	2	0	622	1	3
Future Vol, veh/h	765	2	0	622	1	3
Conflicting Peds, #/hr	0	0	0	0	3	3
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	-1	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	789	2	0	641	1	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1114	399
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	324	-
Critical Hdwy	-	-	-	-	6.6	6.8
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	-	-	3	3.1
Pot Cap-1 Maneuver	-	-	0	-	*239	646
Stage 1	-	-	0	-	*479	-
Stage 2	-	-	0	-	*998	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	*238	644
Mov Cap-2 Maneuver	-	-	-	-	*238	-
Stage 1	-	-	-	-	*479	-
Stage 2	-	-	-	-	*995	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	644	-	-	-
HCM Lane V/C Ratio	0.005	-	-	-
HCM Control Delay (s)	10.6	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1118	0	0	648	1	5
Future Volume (vph)	1118	0	0	648	1	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	15	12	10	16	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt					0.884	
Flt Protected					0.993	
Satd. Flow (prot)	3386	0	0	3129	1809	0
Flt Permitted					0.993	
Satd. Flow (perm)	3386	0	0	3129	1809	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	155			113	194	
Travel Time (s)	3.0			2.2	4.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	1242	0	0	720	1	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1242	0	0	720	7	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↱	
Traffic Vol, veh/h	1118	0	0	648	1	5
Future Vol, veh/h	1118	0	0	648	1	5
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	-2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	1242	0	0	720	1	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1602	621
Stage 1	-	-	-	-	1242	-
Stage 2	-	-	-	-	360	-
Critical Hdwy	-	-	-	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3	3.1
Pot Cap-1 Maneuver	-	0	0	-	295	*686
Stage 1	-	0	0	-	690	-
Stage 2	-	0	0	-	809	-
Platoon blocked, %	-			-	1	1
Mov Cap-1 Maneuver	-	-	-	-	295	*686
Mov Cap-2 Maneuver	-	-	-	-	295	-
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	809	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	562	-	-
HCM Lane V/C Ratio	0.012	-	-
HCM Control Delay (s)	11.5	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1149	0	0	633	0	0
Future Volume (vph)	1149	0	0	633	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	3353	0	0	3576	1697	0
Flt Permitted						
Satd. Flow (perm)	3353	0	0	3576	1697	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	113			65	161	
Travel Time (s)	2.2			1.3	3.7	
Confl. Peds. (#/hr)					2	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Adj. Flow (vph)	1277	0	0	703	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1277	0	0	703	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1149	0	0	633	0	0
Future Vol, veh/h	1149	0	0	633	0	0
Conflicting Peds, #/hr	0	0	0	0	2	2
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	-2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1277	0	0	703	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1277	0	1631	641
Stage 1	-	-	-	-	1277	-
Stage 2	-	-	-	-	354	-
Critical Hdwy	-	-	4.3	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	*681	-	*303	*659
Stage 1	-	-	-	-	*681	-
Stage 2	-	-	-	-	*815	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*681	-	*302	*657
Mov Cap-2 Maneuver	-	-	-	-	*302	-
Stage 1	-	-	-	-	*681	-
Stage 2	-	-	-	-	*813	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	* 681	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1142	0	0	638	0	0
Future Volume (vph)	1142	0	0	638	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	11	11	12	12
Grade (%)	0%			-1%	-1%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	3386	0	0	3257	1809	0
Flt Permitted						
Satd. Flow (perm)	3386	0	0	3257	1809	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	65			652	111	
Travel Time (s)	1.3			12.7	2.5	
Confl. Peds. (#/hr)					1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	1269	0	0	709	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1269	0	0	709	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1142	0	0	638	0	0
Future Vol, veh/h	1142	0	0	638	0	0
Conflicting Peds, #/hr	0	0	0	0	1	1
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	-	-	-1	-1	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	1269	0	0	709	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1269	0	1625	636
Stage 1	-	-	-	-	1269	-
Stage 2	-	-	-	-	356	-
Critical Hdwy	-	-	4.3	-	6.6	6.8
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	*681	-	*297	*659
Stage 1	-	-	-	-	*681	-
Stage 2	-	-	-	-	*797	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*681	-	*297	*658
Mov Cap-2 Maneuver	-	-	-	-	*297	-
Stage 1	-	-	-	-	*681	-
Stage 2	-	-	-	-	*796	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

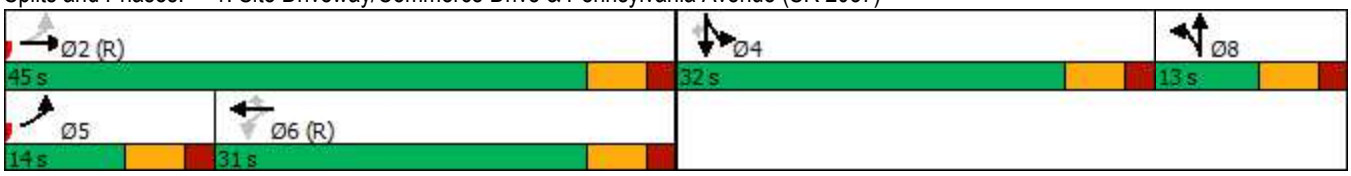
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	* 681	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	377	6	10	402	176	5	4	9	161	6	117
Future Volume (vph)	121	377	6	10	402	176	5	4	9	161	6	117
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	12	12	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.998				0.850		0.932				0.850
Flt Protected	0.950			0.950				0.986		0.950	0.956	
Satd. Flow (prot)	1604	3588	0	1588	3225	1507	0	1654	0	1516	1580	1479
Flt Permitted	0.441			0.515				0.986		0.950	0.956	
Satd. Flow (perm)	745	3588	0	861	3225	1507	0	1654	0	1516	1580	1479
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				185		9				182
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		92			155			162			498	
Travel Time (s)		1.8			3.0			3.7			9.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	127	397	6	11	423	185	5	4	9	169	6	123
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	127	403	0	11	423	185	0	18	0	88	87	123
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	11.0
Total Split (s)	14.0	45.0		31.0	31.0	31.0	13.0	13.0		32.0	32.0	32.0
Total Split (%)	15.6%	50.0%		34.4%	34.4%	34.4%	14.4%	14.4%		35.6%	35.6%	35.6%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 34 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Avenue (SR 2037)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	377	6	10	402	176	5	4	9	161	6	117
Future Volume (veh/h)	121	377	6	10	402	176	5	4	9	161	6	117
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1837	1881	1911	1794	1766	1780	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	127	397	5	11	423	0	5	4	5	173	0	63
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	0	0	2	1	0	0	0	0	0	0
Cap, veh/h	709	2566	32	616	1908		16	13	16	329	0	147
Arrive On Green	0.09	0.71	0.70	0.57	0.57	0.00	0.02	0.03	0.02	0.10	0.00	0.10
Sat Flow, veh/h	1750	3615	45	943	3356	1509	594	475	594	3429	0	1525
Grp Volume(v), veh/h	127	196	206	11	423	0	14	0	0	173	0	63
Grp Sat Flow(s),veh/h/ln	1750	1787	1873	943	1678	1509	1663	0	0	1714	0	1525
Q Serve(g_s), s	2.2	3.2	3.2	0.5	5.6	0.0	0.7	0.0	0.0	4.3	0.0	3.5
Cycle Q Clear(g_c), s	2.2	3.2	3.2	0.5	5.6	0.0	0.7	0.0	0.0	4.3	0.0	3.5
Prop In Lane	1.00		0.02	1.00		1.00	0.36		0.36	1.00		1.00
Lane Grp Cap(c), veh/h	709	1268	1329	616	1908		46	0	0	329	0	147
V/C Ratio(X)	0.18	0.15	0.15	0.02	0.22		0.31	0.00	0.00	0.53	0.00	0.43
Avail Cap(c_a), veh/h	735	1268	1329	616	1908		148	0	0	1029	0	458
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.3	4.3	4.3	8.5	9.6	0.0	43.3	0.0	0.0	38.7	0.0	38.4
Incr Delay (d2), s/veh	0.1	0.3	0.2	0.1	0.3	0.0	3.7	0.0	0.0	1.3	0.0	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(95%),veh/ln	1.2	1.8	1.9	0.2	3.5	0.0	0.6	0.0	0.0	3.3	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.4	4.5	4.5	8.5	9.9	0.0	47.0	0.0	0.0	40.0	0.0	40.3
LnGrp LOS	A	A	A	A	A		D	A	A	D	A	D
Approach Vol, veh/h		529			434			14			236	
Approach Delay, s/veh		4.7			9.8			47.0			40.1	
Approach LOS		A			A			D			D	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		68.9		13.6	12.7	56.2		7.5				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		39.0		26.0	8.0	25.0		7.0				
Max Q Clear Time (g_c+I1), s		5.7		6.8	4.7	8.1		2.7				
Green Ext Time (p_c), s		1.4		0.8	0.1	1.6		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	13.9
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	503	0	0	518	0	2
Future Volume (vph)	503	0	0	518	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	15
Grade (%)	0%			0%	-1%	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3386	0	0	3386	0	1721
Flt Permitted						
Satd. Flow (perm)	3386	0	0	3386	0	1721
Link Speed (mph)	35			35	30	
Link Distance (ft)	1190			92	164	
Travel Time (s)	23.2			1.8	3.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	524	0	0	540	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	524	0	0	540	0	2
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	503	0	0	518	0	2
Future Vol, veh/h	503	0	0	518	0	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	-1	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	524	0	0	540	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	262
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.8
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.1
Pot Cap-1 Maneuver	-	0	0	-	0	791
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	791
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	791	-	-
HCM Lane V/C Ratio	0.003	-	-
HCM Control Delay (s)	9.6	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	557	1	0	577	2	2
Future Volume (vph)	557	1	0	577	2	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	15	12	10	16	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt					0.932	
Flt Protected					0.976	
Satd. Flow (prot)	3386	0	0	3160	1874	0
Flt Permitted					0.976	
Satd. Flow (perm)	3386	0	0	3160	1874	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	155			113	194	
Travel Time (s)	3.0			2.2	4.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	574	1	0	595	2	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	575	0	0	595	4	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↱	
Traffic Vol, veh/h	557	1	0	577	2	2
Future Vol, veh/h	557	1	0	577	2	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	-2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	574	1	0	595	2	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	873	288
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	298	-
Critical Hdwy	-	-	-	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3	3.1
Pot Cap-1 Maneuver	-	-	0	-	576	*943
Stage 1	-	-	0	-	958	-
Stage 2	-	-	0	-	867	-
Platoon blocked, %	-	-		-	1	1
Mov Cap-1 Maneuver	-	-	-	-	576	*943
Mov Cap-2 Maneuver	-	-	-	-	576	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	867	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	715	-	-	-
HCM Lane V/C Ratio	0.006	-	-	-
HCM Control Delay (s)	10.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	557	0	0	589	0	0
Future Volume (vph)	557	0	0	589	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	3386	0	0	3576	1697	0
Flt Permitted						
Satd. Flow (perm)	3386	0	0	3576	1697	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	113			65	161	
Travel Time (s)	2.2			1.3	3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	605	0	0	640	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	605	0	0	640	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	557	0	0	589	0	0
Future Vol, veh/h	557	0	0	589	0	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	-2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	605	0	0	640	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	605	0	925	303
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	320	-
Critical Hdwy	-	-	4.3	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	951	-	545	*931
Stage 1	-	-	-	-	946	-
Stage 2	-	-	-	-	846	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	951	-	545	*931
Mov Cap-2 Maneuver	-	-	-	-	545	-
Stage 1	-	-	-	-	946	-
Stage 2	-	-	-	-	846	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	951	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	556	0	0	590	0	0
Future Volume (vph)	556	0	0	590	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	11	11	12	12
Grade (%)	0%			-1%	-1%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	3386	0	0	3257	1809	0
Flt Permitted						
Satd. Flow (perm)	3386	0	0	3257	1809	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	65			652	111	
Travel Time (s)	1.3			12.7	2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	604	0	0	641	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	604	0	0	641	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	556	0	0	590	0	0
Future Vol, veh/h	556	0	0	590	0	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	-	-	-1	-1	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	604	0	0	641	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	604	0	925	302
Stage 1	-	-	-	-	604	-
Stage 2	-	-	-	-	321	-
Critical Hdwy	-	-	4.3	-	6.6	6.8
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	952	-	532	*931
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	830	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	952	-	532	*931
Mov Cap-2 Maneuver	-	-	-	-	532	-
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	830	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	952	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

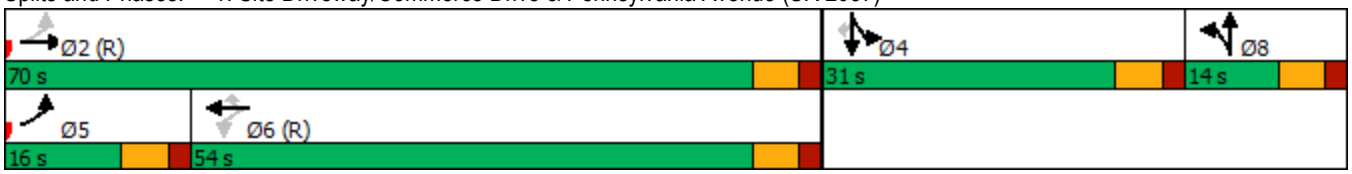
2025 Base Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	221	423	9	19	468	659	7	4	8	141	9	140
Future Volume (vph)	221	423	9	19	468	659	7	4	8	141	9	140
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	12	12	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	1.00						0.98		1.00	1.00	0.99
Frt		0.997				0.850		0.943				0.850
Flt Protected	0.950			0.950				0.982		0.950	0.958	
Satd. Flow (prot)	1573	3549	0	1588	3133	1492	0	1648	0	1404	1462	1422
Flt Permitted	0.423			0.494				0.982		0.950	0.958	
Satd. Flow (perm)	699	3549	0	826	3133	1492	0	1640	0	1400	1458	1401
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				679		8				144
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		92			155			162			498	
Travel Time (s)		1.8			3.0			3.7			9.7	
Confl. Peds. (#/hr)	4		4				4		4	2		2
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
Heavy Vehicles (%)	2%	3%	0%	0%	5%	2%	0%	0%	0%	8%	11%	4%
Adj. Flow (vph)	228	436	9	20	482	679	7	4	8	145	9	144
Shared Lane Traffic (%)										47%		
Lane Group Flow (vph)	228	445	0	20	482	679	0	19	0	77	77	144
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	11.0
Total Split (s)	16.0	70.0		54.0	54.0	54.0	14.0	14.0		31.0	31.0	31.0
Total Split (%)	13.9%	60.9%		47.0%	47.0%	47.0%	12.2%	12.2%		27.0%	27.0%	27.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	

Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Avenue (SR 2037)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	221	423	9	19	468	659	7	4	8	141	9	140
Future Volume (veh/h)	221	423	9	19	468	659	7	4	8	141	9	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.99
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	1809	1866	1911	1794	1724	1766	1800	1800	1800	1688	1646	1744
Adj Flow Rate, veh/h	228	436	9	20	482	0	7	4	2	151	0	102
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, %	2	3	0	0	5	2	0	0	0	8	11	4
Cap, veh/h	685	2635	54	627	2042		21	12	6	336	0	153
Arrive On Green	0.07	0.74	0.73	0.62	0.62	0.00	0.01	0.02	0.01	0.10	0.00	0.10
Sat Flow, veh/h	1723	3553	73	905	3276	1497	915	523	261	3215	0	1469
Grp Volume(v), veh/h	228	217	228	20	482	0	13	0	0	151	0	102
Grp Sat Flow(s),veh/h/ln	1723	1773	1853	905	1638	1497	1698	0	0	1607	0	1469
Q Serve(g_s), s	4.9	4.2	4.2	1.0	7.5	0.0	0.9	0.0	0.0	5.1	0.0	7.7
Cycle Q Clear(g_c), s	4.9	4.2	4.2	1.0	7.5	0.0	0.9	0.0	0.0	5.1	0.0	7.7
Prop In Lane	1.00		0.04	1.00		1.00	0.54		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	685	1315	1374	627	2042		40	0	0	336	0	153
V/C Ratio(X)	0.33	0.17	0.17	0.03	0.24		0.33	0.00	0.00	0.45	0.00	0.66
Avail Cap(c_a), veh/h	720	1315	1374	627	2042		133	0	0	727	0	332
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.8	4.4	4.4	8.3	9.6	0.0	55.6	0.0	0.0	48.4	0.0	49.6
Incr Delay (d2), s/veh	0.3	0.3	0.3	0.1	0.3	0.0	4.6	0.0	0.0	0.9	0.0	4.9
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(95%),veh/ln	2.8	2.5	2.6	0.4	4.7	0.0	0.8	0.0	0.0	3.7	0.0	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.1	4.6	4.6	8.4	9.8	0.0	60.2	0.0	0.0	49.3	0.0	54.4
LnGrp LOS	A	A	A	A	A		E	A	A	D	A	D
Approach Vol, veh/h		673			502			13			253	
Approach Delay, s/veh		5.1			9.8			60.2			51.4	
Approach LOS		A			A			E			D	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		90.3		17.0	13.6	76.7		7.7				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		64.0		25.0	10.0	48.0		8.0				
Max Q Clear Time (g_c+I1), s		6.7		10.2	7.4	10.0		2.9				
Green Ext Time (p_c), s		1.6		0.8	0.2	2.2		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	15.4	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	681	0	0	606	0	2
Future Volume (vph)	681	0	0	606	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	15
Grade (%)	0%			0%	-1%	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3320	0	0	3288	0	1721
Flt Permitted						
Satd. Flow (perm)	3320	0	0	3288	0	1721
Link Speed (mph)	35			35	30	
Link Distance (ft)	1190			92	164	
Travel Time (s)	23.2			1.8	3.7	
Confl. Peds. (#/hr)			4		9	9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	4%	0%	0%
Adj. Flow (vph)	702	0	0	625	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	702	0	0	625	0	2
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	681	0	0	606	0	2
Future Vol, veh/h	681	0	0	606	0	2
Conflicting Peds, #/hr	0	0	4	0	9	9
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	-1	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	0	0	4	0	0
Mvmt Flow	702	0	0	625	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	360
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.8
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.1
Pot Cap-1 Maneuver	-	0	0	-	0	684
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	678
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	678	-	-
HCM Lane V/C Ratio	0.003	-	-
HCM Control Delay (s)	10.3	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0	-	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	571	2	4	1128	1	0
Future Volume (vph)	571	2	4	1128	1	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	15	12	10	16	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.999					
Flt Protected					0.950	
Satd. Flow (prot)	3254	0	0	3099	1957	0
Flt Permitted					0.950	
Satd. Flow (perm)	3254	0	0	3099	1957	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	155			113	194	
Travel Time (s)	3.0			2.2	4.4	
Confl. Peds. (#/hr)			1		2	2
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	5%	0%	0%	3%	0%	0%
Adj. Flow (vph)	577	2	4	1139	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	579	0	0	1143	1	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	571	2	4	1128	1	0
Future Vol, veh/h	571	2	4	1128	1	0
Conflicting Peds, #/hr	0	0	1	0	2	2
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	-2	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	5	0	0	3	0	0
Mvmt Flow	577	2	4	1139	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	580	0	1159	293
Stage 1	-	-	-	-	579	-
Stage 2	-	-	-	-	580	-
Critical Hdwy	-	-	4.3	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	967	-	*359	*936
Stage 1	-	-	-	-	*967	-
Stage 2	-	-	-	-	*634	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	966	-	*354	*933
Mov Cap-2 Maneuver	-	-	-	-	*354	-
Stage 1	-	-	-	-	*966	-
Stage 2	-	-	-	-	*626	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	354	-	-	966	-
HCM Lane V/C Ratio	0.003	-	-	0.004	-
HCM Control Delay (s)	15.2	-	-	8.7	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	577	0	1	1147	0	0
Future Volume (vph)	577	0	1	1147	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	3288	0	0	3542	1697	0
Flt Permitted						
Satd. Flow (perm)	3288	0	0	3542	1697	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	113			65	161	
Travel Time (s)	2.2			1.3	3.7	
Confl. Peds. (#/hr)		1	3		6	6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	0%	0%	3%	0%	0%
Adj. Flow (vph)	589	0	1	1170	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	589	0	0	1171	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	577	0	1	1147	0	0
Future Vol, veh/h	577	0	1	1147	0	0
Conflicting Peds, #/hr	0	1	3	0	6	6
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	-2	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	4	0	0	3	0	0
Mvmt Flow	589	0	1	1170	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	592	0	1185	304
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	593	-
Critical Hdwy	-	-	4.3	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	*955	-	*353	*924
Stage 1	-	-	-	-	*955	-
Stage 2	-	-	-	-	*625	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*952	-	*350	*915
Mov Cap-2 Maneuver	-	-	-	-	*350	-
Stage 1	-	-	-	-	*953	-
Stage 2	-	-	-	-	*619	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	* 952	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	8.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	577	0	1	1140	0	0
Future Volume (vph)	577	0	1	1140	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	11	11	12	12
Grade (%)	0%			-1%	-1%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	3288	0	0	3226	1809	0
Flt Permitted						
Satd. Flow (perm)	3288	0	0	3226	1809	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	65			652	111	
Travel Time (s)	1.3			12.7	2.5	
Confl. Peds. (#/hr)		1	3		7	7
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	4%	0%	0%	3%	0%	0%
Adj. Flow (vph)	583	0	1	1152	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	583	0	0	1153	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	577	0	1	1140	0	0
Future Vol, veh/h	577	0	1	1140	0	0
Conflicting Peds, #/hr	0	1	3	0	7	7
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	-	-	-1	-1	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	4	0	0	3	0	0
Mvmt Flow	583	0	1	1152	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	586	0	1171	302
Stage 1	-	-	-	-	586	-
Stage 2	-	-	-	-	585	-
Critical Hdwy	-	-	4.3	-	6.6	6.8
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	*955	-	*348	*924
Stage 1	-	-	-	-	*955	-
Stage 2	-	-	-	-	*610	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*952	-	*343	*915
Mov Cap-2 Maneuver	-	-	-	-	*343	-
Stage 1	-	-	-	-	*952	-
Stage 2	-	-	-	-	*604	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	* 952	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	8.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

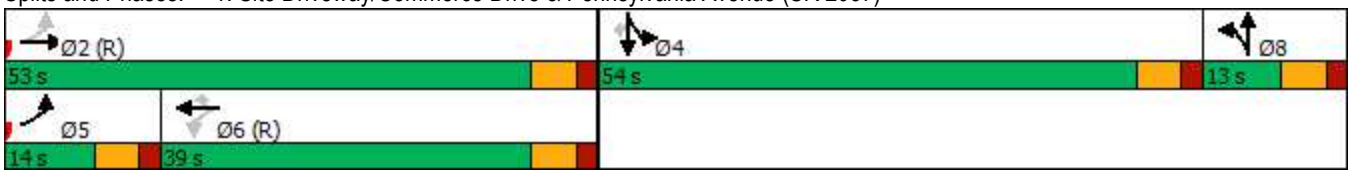
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	560	9	12	358	278	10	6	14	567	2	270
Future Volume (vph)	194	560	9	12	358	278	10	6	14	567	2	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	12	12	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	1.00								1.00	1.00	0.99
Frt		0.998				0.850		0.939				0.850
Flt Protected	0.950			0.950				0.984		0.950	0.953	
Satd. Flow (prot)	1588	3622	0	1588	3257	1478	0	1663	0	1486	1545	1464
Flt Permitted	0.428			0.415				0.984		0.950	0.953	
Satd. Flow (perm)	715	3622	0	694	3257	1478	0	1663	0	1485	1544	1446
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				305		15				297
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		92			155			162			498	
Travel Time (s)		1.8			3.0			3.7			9.7	
Confl. Peds. (#/hr)	1		1							1		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	0%	0%	1%	3%	0%	0%	0%	2%	0%	1%
Adj. Flow (vph)	213	615	10	13	393	305	11	7	15	623	2	297
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	213	625	0	13	393	305	0	33	0	311	314	297
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	11.0
Total Split (s)	14.0	53.0		39.0	39.0	39.0	13.0	13.0		54.0	54.0	54.0
Total Split (%)	11.7%	44.2%		32.5%	32.5%	32.5%	10.8%	10.8%		45.0%	45.0%	45.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 108 (90%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	

Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Avenue (SR 2037)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	194	560	9	12	358	278	10	6	14	567	2	270
Future Volume (veh/h)	194	560	9	12	358	278	10	6	14	567	2	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1823	1896	1911	1794	1780	1752	1800	1800	1800	1772	1800	1786
Adj Flow Rate, veh/h	213	615	10	13	393	0	11	7	3	624	0	156
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	0	0	1	3	0	0	0	2	0	1
Cap, veh/h	606	2224	36	441	1680		26	17	7	785	0	351
Arrive On Green	0.08	0.61	0.60	0.50	0.50	0.00	0.02	0.03	0.02	0.23	0.00	0.23
Sat Flow, veh/h	1736	3627	59	767	3383	1485	896	570	244	3375	0	1512
Grp Volume(v), veh/h	213	305	320	13	393	0	21	0	0	624	0	156
Grp Sat Flow(s),veh/h/ln	1736	1801	1885	767	1691	1485	1711	0	0	1688	0	1512
Q Serve(g_s), s	6.8	9.5	9.5	1.0	7.9	0.0	1.5	0.0	0.0	20.9	0.0	10.6
Cycle Q Clear(g_c), s	6.8	9.5	9.5	1.0	7.9	0.0	1.5	0.0	0.0	20.9	0.0	10.6
Prop In Lane	1.00		0.03	1.00		1.00	0.52		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	606	1104	1156	441	1680		50	0	0	785	0	351
V/C Ratio(X)	0.35	0.28	0.28	0.03	0.23		0.42	0.00	0.00	0.80	0.00	0.44
Avail Cap(c_a), veh/h	606	1104	1156	441	1680		114	0	0	1378	0	617
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.9	10.8	10.8	15.5	17.2	0.0	57.6	0.0	0.0	43.4	0.0	39.4
Incr Delay (d2), s/veh	0.3	0.6	0.6	0.1	0.3	0.0	5.5	0.0	0.0	1.9	0.0	0.9
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(95%),veh/ln	4.7	6.8	7.1	0.4	5.6	0.0	1.3	0.0	0.0	13.7	0.0	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.3	11.4	11.4	15.6	17.5	0.0	63.0	0.0	0.0	45.2	0.0	40.3
LnGrp LOS	B	B	B	B	B		E	A	A	D	A	D
Approach Vol, veh/h		838			406			21			780	
Approach Delay, s/veh		11.6			17.5			63.0			44.3	
Approach LOS		B			B			E			D	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		78.6		32.9	14.0	64.6		8.5				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		47.0		48.0	8.0	33.0		7.0				
Max Q Clear Time (g_c+I1), s		12.0		23.4	9.3	10.4		3.5				
Green Ext Time (p_c), s		2.3		3.5	0.0	1.6		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	25.8	
HCM 6th LOS	C	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	771	2	0	627	1	3
Future Volume (vph)	771	2	0	627	1	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	15
Grade (%)	0%			0%	-1%	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected					0.950	
Satd. Flow (prot)	3386	0	0	3386	0	1721
Flt Permitted					0.950	
Satd. Flow (perm)	3386	0	0	3386	0	1721
Link Speed (mph)	35			35	30	
Link Distance (ft)	1190			92	164	
Travel Time (s)	23.2			1.8	3.7	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	795	2	0	646	1	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	797	0	0	646	1	3
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	771	2	0	627	1	3
Future Vol, veh/h	771	2	0	627	1	3
Conflicting Peds, #/hr	0	0	0	0	3	3
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	-1	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	795	2	0	646	1	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1122	402
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	326	-
Critical Hdwy	-	-	-	-	6.6	6.8
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	-	-	3	3.1
Pot Cap-1 Maneuver	-	-	0	-	*236	643
Stage 1	-	-	0	-	*476	-
Stage 2	-	-	0	-	*998	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	*235	641
Mov Cap-2 Maneuver	-	-	-	-	*235	-
Stage 1	-	-	-	-	*476	-
Stage 2	-	-	-	-	*995	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	641	-	-	-
HCM Lane V/C Ratio	0.005	-	-	-
HCM Control Delay (s)	10.6	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1127	0	0	653	1	5
Future Volume (vph)	1127	0	0	653	1	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	15	12	10	16	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt					0.884	
Flt Protected					0.993	
Satd. Flow (prot)	3386	0	0	3129	1809	0
Flt Permitted					0.993	
Satd. Flow (perm)	3386	0	0	3129	1809	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	155			113	194	
Travel Time (s)	3.0			2.2	4.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	1252	0	0	726	1	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1252	0	0	726	7	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↱	
Traffic Vol, veh/h	1127	0	0	653	1	5
Future Vol, veh/h	1127	0	0	653	1	5
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	-2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	1252	0	0	726	1	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1615	626
Stage 1	-	-	-	-	1252	-
Stage 2	-	-	-	-	363	-
Critical Hdwy	-	-	-	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3	3.1
Pot Cap-1 Maneuver	-	0	0	-	287	*686
Stage 1	-	0	0	-	677	-
Stage 2	-	0	0	-	807	-
Platoon blocked, %	-			-	1	1
Mov Cap-1 Maneuver	-	-	-	-	287	*686
Mov Cap-2 Maneuver	-	-	-	-	287	-
Stage 1	-	-	-	-	677	-
Stage 2	-	-	-	-	807	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	557	-	-
HCM Lane V/C Ratio	0.012	-	-
HCM Control Delay (s)	11.5	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1158	0	0	638	0	0
Future Volume (vph)	1158	0	0	638	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	3353	0	0	3576	1697	0
Flt Permitted						
Satd. Flow (perm)	3353	0	0	3576	1697	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	113			65	161	
Travel Time (s)	2.2			1.3	3.7	
Confl. Peds. (#/hr)					2	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Adj. Flow (vph)	1287	0	0	709	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1287	0	0	709	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1158	0	0	638	0	0
Future Vol, veh/h	1158	0	0	638	0	0
Conflicting Peds, #/hr	0	0	0	0	2	2
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	-2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1287	0	0	709	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1287	0	1644	646
Stage 1	-	-	-	-	1287	-
Stage 2	-	-	-	-	357	-
Critical Hdwy	-	-	4.3	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	*681	-	*293	*659
Stage 1	-	-	-	-	*681	-
Stage 2	-	-	-	-	*812	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*681	-	*292	*657
Mov Cap-2 Maneuver	-	-	-	-	*292	-
Stage 1	-	-	-	-	*681	-
Stage 2	-	-	-	-	*810	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	* 681	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1151	0	0	643	0	0
Future Volume (vph)	1151	0	0	643	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	11	11	12	12
Grade (%)	0%			-1%	-1%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	3386	0	0	3257	1809	0
Flt Permitted						
Satd. Flow (perm)	3386	0	0	3257	1809	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	65			652	111	
Travel Time (s)	1.3			12.7	2.5	
Confl. Peds. (#/hr)					1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	1279	0	0	714	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1279	0	0	714	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

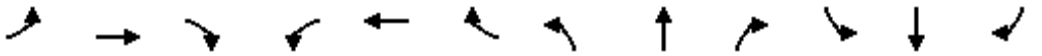
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1151	0	0	643	0	0
Future Vol, veh/h	1151	0	0	643	0	0
Conflicting Peds, #/hr	0	0	0	0	1	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-1	-1	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	1279	0	0	714	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1279	0	1637	641
Stage 1	-	-	-	-	1279	-
Stage 2	-	-	-	-	358	-
Critical Hdwy	-	-	4.3	-	6.6	6.8
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	*681	-	*288	*659
Stage 1	-	-	-	-	*681	-
Stage 2	-	-	-	-	*795	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*681	-	*288	*658
Mov Cap-2 Maneuver	-	-	-	-	*288	-
Stage 1	-	-	-	-	*681	-
Stage 2	-	-	-	-	*794	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	* 681	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

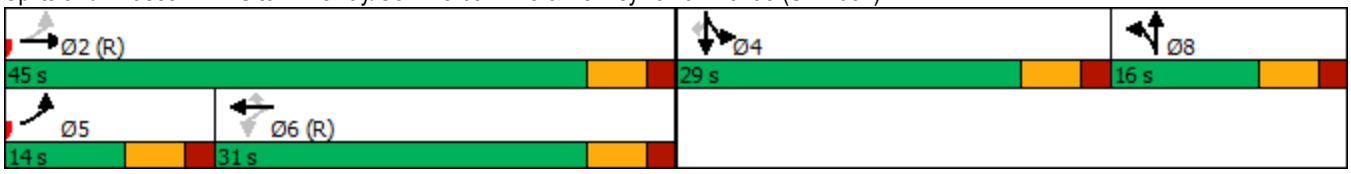
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	380	6	10	405	177	5	4	9	162	6	118
Future Volume (vph)	122	380	6	10	405	177	5	4	9	162	6	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	12	12	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.998				0.850		0.932				0.850
Flt Protected	0.950			0.950				0.986		0.950	0.955	
Satd. Flow (prot)	1604	3588	0	1588	3225	1507	0	1654	0	1516	1579	1479
Flt Permitted	0.439			0.513				0.986		0.950	0.955	
Satd. Flow (perm)	741	3588	0	858	3225	1507	0	1654	0	1516	1579	1479
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				186		9				182
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		92			155			162			498	
Travel Time (s)		1.8			3.0			3.7			9.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	128	400	6	11	426	186	5	4	9	171	6	124
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	128	406	0	11	426	186	0	18	0	89	88	124
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	11.0
Total Split (s)	14.0	45.0		31.0	31.0	31.0	16.0	16.0		29.0	29.0	29.0
Total Split (%)	15.6%	50.0%		34.4%	34.4%	34.4%	17.8%	17.8%		32.2%	32.2%	32.2%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 34 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Avenue (SR 2037)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	380	6	10	405	177	5	4	9	162	6	118
Future Volume (veh/h)	122	380	6	10	405	177	5	4	9	162	6	118
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1837	1881	1911	1794	1766	1780	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	128	400	5	11	426	0	5	4	5	175	0	64
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	0	0	2	1	0	0	0	0	0	0
Cap, veh/h	707	2565	32	614	1907		16	13	16	330	0	147
Arrive On Green	0.09	0.71	0.70	0.57	0.57	0.00	0.02	0.03	0.02	0.10	0.00	0.10
Sat Flow, veh/h	1750	3615	45	940	3356	1509	594	475	594	3429	0	1525
Grp Volume(v), veh/h	128	198	207	11	426	0	14	0	0	175	0	64
Grp Sat Flow(s),veh/h/ln	1750	1787	1873	940	1678	1509	1663	0	0	1714	0	1525
Q Serve(g_s), s	2.3	3.2	3.3	0.5	5.6	0.0	0.7	0.0	0.0	4.4	0.0	3.6
Cycle Q Clear(g_c), s	2.3	3.2	3.3	0.5	5.6	0.0	0.7	0.0	0.0	4.4	0.0	3.6
Prop In Lane	1.00		0.02	1.00		1.00	0.36		0.36	1.00		1.00
Lane Grp Cap(c), veh/h	707	1268	1329	614	1907		46	0	0	330	0	147
V/C Ratio(X)	0.18	0.16	0.16	0.02	0.22		0.31	0.00	0.00	0.53	0.00	0.44
Avail Cap(c_a), veh/h	732	1268	1329	614	1907		203	0	0	914	0	407
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.3	4.3	4.3	8.5	9.6	0.0	43.3	0.0	0.0	38.7	0.0	38.4
Incr Delay (d2), s/veh	0.1	0.3	0.3	0.1	0.3	0.0	3.7	0.0	0.0	1.3	0.0	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(95%),veh/ln	1.2	1.8	1.9	0.2	3.5	0.0	0.6	0.0	0.0	3.3	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.5	4.5	4.5	8.5	9.9	0.0	47.0	0.0	0.0	40.1	0.0	40.4
LnGrp LOS	A	A	A	A	A		D	A	A	D	A	D
Approach Vol, veh/h		533			437			14			239	
Approach Delay, s/veh		4.7			9.8			47.0			40.2	
Approach LOS		A			A			D			D	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		68.9		13.7	12.7	56.2		7.5				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		39.0		23.0	8.0	25.0		10.0				
Max Q Clear Time (g_c+I1), s		5.7		6.9	4.8	8.1		2.7				
Green Ext Time (p_c), s		1.4		0.8	0.1	1.6		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	14.0
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	507	0	0	522	0	2
Future Volume (vph)	507	0	0	522	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	15
Grade (%)	0%			0%	-1%	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3386	0	0	3386	0	1721
Flt Permitted						
Satd. Flow (perm)	3386	0	0	3386	0	1721
Link Speed (mph)	35			35	30	
Link Distance (ft)	1190			92	164	
Travel Time (s)	23.2			1.8	3.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	528	0	0	544	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	528	0	0	544	0	2
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	507	0	0	522	0	2
Future Vol, veh/h	507	0	0	522	0	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	-1	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	528	0	0	544	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	264
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.8
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.1
Pot Cap-1 Maneuver	-	0	0	-	0	789
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	789
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	789	-	-
HCM Lane V/C Ratio	0.003	-	-
HCM Control Delay (s)	9.6	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	562	1	0	582	2	2
Future Volume (vph)	562	1	0	582	2	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	15	12	10	16	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt					0.932	
Flt Protected					0.976	
Satd. Flow (prot)	3386	0	0	3160	1874	0
Flt Permitted					0.976	
Satd. Flow (perm)	3386	0	0	3160	1874	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	155			113	194	
Travel Time (s)	3.0			2.2	4.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	579	1	0	600	2	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	580	0	0	600	4	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	562	1	0	582	2	2
Future Vol, veh/h	562	1	0	582	2	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	-2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	579	1	0	600	2	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	880	290
Stage 1	-	-	-	-	580	-
Stage 2	-	-	-	-	300	-
Critical Hdwy	-	-	-	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3	3.1
Pot Cap-1 Maneuver	-	-	0	-	570	*943
Stage 1	-	-	0	-	951	-
Stage 2	-	-	0	-	865	-
Platoon blocked, %	-	-		-	1	1
Mov Cap-1 Maneuver	-	-	-	-	570	*943
Mov Cap-2 Maneuver	-	-	-	-	570	-
Stage 1	-	-	-	-	951	-
Stage 2	-	-	-	-	865	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	711	-	-	-
HCM Lane V/C Ratio	0.006	-	-	-
HCM Control Delay (s)	10.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	562	0	0	594	0	0
Future Volume (vph)	562	0	0	594	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	3386	0	0	3576	1697	0
Flt Permitted						
Satd. Flow (perm)	3386	0	0	3576	1697	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	113			65	161	
Travel Time (s)	2.2			1.3	3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	611	0	0	646	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	611	0	0	646	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	562	0	0	594	0	0
Future Vol, veh/h	562	0	0	594	0	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	-2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	611	0	0	646	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	611	0	934	306
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	323	-
Critical Hdwy	-	-	4.3	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	946	-	536	*931
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	843	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	946	-	536	*931
Mov Cap-2 Maneuver	-	-	-	-	536	-
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	843	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	946	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	561	0	0	595	0	0
Future Volume (vph)	561	0	0	595	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	11	11	12	12
Grade (%)	0%			-1%	-1%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	3386	0	0	3257	1809	0
Flt Permitted						
Satd. Flow (perm)	3386	0	0	3257	1809	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	65			652	111	
Travel Time (s)	1.3			12.7	2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	610	0	0	647	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	610	0	0	647	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	561	0	0	595	0	0
Future Vol, veh/h	561	0	0	595	0	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	-	-	-1	-1	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	610	0	0	647	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	610	0	934	305
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	324	-
Critical Hdwy	-	-	4.3	-	6.6	6.8
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	946	-	524	*931
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	827	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	946	-	524	*931
Mov Cap-2 Maneuver	-	-	-	-	524	-
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	827	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	946	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

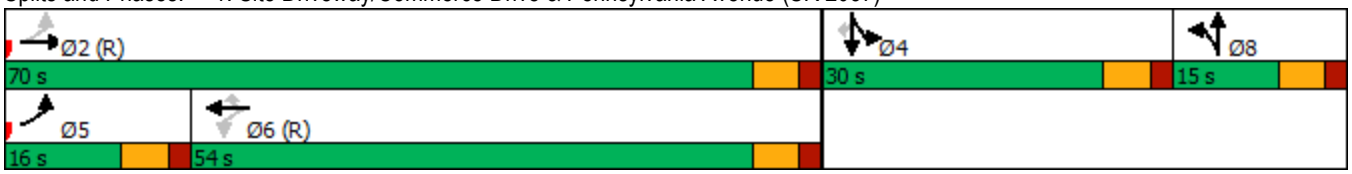
2030 Base Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	429	9	19	474	668	7	4	8	143	9	142
Future Volume (vph)	224	429	9	19	474	668	7	4	8	143	9	142
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	12	12	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	1.00						0.98		1.00	1.00	0.99
Frt		0.997				0.850		0.943				0.850
Flt Protected	0.950			0.950				0.982		0.950	0.958	
Satd. Flow (prot)	1573	3549	0	1588	3133	1492	0	1649	0	1404	1462	1422
Flt Permitted	0.420			0.491				0.982		0.950	0.958	
Satd. Flow (perm)	694	3549	0	821	3133	1492	0	1641	0	1400	1458	1401
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				689		8				146
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		92			155			162			498	
Travel Time (s)		1.8			3.0			3.7			9.7	
Confl. Peds. (#/hr)	4		4				4		4	2		2
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
Heavy Vehicles (%)	2%	3%	0%	0%	5%	2%	0%	0%	0%	8%	11%	4%
Adj. Flow (vph)	231	442	9	20	489	689	7	4	8	147	9	146
Shared Lane Traffic (%)										47%		
Lane Group Flow (vph)	231	451	0	20	489	689	0	19	0	78	78	146
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	11.0
Total Split (s)	16.0	70.0		54.0	54.0	54.0	15.0	15.0		30.0	30.0	30.0
Total Split (%)	13.9%	60.9%		47.0%	47.0%	47.0%	13.0%	13.0%		26.1%	26.1%	26.1%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	

Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Avenue (SR 2037)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	429	9	19	474	668	7	4	8	143	9	142
Future Volume (veh/h)	224	429	9	19	474	668	7	4	8	143	9	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.99
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	1809	1866	1911	1794	1724	1766	1800	1800	1800	1688	1646	1744
Adj Flow Rate, veh/h	231	442	9	20	489	0	7	4	2	153	0	104
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, %	2	3	0	0	5	2	0	0	0	8	11	4
Cap, veh/h	680	2631	54	622	2036		21	12	6	340	0	155
Arrive On Green	0.08	0.74	0.73	0.62	0.62	0.00	0.01	0.02	0.01	0.11	0.00	0.11
Sat Flow, veh/h	1723	3554	72	900	3276	1497	915	523	261	3215	0	1469
Grp Volume(v), veh/h	231	220	231	20	489	0	13	0	0	153	0	104
Grp Sat Flow(s),veh/h/ln	1723	1773	1853	900	1638	1497	1698	0	0	1607	0	1469
Q Serve(g_s), s	5.0	4.2	4.2	1.0	7.6	0.0	0.9	0.0	0.0	5.1	0.0	7.8
Cycle Q Clear(g_c), s	5.0	4.2	4.2	1.0	7.6	0.0	0.9	0.0	0.0	5.1	0.0	7.8
Prop In Lane	1.00		0.04	1.00		1.00	0.54		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	680	1313	1372	622	2036		40	0	0	340	0	155
V/C Ratio(X)	0.34	0.17	0.17	0.03	0.24		0.33	0.00	0.00	0.45	0.00	0.67
Avail Cap(c_a), veh/h	714	1313	1372	622	2036		148	0	0	699	0	319
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	4.4	4.4	8.4	9.7	0.0	55.6	0.0	0.0	48.3	0.0	49.5
Incr Delay (d2), s/veh	0.3	0.3	0.3	0.1	0.3	0.0	4.6	0.0	0.0	0.9	0.0	4.9
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(95%),veh/ln	2.9	2.5	2.6	0.4	4.8	0.0	0.8	0.0	0.0	3.8	0.0	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.2	4.7	4.7	8.5	10.0	0.0	60.2	0.0	0.0	49.2	0.0	54.4
LnGrp LOS	A	A	A	A	A		E	A	A	D	A	D
Approach Vol, veh/h		682			509			13			257	
Approach Delay, s/veh		5.2			9.9			60.2			51.3	
Approach LOS		A			A			E			D	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		90.2		17.1	13.7	76.5		7.7				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		64.0		24.0	10.0	48.0		9.0				
Max Q Clear Time (g_c+I1), s		6.7		10.3	7.5	10.1		2.9				
Green Ext Time (p_c), s		1.6		0.8	0.2	2.3		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	15.4	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	691	0	0	614	0	2
Future Volume (vph)	691	0	0	614	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	15
Grade (%)	0%			0%	-1%	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3320	0	0	3288	0	1721
Flt Permitted						
Satd. Flow (perm)	3320	0	0	3288	0	1721
Link Speed (mph)	35			35	30	
Link Distance (ft)	1190			92	164	
Travel Time (s)	23.2			1.8	3.7	
Confl. Peds. (#/hr)			4		9	9
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	3%	0%	0%	4%	0%	0%
Adj. Flow (vph)	712	0	0	633	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	712	0	0	633	0	2
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	691	0	0	614	0	2
Future Vol, veh/h	691	0	0	614	0	2
Conflicting Peds, #/hr	0	0	4	0	9	9
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	-1	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	0	0	4	0	0
Mvmt Flow	712	0	0	633	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	365
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.8
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.1
Pot Cap-1 Maneuver	-	0	0	-	0	679
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	673
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	673	-	-
HCM Lane V/C Ratio	0.003	-	-
HCM Control Delay (s)	10.4	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	578	2	4	1143	1	0
Future Volume (vph)	578	2	4	1143	1	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	15	12	10	16	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.999					
Flt Protected					0.950	
Satd. Flow (prot)	3254	0	0	3099	1957	0
Flt Permitted					0.950	
Satd. Flow (perm)	3254	0	0	3099	1957	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	155			113	194	
Travel Time (s)	3.0			2.2	4.4	
Confl. Peds. (#/hr)			1		2	2
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	5%	0%	0%	3%	0%	0%
Adj. Flow (vph)	584	2	4	1155	1	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	586	0	0	1159	1	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↱	
Traffic Vol, veh/h	578	2	4	1143	1	0
Future Vol, veh/h	578	2	4	1143	1	0
Conflicting Peds, #/hr	0	0	1	0	2	2
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	-2	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	5	0	0	3	0	0
Mvmt Flow	584	2	4	1155	1	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	587	0	1174	296
Stage 1	-	-	-	-	586	-
Stage 2	-	-	-	-	588	-
Critical Hdwy	-	-	4.3	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	961	-	349	*936
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	628	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	960	-	344	*933
Mov Cap-2 Maneuver	-	-	-	-	344	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	619	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	344	-	-	960	-
HCM Lane V/C Ratio	0.003	-	-	0.004	-
HCM Control Delay (s)	15.5	-	-	8.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	584	0	1	1163	0	0
Future Volume (vph)	584	0	1	1163	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	3288	0	0	3542	1697	0
Flt Permitted						
Satd. Flow (perm)	3288	0	0	3542	1697	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	113			65	161	
Travel Time (s)	2.2			1.3	3.7	
Confl. Peds. (#/hr)		1	3		6	6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	0%	0%	3%	0%	0%
Adj. Flow (vph)	596	0	1	1187	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	596	0	0	1188	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	584	0	1	1163	0	0
Future Vol, veh/h	584	0	1	1163	0	0
Conflicting Peds, #/hr	0	1	3	0	6	6
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	-2	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	4	0	0	3	0	0
Mvmt Flow	596	0	1	1187	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	599	0	1201	307
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	602	-
Critical Hdwy	-	-	4.3	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	*955	-	*343	*924
Stage 1	-	-	-	-	*955	-
Stage 2	-	-	-	-	*619	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*952	-	*339	*915
Mov Cap-2 Maneuver	-	-	-	-	*339	-
Stage 1	-	-	-	-	*953	-
Stage 2	-	-	-	-	*613	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	* 952	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	8.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	584	0	1	1156	0	0
Future Volume (vph)	584	0	1	1156	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	11	11	12	12
Grade (%)	0%			-1%	-1%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	3288	0	0	3226	1809	0
Flt Permitted						
Satd. Flow (perm)	3288	0	0	3226	1809	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	65			652	111	
Travel Time (s)	1.3			12.7	2.5	
Confl. Peds. (#/hr)		1	3		7	7
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles (%)	4%	0%	0%	3%	0%	0%
Adj. Flow (vph)	590	0	1	1168	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	590	0	0	1169	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

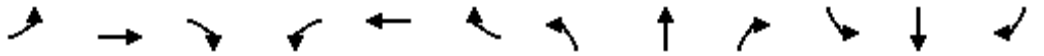
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	584	0	1	1156	0	0
Future Vol, veh/h	584	0	1	1156	0	0
Conflicting Peds, #/hr	0	1	3	0	7	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	-1	-1	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	4	0	0	3	0	0
Mvmt Flow	590	0	1	1168	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	593	0	1186	305
Stage 1	-	-	-	-	593	-
Stage 2	-	-	-	-	593	-
Critical Hdwy	-	-	4.3	-	6.6	6.8
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	*955	-	*338	*924
Stage 1	-	-	-	-	*955	-
Stage 2	-	-	-	-	*605	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*952	-	*334	*915
Mov Cap-2 Maneuver	-	-	-	-	*334	-
Stage 1	-	-	-	-	*952	-
Stage 2	-	-	-	-	*599	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	* 952	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	8.8	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

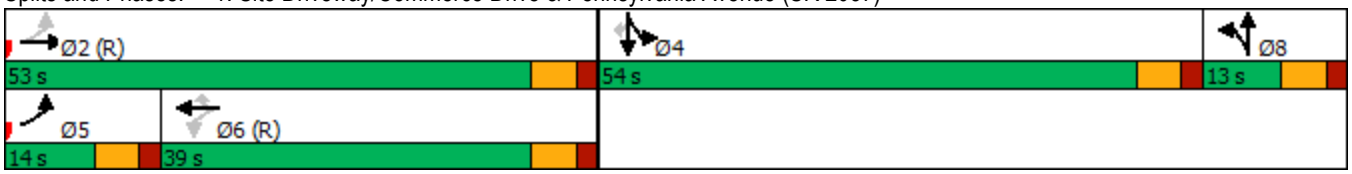


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	567	9	12	363	282	10	6	14	574	2	274
Future Volume (vph)	196	567	9	12	363	282	10	6	14	574	2	274
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	12	12	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	1.00								1.00	1.00	0.99
Frt		0.998				0.850		0.939				0.850
Flt Protected	0.950			0.950				0.984		0.950	0.953	
Satd. Flow (prot)	1588	3622	0	1588	3257	1478	0	1663	0	1486	1545	1464
Flt Permitted	0.423			0.412				0.984		0.950	0.953	
Satd. Flow (perm)	707	3622	0	689	3257	1478	0	1663	0	1485	1544	1446
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				309		15				301
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		92			155			162			498	
Travel Time (s)		1.8			3.0			3.7			9.7	
Confl. Peds. (#/hr)	1		1							1		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	0%	0%	1%	3%	0%	0%	0%	2%	0%	1%
Adj. Flow (vph)	215	623	10	13	399	310	11	7	15	631	2	301
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	215	633	0	13	399	310	0	33	0	315	318	301
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	11.0
Total Split (s)	14.0	53.0		39.0	39.0	39.0	13.0	13.0		54.0	54.0	54.0
Total Split (%)	11.7%	44.2%		32.5%	32.5%	32.5%	10.8%	10.8%		45.0%	45.0%	45.0%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 108 (90%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	

Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Avenue (SR 2037)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	196	567	9	12	363	282	10	6	14	574	2	274
Future Volume (veh/h)	196	567	9	12	363	282	10	6	14	574	2	274
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1823	1896	1911	1794	1780	1752	1800	1800	1800	1772	1800	1786
Adj Flow Rate, veh/h	215	623	10	13	399	0	11	7	3	632	0	160
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	0	0	1	3	0	0	0	2	0	1
Cap, veh/h	600	2215	36	436	1671		26	17	7	794	0	355
Arrive On Green	0.08	0.61	0.60	0.49	0.49	0.00	0.02	0.03	0.02	0.24	0.00	0.24
Sat Flow, veh/h	1736	3628	58	762	3383	1485	896	570	244	3375	0	1512
Grp Volume(v), veh/h	215	309	324	13	399	0	21	0	0	632	0	160
Grp Sat Flow(s),veh/h/ln	1736	1801	1885	762	1691	1485	1711	0	0	1688	0	1512
Q Serve(g_s), s	7.0	9.7	9.7	1.1	8.1	0.0	1.5	0.0	0.0	21.1	0.0	10.9
Cycle Q Clear(g_c), s	7.0	9.7	9.7	1.1	8.1	0.0	1.5	0.0	0.0	21.1	0.0	10.9
Prop In Lane	1.00		0.03	1.00		1.00	0.52		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	600	1100	1151	436	1671		50	0	0	794	0	355
V/C Ratio(X)	0.36	0.28	0.28	0.03	0.24		0.42	0.00	0.00	0.80	0.00	0.45
Avail Cap(c_a), veh/h	600	1100	1151	436	1671		114	0	0	1378	0	617
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.1	11.0	11.0	15.6	17.4	0.0	57.6	0.0	0.0	43.2	0.0	39.3
Incr Delay (d2), s/veh	0.4	0.6	0.6	0.1	0.3	0.0	5.5	0.0	0.0	1.9	0.0	0.9
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(95%),veh/ln	4.8	7.0	7.3	0.4	5.7	0.0	1.3	0.0	0.0	13.8	0.0	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.5	11.6	11.6	15.8	17.8	0.0	63.0	0.0	0.0	45.1	0.0	40.1
LnGrp LOS	B	B	B	B	B		E	A	A	D	A	D
Approach Vol, veh/h		848			412			21			792	
Approach Delay, s/veh		11.8			17.7			63.0			44.1	
Approach LOS		B			B			E			D	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		78.3		33.2	14.0	64.3		8.5				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		47.0		48.0	8.0	33.0		7.0				
Max Q Clear Time (g_c+I1), s		12.2		23.6	9.5	10.6		3.5				
Green Ext Time (p_c), s		2.3		3.6	0.0	1.7		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			25.8									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	782	2	0	636	1	3
Future Volume (vph)	782	2	0	636	1	3
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	15
Grade (%)	0%			0%	-1%	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt						0.865
Flt Protected					0.950	
Satd. Flow (prot)	3386	0	0	3386	0	1721
Flt Permitted					0.950	
Satd. Flow (perm)	3386	0	0	3386	0	1721
Link Speed (mph)	35			35	30	
Link Distance (ft)	1190			92	164	
Travel Time (s)	23.2			1.8	3.7	
Confl. Peds. (#/hr)					3	3
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	806	2	0	656	1	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	808	0	0	656	1	3
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	782	2	0	636	1	3
Future Vol, veh/h	782	2	0	636	1	3
Conflicting Peds, #/hr	0	0	0	0	3	3
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	-1	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	806	2	0	656	1	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1138	407
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	331	-
Critical Hdwy	-	-	-	-	6.6	6.8
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	-	-	3	3.1
Pot Cap-1 Maneuver	-	-	0	-	*231	638
Stage 1	-	-	0	-	*470	-
Stage 2	-	-	0	-	*977	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	*230	636
Mov Cap-2 Maneuver	-	-	-	-	*230	-
Stage 1	-	-	-	-	*470	-
Stage 2	-	-	-	-	*974	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	636	-	-	-
HCM Lane V/C Ratio	0.005	-	-	-
HCM Control Delay (s)	10.7	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1142	0	0	662	1	5
Future Volume (vph)	1142	0	0	662	1	5
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	15	12	10	16	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt					0.884	
Flt Protected					0.993	
Satd. Flow (prot)	3386	0	0	3129	1809	0
Flt Permitted					0.993	
Satd. Flow (perm)	3386	0	0	3129	1809	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	155			113	194	
Travel Time (s)	3.0			2.2	4.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	1269	0	0	736	1	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1269	0	0	736	7	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1142	0	0	662	1	5
Future Vol, veh/h	1142	0	0	662	1	5
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	-2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	1269	0	0	736	1	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	1637	635
Stage 1	-	-	-	-	1269	-
Stage 2	-	-	-	-	368	-
Critical Hdwy	-	-	-	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3	3.1
Pot Cap-1 Maneuver	-	0	0	-	272	*686
Stage 1	-	0	0	-	657	-
Stage 2	-	0	0	-	802	-
Platoon blocked, %	-			-	1	1
Mov Cap-1 Maneuver	-	-	-	-	272	*686
Mov Cap-2 Maneuver	-	-	-	-	272	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	802	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	547	-	-
HCM Lane V/C Ratio	0.012	-	-
HCM Control Delay (s)	11.7	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1174	0	0	647	0	0
Future Volume (vph)	1174	0	0	647	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	3353	0	0	3576	1697	0
Flt Permitted						
Satd. Flow (perm)	3353	0	0	3576	1697	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	113			65	161	
Travel Time (s)	2.2			1.3	3.7	
Confl. Peds. (#/hr)					2	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Adj. Flow (vph)	1304	0	0	719	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1304	0	0	719	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1174	0	0	647	0	0
Future Vol, veh/h	1174	0	0	647	0	0
Conflicting Peds, #/hr	0	0	0	0	2	2
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	-2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1304	0	0	719	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1304	0	1666	654
Stage 1	-	-	-	-	1304	-
Stage 2	-	-	-	-	362	-
Critical Hdwy	-	-	4.3	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	*653	-	*307	*631
Stage 1	-	-	-	-	*653	-
Stage 2	-	-	-	-	*808	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	*653	-	*306	*630
Mov Cap-2 Maneuver	-	-	-	-	*306	-
Stage 1	-	-	-	-	*653	-
Stage 2	-	-	-	-	*806	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	* 653	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1167	0	0	652	0	0
Future Volume (vph)	1167	0	0	652	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	11	11	12	12
Grade (%)	0%			-1%	-1%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt						
Flt Protected						
Satd. Flow (prot)	3386	0	0	3257	1809	0
Flt Permitted						
Satd. Flow (perm)	3386	0	0	3257	1809	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	65			652	111	
Travel Time (s)	1.3			12.7	2.5	
Confl. Peds. (#/hr)					1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	1297	0	0	724	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1297	0	0	724	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1167	0	0	652	0	0
Future Vol, veh/h	1167	0	0	652	0	0
Conflicting Peds, #/hr	0	0	0	0	1	1
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	-	-	-1	-1	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	1297	0	0	724	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1297	0	1660	650
Stage 1	-	-	-	-	1297	-
Stage 2	-	-	-	-	363	-
Critical Hdwy	-	-	4.3	-	6.6	6.8
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	681	-	272	*659
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	791	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	681	-	272	*658
Mov Cap-2 Maneuver	-	-	-	-	272	-
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	790	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

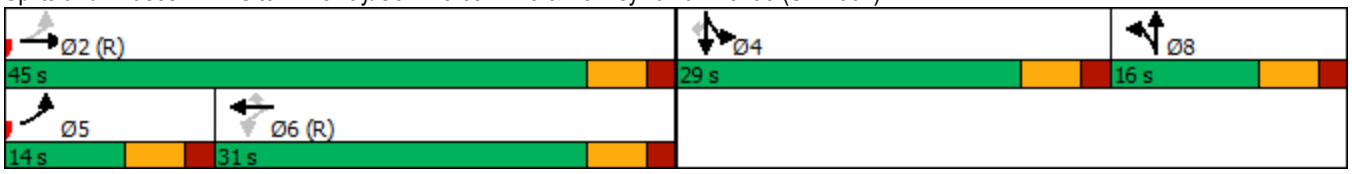
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	681	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	385	6	10	411	180	5	4	9	165	6	120
Future Volume (vph)	124	385	6	10	411	180	5	4	9	165	6	120
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	12	12	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.998				0.850		0.932				0.850
Flt Protected	0.950			0.950				0.986		0.950	0.955	
Satd. Flow (prot)	1604	3588	0	1588	3225	1507	0	1654	0	1516	1579	1479
Flt Permitted	0.434			0.511				0.986		0.950	0.955	
Satd. Flow (perm)	733	3588	0	854	3225	1507	0	1654	0	1516	1579	1479
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				189		9				182
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		92			155			162			498	
Travel Time (s)		1.8			3.0			3.7			9.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	131	405	6	11	433	189	5	4	9	174	6	126
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	131	411	0	11	433	189	0	18	0	90	90	126
Turn Type	pm+pt	NA		Perm	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases	2			6		6						4
Detector Phase	5	2		6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	11.0
Total Split (s)	14.0	45.0		31.0	31.0	31.0	16.0	16.0		29.0	29.0	29.0
Total Split (%)	15.6%	50.0%		34.4%	34.4%	34.4%	17.8%	17.8%		32.2%	32.2%	32.2%
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0		-1.0		-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 34 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Avenue (SR 2037)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	385	6	10	411	180	5	4	9	165	6	120
Future Volume (veh/h)	124	385	6	10	411	180	5	4	9	165	6	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1837	1881	1911	1794	1766	1780	1800	1800	1800	1800	1800	1800
Adj Flow Rate, veh/h	131	405	5	11	433	0	5	4	5	178	0	66
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	0	0	2	1	0	0	0	0	0	0
Cap, veh/h	702	2562	32	611	1903		16	13	16	333	0	148
Arrive On Green	0.09	0.71	0.70	0.57	0.57	0.00	0.02	0.03	0.02	0.10	0.00	0.10
Sat Flow, veh/h	1750	3616	45	936	3356	1509	594	475	594	3429	0	1525
Grp Volume(v), veh/h	131	200	210	11	433	0	14	0	0	178	0	66
Grp Sat Flow(s),veh/h/ln	1750	1787	1873	936	1678	1509	1663	0	0	1714	0	1525
Q Serve(g_s), s	2.3	3.3	3.3	0.5	5.8	0.0	0.7	0.0	0.0	4.4	0.0	3.7
Cycle Q Clear(g_c), s	2.3	3.3	3.3	0.5	5.8	0.0	0.7	0.0	0.0	4.4	0.0	3.7
Prop In Lane	1.00		0.02	1.00		1.00	0.36		0.36	1.00		1.00
Lane Grp Cap(c), veh/h	702	1266	1327	611	1903		46	0	0	333	0	148
V/C Ratio(X)	0.19	0.16	0.16	0.02	0.23		0.31	0.00	0.00	0.53	0.00	0.44
Avail Cap(c_a), veh/h	727	1266	1327	611	1903		203	0	0	914	0	407
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	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.4	4.3	4.3	8.5	9.7	0.0	43.3	0.0	0.0	38.7	0.0	38.3
Incr Delay (d2), s/veh	0.1	0.3	0.3	0.1	0.3	0.0	3.7	0.0	0.0	1.3	0.0	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(95%),veh/ln	1.3	1.9	2.0	0.2	3.6	0.0	0.6	0.0	0.0	3.4	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.5	4.6	4.6	8.6	10.0	0.0	47.0	0.0	0.0	40.0	0.0	40.4
LnGrp LOS	A	A	A	A	A		D	A	A	D	A	D
Approach Vol, veh/h		541			444			14			244	
Approach Delay, s/veh		4.8			9.9			47.0			40.1	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		68.8		13.8	12.7	56.0		7.5				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s		39.0		23.0	8.0	25.0		10.0				
Max Q Clear Time (g_c+I1), s		5.8		6.9	4.8	8.3		2.7				
Green Ext Time (p_c), s		1.4		0.8	0.1	1.7		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	14.0	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	514	0	0	529	0	2
Future Volume (vph)	514	0	0	529	0	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	12	12	15
Grade (%)	0%			0%	-1%	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.865
Flt Protected						
Satd. Flow (prot)	3386	0	0	3386	0	1721
Flt Permitted						
Satd. Flow (perm)	3386	0	0	3386	0	1721
Link Speed (mph)	35			35	30	
Link Distance (ft)	1190			92	164	
Travel Time (s)	23.2			1.8	3.7	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	535	0	0	551	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	535	0	0	551	0	2
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	514	0	0	529	0	2
Future Vol, veh/h	514	0	0	529	0	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	-1	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	535	0	0	551	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	268
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.8
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.1
Pot Cap-1 Maneuver	-	0	0	-	0	784
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	784
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	784	-	-
HCM Lane V/C Ratio	0.003	-	-
HCM Control Delay (s)	9.6	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	569	1	0	590	2	2
Future Volume (vph)	569	1	0	590	2	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	15	12	10	16	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt					0.932	
Flt Protected					0.976	
Satd. Flow (prot)	3386	0	0	3160	1874	0
Flt Permitted					0.976	
Satd. Flow (perm)	3386	0	0	3160	1874	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	155			113	194	
Travel Time (s)	3.0			2.2	4.4	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	0%	1%	0%	0%
Adj. Flow (vph)	587	1	0	608	2	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	588	0	0	608	4	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	569	1	0	590	2	2
Future Vol, veh/h	569	1	0	590	2	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	-2	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	1	0	0	1	0	0
Mvmt Flow	587	1	0	608	2	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	892	294
Stage 1	-	-	-	-	588	-
Stage 2	-	-	-	-	304	-
Critical Hdwy	-	-	-	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	-	-	3	3.1
Pot Cap-1 Maneuver	-	-	0	-	558	*943
Stage 1	-	-	0	-	941	-
Stage 2	-	-	0	-	861	-
Platoon blocked, %	-	-		-	1	1
Mov Cap-1 Maneuver	-	-	-	-	558	*943
Mov Cap-2 Maneuver	-	-	-	-	558	-
Stage 1	-	-	-	-	941	-
Stage 2	-	-	-	-	861	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	701	-	-	-
HCM Lane V/C Ratio	0.006	-	-	-
HCM Control Delay (s)	10.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	569	0	0	602	0	0
Future Volume (vph)	569	0	0	602	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	3386	0	0	3576	1697	0
Flt Permitted						
Satd. Flow (perm)	3386	0	0	3576	1697	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	113			65	161	
Travel Time (s)	2.2			1.3	3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	618	0	0	654	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	618	0	0	654	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	569	0	0	602	0	0
Future Vol, veh/h	569	0	0	602	0	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	-2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	618	0	0	654	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	618	0	945	309
Stage 1	-	-	-	-	618	-
Stage 2	-	-	-	-	327	-
Critical Hdwy	-	-	4.3	-	6.4	6.7
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	939	-	527	*931
Stage 1	-	-	-	-	930	-
Stage 2	-	-	-	-	839	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	939	-	527	*931
Mov Cap-2 Maneuver	-	-	-	-	527	-
Stage 1	-	-	-	-	930	-
Stage 2	-	-	-	-	839	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	939	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	568	0	0	603	0	0
Future Volume (vph)	568	0	0	603	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	11	11	12	12
Grade (%)	0%			-1%	-1%	
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	3386	0	0	3257	1809	0
Flt Permitted						
Satd. Flow (perm)	3386	0	0	3257	1809	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	65			652	111	
Travel Time (s)	1.3			12.7	2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	617	0	0	655	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	617	0	0	655	0	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	568	0	0	603	0	0
Future Vol, veh/h	568	0	0	603	0	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	-	-	-1	-1	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	617	0	0	655	0	0

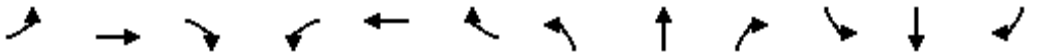
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	617	0	945	309
Stage 1	-	-	-	-	617	-
Stage 2	-	-	-	-	328	-
Critical Hdwy	-	-	4.3	-	6.6	6.8
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	3	-	3	3.1
Pot Cap-1 Maneuver	-	-	940	-	514	*931
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	823	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	940	-	514	*931
Mov Cap-2 Maneuver	-	-	-	-	514	-
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	823	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	940	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

2025 Projected Conditions With Improvements

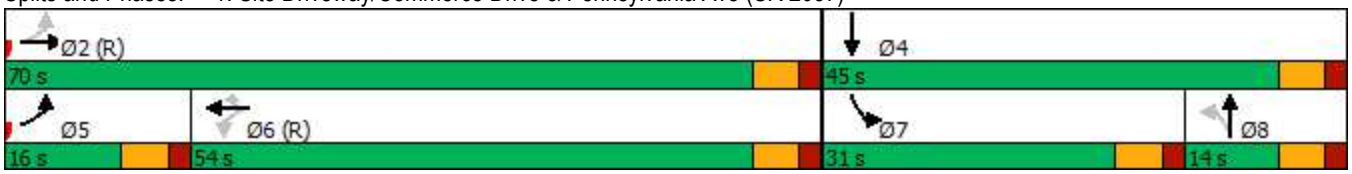


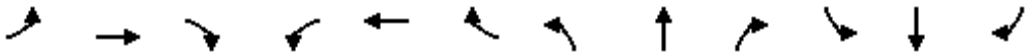
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	221	425	26	52	467	659	11	7	14	142	17	140
Future Volume (vph)	221	425	26	52	467	659	11	7	14	142	17	140
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	10	14	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	1		0	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00	1.00					0.99	0.98		1.00	0.99	
Frt		0.991				0.850		0.900			0.867	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1573	3529	0	1588	3133	1492	1596	1697	0	2867	1422	0
Flt Permitted	0.421			0.485			0.851			0.950		
Satd. Flow (perm)	696	3529	0	811	3133	1492	1410	1697	0	2855	1422	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				679		14			144	
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		1280			268			162			498	
Travel Time (s)		24.9			5.2			3.7			9.7	
Confl. Peds. (#/hr)	4		4				4		4	2		2
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
Heavy Vehicles (%)	2%	3%	0%	0%	5%	2%	0%	0%	0%	8%	11%	4%
Adj. Flow (vph)	228	438	27	54	481	679	11	7	14	146	18	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	228	465	0	54	481	679	11	21	0	146	162	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6		6	8					
Detector Phase	5	2		6	6	6	8	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	
Total Split (s)	16.0	70.0		54.0	54.0	54.0	14.0	14.0		31.0	45.0	
Total Split (%)	13.9%	60.9%		47.0%	47.0%	47.0%	12.2%	12.2%		27.0%	39.1%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	6.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	

Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Ave (SR 2037)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	221	425	26	52	467	659	11	7	14	142	17	140
Future Volume (veh/h)	221	425	26	52	467	659	11	7	14	142	17	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.97	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	1809	1866	1911	1794	1724	1766	1800	1872	1800	1688	1646	1744
Adj Flow Rate, veh/h	228	438	27	54	481	0	11	7	8	146	18	102
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, %	2	3	0	0	5	2	0	0	0	8	11	4
Cap, veh/h	682	2504	154	613	2029		115	41	46	248	37	212
Arrive On Green	0.08	0.74	0.73	0.62	0.62	0.00	0.04	0.05	0.04	0.08	0.17	0.17
Sat Flow, veh/h	1723	3393	209	888	3276	1497	1209	784	896	3118	213	1209
Grp Volume(v), veh/h	228	228	237	54	481	0	11	0	15	146	0	120
Grp Sat Flow(s),veh/h/ln	1723	1773	1828	888	1638	1497	1209	0	1681	1559	0	1423
Q Serve(g_s), s	5.0	4.5	4.5	2.8	7.5	0.0	1.0	0.0	1.0	5.2	0.0	8.7
Cycle Q Clear(g_c), s	5.0	4.5	4.5	2.8	7.5	0.0	1.0	0.0	1.0	5.2	0.0	8.7
Prop In Lane	1.00		0.11	1.00		1.00	1.00		0.53	1.00		0.85
Lane Grp Cap(c), veh/h	682	1309	1349	613	2029		115	0	87	248	0	249
V/C Ratio(X)	0.33	0.17	0.18	0.09	0.24		0.10	0.00	0.17	0.59	0.00	0.48
Avail Cap(c_a), veh/h	717	1309	1349	613	2029		147	0	132	705	0	495
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	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	4.5	4.5	8.9	9.8	0.0	53.1	0.0	52.4	51.1	0.0	42.7
Incr Delay (d2), s/veh	0.3	0.3	0.3	0.3	0.3	0.0	0.4	0.0	0.9	2.2	0.0	1.4
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(95%),veh/ln	2.9	2.7	2.8	1.0	4.7	0.0	0.6	0.0	0.8	3.8	0.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.2	4.8	4.8	9.2	10.0	0.0	53.5	0.0	53.4	53.3	0.0	44.2
LnGrp LOS	A	A	A	A	B		D	A	D	D	A	D
Approach Vol, veh/h		693			535			26			266	
Approach Delay, s/veh		5.3			10.0			53.4			49.2	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		89.9		25.1	13.7	76.2	14.2	11.0				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s		64.0		39.0	10.0	48.0	25.0	8.0				
Max Q Clear Time (g_c+I1), s		7.0		11.2	7.5	10.0	7.7	3.0				
Green Ext Time (p_c), s		1.7		0.4	0.2	2.5	0.5	0.0				

Intersection Summary		
HCM 6th Ctrl Delay	15.4	
HCM 6th LOS	B	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	581	7	0	1176	0	6
Future Volume (vph)	581	7	0	1176	0	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.998					0.865
Flt Protected						
Satd. Flow (prot)	3283	0	0	3542	0	1573
Flt Permitted						
Satd. Flow (perm)	3283	0	0	3542	0	1573
Link Speed (mph)	35			35	30	
Link Distance (ft)	268			716	161	
Travel Time (s)	5.2			13.9	3.7	
Confl. Peds. (#/hr)		1	3		6	6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	0%	0%	3%	0%	0%
Adj. Flow (vph)	593	7	0	1200	0	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	600	0	0	1200	0	6
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

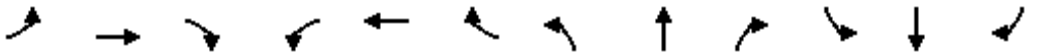
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	581	7	0	1176	0	6
Future Vol, veh/h	581	7	0	1176	0	6
Conflicting Peds, #/hr	0	1	3	0	6	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	-2	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	4	0	0	3	0	0
Mvmt Flow	593	7	0	1200	0	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	307
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.1
Pot Cap-1 Maneuver	-	-	0	-	0	*924
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*917
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	917	-	-	-
HCM Lane V/C Ratio	0.007	-	-	-
HCM Control Delay (s)	9	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

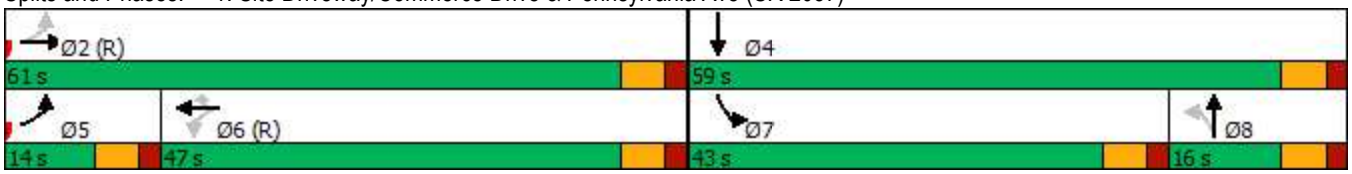


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	194	561	18	37	357	278	33	21	39	568	13	270
Future Volume (vph)	194	561	18	37	357	278	33	21	39	568	13	270
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	10	14	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	1		0	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00	1.00								1.00	0.99	
Frt		0.995				0.850		0.902			0.857	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1588	3611	0	1588	3257	1478	1596	1732	0	3036	1459	0
Flt Permitted	0.431			0.410			0.571			0.950		
Satd. Flow (perm)	720	3611	0	685	3257	1478	959	1732	0	3031	1459	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				305		43			297	
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		1280			268			162			498	
Travel Time (s)		24.9			5.2			3.7			9.7	
Confl. Peds. (#/hr)	1		1							1		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	0%	0%	1%	3%	0%	0%	0%	2%	0%	1%
Adj. Flow (vph)	213	616	20	41	392	305	36	23	43	624	14	297
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	636	0	41	392	305	36	66	0	624	311	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6		6	8					
Detector Phase	5	2		6	6	6	8	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	
Total Split (s)	14.0	61.0		47.0	47.0	47.0	16.0	16.0		43.0	59.0	
Total Split (%)	11.7%	50.8%		39.2%	39.2%	39.2%	13.3%	13.3%		35.8%	49.2%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	6.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 108 (90%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	

Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Ave (SR 2037)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	194	561	18	37	357	278	33	21	39	568	13	270
Future Volume (veh/h)	194	561	18	37	357	278	33	21	39	568	13	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1823	1896	1911	1794	1780	1752	1800	1872	1800	1772	1800	1786
Adj Flow Rate, veh/h	213	616	20	41	392	0	36	23	31	624	14	156
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	0	0	1	3	0	0	0	2	0	1
Cap, veh/h	579	2095	68	418	1596		116	41	55	752	42	465
Arrive On Green	0.08	0.59	0.58	0.47	0.47	0.00	0.05	0.06	0.05	0.23	0.33	0.33
Sat Flow, veh/h	1736	3561	116	759	3383	1485	1164	723	974	3274	127	1416
Grp Volume(v), veh/h	213	311	325	41	392	0	36	0	54	624	0	170
Grp Sat Flow(s),veh/h/ln	1736	1801	1875	759	1691	1485	1164	0	1697	1637	0	1544
Q Serve(g_s), s	7.3	10.3	10.4	3.6	8.3	0.0	3.6	0.0	3.7	21.8	0.0	10.0
Cycle Q Clear(g_c), s	7.3	10.3	10.4	3.6	8.3	0.0	3.6	0.0	3.7	21.8	0.0	10.0
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.57	1.00		0.92
Lane Grp Cap(c), veh/h	579	1060	1103	418	1596		116	0	96	752	0	507
V/C Ratio(X)	0.37	0.29	0.29	0.10	0.25		0.31	0.00	0.56	0.83	0.00	0.34
Avail Cap(c_a), veh/h	579	1060	1103	418	1596		157	0	156	1037	0	695
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	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.4	12.3	12.3	17.7	18.9	0.0	56.1	0.0	55.4	44.0	0.0	30.4
Incr Delay (d2), s/veh	0.4	0.7	0.7	0.5	0.4	0.0	1.5	0.0	5.0	4.1	0.0	0.4
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(95%),veh/ln	5.0	7.6	7.8	1.2	5.9	0.0	2.0	0.0	3.1	14.1	0.0	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.8	13.0	13.0	18.2	19.3	0.0	57.6	0.0	60.5	48.1	0.0	30.8
LnGrp LOS	B	B	B	B	B		E	A	E	D	A	C
Approach Vol, veh/h		849			433			90			794	
Approach Delay, s/veh		13.2			19.2			59.3			44.4	
Approach LOS		B			B			E			D	

Timer - Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		75.6		44.4	14.0	61.6	32.6	11.8				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s		55.0		53.0	8.0	41.0	37.0	10.0				
Max Q Clear Time (g_c+I1), s		12.8		12.5	9.8	10.8	24.3	5.7				
Green Ext Time (p_c), s		2.4		0.7	0.0	2.0	2.3	0.1				

Intersection Summary												
HCM 6th Ctrl Delay			27.8									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1175	5	0	663	0	16
Future Volume (vph)	1175	5	0	663	0	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.999					0.865
Flt Protected						
Satd. Flow (prot)	3350	0	0	3576	0	1573
Flt Permitted						
Satd. Flow (perm)	3350	0	0	3576	0	1573
Link Speed (mph)	35			35	30	
Link Distance (ft)	268			716	161	
Travel Time (s)	5.2			13.9	3.7	
Confl. Peds. (#/hr)					2	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Adj. Flow (vph)	1306	6	0	737	0	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1312	0	0	737	0	18
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.1

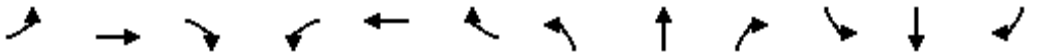
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1175	5	0	663	0	16
Future Vol, veh/h	1175	5	0	663	0	16
Conflicting Peds, #/hr	0	0	0	0	2	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	-2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1306	6	0	737	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	658
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.1
Pot Cap-1 Maneuver	-	-	0	-	0	*631
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*630
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	630	-	-	-
HCM Lane V/C Ratio	0.028	-	-	-
HCM Control Delay (s)	10.9	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

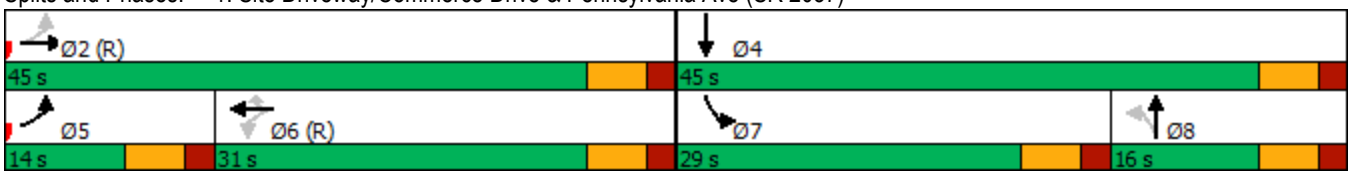
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

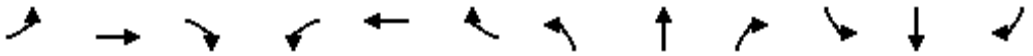


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	386	38	77	404	176	45	29	54	164	25	118
Future Volume (vph)	122	386	38	77	404	176	45	29	54	164	25	118
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	10	14	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	1		0	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.987				0.850		0.903			0.876	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1604	3554	0	1588	3225	1507	1596	1734	0	3096	1524	0
Flt Permitted	0.422			0.494			0.662			0.950		
Satd. Flow (perm)	713	3554	0	826	3225	1507	1112	1734	0	3096	1524	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15				185		57			124	
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		1280			268			162			498	
Travel Time (s)		24.9			5.2			3.7			9.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	128	406	40	81	425	185	47	31	57	173	26	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	446	0	81	425	185	47	88	0	173	150	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6		6	8					
Detector Phase	5	2		6	6	6	8	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	
Total Split (s)	14.0	45.0		31.0	31.0	31.0	16.0	16.0		29.0	45.0	
Total Split (%)	15.6%	50.0%		34.4%	34.4%	34.4%	17.8%	17.8%		32.2%	50.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	6.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 34 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Ave (SR 2037)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	386	38	77	404	176	45	29	54	164	25	118
Future Volume (veh/h)	122	386	38	77	404	176	45	29	54	164	25	118
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1837	1881	1911	1794	1766	1780	1800	1872	1800	1800	1800	1800
Adj Flow Rate, veh/h	128	406	39	81	425	0	47	31	53	173	26	64
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	0	0	2	1	0	0	0	0	0	0
Cap, veh/h	650	2163	207	547	1728		170	51	88	314	107	264
Arrive On Green	0.09	0.66	0.64	0.51	0.51	0.00	0.07	0.08	0.07	0.09	0.23	0.23
Sat Flow, veh/h	1750	3296	315	906	3356	1509	1258	620	1061	3326	461	1135
Grp Volume(v), veh/h	128	219	226	81	425	0	47	0	84	173	0	90
Grp Sat Flow(s),veh/h/ln	1750	1787	1824	906	1678	1509	1258	0	1681	1663	0	1596
Q Serve(g_s), s	2.6	4.3	4.4	4.3	6.3	0.0	3.2	0.0	4.4	4.5	0.0	4.1
Cycle Q Clear(g_c), s	2.6	4.3	4.4	4.3	6.3	0.0	3.2	0.0	4.4	4.5	0.0	4.1
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.63	1.00		0.71
Lane Grp Cap(c), veh/h	650	1172	1197	547	1728		170	0	139	314	0	372
V/C Ratio(X)	0.20	0.19	0.19	0.15	0.25		0.28	0.00	0.60	0.55	0.00	0.24
Avail Cap(c_a), veh/h	675	1172	1197	547	1728		220	0	205	887	0	709
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	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.2	6.1	6.1	11.6	12.1	0.0	40.3	0.0	40.2	38.9	0.0	28.1
Incr Delay (d2), s/veh	0.1	0.4	0.3	0.6	0.3	0.0	0.9	0.0	4.2	1.5	0.0	0.3
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(95%),veh/ln	1.6	2.7	2.8	1.6	4.1	0.0	1.9	0.0	3.5	3.3	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	6.4	6.5	12.2	12.5	0.0	41.2	0.0	44.3	40.4	0.0	28.4
LnGrp LOS	A	A	A	B	B		D	A	D	D	A	C
Approach Vol, veh/h		573			506			131			263	
Approach Delay, s/veh		6.6			12.4			43.2			36.3	
Approach LOS		A			B			D			D	

Timer - Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		64.0		26.0	12.7	51.3	13.5	12.4				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s		39.0		39.0	8.0	25.0	23.0	10.0				
Max Q Clear Time (g_c+I1), s		6.8		6.6	5.1	8.8	7.0	6.4				
Green Ext Time (p_c), s		1.6		0.3	0.1	2.0	0.5	0.1				

Intersection Summary												
HCM 6th Ctrl Delay			17.2									
HCM 6th LOS			B									

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	603	11	0	661	0	23
Future Volume (vph)	603	11	0	661	0	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.997					0.865
Flt Protected						
Satd. Flow (prot)	3377	0	0	3576	0	1573
Flt Permitted						
Satd. Flow (perm)	3377	0	0	3576	0	1573
Link Speed (mph)	35			35	30	
Link Distance (ft)	268			716	161	
Travel Time (s)	5.2			13.9	3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	655	12	0	718	0	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	667	0	0	718	0	25
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	603	11	0	661	0	23
Future Vol, veh/h	603	11	0	661	0	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	-2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	655	12	0	718	0	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	334
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.1
Pot Cap-1 Maneuver	-	-	0	-	0	*894
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*894
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	894	-	-	-
HCM Lane V/C Ratio	0.028	-	-	-
HCM Control Delay (s)	9.1	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

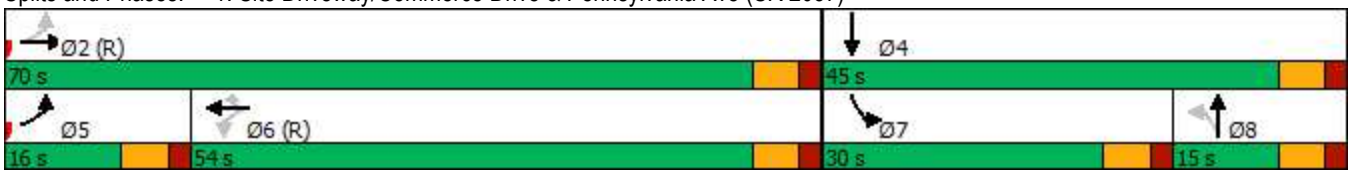
2030 Projected Conditions With Improvements

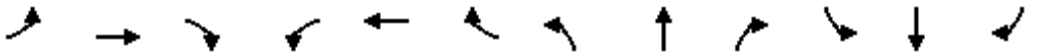
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	431	26	52	473	668	11	7	14	144	17	142
Future Volume (vph)	224	431	26	52	473	668	11	7	14	144	17	142
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	10	14	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	1		0	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00	1.00					0.99	0.98		1.00	0.99	
Frt		0.991				0.850		0.900			0.866	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1573	3529	0	1588	3133	1492	1596	1699	0	2867	1421	0
Flt Permitted	0.417			0.482			0.851			0.950		
Satd. Flow (perm)	689	3529	0	806	3133	1492	1412	1699	0	2854	1421	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				689		14			146	
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		1280			268			162			498	
Travel Time (s)		24.9			5.2			3.7			9.7	
Confl. Peds. (#/hr)	4		4				4		4	2		2
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
Heavy Vehicles (%)	2%	3%	0%	0%	5%	2%	0%	0%	0%	8%	11%	4%
Adj. Flow (vph)	231	444	27	54	488	689	11	7	14	148	18	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	231	471	0	54	488	689	11	21	0	148	164	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6		6	8					
Detector Phase	5	2		6	6	6	8	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	
Total Split (s)	16.0	70.0		54.0	54.0	54.0	15.0	15.0		30.0	45.0	
Total Split (%)	13.9%	60.9%		47.0%	47.0%	47.0%	13.0%	13.0%		26.1%	39.1%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	6.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 12 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	

Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Ave (SR 2037)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	431	26	52	473	668	11	7	14	144	17	142
Future Volume (veh/h)	224	431	26	52	473	668	11	7	14	144	17	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.97	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	1809	1866	1911	1794	1724	1766	1800	1872	1800	1688	1646	1744
Adj Flow Rate, veh/h	231	444	27	54	488	0	11	7	8	148	18	104
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, %	2	3	0	0	5	2	0	0	0	8	11	4
Cap, veh/h	678	2504	152	609	2025		115	41	46	250	37	213
Arrive On Green	0.08	0.74	0.73	0.62	0.62	0.00	0.04	0.05	0.04	0.08	0.18	0.18
Sat Flow, veh/h	1723	3396	206	883	3276	1497	1207	784	896	3118	210	1213
Grp Volume(v), veh/h	231	231	240	54	488	0	11	0	15	148	0	122
Grp Sat Flow(s),veh/h/ln	1723	1773	1829	883	1638	1497	1207	0	1681	1559	0	1422
Q Serve(g_s), s	5.1	4.5	4.6	2.9	7.7	0.0	1.0	0.0	1.0	5.3	0.0	8.9
Cycle Q Clear(g_c), s	5.1	4.5	4.6	2.9	7.7	0.0	1.0	0.0	1.0	5.3	0.0	8.9
Prop In Lane	1.00		0.11	1.00		1.00	1.00		0.53	1.00		0.85
Lane Grp Cap(c), veh/h	678	1308	1349	609	2025		115	0	87	250	0	250
V/C Ratio(X)	0.34	0.18	0.18	0.09	0.24		0.10	0.00	0.17	0.59	0.00	0.49
Avail Cap(c_a), veh/h	711	1308	1349	609	2025		157	0	146	678	0	495
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	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.0	4.6	4.6	8.9	9.9	0.0	53.1	0.0	52.4	51.1	0.0	42.8
Incr Delay (d2), s/veh	0.3	0.3	0.3	0.3	0.3	0.0	0.4	0.0	0.9	2.2	0.0	1.5
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(95%),veh/ln	3.0	2.7	2.8	1.0	4.8	0.0	0.6	0.0	0.8	3.8	0.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.3	4.9	4.9	9.2	10.1	0.0	53.5	0.0	53.3	53.3	0.0	44.2
LnGrp LOS	A	A	A	A	B		D	A	D	D	A	D
Approach Vol, veh/h		702			542			26			270	
Approach Delay, s/veh		5.3			10.0			53.4			49.2	
Approach LOS		A			B			D			D	

Timer - Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		89.8		25.2	13.7	76.1	14.2	11.0				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s		64.0		39.0	10.0	48.0	24.0	9.0				
Max Q Clear Time (g_c+I1), s		7.0		11.4	7.6	10.2	7.8	3.0				
Green Ext Time (p_c), s		1.7		0.4	0.2	2.5	0.5	0.0				

Intersection Summary												
HCM 6th Ctrl Delay			15.5									
HCM 6th LOS			B									

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	588	7	0	1192	0	6
Future Volume (vph)	588	7	0	1192	0	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.998					0.865
Flt Protected						
Satd. Flow (prot)	3283	0	0	3542	0	1573
Flt Permitted						
Satd. Flow (perm)	3283	0	0	3542	0	1573
Link Speed (mph)	35			35	30	
Link Distance (ft)	268			716	161	
Travel Time (s)	5.2			13.9	3.7	
Confl. Peds. (#/hr)		1	3		6	6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	0%	0%	3%	0%	0%
Adj. Flow (vph)	600	7	0	1216	0	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	607	0	0	1216	0	6
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

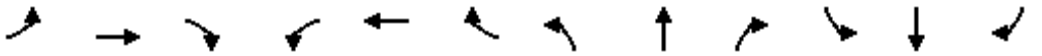
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	588	7	0	1192	0	6
Future Vol, veh/h	588	7	0	1192	0	6
Conflicting Peds, #/hr	0	1	3	0	6	6
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	-2	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	4	0	0	3	0	0
Mvmt Flow	600	7	0	1216	0	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	311
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.1
Pot Cap-1 Maneuver	-	-	0	-	0	*924
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*917
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	917	-	-	-
HCM Lane V/C Ratio	0.007	-	-	-
HCM Control Delay (s)	9	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

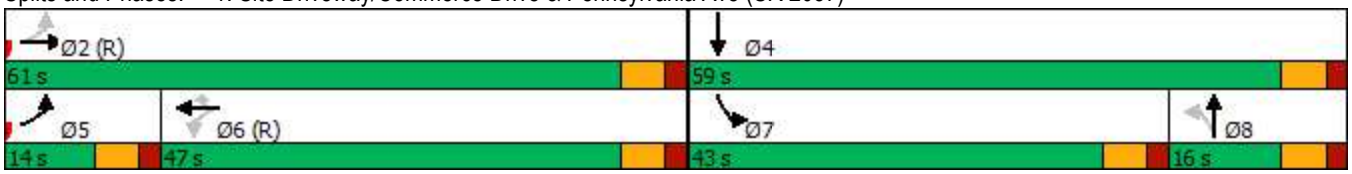


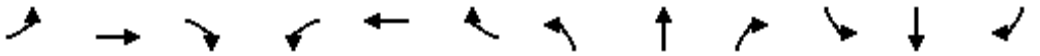
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	568	18	37	362	282	33	21	39	575	13	274
Future Volume (vph)	196	568	18	37	362	282	33	21	39	575	13	274
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	10	14	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	1		0	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor	1.00	1.00								1.00	0.99	
Frt		0.995				0.850		0.902			0.857	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1588	3611	0	1588	3257	1478	1596	1732	0	3036	1459	0
Flt Permitted	0.426			0.407			0.569			0.950		
Satd. Flow (perm)	712	3611	0	680	3257	1478	956	1732	0	3031	1459	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				310		43			301	
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		1280			268			162			498	
Travel Time (s)		24.9			5.2			3.7			9.7	
Confl. Peds. (#/hr)	1		1							1		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	0%	0%	1%	3%	0%	0%	0%	2%	0%	1%
Adj. Flow (vph)	215	624	20	41	398	310	36	23	43	632	14	301
Shared Lane Traffic (%)												
Lane Group Flow (vph)	215	644	0	41	398	310	36	66	0	632	315	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6		6	8					
Detector Phase	5	2		6	6	6	8	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	
Total Split (s)	14.0	61.0		47.0	47.0	47.0	16.0	16.0		43.0	59.0	
Total Split (%)	11.7%	50.8%		39.2%	39.2%	39.2%	13.3%	13.3%		35.8%	49.2%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	6.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 108 (90%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	

Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Ave (SR 2037)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	196	568	18	37	362	282	33	21	39	575	13	274
Future Volume (veh/h)	196	568	18	37	362	282	33	21	39	575	13	274
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1823	1896	1911	1794	1780	1752	1800	1872	1800	1772	1800	1786
Adj Flow Rate, veh/h	215	624	20	41	398	0	36	23	31	632	14	160
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	1	0	0	1	3	0	0	0	2	0	1
Cap, veh/h	574	2088	67	414	1588		116	41	55	760	41	469
Arrive On Green	0.08	0.59	0.58	0.47	0.47	0.00	0.05	0.06	0.05	0.23	0.33	0.33
Sat Flow, veh/h	1736	3562	114	754	3383	1485	1160	723	974	3274	124	1419
Grp Volume(v), veh/h	215	315	329	41	398	0	36	0	54	632	0	174
Grp Sat Flow(s),veh/h/ln	1736	1801	1875	754	1691	1485	1160	0	1697	1637	0	1543
Q Serve(g_s), s	7.4	10.5	10.6	3.7	8.5	0.0	3.7	0.0	3.7	22.0	0.0	10.2
Cycle Q Clear(g_c), s	7.4	10.5	10.6	3.7	8.5	0.0	3.7	0.0	3.7	22.0	0.0	10.2
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.57	1.00		0.92
Lane Grp Cap(c), veh/h	574	1056	1099	414	1588		116	0	96	760	0	510
V/C Ratio(X)	0.37	0.30	0.30	0.10	0.25		0.31	0.00	0.56	0.83	0.00	0.34
Avail Cap(c_a), veh/h	574	1056	1099	414	1588		157	0	156	1037	0	694
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	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	12.5	12.5	17.9	19.1	0.0	56.1	0.0	55.4	43.8	0.0	30.3
Incr Delay (d2), s/veh	0.4	0.7	0.7	0.5	0.4	0.0	1.5	0.0	5.0	4.3	0.0	0.4
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(95%),veh/ln	5.1	7.7	7.9	1.2	6.1	0.0	2.0	0.0	3.1	14.2	0.0	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.0	13.2	13.2	18.3	19.5	0.0	57.6	0.0	60.5	48.1	0.0	30.7
LnGrp LOS	B	B	B	B	B		E	A	E	D	A	C
Approach Vol, veh/h		859			439			90			806	
Approach Delay, s/veh		13.4			19.4			59.3			44.4	
Approach LOS		B			B			E			D	

Timer - Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		75.3		44.7	14.0	61.3	32.9	11.8				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s		55.0		53.0	8.0	41.0	37.0	10.0				
Max Q Clear Time (g_c+I1), s		13.0		12.7	9.9	11.0	24.5	5.7				
Green Ext Time (p_c), s		2.4		0.7	0.0	2.0	2.3	0.1				

Intersection Summary												
HCM 6th Ctrl Delay			27.9									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1191	5	0	672	0	16
Future Volume (vph)	1191	5	0	672	0	16
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.999					0.865
Flt Protected						
Satd. Flow (prot)	3350	0	0	3576	0	1573
Flt Permitted						
Satd. Flow (perm)	3350	0	0	3576	0	1573
Link Speed (mph)	35			35	30	
Link Distance (ft)	268			716	161	
Travel Time (s)	5.2			13.9	3.7	
Confl. Peds. (#/hr)					2	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Adj. Flow (vph)	1323	6	0	747	0	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1329	0	0	747	0	18
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.1

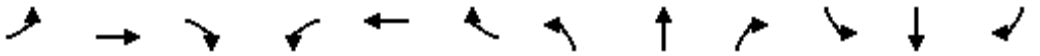
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1191	5	0	672	0	16
Future Vol, veh/h	1191	5	0	672	0	16
Conflicting Peds, #/hr	0	0	0	0	2	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	-2	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	1323	6	0	747	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	667
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.1
Pot Cap-1 Maneuver	-	-	0	-	0	*631
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*630
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	630	-	-	-
HCM Lane V/C Ratio	0.028	-	-	-
HCM Control Delay (s)	10.9	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

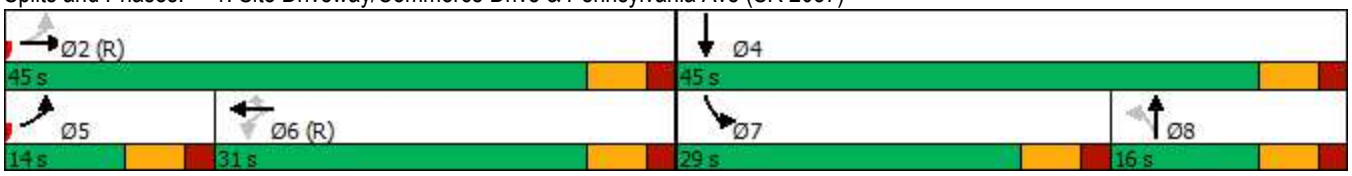
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

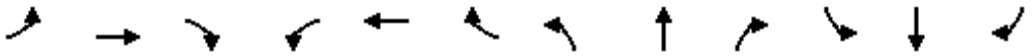


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	391	38	77	410	179	45	29	54	167	25	120
Future Volume (vph)	124	391	38	77	410	179	45	29	54	167	25	120
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	11	12	10	14	12	10	11	11
Grade (%)		-1%			1%			0%			0%	
Storage Length (ft)	200		0	240		100	0		0	150		0
Storage Lanes	1		0	1		1	1		0	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.987				0.850		0.903			0.876	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1604	3554	0	1588	3225	1507	1596	1734	0	3096	1524	0
Flt Permitted	0.417			0.491			0.660			0.950		
Satd. Flow (perm)	704	3554	0	821	3225	1507	1109	1734	0	3096	1524	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15				188		57			126	
Link Speed (mph)		35			35			30			35	
Link Distance (ft)		1280			268			162			498	
Travel Time (s)		24.9			5.2			3.7			9.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	131	412	40	81	432	188	47	31	57	176	26	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	131	452	0	81	432	188	47	88	0	176	152	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases	5	2			6			8		7	4	
Permitted Phases	2			6		6	8					
Detector Phase	5	2		6	6	6	8	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	20.0		20.0	20.0	20.0	5.0	5.0		5.0	5.0	
Minimum Split (s)	13.0	26.0		26.0	26.0	26.0	11.0	11.0		11.0	11.0	
Total Split (s)	14.0	45.0		31.0	31.0	31.0	16.0	16.0		29.0	45.0	
Total Split (%)	15.6%	50.0%		34.4%	34.4%	34.4%	17.8%	17.8%		32.2%	50.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	6.0	5.0		5.0	5.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag		Lead		
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 34 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of 1st Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	

Splits and Phases: 1: Site Driveway/Commerce Drive & Pennsylvania Ave (SR 2037)





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	391	38	77	410	179	45	29	54	167	25	120
Future Volume (veh/h)	124	391	38	77	410	179	45	29	54	167	25	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1837	1881	1911	1794	1766	1780	1800	1872	1800	1800	1800	1800
Adj Flow Rate, veh/h	131	412	39	81	432	0	47	31	53	176	26	66
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	0	0	2	1	0	0	0	0	0	0
Cap, veh/h	645	2162	204	543	1723		170	51	88	318	105	267
Arrive On Green	0.09	0.66	0.64	0.51	0.51	0.00	0.07	0.08	0.07	0.10	0.23	0.23
Sat Flow, veh/h	1750	3301	311	901	3356	1509	1255	620	1061	3326	451	1144
Grp Volume(v), veh/h	131	222	229	81	432	0	47	0	84	176	0	92
Grp Sat Flow(s),veh/h/ln	1750	1787	1825	901	1678	1509	1255	0	1681	1663	0	1594
Q Serve(g_s), s	2.7	4.4	4.5	4.3	6.5	0.0	3.3	0.0	4.4	4.5	0.0	4.2
Cycle Q Clear(g_c), s	2.7	4.4	4.5	4.3	6.5	0.0	3.3	0.0	4.4	4.5	0.0	4.2
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.63	1.00		0.72
Lane Grp Cap(c), veh/h	645	1171	1196	543	1723		170	0	139	318	0	373
V/C Ratio(X)	0.20	0.19	0.19	0.15	0.25		0.28	0.00	0.60	0.55	0.00	0.25
Avail Cap(c_a), veh/h	670	1171	1196	543	1723		219	0	205	887	0	709
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	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.3	6.1	6.2	11.7	12.2	0.0	40.3	0.0	40.2	38.9	0.0	28.0
Incr Delay (d2), s/veh	0.2	0.4	0.4	0.6	0.3	0.0	0.9	0.0	4.2	1.5	0.0	0.3
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(95%),veh/ln	1.6	2.7	2.8	1.6	4.2	0.0	1.9	0.0	3.5	3.4	0.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	6.5	6.5	12.3	12.6	0.0	41.2	0.0	44.3	40.4	0.0	28.4
LnGrp LOS	A	A	A	B	B		D	A	D	D	A	C
Approach Vol, veh/h		582			513			131			268	
Approach Delay, s/veh		6.7			12.5			43.2			36.3	
Approach LOS		A			B			D			D	

Timer - Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		64.0		26.0	12.7	51.2	13.6	12.4				
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s		39.0		39.0	8.0	25.0	23.0	10.0				
Max Q Clear Time (g_c+I1), s		6.9		6.7	5.2	9.0	7.0	6.4				
Green Ext Time (p_c), s		1.6		0.3	0.1	2.1	0.6	0.1				

Intersection Summary												
HCM 6th Ctrl Delay			17.2									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	610	11	0	669	0	23
Future Volume (vph)	610	11	0	669	0	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	13	10	14	10	12
Grade (%)	0%			0%	-2%	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.997					0.865
Flt Protected						
Satd. Flow (prot)	3377	0	0	3576	0	1573
Flt Permitted						
Satd. Flow (perm)	3377	0	0	3576	0	1573
Link Speed (mph)	35			35	30	
Link Distance (ft)	268			716	161	
Travel Time (s)	5.2			13.9	3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	2%	0%	0%
Adj. Flow (vph)	663	12	0	727	0	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	675	0	0	727	0	25
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	610	11	0	669	0	23
Future Vol, veh/h	610	11	0	669	0	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	-2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	663	12	0	727	0	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	338
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.7
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.1
Pot Cap-1 Maneuver	-	-	0	-	0	*894
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*894
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	894	-	-	-
HCM Lane V/C Ratio	0.028	-	-	-
HCM Control Delay (s)	9.1	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

APPENDIX G

PennDOT Signal Diagrams

SIGN DETAILS

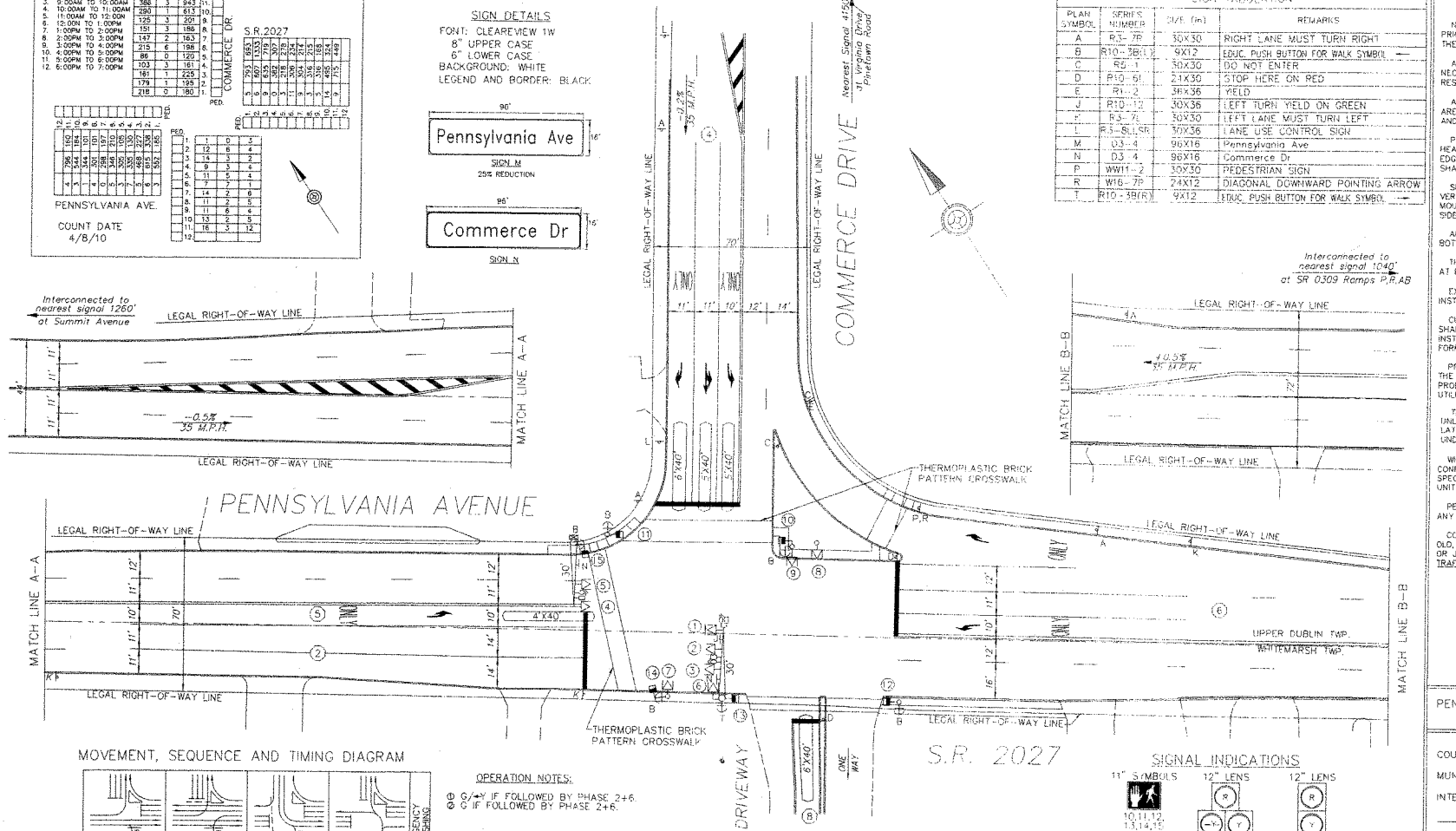
FONT: CLEAREVIEW 1W
8" UPPER CASE
6" LOWER CASE
BACKGROUND: WHITE
LEGEND AND BORDER: BLACK

SIGN M
25% REDUCTION

SIGN N

SIGN TABULATION

PLAN SYMBOL	SERIES NUMBER	SIZE (in)	REMARKS
A	R3-7R	30X30	RIGHT LANE MUST TURN RIGHT
B	R10-3B(L)	9X12	EDUC. PUSH BUTTON FOR WALK SYMBOL
C	R5-1	30X30	DO NOT ENTER
D	R10-6I	21X30	STOP HERE ON RED
E	R1-2	36X36	YIELD
J	R10-12	30X36	LEFT TURN YIELD ON GREEN
H	R3-7L	30X30	LEFT LANE MUST TURN LEFT
L	R3-8L,SR	30X36	LANE USE CONTROL SIGN
M	D3-4	96X16	Pennsylvania Ave
N	D3-4	96X16	Commerce Dr
P	WW11-2	30X30	PEDESTRIAN SIGN
R	W16-7P	24X12	DIAGONAL DOWNWARD POINTING ARROW
T	R10-3B(R)	9X12	EDUC. PUSH BUTTON FOR WALK SYMBOL



MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2+5			2+6				4				8				EMERGENCY FLASHING
SIGNALS \ INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14		
1	G/Y	Y	R	G	G	Y	R	R	R	R	R	R	R	R		Y
2,3	G	Y	R	G	G	Y	R	R	R	R	R	R	R	R		Y
4,5	R	R	R	G	G	Y	R	R	R	R	R	R	R	R		Y
6,7	R	R	R	R	R	R	R	G	G	Y	R	R	R	R		R
8,9	R	R	R	R	R	R	R	R	R	R	R	G	Y	R		R
10,11	H	H	H	M	FH	H	H	H	H	H	H	R	R	R		OFF
12,13	H	H	H	M	FH	H	H	H	H	H	H	G	Y	R		OFF
14,15	H	H	H	H	H	H	H	M	FH	H	H	R	R	R		OFF

		4	2			4	2		4	2		4	2	
FIXED														
MINIMUM	7			20			5			5				
PASSAGE	3						3			3				
MAX I	15			25			25			15				
PEDESTRIAN*				7	18		7	19						
MEMORY	NL			MX			L			NL				

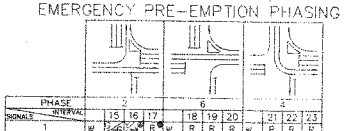
*UPON PEDESTRIAN ACTUATION ONLY, OTHERWISE "H" AT ALL TIMES.

SYSTEM NOTE:
REFER TO SYSTEM PERMIT #1-0038 FOR PROGRAM TIMES AND WEEKLY PROGRAM CHART

OPERATION NOTES:

① G/Y IF FOLLOWED BY PHASE 2+6.
② G IF FOLLOWED BY PHASE 2+6.

EMERGENCY PRE-EMPTION PHASING



PHASE	2			6			5			
SIGNALS \ INTERVAL	15	16	17	18	19	20	21	22	23	
1	G/Y	Y	R	R	R	R	R	R	R	
2,3	G	Y	R	R	R	R	R	R	R	
4,5	R	R	R	G	Y	R	R	R	R	
6,7	R	R	R	R	R	R	G	Y	R	
8,9	R	R	R	R	R	R	R	R	R	
10,11	H	H	H	H	H	H	H	H	H	
12,13	H	H	H	H	H	H	H	H	H	
14,15	H	H	H	H	H	H	H	H	H	
FIXED TIME	**	4	2	**	4	2	**	4	2	

ALL APPROACHES RED BEFORE GOING TO PRE-EMPT
ALL APPROACHES RED BEFORE COMING TO PRE-EMPT
ALL APPROACHES RED BEFORE COMING TO PRE-EMPT

EMERGENCY PRE-EMPTION OPERATION NOTES

Ⓐ SIGNALS TO INDICATE G/→ WHEN RETURNING TO NORMAL OPERATION.
Ⓑ SIGNALS TO INDICATE G WHEN RETURNING TO NORMAL OPERATION

EMERGENCY PRE-EMPTION NOTES

CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE EASTBOUND AND WESTBOUND APPROACHES OF PENNSYLVANIA AVENUE, AND THE SOUTHBOUND APPROACH OF COMMERCE DRIVE, WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION.

THIS FAIL SAFE DEVICE SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH. LOCATION OF THE EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLES, SHALL TERMINATE ALL GREEN INDICATIONS, AND TIME OUT THE YELLOW CLEARANCES. ALL APPROACHES SHALL THEN DISPLAY A RED INDICATION BEFORE THE PRE-EMPTION PHASE BEGINS. THE GREEN INDICATIONS FOR THE PRE-EMPTED PHASE SHALL REMAIN GREEN FOR THE DURATION OF THE SIGNAL PRE-EMPTION, WITH RED INDICATIONS DISPLAYED FOR ALL OTHER PHASES.

THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLES, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE ACTUATION OF THE APPROACHING PHASE GOVERNING THE EMERGENCY VEHICLE.

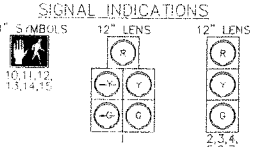
IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE ARE FLASHING, ALL SIGNALS SHALL REMAIN FLASHING.

UPON COMPLETION OF PRE-EMPTION PHASE 2, 4, OR 6, IN RETURNING TO NORMAL OPERATION, PHASE 2+6, INTERVAL 4 SHALL FOLLOW.

IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

NOTE: IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITY FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE EMERGENCY PRE-EMPTION.

SIGNAL INDICATIONS



SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS 1,2,3,4,5,6,7,8,9

SCALE
25 0 25

LEGEND

- 20' — MAST ARM/ IDENTIFYING LENGTH
- (12'x6') — LOOP SENSOR/SIZE
- (2) — VEHICULAR SIGNAL HEAD/ BACKPLATE/VISORS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER
- EPE — EMERGENCY PRE-EMPTION FLASHING BEACON
- EPD — EMERGENCY PRE-EMPTION DEVICE
- (2) — PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- (2) — PHASE NUMBER
- I — PEDESTRIAN PUSHBUTTON/ SIGN
- A — SIGN IDENTIFYING LETTER

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT, FOR REVIEW, PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

SYSTEM PERMIT # 1-0038

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: UPPER DUBLIN TOWNSHIP
INTERSECTION: PENNSYLVANIA AVENUE (S.R. 2027) AND COMMERCE DRIVE

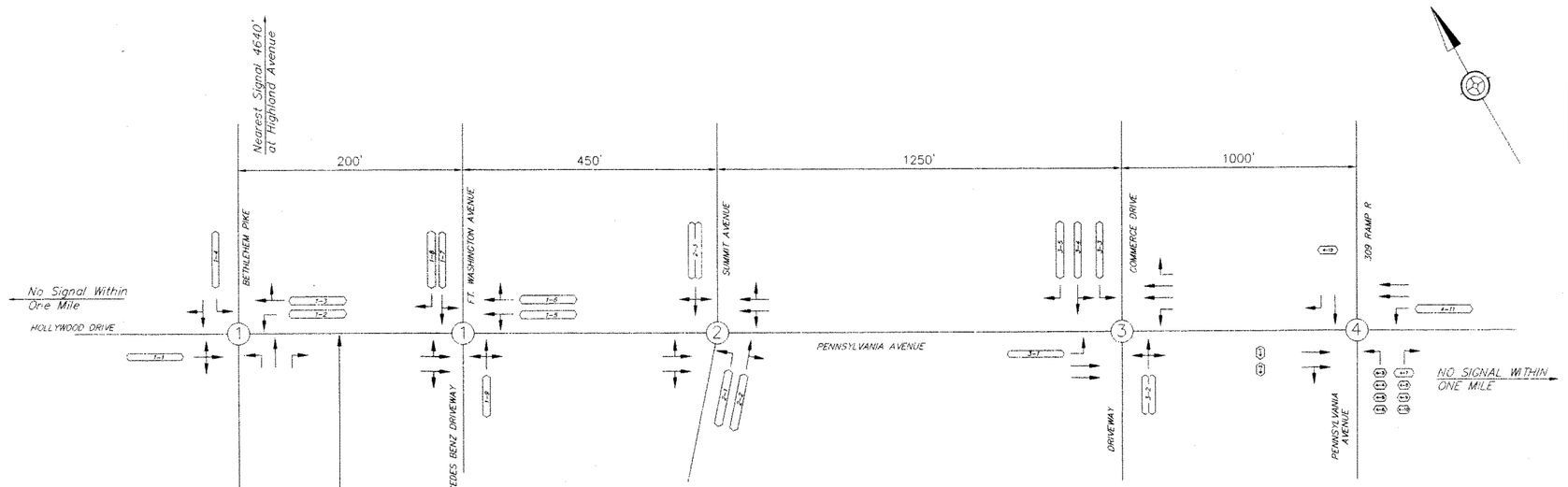
REVIEWED:
DATE
MUNICIPAL OFFICIAL DATE

RECOMMENDED:
ASHWIN PATEL 5/6/04
LOUIS R. BELMONTE 5/11/04
DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DES./ REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	AS-BUILT, ADD SIGNS P & R, RELOCATE SIGN K, PED CLEARANCES, X-WALK STRIPING	WOF	8/10/10	DLA	8/12/10	ARP	8/13/10
2							
3							
4							
5							
6							
7							
8							

SHEET 2 OF 2 | PERMIT # 64-0401 | FILE # 0401

I-0038



TIME OF DAY SYSTEM
CYCLE/SPLIT/OFFSET

Program 1		File #	Phase										Cycle	Offset # 1	Offset # 2
	Intersections		1	2	3	4	5	6	7	8	9	10			
1	BETHLEHEM PIKE/PENNSYLVANIA AVENUE	0681	–	–	–	–	–	–	–	–	–	–	MAX 1	FREE	
2	PENNSYLVANIA AVENUE/SUMMIT AVE	1649	–	76	–	39	–	76	–	39	–	–	115	10	
3	PENNSYLVANIA AVENUE/COMMERCE DRIVE	0401	–	70	–	32(SPLIT)	18(LEAD)	54	–	13(SPLIT)	–	–	115	12	
4	PENNSYLVANIA AVENUE/309 RAMP R	3479	23(LEAD)	54	–	38(SPLIT)	–	77	–	38	–	–	115	0	
5	BETHLEHEM PIKE/LAFAYETTE AVENUE	3275	–	59	–	12(SPLIT)	13(LEAD)	46	–	39(SPLIT)	–	–	110	FREE	
6	LAFAYETTE AVE/LAFAYETTE CONN.	3276	29(LEAD)	38	–	43(SPLIT)	–	67	–	43(SPLIT)	–	–	110	FREE	
Program 2		File #	Phase										Cycle	Offset # 1	Offset # 2
	Intersections		1	2	3	4	5	6	7	8	9	10			
1	BETHLEHEM PIKE/PENNSYLVANIA AVENUE	0681	–	–	–	–	–	–	–	–	–	–	MAX 1	FREE	
2	PENNSYLVANIA AVENUE/SUMMIT AVE	1649	–	55	–	35	–	55	–	35	–	–	90	45	
3	PENNSYLVANIA AVENUE/COMMERCE DRIVE	0401	–	45	–	32(SPLIT)	14(LEAD)	31	–	13(SPLIT)	–	–	90	34	
4	PENNSYLVANIA AVENUE/309 RAMP R	3479	21(LEAD)	42	–	27	–	63	–	27	–	–	90	23	
5	BETHLEHEM PIKE/LAFAYETTE AVENUE	3275	–	69	–	12(SPLIT)	13(LEAD)	56	–	29(SPLIT)	–	–	110	FREE	
6	LAFAYETTE AVE/LAFAYETTE CONN.	3276	29(LEAD)	38	–	43(SPLIT)	–	67	–	43(SPLIT)	–	–	110	FREE	
Program 3		File #	Phase										Cycle	Offset # 1	Offset # 2
	Intersections		1	2	3	4	5	6	7	8	9	10			
1	BETHLEHEM PIKE/PENNSYLVANIA AVENUE	0681	–	–	–	–	–	–	–	–	–	–	MAX 1	FREE	
2	PENNSYLVANIA AVENUE/SUMMIT AVE	1649	–	85	–	35	–	85	–	35	–	–	120	1	
3	PENNSYLVANIA AVENUE/COMMERCE DRIVE	0401	–	48	–	54(SPLIT)	14(LEAD)	35	–	13(SPLIT)	–	–	120	108	
4	PENNSYLVANIA AVENUE/309 RAMP R	3479	29(LEAD)	63	–	28	–	92	–	28	–	–	120	116	
5	BETHLEHEM PIKE/LAFAYETTE AVENUE	3275	–	51	–	12(SPLIT)	19(LEAD)	32	–	37(SPLIT)	–	–	100	FREE	
6	LAFAYETTE AVE/LAFAYETTE CONN.	3276	23(LEAD)	30	–	47(SPLIT)	–	53	–	47(SPLIT)	–	–	100	FREE	

NOTES: – ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
– REFER TO THE SIGNAL PERMIT PLAN FOR MAX I, MAX II, CLEARANCE AND PED TIMES.

CLOSED LOOP SIGNAL NOTES

1. PROGRAMS TO BE SELECTED BY CLOSED LOOP SYSTEM (TIME OF DAY) OR TBC BACKUP.
2. OFFSET REFERENCED TO THE BEGINNING OF NEMA TS2 FIRST GREEN.
3. ACTUAL GREEN TIME DETERMINED BY CYCLE LENGTH.
4. SYSTEM LIMITS:
   ALONG BETHLEHEM PIKE FROM LAFAYETTE TO PENNA AVE
   ALONG PENNA AVE FROM BETHLEHEM PIKE TO SUMMIT AVE
   MASTER CONTROLLER: BETHLEHEM PIKE AND PENNA AVE
5. PRIMARY COORDINATION: FIBER OPTIC CABLE
   SECONDARY COORDINATION: TBC (DEFAULT TO BACKUP TBC)
6. SYSTEM IS DESIGNED FOR THE SYSTEM SOFTWARE: N/A

WEEKLY PROGRAM CHART				
EVENT	DAY	TIME	PROGRAM	REMARKS
1	1–7	00:00	MAX 1	FREE
2	1–5	06:00	1	–
3	1–5	09:00	2	–
4	1–5	15:00	3	–
5	1–5	19:00	MAX 1	FREE
6	6–7	10:00	2	–
7	6–7	07:00	MAX 1	FREE

* DAY 1 = MONDAY

LEGEND

(X–Y) SYSTEM DETECTOR, INTERSECTION X – LOOP NO. Y

(X–Y) DETECTOR, INTERSECTION X – LOOP NO. Y

ø PHASE

SCALE: NOT TO SCALE

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

REFER TO TRAFFIC SIGNAL PERMIT DRAWING FOR INDIVIDUAL INTERSECTION OPERATION, GEOMETRY, PHASING AND CRITICAL TIMES.

FOR CONSTRUCTION AND INSPECTION THE SYSTEM PERMIT SHOULD ALWAYS BE ACCOMPANIED WITH TRAFFIC SIGNAL PERMIT DRAWING.

TEST THE SYSTEM AT LOCAL INTERSECTION LEVEL, SUBSYSTEM LEVEL MASTER CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE DIAL UP LEVEL.

GATHER THE SYSTEM FAILURE CRITICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.

SET UP PENNDOT DISTRICT 6-0 COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SYSTEMS REVISIONS.

ASSIGN LOOP DETECTORS AND PROGRAM THE CONTROLLERS TO GATHER TRAFFIC VOLUMES IN 15 MINUTE INTERVAL, WHERE APPLICABLE.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

OBTAIN POLE ATTACHMENT PERMIT FOR AERIAL FIBER OPTIC INSTALLATION.

MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE DROPS.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 10, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: UPPER DUBLIN TWP./WHITEMARSH TWP.
INTERSECTION: BETHLEHEM PIKE
PENNSYLVANIA AVENUE

REVIEWED:

MUNICIPAL OFFICIAL — DATE 6/2/11

RECOMMENDED:

KEVIN M. CONAHAN 4/18/05

LOUIS R. BELMONTE 4/18/05
DISTRICT TRAFFIC ENGINEER — DATE

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	ADDED DRIVEWAY TO INTERSECTION 4			KMC	2/2/7	LRB	2/7/07
2	REVISED SPLITS, ADDED INTERSECTIONS 3 & 4	JLH	2/24/10	DLA	3/12/10	AP	3/12/10
3	REVISED TIMINGS ON PENNSYLVANIA AVE	MEM		DLA	12/27/10	LRB	1/3/11
4	ADDED DRIVEWAY TO INTERSECTION 1, CHANGED EVENT 6 TO PROGRAM 2	H&K	4/11/11	DLA	6/29/11	AP	7/12/11
5							
6							
7							
8							

SHEET 2 OF 2 | PERMIT # I-0038 | FILE #

APPENDIX H

Auxiliary Turn Lane Warrant Analysis

Pennsylvania Avenue (SR 2037) & Commerce Drive/ Site Driveway

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	11/7/2022
County:	Chester County	**Conducted By:**	BH
PennDOT Engineering District:	6	**Checked By:**	MB
		Agency/Company Name:	Traffic Planning and Design, Inc.

Intersection & Approach Description: Pennsylvania Avenue (SR 2037) and Commerce Drive/Site Driveway

Analysis Period:	2030 Build	**Number of Approach Lanes:**	2
Design Hour:	AM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Signalized		
Posted Speed Limit (MPH):	35		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	52	2.0%	53
	Through	-	473	5.0%	485
	Right	Yes	668	2.0%	675
Opposing	Left	Yes	224	2.0%	227
	Through	-	431	3.0%	438
	Right	Yes	26	2.0%	27

Advancing Volume:	1213
Opposing Volume:	692
Left Turn Volume:	53
% Left Turns in Advancing Volume:	4.37%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	224	2.0%	N/A
	Through	-	431	3.0%	N/A
	Right	-	26	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 7**

Warrant Met?: **Yes**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized
Design Hour Volume of Turning Lane:	53
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	31

Average # of Vehicles/Cycle: 2.0

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

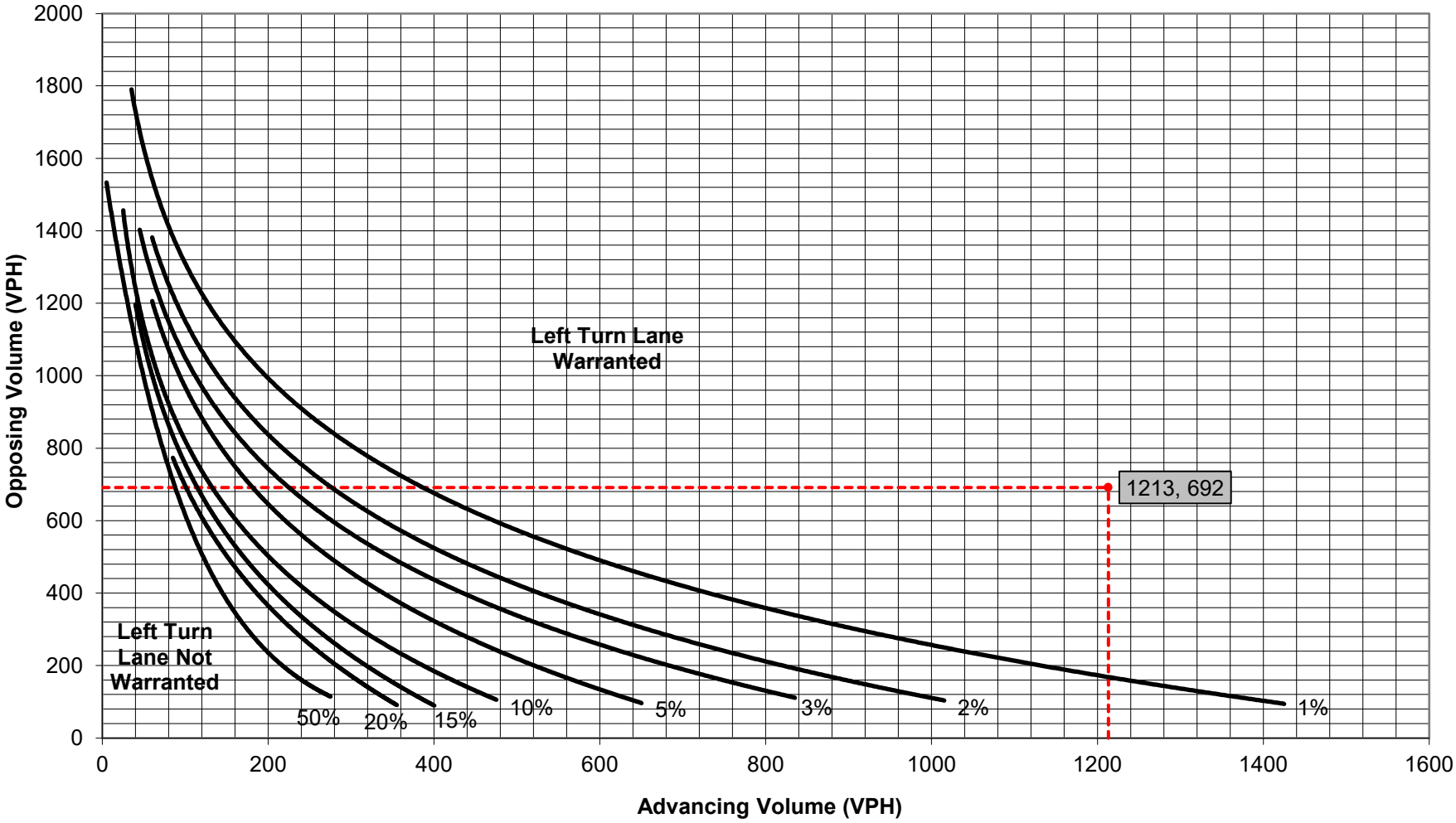
Left Turn Lane Storage Length, Condition A:	**100**	**Feet**
Condition B:	**N/A**	**Feet**
Condition C:	**N/A**	**Feet**
Required Left Turn Lane Storage Length:	**100**	**Feet**

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 7. Warrant for left turn lanes on four-lane, undivided highways (unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	11/7/2022
County:	Chester County	**Conducted By:**	BH
PennDOT Engineering District:	6	**Checked By:**	MB
		Agency/Company Name:	Traffic Planning and Design, Inc.

Intersection & Approach Description: Pennsylvania Avenue (SR 2037) and Commerce Drive/Site Driveway

Analysis Period:	2030 Build	**Number of Approach Lanes:**	2
Design Hour:	AM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Signalized		
Posted Speed Limit (MPH):	35		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	52	2.0%	N/A
	Through	-	473	5.0%	N/A
	Right	Yes	668	2.0%	N/A
Opposing	Left	Yes	224	2.0%	N/A
	Through	-	431	3.0%	N/A
	Right	Yes	26	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	224	2.0%	227
	Through	-	431	3.0%	438
	Right	-	26	2.0%	27

Advancing Volume:	692
Right Turn Volume:	27

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 11

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized
Design Hour Volume of Turning Lane:	27
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	31

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

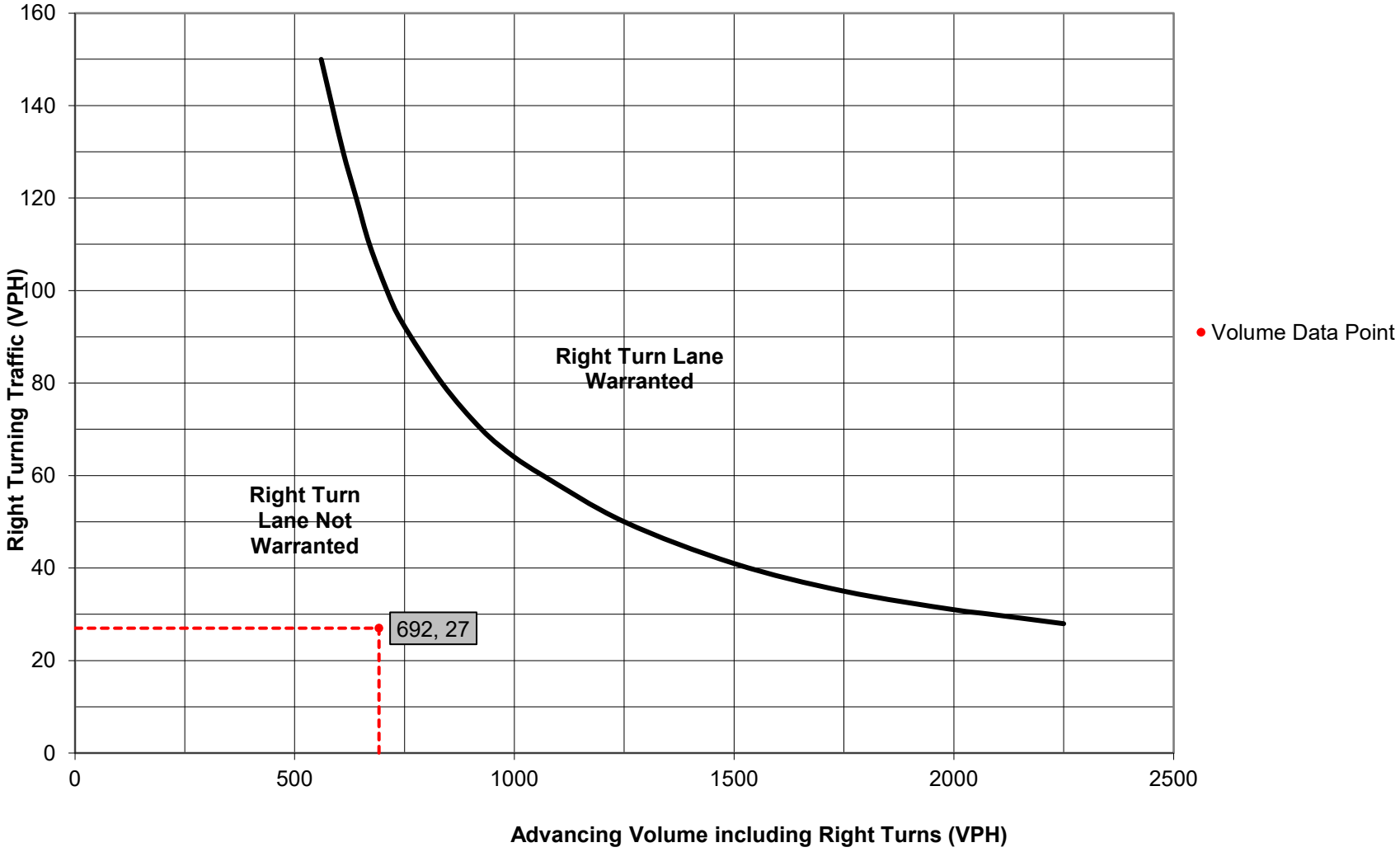
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 11. Warrant for right turn lanes on four-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	11/7/2022
County:	Chester County	**Conducted By:**	BH
PennDOT Engineering District:	6	**Checked By:**	MB
		Agency/Company Name:	Traffic Planning and Design, Inc.

Intersection & Approach Description: Pennsylvania Avenue (SR 2037) and Commerce Drive/Site Driveway

Analysis Period:	2030 Build	**Number of Approach Lanes:**	2
Design Hour:	PM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Signalized		
Posted Speed Limit (MPH):	35		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	37	2.0%	38
	Through	-	362	1.0%	364
	Right	Yes	282	3.0%	287
Opposing	Left	Yes	196	1.0%	197
	Through	-	568	1.0%	571
	Right	Yes	18	2.0%	19

Advancing Volume:	689
Opposing Volume:	787
Left Turn Volume:	38
% Left Turns in Advancing Volume:	5.52%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	196	1.0%	N/A
	Through	-	568	1.0%	N/A
	Right	-	18	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 7

Warrant Met?: Yes

Right Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized
Design Hour Volume of Turning Lane:	38
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	31

Average # of Vehicles/Cycle: 1.0

PennDOT Publication 46, Exhibit 11-6

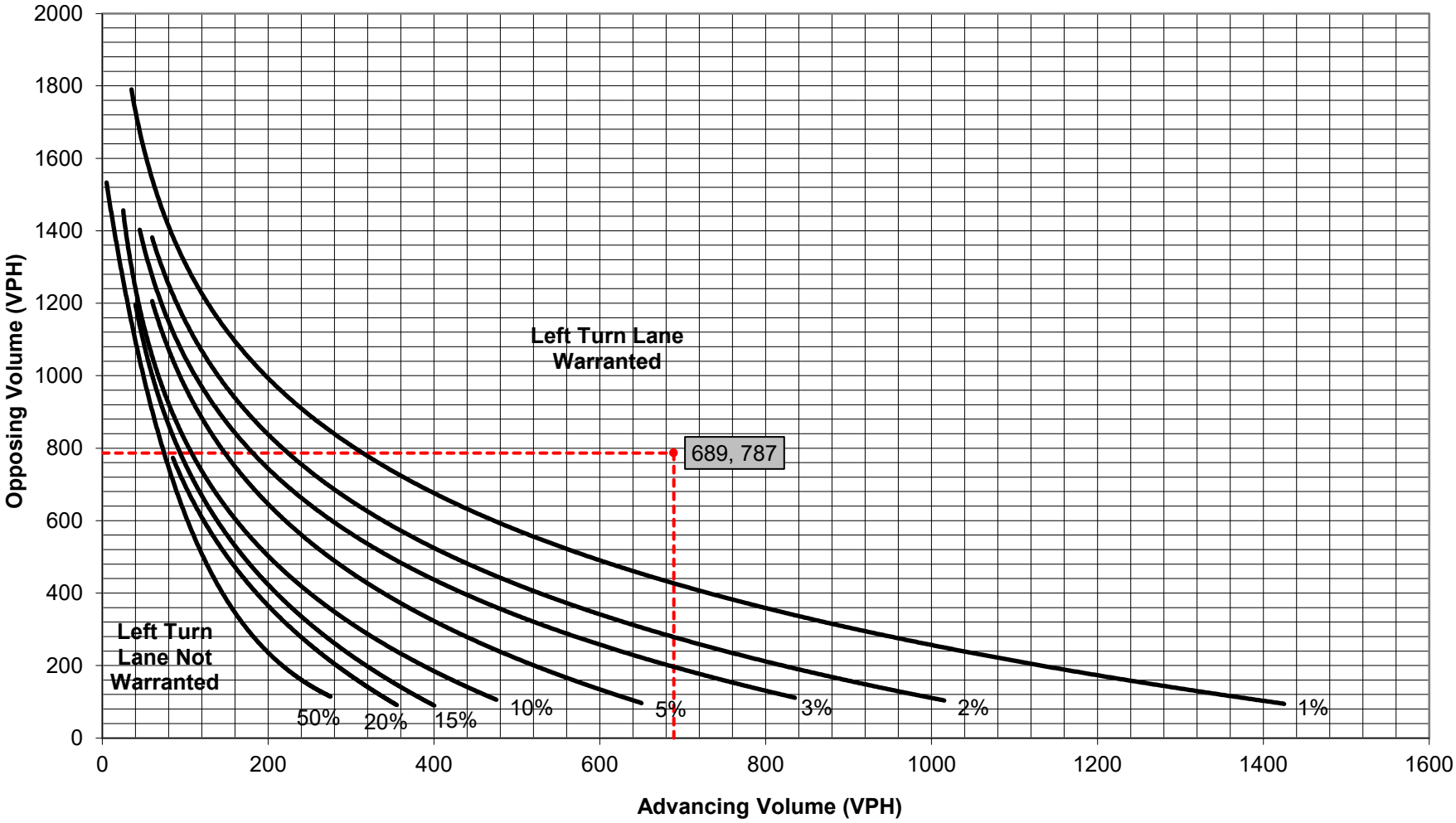
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	75	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	75	Feet

Additional Findings: N/A

Additional Comments / Justifications:

Figure 7. Warrant for left turn lanes on four-lane, undivided highways (unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	11/7/2022
County:	Chester County	**Conducted By:**	BH
PennDOT Engineering District:	6	**Checked By:**	MB
		Agency/Company Name:	Traffic Planning and Design, Inc.

Intersection & Approach Description: Pennsylvania Avenue (SR 2037) and Commerce Drive/Site Driveway

Analysis Period:	2030 Build	**Number of Approach Lanes:**	2
Design Hour:	PM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Signalized		
Posted Speed Limit (MPH):	35		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	37	2.0%	N/A
	Through	-	362	1.0%	N/A
	Right	Yes	282	3.0%	N/A
Opposing	Left	Yes	196	1.0%	N/A
	Through	-	568	1.0%	N/A
	Right	Yes	18	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	196	1.0%	197
	Through	-	568	1.0%	571
	Right	-	18	2.0%	19

Advancing Volume:	787
Right Turn Volume:	19

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 11

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized
Design Hour Volume of Turning Lane:	19
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	31

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

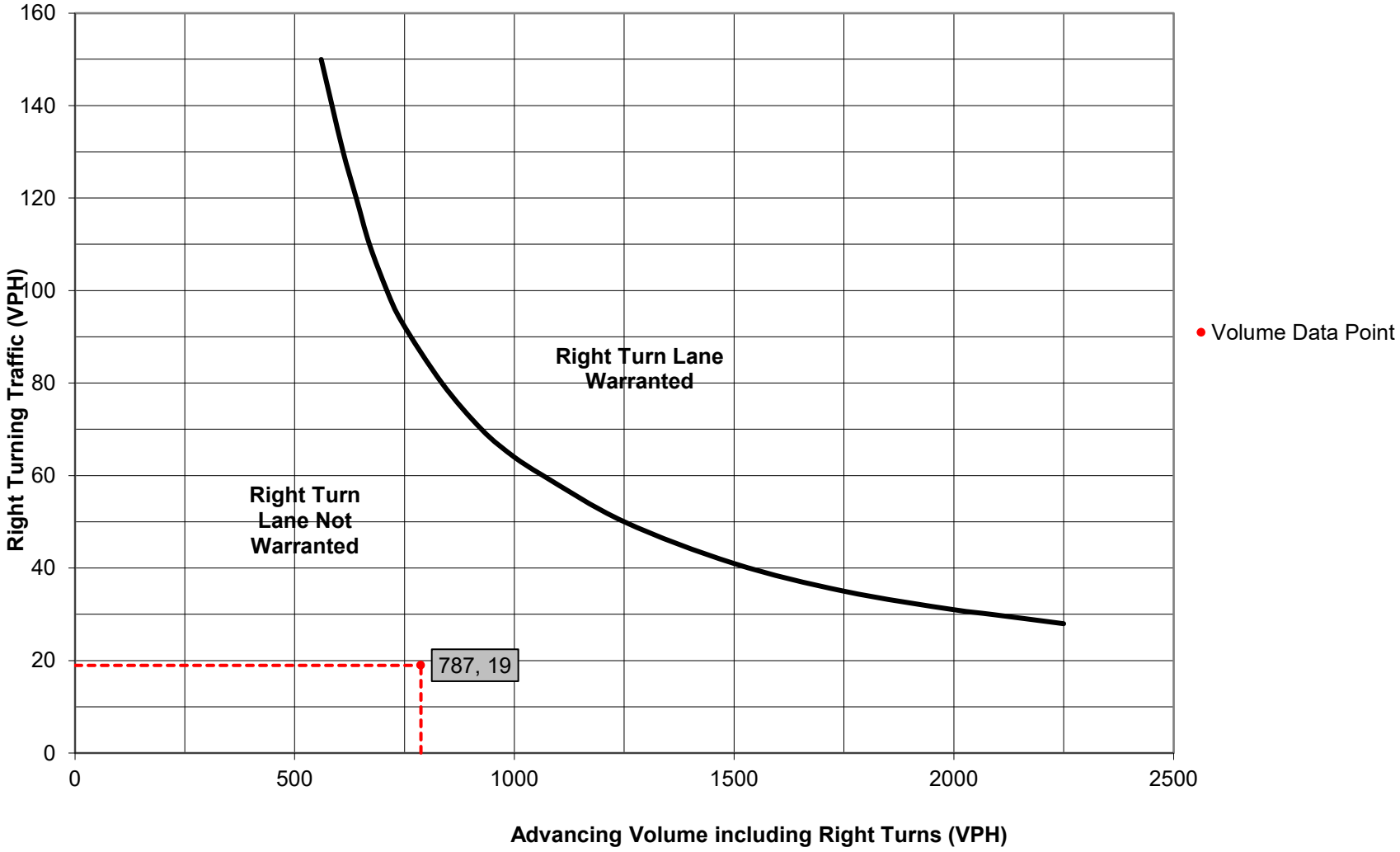
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 11. Warrant for right turn lanes on four-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	3/6/2023
County:	Chester County	**Conducted By:**	BH
PennDOT Engineering District:	6	**Checked By:**	MB
		Agency/Company Name:	Traffic Planning and Design, Inc.

Intersection & Approach Description: Pennsylvania Avenue (SR 2037) and Commerce Drive/Site Driveway

Analysis Period:	2030 Build	**Number of Approach Lanes:**	2
Design Hour:	SAT Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Signalized		
Posted Speed Limit (MPH):	35		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	77	2.0%	78
	Through	-	410	2.0%	415
	Right	Yes	179	1.0%	180
Opposing	Left	Yes	124	2.0%	126
	Through	-	391	2.0%	395
	Right	Yes	38	2.0%	39

Advancing Volume:	673
Opposing Volume:	560
Left Turn Volume:	78
% Left Turns in Advancing Volume:	11.59%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	124	2.0%	N/A
	Through	-	391	2.0%	N/A
	Right	-	38	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 7**

Warrant Met?: **Yes**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized
Design Hour Volume of Turning Lane:	78
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	40

Average # of Vehicles/Cycle: 2.0

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

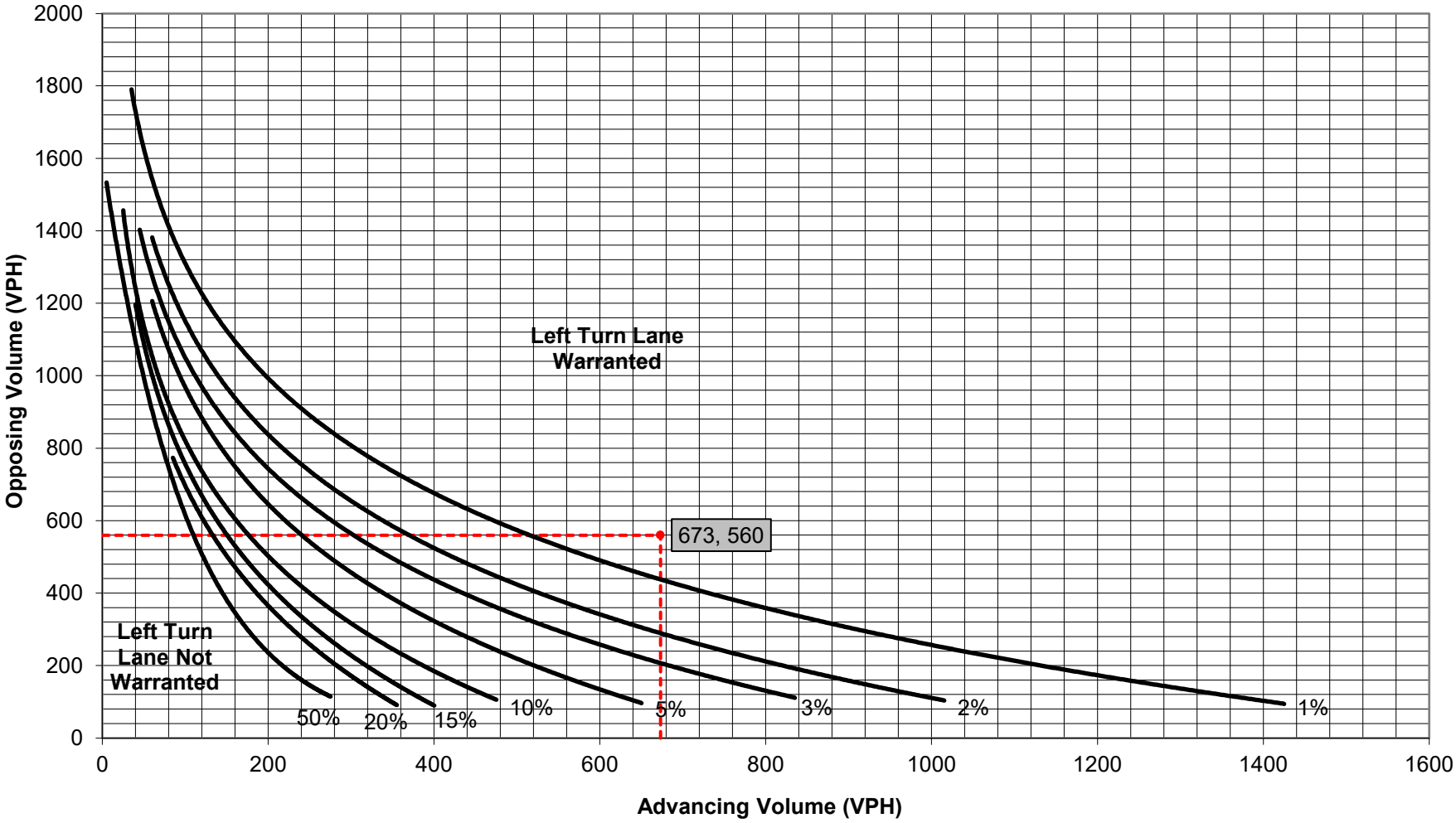
Left Turn Lane Storage Length, Condition A:	**100**	**Feet**
Condition B:	**N/A**	**Feet**
Condition C:	**N/A**	**Feet**
Required Left Turn Lane Storage Length:	**100**	**Feet**

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 7. Warrant for left turn lanes on four-lane, undivided highways (unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	3/6/2023
County:	Chester County	**Conducted By:**	BH
PennDOT Engineering District:	6	**Checked By:**	MB
		Agency/Company Name:	Traffic Planning and Design, Inc.

Intersection & Approach Description: Pennsylvania Avenue (SR 2037) and Commerce Drive/Site Driveway

Analysis Period:	2030 Build	**Number of Approach Lanes:**	2
Design Hour:	SAT Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Signalized		
Posted Speed Limit (MPH):	35		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	77	2.0%	N/A
	Through	-	410	2.0%	N/A
	Right	Yes	179	1.0%	N/A
Opposing	Left	Yes	124	2.0%	N/A
	Through	-	391	2.0%	N/A
	Right	Yes	38	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	124	2.0%	126
	Through	-	391	2.0%	395
	Right	-	38	2.0%	39

Advancing Volume:	560
Right Turn Volume:	39

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 11

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Signalized
Design Hour Volume of Turning Lane:	39
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	40

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

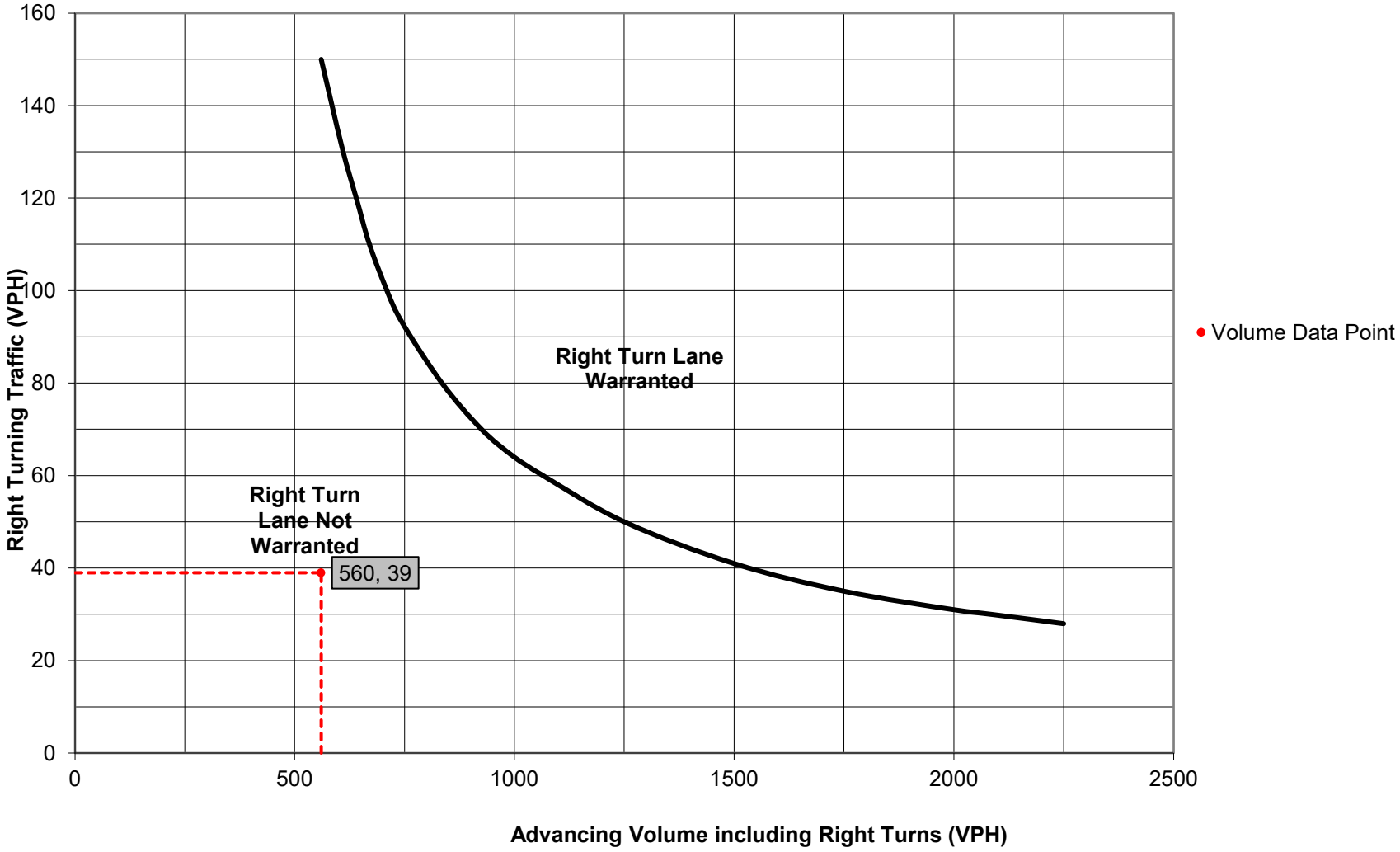
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 11. Warrant for right turn lanes on four-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)



Pennsylvania Avenue (SR 2037) & Proposed RI-RO Driveway

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	11/7/2022
County:	Chester County	**Conducted By:**	BH
PennDOT Engineering District:	6	**Checked By:**	MB
		Agency/Company Name:	Traffic Planning and Design, Inc.

Intersection & Approach Description: Pennsylvania Avenue (SR 2037) and Right-in/Right-out Site Driveway

Analysis Period:	2030 Build	**Number of Approach Lanes:**	2
Design Hour:	AM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	2.0%	N/A
	Through	-	1192	3.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	588	4.0%	N/A
	Right	Yes	7	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	588	4.0%	600
	Right	-	7	2.0%	8

Advancing Volume:	608
Right Turn Volume:	8

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 11

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	8
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

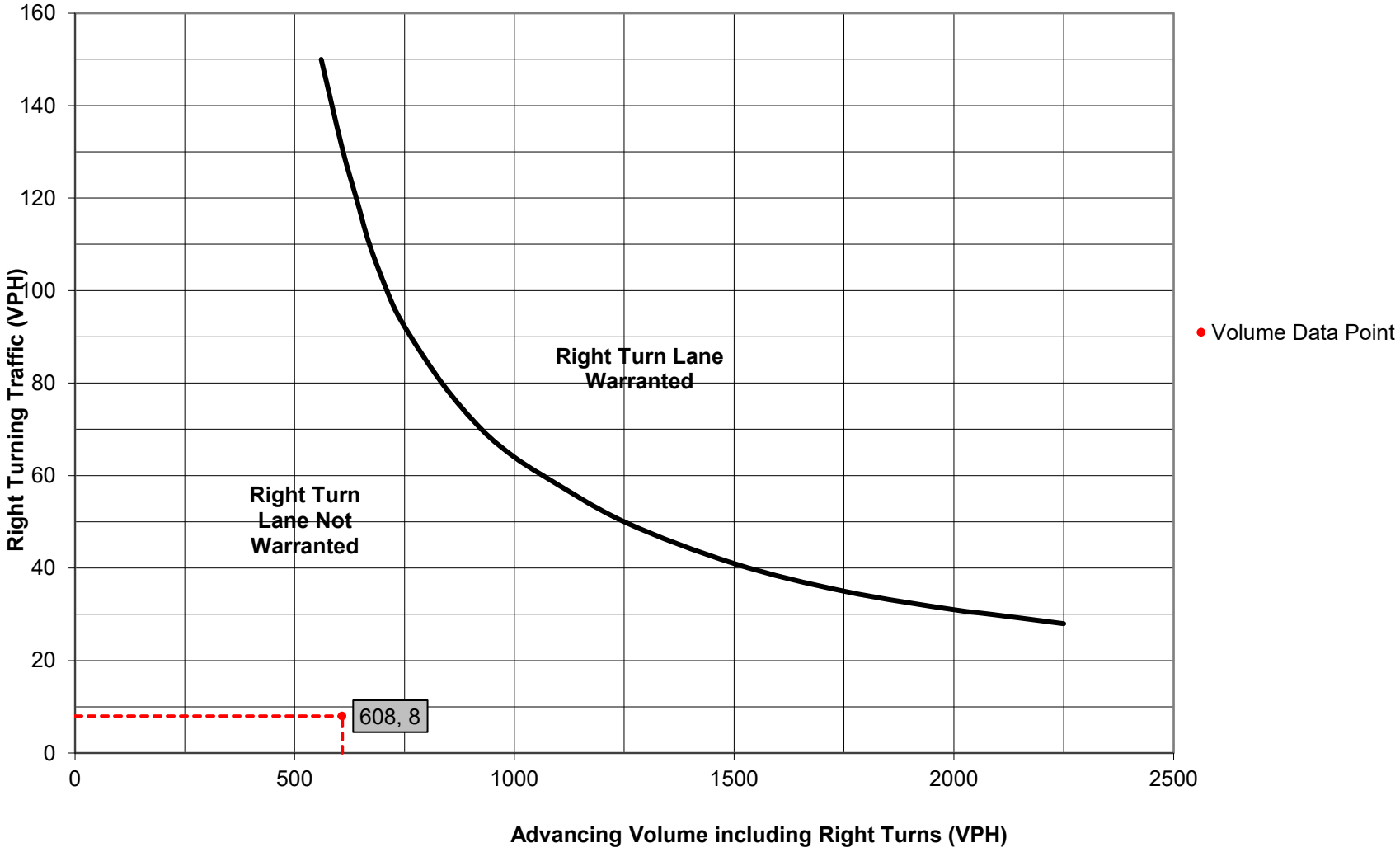
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 11. Warrant for right turn lanes on four-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	11/7/2022
County:	Chester County	**Conducted By:**	BH
PennDOT Engineering District:	6	**Checked By:**	MB
		Agency/Company Name:	Traffic Planning and Design, Inc.

Intersection & Approach Description: Pennsylvania Avenue (SR 2037) and Right-in/Right-out Site Driveway

Analysis Period:	2030 Build	**Number of Approach Lanes:**	2
Design Hour:	PM Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	2.0%	N/A
	Through	-	672	2.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	1191	2.0%	N/A
	Right	Yes	5	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	1191	2.0%	1203
	Right	-	5	2.0%	6

Advancing Volume:	1209
Right Turn Volume:	6

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 11

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	6
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

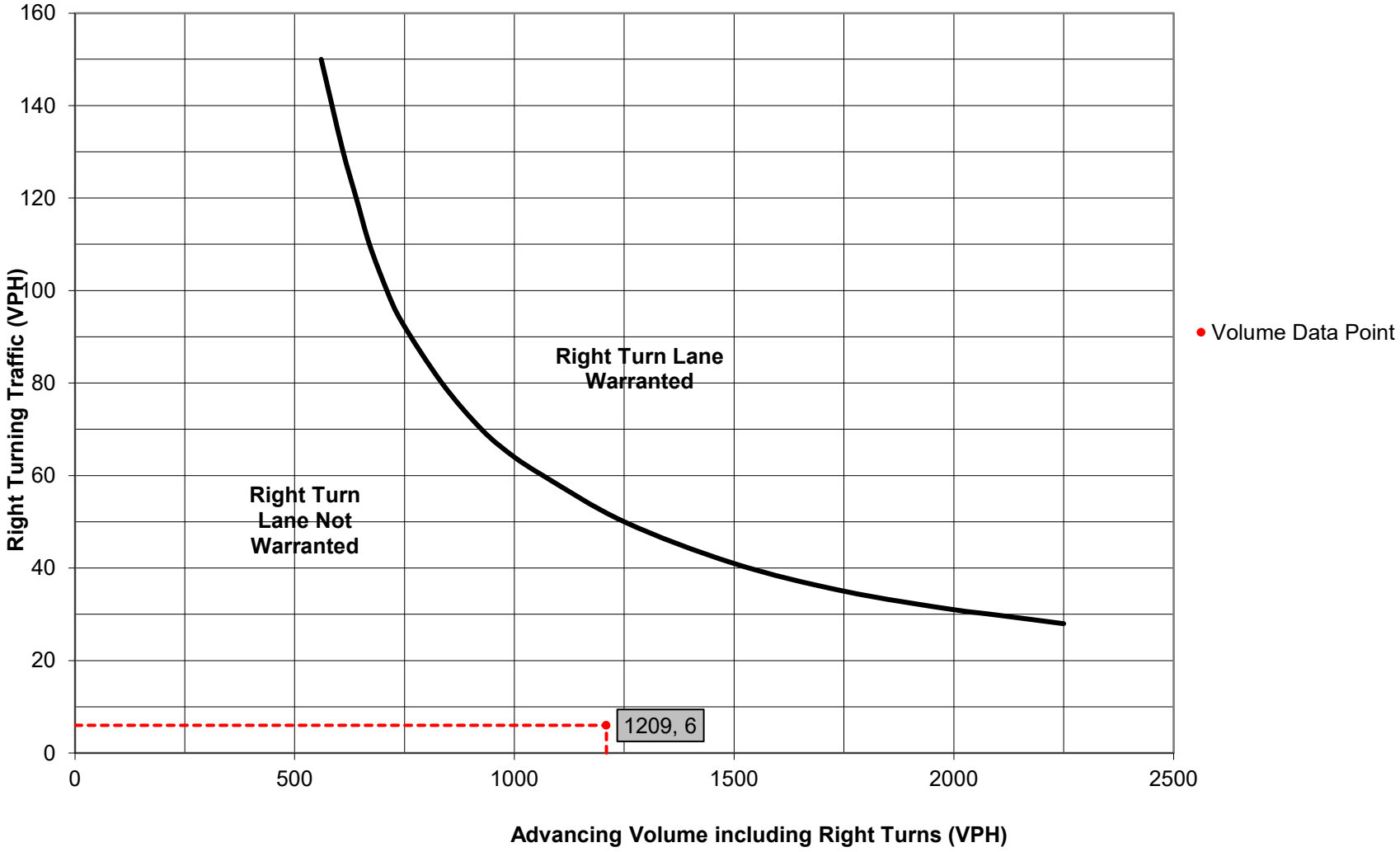
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 11. Warrant for right turn lanes on four-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	**Analysis Date:**	3/6/2023
County:	Chester County	**Conducted By:**	BH
PennDOT Engineering District:	6	**Checked By:**	MB
		Agency/Company Name:	Traffic Planning and Design, Inc.

Intersection & Approach Description: Pennsylvania Avenue (SR 2037) and Right-in/Right-out Site Driveway

Analysis Period:	2030 Build	**Number of Approach Lanes:**	2
Design Hour:	SAT Peak Hour	**Undivided or Divided Highway:**	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		**Type of Analysis**
Type of Terrain:	Level	**Left or Right-Turn Lane Analysis?:**	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	2.0%	N/A
	Through	-	669	2.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	610	1.0%	N/A
	Right	Yes	11	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	610	1.0%	614
	Right	-	11	2.0%	12

Advancing Volume:	626
Right Turn Volume:	12

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A

Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 11

Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	12
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

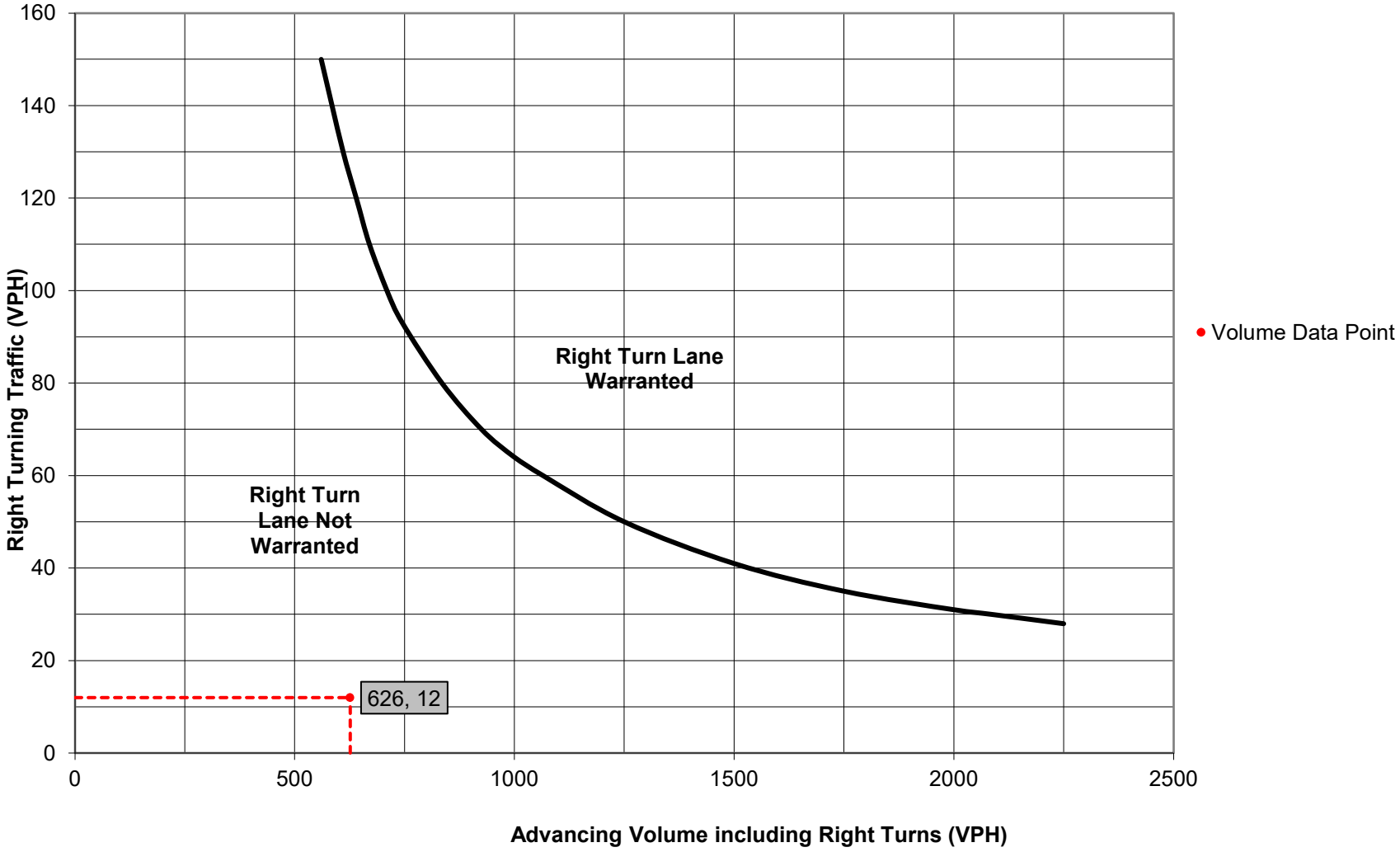
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

Figure 11. Warrant for right turn lanes on four-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)



TRAFFIC PLANNING AND DESIGN, INC.
WWW.TRAFFICPD.COM

March 9, 2023

Mr. Fran Hanney
PennDOT District 6-0
7000 Geerdes Boulevard
King of Prussia, PA 19406

RE: RESPONSE LETTER – Scoping Review
BMW Dealership Redevelopment
Whitemarsh Township, Montgomery County, PA
TPD Job #MILE.00001
PennDOT Application #S0620220106

Dear Mr. Hanney:

This letter pertains to the Proposed BMW Dealership Redevelopment in Whitemarsh Township, Montgomery County. Traffic Planning and Design, Inc. (TPD) has prepared this response letter to address the Traffic Review comments contained in the PennDOT Scoping Review Email, dated December 2, 2022 (attached for reference). For the discussion below, the review comments are shown italic type, with the corresponding TPD response shown in bold type:

PENNDOT SCOPING REVIEW COMMENTS

1. *The PennDOT project number for this scoping application review, S0620220106, must be referenced when the formal Highway Occupancy Permit (HOP) application is submitted.*

   Response: So noted/Will comply.

2. *The segment and offset for the low volume driveway are inconsistent with the straight-line diagram. The low volume driveway appears to be 236 feet from the main access across from Commerce Drive. Review and revise accordingly.*

   Response: Will comply as part of the submission of a future HOP Application.

3. *Verify that the full movement access lane configuration will align with the lane configuration of Commerce Drive.*

   Response: Will comply – The TIS recommends an alignment that allows removal of the existing split-phasing at the signal.

4. *Replace all existing depressed curb accesses along the property frontage with full height curb.*

   Response: Will comply.

5. *Provide documentation of scope concurrence from Whitemarsh Township.*

   Response: Will comply – See Appendix A.

6. *Upgrade the Traffic Signal and pedestrian facilities at the intersection of the main access and along the property frontage as required.*

   Response: Will comply to the extent feasible as part of the submission of a future HOP Application.

7. *With respect to the formal permit application, please ensure that the following items are addressed:*

   a. *Please be advised that pursuant to and in accordance with Title 67, Chapter 441.8(h)(2)(iv) of the code, the Safe Stopping Sight Distance is the absolute minimum acceptable sight distance for driveways. It is the designer's responsibility to ensure that this minimum requirement is satisfied.*

      Response: So noted/Will comply.

   b. *It should be understood that in accordance with PennDOT Strike-Off Letter 470-10-03 and pursuant to section 421 of the State Highway Law (36 P.S. ? 670-421) the installation of any drainage facilities within the Legal Right-of-Way may necessitate additional permitting requirements, including, but not limited to, a separate Highway Occupancy Permit from the Municipality for the future maintenance of the new drainage facilities.*

      Response: So noted/Will comply.

   c. *ADA compliance within the limits of work (along the access frontage at a minimum) must be evaluated in the TIS (i.e. new/modified facilities, impact to SEPTA bus stops, etc.). If driveway modifications are proposed, the existing curb ramps must be upgraded to be ADA compliant. At a minimum, the ramp adjacent to the curb replacement would need to be reconstructed.*

      Response: Will comply to the extent feasible as part of the future HOP submission

   d. *Consistent with current Department Policy, applicants for Highway Occupancy Permits must apply for an EPS Business Partner ID (BPID). The BPID is to be used in the establishment of a billing account for the invoicing of inspection costs. For information on obtaining a BPID, you may visit: https://www.dot14.state.pa.us/EPS/home/manageBPRegistration.jsp*

      Response: Will comply as part of the future HOP submission

8. *Provide 14-foot curb lanes on the full movement access and a 28-foot throat at the right-in/right-out access.*

   Response: Will comply.

We hope that these responses are helpful. If you require additional information, please feel free to contact us.

Sincerely,
TRAFFIC PLANNING AND DESIGN, INC.



Matthew I. Hammond, P.E.
Executive Vice President

mhammond@trafficpd.com

Attachment: 12/2/2022 PennDOT Scoping Review

cc: Whitemarsh Township
Project Team (via Email)
TPD File

Bressler, Matt

From: ePermitting Help <penndotepermittinghelp@pa.gov>
Sent: Friday, December 02, 2022 10:14 AM
To: dturnbaugh@mileone.com; Hammond, Matt; Bressler, Matt; Haesler, Brian; fhanney@pa.gov; jotten@pa.gov; slapenta@pa.gov; c-smccutch@pa.gov; scburton@pa.gov; ajparker@mccormicktaylor.com; planning@montcopa.org; kheinrich@gilmore-assoc.com; rmellor@whitemarshtwp.org
Cc: RA-PDEPSPROD@pa.gov
Subject: :: Scoping Meeting Application - Returned - Application Number is : S0620220106 (Sent on: 12/02/2022 10:13:36 AM)

CAUTION: External email - do not click links or open attachments unless you recognize the sender and know the content is safe.

PennDOT has completed its review of the TIS Determination and Scoping Meeting Application.

Please address the following comments below, and resubmit the application to PennDOT for review.

PennDOT Review Comments :

1. The PennDOT project number for this scoping application review, S0620220106, must be referenced when the formal Highway Occupancy Permit (HOP) application is submitted.
2. The segment and offset for the low volume driveway are inconsistent with the straight line diagram. The low volume driveway appears to be 236 feet from the main access across from Commerce Drive. Review and revise accordingly.
3. Verify that the full movement access lane configuration will align with the lane configuration of Commerce Drive.
4. Replace all existing depressed curb accesses along the property frontage with full height curb.
5. Provide documentation of scope concurrence from Whitemarsh Township.
6. Upgrade the Traffic Signal and pedestrian facilities at the intersection of the main access and along the property frontage as required.
7. With respect to the formal permit application, please ensure that the following items are addressed:a. Please be advised that pursuant to and in accordance with Title 67, Chapter 441.8(h)(2)(iv) of the code, the Safe Stopping Sight Distance is the absolute minimum acceptable sight distance for driveways. It is the designer?s responsibility to ensure that this minimum requirement is satisfied. b. It should be understood that in accordance with PennDOT Strike-Off Letter 470-10-03 and pursuant to section 421 of the State Highway Law (36 P.S. ? 670-421) the installation of any drainage facilities within the Legal Right-of-Way may necessitate additional permitting requirements, including, but not limited to, a separate Highway Occupancy Permit from the Municipality for the future maintenance of the new drainage facilities.c. ADA compliance within the limits of work (along the access frontage at a minimum) must be evaluated in the TIS (i.e. new/modified facilities, impact to SEPTA bus stops, etc.). If driveway modifications are proposed, the existing curb ramps must be upgraded to be ADA compliant. At a minimum, the ramp adjacent to the curb replacement would need to be reconstructed. d. Consistent with current Department Policy, applicants for Highway Occupancy Permits must apply for an EPS Business Partner ID (BPID). The BPID is to be used in the establishment of a billing account for the invoicing of inspection costs. For information on obtaining a BPID, you may visit: https://www.dot14.state.pa.us/EPS/home/manageBPRegistration.jsp
8. Provide 14-foot curb lanes on the full movement access and a 28-foot throat at the right-in/right-out access.

Click here to access the Scoping Application

PENNDOT EPERMIT - PLEASE DO NOT REPLY TO THIS EMAIL

UPDATES

KEYSTONE
Municipal Services, Inc.
801 Yale Avenue, Suite 622, Swarthmore, PA 19081
Phone: (610) 328-4830 | Fax: (610) 328-4836 | Email: keystonems@comcast.net

March 27, 2023

Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 194444

RE: Preliminary Land Development Plans 500-512 Pennsylvania Avenue Fort Washington, PA 19034

Charles Guttenplan;

I have reviewed the Preliminary Land Development Plans for 500-512 Pennsylvania Ave. The plan was reviewed using the 2018 International Fire Code and Whitemarsh Township ordinance # 1012. The follow items will need to be corrected:

1. The plan shall be in accordance with Appendix C section C101 of the 2018 International Fire Code "Fire Hydrant Locations and Distribution". The submitted plan does not indicate any on-site fire hydrants.
2. The plan shall be in accordance with Appendix D section D101 of the 2018 International Fire Code "Fire Apparatus Access Roads". The submitted plan indicates 24' access roads. Section D105 requires 26' access roads.
3. The plan shall be in accordance with section 503.4 "Obstruction of fire apparatus access roads" of the 2018 International Fire Code. The submitted truck turning plan indicates using parking spaces as the fire apparatus access road.
4. The plan shall be in accordance with section 503.1.1 "Buildings and Facilities" of the 2018 International Fire Code. The submitted plan indicates more than 150' of the exterior of the building not being able to be accessible by a fire apparatus road.
5. The plan shall be in accordance with Appendix D section 103.6 "Signs". The submitted plan does not indicate on the detail sheet "NO PARKING-FIRE LANE" signs.

If you should have any questions or require additional information, please contact me at 267-249-2064.

Bill Oettinger
Fire Code Official
Keystone Municipal Services, Inc.

74 W. Broad Street, Suite 500
Bethlehem, PA 18018
610.709.9971

HEC-RAS Flood Analysis for Sandy Run

Project: BMW Automotive Dealership Expansion
500 Pennsylvania Avenue
Whitemarsh Township
Montgomery County, PA

Project Number: PAB220113.00

Client: MileOne Fort Washington, LLC
3301 Briggs Chaney Road
Silver Spring, MD 20904

Date: 4/3/2023

Professional Engineer: Jeff A. Beavan, P.E.
PA License #PE082005

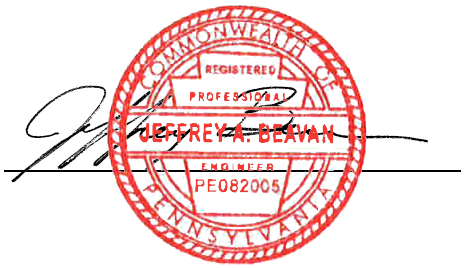


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Flood Analysis Narrative

GENERAL PROJECT DESCRIPTION

BMW of Fort Washington proposes to consolidate and subdivide four existing lots totaling 5.133 acres along Pennsylvania Avenue into one proposed lot. The proposed lot will contain a proposed automobile dealership. Pertinent data characterizing the existing and future site conditions are shown on the accompanying Preliminary Land Development Plans.

The site drains to two points of interest, both of which ultimately drain to Sandy Run, which is tributary to the Wissahickon Creek, with a Chapter 93 designation of TSF, MF, or trout-stocking fishes, migratory fishes.

Waters of the US exist and are present on the project site and have been delineated by survey. No wetland areas exist on site. The entire site is located within the existing 100 and 500 year floodplain as delineated on the effective FEMA Flood Insurance Rate Map panel covering the site area (panel number 42091C0289G, revised May 24, 2021).

FLOODPLAIN ANALYSIS

A hydraulic analysis was performed based on a HEC-RAS geometric model of the confluence of the Sandy Run, including the main stem and a number of upstream tributaries. The intent of the analysis is to indicate that the proposed development will not impact flood elevations beyond 1 foot elevation as a result of the placement of the building and grading operations (net fill) within the floodplain. The HEC-RAS river analysis system software, as developed by the U.S. Army Corps of Engineers, was used for the analysis. The data for the Schuylkill River model was based on a HEC-RAS model provided by FEMA, dated January 2010, revised November 2012. Elevations were compared to the cross-sections contained in the May 24, 2021 Flood Insurance Study for Montgomery County. The cross-sections within the site area include from station 4790.088 to station 5084.678 of the Sandy Run Main Stem.

The Effective condition of the Site is based on the Approved LOMR of the as-built conditions for the Audi of Fort Washington dealership, located at 432 Pennsylvania Avenue, Whitemarsh Township, Montgomery County, PA.

The Corrected Effective condition of the site supplements the Audi of Fort Washington conditions with surveyed conditions of the BMW of Fort Washington property located at 500, 506, 510, and 512 Pennsylvania Avenue, Whitemarsh Township, Montgomery County, PA. In order to provide a direct comparison between development conditions, the Corrected Effective conditions adjust the cross section geometry to align with the proposed building footprints in the Post-Development conditions.

The Post-Development conditions for the BMW of Fort Washington property are modeled to provide flood storage under the building expansion. The proposed building expansion proposes a finished floor elevation of 171.00 on columns in order to provide flood storage and a net cut condition for the site. The building expansion was modeled to rest upon columns with a width of 2 feet, spaced 20 feet on center.

In comparison to the corrected effective FEMA Flood Insurance Rate Map panels covering the site area (panel number 42091C0289G, revised May 24, 2021), the HEC-RAS analysis indicates that the 100-year storm event (1-percent-annual-chance storm) for the Sandy Run maintains an elevation below the floodproofing elevation 170.00 where floodproofing is applicable within the project site. Upstream of the project site, including the cross sections within Upper Dublin Township, both the 100-year and 500-year elevations increase in comparison to the effective flood study for a length of 1200 feet within the study area. As flood storage is being provided under the building, columns under the building were modeled as obstructions to the top of the building, with ineffective flow shown for the space between the columns. The portions of the building that are not resting upon columns and which are to be floodproofed were modeled as obstructions in the applicable cross-sections, as flood storage cannot be provided within these areas. The underground basins within the site are located within the existing floodplain and were modeled as cut, providing flood storage in this area as intended to offset building fill and floodproofing elsewhere.

In addition to the HEC-RAS analysis, a cut/fill comparison was made based on the proposed site grading, showing that the proposed project will result in a net cut of 122 cubic yards within the floodplain area.

Based on this analysis, the proposed project will result in a 0.43 foot increase in the base flood elevation for the Sandy Run upstream of the project site.

100-Year Storm Event
Floodplain Elevation Table (Pre-Development & Post-Development
(Shaded Cross-Sections Are Within Project Area)

Reach	Station	100-Year Water Elevation			Delta
		Audi As-Built Flood Study (LOMR) (Effective Model)	Corrected Effective Model	Post-Dev	
Sandy Main Stem	4685.592	163.53	163.53	163.53	0.00
	4777.088	168.55	168.55	168.46	-0.09
	4790.088	168.63	168.63	167.97	-0.66
	4865.578	168.67	168.72	169.36	0.64
	5039.878	168.63	169.07	169.46	0.39
	5065.378	169.06	168.97	169.40	0.43
	5084.678	169.05	169.13	169.44	0.31
	5508.105	169.13	169.17	169.59	0.42
	6189.177	168.81	168.85	169.28	0.43

CONCLUSION

The HEC-RAS outputs for the 1-percent-annual-chance storm event floodplain analysis for the Sandy Run is included herein, and shows a 0.43 foot increase in the base flood elevation as a result of development. In addition, cut/fill calculations are provided showing that the proposed development will result in a net fill condition, thereby decreasing the storage within the floodplain. Based on this analysis, the project has been designed to comply with the Whitemarsh Township Floodplain Ordinance, Chapter 101, as well as applicable State and Federal floodplain regulations.

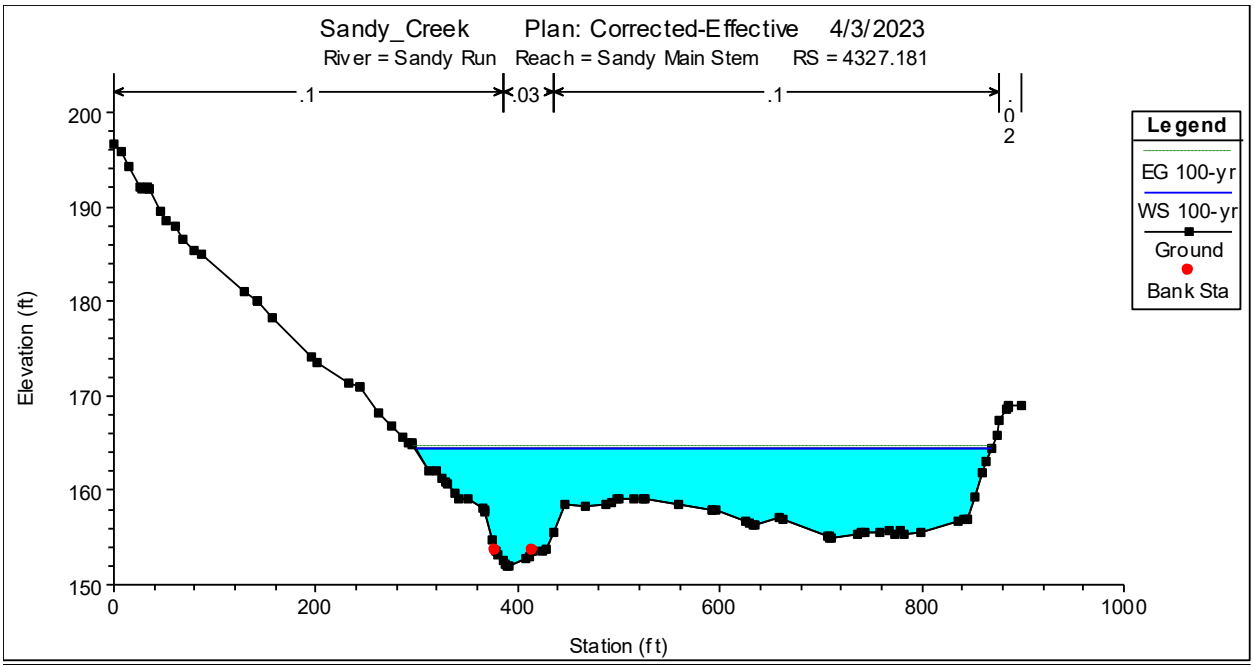


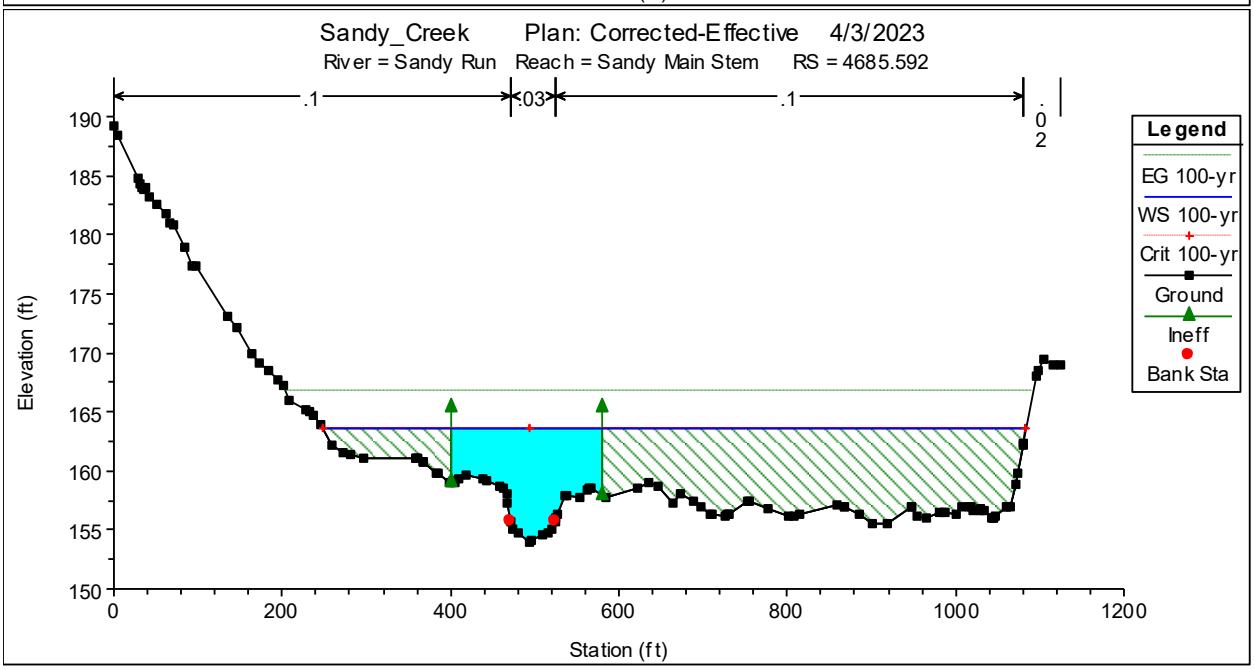
USGS MAP

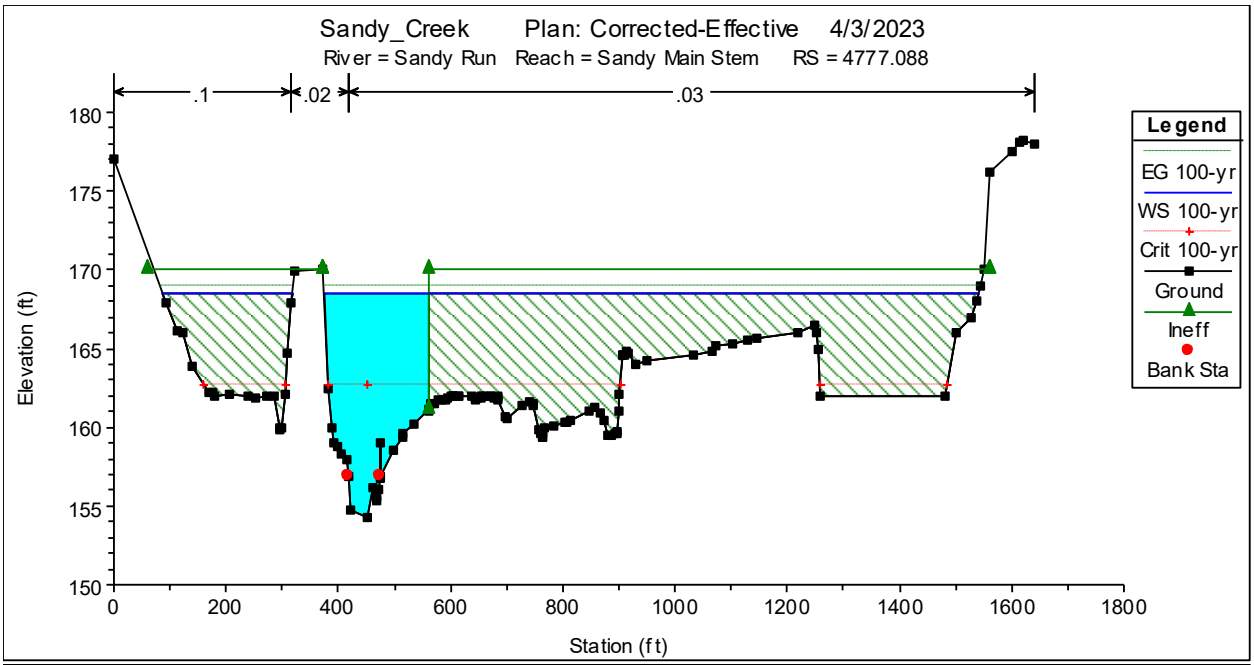
SCALE: 1" = 2,000'
AMBLER QUAD

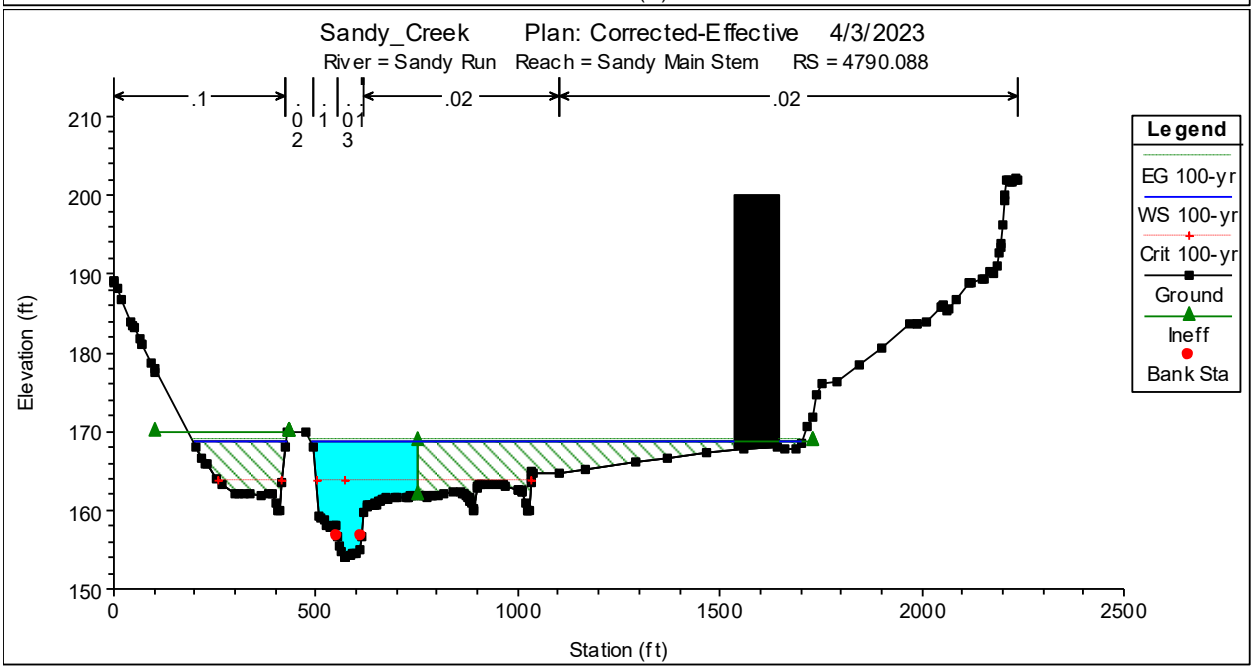
Pre-Development Conditions

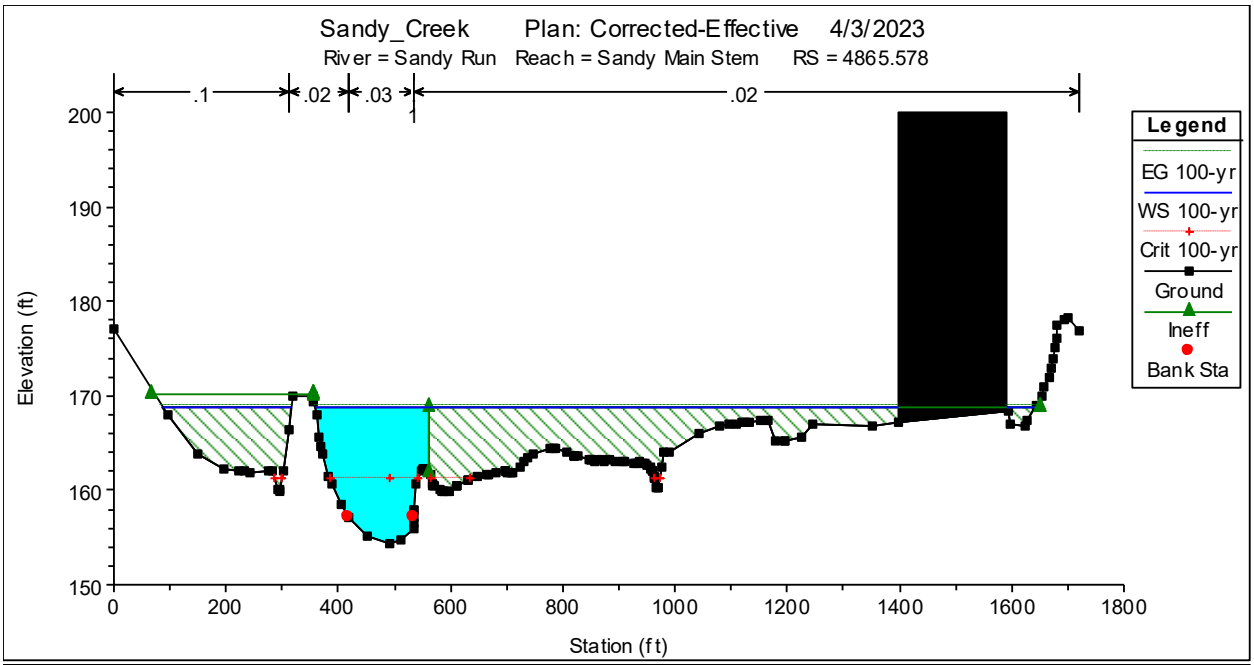
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sandy Main Stem	6189.177	100-yr	4945	155	168.85	164.39	169.81	0.001085	9.22	1173.32	135.44	0.44
Sandy Main Stem	5508.105	100-yr	9741	154	169.17	164.93	169.25	0.0001	2.96	5057.32	1202.04	0.14
Sandy Main Stem	5084.678	100-yr	9741	154	169.13	165.37	169.19	0.000124	3.26	5530.93	1228.01	0.15
Sandy Main Stem	5065.378	100-yr	9741	154.25	168.97	165.42	169.18	0.000222	4.23	2736.08	1040.55	0.2
Sandy Main Stem	5039.878	100-yr	9741	154.25	169.07	165.12	169.12	0.000065	2.29	5300.02	1491.96	0.11
Sandy Main Stem	4865.578	100-yr	9741	154.25	168.72	161.2	169.02	0.000253	4.45	2203	1321.6	0.21
Sandy Main Stem	4790.088	100-yr	9741	154	168.63	163.67	168.99	0.00033	5.17	2389.1	1330.54	0.24
Sandy Main Stem	4777.088	100-yr	9741	154.25	168.55	162.73	168.96	0.000403	5.38	1917.69	1397.86	0.26

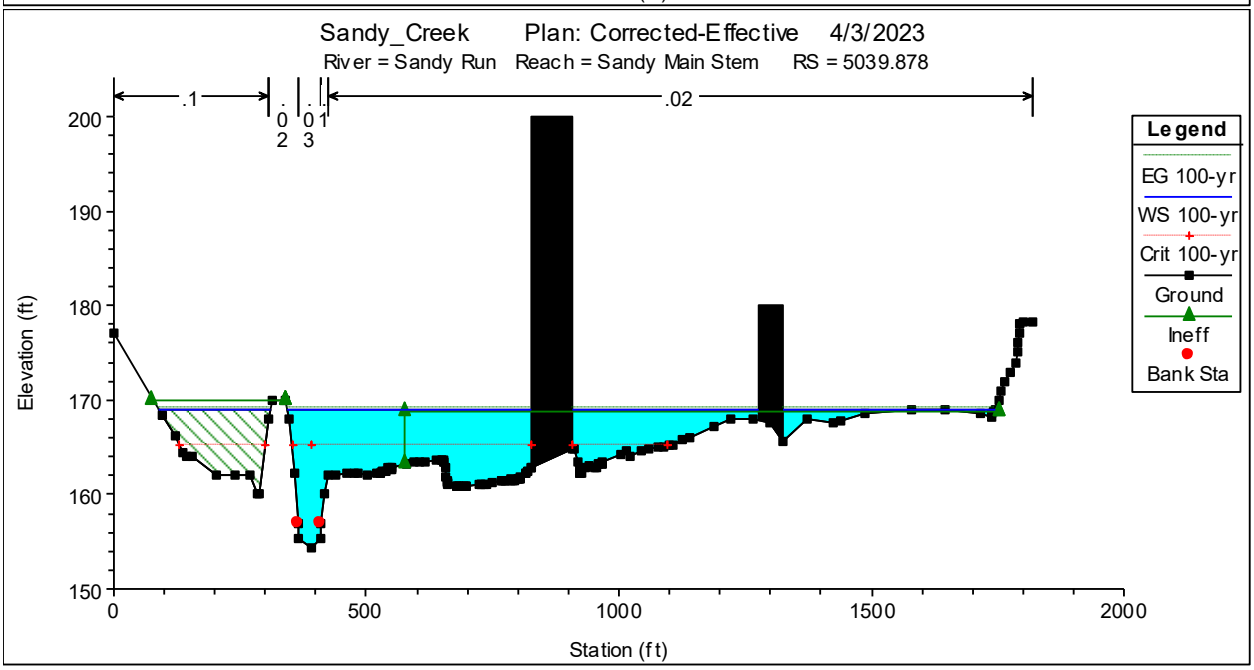

Sandy_Creek Plan: Corrected-Effective 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 4327.181
.1
.03
.1
.02
Legend
EG 100-yr
WS 100-yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
150
160
170
180
190
200
0
200
400
600
800
1000

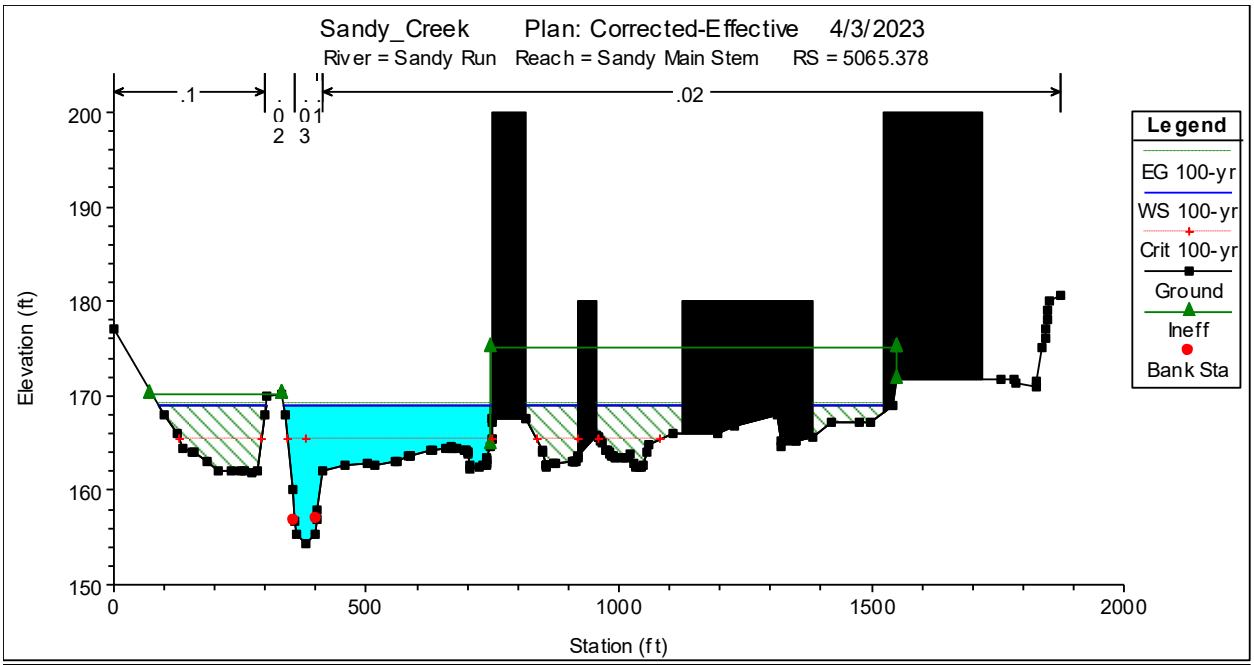

Sandy_Creek Plan: Corrected-Effective 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 4685.592
.1
.03
.1
.02
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
150
155
160
165
170
175
180
185
190
0
200
400
600
800
1000
1200

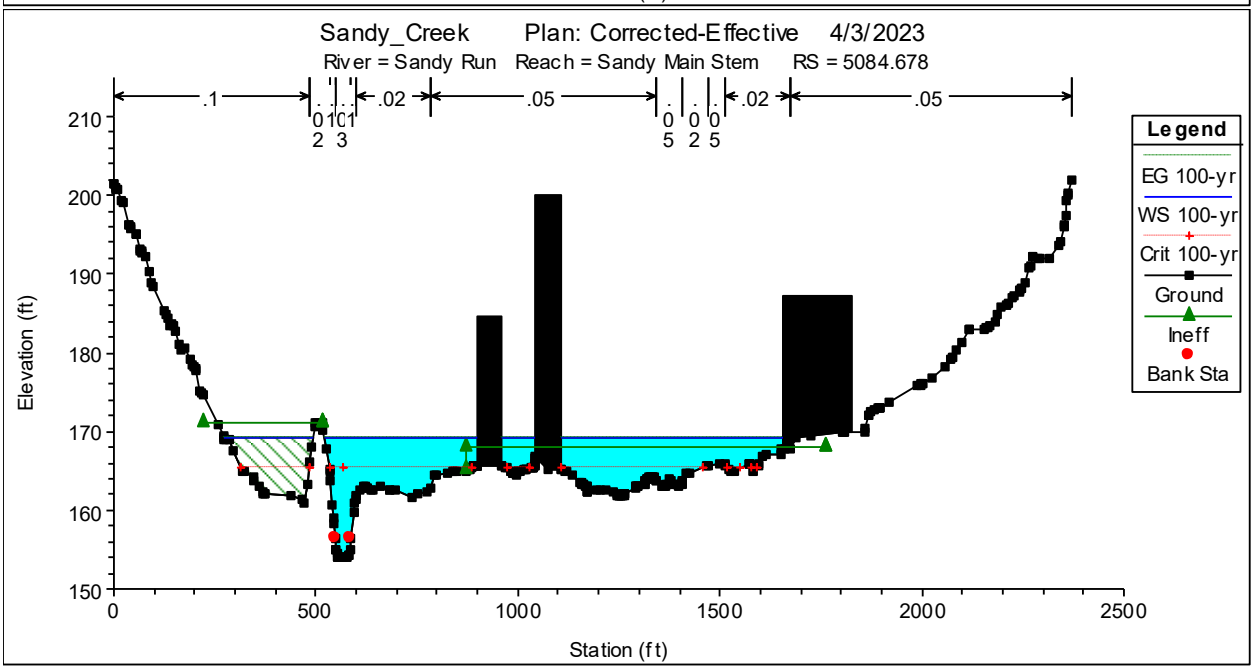

Sandy_Creek Plan: Corrected-Effective 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 4777.088
.1
.02
.03
Elevation (ft)
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta

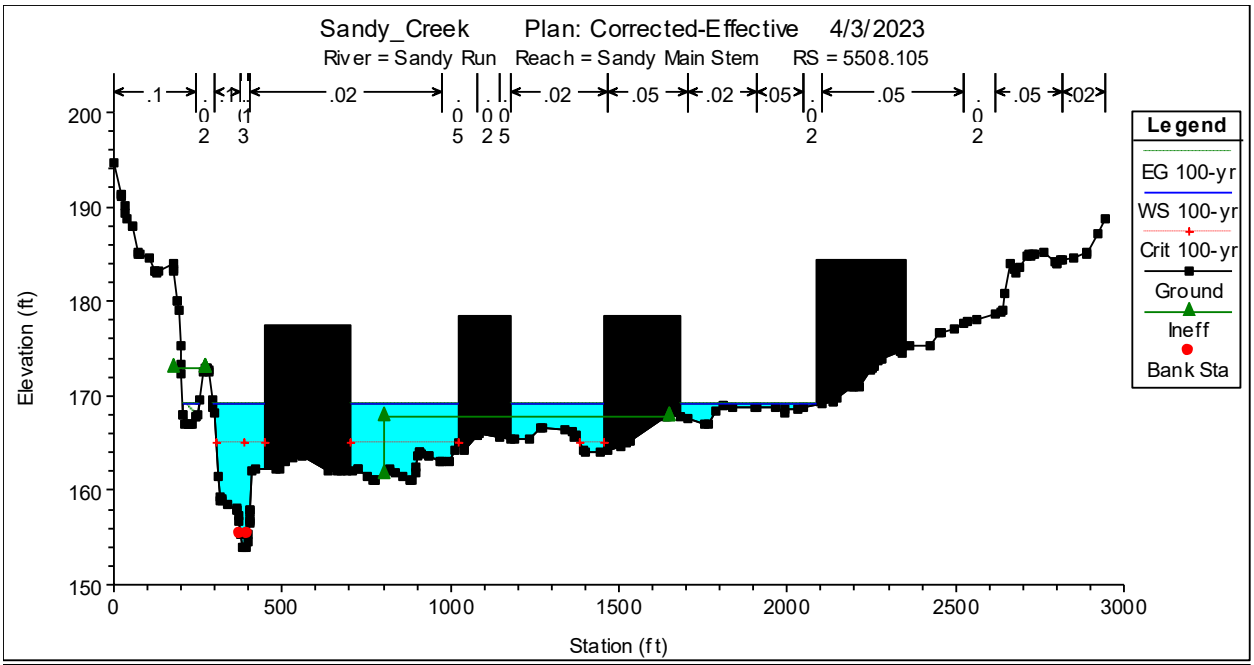

Sandy_Creek Plan: Corrected-Effective 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 4790.088
.1
.02
.02
Elevation (ft)
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta

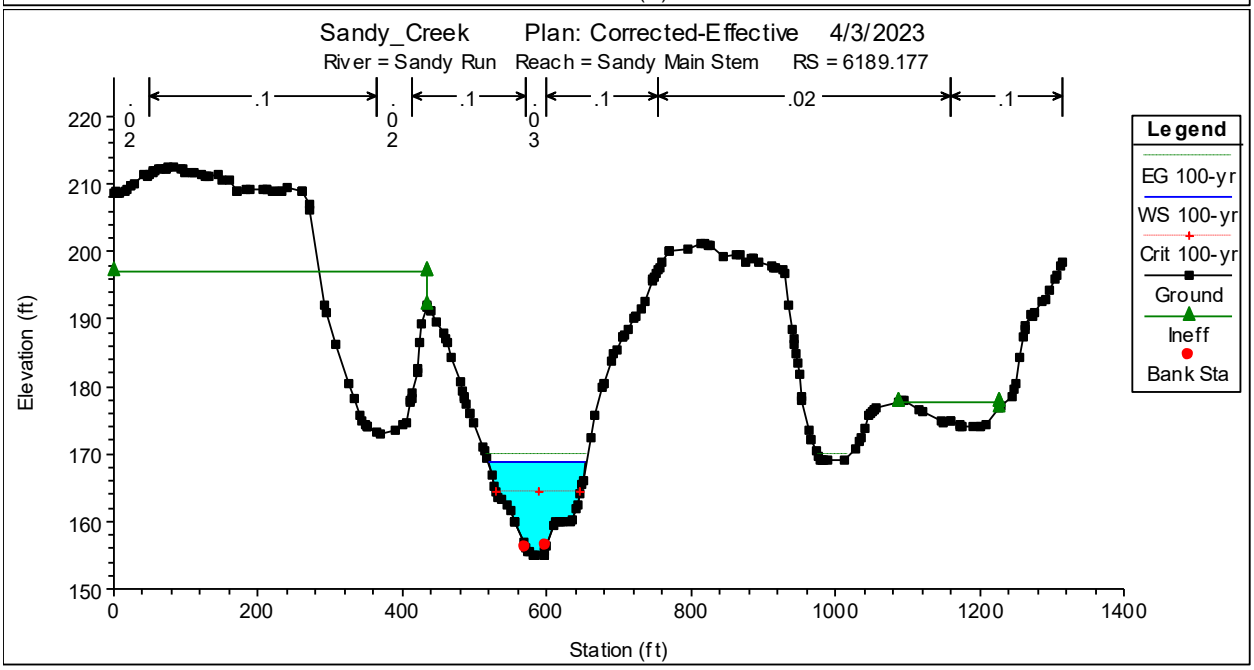

Sandy_Creek Plan: Corrected-Effective 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 4865.578
.1
.02
.03
.02
Elevation (ft)
200
190
180
170
160
150
0
200
400
600
800
1000
1200
1400
1600
1800
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta


Sandy_Creek Plan: Corrected-Effective 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 5039.878
.1
.02
Elevation (ft)
200
190
180
170
160
150
0
500
1000
1500
2000
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta


Sandy_Creek Plan: Corrected-Effective 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 5065.378
.1
.02
Elevation (ft)
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta

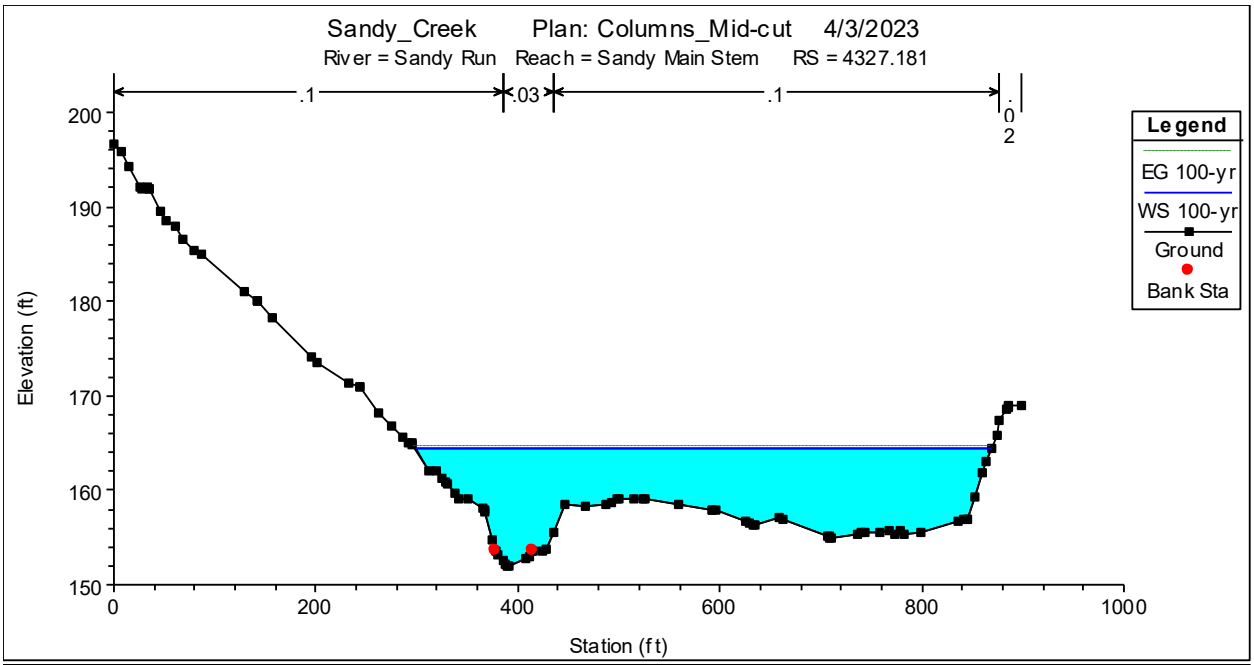

Sandy_Creek Plan: Corrected-Effective 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 5084.678
.1
.02
.05
.02
.05
Elevation (ft)
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta

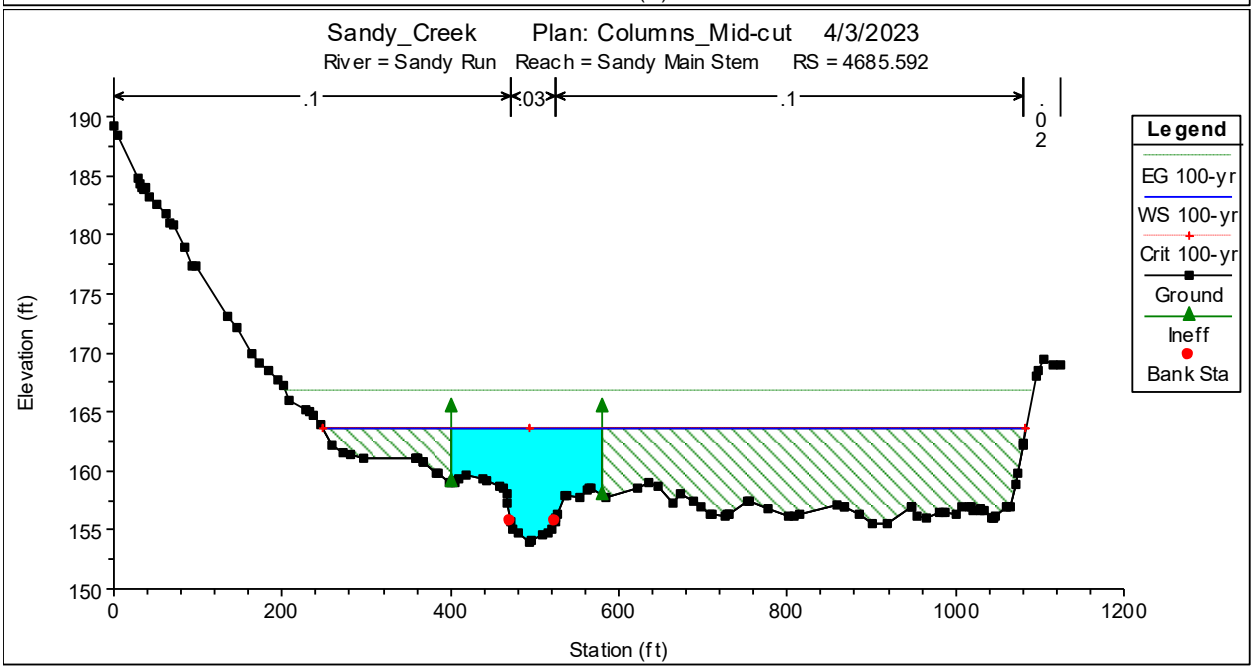

Sandy_Creek Plan: Corrected-Effective 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 5508.105
Elevation (ft)
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta

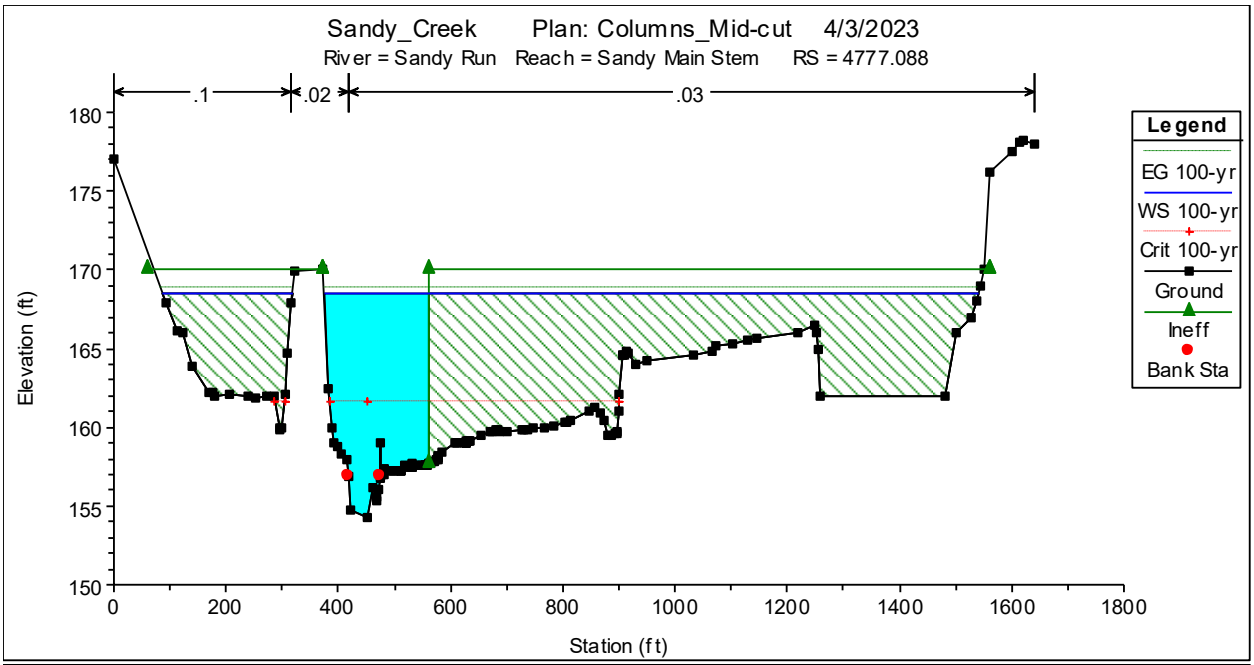

Sandy_Creek Plan: Corrected-Effective 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 6189.177
Elevation (ft)
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta

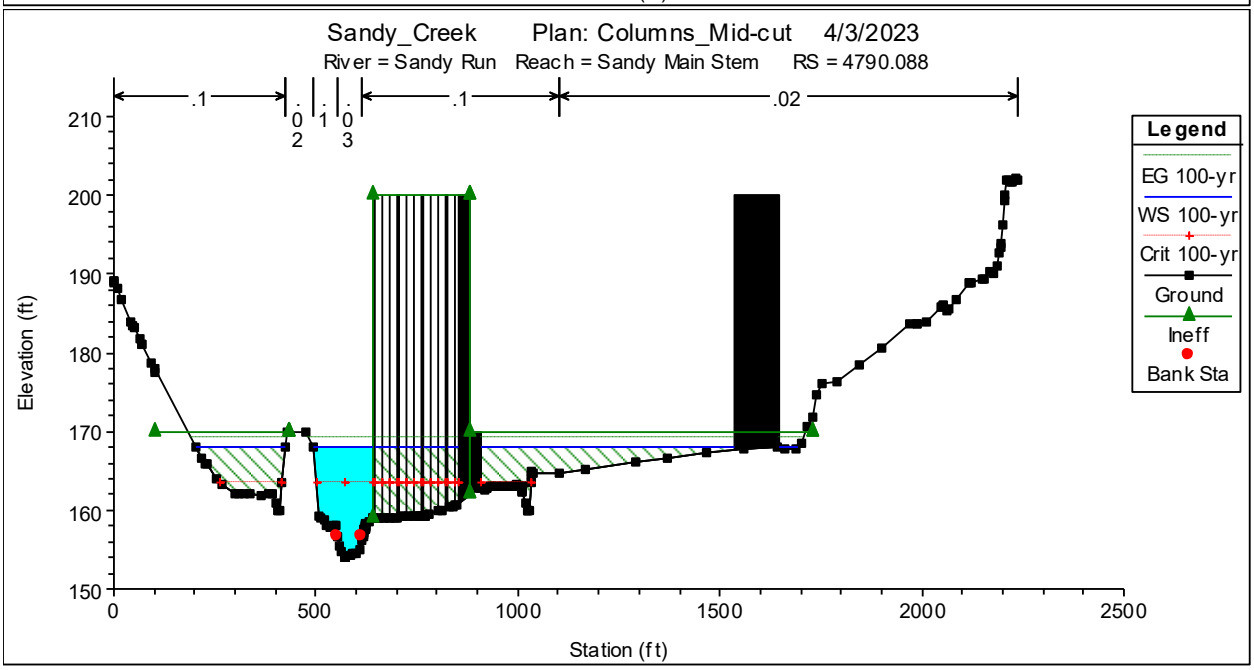
Post-Development Conditions

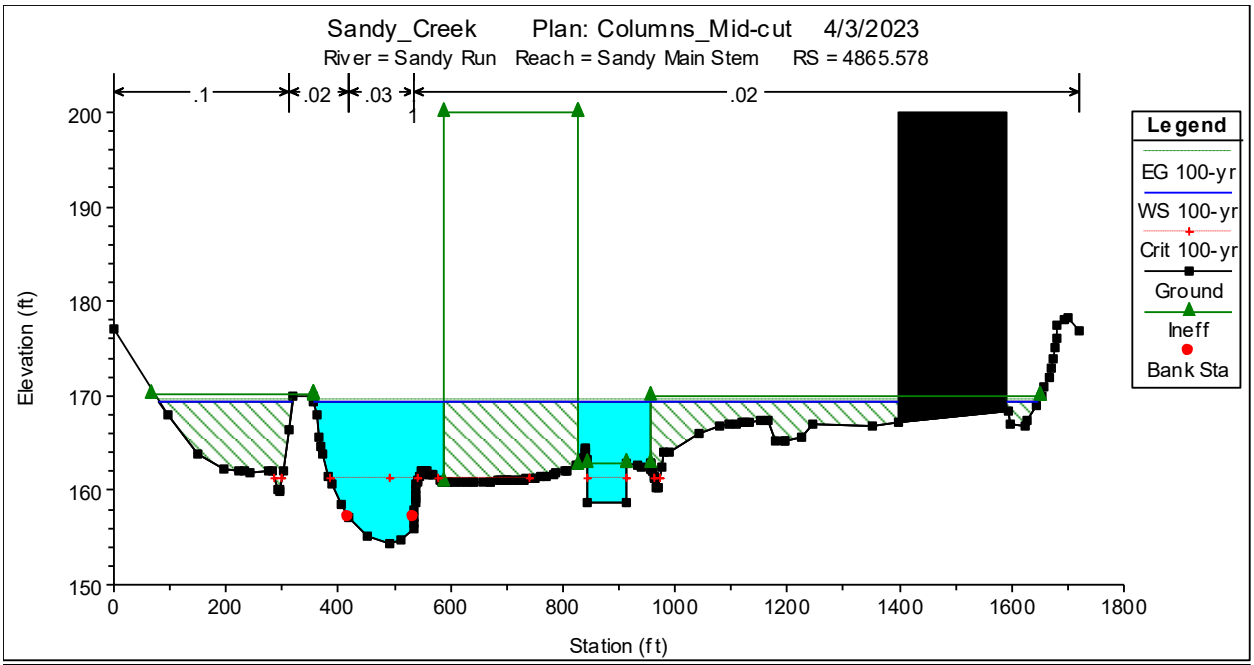
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Sandy Main Stem	6189.177	100-yr	4945	155	169.28	164.39	170.15	0.000958	8.85	1238.63	172.28	0.42
Sandy Main Stem	5508.105	100-yr	9741	154	169.59	164.93	169.65	0.000079	2.69	5537.45	1205.52	0.12
Sandy Main Stem	5084.678	100-yr	9741	154	169.44	164.91	169.59	0.000213	4.34	3546.49	1291.91	0.2
Sandy Main Stem	5065.378	100-yr	9741	154.25	169.4	165.49	169.58	0.000189	3.99	2956.76	994.42	0.18
Sandy Main Stem	5039.878	100-yr	9741	154.25	169.46	165.19	169.54	0.000115	3.1	4336.86	1555.71	0.14
Sandy Main Stem	4865.578	100-yr	9741	154.25	169.36	161.24	169.47	0.000082	2.61	3686.11	1337.75	0.12
Sandy Main Stem	4790.088	100-yr	9741	154	167.97	163.45	169.33	0.001391	10.28	1582.49	1231.85	0.5
Sandy Main Stem	4777.088	100-yr	9741	154.25	168.46	161.62	168.82	0.000323	4.8	2065.77	1396.13	0.23

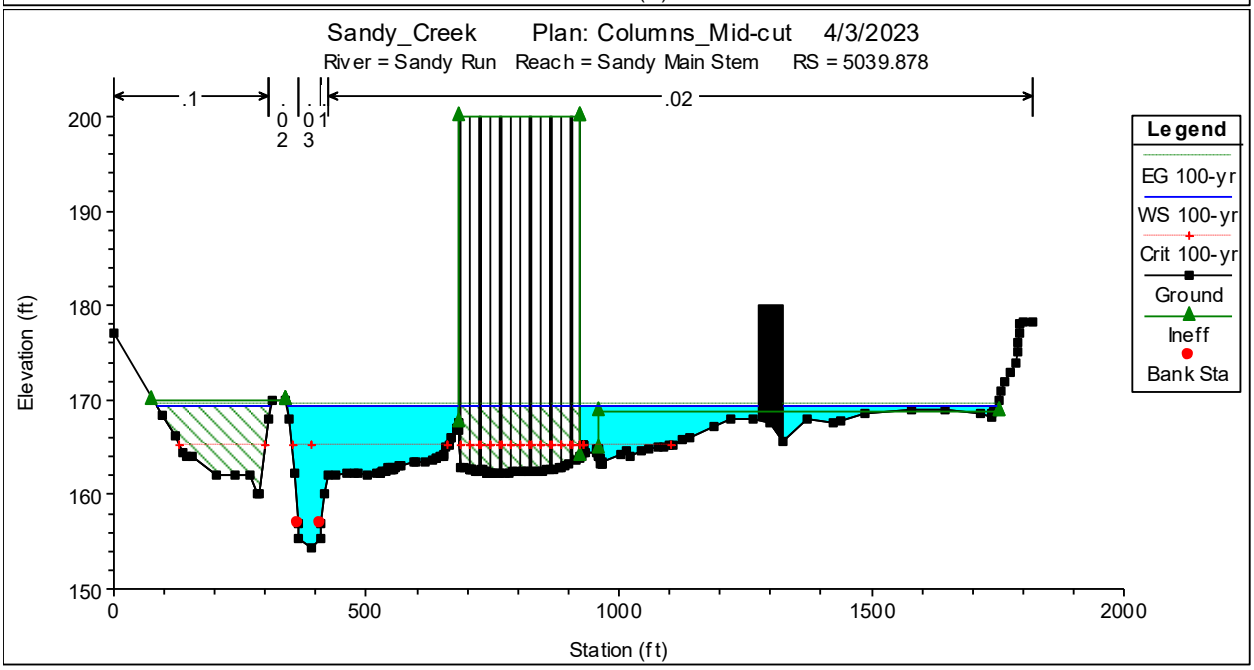

Sandy_Creek Plan: Columns_Mid-cut 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 4327.181
.1
.03
.1
.02
Legend
EG 100-yr
WS 100-yr
Ground
Bank Sta
Elevation (ft)
Station (ft)

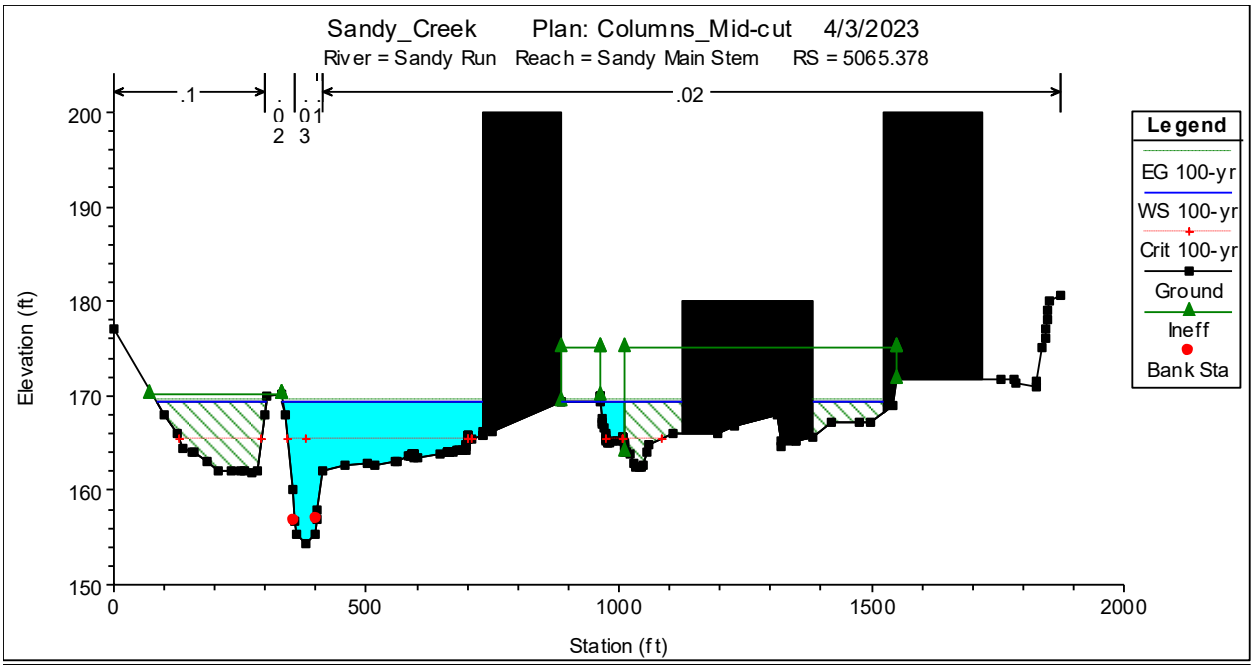

Sandy_Creek Plan: Columns_Mid-cut 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 4685.592
.1
.03
.1
.02
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

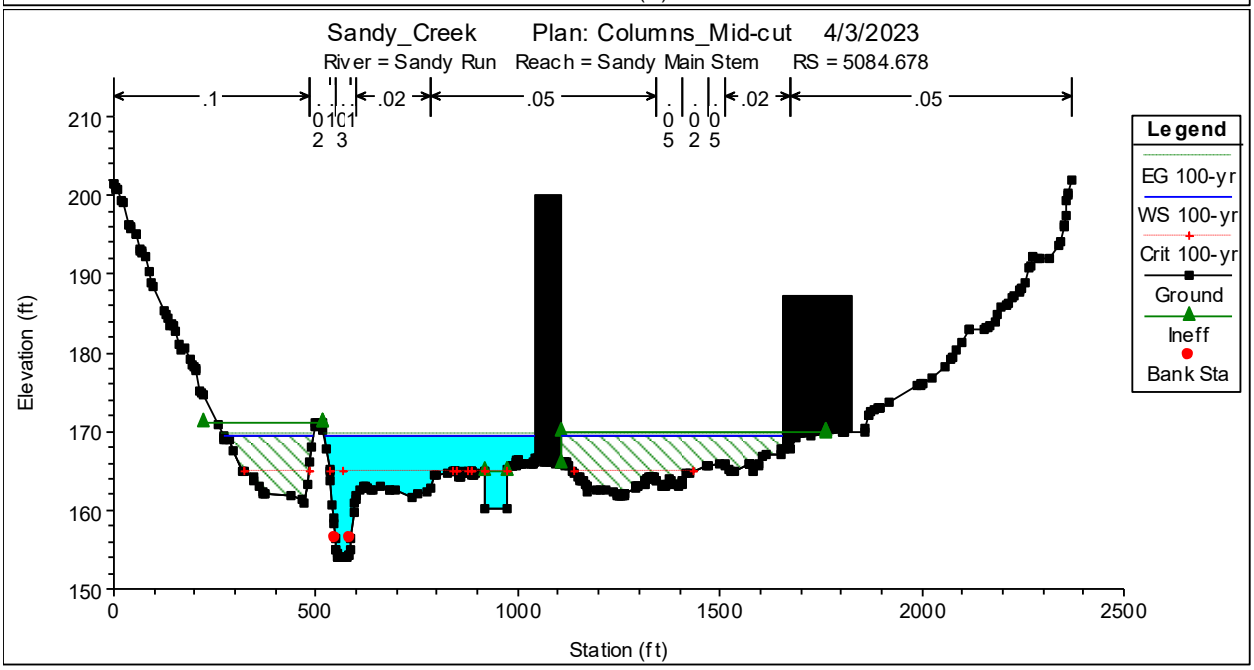

Sandy_Creek Plan: Columns_Mid-cut 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 4777.088
.1
.02
.03
Elevation (ft)
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta

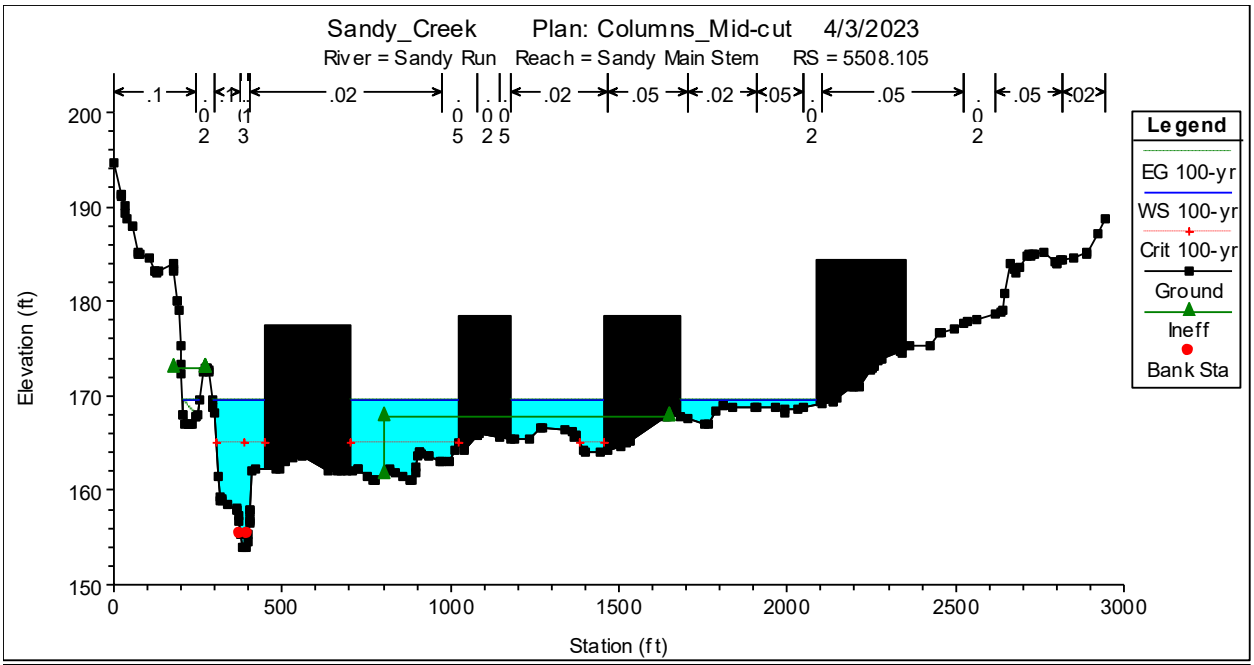

Sandy_Creek Plan: Columns_Mid-cut 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 4790.088
.1
.02
.1
.02
.1
.03
Elevation (ft)
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta

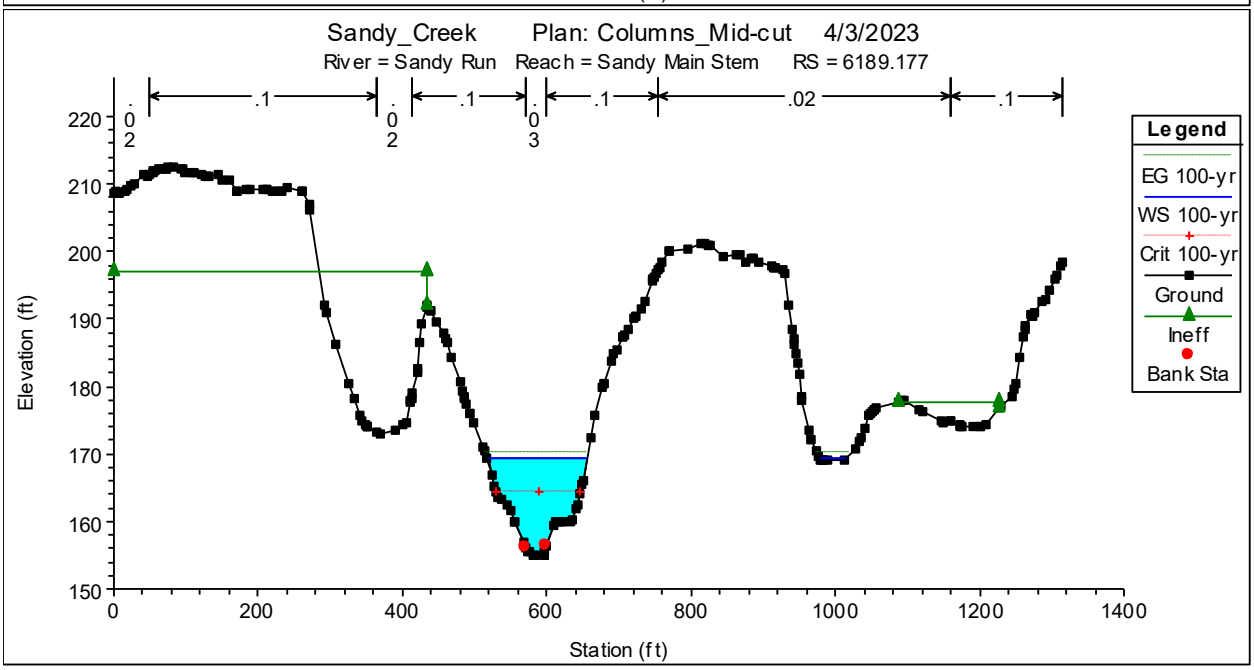

Sandy_Creek Plan: Columns_Mid-cut 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 4865.578
.1
.02
.03
.02
Elevation (ft)
200
190
180
170
160
150
0
200
400
600
800
1000
1200
1400
1600
1800
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta


Sandy_Creek Plan: Columns_Mid-cut 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 5039.878
.1
.02
Elevation (ft)
200
190
180
170
160
150
0
500
1000
1500
2000
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta

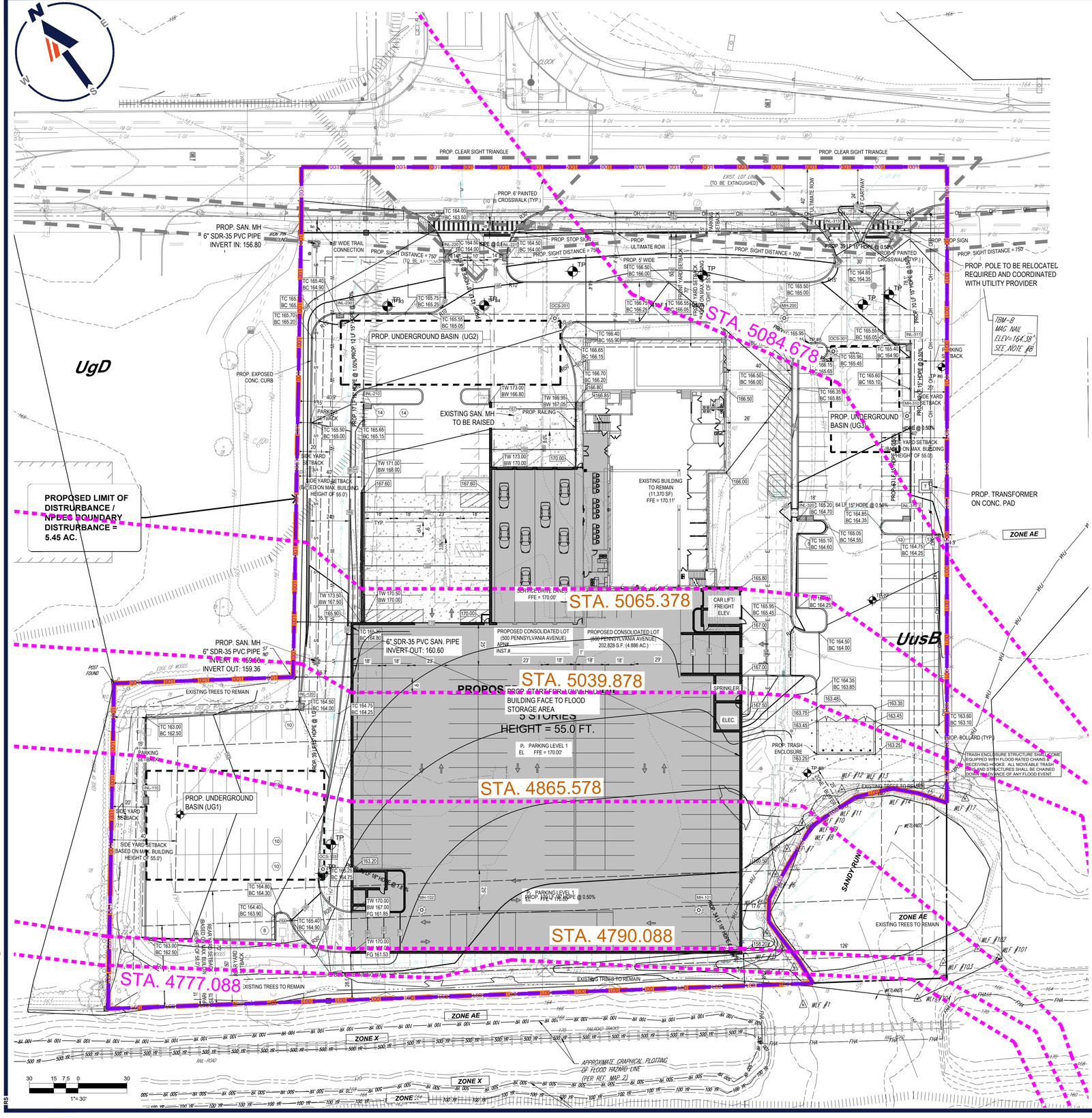

Sandy_Creek Plan: Columns_Mid-cut 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 5065.378
.1
.02
Elevation (ft)
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta


Sandy_Creek Plan: Columns_Mid-cut 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 5084.678
.1
.02
.05
.02
.05
Elevation (ft)
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta


Sandy_Creek Plan: Columns_Mid-cut 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 5508.105
Elevation (ft)
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta


Sandy_Creek Plan: Columns_Mid-cut 4/3/2023
River = Sandy Run Reach = Sandy Main Stem RS = 6189.177
Elevation (ft)
Station (ft)
Legend
EG 100-yr
WS 100-yr
Crit 100-yr
Ground
Ineff
Bank Sta

Appendix A – Cross-Section Plan


PROP. CLEAR SIGHT TRIANGLE
PROP. CLEAR SIGHT TRIANGLE
PROP. 6' PAINTED (TO BE CROSSWALK (TYP.)
EXIST. LOT LINE (TO BE EXTINGUISHED)
PROP. SAN. MH 6" SDR-35 PVC PIPE INVERT IN: 156.80
8' WIDE TRAIL CONNECTION
PROP. SIGHT DISTANCE = 750'
PROP. STOP SIGN
PROP. ULTIMATE ROW
PROP. 5' WIDE SIDEWALK
PROP. 39 LF 15" HDPE @ 0.50%
PROP. 70 LF 15" HDPE @ 0.50%
PROP. 5' PAINTED CROSSWALK (TYP.)
PROP. SIGHT DISTANCE = 150'
PROP. POLE TO BE RELOCATED REQUIRED AND COORDINATED WITH UTILITY PROVIDER
TBM-B MAG. NAIL ELEV.= 164.38' SEE NOTE #8
PROP. UNDERGROUND BASIN (UG2)
PROP. EXPOSED CONC. CURB
EXISTING SAN. MH TO BE RAISED
PROP. RAILING
PROP. 70 LF 15" HDPE @ 0.50%
PROP. UNDERGROUND BASIN (UG3)
PROP. TRANSFORMER ON CONC. PAD
PROPOSED LIMIT OF DISTRURBANCE / NPDES BOUNDARY DISTRURBANCE = 5.45 AC.
EXISTING BUILDING TO REMAIN (11,370 SF) FFE = 170.11'
PROP. 64 LF 15" HDPE @ 0.50%
ZONE AE
PROP. 6" SDR-35 PVC PIPE FFE = 170.00'
CAR LIFT/ FREIGHT ELEV.
PROP. SAN. MH 6" SDR-35 PVC SAN. PIPE INVERT IN: 160.96 INVERT OUT: 159.36
6" SDR-35 PVC SAN. PIPE INVERT OUT: 160.60
PROPOSED CONSOLIDATED LOT (500 PENNSYLVANIA AVENUE) APN# INST.#
PROPOSED CONSOLIDATED LOT (500 PENNSYLVANIA AVENUE) 202,828 S.F. (4.886 AC.)
UusB
PROPOSED BUILDING
PROP. START OF BUILDING FACE TO FLOOD STORAGE AREA
5 STORIES
HEIGHT = 55.0 FT.
P1 PARKING LEVEL 1 EL FFE = 170.00'
SPRINKLER
ELEC.
PROP. TRASH ENCLOSURE
PROP. BOLLARD (TYP.)
TRASH ENCLOSURE STRUCTURE SHALL BECOME EQUIPPED WITH FLOOD RATED CHAINS & RECEIVING HOOKS. ALL MOVEABLE TRASH BINS AND STRUCTURES SHALL BE CHAINED DOWN IN ADVANCE OF ANY FLOOD EVENT.
PROP. UNDERGROUND BASIN (UG1)
EXISTING TREES TO REMAIN
EXISTING BUILDING TO BE DEMOLISHED
PROP. 39 LF 15" HDPE @ 0.50%
PROP. 70 LF 15" HDPE @ 0.50%
PROP. 35 LF 18" HDPE @ 1.00%
PROP. 35 LF 15" HDPE @ 0.50%
PROP. 35 LF 18" HDPE @ 0.50%
PROP. 70 LF 15" HDPE @ 0.50%
PROP. 30 LF 15" HDPE @ 0.50%
PROP. 30 LF 18

Appendix B – Cut/Fill Exhibit

PROP. CLEAR SIGHT TRIANGLE

PROP. CLEAR SIGHT TRIANGLE

EXIST. LOT LINE (TO BE EXTINGUISHED)

PROP. 6' PAINTED (TO BE CROSSWALK (TYP.)

PROP. SAN. MH 6" SDR-35 PVC PIPE INVERT IN: 156.80

8' WIDE TRAIL CONNECTION

PROP. SIGHT DISTANCE = 780'

PROP. STOP SIGN

PROP. ULTIMATE ROW

PROP. SIGHT DISTANCE = 359'

PROP. 5' WIDE SIDEWALK

PROP. 24' DRIVEWAY

PROP. SIGHT DISTANCE = 780'

PROP. STOP SIGN

PROP. SIGHT DISTANCE = 150'

PROP. POLE TO BE RELOCATED REQUIRED AND COORDINATED WITH UTILITY PROVIDER

TBM-B MAG NAIL ELEV= 164.38' SEE NOTE #8

PROP. UNDERGROUND BASIN (UG2)

PROP. EXPOSED CONC. CURB

EXISTING SAN. MH TO BE RAISED

PROP. RAILING

PROP. UNDERGROUND BASIN (UG3)

PROP. TRANSFORMER ON CONC. PAD

ZONE AE

PROPOSED LIMIT OF DISTRURBANCE / NPDES BOUNDARY DISTRURBANCE = 5.45 AC.

EXISTING BUILDING TO REMAIN (11,370 SF) FFE = 170.11'

SERVICE DRIVE LANES FFE = 170.00'

PROPOSED CONSOLIDATED STORMWATER MANAGEMENT AREA (PENNSYLVANIA AVENUE) 202,628 S.F. (4.869 AC.)

PROPOSED CONSOLIDATED STORMWATER MANAGEMENT AREA (WASHINGTON AVENUE) 202,628 S.F. (4.869 AC.)

6" SDR-35 PVC SAN. PIPE INVERT OUT: 160.60

PROPOSED BUILDING PAD: FINISH FLOOR ELEVATION = 170.00' TOP OF BUILDING PARAPET = 225.00'

PROP. START OF LOUVERED BUILDING FACE TO FLOOD STORAGE AREA

5 STORIES HEIGHT = 55.0 FT.

P1 PARKING LEVEL FFE = 170.00'

P2 PARKING LEVEL 1 FFE = 170.00'

PROP. SAN. MH 6" SDR-35 PVC PIPE INVERT IN: 159.56 INVERT OUT: 159.36

PROP. UNDERGROUND BASIN (UG1)

PROP. RETAINING WALL

EXISTING TREES TO REMAIN

EXISTING TREES TO REMAIN

EXISTING TREES TO REMAIN

EXISTING TREES TO REMAIN

PROP. BOLLARD (TYP.)

TRASH ENCLOSURE STRUCTURE SHALL BE EQUIPPED WITH FLOOD RATED CHAINS & RECEIVING HOOKS. ALL MOVEABLE TRASH BINS AND STRUCTURES SHALL BE CHAINED DOWN IN ADVANCE OF ANY FLOOD EVENT.

WETLANDS

SANDY RUN

APPROXIMATE GRAPHICAL PLOTTING OF FLOOD HAZARD LINE (SEE REF. MAP 2)

ZONE AE

ZONE X

ZONE X

ZONE AE

ZONE AE

UgD

UusB

STA. 5084.678

STA. 5065.378

STA. 5039.878

STA. 4865.578

STA. 4790.088

STA. 4777.088

30 15 7.5 0 30

1"= 30'

USGS MAP

AMBLER QUAD

SCALE: 1"=2,000'

1000' 0 2000'

CUT FILL LEGEND

FLOODPLAIN FILL AREA

FLOODPLAIN CUT AREA

AS-BUILT FLOODPLAIN CUT/FILL CALCULATION

CUT WITHIN FLOODPLAIN: 5,747 CY

FILL WITHIN FLOODPLAIN: 5,625 CY

NET CUT WITHIN FLOODPLAIN: 122 CY

NET FILL WITHIN FLOODPLAIN = 0 CY

BOHLER

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL SERVICES
PERMITTING SERVICES
TRANSPORTATION SERVICES

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REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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PROJECT No.:	PAB220113.00
DRAWN BY:	RMS
CHECKED BY:	MSL
DATE:	03/21/2023
CAD I.D.:	PAB220113_CUTFILL-0A

PROJECT:

FLOODPLAIN ANALYSIS PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

500 PENNSYLVANIA AVENUE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA

BOHLER

74 W BROAD STREET, SUITE 500
BETHLEHEM, PA 18018
Phone: (610) 709-9971
Fax: (610) 709-9976
www.BohlerEngineering.com

J.A. BEAVAN

PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE No. PE082005
NEW YORK LICENSE No. 16 093204
NEW JERSEY LICENSE No. 24GE05329500

SHEET TITLE:

FLOODPLAIN CUT-FILL EXHIBIT

SHEET NUMBER:

C-302

ORG. DATE - 03/21/2023

R:\2022\PAB220113.00\CAD\BOWINGS\EXHIBITS\FEMA\PAB220113_CUTFILL-0A_-_LAYOUT: C-302 CUT-FILL

Whitemarsh TOWNSHIP
616 GERMANTOWN PIKE - LAFAYETTE HILL, PA 19444-1821
TEL: 610-825-3535 FAX: 610-825-9416
www.whitemarshtwp.org

BOARD of SUPERVISORS
Fran McCusker – Chair
Jacy Toll – Vice Chair
Vincent Manuele
Laura Boyle Nester
Patrice Turenne

Richard L. Mellor, Jr.
Township Manager

April 6, 2023

Mile One Fort Washington, LLC
c/o Dennis Turnbaugh
3301 Briggs Chaney Road
Silver Springs, MD 20904

RE: SLD#03-23/ 500-512 Pennsylvania Ave. Fort Washington
Preliminary Minor Subdivision/ Major Land Development – Car Dealership Expansion
Zoning Ordinance Compliance Review Letter

Dear Mr. Turnbaugh:

Please accept this review of the Zoning Ordinance Compliance issues for your preliminary minor subdivision/ major land development plan. We reviewed a land development plan set prepared by Bohler Engineering, dated March 15, 2023 with no revisions. No architectural plans were included in the current submission. The plan depicts the combination of three lots, the removal of two existing structures, and the construction of a new service, storage, and parking structure for the BMW dealership. The parcels are located in the Commercial Retail District (CR-L), the Floodplain Conservation District, the Riparian Corridor Conservation District, and a small portion of the lot may have restrictions due to steep slopes.

The following items are issues that must be addressed in order to comply with Chapter 116, Zoning, of the Whitemarsh Township Code.

1. § 116-93.C. — This section regulates building coverage, impervious ground coverage, and green space. The proposed plan shows 70.9% impervious ground coverage where a maximum of 65% is permitted. It also shows 29.1% green space where a minimum of 35% is permitted. The applicant noted that a variance from this section will be requested.

2. § 116-93.G. — This section regulates the required rear yard. The minimum rear yard is 50' (with an expansion to 70' based on the height of the building), the plans show the building as close as 21' from the rear property line. The applicant noted that a variance from this section will be requested.

3. § 116-94. — This section describes height regulations and the additional setback requirements associated with additional height. Since the building is exceeding the limit of 35' (proposed 55') an additional one foot is added to each setback requirement. This means that the front setback (70' required, 66' proposed) and the side setback (40' required, 35' proposed) requirements are not met. Variances therefore must be sought.

4. §116-96.A. — This section specifies that outside displays or sales require a special exception. If the applicant plans on displaying cars outside of the building, a special exception is required.

5.	§ 116-104.B.(6)	This section specifies that retail or wholesale sales or customer service are allowed when authorized by Special Exception. The proposed expected use therefore requires special exception approval.
6.	§ 116-159.A.	The plan should more clearly indicate that the entirety of the proposed lot is located in the floodplain.
7.	§ 116-164.C.	This section restricts any improvements in the floodplain that may impact flood heights. Additional information of the potential flood height impacts of the development is needed. (Note: A Flood Analysis was submitted on April 4, 2023 and will be reviewed by the Township Engineer.)
8.	§ 116-164.D.	This section prohibits the storage of certain materials, including more than 550 gallons of petroleum-based products in the floodplain. Gas and oil storage over 550 gallons is thus not permitted. If it will exist on site it must be shown on the plans and relevant zoning relief must be sought. (See related Comment #18.)
9.	§ 116-165	The section describes permitted development in the floodplain. The proposed development, including the building and associated improvements are not permitted in the floodplain. Variances therefore must be sought.
10.	§ 116-166.C.	This section describes the floodproofing standards. Any development in the floodplain must be shown to comply with this section.
11.	§ 116-169.B.	All slopes over 15% should be shown on a plan. There are restrictions on the allowable percentage of disturbance of these slopes. Documentation of disturbance must be shown.
12.	§ 116-184.A.	While the handicap spaces are noted, they should also be drawn on the plans.
13.	§ 116-184.B	The number of parking spaces exceeds the permitted 110% of allowed minimum parking. A variance therefore must be sought.
14.	§ 116-184.D	This section restricts the number of parking spaces that can be adjacent without vegetation and landscaping improvement. The parking near the rear of the lot does not meet these standards.
15.	§ 116-184.E.	This section restricts parking within 10' of the building. Some parking is shown within 10' of the building.
16.	§ 116-188.3.	This section requires electric vehicle parking and associated improvements. EV parking spaces are noted but the location must be shown on the plans.
17.	§ 116-204.B.	This section states that renovations valued at over 50% of the market value of the property in the floodplain must comply with relevant floodplain construction requirements including applicable provisions of Chapter 101, Floodplain Management.
18.	§ 116-204.C.	This section describes standards for storage of hazardous materials as described in §116-164.D. in the floodplain. The plans should be modified to show compliance with this section in the case that these materials will be stored on site.

19. § 116-206	Proposed sign locations and details should be included unless the applicant intends to request them at a later date, in which case a separate permit will need to be filed.
20. § 116-258	The plan must clearly indicate the boundaries of the Riparian Corridor Conservation District (RCCD) Zones One and Two.
21. § 116-259.B.	This section describes uses permitted in RCCD Zone One. It appears that a portion of the building is located in this zone. Buildings are not a permitted use in this zone. A variance therefore must be sought.
22. § 116-259.C.	This section describes uses permitted in RCCD Zone Two. This zone is coterminous with the 100-year floodplain. The building and associated improvements, including the trash enclosure, are not permitted by right in this zone. A variance therefore must be sought.
23. § 116-260	This section describes the uses specifically prohibited in the RCCD district. Roads, driveways, and any type of permanent structure are prohibited. A variance therefore must be sought.

Additional Comments:

1. The applicant should note that there are discrepancies between the parking table on Sheet C-302 and Sheet C-303. This should be corrected.

Should you have any questions, please do not hesitate to contact me.

Very truly yours,

Charles L. Guttenplan, AICP
Director of Planning and Zoning/Zoning Officer

cc: Richard L. Mellor, Jr., Township Manager
Craig McaNally, Interim Township Assistant Manager
Robert A. Sztubinski, B.C.O., Director of Building and Codes
Whitemarsh Township Fire Marshal
Sean P. Kilkenny, Esq., Township Solicitor
Krista Heinrich, P.E., Township Engineer
Matthew Longenberger, Bohler Engineering, Applicant's Engineer
John Iannozzi, Esq. Hamburg Rubin, Applicant's Attorney

June 1, 2023

Charles L. Guttenplan, AICP
Director of Planning & Zoning
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444-1821

Re: MileOne Fort Washington LLC's Zoning Application and related Land Development Plans for the proposed BMW project for 512 Pennsylvania Avenue, 510 Pennsylvania Avenue, 500 Pennsylvania Avenue, and 506 Pennsylvania Avenue (collectively "Subject Property")

Dear Charlie:

As you know, I represent Fort Washington Rescape, Inc. Please be advised that Fort Washington Rescape, Inc. has reviewed the MileOne Fort Washington LLC's filed Zoning Application and related Land Development Plans for the proposed BMW project, and we have no position.

Respectfully Submitted,

By: _____
George J. Ozorowski, Esquire

Cc:

Mr. Peter D. Blood, Fort Washington Rescape, Inc.
Whitemarsh Township Zoning Hearing Board
Whitemarsh Township Board of Supervisors
Dennis Turnbaugh, MileOne Auto Group
John Iannozzi, Esquire, Attorney for MileOne Fort Washington, LLC

FUREY & BALDASSARI, P.C.

ATTORNEYS AT LAW
1043 S. PARK AVENUE
AUDUBON, PA 19403

MICHAEL E. FUREY
mike@fbpclaw.com

JOSEPH J. BALDASSARI*
joe@fbpclaw.com

*also member of NJ bar

(610) 666-7500
fax (610) 666-7200

June 13, 2023

MileOne Fort Washington, LLC
1 Olympic Place, Suite 1100
Towson, MD 21204

RE: Whitemarsh Township Zoning Hearing Board
Application of MileOne Fort Washington, LLC No. 2023-11

Dear Applicant:

Enclosed herewith please find a true and correct copy of the Decision and Order of the Whitemarsh Township Zoning Hearing Board pursuant to the vote at its meeting on June 7, 2023. Please note that your application was granted, subject to conditions as recited in the Decision and Order.

You are also hereby advised that all parties have thirty (30) days from the issuance of the Board's Decision and Order to file an appeal to the Court of Common Pleas of Montgomery County.

Sincerely,

MICHAEL E. FUREY
Solicitor for the Whitemarsh Township
Zoning Hearing Board

MEF/sr
Enclosure

cc: Charles Guttenplan, Zoning Officer (w/enclosure)
Sean Kilkenny, Esquire (w/enclosure)
John Iannozzi, Esquire (w/enclosure)

WHITEMARSH TOWNSHIP ZONING HEARING BOARD

DECISION AND ORDER

APPLICATION NO.: 2023-11
APPLICANT: MileOne Fort Washington, LLC

HEARING DATE: 06/07/23
VOTE: 06/07/23
WRITTEN DECISION: 06/12/23
COPY MAILED: 06/13/23

Parcel # 65-00-08776-00-6
Block 051, Unit 046
512 Pennsylvania Avenue
Fort Washington, PA 19034

Parcel # 65-00-08773-00-9
Block 051, Unit 002
510 Pennsylvania Avenue
Fort Washington, PA 19034

Parcel # 65-00-08770-00-3
Block 051, Unit 041
500 Pennsylvania Avenue
Fort Washington, PA 19034

Parcel # 65-00-08767-00-6 and 65-00-08767-10-5
Block 051, Unit 044
506 Pennsylvania Avenue
Fort Washington, PA 19034

CRL – Commercial Retail District
Floodplain Conservation Overlay District
Riparian Corridor Conservation Overlay District

MileOne Fort Washington, LLC ("Applicant") is the lessee of the Properties, proceeding with permission of the Owner, listed above referenced Tax Parcel numbers pursuant to a signed lease agreement with Auto Properties Fort Washington, LLC. The Applicant proposes to consolidate the tax parcels noted above for addresses 500, 506, 510, and 512 Pennsylvania Avenue into one lot (collectively "Subject Property"). The Applicant proposes to remove two existing dealership buildings and to modify the remaining BMW building on the Subject Property ("BMW Facility"). The BMW Facility will be utilized for sales, service, storage, and parking on the Subject Property ("Project").

After completion of a public hearing on the above-referenced Application, pursuant to public notice as required by law, the Zoning Hearing Board of Whitemarsh Township decided and orders that the following relief from, and approvals under, the Whitemarsh Township Zoning Ordinance, and the Floodplain Management Ordinance, are **GRANTED**:

A Variance from §116-93.C, so as to permit an impervious coverage of 70.9%, rather than the 65.0% permitted, and to permit 29.1% green space, rather than the 35% required, an improvement of an existing non-conformity on the overall consolidated Subject Property.

A Variance from §116-93.G, so as to permit a rear yard setback of 20 feet, rather than the 50 feet with an expansion to 80 feet based on the height of the building as required.

A Variance from §116-94, so as to permit a side yard setback of 35 feet, rather than the 50 feet required for a building height of 65 feet, and a front yard setback of 64.4 feet, rather than the 80 feet required for a building height of 65 feet.

A Special Exception under §116-96.A, so as to permit the outside display and/or sale of vehicles associated with the automotive dealership.

A Special Exception under §116-104.B.(6), so as to permit retail sales, wholesale sales, and/or customer service in the CR-L District.

A Variance from §116-164.C, so as to permit development in the floodplain where the effect is not fully offset by improvements, under circumstances whereby the flood height would be increased by up to 4" within a limited section of the site, with no adverse effects to the capacity of the channel or the floodway, or upstream or downstream capacity of the floodplain.

A Variance from §116-164.D, so as to permit the proposed use to have a supply of more than 550 gallons of petroleum products, materials, and other substances associated with an automotive use within the floodplain.

A Variance from §116-165, so as to permit the expansion of an existing automobile dealership within the Floodplain Conservation Overlay District.

A Variance from §116-169.B.(2), so as to permit 40% disturbance to man-made steep slopes (25+%) on the site, rather than the 15% is permitted.

A Variance from §116-184.B, so as to permit the minimum parking count to be exceeded by more than 110% to accommodate inventory storage.

A Variance from §116-184.D, so as to permit more than 30 individual parking spaces to be placed together in any parking area, with dimensions of the parking area exceeding 150 feet, and not installing planting strips of not less than 10 feet in width between parking rows, as shown on the plans, as applicable to the proposed parking decks and certain existing parking areas to remain.

A Variance from §116-188.3, so as to permit EV charging spaces provided only based on the required off-street parking spaces, and to exclude inventory storage spaces from the requirements.

A Variance from §116-259.B, so as to permit an encroachment into the Riparian

Corridor Conservation District Zone One, including a ±15 foot portion of the building, in an area developed with surface parking in the existing condition.

Variances from §116-259.C and §116-260, so as to permit an encroachment into the Riparian Corridor Conservation District Zone Two, including for the building and associated improvements, trash enclosure, site roads, driveways, and structures, as the entire site is located within the Riparian Corridor Conservation District due to the 100-year Floodplain delineation.

Variances from §101-21.D. and §101-24.B, so as to permit construction within an identified floodplain area closer than 50 feet to the top-of-bank of a watercourse, in accordance with PADEP and FEMA requirements.

A Variance from §101-24.A.(12), so as to permit the proposed use to have a supply of more than 550 gallons of petroleum products, materials, and other substances associated with an automotive use within the floodplain

Under the Floodplain Management Ordinance, the Zoning Hearing Board finds that:

The Project does not involve development which may endanger human life, or prohibited activities. The variances granted involve only the least modification necessary to provide relief. Reasonable conditions and safeguards have been imposed below in order to protect the public health, safety, and welfare, and to achieve the objectives of the Floodplain Management Ordinance. There is good and sufficient cause for granting relief. The failure to grant the variances would result in exceptional hardship to the Applicant. The granting of the variances will neither result in an unacceptable or prohibited increase in flood heights, additional threats to public safety, or extraordinary public expense, nor create nuisances, cause fraud on, or victimize the public, or conflict with any other applicable state or local ordinances and regulations.

The Applicant is on notice that:

Certain relief from floodplain regulations may result in increased premium rates for flood insurance and/or may increase the risks to life and property.

The development of the property in the floodplain is entirely at the risk of the Applicant

THIS DECISION IS SUBJECT TO THE FOLLOWING CONDITIONS:

1. All use and development permitted by this Decision shall substantially conform to the exhibits and testimony presented by the Applicant, unless inconsistent with any specific conditions imposed by this Board, in which case these specific conditions shall take precedence.

2. The Applicant shall apply for and obtain all permits required by the Township Codes in a timely manner.

3. The Applicant shall comply with all requirements of the Township Engineer as stated in the Township Engineer's Memo dated June 1, 2023, subject to amendment as the Applicant proceeds through the land development approval process. All structures shall be designed and constructed so as to have the capability of resisting the one-percent-annual-chance flood.

4. The Applicant shall comply with all requirements of the Township Board of Supervisors with respect to subdivision and land development approvals.

This Decision and Order of the Board is final and any appeal of it must be filed with the Court of Common Pleas of Montgomery County within thirty (30) days following the copy mailing date set out above.

The Board reserves the right to issue Findings of Fact and Conclusions of Law in the event of an appeal.

Section 116-223 of the Zoning Ordinance provides as follows:

Expiration of granted appeals. Unless otherwise specified by the Board, all approvals granted by the Zoning Hearing Board shall automatically expire 365 days after the date of the decision unless: (1) the applicant has acted upon the approval by obtaining the required permit(s) and paying the prescribed fees for same, or (2) the Zoning Hearing Board decision is on appeal to the courts, at which point, the approval, if upheld on appeal, shall expire 365 days after final determination on appeal.

The Zoning Hearing Board may extend the expiration date of approvals for a 180 day period upon request by the applicant, provided that the applicant is, in the opinion of the Zoning Hearing Board, diligently pursuing governmental and/or regulatory approvals as required. Requests for extensions shall be in writing and submitted to the Zoning Hearing Board at least 30 days before any applicable expiration date. Only one (1) extension may be provided for any application.

No. 2023-11
WHITEMARSH TOWNSHIP ZONING HEARING BOARD:

Marc Weinstein, Chair

Stanley A. Casacio, Vice Chair

James Behr

Not Present

Robert A. Bacine

William E. Kramer

Gregory Nester

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

June 8, 2023

Mr. Richard L. Mellor, Jr. - Township Manager
Whitemarsh Township Municipal Building
616 Germantown Pike
Lafayette Hill, PA 19444

RE: Preliminary Plan Review
500-512 Pennsylvania Ave
Whitemarsh Township, Montgomery County, PA
S/LD # 03-23
Our Project Number 2023-03063

Dear Mr. Mellor:

As requested, we have reviewed plans for the above referenced Preliminary Plan Submission consisting of:

- 28-Sheet Plan prepared by Bohler Engineering dated March 15, 2023
- Post Construction Stormwater Management (PCSM) plan narrative prepared by Bohler Engineering dated March 15, 2023 with no noted revisions
- Flood Analysis Report dated April 3, 2023 with no noted revisions
- Various supporting documents, forms and correspondence enclosed with the application

The following comments are offered for your consideration:

The applicant is requesting waivers and/or relief from the requirements of the following sections of the ordinance:

	Section	Description
1.	105-12(D)	The applicant is requesting a waiver from the requirements of this section of the ordinance in order to not require separate Preliminary and Final plan submissions, and to allow the submissions to be considered contemporaneously.
2.	105-21(B)(1)(n)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the preliminary plan to show all sewer lines, storm drains, culverts, bridges, utility easements, railroads, and other significant man-made features within 500 feet of and within the site. The granting of any waiver should be conditioned upon the plans showing existing features along Pennsylvania Avenue for approximately 200 feet to the East of the property to verify proper alignment and an aerial photo showing features within 500 feet being included in the plan set. Additionally, the formal waiver request letter and plan set must be revised to request a waiver from §105-21(B)(1)(n) instead of §105-20(A)(12).

	Section	Description

3. 105-21(B)(13) The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires an Existing Resources and Site Analysis Plan (ERSAP) to be prepared which provides a comprehensive analysis of existing conditions, both on the proposed development tract and within 500 feet of the tract boundaries.

4. 105-30 (A) As defined by §105-29(C) and §105-30(A), streets adjacent to the site are subject the following requirements:

Street Name	Classification	Required Ultimate R.O.W	Required Cartway Width	Curbs	Sidewalks	Tree Zone
Pennsylvania Avenue	Major Collector	*	*	Required	Required	Required

*As recommended by PennDOT

The applicant must request a waiver from this section of the ordinance in order to plant trees outside of the required tree zone. Please refer to §105-48(E) for related comment. Additionally, the plans must be revised to dimension the full cartway width of Pennsylvania Avenue.

5. 105-38(A) This section of the ordinance requires that two-way aisles for parking spaces having a 90-degree angle of parking must be 24 feet wide, with a minimum parking stall width of 9 ft x 18 ft. The plans must be revised, or a waiver must be requested in order to demonstrate compliance with the requirements of this section of the ordinance. The plans must be revised to include dimensions for parking areas.

6. 105-38(D) This section of the ordinance requires parking areas to be designed to permit each motor vehicle to proceed to and from the parking space provided for it without requiring the moving of any other motor vehicles. Multiple parking stalls proposed throughout the development appear inaccessible. The plans must be revised to remove this condition, or a waiver must be obtained. The plans must distinguish between off-street parking stalls and stalls for inventory and service repair operations.

7. 105-38 (H) The plans must be revised to relocate the proposed parking facility outside the required parking setback along the southeast property line or the applicant must request a waiver from the requirements of this section of the ordinance.

8. 105-38(I) No more than 15 parking spaces shall be permitted in a continuous row without being interrupted by a landscaping area not less than the width of a parking space constructed in accordance with the plan. The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance or a waiver must be obtained.

9. 105-38(J) No one area for off-street parking of motor vehicles shall exceed 30 cars in capacity. Separate areas on a parcel shall be physically separated from one another by ten-foot-wide planting strips. The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance or the applicant must request a waiver.

10. 105-38(O) The plans must be revised to relocate the parking spaces adjacent to the service drive lanes to provide at least ten feet (10.0') between any parking area and a building or the applicant must request a waiver from this section of the ordinance.

	Section	Description
11.	105-39(A)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires all parking areas to have at least one, three inch-caliper tree for every two parking spaces provided.
12.	105-48(E)	Street trees shall be planted within a tree planting zone of lawn area or other material approved by the Shade Tree Commission, situated between the sidewalk and curb measuring a minimum of five feet (5.0') in width from the planting edge of the curb to the planting edge of the sidewalk. The applicant must request a waiver from the requirements of this section of the ordinance to allow planting outside of the tree zone.
13.	105-52(B)(2)	This section of the ordinance requires that all buffers shall have a minimum width of 50 feet. The Board of Supervisors may permit an alternative planting option which shall have a screening capability equal to or greater than any of the available options. The plans must be revised, or a waiver must be requested.
14.	58-34(B)(7)(d)	The applicant is requesting relief from the requirements of this section of the ordinance, which requires the minimum diameter of all storm drainage pipes to be eighteen inches and reinforced concrete pipe. We have no objection to the granting of this waiver. The formal waiver request letter must be revised to request relief from §58-34(B)(7)(d) instead of II(E)(2)(g)(iv).
15.	58-34(B)(7)(h)	The applicant is requesting relief from the requirements of this section of the ordinance, which requires storm pipes to have a minimum eighteen-inch depth of cover the top of the pipe. We have no objection to the granting of this relief, subject to the applicant's engineer demonstrating the pipe material is able to withstand the bearing capacity. The formal waiver request letter must be revised to request relief from §58-34(B)(7)(h) instead of II(E)(2)(g)(viii).
16.	55-4(B)(6)	The applicant is requesting a waiver from the requirements of this section of the ordinance to remove more than 33% of trees, having a DBH of six inches or greater, on any lot. It appears the proposed tree removal does not exceed this threshold. If a waiver is necessary, the formal waiver request letter must be updated and the plan set must be revised to reference the accurate section of the ordinance.
17.	55-4(D)(6)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires every living and healthy tree with a DBH of six inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new canopy trees, of a type and species approved by the Shade Tree Commission with a trunk diameter of not less than three inches in caliper. Please note, §55-4(F) allows for the planting of substitution trees, subject to the approval by the Shade Tree Commission, for the portion of replacement trees unable to be planted due to insufficient area. Additionally, the formal waiver request letter and plan set must be revised to request a waiver from §55-4(D)(6) instead of §55-4(B)(6).

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

	Section	Description
18.	105-21(A)(5)	The following plans and legend must be revised and/or updated accordingly: Sheet C-201: Existing Conditions and Demolition Plan: • Indicate existing edge of pavement and centerline of Sandy Run Creek within legend, • Identify the linetype that borders Sandy Run Creek and the linetype adjacent to Pennsylvania Railroad and TMP#:065-00-07864-20-007 within the legend, • Legal right-of-way linetype shown on plan is not consistent with legend, Sheet C-301: Record Plan: • "Property line" linetype must be utilized on all property lines besides the street line, • identify the linetype that borders Sandy Run Creek and the linetype adjacent to Pennsylvania Railroad and TMP#:065-00-07864-20-007 within the legend. Sheet C-501: Utility Plan: • Identify linetype transecting internal driveway from Pennsylvania Avenue to the existing building.
19.	105-21(B)(1)	The plans must be revised to show the Municipal Boundary Line along Pennsylvania Avenue.
20.	105-21(B)(1)(d)	The zoning data table indicates the existing building footprint area as 11,370 square feet which does not appear to be consistent with the plan view and must be revised. Additionally, the zoning requirements table must be revised to indicate that property is located within Floodplain Conservation District.
21.	105-21(B)(1)(j)	The applicant must submit legal descriptions for the proposed lot consolidation for review by the Township Engineer.
22.	105-21(B)(1)(l)	The plans must be revised to note the landowner information for adjoining properties across Pennsylvania Avenue.
23.	105-21(B)(1)(m)	The labels for Pennsylvania Avenue must be revised to reference the State Route Number as SR 2037.
24.	105-21(B)(1)(o)(3)	The plans must be revised to include the following information for the proposed building and parking areas: • Dimensions of drive aisles and buildings, • All parking spaces within the garage must be annotated and electric vehicle spaces specified. It appears the number of parking spaces annotated are not consistent with parking table, • Existing uses of the building to remain which specifies the retail, office and service bays areas with square footage noted must be identified, • A detailed plan must be submitted showing the layout of each level including any pavement markings and signage.

	Section	Description
25.	105-21(B)(2)(a)	The plans must be revised to include a delineation of the soil types within the site, specifically identifying the location of hydrologic soil groups A and B which were utilized in the Stormwater Management Report. Additionally, a table must be included on the Erosion and Sediment Control Plan which indicates each soil's limitations.
26.	105-21(B)(7)	The Grading Plan must be revised to reflect the vertical grade change along the curb line around the parking area at the rear of the site.
27.	105-21(B)(9)(d)[2][b]	The Transportation Impact Assessment Report must be revised to provide a description of the public transportation (i.e., SEPTA) available in the area. Additionally, the plans must be revised to show the relocation of the existing bus stop which is currently in the center of the right in/right out driveway.
28.	105-21(B)(9)(d)[3][b]	The Transportation Impact Assessment Report must be revised to identify roadways and/or intersections experiencing levels of service E or F.
29.	105-21(B)(9)(d)[5][a]	The Transportation Impact Assessment Report must be revised to provide clarification of the following: • The critical headway values used in the analysis are not consistent with the calculated values in Appendix E • The timings used for the existing PM peak analysis are not consistent with signal plans • The applicant may consider revising the trip generation table to clearly demonstrate the amount of site traffic that is being added to the roadway network versus the existing building conditions
30.	105-21(B)(9)(d)(5)[b]	The plans must be revised to show the proposed traffic signal at the Western access point consistent with the Traffic Impact Assessment dated March 9, 2023.
31.	105-21(B)(9)(d)[6][a	All streets and/or intersections showing a level of service below C shall be considered deficient, and specific recommendations for the elimination of these problems shall be listed. This listing of recommended improvements shall include but are not limited to the following elements: internal circulation design, site access location and design, external street and intersection design and improvements, traffic signal installation and operation, including signal timing and transit design improvements. The report must be revised to provide recommendations to eliminate the various deficiencies noted.
32.	105-21(B)(9)(d)[6][a	Signal Design Plans for the revised Pennsylvania Avenue/Commerce Drive intersection showing new alignment and updated timings must be submitted for review.
33.	105-21(B)(10)(a)	The applicant shall submit a letter from the appropriate municipal authority indicating the availability of public sanitary sewer facilities.
34.	105-21(B)(10)(b)	The applicant shall submit a letter from the appropriate municipal authority indicating the availability of central water supply.
35.	105-21(B)(12)	A map showing the location of the proposed subdivision within its neighborhood context shall be submitted.

	Section	Description
36.	105-21(B)(15)	A Preliminary Resource Impact and Conservation Plan (the "Preliminary Impact Plan") shall be prepared for all Major Subdivision and Land Development applications to categorize the impacts of the proposed activities and physical alterations on those resources shown on the ERSAP. All proposed improvements, including but not necessarily limited to grading, fill, streets, buildings, utilities and stormwater management facilities, as proposed in the other Preliminary Plan documents, shall be taken into account in preparing the Preliminary Impact Plan, which shall clearly demonstrate that the applicant has minimized site disturbance to the greatest extent practicable.
37.	105-21(B)(16)(a)	The plans must be revised to remove the topography from the Record Plan and to show the topography on the Existing Conditions and Demolition Plan.
38.	105-21(B)(16)(l)[1]	The plans must be revised to clearly indicate existing and proposed easements throughout the project location, specifically the PECO easement and access easement. All easements must be shown on the Record Plan.
39.	105-21.1(K)(2)	Within the North Transportation Service Area an impact fee in the amount of Two Thousand Eight Hundred and Twenty-Five Dollars ($2,825.00) per anticipated peak hour trip must be provided by the applicant. Based on data documented within the latest edition of the ITE Trip Generation Manual, the proposed development will generate 182 PM peak hour trips. Therefore, the traffic impact fee totals $514,150.00 ($2,825.00 x 182 peak hour trips).
40.	105-24(B)(3)	The Township Engineer signature block must be revised to reference the current Township Engineer and a signature block must be included for the Chairman and the Secretary of the Board of Supervisors.
41.	105-28(I)	This section of the ordinance requires the applicant to obtain a Highway Occupancy Permit from the Pennsylvania Department of Transportation (PennDOT) for the proposed work within the right of way of Pennsylvania Avenue (SR-2037). The Highway Occupancy Permit Application Plans must be submitted to the Township for review prior to submission to PennDOT. The Township Engineer should be notified of all meetings with PennDOT and must be copied on all correspondence. Additionally, the plans must be revised to indicate to source or plan reference uses to determine the Right-of-way width for Pennsylvania Avenue.
42.	105-28(K)	The plans must be revised to include a note which states that structures, including but not limited to mailboxes, fences and poles, shall not be erected within street rights-of-way.
43.	105-37	The proposed clear sight triangles must be removed from the Drainage Area Maps for clarity.
44.	105-38(B)	The width of entrance and exit drives shall be (1) A minimum of twelve feet (12.0') for one-way use only (2) A minimum of twenty five feet (25.0') for two-way use (3) A maximum of thirty-five feet (35.0') at the street line Dimensions must be added to the plans which demonstrate compliance with the requirements of this section of the ordinance.

	Section	Description
45.	105-38(C)	This section of the ordinance requires curves/turn in entrance and exit drives and all internal parking lot aisles necessary for providing access for fire protection equipment shall have a minimum inside turning radius of 25 feet and a minimum outside turning radius of 50 feet. The truck turning template diagram submitted shows the fire truck utilizing parking spaces and curbing for maneuvering and must be revised to remove this condition and to utilize the Tower 29 Township Fire truck with an overall length of 49'-4" and a wheelbase of 23.0'. Show all entering and exiting movements for the fire truck detail including left-in and left-out.
46.	105-38(Q)	No less than a five-foot radius of curvature shall be permitted for all curblines in parking areas. The plans must be revised to include all radii dimensions in order to demonstrate compliance with the requirements of this section of the ordinance. Additionally, it appears that the end of the ten parking spaces located in the southwest property corner interrupts the internal drive aisle to the parking garage. It is recommended that a curbed radius or pavement markings be provided to avoid vehicular conflict.
47.	105-38(U)	All common parking areas shall be adequately lighted during after-dark operating hours and all lights shall be located on raised parking islands, not on the parking surface. A Lighting Plan which indicates an adequate level of illumination in all parking areas must be submitted to the Township.
48.	105-38(V)	All artificial lighting used to illuminate any parking space or spaces shall be so arranged that no direct rays from such lighting shall fall upon any neighboring property or streets, nor shall any high brightness surface of the luminaries be visible from neighboring residential property or from a public street. The required Lighting Plan must be revised to demonstrate compliance with the requirements of this section of the ordinance.
49.	105-40(A)	The plans must be revised to indicate the location of the proposed loading space to demonstrate compliance with this section of the ordinance.
50.	105-45(C)	The proposed parking facility along the Eastern property line is within the proposed PECO utility; the applicant must provide evidence in sufficient detail that the location of the parking is acceptable to PECO.
51.	105-47	The sidewalk detail must be revised to call for a 6" subbase and to note that all sidewalks be laterally pitched at a slope of no less than ¼ inch per foot.
52.	105-47(A)	The plans must be revised to provide a pedestrian connection between the proposed building to the sidewalk along Pennsylvania Avenue.
53.	105-53(D)	This section of the ordinance requires the dedication of land in the amount of 10% of the total Site Area for Park and/or Recreational use. The applicant has the option of offering a fee in lieu of dedicating actual land area and can also provide a combination of a fee in lieu and dedication of land. All offers of land and/or fees in lieu of dedication must meet the requirements of this section of the ordinance.
54.	105-72(A)	Monuments must be provided at all property line corners. Monuments shall be placed at each change in direction of a boundary along the street line.

	Section	Description
55.	105-73(C)	The plans must be revised to provide internal sidewalks and appropriate crosswalks from the parking facilities to the building to assure pedestrian safety.
56.	105-76(B)	The applicant must obtain a letter of approval from the Township Fire Marshal in order to ensure that adequate fire protection is provided.
57.	105-78	The applicant must obtain the approval of the Whitemarsh Township Authority with regard to proposed sanitary sewerage facilities.
58.	105-79	All preliminary plan submissions shall include documentation of sewerage sewage facilities planning as required by the PADEP.
59.	105-83(E)	No removal of a tree shall be permitted unless the applicant obtains a recommendation from the Shade Tree Commission based on a tree survey and removal plan submitted in accordance with Chapter 55 of the Whitemarsh Township Code.
60.	105-89	The developer shall enter into a written agreement with the Township in the manner and form approved by they Solicitor wherein the developer shall agree, to construct or cause to be constructed at his own expense all proposed improvements shown on the approved land development plan, all in strict accordance with the standards and specifications of the Township and within the time specified in said agreement and to deposit with the Township financial security in an amount sufficient to cover the cost of all subdivision or land development improvements, including both public and private improvements.

CHAPTER 55 - TREE PROTECTION STANDARDS

	Section	Description
61.	55-4(C)	This section of the ordinance requires that a tree survey plan and a landscape plan shall be prepared and reviewed by the Shade Tree Commission in a public meeting.
62.	55-4(C)(3)	This section of the ordinance requires that every tree determined to be living and healthy, with a DBH of 6 inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new Canopy trees of a type and species approved by the Township with a trunk diameter of not less than 3 inches in caliper. The total caliper of replacement trees, measured at 6 inches above the ground line, shall equal or exceed the DBH of the tree removed.
63.	55-4(C)(4)(b)	The plans must be revised to include provisions for tree protection to preserve healthy trees and shrubs on site in accordance with this section of the ordinance. A note must be added to the plans requiring protective fencing to be placed around trees on the property prior to construction. Protective fencing must be shown on the plans in the areas where it will be required.
64.	55-4(D)(2)	A note must be added to the plans requiring a pre-construction conference with the Township Shade Tree Commission's designee prior to start of construction.

GRADING, EROSION CONTROL, STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES ORDINANCE:

	Section	Description
65.	58-14(A)(2)(b)	The stormwater management design must be revised to analyze 20% of the existing impervious area of the site as meadow in good condition. Additionally, it appears the meadow curve numbers for soil groups A and B are not consistent with the TR-55 manual and must be revised.
66.	58-17(A)(2)(o)	The top of grate/rim elevations labelled on the "Storm Sewer Profiles Plan" and the "Utility Plan" do not appear consistent with the finished grades shown on the "Grading Plan", specifically Inlet 320, manhole 310 and inlet 230.
67.	58-17(A)(2)(p)	The plans appear to show a proposed Manhole (MH 300) to be located above an existing 72" CMP, and must be revised to include a constructible detail for this structure.
68.	58-17(A)(2)(p)	The following inconsistencies between the stormwater plans/details and the stormwater management report must be addressed: • The top of box for all outlet devices is not considered a weir structure; therefore the pond report must be revised, • UG Basin 1: Outlet pipe and orifice length noted in pond report is not consistent with design, • UG Basin 2: Chamber barrel length noted in pond report not consistent with PCSM plan, 3" orifice missing from pond report, outlet pipe length and weir elevation not consistent with design, • UG Basin 3: Chamber barrel length, number of chambers and outlet pipe noted in pond report is not consistent with design • The Cultec underground basin detail located on the PCSM sheet (C-606) must be revised to show all pertinent data (i.e. layers appear turned off)
69.	58-17(A)(2)(s)	The following signature block must be included on the plan, "(Design Engineer), on this date (Signature, date) has reviewed and herby certifies that the stormwater management site plan meets all design standards and criteria of Chapter 58, "Grading, Erosion Control, Stormwater Management and Best Management Practices"."
70.	58-17(A)(2)(t)	A statement, signed by the landowner, must be included on the plans, acknowledging that the stormwater BMPs are fixtures that can be altered or removed only after approval by the Township.
71.	58-17(A)(7)	A cross section of the existing swale utilized for the bypass area must be shown on the plan set and include the hundred-year hydraulic grade line.
72.	58-18(A)(2)	Since the limit of disturbance is greater than one acre, the applicant must obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Pennsylvania Department of Environmental Protection. Once obtained, a copy must be submitted to the Township.
73.	58-23(A)	An as-built survey of all stormwater BMPs must be submitted to the Township in paper and digital (dwg) formats. A note must be added to the plans stating an as-built survey will be completed and submitted in both formats to the Township.

	Section	Description
74.	58-24(K)(2)	Stormwater facilities shall be accessible to permit periodic maintenance and an access easement shall be provided to permit such access. The following blanket stormwater easement note must be revised to state: *'Stormwater facilities shall be owned and maintained by the property owner in perpetuity. The property owner shall provide a blanket stormwater access easement to the Township for the purpose of access to the stormwater facilities. If, in the judgment of the Township Engineer, the owner has failed to maintain the stormwater facilities in such a manner as to ensure their proper functioning, the Township after providing a written notice, shall have the right to enter upon the lands of the owner and to make any repairs as may be necessary to the stormwater facilities to ensure that such facilities function and perform in accordance with the design specifications. Any and all costs incurred by the Township for such repairs and/or maintenance shall be paid in full by the owner. A lien or liens may be placed against the property if the owner fails to remit payment within sixty (60) days.'*
75.	58-24(K)(2)(g)	All easements must be documented in the form of an easement agreement, approved by the Township Solicitor and recorded at the Recorder of Deeds for Montgomery County.
76.	58-25	The property owner shall sign an operations and maintenance agreement with the Township addressing stormwater BMPs that are to be privately owned.
77.	58-28(D)(10)	This section of the ordinance requires proper drainage away from buildings, and all land within a project area shall be graded to drain and dispose of surface water without, except where ponding (detention basins, etc.) is part of the stormwater management plan for the site. It appears the proposed grading along the western driveway where the curb is labelled 'TC:165.65, BC:165.15 and TC:165.50, BC:165.00 will cause ponding and must be revised. Additionally, it appears the '161' contour under the proposed garage is missing.
78.	58-28(D)(14)	A note must be added to the plans to address measures for dust control during grading.
79.	58-29(A)(2)	No excavation shall be made with a cut face steeper than 3:1 unless a concrete, masonry, or other approved retaining wall designed by a Registered Professional Engineer experienced in structural engineering, and constructed in accordance with approved standards, is provided to support the face of the excavation. Design calculations/details pertaining to the retaining walls must be submitted for review by the Township Engineer. Additional bottom/top of wall elevations must be included on the grading plan and elevation views of the retaining walls must be provided.
80.	58-30(A)(9)	A note must be added to the plan requiring stormwater detention/retention facilities to be in place and functioning prior to the creation of any impervious area. This must be consistent with the construction sequence.
81.	58-31(A)(1)	The time of concentration flow paths must be shown on the Drainage Area Maps. Additionally, the pre-development time of concentration for drainage area 2 does not appear to reflect existing conditions and must be revised to show a sheet flow component.

	Section	Description
82.	58-31(A)(8)	The stormwater management calculations must be revised to address tailwater from the Sandy Run. A flap gate, or similar, should be considered at all outlet structures.
83.	58-31(A)(17)	The stormwater management report must be revised to provide profiles of all pipe conveyances with hydraulic grade lines shown.
84.	58-32(E)(4)	The following note must be attached to all drainage plans and signed and sealed by the applicant's registered professional engineer experienced in geotechnical and soil engineering: "I certify that the proposed facility is/is not underlain by limestone."
85.	58-34(B)(4)	The storm sewer facilities must be revised to provide a minimum drop of two inches between the lowest pipe invert elevation and the outlet pipe invert elevation.
86.	58-35(C)(3)(e)	A detailed soils evaluation of the project site shall be performed to determine the suitability of infiltration BMPs. The evaluation shall be performed by a registered professional engineer experienced in geotechnical engineering or a certified professional soil scientist, and at a minimum, address soil permeability, depth to bedrock, susceptibility to sinkhole formation, and subgrade stability.
87.	58-35(C)(3)(f)[7]	Infiltration rates shall not be used in computing the storage volume of the infiltration system. The routing calculations for underground basin 2 must be revised to remove infiltration.
88.	58-41(C)	A note shall be added to the plans stating the permit holder will notify the Township Engineer in order to obtain inspections at least 48 hours before the inspection is to be made for; initial inspection, rough grading, drainage facilities, BMPs, special structures and final inspection.

CHAPTER 101 – FLOODPLAIN MANAGEMENT ORDINANCE:

	Section	Description
89.	101-9(C)(3)	The plans must be revised to note the base flood elevation.
90.	101-9(C)(4)(g)	The applicant must provide an indication of the amount, location and purpose of any materials or substances referred to in §§ 101-23(F) and 101-24 which are intended to be used, produced, stored or otherwise maintained on site
91.	101-9(C)(4)(h)	The applicant must provide a description of the safeguards incorporated into the design of the proposed structure to prevent leaks or spills of the substances listed in § 101-24 during a base flood.
92.	101-17(A)(1)	Within any floodway area, no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.

	Section	Description
93.	101-17(A)(2)	Within any floodway area, no new construction or development shall be allowed, unless the appropriate approvals are obtained from the Army Corps of Engineers, Federal Emergency Management Agency, Pennsylvania Department of Environmental Protection and approved by the Township.
94.	101-17(A)(1)	In the Floodplain Conservation District, no development shall be permitted except where the effect of such development on flood heights is fully offset by accompanying improvements which have been approved by all appropriate local, state, and federal authorities as required. The applicant must provide evidence in sufficient detail to demonstrate compliance with the requirements of this section of the ordinance, such as the inclusion of a cut/fill analysis plan demonstrating there will be no net fill. The Flood Analysis for Sandy Run Report concludes there will be a net fill condition which appears inconsistent with the remaining narrative and must be revised.
95.	101-17(A)(2)	The applicant must obtain a permit from the Pennsylvania Department of Environmental Protection for the proposed work within the floodway.
96.	101-22(C)(3)(c)	An elevation view of the proposed parking garage must be submitted that is consistent with the cross sections included in the HEC-RAS Flood Analysis for Sandy Run. Additionally, the Grading Plan and Floodplain Cross-Section Exhibit appear to show conflicting proposed grading and louver locations under the parking garage.
97.	101-23(F)	This section of the ordinance requires all materials that are buoyant, flammable, explosive, or in times of flooding, could be injurious to human, animal, or plant life, and not listed in §101-24, Development which may endanger human life, shall be stored at or above the regulatory flood elevation or floodproofed to maximum extent possible. The applicant's engineer must demonstrate that stored materials are protected.
98.	101-23(H)	The plans must be revised to demonstrate that any structures, including fencing and trash enclosures, shall be adequately anchored to prevent flotation, collapse, or lateral movement.
99.	101-24(A)	The plans must be revised to demonstrate that the storage of any materials listed in section 116-164(D) or 101-24(A) of the Township Code (including petroleum products) shall be elevated and located in flood proofed areas of the proposed building. All gas and petroleum fuel systems and parts thereof shall be located two feet above the one-hundred-year-flood level, in accordance with Section 42-7(H)(4) of the Township Code.

ADDITIONAL COMMENTS

100. A table must be provided on the plans detailing compliance with the required number of handicapped accessible and van accessible spaces in accordance with the Americans with Disability Act (ADA). Details for handicapped accessible and van accessible signs and pavement markings must be added to the plans.

101. The plans must be revised to include ADA ramp details for the crossing of the eastern driveway. The details should include spot elevations, slopes, and lengths to verify ADA compliance and constructability.

102. The following details must be included in the plan set at this time: DW-Endwall, Type-C inlet, and handicap ramp. Additionally, the pavement detail must be revised to show 6" 25mm Superpave Base Course, 5" 25mm Superpave Binder Course, 2" 9.5mm Superpave wearing course.

103. For clarity purposes, remove all utilities and annotation not pertaining to the drainage on Sheets C-001 and C-1003.

104. It appears the proposed right-in/right-out driveway will conflict with the existing driveway adjacent to the eastern property line and must be revised. Additionally, confirm the existing utilities shown on Sheet 4 will not conflict with proposed curbing and turning island.

105. The Auto Carrier Truck Turning Plans must be revised to avoid curb conflicts. Additionally, a turning diagram for the auto carrier departing the western driveway must be submitted.

106. Provide a crossing of Pennsylvania Avenue at the traffic signal. ADA ramps and pedestrian signal head with countdown timers and pushbuttons must be proposed.

107. The Traffic Impact Assessment Report indicated a separate left turn lane exiting the driveway at the intersection of Pennsylvania Avenue (SR 2037) and Commerce Drive/Site Driveway. The plans must be revised to show the separate left turn lane leaving the site driveway.

108. The gore striping at the western driveway must be revised to reflect accurate direction.

109. The following signage must be included/revised in the plan set:
- Height restrictions signage at parking garage
- 'ALL TRAFFIC MUST TURN RIGHT' sign and 'NO LEFT TURN' sign at the right in/right out driveway,
- Sign details show multiple size variants. Revise the details to indicate which sizes are being proposed for the site,
- Provide object markers for the channelized island.

110. All stop bars must be located a minimum of four feet from a crosswalk.

111. The western driveway design should be discussed with PennDOT. Typically, with a signalized intersection, 150' length is preferred to the first internal intersection. We note the proposed length (45)' between the signal and first existing internal intersection is less than existing conditions (60').

112. The plans must be revised to remove the proposed stop sign from the driveway opposite Commerce Drive as this access will be controlled by the traffic signal.

Any future submission of the design plans for this project must be accompanied by a letter, prepared by the applicant's engineer, which addresses each of the comments contained in this report. Should you have any questions regarding this matter, please do not hesitate to contact me at this office.

Sincerely,

Krista Heinrich, PE
Township Engineer

c: Craig T. McAnally – Acting Assistant Township Manager
Charles L. Guttenplan, AICP – Director of Planning and Zoning
Robert A. Sztubinski, B.C.O. – Director of Building & Codes
Andrew Thomas – Fire Marshal
Sean Kilkenny, Esq.; The Law Offices of Sean Kilkenny, LLC – Township Solicitor *(via email)*
Dennis Turnbaugh – Mile One Fort Washington LLC
Jeffrey A. Beavan, PE – Applicant's Engineer
John Iannozzi, Esq. – Applicant's Attorney

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74 W. Broad Street, Suite 500
Bethlehem, PA 18018
610.709.9971

March 15, 2023
Revised June 9, 2023
Via Email

Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

Attention: Board of Supervisors

RE: BMW Automotive Dealership Expansion
500-512 Pennsylvania Ave.
Whitemarsh Township
Montgomery County, PA
PAB220113.00

Dear Supervisors:

On behalf of MileOne Autogroup, Inc., Bohler Engineering PA, LLC hereby requests the following Waivers from the Whitemarsh Township Board of Supervisors in regards to the above referenced Land Development Application:

1. From SALDO §105-21(B)(1)(n) from the requirement to show all utilities and significant man-made features within 500-feet of, and within the site, to permit utilities and significant man-made features to be shown within the site and along frontage of project boundary, as off-site improvements are not proposed. An Aerial Plan showing features within 500-feet of the project will be included within the plan set.

2. From SALDO §105-21.(B).(13) to permit the site survey (to project extents) to serve as the existing resources and site analysis (ERSA) plan.

3. From SALDO §105-21.(B).(15) to permit the site post-construction stormwater management (PCSM) plans, details, and notes to serve as the Preliminary Resource Impact and Conservation Plan, as this will meet the resource identification, impact, and conservation requirements for PADEP and NPDES purposes.

4. From SALDO §105-30.(A) and §105-48.(E) to permit street trees to be planted outside of the Tree Zone, due to utility conflicts and an existing sanitary sewer easement along the site frontage. The required number of street trees under §105-48.B are provided along the site frontage.

5. From SALDO §105-38(A) to provide 2-way aisles of a size less than 24-feet for 90-degree parking having a stall width of less than 9 ft x 18 ft in order to preserve an existing parking area in the southwestern corner of the site where they will be utilized for dealership operations and are not intended to be utilized for customer parking.

6. From SALDO §105-38(B) from the requirement that the maximum width of entrance and exit drives shall be 35-feet at the street line, in order to provide alignment with opposite travel and auxiliary lanes and to satisfy PennDOT design criteria (including lane widths and required radii) along a state route.

7. From SALDO §105-38(C) to permit curb radii of less than 25-feet along parking lot aisles necessary for access for fire protection equipment, as long as truck turning templates are provided to the satisfaction of the Township Fire Marshal and Township Engineer showing circulation throughout the site.

8. From SALDO §105-38(D) to provide double-stacked inventory and service/repair parking spaces without a direct access aisle, as these are intended to be utilized for dealership operations and not to meet required off-street parking requirements.

9. From SALDO §105-38(H) to permit a 4.9-foot setback in lieu of a 15-foot setback to off-street parking spaces along the southeastern property line for up to 13 inventory storage and/or service storage spaces. This area is currently utilized for vehicular storage, and moves the edge of pavement back from a 0-foot setback in the existing condition. All other parking areas on site meet the required parking setback.

10. From SALDO §105-38(I) to permit parking rows of greater than 15 spaces without interruption by a landscaping area for the parking spaces located within the parking structure.

11. From SALDO §105-38(J) from requiring a maximum of 30 individual parking spaces placed together in any parking area and planting strips of not less than 10-feet in width between parking rows, to permit the proposed parking deck building, to allow certain existing parking areas (including in the southwestern corner of the site) to remain in their existing paved state, and for limited double-stacked inventory/service storage spaces on the site.

12. From SALDO §105-38(O) from the requirement to provide at least 10-feet between any parking area and a building for the 14 parking spaces located near the service drive lane, for consistency with the Zoning Ordinance. A determination was obtained from the Township that relief was not required from a similar code section in the Zoning Ordinance (§116-184.E) due to the fact that the ramp adjacent to the service drive lanes is considered part of the structure, and therefore the parking spaces west of the service drive lanes would not be subject to the setback between a parking area and building (as they are on the building).

13. From SALDO §105-39.(A) to permit fewer than the required number of parking lot trees due to insufficient planting area within the parking lots.

14. From SALDO § 105-52(B)(2) from the requirement to provide a 50-foot buffer yard, to permit an alternative planting option for the buffers along Pennsylvania Avenue and the southeastern property line due to limited site area. The required quantity of buffer plantings are being provided to meet the screening requirements.

15. A Partial Waiver from SALDO § 105-53.(D) from the requirement to provide a fee in lieu of dedication for lands required for Park and/or Recreational Use, to coordinate with the Board of Supervisors in consideration of the fact that the stream is being preserved and an easement is anticipated to be provided to the County for their use in extending the Cross-County trail along the rear of the project site.

16. From Whitemarsh Township Code – Tree Protection Standards §55-4.(C).(3) and §55-4.(D).(6) to permit fewer than the required number of replacement trees due to insufficient planting area.

17. From Whitemarsh Township Code – Grading, Erosion Control, Stormwater Management and Best Management Practices §58-30.(A).(9) to permit construction of impervious surfaces prior to completion of all on-site stormwater facilities, provided that adequate erosion and sediment pollution controls are provided to prevent sediment-laden water from leaving the site and that E&S adequacy and an NPDES permit are obtained from PADEP and the Montgomery County Conservation District prior to commencing construction.

18. From Whitemarsh Township Code – Grading, Erosion Control, Stormwater Management and Best Management Practices §58-34(B)(7)(d) to permit stormwater pipe sizes under 18-inches and to permit HDPE pipe in lieu of the required RCP pipe.

19. From Whitemarsh Township Code – Grading, Erosion Control, Stormwater Management and Best Management Practices §58-34(b)(7)(h) to permit roof leader piping to have a minimum of 12-inches of cover over the top of the pipe where 18-inches is required.

Should you have any questions or require additional information, please do not hesitate to contact me at this office (610) 709-9971.

Sincerely,

BOHLER ENGINEERING PA, LLC

Matthew S. Longenberger, RLA

JB/rs/mb
CC: Dennis Turnbaugh (email)
John Iannozzi, Esq., Hamburg, Rubin, Mullin, Maxwell & Lupin, P.C. (email)
Jon Penney, Penney Design Group (email)

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74 W. Broad Street, Suite 500
Bethlehem, PA 18018
610.709.9971

July 10, 2023
Via Email

Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

Attention: Board of Supervisors

RE: BMW Automotive Dealership Expansion
500-512 Pennsylvania Ave.
Whitemarsh Township
Montgomery County, PA
PAB220113.00

Dear Supervisors:

On behalf of MileOne Fort Washington, LLC, Bohler Engineering PA, LLC hereby requests a waiver of SALDO § 105-53.(D) from the Whitemarsh Township Board of Supervisors in regard to the above referenced Land Development Application, related to Park and/or Recreational Facilities, Land, or Fees.

Based on SALDO § 105-53.(D).(2).(b).[2], the proposed 75,085 GSF of occupied and enclosed space would result in a fee of $37,542.50 at a rate of $0.50 per GSF. In lieu of the proposed fee, the applicant is requesting credit for granting an easement along the rear of the site for the future construction (by the County) of a trail connection along the rear of the property. The proposed easement is 8,394 SF of area. Based on an assessed value of $4,013,490 for 4.79 acres, or $19.23 per SF, the value of the proposed easement on a per-square-foot basis would exceed the value of the required $37,542.50 fee. In addition, the Applicant is constructing a 72 LF section of the cross-county trail along the site's Pennsylvania Avenue frontage as well. As such, the Applicant is requesting that the provision of the easement satisfy the code requirement without additional consideration.

Should you have any questions or require additional information, please do not hesitate to contact me at this office (610) 709-9971.

Sincerely,

BOHLER ENGINEERING PA, LLC



Matthew S. Longenberger, RLA

JB/rs/mb
CC: Dennis Turnbaugh (email)
John Iannozzi, Esq., Hamburg, Rubin, Mullin, Maxwell & Lupin, P.C. (email)
Jon Penney, Penney Design Group (email)

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WHITEMARSH TOWNSHIP

To: **Rick Mellor, Township Manager**

C: **Craig McAnally, Assistant Township Manager**

From: **Samantha Zrillo, Planner**

Subject: **500-512 Pennsylvania Avenue, BMW Dealership, SLD#03-23**

Date: **July 17, 2023**

The applicant's representatives for this project appeared before the Shade Tree Commission on July 17, 2023. The project entails parcel consolidation, driveway consolidation, demolition of existing buildings, and expansion of the main building. The project received zoning relief during the June 2023 Zoning Hearing Board meeting and received a formal recommendation for both their waiver requests and land development plans from the Planning Commission.

Mr. North gave a detailed overview of the site plans, showing where the proposed building will be located as well as the trees to be removed, preserved, and planted. Additional shrubs and ornamental grasses are also included on the plans. The proposed project is compliant with all landscaping requirements regarding buffering and street trees; however, it is not compliant with tree replacement. The plan is deficient by 27 trees. It was noted that there are overhead wires, easements, and wetlands that limit the ability of tree planting. The proposed project will remove six healthy canopy trees equating to 104.4 inches DBH.

The Board inquired about a healthy tree being marked as removed, presence of invasive vines, and if there was maximization of planting shade trees and layering with small trees and grasses. The applicant's representation noted proximity to construction, utility placement, habitat type, and location of a future County Trail as reasons for existing tree plans. The applicant's representatives agreed to maintain the invasive vines and consult with the Township about layering.

Mr. Hosbach summarized conditions to be twenty understory trees of one inch caliper, regularly scheduled vine maintenance, floodplain mix or shade conservation seed mix to be planted, and fee-in-lieu of seventeen (17) trees. The maintenance, seed mix, and trees should all be noted on the plan. Species include five sweet bay magnolia, five serviceberry, five yellowwood, and five redbud forest pansy.

A motion was made by Mr. D'Amore, seconded by Ms. Kosabutski, to approve the aforementioned conditions. The motion was carried unanimously.

TRAFFIC PLANNING AND DESIGN, INC.

WWW.TRAFFICPD.COM

July 20, 2023

Dennis Turnbaugh
MileOne Autogroup
510 Pennsylvania Avenue
Fort Washington, PA 19034

RE: BMW of Fort Washington Redevelopment – Impact Fee Letter
Whitemarsh Township, Montgomery County, PA
TPD Job #MILE.00001

Dear Mr. Turnbaugh:

As requested, Traffic Planning and Design, Inc. (TPD) has completed the following Traffic Impact Fee Letter for the Proposed Redevelopment of the existing BMW of Fort Washington car dealership, in Whitemarsh Township, Montgomery County, PA. The Existing Site includes approximately 36,291 sf of building area and fifteen (15) service bays. The Redeveloped Site will result in a total of approximately 95,576 sf of building area (excluding the structured parking) and thirty-eight (38) service bays.

Based on recent experience with New Car Sales projects in the local area, it is TPD's opinion that the ITE Land Use Code #840 (Automobile Sales (New)) grossly overestimates the number of trip-ends that these sites generate. This can be illustrated by the counts that were conducted at the Existing Site, conducted in October 2022 as part of the TIS prepared for the redevelopment. ITE Land Use Code #840 (Automobile Sales (New)) contains a trip generation rate (trips/ksf) of 2.42 trips/ksf, which is significantly higher than what has been observed at other dealerships.

In order to justify the usage of localized data over ITE Data for the Proposed Redevelopment, TPD performed trip generation counts during the weekday P.M. peak hour at two (2) additional similar local sites on Pennsylvania Avenue (S.R. 2037), bringing the total number of data points to three (3) local sites, in order to calculate the anticipated trip generation of the Proposed Redevelopment. These sites include:

- Audi of Fort Washington
    - Approximately 71,533 sf of building/service area with 29 total service bays
- Mercedes Benz of Fort Washington
    - Approximately 114,000 sf of building/service area with 64 total service bays

The purpose of this letter is to provide the following:

- Develop a localized trip generation rate for these type (high-end) car dealerships along Pennsylvania Avenue (S.R. 2037);

- Calculate the trip generation of the Proposed Redevelopment utilizing the localized data developed above;
- Compare the trip generation of the Existing Site and the Proposed Redevelopment for the purposes of calculating the Transportation Impact Fee.

The following are TPD's findings:

TRIP GENERATION COUNTS

Counts were conducted at the driveways for each of the three (3) sites during the weekday P.M. peak hour (4-6 pm), which is the time period the Township's Traffic Impact Fee is based on. These counts were conducted during the following time periods:

- BMW of Fort Washington – Thursday, October 27, 2022
- Audi of Fort Washington – Tuesday, July 11, 2023
- Mercedes Benz of Fort Washington – Tuesday, July 11, 2023

These counts are included in **Attachment A**.

PEAK HOURS OF OPERATION

The counts conducted were then utilized to determine the peak hour time period of operation for each site during the weekday P.M. peak hour (4-6 pm). Based on this calculation, TPD identified the following peak hours of operation:

- BMW of Fort Washington – 5:00-6:00pm
- Audi of Fort Washington – 4:45-5:45pm
- Mercedes Benz of Fort Washington – 4:15-5:15pm

These calculation sheets are included in **Attachment B**.

LOCAL TRIP GENERATION

Based on the counts and calculations above, the following are the vehicular trips experienced at each of the site studied during the weekday P.M. peak hour:

- BMW of Fort Washington – 65 trips
- Audi of Fort Washington – 87 trips
- Mercedes Benz of Fort Washington – 88 trips

Based on these numbers, the weighted average trip generation rates based on both the number of service bays, as well as the square footage for the three (3) sites analyzed in question were calculated to be:

- 2.222 trips/service bay
- 1.082 trips/ksf

Upon review of the data collected, it appears that utilizing the number of service bays each location provides, or will provide, does not provide an accurate projection of the trips to be generated by the

Proposed Redevelopment, as the number of service bays between the two sites analyzed greatly varies as it relates to the trips experienced. While the Mercedes Benz dealership provides for more than twice the number of service bays when compared to the Audi dealership, the PM peak hour trips experienced by these two locations are nearly identical, suggesting these dealerships reach a "critical mass" as it relates to the number of service bays. Therefore, utilizing the square footage as the variable for determining the number of trips to be generated by the Proposed Redevelopment, provides a more conservative estimate of the trips to be generated, and utilized, for the basis of the Traffic Impact Fee.

These calculation sheets are included in **Attachment C**.

TRANSPORTATION IMPACT FEE

Applying the trip generation rates developed above, to the Proposed Redevelopment, results in the following trip generations:

- 38 service bays * 2.222 trips/service bay = 84 trips
- ***95.576 ksf * 1.082 trips/ksf = 103 trips***

The Transportation Impact Fee applies to new trips generated by the site to the Study Area. As stated above, the Existing Site currently generates 65 trips during the PM Peak hour (as previously provided in the Traffic Impact Study). Therefore, the Proposed Redevelopment would only add an additional ***38 trips*** (103 trips-65 trips) based on the calculations presented above.

Therefore based on the Township's Transportation Impact Fee of $2,825/new PM peak hour trip, the impact fee due related to the Proposed Redevelopment is **$107,350.00**.

These calculation sheets are also included in **Attachment C**.

If you have any questions, or require additional information, please feel free to contact us.

Sincerely,
TRAFFIC PLANNING AND DESIGN, INC.



Matthew I. Hammond, P.E.
Executive Vice President
mhammond@trafficpd.com

Attachments: Attachment A – Trip Generation Counts
Attachment B – Peak Hours of Operation
Attachment C – Local Trip Generation/Impact Fee

cc: Project Team
TPD File

ATTACHMENT A

Trip Generation Counts

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

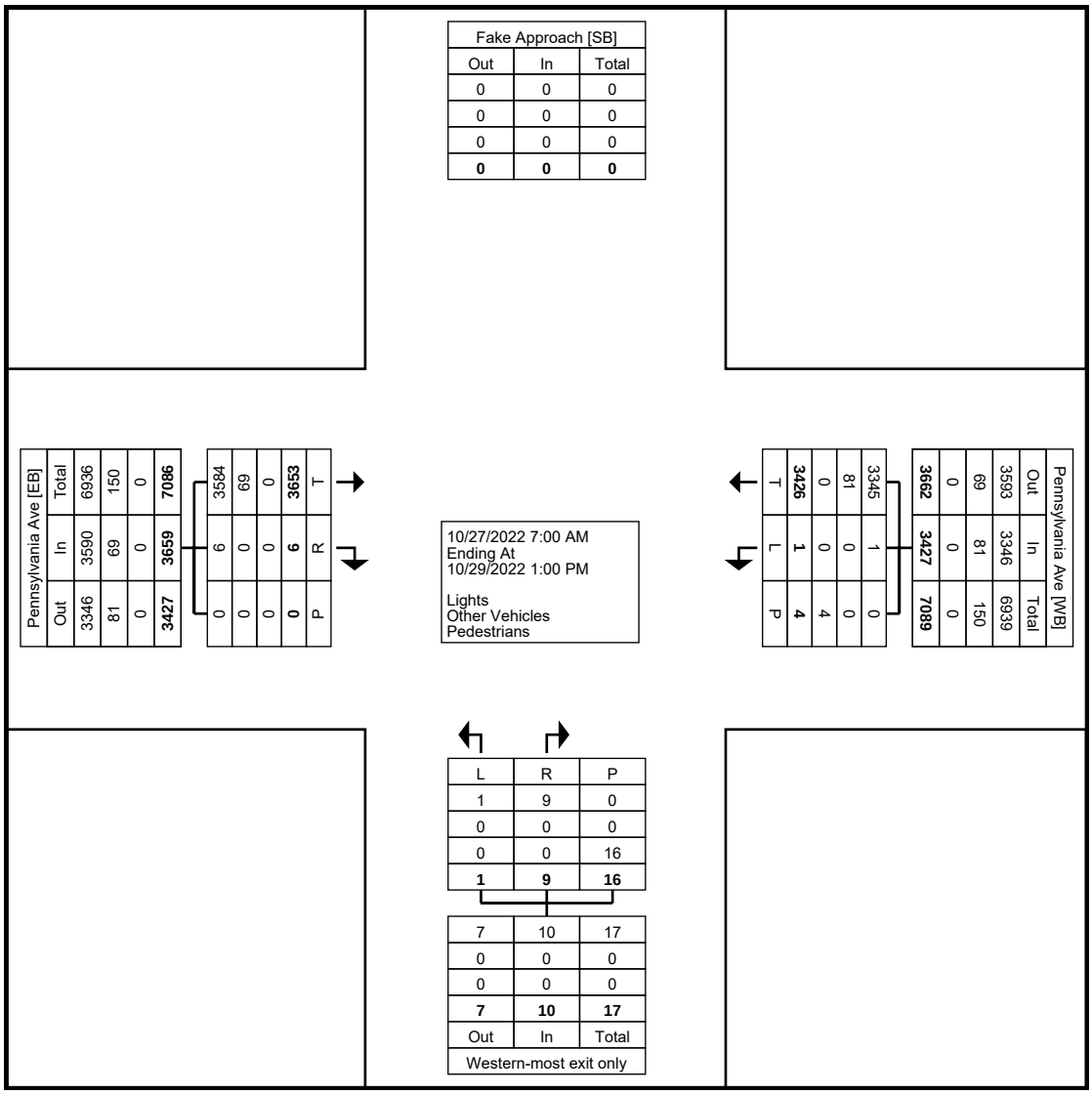
Turning Movement Data

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Western-most exit only DW (Star 1) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
7:00 AM	118	1	0	119	0	167	0	167	0	1	1	1	287
7:15 AM	152	1	0	153	0	138	0	138	0	0	2	0	291
7:30 AM	138	0	0	138	0	163	0	163	0	0	0	0	301
7:45 AM	168	0	0	168	0	153	0	153	0	1	1	1	322
Hourly Total	576	2	0	578	0	621	0	621	0	2	4	2	1201
8:00 AM	174	0	0	174	0	146	0	146	0	1	0	1	321
8:15 AM	165	0	0	165	0	140	0	140	0	0	0	0	305
8:30 AM	169	0	0	169	0	162	4	162	0	0	8	0	331
8:45 AM	147	0	0	147	0	164	0	164	0	0	0	0	311
Hourly Total	655	0	0	655	0	612	4	612	0	1	8	1	1268
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	197	1	0	198	0	146	0	146	0	0	0	0	344
4:15 PM	170	1	0	171	0	143	0	143	0	0	0	0	314
4:30 PM	159	0	0	159	0	133	0	133	0	0	0	0	292
4:45 PM	173	0	0	173	0	133	0	133	0	0	0	0	306
Hourly Total	699	2	0	701	0	555	0	555	0	0	0	0	1256
5:00 PM	186	1	0	187	0	155	0	155	0	1	1	1	343
5:15 PM	172	1	0	173	0	170	0	170	1	1	0	2	345
5:30 PM	213	0	0	213	0	146	0	146	0	0	2	0	359
5:45 PM	194	0	0	194	0	151	0	151	0	1	0	1	346
Hourly Total	765	2	0	767	0	622	0	622	1	3	3	4	1393
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	111	0	0	111	0	111	0	111	0	0	0	0	222
11:15 AM	111	0	0	111	0	128	0	128	0	0	1	0	239
11:30 AM	135	0	0	135	0	131	0	131	0	0	0	0	266
11:45 AM	113	0	0	113	0	140	0	140	0	1	0	1	254
Hourly Total	470	0	0	470	0	510	0	510	0	1	1	1	981
12:00 PM	129	0	0	129	0	120	0	120	0	1	0	1	250
12:15 PM	126	0	0	126	0	127	0	127	0	0	0	0	253
12:30 PM	135	0	0	135	1	120	0	121	0	0	0	0	256
12:45 PM	98	0	0	98	0	139	0	139	0	1	0	1	238
Hourly Total	488	0	0	488	1	506	0	507	0	2	0	2	997
Grand Total	3653	6	0	3659	1	3426	4	3427	1	9	16	10	7096
Approach %	99.8	0.2	-	-	0.0	100.0	-	-	10.0	90.0	-	-	-
Total %	51.5	0.1	-	51.6	0.0	48.3	-	48.3	0.0	0.1	-	0.1	-
Lights	3584	6	-	3590	1	3345	-	3346	1	9	-	10	6946
% Lights	98.1	100.0	-	98.1	100.0	97.6	-	97.6	100.0	100.0	-	100.0	97.9
Other Vehicles	69	0	-	69	0	81	-	81	0	0	-	0	150
% Other Vehicles	1.9	0.0	-	1.9	0.0	2.4	-	2.4	0.0	0.0	-	0.0	2.1
Pedestrians	-	-	0	-	-	-	4	-	-	-	16	-	-
% Pedestrians	-	-	-	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Data Plot

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

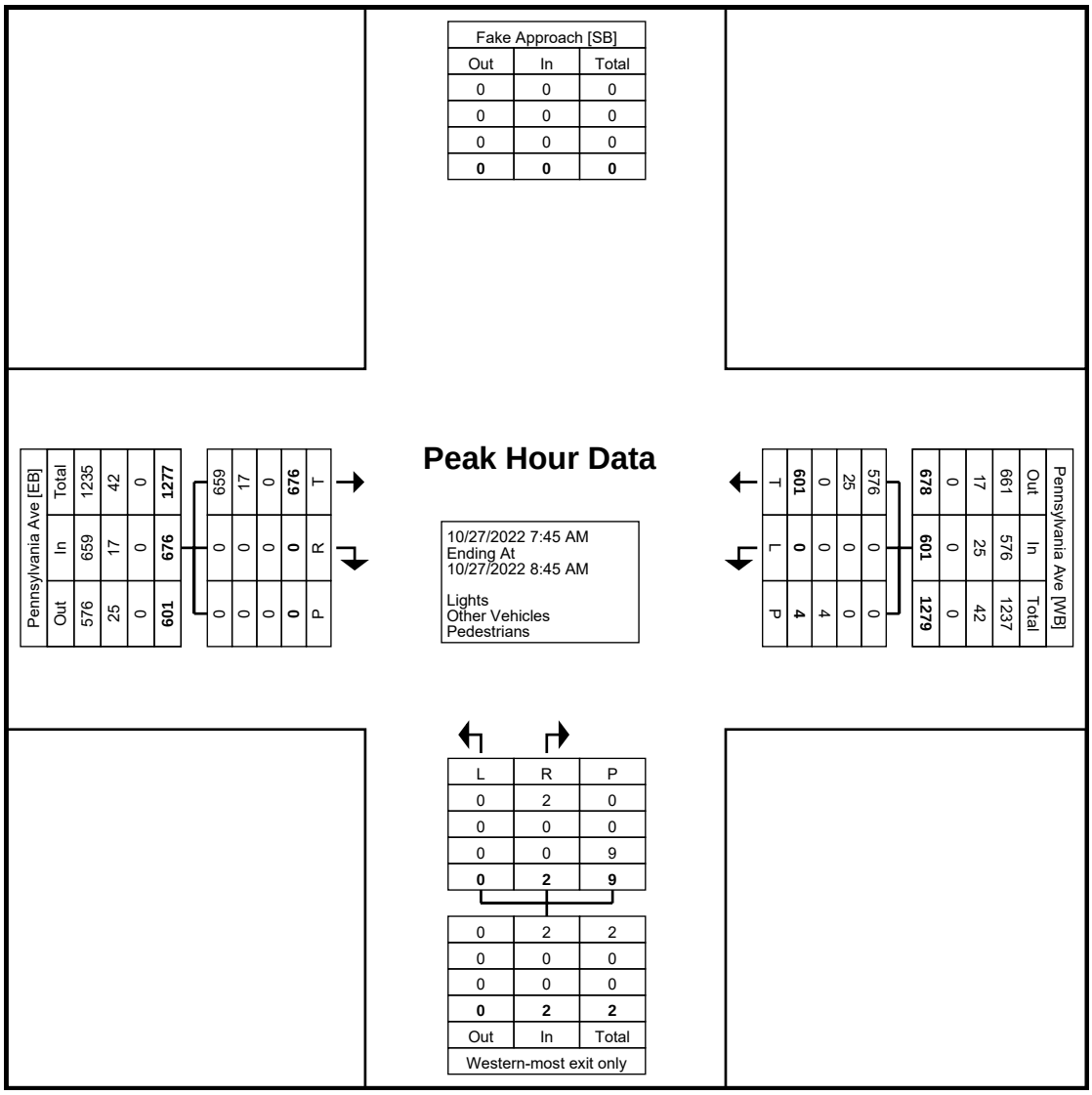
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Western-most exit only DW (Star 1) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
7:45 AM	168	0	0	168	0	153	0	153	0	1	1	1	322
8:00 AM	174	0	0	174	0	146	0	146	0	1	0	1	321
8:15 AM	165	0	0	165	0	140	0	140	0	0	0	0	305
8:30 AM	169	0	0	169	0	162	4	162	0	0	8	0	331
Total	676	0	0	676	0	601	4	601	0	2	9	2	1279
Approach %	100.0	0.0	-	-	0.0	100.0	-	-	0.0	100.0	-	-	-
Total %	52.9	0.0	-	52.9	0.0	47.0	-	47.0	0.0	0.2	-	0.2	-
PHF	0.971	0.000	-	0.971	0.000	0.927	-	0.927	0.000	0.500	-	0.500	0.966
Lights	659	0	-	659	0	576	-	576	0	2	-	2	1237
% Lights	97.5	-	-	97.5	-	95.8	-	95.8	-	100.0	-	100.0	96.7
Other Vehicles	17	0	-	17	0	25	-	25	0	0	-	0	42
% Other Vehicles	2.5	-	-	2.5	-	4.2	-	4.2	-	0.0	-	0.0	3.3
Pedestrians	-	-	0	-	-	-	4	-	-	-	9	-	-
% Pedestrians	-	-	-	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (7:45 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

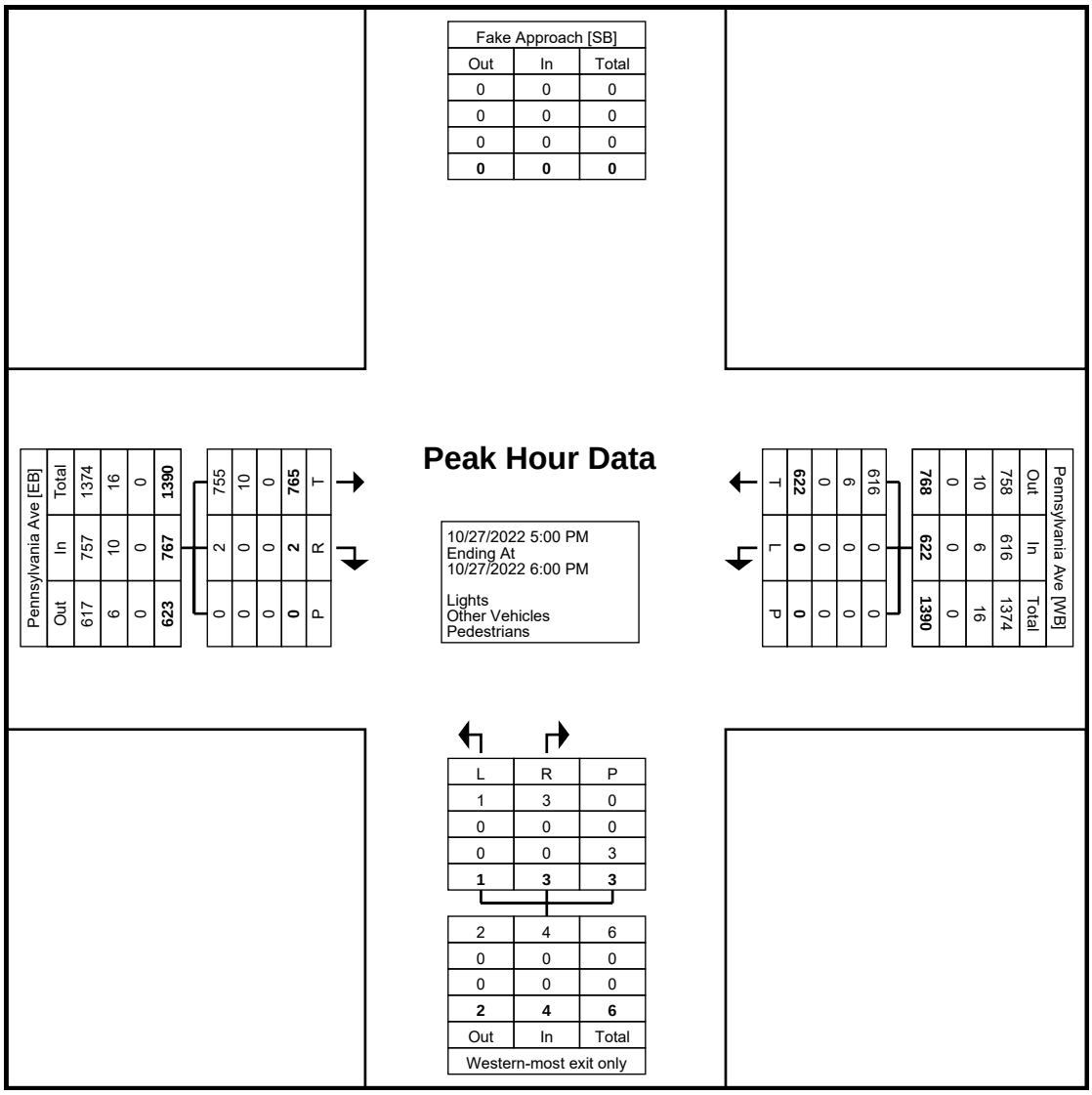
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Western-most exit only DW (Star 1) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
5:00 PM	186	1	0	187	0	155	0	155	0	1	1	1	343
5:15 PM	172	1	0	173	0	170	0	170	1	1	0	2	345
5:30 PM	213	0	0	213	0	146	0	146	0	0	2	0	359
5:45 PM	194	0	0	194	0	151	0	151	0	1	0	1	346
Total	765	2	0	767	0	622	0	622	1	3	3	4	1393
Approach %	99.7	0.3	-	-	0.0	100.0	-	-	25.0	75.0	-	-	-
Total %	54.9	0.1	-	55.1	0.0	44.7	-	44.7	0.1	0.2	-	0.3	-
PHF	0.898	0.500	-	0.900	0.000	0.915	-	0.915	0.250	0.750	-	0.500	0.970
Lights	755	2	-	757	0	616	-	616	1	3	-	4	1377
% Lights	98.7	100.0	-	98.7	-	99.0	-	99.0	100.0	100.0	-	100.0	98.9
Other Vehicles	10	0	-	10	0	6	-	6	0	0	-	0	16
% Other Vehicles	1.3	0.0	-	1.3	-	1.0	-	1.0	0.0	0.0	-	0.0	1.1
Pedestrians	-	-	0	-	-	-	0	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (5:00 PM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

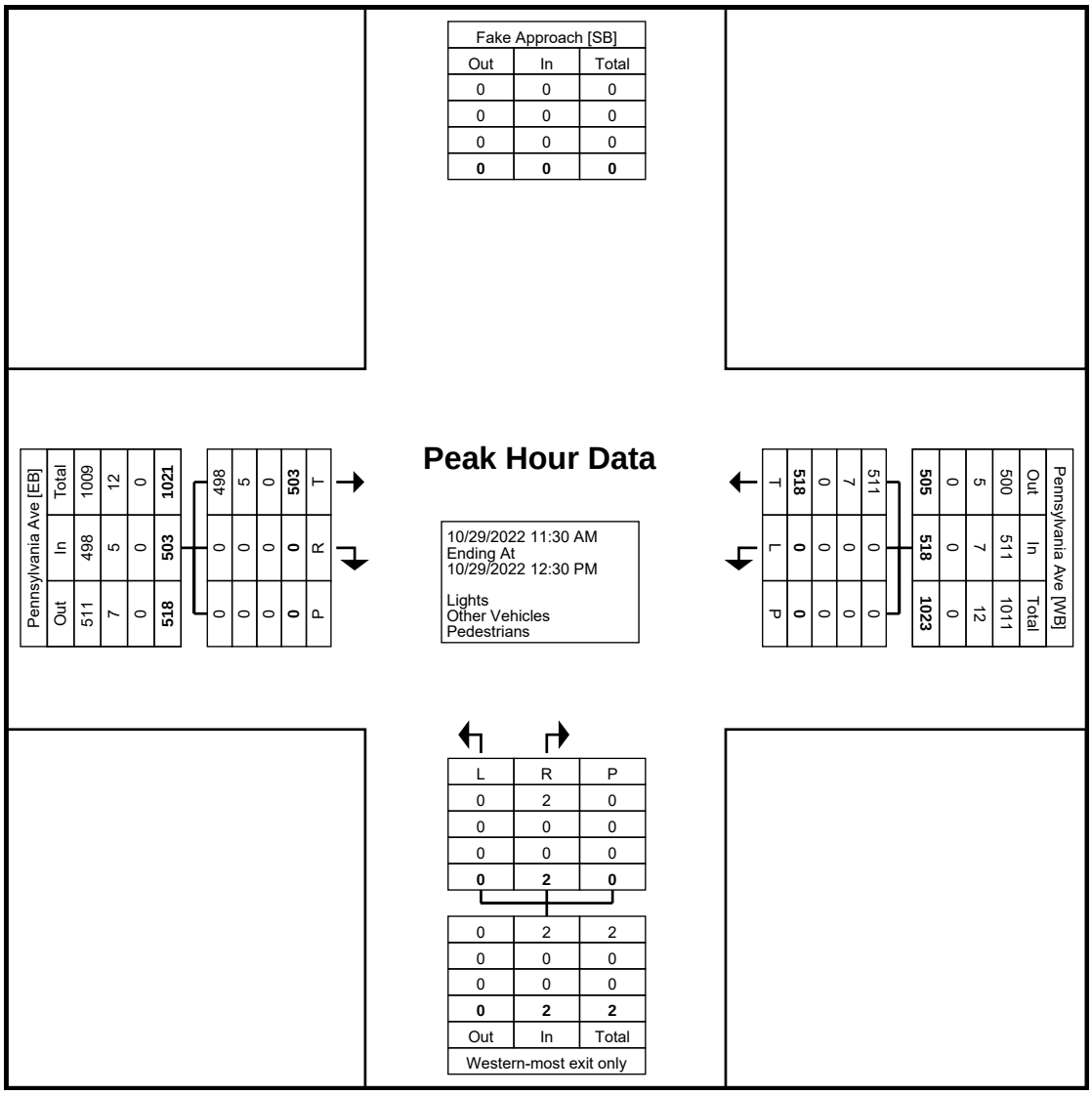
Turning Movement Peak Hour Data (11:30 AM)

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Western-most exit only DW (Star 1) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
11:30 AM	135	0	0	135	0	131	0	131	0	0	0	0	266
11:45 AM	113	0	0	113	0	140	0	140	0	1	0	1	254
12:00 PM	129	0	0	129	0	120	0	120	0	1	0	1	250
12:15 PM	126	0	0	126	0	127	0	127	0	0	0	0	253
Total	503	0	0	503	0	518	0	518	0	2	0	2	1023
Approach %	100.0	0.0	-	-	0.0	100.0	-	-	0.0	100.0	-	-	-
Total %	49.2	0.0	-	49.2	0.0	50.6	-	50.6	0.0	0.2	-	0.2	-
PHF	0.931	0.000	-	0.931	0.000	0.925	-	0.925	0.000	0.500	-	0.500	0.961
Lights	498	0	-	498	0	511	-	511	0	2	-	2	1011
% Lights	99.0	-	-	99.0	-	98.6	-	98.6	-	100.0	-	100.0	98.8
Other Vehicles	5	0	-	5	0	7	-	7	0	0	-	0	12
% Other Vehicles	1.0	-	-	1.0	-	1.4	-	1.4	-	0.0	-	0.0	1.2
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 1 Western-most exit only DW (Star 1) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (11:30 AM)

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

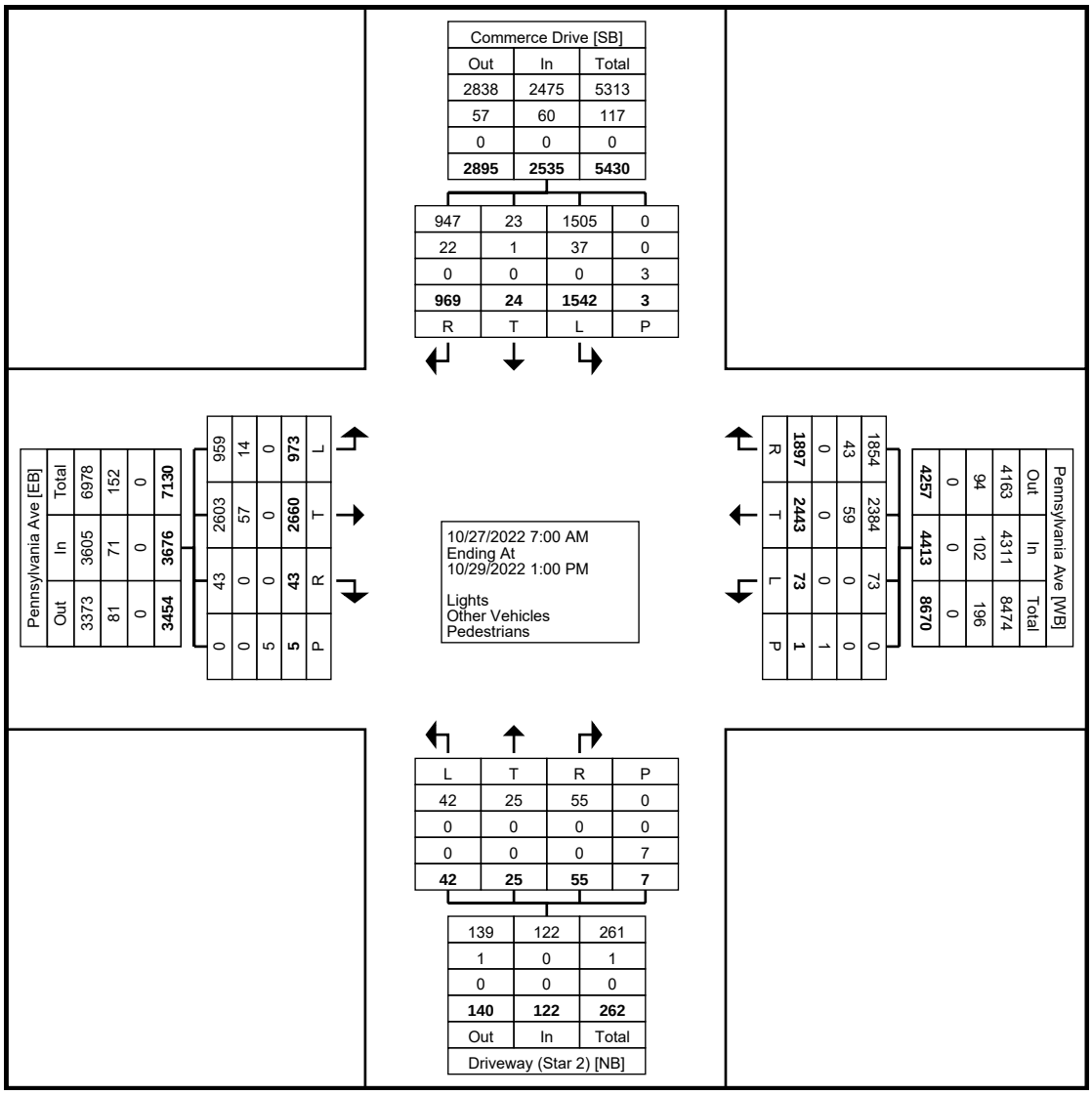
Turning Movement Data

Start Time	Pennsylvania Ave Eastbound						Pennsylvania Ave Westbound						Driveway (Star 2) Northbound						Commerce Drive Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
7:00 AM	23	94	0	0	0	117	0	128	41	18	0	187	0	0	0	0	2	0	24	0	16	23	0	63	367
7:15 AM	51	98	1	0	0	150	1	111	62	15	1	189	0	0	0	0	0	0	35	0	10	19	0	64	403
7:30 AM	43	101	1	0	0	145	4	134	75	28	0	241	3	1	2	0	0	6	37	0	14	13	0	64	456
7:45 AM	59	110	3	0	0	172	1	120	97	36	0	254	2	0	1	0	0	3	30	1	19	23	0	73	502
Hourly Total	176	403	5	0	0	584	6	493	275	97	1	871	5	1	3	0	2	9	126	1	59	78	0	264	1728
8:00 AM	52	119	1	0	0	172	6	104	126	31	0	267	1	2	0	3	0	6	37	2	30	6	0	75	520
8:15 AM	55	106	1	0	0	162	3	111	125	45	0	284	2	0	1	1	0	4	33	2	14	14	0	63	513
8:30 AM	63	101	4	0	4	168	6	132	136	26	0	300	1	0	1	1	4	3	28	4	23	12	2	67	538
8:45 AM	49	94	3	0	0	146	4	117	123	42	0	286	3	2	0	1	0	6	42	1	31	9	0	83	521
Hourly Total	219	420	9	0	4	648	19	464	510	144	0	1137	7	4	2	6	4	19	140	9	98	41	2	288	2092
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	38	163	3	0	0	204	3	106	50	18	0	177	3	1	2	1	0	7	88	1	21	17	0	127	515
4:15 PM	41	122	0	0	0	163	2	91	60	15	0	168	5	1	1	0	0	7	81	1	11	35	0	128	466
4:30 PM	39	131	2	0	0	172	2	85	44	12	0	143	3	2	1	3	0	9	116	1	17	28	0	162	486
4:45 PM	39	137	3	0	0	179	6	76	45	24	0	151	1	2	1	1	0	5	107	1	18	38	0	164	499
Hourly Total	157	553	8	0	0	718	13	358	199	69	0	639	12	6	5	5	0	28	392	4	67	118	0	581	1966
5:00 PM	41	140	0	0	0	181	4	75	44	32	0	155	1	2	2	1	0	6	199	0	37	46	0	282	624
5:15 PM	28	142	3	0	0	173	2	89	49	15	0	155	1	1	0	2	0	4	137	0	45	37	0	219	551
5:30 PM	64	145	2	0	1	211	3	94	48	16	0	161	3	0	1	2	0	6	123	1	30	23	1	177	555
5:45 PM	59	128	4	0	0	191	3	97	49	23	0	172	5	3	0	6	0	14	103	1	28	22	0	154	531
Hourly Total	192	555	9	0	1	756	12	355	190	86	0	643	10	6	3	11	0	30	562	2	140	128	1	832	2261
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	28	85	0	0	0	113	2	71	24	9	0	106	0	0	0	0	0	0	49	0	15	26	0	90	309
11:15 AM	27	84	2	0	0	113	4	89	29	9	0	131	0	1	0	2	1	3	35	1	22	13	0	71	318
11:30 AM	31	103	2	0	0	136	2	105	24	14	0	145	2	1	2	1	0	6	31	0	16	14	0	61	348
11:45 AM	35	85	2	0	0	122	1	107	40	15	0	163	1	0	2	0	0	3	45	1	12	21	0	79	367
Hourly Total	121	357	6	0	0	484	9	372	117	47	0	545	3	2	4	3	1	12	160	2	65	74	0	301	1342
12:00 PM	23	96	1	1	0	121	4	94	38	11	0	147	1	2	1	3	0	7	55	2	15	10	0	82	357
12:15 PM	32	93	0	0	0	125	3	96	30	4	0	133	1	1	0	0	0	2	30	3	17	12	0	62	322
12:30 PM	31	102	3	0	0	136	3	98	29	5	0	135	2	1	2	3	0	8	41	1	9	13	0	64	343
12:45 PM	22	81	1	0	0	104	4	113	43	3	0	163	1	2	2	2	0	7	36	0	12	13	0	61	335
Hourly Total	108	372	5	1	0	486	14	401	140	23	0	578	5	6	5	8	0	24	162	6	53	48	0	269	1357
Grand Total	973	2660	42	1	5	3676	73	2443	1431	466	1	4413	42	25	22	33	7	122	1542	24	482	487	3	2535	10746
Approach %	26.5	72.4	1.1	0.0	-	-	1.7	55.4	32.4	10.6	-	-	34.4	20.5	18.0	27.0	-	-	60.8	0.9	19.0	19.2	-	-	-
Total %	9.1	24.8	0.4	0.0	-	34.2	0.7	22.7	13.3	4.3	-	41.1	0.4	0.2	0.2	0.3	-	1.1	14.3	0.2	4.5	4.5	-	23.6	-
Lights	959	2603	42	1	-	3605	73	2384	1403	451	-	4311	42	25	22	33	-	122	1505	23	469	478	-	2475	10513
% Lights	98.6	97.9	100.0	100.0	-	98.1	100.0	97.6	98.0	96.8	-	97.7	100.0	100.0	100.0	100.0	-	100.0	97.6	95.8	97.3	98.2	-	97.6	97.8
Other Vehicles	14	57	0	0	-	71	0	59	28	15	-	102	0	0	0	0	-	0	37	1	13	9	-	60	233
% Other Vehicles	1.4	2.1	0.0	0.0	-	1.9	0.0	2.4	2.0	3.2	-	2.3	0.0	0.0	0.0	0.0	-	0.0	2.4	4.2	2.7	1.8	-	2.4	2.2
Pedestrians	-	-	-	-	5	-	-	-	-	-	1	-	-	-	-	-	7	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Data Plot

Counter: MIO:
Set up By JH::

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Suite 650
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Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
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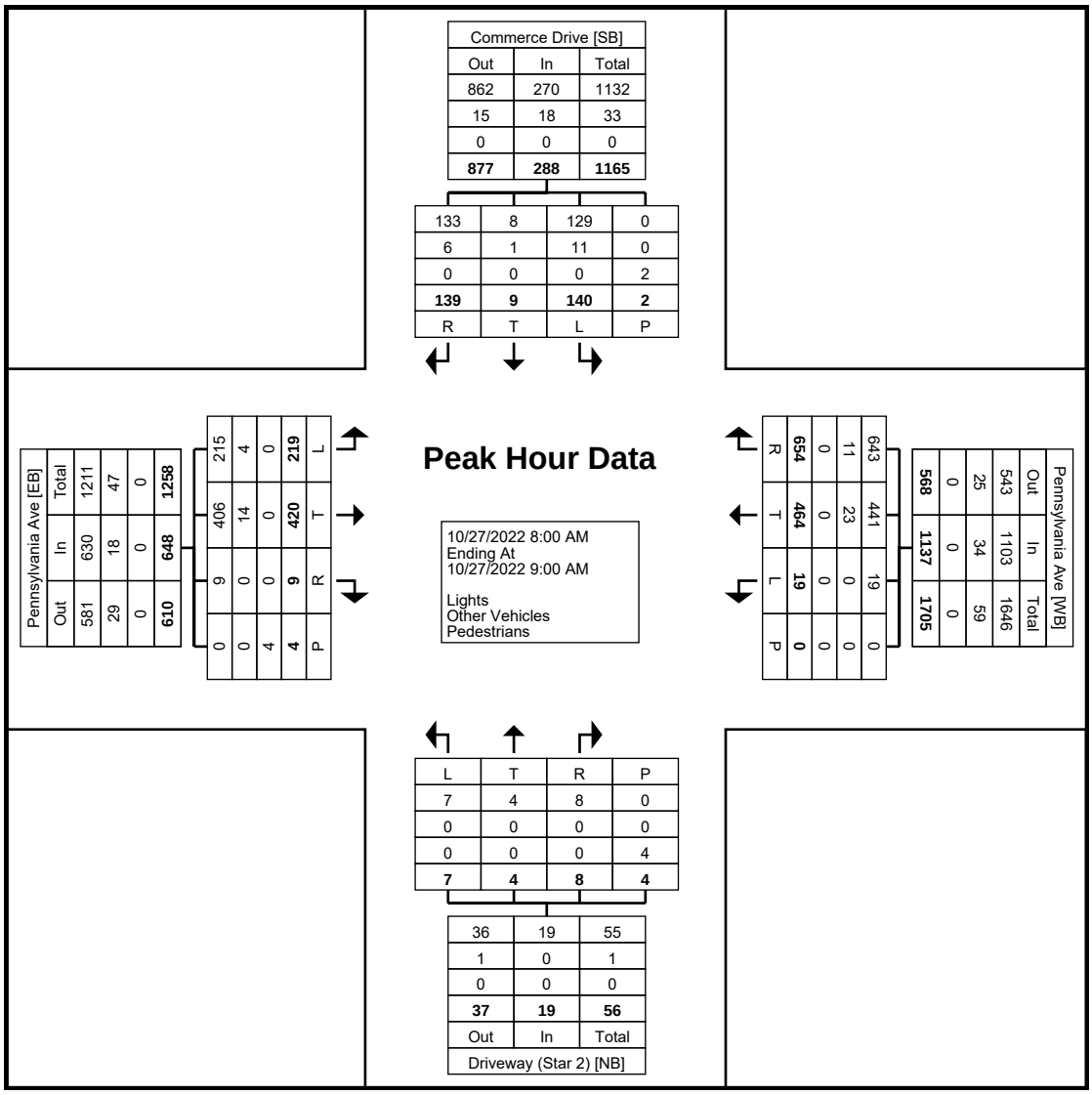
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Pennsylvania Ave Eastbound						Pennsylvania Ave Westbound						Driveway (Star 2) Northbound						Commerce Drive Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
8:00 AM	52	119	1	0	0	172	6	104	126	31	0	267	1	2	0	3	0	6	37	2	30	6	0	75	520
8:15 AM	55	106	1	0	0	162	3	111	125	45	0	284	2	0	1	1	0	4	33	2	14	14	0	63	513
8:30 AM	63	101	4	0	4	168	6	132	136	26	0	300	1	0	1	1	4	3	28	4	23	12	2	67	538
8:45 AM	49	94	3	0	0	146	4	117	123	42	0	286	3	2	0	1	0	6	42	1	31	9	0	83	521
Total	219	420	9	0	4	648	19	464	510	144	0	1137	7	4	2	6	4	19	140	9	98	41	2	288	2092
Approach %	33.8	64.8	1.4	0.0	-	-	1.7	40.8	44.9	12.7	-	-	36.8	21.1	10.5	31.6	-	-	48.6	3.1	34.0	14.2	-	-	-
Total %	10.5	20.1	0.4	0.0	-	31.0	0.9	22.2	24.4	6.9	-	54.3	0.3	0.2	0.1	0.3	-	0.9	6.7	0.4	4.7	2.0	-	13.8	-
PHF	0.869	0.882	0.563	0.000	-	0.942	0.792	0.879	0.938	0.800	-	0.948	0.583	0.500	0.500	0.500	-	0.792	0.833	0.563	0.790	0.732	-	0.867	0.972
Lights	215	406	9	0	-	630	19	441	504	139	-	1103	7	4	2	6	-	19	129	8	92	41	-	270	2022
% Lights	98.2	96.7	100.0	-	-	97.2	100.0	95.0	98.8	96.5	-	97.0	100.0	100.0	100.0	100.0	-	100.0	92.1	88.9	93.9	100.0	-	93.8	96.7
Other Vehicles	4	14	0	0	-	18	0	23	6	5	-	34	0	0	0	0	-	0	11	1	6	0	-	18	70
% Other Vehicles	1.8	3.3	0.0	-	-	2.8	0.0	5.0	1.2	3.5	-	3.0	0.0	0.0	0.0	0.0	-	0.0	7.9	11.1	6.1	0.0	-	6.3	3.3
Pedestrians	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
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Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
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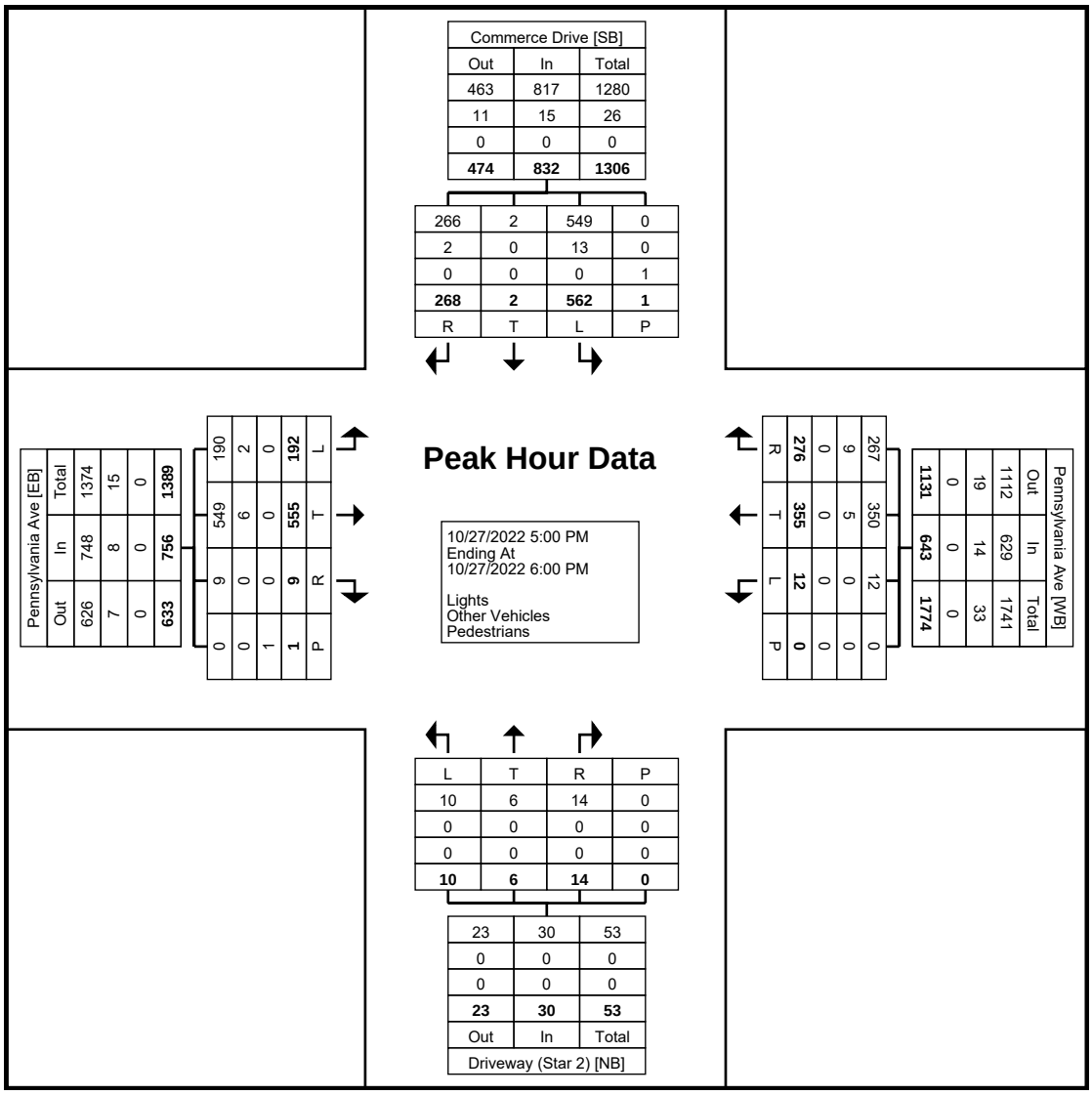
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Pennsylvania Ave Eastbound						Pennsylvania Ave Westbound						Driveway (Star 2) Northbound						Commerce Drive Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
5:00 PM	41	140	0	0	0	181	4	75	44	32	0	155	1	2	2	1	0	6	199	0	37	46	0	282	624
5:15 PM	28	142	3	0	0	173	2	89	49	15	0	155	1	1	0	2	0	4	137	0	45	37	0	219	551
5:30 PM	64	145	2	0	1	211	3	94	48	16	0	161	3	0	1	2	0	6	123	1	30	23	1	177	555
5:45 PM	59	128	4	0	0	191	3	97	49	23	0	172	5	3	0	6	0	14	103	1	28	22	0	154	531
Total	192	555	9	0	1	756	12	355	190	86	0	643	10	6	3	11	0	30	562	2	140	128	1	832	2261
Approach %	25.4	73.4	1.2	0.0	-	-	1.9	55.2	29.5	13.4	-	-	33.3	20.0	10.0	36.7	-	-	67.5	0.2	16.8	15.4	-	-	-
Total %	8.5	24.5	0.4	0.0	-	33.4	0.5	15.7	8.4	3.8	-	28.4	0.4	0.3	0.1	0.5	-	1.3	24.9	0.1	6.2	5.7	-	36.8	-
PHF	0.750	0.957	0.563	0.000	-	0.896	0.750	0.915	0.969	0.672	-	0.935	0.500	0.500	0.375	0.458	-	0.536	0.706	0.500	0.778	0.696	-	0.738	0.906
Lights	190	549	9	0	-	748	12	350	183	84	-	629	10	6	3	11	-	30	549	2	139	127	-	817	2224
% Lights	99.0	98.9	100.0	-	-	98.9	100.0	98.6	96.3	97.7	-	97.8	100.0	100.0	100.0	100.0	-	100.0	97.7	100.0	99.3	99.2	-	98.2	98.4
Other Vehicles	2	6	0	0	-	8	0	5	7	2	-	14	0	0	0	0	-	0	13	0	1	1	-	15	37
% Other Vehicles	1.0	1.1	0.0	-	-	1.1	0.0	1.4	3.7	2.3	-	2.2	0.0	0.0	0.0	0.0	-	0.0	2.3	0.0	0.7	0.8	-	1.8	1.6
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (5:00 PM)

Counter: MIO:
Set up By JH::

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2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
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Start Date: 10/27/2022

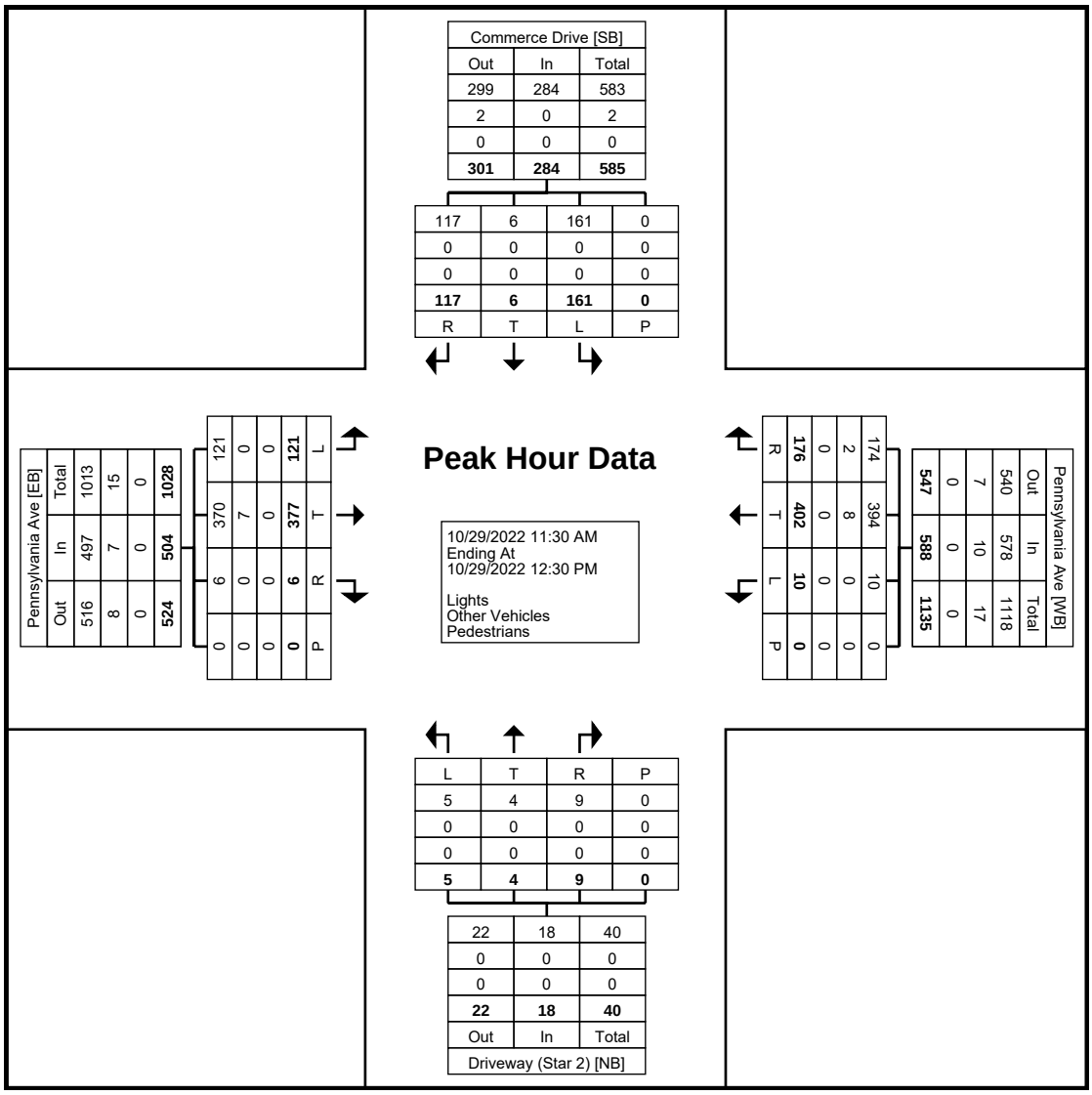
Turning Movement Peak Hour Data (11:30 AM)

Start Time	Pennsylvania Ave Eastbound						Pennsylvania Ave Westbound						Driveway (Star 2) Northbound						Commerce Drive Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
11:30 AM	31	103	2	0	0	136	2	105	24	14	0	145	2	1	2	1	0	6	31	0	16	14	0	61	348
11:45 AM	35	85	2	0	0	122	1	107	40	15	0	163	1	0	2	0	0	3	45	1	12	21	0	79	367
12:00 PM	23	96	1	1	0	121	4	94	38	11	0	147	1	2	1	3	0	7	55	2	15	10	0	82	357
12:15 PM	32	93	0	0	0	125	3	96	30	4	0	133	1	1	0	0	0	2	30	3	17	12	0	62	322
Total	121	377	5	1	0	504	10	402	132	44	0	588	5	4	5	4	0	18	161	6	60	57	0	284	1394
Approach %	24.0	74.8	1.0	0.2	-	-	1.7	68.4	22.4	7.5	-	-	27.8	22.2	27.8	22.2	-	-	56.7	2.1	21.1	20.1	-	-	-
Total %	8.7	27.0	0.4	0.1	-	36.2	0.7	28.8	9.5	3.2	-	42.2	0.4	0.3	0.4	0.3	-	1.3	11.5	0.4	4.3	4.1	-	20.4	-
PHF	0.864	0.915	0.625	0.250	-	0.926	0.625	0.939	0.825	0.733	-	0.902	0.625	0.500	0.625	0.333	-	0.643	0.732	0.500	0.882	0.679	-	0.866	0.950
Lights	121	370	5	1	-	497	10	394	131	43	-	578	5	4	5	4	-	18	161	6	60	57	-	284	1377
% Lights	100.0	98.1	100.0	100.0	-	98.6	100.0	98.0	99.2	97.7	-	98.3	100.0	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	100.0	-	100.0	98.8
Other Vehicles	0	7	0	0	-	7	0	8	1	1	-	10	0	0	0	0	-	0	0	0	0	0	-	0	17
% Other Vehicles	0.0	1.9	0.0	0.0	-	1.4	0.0	2.0	0.8	2.3	-	1.7	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	1.2
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 2 Commerce Drive-Driveway (Star 2) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (11:30 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

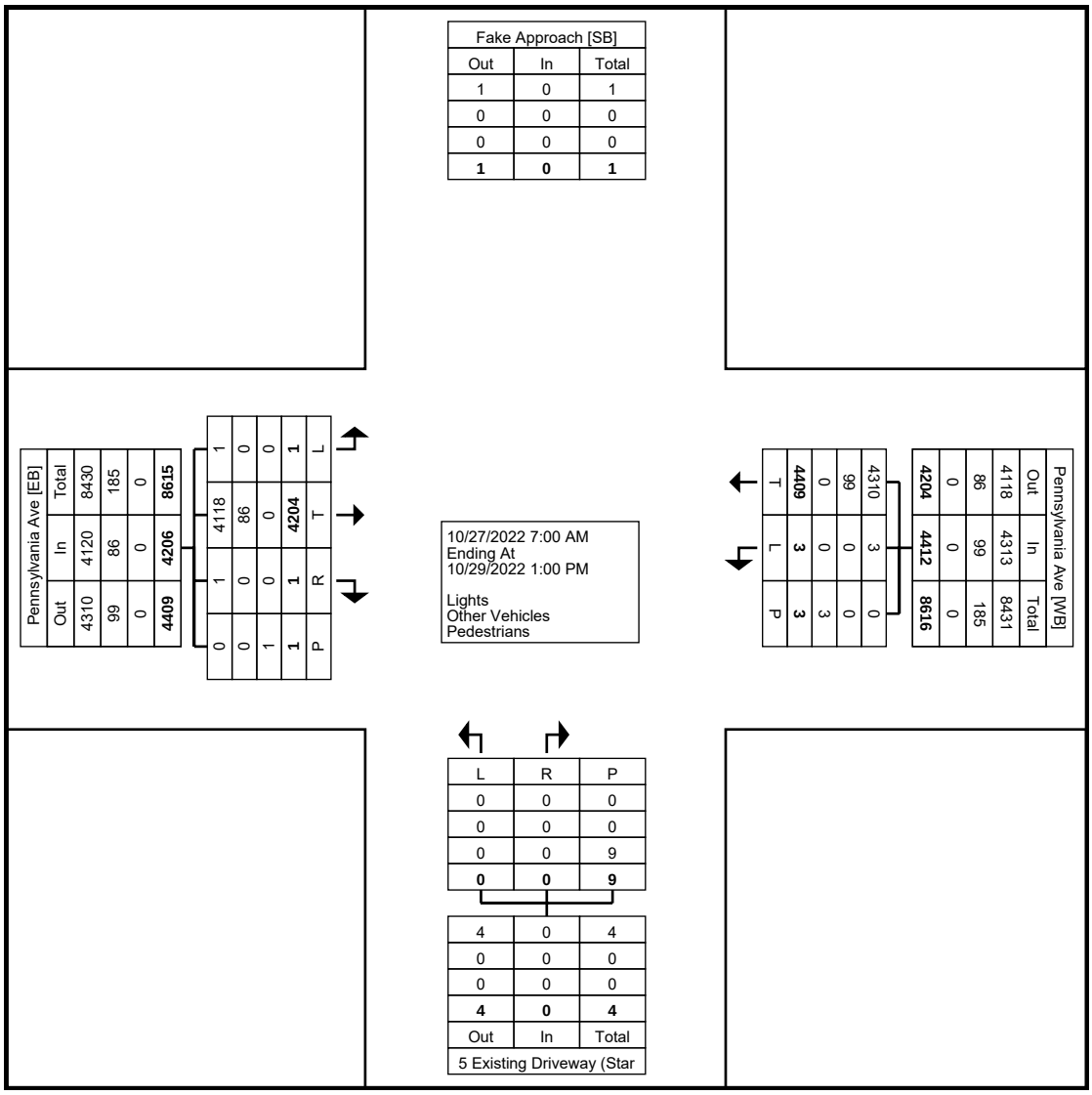
Turning Movement Data

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				5 Existing Driveway (Star 5) Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
7:00 AM	0	118	1	0	119	0	186	0	186	0	0	1	0	305
7:15 AM	0	130	0	0	130	0	189	0	189	0	0	0	0	319
7:30 AM	0	138	0	0	138	1	244	0	245	0	0	0	0	383
7:45 AM	0	132	0	0	132	0	256	0	256	0	0	0	0	388
Hourly Total	0	518	1	0	519	1	875	0	876	0	0	1	0	1395
8:00 AM	0	161	0	1	161	0	265	3	265	0	0	3	0	426
8:15 AM	0	143	0	0	143	0	282	0	282	0	0	0	0	425
8:30 AM	0	137	0	0	137	0	290	0	290	0	0	4	0	427
8:45 AM	0	131	0	0	131	1	294	0	295	0	0	0	0	426
Hourly Total	0	572	0	1	572	1	1131	3	1132	0	0	7	0	1704
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	237	0	0	237	0	179	0	179	0	0	0	0	416
4:15 PM	0	199	0	0	199	0	172	0	172	0	0	0	0	371
4:30 PM	0	232	0	0	232	0	144	0	144	0	0	0	0	376
4:45 PM	0	239	0	0	239	0	149	0	149	0	0	0	0	388
Hourly Total	0	907	0	0	907	0	644	0	644	0	0	0	0	1551
5:00 PM	0	344	0	0	344	0	153	0	153	0	0	0	0	497
5:15 PM	0	286	0	0	286	0	153	0	153	0	0	0	0	439
5:30 PM	0	275	0	0	275	0	157	0	157	0	0	1	0	432
5:45 PM	0	237	0	0	237	0	175	0	175	0	0	0	0	412
Hourly Total	0	1142	0	0	1142	0	638	0	638	0	0	1	0	1780
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	128	0	0	128	1	103	0	104	0	0	0	0	232
11:15 AM	0	123	0	0	123	0	132	0	132	0	0	0	0	255
11:30 AM	1	144	0	0	145	0	141	0	141	0	0	0	0	286
11:45 AM	0	119	0	0	119	0	169	0	169	0	0	0	0	288
Hourly Total	1	514	0	0	515	1	545	0	546	0	0	0	0	1061
12:00 PM	0	166	0	0	166	0	144	0	144	0	0	0	0	310
12:15 PM	0	126	0	0	126	0	136	0	136	0	0	0	0	262
12:30 PM	0	146	0	0	146	0	134	0	134	0	0	0	0	280
12:45 PM	0	113	0	0	113	0	162	0	162	0	0	0	0	275
Hourly Total	0	551	0	0	551	0	576	0	576	0	0	0	0	1127
Grand Total	1	4204	1	1	4206	3	4409	3	4412	0	0	9	0	8618
Approach %	0.0	100.0	0.0	-	-	0.1	99.9	-	-	0.0	0.0	-	-	-
Total %	0.0	48.8	0.0	-	48.8	0.0	51.2	-	51.2	0.0	0.0	-	0.0	-
Lights	1	4118	1	-	4120	3	4310	-	4313	0	0	-	0	8433
% Lights	100.0	98.0	100.0	-	98.0	100.0	97.8	-	97.8	-	-	-	-	97.9
Other Vehicles	0	86	0	-	86	0	99	-	99	0	0	-	0	185
% Other Vehicles	0.0	2.0	0.0	-	2.0	0.0	2.2	-	2.2	-	-	-	-	2.1
Pedestrians	-	-	-	1	-	-	-	3	-	-	-	9	-	-
% Pedestrians	-	-	-	100.0	-	-	-	100.0	-	-	-	100.0	-	-

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610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Data Plot

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2500 East High Street
Suite 650
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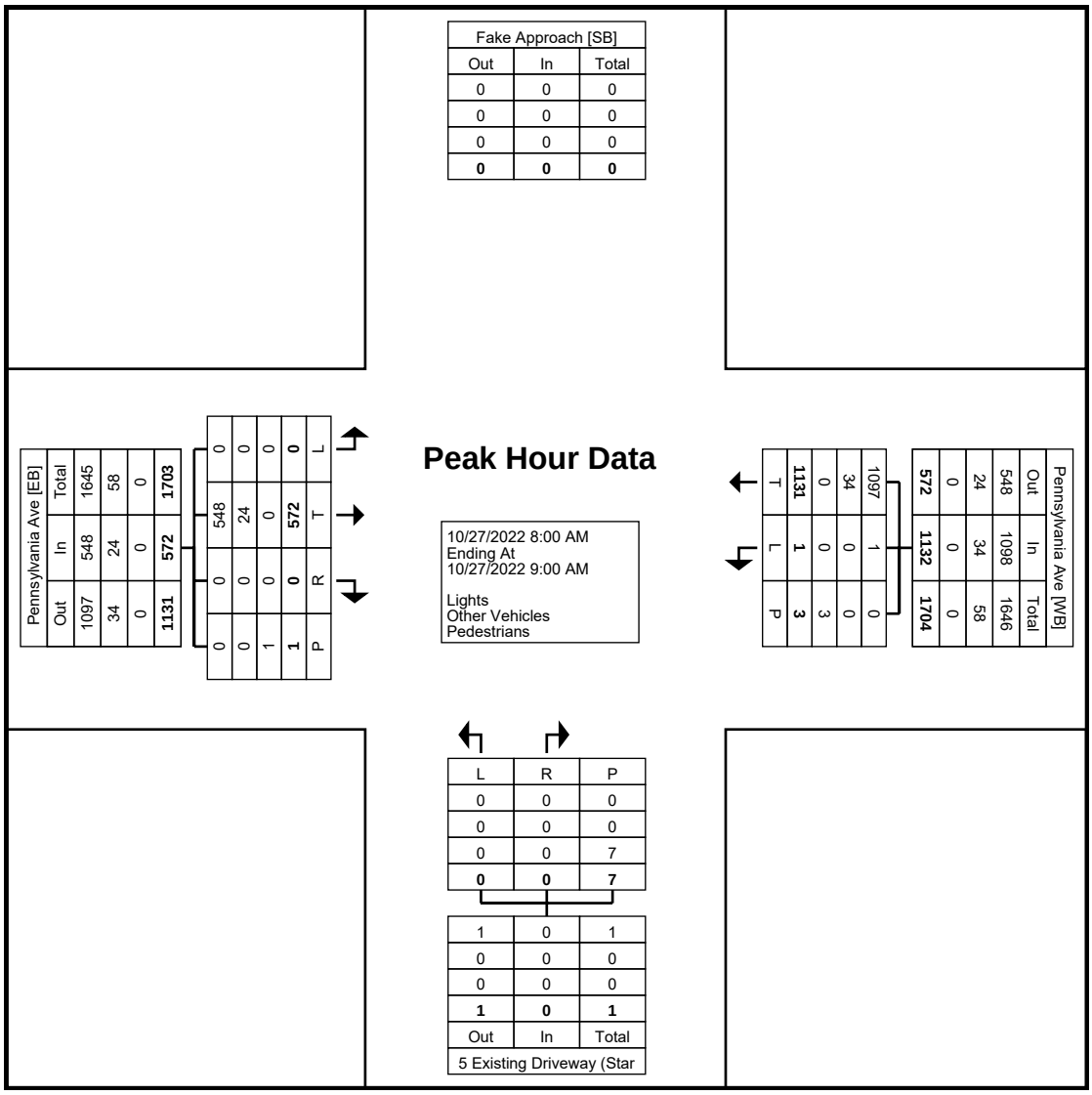
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				5 Existing Driveway (Star 5) Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
8:00 AM	0	161	0	1	161	0	265	3	265	0	0	3	0	426
8:15 AM	0	143	0	0	143	0	282	0	282	0	0	0	0	425
8:30 AM	0	137	0	0	137	0	290	0	290	0	0	4	0	427
8:45 AM	0	131	0	0	131	1	294	0	295	0	0	0	0	426
Total	0	572	0	1	572	1	1131	3	1132	0	0	7	0	1704
Approach %	0.0	100.0	0.0	-	-	0.1	99.9	-	-	0.0	0.0	-	-	-
Total %	0.0	33.6	0.0	-	33.6	0.1	66.4	-	66.4	0.0	0.0	-	0.0	-
PHF	0.000	0.888	0.000	-	0.888	0.250	0.962	-	0.959	0.000	0.000	-	0.000	0.998
Lights	0	548	0	-	548	1	1097	-	1098	0	0	-	0	1646
% Lights	-	95.8	-	-	95.8	100.0	97.0	-	97.0	-	-	-	-	96.6
Other Vehicles	0	24	0	-	24	0	34	-	34	0	0	-	0	58
% Other Vehicles	-	4.2	-	-	4.2	0.0	3.0	-	3.0	-	-	-	-	3.4
Pedestrians	-	-	-	1	-	-	-	3	-	-	-	7	-	-
% Pedestrians	-	-	-	100.0	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

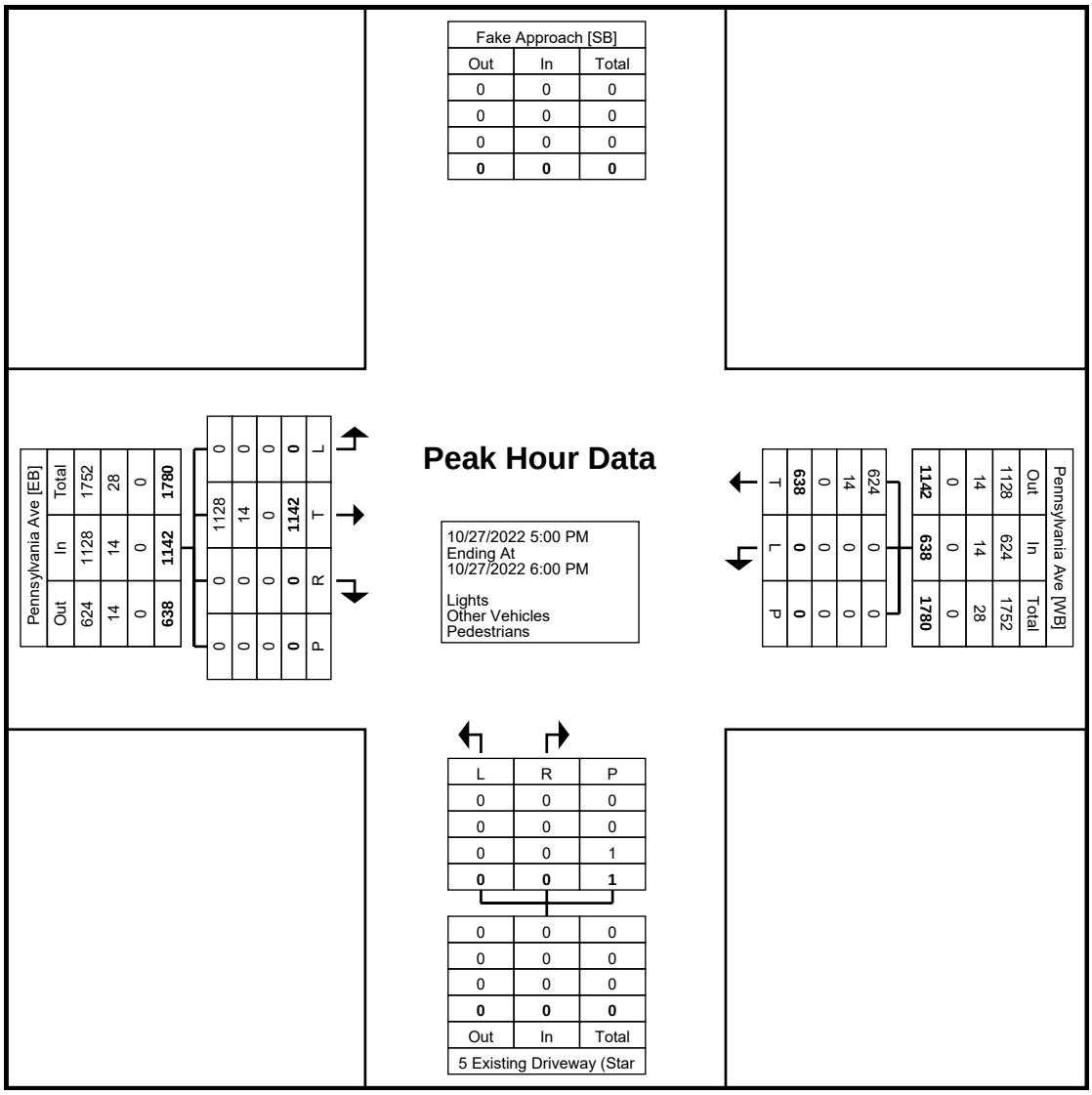
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				5 Existing Driveway (Star 5) Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
5:00 PM	0	344	0	0	344	0	153	0	153	0	0	0	0	497
5:15 PM	0	286	0	0	286	0	153	0	153	0	0	0	0	439
5:30 PM	0	275	0	0	275	0	157	0	157	0	0	1	0	432
5:45 PM	0	237	0	0	237	0	175	0	175	0	0	0	0	412
Total	0	1142	0	0	1142	0	638	0	638	0	0	1	0	1780
Approach %	0.0	100.0	0.0	-	-	0.0	100.0	-	-	0.0	0.0	-	-	-
Total %	0.0	64.2	0.0	-	64.2	0.0	35.8	-	35.8	0.0	0.0	-	0.0	-
PHF	0.000	0.830	0.000	-	0.830	0.000	0.911	-	0.911	0.000	0.000	-	0.000	0.895
Lights	0	1128	0	-	1128	0	624	-	624	0	0	-	0	1752
% Lights	-	98.8	-	-	98.8	-	97.8	-	97.8	-	-	-	-	98.4
Other Vehicles	0	14	0	-	14	0	14	-	14	0	0	-	0	28
% Other Vehicles	-	1.2	-	-	1.2	-	2.2	-	2.2	-	-	-	-	1.6
Pedestrians	-	-	-	0	-	-	-	0	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (5:00 PM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

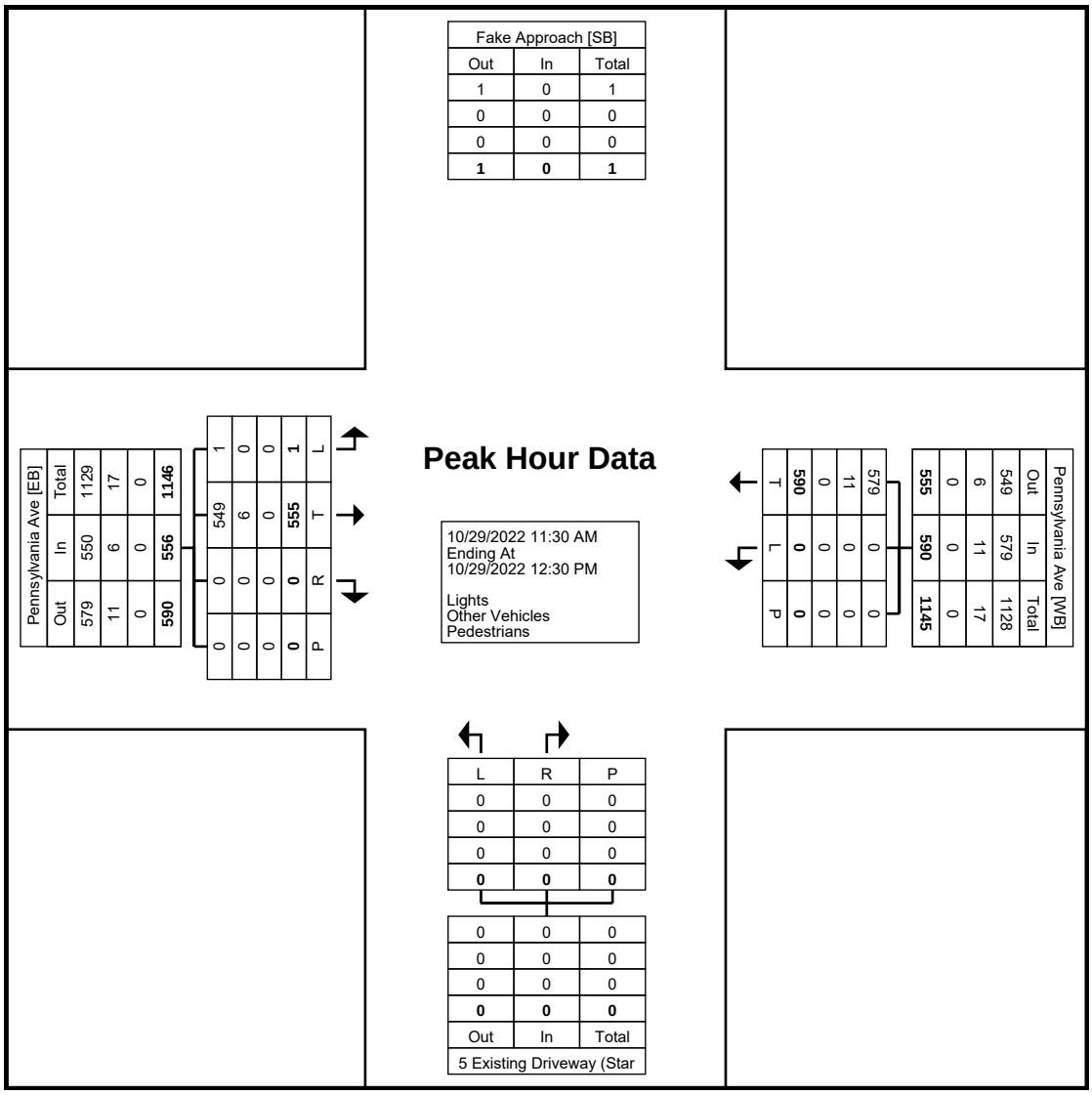
Turning Movement Peak Hour Data (11:30 AM)

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				5 Existing Driveway (Star 5) Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
11:30 AM	1	144	0	0	145	0	141	0	141	0	0	0	0	286
11:45 AM	0	119	0	0	119	0	169	0	169	0	0	0	0	288
12:00 PM	0	166	0	0	166	0	144	0	144	0	0	0	0	310
12:15 PM	0	126	0	0	126	0	136	0	136	0	0	0	0	262
Total	1	555	0	0	556	0	590	0	590	0	0	0	0	1146
Approach %	0.2	99.8	0.0	-	-	0.0	100.0	-	-	0.0	0.0	-	-	-
Total %	0.1	48.4	0.0	-	48.5	0.0	51.5	-	51.5	0.0	0.0	-	0.0	-
PHF	0.250	0.836	0.000	-	0.837	0.000	0.873	-	0.873	0.000	0.000	-	0.000	0.924
Lights	1	549	0	-	550	0	579	-	579	0	0	-	0	1129
% Lights	100.0	98.9	-	-	98.9	-	98.1	-	98.1	-	-	-	-	98.5
Other Vehicles	0	6	0	-	6	0	11	-	11	0	0	-	0	17
% Other Vehicles	0.0	1.1	-	-	1.1	-	1.9	-	1.9	-	-	-	-	1.5
Pedestrians	-	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 5 Existing Driveway (Star 5) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (11:30 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

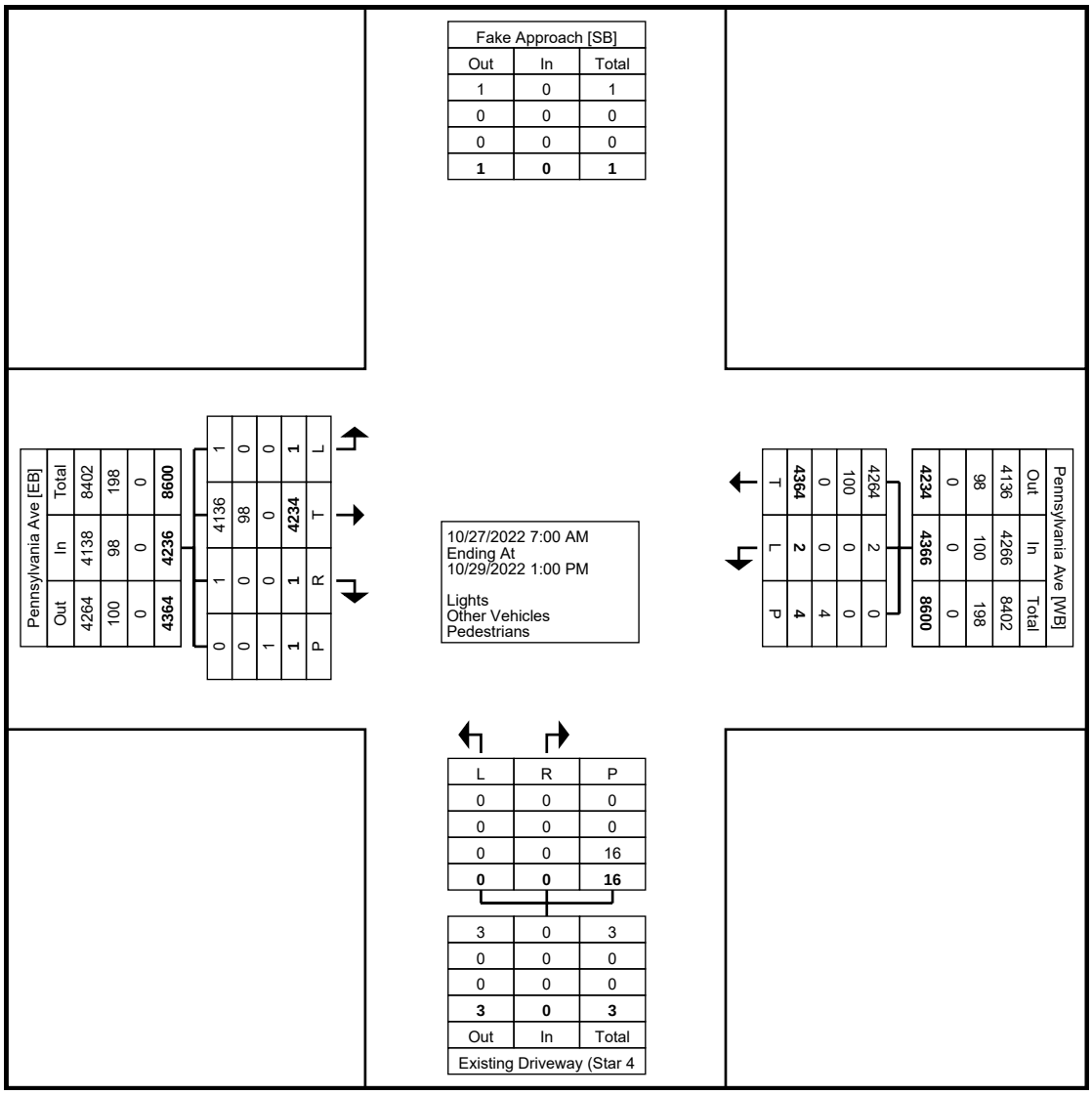
Turning Movement Data

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				Existing Driveway (Star 4 Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
7:00 AM	0	117	1	0	118	0	184	0	184	0	0	1	0	302
7:15 AM	0	130	0	0	130	0	183	1	183	0	0	0	0	313
7:30 AM	0	137	0	0	137	0	239	0	239	0	0	1	0	376
7:45 AM	0	132	0	0	132	0	236	0	236	0	0	1	0	368
Hourly Total	0	516	1	0	517	0	842	1	842	0	0	3	0	1359
8:00 AM	0	161	0	1	161	0	268	3	268	0	0	4	0	429
8:15 AM	0	142	0	0	142	0	280	0	280	0	0	0	0	422
8:30 AM	0	138	0	0	138	0	298	0	298	0	0	2	0	436
8:45 AM	0	131	0	0	131	1	292	0	293	0	0	0	0	424
Hourly Total	0	572	0	1	572	1	1138	3	1139	0	0	6	0	1711
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	256	0	0	256	0	176	0	176	0	0	0	0	432
4:15 PM	0	204	0	0	204	0	169	0	169	0	0	0	0	373
4:30 PM	0	240	0	0	240	0	146	0	146	0	0	3	0	386
4:45 PM	0	236	0	0	236	0	141	0	141	0	0	1	0	377
Hourly Total	0	936	0	0	936	0	632	0	632	0	0	4	0	1568
5:00 PM	0	343	0	0	343	0	150	0	150	0	0	0	0	493
5:15 PM	0	288	0	0	288	0	149	0	149	0	0	1	0	437
5:30 PM	0	279	0	0	279	0	158	0	158	0	0	1	0	437
5:45 PM	0	239	0	0	239	0	176	0	176	0	0	0	0	415
Hourly Total	0	1149	0	0	1149	0	633	0	633	0	0	2	0	1782
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	126	0	0	126	1	105	0	106	0	0	0	0	232
11:15 AM	0	119	0	0	119	0	132	0	132	0	0	1	0	251
11:30 AM	1	141	0	0	142	0	143	0	143	0	0	0	0	285
11:45 AM	0	120	0	0	120	0	167	0	167	0	0	0	0	287
Hourly Total	1	506	0	0	507	1	547	0	548	0	0	1	0	1055
12:00 PM	0	167	0	0	167	0	144	0	144	0	0	0	0	311
12:15 PM	0	128	0	0	128	0	135	0	135	0	0	0	0	263
12:30 PM	0	146	0	0	146	0	132	0	132	0	0	0	0	278
12:45 PM	0	114	0	0	114	0	161	0	161	0	0	0	0	275
Hourly Total	0	555	0	0	555	0	572	0	572	0	0	0	0	1127
Grand Total	1	4234	1	1	4236	2	4364	4	4366	0	0	16	0	8602
Approach %	0.0	100.0	0.0	-	-	0.0	100.0	-	-	0.0	0.0	-	-	-
Total %	0.0	49.2	0.0	-	49.2	0.0	50.7	-	50.8	0.0	0.0	-	0.0	-
Lights	1	4136	1	-	4138	2	4264	-	4266	0	0	-	0	8404
% Lights	100.0	97.7	100.0	-	97.7	100.0	97.7	-	97.7	-	-	-	-	97.7
Other Vehicles	0	98	0	-	98	0	100	-	100	0	0	-	0	198
% Other Vehicles	0.0	2.3	0.0	-	2.3	0.0	2.3	-	2.3	-	-	-	-	2.3
Pedestrians	-	-	-	1	-	-	-	4	-	-	-	16	-	-
% Pedestrians	-	-	-	100.0	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Data Plot

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

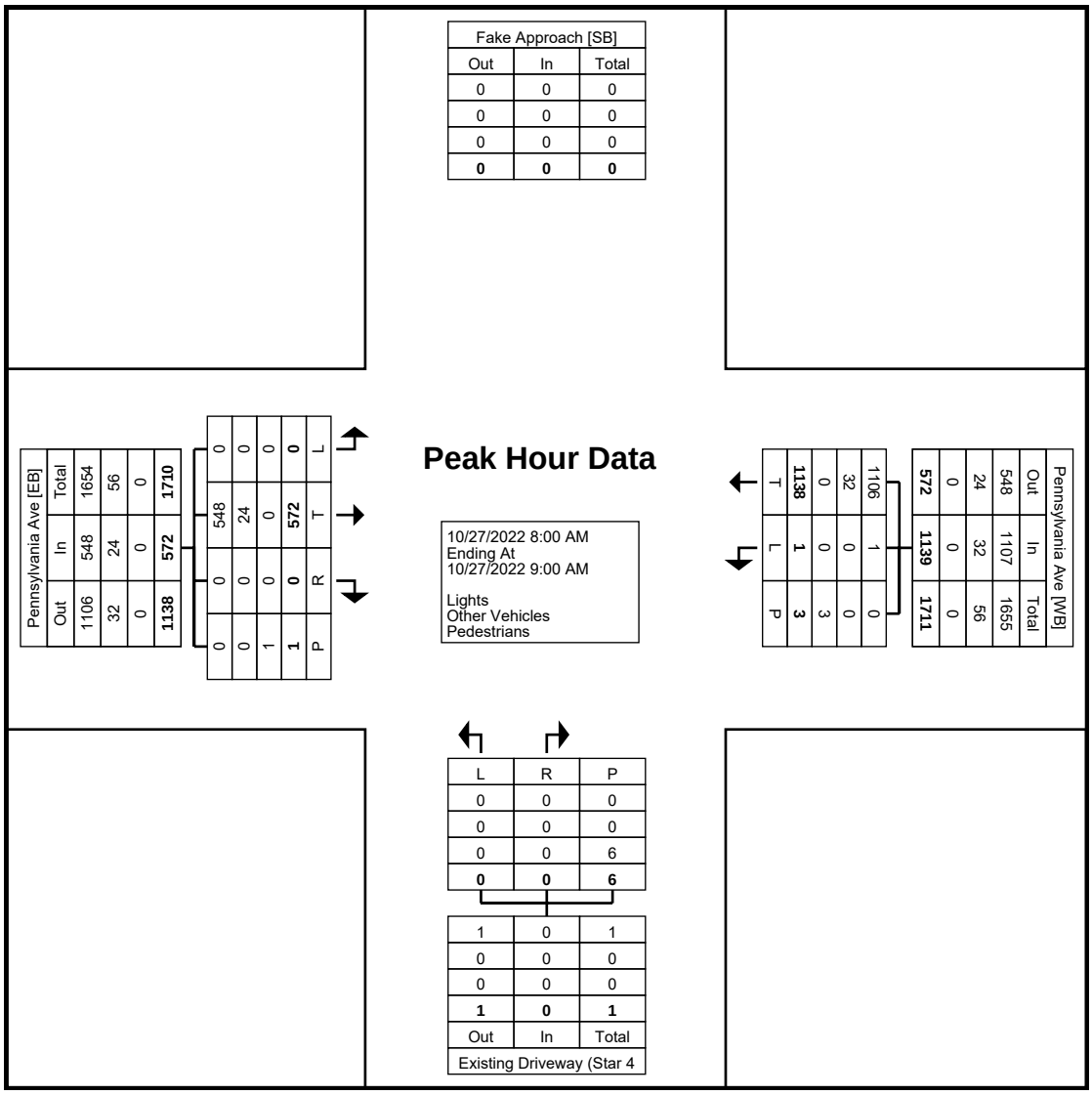
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				Existing Driveway (Star 4 Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
8:00 AM	0	161	0	1	161	0	268	3	268	0	0	4	0	429
8:15 AM	0	142	0	0	142	0	280	0	280	0	0	0	0	422
8:30 AM	0	138	0	0	138	0	298	0	298	0	0	2	0	436
8:45 AM	0	131	0	0	131	1	292	0	293	0	0	0	0	424
Total	0	572	0	1	572	1	1138	3	1139	0	0	6	0	1711
Approach %	0.0	100.0	0.0	-	-	0.1	99.9	-	-	0.0	0.0	-	-	-
Total %	0.0	33.4	0.0	-	33.4	0.1	66.5	-	66.6	0.0	0.0	-	0.0	-
PHF	0.000	0.888	0.000	-	0.888	0.250	0.955	-	0.956	0.000	0.000	-	0.000	0.981
Lights	0	548	0	-	548	1	1106	-	1107	0	0	-	0	1655
% Lights	-	95.8	-	-	95.8	100.0	97.2	-	97.2	-	-	-	-	96.7
Other Vehicles	0	24	0	-	24	0	32	-	32	0	0	-	0	56
% Other Vehicles	-	4.2	-	-	4.2	0.0	2.8	-	2.8	-	-	-	-	3.3
Pedestrians	-	-	-	1	-	-	-	3	-	-	-	6	-	-
% Pedestrians	-	-	-	100.0	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

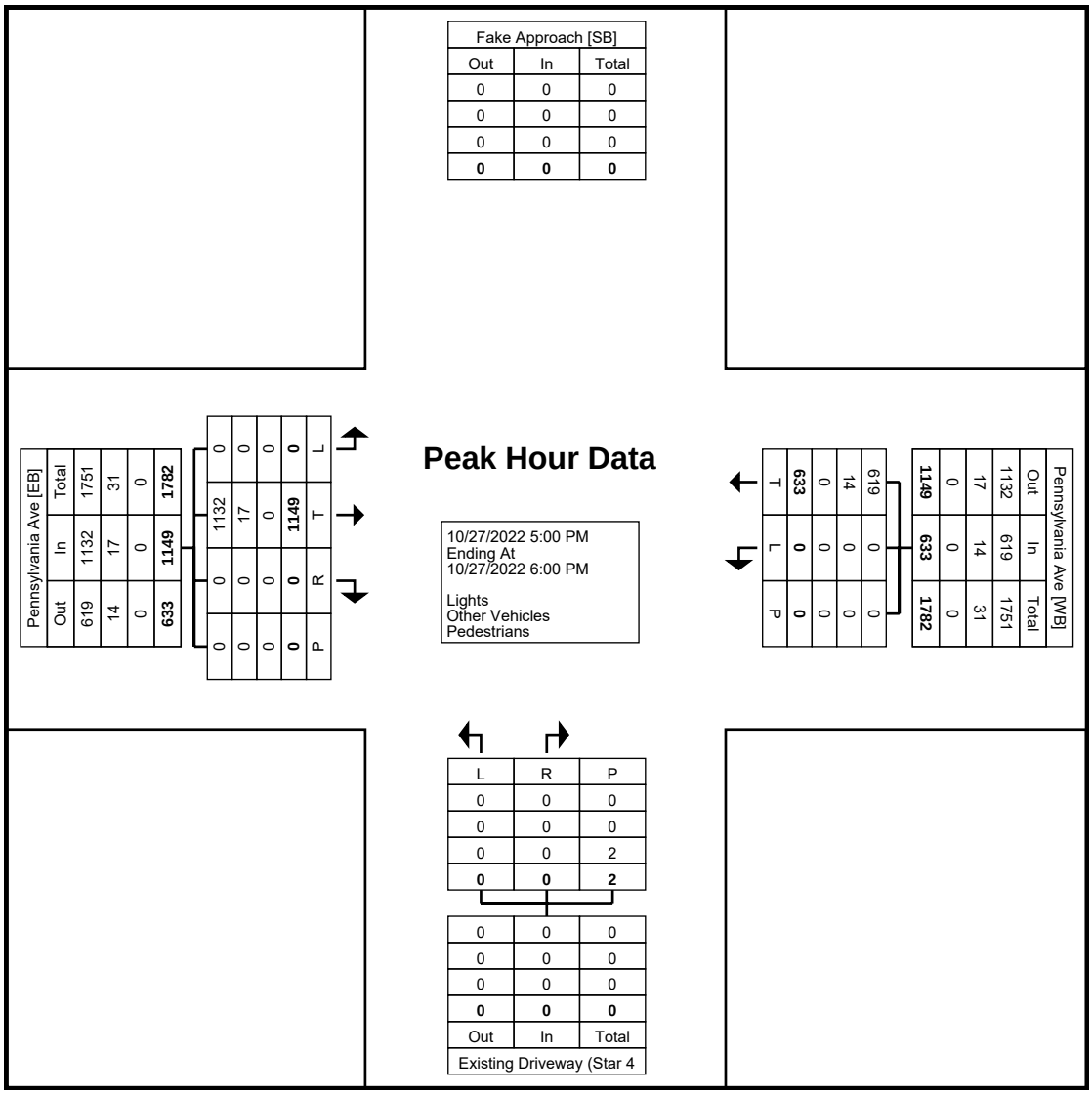
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				Existing Driveway (Star 4 Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
5:00 PM	0	343	0	0	343	0	150	0	150	0	0	0	0	493
5:15 PM	0	288	0	0	288	0	149	0	149	0	0	1	0	437
5:30 PM	0	279	0	0	279	0	158	0	158	0	0	1	0	437
5:45 PM	0	239	0	0	239	0	176	0	176	0	0	0	0	415
Total	0	1149	0	0	1149	0	633	0	633	0	0	2	0	1782
Approach %	0.0	100.0	0.0	-	-	0.0	100.0	-	-	0.0	0.0	-	-	-
Total %	0.0	64.5	0.0	-	64.5	0.0	35.5	-	35.5	0.0	0.0	-	0.0	-
PHF	0.000	0.837	0.000	-	0.837	0.000	0.899	-	0.899	0.000	0.000	-	0.000	0.904
Lights	0	1132	0	-	1132	0	619	-	619	0	0	-	0	1751
% Lights	-	98.5	-	-	98.5	-	97.8	-	97.8	-	-	-	-	98.3
Other Vehicles	0	17	0	-	17	0	14	-	14	0	0	-	0	31
% Other Vehicles	-	1.5	-	-	1.5	-	2.2	-	2.2	-	-	-	-	1.7
Pedestrians	-	-	-	0	-	-	-	0	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (5:00 PM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

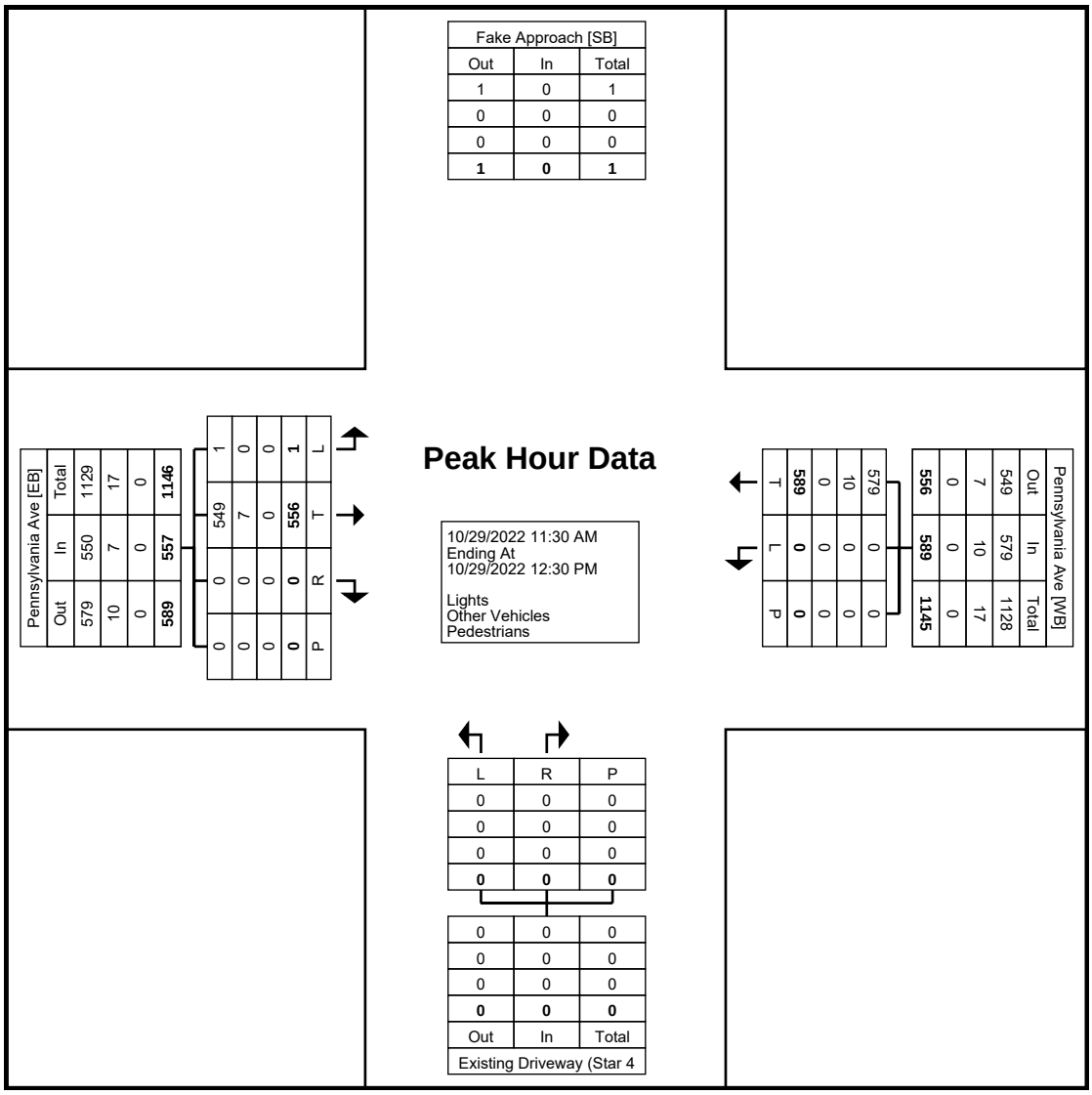
Turning Movement Peak Hour Data (11:30 AM)

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				Existing Driveway (Star 4 Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
11:30 AM	1	141	0	0	142	0	143	0	143	0	0	0	0	285
11:45 AM	0	120	0	0	120	0	167	0	167	0	0	0	0	287
12:00 PM	0	167	0	0	167	0	144	0	144	0	0	0	0	311
12:15 PM	0	128	0	0	128	0	135	0	135	0	0	0	0	263
Total	1	556	0	0	557	0	589	0	589	0	0	0	0	1146
Approach %	0.2	99.8	0.0	-	-	0.0	100.0	-	-	0.0	0.0	-	-	-
Total %	0.1	48.5	0.0	-	48.6	0.0	51.4	-	51.4	0.0	0.0	-	0.0	-
PHF	0.250	0.832	0.000	-	0.834	0.000	0.882	-	0.882	0.000	0.000	-	0.000	0.921
Lights	1	549	0	-	550	0	579	-	579	0	0	-	0	1129
% Lights	100.0	98.7	-	-	98.7	-	98.3	-	98.3	-	-	-	-	98.5
Other Vehicles	0	7	0	-	7	0	10	-	10	0	0	-	0	17
% Other Vehicles	0.0	1.3	-	-	1.3	-	1.7	-	1.7	-	-	-	-	1.5
Pedestrians	-	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 4 Existing Driveway (Star 4) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (11:30 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022
Page No: 1

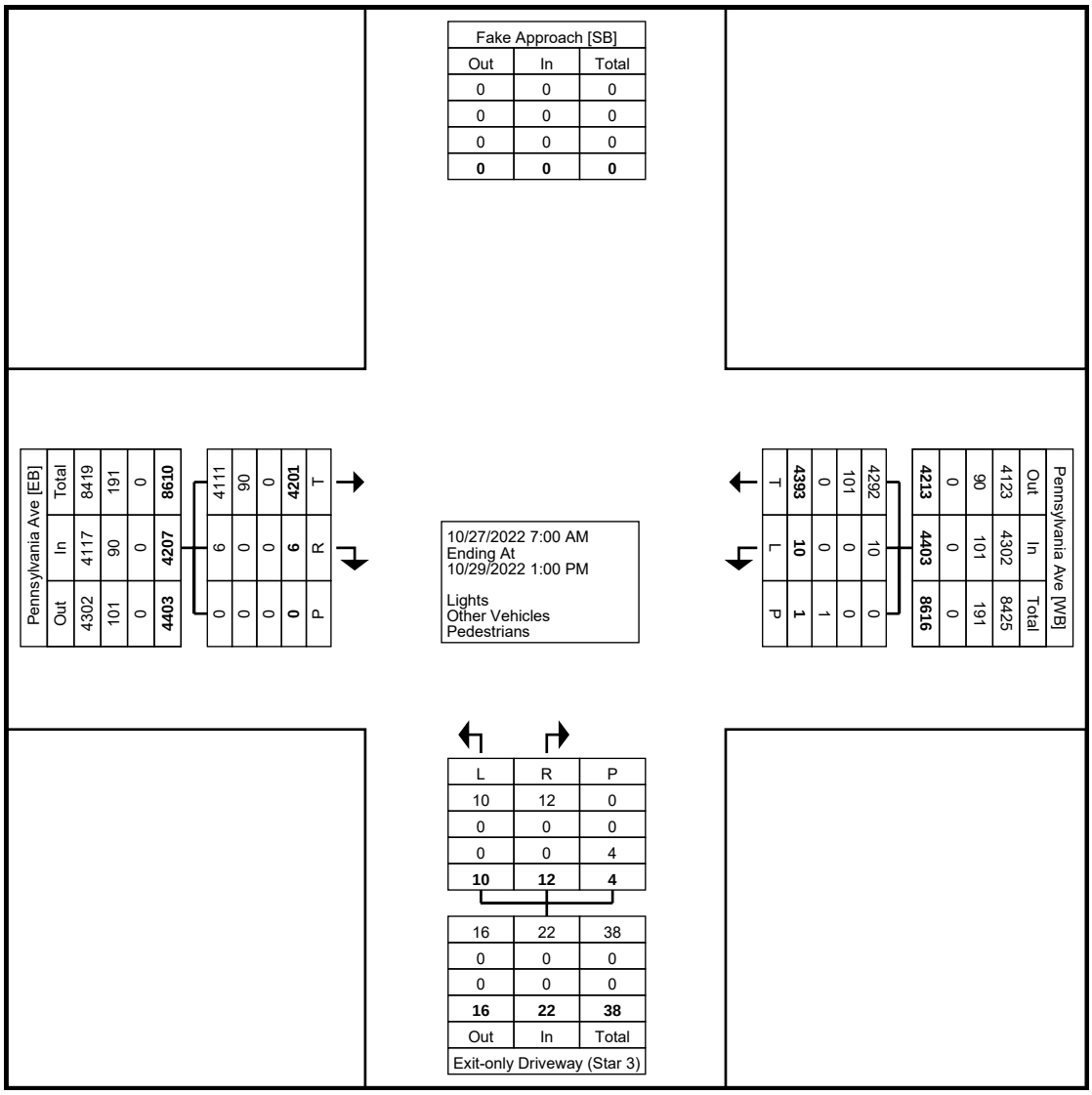
Turning Movement Data

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Exit-only Driveway (Star 3) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
7:00 AM	117	0	0	117	0	185	0	185	0	0	1	0	302
7:15 AM	130	1	0	131	2	191	0	193	0	0	0	0	324
7:30 AM	139	0	0	139	1	245	0	246	0	0	0	0	385
7:45 AM	137	1	0	138	0	254	0	254	0	0	0	0	392
Hourly Total	523	2	0	525	3	875	0	878	0	0	1	0	1403
8:00 AM	157	0	0	157	1	269	1	270	0	0	0	0	427
8:15 AM	142	0	0	142	1	280	0	281	0	0	0	0	423
8:30 AM	130	1	0	131	0	283	0	283	1	0	2	1	415
8:45 AM	137	1	0	138	2	287	0	289	0	0	0	0	427
Hourly Total	566	2	0	568	4	1119	1	1123	1	0	2	1	1692
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	255	0	0	255	1	177	0	178	0	3	0	3	436
4:15 PM	200	0	0	200	0	174	0	174	1	0	0	1	375
4:30 PM	235	1	0	236	0	140	0	140	1	0	0	1	377
4:45 PM	243	0	0	243	0	144	0	144	0	1	0	1	388
Hourly Total	933	1	0	934	1	635	0	636	2	4	0	6	1576
5:00 PM	340	0	0	340	0	154	0	154	0	0	0	0	494
5:15 PM	275	0	0	275	0	158	0	158	1	4	0	5	438
5:30 PM	271	0	0	271	0	156	0	156	0	1	0	1	428
5:45 PM	232	0	0	232	0	180	0	180	0	0	0	0	412
Hourly Total	1118	0	0	1118	0	648	0	648	1	5	0	6	1772
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	130	0	0	130	1	107	0	108	2	0	0	2	240
11:15 AM	121	0	0	121	0	128	0	128	0	0	1	0	249
11:30 AM	135	0	0	135	1	141	0	142	1	1	0	2	279
11:45 AM	126	0	0	126	0	168	0	168	0	1	0	1	295
Hourly Total	512	0	0	512	2	544	0	546	3	2	1	5	1063
12:00 PM	155	0	0	155	0	137	0	137	1	0	0	1	293
12:15 PM	125	0	0	125	0	133	0	133	0	0	0	0	258
12:30 PM	151	1	0	152	0	139	0	139	1	1	0	2	293
12:45 PM	118	0	0	118	0	163	0	163	1	0	0	1	282
Hourly Total	549	1	0	550	0	572	0	572	3	1	0	4	1126
Grand Total	4201	6	0	4207	10	4393	1	4403	10	12	4	22	8632
Approach %	99.9	0.1	-	-	0.2	99.8	-	-	45.5	54.5	-	-	-
Total %	48.7	0.1	-	48.7	0.1	50.9	-	51.0	0.1	0.1	-	0.3	-
Lights	4111	6	-	4117	10	4292	-	4302	10	12	-	22	8441
% Lights	97.9	100.0	-	97.9	100.0	97.7	-	97.7	100.0	100.0	-	100.0	97.8
Other Vehicles	90	0	-	90	0	101	-	101	0	0	-	0	191
% Other Vehicles	2.1	0.0	-	2.1	0.0	2.3	-	2.3	0.0	0.0	-	0.0	2.2
Pedestrians	-	-	0	-	-	-	1	-	-	-	4	-	-
% Pedestrians	-	-	-	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Data Plot

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

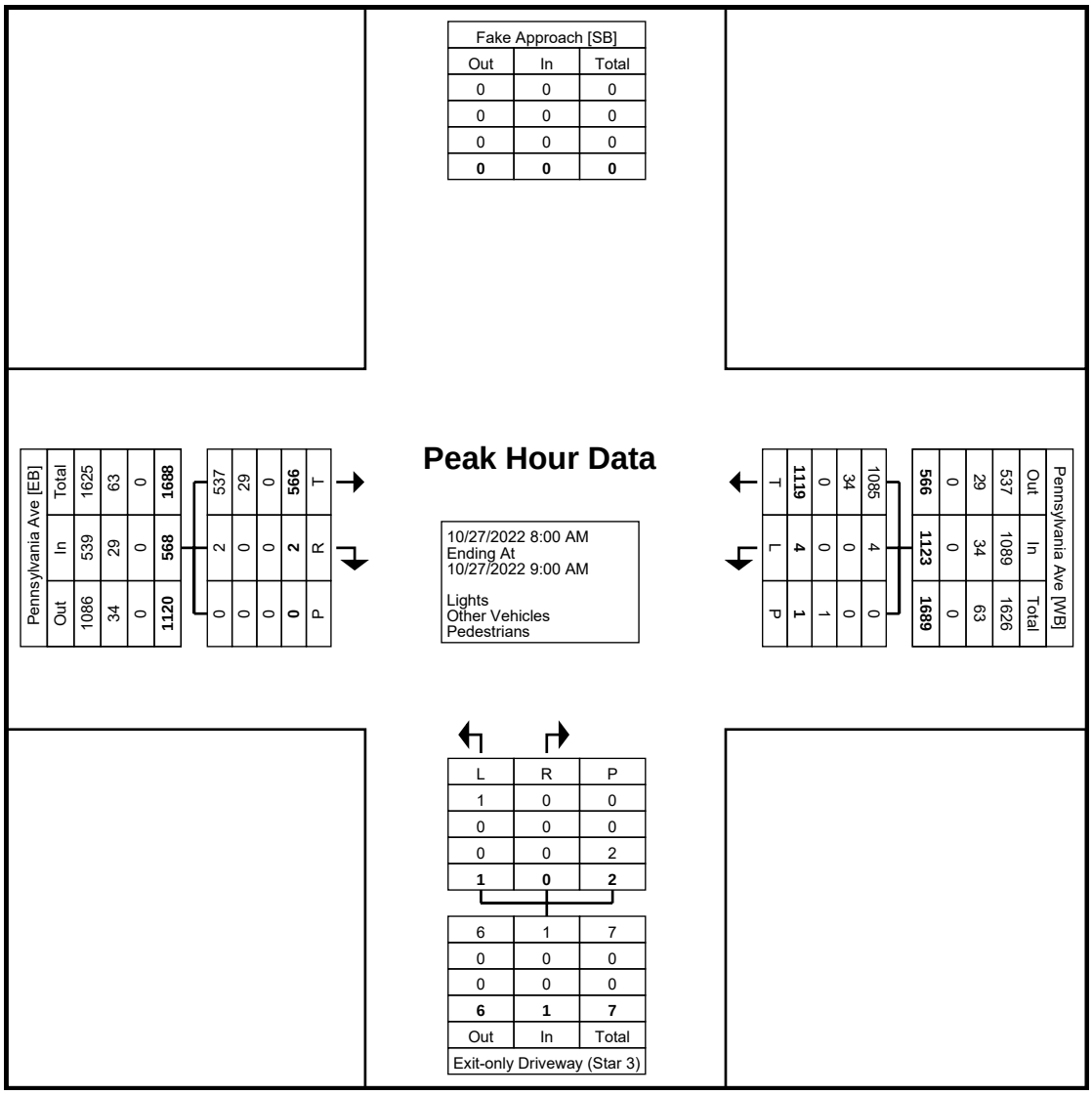
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Exit-only Driveway (Star 3) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
8:00 AM	157	0	0	157	1	269	1	270	0	0	0	0	427
8:15 AM	142	0	0	142	1	280	0	281	0	0	0	0	423
8:30 AM	130	1	0	131	0	283	0	283	1	0	2	1	415
8:45 AM	137	1	0	138	2	287	0	289	0	0	0	0	427
Total	566	2	0	568	4	1119	1	1123	1	0	2	1	1692
Approach %	99.6	0.4	-	-	0.4	99.6	-	-	100.0	0.0	-	-	-
Total %	33.5	0.1	-	33.6	0.2	66.1	-	66.4	0.1	0.0	-	0.1	-
PHF	0.901	0.500	-	0.904	0.500	0.975	-	0.971	0.250	0.000	-	0.250	0.991
Lights	537	2	-	539	4	1085	-	1089	1	0	-	1	1629
% Lights	94.9	100.0	-	94.9	100.0	97.0	-	97.0	100.0	-	-	100.0	96.3
Other Vehicles	29	0	-	29	0	34	-	34	0	0	-	0	63
% Other Vehicles	5.1	0.0	-	5.1	0.0	3.0	-	3.0	0.0	-	-	0.0	3.7
Pedestrians	-	-	0	-	-	-	1	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
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610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (8:00 AM)

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

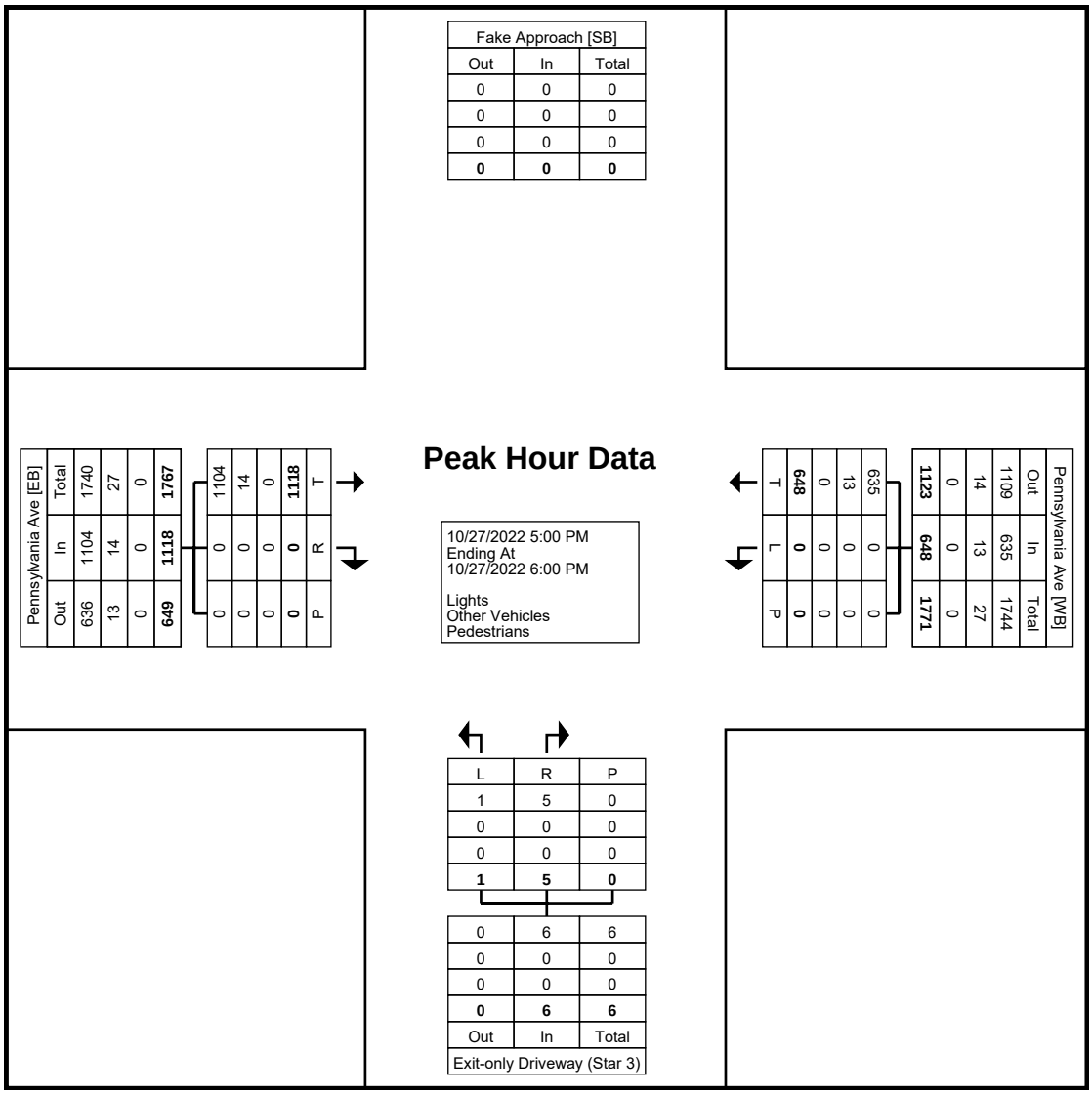
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Exit-only Driveway (Star 3) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
5:00 PM	340	0	0	340	0	154	0	154	0	0	0	0	494
5:15 PM	275	0	0	275	0	158	0	158	1	4	0	5	438
5:30 PM	271	0	0	271	0	156	0	156	0	1	0	1	428
5:45 PM	232	0	0	232	0	180	0	180	0	0	0	0	412
Total	1118	0	0	1118	0	648	0	648	1	5	0	6	1772
Approach %	100.0	0.0	-	-	0.0	100.0	-	-	16.7	83.3	-	-	-
Total %	63.1	0.0	-	63.1	0.0	36.6	-	36.6	0.1	0.3	-	0.3	-
PHF	0.822	0.000	-	0.822	0.000	0.900	-	0.900	0.250	0.313	-	0.300	0.897
Lights	1104	0	-	1104	0	635	-	635	1	5	-	6	1745
% Lights	98.7	-	-	98.7	-	98.0	-	98.0	100.0	100.0	-	100.0	98.5
Other Vehicles	14	0	-	14	0	13	-	13	0	0	-	0	27
% Other Vehicles	1.3	-	-	1.3	-	2.0	-	2.0	0.0	0.0	-	0.0	1.5
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

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Counter: MIO:
Set up By JH::

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (5:00 PM)

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022

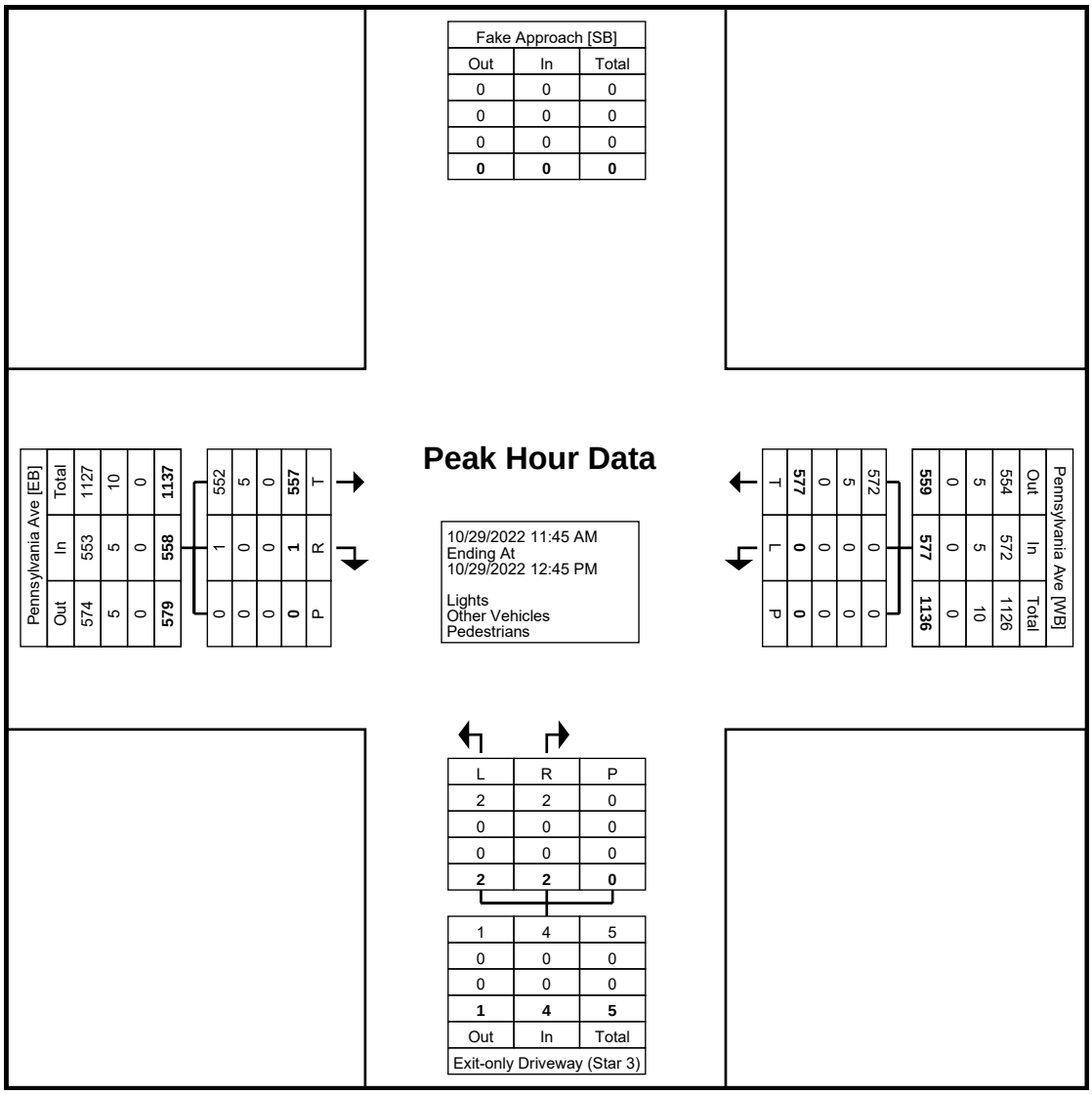
Turning Movement Peak Hour Data (11:45 AM)

Start Time	Pennsylvania Ave Eastbound				Pennsylvania Ave Westbound				Exit-only Driveway (Star 3) Northbound				
	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
11:45 AM	126	0	0	126	0	168	0	168	0	1	0	1	295
12:00 PM	155	0	0	155	0	137	0	137	1	0	0	1	293
12:15 PM	125	0	0	125	0	133	0	133	0	0	0	0	258
12:30 PM	151	1	0	152	0	139	0	139	1	1	0	2	293
Total	557	1	0	558	0	577	0	577	2	2	0	4	1139
Approach %	99.8	0.2	-	-	0.0	100.0	-	-	50.0	50.0	-	-	-
Total %	48.9	0.1	-	49.0	0.0	50.7	-	50.7	0.2	0.2	-	0.4	-
PHF	0.898	0.250	-	0.900	0.000	0.859	-	0.859	0.500	0.500	-	0.500	0.965
Lights	552	1	-	553	0	572	-	572	2	2	-	4	1129
% Lights	99.1	100.0	-	99.1	-	99.1	-	99.1	100.0	100.0	-	100.0	99.1
Other Vehicles	5	0	-	5	0	5	-	5	0	0	-	0	10
% Other Vehicles	0.9	0.0	-	0.9	-	0.9	-	0.9	0.0	0.0	-	0.0	0.9
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

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Suite 650
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610.326.3100

Counter: MIO:
Set up By JH::

Count Name: 3 Exit-only Driveway (Star 3) & Pennsylvania Ave
Site Code:
Start Date: 10/27/2022



Turning Movement Peak Hour Data Plot (11:45 AM)

Counter: MIO:
Set up By JB:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 4 Audi Driveway & Pennsylvania Ave
Site Code:
Start Date: 07/11/2023

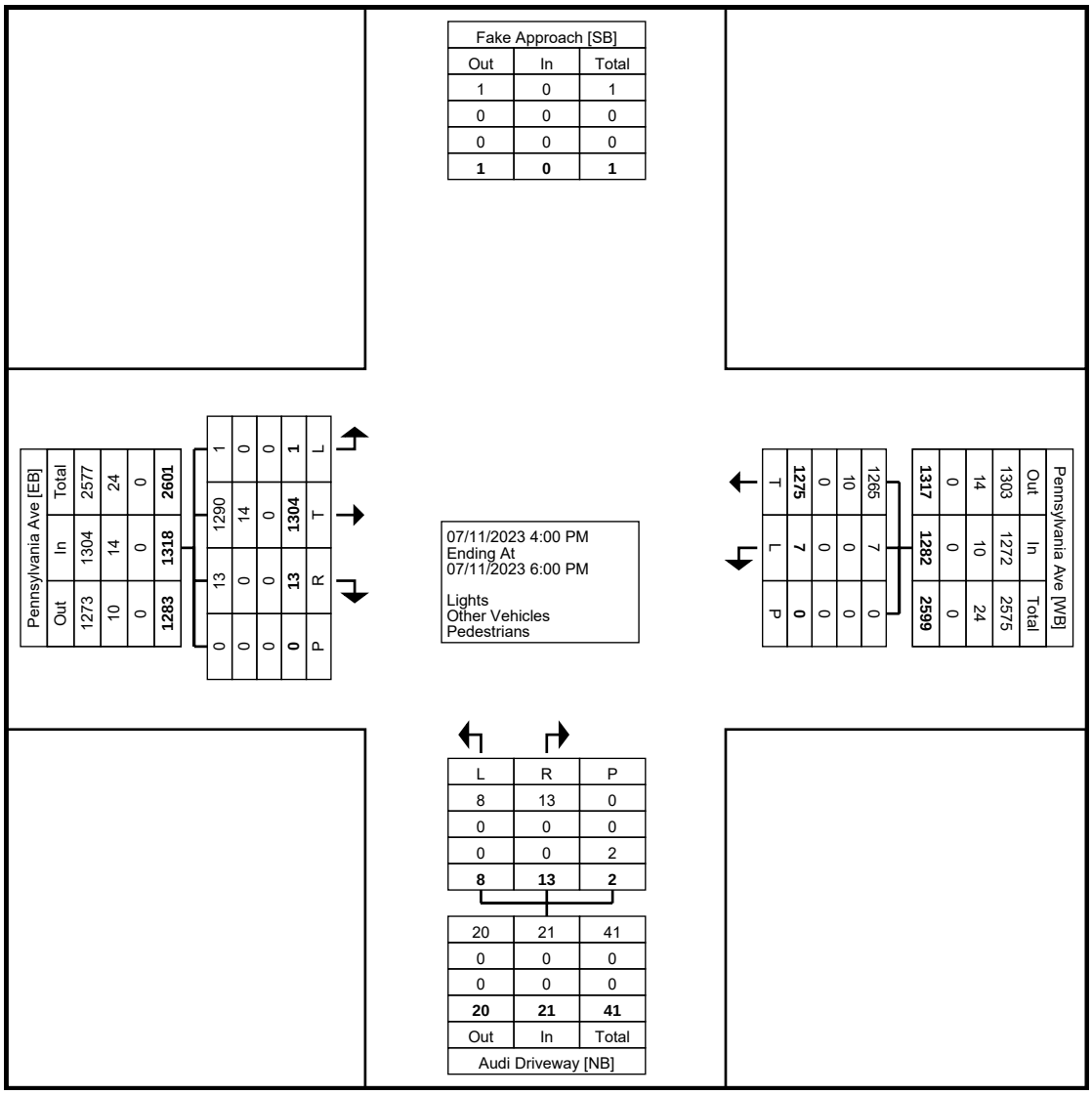
Turning Movement Data

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				Audi Driveway Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
4:00 PM	0	177	2	0	179	0	157	0	157	1	1	0	2	338
4:15 PM	0	174	2	0	176	0	131	0	131	0	1	0	1	308
4:30 PM	1	136	2	0	139	2	172	0	174	0	1	1	1	314
4:45 PM	0	168	1	0	169	1	153	0	154	1	2	0	3	326
Hourly Total	1	655	7	0	663	3	613	0	616	2	5	1	7	1286
5:00 PM	0	152	0	0	152	0	185	0	185	3	1	0	4	341
5:15 PM	0	165	2	0	167	0	178	0	178	0	2	0	2	347
5:30 PM	0	184	2	0	186	3	153	0	156	2	2	0	4	346
5:45 PM	0	148	2	0	150	1	146	0	147	1	3	1	4	301
Hourly Total	0	649	6	0	655	4	662	0	666	6	8	1	14	1335
Grand Total	1	1304	13	0	1318	7	1275	0	1282	8	13	2	21	2621
Approach %	0.1	98.9	1.0	-	-	0.5	99.5	-	-	38.1	61.9	-	-	-
Total %	0.0	49.8	0.5	-	50.3	0.3	48.6	-	48.9	0.3	0.5	-	0.8	-
Lights	1	1290	13	-	1304	7	1265	-	1272	8	13	-	21	2597
% Lights	100.0	98.9	100.0	-	98.9	100.0	99.2	-	99.2	100.0	100.0	-	100.0	99.1
Other Vehicles	0	14	0	-	14	0	10	-	10	0	0	-	0	24
% Other Vehicles	0.0	1.1	0.0	-	1.1	0.0	0.8	-	0.8	0.0	0.0	-	0.0	0.9
Pedestrians	-	-	-	0	-	-	-	0	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JB:

Count Name: 4 Audi Driveway & Pennsylvania Ave
Site Code:
Start Date: 07/11/2023



Turning Movement Data Plot

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JB:

Count Name: 4 Audi Driveway & Pennsylvania Ave
Site Code:
Start Date: 07/11/2023

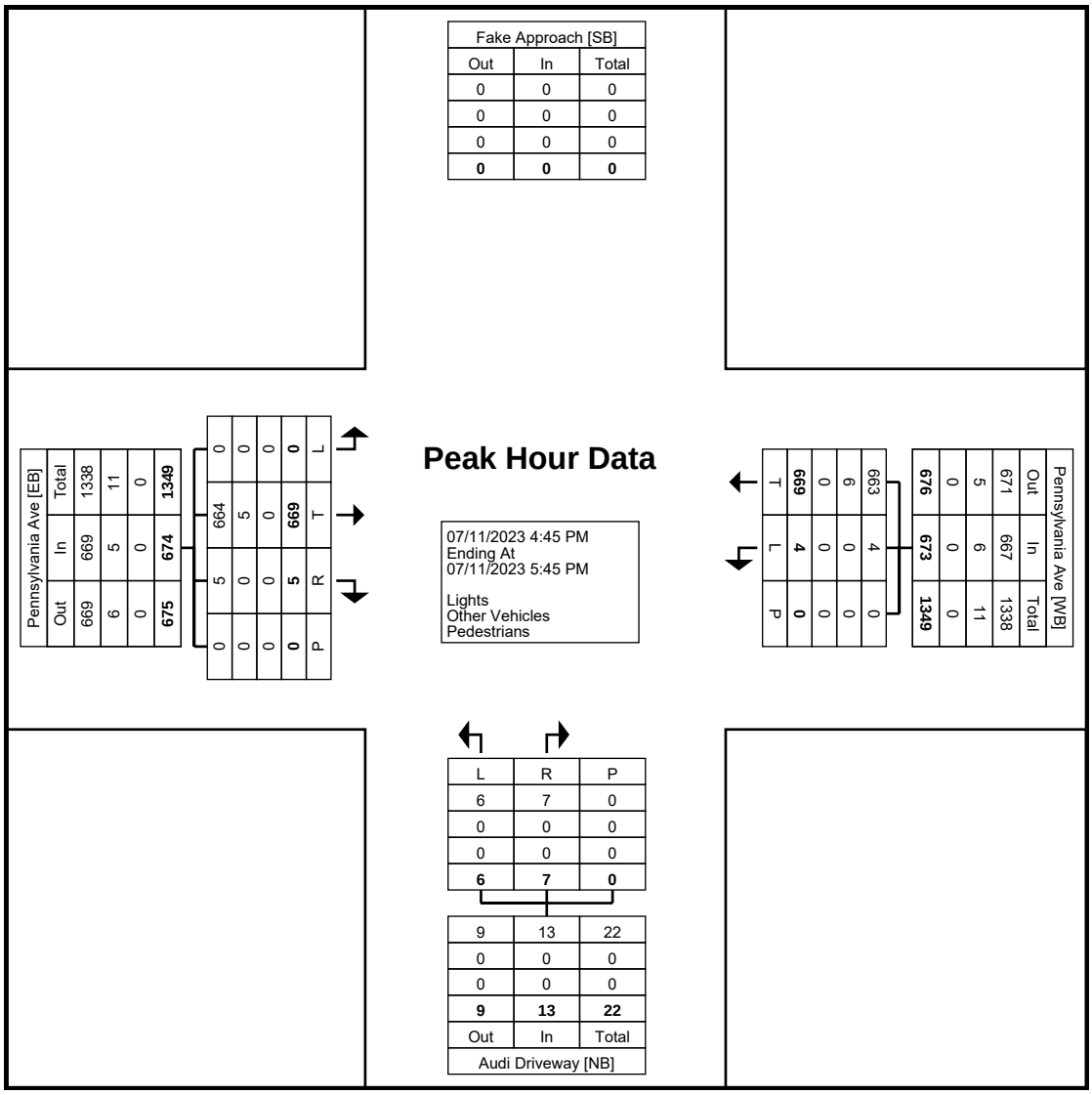
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Pennsylvania Ave Eastbound					Pennsylvania Ave Westbound				Audi Driveway Northbound				
	Left	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
4:45 PM	0	168	1	0	169	1	153	0	154	1	2	0	3	326
5:00 PM	0	152	0	0	152	0	185	0	185	3	1	0	4	341
5:15 PM	0	165	2	0	167	0	178	0	178	0	2	0	2	347
5:30 PM	0	184	2	0	186	3	153	0	156	2	2	0	4	346
Total	0	669	5	0	674	4	669	0	673	6	7	0	13	1360
Approach %	0.0	99.3	0.7	-	-	0.6	99.4	-	-	46.2	53.8	-	-	-
Total %	0.0	49.2	0.4	-	49.6	0.3	49.2	-	49.5	0.4	0.5	-	1.0	-
PHF	0.000	0.909	0.625	-	0.906	0.333	0.904	-	0.909	0.500	0.875	-	0.813	0.980
Lights	0	664	5	-	669	4	663	-	667	6	7	-	13	1349
% Lights	-	99.3	100.0	-	99.3	100.0	99.1	-	99.1	100.0	100.0	-	100.0	99.2
Other Vehicles	0	5	0	-	5	0	6	-	6	0	0	-	0	11
% Other Vehicles	-	0.7	0.0	-	0.7	0.0	0.9	-	0.9	0.0	0.0	-	0.0	0.8
Pedestrians	-	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Traffic Planning and Design, Inc
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Counter: MIO:
Set up By JB:

Count Name: 4 Audi Driveway & Pennsylvania Ave
Site Code:
Start Date: 07/11/2023
Page No: 4



Turning Movement Peak Hour Data Plot (4:45 PM)

Counter: MIO:
Set up By JB:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 3 Audi-Hotel-Starbucks Drive Aislet & Audi Driveway
Site Code:
Start Date: 07/11/2023

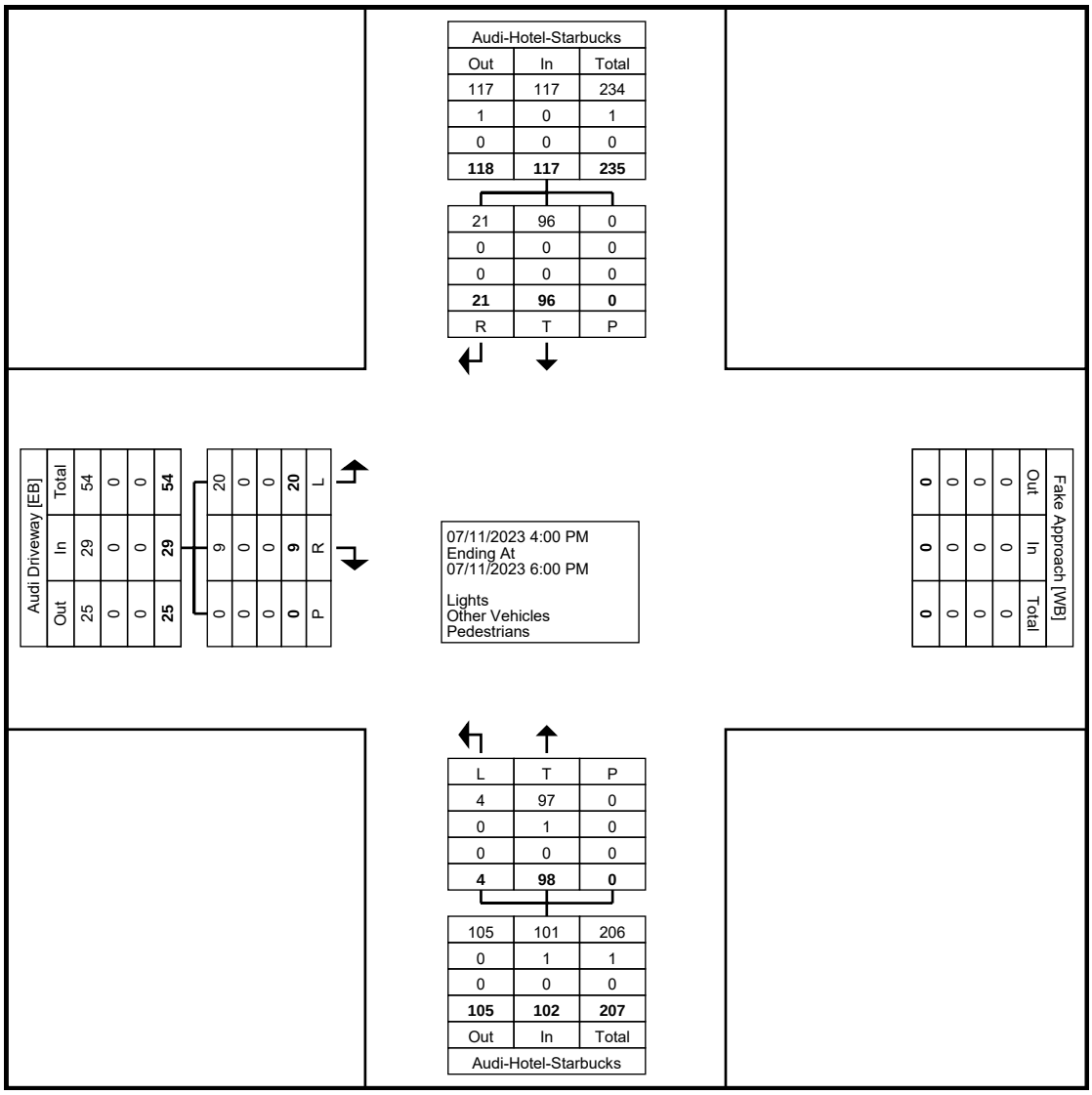
Turning Movement Data

Start Time	Audi Driveway Eastbound				Audi-Hotel-Starbucks Drive Aislet Northbound				Audi-Hotel-Starbucks Drive Aislet Southbound				
	Left	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
4:00 PM	1	0	0	1	2	17	0	19	16	0	0	16	36
4:15 PM	0	1	0	1	0	12	0	12	16	1	0	17	30
4:30 PM	3	1	0	4	0	14	0	14	10	2	0	12	30
4:45 PM	3	0	0	3	1	16	0	17	12	3	0	15	35
Hourly Total	7	2	0	9	3	59	0	62	54	6	0	60	131
5:00 PM	1	1	0	2	0	15	0	15	11	2	0	13	30
5:15 PM	3	0	0	3	0	8	0	8	10	4	0	14	25
5:30 PM	5	5	0	10	0	8	0	8	11	6	0	17	35
5:45 PM	4	1	0	5	1	8	0	9	10	3	0	13	27
Hourly Total	13	7	0	20	1	39	0	40	42	15	0	57	117
Grand Total	20	9	0	29	4	98	0	102	96	21	0	117	248
Approach %	69.0	31.0	-	-	3.9	96.1	-	-	82.1	17.9	-	-	-
Total %	8.1	3.6	-	11.7	1.6	39.5	-	41.1	38.7	8.5	-	47.2	-
Lights	20	9	-	29	4	97	-	101	96	21	-	117	247
% Lights	100.0	100.0	-	100.0	100.0	99.0	-	99.0	100.0	100.0	-	100.0	99.6
Other Vehicles	0	0	-	0	0	1	-	1	0	0	-	0	1
% Other Vehicles	0.0	0.0	-	0.0	0.0	1.0	-	1.0	0.0	0.0	-	0.0	0.4
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

Counter: MIO:
Set up By JB:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 3 Audi-Hotel-Starbucks Drive Aislet & Audi Driveway
Site Code:
Start Date: 07/11/2023



Turning Movement Data Plot

Counter: MIO:
Set up By JB:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 3 Audi-Hotel-Starbucks Drive Aislet & Audi Driveway
Site Code:
Start Date: 07/11/2023

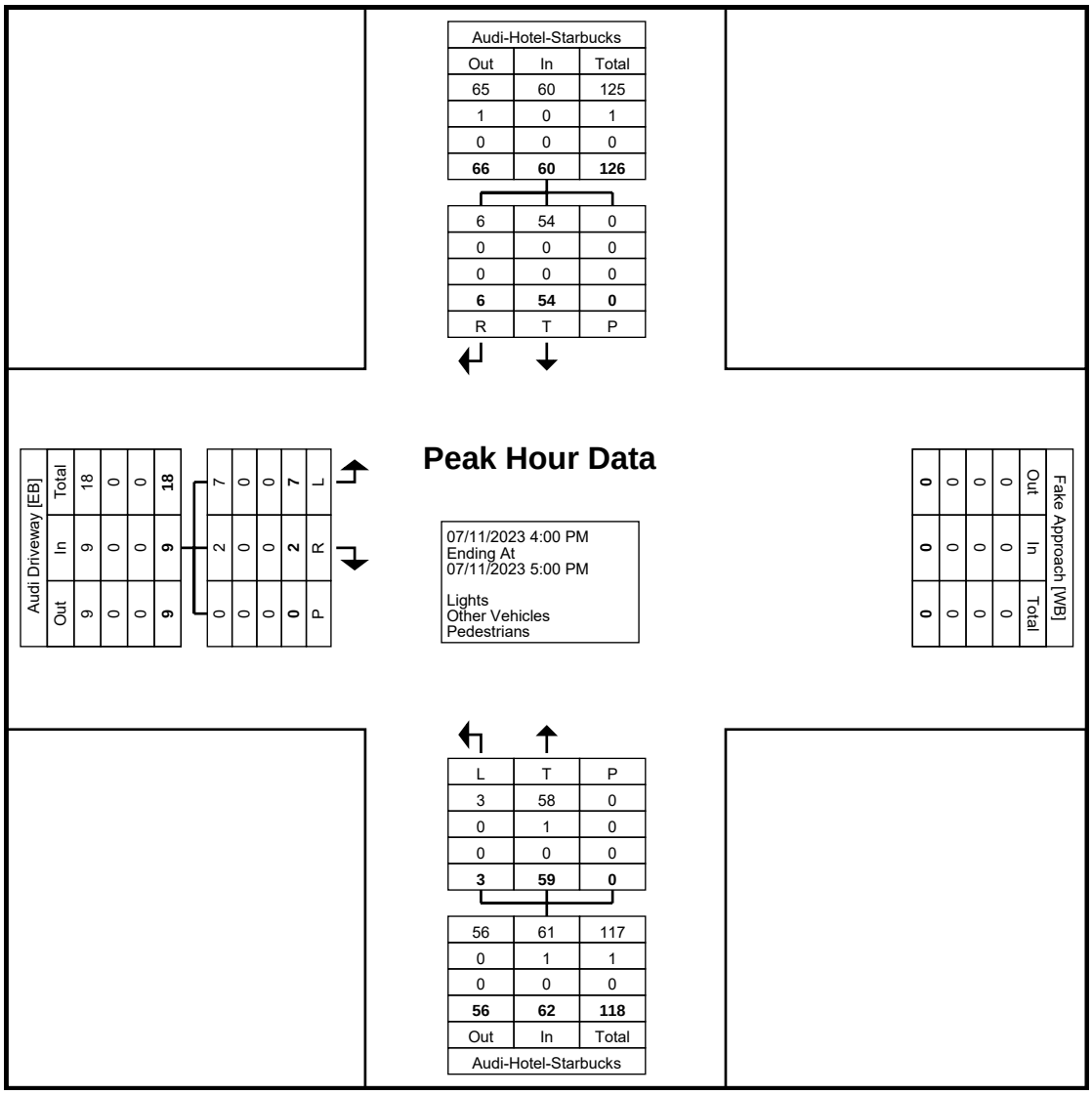
Turning Movement Peak Hour Data (4:00 PM)

Start Time	Audi Driveway Eastbound				Audi-Hotel-Starbucks Drive Aislet Northbound				Audi-Hotel-Starbucks Drive Aislet Southbound				
	Left	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
4:00 PM	1	0	0	1	2	17	0	19	16	0	0	16	36
4:15 PM	0	1	0	1	0	12	0	12	16	1	0	17	30
4:30 PM	3	1	0	4	0	14	0	14	10	2	0	12	30
4:45 PM	3	0	0	3	1	16	0	17	12	3	0	15	35
Total	7	2	0	9	3	59	0	62	54	6	0	60	131
Approach %	77.8	22.2	-	-	4.8	95.2	-	-	90.0	10.0	-	-	-
Total %	5.3	1.5	-	6.9	2.3	45.0	-	47.3	41.2	4.6	-	45.8	-
PHF	0.583	0.500	-	0.563	0.375	0.868	-	0.816	0.844	0.500	-	0.882	0.910
Lights	7	2	-	9	3	58	-	61	54	6	-	60	130
% Lights	100.0	100.0	-	100.0	100.0	98.3	-	98.4	100.0	100.0	-	100.0	99.2
Other Vehicles	0	0	-	0	0	1	-	1	0	0	-	0	1
% Other Vehicles	0.0	0.0	-	0.0	0.0	1.7	-	1.6	0.0	0.0	-	0.0	0.8
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

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Counter: MIO:
Set up By JB:

Count Name: 3 Audi-Hotel-Starbucks Drive Aislet & Audi Driveway
Site Code:
Start Date: 07/11/2023



Turning Movement Peak Hour Data Plot (4:00 PM)

Counter: MIO:
Set up By JB:

Traffic Planning and Design, Inc
2500 East High Street
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610.326.3100

Count Name: 1 Mercedes Driveway-Fort Washington Ave & Pennsylvania Ave (Re-Processed 4PM - 6PM)
Site Code:
Start Date: 07/11/2023

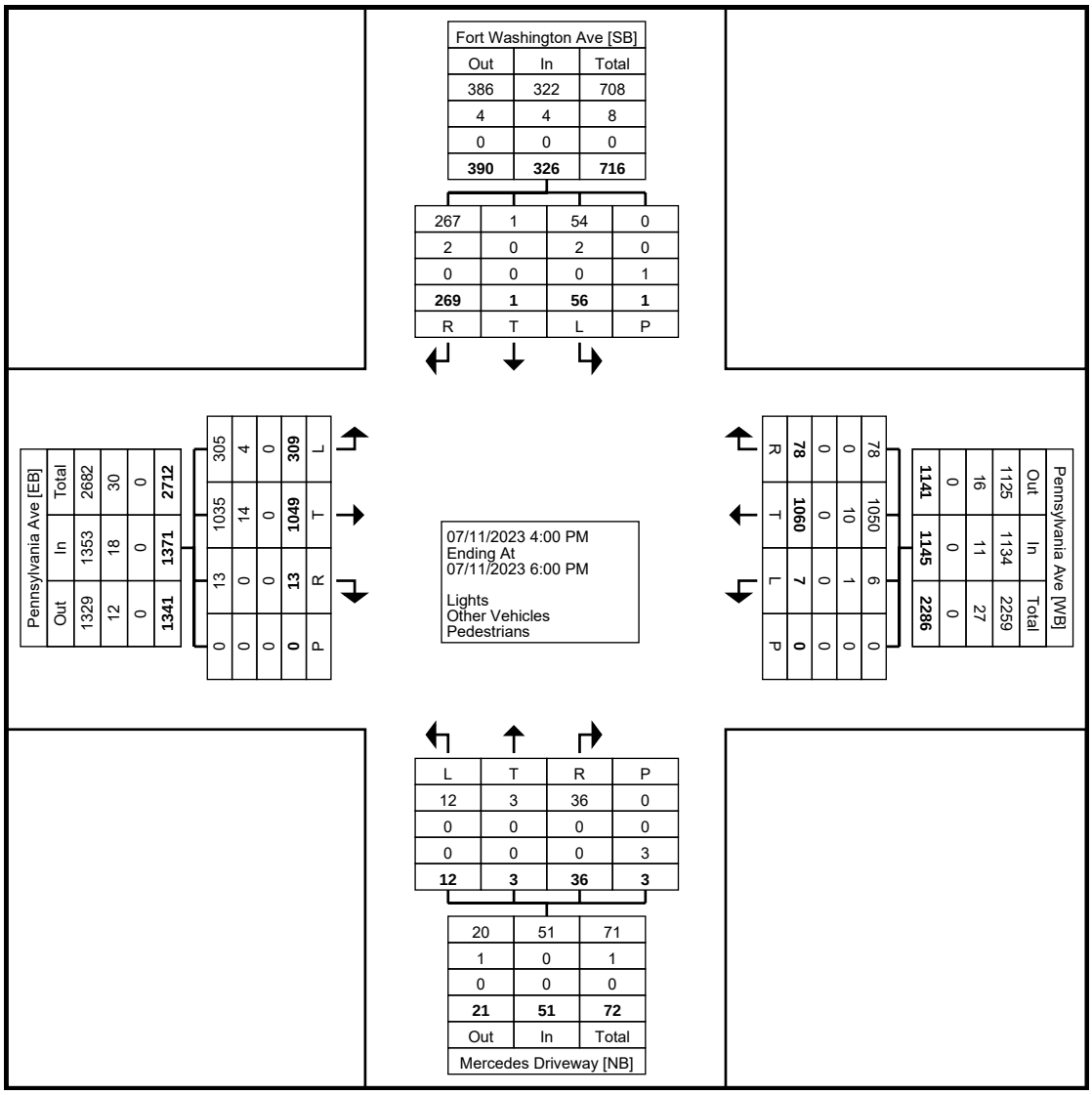
Turning Movement Data

Start Time	Pennsylvania Ave Eastbound						Pennsylvania Ave Westbound						Mercedes Driveway Northbound						Fort Washington Ave Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
4:00 PM	28	160	1	2	0	191	2	130	6	0	0	138	2	0	3	0	0	5	7	0	24	2	0	33	367
4:15 PM	27	156	1	0	0	184	0	118	6	4	0	128	1	0	2	1	0	4	11	0	23	1	0	35	351
4:30 PM	52	115	2	0	0	169	2	130	6	5	0	143	2	1	2	2	1	7	5	0	18	0	0	23	342
4:45 PM	40	103	0	0	0	143	0	134	8	5	0	147	2	0	3	3	1	8	7	1	39	0	1	47	345
Hourly Total	147	534	4	2	0	687	4	512	26	14	0	556	7	1	10	6	2	24	30	1	104	3	1	138	1405
5:00 PM	55	130	2	0	0	187	0	135	5	5	0	145	2	2	2	4	0	10	5	0	37	1	0	43	385
5:15 PM	50	140	1	0	0	191	0	148	5	2	0	155	1	0	1	2	0	4	11	0	51	3	0	65	415
5:30 PM	32	121	3	0	0	156	1	134	8	2	0	145	1	0	4	1	0	6	6	0	31	1	0	38	345
5:45 PM	25	124	1	0	0	150	2	131	9	2	0	144	1	0	0	6	1	7	4	0	38	0	0	42	343
Hourly Total	162	515	7	0	0	684	3	548	27	11	0	589	5	2	7	13	1	27	26	0	157	5	0	188	1488
Grand Total	309	1049	11	2	0	1371	7	1060	53	25	0	1145	12	3	17	19	3	51	56	1	261	8	1	326	2893
Approach %	22.5	76.5	0.8	0.1	-	-	0.6	92.6	4.6	2.2	-	-	23.5	5.9	33.3	37.3	-	-	17.2	0.3	80.1	2.5	-	-	-
Total %	10.7	36.3	0.4	0.1	-	47.4	0.2	36.6	1.8	0.9	-	39.6	0.4	0.1	0.6	0.7	-	1.8	1.9	0.0	9.0	0.3	-	11.3	-
Lights	305	1035	11	2	-	1353	6	1050	53	25	-	1134	12	3	17	19	-	51	54	1	259	8	-	322	2860
% Lights	98.7	98.7	100.0	100.0	-	98.7	85.7	99.1	100.0	100.0	-	99.0	100.0	100.0	100.0	100.0	-	100.0	96.4	100.0	99.2	100.0	-	98.8	98.9
Other Vehicles	4	14	0	0	-	18	1	10	0	0	-	11	0	0	0	0	-	0	2	0	2	0	-	4	33
% Other Vehicles	1.3	1.3	0.0	0.0	-	1.3	14.3	0.9	0.0	0.0	-	1.0	0.0	0.0	0.0	0.0	-	0.0	3.6	0.0	0.8	0.0	-	1.2	1.1
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JB:

Count Name: 1 Mercedes Driveway-Fort Washington Ave & Pennsylvania Ave (Re-Processed 4PM - 6PM)
Site Code:
Start Date: 07/11/2023



Turning Movement Data Plot

Counter: MIO:
Set up By JB:

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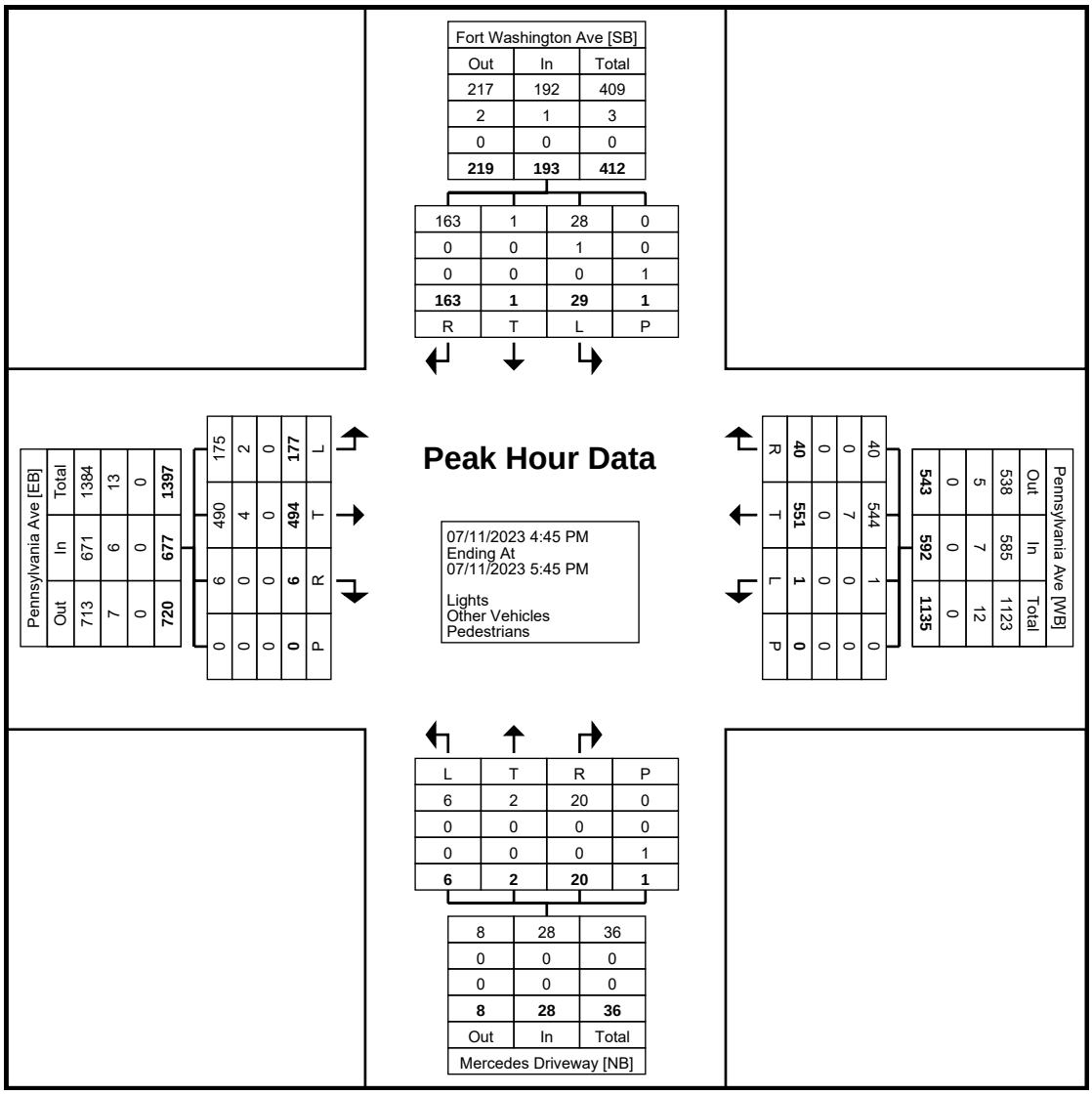
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Pennsylvania Ave Eastbound						Pennsylvania Ave Westbound						Mercedes Driveway Northbound						Fort Washington Ave Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
4:45 PM	40	103	0	0	0	143	0	134	8	5	0	147	2	0	3	3	1	8	7	1	39	0	1	47	345
5:00 PM	55	130	2	0	0	187	0	135	5	5	0	145	2	2	2	4	0	10	5	0	37	1	0	43	385
5:15 PM	50	140	1	0	0	191	0	148	5	2	0	155	1	0	1	2	0	4	11	0	51	3	0	65	415
5:30 PM	32	121	3	0	0	156	1	134	8	2	0	145	1	0	4	1	0	6	6	0	31	1	0	38	345
Total	177	494	6	0	0	677	1	551	26	14	0	592	6	2	10	10	1	28	29	1	158	5	1	193	1490
Approach %	26.1	73.0	0.9	0.0	-	-	0.2	93.1	4.4	2.4	-	-	21.4	7.1	35.7	35.7	-	-	15.0	0.5	81.9	2.6	-	-	-
Total %	11.9	33.2	0.4	0.0	-	45.4	0.1	37.0	1.7	0.9	-	39.7	0.4	0.1	0.7	0.7	-	1.9	1.9	0.1	10.6	0.3	-	13.0	-
PHF	0.805	0.882	0.500	0.000	-	0.886	0.250	0.931	0.813	0.700	-	0.955	0.750	0.250	0.625	0.625	-	0.700	0.659	0.250	0.775	0.417	-	0.742	0.898
Lights	175	490	6	0	-	671	1	544	26	14	-	585	6	2	10	10	-	28	28	1	158	5	-	192	1476
% Lights	98.9	99.2	100.0	-	-	99.1	100.0	98.7	100.0	100.0	-	98.8	100.0	100.0	100.0	100.0	-	100.0	96.6	100.0	100.0	100.0	-	99.5	99.1
Other Vehicles	2	4	0	0	-	6	0	7	0	0	-	7	0	0	0	0	-	0	1	0	0	0	-	1	14
% Other Vehicles	1.1	0.8	0.0	-	-	0.9	0.0	1.3	0.0	0.0	-	1.2	0.0	0.0	0.0	0.0	-	0.0	3.4	0.0	0.0	0.0	-	0.5	0.9
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
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Site Code:
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Turning Movement Peak Hour Data Plot (4:45 PM)

Counter: MIO:
Set up By JB:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: 2 Summit Avenue & Mercedes Driveway
Site Code:
Start Date: 07/11/2023

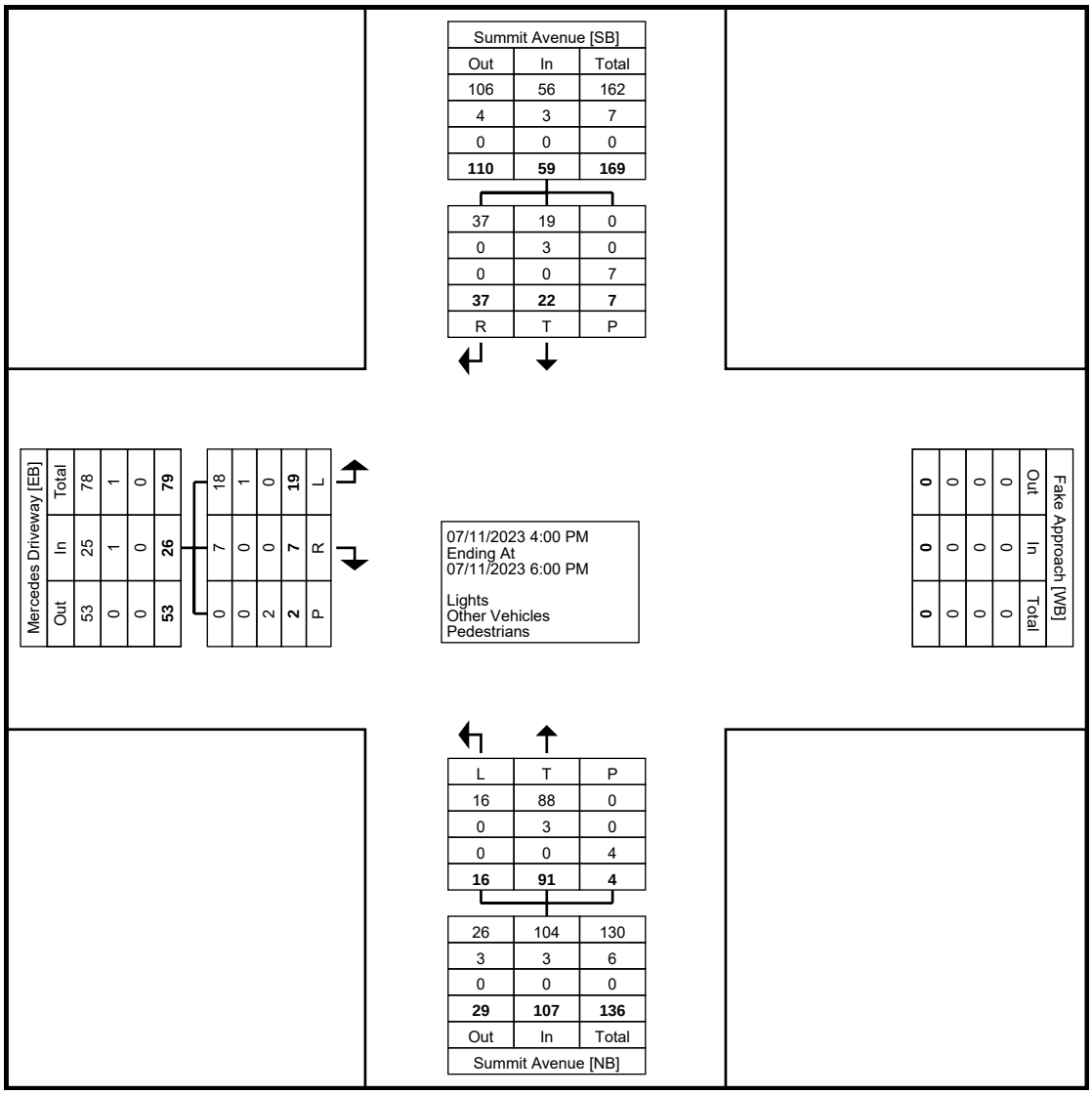
Turning Movement Data

Start Time	Mercedes Driveway Eastbound				Summit Avenue Northbound				Summit Avenue Southbound				
	Left	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
4:00 PM	2	0	0	2	0	2	0	2	1	3	0	4	8
4:15 PM	3	1	0	4	1	1	0	2	1	5	1	6	12
4:30 PM	4	2	0	6	2	9	0	11	1	4	0	5	22
4:45 PM	3	1	1	4	5	40	0	45	6	6	2	12	61
Hourly Total	12	4	1	16	8	52	0	60	9	18	3	27	103
5:00 PM	4	1	1	5	5	0	1	5	1	4	2	5	15
5:15 PM	2	1	0	3	2	1	3	3	5	5	2	10	16
5:30 PM	1	1	0	2	1	30	0	31	4	4	0	8	41
5:45 PM	0	0	0	0	0	8	0	8	3	6	0	9	17
Hourly Total	7	3	1	10	8	39	4	47	13	19	4	32	89
Grand Total	19	7	2	26	16	91	4	107	22	37	7	59	192
Approach %	73.1	26.9	-	-	15.0	85.0	-	-	37.3	62.7	-	-	-
Total %	9.9	3.6	-	13.5	8.3	47.4	-	55.7	11.5	19.3	-	30.7	-
Lights	18	7	-	25	16	88	-	104	19	37	-	56	185
% Lights	94.7	100.0	-	96.2	100.0	96.7	-	97.2	86.4	100.0	-	94.9	96.4
Other Vehicles	1	0	-	1	0	3	-	3	3	0	-	3	7
% Other Vehicles	5.3	0.0	-	3.8	0.0	3.3	-	2.8	13.6	0.0	-	5.1	3.6
Pedestrians	-	-	2	-	-	-	4	-	-	-	7	-	-
% Pedestrians	-	-	100.0	-	-	-	100.0	-	-	-	100.0	-	-

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Counter: MIO:
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Count Name: 2 Summit Avenue & Mercedes Driveway
Site Code:
Start Date: 07/11/2023
Page No: 2



Turning Movement Data Plot

Counter: MIO:
Set up By JB:

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Count Name: 2 Summit Avenue & Mercedes Driveway
Site Code:
Start Date: 07/11/2023

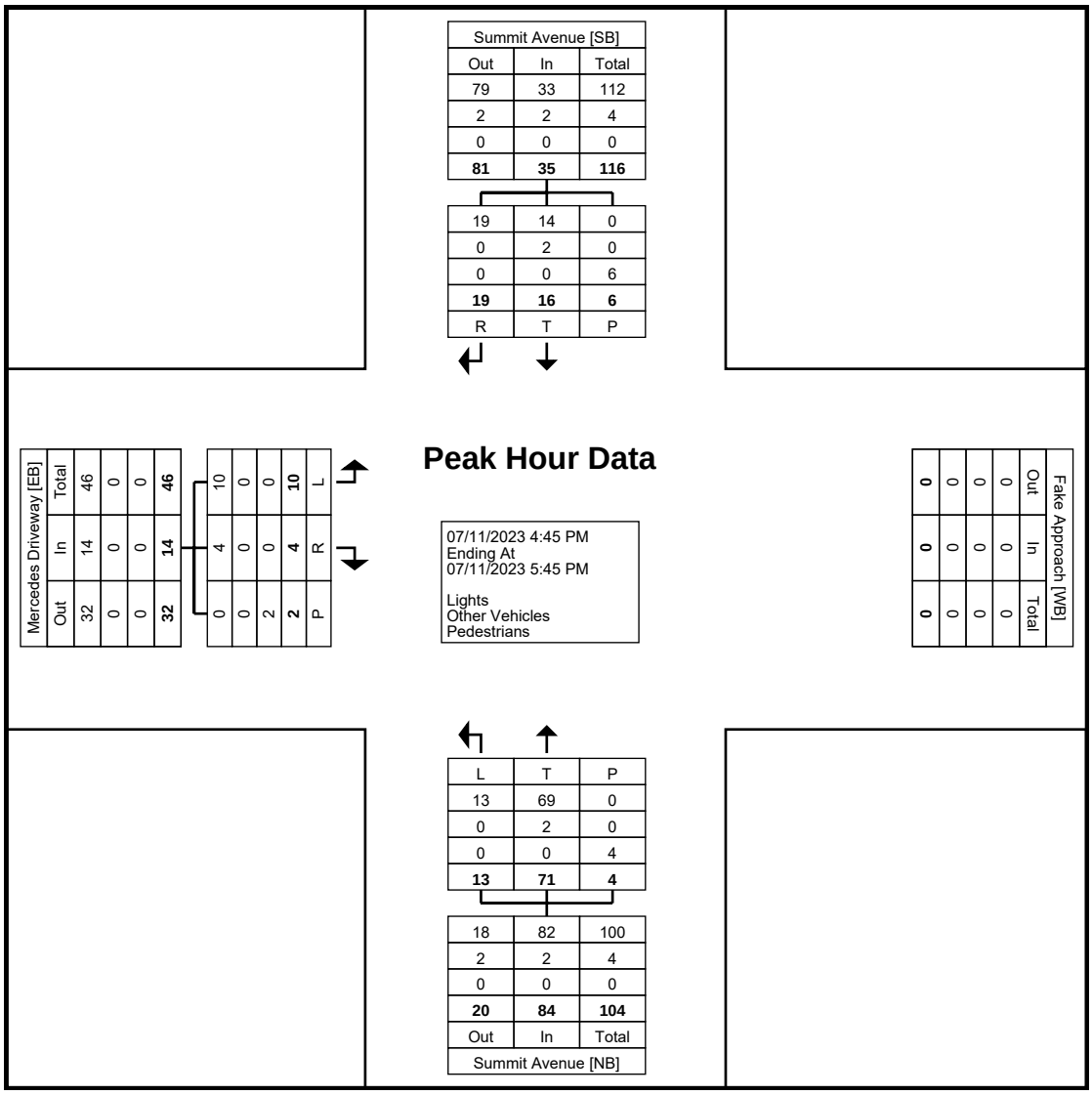
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Mercedes Driveway Eastbound				Summit Avenue Northbound				Summit Avenue Southbound				
	Left	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
4:45 PM	3	1	1	4	5	40	0	45	6	6	2	12	61
5:00 PM	4	1	1	5	5	0	1	5	1	4	2	5	15
5:15 PM	2	1	0	3	2	1	3	3	5	5	2	10	16
5:30 PM	1	1	0	2	1	30	0	31	4	4	0	8	41
Total	10	4	2	14	13	71	4	84	16	19	6	35	133
Approach %	71.4	28.6	-	-	15.5	84.5	-	-	45.7	54.3	-	-	-
Total %	7.5	3.0	-	10.5	9.8	53.4	-	63.2	12.0	14.3	-	26.3	-
PHF	0.625	1.000	-	0.700	0.650	0.444	-	0.467	0.667	0.792	-	0.729	0.545
Lights	10	4	-	14	13	69	-	82	14	19	-	33	129
% Lights	100.0	100.0	-	100.0	100.0	97.2	-	97.6	87.5	100.0	-	94.3	97.0
Other Vehicles	0	0	-	0	0	2	-	2	2	0	-	2	4
% Other Vehicles	0.0	0.0	-	0.0	0.0	2.8	-	2.4	12.5	0.0	-	5.7	3.0
Pedestrians	-	-	2	-	-	-	4	-	-	-	6	-	-
% Pedestrians	-	-	100.0	-	-	-	100.0	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
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610.326.3100

Counter: MIO:
Set up By JB:

Count Name: 2 Summit Avenue & Mercedes Driveway
Site Code:
Start Date: 07/11/2023



Turning Movement Peak Hour Data Plot (4:45 PM)

ATTACHMENT B

Peak Hours of Operation

MILE.00001
TRIP GENERATION COUNTS - BMW of Fort Washington
Whitemarsh/Montgomery
Thursday, October 27, 2022

		Main Driveway		Western Driveway		West Central Driveway		East Central Driveway		Eastern Driveway		TOTAL				
		ENTER	EXIT	ENTER	EXIT	ENTER	EXIT	ENTER	EXIT	ENTER	EXIT	ENTER	EXIT	TOTAL	PEAK	
16	**00**	7	7	1	0	1	3	0	0	0	0	**9**	**10**	**19**	**63**	
16	**15**	3	7	1	0	0	1	0	0	0	0	**4**	**8**	**12**	**56**	
16	**30**	5	9	0	0	1	1	0	0	0	0	**6**	**10**	**16**	**61**	
16	**45**	10	5	0	0	0	1	0	0	0	0	**10**	**6**	**16**	**58**	
17	**00**	4	6	1	1	0	0	0	0	0	0	**5**	**7**	**12**	**65**	**<<<PM PEAK HOUR**
17	**15**	5	4	1	2	0	5	0	0	0	0	**6**	**11**	**17**		
17	**30**	6	6	0	0	0	1	0	0	0	0	**6**	**7**	**13**		
17	**45**	8	14	0	1	0	0	0	0	0	0	**8**	**15**	**23**		
		23	**30**	**2**	**4**	**0**	**6**	**0**	**0**	**0**	**0**	**25**	**40**	**65**	**= PM PEAK HOUR**	

MILE.00001
TRIP GENERATION COUNTS - Mercedes-Benz of Fort Washington
Whitemarsh/Montgomery
Tuesday, July 11, 2023

		PA Ave Driveway		Summit Ave Driveway		TOTAL				
		ENTER	EXIT	ENTER	EXIT	ENTER	EXIT	TOTAL	PEAK	
16	00	5	5	3	2	8	7	15	77	
16	15	1	4	6	4	7	8	15	88	<<<PM PEAK HOUR
16	30	4	7	6	6	10	13	23	88	<<<PM PEAK HOUR
16	45	1	8	11	4	12	12	24	82	
17	00	2	10	9	5	11	15	26	74	
17	15	1	4	7	3	8	7	15		
17	30	4	6	5	2	9	8	17		
17	45	3	7	6	0	9	7	16		
		8	29	32	19	40	48	88	= PM PEAK HOUR	

MILE.00001
TRIP GENERATION COUNTS - Audi of Fort Washington
Whitemarsh/Montgomery
Tuesday, July 11, 2023

		PA Ave Driveway		2nd Driveway		Additional Service Trips		TOTAL			
		ENTER	EXIT	ENTER	EXIT	ENTER	EXIT	ENTER	EXIT	TOTAL	PEAK
16	00	2	2	2	1	3	5	7	8	15	73
16	15	2	1	1	1	5	5	8	7	15	74
16	30	4	1	2	4	1	7	7	12	19	76
16	45	2	3	4	3	6	6	12	12	24	87
17	00	0	4	2	2	2	6	4	12	16	85
17	15	2	2	4	3	3	3	9	8	17	
17	30	5	4	6	10	2	3	13	17	30	
17	45	3	4	4	5	1	5	8	14	22	
		9	13	16	18	13	18	38	49	87	= PM PEAK HOUR

ATTACHMENT C

Local Trip Generation/Impact Fee

BMW Fort Washington

July 2023

BMW Fort Washington - Exisiting - October 27, 2022

Information provided by Dennis Turnbaugh, Division President

	Service bays	15	
	Approximate SF	36,291	
	Peak PM Traffic Count	**65**	**5-6pm**
	Traffic count per service bay	4.333	
	Traffic count per 1,000 SF	1.791	

Audi Fort Washington - traffic study 7/11/2023

Information provided by equipment plan

	Service bays	29	
	Approximate SF (excludes structured parking)	71,533	
	Peak PM Traffic Count	**87**	**4:45-5:45pm**
	Traffic count per service bay	3.000	
	Traffic count per 1,000 SF	1.216	

Mercedes-Benz Fort Washington - traffic study 7/11/2023

Information provided by Chris MaGarity, Chief Operating Officer.

PA Ave is intake point for service work performed at all three workshop locations.

PA Ave	Service bays	24	
	Approximate SF	50,000	
	Peak PM Traffic Count	**88**	**4:15-5:15pm**
Commerce Dr.	Service bays	23	
	Approximate SF	44,000	
Dresher	Service bays	17	
	Approximate SF	20,000	
Total	Service bays	64	
	Approximate SF	114,000	
	Traffic count per service bay	1.375	
	Traffic count per 1,000 SF	0.772	

Existing Combined Data for BMW, Audi and Mercedes-Benz

Service bays	108	
Approximate SF	221,824	
Peak PM Traffic Count	240	
Traffic count per service bay	2.222	
Traffic count per 1,000 SF	1.082	

BMW Fort Washington - proposed development

Information provided by Dennis Turnbaugh, Division President

Service bays	38	
Approximate SF (excludes structured parking)	95,576	

Projected BMW Fort Wahington Traffic Counts - based on weighted aveage of exisiting data for BMW, Audi and Mercedes-Benz applied to BMW proposed project

	Projected Peak PM Traffic Count based on:		
	Service bays	84	
	Approximate SF	103	
	Projected Incremental Trips (over baseline of 65) based on:		**Impact Fee @ $2,825**
	Service bays	**19**	**$ 53,675**
	Approximate SF	**38**	**$ 107,350**

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

MEMORANDUM

Date:	July 28, 2023
To:	Krista Heinrich, P.E.
From:	Damon Drummond, P.E., PTOE
cc:	Leslie Bogdnoff, P.E. Kristin Norwood, P.E.
Reference:	BMW Automotive Dealership Expansion Preliminary Land Development Plans Whitemarsh Township, Montgomery County, PA Transportation Impact Fee Review 1 G&A #23-03063

Pursuant to your request, Gilmore & Associates, Inc. has reviewed the Impact Fee for BMW Automotive Dealership Expansion. We offer the following comments for your consideration:

A. PROJECT DESCRIPTION

The Applicant, Mileone Fort Washington, LLC, is proposing a redevelopment of the existing BMW Dealership and subsequent parking lot reconfiguration located south of the intersection of Pennsylvania Avenue (SR 2037) and Commerce Drive.

B. DOCUMENTS REVIEWED

1. Impact Fee Letter prepared by Traffic Planning and Design, Inc., dated July 20, 2023.

C. TRAFFIC IMPACT FEE COMMENTS:

1. §105-21.1 – A transportation impact fee is required for proposed land developments and is based on a per trip cost of $2,825 multiplied by the estimated number of PM peak hour trips for the development.
2. The applicant has conducted a trip generation study of three local similar sites in Fort Washington to determine the local trip generation rates for car dealerships. Based on the data collected, the trip rates calculated at each site are less than ITE Trip Generation Rate of 2.42 per 1,000 square feet. We concur with the general methodology of those calculations.
3. Based on the data provided, we recommend the final rate be based on the average of the calculated rates of the three sites: (1.791+1.216+0.772)/3) = 1.260 trips per 1000sf. This provides a more conservative approach than just using the weighted average but still takes local data into account for the trip generation calculation. Thus, the proposed 95,576 sf development should generate 121 total trips. (95.576*1.260 = 121 trips). As noted in the letter, there are 65 existing trips resulting in a net increase of 56 trips. Therefore, the anticipated transportation impact fee is 56 trips x $2,825 = $158,200.

MONTGOMERY COUNTY
BOARD OF COMMISSIONERS

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MONTGOMERY COUNTY
PLANNING COMMISSION

MONTGOMERY COUNTY COURTHOUSE • PO BOX 311
NORRISTOWN, PA 19404-0311
610-278-3722 • FAX: 610-278-3941
WWW.MONTGOMERYCOUNTYPA.GOV
SCOTT FRANCE, AICP
EXECUTIVE DIRECTOR

August 3, 2023

Mr. Charles L. Guttenplan, AICP
Director of Planning & Zoning Officer
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, Pennsylvania 19444

Re: MCPC #23-0041-001
Plan Name: BMW Automotive Dealership Expansion
Consolidation of 4 tax parcels into one (1) lot
Comprising 4.886 ac. (net)/69,182 sq. ft. building
Situate: Commerce Drive (west) at Pennsylvania Avenue (south)
Whitemarsh Township

Dear Mr. Guttenplan:

We have reviewed the above-referenced subdivision proposal in accordance with Section 502 of Act 247, "The Pennsylvania Municipalities Planning Code," as you requested on March 16, 2023. We forward this letter as a report of our review.

BACKGROUND

The applicant, MileOne Fort Washington, LLC, has submitted a subdivision and land development plan that proposes the redevelopment of an existing automobile dealership at 500 Pennsylvania Avenue. The development proposal will replace the dealership's existing 22,065 sq. ft. building with a five-story, 69,182 sq. ft. building. According to applicant, the BMW facility will be utilized for sales, service, storage and parking on the site. The plan states that after discussion with PennDOT, the five existing access point to Pennsylvania Avenue will be reduced to two access points: one full movement access driveway opposite Commerce Drive and one right-in/right-out to the southeast of the signalized intersection at Pennsylvania Avenue and Commerce Drive . The development tract is located in the CR-L, Commercial-Retail Low District and in the Floodplain Conservation District. The entire site appears to be in the 100-year floodplain and immediately adjacent to the Sandy Run. The proposed structure appears to be elevated, and according to the applicant's documentation various flood-proofing measures will be incorporated into the development.

In their decision on June 7, 2023, the Zoning Hearing Board (ZHB) of Whitemarsh Township granted 16 Variances and 2 Special Exceptions from the Floodplain Management Ordinance and the Riparian Corridor Conservation District. The board found that "The project does not involve development which may endanger human life or

prohibited activities. One of the conditions of this decision is that ". . . All structures shall be designed and constructed so as to have the capability of resisting the one-percent – annual chance flood."

The submitted plan proposes the consolidation of four (4) existing lots and the elimination of the existing lot lines to create a new 5.133-acre lot. The lot at 500-514 Pennsylvania Avenue is immediately adjacent to the SEPTA Lansdale/Doylestown Regional Rail corridor. According to the applicant's submitted documentation, the entire site is located within the existing 100 and 500 year floodplain, as delineated on the effective FEMA Flood Insurance Rate Map pan covering the site area -- Panel number 42091C0289G, revised May 24, 2021. The building's expansion plan proposes a finished floor elevation of 171.0 ft on columns in order to provide flood storage for the site.

CONSISTENCY WITH THE COUNTY COMPREHENSIVE PLAN

Consistency with the *MONTCO 2040* – County Comprehensive Plan-

The county plan supports the redevelopment and reinvestment in areas where infrastructure exists with a special emphasis on opportunities near transit centers such as Ft. Washington commuter rail center. However, the redevelopment of the site is entirely within the 100- and 500 year floodplain. This is inconsistent with the '*Sustainable Places*' land use vision of the *Montco 2040: A Shared Vison*, the Montgomery County Comprehensive Plan. The vision and plan recommendation is for communities to adopt local floodplain regulations that prohibit fill and buildings within the floodplain, except for sites that are brownfield redevelopments. Specifically it recommends that *"Auto-related uses and other uses that could have a strong negative environmental impact should be prohibited in all floodplain areas*." (pg. 41)

Consistency with the Whitemarsh Township Plan Update, 2020

The proposed development plan for this site is consistent with the township's Future Land Use Plan, 2028. The Whitemarsh Township Selective Comprehensive Plan Update, November 2020 identifies this area in the Future Land Use Plan, 2028 as a 'Mixed-Use Node'. The plan recommends leveraging the multi-modal, mixed-use assets with restaurants, retail and other related services, and including public space amenities in future developments.

RECOMMENDATION

We support the redevelopment of this site as proposed, and in our review we have identified several issues related to the Cross-County Trail and ensuring that the site's redevelopment is integrated with the trail planning and the need for safe pedestrian movements across Pennsylvania Avenue. Several recommendations and improvements are discussed below that we believe would help mitigate some of the environmental and public safety impacts from the development and provide an improved and safer pedestrian environment along the development's frontage and to Ft. Washington Office Park destinations along Commerce Drive.

REVIEW COMMENTS

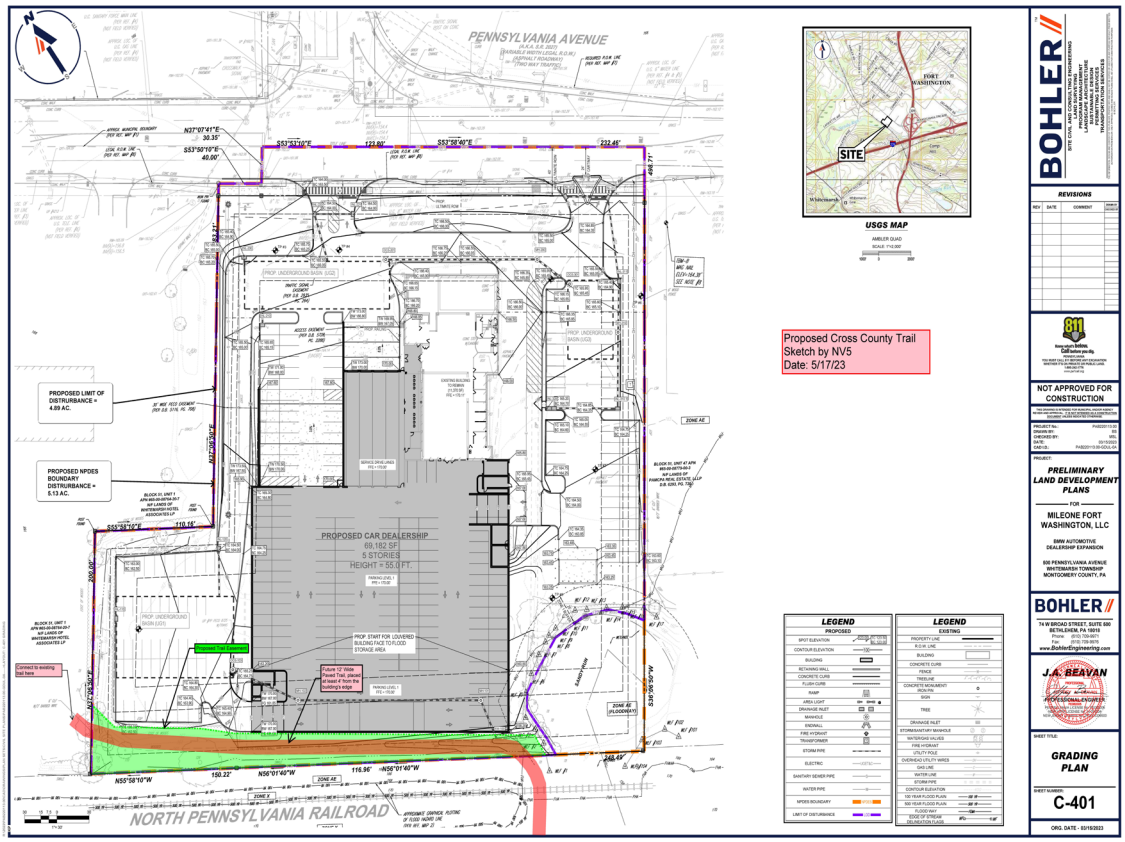
1. **Floodplain Management Ordinance**
   The applicant received numerous variances from the Floodplain Management Ordinance, and the decision by the Whitemarsh Zoning Hearing Board states that:

"The variances granted involve only the least modification necessary to provide relief. Reasonable conditions have been imposed below in order to protect the public health, safety and welfare and to achieve the objectives of the Floodplain Management Ordinance".

We have concerns about the potential negative impacts on the public's health, safety and welfare, as well as the potential environmental impacts of the redevelopment and expansion of an automobile use on this site. Given the history of extensive and damaging flooding in this area, the township should ensure that a flood emergency plan is developed that addresses how and where the dealership's vehicles will be stored during flooding events. The township should be advised by the applicant of how any automobile hazardous materials – such as motor oil, transmission and brake fluids, antifreeze and fuels – will be flood-proofed during these events. The applicant has received relief for the proposed location of the refuse containers. We recommend the township ensure that a protocol be included with the 'flood-emergency plan', specifying the details of the enclosure and how the containers will be secured and flood-proofed.

2. Cross-County Trail Easement

The Montgomery County Planning Commission (MCPC) is nearing completion of a feasibility study for completing the Cross County Trail in Whitemarsh Township to, in part, connect where the trail ends at Skippack Pike, to the existing segments in the Fort Washington area. A proposed segment of this trail will impact the Applicant's property when, coming from the South, the trail would pass under SEPTA's Sandy Run Bridge and run along the property's south boundary with the SEPTA railroad to eventually connect with the existing trail segment at 432 Pennsylvania Avenue. County Trails & Open Space Planning staff met with the Applicant and the Township on May 12, 2023 to discuss how the trail might be accommodated on the property. In furtherance of the mutual planning objectives discussed at the meeting, we recommend the Township work with the Applicant to place a trail easement, to the benefit of the County, to support the development of a 12-foot wide paved trail along the property's southwest boundary, with proposed easement boundaries substantially similar to those transmitted to the Township and Applicant on May 17, 2023. The proposed alignment along the rear of the applicant's property is shown below.



Proposed Easement alignment for the Cross-County Trail- rear of the BMW redevelopment site.

3. **Cross County Trail & Road Diet the intersection of Commerce Drive & Pennsylvania Avenue**
   The planning and design for Phase 3 of the Cross County Trail & Road Diet along Commerce Drive is underway and the frontage of the applicant's development site is adjacent to the Cross County Trail (CCT). It is a regionally significant Circuit Trail that will connect the Schuylkill Trail in Conshohocken with the Pennypack Preserve and Trail in Willow Grove area. Ensuring a safe crossing at the intersection of Pennsylvania Avenue and Commerce Drive is a critically important aspect for trail users. https://circuittrails.org/find-trails/cross-county-trail/ .

   We recommend the township ensure that along the applicant's frontage that the trail is a 10 ft.-wide trail, and not the 8 ft. width shown in the submitted plan. We recommend the applicant's planned improvements include the re-establishment of the pedestrian crosswalk and the construction of ADA curb ramps between the south side of Pennsylvania Avenue to the opposite side and the roadway. As shown in the attached photos, a thermal-stamped crosswalk existed across both Pennsylvania Avenue and Commerce Drive as recently as 2019. It has deteriorated and should be reinstituted to provide safe access for pedestrians and cyclists at this intersection (see below for a 2019 photo of this area).



Degraded crosswalk at Commerce Drive & Pennsylvania Avenue

CONCLUSION

We recommend the township address the above mentioned issues and comments to its satisfaction. Please note that the review comments and recommendation contained in this report are advisory to the municipality and final disposition for the approval of any proposal will be made by the municipality.

Please be aware that the MCPC number #23-0041-001 has been set aside for the applicant' plan. If any subsequent plans are submitted for final recording, this MCPC number should appear on the applicant sheets within the plans in the box reserved for the seal of this agency.

Should the governing body approve a final plat of this proposal, the applicant must present the plan to our office for seal and signature prior to recording with the Recorder of Deeds office. A paper copy bearing the municipal seal and signature of approval must be supplied for our files.

Sincerely,

Barry W. Jeffries

Barry W Jeffries, ASLA, Senior Design Planner
bjeffrie@montgomerycountypa.gov
(610) 278-3444

c: Aaron Kostyk, Chair, Township Planning Commission
Krista Heinrich, PE, Township Engineer
David Sander, Esq., Township Solicitor
Kurt Ferguson, Upper Dublin Twp. Mgr.
Fran Hanney, PennDOT District 6-0

Scott Burton, PennDOT

Attachment A: Aerial Image of Site
Attachment B: Reduced Copy of Applicant's Proposed Site Plan

ATTACHMENTS A & B



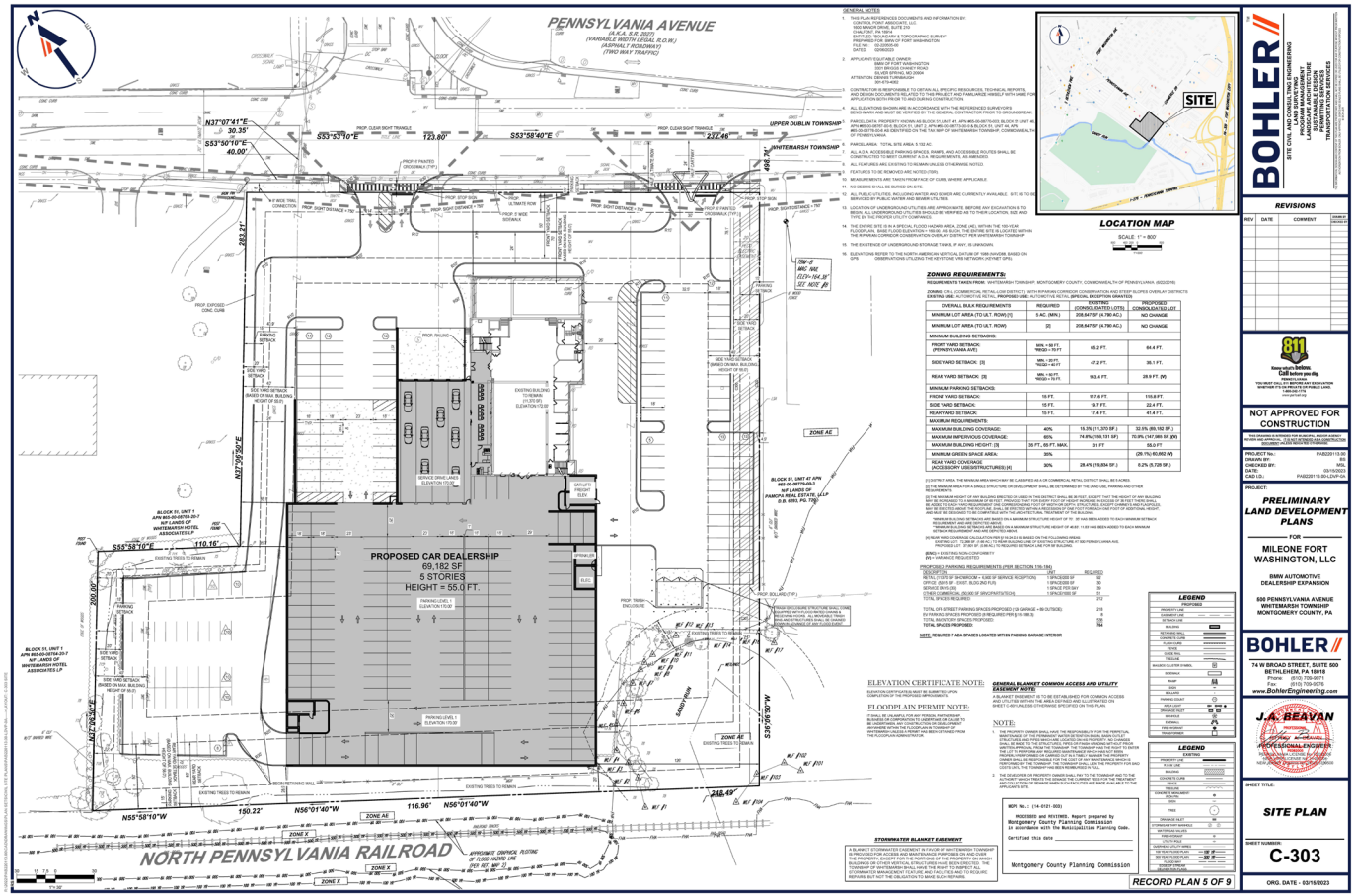
BMW Automotive Dealership Expansion
MCPC#230041001

Montgomery County Planning Commission

0 100 200 400 Feet

N

Mr. Charles L. Guttenplan, AICP - Attachment B - August 3, 2023



BOHLER

REVISIONS

REV	DATE	COMMENT	CHANGE OF BASIS OF BEARINGS

811 Know what's below. Call before you dig. 1-800-242-1776
YOU MUST CALL 811 BEFORE ANY EXCAVATION WHETHER IT'S ON PUBLIC OR PRIVATE LAND
www.pa811.org

NOT APPROVED FOR CONSTRUCTION

THIS DRAWING IS INTENDED FOR REVIEWING AGENCY AND/OR CONSTRUCTION BIDDING PURPOSES ONLY AND IS NOT TO BE USED FOR CONSTRUCTION, RECORDING OR FOR SALES PURPOSES.

PROJECT No.:	PA220113.06
DRAWN BY:	BG
CHECKED BY:	MSL
DATE:	03/15/2023
CAD I.D.:	PA220113.06-LDVP-01

PROJECT:

PRELIMINARY LAND DEVELOPMENT PLANS

FOR

MILEONE FORT WASHINGTON, LLC

BMW AUTOMOTIVE DEALERSHIP EXPANSION

500 PENNSYLVANIA AVENUE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA

BOHLER
74 W BROAD STREET, SUITE 500
BETHLEHEM, PA 18018
Phone (610) 758-2000
Fax (610) 758-6870
www.BohlerEngineering.com

J. A. BEAVAN
COMMONWEALTH OF PENNSYLVANIA
PROFESSIONAL ENGINEER
JOSEPH A. BEAVAN, PE
LICENSE NUMBER PE084037
REGISTERED PROFESSIONAL ENGINEER

SHEET TITLE:

SITE PLAN

SHEET NUMBER:

C-303

ORG. DATE - 03/15/2023

WHITEMARSH TOWNSHIP BOARD OF SUPERVISORS
RESOLUTION #2023-____

BE IT RESOLVED, and it is hereby resolved by the Board of Supervisors of Whitemarsh Township, as follows:

A. Mileone Fort Washington, LLC (the "***Applicant***"), has caused to be prepared and filed with the Township ***Plan S/LD #03-23,*** entitled ***"BMW Automotive Dealership Expansion"*** consisting of twenty-eight (28) sheets, prepared by Bohler Engineering PA, LLC, dated March 15, 2023, with no revisions (the "***Plan***").

B. The Plan proposes the combination of 3 lots, the removal of 2 existing structures, and the construction of a new service, storage, and parking structure for the existing BMW dealership (the "***Project***") on 4.886 acres of land located at 500 - 512 Pennsylvania Avenue, Ft. Washington, PA, being Montgomery County Tax Parcel Nos. 65-00-08776-00-6, 65-00-08773-00-9, 65-00-08770-00-3, 65-00-08767-00-6, and 65-00-08767-10-5 (the **"Property"**).

C. The Whitemarsh Township Planning Commission reviewed the Plan at its July 11, 2023 meeting and recommended approval of the Plan as a Preliminary Minor Subdivision and Preliminary Major Land Development Plan, and the requested waivers, subject to certain conditions.

NOW, THEREFORE, the Plan is hereby granted ***Conditional Preliminary Minor Subdivision and Preliminary Major Land Development Approval*** subject to the satisfaction of the following conditions by the Applicant:

1. Compliance with all comments as outlined in the Letter of Review dated June 8, 2023, prepared by Gilmore & Associates, Inc., attached hereto as ***Exhibit "A"*** and incorporated herein by reference;

2. Compliance with all comments as outlined in the Zoning Ordinance Compliance Review of S/LD #03-23 dated April 6, 2023, prepared by Charles L. Guttenplan, AICP, Whitemarsh Township Director of Planning and Zoning/Zoning Officer, attached hereto as ***Exhibit "B"*** and incorporated herein by reference;

3. Compliance with all conditions set forth in the Whitemarsh Township Zoning Hearing Board's Decision and Order dated Jun2 12, 2023 at Application No. 2023-11, a copy of which is attached hereto as ***Exhibit "C"*** and incorporated herein by reference;

4. Compliance with the comments of the Township Fire Marshal dated March 27, 2023, attached hereto as ***Exhibit "D"*** and incorporated herein by reference;

5. Compliance with the recommendations of the Whitemarsh Shade Tree Commission as set forth in a memorandum dated July 17, 2023, a copy of which is attached hereto as ***Exhibit "E"*** and incorporated herein by reference;

6. Unless waived by the Board of Supervisors, payment, in a form acceptable to the Township, of a traffic impact fee of **$158,200.00**, based upon the amount of $2,825.00 per anticipated peak hour trip multiplied by 56 peak hour trips (calculated as follows: $2,825.00 x 56 peak hour trips), assessed in accordance with an analysis prepared by Traffic Planning and Design, Inc. (dated July 20, 2023) and approved by the Township Engineer, which payment shall be made prior to the signing of final plans;

7. Unless waived by the Board of Supervisors, payment, in a form acceptable to the Township, of a Park and Recreation Fee in the amount of **$37,542.50** in accordance with Section 105-53(D) of the Township's Subdivision and Land Development Ordinance, which payment shall be made prior to the signing of final plans;

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8. In lieu of the payment prescribed by Paragraph 7 (Traffic Impact Fee) and paragraph 8 (Park and Recreation Fee) above, the Applicant will make a voluntary lump sum contribution in a form acceptable to the Township in the amount of $**195,742.50** to enable the Township to use the payment as it sees fit;

9. Further, the Board of Supervisors takes the following action as to the Applicant's request for waivers from the requirements of Chapter 105 of the Whitemarsh Township Code – "Subdivision and Land Development":

a. ***Section 105-21.B.(1)(n):*** from the requirement to show existing features within 500 feet of the site to allow an aerial plan showing features within 500 feet of the project to be included with the plan set;

□ Granted □ Denied

b. ***Section 105-21.B.(13):*** from the requirement that an existing resources and site analysis (ERSA) plan be submitted to allow the site survey to serve as same;

□ Granted □ Denied

c. ***Section 105-21.B.(15):*** from the requirement to provide a Preliminary Resource Impact and Conservation Plan to allow the Post-Construction Stormwater Management (PCSM) plans, details, and notes to serve as same;

□ Granted □ Denied

d. ***Section 105-30.A. and 105-48.E.:*** from the requirement that street trees be planted within a tree planting zone of lawn area or other material approved by the Shade Tree Commission, situated between the sidewalk and curb and measuring a minimum of five feet in width from the planting edge of the curb to the planting edge of the sidewalk, to allow street trees to be planted outside of the Tree Zone due to utility conflicts and an existing sanitary sewer easement along the site frontage. The required number of street trees shall be provided along the site frontage;

□ Granted □ Denied

e. ***Section 105-38.A.:*** from the requirement to provide 2-way aisles of a size not less than 24 feet for 90-defree parking, having a stall dimension of not less than 9' x 18' in order to preserve an existing parking area in the southwestern corner of the Property to be utilized for dealership operations and are not intended for customer parking;

□ Granted □ Denied

f. ***Section 105-38.B.:*** from the requirement that the maximum width of entrance and exit drives be 35 feet at the street line in order to provide alignment with opposite travel and auxiliary lanes and to satisfy PennDOT design criteria along a state route;

□ Granted □ Denied

g. ***Section 105-38.C.:*** from the requirement that curves/turns in entrance and exit drives and all internal parking lot aisles necessary for providing access for fire protection equipment shall have a minimum inside turning radius of 25 feet and a minimum outside turning radius of 50 feet, to permit curb radii of less than 25 feet, conditioned on the Applicant providing the Township with truck turning templates to the satisfaction of the Township Fire Marshal and the Township Engineer showing circulation throughout the Property;

□ Granted □ Denied

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h. ***Section 105-38.D.:*** from the requirement that parking areas be designed to permit each motor vehicle to proceed to and from the parking space provided for it without requiring the moving of any other motor vehicles, to allow double-stacked inventory and service/repair parking spaces without a direct access aisle, as these are intended to be utilized for dealership operations and not to meet required off-street parking requirements;

□ Granted □ Denied

i. ***Section 105-38.H.:*** from the requirement that except at entrance and exit drives, all parking areas shall be set back from the right-of-way line and all property lines at least 15 feet, to allow a 4.9-foot setback along the southeastern property line for up to 13 inventory storage and/or service storage spaces;

□ Granted □ Denied

j. ***Section 105-38.I.:*** from the requirement that no more than 15 parking spaces be permitted in a continuous row without being interrupted by a landscaping area of not less than the width of a parking space constructed in accordance with the plan, to permit parking rows of greater than 15 spaces without interruption for parking spaces located within the parking structure;

□ Granted □ Denied

k. ***Section 105-38.J.:*** from the requirement that no one area for off-street parking of motor vehicles shall exceed 30 cars in capacity and that separate areas on a parcel shall be physically separated from one another by ten-foot-wide planting strips, to permit the proposed parking deck building, to allow certain existing parking areas (including the southwestern corner of the Property) to remain in their existing paved state, and for limited double-stacked inventory/service storage spaces on the Property;

□ Granted □ Denied

l. ***Section 105-38.O.:*** from the requirement that parking areas be located at least 10 feet from any building or structure, to allow the 14 parking spaces located near the service drive lane to remain;

□ Granted □ Denied

m. ***Section 105-39.A.:*** from the requirement that all parking areas shall have at least one, three-inch-caliper tree for every two parking spaces provided, to allow fewer than the required number of parking lot trees due to insufficient planting area within the parking lots;

□ Granted □ Denied

n. ***Section 105-52.B.(2):*** from the requirement that a minimum 50-foot buffer yard be provided between land developments, to allow an alternative planting option for the buffers along Pennsylvania Avenue and the southeastern property line due to limited site area, conditioned on the Applicant providing the required quantity of buffer plantings to meet the screening requirements;

□ Granted □ Denied

o. ***Section 105-53.D.:*** a partial waiver from the requirement of dedication of land suitable for park and recreational use to the Township or payment of fees in lieu thereof to allow the Applicant to coordinate with the Board of Supervisors in consideration of the stream being preserved and anticipated easement to the County for use in extending the Cross-County Trail along the rear of the Property;

□ Granted □ Denied

p. ***Section 105-21.1.E.:*** from the requirement that a traffic impact fee be paid to allow for the payment of a voluntary contribution in accordance with paragraph 8, above;

10. Further, the Board of Supervisors takes the following action as to the Applicant's request for waivers from Chapter 58 of the Whitemarsh Township Code – "Grading, Erosion Control, Stormwater Management and Best Management Practices", as follows:

a. ***Section 58-30.A.(9):*** from the requirement that all stormwater detention/retention facilities shall be in place and functioning prior to the creation of any impervious surface, to permit construction of impervious surfaces prior to completion of all on-site stormwater facilities, provided that adequate erosion and sediment pollution controls are provided to prevent sediment-laden water from leaving the Property and that erosion and sediment adequacy and an NPDES permit are obtained from PADEP and the Montgomery County Conservation District prior to commencing construction;

□ Granted □ Denied

b. ***Section 58-34.B.(7)(d):*** from the requirement that the minimum diameter of all storm drainage pipes shall be 18 inches or equivalent thereto and that all storm pipe shall be reinforced concrete pipe which conforms to the Pennsylvania Department of Transportation specifications, or Whitemarsh Township specifications, whichever are more stringent, to permit stormwater pipe sizes under 18 inches and to permit HDPE pipe in lieu of the required reinforced concrete pipe;

□ Granted □ Denied

c. ***Section 58-34.B.(7)(h):*** from the requirement that storm pipes shall have a minimum 18-inch depth of cover over the top of pipe, to permit roof leader piping to have a minimum of 12 inches of cover over the top of the pipe;

□ Granted □ Denied

11. Further, the Board of Supervisors takes the following action as to the Applicant's request for waivers from the requirements of Chapter 55 of the Whitemarsh Code of Ordinance pertaining "Tree Protection Standards", as follows:

a. ***Section 55-4.C.(3) and 55-4.D.(6):*** from the requirement that replacement trees be provided in accordance with the ordinance, to permit fewer than the required number of replacement trees due to insufficient planting area;

□ Granted □ Denied

The Conditional Preliminary Minor Subdivision and Major Land Development Approval granted herein shall be rescinded automatically upon the Applicant's failure to accept, in writing, all conditions herein imposed within seven (7) days of receipt of this Resolution, as evidenced by Applicant's signature below.

ADOPTED, as a Resolution by the Whitemarsh Township Board of Supervisors this 10th day of August, 2023.

ATTEST: ***WHITEMARSH TOWNSHIP BOARD OF SUPERVISORS***

_____ By:_____

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RICHARD L. MELLOR, JR.,
SECRETARY

FRAN MCCUSKER, CHAIR

THE UNDERSIGNED HEREBY REPRESENTS THAT HE IS AUTHORIZED ON BEHALF OF THE APPLICANT TO AGREE, AND HEREBY AGREES TO THE ABOVE CONDITIONAL PRELIMINARY LAND DEVELOPMENT PLAN APPROVAL RESOLUTION:

APPLICANT:

MILEONE FORT WASHINGTON, LLC

By: _____ ***Dated :*** _____
_____, _____

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EXHIBIT "A"

GILMORE & ASSOCIATES' REVIEW LETTER
June 8, 2023
[ATTACHED]

DRAFT

EXHIBIT "B"

ZONING ORDINANCE COMPLIANCE REVIEW LETTER
April 6, 2023
[ATTACHED]

DRAFT

EXHIBIT "C"

ZONING HEARING BOARD DECISION AND ORDER
June 12, 2023
[ATTACHED]

DRAFT

EXHIBIT "D"

TOWNSHIP FIRE MARSHAL'S MEMORANDUM
March 27, 2023
[ATTACHED]

DRAFT

EXHIBIT "E"

TOWNSHIP SHADE TREE COMMISSION'S MEMORANDUM
July 17, 2023
[ATTACHED]

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