

July 8, 2021 Planning Commission Meeting

400 W Elm St Land Development Packet (page 2)

333 W 7th Ave Subdivision and Land Development Packet (page 551)

BOROUGH OF CONSHOHOCKEN
MONTGOMERY COUNTY, PENNSYLVANIA

BOROUGH OF CONSHOHOCKEN
MAR 31 '21 AM 10:25
RECEIVED

APPLICATION FOR SUBDIVISION/ LAND DEVELOPMENT

To be completed by the Borough:

| | |
|---|-------------------------------|
| Submission Information: | |
| File Number: <u>LD-2021-03</u> | File Date: <u>3/31/21</u> |
| Project Title: <u>400 W. Elm Street</u> | Date Complete: <u>3/31/21</u> |
| Received By: <u>B. Rogers</u> | 90 Day Date: <u>Waived</u> |

REQUIRED MATERIALS FOR ALL LAND DEVELOPMENT/SUBDIVISION APPLICATIONS

1. This form MUST be completed and submitted with the Borough's Land Development/Subdivision application.
2. A Land Development/Subdivision Application MUST include all of the items listed in the application checklist to be considered complete.

Incomplete applications will NOT be placed on a Planning Commission agenda. Incomplete applications will be returned to the applicant.
3. Complete applications must be received at least 38 DAYS (see schedule) prior to the Planning Commission meeting at which it will be heard.

It is highly encouraged to submit applications in a digital format.
4. One (1) digital copy plus seven (7) paper copies of the complete application are required if submitting digitally, or fifteen (15) paper copies of the complete application are required.

Applicant Information:
Corson Street Acquisition Limited Partnership c/o
Name: Equus Capital Partners
Address: 3843 West Chester Pike
Newtown Square, PA 19073
Phone: Bob Dwyer: 610-996-6600; John Forde: 610-355-1872
Fax: 610-355-1871
E-Mail*: bob@landtrustprop.com; jforde@bpgltd.com

Property Owner Information (if different):
Name: _____
Address: _____
Phone: _____
Fax: _____
E-Mail*: _____

Architect/Planner: JDavis Architects c/o Shawn McAnally RA, NCARB
Address: 1218 Chestnut Street, 7th Floor, Philadelphia, PA 19107
E-mail*: shawnm@jdavisarchitects.com

Phone/Fax: (P) 215-545-0121

Engineer/Surveyor: Bohler Engineering PA, LLC c/o William R. Rearden, P.E. & John P. Alejnikov, P.E.
Address: 1600 Manor Drive, Suite 200, Chalfont, PA 18914
E-mail*: wrearden@bohlereng.com; jalejnikov@bohlereng.com

Phone/Fax: (P) 215-996-9100 / (F) 215-996-9102

Landscape Architect: Stuart and Associates, LLC c/o Patrick Stuart, RLA, MCRP, LLA & Vanessa Meyer, RLA
Address: 860 First Avenue, Suite 9B, King of Prussia, PA, 19406
E-mail*: patrick@stuart.associates; Vanessa@stuart.associates

Phone/Fax: (P) 610-337-2100

Attorney: Riley Riper Hollin & Colagreco c/o Louis J. Colagreco, Jr., Esq., & Gina M. Gerber, Esq.
Address: Eagleview Corporate Center, 717 Constitution Drive, Exton, PA 19341

E-mail*: Lou@RRHC.COM; ginag@RRHC.COM

Phone/Fax: (P) 610-458-4400 / (F) 610 458-4441

*All correspondence regarding this application from the Planning Commission and staff will be made via e-mail. All persons involved with this application should provide their e-mail addresses so that information including, but not limited to, meeting dates and plan reviews replaces revisions here, is distributed appropriately.

Application For: (See Section 22-305.A or the bottom of page 10 of the application packet for clarification)

- Minor Land Development
- Preliminary Major Land Development
- Final Major Land Development

- Minor Subdivision
- Preliminary Major Subdivision
- Final Major Subdivision

Project Information:

Location (Street Address): 400 West Elm Street, Conshohocken, PA 19428

Tax Assessment Parcel No. * see attached. County Deed Book No. * Page No. *

Description of Proposed Work: The Applicant is proposing to develop the property with a 13-story apartment building with approximately 352 units and a 2-story parking garage. The site will also contain related site amenities and improvements inclusive of parking, access roadways, lighting, landscaping, utilities, and stormwater management facilities.

Total Tract Acreage: 8.495 ac. Project Acreage 11.46 ac.

Zoning District SP-3 - BR-2 Existing Number of Lots: 11 Proposed Number of Lots: 1

Proposed Land Use: Single-Family Detached Single-Family Semi-Detached Multi-Family
 Single-Family Attached Commercial Office Industrial

Other (Describe): Multi-Family Residences (Permitted by Conditional Use)

Existing Sewer Flows: 0 Proposed Sewer Flows: 352 EDU/92,400 GPD

Check List - Plans:

The applicant must provide all of the following plans for an application to be considered complete. Section 22, Part 3 of the SALDO outlines plan submission requirements and the criteria that must be met in order for submissions to be deemed complete. These requirements are listed on information sheets provided at the end of this application package. If the required plans listed below do not have sufficient information to allow for staff reviews, the application may be considered incomplete and returned, requesting additional information.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Record Plan | <input checked="" type="checkbox"/> Landscape Plan (sealed by a Landscape Architect) |
| <input checked="" type="checkbox"/> Existing Features Site Plan | <input checked="" type="checkbox"/> Demolition Plan |
| <input checked="" type="checkbox"/> Grading Plan | <input checked="" type="checkbox"/> Detail Sheets |
| <input checked="" type="checkbox"/> Erosion and Sediment Control Plan | <input checked="" type="checkbox"/> Traffic Study (if applicable) |
| <input checked="" type="checkbox"/> Lighting Plan_Major | <input checked="" type="checkbox"/> Post Construction Stormwater Management Plan |
| <input checked="" type="checkbox"/> Circulation Plan_Major | <input checked="" type="checkbox"/> Utility Plan |
| <input checked="" type="checkbox"/> Stormwater Calculations | |

Check List - Proof of ownership and zoning relief:

- Proof of equitable ownership or interest in the property - copy of the deed to the subject property
- Copy of adjudication of Zoning Hearing Board related to the application

Check List - Color Photographs of Site and Existing Conditions:

- Streetscape in all directions, showing subject property in each
- Façade and secondary elevations of existing building(s) on site
- Sidewalk and curb conditions
- Street trees
- Alley conditions, if present

Check List - Building Elevations:

- Architectural drawings and renderings of proposed building(s)

Check List - Setback of Proposed Building(s):

- Established building line for the block on which the property is located (eg: scale off an aerial)
(In plan, show setbacks of all existing buildings on same side of the street as project for entire block.)

List of Requested Waivers:

Section/Requirement:
See attached letter.

Relief Requested:

Have you met with the Zoning Officer regarding this plan? Yes No

Are there known variances/any zoning relief necessary for this project? Yes No

If YES, have you submitted an application for the Zoning Hearing Board? Yes No

Has this plan been reviewed by the Zoning Hearing Board? Yes No

*Please be advised that if any variances are found to be necessary during the course of the review of this plan, you will be required to go to the Zoning Hearing Board prior to proceeding to the Planning Commission. In addition, you will be requested to grant the Borough a waiver to the 90-day action period or an immediate denial of this application will be made, and you will be required to resubmit the application.

The undersigned represents that to the best of his/her knowledge and belief, all the above statements are true, correct and complete.

(Robert J Dwyer)

Signature of Applicant

Signature of Property Owner (if not the same as applicant)

3/31/21

Date

Date

ALL MAJOR subdivision/land use applications require a pre-submission meeting to discuss the project prior to full application submittal.

MINOR subdivision/land use applications may request a pre-submission meeting; if one is desired.

Meetings are held the second and fourth Tuesday of each month beginning at 1:30pm at the Borough Administrative Offices.

Applicants assume responsibility of any fees associated with this meeting.

 Applicant signature date

Please note: Pre-Application Meeting was waived due to prior Conditional Use and Land Development Approvals.

To schedule a pre-submission meeting, please contact the office of the Borough Manager

ph: 610.828.1092

e: landuse@conshohockenpa.gov

Borough Use Only:

| | | | | |
|---|-----------|-----------------|-----------|------------|
| <input checked="" type="checkbox"/> Filing Fee | Amount \$ | <u>1,000.00</u> | Check No. | <u>488</u> |
| <input checked="" type="checkbox"/> Pre-Construction Professional Services Escrow | Amount \$ | <u>5,000.00</u> | Check No. | <u>487</u> |

Decision Information:

Approval _____ Denial _____ Decision Date: _____

Comments/Conditions:

*Tax Assessment Parcel Numbers:

BLOCK 10, UNIT 11, APN 05-00-00136-012, Deed Book 5649, Page 1407

BLOCK 10, UNIT 6, APN 05-00-00136-003, Deed Book 5609, Page 1377

BLOCK 11, UNIT 8, APN 05-00-02472-106, Deed Book 5941, Page 2967

BLOCK 10, UNIT 5, APN 05-00-00136-021, Deed Book 5941, Page 2967

BLOCK 10, UNIT 8, APN 50-00-2704-009 Deed Book 3513, Page 21

BLOCK 10, LOT 10, APN 05-00-2696-008 (no deed info on survey)

BLOCK 11, UNIT 9, APN 05-00-02474-205, Deed Book 5941, Page 2967

BLOCK 11, UNIT 7, APN 05-00-11874-001, Deed Book 5941, Page 2967 & Deed Book 5942, Page 2

BLOCK 12, UNIT 20, APN 05-00-11873-002, Deed Book 5941, Page 2967 & Deed Book 5942, Page 2

Plymouth Township:

BLOCK 25, UNIT 33, APN 49-00-06910-016, Deed Book 5942, Page 2

BLOCK 24, UNIT 43, APN 49-00-06904-004, Deed Book 5941, Page 2967

BOROUGH OF CONSHOHOCKEN
MONTGOMERY COUNTY, PENNSYLVANIA

Planning Process Extension Agreement

The Pennsylvania Municipality Planning Code (MPC) and the Conshohocken Borough Subdivision and Land Development Ordinance state that action must be taken by the Borough within ninety (90) days after a complete application is filed with the Borough. In the Borough, larger and complicated projects have historically required additional time in order to complete a thorough review before being considered for approval. As such, an applicant may voluntarily waive the timing requirement at any time, but is encouraged to submit this waiver with the completed application.

I, the applicant, hereby voluntarily waive the timing requirement as set forth in the MPC (Section 509) and the Conshohocken Borough Subdivision and Land Development Ordinance (Section 22-308).



Applicant signature

3/31/21
Date

Brittany Rogers
Received by (Borough)

3/31/21
Date

BOROUGH OF CONSHOHOCKEN
MONTGOMERY COUNTY, PENNSYLVANIA

ESCROW AGREEMENT
FOR PROFESSIONAL REVIEW FEES

SUBDIVISION/LAND DEVELOPMENT APPLICATIONS

The undersigned hereby agrees to post an escrow to cover the costs of the review of subdivision and land development applications by the Borough Planner, Engineer, and Solicitor. The amount of said escrow shall be according to the attached "Schedule of Fees" and shall be posted at the time of initial submission of an application to the Borough. Said fees shall be placed in an escrow account and any balance remaining shall be returned to the applicant subsequent to the receipt of final approval.

The applicant is advised that the "Schedule of Fees" represents only an estimate of the costs associated with plan review. The completeness and quality of the submission, the complexity of the project, the number of revisions and other factors may cause costs to exceed the established escrow amounts. If during the course of a subdivision/land development review an escrow amount falls to 10% of the original escrow amount or \$250, whichever is greater, the Borough may require the posting of additional escrow.

NOTE: NO FINAL APPROVALS, CONSTRUCTION, BUILDING OR OCCUPANCY PERMITS SHALL BE ISSUED UNTIL ALL OUTSTANDING PROFESSIONAL REVIEW FEES HAVE BEEN SATISFIED.

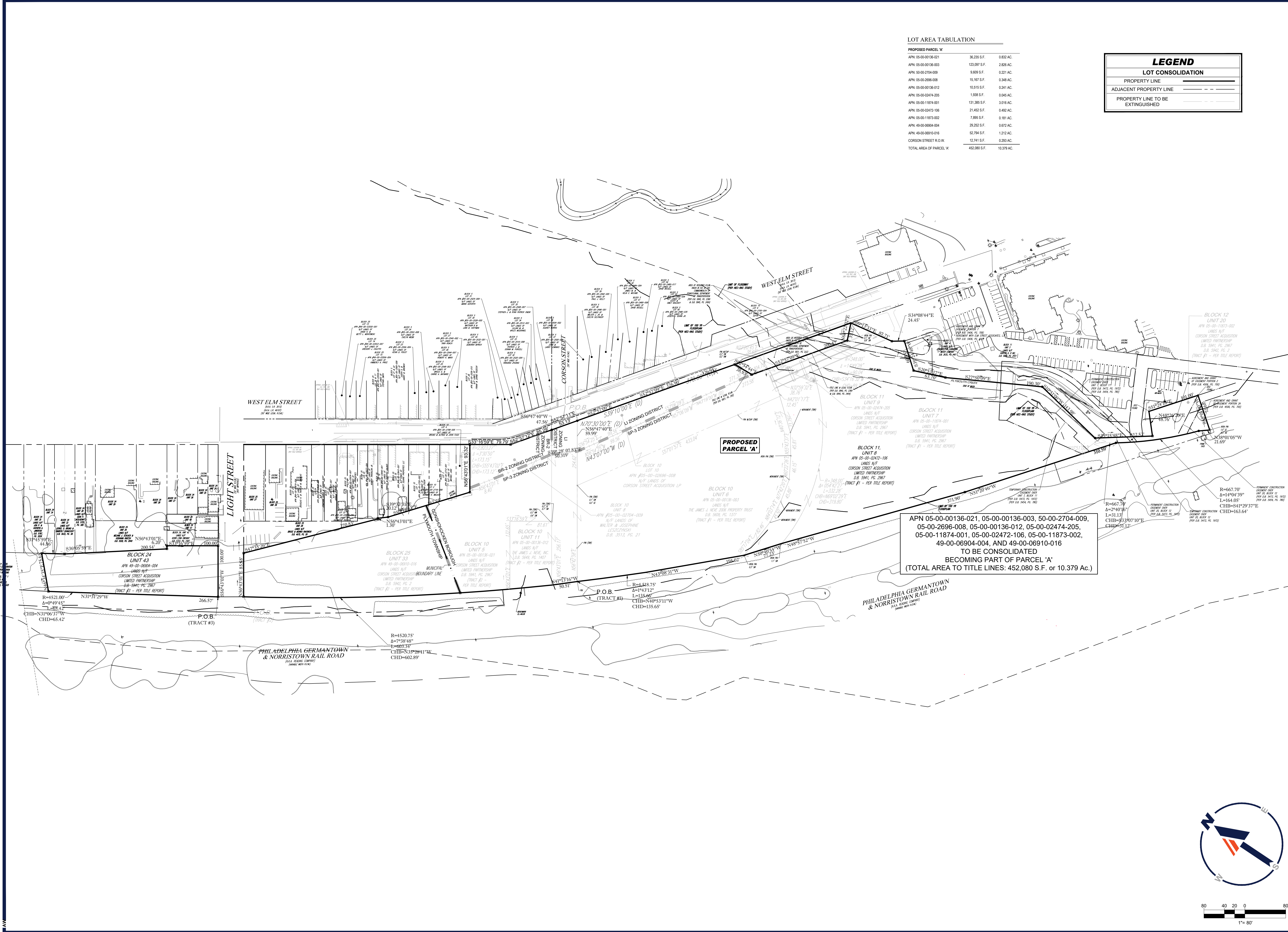
Signed  _____ Date: 3/31/21
Applicant







R:\2021\21167\DRAWINGS\PLAN SET\LAND DEVELOPMENT\REVISION 1\21167-SP-02-LOT CONSOLIDATION LAYOUT.CAD



LOT AREA TABULATION

| PROPOSED PARCEL 'A' | AC. | S.F. |
|---------------------------------|----------------|---------------|
| APN 05-00-00136-021 | 36,235 | 0.832 |
| APN 05-00-00136-003 | 123,097 | 2.826 |
| APN 05-00-2704-009 | 9,609 | 0.221 |
| APN 05-00-2696-008 | 15,167 | 0.348 |
| APN 05-00-00136-012 | 10,515 | 0.241 |
| APN 05-00-02474-205 | 1,938 | 0.045 |
| APN 05-00-11874-001 | 131,385 | 3.016 |
| APN 05-00-02472-106 | 21,452 | 0.492 |
| APN 05-00-11873-002 | 7,895 | 0.181 |
| APN 49-00-06904-004 | 29,252 | 0.672 |
| APN 49-00-06910-016 | 52,794 | 1.212 |
| CORSON STREET R.O.W. | 12,741 | 0.293 |
| TOTAL AREA OF PARCEL 'A' | 452,080 | 10.379 |

LEGEND

LOT CONSOLIDATION

| | |
|----------------------------------|-----------|
| PROPERTY LINE | ————— |
| ADJACENT PROPERTY LINE | ----- |
| PROPERTY LINE TO BE EXTINGUISHED | - - - - - |

APN 05-00-00136-021, 05-00-00136-003, 50-00-2704-009, 05-00-2696-008, 05-00-00136-012, 05-00-02474-205, 05-00-11874-001, 05-00-02472-106, 05-00-11873-002, 49-00-06904-004, AND 49-00-06910-016 TO BE CONSOLIDATED BECOMING PART OF PARCEL 'A' (TOTAL AREA TO TITLE LINES: 452,080 S.F. or 10.379 Ac.)

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REVISIONS

| REV | DATE | COMMENT | DRAWN BY |
|-----|------------|------------------|----------|
| 1 | 05/06/2021 | MCCD SUBMISSION | KDS |
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PROJECT No.: PC201167

DRAWN BY: ATW

CHECKED BY: LNB

DATE: 3/30/2021

CAD ID: PC201167-SP-02

PRELIMINARY! FINAL LAND DEVELOPMENT PLANS

FOR
CORSON STREET ACQUISITION LIMITED PARTNERSHIP

WEST ELM STREET
 CONSHOHOCKEN BOROUGH &
 PLYMOUTH TOWNSHIP
 MONTGOMERY COUNTY, PA

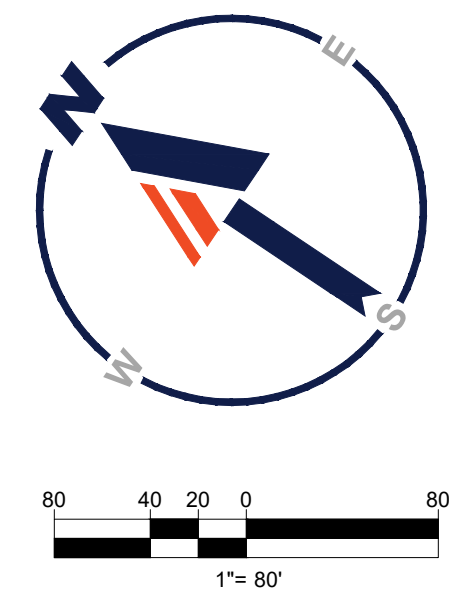
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 CHALFONT, PA 18914
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 Fax: (215) 996-9102
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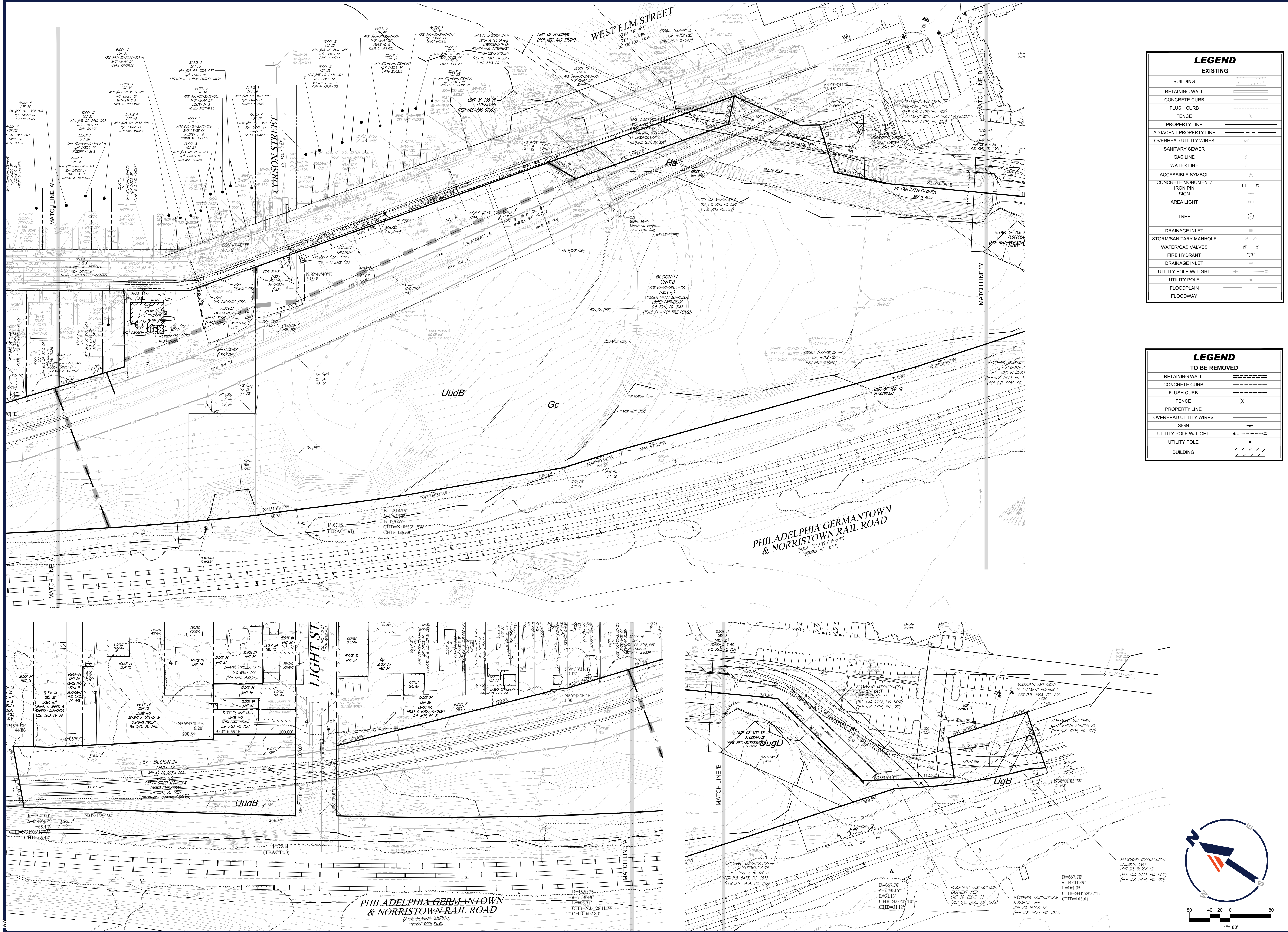
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 NEW JERSEY LICENSE NO. 24069494500

SHEET TITLE:
LOT CONSOLIDATION PLAN
 (RECORD PLAN 3 OF 9)

SHEET NUMBER:
C-201
 (3 OF 29)

REVISION 2 - 06/04/2021





LEGEND
EXISTING

| | |
|--------------------------------|----------|
| BUILDING | [Symbol] |
| RETAINING WALL | [Symbol] |
| CONCRETE CURB | [Symbol] |
| FLUSH CURB | [Symbol] |
| FENCE | [Symbol] |
| PROPERTY LINE | [Symbol] |
| ADJACENT PROPERTY LINE | [Symbol] |
| OVERHEAD UTILITY WIRES | [Symbol] |
| SANITARY SEWER | [Symbol] |
| GAS LINE | [Symbol] |
| WATER LINE | [Symbol] |
| ACCESSIBLE SYMBOL | [Symbol] |
| CONCRETE MONUMENT/ IRON PIN | [Symbol] |
| SIGN | [Symbol] |
| AREA LIGHT | [Symbol] |
| TREE | [Symbol] |
| DRAINAGE INLET | [Symbol] |
| STORM/SANITARY MANHOLE | [Symbol] |
| WATER/GAS VALVES | [Symbol] |
| FIRE HYDRANT | [Symbol] |
| DRAINAGE INLET | [Symbol] |
| UTILITY POLE W/ LIGHT | [Symbol] |
| UTILITY POLE | [Symbol] |
| FLOODPLAIN | [Symbol] |
| FLOODWAY | [Symbol] |

LEGEND
TO BE REMOVED

| | |
|------------------------|----------|
| RETAINING WALL | [Symbol] |
| CONCRETE CURB | [Symbol] |
| FLUSH CURB | [Symbol] |
| FENCE | [Symbol] |
| PROPERTY LINE | [Symbol] |
| OVERHEAD UTILITY WIRES | [Symbol] |
| SIGN | [Symbol] |
| UTILITY POLE W/ LIGHT | [Symbol] |
| UTILITY POLE | [Symbol] |
| BUILDING | [Symbol] |

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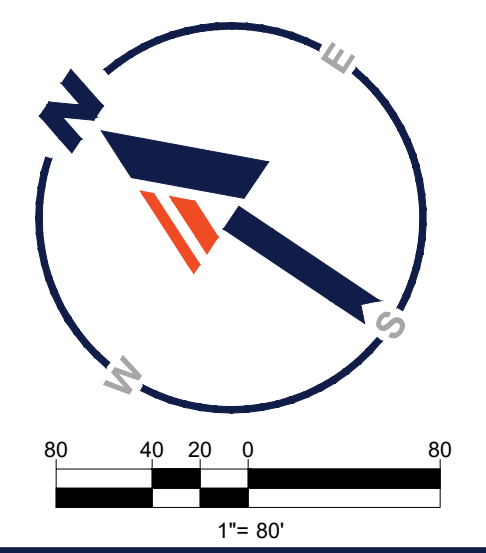
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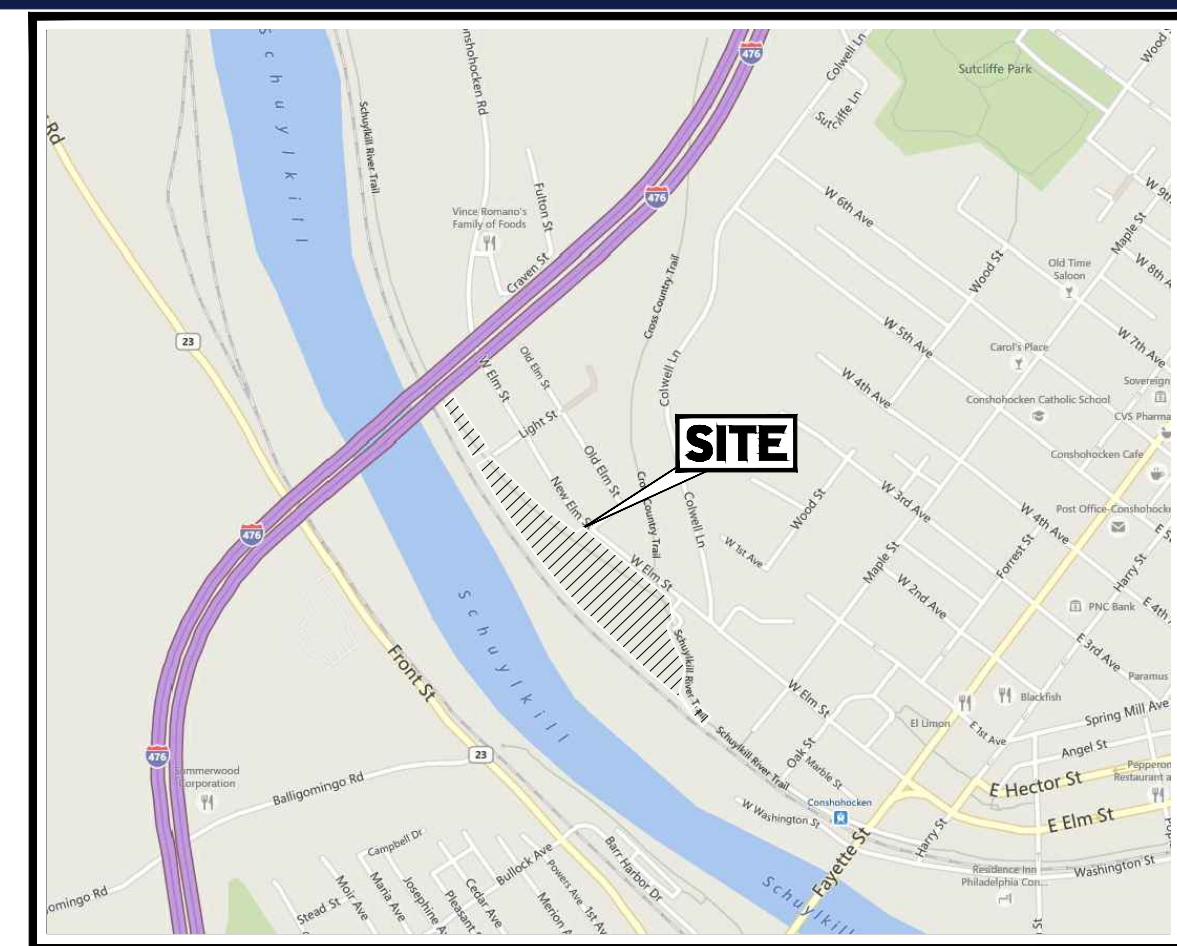
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SHEET TITLE:
**EXISTING CONDITIONS/
DEMOLITION PLAN**
SHEET NUMBER:
C-202
(4 OF 29)
REVISION 2 - 06/04/2021



R:\2021\167\DRAWINGS\PLAN SET\LAND DEVELOPMENT\REVISION 2\PC201167-SPP-02.dwg LAYOUT: C-202.DWG



LOCATION MAP
SCALE: 1" = 1,000'
SOURCE: GOOGLE MAPS

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LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
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| 2 | 06/04/2021 | PER TWP COMMENTS | KDS JPA |
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PROJECT No.: PC201167
DRAWN BY: ATW
CHECKED BY: LNS
DATE: 3/30/2021
CAD ID: PC201167-SPP-02

PROJECT:
**PRELIMINARY/
FINAL LAND
DEVELOPMENT
PLANS**
FOR
**CORSON STREET
ACQUISITION LIMITED
PARTNERSHIP**

WEST ELM STREET
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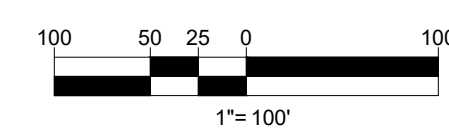
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NEW JERSEY LICENSE NO. 24060494500

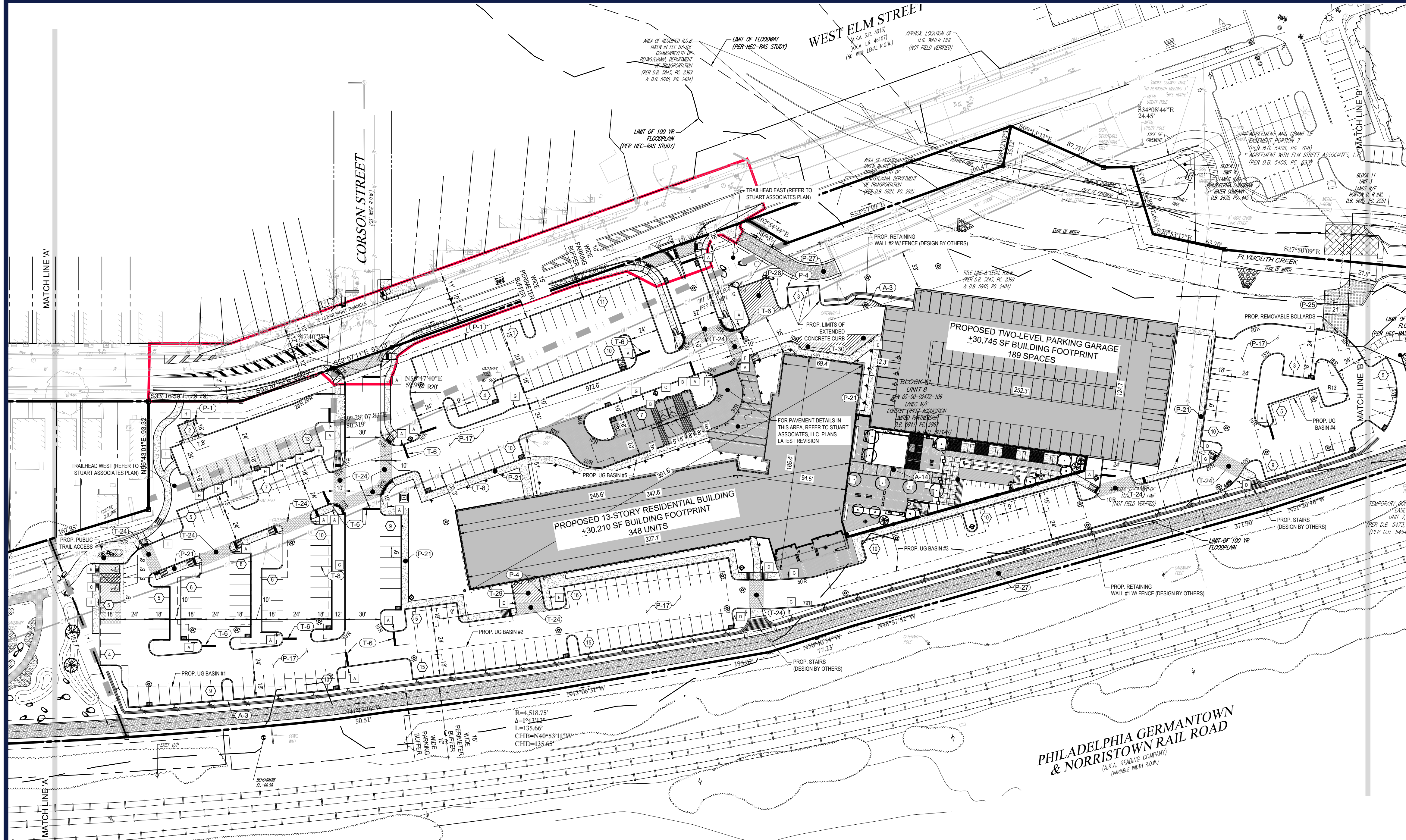
SHEET TITLE:
AERIAL PLAN

SHEET NUMBER:
C-203
(5 OF 29)

REVISION 2 - 06/04/2021



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LEGEND PROPOSED

- (A-3) WOODEN GUIDE RAIL
- (A-11) POOL / COURTYARD AREA (DESIGN BY OTHERS)
- (P-1) TYPICAL CONCRETE CURB. SEE DETAILS
- (P-4) TYPICAL EXTENDED CONCRETE CURB. SEE DETAILS
- (P-17) STANDARD ASPHALT PAVEMENT. SEE DETAILS
- (P-21) 6" CONCRETE SIDEWALK. SEE DETAILS
- (P-25) GRASS PAVER. SEE DETAILS
- (P-27) 12' WIDE ASPHALT TRAIL
- (P-28) AMENITY AREA (DESIGN BY OTHERS)
- (T-6) WHITE PAINTED STOP BAR. SEE DETAILS
- (T-8) PAVEMENT MARKING. SEE DETAILS
- (T-24) CROSSWALK (DESIGN BY OTHERS)
- (T-29) 10'X20' LOADING ZONE
- (T-30) 10'X40' LOADING ZONE

SIGN LEGEND PROPOSED

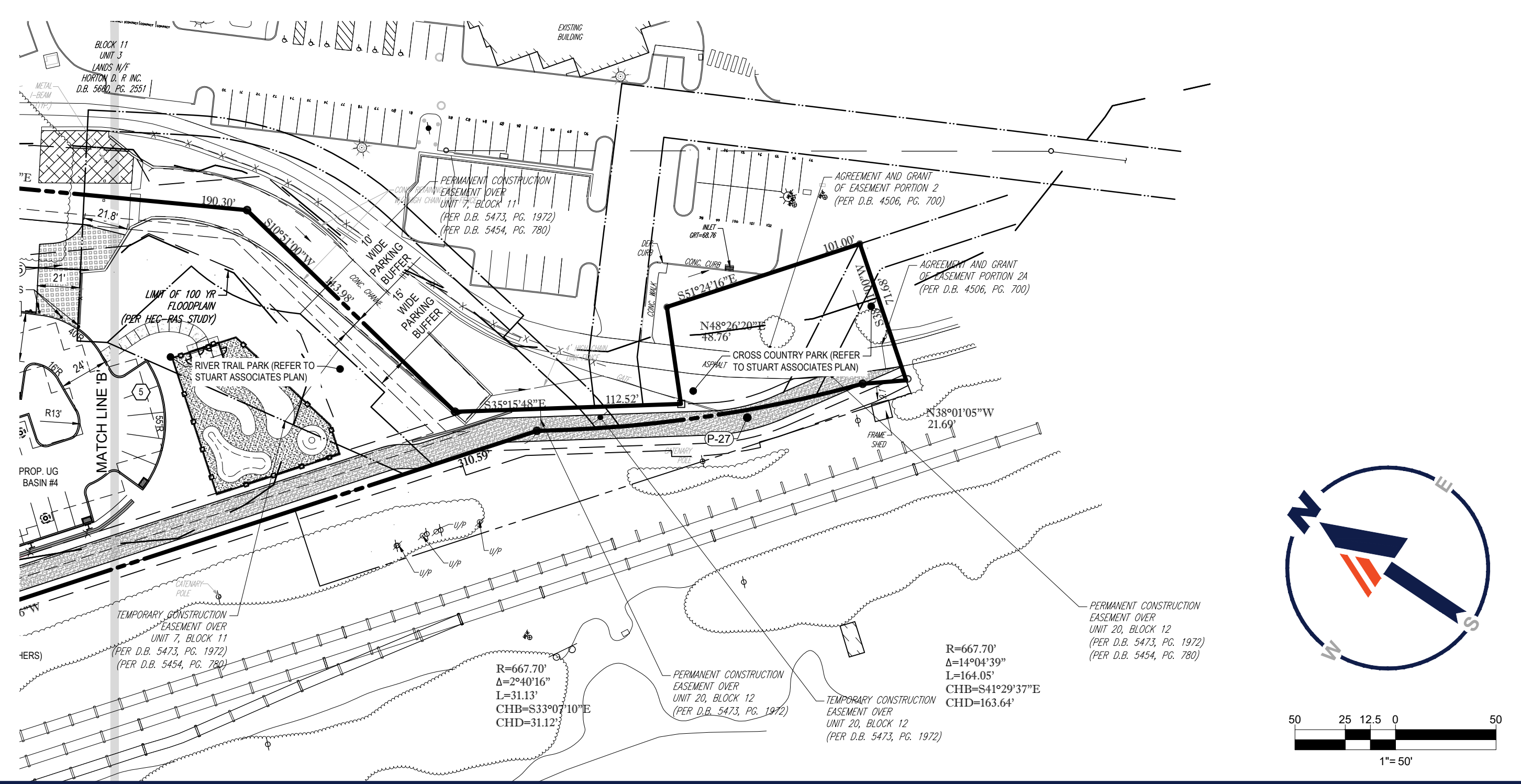
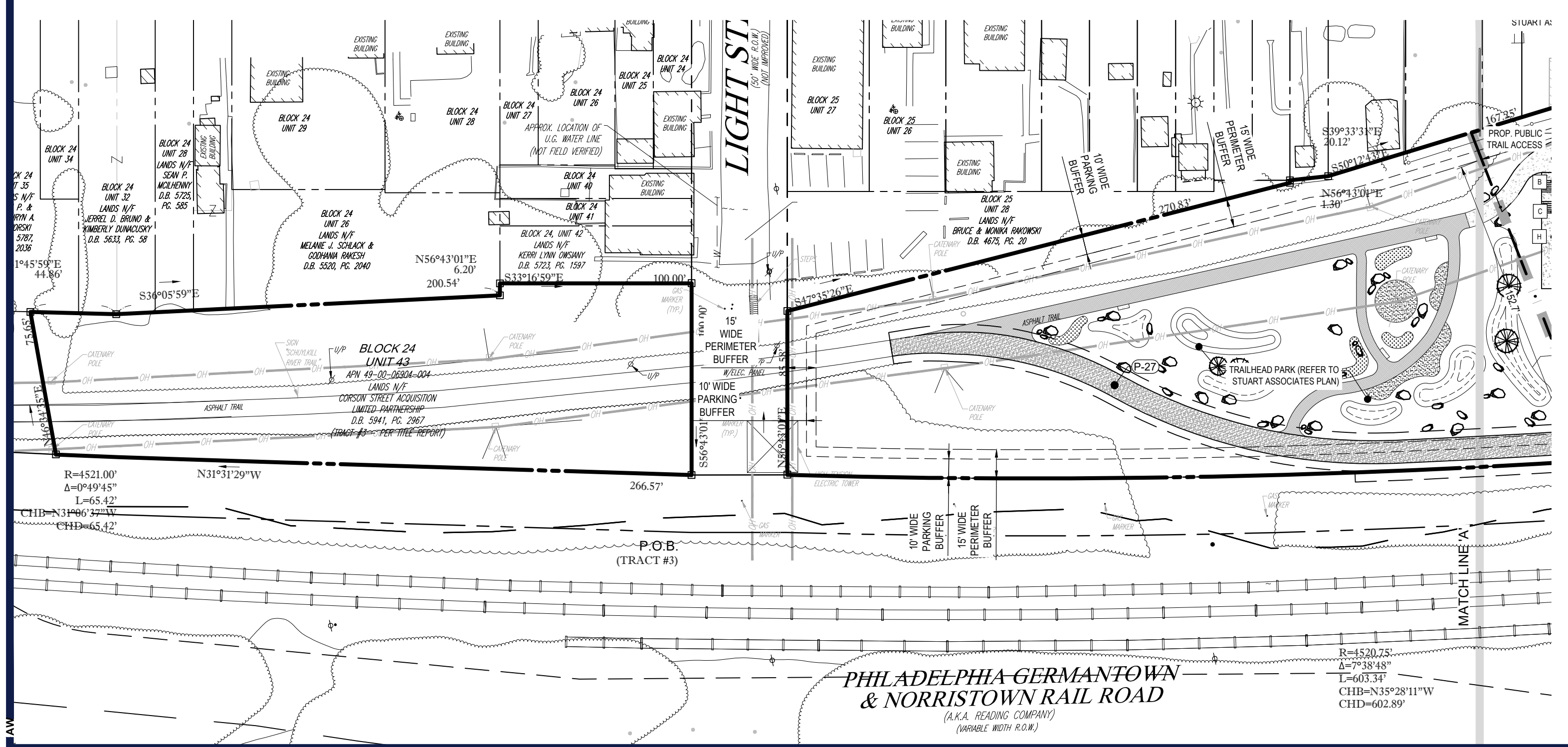
- (A) 'STOP' SIGN. SEE DETAILS
- (B) 'RESERVED PARKING SIGN & 'RESERVED PARKING PENALTIES' SIGN. SEE DETAILS
- (C) 'RESERVED PARKING SIGN & 'RESERVED PARKING' PENALTIES SIGN & 'VAN ACCESSIBLE' SIGN. SEE DETAILS
- (D) PEDESTRIAN CROSSING SIGN & DOWNWARD POINTING ARROW SIGN. SEE DETAILS
- (E) 'NO PARKING LOADING ZONE' SIGN. SEE DETAILS
- (F) 'DO NOT ENTER' SIGN. SEE DETAILS
- (G) 'NO PARKING, FIRE LANE' SIGN. SEE DETAILS
- (H) PUBLIC PARKING IDENTIFICATION SIGNAGE.
- (I) WAYFINDING SIGNAGE FOR TRAIL USERS.
- (J) 'EMERGENCY AND AUTHORIZED VEHICLES ONLY' SIGN. SEE DETAILS.

LEGEND PROPOSED

- BUILDING
- SIDEWALK
- PUBLIC PARKING
- RETAINING WALL
- CONCRETE CURB
- FLUSH CURB
- FENCE
- WOODEN GUIDE RAIL
- PROPERTY LINE
- EASEMENT LINE
- SETBACK LINE
- ADA PARKING SYMBOL
- PARKING COUNT
- CONCRETE MONUMENT/ IRON PIN
- ENDWALL
- DRAINAGE INLET
- FIRE HYDRANT
- 12' WIDE ASPHALT TRAIL

LEGEND EXISTING

- BUILDING
- RETAINING WALL
- CONCRETE CURB
- FLUSH CURB
- FENCE
- PROPERTY LINE
- ADJACENT PROPERTY LINE
- OVERHEAD UTILITY WIRES
- SANITARY SEWER
- WATER LINE
- ACCESSIBLE SYMBOL
- CONCRETE MONUMENT/ IRON PIN
- SIGN
- AREA LIGHT
- TREE
- DRAINAGE INLET
- STORM/SANITARY MANHOLE
- WATER/GAS VALVES
- FIRE HYDRANT
- DRAINAGE INLET
- UTILITY POLE W/ LIGHT
- FLOODPLAIN
- FLOODWAY



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| 1 | 05/06/2021 | MCCD SUBMISSION | KDS |
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 FOR
CORSON STREET ACQUISITION LIMITED PARTNERSHIP

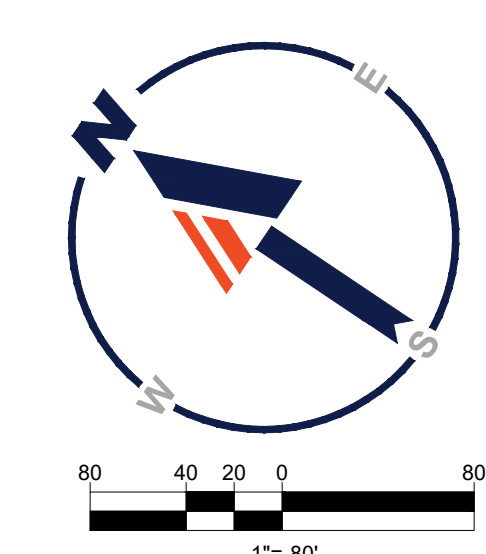
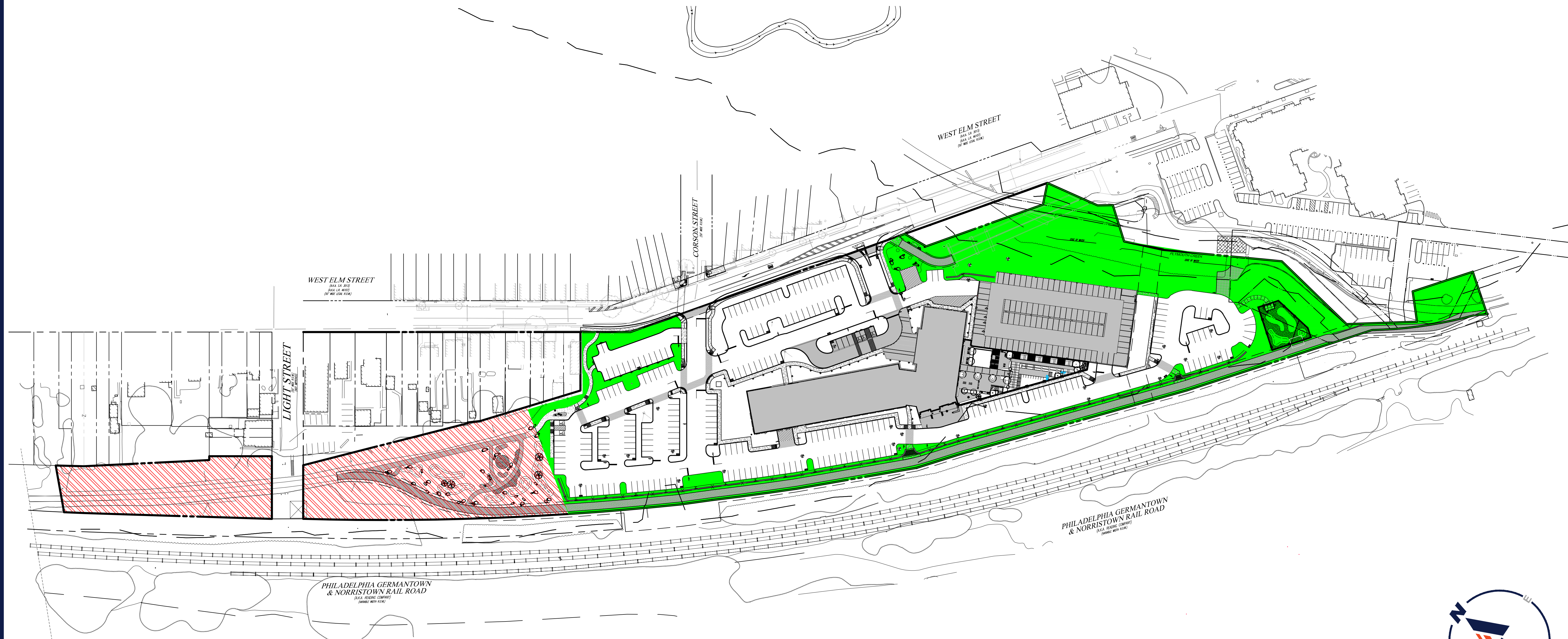
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W.R. REARDEN
 PROFESSIONAL ENGINEER
 PENNSYLVANIA LICENSE NO. PE073045
 NEW JERSEY LICENSE NO. 24060494500

SHEET TITLE:
SITE PLAN
 (RECORD PLAN 4 OF 9)
 SHEET NUMBER:
C-301
 (6 OF 29)
 REVISION 2 - 06/04/2021

| LEGEND | |
|---|--|
| OPEN SPACE AREA PLAN | |
| PLYMOUTH TOWNSHIP PORTION (NOT USED IN SATISFYING ANY OF THE BOROUGH'S REQUIREMENTS) (TOTAL = 1.88 AC. (82,047 S.F.)) | |
| PROPOSED OPEN SPACE AREA* (TOTAL = 2.67 AC. (116,350 S.F.)) | |
| PROPOSED OPEN SPACE AREA DESIGNATED PRIVATE (REMAINING OPEN SPACE AREA TO BE PUBLIC ACCESSIBLE) (TOTAL = 0.09 AC. (3,805 S.F.)) | |



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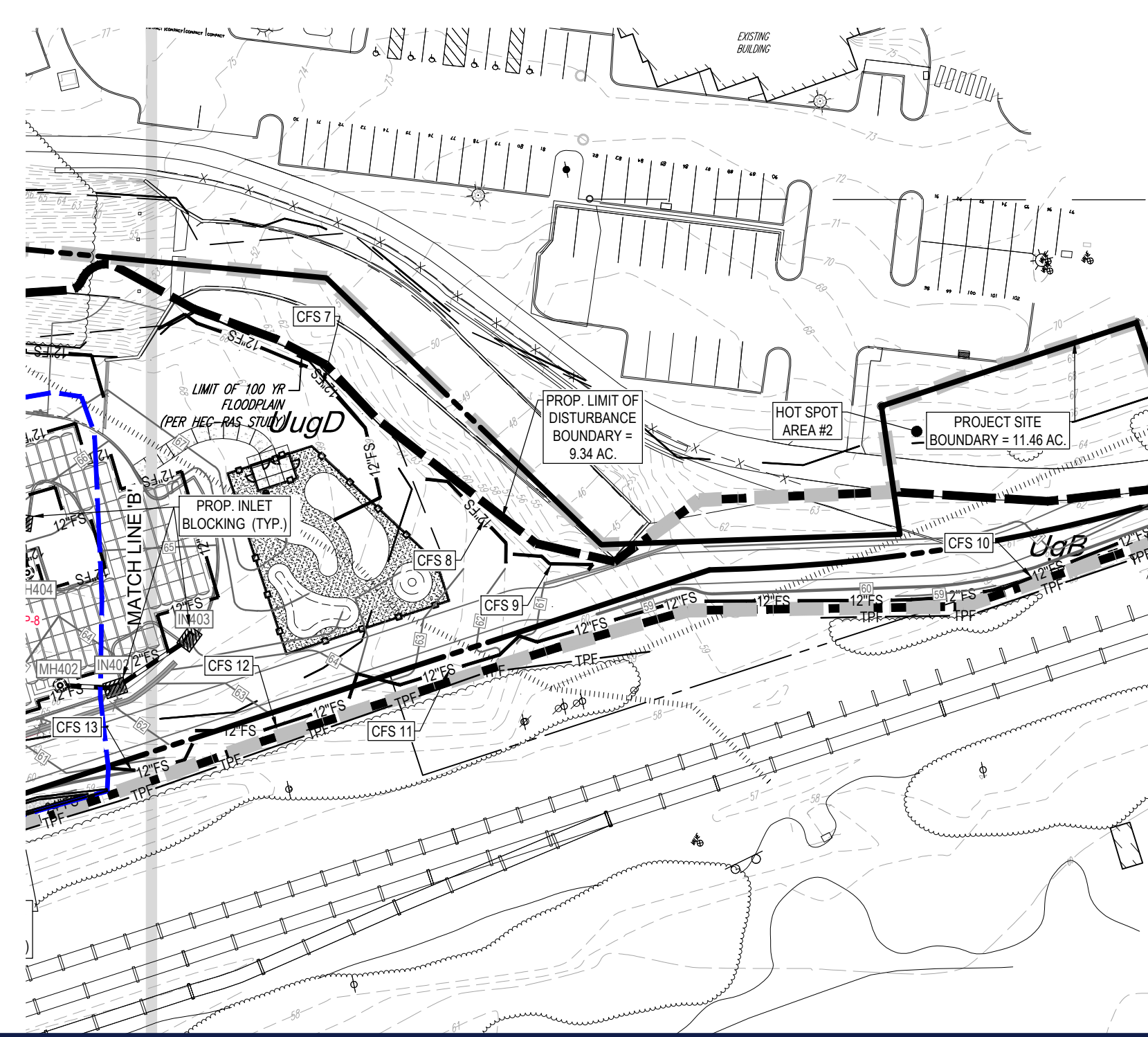
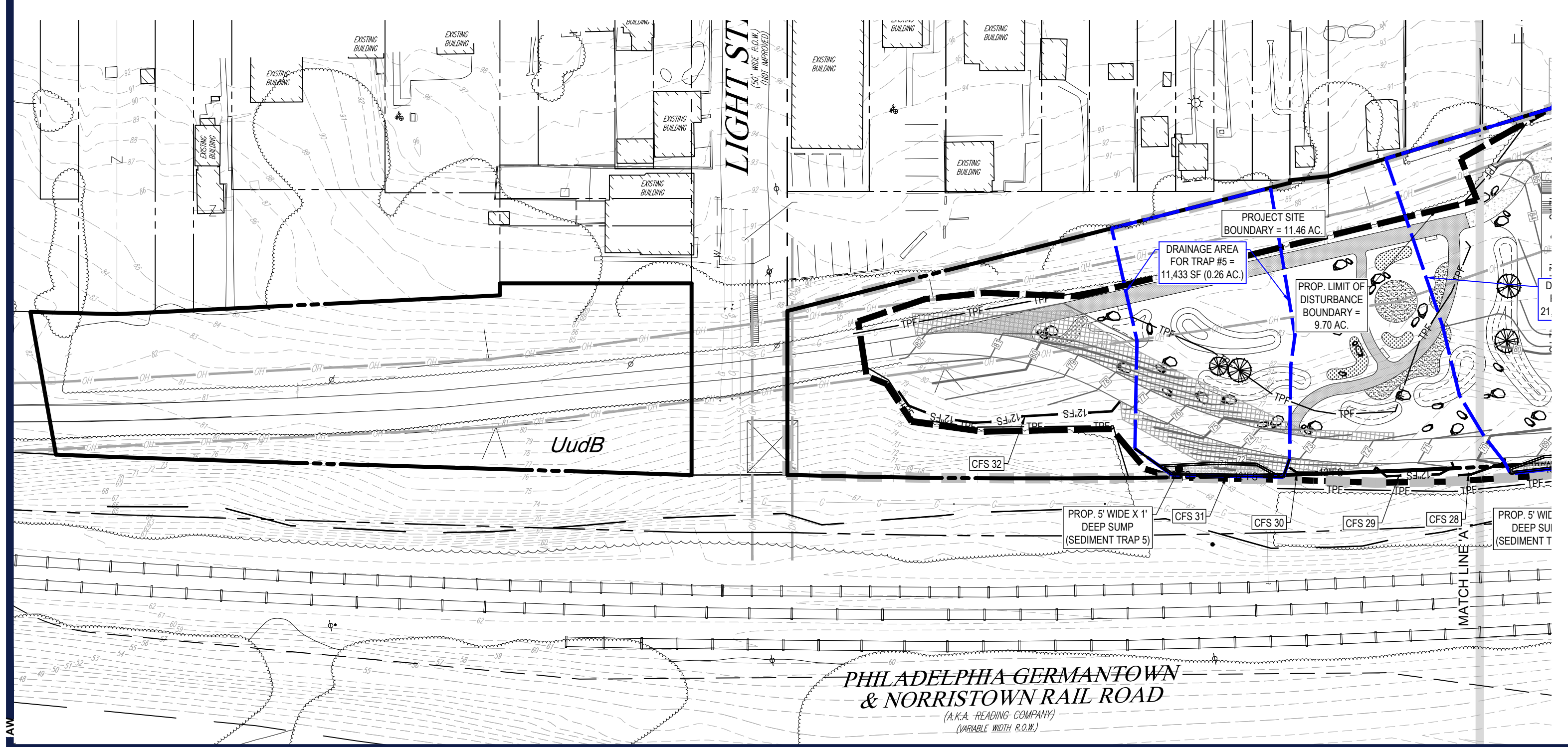
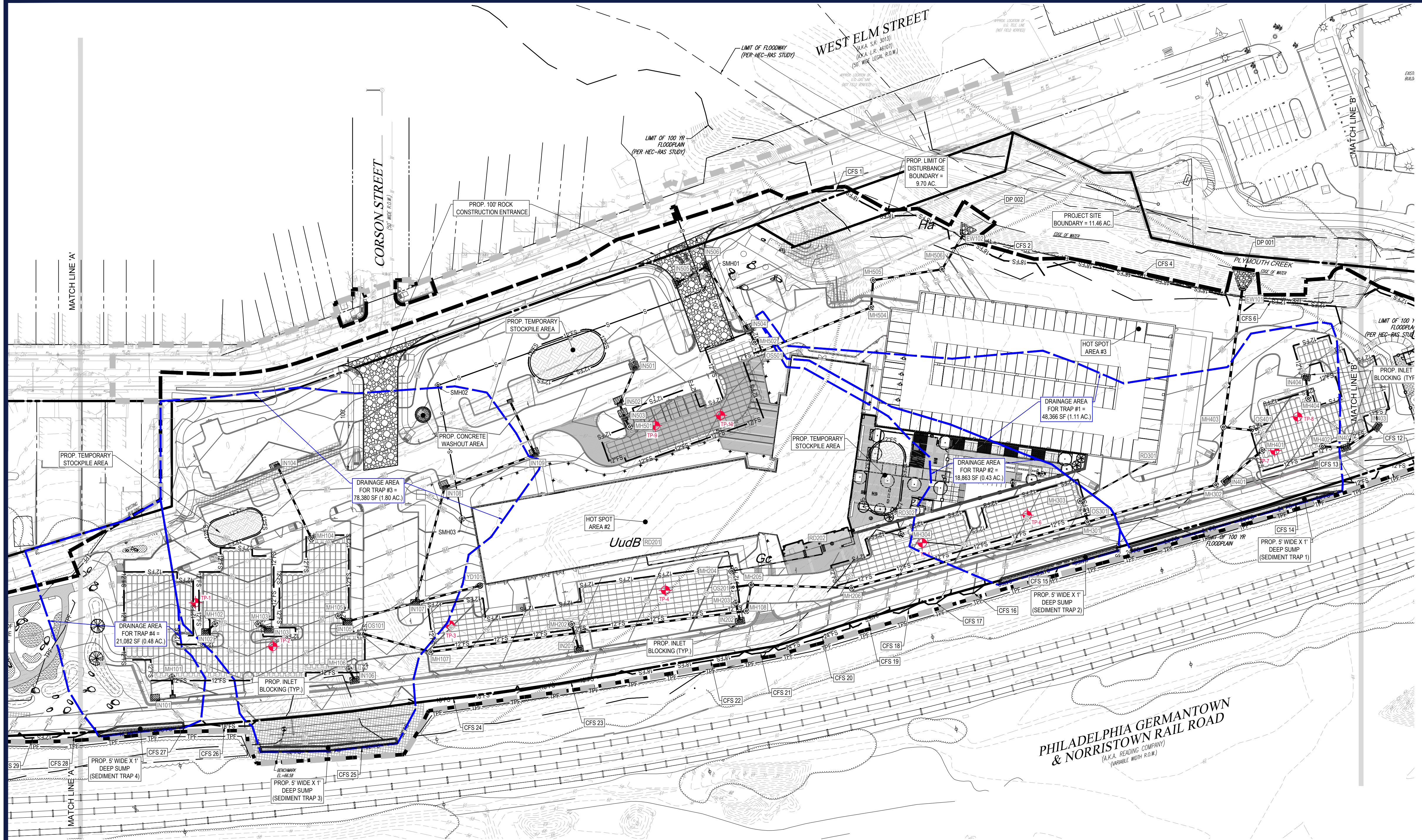
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SHEET TITLE:
**OPEN SPACE
 AREA PLAN**

SHEET NUMBER:
C-303
 (8 OF 29)

REVISION 2 - 06/04/2021

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LEGEND

EXISTING

| | |
|----------------------------|----------|
| BUILDING | [Symbol] |
| RETAINING WALL | [Symbol] |
| CONCRETE CURB | [Symbol] |
| FLUSH CURB | [Symbol] |
| FENCE | [Symbol] |
| PROPERTY LINE | [Symbol] |
| ADJACENT PROPERTY LINE | [Symbol] |
| OVERHEAD UTILITY WIRES | [Symbol] |
| SANITARY SEWER | [Symbol] |
| WATER LINE | [Symbol] |
| ACCESSIBLE SYMBOL | [Symbol] |
| CONCRETE MONUMENT/IRON PIN | [Symbol] |
| SIGN | [Symbol] |
| AREA LIGHT | [Symbol] |
| TREE | [Symbol] |
| DRAINAGE INLET | [Symbol] |
| STORM/SANITARY MANHOLE | [Symbol] |
| WATER/GAS VALVES | [Symbol] |
| FIRE HYDRANT | [Symbol] |
| DRAINAGE INLET | [Symbol] |
| UTILITY POLE W/ LIGHT | [Symbol] |
| UTILITY POLE | [Symbol] |
| FLOODPLAIN | [Symbol] |
| FLOODWAY | [Symbol] |

LEGEND

PROPOSED

| | |
|----------------------------|----------|
| PROJECT SITE BOUNDARY | [Symbol] |
| LIMIT OF DISTURBANCE | [Symbol] |
| COMPOST FILTER SOCK | [Symbol] |
| INLET BLOCKING | [Symbol] |
| TEMPORARY STOCKPILE | [Symbol] |
| ROCK CONSTRUCTION ENTRANCE | [Symbol] |
| CONCRETE WASHOUT | [Symbol] |
| VISI FENCING | [Symbol] |
| NAG SC150 MATTING | [Symbol] |
| SOIL BOUNDARY | [Symbol] |
| SOIL BOUNDARY GROUP | [Symbol] |
| SED. TRAP DRAINAGE AREA | [Symbol] |

NOTE: PUBLIC PARKING LOT AND RIVER TRAIL CONNECTION ARE TO BE CONSTRUCTED PRIOR TO ANY DISTURBANCE OF THE EXISTING CORSON STREET PARKING LOT AND EXISTING RIVER TRAIL.

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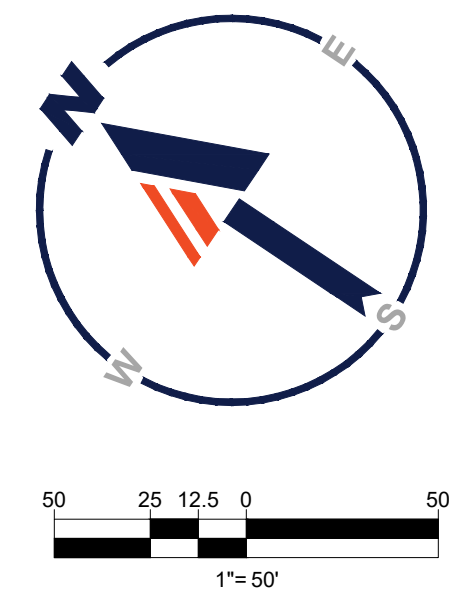
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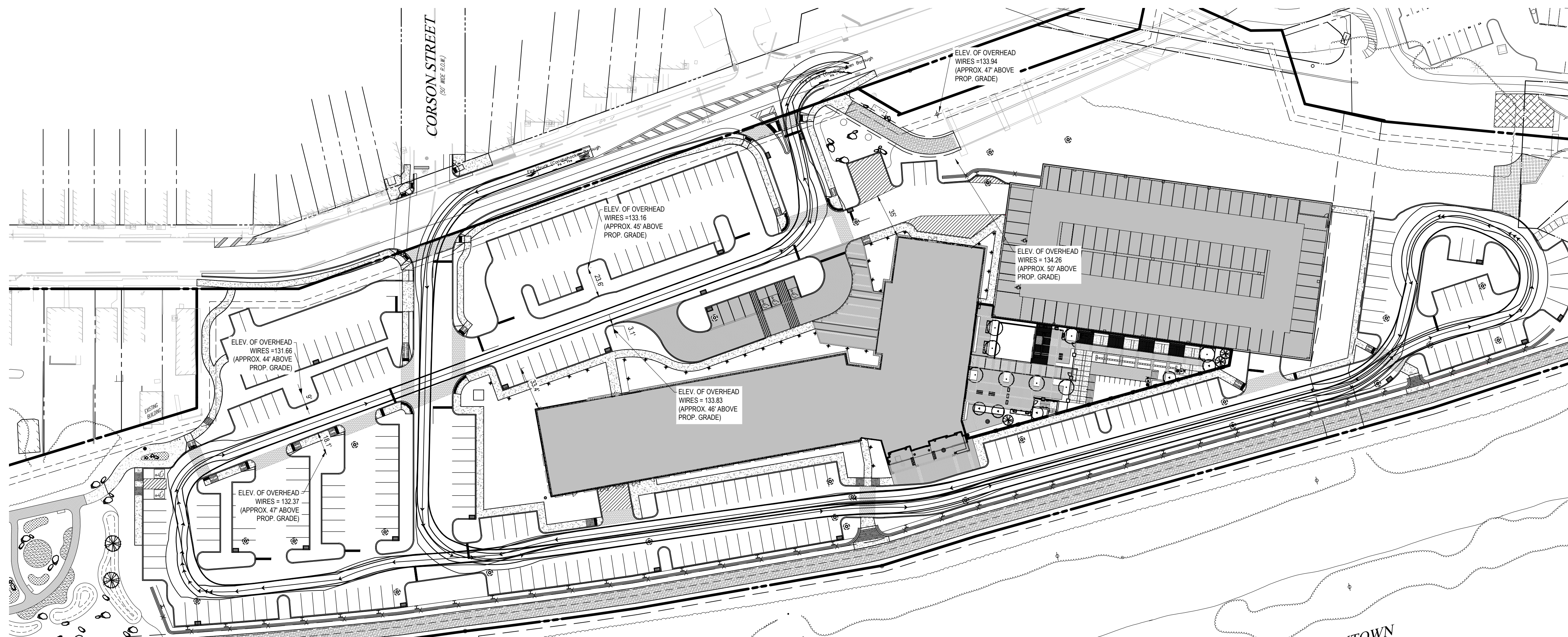
SHEET TITLE:
SOIL EROSION & SEDIMENT POLLUTION CONTROL PLAN

SHEET NUMBER:
C-601
 (13 OF 29)

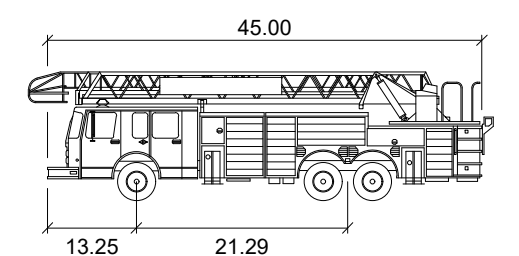
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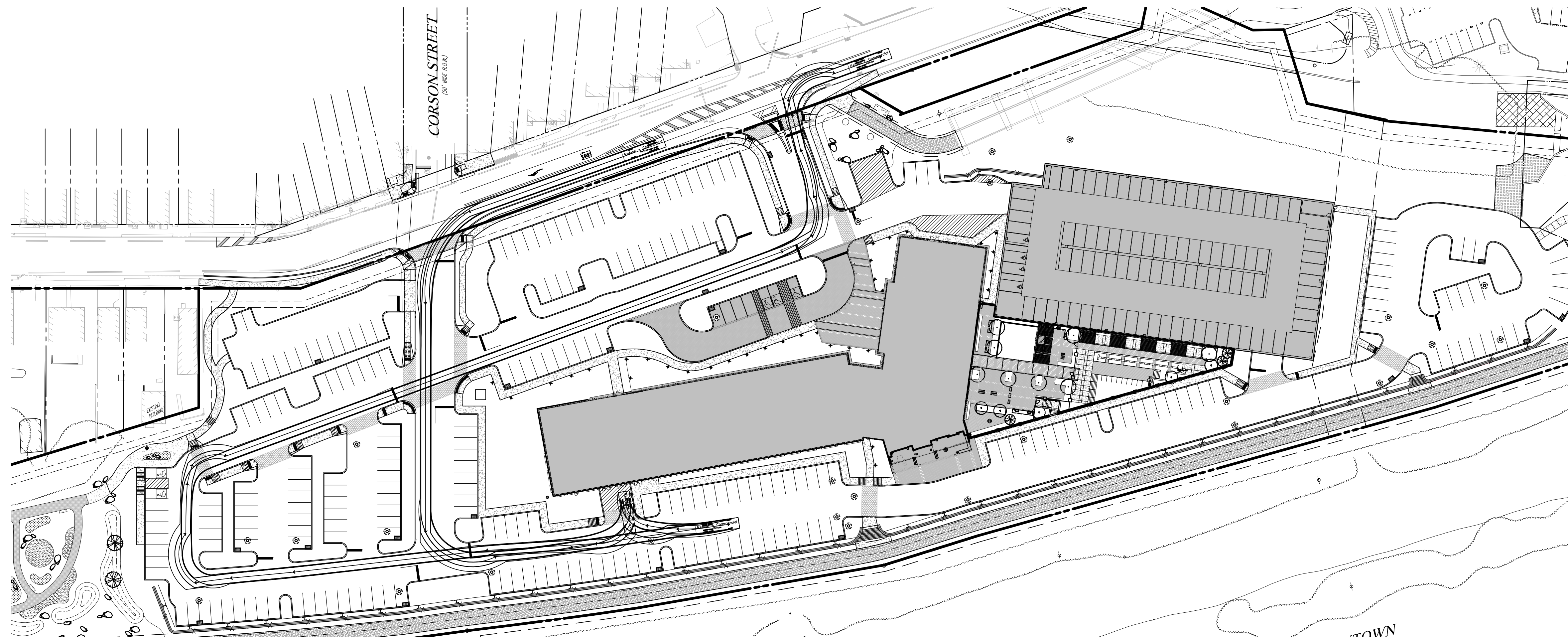


FIRE TRUCK TURN

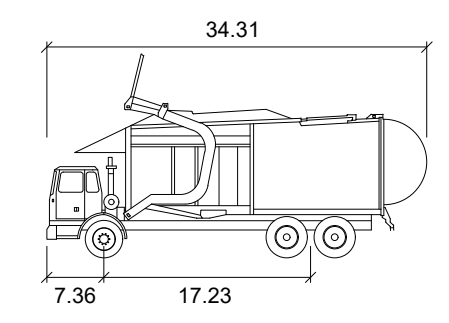


Fire Truck (Conshohocken Borough)

| feet | |
|-------------------|--------|
| Width | : 9.33 |
| Track | : 9.00 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 40.0 |

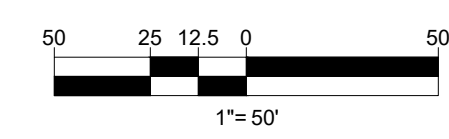


REFUSE TRUCK TURN



Refuse - Commercial

| feet | |
|-------------------|--------|
| Width | : 8.50 |
| Track | : 7.50 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 40.0 |



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SHEET TITLE:
**TRUCK
 TURNING PLAN**

SHEET NUMBER:
C-904
 (29 OF 29)

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1600 Manor Drive, Suite 200
Chalfont, PA 18914

Post Construction Stormwater Management Calculations

Project: **BPG Conshohocken**
400 West Elm Street
Conshohocken Borough
Montgomery County, Pennsylvania

Client: **Corson Street Acquisition Limited Partnership**
3843 West Chester Pike
Newtown Square, Pennsylvania

Project
Number: **PC201167**

Date: **June 4, 2021**

Professional
Engineer: William R. Rearden
PA License #PE073243

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General Project Description/Stormwater Management

GENERAL PROJECT DESCRIPTION

Corson Street Acquisition Limited Partnership is proposing to develop a 10.440 acre tract, 8.556 acres is located in Conshohocken Borough and 1.884 acres is located in Plymouth Township. The area situated in Plymouth Township has no proposed improvements.

The lot will consist of a proposed 13-story residential building (approximately 30,210 SF footprint) with a separate 2-story parking garage. The project will also include exterior parking, driveways, utilities, landscaping, stormwater management controls, and any necessary measures and amenities to support the development. Pertinent data characterizing the existing and future site conditions are shown on the accompanying Land Development Plans.

The existing condition for the entire tract is mostly vacant lawn but also consists of a shed, wood deck, patio, wheel stops, and asphalt pavement. All structures mentioned will be demolished as a part of this construction. A floodway line from the Plymouth Creek runs along the eastern portion of the property, while the 100-year floodplain limits for both Plymouth Creek and the Schuylkill River exist for portions along the east and south boundary. The previously submitted Zoning Plan has addressed any variances required for the construction of this project.

The PCSM Plan is separate from the E&S Plan and is labeled "Post Construction Stormwater Management Plan".

Documentation is provided that the PCSM Plan was prepared by a person trained and experienced in Post Construction Stormwater Management design methods and techniques applicable to the size and scope of the project.

General PCSM Planning and Design §102.8(b)

1. The following measures were taken to preserve the integrity of stream channels and to maintain and protect the physical, biological, and chemical qualities of the receiving stream:
 - Direct runoff from impervious surfaces to underground basins.
 - Maintain generally the same drainage patterns as in the existing conditions.
 - The installations of water quality filters in each structure.
2. The following measures were taken to prevent an increase in the rate of storm water runoff:
 - Direct runoff to underground basins to control runoff rates.
 - Minimize impervious areas where practical.
 - Maintain generally the same drainage patterns as in the existing condition
3. The following measures were taken to minimize any increase in storm water runoff volume:
 - Provide underground infiltration basins to help reduce runoff volume.
 - Minimize impervious areas where practical.
4. The following measures were taken to minimize impervious areas:
 - Parking areas have been designed to the minimum dimensions per the borough ordinance.
5. The following measures are taken to maximize protection of existing drainage features and vegetation:
 - Access the site thru designated construction entrance.
 - Maintain existing flow paths to the receiving waters.
6. The following measures were taken to minimize land clearing and grading:

- Grade site to minimize extent of cut/fills.
7. The following measures are taken to minimize soil compaction:
- Access the site thru designated construction entrance.
 - Use treaded machinery where practical during earthmoving operations.
 - Grade site to minimize extent of cuts/fills.
8. the following measures were taken to utilize other structural or nonstructural BMPs that prevent or minimize changes in storm water runoff:
- Direct runoff to underground infiltration basins to control runoff rates.
 - Minimize impervious areas where practical.

Types, Depth, Slope, Locations, and Limitations of the Soils
§102.8(f)(2)

Soil Descriptions:

| Soil | Description | Soil Group |
|-------------|--|-------------------|
| Gc | Gibraltar silt loam, 0 to 2 percent slopes | B |
| Ha | Hatboro silt loam, 0 to 3 percent slopes | B/D |
| UudB | Urban land-Udorthents, limestone complex, 0 to 8 percent slopes | C/D |
| UugD | Urban land-Udorthents, schist and gneiss complex, 8 to 25 percent slopes | C |
| UgB | Urban land, 0 to 8 percent slopes | - |

- **No geologic mapping features were identified.**

Infiltration Testing:

Infiltration testing was conducted during the week of 3/22-3/26 by Geo-Technology Associates, Inc.

Out of the five basin locations provided for preliminary testing, four basin layouts (8 testing locations) found elevations with positive infiltration. Basin 4 was unable to location suitable infiltration conditions for the southeast corner of the site, and therefore will only function as a detention basin. The remaining locations are conducive for infiltration and therefore underground infiltration basins have been provided at these locations. The calculations below show the respective field results, along with the design rate used for each basin after a safety factor of 2 is applied.

UG Basin 1 → 0.00, 0.25, 0.00, 0.00
 0.25 in/hr / 2 (factor of safety) = **0.13 in/hr**

UG Basin 2 → 0.25, 1.75, 2.25, 2.50
 $[(0.25 \text{ in/hr} \times 1.75 \text{ in/hr} \times 2.25 \text{ in/hr} \times 2.50 \text{ in/hr})^{(1/4)}] = 1.25 \text{ in/hr} \times 2 \text{ (factor of safety)} = \mathbf{0.63 \text{ in/hr}}$

UG Basin 3 → 0.25, 0.75, 3.00, 11.25
 $[(0.25 \text{ in/hr} \times 0.75 \text{ in/hr} \times 3.00 \text{ in/hr} \times 11.25 \text{ in/hr})^{(1/4)}] = 1.59 \text{ in/hr} \times 2 \text{ (factor of safety)} = \mathbf{0.80 \text{ in/hr}}$

UG Basin 5 → 6.00, 7.50
 $[(6.00 \text{ in/hr} \times 7.50 \text{ in/hr})^{(1/2)}] = 6.71 \text{ in/hr} \times 2 \text{ (factor of safety)} = \mathbf{3.36 \text{ in/hr}}$

Past, Present and Proposed Land Uses and Proposed Alteration to Project Site
§102.8(f)(3)

During the past 5 years, the site has consisted of primarily vacant land with a shed, wood deck, patio, wheel stops, and asphalt pavement.

During the past 50 years, the site has consisted of primarily vacant land with a shed, wood deck, patio,

wheel stops, and asphalt pavement.

Geologic Formations or Soil Conditions

§102.8(f)(12)

Refer to the environmental investigations summary, as prepared by Whitestone Associate, Inc., dated 7/16/15. All contaminated soils will be removed as Phase 1 of construction.

Potential Thermal Impacts

§102.8(f)(13)

A potential for thermal impacts exists in instances where surface runoff is directly conveyed to a receiving stream without adequate attenuation or cooling. To avoid thermal impacts, the following has been employed: underground infiltration basins, underground detention basin, and substantial amounts of vegetation around each of the BMPS. All of these measures will help to control runoff volume and rate and thereby provide additional cooling time, thereby minimizing thermal impacts to the receiving stream.

Riparian Forest Buffer Management Plan

§102.8(f)(14)

- There are no existing/proposed riparian forest buffers located within or outside the limits of disturbance for this project.

PA Integrated Water Quality Monitoring and Assessment Report Impairments (Cat. 4 & 5)

| Impairments | Cause of Impairment |
|---------------------------|-----------------------------------|
| Urban Runoff/Storm Sewers | Siltation, Water/Flow Variability |
| Habit Modification | Siltation, Water/Flow Variability |
| Channelization | Siltation |

- Established TMDL = PCB (Total Maximum Daily Loads Unknown)

Stormwater Management

Watershed

The overall property flows to Plymouth Creek, which is located within the Lower Schuylkill River Watershed. The Lower Schuylkill River Watershed has a Chapter 93 Classification of WWF-MF (Warm Water Fishes – Migratory Fishes).

Design Methodology

The method utilized for calculating the peak flow rates and generating hydrographs for the pre- and post-development was the SCS Method as defined in the computer watershed software HydroCAD 10.00-22. Drainage areas to the point of discharges were delineated and curve numbers were calculated based on the values for each type of land use listed in the Borough of Conshohocken Stormwater Management Ordinance. Time of concentration was calculated for the Pre-Development conditions, but a minimum of 6 minutes was used for the Post-Development drainage areas for a conservative design. Hydrographs for the 1, 2, 10, 25, 50 and 100-yr storms were generated using the 24 hr precipitation amounts dictated by the National Weather Service NOAA website for the storm events.

Peak Rate Points of Discharge

The project is located within one watershed and has two (2) points of discharge along Plymouth Creek. Point of Discharge 1 is a proposed endwall that will discharge along the southeastern portion of the property boundary to Plymouth Creek. This endwall will discharge the reduced flows from Basins 1-4. Point of Discharge 2 is a proposed endwall that will discharge along the northeastern portion of the property boundary to Plymouth Creek. This endwall will discharge the reduced flows from Basin 5. The volume, rates, and water quality reduction requirements have been met for the watershed per PADEP and Borough of Conshohocken standards.

Runoff Calculations – Rational Peak Flow Rate

- The Soil Conservation Service (SCS) method was used with rainfall intensities obtained from NOAA intensity curves and were generated for the 1-, 2-, 5-, 10-, 25-, 50- and 100-yr storms.
- For pre-development runoff, the site was considered either impervious or meadow for calculations. A calculated time of concentration greater than 6 minutes was used.
- For post-development conditions, the site cover was considered either open space/lawns or impervious. A minimum time of concentration of 6 minutes was used for conservative calculations.

Post-Development

- In order to provide as much water quality benefits and infiltration, various BMPs are proposed to provide the greatest possible benefit.
- The Summary of Peak Flow Rates page lists the various hydrograph peak discharges.
- To determine the 2-year volume difference for the NPDES calculations, the net difference in impervious within the limit-of-disturbance was used. Pre-development pervious conditions were calculated as Meadow (with 20% of the impervious area considered meadow as well). Post-development pervious areas were considered Lawn/Open Space.
- The development meets the peak rate reduction requirement for the 1- through 100-year events. The post-development peak rate must not exceed the pre-development peak rates for the 2-, 10-, 25-, 50- and 100-yr storm events. The post-development 2-year peak rate has also been reduced to be below the 1-year pre-development peak rate. The corresponding peak rates are as follows:

| | <u>1-year</u> | <u>2-year</u> | <u>10-year</u> | <u>25-year</u> | <u>50-year</u> | <u>100-year</u> |
|------------------|---------------|---------------|----------------|----------------|----------------|-----------------|
| Pre-development | 7.82 | 12.95 | 30.02 | 42.42 | 53.44 | 65.57 |
| Post-development | 5.85 | 8.28 | 15.66 | 20.69 | 25.02 | 30.46 |

Note that the reduction in post-development flows in compliance with Township requirements should prevent further downstream erosion as a result of this development.

Regarding the calculations, note the following:

- a. The PCSM Spreadsheet has been provided for the proposed development:
 - i. In these Worksheets, the *Total Site Area* that was used is the NPDES boundary for the lot. The *Managed Area* is the total disturbance proposed.
- b. The overall development design will result in 46,890 cuft of additional runoff, per the Volume Component of the PCSM Spreadsheet.
- c. The underground basins will account for 48,461 cuft of storage volume, per the Volume Component of the PCSM Spreadsheet.

Storm Drainage

The stormwater conveyance system has been designed to intercept runoff at topographic low points and areas of significant runoff quantities. Stormwater is then conveyed to the proposed underground infiltration and detention basins, and then outfalls to Plymouth Creek. Flexstorm filter bags have been designed for every proposed inlet on site. These filters will provide additional water quality as stormwater

is then conveyed to the underground basins, before stormwater ultimately drains to Plymouth Creek. Conveyance design precipitation amounts are based on the rainfall intensities specified from the NOAA Atlas 14, Volume 2, Version 3 of the Conshohocken, Pennsylvania location for the 100-year storm event. The Bentley StormCAD V8i computer program has been utilized for the design of the storm conveyance system.

The proposed stormwater management program described within this report has been designed to comply with the Borough of Conshohocken Stormwater Management Ordinance and the standards set forth by the Pennsylvania Department of Environmental Protection.

Written Description of PCSM BMPs §102.8(f)(6)

- BMP 6.6.4 – Water Quality Inlets
 - In order to ensure that the runoff leaving the site does not contain sediment, water quality inlets have been proposed.
 - All proposed inlets consist of a Flexstorm filter bag insert.
- BMP 6.4.2 – Underground Infiltration Basins
 - Provides necessary infiltration to meet volume requirements.
 - Underground infiltration basins #1, #2, #3, and #5 provided on site.

Antidegradation Analysis

Background

Corson Street Acquisition Limited Partnership is proposing to construct a 13-story residential building in Conshohocken Borough, PA. This antidegradation analysis has been compiled for the Individual NPDES application due to the impairments found within the Plymouth Creek. Every effort has been made to incorporate the necessary BMPs to infiltrate the increased runoff associated with a 2-year storm and remove pollutants to comply with the no-discharge alternative.

Site Inventory/Description/Analysis

The PCSM plans have a detailed description of the existing natural features of the site including:

1. Topography
2. Soils descriptions

These areas have been closely examined to determine the appropriate BMP measures and locations suitable for the site.

Non-Discharge Alternative Evaluation for Post-Construction Stormwater Management

Alternative Siting/Location/Configuration/Discharge

The proposed development is located on a property that is currently zoned as SP-3 Specially Planned District. The extents of the project are in accordance with the applicable township and county regulations. Alternative site locations within the township are not feasible and the proposed discharge point will model the existing condition. Several BMP's have been incorporated into the design to reduce thermal impacts, provide for the required rate reduction, recharge volume and water quality requirements.

Low Impact Development (LID)

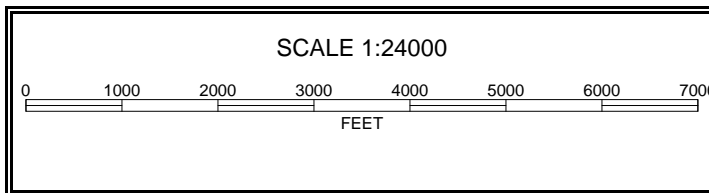
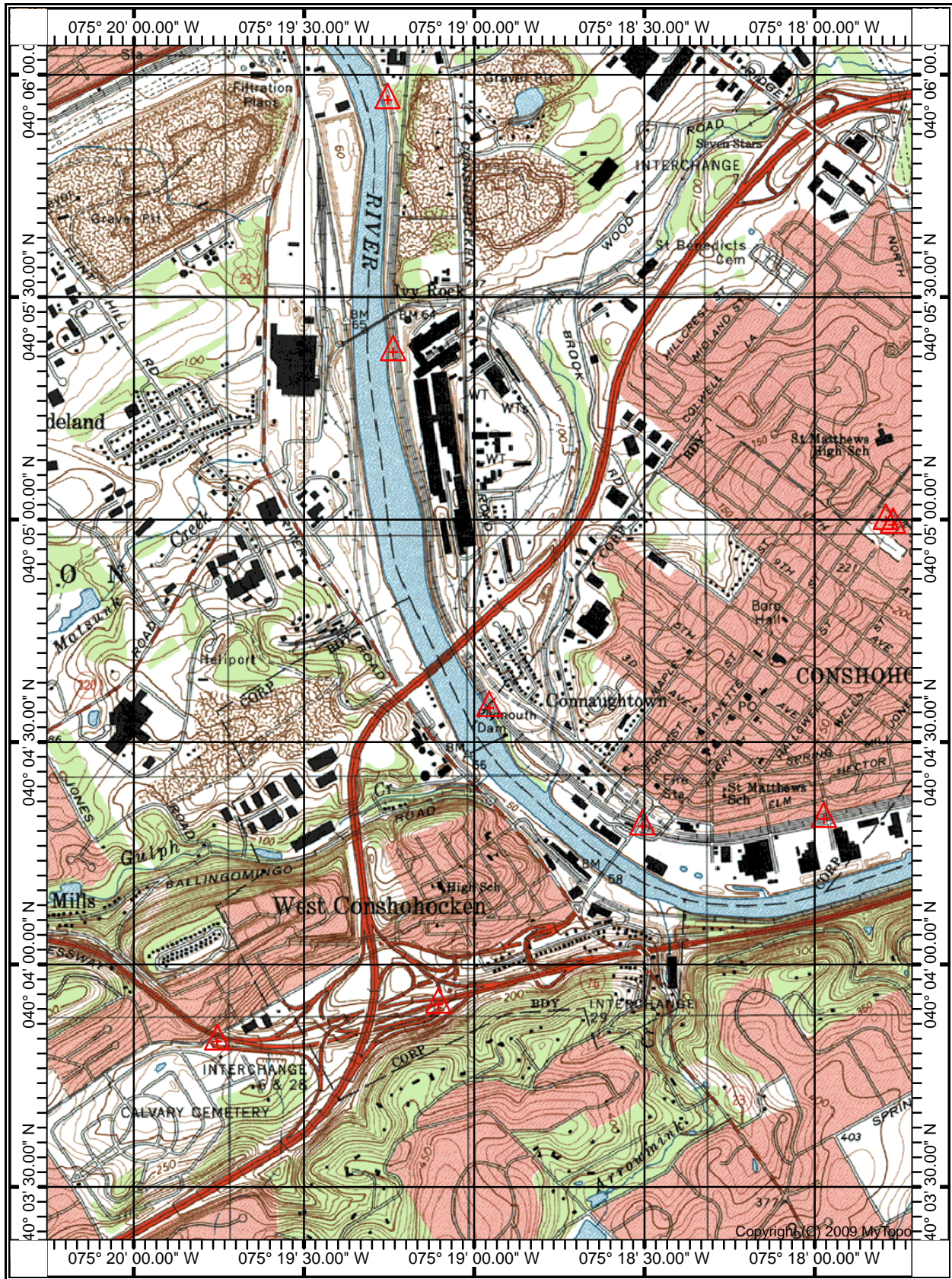
LID was accomplished by using the minimum LID parking space requirements per the Borough of Conshohocken Standard. A 2-story parking garage is also provided to accommodate more parking spaces within a smaller footprint. By providing the minimum dimensions and consolidating spaces in a parking garage, the amount of impervious area is reduced.

Riparian Buffers

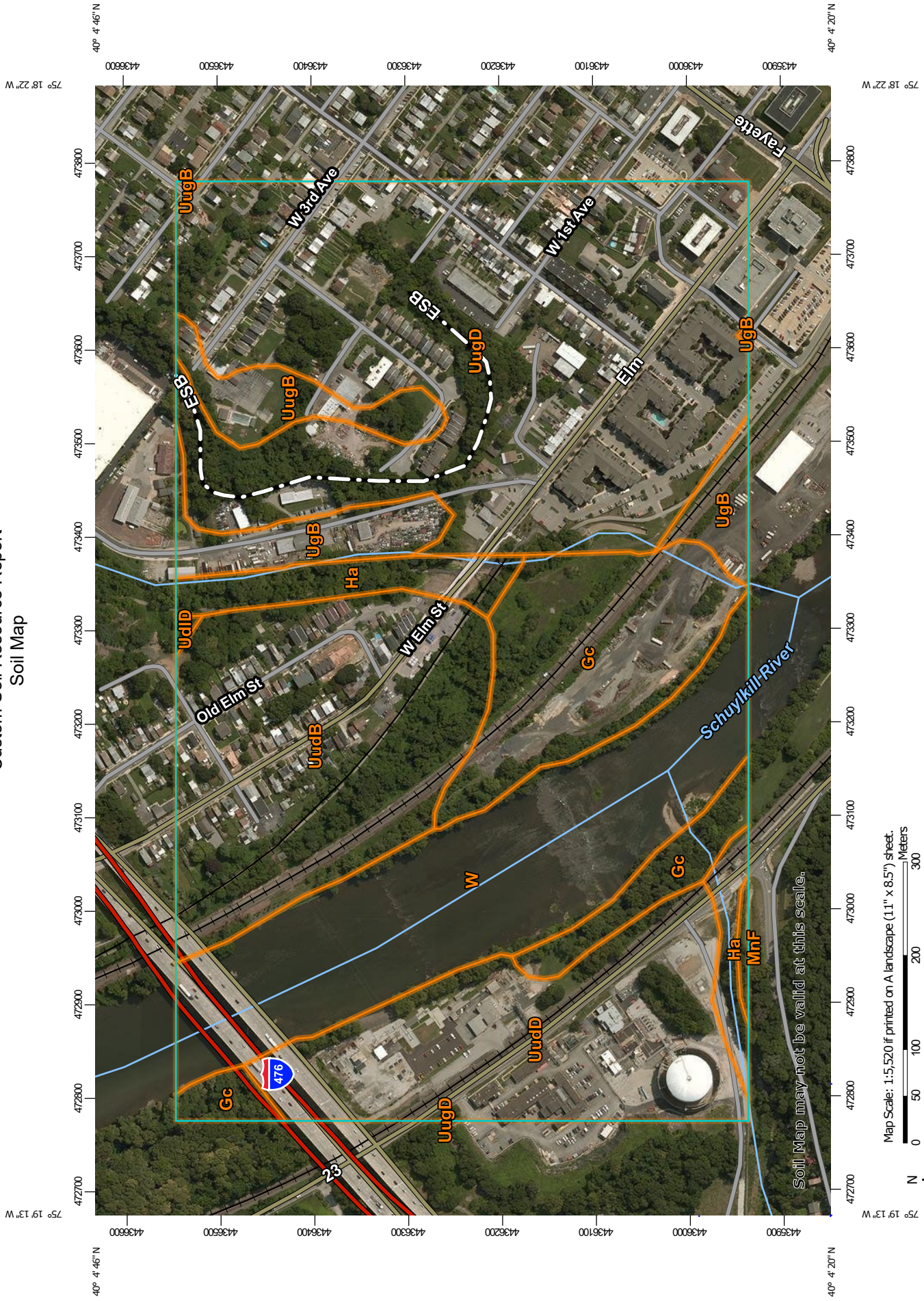
A riparian buffer is not applicable as indicated by the Montgomery County Conservation District and Conshohocken Borough.

Infiltration

Four (4) underground infiltration basins are proposed throughout the site to infiltrate the necessary volume for the 2-year, 24-hour storm.

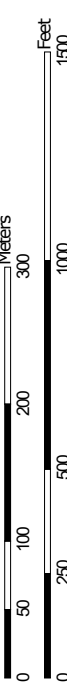


Custom Soil Resource Report
Soil Map



Soil Map may not be valid at this scale.

Map Scale: 1:5,520 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

- Area of Interest (AOI)**
 - Area of Interest (AOI)
- Soils**
 - Soil Map Unit Polygons
 - Soil Map Unit Lines
 - Soil Map Unit Points
- Special Point Features**
 - Blowout
 - Borrow Pit
 - Clay Spot
 - Closed Depression
 - Gravel Pit
 - Gravelly Spot
 - Landfill
 - Lava Flow
 - Marsh or swamp
 - Mine or Quarry
 - Miscellaneous Water
 - Perennial Water
 - Rock Outcrop
 - Saline Spot
 - Sandy Spot
 - Severely Eroded Spot
 - Sinkhole
 - Slide or Slip
 - Sodic Spot
- Water Features**
 - Streams and Canals
- Transportation**
 - Rails
 - Interstate Highways
 - US Routes
 - Major Roads
 - Local Roads
- Background**
 - Aerial Photography
- Other Features**
 - Spoil Area
 - Stony Spot
 - Very Stony Spot
 - Wet Spot
 - Other
 - Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Montgomery County, Pennsylvania
 Survey Area Data: Version 15, Jun 5, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 25, 2014—Aug 11, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|------------------------------------|--|--------------|----------------|
| Gc | Gibraltar silt loam | 17.0 | 11.2% |
| Ha | Hatboro silt loam | 5.5 | 3.6% |
| MnF | Manor loam, 25 to 60 percent slopes, very stony | 0.3 | 0.2% |
| UdID | Udorthents, limestone, 8 to 25 percent slopes | 0.1 | 0.1% |
| UgB | Urban land, 0 to 8 percent slopes | 5.9 | 3.9% |
| UudB | Urban land-Udorthents, limestone complex, 0 to 8 percent slopes | 24.0 | 15.7% |
| UudD | Urban land-Udorthents, limestone complex, 8 to 25 percent slopes | 19.8 | 13.0% |
| UugB | Urban land-Udorthents, schist and gneiss complex, 0 to 8 percent slopes | 3.7 | 2.5% |
| UugD | Urban land-Udorthents, schist and gneiss complex, 8 to 25 percent slopes | 51.6 | 33.9% |
| W | Water | 24.2 | 15.9% |
| Totals for Area of Interest | | 152.1 | 100.0% |

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a

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particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

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Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Montgomery County, Pennsylvania

Gc—Gibraltar silt loam

Map Unit Setting

National map unit symbol: 1nnty
Elevation: 100 to 840 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 133 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Gibraltar and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gibraltar

Setting

Landform: Flood plains, levees
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coal overwash over alluvium derived from shale and siltstone

Typical profile

A - 0 to 4 inches: silt loam
C1 - 4 to 24 inches: silt loam
C2 - 24 to 30 inches: sandy loam
2Apb - 30 to 62 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 60 to 72 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water capacity: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Holly

Percent of map unit: 5 percent
Landform: Flood plains

Custom Soil Resource Report

Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Ha—Hatboro silt loam

Map Unit Setting

National map unit symbol: 154h
Elevation: 200 to 800 feet
Mean annual precipitation: 36 to 50 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 140 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Hatboro and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hatboro

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Parent material: Alluvium derived from metamorphic and sedimentary rock

Typical profile

Ap - 0 to 9 inches: silt loam
Bg - 9 to 44 inches: silt loam
Cg - 44 to 56 inches: sandy clay loam
C - 56 to 70 inches: stratified gravelly sand to clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 60 to 99 inches to lithic bedrock
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Available water capacity: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Glenville

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Foothlope, backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Hydric soil rating: No

MnF—Manor loam, 25 to 60 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2fgfr
Elevation: 250 to 1,000 feet
Mean annual precipitation: 35 to 50 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 150 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Manor, very stony, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Manor, Very Stony

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Residuum weathered from mica schist

Typical profile

O_i - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: loam
B_w - 3 to 26 inches: channery loam
C - 26 to 60 inches: very fine sandy loam

Properties and qualities

Slope: 25 to 60 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 72 to 99 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: B

Hydric soil rating: No

UdID—Udorthents, limestone, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2dtvj

Elevation: 300 to 900 feet

Mean annual precipitation: 42 to 48 inches

Mean annual air temperature: 50 to 57 degrees F

Frost-free period: 160 to 200 days

Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, limestone, and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Limestone

Setting

Landform: Hills

Landform position (three-dimensional): Interfluve, side slope, nose slope

Down-slope shape: Linear, convex

Across-slope shape: Convex, linear

Parent material: Graded areas of argillaceous limestone

Typical profile

H1 - 0 to 6 inches: silty clay loam

H2 - 6 to 60 inches: clay

Properties and qualities

Slope: 8 to 25 percent

Depth to restrictive feature: 40 to 99 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 60 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

UgB—Urban land, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2dtyq
Elevation: 800 to 1,500 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 41 to 62 degrees F
Frost-free period: 130 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Pavement, buildings and other artificially covered areas human transported material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Udorthents, unstable fill

Percent of map unit: 10 percent
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

UudB—Urban land-Udorthents, limestone complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2dtz5
Elevation: 300 to 1,000 feet

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Mean annual precipitation: 36 to 50 inches
Mean annual air temperature: 46 to 57 degrees F
Frost-free period: 140 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 80 percent
Udorthents, limestone, and similar soils: 15 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Hills, valleys
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Interfluve, side slope, nose slope, head slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Pavement, buildings and other artificially covered areas

Typical profile

H1 - 0 to 6 inches: variable

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 10 to 99 inches to lithic bedrock
Available water capacity: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Description of Udorthents, Limestone

Setting

Landform: Valleys, hills
Landform position (two-dimensional): Shoulder, footslope, backslope, summit
Landform position (three-dimensional): Interfluve, side slope, nose slope, head slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Graded areas of argillaceous limestone

Typical profile

H1 - 0 to 6 inches: clay loam
H2 - 6 to 60 inches: clay

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 20 to 99 inches to lithic bedrock
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 24 inches

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Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Duffield

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

UudD—Urban land-Udorthents, limestone complex, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2dtz6
Elevation: 300 to 1,000 feet
Mean annual precipitation: 36 to 50 inches
Mean annual air temperature: 46 to 57 degrees F
Frost-free period: 140 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 80 percent
Udorthents, limestone, and similar soils: 15 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Ridges, hills, valleys
Landform position (two-dimensional): Backslope, shoulder, footslope, summit
Landform position (three-dimensional): Interfluve, side slope, nose slope, head slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Pavement, buildings and other artificially covered areas

Typical profile

H1 - 0 to 6 inches: variable

Properties and qualities

Slope: 8 to 25 percent

Depth to restrictive feature: 10 to 99 inches to lithic bedrock

Available water capacity: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydric soil rating: No

Description of Udorthents, Limestone

Setting

Landform: Hills, valleys, ridges

Landform position (two-dimensional): Summit, shoulder, backslope, footslope

Landform position (three-dimensional): Interfluve, side slope, nose slope, head slope

Down-slope shape: Linear, convex

Across-slope shape: Convex, linear

Parent material: Graded areas of limestone and dolomite

Typical profile

H1 - 0 to 6 inches: clay loam

H2 - 6 to 60 inches: clay

Properties and qualities

Slope: 8 to 25 percent

Depth to restrictive feature: 20 to 99 inches to lithic bedrock

Drainage class: Moderately well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 6 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: C/D

Hydric soil rating: No

Minor Components

Duffield

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

UugB—Urban land-Udorthents, schist and gneiss complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2dtz7
Elevation: 200 to 2,000 feet
Mean annual precipitation: 35 to 55 inches
Mean annual air temperature: 45 to 61 degrees F
Frost-free period: 110 to 235 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 80 percent
Udorthents, schist and gneiss, and similar soils: 15 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Pavement, buildings and other artificially covered areas

Typical profile

C - 0 to 6 inches: variable

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 10 to 99 inches to lithic bedrock
Available water capacity: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Description of Udorthents, Schist And Gneiss

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Graded areas of schist and/or gneiss

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Typical profile

Ap - 0 to 6 inches: loam
C - 6 to 40 inches: silty clay loam
R - 40 to 60 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 20 to 70 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Glenelg

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Edgemont

Percent of map unit: 1 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Glenville

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Hydric soil rating: No

Baile

Percent of map unit: 1 percent
Landform: Depressions
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope

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Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Gladstone

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

UugD—Urban land-Udorthents, schist and gneiss complex, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2dtz8
Elevation: 200 to 2,000 feet
Mean annual precipitation: 35 to 55 inches
Mean annual air temperature: 45 to 61 degrees F
Frost-free period: 110 to 235 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 80 percent
Udorthents, schist and gneiss, and similar soils: 15 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Pavement, buildings and other artificially covered areas

Typical profile

C - 0 to 6 inches: variable

Properties and qualities

Slope: 8 to 25 percent
Depth to restrictive feature: 10 to 99 inches to lithic bedrock
Available water capacity: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

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Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Description of Udorthents, Schist And Gneiss

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Graded areas of schist and/or gneiss

Typical profile

Ap - 0 to 6 inches: loam
C - 6 to 40 inches: silty clay loam
R - 40 to 60 inches: bedrock

Properties and qualities

Slope: 8 to 25 percent
Depth to restrictive feature: 20 to 70 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Glenville

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Hydric soil rating: No

Baile

Percent of map unit: 1 percent
Landform: Depressions
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Edgemont

Percent of map unit: 1 percent

Custom Soil Resource Report

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Gladstone

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Glenelg

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: 1nnv3
Mean annual precipitation: 36 to 50 inches
Mean annual air temperature: 46 to 59 degrees F
Frost-free period: 120 to 214 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Parent material: Rivers streams ponds

Properties and qualities

Runoff class: Negligible
Frequency of ponding: Frequent

NOAA Atlas 14, Volume 2, Version 3
CONSHOHOCKEN
Station ID: 36-1737



Location name: Conshohocken, Pennsylvania,
USA*

Latitude: 40.0744°, Longitude: -75.3178°

Elevation:

Elevation (station metadata): 70 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 | 0.347 (0.319-0.378) | 0.413 (0.379-0.450) | 0.484 (0.444-0.527) | 0.534 (0.489-0.582) | 0.595 (0.541-0.648) | 0.636 (0.575-0.693) | 0.676 (0.609-0.738) | 0.711 (0.637-0.778) | 0.751 (0.667-0.826) | 0.781 (0.688-0.862) |
| 10-min | 0.554 (0.509-0.603) | 0.660 (0.606-0.720) | 0.776 (0.710-0.845) | 0.855 (0.782-0.931) | 0.948 (0.862-1.03) | 1.01 (0.916-1.10) | 1.07 (0.968-1.17) | 1.13 (1.01-1.23) | 1.19 (1.06-1.31) | 1.23 (1.08-1.36) |
| 15-min | 0.692 (0.636-0.754) | 0.830 (0.762-0.905) | 0.981 (0.899-1.07) | 1.08 (0.990-1.18) | 1.20 (1.09-1.31) | 1.28 (1.16-1.40) | 1.36 (1.22-1.48) | 1.42 (1.27-1.56) | 1.50 (1.33-1.64) | 1.54 (1.36-1.71) |
| 30-min | 0.949 (0.873-1.03) | 1.15 (1.05-1.25) | 1.39 (1.28-1.52) | 1.57 (1.43-1.71) | 1.78 (1.62-1.94) | 1.93 (1.75-2.10) | 2.08 (1.87-2.27) | 2.21 (1.98-2.42) | 2.38 (2.11-2.62) | 2.50 (2.20-2.76) |
| 60-min | 1.18 (1.09-1.29) | 1.44 (1.32-1.57) | 1.79 (1.64-1.95) | 2.04 (1.87-2.22) | 2.37 (2.16-2.58) | 2.62 (2.37-2.85) | 2.86 (2.58-3.13) | 3.10 (2.78-3.40) | 3.41 (3.03-3.75) | 3.65 (3.22-4.03) |
| 2-hr | 1.42 (1.29-1.55) | 1.72 (1.58-1.89) | 2.15 (1.96-2.35) | 2.48 (2.25-2.71) | 2.91 (2.63-3.18) | 3.25 (2.92-3.55) | 3.59 (3.20-3.93) | 3.93 (3.48-4.31) | 4.39 (3.84-4.83) | 4.74 (4.11-5.24) |
| 3-hr | 1.55 (1.42-1.70) | 1.88 (1.72-2.07) | 2.35 (2.15-2.58) | 2.72 (2.47-2.98) | 3.20 (2.89-3.51) | 3.58 (3.22-3.92) | 3.97 (3.54-4.36) | 4.37 (3.86-4.80) | 4.90 (4.27-5.41) | 5.31 (4.58-5.88) |
| 6-hr | 1.94 (1.77-2.13) | 2.34 (2.15-2.58) | 2.92 (2.67-3.21) | 3.39 (3.08-3.72) | 4.04 (3.65-4.43) | 4.57 (4.09-5.01) | 5.13 (4.55-5.62) | 5.72 (5.01-6.27) | 6.54 (5.63-7.22) | 7.20 (6.11-7.98) |
| 12-hr | 2.36 (2.16-2.61) | 2.85 (2.61-3.15) | 3.57 (3.26-3.94) | 4.18 (3.79-4.60) | 5.05 (4.54-5.55) | 5.79 (5.15-6.36) | 6.59 (5.79-7.25) | 7.45 (6.46-8.23) | 8.72 (7.39-9.66) | 9.77 (8.14-10.9) |
| 24-hr | 2.73 (2.50-2.98) | 3.28 (3.01-3.59) | 4.12 (3.78-4.50) | 4.82 (4.40-5.25) | 5.82 (5.30-6.34) | 6.67 (6.04-7.26) | 7.58 (6.83-8.24) | 8.57 (7.67-9.31) | 10.0 (8.85-10.9) | 11.2 (9.81-12.2) |
| 2-day | 3.15 (2.88-3.44) | 3.80 (3.48-4.15) | 4.77 (4.37-5.22) | 5.57 (5.08-6.08) | 6.69 (6.08-7.30) | 7.63 (6.91-8.31) | 8.62 (7.76-9.40) | 9.69 (8.66-10.6) | 11.2 (9.92-12.2) | 12.4 (10.9-13.6) |
| 3-day | 3.32 (3.04-3.63) | 4.00 (3.67-4.38) | 5.01 (4.59-5.48) | 5.83 (5.34-6.37) | 7.00 (6.37-7.63) | 7.97 (7.23-8.68) | 8.99 (8.11-9.79) | 10.1 (9.04-11.0) | 11.6 (10.3-12.7) | 12.9 (11.4-14.1) |
| 4-day | 3.49 (3.21-3.82) | 4.20 (3.87-4.60) | 5.25 (4.82-5.75) | 6.10 (5.59-6.67) | 7.31 (6.67-7.97) | 8.30 (7.55-9.04) | 9.35 (8.46-10.2) | 10.5 (9.41-11.4) | 12.1 (10.7-13.2) | 13.3 (11.8-14.6) |
| 7-day | 4.08 (3.78-4.44) | 4.89 (4.53-5.33) | 6.05 (5.59-6.59) | 7.00 (6.46-7.62) | 8.35 (7.67-9.08) | 9.47 (8.66-10.3) | 10.7 (9.69-11.6) | 11.9 (10.8-12.9) | 13.7 (12.3-14.9) | 15.2 (13.5-16.5) |
| 10-day | 4.65 (4.32-5.02) | 5.55 (5.17-6.00) | 6.77 (6.29-7.32) | 7.75 (7.18-8.37) | 9.11 (8.41-9.83) | 10.2 (9.39-11.0) | 11.3 (10.4-12.2) | 12.5 (11.4-13.5) | 14.2 (12.8-15.3) | 15.5 (13.9-16.8) |
| 20-day | 6.29 (5.89-6.72) | 7.46 (6.99-7.98) | 8.90 (8.33-9.52) | 10.0 (9.38-10.7) | 11.6 (10.8-12.3) | 12.7 (11.9-13.6) | 13.9 (12.9-14.9) | 15.2 (14.0-16.2) | 16.8 (15.4-18.0) | 18.0 (16.5-19.3) |
| 30-day | 7.83 (7.40-8.28) | 9.23 (8.72-9.76) | 10.8 (10.2-11.4) | 11.9 (11.3-12.6) | 13.5 (12.7-14.3) | 14.7 (13.8-15.5) | 15.8 (14.9-16.8) | 17.0 (15.9-18.0) | 18.5 (17.2-19.6) | 19.6 (18.1-20.8) |
| 45-day | 9.96 (9.46-10.5) | 11.7 (11.1-12.3) | 13.4 (12.8-14.2) | 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 (20.0-22.5) | 22.3 (20.9-23.6) |
| 60-day | 11.9 (11.4-12.5) | 14.0 (13.3-14.7) | 16.0 (15.2-16.8) | 17.4 (16.6-18.3) | 19.3 (18.3-20.2) | 20.6 (19.6-21.6) | 21.8 (20.7-22.9) | 23.0 (21.8-24.2) | 24.4 (23.1-25.7) | 25.4 (24.0-26.8) |

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
Location name: Conshohocken, Pennsylvania,
USA*

Latitude: 40.0744°, Longitude: -75.3178°

Elevation: 68.66 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 | 4.16 (3.83-4.54) | 4.96 (4.55-5.40) | 5.81 (5.33-6.32) | 6.41 (5.87-6.98) | 7.14 (6.49-7.78) | 7.63 (6.90-8.32) | 8.11 (7.31-8.86) | 8.53 (7.64-9.34) | 9.01 (8.00-9.91) | 9.37 (8.26-10.3) |
| 10-min | 3.32 (3.05-3.62) | 3.96 (3.64-4.32) | 4.66 (4.26-5.07) | 5.13 (4.69-5.59) | 5.69 (5.17-6.19) | 6.07 (5.50-6.62) | 6.44 (5.81-7.03) | 6.76 (6.06-7.40) | 7.13 (6.33-7.84) | 7.38 (6.50-8.15) |
| 15-min | 2.77 (2.54-3.02) | 3.32 (3.05-3.62) | 3.92 (3.60-4.27) | 4.32 (3.96-4.71) | 4.80 (4.37-5.23) | 5.13 (4.64-5.59) | 5.43 (4.89-5.93) | 5.68 (5.10-6.22) | 5.98 (5.31-6.58) | 6.18 (5.44-6.82) |
| 30-min | 1.90 (1.75-2.07) | 2.29 (2.11-2.50) | 2.79 (2.55-3.04) | 3.13 (2.87-3.41) | 3.56 (3.24-3.88) | 3.86 (3.49-4.21) | 4.16 (3.75-4.54) | 4.42 (3.97-4.85) | 4.76 (4.23-5.23) | 5.00 (4.41-5.52) |
| 60-min | 1.18 (1.09-1.29) | 1.44 (1.32-1.57) | 1.79 (1.64-1.95) | 2.04 (1.87-2.22) | 2.37 (2.16-2.58) | 2.62 (2.37-2.85) | 2.86 (2.58-3.13) | 3.10 (2.78-3.40) | 3.41 (3.03-3.75) | 3.65 (3.22-4.03) |
| 2-hr | 0.709 (0.647-0.776) | 0.861 (0.788-0.943) | 1.07 (0.980-1.18) | 1.24 (1.13-1.35) | 1.45 (1.31-1.59) | 1.62 (1.46-1.77) | 1.79 (1.60-1.96) | 1.96 (1.74-2.15) | 2.19 (1.92-2.42) | 2.37 (2.05-2.62) |
| 3-hr | 0.516 (0.472-0.567) | 0.626 (0.573-0.688) | 0.784 (0.715-0.860) | 0.904 (0.822-0.992) | 1.07 (0.962-1.17) | 1.19 (1.07-1.31) | 1.32 (1.18-1.45) | 1.45 (1.28-1.60) | 1.63 (1.42-1.80) | 1.77 (1.53-1.96) |
| 6-hr | 0.324 (0.296-0.356) | 0.391 (0.359-0.431) | 0.488 (0.445-0.536) | 0.566 (0.515-0.621) | 0.675 (0.609-0.739) | 0.764 (0.683-0.836) | 0.857 (0.760-0.939) | 0.955 (0.837-1.05) | 1.09 (0.940-1.21) | 1.20 (1.02-1.33) |
| 12-hr | 0.196 (0.179-0.216) | 0.236 (0.216-0.261) | 0.296 (0.271-0.327) | 0.347 (0.315-0.382) | 0.419 (0.377-0.461) | 0.480 (0.428-0.528) | 0.547 (0.481-0.602) | 0.619 (0.536-0.683) | 0.723 (0.614-0.802) | 0.811 (0.676-0.902) |
| 24-hr | 0.114 (0.104-0.124) | 0.137 (0.126-0.150) | 0.172 (0.158-0.187) | 0.201 (0.184-0.219) | 0.243 (0.221-0.264) | 0.278 (0.252-0.302) | 0.316 (0.285-0.343) | 0.357 (0.319-0.388) | 0.417 (0.369-0.453) | 0.467 (0.409-0.507) |
| 2-day | 0.066 (0.060-0.072) | 0.079 (0.072-0.086) | 0.099 (0.091-0.109) | 0.116 (0.106-0.127) | 0.139 (0.127-0.152) | 0.159 (0.144-0.173) | 0.180 (0.162-0.196) | 0.202 (0.180-0.220) | 0.233 (0.207-0.254) | 0.259 (0.228-0.283) |
| 3-day | 0.046 (0.042-0.050) | 0.056 (0.051-0.061) | 0.070 (0.064-0.076) | 0.081 (0.074-0.089) | 0.097 (0.089-0.106) | 0.111 (0.100-0.121) | 0.125 (0.113-0.136) | 0.140 (0.126-0.153) | 0.162 (0.143-0.176) | 0.179 (0.158-0.196) |
| 4-day | 0.036 (0.033-0.040) | 0.044 (0.040-0.048) | 0.055 (0.050-0.060) | 0.064 (0.058-0.069) | 0.076 (0.069-0.083) | 0.086 (0.079-0.094) | 0.097 (0.088-0.106) | 0.109 (0.098-0.119) | 0.126 (0.112-0.137) | 0.139 (0.123-0.152) |
| 7-day | 0.024 (0.022-0.026) | 0.029 (0.027-0.032) | 0.036 (0.033-0.039) | 0.042 (0.038-0.045) | 0.050 (0.046-0.054) | 0.056 (0.052-0.061) | 0.063 (0.058-0.069) | 0.071 (0.064-0.077) | 0.082 (0.073-0.089) | 0.090 (0.080-0.098) |
| 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 (0.043-0.051) | 0.052 (0.048-0.056) | 0.059 (0.053-0.064) | 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 (0.022-0.026) | 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 (0.016-0.018) | 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 (0.015-0.017) | 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

STANDARD E&S WORKSHEET # 22
PLAN PREPARER RECORD OF TRAINING AND EXPERIENCE IN EROSION AND
SEDIMENT POLLUTION CONTROL METHODS AND TECHNIQUES

NAME OF PLAN PREPARER: William R. Rearden, P.E.

FORMAL EDUCATION

Name of College or Technical Institute: Penn State University

Curriculum or Program: Civil Engineering

Dates of Attendance: **From:** September 1991 **To:** May 1995

Degree Received: B.S. of Civil Engineering with Distinction

OTHER TRAINING:

Name of Training:

Presented By:

Date

EMPLOYMENT HISTORY:

Current Employer: Bohler Engineering PA, LLC

Telephone: 215-996-9100

Former Employer: _____

Telephone: _____

RECENT E&S PLANS PREPARED:

| | | | | |
|--------------------------|--------------------------|-------------------------------|---------------------------------|----------------------------|
| Name of Project: | <u>Arborcrest</u> | <u>Madison at New Britain</u> | <u>Briton Lake Corp. Center</u> | <u>Atwater Village</u> |
| County: | <u>Montgomery</u> | <u>Bucks</u> | <u>Delaware</u> | <u>Chester</u> |
| Municipality: | <u>Whitpain Township</u> | <u>New Britain Twp.</u> | <u>Concord Twp.</u> | <u>East Whiteland Twp.</u> |
| Permit Number: | <u>PAG-02004609016-1</u> | <u>PAG02000911061</u> | <u>PAR10-J1690R1</u> | <u>PAI011514044</u> |
| Approving Agency: | <u>MCCD</u> | <u>BCCD</u> | <u>DCCD</u> | <u>CCCD</u> |

**Net Change in Volume and Rate of Stormwater & Supporting
Calculations**
§102.8(f)(4) & §102.8(f)(8)

General Information

Instructions
General
Volume
Rate
Quality

Project Name: Application Type:

County: Municipality:

Project Type: New Project Minor / Major Amendment

Area: acres Total Earth Disturbance: acres
(In Watershed) *(In Watershed)*

No. of Post-Construction Discharge Points: Start DP Numbering at:

| Discharge Point (DP) No. | Drainage Area (DA) (acres) | Earth Disturbance in DA (acres) | Existing Impervious in DA (acres) | Proposed Impervious in DA (acres) | Receiving Waters | Ch. 93 Class | Structural BMP(s) |
|--------------------------|----------------------------|---------------------------------|-----------------------------------|-----------------------------------|------------------|--------------|-------------------|
| 001 | 5.28 | 5.28 | 0.82 | 4.29 | Plymouth Creek | WWF, MF | Yes |
| 002 | 1.04 | 1.04 | 0.36 | 0.87 | Plymouth Creek | WWF, MF | Yes |
| Undetained Areas | 5.14 | 3.38 | 0.65 | 1.79 | Plymouth Creek | WWF, MF | |
| Totals: | 11.46 | 9.70 | 1.83 | 6.95 | | | |

Volume Management

Project: 400 West Elm

Instructions
General
Volume
Rate
Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): inches

Alternative 2-Year / 24-Hour Storm Event inches

Alternative Source:

Pre-Construction Conditions: No. Rows: 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) | |
|--|--------------|------------|----|---------|---------------|--------------------|---------------|
| Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW) | 0.01 | B | 98 | 0.041 | 3.05 | 111 | |
| Pervious as Meadow | 3.71 | B | 58 | 1.448 | 0.37 | 4,980 | |
| Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW) | 0.96 | C | 98 | 0.041 | 3.05 | 10,619 | |
| Impervious as Meadow | 0.25 | C | 71 | 0.817 | 0.93 | 841 | |
| Pervious as Meadow | 4.77 | C | 71 | 0.817 | 0.93 | 16,044 | |
| TOTAL (ACRES): | | | | | 9.70 | TOTAL (CF): | 32,594 |

Post-Construction Conditions: No. Rows:

| 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%) | 1.23 | B | 61 | 1.279 | 0.48 | 2,130 |

| | | | | | | |
|--|-------------|---|----|-------|--------------------|---------------|
| Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW) | 2.36 | B | 98 | 0.041 | 3.05 | 26,105 |
| Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%) | 2.30 | C | 74 | 0.703 | 1.09 | 9,105 |
| Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW) | 3.81 | C | 98 | 0.041 | 3.05 | 42,144 |
| TOTAL (ACRES): | 9.70 | | | | TOTAL (CF): | 79,484 |

NET CHANGE IN VOLUME TO MANAGE (CF): 46,890

Non-Structural BMP Volume Credits:

- Tree Planting Credit
- Other (attach calculations):

Structural BMP Volume Credits: No. Structural BMPs: 5 Start BMP Numbering at: 1

| DP No. | BMP No. | BMP Name | CSM | Discharge | Incremental BMP DA (acres) | Volume Routed to BMP (CF) | Infiltration / Vegetated Area (SF) | Infiltration Rate (in/hr) | Infiltration Period (hrs) | Vegetated? | Media Depth (ft) | Storage Volume (CF) | Infiltration Credit (CF) | ET Credit (CF) |
|----------------|---------|------------------------------|-----|-----------|----------------------------|---------------------------|------------------------------------|---------------------------|---------------------------|------------|------------------|---------------------|--------------------------|----------------|
| 001 | 1 | Infiltration Bed | - | Off-Site | 1.90 | 16,737 | 18,675 | 0.13 | 94 | No | | 16,649 | 16,457 | |
| 001 | 2 | Infiltration Bed | - | Off-Site | 1.18 | 12,114 | 8,296 | 0.63 | 36 | No | | 11,076 | 12,114 | |
| 001 | 3 | Infiltration Bed | - | Off-Site | 0.97 | 10,729 | 6,289 | 0.80 | 33 | No | | 8,308 | 10,729 | |
| 001 | 4 | Dry Extended Detention Basin | - | Off-Site | 1.24 | 9,313 | 6,473 | 0.00 | | | | | | |
| 002 | 5 | Infiltration Bed | - | Off-Site | 1.04 | 9,161 | 6,321 | 3.36 | 25 | No | | 8,439 | 9,161 | |
| Totals: | | | | | | | | | | | | 48,461 | | |

INFILTRATION & ET CREDITS (CF): 48,461

NET CHANGE IN VOLUME TO MANAGE (CF): 46,890

TOTAL CREDITS (CF):

48,461

VOLUME REQUIREMENT SATISFIED

Rate Control

Project: 400 West Elm

Instructions
General
Volume
Rate
Quality

Precipitation Amounts:

| | |
|---|-------------|
| NOAA 2-Year 24-Hour Storm Event (in): | 3.28 |
| NOAA 10-Year 24-Hour Storm Event (in): | 4.82 |
| NOAA 50-Year 24-Hour Storm Event (in): | 6.67 |
| NOAA 100-Year 24-Hour Storm Event (in): | 7.58 |

| | |
|--|--|
| Alternative 2-Year 24-Hour Storm Event (in): | |
| Alternative 10-Year 24-Hour Storm Event (in): | |
| Alternative 50-Year 24-Hour Storm Event (in): | |
| Alternative 100-Year 24-Hour Storm Event (in): | |

Report Summary of Peak Rates Only

Attach model input and output data or other calculations to support the rates reported below.

| Peak Discharge Rates (cfs) | | | | | |
|----------------------------|------------------|-------------------|------------|------------------------|--|
| | Pre-Construction | Post-Construction | Net Change | | |
| 2-Year Storm: | 12.95 | 8.28 | -4.67 | Rate Control Satisfied | |
| 10-Year Storm: | 30.02 | 15.66 | -14.36 | Rate Control Satisfied | |
| 50-Year Storm: | 53.44 | 25.02 | -28.42 | Rate Control Satisfied | |
| 100-Year Storm: | 65.57 | 30.46 | -35.11 | Rate Control Satisfied | |

| DP No. | BMP No. | BMP Name | MRC | Inflow to BMP (cfs) | | | Outflow from BMP (cfs) | | | | |
|--------|---------|------------------|-----|---------------------|-------|-------|------------------------|------|-------|-------|--------|
| | | | | 2-yr | 10-yr | 50-yr | 100-yr | 2-yr | 10-yr | 50-yr | 100-yr |
| 001 | 1 | Infiltration Bed | - | 7.79 | 12.17 | 17.37 | 19.91 | 0.06 | 0.06 | 0.21 | 0.27 |

| | | | | | | | | | | | |
|-----|---|------------------------------|---|------|------|-------|-------|------|------|------|------|
| 001 | 2 | Infiltration Bed | - | 5.31 | 7.97 | 11.13 | 12.68 | 0.12 | 0.12 | 0.84 | 2.46 |
| 001 | 3 | Infiltration Bed | - | 4.50 | 6.65 | 9.23 | 10.50 | 0.12 | 0.18 | 1.43 | 4.33 |
| 001 | 4 | Dry Extended Detention Basin | - | 4.48 | 7.36 | 10.81 | 12.49 | 0.25 | 0.33 | 2.49 | 6.12 |
| 002 | 5 | Infiltration Bed | - | 4.26 | 6.66 | 9.51 | 10.90 | 0.49 | 0.49 | 0.56 | 0.88 |

Water Quality

Project: 400 West Elm

PRINT

Instructions

General

Volume

Rate

Quality

Pre-Construction Pollutant Loads:

| Land Cover (from Volume Worksheet) | Land Cover for Water Quality | Area (acres) | Soil Group | Runoff Volume (cf) | Pollutant Conc. (mg/L) | | | Pollutant Loads (lbs) | | | |
|--|------------------------------|--------------|------------|--------------------|------------------------|------|------|-----------------------|-------------|-------------|--|
| | | | | | TSS | TP | TN | TSS | TP | TN | |
| Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW) | Residential | 0.01 | B | 111 | 65.0 | 0.29 | 2.05 | 0.45 | 0.00 | 0.01 | |
| Pervious as Meadow | Grassland/Herbaceous | 3.71 | B | 4,980 | 48.8 | 0.22 | 2.30 | 15.18 | 0.07 | 0.72 | |
| Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW) | Residential | 0.96 | C | 10,619 | 65.0 | 0.29 | 2.05 | 43.10 | 0.19 | 1.36 | |
| Impervious as Meadow | Grassland/Herbaceous | 0.25 | C | 841 | 48.8 | 0.22 | 2.30 | 2.56 | 0.01 | 0.12 | |
| Pervious as Meadow | Grassland/Herbaceous | 4.77 | C | 16,044 | 48.8 | 0.22 | 2.30 | 48.89 | 0.22 | 2.30 | |
| TOTAL (ACRES): | | 9.70 | | | TOTALS: | | | 110.17 | 0.49 | 4.51 | |

Post-Construction Pollutant Loads (without BMPs):

| Land Cover (from Volume Worksheet) | Area | Soil | Runoff Volume | Pollutant Conc. (mg/L) | Pollutant Loads (lbs) |
|------------------------------------|------|------|---------------|------------------------|-----------------------|
| | | | | | |

| LAND COVER (FROM VOLUME WORKSHEET) | Quality | (acres) | Group | Volume (cf) | TSS | TP | TN | TSS | TP | TN | |
|--|-------------|---------|-------|-----------------------|------|------|------|-------------|-------------|------|--|
| Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%) | Open Space | 1.23 | B | 2,130 | 78.0 | 0.25 | 1.25 | 10.38 | 0.03 | 0.17 | |
| Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW) | Residential | 2.36 | B | 26,105 | 65.0 | 0.29 | 2.05 | 105.95 | 0.47 | 3.34 | |
| Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%) | Open Space | 2.30 | C | 9,105 | 78.0 | 0.25 | 1.25 | 44.35 | 0.14 | 0.71 | |
| Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW) | Residential | 3.81 | C | 42,144 | 65.0 | 0.29 | 2.05 | 171.05 | 0.76 | 5.39 | |
| TOTAL (ACRES): 9.70 | | | | TOTALS: 331.73 | | | | 1.41 | 9.61 | | |

| | | | |
|---|---------------|-------------|-------------|
| POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS): | 221.55 | 0.92 | 5.10 |
|---|---------------|-------------|-------------|

Characterize Undetained Areas (for Untreated Stormwater)

| Land Cover | Area (acres) | Soil Group | CN | Ia (in) | Q Runoff (in) | Runoff Volume (cf) |
|------------|--------------|------------|----|---------|---------------|--------------------|
| | | | | | | |

Non-Structural BMP Water Quality Credits:

- Pervious Undetained Area Credit
- Other (attach calculations)

Description:

| | | |
|-----|----|----|
| TSS | TP | TN |
| | | |

Structural BMP Water Quality Credits:

- Use default BMP Outflows and Median BMP Outflow Concentrations

| BMP ID | BMP Name | CN | BMP IA | Vol. Routed | Inf. & ET | Capture & Riffle | Outflow | Outflow Conc. (mg/L) | Pollutant Loads (lbs) |
|--------|----------|----|--------|-------------|-----------|------------------|---------|----------------------|-----------------------|
| | | | | | | | | | |

| SP. NO. | No. | BMP TYPE | Area (acres) | to BMP (CF) | Credits (CF) | Buffer Credits (CF) | (CF) | TSS | TP | TN | TSS | TP | TN |
|---------|-----|------------------------------|--------------|-------------|--------------|---------------------|-------|-------|------|------|-------|------|------|
| 001 | 1 | Infiltration Bed | 1.90 | 16,737 | 16,457 | | 280 | 24.30 | 0.19 | 1.19 | 0.42 | 0.00 | 0.02 |
| 001 | 2 | Infiltration Bed | 1.18 | 12,114 | 12,114 | | 0 | 24.30 | 0.19 | 1.19 | 0.00 | 0.00 | 0.00 |
| 001 | 3 | Infiltration Bed | 0.97 | 10,729 | 10,729 | | 0 | 24.30 | 0.19 | 1.19 | 0.00 | 0.00 | 0.00 |
| 001 | 4 | Dry Extended Detention Basin | 1.24 | 9,313 | | | 9,313 | 24.30 | 0.19 | 1.19 | 14.13 | 0.11 | 0.69 |
| 002 | 5 | Infiltration Bed | 1.04 | 9,161 | 9,161 | | 0 | 24.30 | 0.19 | 1.19 | 0.00 | 0.00 | 0.00 |

| TSS | TP | TN |
|--------|------|------|
| 14.56 | 0.11 | 0.71 |
| 89.44 | 0.38 | 2.59 |
| 0.00 | 0.00 | 0.00 |
| 103.99 | 0.49 | 3.30 |
| 110.17 | 0.49 | 4.51 |

POLLUTANT LOADS FROM STRUCTURAL BMP (TREATED) OUTFLOWS (LBS):
POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):
NON-STRUCTURAL BMP WATER QUALITY CREDITS (LBS):
NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):
POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):

WATER QUALITY REQUIREMENT SATISFIED

CERTIFICATION

I certify under penalty of law and subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities) that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I further certify that the structure, function, and calculations contained in this spreadsheet have not been modified in comparison to the spreadsheet DEP has posted to its website or, if modifications were made, an explanation of the modifications made is attached to this spreadsheet.

Kyle Slack
 Spreadsheet User Name

3/26/2021
 Date

Worksheet 4 . Change in Runoff Volume for 100-Year Storm Event

Project Name: 400 West Elm
 Drainage Area: 100-Year Basin Capacity
 100-Year Rainfall: 7.58 in.
 Total Site Area: _____ Acres
 Protected Site Area: 0.00 Acres
 Managed Area: 0.00 Acres

Existing Conditions *

| Cover Type/Condition | Soil Type | Area (sf) | Area (Ac) | CN | S | Ia (0.2 x S) | Q Runoff ¹ (in) | Runoff Volume ² (cuft) |
|------------------------------------|-----------|-----------|-------------|----|-------|--------------|----------------------------|-----------------------------------|
| Impervious | B | | 0.01 | 98 | 0.204 | 0.041 | 7.340 | 266.46 |
| Meadow | B | | 3.71 | 58 | 7.241 | 1.448 | 2.811 | 37,862.87 |
| Impervious | C | | 0.96 | 98 | 0.204 | 0.041 | 7.340 | 25,580.11 |
| Impervious (20% considered meadow) | C | | 0.25 | 71 | 4.085 | 0.817 | 4.217 | 3,826.52 |
| Meadow | C | | 4.77 | 71 | 4.085 | 0.817 | 4.217 | 73,010.03 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Total | | 0 | 9.70 | | | | | 140,545.99 |

- * Per Chapter 3, the following must be implemented:
 1. Existing non-forested pervious areas must be considered meadow (good condition) or its equivalent.
 2. Twenty-percent (20%) of existing impervious area, when present, shall be considered meadow (good condition).

Developed Conditions

| Cover Type/Condition | Soil Type | Area (sf) | Area (Ac) | CN | S | Ia (0.2 x S) | Q Runoff ¹ (in) | Runoff Volume ² (cuft) |
|------------------------------------|-----------|-----------|-------------|----|-------|--------------|----------------------------|-----------------------------------|
| Open Space (Lawns), Good Condition | B | | 1.23 | 61 | 6.393 | 1.279 | 3.128 | 13,965.27 |
| Impervious | B | | 2.36 | 98 | 0.204 | 0.041 | 7.340 | 62,884.43 |
| Open Space (Lawns), Good Condition | C | | 2.30 | 74 | 3.514 | 0.703 | 4.552 | 38,003.24 |
| Impervious | C | | 3.81 | 98 | 0.204 | 0.041 | 7.340 | 101,521.05 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Total | | 0 | 9.70 | | | | | 216,373.99 |

100-year Volume Increase =

| |
|------------------|
| 75,828.00 |
| 20.89 |

 cuft
 acre-inch

2-year Volume Increase = Developed Conditions Runoff Volume - Existing Conditions Runoff Volume

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.)

Note: Runoff Volume must be calculated for EACH land use type/condition and HSGI. The use of a weighted CN value for volume calculations is not acceptable.

Underground Basin 100-Year Storm Storage Capacity

Project: 400 West Elm

Description: Per Conshohocken Borough Code

| | | |
|--|-------------------|-----------|
| Pre-Development Volume = | 140,545.99 | cuft |
| Post-Development Volume = | 216,373.99 | cuft |
| 100-Year Volume Increase = | 75,828.00 | cuft |
| | or | |
| | 20.89 | acre-inch |
| Basin 1 Storage = | 39,083 | cuft |
| | 10.77 | acre-inch |
| Basin 2 Storage = | 17,403 | cuft |
| | 4.79 | acre-inch |
| Basin 3 Storage = | 13,077 | cuft |
| | 3.60 | acre-inch |
| Basin 4 Storage = | 12,866 | cuft |
| | 3.54 | acre-inch |
| Basin 5 Storage = | 13,260 | cuft |
| | 3.65 | acre-inch |
| Total Provided Basin Storage = | 26.36 | acre-inch |
| Additional Required Storage for Sediment Accumulation = | 0.06 | acre-inch |
| Total Required Storage = | 20.95 | acre-inch |

Summary of Peak Flow Rates

Project: 400 West Elm

Runoff Rates (cfs)

| Storm Frequency | <u>1 yr</u> | <u>2 yr</u> | <u>10 yr</u> | <u>25 yr</u> | <u>50 yr</u> | <u>100 yr</u> |
|--|-------------|-------------|--------------|--------------|--------------|---------------|
| Pre-Development* | 7.82 | 12.95 | 30.02 | 42.42 | 53.44 | 65.57 |
| Post Development Allowed** | N/A | 12.95 | 30.02 | 42.42 | 53.44 | 65.57 |
| Total Post-Development Combined to POI #1 | 5.85 | 8.28 | 15.66 | 20.69 | 25.02 | 30.46 |
| | | Good | Good | Good | Good | Good |

** - Permitted post-development peak rates are based on the requirements of the Borough of Conshohocken Stormwater Management Ordinance, as follows:

- 2-year storm post-development must be less than 2-year storm pre-development
- 10-year storm post-development must be less than 10-year storm pre-development
- 25-year storm post-development must be less than 25-year storm pre-development
- 50-year storm post-development must be less than 50-year storm pre-development
- 100-year storm post-development must be less than 100-year storm pre-development

Runoff Calculation CN Worksheets

Project: [400 West Elm](#)

Description: [Pre and Post Development Drainage Areas](#)

Catchment Areas

| Description | HSG B / CN | | HSG C / CN | | Impervious | Total Area (Ac) | Composite CN |
|------------------------|------------------------------------|--------|------------------------------------|--------|------------|-----------------|--------------|
| | Open Space (Lawns), Good Condition | Meadow | Open Space (Lawns), Good Condition | Meadow | Impervious | | |
| | 61 | 58 | 74 | 71 | 98 | | |
| DA-2P(A) - To Basin #1 | | | 0.51 | | 1.39 | 1.90 | 92 |
| DA-2P(B) - To Basin #2 | 0.01 | | 0.06 | | 1.11 | 1.18 | 96 |
| DA-2P(C) - To Basin #3 | | | | | 0.97 | 0.97 | 98 |
| DA-2P(D) - To Basin #4 | 0.32 | | 0.04 | | 0.88 | 1.24 | 88 |
| DA-2P(E) - To Basin #5 | 0.01 | | 0.25 | | 0.78 | 1.04 | 92 |
| DA-2P(F) - Bypass | 0.89 | | 1.44 | | 1.04 | 3.37 | 78 |
| DA-1E | | 3.71 | | 4.77 | 1.22 | 9.70 | 69 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Time of Concentration (Tc) or (Tt) Calculations

Project: 400 West Elm

Description: DA-1E (Pre-development)

Note: Space for as many as three segments per flow type can be used for each worksheet.

Sheet Flow (Applicable to Tc only)

| | Segment ID | AB | | | | | |
|---|---------------|------------------------|---|--|---|--|----------|
| 1. Surface Description (table 3-1) | | Short Grass Prairie | | | | | |
| 2. Manning's roughness coeff., n (table 3-1) | | 0.150 | | | | | |
| 3. Flow length, L (total L ≤ 150 ft) | ft | 50 | | | | | |
| 4. Two-yr 24-hr rainfall, P ₂ | in | 3.28 | | | | | |
| 5. Land slope, s* | ft/ft | 0.0333 | | | | | |
| 6. Tt = 0.007(nL) ^{0.8} / P ₂ ^{0.5} s ^{0.4} | Compute Tt hr | 0.0755 | + | | + | | + |
| *S is averaged | | | | | | | = 0.0755 |

Shallow Concentrated Flow

| | Segment ID | BC | CD | DE | EF | FG | |
|---|------------|---------|--------|---------|---------|---------|----------|
| 7. Surface Description (paved or unpaved) | | Unpaved | Paved | Unpaved | Unpaved | Unpaved | |
| 8. Flow length, L | ft | 194 | 15 | 209 | 28 | 123 | |
| 9. Watercourse slope, s* | ft/ft | 0.0284 | 0.0040 | 0.0643 | 0.2600 | 0.0488 | |
| 10. Average velocity, V | ft/sec | 2.71 | 1.30 | 4.10 | 8.28 | 3.57 | |
| 11. Tt = L / 3600V | | 0.0199 | 0.0032 | 0.0142 | 0.0009 | 0.0096 | = 0.0478 |

Channel Flow

| | Segment ID | | | | | | |
|--|-----------------|--|--|--|--|--|----------|
| 12. Cross sectional flow area, a | ft ² | | | | | | |
| 13. Wetted perimeter, p | ft | | | | | | |
| 14. Hydraulic radius, r = a/wp | ft | | | | | | |
| 15. Channel Slope, s | ft/ft | | | | | | |
| 16. Manning's roughness coeff., n | | | | | | | |
| 17. V = 1.49r ^{2/3} s ^{1/2} / n | | | | | | | |
| 18. Flow length, L | ft | | | | | | |
| 19. Tt = L / 3600V | | | | | | | |
| 20. Watershed or subarea T _c or T _t (add T _t in steps 6,11, and 19) | | | | | | | = 0.1233 |

Tc = **7.40** minutes



DA-1E



DA-2P(A)



DA-2P(B)



DA-2P(C)



DA-2P(D)



DA-2P(E)



UG Basin 1



UG Basin 2



UG Basin 3



UG Basin 4



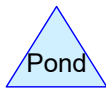
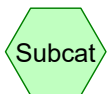
UG Basin 5



DA-2P(F) - Bypass



Total Post POI 1



Routing Diagram for PC201167 HydroCAD-02
Prepared by Bohler Engineering, Printed 6/3/2021
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PC201167 HydroCAD-02

Prepared by Bohler Engineering

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Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

Summary for Subcatchment 1S: DA-1E

Runoff = 65.57 cfs @ 11.99 hrs, Volume= 140,671 cf, Depth= 4.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=7.58"

| Area (ac) | CN | Description |
|-----------|----|---------------------------|
| 3.710 | 58 | Meadow, non-grazed, HSG B |
| 1.220 | 98 | Paved parking, HSG C |
| 4.770 | 71 | Meadow, non-grazed, HSG C |
| 9.700 | 69 | Weighted Average |
| 8.480 | | 87.42% Pervious Area |
| 1.220 | | 12.58% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|-------------------------|
| 7.4 | | | | | Direct Entry, PreDev Tc |

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Prepared by Bohler Engineering

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Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

Summary for Subcatchment 2S: DA-2P(A)

Runoff = 19.91 cfs @ 11.97 hrs, Volume= 45,713 cf, Depth= 6.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=7.58"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 0.510 | 74 | >75% Grass cover, Good, HSG C |
| 1.390 | 98 | Paved parking, HSG C |
| 1.900 | 92 | Weighted Average |
| 0.510 | | 26.84% Pervious Area |
| 1.390 | | 73.16% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---------------------------------|
| 6.0 | | | | | Direct Entry, basin 1 tc |

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Prepared by Bohler Engineering

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Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

Summary for Subcatchment 3S: DA-2P(B)

Runoff = 12.68 cfs @ 11.97 hrs, Volume= 30,420 cf, Depth= 7.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=7.58"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 0.010 | 61 | >75% Grass cover, Good, HSG B |
| 0.060 | 74 | >75% Grass cover, Good, HSG C |
| 0.430 | 98 | Paved parking, HSG C |
| 0.680 | 98 | Unconnected roofs, HSG C |
| 1.180 | 96 | Weighted Average |
| 0.070 | | 5.93% Pervious Area |
| 1.110 | | 94.07% Impervious Area |
| 0.680 | | 61.26% Unconnected |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---------------------------------|
| 6.0 | | | | | Direct Entry, basin 2 tc |

PC201167 HydroCAD-02

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Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

Summary for Subcatchment 4S: DA-2P(C)

Runoff = 10.50 cfs @ 11.97 hrs, Volume= 25,847 cf, Depth= 7.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=7.58"

| Area (ac) | CN | Description |
|-----------|----|--------------------------|
| 0.970 | 98 | Unconnected roofs, HSG B |
| 0.970 | | 100.00% Impervious Area |
| 0.970 | | 100.00% Unconnected |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---------------------------------|
| 6.0 | | | | | Direct Entry, basin 3 tc |

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Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

Summary for Subcatchment 5S: DA-2P(D)

Runoff = 12.49 cfs @ 11.97 hrs, Volume= 27,719 cf, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=7.58"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 0.320 | 61 | >75% Grass cover, Good, HSG B |
| 0.040 | 74 | >75% Grass cover, Good, HSG C |
| 0.880 | 98 | Paved parking, HSG B |
| 1.240 | 88 | Weighted Average |
| 0.360 | | 29.03% Pervious Area |
| 0.880 | | 70.97% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---------------------------------|
| 6.0 | | | | | Direct Entry, basin 4 tc |

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Type II 24-hr 100-yr Rainfall=7.58"

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Summary for Subcatchment 6S: DA-2P(E)

Runoff = 10.90 cfs @ 11.97 hrs, Volume= 25,022 cf, Depth= 6.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=7.58"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 0.010 | 61 | >75% Grass cover, Good, HSG B |
| 0.250 | 74 | >75% Grass cover, Good, HSG C |
| 0.780 | 98 | Paved parking, HSG C |
| 1.040 | 92 | Weighted Average |
| 0.260 | | 25.00% Pervious Area |
| 0.780 | | 75.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|---------------------------------|
| 6.0 | | | | | Direct Entry, basin 5 tc |

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Type II 24-hr 100-yr Rainfall=7.58"

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Summary for Subcatchment 7S: DA-2P(F) - Bypass

Runoff = 29.32 cfs @ 11.97 hrs, Volume= 61,398 cf, Depth= 5.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=7.58"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 1.440 | 74 | >75% Grass cover, Good, HSG C |
| 1.050 | 98 | Paved parking, HSG C |
| 0.890 | 61 | >75% Grass cover, Good, HSG B |
| 3.380 | 78 | Weighted Average |
| 2.330 | | 68.93% Pervious Area |
| 1.050 | | 31.07% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--------------------------------|
| 6.0 | | | | | Direct Entry, bypass tc |

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Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

Summary for Pond 1P: UG Basin 1

Inflow Area = 82,764 sf, 73.16% Impervious, Inflow Depth = 6.63" for 100-yr event
 Inflow = 19.91 cfs @ 11.97 hrs, Volume= 45,713 cf
 Outflow = 0.27 cfs @ 17.73 hrs, Volume= 31,921 cf, Atten= 99%, Lag= 345.5 min
 Discarded = 0.06 cfs @ 5.53 hrs, Volume= 18,555 cf
 Primary = 0.21 cfs @ 17.73 hrs, Volume= 13,366 cf

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 76.95' @ 17.73 hrs Surf.Area= 18,675 sf Storage= 34,727 cf

Plug-Flow detention time= 1,633.8 min calculated for 31,921 cf (70% of inflow)
 Center-of-Mass det. time= 1,538.2 min (2,305.2 - 766.9)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|--------|---------------|--|
| #1 | 74.00' | 17,692 cf | Stone (Prismatic) Listed below (Recalc) 65,363 cf Overall - 21,132 cf Embedded = 44,230 cf x 40.0% Voids |
| #2 | 74.50' | 21,132 cf | ADS_StormTech SC-740 +Cap x 460 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap |
| | | 38,824 cf | Total Available Storage |

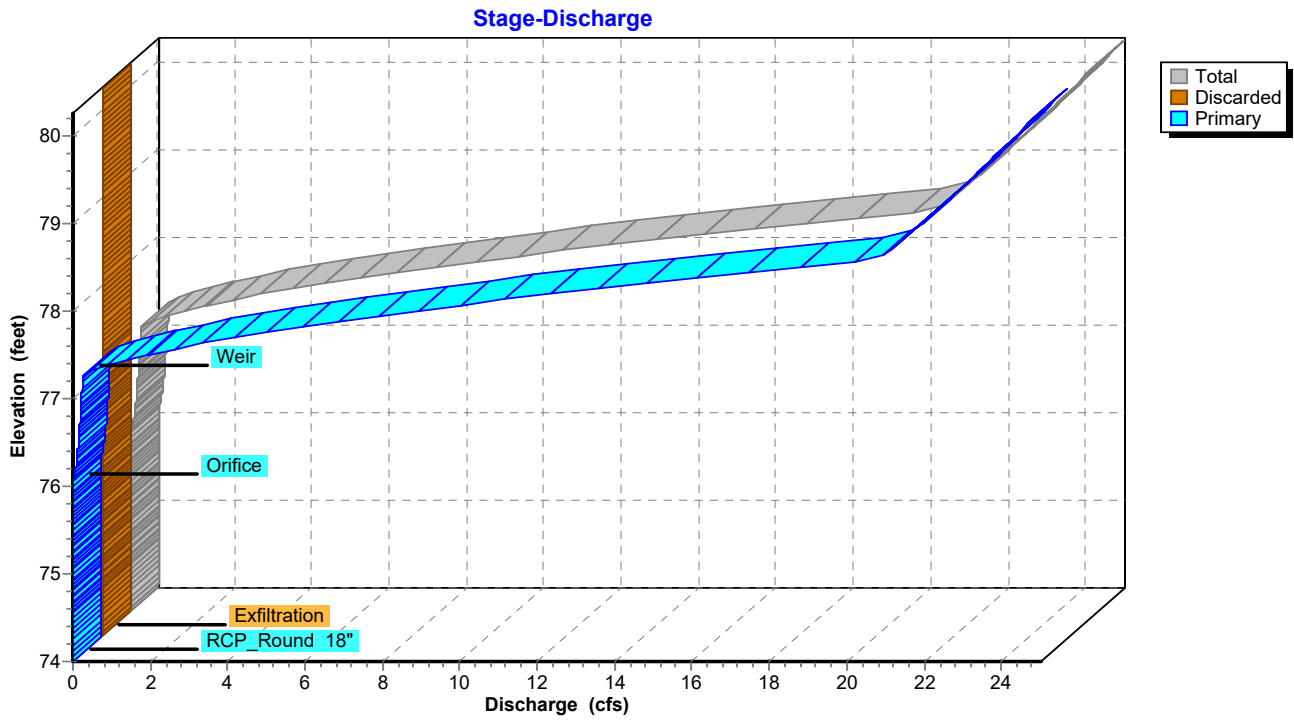
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|------------------|-------------------|------------------------|------------------------|
| 74.00 | 18,675 | 0 | 0 |
| 77.50 | 18,675 | 65,363 | 65,363 |

| Device | Routing | Invert | Outlet Devices |
|--------|-----------|--------|---|
| #1 | Primary | 74.00' | 18.0" Round RCP_Round 18" L= 62.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 74.00' / 69.06' S= 0.0797 ' /' Cc= 0.900 n= 0.015, Flow Area= 1.77 sf |
| #2 | Device 1 | 76.00' | 3.0" Vert. Orifice C= 0.600 |
| #3 | Discarded | 74.00' | 0.130 in/hr Exfiltration over Surface area |
| #4 | Device 1 | 77.25' | Weir, Cv= 2.62 (C= 3.28) Head (feet) 0.00 3.01 Width (feet) 4.00 4.00 |

Discarded OutFlow Max=0.06 cfs @ 5.53 hrs HW=74.06' (Free Discharge)
 ↳ **3=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.21 cfs @ 17.73 hrs HW=76.95' (Free Discharge)
 ↳ **1=RCP_Round 18"** (Passes 0.21 cfs of 15.78 cfs potential flow)
 ↳ **2=Orifice** (Orifice Controls 0.21 cfs @ 4.38 fps)
 ↳ **4=Weir** (Controls 0.00 cfs)

Pond 1P: UG Basin 1



Stage-Area-Storage for Pond 1P: UG Basin 1

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) | Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---------------------|--------------------|-------------------------|---------------------|--------------------|-------------------------|
| 74.00 | 18,675 | 0 | 79.30 | 18,675 | 38,824 |
| 74.10 | 18,675 | 747 | 79.40 | 18,675 | 38,824 |
| 74.20 | 18,675 | 1,494 | 79.50 | 18,675 | 38,824 |
| 74.30 | 18,675 | 2,241 | 79.60 | 18,675 | 38,824 |
| 74.40 | 18,675 | 2,988 | 79.70 | 18,675 | 38,824 |
| 74.50 | 18,675 | 3,735 | 79.80 | 18,675 | 38,824 |
| 74.60 | 18,675 | 5,212 | 79.90 | 18,675 | 38,824 |
| 74.70 | 18,675 | 6,685 | 80.00 | 18,675 | 38,824 |
| 74.80 | 18,675 | 8,150 | 80.10 | 18,675 | 38,824 |
| 74.90 | 18,675 | 9,605 | 80.20 | 18,675 | 38,824 |
| 75.00 | 18,675 | 11,050 | | | |
| 75.10 | 18,675 | 12,483 | | | |
| 75.20 | 18,675 | 13,903 | | | |
| 75.30 | 18,675 | 15,309 | | | |
| 75.40 | 18,675 | 16,700 | | | |
| 75.50 | 18,675 | 18,077 | | | |
| 75.60 | 18,675 | 19,436 | | | |
| 75.70 | 18,675 | 20,775 | | | |
| 75.80 | 18,675 | 22,093 | | | |
| 75.90 | 18,675 | 23,390 | | | |
| 76.00 | 18,675 | 24,663 | | | |
| 76.10 | 18,675 | 25,912 | | | |
| 76.20 | 18,675 | 27,129 | | | |
| 76.30 | 18,675 | 28,310 | | | |
| 76.40 | 18,675 | 29,456 | | | |
| 76.50 | 18,675 | 30,562 | | | |
| 76.60 | 18,675 | 31,617 | | | |
| 76.70 | 18,675 | 32,608 | | | |
| 76.80 | 18,675 | 33,504 | | | |
| 76.90 | 18,675 | 34,320 | | | |
| 77.00 | 18,675 | 35,089 | | | |
| 77.10 | 18,675 | 35,836 | | | |
| 77.20 | 18,675 | 36,583 | | | |
| 77.30 | 18,675 | 37,330 | | | |
| 77.40 | 18,675 | 38,077 | | | |
| 77.50 | 18,675 | 38,824 | | | |
| 77.60 | 18,675 | 38,824 | | | |
| 77.70 | 18,675 | 38,824 | | | |
| 77.80 | 18,675 | 38,824 | | | |
| 77.90 | 18,675 | 38,824 | | | |
| 78.00 | 18,675 | 38,824 | | | |
| 78.10 | 18,675 | 38,824 | | | |
| 78.20 | 18,675 | 38,824 | | | |
| 78.30 | 18,675 | 38,824 | | | |
| 78.40 | 18,675 | 38,824 | | | |
| 78.50 | 18,675 | 38,824 | | | |
| 78.60 | 18,675 | 38,824 | | | |
| 78.70 | 18,675 | 38,824 | | | |
| 78.80 | 18,675 | 38,824 | | | |
| 78.90 | 18,675 | 38,824 | | | |
| 79.00 | 18,675 | 38,824 | | | |
| 79.10 | 18,675 | 38,824 | | | |
| 79.20 | 18,675 | 38,824 | | | |

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Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

Summary for Pond 2P: UG Basin 2

Inflow Area = 51,401 sf, 94.07% Impervious, Inflow Depth = 7.10" for 100-yr event
 Inflow = 12.68 cfs @ 11.97 hrs, Volume= 30,420 cf
 Outflow = 2.46 cfs @ 12.13 hrs, Volume= 30,420 cf, Atten= 81%, Lag= 10.0 min
 Discarded = 0.12 cfs @ 6.02 hrs, Volume= 20,551 cf
 Primary = 2.34 cfs @ 12.13 hrs, Volume= 9,869 cf

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 72.16' @ 12.13 hrs Surf.Area= 8,296 sf Storage= 15,264 cf

Plug-Flow detention time= 634.2 min calculated for 30,417 cf (100% of inflow)
 Center-of-Mass det. time= 634.3 min (1,383.7 - 749.4)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|--------|---------------|--|
| #1 | 69.30' | 7,755 cf | stone (Prismatic) Listed below (Recalc) 29,036 cf Overall - 9,647 cf Embedded = 19,389 cf x 40.0% Voids |
| #2 | 69.80' | 9,647 cf | ADS_StormTech SC-740 +Cap x 210 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap |
| | | 17,403 cf | Total Available Storage |

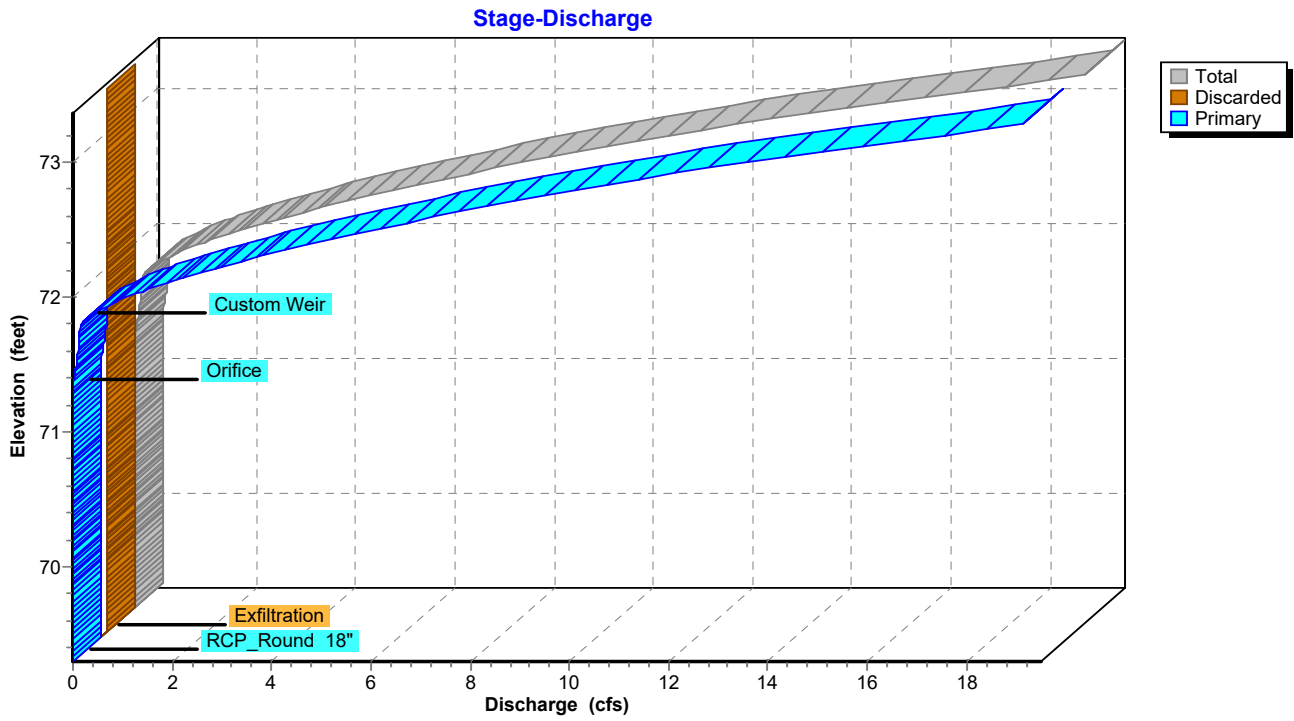
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|------------------|-------------------|------------------------|------------------------|
| 69.30 | 8,296 | 0 | 0 |
| 72.80 | 8,296 | 29,036 | 29,036 |

| Device | Routing | Invert | Outlet Devices |
|--------|-----------|--------|--|
| #1 | Primary | 69.30' | 18.0" Round RCP_Round 18" L= 13.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 69.30' / 69.00' S= 0.0231 '/' Cc= 0.900 n= 0.015, Flow Area= 1.77 sf |
| #2 | Device 1 | 71.30' | 3.0" Vert. Orifice C= 0.600 |
| #3 | Device 1 | 71.80' | Custom Weir, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 1.00 1.57 Width (feet) 3.00 3.00 4.00 4.00 |
| #4 | Discarded | 69.30' | 0.630 in/hr Exfiltration over Surface area |

Discarded OutFlow Max=0.12 cfs @ 6.02 hrs HW=69.34' (Free Discharge)
 ↳4=Exfiltration (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=2.33 cfs @ 12.13 hrs HW=72.16' (Free Discharge)
 ↳1=RCP_Round 18" (Passes 2.33 cfs of 14.84 cfs potential flow)
 ↳2=Orifice (Orifice Controls 0.20 cfs @ 4.13 fps)
 ↳3=Custom Weir (Weir Controls 2.13 cfs @ 1.97 fps)

Pond 2P: UG Basin 2



Stage-Area-Storage for Pond 2P: UG Basin 2

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) | Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---------------------|--------------------|-------------------------|---------------------|--------------------|-------------------------|
| 69.30 | 8,296 | 0 | 71.95 | 8,296 | 14,421 |
| 69.35 | 8,296 | 166 | 72.00 | 8,296 | 14,638 |
| 69.40 | 8,296 | 332 | 72.05 | 8,296 | 14,844 |
| 69.45 | 8,296 | 498 | 72.10 | 8,296 | 15,038 |
| 69.50 | 8,296 | 664 | 72.15 | 8,296 | 15,223 |
| 69.55 | 8,296 | 830 | 72.20 | 8,296 | 15,402 |
| 69.60 | 8,296 | 996 | 72.25 | 8,296 | 15,575 |
| 69.65 | 8,296 | 1,161 | 72.30 | 8,296 | 15,744 |
| 69.70 | 8,296 | 1,327 | 72.35 | 8,296 | 15,910 |
| 69.75 | 8,296 | 1,493 | 72.40 | 8,296 | 16,075 |
| 69.80 | 8,296 | 1,659 | 72.45 | 8,296 | 16,241 |
| 69.85 | 8,296 | 1,992 | 72.50 | 8,296 | 16,407 |
| 69.90 | 8,296 | 2,324 | 72.55 | 8,296 | 16,573 |
| 69.95 | 8,296 | 2,656 | 72.60 | 8,296 | 16,739 |
| 70.00 | 8,296 | 2,988 | 72.65 | 8,296 | 16,905 |
| 70.05 | 8,296 | 3,318 | 72.70 | 8,296 | 17,071 |
| 70.10 | 8,296 | 3,647 | 72.75 | 8,296 | 17,237 |
| 70.15 | 8,296 | 3,975 | 72.80 | 8,296 | 17,403 |
| 70.20 | 8,296 | 4,302 | 72.85 | 8,296 | 17,403 |
| 70.25 | 8,296 | 4,628 | 72.90 | 8,296 | 17,403 |
| 70.30 | 8,296 | 4,953 | 72.95 | 8,296 | 17,403 |
| 70.35 | 8,296 | 5,276 | 73.00 | 8,296 | 17,403 |
| 70.40 | 8,296 | 5,598 | 73.05 | 8,296 | 17,403 |
| 70.45 | 8,296 | 5,918 | 73.10 | 8,296 | 17,403 |
| 70.50 | 8,296 | 6,237 | 73.15 | 8,296 | 17,403 |
| 70.55 | 8,296 | 6,554 | 73.20 | 8,296 | 17,403 |
| 70.60 | 8,296 | 6,869 | 73.25 | 8,296 | 17,403 |
| 70.65 | 8,296 | 7,183 | 73.30 | 8,296 | 17,403 |
| 70.70 | 8,296 | 7,496 | 73.35 | 8,296 | 17,403 |
| 70.75 | 8,296 | 7,806 | | | |
| 70.80 | 8,296 | 8,115 | | | |
| 70.85 | 8,296 | 8,421 | | | |
| 70.90 | 8,296 | 8,726 | | | |
| 70.95 | 8,296 | 9,028 | | | |
| 71.00 | 8,296 | 9,328 | | | |
| 71.05 | 8,296 | 9,626 | | | |
| 71.10 | 8,296 | 9,921 | | | |
| 71.15 | 8,296 | 10,214 | | | |
| 71.20 | 8,296 | 10,504 | | | |
| 71.25 | 8,296 | 10,791 | | | |
| 71.30 | 8,296 | 11,076 | | | |
| 71.35 | 8,296 | 11,358 | | | |
| 71.40 | 8,296 | 11,636 | | | |
| 71.45 | 8,296 | 11,912 | | | |
| 71.50 | 8,296 | 12,183 | | | |
| 71.55 | 8,296 | 12,450 | | | |
| 71.60 | 8,296 | 12,713 | | | |
| 71.65 | 8,296 | 12,972 | | | |
| 71.70 | 8,296 | 13,227 | | | |
| 71.75 | 8,296 | 13,477 | | | |
| 71.80 | 8,296 | 13,722 | | | |
| 71.85 | 8,296 | 13,962 | | | |
| 71.90 | 8,296 | 14,195 | | | |

Summary for Pond 3P: UG Basin 3

Inflow Area = 42,253 sf, 100.00% Impervious, Inflow Depth = 7.34" for 100-yr event
 Inflow = 10.50 cfs @ 11.97 hrs, Volume= 25,847 cf
 Outflow = 4.33 cfs @ 12.07 hrs, Volume= 25,847 cf, Atten= 59%, Lag= 6.2 min
 Discarded = 0.12 cfs @ 5.95 hrs, Volume= 17,240 cf
 Primary = 4.22 cfs @ 12.07 hrs, Volume= 8,607 cf

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 65.05' @ 12.07 hrs Surf.Area= 6,289 sf Storage= 11,700 cf

Plug-Flow detention time= 477.1 min calculated for 25,844 cf (100% of inflow)
 Center-of-Mass det. time= 477.2 min (1,214.9 - 737.7)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|--------|---------------|--|
| #1 | 62.10' | 5,956 cf | stone (Prismatic) Listed below (Recalc) 22,011 cf Overall - 7,121 cf Embedded = 14,891 cf x 40.0% Voids |
| #2 | 62.60' | 7,121 cf | ADS_StormTech SC-740 +Cap x 155 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap |
| | | 13,077 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|------------------|-------------------|------------------------|------------------------|
| 62.10 | 6,289 | 0 | 0 |
| 65.60 | 6,289 | 22,011 | 22,011 |

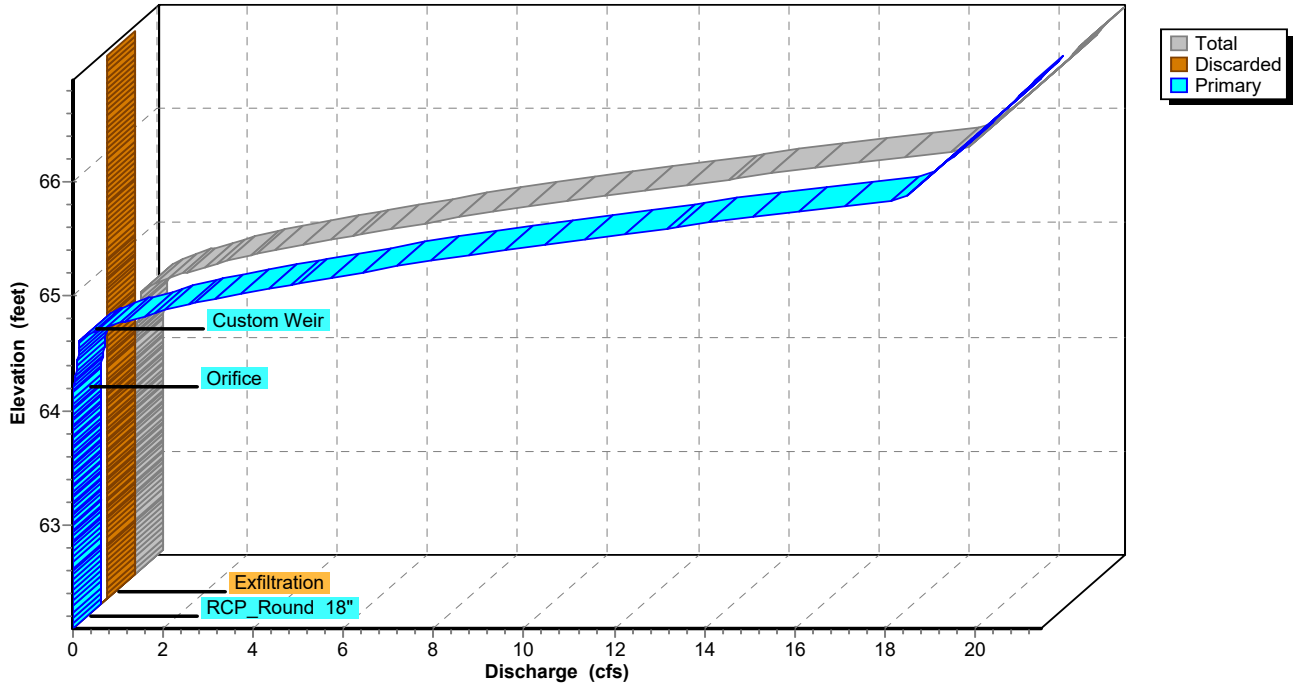
| Device | Routing | Invert | Outlet Devices |
|--------|-----------|--------|---|
| #1 | Primary | 62.10' | 18.0" Round RCP_Round 18" L= 7.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 62.10' / 61.90' S= 0.0286 '/' Cc= 0.900 n= 0.015, Flow Area= 1.77 sf |
| #2 | Device 1 | 64.10' | 3.0" Vert. Orifice C= 0.600 |
| #3 | Device 1 | 64.60' | Custom Weir, Cv= 2.62 (C= 3.28) Head (feet) 0.00 2.28 Width (feet) 4.00 4.00 |
| #4 | Discarded | 62.10' | 0.800 in/hr Exfiltration over Surface area |

Discarded OutFlow Max=0.12 cfs @ 5.95 hrs HW=62.15' (Free Discharge)
 ↳ **4=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=4.21 cfs @ 12.07 hrs HW=65.05' (Free Discharge)
 ↳ **1=RCP_Round 18"** (Passes 4.21 cfs of 15.58 cfs potential flow)
 ↳ **2=Orifice** (Orifice Controls 0.22 cfs @ 4.38 fps)
 ↳ **3=Custom Weir** (Weir Controls 4.00 cfs @ 2.20 fps)

Pond 3P: UG Basin 3

Stage-Discharge



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Stage-Area-Storage for Pond 3P: UG Basin 3

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) | Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---------------------|--------------------|-------------------------|---------------------|--------------------|-------------------------|
| 62.10 | 6,289 | 0 | 64.75 | 6,289 | 10,820 |
| 62.15 | 6,289 | 126 | 64.80 | 6,289 | 10,983 |
| 62.20 | 6,289 | 252 | 64.85 | 6,289 | 11,138 |
| 62.25 | 6,289 | 377 | 64.90 | 6,289 | 11,285 |
| 62.30 | 6,289 | 503 | 64.95 | 6,289 | 11,425 |
| 62.35 | 6,289 | 629 | 65.00 | 6,289 | 11,560 |
| 62.40 | 6,289 | 755 | 65.05 | 6,289 | 11,691 |
| 62.45 | 6,289 | 880 | 65.10 | 6,289 | 11,819 |
| 62.50 | 6,289 | 1,006 | 65.15 | 6,289 | 11,945 |
| 62.55 | 6,289 | 1,132 | 65.20 | 6,289 | 12,071 |
| 62.60 | 6,289 | 1,258 | 65.25 | 6,289 | 12,197 |
| 62.65 | 6,289 | 1,507 | 65.30 | 6,289 | 12,322 |
| 62.70 | 6,289 | 1,755 | 65.35 | 6,289 | 12,448 |
| 62.75 | 6,289 | 2,004 | 65.40 | 6,289 | 12,574 |
| 62.80 | 6,289 | 2,252 | 65.45 | 6,289 | 12,700 |
| 62.85 | 6,289 | 2,499 | 65.50 | 6,289 | 12,825 |
| 62.90 | 6,289 | 2,745 | 65.55 | 6,289 | 12,951 |
| 62.95 | 6,289 | 2,991 | 65.60 | 6,289 | 13,077 |
| 63.00 | 6,289 | 3,235 | 65.65 | 6,289 | 13,077 |
| 63.05 | 6,289 | 3,479 | 65.70 | 6,289 | 13,077 |
| 63.10 | 6,289 | 3,722 | 65.75 | 6,289 | 13,077 |
| 63.15 | 6,289 | 3,964 | 65.80 | 6,289 | 13,077 |
| 63.20 | 6,289 | 4,205 | 65.85 | 6,289 | 13,077 |
| 63.25 | 6,289 | 4,444 | 65.90 | 6,289 | 13,077 |
| 63.30 | 6,289 | 4,683 | 65.95 | 6,289 | 13,077 |
| 63.35 | 6,289 | 4,920 | 66.00 | 6,289 | 13,077 |
| 63.40 | 6,289 | 5,156 | 66.05 | 6,289 | 13,077 |
| 63.45 | 6,289 | 5,392 | 66.10 | 6,289 | 13,077 |
| 63.50 | 6,289 | 5,625 | 66.15 | 6,289 | 13,077 |
| 63.55 | 6,289 | 5,858 | 66.20 | 6,289 | 13,077 |
| 63.60 | 6,289 | 6,089 | 66.25 | 6,289 | 13,077 |
| 63.65 | 6,289 | 6,319 | 66.30 | 6,289 | 13,077 |
| 63.70 | 6,289 | 6,547 | 66.35 | 6,289 | 13,077 |
| 63.75 | 6,289 | 6,773 | 66.40 | 6,289 | 13,077 |
| 63.80 | 6,289 | 6,998 | 66.45 | 6,289 | 13,077 |
| 63.85 | 6,289 | 7,221 | 66.50 | 6,289 | 13,077 |
| 63.90 | 6,289 | 7,442 | 66.55 | 6,289 | 13,077 |
| 63.95 | 6,289 | 7,661 | 66.60 | 6,289 | 13,077 |
| 64.00 | 6,289 | 7,879 | 66.65 | 6,289 | 13,077 |
| 64.05 | 6,289 | 8,094 | 66.70 | 6,289 | 13,077 |
| 64.10 | 6,289 | 8,308 | 66.75 | 6,289 | 13,077 |
| 64.15 | 6,289 | 8,519 | 66.80 | 6,289 | 13,077 |
| 64.20 | 6,289 | 8,728 | 66.85 | 6,289 | 13,077 |
| 64.25 | 6,289 | 8,934 | | | |
| 64.30 | 6,289 | 9,138 | | | |
| 64.35 | 6,289 | 9,338 | | | |
| 64.40 | 6,289 | 9,536 | | | |
| 64.45 | 6,289 | 9,730 | | | |
| 64.50 | 6,289 | 9,922 | | | |
| 64.55 | 6,289 | 10,110 | | | |
| 64.60 | 6,289 | 10,294 | | | |
| 64.65 | 6,289 | 10,474 | | | |
| 64.70 | 6,289 | 10,650 | | | |

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Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

Summary for Pond 4P: UG Basin 4

Inflow Area = 54,014 sf, 70.97% Impervious, Inflow Depth = 6.16" for 100-yr event
 Inflow = 12.49 cfs @ 11.97 hrs, Volume= 27,719 cf
 Outflow = 6.12 cfs @ 12.06 hrs, Volume= 27,719 cf, Atten= 51%, Lag= 5.5 min
 Primary = 6.12 cfs @ 12.06 hrs, Volume= 27,719 cf

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 62.13' @ 12.06 hrs Surf.Area= 6,473 sf Storage= 12,316 cf

Plug-Flow detention time= 282.7 min calculated for 27,716 cf (100% of inflow)
 Center-of-Mass det. time= 282.9 min (1,063.4 - 780.5)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|--------|---------------|--|
| #1 | 59.00' | 6,251 cf | stone (Prismatic) Listed below (Recalc) 22,656 cf Overall - 7,029 cf Embedded = 15,627 cf x 40.0% Voids |
| #2 | 59.50' | 7,029 cf | ADS_StormTech SC-740 +Cap x 153 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap |
| | | 13,279 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|------------------|-------------------|------------------------|------------------------|
| 59.00 | 6,473 | 0 | 0 |
| 62.50 | 6,473 | 22,656 | 22,656 |

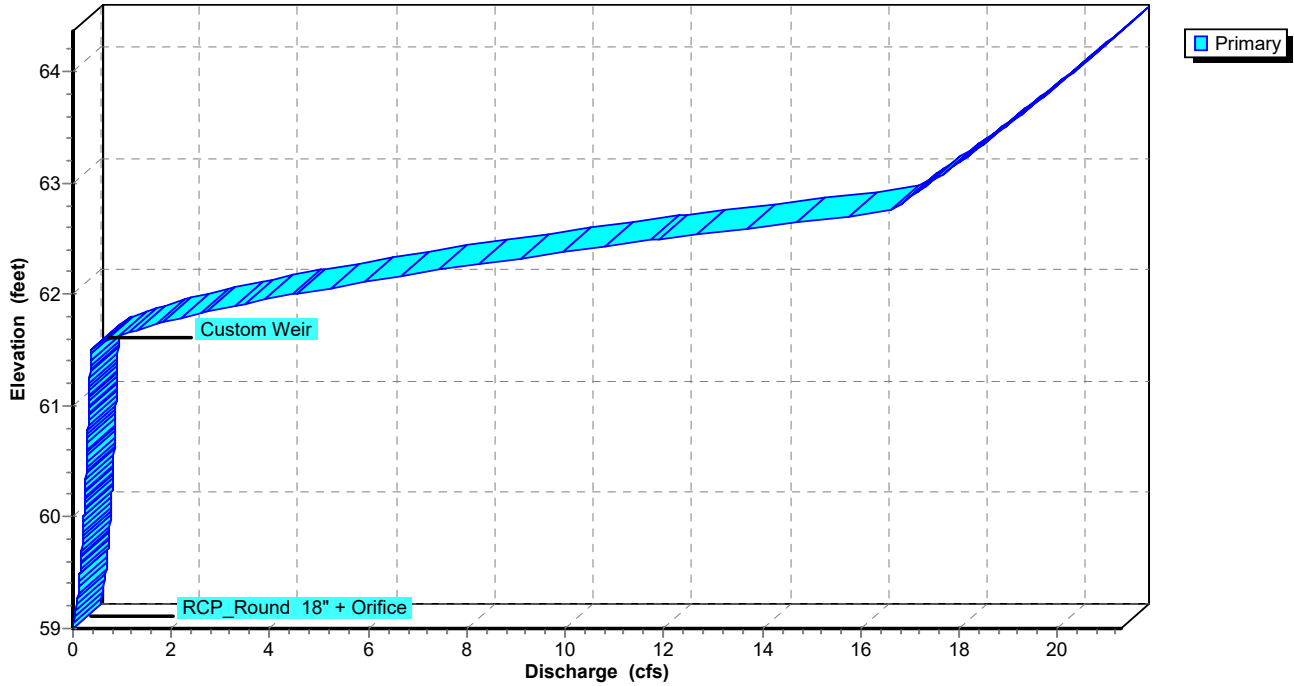
| Device | Routing | Invert | Outlet Devices |
|--------|----------|--------|--|
| #1 | Primary | 59.00' | 18.0" Round RCP_Round 18" L= 26.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 59.00' / 58.74' S= 0.0100 '/' Cc= 0.900 n= 0.015, Flow Area= 1.77 sf |
| #2 | Device 1 | 59.00' | 3.0" Vert. Orifice C= 0.600 |
| #3 | Device 1 | 61.50' | Custom Weir, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 1.00 2.87 Width (feet) 3.50 3.50 4.00 4.00 |

Primary OutFlow Max=6.11 cfs @ 12.06 hrs HW=62.13' (Free Discharge)

- 1=RCP_Round 18" (Passes 6.11 cfs of 14.39 cfs potential flow)
- 2=Orifice (Orifice Controls 0.41 cfs @ 8.34 fps)
- 3=Custom Weir (Weir Controls 5.70 cfs @ 2.60 fps)

Pond 4P: UG Basin 4

Stage-Discharge



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Type II 24-hr 100-yr Rainfall=7.58"

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Stage-Area-Storage for Pond 4P: UG Basin 4

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---------------------|-------------------------|---------------------|-------------------------|---------------------|-------------------------|
| 59.00 | 0 | 61.12 | 8,922 | 63.24 | 13,279 |
| 59.04 | 104 | 61.16 | 9,089 | 63.28 | 13,279 |
| 59.08 | 207 | 61.20 | 9,253 | 63.32 | 13,279 |
| 59.12 | 311 | 61.24 | 9,416 | 63.36 | 13,279 |
| 59.16 | 414 | 61.28 | 9,577 | 63.40 | 13,279 |
| 59.20 | 518 | 61.32 | 9,736 | 63.44 | 13,279 |
| 59.24 | 621 | 61.36 | 9,893 | 63.48 | 13,279 |
| 59.28 | 725 | 61.40 | 10,048 | 63.52 | 13,279 |
| 59.32 | 829 | 61.44 | 10,201 | 63.56 | 13,279 |
| 59.36 | 932 | 61.48 | 10,352 | 63.60 | 13,279 |
| 59.40 | 1,036 | 61.52 | 10,500 | 63.64 | 13,279 |
| 59.44 | 1,139 | 61.56 | 10,646 | 63.68 | 13,279 |
| 59.48 | 1,243 | 61.60 | 10,788 | 63.72 | 13,279 |
| 59.52 | 1,395 | 61.64 | 10,927 | 63.76 | 13,279 |
| 59.56 | 1,596 | 61.68 | 11,062 | 63.80 | 13,279 |
| 59.60 | 1,796 | 61.72 | 11,192 | 63.84 | 13,279 |
| 59.64 | 1,997 | 61.76 | 11,317 | 63.88 | 13,279 |
| 59.68 | 2,197 | 61.80 | 11,437 | 63.92 | 13,279 |
| 59.72 | 2,397 | 61.84 | 11,552 | 63.96 | 13,279 |
| 59.76 | 2,596 | 61.88 | 11,663 | 64.00 | 13,279 |
| 59.80 | 2,794 | 61.92 | 11,773 | 64.04 | 13,279 |
| 59.84 | 2,993 | 61.96 | 11,880 | 64.08 | 13,279 |
| 59.88 | 3,190 | 62.00 | 11,985 | 64.12 | 13,279 |
| 59.92 | 3,387 | 62.04 | 12,088 | 64.16 | 13,279 |
| 59.96 | 3,584 | 62.08 | 12,192 | 64.20 | 13,279 |
| 60.00 | 3,780 | 62.12 | 12,296 | 64.24 | 13,279 |
| 60.04 | 3,975 | 62.16 | 12,399 | 64.28 | 13,279 |
| 60.08 | 4,170 | 62.20 | 12,503 | 64.32 | 13,279 |
| 60.12 | 4,364 | 62.24 | 12,606 | 64.36 | 13,279 |
| 60.16 | 4,557 | 62.28 | 12,710 | | |
| 60.20 | 4,750 | 62.32 | 12,813 | | |
| 60.24 | 4,941 | 62.36 | 12,917 | | |
| 60.28 | 5,133 | 62.40 | 13,021 | | |
| 60.32 | 5,323 | 62.44 | 13,124 | | |
| 60.36 | 5,512 | 62.48 | 13,228 | | |
| 60.40 | 5,701 | 62.52 | 13,279 | | |
| 60.44 | 5,889 | 62.56 | 13,279 | | |
| 60.48 | 6,076 | 62.60 | 13,279 | | |
| 60.52 | 6,262 | 62.64 | 13,279 | | |
| 60.56 | 6,448 | 62.68 | 13,279 | | |
| 60.60 | 6,632 | 62.72 | 13,279 | | |
| 60.64 | 6,815 | 62.76 | 13,279 | | |
| 60.68 | 6,997 | 62.80 | 13,279 | | |
| 60.72 | 7,178 | 62.84 | 13,279 | | |
| 60.76 | 7,358 | 62.88 | 13,279 | | |
| 60.80 | 7,537 | 62.92 | 13,279 | | |
| 60.84 | 7,714 | 62.96 | 13,279 | | |
| 60.88 | 7,891 | 63.00 | 13,279 | | |
| 60.92 | 8,066 | 63.04 | 13,279 | | |
| 60.96 | 8,240 | 63.08 | 13,279 | | |
| 61.00 | 8,412 | 63.12 | 13,279 | | |
| 61.04 | 8,584 | 63.16 | 13,279 | | |
| 61.08 | 8,754 | 63.20 | 13,279 | | |

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Prepared by Bohler Engineering

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Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

Summary for Pond 5P: UG Basin 5

Inflow Area = 45,302 sf, 75.00% Impervious, Inflow Depth = 6.63" for 100-yr event
 Inflow = 10.90 cfs @ 11.97 hrs, Volume= 25,022 cf
 Outflow = 0.88 cfs @ 12.48 hrs, Volume= 25,022 cf, Atten= 92%, Lag= 30.6 min
 Discarded = 0.49 cfs @ 11.15 hrs, Volume= 23,559 cf
 Primary = 0.39 cfs @ 12.48 hrs, Volume= 1,463 cf

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
 Peak Elev= 82.56' @ 12.48 hrs Surf.Area= 6,321 sf Storage= 10,664 cf

Plug-Flow detention time= 151.0 min calculated for 25,019 cf (100% of inflow)
 Center-of-Mass det. time= 151.0 min (917.9 - 766.9)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|--------|---------------|--|
| #1 | 80.00' | 5,909 cf | stone (Prismatic) Listed below (Recalc) 22,124 cf Overall - 7,350 cf Embedded = 14,773 cf x 40.0% Voids |
| #2 | 80.50' | 7,350 cf | ADS_StormTech SC-740 +Cap x 160 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap |
| | | 13,260 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|------------------|-------------------|------------------------|------------------------|
| 80.00 | 6,321 | 0 | 0 |
| 83.50 | 6,321 | 22,124 | 22,124 |

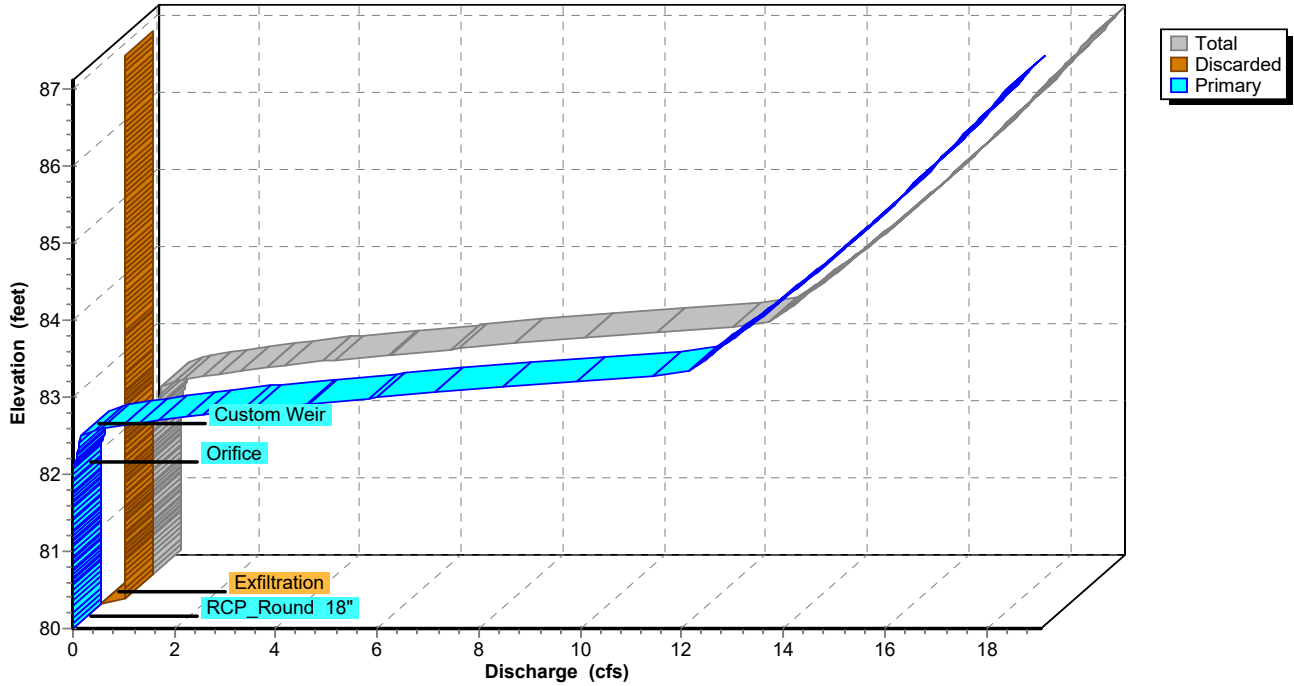
| Device | Routing | Invert | Outlet Devices |
|--------|-----------|--------|--|
| #1 | Primary | 80.00' | 18.0" Round RCP_Round 18" L= 108.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 80.00' / 79.04' S= 0.0089 ' /' Cc= 0.900 n= 0.015, Flow Area= 1.77 sf |
| #2 | Device 1 | 82.00' | 3.0" Vert. Orifice C= 0.600 |
| #3 | Device 1 | 82.50' | Custom Weir, Cv= 2.62 (C= 3.28) Head (feet) 0.00 4.62 Width (feet) 5.00 5.00 |
| #4 | Discarded | 80.00' | 3.360 in/hr Exfiltration over Surface area |

Discarded OutFlow Max=0.49 cfs @ 11.15 hrs HW=80.07' (Free Discharge)
 ↳ **4=Exfiltration** (Exfiltration Controls 0.49 cfs)

Primary OutFlow Max=0.38 cfs @ 12.48 hrs HW=82.56' (Free Discharge)
 ↳ **1=RCP_Round 18"** (Passes 0.38 cfs of 10.29 cfs potential flow)
 ↳ **2=Orifice** (Orifice Controls 0.16 cfs @ 3.17 fps)
 ↳ **3=Custom Weir** (Weir Controls 0.22 cfs @ 0.78 fps)

Pond 5P: UG Basin 5

Stage-Discharge



Stage-Area-Storage for Pond 5P: UG Basin 5

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) | Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---------------------|--------------------|-------------------------|---------------------|--------------------|-------------------------|
| 80.00 | 6,321 | 0 | 85.30 | 6,321 | 13,260 |
| 80.10 | 6,321 | 253 | 85.40 | 6,321 | 13,260 |
| 80.20 | 6,321 | 506 | 85.50 | 6,321 | 13,260 |
| 80.30 | 6,321 | 759 | 85.60 | 6,321 | 13,260 |
| 80.40 | 6,321 | 1,011 | 85.70 | 6,321 | 13,260 |
| 80.50 | 6,321 | 1,264 | 85.80 | 6,321 | 13,260 |
| 80.60 | 6,321 | 1,771 | 85.90 | 6,321 | 13,260 |
| 80.70 | 6,321 | 2,276 | 86.00 | 6,321 | 13,260 |
| 80.80 | 6,321 | 2,779 | 86.10 | 6,321 | 13,260 |
| 80.90 | 6,321 | 3,278 | 86.20 | 6,321 | 13,260 |
| 81.00 | 6,321 | 3,774 | 86.30 | 6,321 | 13,260 |
| 81.10 | 6,321 | 4,265 | 86.40 | 6,321 | 13,260 |
| 81.20 | 6,321 | 4,752 | 86.50 | 6,321 | 13,260 |
| 81.30 | 6,321 | 5,234 | 86.60 | 6,321 | 13,260 |
| 81.40 | 6,321 | 5,711 | 86.70 | 6,321 | 13,260 |
| 81.50 | 6,321 | 6,183 | 86.80 | 6,321 | 13,260 |
| 81.60 | 6,321 | 6,648 | 86.90 | 6,321 | 13,260 |
| 81.70 | 6,321 | 7,107 | 87.00 | 6,321 | 13,260 |
| 81.80 | 6,321 | 7,559 | 87.10 | 6,321 | 13,260 |
| 81.90 | 6,321 | 8,003 | | | |
| 82.00 | 6,321 | 8,439 | | | |
| 82.10 | 6,321 | 8,866 | | | |
| 82.20 | 6,321 | 9,282 | | | |
| 82.30 | 6,321 | 9,686 | | | |
| 82.40 | 6,321 | 10,078 | | | |
| 82.50 | 6,321 | 10,455 | | | |
| 82.60 | 6,321 | 10,816 | | | |
| 82.70 | 6,321 | 11,153 | | | |
| 82.80 | 6,321 | 11,458 | | | |
| 82.90 | 6,321 | 11,735 | | | |
| 83.00 | 6,321 | 11,995 | | | |
| 83.10 | 6,321 | 12,248 | | | |
| 83.20 | 6,321 | 12,501 | | | |
| 83.30 | 6,321 | 12,754 | | | |
| 83.40 | 6,321 | 13,007 | | | |
| 83.50 | 6,321 | 13,260 | | | |
| 83.60 | 6,321 | 13,260 | | | |
| 83.70 | 6,321 | 13,260 | | | |
| 83.80 | 6,321 | 13,260 | | | |
| 83.90 | 6,321 | 13,260 | | | |
| 84.00 | 6,321 | 13,260 | | | |
| 84.10 | 6,321 | 13,260 | | | |
| 84.20 | 6,321 | 13,260 | | | |
| 84.30 | 6,321 | 13,260 | | | |
| 84.40 | 6,321 | 13,260 | | | |
| 84.50 | 6,321 | 13,260 | | | |
| 84.60 | 6,321 | 13,260 | | | |
| 84.70 | 6,321 | 13,260 | | | |
| 84.80 | 6,321 | 13,260 | | | |
| 84.90 | 6,321 | 13,260 | | | |
| 85.00 | 6,321 | 13,260 | | | |
| 85.10 | 6,321 | 13,260 | | | |
| 85.20 | 6,321 | 13,260 | | | |

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Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

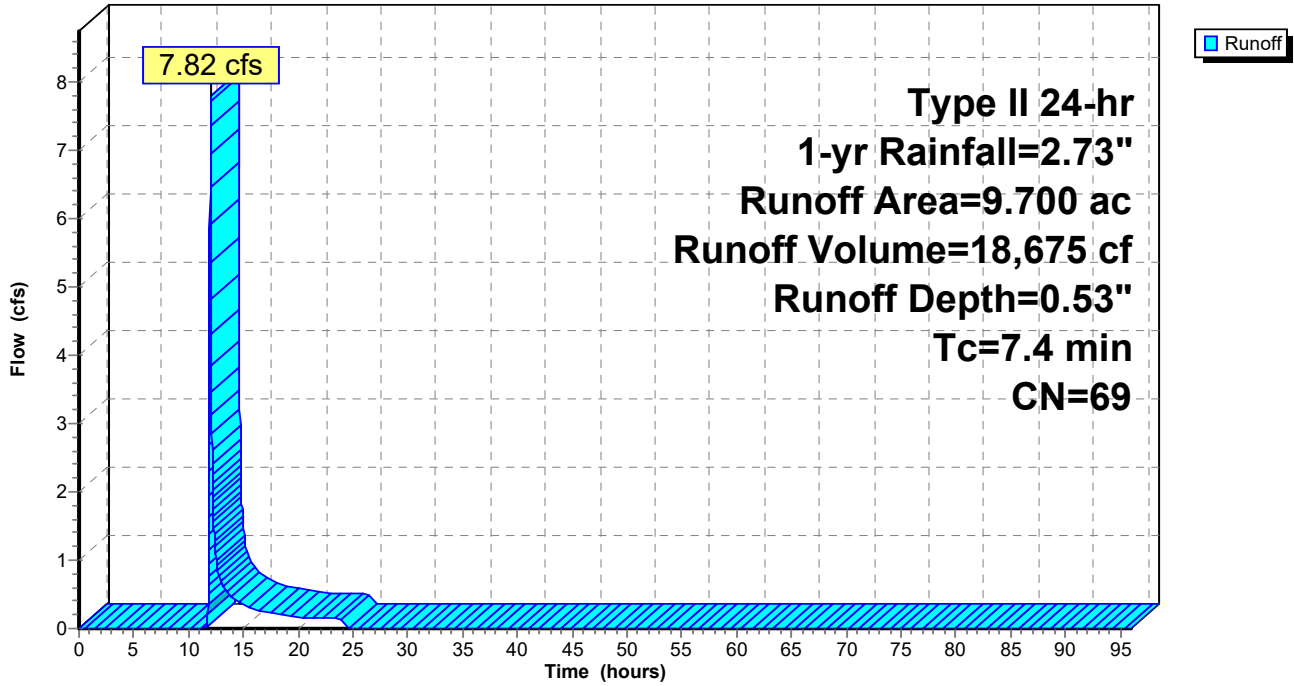
Summary for Link 1L: Total Post POI 1

Inflow Area = 422,968 sf, 63.65% Impervious, Inflow Depth = 3.47" for 100-yr event
Inflow = 30.46 cfs @ 12.01 hrs, Volume= 122,422 cf
Primary = 30.46 cfs @ 12.01 hrs, Volume= 122,422 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

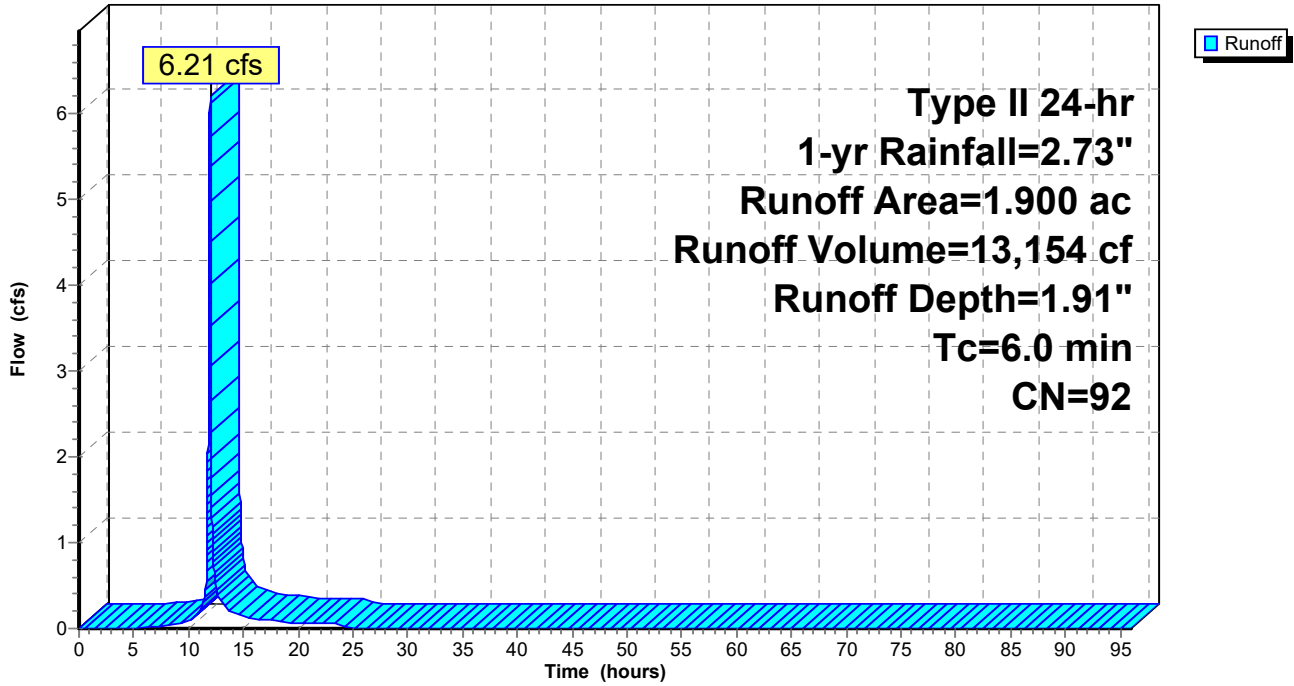
Subcatchment 1S: DA-1E

Hydrograph



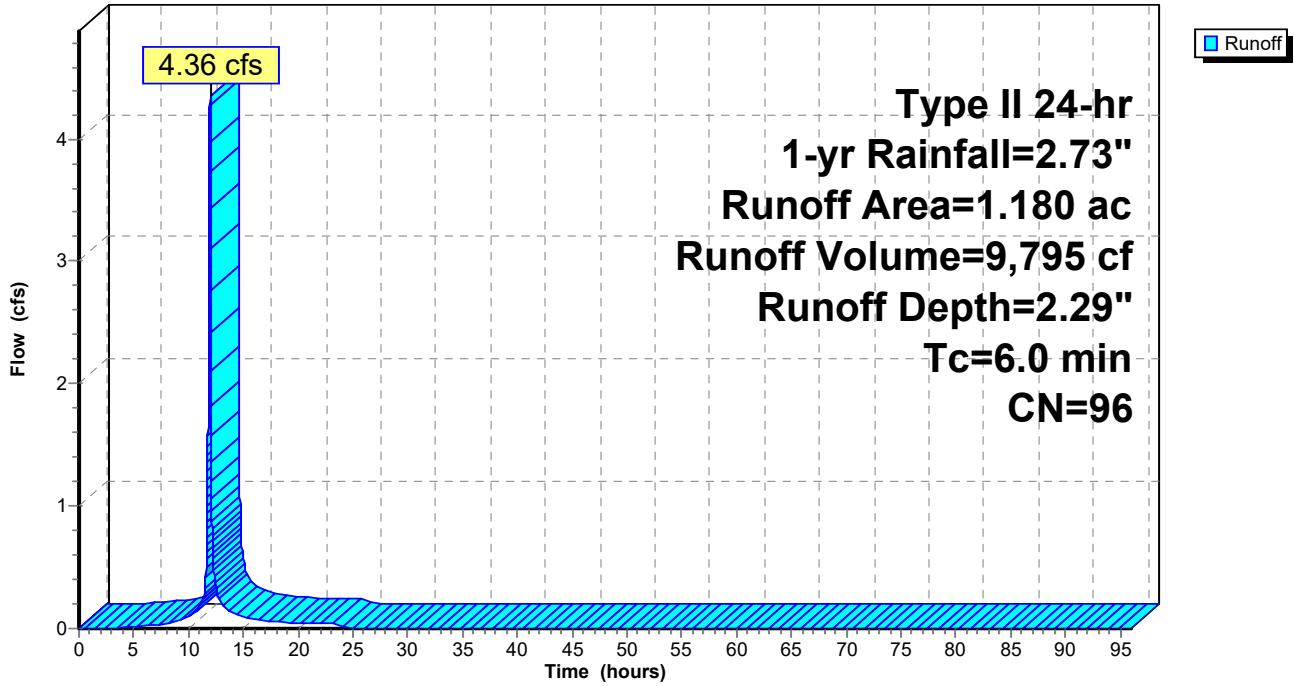
Subcatchment 2S: DA-2P(A)

Hydrograph



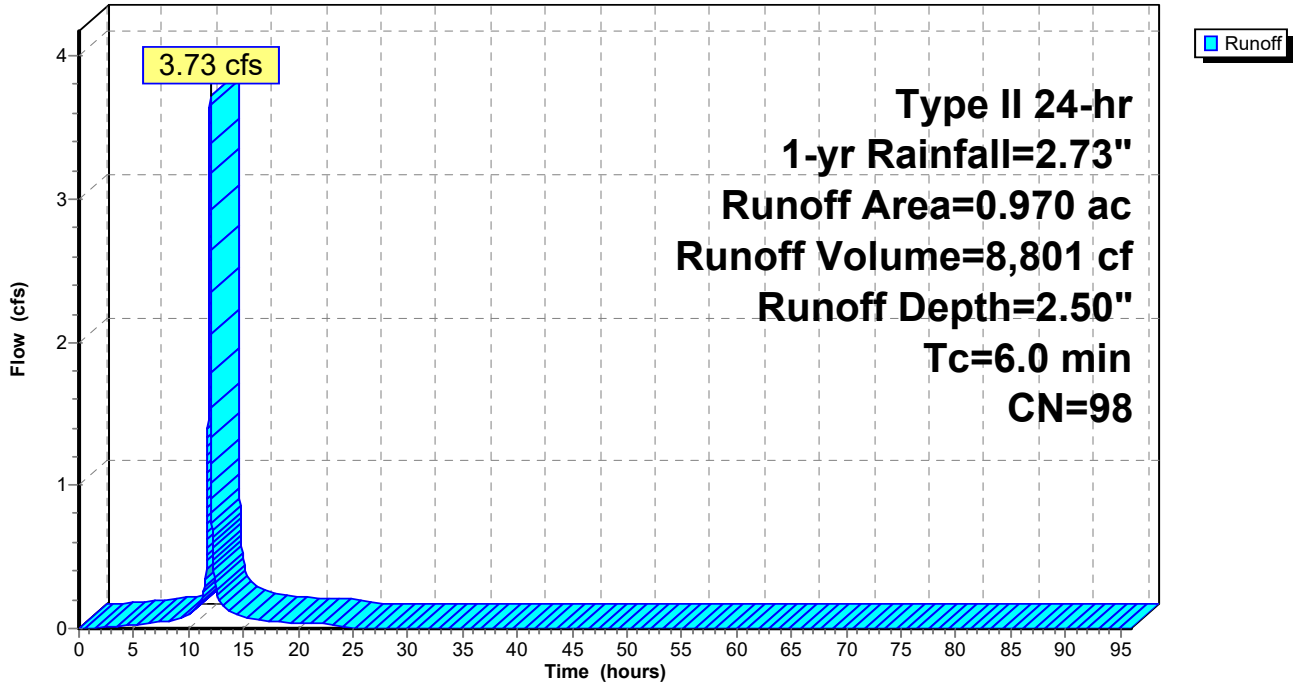
Subcatchment 3S: DA-2P(B)

Hydrograph



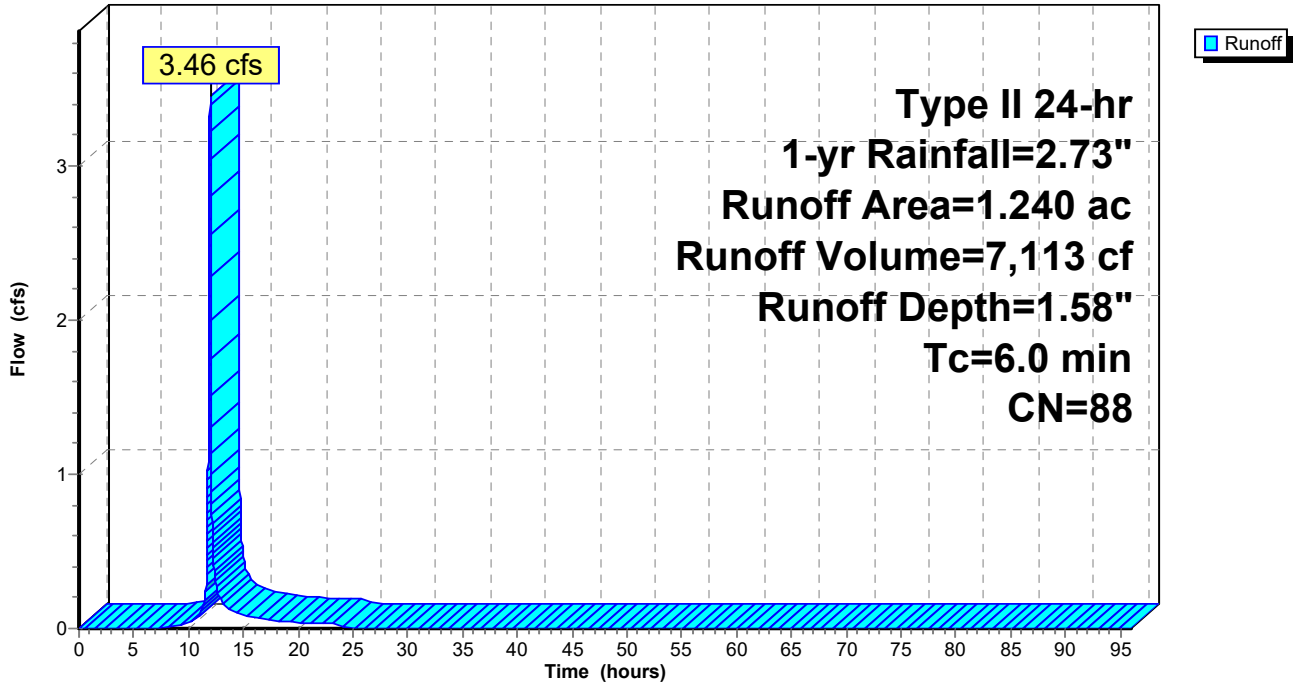
Subcatchment 4S: DA-2P(C)

Hydrograph



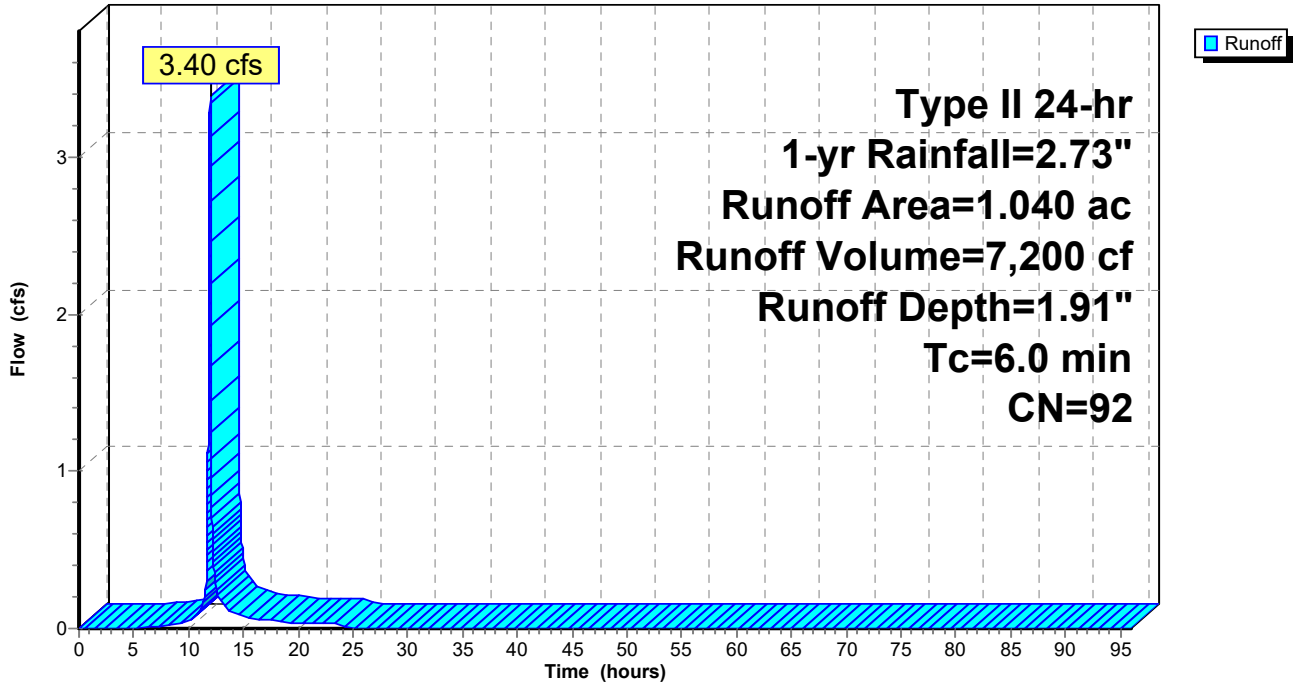
Subcatchment 5S: DA-2P(D)

Hydrograph



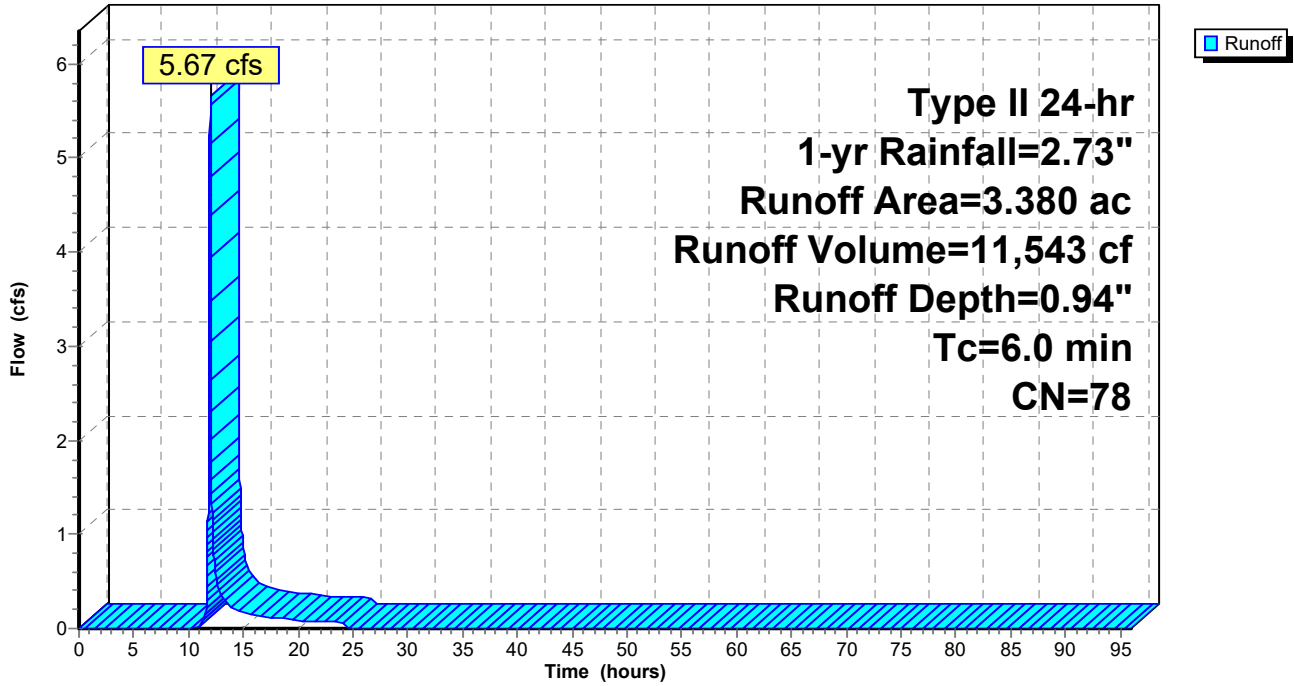
Subcatchment 6S: DA-2P(E)

Hydrograph



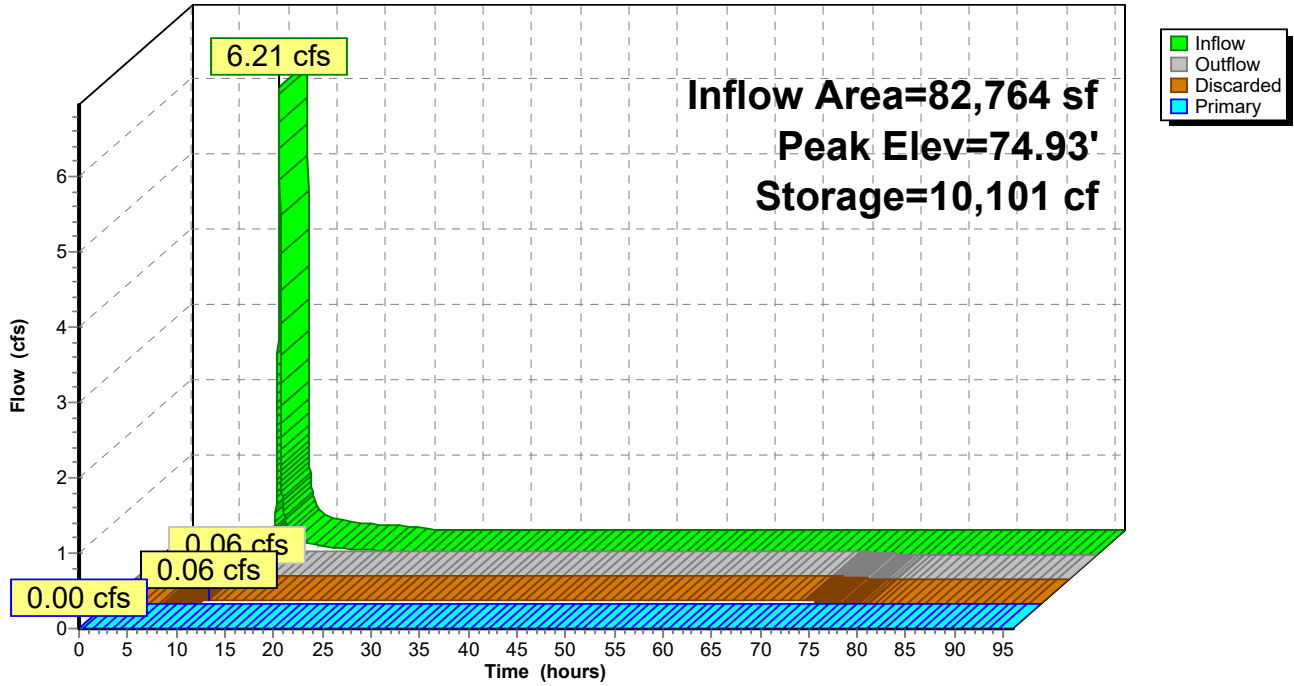
Subcatchment 7S: DA-2P(F) - Bypass

Hydrograph



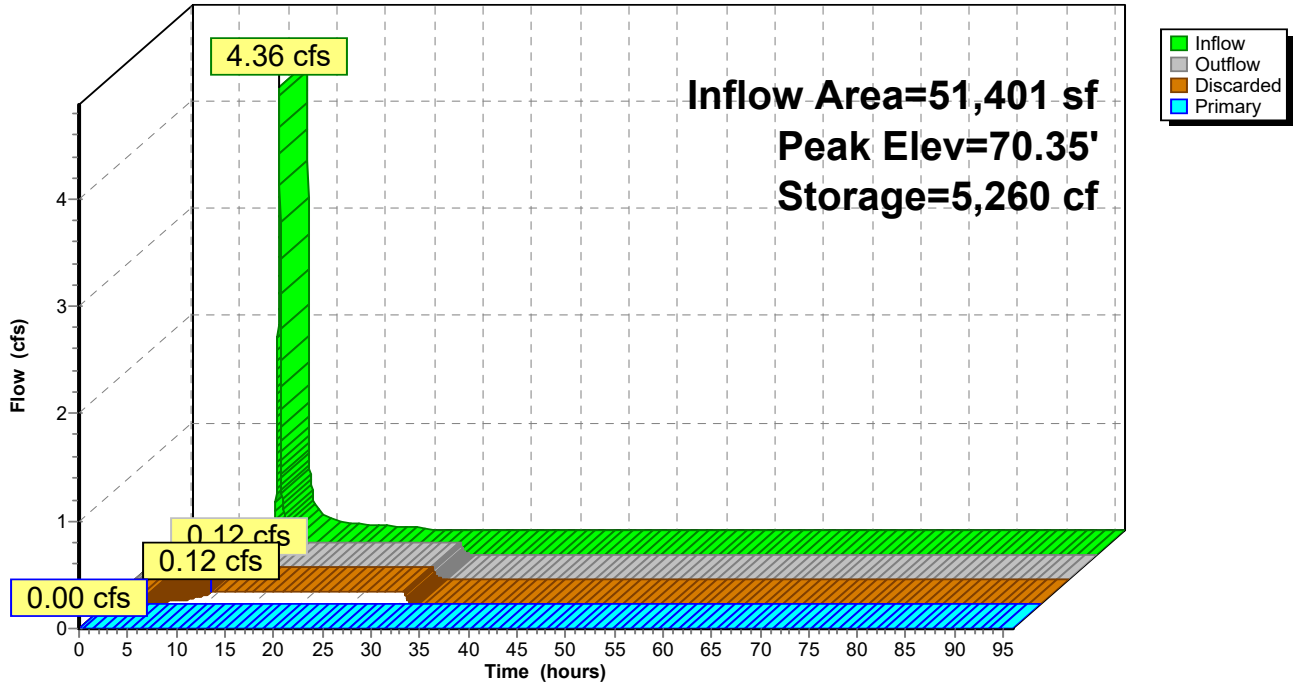
Pond 1P: UG Basin 1

Hydrograph



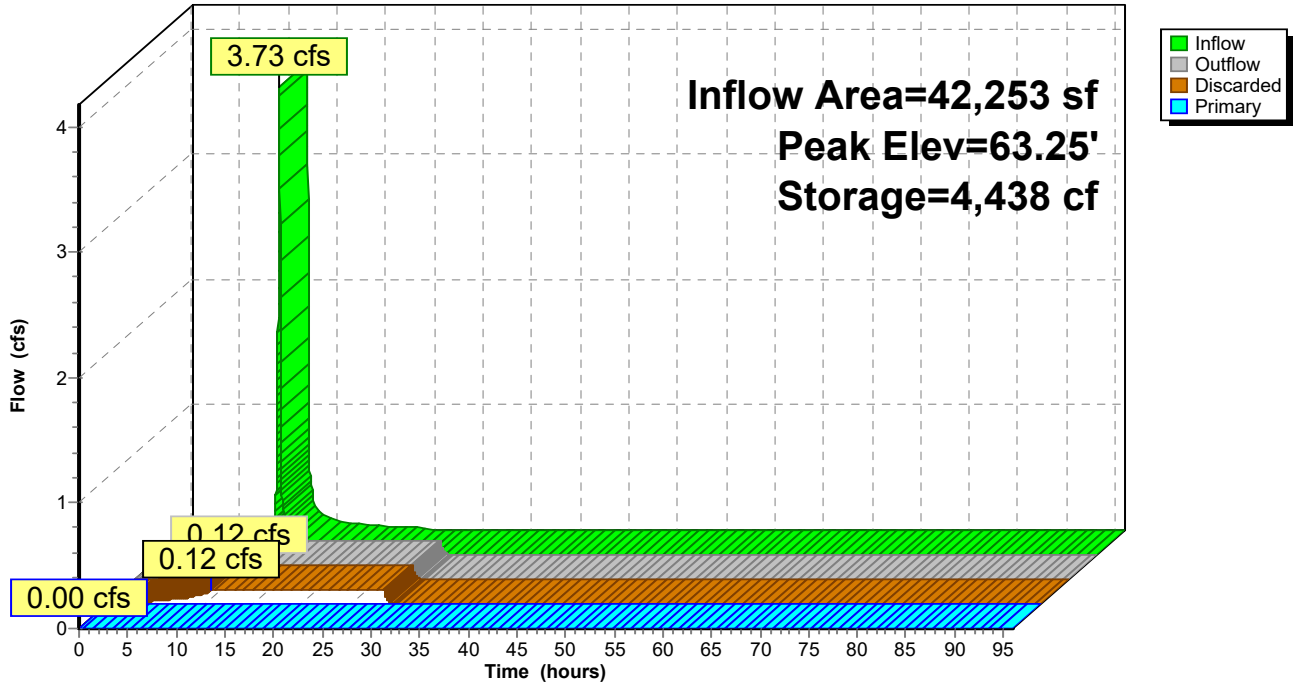
Pond 2P: UG Basin 2

Hydrograph



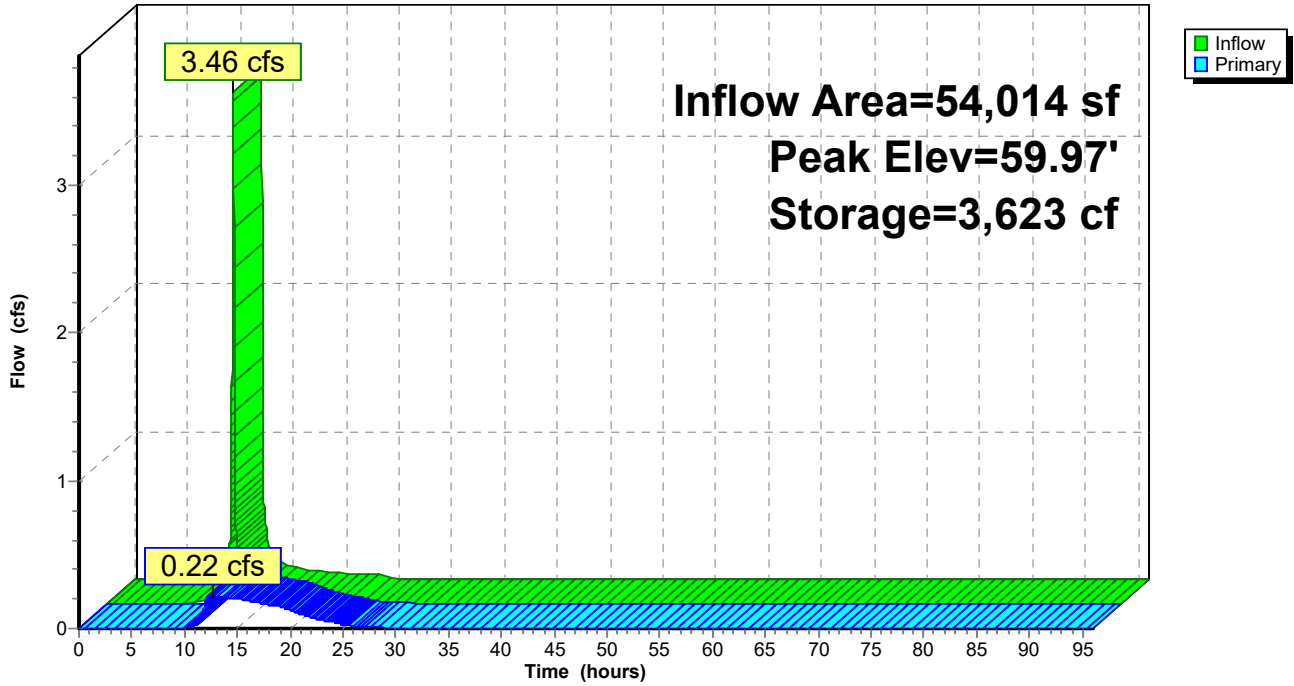
Pond 3P: UG Basin 3

Hydrograph



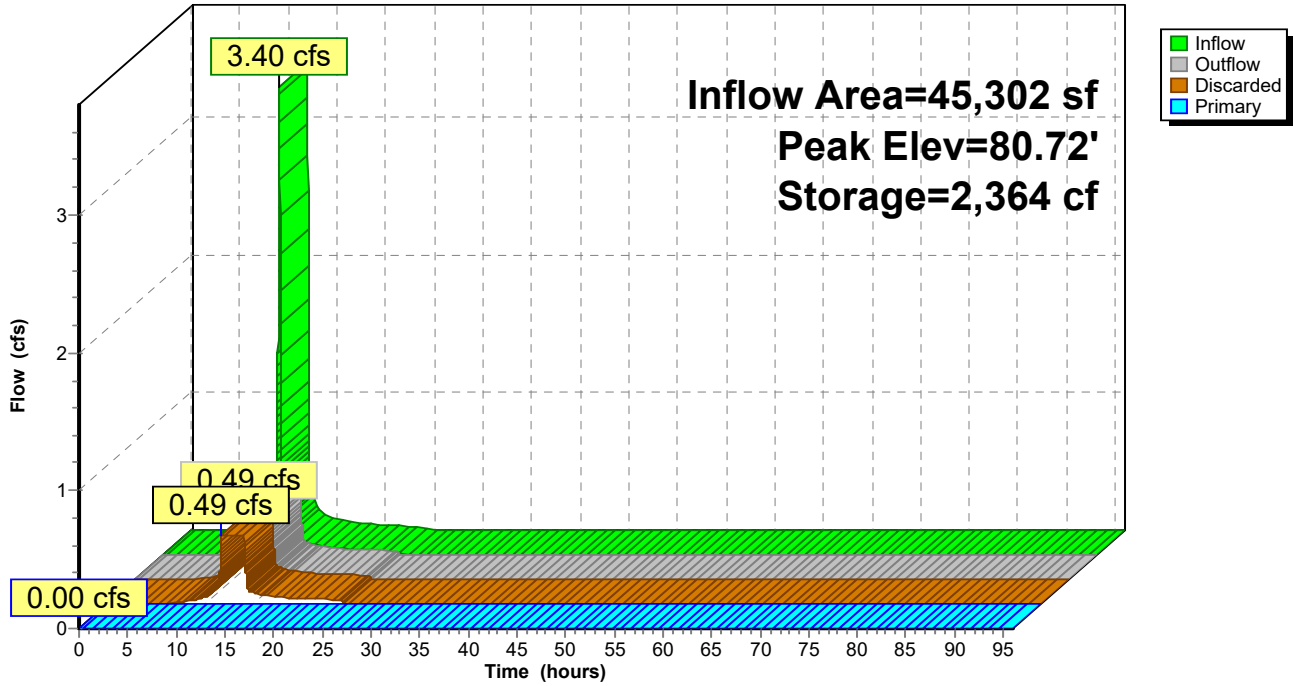
Pond 4P: UG Basin 4

Hydrograph



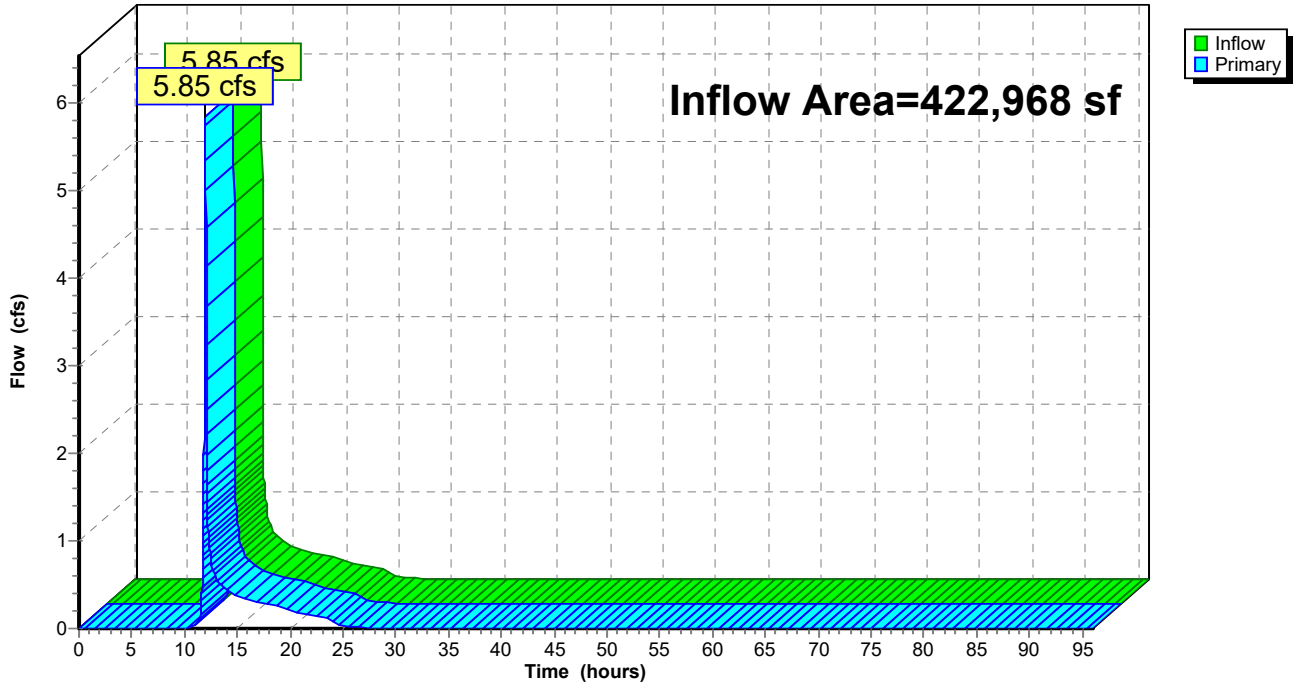
Pond 5P: UG Basin 5

Hydrograph



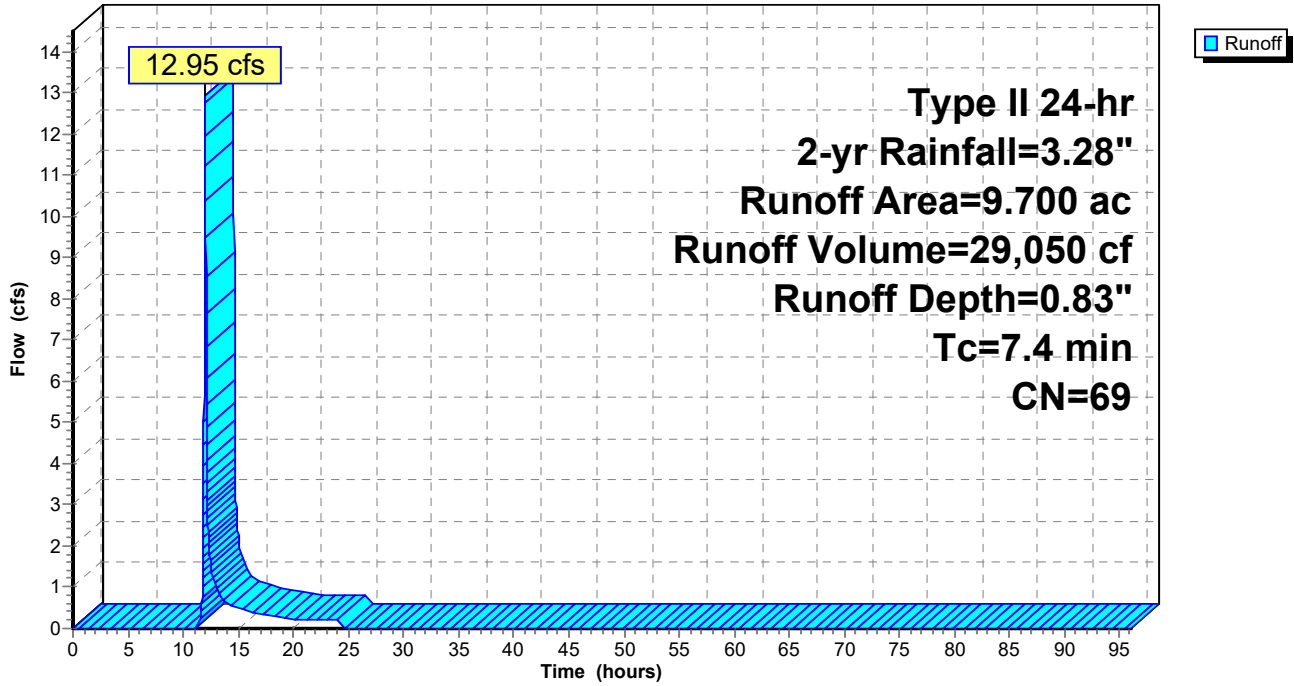
Link 1L: Total Post POI 1

Hydrograph



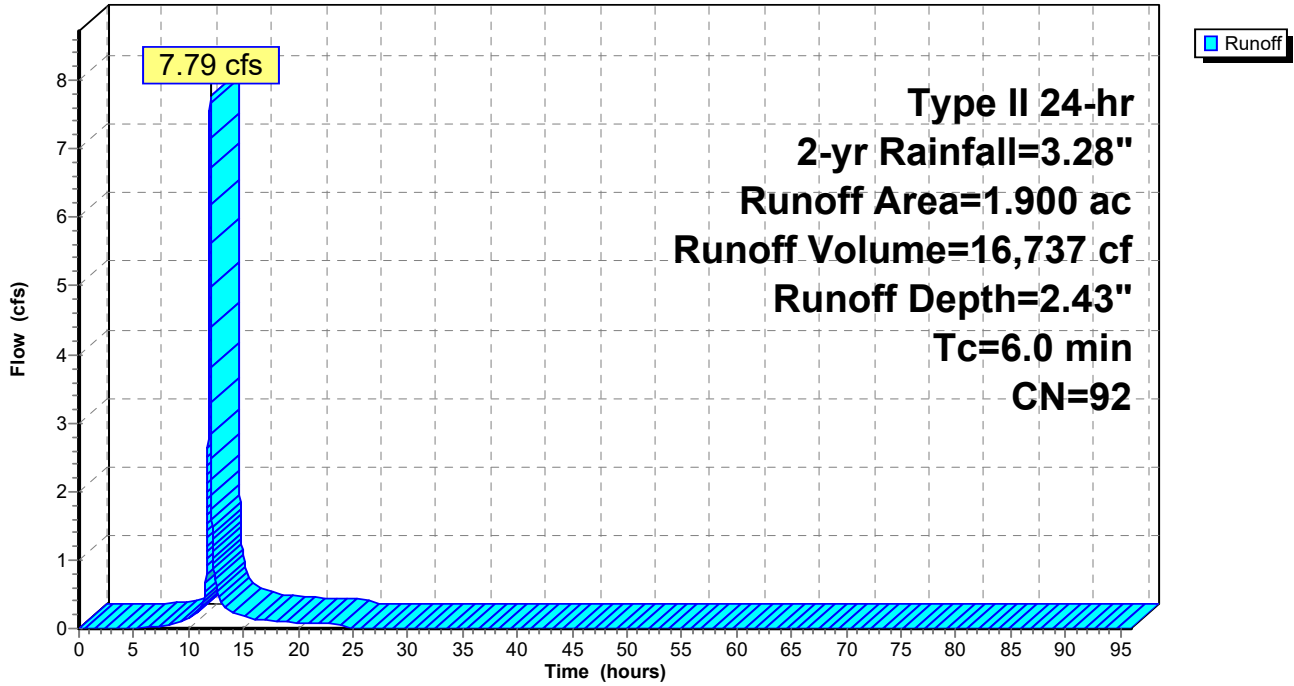
Subcatchment 1S: DA-1E

Hydrograph



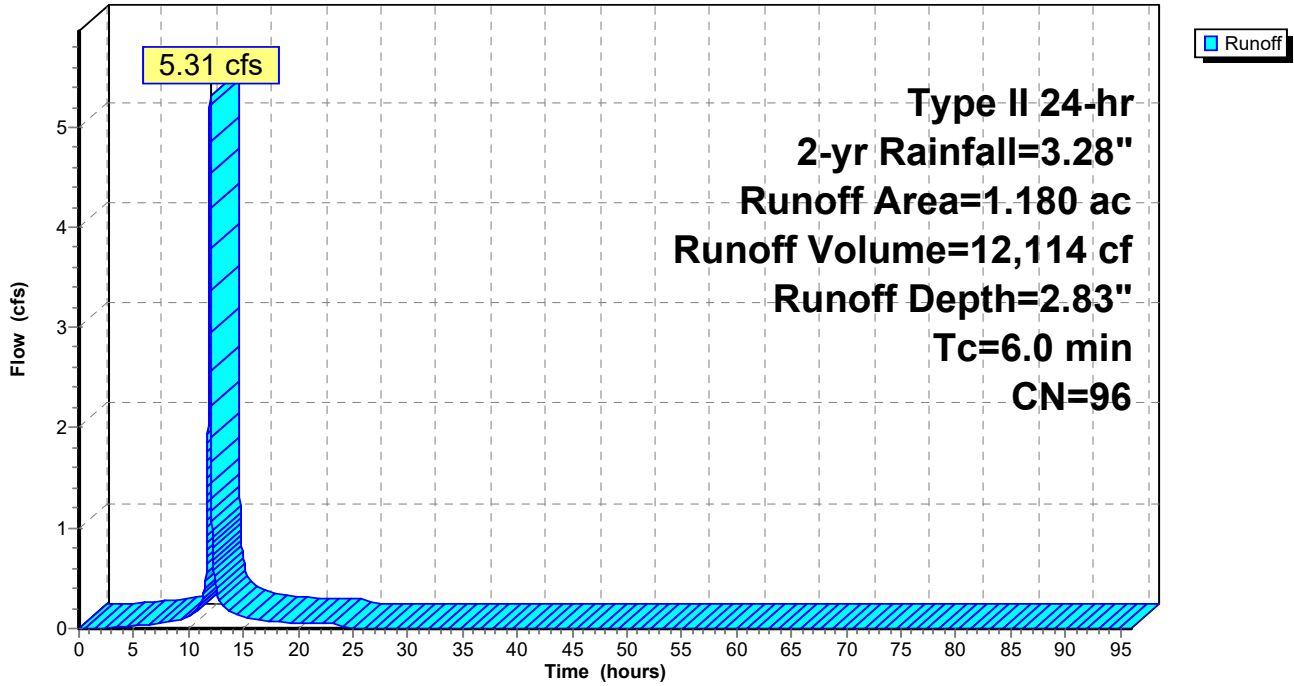
Subcatchment 2S: DA-2P(A)

Hydrograph



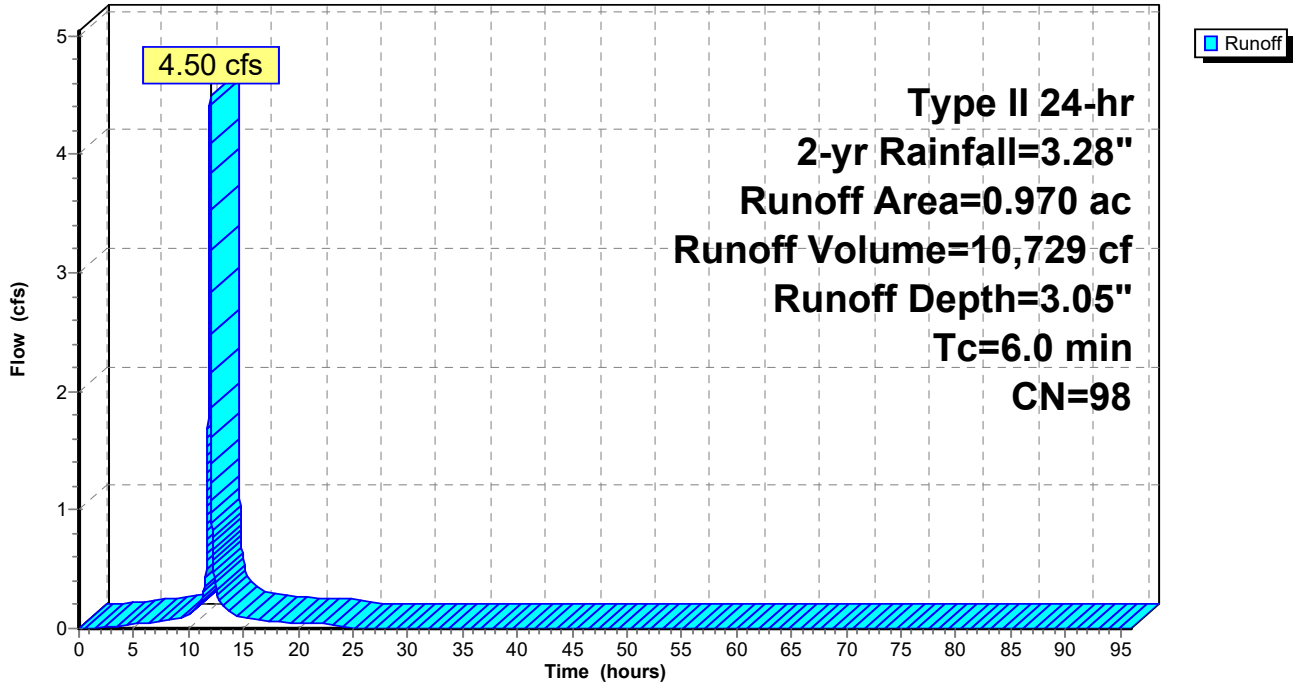
Subcatchment 3S: DA-2P(B)

Hydrograph



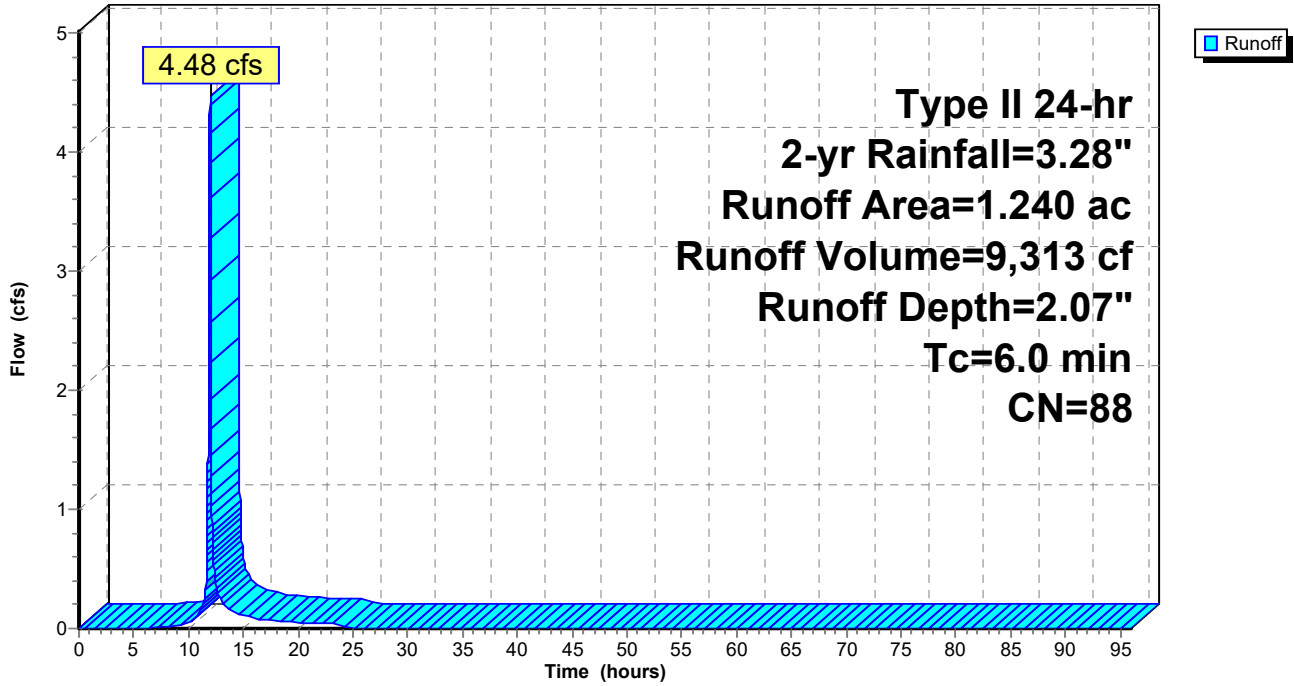
Subcatchment 4S: DA-2P(C)

Hydrograph



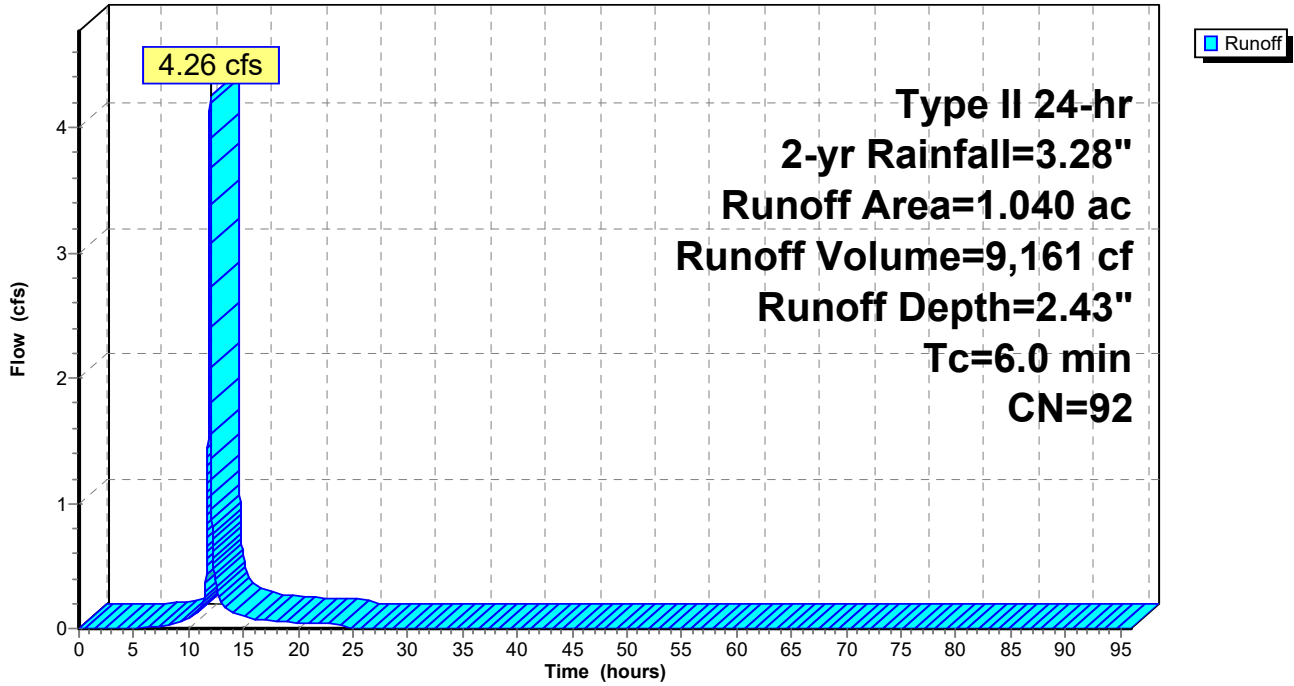
Subcatchment 5S: DA-2P(D)

Hydrograph



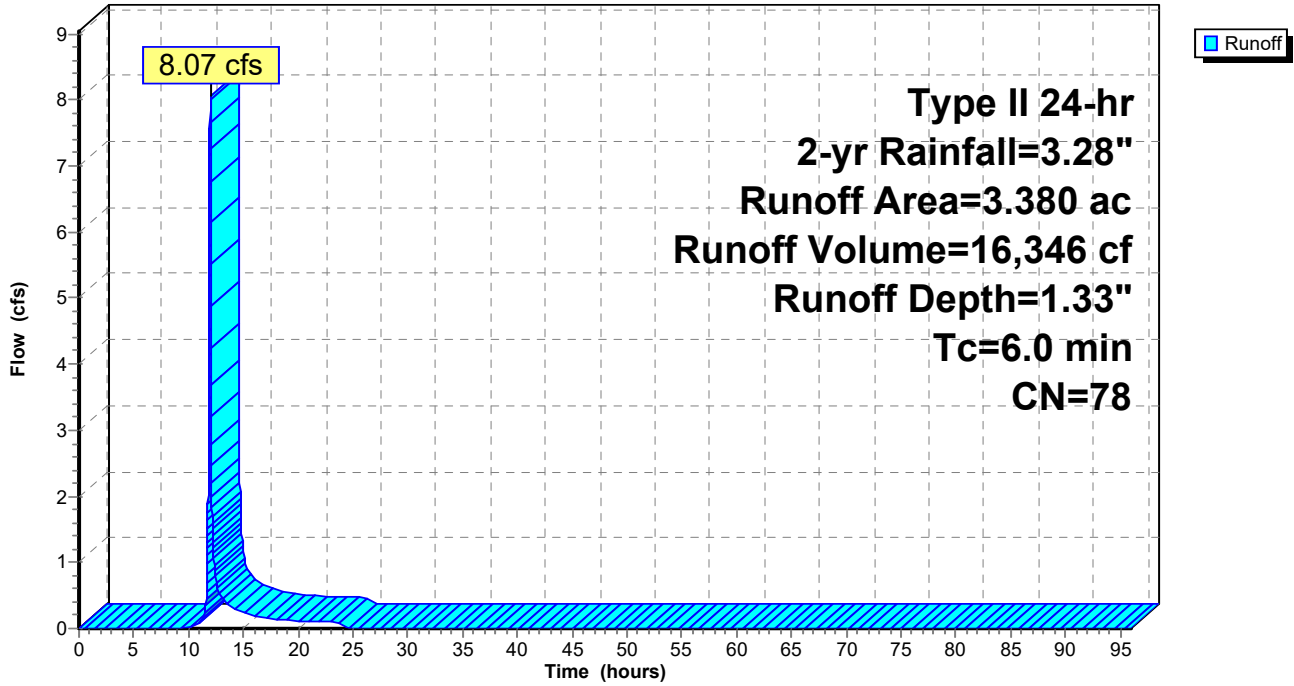
Subcatchment 6S: DA-2P(E)

Hydrograph



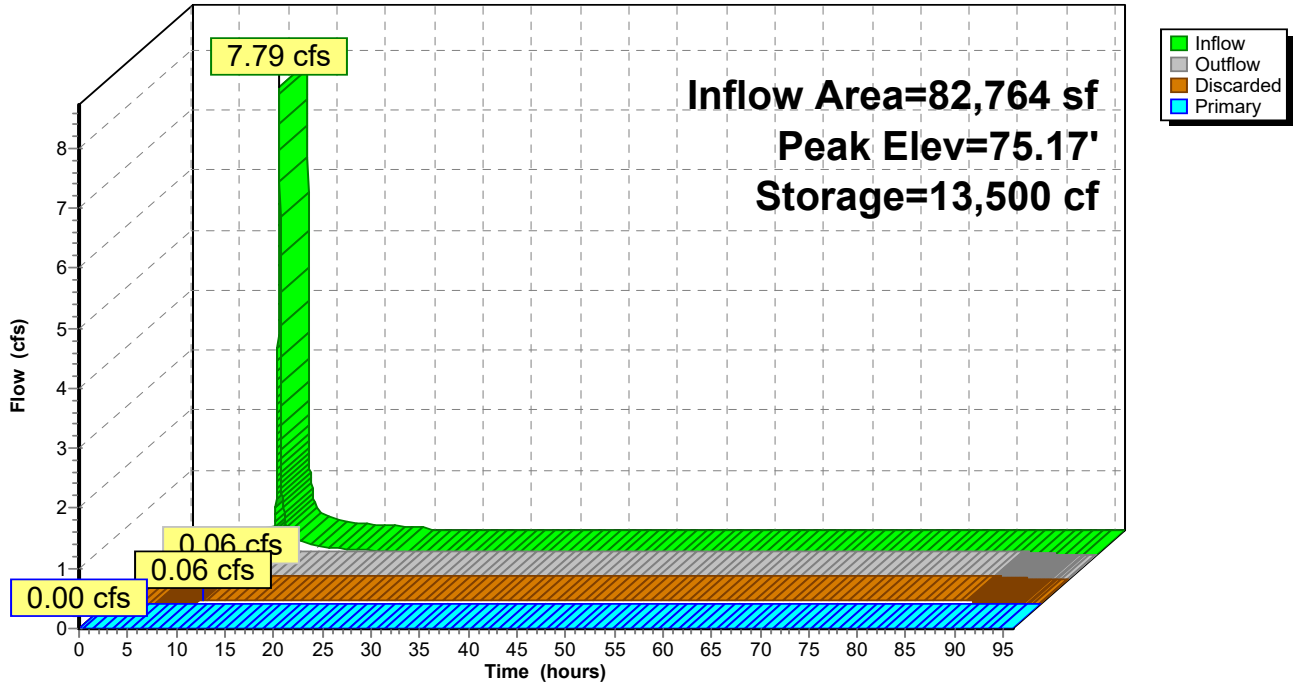
Subcatchment 7S: DA-2P(F) - Bypass

Hydrograph



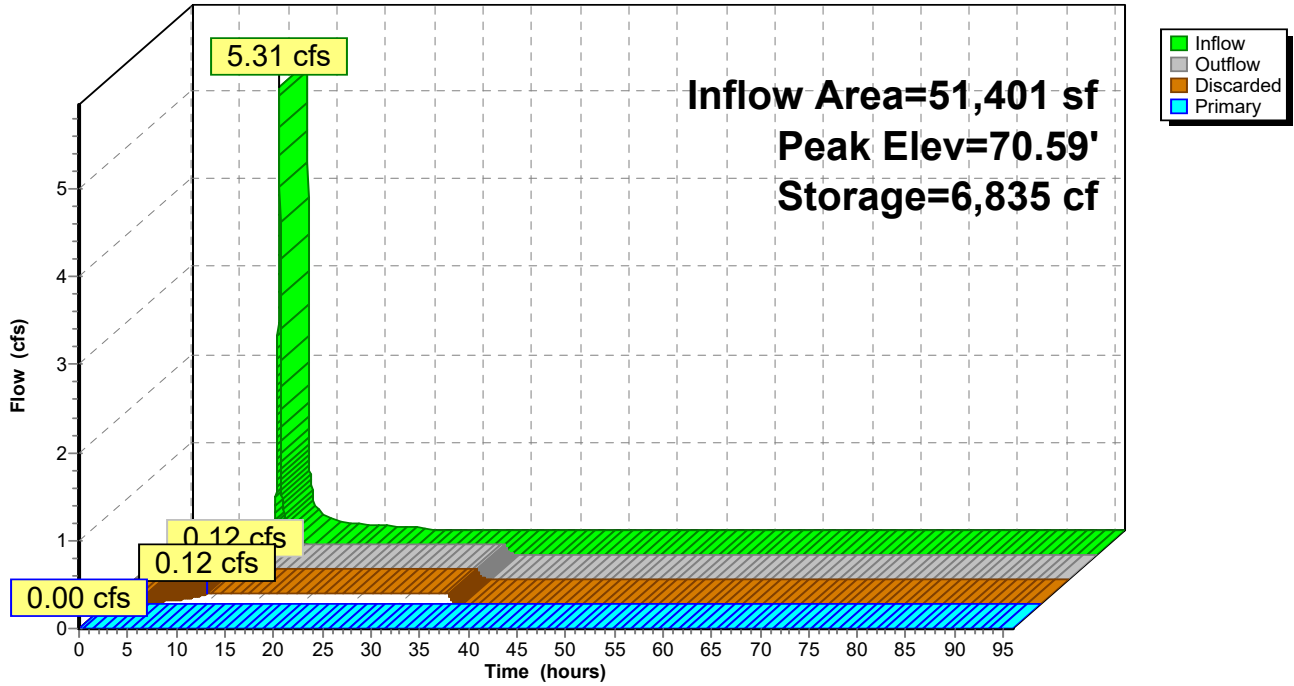
Pond 1P: UG Basin 1

Hydrograph



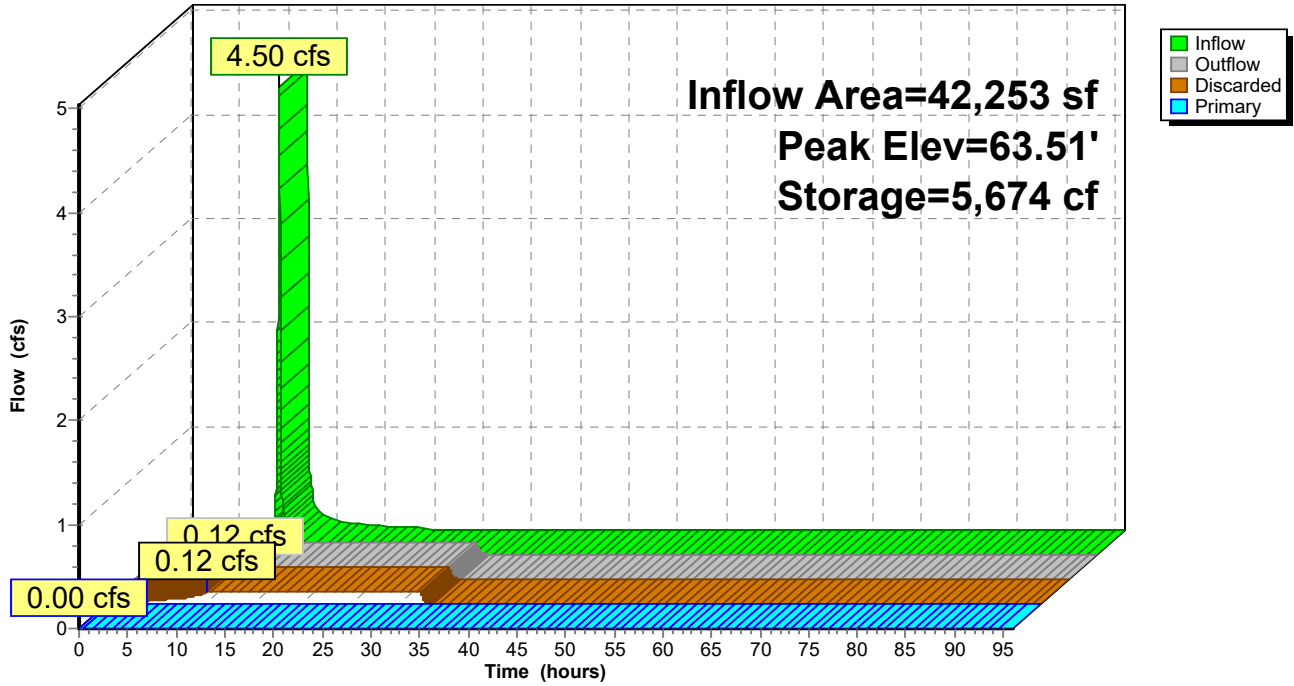
Pond 2P: UG Basin 2

Hydrograph



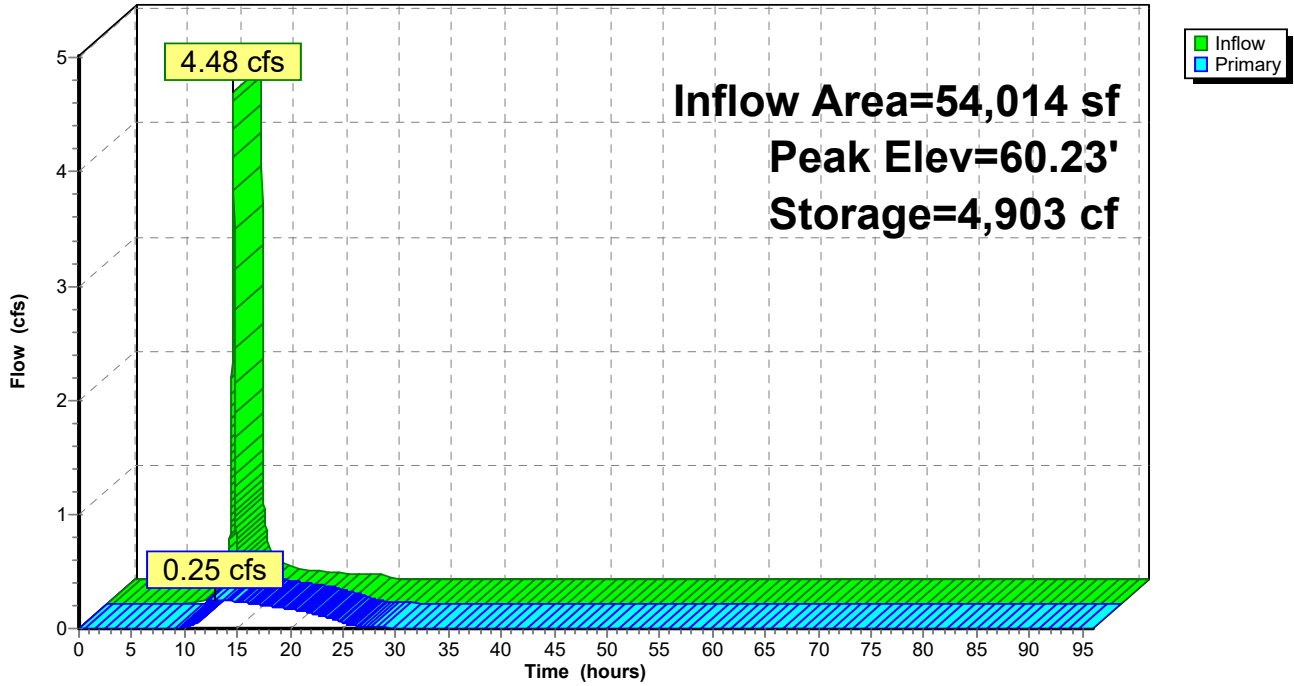
Pond 3P: UG Basin 3

Hydrograph



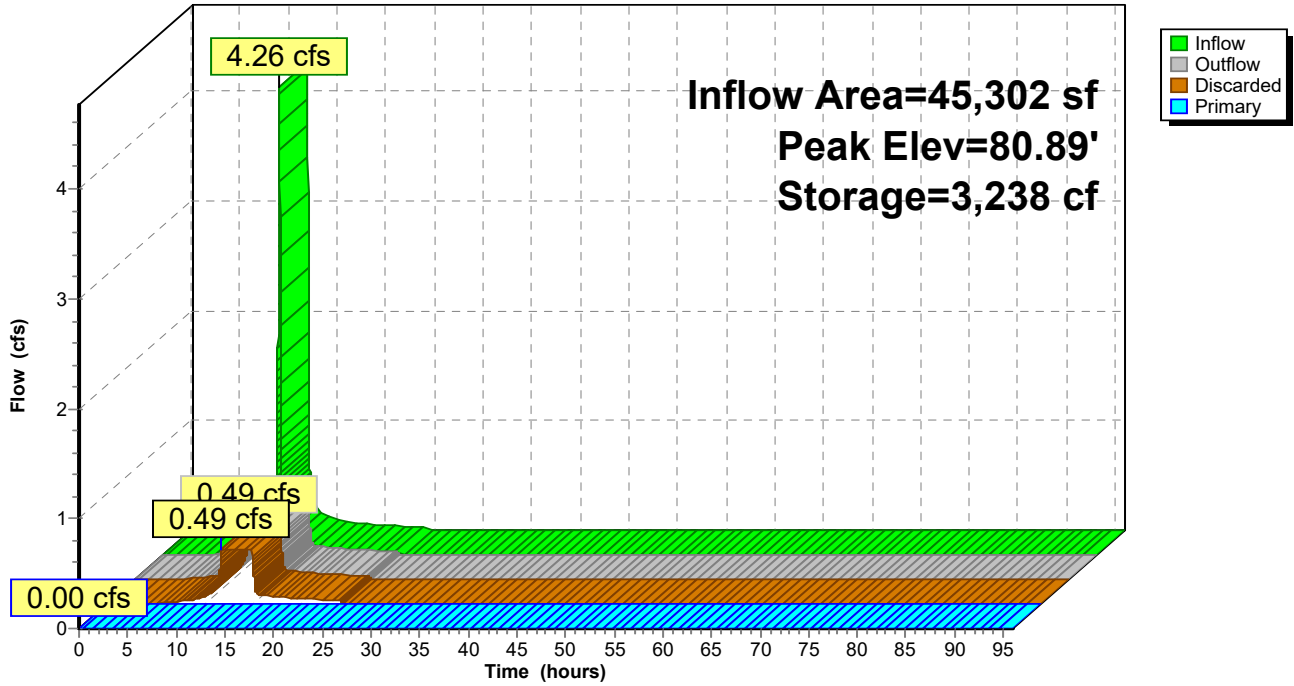
Pond 4P: UG Basin 4

Hydrograph



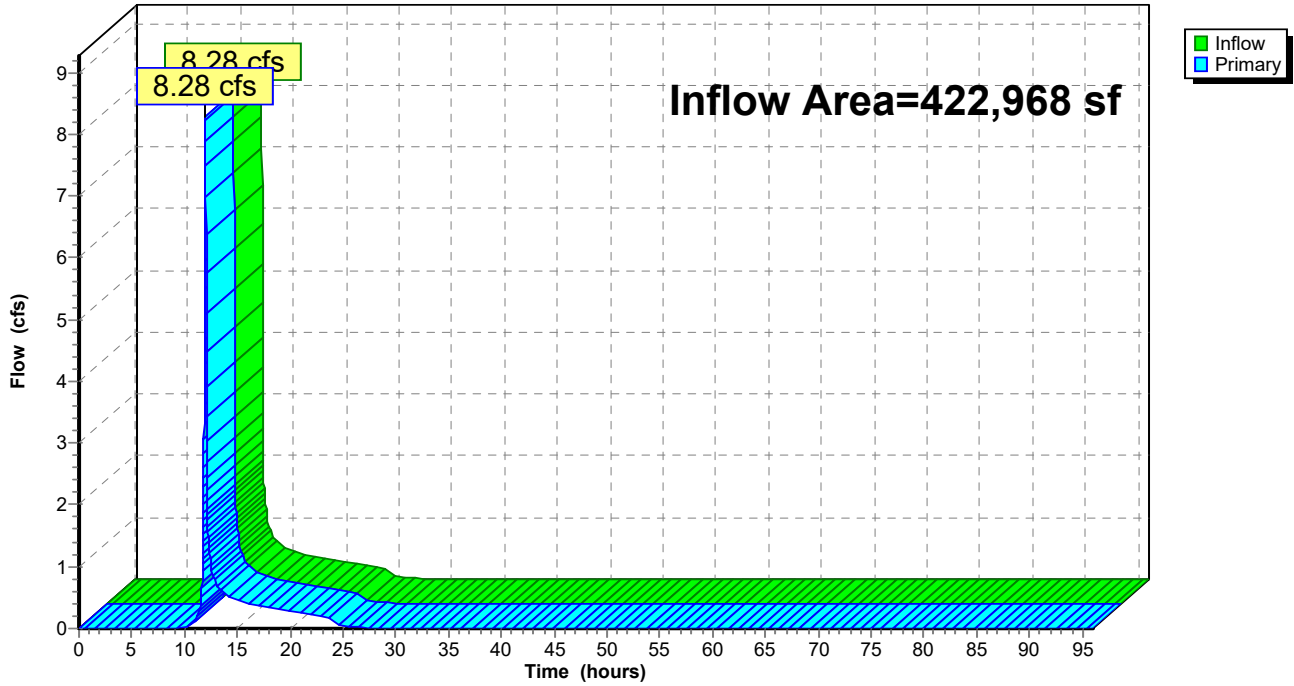
Pond 5P: UG Basin 5

Hydrograph



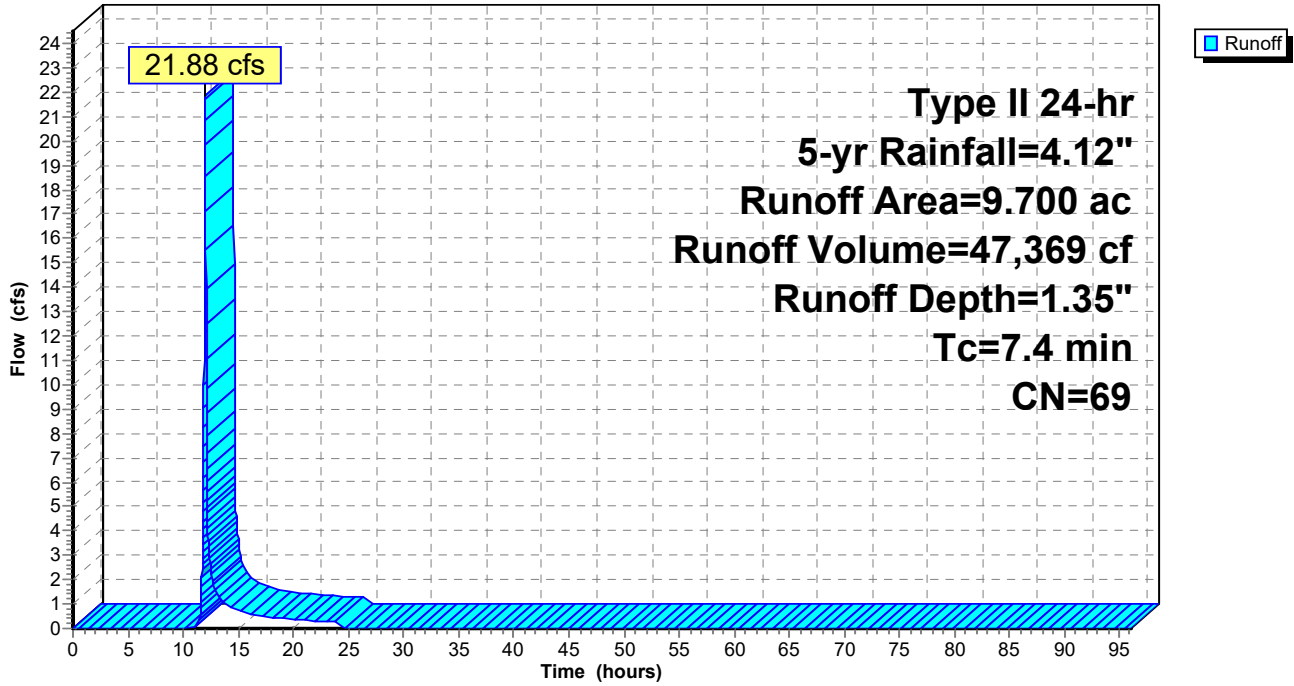
Link 1L: Total Post POI 1

Hydrograph



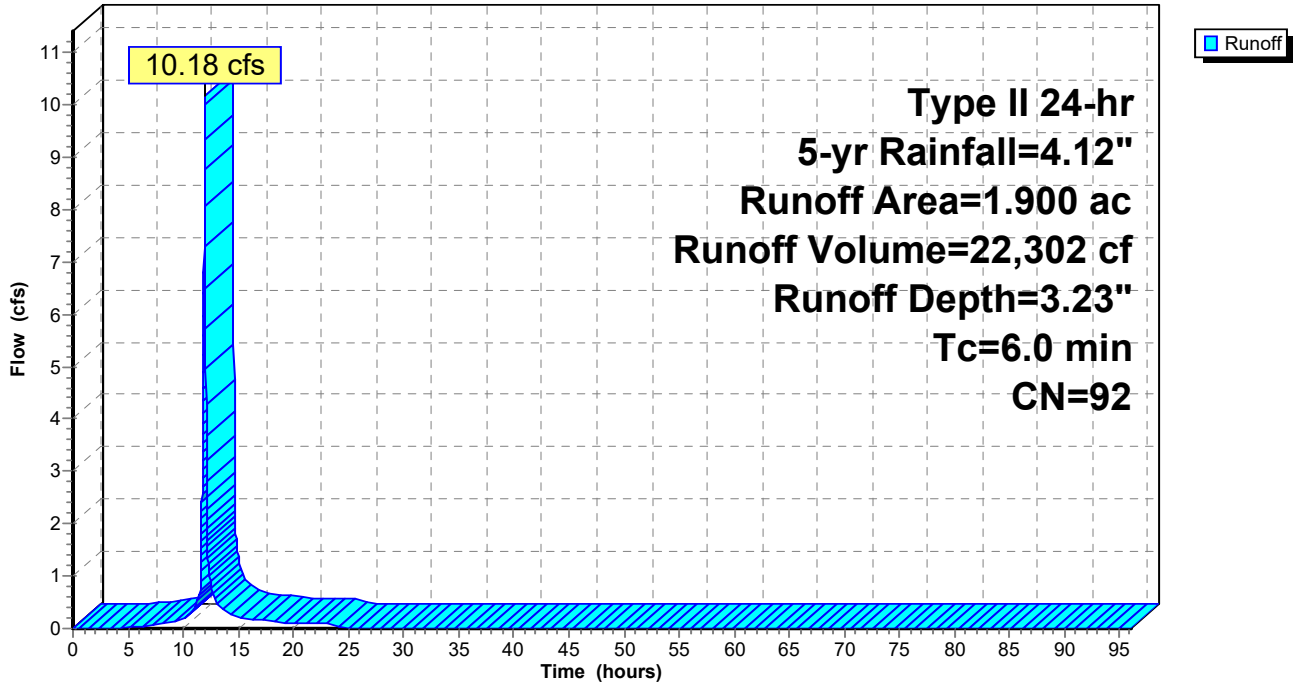
Subcatchment 1S: DA-1E

Hydrograph



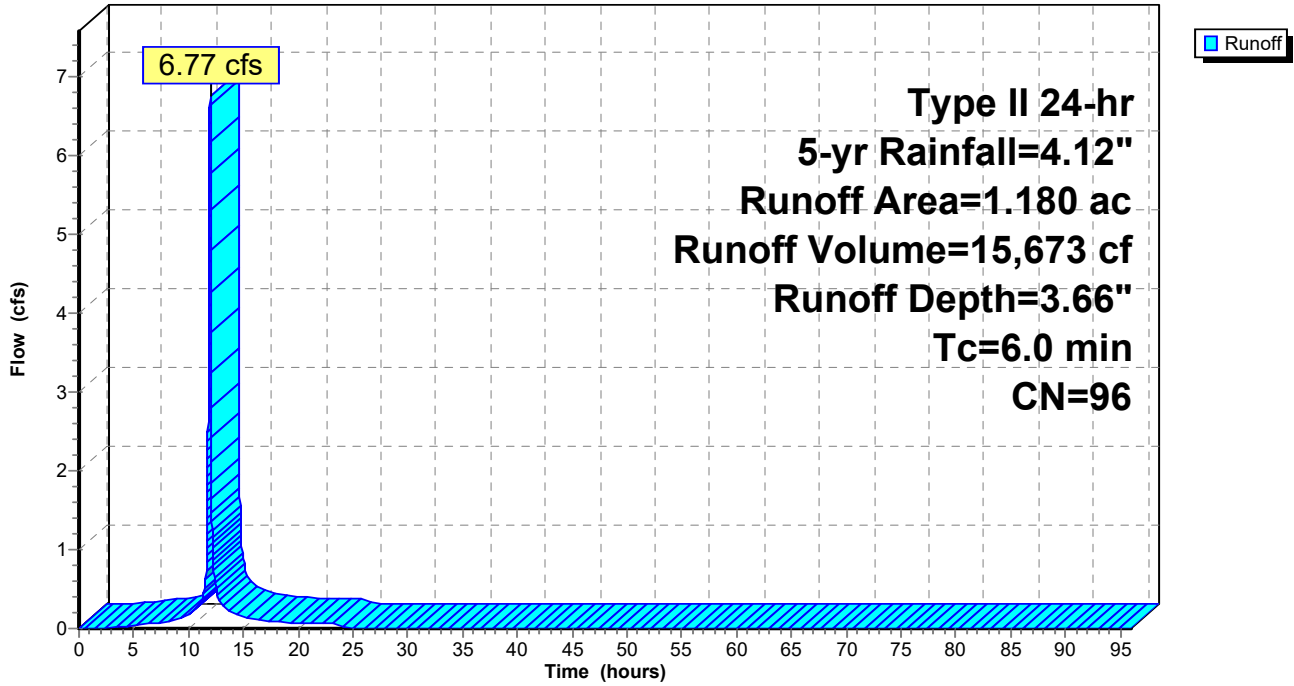
Subcatchment 2S: DA-2P(A)

Hydrograph



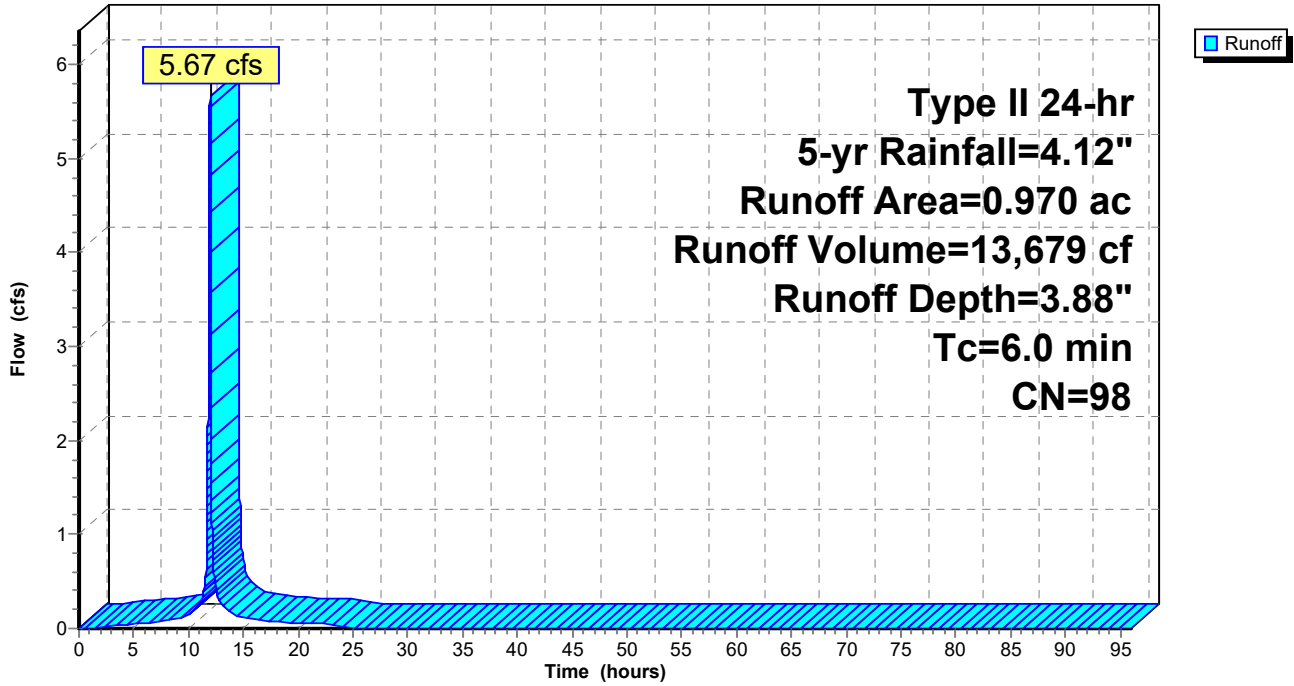
Subcatchment 3S: DA-2P(B)

Hydrograph



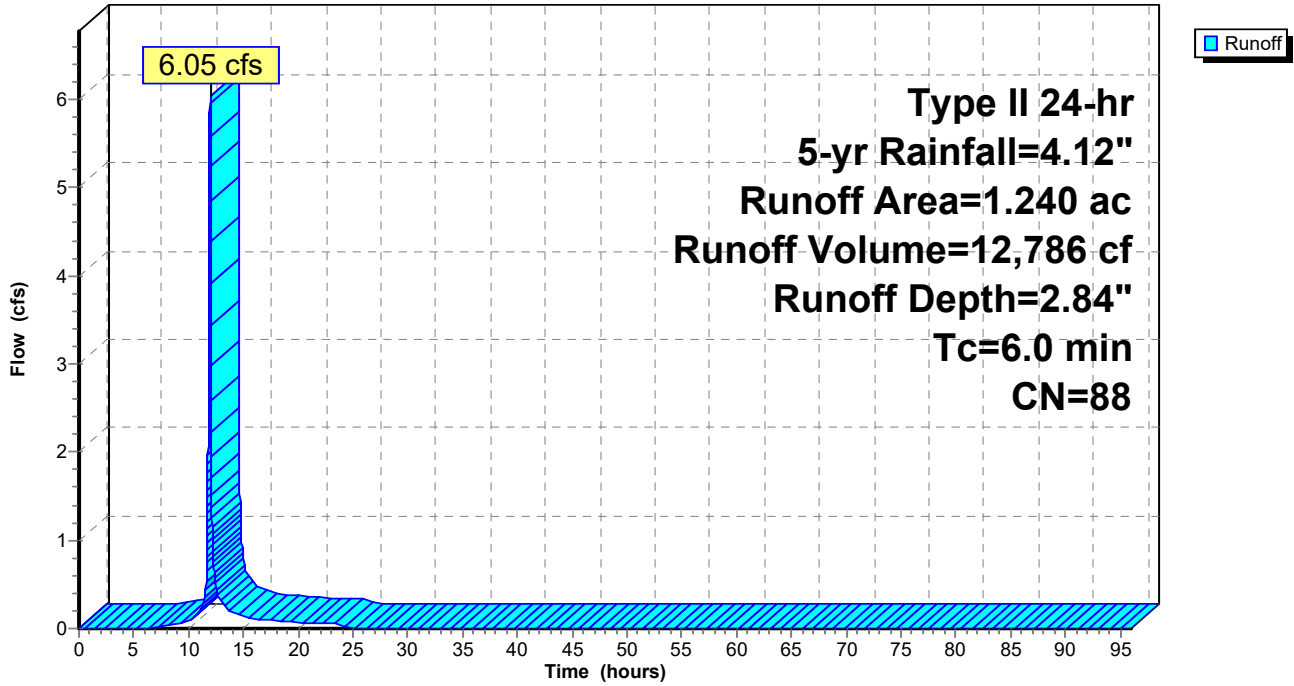
Subcatchment 4S: DA-2P(C)

Hydrograph



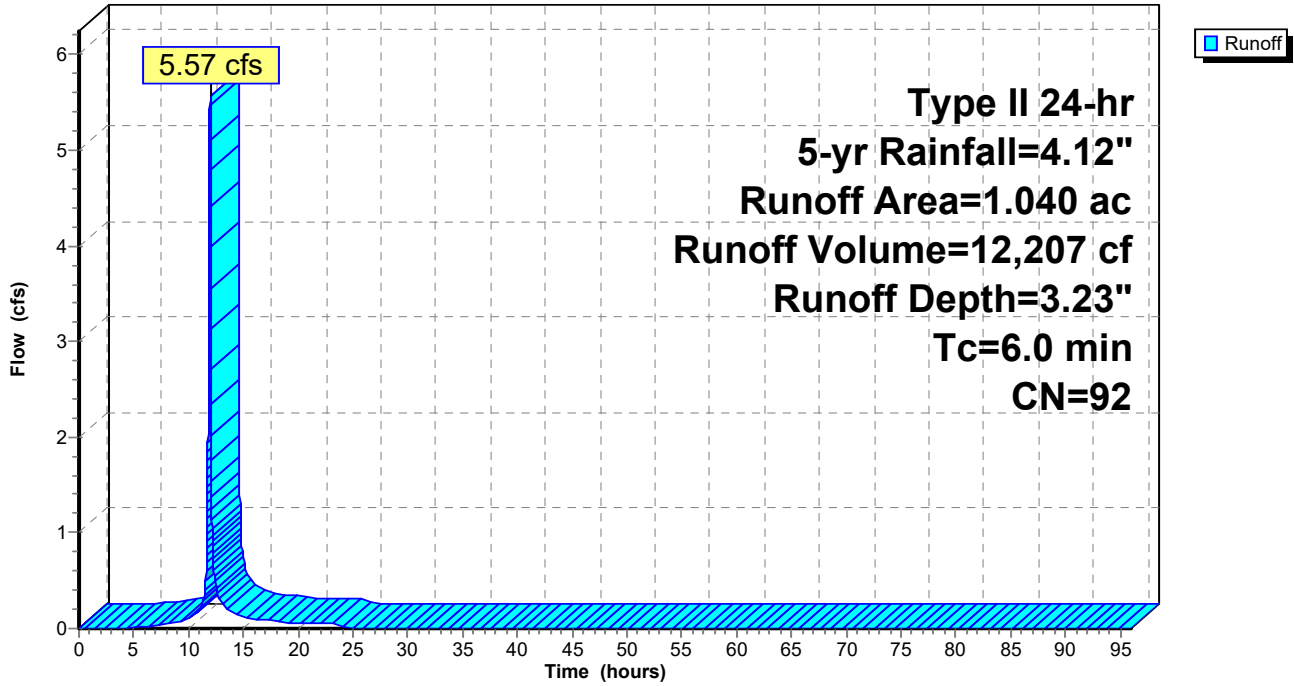
Subcatchment 5S: DA-2P(D)

Hydrograph



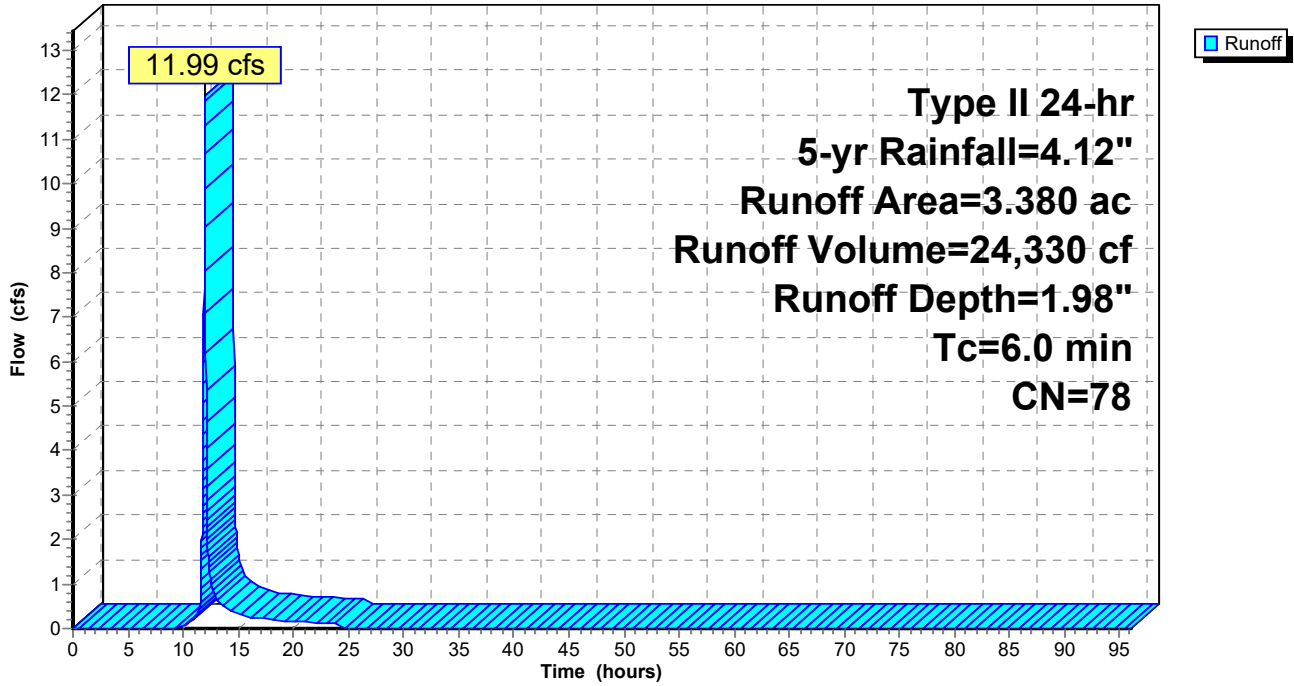
Subcatchment 6S: DA-2P(E)

Hydrograph



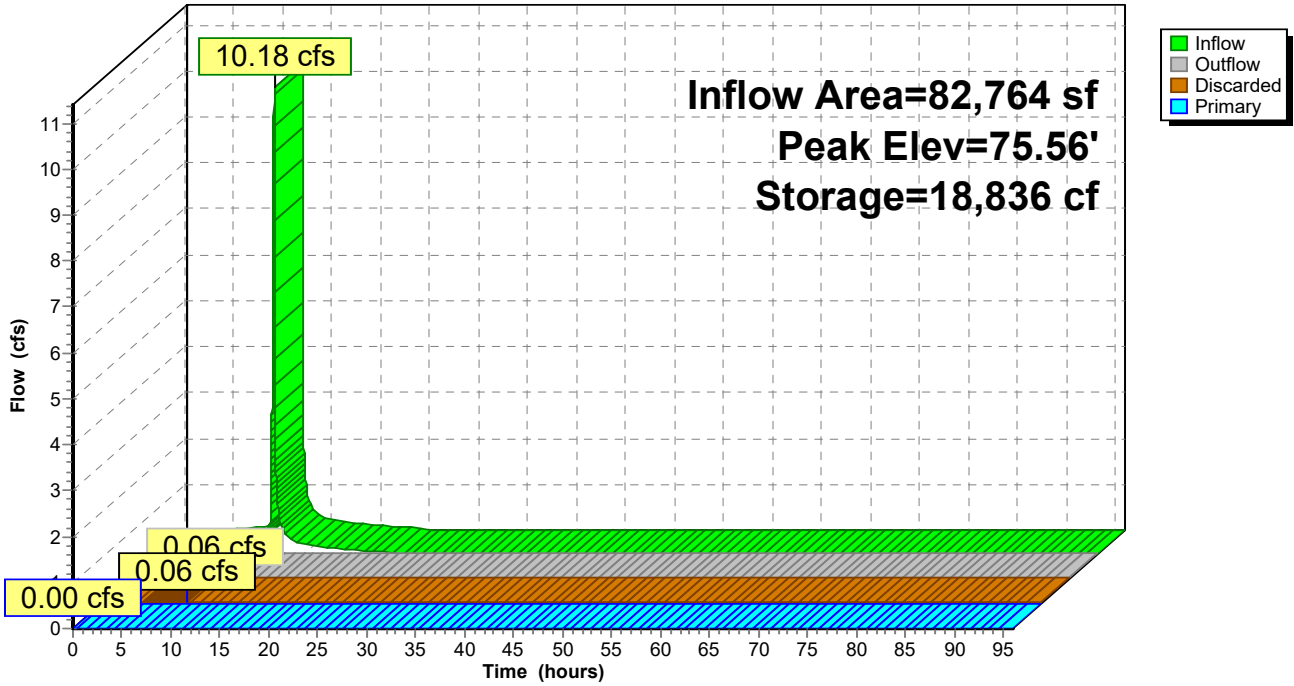
Subcatchment 7S: DA-2P(F) - Bypass

Hydrograph



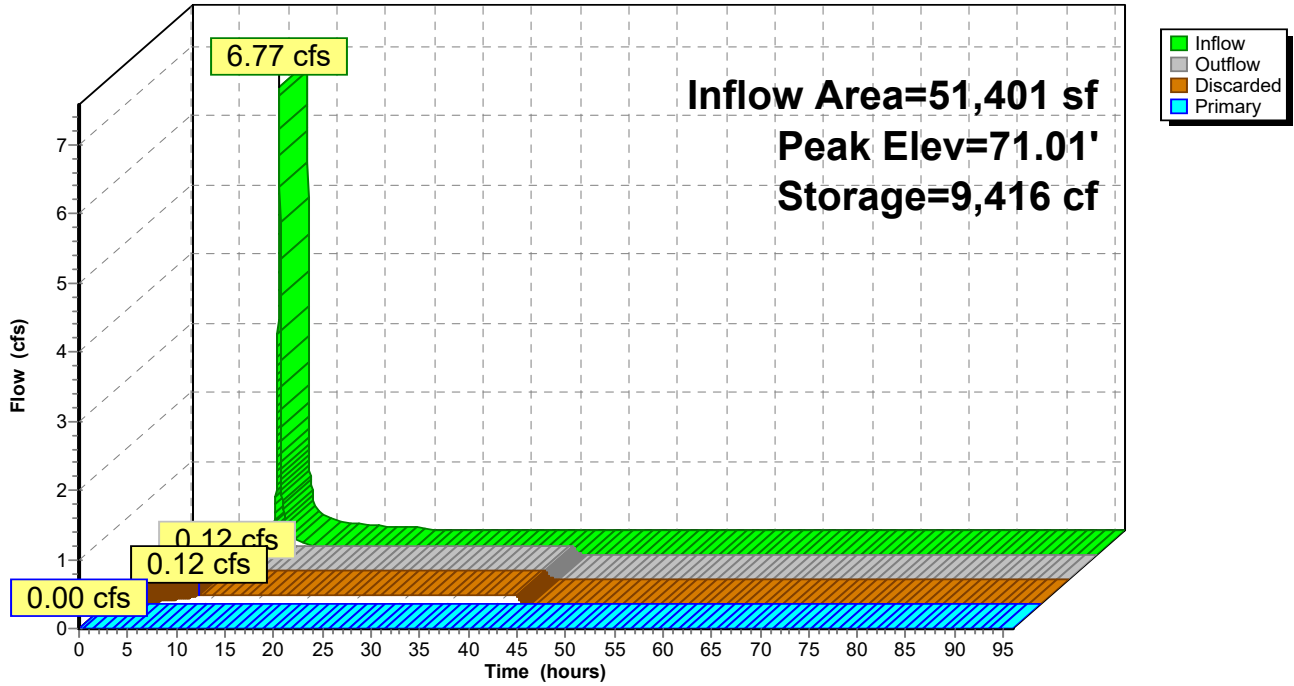
Pond 1P: UG Basin 1

Hydrograph



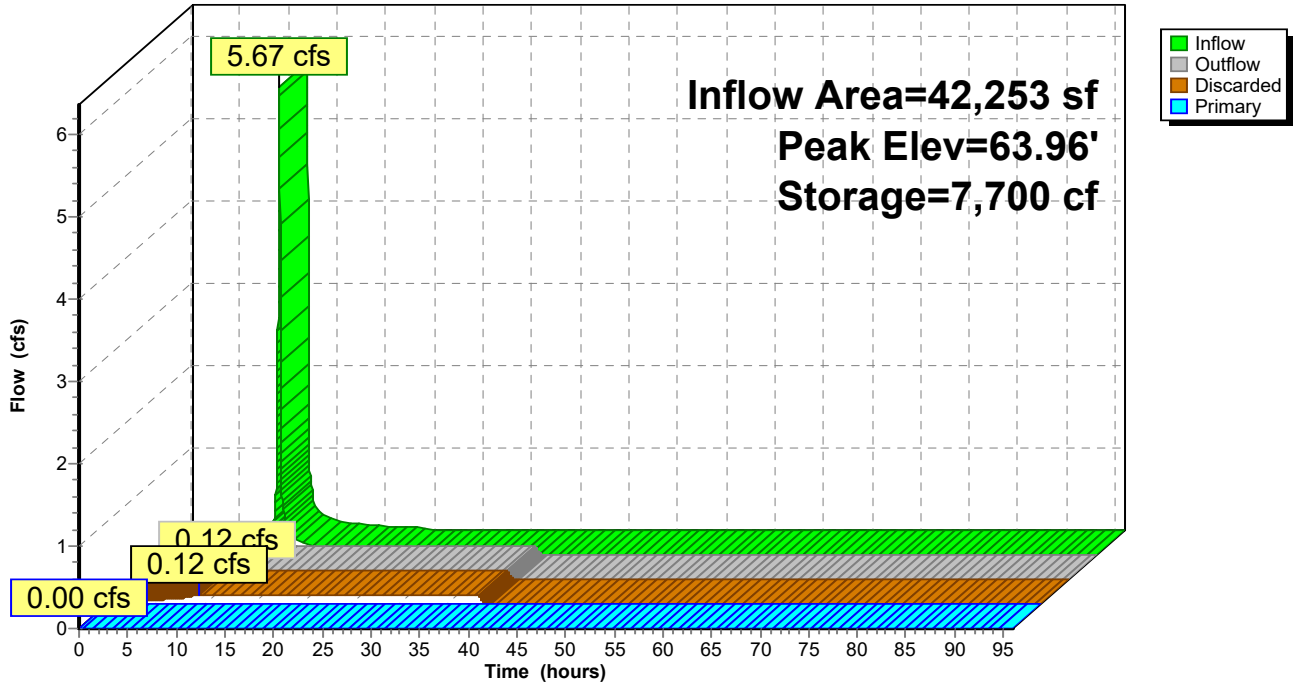
Pond 2P: UG Basin 2

Hydrograph



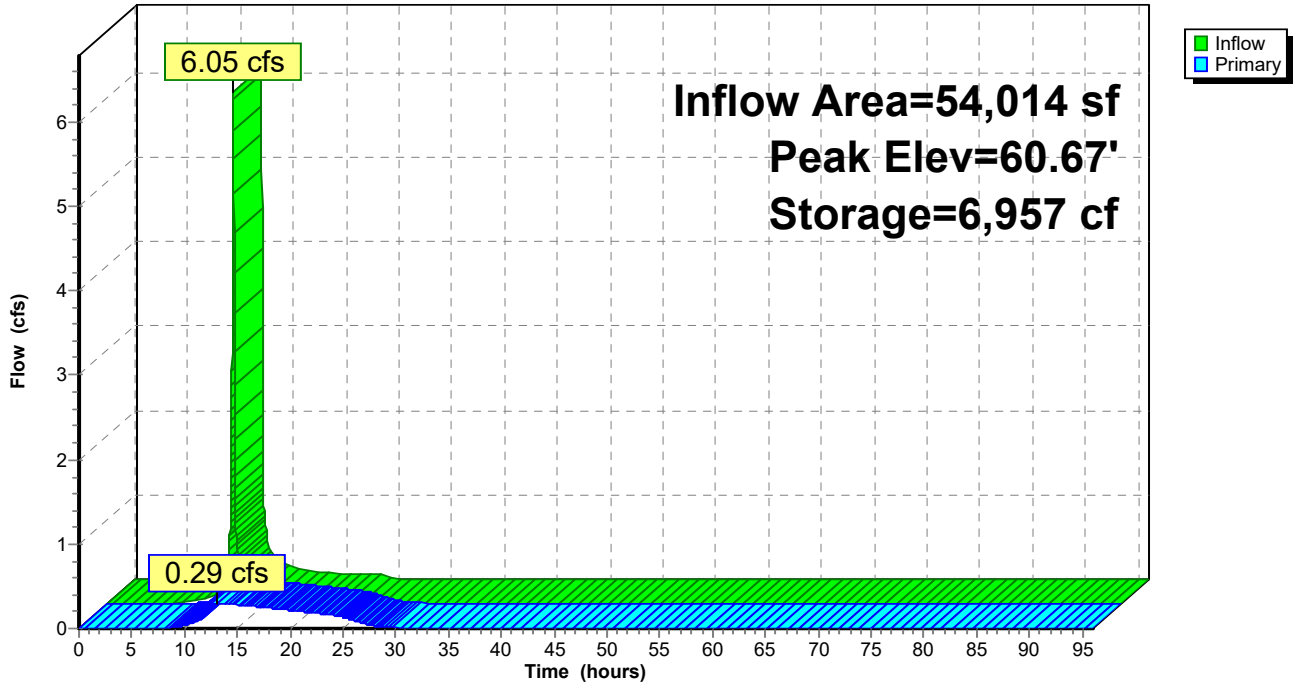
Pond 3P: UG Basin 3

Hydrograph



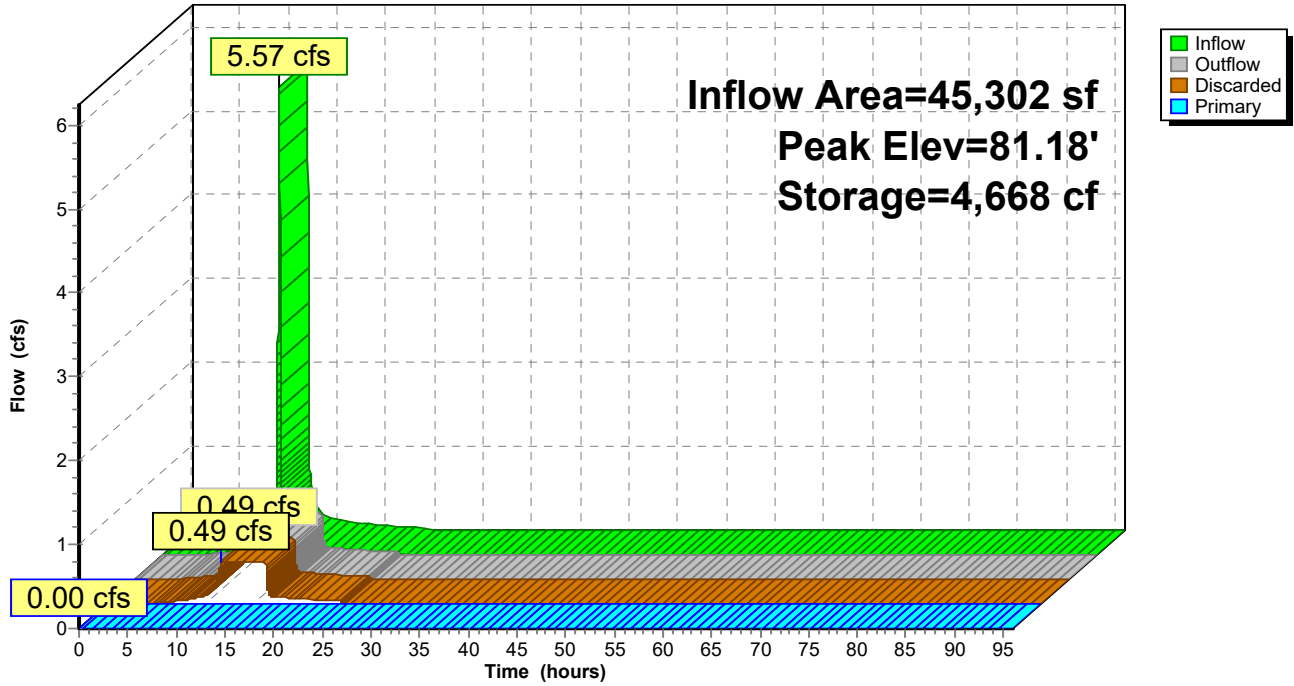
Pond 4P: UG Basin 4

Hydrograph



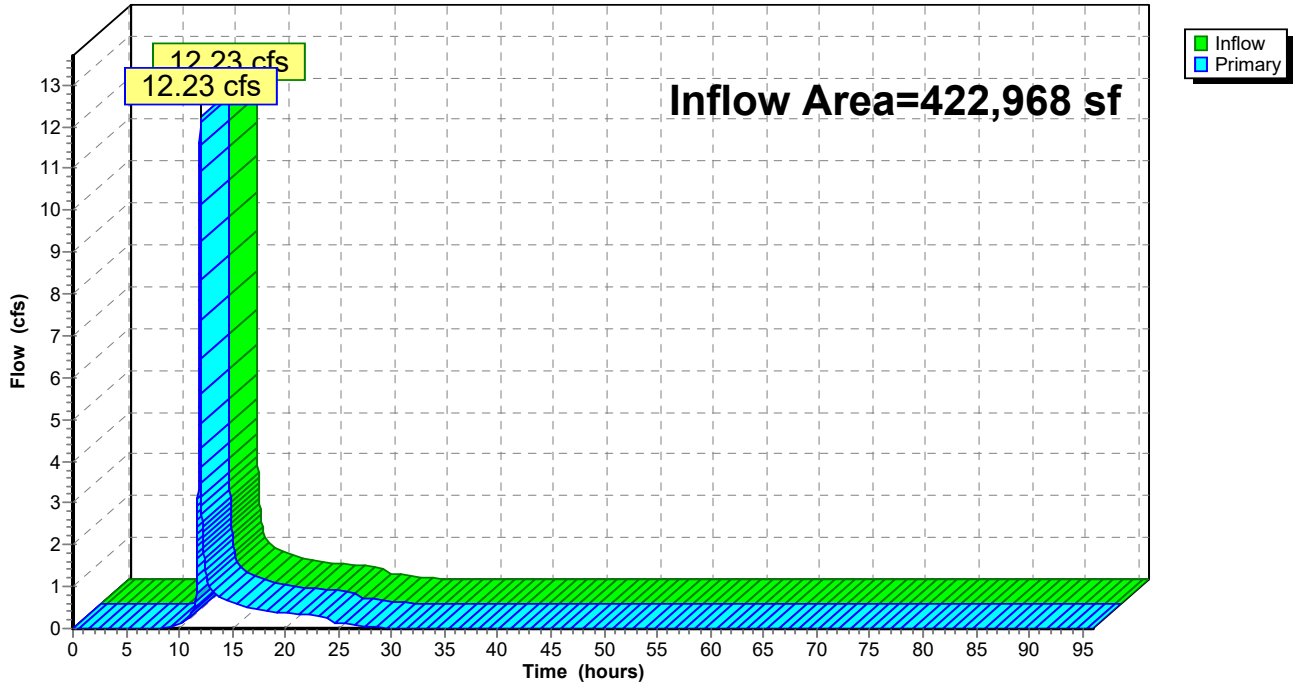
Pond 5P: UG Basin 5

Hydrograph



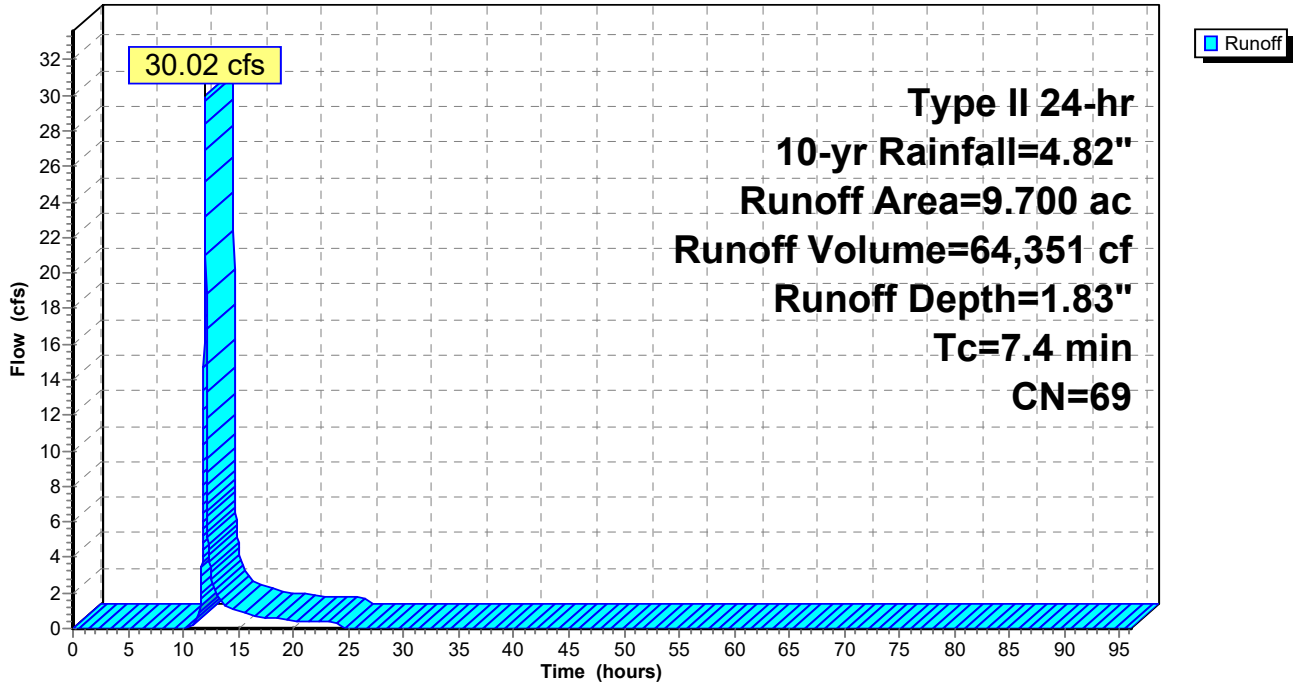
Link 1L: Total Post POI 1

Hydrograph



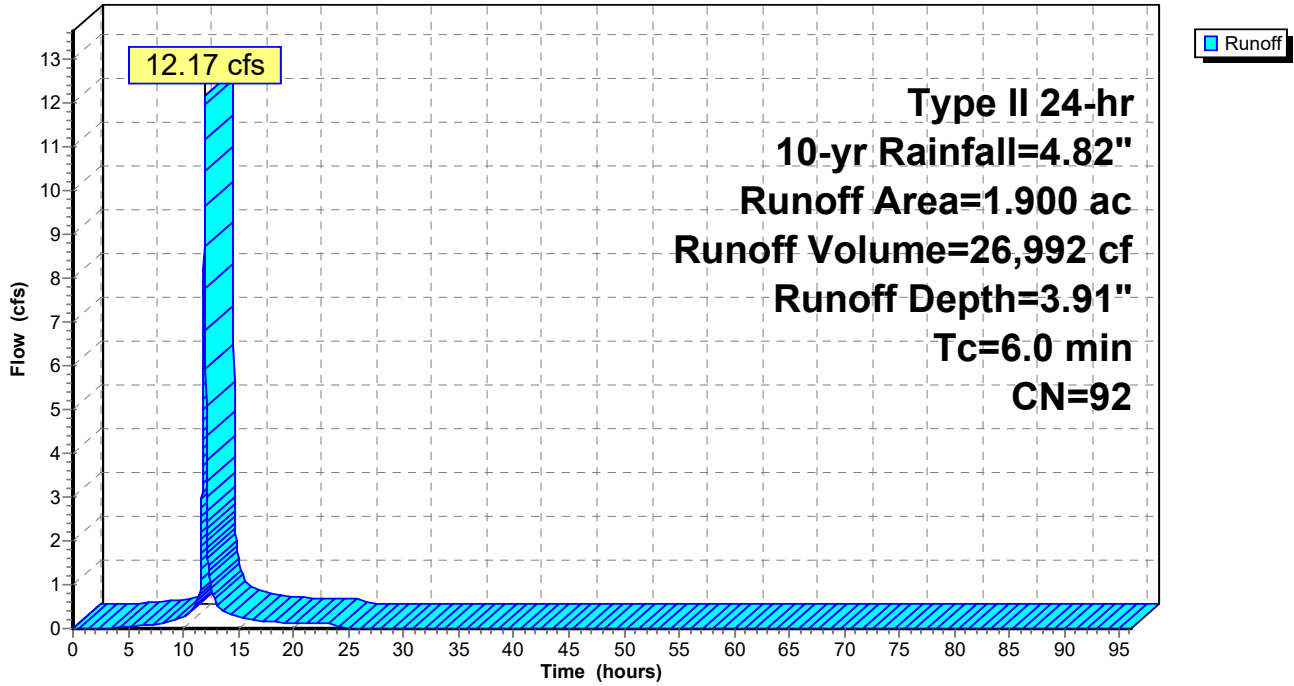
Subcatchment 1S: DA-1E

Hydrograph



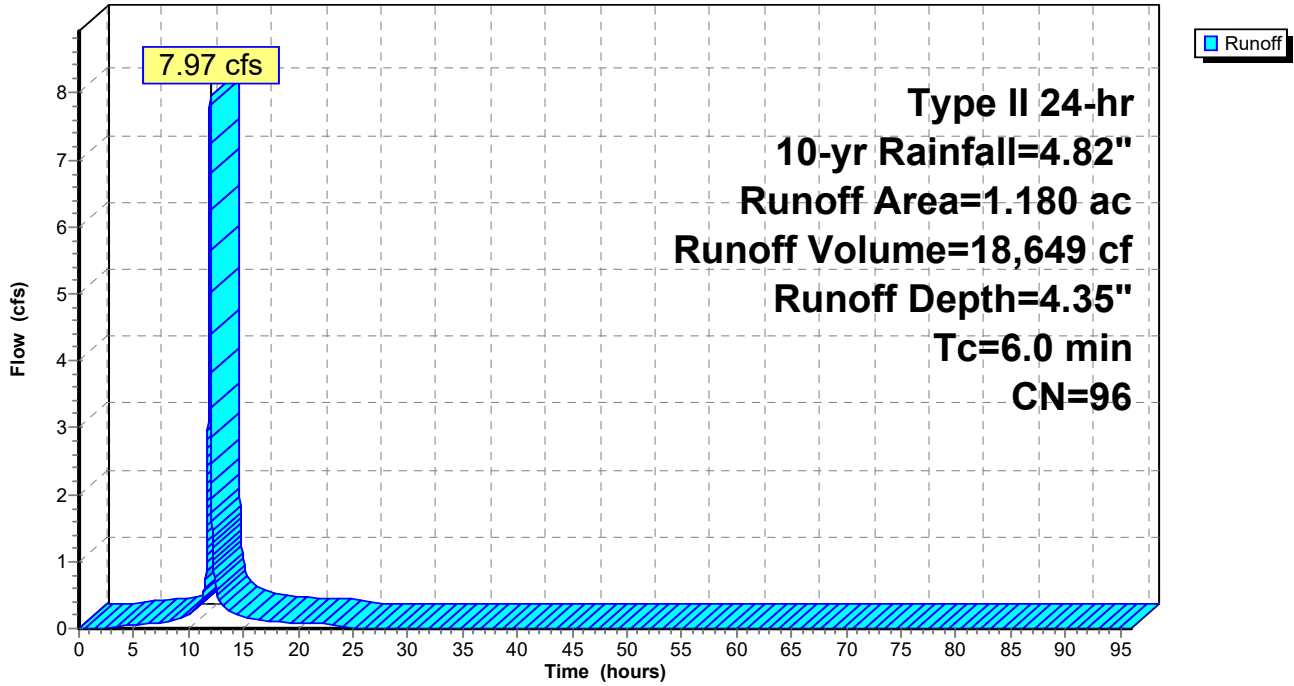
Subcatchment 2S: DA-2P(A)

Hydrograph



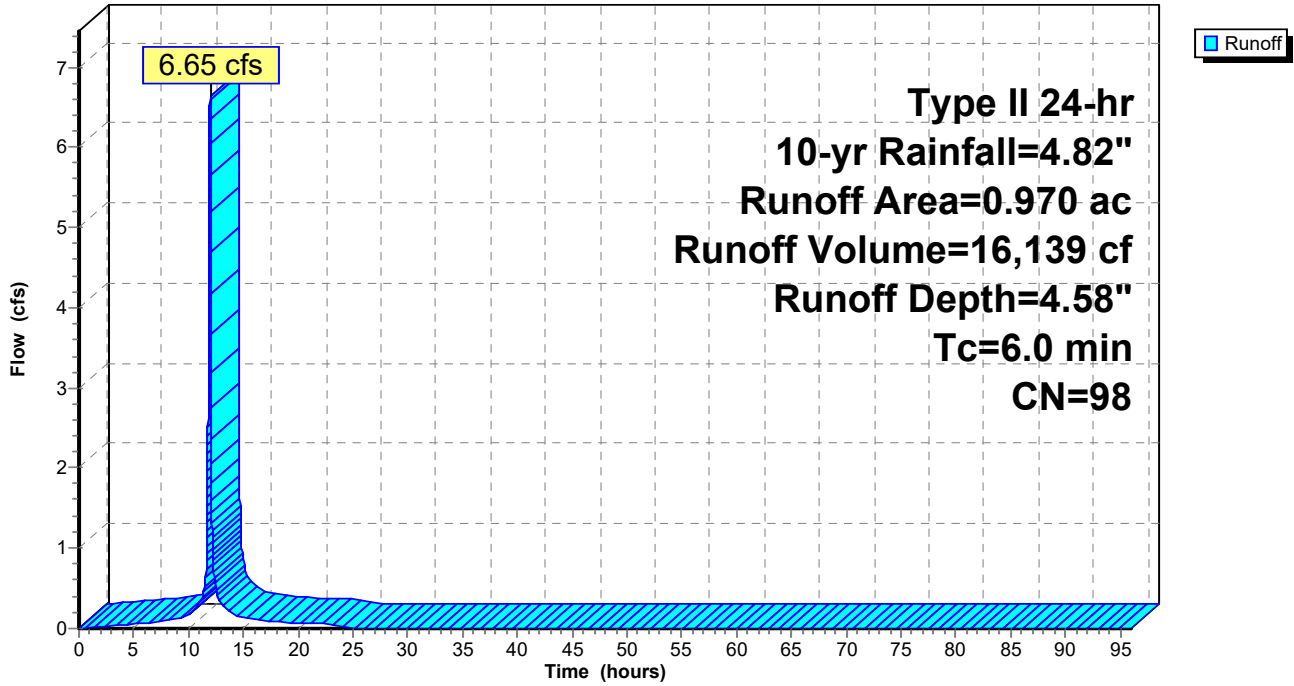
Subcatchment 3S: DA-2P(B)

Hydrograph



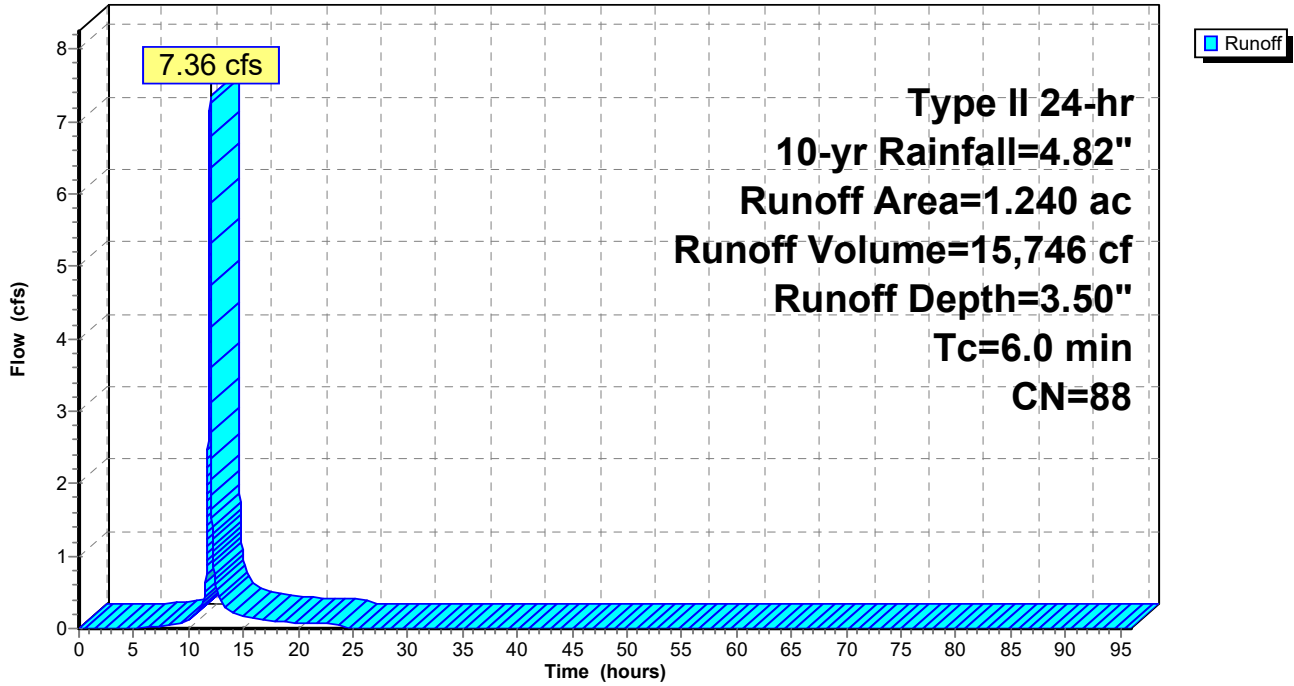
Subcatchment 4S: DA-2P(C)

Hydrograph



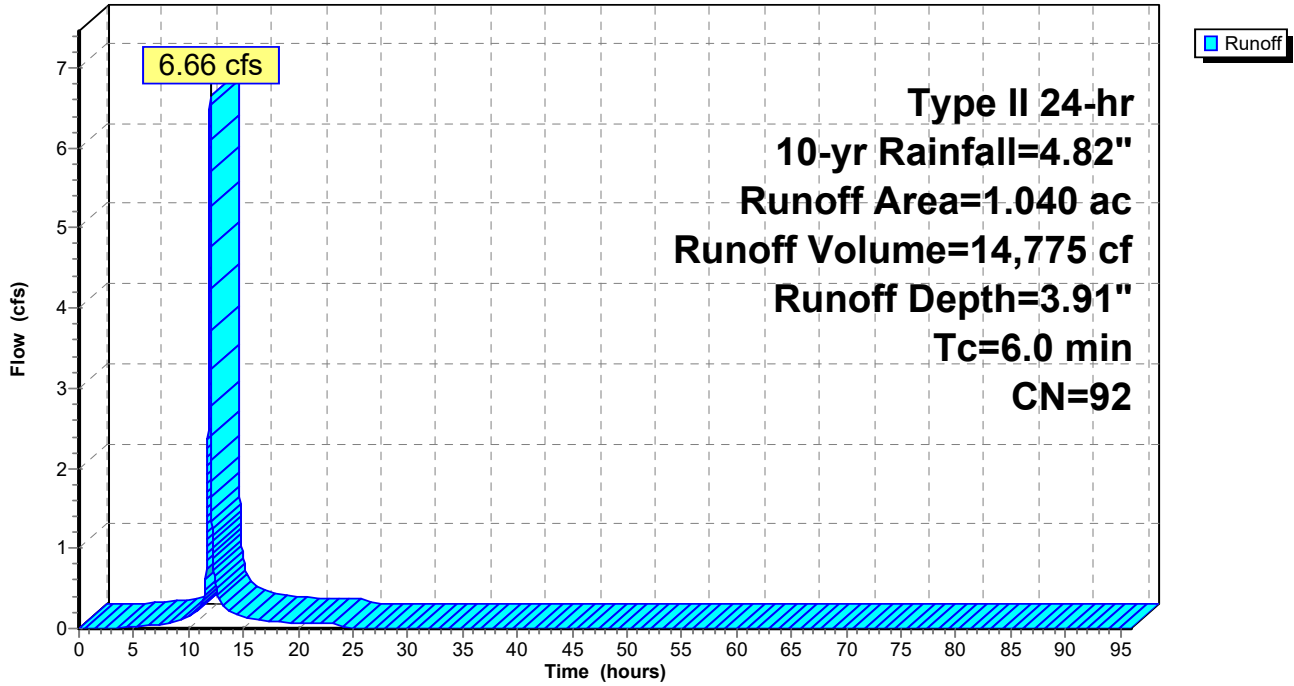
Subcatchment 5S: DA-2P(D)

Hydrograph



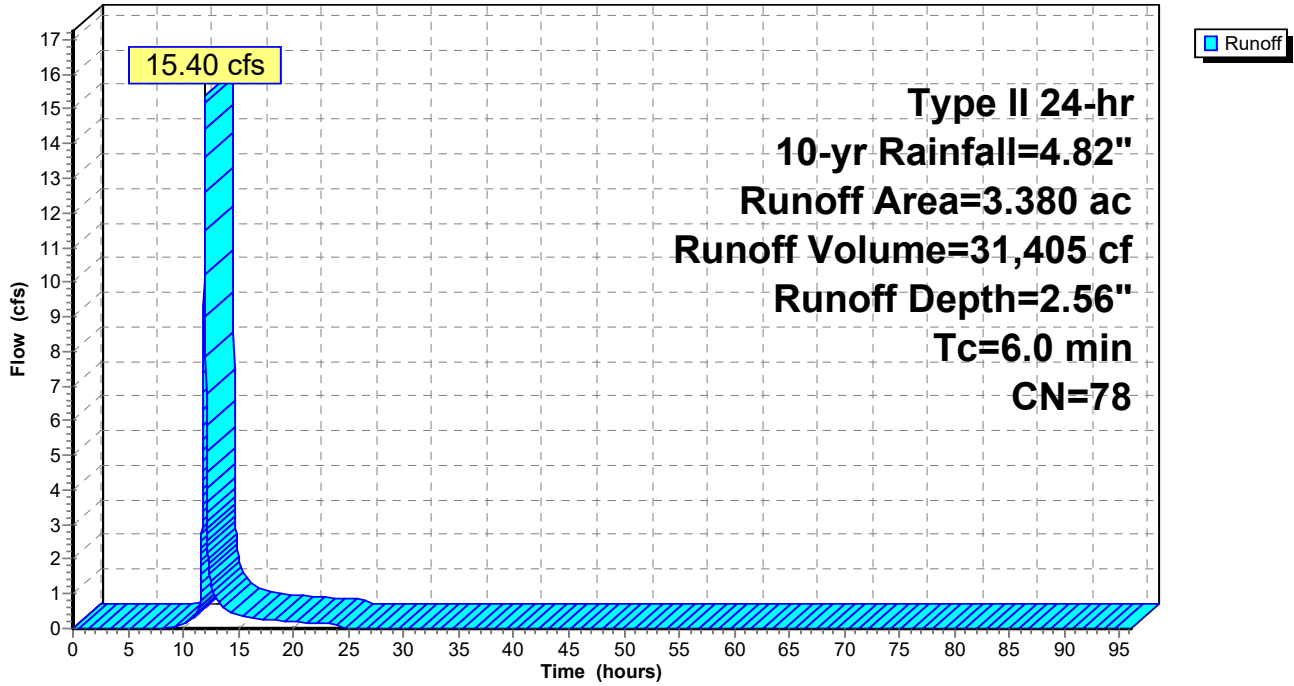
Subcatchment 6S: DA-2P(E)

Hydrograph



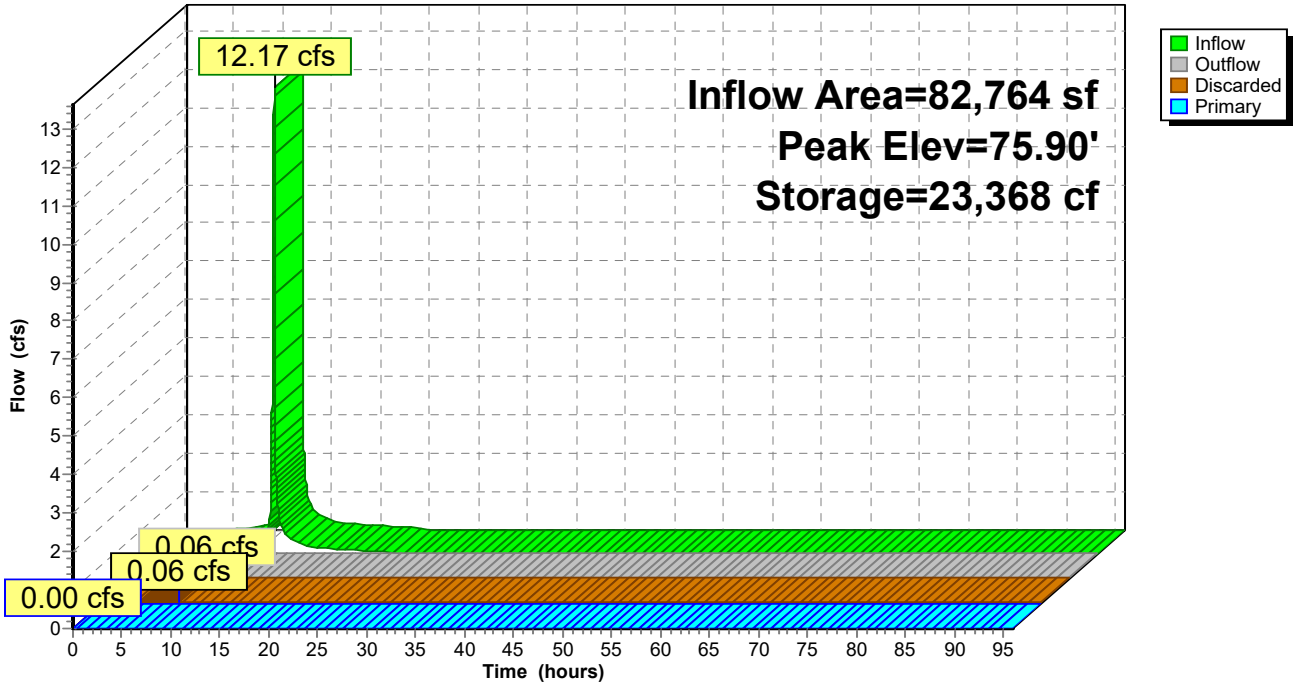
Subcatchment 7S: DA-2P(F) - Bypass

Hydrograph



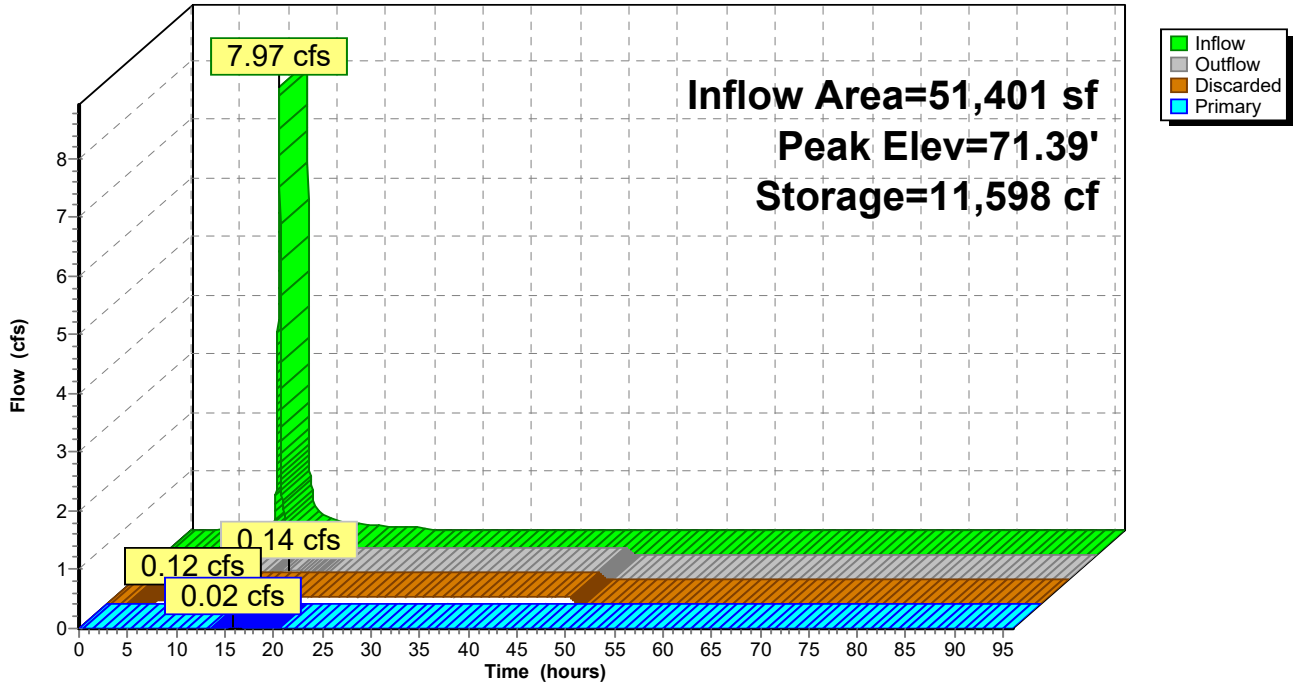
Pond 1P: UG Basin 1

Hydrograph



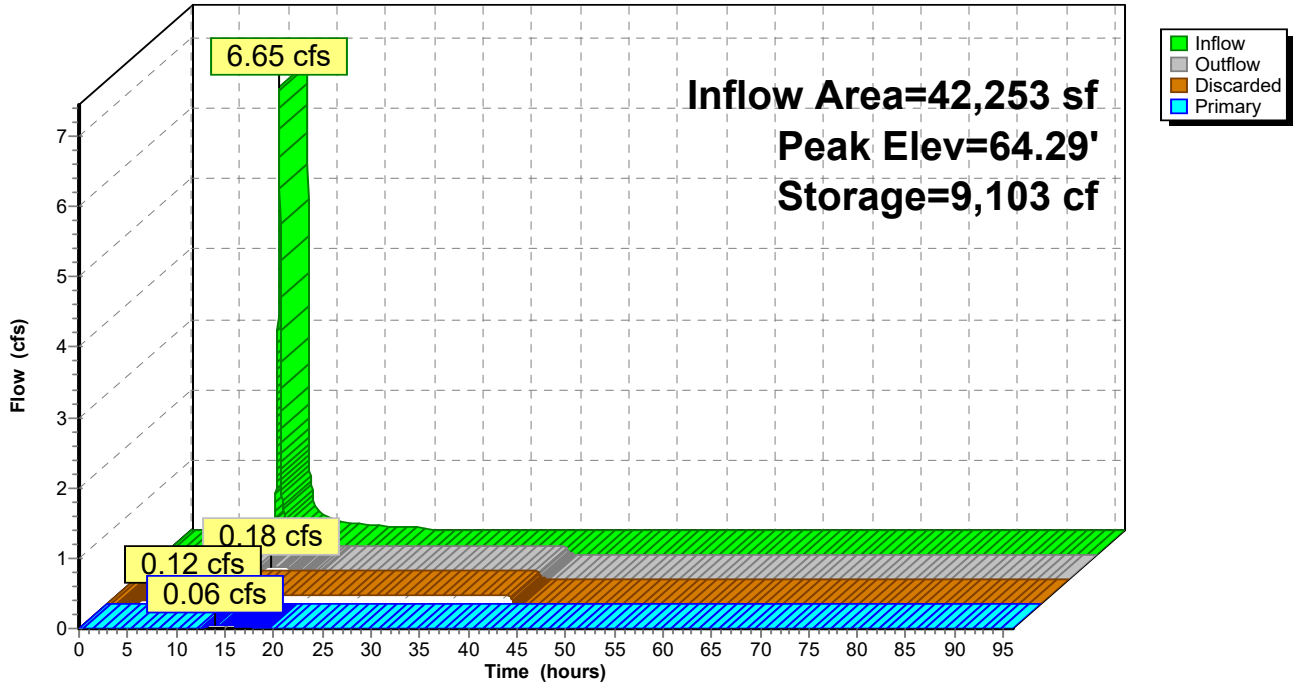
Pond 2P: UG Basin 2

Hydrograph



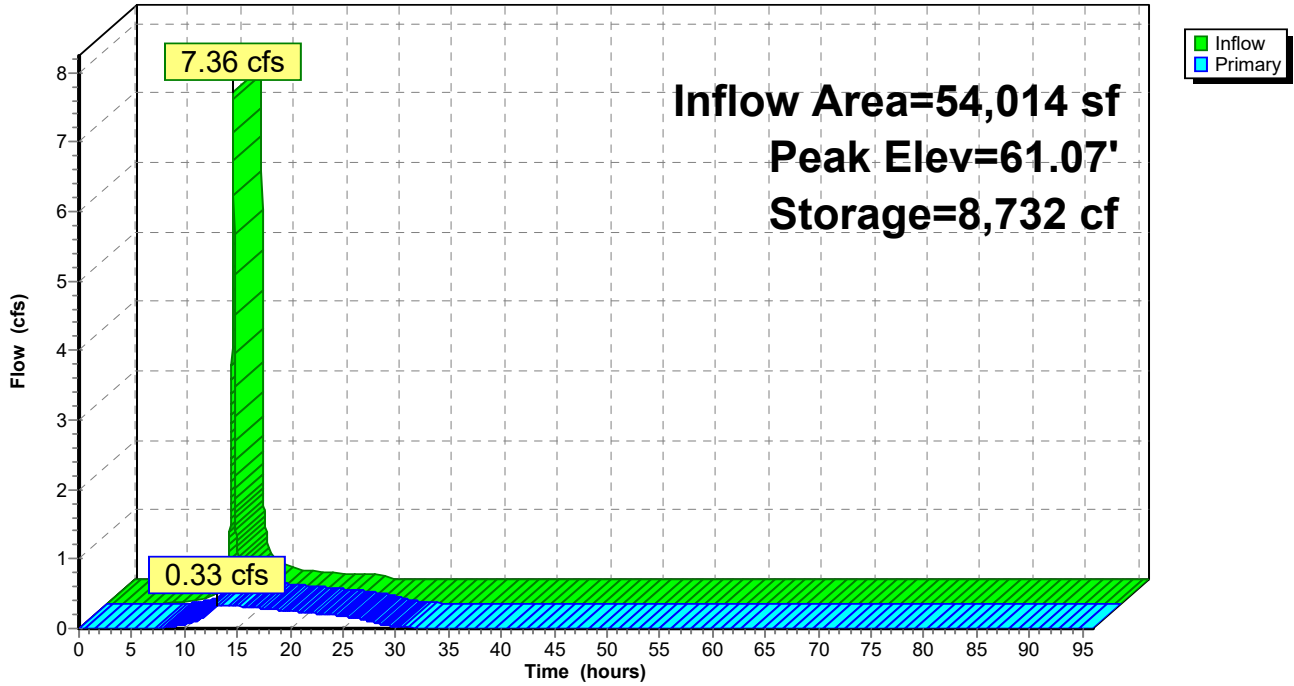
Pond 3P: UG Basin 3

Hydrograph



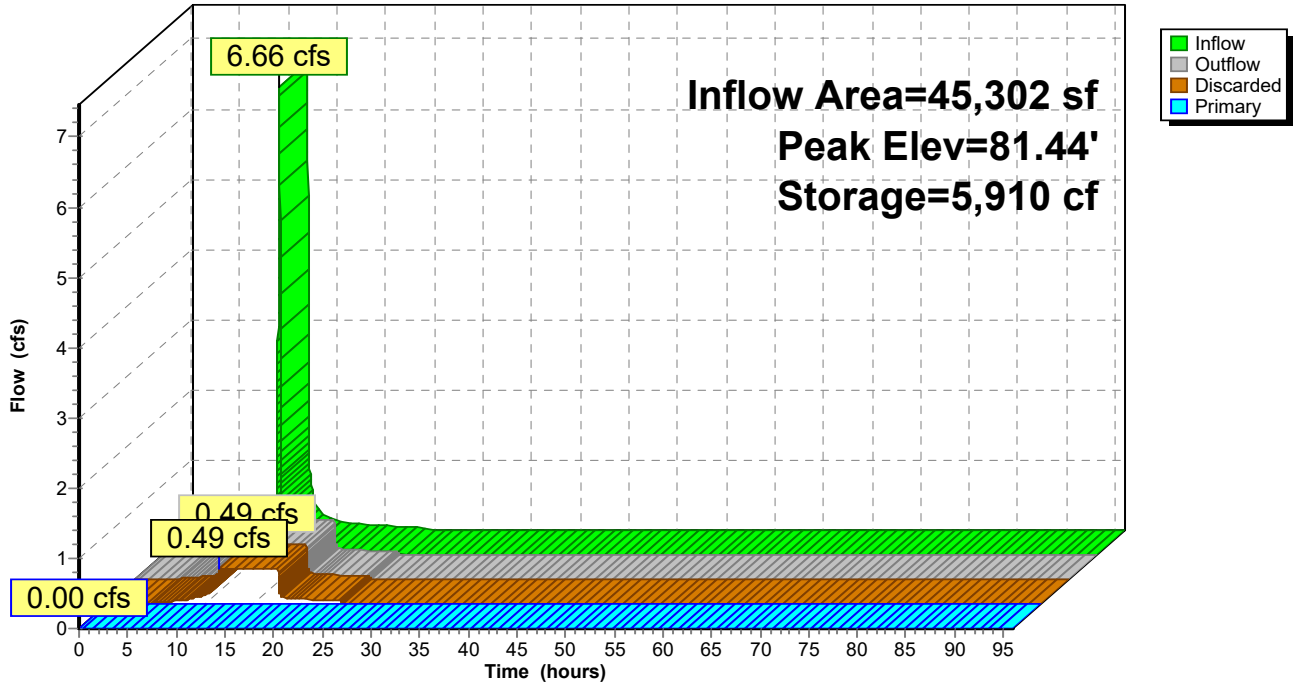
Pond 4P: UG Basin 4

Hydrograph



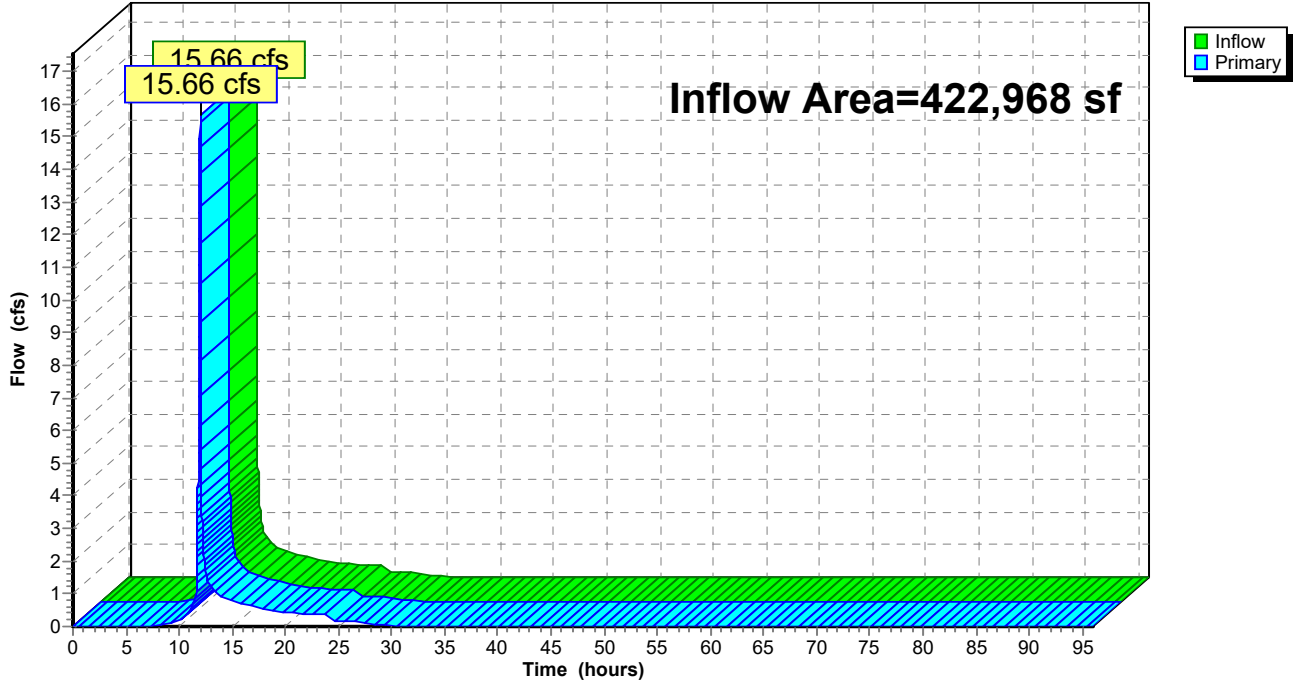
Pond 5P: UG Basin 5

Hydrograph



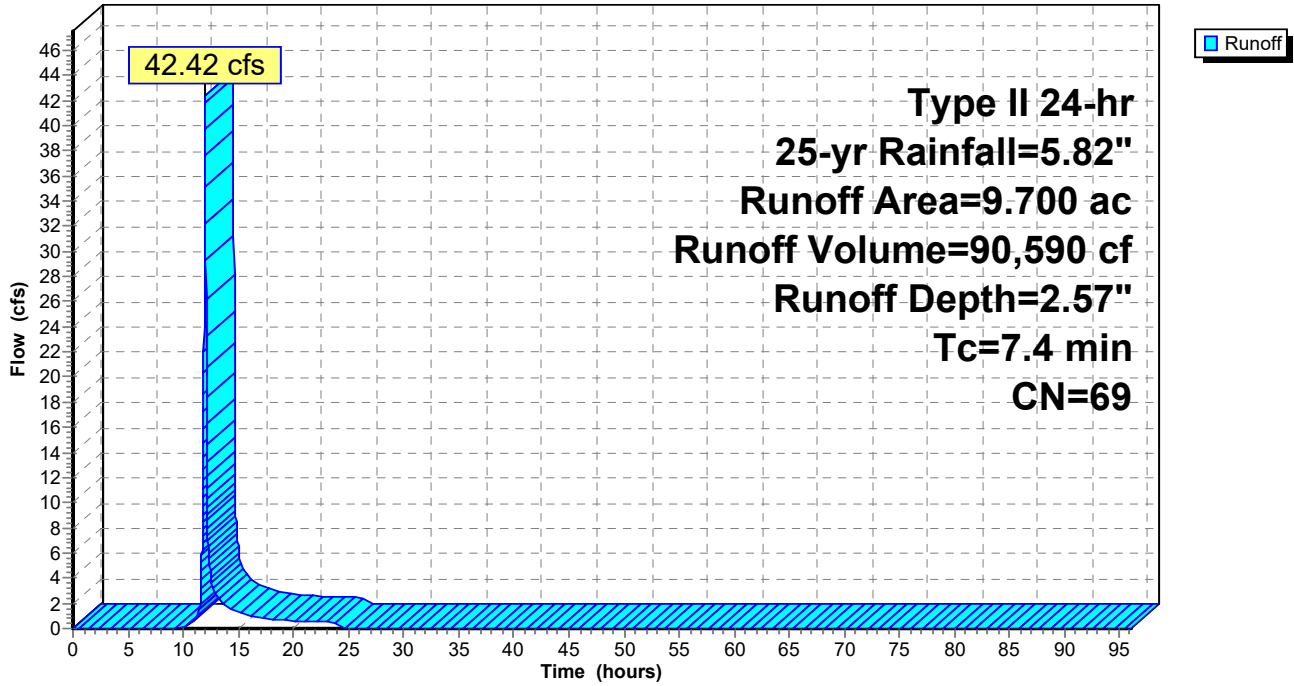
Link 1L: Total Post POI 1

Hydrograph



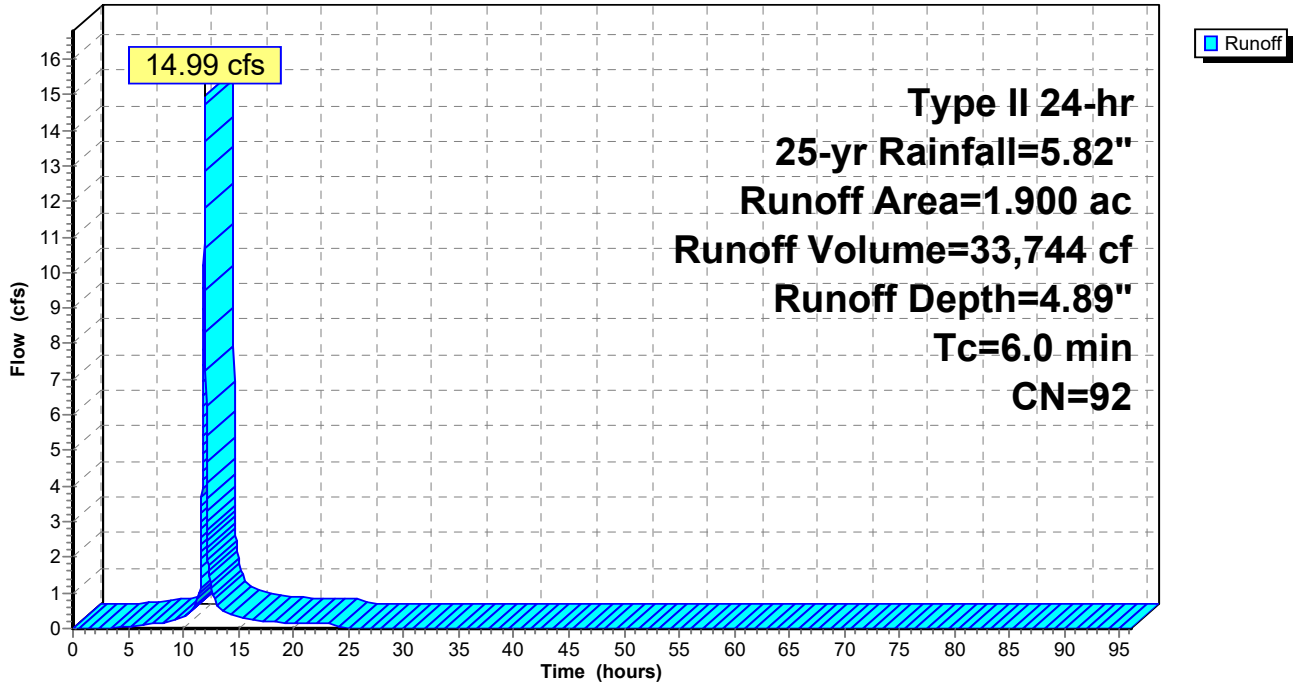
Subcatchment 1S: DA-1E

Hydrograph



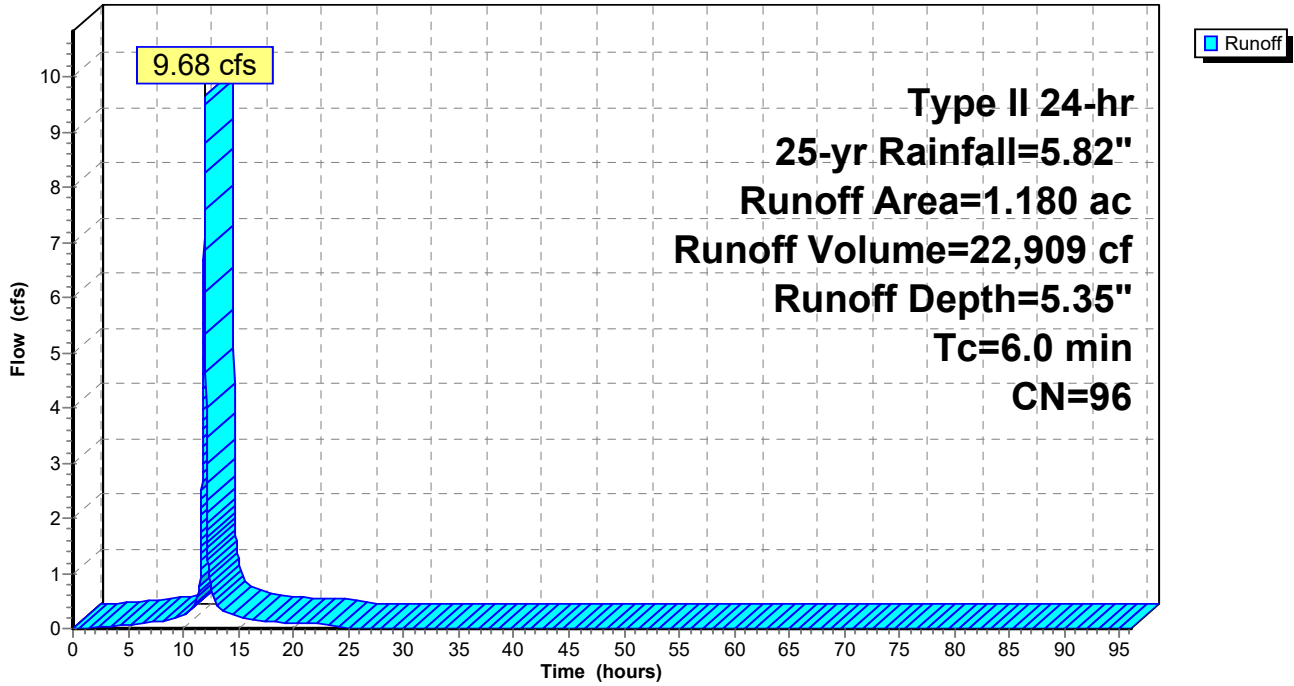
Subcatchment 2S: DA-2P(A)

Hydrograph



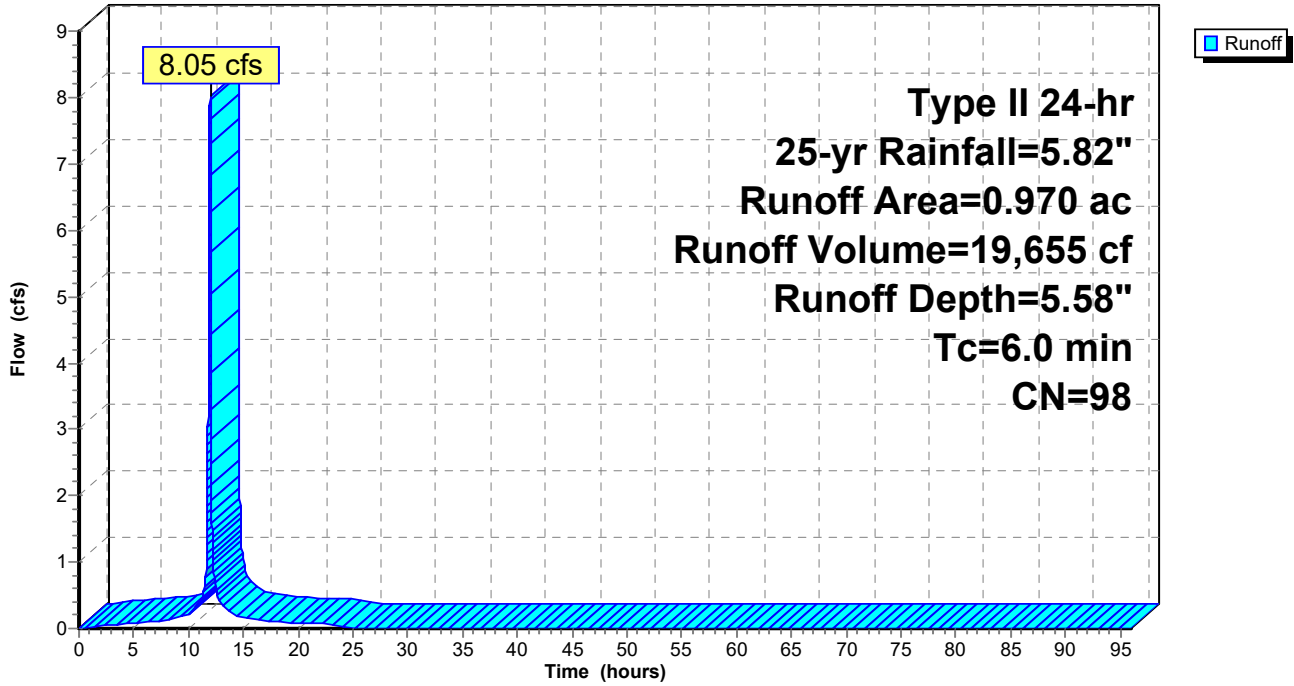
Subcatchment 3S: DA-2P(B)

Hydrograph



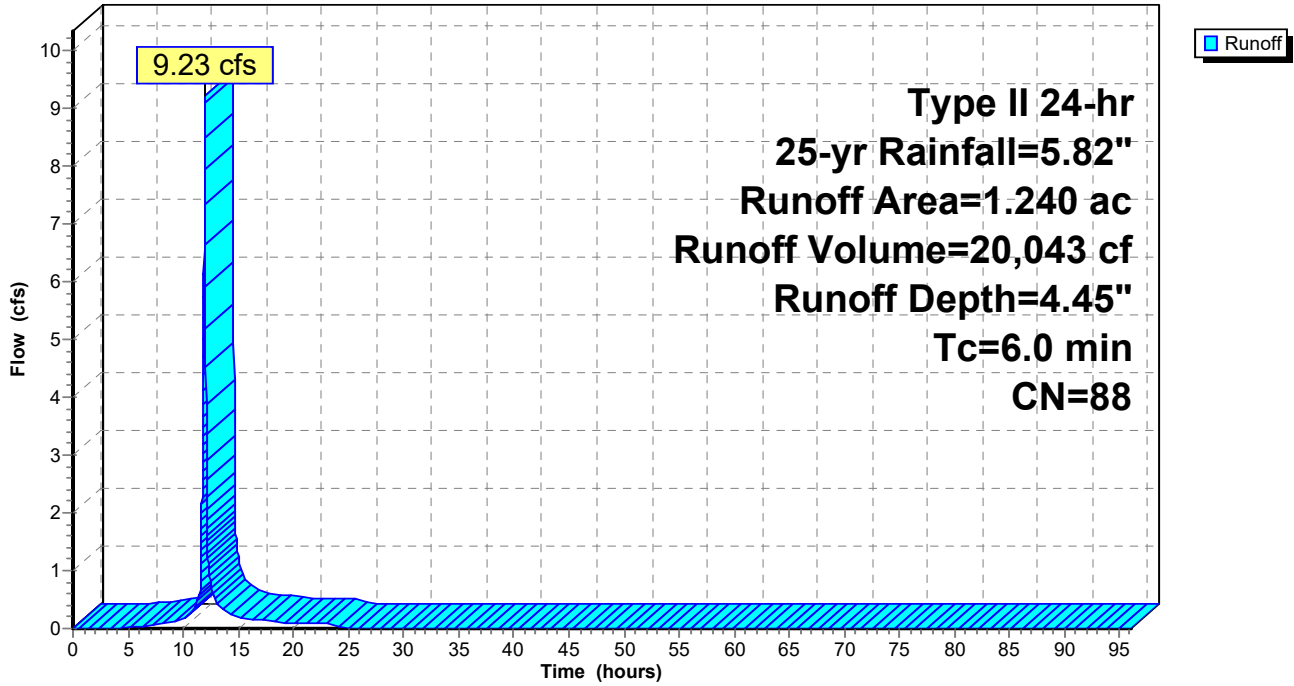
Subcatchment 4S: DA-2P(C)

Hydrograph



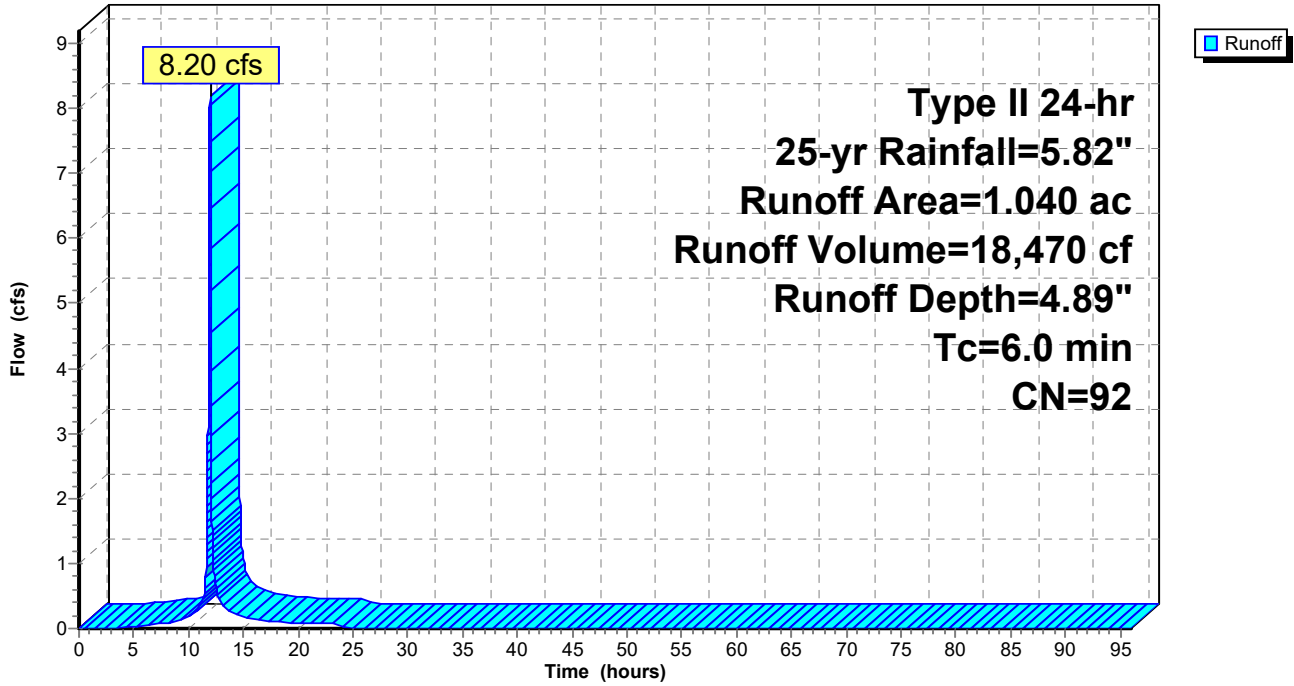
Subcatchment 5S: DA-2P(D)

Hydrograph



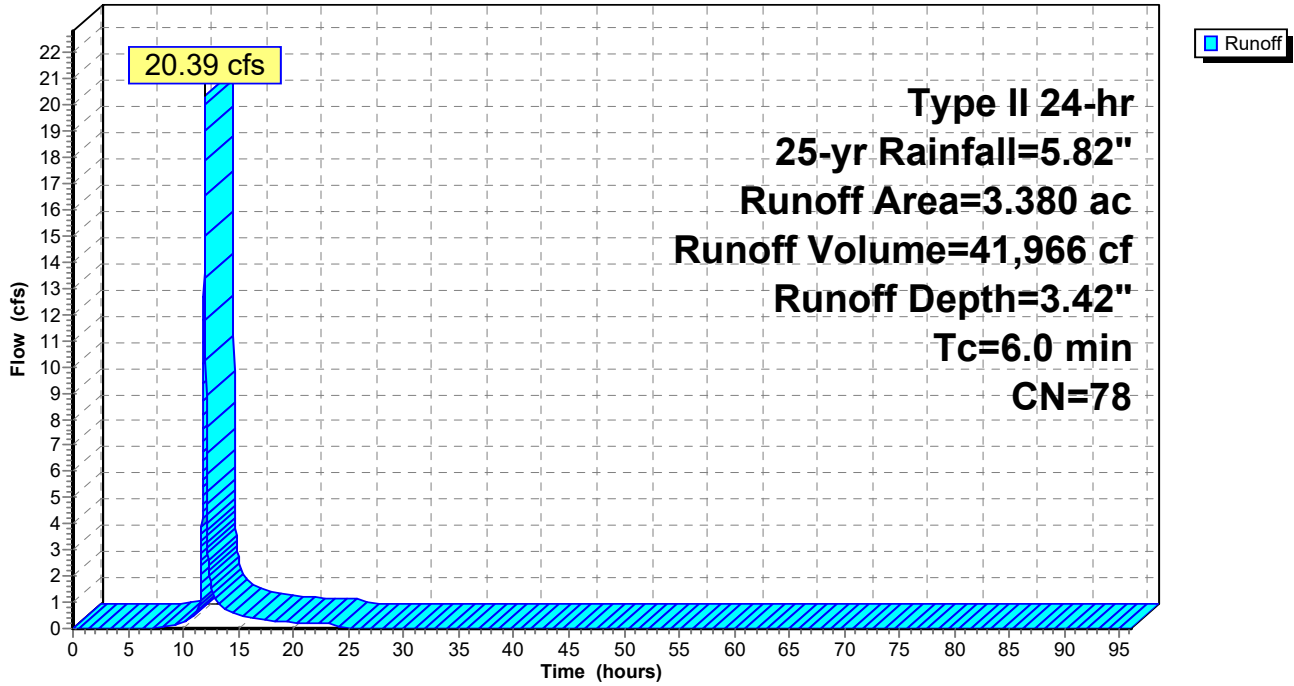
Subcatchment 6S: DA-2P(E)

Hydrograph



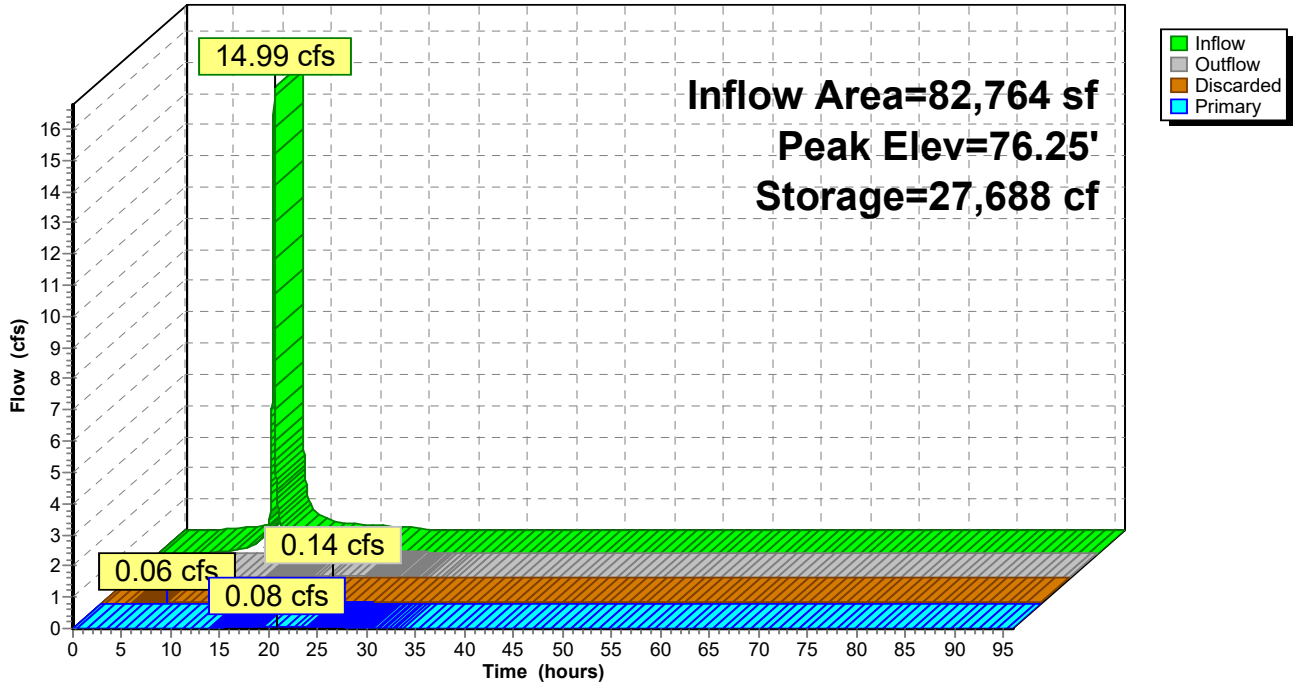
Subcatchment 7S: DA-2P(F) - Bypass

Hydrograph



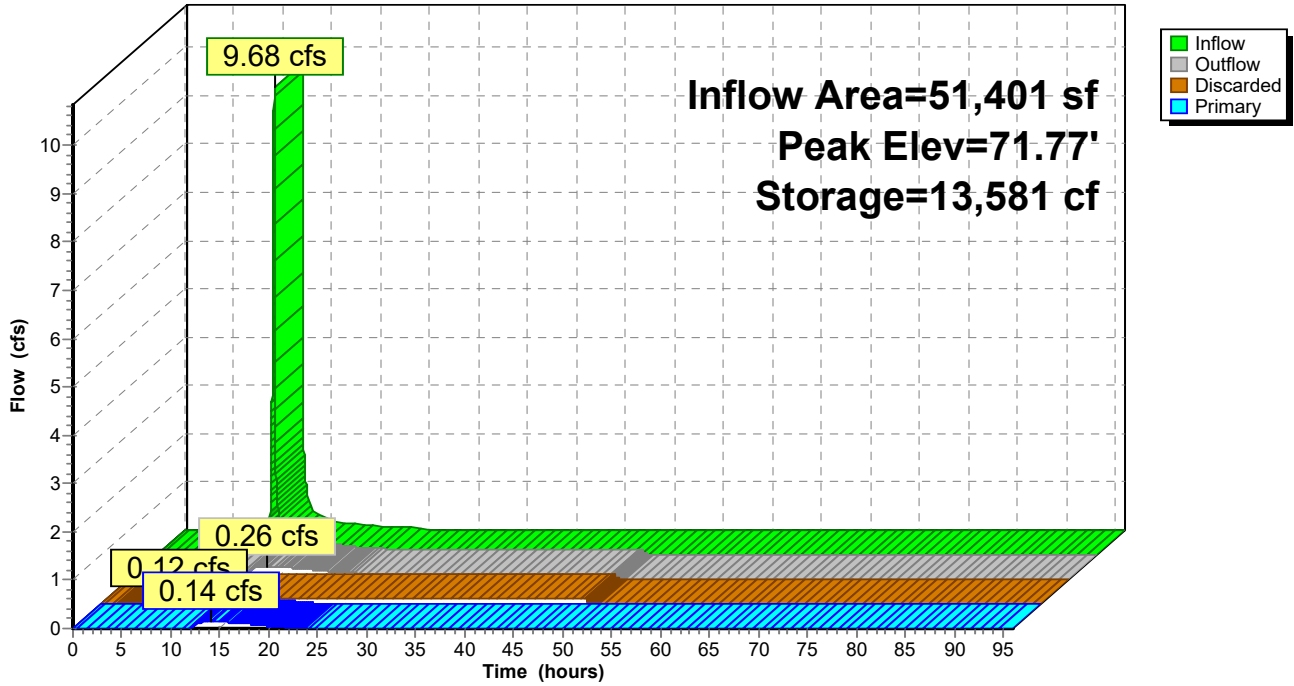
Pond 1P: UG Basin 1

Hydrograph



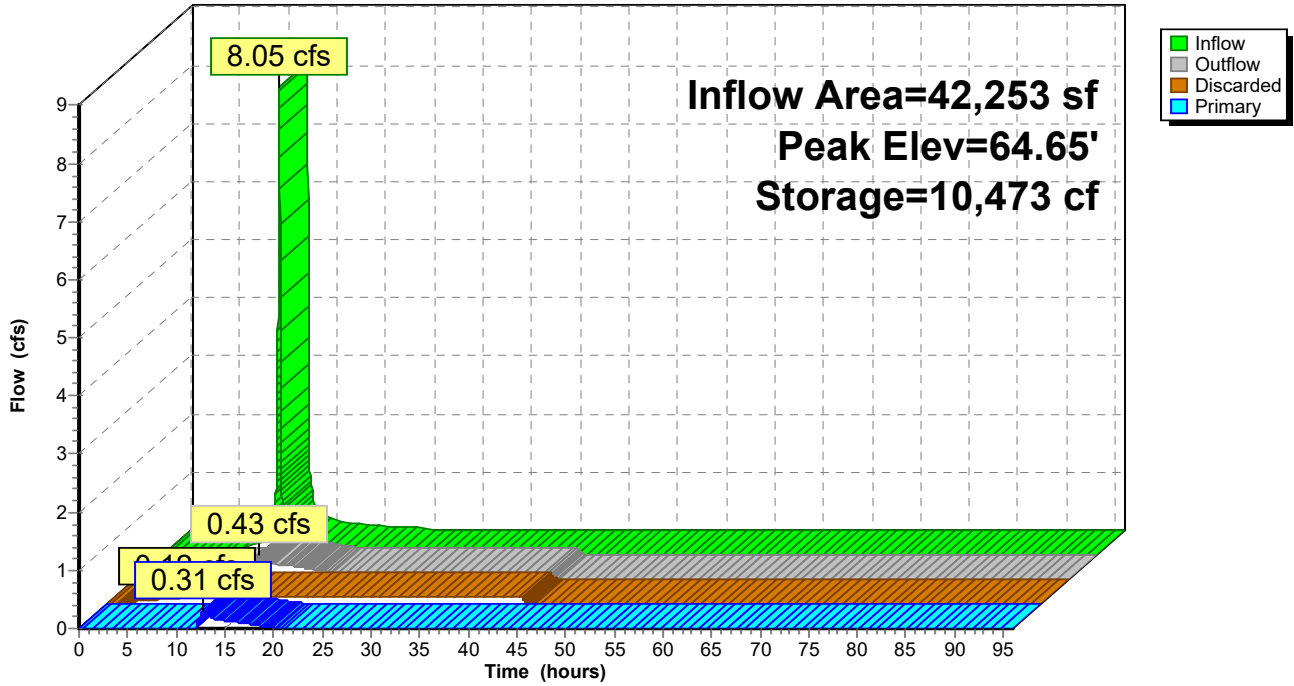
Pond 2P: UG Basin 2

Hydrograph



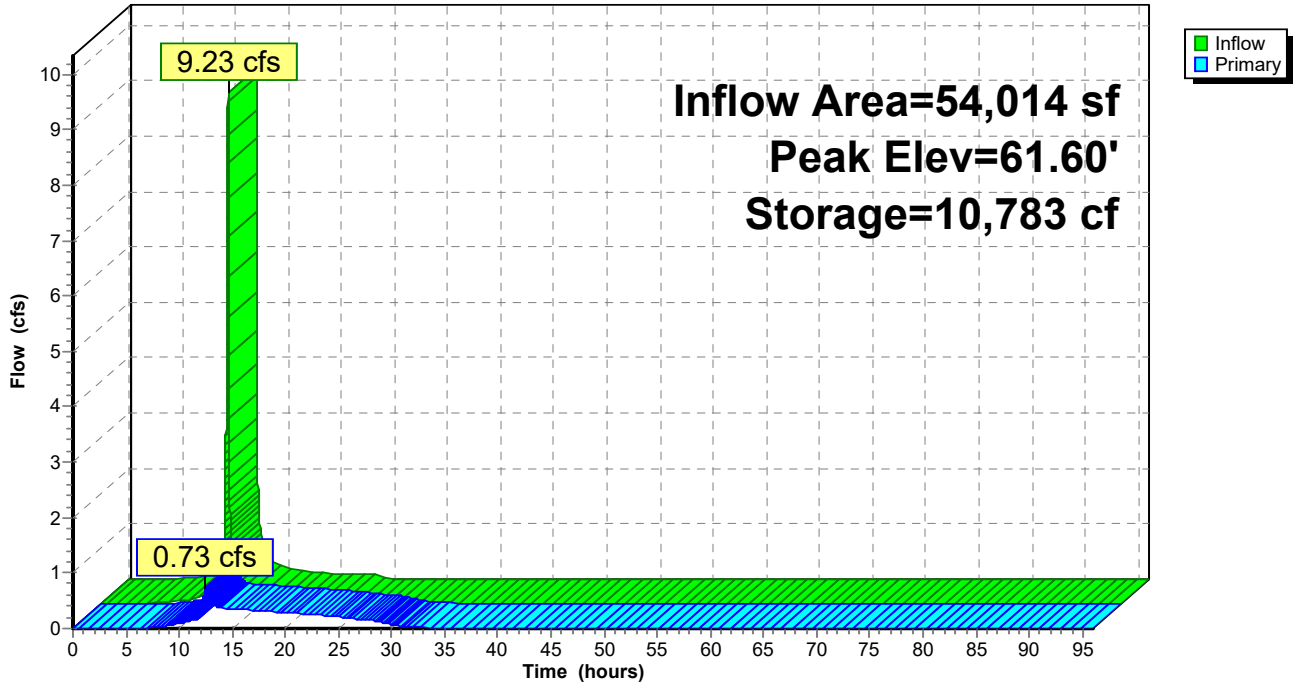
Pond 3P: UG Basin 3

Hydrograph



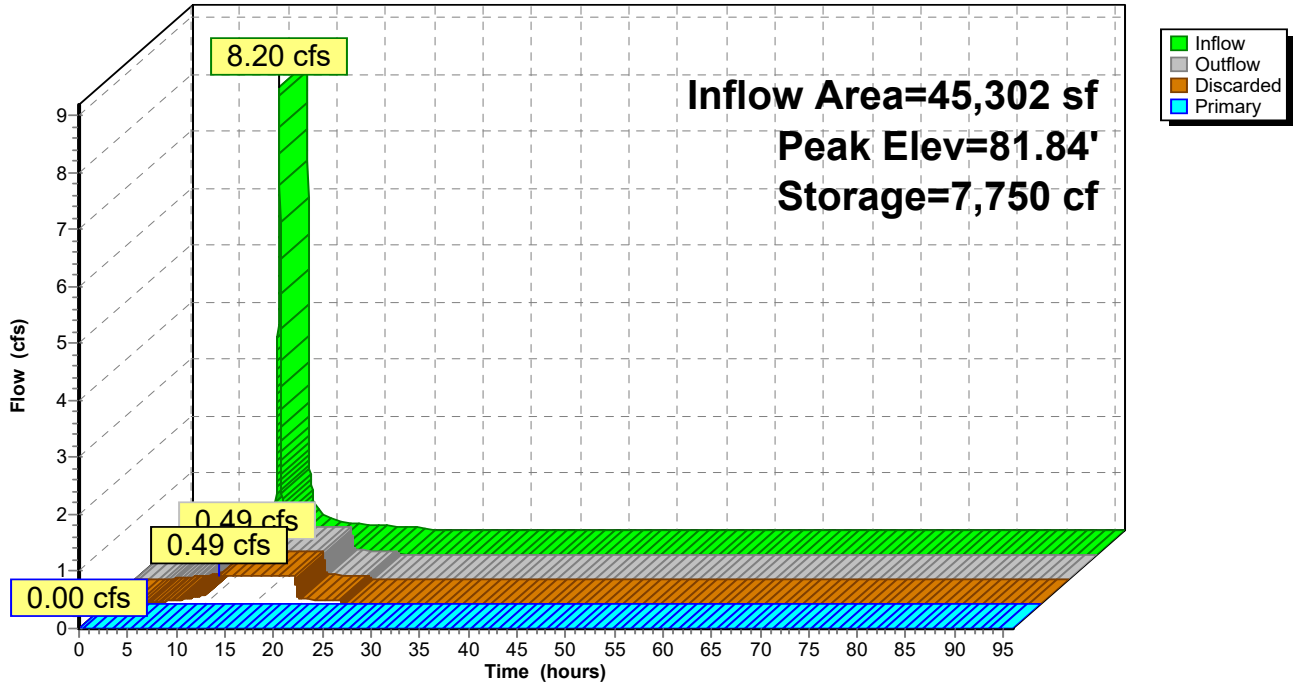
Pond 4P: UG Basin 4

Hydrograph



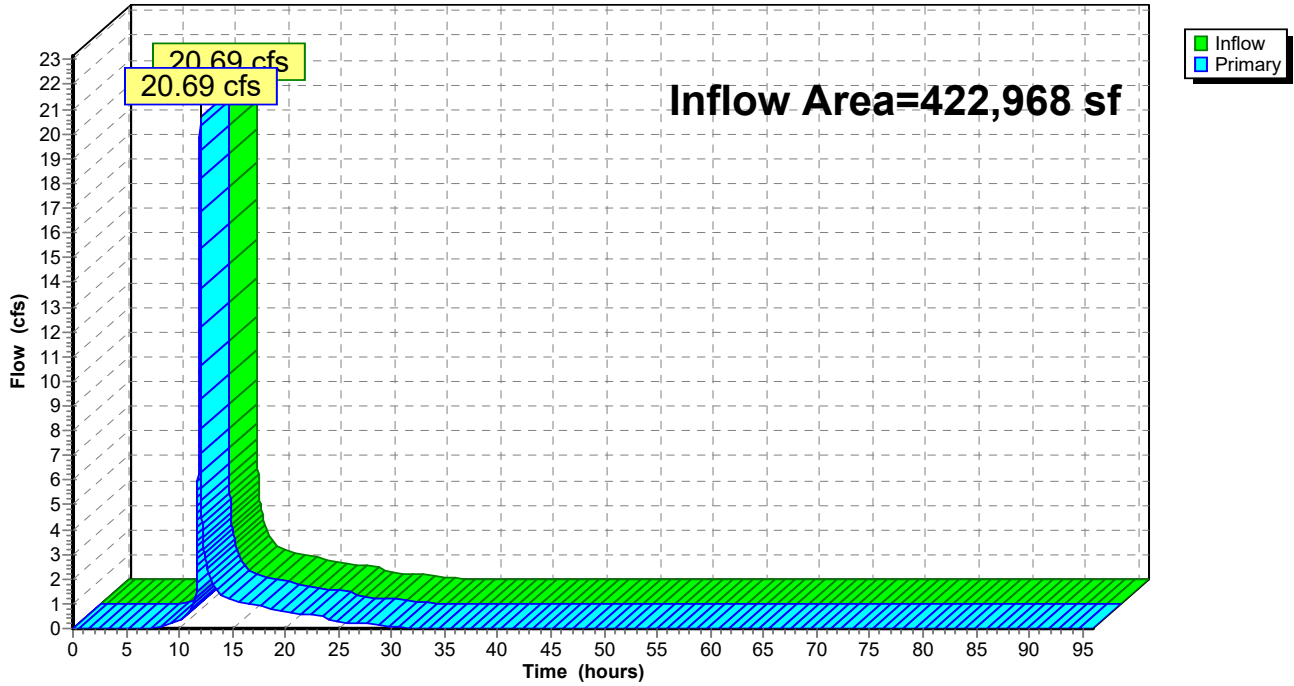
Pond 5P: UG Basin 5

Hydrograph



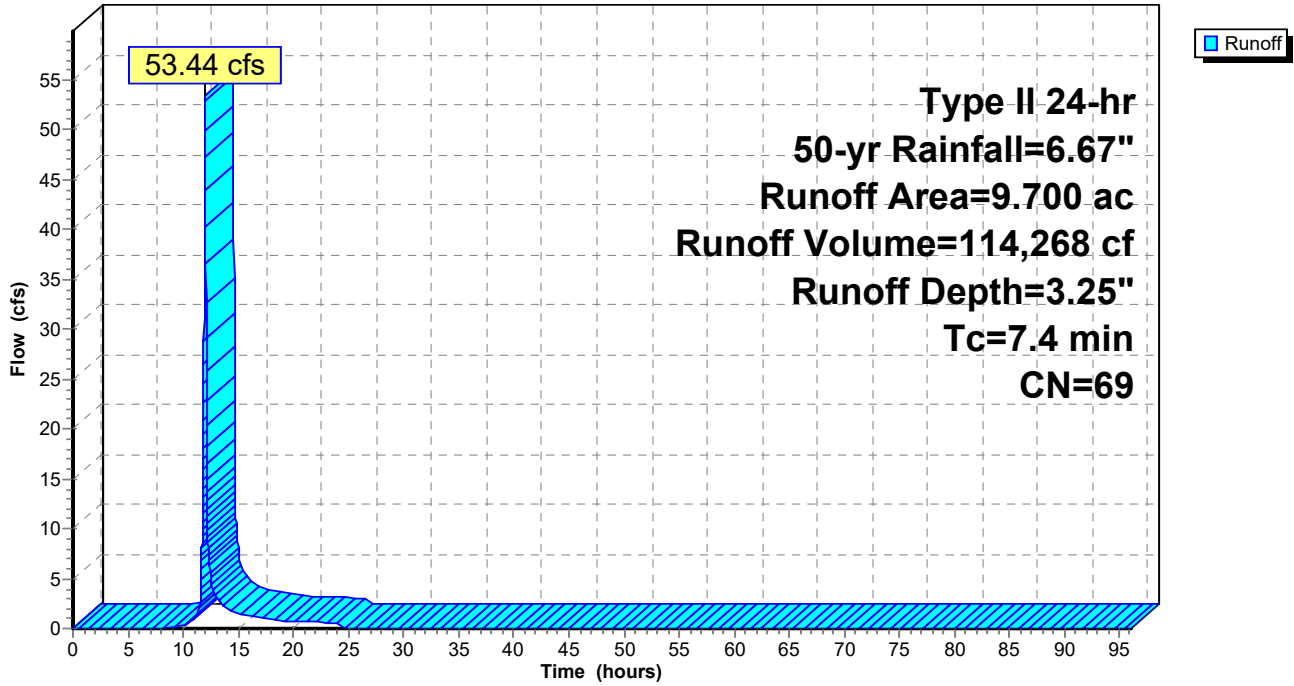
Link 1L: Total Post POI 1

Hydrograph



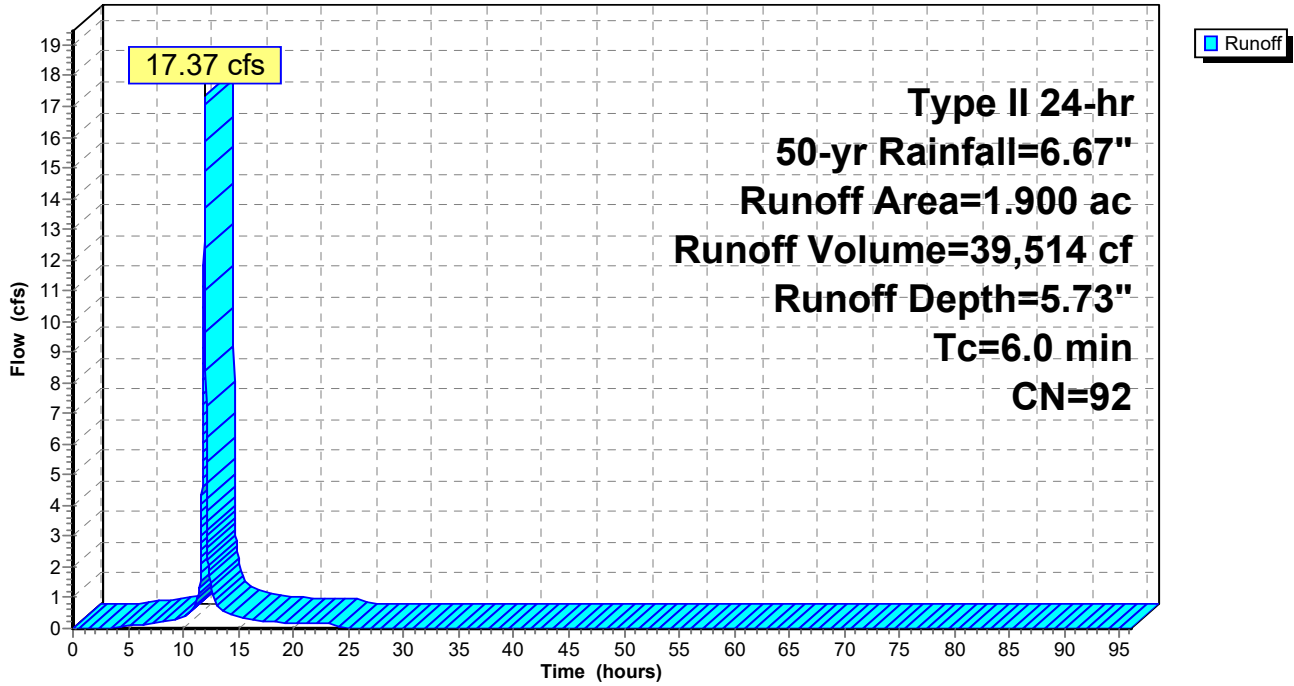
Subcatchment 1S: DA-1E

Hydrograph



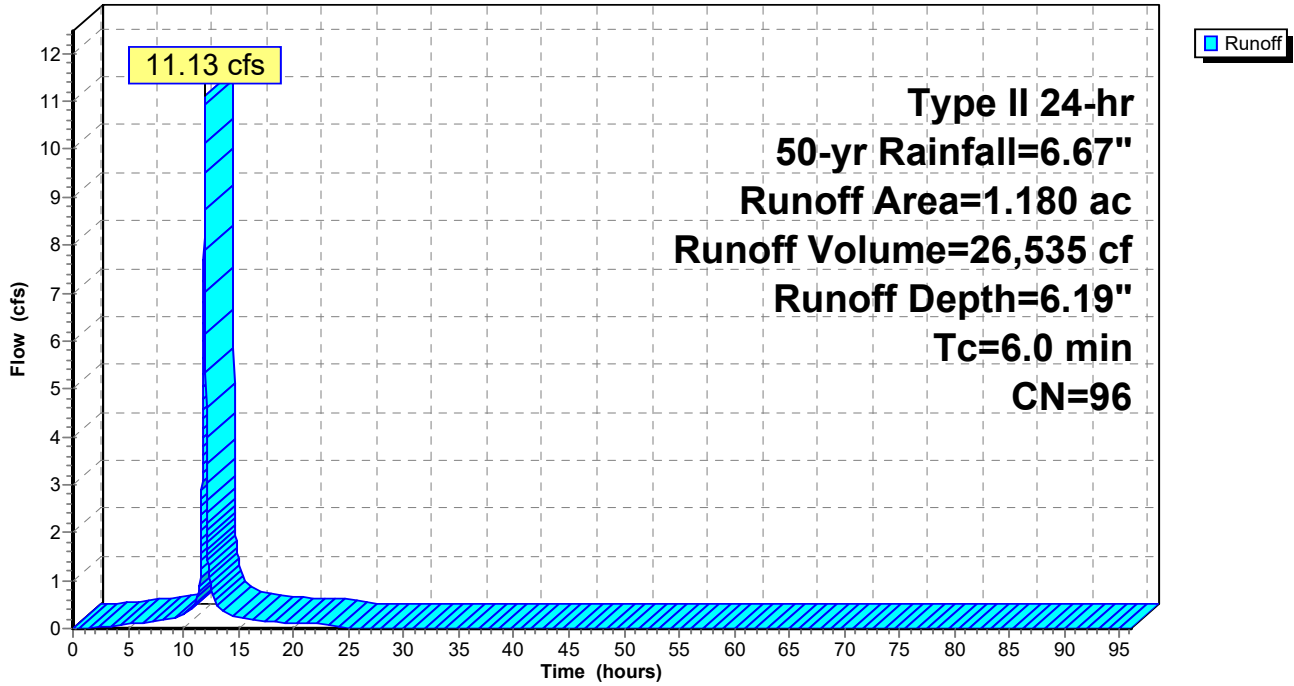
Subcatchment 2S: DA-2P(A)

Hydrograph



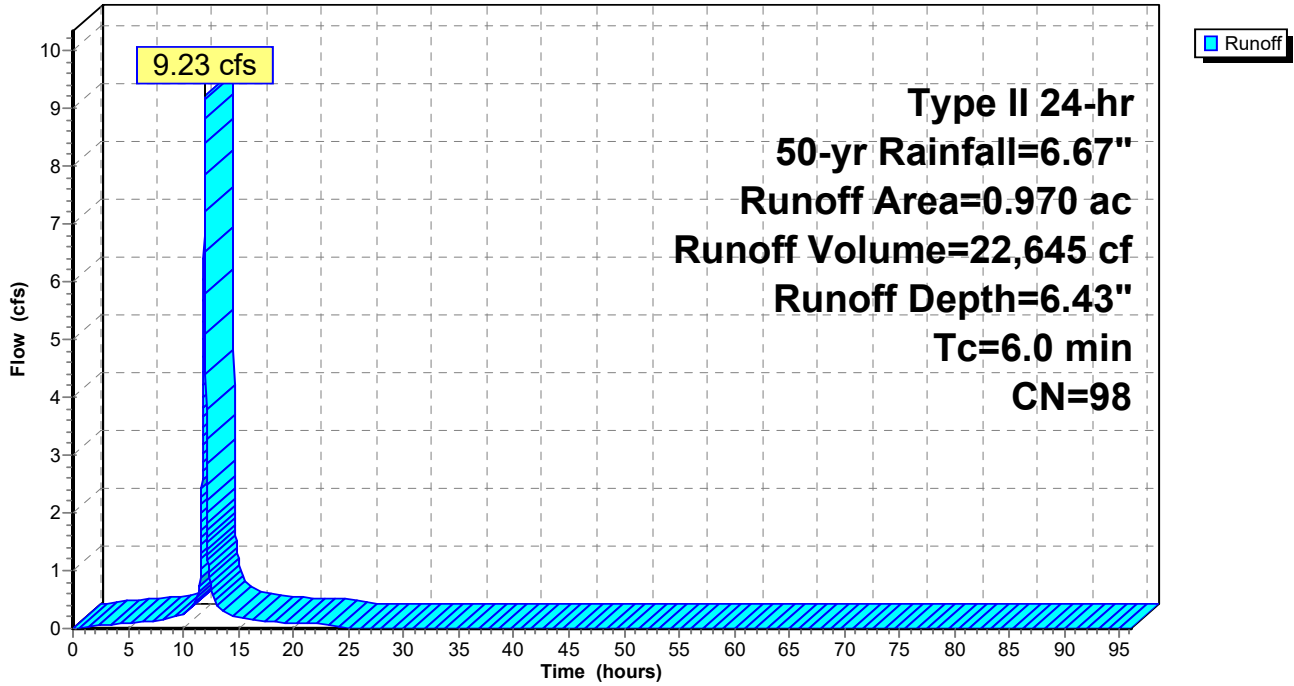
Subcatchment 3S: DA-2P(B)

Hydrograph



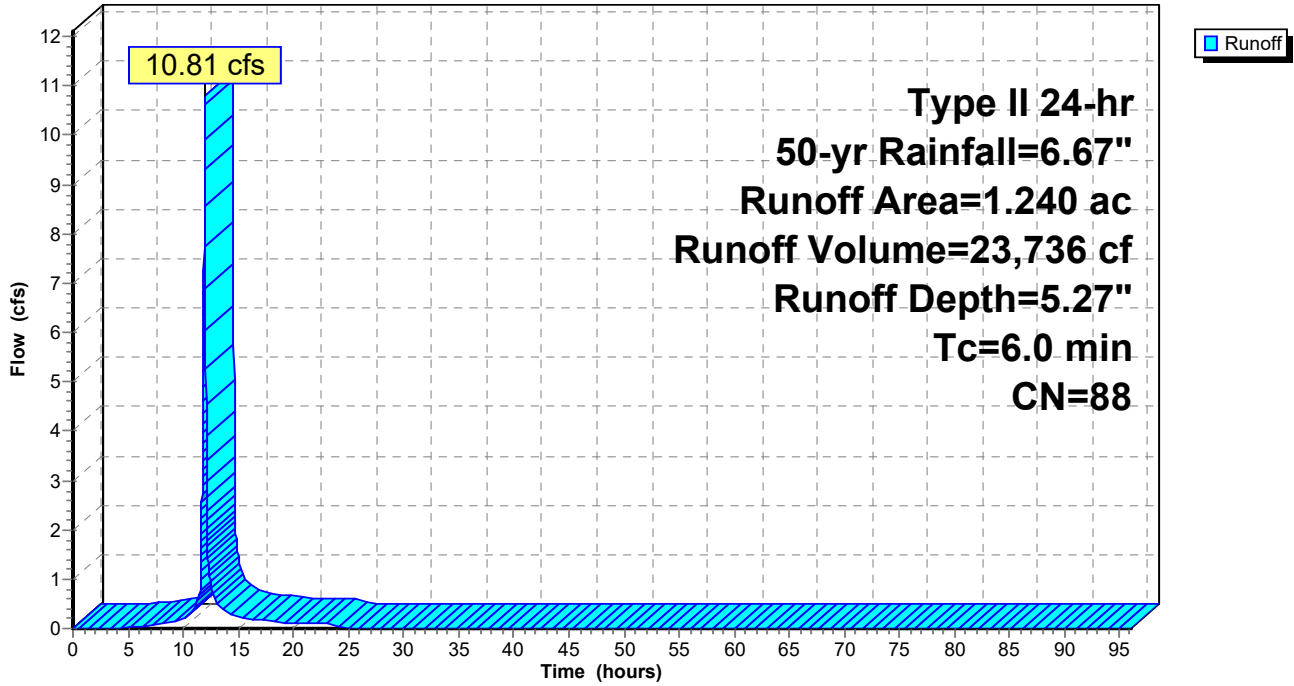
Subcatchment 4S: DA-2P(C)

Hydrograph



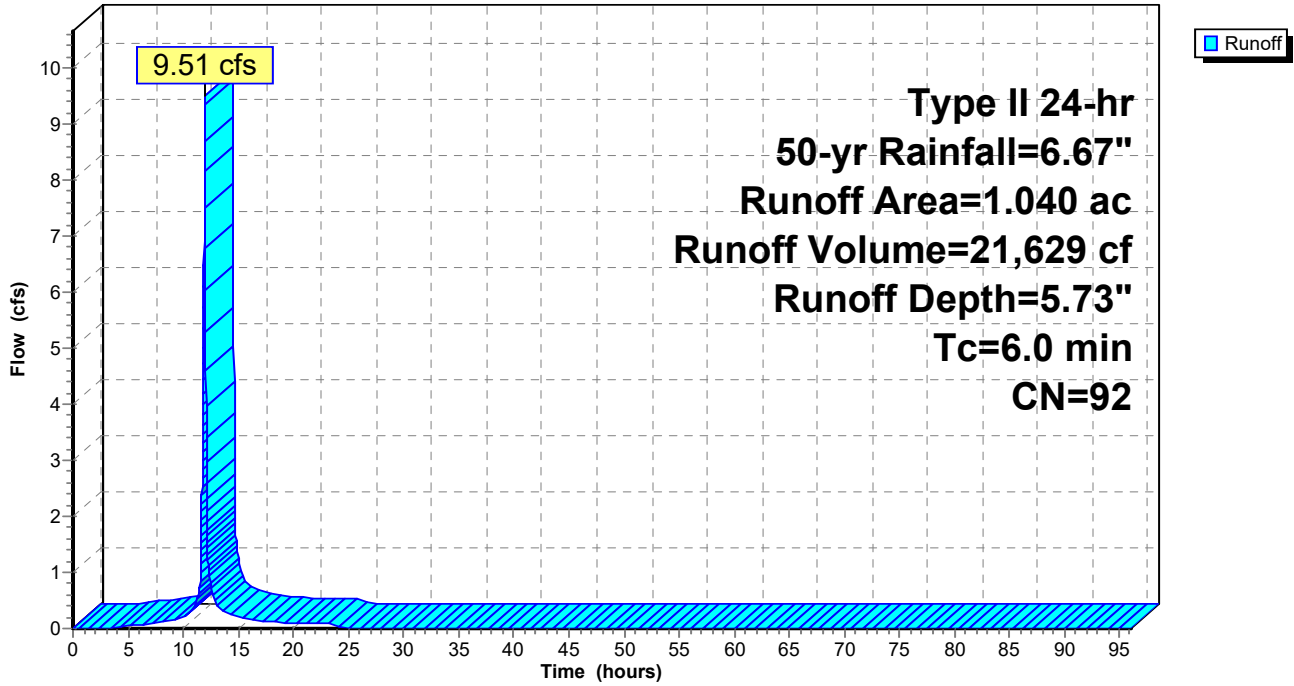
Subcatchment 5S: DA-2P(D)

Hydrograph



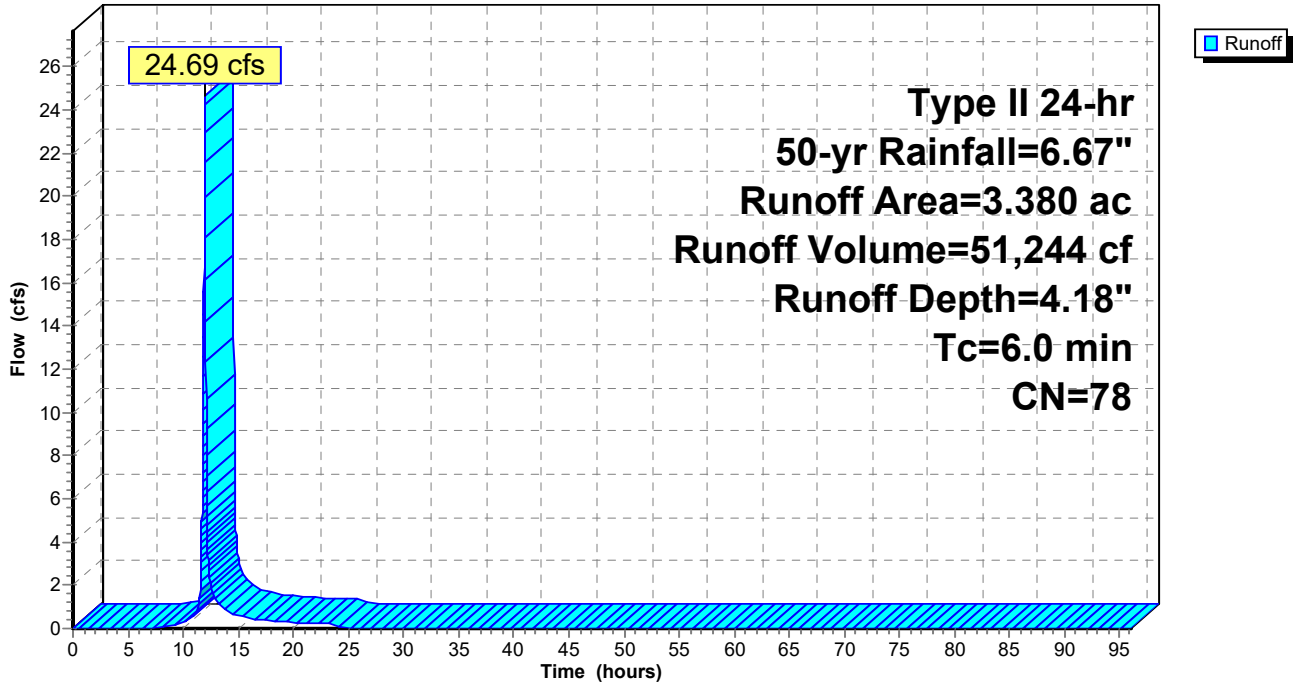
Subcatchment 6S: DA-2P(E)

Hydrograph



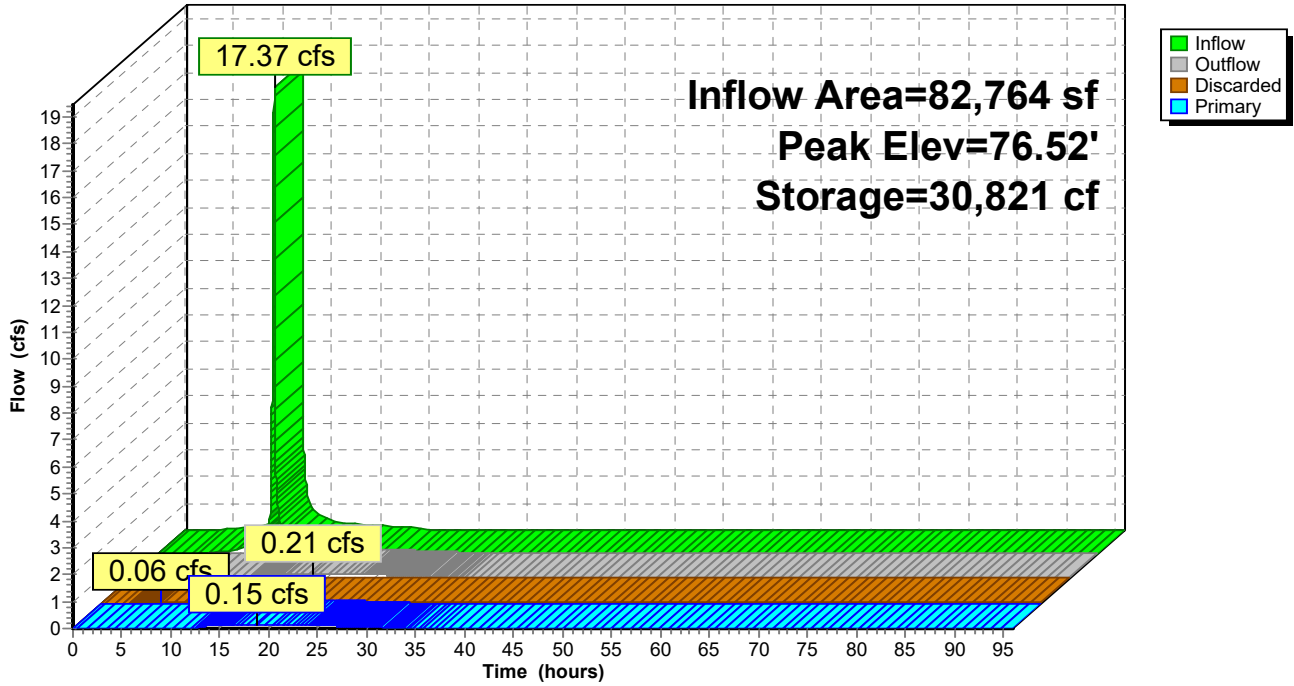
Subcatchment 7S: DA-2P(F) - Bypass

Hydrograph



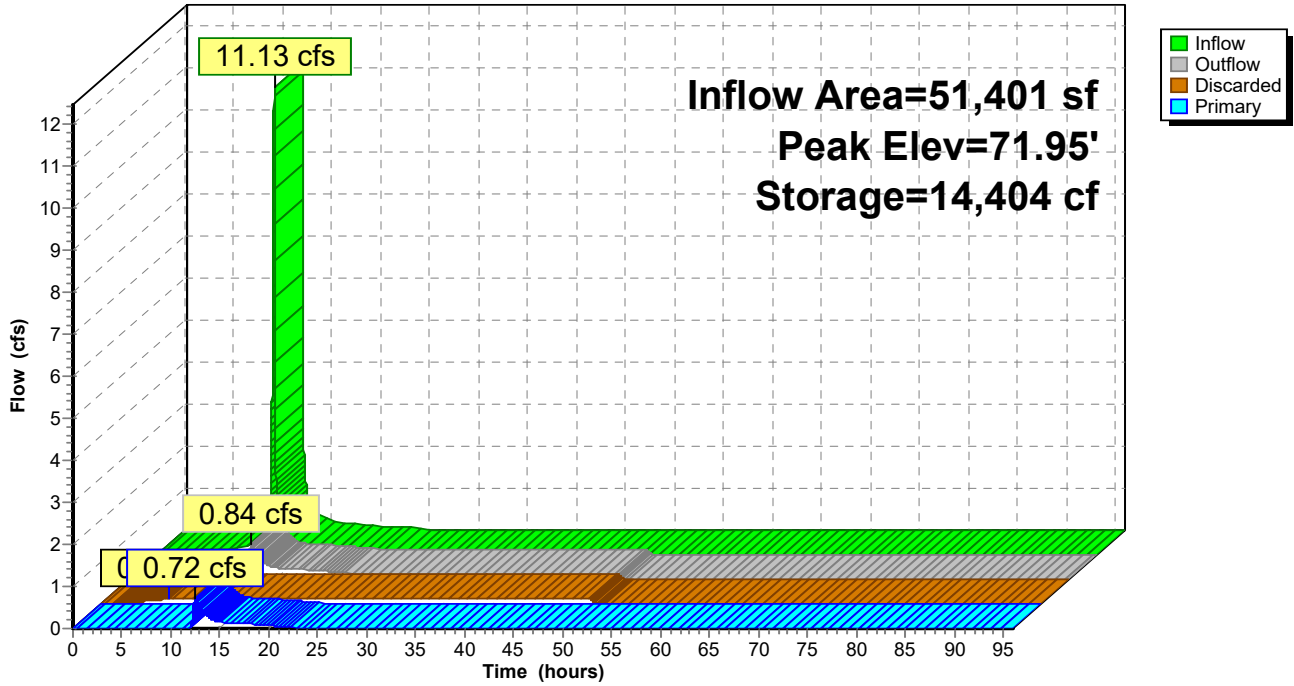
Pond 1P: UG Basin 1

Hydrograph



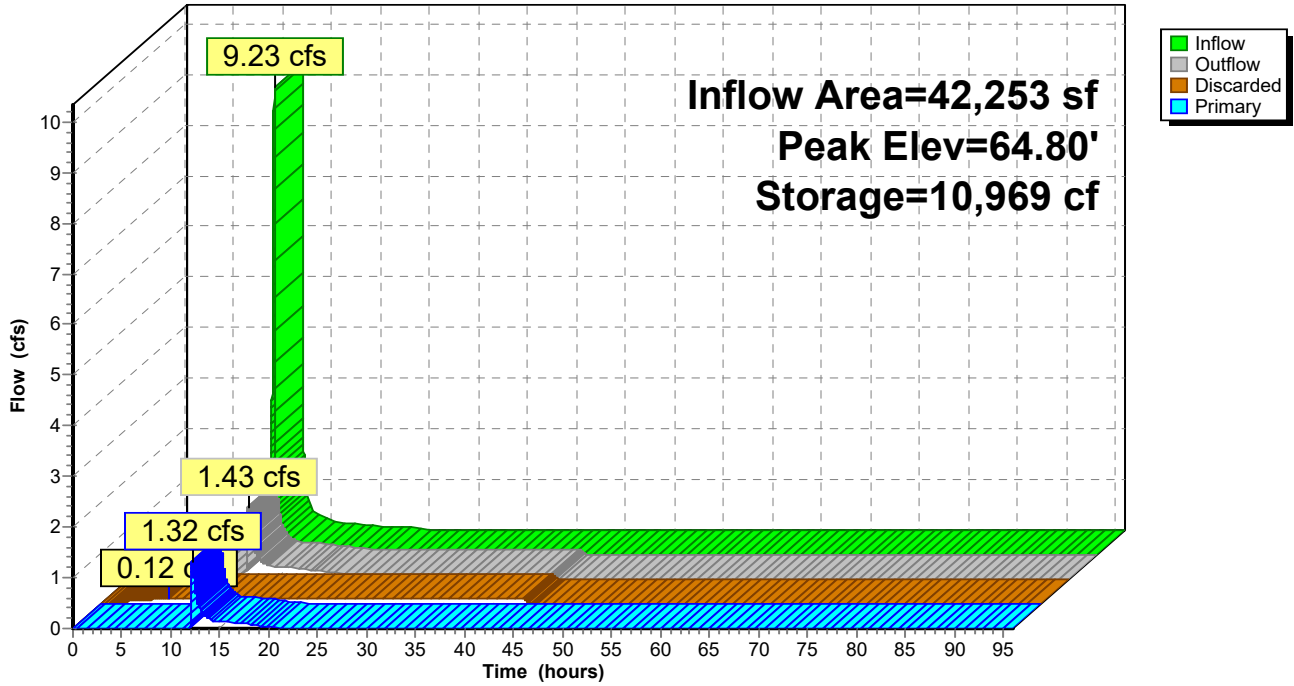
Pond 2P: UG Basin 2

Hydrograph



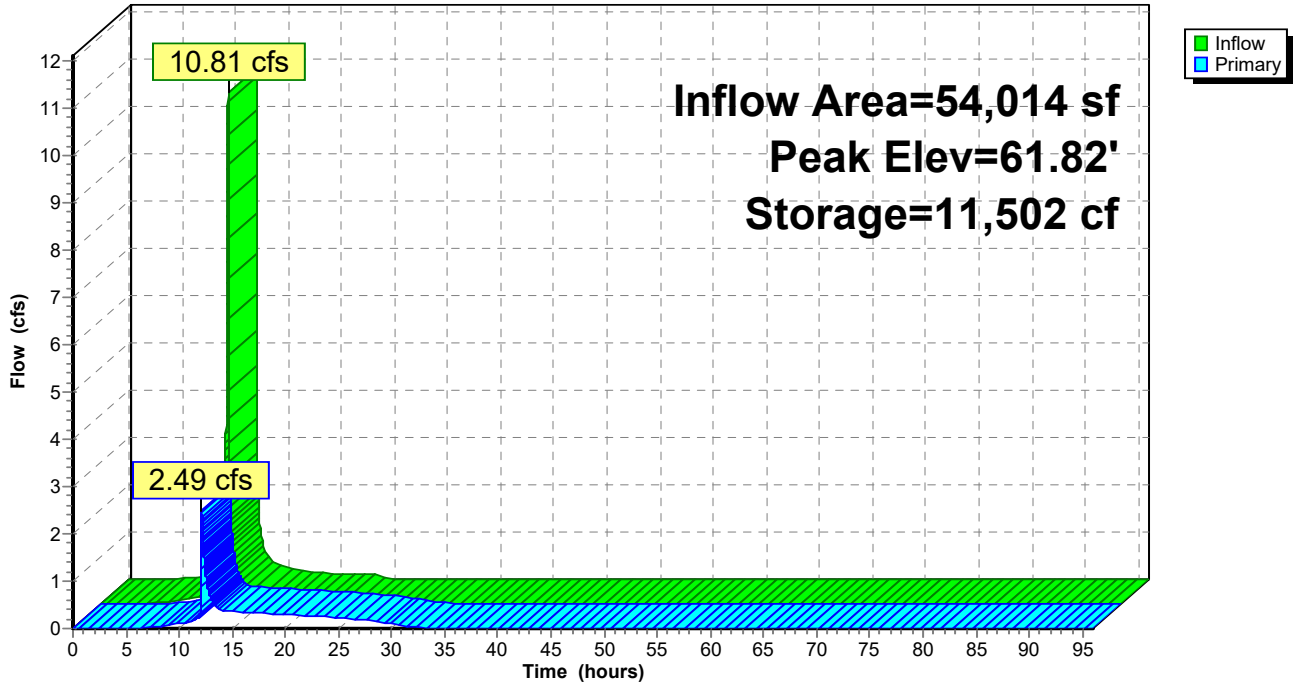
Pond 3P: UG Basin 3

Hydrograph



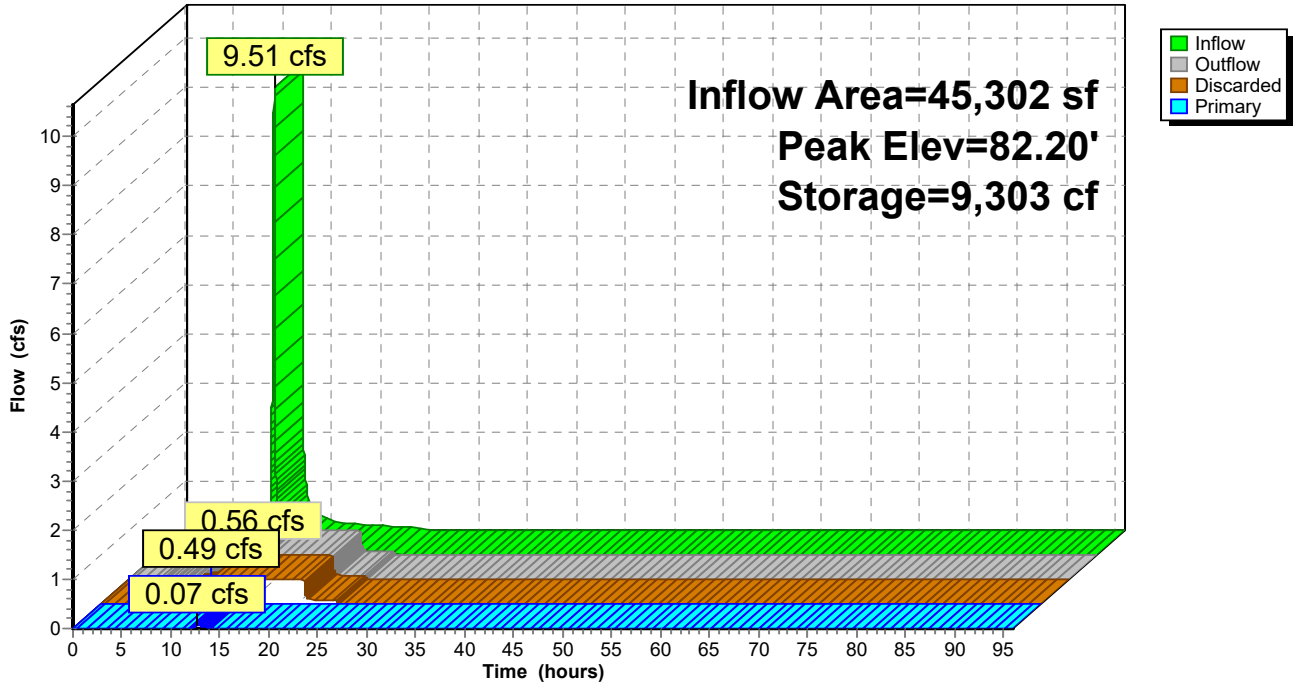
Pond 4P: UG Basin 4

Hydrograph



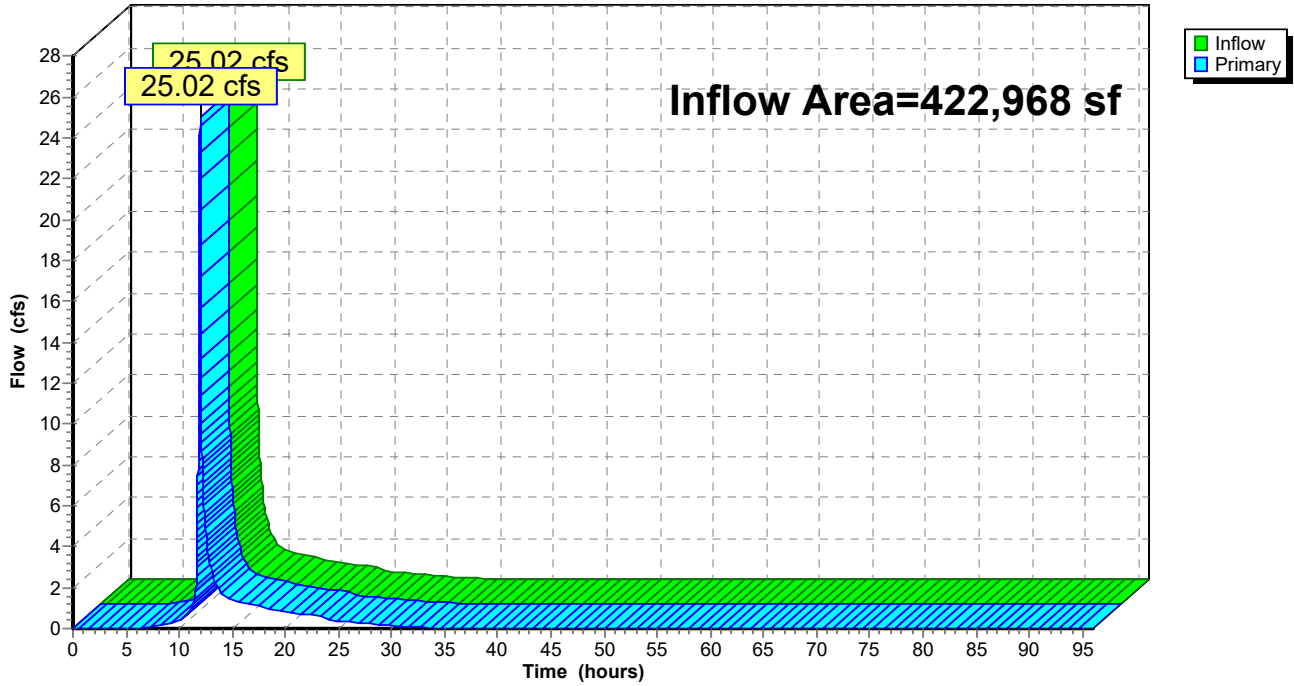
Pond 5P: UG Basin 5

Hydrograph



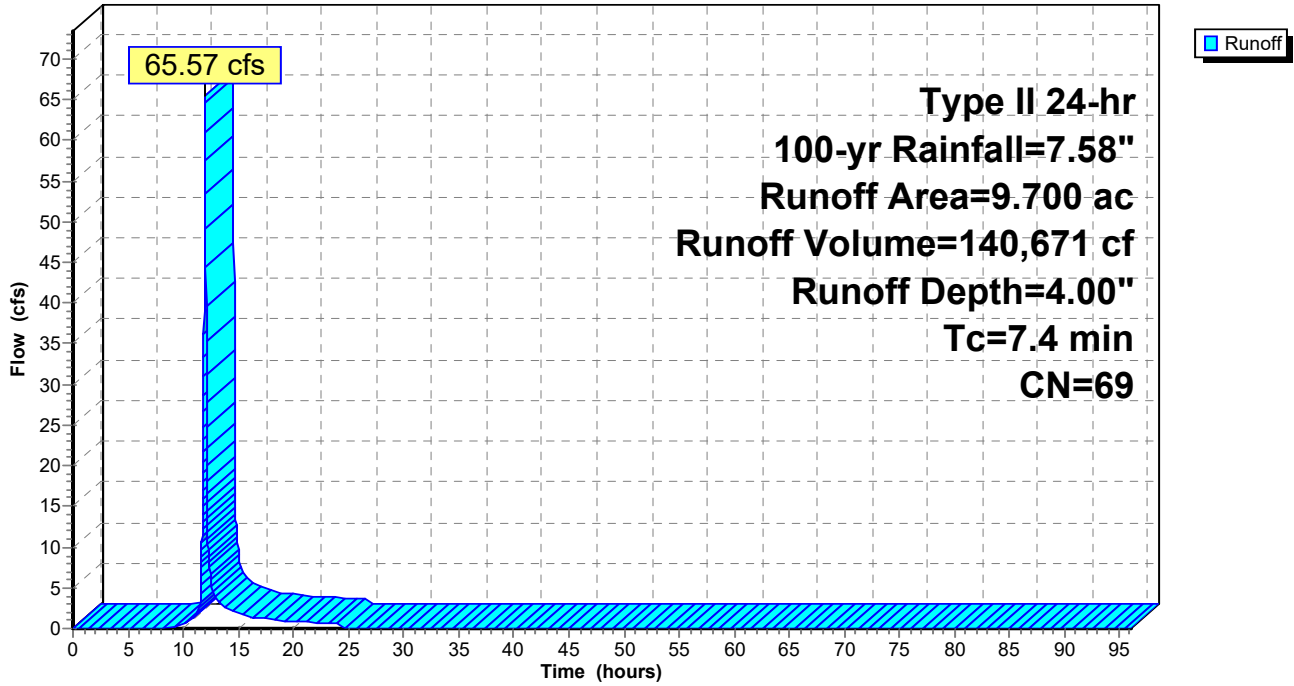
Link 1L: Total Post POI 1

Hydrograph



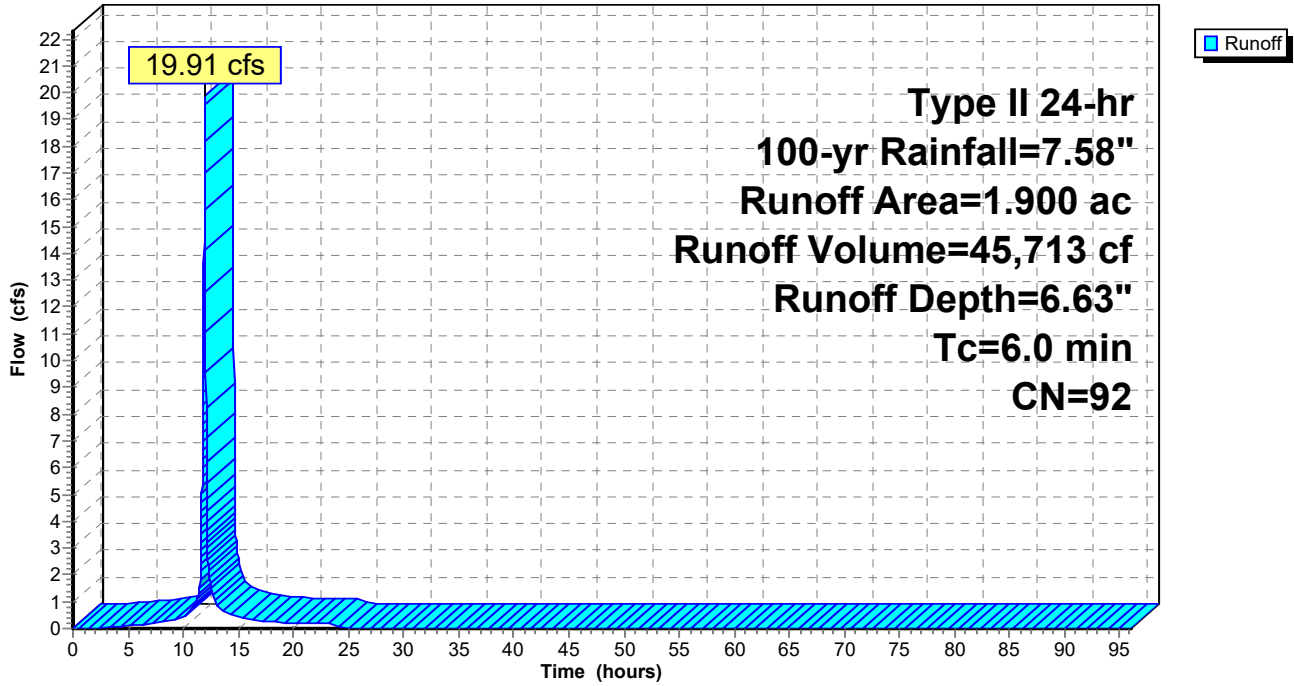
Subcatchment 1S: DA-1E

Hydrograph



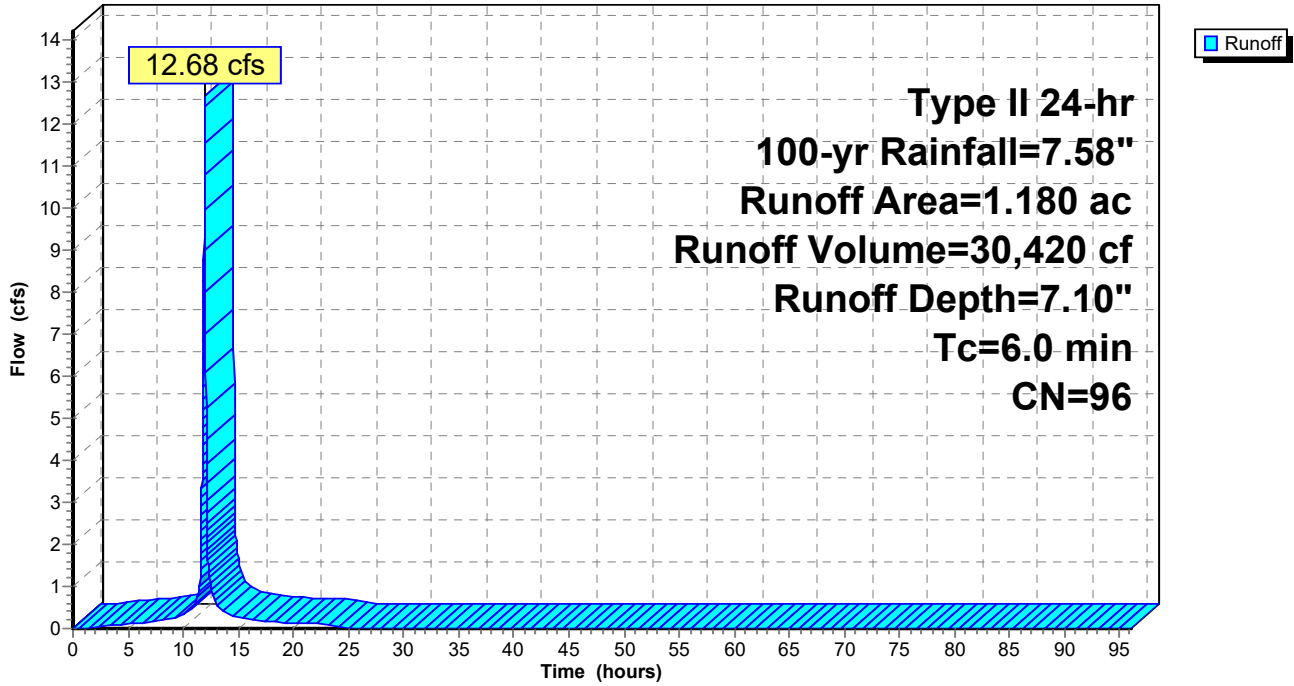
Subcatchment 2S: DA-2P(A)

Hydrograph



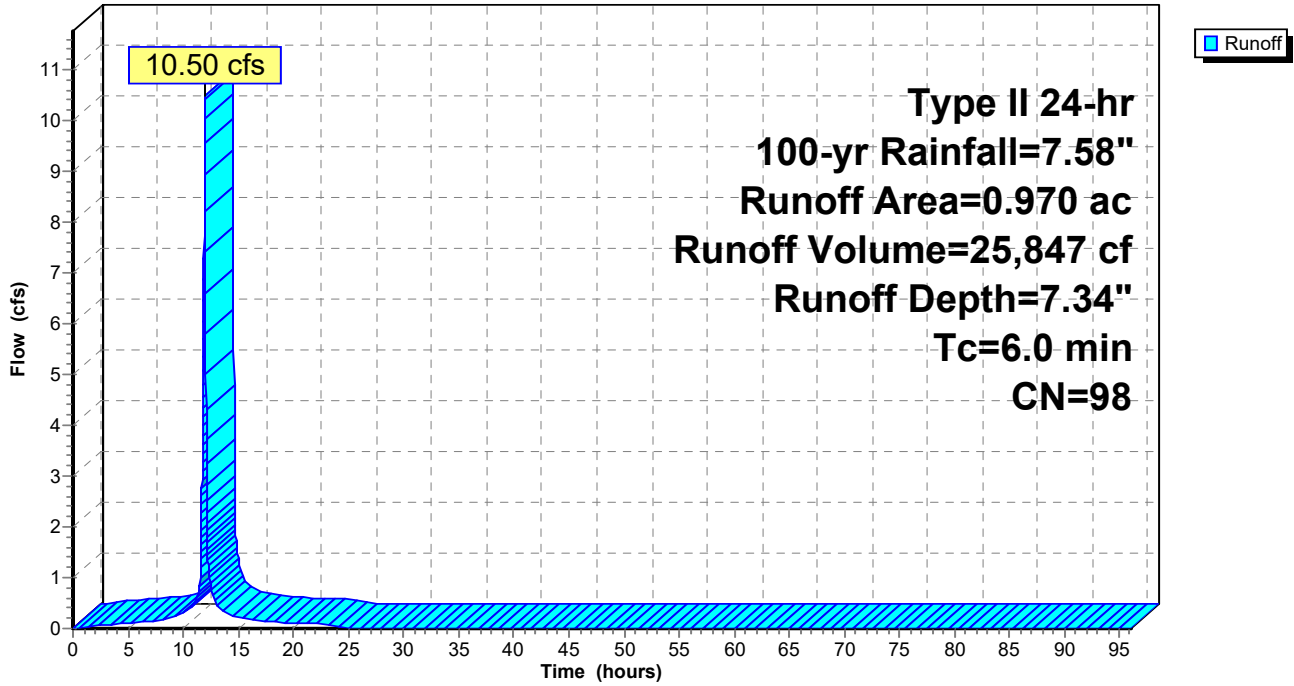
Subcatchment 3S: DA-2P(B)

Hydrograph



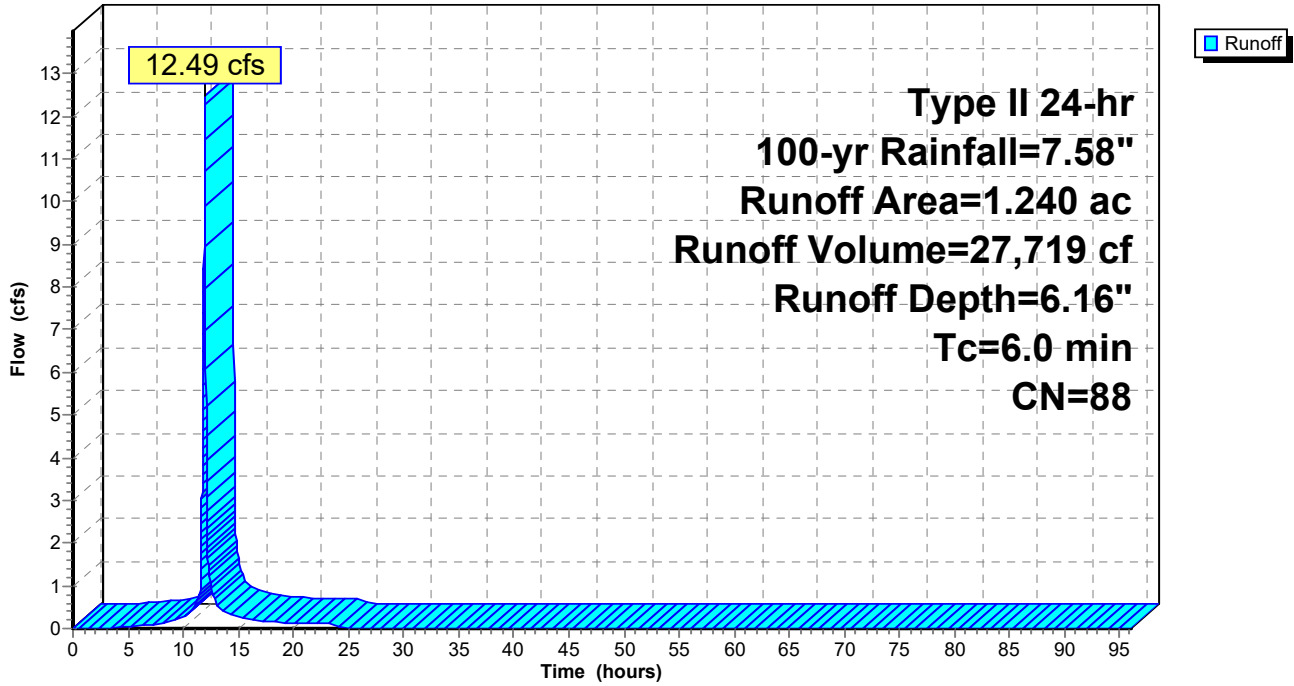
Subcatchment 4S: DA-2P(C)

Hydrograph



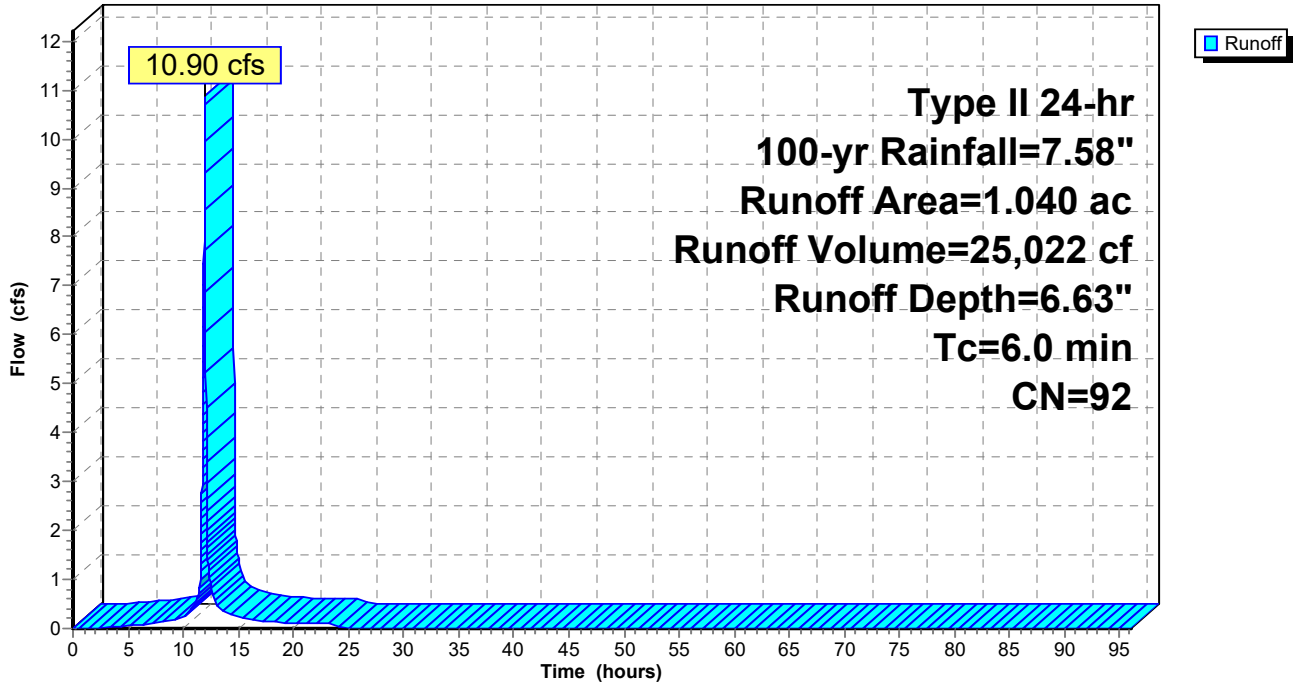
Subcatchment 5S: DA-2P(D)

Hydrograph



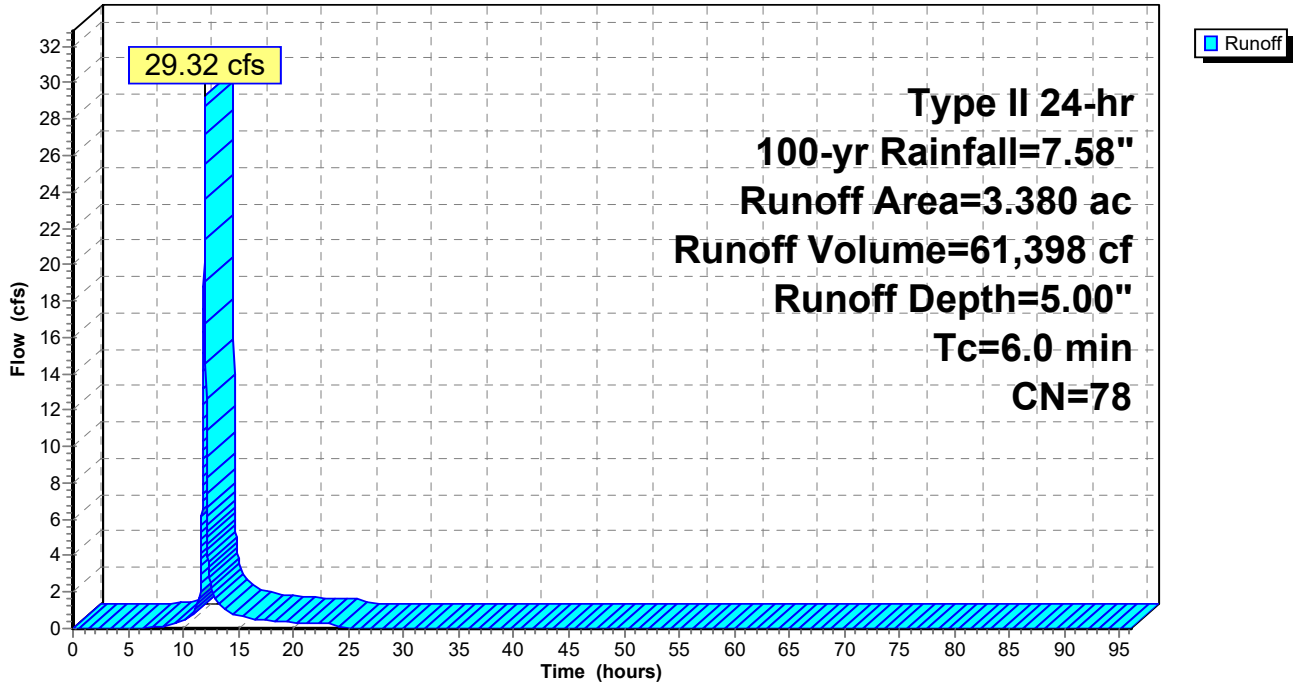
Subcatchment 6S: DA-2P(E)

Hydrograph



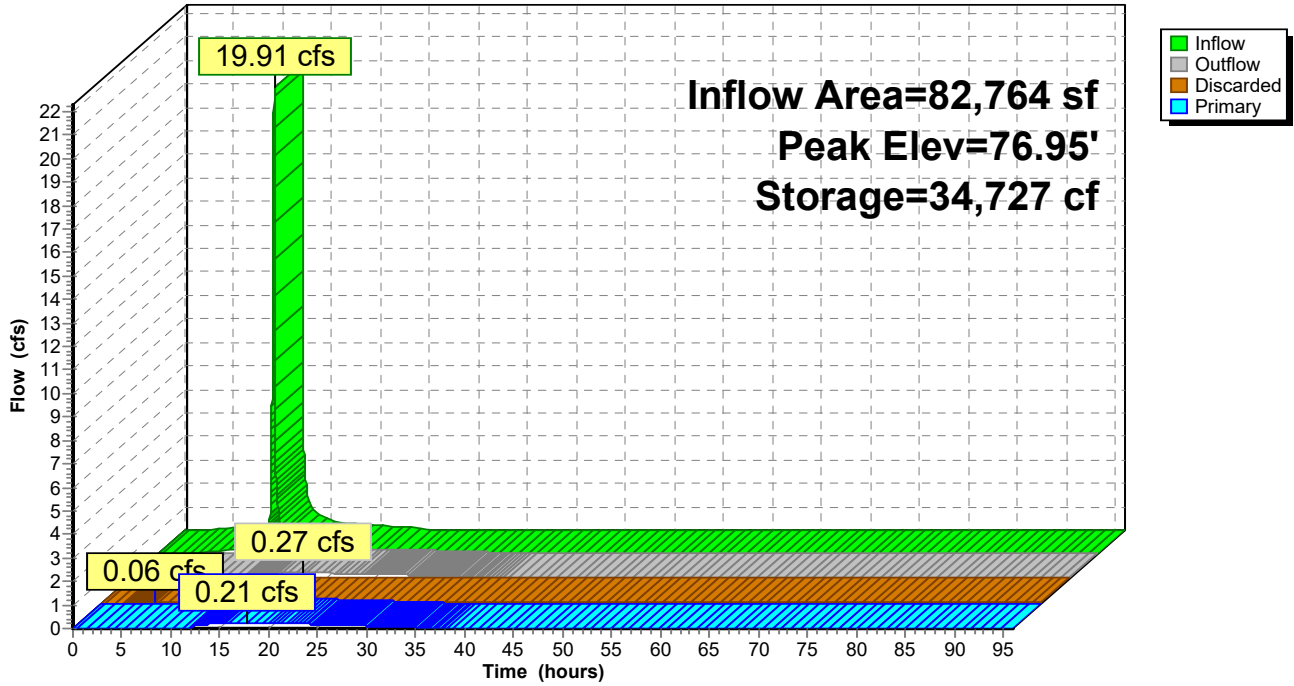
Subcatchment 7S: DA-2P(F) - Bypass

Hydrograph



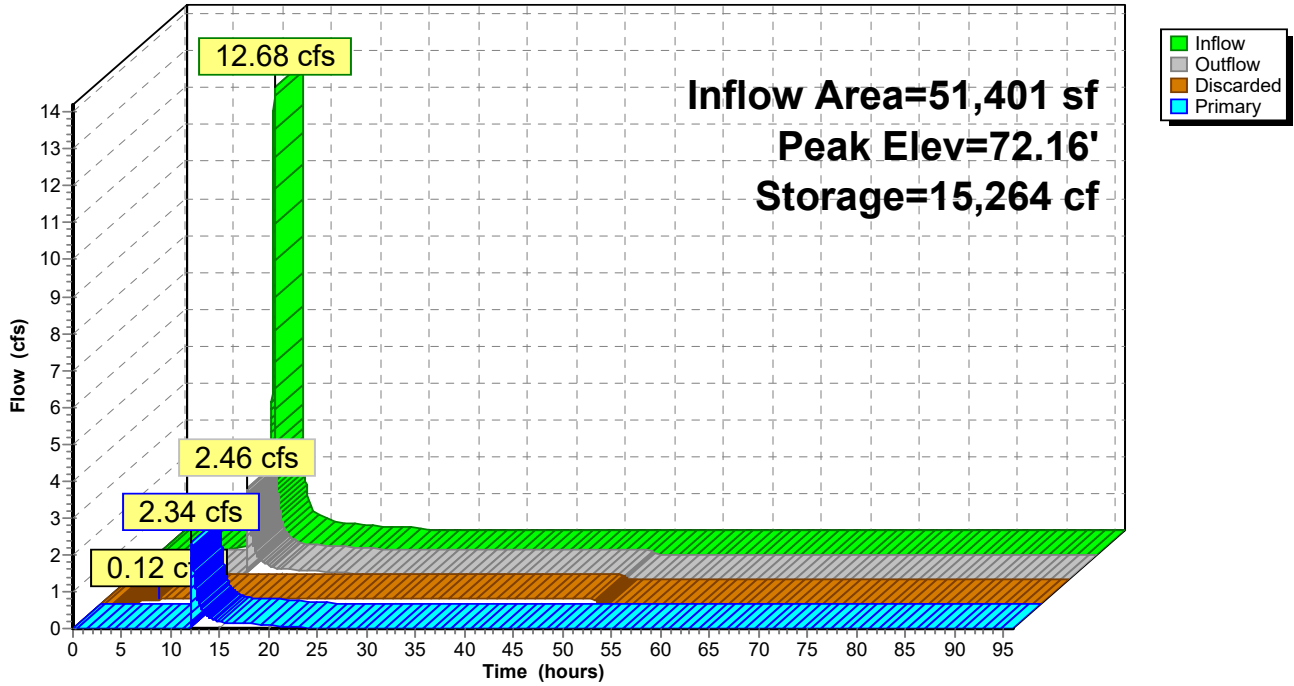
Pond 1P: UG Basin 1

Hydrograph



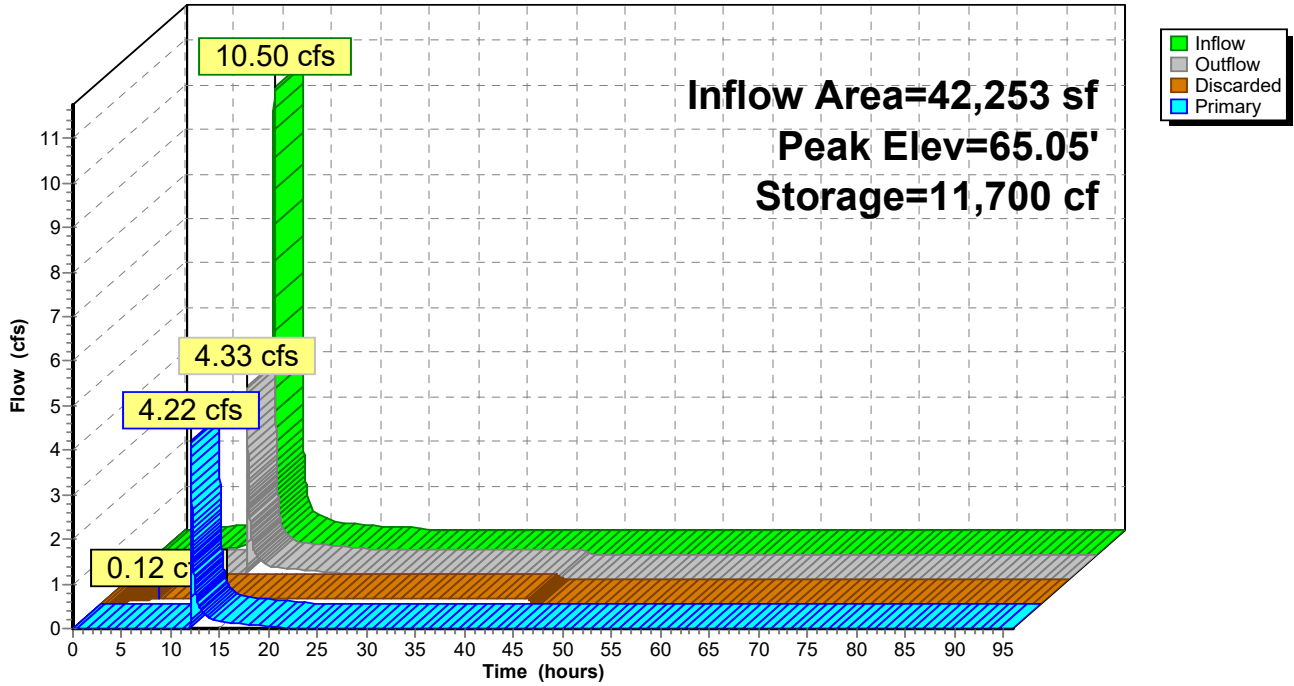
Pond 2P: UG Basin 2

Hydrograph



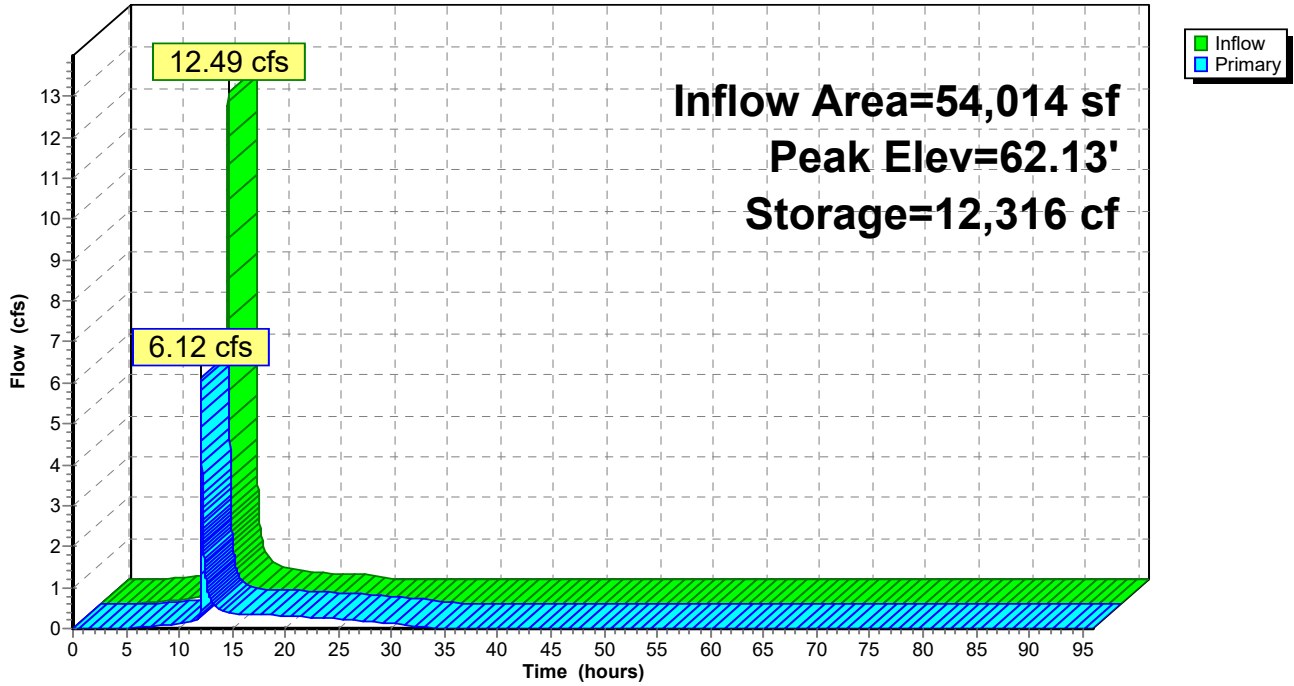
Pond 3P: UG Basin 3

Hydrograph



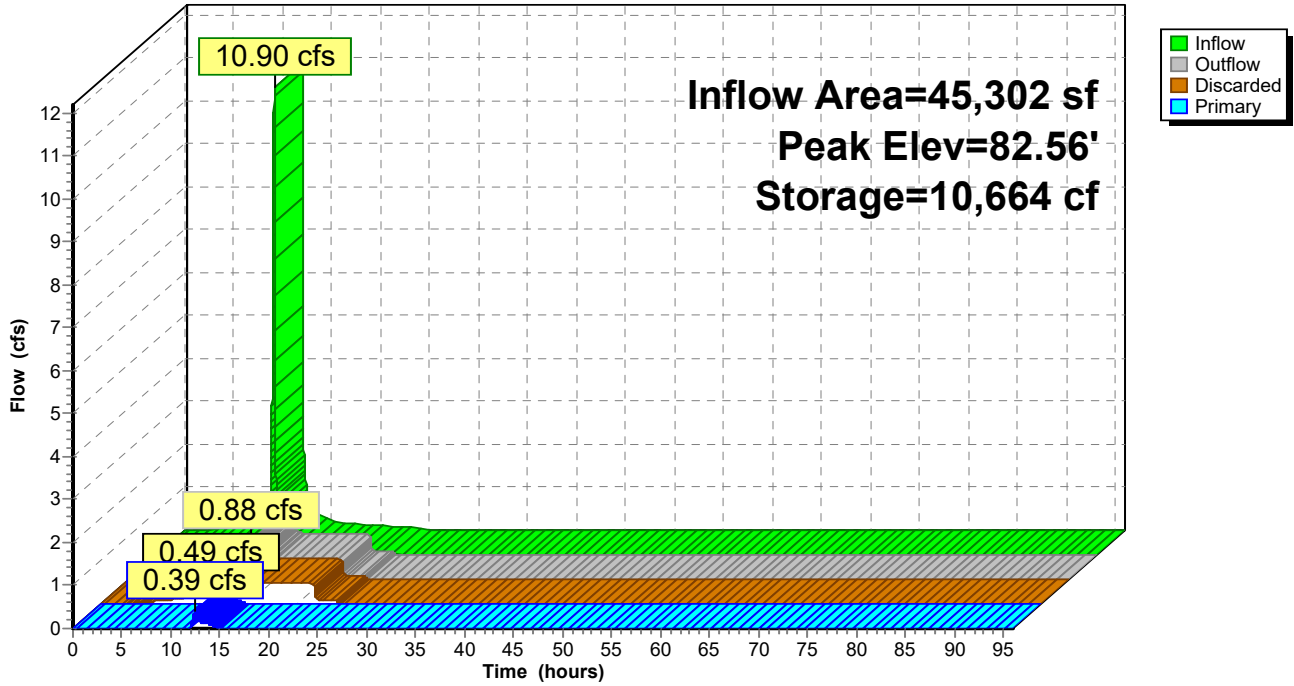
Pond 4P: UG Basin 4

Hydrograph



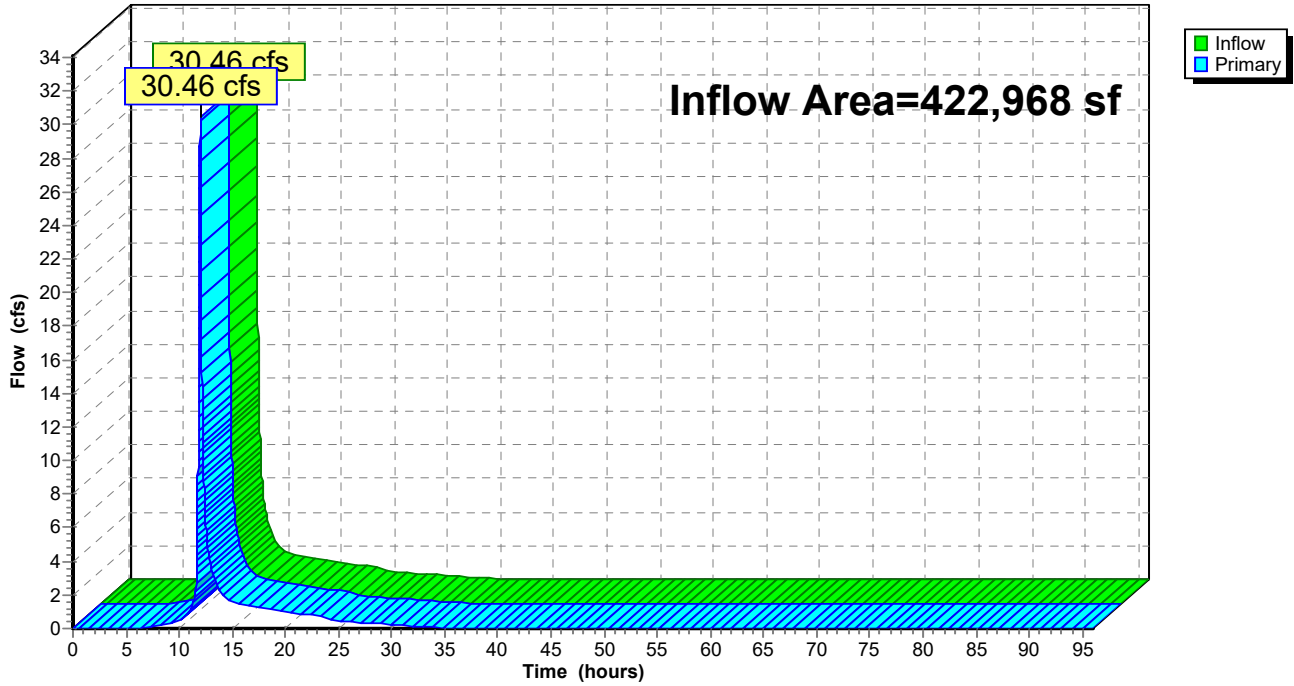
Pond 5P: UG Basin 5

Hydrograph



Link 1L: Total Post POI 1

Hydrograph



PC201167 HydroCAD-02

Prepared by Bohler Engineering

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Type II 24-hr 2-yr Rainfall=3.28"

Printed 6/3/2021

Hydrograph for Pond 1P: UG Basin 1

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|--------------|--------------|----------------------|------------------|---------------|-----------------|---------------|
| 0.00 | 0.00 | 0 | 74.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 74.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0 | 74.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.02 | 41 | 74.01 | 0.00 | 0.00 | 0.00 |
| 8.00 | 0.05 | 187 | 74.03 | 0.02 | 0.02 | 0.00 |
| 10.00 | 0.13 | 514 | 74.07 | 0.06 | 0.06 | 0.00 |
| 12.00 | 7.17 | 7,087 | 74.73 | 0.06 | 0.06 | 0.00 |
| 14.00 | 0.23 | 11,626 | 75.04 | 0.06 | 0.06 | 0.00 |
| 16.00 | 0.14 | 12,522 | 75.10 | 0.06 | 0.06 | 0.00 |
| 18.00 | 0.11 | 13,003 | 75.14 | 0.06 | 0.06 | 0.00 |
| 20.00 | 0.08 | 13,272 | 75.16 | 0.06 | 0.06 | 0.00 |
| 22.00 | 0.07 | 13,406 | 75.16 | 0.06 | 0.06 | 0.00 |
| 24.00 | 0.07 | 13,499 | 75.17 | 0.06 | 0.06 | 0.00 |
| 26.00 | 0.00 | 13,116 | 75.14 | 0.06 | 0.06 | 0.00 |
| 28.00 | 0.00 | 12,711 | 75.12 | 0.06 | 0.06 | 0.00 |
| 30.00 | 0.00 | 12,307 | 75.09 | 0.06 | 0.06 | 0.00 |
| 32.00 | 0.00 | 11,902 | 75.06 | 0.06 | 0.06 | 0.00 |
| 34.00 | 0.00 | 11,498 | 75.03 | 0.06 | 0.06 | 0.00 |
| 36.00 | 0.00 | 11,093 | 75.00 | 0.06 | 0.06 | 0.00 |
| 38.00 | 0.00 | 10,688 | 74.97 | 0.06 | 0.06 | 0.00 |
| 40.00 | 0.00 | 10,284 | 74.95 | 0.06 | 0.06 | 0.00 |
| 42.00 | 0.00 | 9,879 | 74.92 | 0.06 | 0.06 | 0.00 |
| 44.00 | 0.00 | 9,474 | 74.89 | 0.06 | 0.06 | 0.00 |
| 46.00 | 0.00 | 9,070 | 74.86 | 0.06 | 0.06 | 0.00 |
| 48.00 | 0.00 | 8,665 | 74.84 | 0.06 | 0.06 | 0.00 |
| 50.00 | 0.00 | 8,261 | 74.81 | 0.06 | 0.06 | 0.00 |
| 52.00 | 0.00 | 7,856 | 74.78 | 0.06 | 0.06 | 0.00 |
| 54.00 | 0.00 | 7,451 | 74.75 | 0.06 | 0.06 | 0.00 |
| 56.00 | 0.00 | 7,047 | 74.72 | 0.06 | 0.06 | 0.00 |
| 58.00 | 0.00 | 6,642 | 74.70 | 0.06 | 0.06 | 0.00 |
| 60.00 | 0.00 | 6,237 | 74.67 | 0.06 | 0.06 | 0.00 |
| 62.00 | 0.00 | 5,833 | 74.64 | 0.06 | 0.06 | 0.00 |
| 64.00 | 0.00 | 5,428 | 74.61 | 0.06 | 0.06 | 0.00 |
| 66.00 | 0.00 | 5,024 | 74.59 | 0.06 | 0.06 | 0.00 |
| 68.00 | 0.00 | 4,619 | 74.56 | 0.06 | 0.06 | 0.00 |
| 70.00 | 0.00 | 4,214 | 74.53 | 0.06 | 0.06 | 0.00 |
| 72.00 | 0.00 | 3,810 | 74.51 | 0.06 | 0.06 | 0.00 |
| 74.00 | 0.00 | 3,405 | 74.46 | 0.06 | 0.06 | 0.00 |
| 76.00 | 0.00 | 3,000 | 74.40 | 0.06 | 0.06 | 0.00 |
| 78.00 | 0.00 | 2,596 | 74.35 | 0.06 | 0.06 | 0.00 |
| 80.00 | 0.00 | 2,191 | 74.29 | 0.06 | 0.06 | 0.00 |
| 82.00 | 0.00 | 1,787 | 74.24 | 0.06 | 0.06 | 0.00 |
| 84.00 | 0.00 | 1,382 | 74.18 | 0.06 | 0.06 | 0.00 |
| 86.00 | 0.00 | 977 | 74.13 | 0.06 | 0.06 | 0.00 |
| 88.00 | 0.00 | 573 | 74.08 | 0.06 | 0.06 | 0.00 |
| 90.00 | 0.00 | 246 | 74.03 | 0.03 | 0.03 | 0.00 |
| 92.00 | 0.00 | 104 | 74.01 | 0.01 | 0.01 | 0.00 |
| 94.00 | 0.00 | 44 | 74.01 | 0.01 | 0.01 | 0.00 |
| 96.00 | 0.00 | 18 | 74.00 | 0.00 | 0.00 | 0.00 |

PC201167 HydroCAD-02

Prepared by Bohler Engineering

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Type II 24-hr 2-yr Rainfall=3.28"

Printed 6/3/2021

Hydrograph for Pond 2P: UG Basin 2

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|--------------|--------------|----------------------|------------------|---------------|-----------------|---------------|
| 0.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.01 | 13 | 69.30 | 0.01 | 0.01 | 0.00 |
| 6.00 | 0.03 | 35 | 69.31 | 0.03 | 0.03 | 0.00 |
| 8.00 | 0.06 | 59 | 69.32 | 0.05 | 0.05 | 0.00 |
| 10.00 | 0.12 | 117 | 69.34 | 0.11 | 0.11 | 0.00 |
| 12.00 | 4.85 | 4,388 | 70.21 | 0.12 | 0.12 | 0.00 |
| 14.00 | 0.15 | 6,797 | 70.59 | 0.12 | 0.12 | 0.00 |
| 16.00 | 0.09 | 6,773 | 70.58 | 0.12 | 0.12 | 0.00 |
| 18.00 | 0.07 | 6,475 | 70.54 | 0.12 | 0.12 | 0.00 |
| 20.00 | 0.05 | 6,040 | 70.47 | 0.12 | 0.12 | 0.00 |
| 22.00 | 0.05 | 5,516 | 70.39 | 0.12 | 0.12 | 0.00 |
| 24.00 | 0.04 | 4,965 | 70.30 | 0.12 | 0.12 | 0.00 |
| 26.00 | 0.00 | 4,108 | 70.17 | 0.12 | 0.12 | 0.00 |
| 28.00 | 0.00 | 3,237 | 70.04 | 0.12 | 0.12 | 0.00 |
| 30.00 | 0.00 | 2,366 | 69.91 | 0.12 | 0.12 | 0.00 |
| 32.00 | 0.00 | 1,495 | 69.75 | 0.12 | 0.12 | 0.00 |
| 34.00 | 0.00 | 624 | 69.49 | 0.12 | 0.12 | 0.00 |
| 36.00 | 0.00 | 8 | 69.30 | 0.01 | 0.01 | 0.00 |
| 38.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 74.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 76.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 78.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 80.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 82.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 84.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 86.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 88.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 90.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 92.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 94.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 96.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |

PC201167 HydroCAD-02

Prepared by Bohler Engineering

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Type II 24-hr 2-yr Rainfall=3.28"

Printed 6/3/2021

Hydrograph for Pond 3P: UG Basin 3

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|--------------|--------------|----------------------|------------------|---------------|-----------------|---------------|
| 0.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.01 | 6 | 62.10 | 0.01 | 0.01 | 0.00 |
| 4.00 | 0.03 | 25 | 62.11 | 0.02 | 0.02 | 0.00 |
| 6.00 | 0.04 | 43 | 62.12 | 0.04 | 0.04 | 0.00 |
| 8.00 | 0.06 | 60 | 62.12 | 0.06 | 0.06 | 0.00 |
| 10.00 | 0.11 | 106 | 62.14 | 0.10 | 0.10 | 0.00 |
| 12.00 | 4.10 | 3,761 | 63.11 | 0.12 | 0.12 | 0.00 |
| 14.00 | 0.12 | 5,672 | 63.51 | 0.12 | 0.12 | 0.00 |
| 16.00 | 0.08 | 5,539 | 63.48 | 0.12 | 0.12 | 0.00 |
| 18.00 | 0.06 | 5,178 | 63.40 | 0.12 | 0.12 | 0.00 |
| 20.00 | 0.04 | 4,701 | 63.30 | 0.12 | 0.12 | 0.00 |
| 22.00 | 0.04 | 4,151 | 63.19 | 0.12 | 0.12 | 0.00 |
| 24.00 | 0.04 | 3,578 | 63.07 | 0.12 | 0.12 | 0.00 |
| 26.00 | 0.00 | 2,752 | 62.90 | 0.12 | 0.12 | 0.00 |
| 28.00 | 0.00 | 1,913 | 62.73 | 0.12 | 0.12 | 0.00 |
| 30.00 | 0.00 | 1,075 | 62.53 | 0.12 | 0.12 | 0.00 |
| 32.00 | 0.00 | 236 | 62.19 | 0.12 | 0.12 | 0.00 |
| 34.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 74.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 76.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 78.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 80.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 82.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 84.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 86.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 88.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 90.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 92.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 94.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 96.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |

PC201167 HydroCAD-02

Prepared by Bohler Engineering

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Type II 24-hr 2-yr Rainfall=3.28"

Printed 6/3/2021

Hydrograph for Pond 4P: UG Basin 4

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Primary (cfs) |
|--------------|--------------|----------------------|------------------|---------------|
| 0.00 | 0.00 | 0 | 59.00 | 0.00 |
| 2.00 | 0.00 | 0 | 59.00 | 0.00 |
| 4.00 | 0.00 | 0 | 59.00 | 0.00 |
| 6.00 | 0.00 | 0 | 59.00 | 0.00 |
| 8.00 | 0.01 | 36 | 59.01 | 0.00 |
| 10.00 | 0.05 | 213 | 59.08 | 0.01 |
| 12.00 | 4.16 | 3,478 | 59.94 | 0.21 |
| 14.00 | 0.14 | 4,656 | 60.18 | 0.24 |
| 16.00 | 0.09 | 3,776 | 60.00 | 0.22 |
| 18.00 | 0.07 | 2,820 | 59.81 | 0.19 |
| 20.00 | 0.05 | 1,930 | 59.63 | 0.17 |
| 22.00 | 0.04 | 1,162 | 59.45 | 0.13 |
| 24.00 | 0.04 | 678 | 59.26 | 0.09 |
| 26.00 | 0.00 | 307 | 59.12 | 0.03 |
| 28.00 | 0.00 | 181 | 59.07 | 0.01 |
| 30.00 | 0.00 | 126 | 59.05 | 0.01 |
| 32.00 | 0.00 | 92 | 59.04 | 0.00 |
| 34.00 | 0.00 | 67 | 59.03 | 0.00 |
| 36.00 | 0.00 | 49 | 59.02 | 0.00 |
| 38.00 | 0.00 | 36 | 59.01 | 0.00 |
| 40.00 | 0.00 | 26 | 59.01 | 0.00 |
| 42.00 | 0.00 | 19 | 59.01 | 0.00 |
| 44.00 | 0.00 | 14 | 59.01 | 0.00 |
| 46.00 | 0.00 | 10 | 59.00 | 0.00 |
| 48.00 | 0.00 | 7 | 59.00 | 0.00 |
| 50.00 | 0.00 | 5 | 59.00 | 0.00 |
| 52.00 | 0.00 | 4 | 59.00 | 0.00 |
| 54.00 | 0.00 | 3 | 59.00 | 0.00 |
| 56.00 | 0.00 | 2 | 59.00 | 0.00 |
| 58.00 | 0.00 | 2 | 59.00 | 0.00 |
| 60.00 | 0.00 | 1 | 59.00 | 0.00 |
| 62.00 | 0.00 | 1 | 59.00 | 0.00 |
| 64.00 | 0.00 | 1 | 59.00 | 0.00 |
| 66.00 | 0.00 | 0 | 59.00 | 0.00 |
| 68.00 | 0.00 | 0 | 59.00 | 0.00 |
| 70.00 | 0.00 | 0 | 59.00 | 0.00 |
| 72.00 | 0.00 | 0 | 59.00 | 0.00 |
| 74.00 | 0.00 | 0 | 59.00 | 0.00 |
| 76.00 | 0.00 | 0 | 59.00 | 0.00 |
| 78.00 | 0.00 | 0 | 59.00 | 0.00 |
| 80.00 | 0.00 | 0 | 59.00 | 0.00 |
| 82.00 | 0.00 | 0 | 59.00 | 0.00 |
| 84.00 | 0.00 | 0 | 59.00 | 0.00 |
| 86.00 | 0.00 | 0 | 59.00 | 0.00 |
| 88.00 | 0.00 | 0 | 59.00 | 0.00 |
| 90.00 | 0.00 | 0 | 59.00 | 0.00 |
| 92.00 | 0.00 | 0 | 59.00 | 0.00 |
| 94.00 | 0.00 | 0 | 59.00 | 0.00 |
| 96.00 | 0.00 | 0 | 59.00 | 0.00 |

PC201167 HydroCAD-02

Prepared by Bohler Engineering

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Type II 24-hr 2-yr Rainfall=3.28"

Printed 6/3/2021

Hydrograph for Pond 5P: UG Basin 5

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|--------------|--------------|----------------------|------------------|---------------|-----------------|---------------|
| 0.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.01 | 3 | 80.00 | 0.01 | 0.01 | 0.00 |
| 8.00 | 0.03 | 9 | 80.00 | 0.03 | 0.03 | 0.00 |
| 10.00 | 0.07 | 25 | 80.01 | 0.07 | 0.07 | 0.00 |
| 12.00 | 3.92 | 2,402 | 80.73 | 0.49 | 0.49 | 0.00 |
| 14.00 | 0.12 | 1,569 | 80.56 | 0.49 | 0.49 | 0.00 |
| 16.00 | 0.08 | 29 | 80.01 | 0.08 | 0.08 | 0.00 |
| 18.00 | 0.06 | 22 | 80.01 | 0.06 | 0.06 | 0.00 |
| 20.00 | 0.04 | 16 | 80.01 | 0.04 | 0.04 | 0.00 |
| 22.00 | 0.04 | 14 | 80.01 | 0.04 | 0.04 | 0.00 |
| 24.00 | 0.04 | 13 | 80.01 | 0.04 | 0.04 | 0.00 |
| 26.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 74.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 76.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 78.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 80.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 82.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 84.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 86.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 88.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 90.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 92.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 94.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 96.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |

PC201167 HydroCAD-02

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Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

Hydrograph for Pond 1P: UG Basin 1

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|--------------|--------------|----------------------|------------------|---------------|-----------------|---------------|
| 0.00 | 0.00 | 0 | 74.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 74.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.06 | 166 | 74.02 | 0.02 | 0.02 | 0.00 |
| 6.00 | 0.14 | 597 | 74.08 | 0.06 | 0.06 | 0.00 |
| 8.00 | 0.22 | 1,500 | 74.20 | 0.06 | 0.06 | 0.00 |
| 10.00 | 0.46 | 3,477 | 74.47 | 0.06 | 0.06 | 0.00 |
| 12.00 | 18.17 | 22,424 | 75.83 | 0.06 | 0.06 | 0.00 |
| 14.00 | 0.56 | 33,231 | 76.77 | 0.25 | 0.06 | 0.19 |
| 16.00 | 0.34 | 34,526 | 76.93 | 0.27 | 0.06 | 0.21 |
| 18.00 | 0.26 | 34,721 | 76.95 | 0.27 | 0.06 | 0.21 |
| 20.00 | 0.19 | 34,408 | 76.91 | 0.27 | 0.06 | 0.21 |
| 22.00 | 0.17 | 33,826 | 76.84 | 0.26 | 0.06 | 0.20 |
| 24.00 | 0.16 | 33,215 | 76.77 | 0.25 | 0.06 | 0.19 |
| 26.00 | 0.00 | 31,596 | 76.60 | 0.22 | 0.06 | 0.16 |
| 28.00 | 0.00 | 30,115 | 76.46 | 0.19 | 0.06 | 0.14 |
| 30.00 | 0.00 | 28,820 | 76.34 | 0.17 | 0.06 | 0.11 |
| 32.00 | 0.00 | 27,717 | 76.25 | 0.14 | 0.06 | 0.08 |
| 34.00 | 0.00 | 26,826 | 76.17 | 0.11 | 0.06 | 0.05 |
| 36.00 | 0.00 | 26,142 | 76.12 | 0.08 | 0.06 | 0.03 |
| 38.00 | 0.00 | 25,601 | 76.07 | 0.07 | 0.06 | 0.01 |
| 40.00 | 0.00 | 25,140 | 76.04 | 0.06 | 0.06 | 0.01 |
| 42.00 | 0.00 | 24,717 | 76.00 | 0.06 | 0.06 | 0.00 |
| 44.00 | 0.00 | 24,313 | 75.97 | 0.06 | 0.06 | 0.00 |
| 46.00 | 0.00 | 23,908 | 75.94 | 0.06 | 0.06 | 0.00 |
| 48.00 | 0.00 | 23,503 | 75.91 | 0.06 | 0.06 | 0.00 |
| 50.00 | 0.00 | 23,099 | 75.88 | 0.06 | 0.06 | 0.00 |
| 52.00 | 0.00 | 22,694 | 75.85 | 0.06 | 0.06 | 0.00 |
| 54.00 | 0.00 | 22,289 | 75.82 | 0.06 | 0.06 | 0.00 |
| 56.00 | 0.00 | 21,885 | 75.78 | 0.06 | 0.06 | 0.00 |
| 58.00 | 0.00 | 21,480 | 75.75 | 0.06 | 0.06 | 0.00 |
| 60.00 | 0.00 | 21,076 | 75.72 | 0.06 | 0.06 | 0.00 |
| 62.00 | 0.00 | 20,671 | 75.69 | 0.06 | 0.06 | 0.00 |
| 64.00 | 0.00 | 20,266 | 75.66 | 0.06 | 0.06 | 0.00 |
| 66.00 | 0.00 | 19,862 | 75.63 | 0.06 | 0.06 | 0.00 |
| 68.00 | 0.00 | 19,457 | 75.60 | 0.06 | 0.06 | 0.00 |
| 70.00 | 0.00 | 19,052 | 75.57 | 0.06 | 0.06 | 0.00 |
| 72.00 | 0.00 | 18,648 | 75.54 | 0.06 | 0.06 | 0.00 |
| 74.00 | 0.00 | 18,243 | 75.51 | 0.06 | 0.06 | 0.00 |
| 76.00 | 0.00 | 17,839 | 75.48 | 0.06 | 0.06 | 0.00 |
| 78.00 | 0.00 | 17,434 | 75.45 | 0.06 | 0.06 | 0.00 |
| 80.00 | 0.00 | 17,029 | 75.42 | 0.06 | 0.06 | 0.00 |
| 82.00 | 0.00 | 16,625 | 75.39 | 0.06 | 0.06 | 0.00 |
| 84.00 | 0.00 | 16,220 | 75.37 | 0.06 | 0.06 | 0.00 |
| 86.00 | 0.00 | 15,815 | 75.34 | 0.06 | 0.06 | 0.00 |
| 88.00 | 0.00 | 15,411 | 75.31 | 0.06 | 0.06 | 0.00 |
| 90.00 | 0.00 | 15,006 | 75.28 | 0.06 | 0.06 | 0.00 |
| 92.00 | 0.00 | 14,602 | 75.25 | 0.06 | 0.06 | 0.00 |
| 94.00 | 0.00 | 14,197 | 75.22 | 0.06 | 0.06 | 0.00 |
| 96.00 | 0.00 | 13,792 | 75.19 | 0.06 | 0.06 | 0.00 |

PC201167 HydroCAD-02

Prepared by Bohler Engineering

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Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

Hydrograph for Pond 2P: UG Basin 2

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|--------------|--------------|----------------------|------------------|---------------|-----------------|---------------|
| 0.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.03 | 23 | 69.31 | 0.02 | 0.02 | 0.00 |
| 4.00 | 0.08 | 81 | 69.32 | 0.07 | 0.07 | 0.00 |
| 6.00 | 0.13 | 135 | 69.34 | 0.12 | 0.12 | 0.00 |
| 8.00 | 0.17 | 354 | 69.41 | 0.12 | 0.12 | 0.00 |
| 10.00 | 0.33 | 1,249 | 69.68 | 0.12 | 0.12 | 0.00 |
| 12.00 | 11.54 | 13,047 | 71.66 | 0.24 | 0.12 | 0.12 |
| 14.00 | 0.35 | 13,998 | 71.86 | 0.42 | 0.12 | 0.30 |
| 16.00 | 0.21 | 13,695 | 71.79 | 0.26 | 0.12 | 0.14 |
| 18.00 | 0.16 | 13,201 | 71.69 | 0.24 | 0.12 | 0.12 |
| 20.00 | 0.12 | 12,572 | 71.57 | 0.21 | 0.12 | 0.09 |
| 22.00 | 0.11 | 12,009 | 71.47 | 0.17 | 0.12 | 0.05 |
| 24.00 | 0.10 | 11,646 | 71.40 | 0.14 | 0.12 | 0.02 |
| 26.00 | 0.00 | 10,771 | 71.25 | 0.12 | 0.12 | 0.00 |
| 28.00 | 0.00 | 9,900 | 71.10 | 0.12 | 0.12 | 0.00 |
| 30.00 | 0.00 | 9,029 | 70.95 | 0.12 | 0.12 | 0.00 |
| 32.00 | 0.00 | 8,158 | 70.81 | 0.12 | 0.12 | 0.00 |
| 34.00 | 0.00 | 7,287 | 70.67 | 0.12 | 0.12 | 0.00 |
| 36.00 | 0.00 | 6,416 | 70.53 | 0.12 | 0.12 | 0.00 |
| 38.00 | 0.00 | 5,545 | 70.39 | 0.12 | 0.12 | 0.00 |
| 40.00 | 0.00 | 4,674 | 70.26 | 0.12 | 0.12 | 0.00 |
| 42.00 | 0.00 | 3,803 | 70.12 | 0.12 | 0.12 | 0.00 |
| 44.00 | 0.00 | 2,932 | 69.99 | 0.12 | 0.12 | 0.00 |
| 46.00 | 0.00 | 2,060 | 69.86 | 0.12 | 0.12 | 0.00 |
| 48.00 | 0.00 | 1,189 | 69.66 | 0.12 | 0.12 | 0.00 |
| 50.00 | 0.00 | 318 | 69.40 | 0.12 | 0.12 | 0.00 |
| 52.00 | 0.00 | 1 | 69.30 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 74.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 76.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 78.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 80.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 82.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 84.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 86.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 88.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 90.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 92.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 94.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |
| 96.00 | 0.00 | 0 | 69.30 | 0.00 | 0.00 | 0.00 |

PC201167 HydroCAD-02

Prepared by Bohler Engineering

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Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

Hydrograph for Pond 3P: UG Basin 3

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|--------------|--------------|----------------------|------------------|---------------|-----------------|---------------|
| 0.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.05 | 46 | 62.12 | 0.04 | 0.04 | 0.00 |
| 4.00 | 0.09 | 86 | 62.13 | 0.08 | 0.08 | 0.00 |
| 6.00 | 0.12 | 121 | 62.15 | 0.12 | 0.12 | 0.00 |
| 8.00 | 0.16 | 286 | 62.21 | 0.12 | 0.12 | 0.00 |
| 10.00 | 0.28 | 991 | 62.49 | 0.12 | 0.12 | 0.00 |
| 12.00 | 9.55 | 10,709 | 64.72 | 0.82 | 0.12 | 0.70 |
| 14.00 | 0.29 | 10,391 | 64.63 | 0.33 | 0.12 | 0.21 |
| 16.00 | 0.18 | 10,079 | 64.54 | 0.25 | 0.12 | 0.13 |
| 18.00 | 0.14 | 9,512 | 64.39 | 0.21 | 0.12 | 0.10 |
| 20.00 | 0.10 | 8,986 | 64.26 | 0.16 | 0.12 | 0.05 |
| 22.00 | 0.09 | 8,627 | 64.18 | 0.13 | 0.12 | 0.01 |
| 24.00 | 0.08 | 8,365 | 64.11 | 0.12 | 0.12 | 0.00 |
| 26.00 | 0.00 | 7,554 | 63.93 | 0.12 | 0.12 | 0.00 |
| 28.00 | 0.00 | 6,715 | 63.74 | 0.12 | 0.12 | 0.00 |
| 30.00 | 0.00 | 5,876 | 63.55 | 0.12 | 0.12 | 0.00 |
| 32.00 | 0.00 | 5,038 | 63.37 | 0.12 | 0.12 | 0.00 |
| 34.00 | 0.00 | 4,199 | 63.20 | 0.12 | 0.12 | 0.00 |
| 36.00 | 0.00 | 3,361 | 63.03 | 0.12 | 0.12 | 0.00 |
| 38.00 | 0.00 | 2,522 | 62.85 | 0.12 | 0.12 | 0.00 |
| 40.00 | 0.00 | 1,684 | 62.69 | 0.12 | 0.12 | 0.00 |
| 42.00 | 0.00 | 845 | 62.44 | 0.12 | 0.12 | 0.00 |
| 44.00 | 0.00 | 47 | 62.12 | 0.05 | 0.05 | 0.00 |
| 46.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 74.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 76.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 78.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 80.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 82.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 84.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 86.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 88.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 90.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 92.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 94.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |
| 96.00 | 0.00 | 0 | 62.10 | 0.00 | 0.00 | 0.00 |

PC201167 HydroCAD-02

Prepared by Bohler Engineering

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Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

Hydrograph for Pond 4P: UG Basin 4

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Primary (cfs) |
|--------------|--------------|----------------------|------------------|---------------|
| 0.00 | 0.00 | 0 | 59.00 | 0.00 |
| 2.00 | 0.00 | 0 | 59.00 | 0.00 |
| 4.00 | 0.01 | 20 | 59.01 | 0.00 |
| 6.00 | 0.06 | 232 | 59.09 | 0.02 |
| 8.00 | 0.11 | 538 | 59.21 | 0.07 |
| 10.00 | 0.25 | 1,090 | 59.42 | 0.13 |
| 12.00 | 11.44 | 11,443 | 61.80 | 2.29 |
| 14.00 | 0.36 | 10,513 | 61.52 | 0.41 |
| 16.00 | 0.22 | 9,906 | 61.36 | 0.35 |
| 18.00 | 0.17 | 8,811 | 61.09 | 0.33 |
| 20.00 | 0.12 | 7,556 | 60.80 | 0.31 |
| 22.00 | 0.11 | 6,282 | 60.52 | 0.28 |
| 24.00 | 0.10 | 5,129 | 60.28 | 0.25 |
| 26.00 | 0.00 | 3,480 | 59.94 | 0.21 |
| 28.00 | 0.00 | 2,091 | 59.66 | 0.17 |
| 30.00 | 0.00 | 1,005 | 59.39 | 0.12 |
| 32.00 | 0.00 | 413 | 59.16 | 0.05 |
| 34.00 | 0.00 | 221 | 59.09 | 0.02 |
| 36.00 | 0.00 | 144 | 59.06 | 0.01 |
| 38.00 | 0.00 | 105 | 59.04 | 0.00 |
| 40.00 | 0.00 | 77 | 59.03 | 0.00 |
| 42.00 | 0.00 | 56 | 59.02 | 0.00 |
| 44.00 | 0.00 | 41 | 59.02 | 0.00 |
| 46.00 | 0.00 | 30 | 59.01 | 0.00 |
| 48.00 | 0.00 | 22 | 59.01 | 0.00 |
| 50.00 | 0.00 | 16 | 59.01 | 0.00 |
| 52.00 | 0.00 | 11 | 59.00 | 0.00 |
| 54.00 | 0.00 | 8 | 59.00 | 0.00 |
| 56.00 | 0.00 | 6 | 59.00 | 0.00 |
| 58.00 | 0.00 | 4 | 59.00 | 0.00 |
| 60.00 | 0.00 | 3 | 59.00 | 0.00 |
| 62.00 | 0.00 | 2 | 59.00 | 0.00 |
| 64.00 | 0.00 | 2 | 59.00 | 0.00 |
| 66.00 | 0.00 | 1 | 59.00 | 0.00 |
| 68.00 | 0.00 | 1 | 59.00 | 0.00 |
| 70.00 | 0.00 | 1 | 59.00 | 0.00 |
| 72.00 | 0.00 | 0 | 59.00 | 0.00 |
| 74.00 | 0.00 | 0 | 59.00 | 0.00 |
| 76.00 | 0.00 | 0 | 59.00 | 0.00 |
| 78.00 | 0.00 | 0 | 59.00 | 0.00 |
| 80.00 | 0.00 | 0 | 59.00 | 0.00 |
| 82.00 | 0.00 | 0 | 59.00 | 0.00 |
| 84.00 | 0.00 | 0 | 59.00 | 0.00 |
| 86.00 | 0.00 | 0 | 59.00 | 0.00 |
| 88.00 | 0.00 | 0 | 59.00 | 0.00 |
| 90.00 | 0.00 | 0 | 59.00 | 0.00 |
| 92.00 | 0.00 | 0 | 59.00 | 0.00 |
| 94.00 | 0.00 | 0 | 59.00 | 0.00 |
| 96.00 | 0.00 | 0 | 59.00 | 0.00 |

PC201167 HydroCAD-02

Prepared by Bohler Engineering

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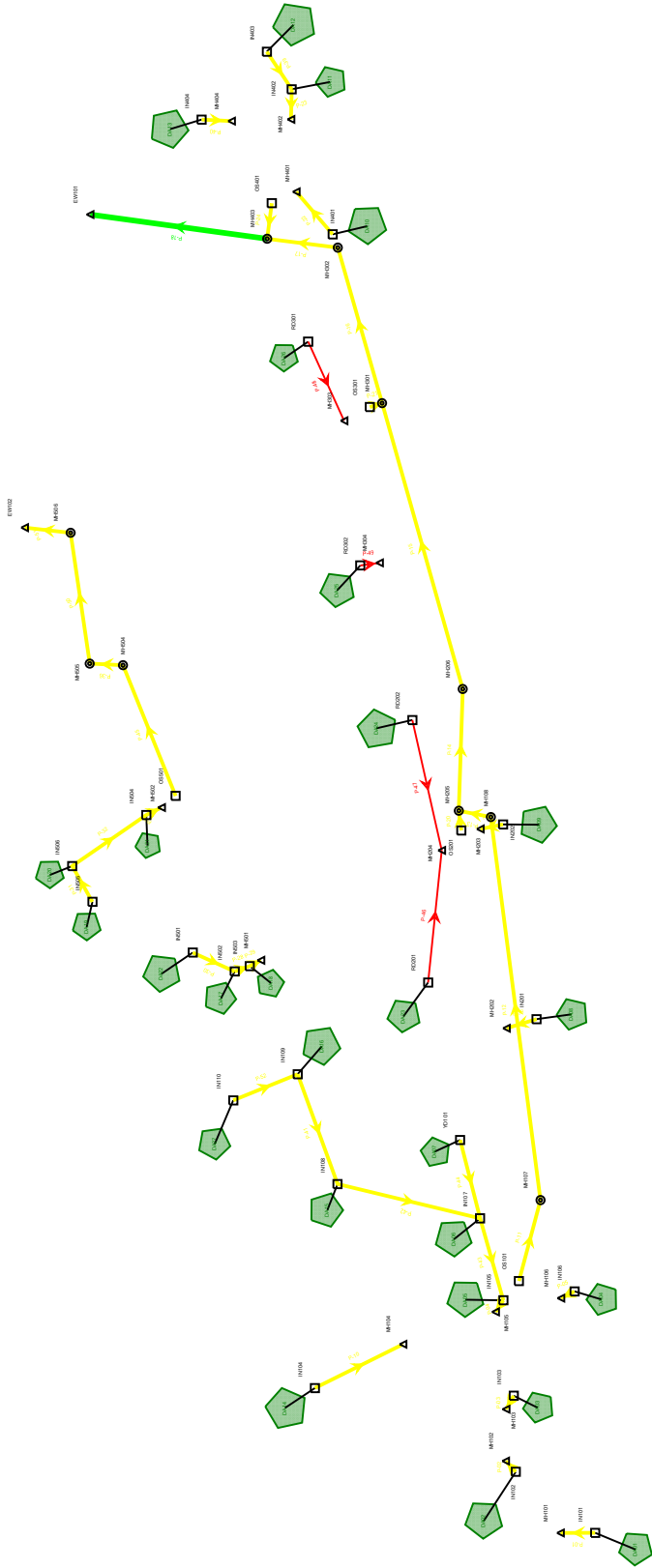
Type II 24-hr 100-yr Rainfall=7.58"

Printed 6/3/2021

Hydrograph for Pond 5P: UG Basin 5

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Discarded (cfs) | Primary (cfs) |
|--------------|--------------|----------------------|------------------|---------------|-----------------|---------------|
| 0.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.03 | 12 | 80.00 | 0.03 | 0.03 | 0.00 |
| 6.00 | 0.08 | 27 | 80.01 | 0.07 | 0.07 | 0.00 |
| 8.00 | 0.12 | 44 | 80.02 | 0.12 | 0.12 | 0.00 |
| 10.00 | 0.25 | 87 | 80.03 | 0.24 | 0.24 | 0.00 |
| 12.00 | 9.94 | 7,758 | 81.84 | 0.49 | 0.49 | 0.00 |
| 14.00 | 0.30 | 9,644 | 82.29 | 0.59 | 0.49 | 0.10 |
| 16.00 | 0.19 | 7,656 | 81.82 | 0.49 | 0.49 | 0.00 |
| 18.00 | 0.14 | 5,287 | 81.31 | 0.49 | 0.49 | 0.00 |
| 20.00 | 0.10 | 2,637 | 80.77 | 0.49 | 0.49 | 0.00 |
| 22.00 | 0.09 | 46 | 80.02 | 0.13 | 0.13 | 0.00 |
| 24.00 | 0.09 | 32 | 80.01 | 0.09 | 0.09 | 0.00 |
| 26.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 28.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 32.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 34.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 36.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 38.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 42.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 44.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 46.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 48.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 52.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 54.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 56.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 58.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 60.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 62.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 64.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 66.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 68.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 70.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 72.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 74.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 76.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 78.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 80.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 82.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 84.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 86.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 88.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 90.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 92.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 94.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |
| 96.00 | 0.00 | 0 | 80.00 | 0.00 | 0.00 | 0.00 |

Scenario: 100-Year



**Scenario: 100-Year
Current Time Step: 0.000Hr
Catch Basin FlexTable: Inlet Report**

| Label | Inlet | Inlet Location | Ground Elevation (ft) | Invert Out (ft) | Inlet Bottom El. (ft) | Inlet Intensity (inh) | Inlet Tc (min) | Flow (Known) (ft ³ /s) | Rim Elevation (ft) | Hydraulic Grade Line (In) (ft) | Hydraulic Grade Line (Out) (ft) | Inlet Drainage Area (acres) | Inlet C | Gutter Spread (ft) | Flow (Total Surface) (ft ³ /s) |
|-------|--------------------|----------------|-----------------------|-----------------|-----------------------|-----------------------|----------------|-----------------------------------|--------------------|--------------------------------|---------------------------------|-----------------------------|---------|--------------------|---|
| OS301 | PADOT Type 'M' | In Sag | 67.88 | 62.10 | 62.10 | 8.110 | 0.000 | 0.00 | 67.88 | 63.22 | 63.22 | (N/A) | (N/A) | 0.0 | 8.41 |
| RD301 | PADOT Type 'C' | In Sag | 68.00 | 64.00 | 64.00 | 8.110 | 5.000 | 0.00 | 68.00 | 66.31 | 66.31 | 0.710 | 0.950 | 17.7 | 5.51 |
| IN401 | PADOT Type 'C' | In Sag | 65.05 | 61.55 | 61.55 | 8.110 | 5.000 | 0.00 | 65.05 | 62.42 | 62.42 | 0.660 | 0.840 | 15.5 | 4.53 |
| OS401 | PADOT Type 'C' | In Sag | 65.37 | 59.00 | 59.00 | 8.110 | 0.000 | 0.00 | 65.37 | 59.80 | 59.80 | (N/A) | (N/A) | 0.0 | 4.31 |
| RD201 | PADOT Type 'C' | In Sag | 78.00 | 74.00 | 74.00 | 8.110 | 5.000 | 0.00 | 78.00 | 74.75 | 74.75 | 0.390 | 0.950 | 11.9 | 3.03 |
| IN101 | PADOT Type 'C' | In Sag | 79.25 | 76.00 | 76.00 | 8.110 | 5.000 | 0.00 | 79.25 | 76.73 | 76.73 | 0.440 | 0.810 | 11.6 | 2.91 |
| IN402 | PADOT Type 'C' | In Sag | 63.25 | 59.55 | 59.55 | 8.110 | 5.000 | 0.00 | 63.25 | 62.01 | 62.01 | 0.420 | 0.710 | 10.3 | 2.44 |
| RD202 | PADOT Type 'C' | In Sag | 78.00 | 74.00 | 74.00 | 8.110 | 5.000 | 0.00 | 78.00 | 74.64 | 74.64 | 0.290 | 0.950 | 9.8 | 2.25 |
| IN107 | PADOT Type 'C' | In Sag | 81.96 | 76.95 | 76.95 | 8.110 | 5.000 | 0.00 | 81.96 | 77.74 | 77.74 | 0.320 | 0.860 | 9.8 | 2.25 |
| RD302 | PADOT Type 'C' | In Sag | 72.12 | 68.00 | 68.00 | 8.110 | 5.000 | 0.00 | 72.12 | 68.63 | 68.63 | 0.260 | 0.950 | 9.1 | 2.02 |
| IN201 | PADOT Type 'C' | In Sag | 76.90 | 73.40 | 73.40 | 8.110 | 5.000 | 0.00 | 76.90 | 73.92 | 73.92 | 0.270 | 0.860 | 8.7 | 1.90 |
| IN501 | PADOT Type 'M' | In Sag | 74.30 | 70.80 | 70.80 | 8.110 | 5.000 | 0.00 | 74.30 | 71.55 | 71.55 | 0.230 | 0.870 | 10.1 | 1.72 |
| IN202 | PADOT Type 'C' | In Sag | 86.55 | 83.05 | 83.05 | 8.110 | 5.000 | 0.00 | 86.55 | 83.54 | 83.54 | 0.260 | 0.810 | 16.4 | 1.64 |
| IN106 | PADOT Type 'C' | In Sag | 79.32 | 75.82 | 75.82 | 8.110 | 5.000 | 0.00 | 79.32 | 76.73 | 76.73 | 0.250 | 0.780 | 7.8 | 1.59 |
| IN502 | PADOT Type 'C' | In Sag | 86.00 | 81.52 | 81.52 | 8.110 | 5.000 | 0.00 | 86.00 | 82.69 | 82.69 | 0.250 | 0.780 | 7.8 | 1.59 |
| IN504 | PADOT Type 'C' | In Sag | 86.28 | 81.24 | 81.24 | 8.110 | 5.000 | 0.00 | 86.28 | 82.61 | 82.61 | 0.220 | 0.860 | 7.4 | 1.48 |
| IN503 | PADOT Type 'C' | In Sag | 81.64 | 76.12 | 76.12 | 8.110 | 5.000 | 0.00 | 81.64 | 77.17 | 77.17 | 0.200 | 0.790 | 7.2 | 1.42 |
| IN105 | PADOT Type 'C' | In Sag | 89.67 | 84.17 | 84.17 | 8.110 | 5.000 | 0.00 | 89.67 | 84.59 | 84.59 | 0.200 | 0.800 | 6.6 | 1.31 |
| IN104 | PADOT Type 'C' | In Sag | 86.55 | 82.85 | 82.85 | 8.110 | 5.000 | 0.00 | 86.55 | 83.38 | 83.38 | 0.140 | 0.780 | 5.2 | 0.89 |
| IN108 | PADOT Type 'C' | In Sag | 87.30 | 80.00 | 80.00 | 8.110 | 5.000 | 0.00 | 87.30 | 80.31 | 80.31 | (N/A) | (N/A) | 0.0 | 0.69 |
| OS501 | PADOT Type 'C' | In Sag | 82.47 | 78.97 | 78.97 | 8.110 | 5.000 | 0.00 | 82.47 | 79.26 | 79.26 | 0.080 | 0.950 | 4.0 | 0.62 |
| IN102 | PADOT Type 'C' | In Sag | 64.66 | 61.16 | 61.16 | 8.110 | 5.000 | 0.00 | 64.66 | 62.04 | 62.04 | 0.110 | 0.620 | 3.6 | 0.56 |
| IN103 | PADOT Type 'C' | In Sag | 87.64 | 84.18 | 84.18 | 8.110 | 5.000 | 0.00 | 87.64 | 84.45 | 84.45 | 0.080 | 0.800 | 3.5 | 0.52 |
| IN110 | PADOT Type 'C' | In Sag | 82.88 | 79.38 | 79.38 | 8.110 | 5.000 | 0.00 | 82.88 | 79.62 | 79.62 | 0.060 | 0.850 | 2.9 | 0.42 |
| IN404 | PADOT Type 'C' | In Sag | 65.90 | 62.40 | 62.40 | 8.110 | 5.000 | 0.00 | 65.90 | 62.61 | 62.61 | 0.050 | 0.830 | 2.4 | 0.34 |
| IN505 | PADOT Type 'C' | In Sag | 85.76 | 82.26 | 82.26 | 8.110 | 5.000 | 0.00 | 85.76 | 82.61 | 82.61 | 0.050 | 0.710 | 2.0 | 0.29 |
| IN506 | PADOT Type 'C' | In Sag | 85.51 | 81.81 | 81.81 | 8.110 | 5.000 | 0.00 | 85.51 | 82.61 | 82.61 | 0.050 | 0.710 | 2.0 | 0.29 |
| YD101 | Grate 18 Niloplast | In Sag | 81.25 | 77.75 | 77.75 | 8.110 | 5.000 | 0.00 | 81.25 | 77.94 | 77.94 | 0.090 | 0.350 | 0.5 | 0.26 |
| IN109 | PADOT Type 'C' | In Sag | 87.21 | 83.71 | 83.71 | 8.110 | 5.000 | 0.00 | 87.21 | 84.06 | 84.06 | 0.040 | 0.650 | 0.5 | 0.21 |
| OS101 | PADOT Type 'M' | In Sag | 81.26 | 74.00 | 74.00 | 8.110 | 5.000 | 0.00 | 81.26 | 74.16 | 74.16 | (N/A) | (N/A) | 0.0 | 0.18 |
| OS201 | PADOT Type 'M' | In Sag | 74.37 | 69.30 | 69.30 | 8.110 | 0.000 | 0.00 | 74.37 | 69.40 | 69.40 | (N/A) | (N/A) | 0.0 | 0.08 |

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**Scenario: 100-Year
Current Time Step: 0.000Hr
FlexTable: Manhole Table**

| Label | Station (Calculated) (ft) | Elevation (Ground) (ft) | Set Rim to Ground Elevation? | Elevation (Rim) (ft) | Elevation (Invert) (ft) | Bolted Cover? | Diameter (in) | Headloss Method |
|-------|---------------------------------|-------------------------------|------------------------------------|-------------------------|-------------------------------|------------------|------------------|--------------------|
| MH107 | 9+07 | 80.00 | True | 80.00 | 68.86 | False | 48.0 | HEC-22 Energy |
| MH108 | 6+25 | 74.60 | True | 74.60 | 67.25 | False | 48.0 | HEC-22 Energy |
| MH205 | 6+01 | 74.00 | True | 74.00 | 66.93 | False | 48.0 | HEC-22 Energy |
| MH206 | 5+12 | 71.84 | True | 71.84 | 65.39 | False | 48.0 | HEC-22 Energy |
| MH301 | 2+94 | 67.80 | True | 67.80 | 61.25 | False | 48.0 | HEC-22 Energy |
| MH302 | 1+76 | 65.30 | True | 65.30 | 59.54 | False | 48.0 | HEC-22 Energy |
| MH403 | 1+24 | 66.08 | True | 66.08 | 58.24 | False | 48.0 | HEC-22 Energy |
| MH504 | 1+23 | 88.82 | True | 88.82 | 71.12 | False | 48.0 | HEC-22 Energy |
| MH505 | 0+99 | 75.00 | True | 75.00 | 68.00 | False | 48.0 | HEC-22 Energy |
| MH506 | 0+37 | 71.00 | True | 71.00 | 65.50 | False | 48.0 | HEC-22 Energy |

**Scenario: 100-Year
Current Time Step: 0.000Hr
FlexTable: Outfall Table**

| Label | Station (ft) | Elevation (Ground) (ft) | Set Rim to Ground Elevation | Elevation (Invert) (ft) | Boundary Condition Type | Elevation (Tailwater) (ft) |
|-------|-----------------|-------------------------------|--------------------------------------|-------------------------------|----------------------------|----------------------------------|
| EW101 | 0+00 | 62.00 | True | 57.00 | Free Outfall | 0.00 |
| EW102 | 0+00 | 67.50 | True | 64.00 | Free Outfall | 0.00 |
| MH101 | 0+00 | 80.03 | True | 75.87 | User Defined Tailwater | 76.73 |
| MH102 | 0+00 | 82.82 | True | 78.82 | User Defined Tailwater | 76.73 |
| MH103 | 0+00 | 83.16 | True | 79.16 | User Defined Tailwater | 76.73 |
| MH104 | 0+00 | 85.43 | True | 81.93 | User Defined Tailwater | 76.73 |
| MH105 | 0+00 | 81.90 | True | 75.90 | User Defined Tailwater | 76.73 |
| MH106 | 0+00 | 79.72 | True | 75.72 | User Defined Tailwater | 76.73 |
| MH202 | 0+00 | 77.14 | True | 73.14 | User Defined Tailwater | 71.54 |
| MH203 | 0+00 | 74.23 | True | 70.71 | User Defined Tailwater | 71.54 |
| MH204 | 0+00 | 74.60 | True | 71.85 | User Defined Tailwater | 71.54 |
| MH303 | 0+00 | 68.08 | True | 63.00 | User Defined Tailwater | 65.33 |
| MH304 | 0+00 | 71.41 | True | 67.41 | User Defined Tailwater | 65.33 |
| MH401 | 0+00 | 64.79 | True | 61.29 | User Defined Tailwater | 61.99 |
| MH402 | 0+00 | 63.63 | True | 59.38 | User Defined Tailwater | 61.99 |
| MH404 | 0+00 | 64.82 | True | 61.32 | User Defined Tailwater | 61.99 |
| MH501 | 0+00 | 86.54 | True | 81.00 | User Defined Tailwater | 82.60 |
| MH502 | 0+00 | 87.10 | True | 81.00 | User Defined Tailwater | 82.60 |

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Scenario: 100-Year Current Time Step: 0.000Hr Conduit Flex Table: Pipe Report

| Upstream Struct. | Downstream Struct. | Size | Material | L (ft) | S (ft/ft) | Flow (Link) (ft³/s) | Q Full (ft³/s) | Avg. V (ft/s) | Up. Invert (ft) | Up. Cover (ft) | Up. Elev. (ft) | HGL In (ft) | EGL In (ft) | Down. Invert (ft) | Down. Cover (ft) | Down. Elev. (ft) | HGL Out (ft) | EGL Out (ft) | Flow / Capacity (Design) (%) |
|------------------|--------------------|---------|-----------------------------------|--------|-----------|---------------------|----------------|---------------|-----------------|----------------|----------------|-------------|-------------|-------------------|------------------|------------------|--------------|--------------|------------------------------|
| RD301 | MH303 | 12 inch | PVC | 69.0 | 0.0145 | 5.51 | 5.58 | 7.02 | 64.00 | 3.00 | 68.00 | 66.31 | 67.07 | 63.00 | 4.08 | 68.08 | 65.33 | 66.10 | 98.90 |
| RD202 | MH204 | 8 inch | PVC | 90.0 | 0.0239 | 2.25 | 2.30 | 7.90 | 74.00 | 3.33 | 78.00 | 74.64 | 75.30 | 71.85 | 2.08 | 74.60 | 72.36 | 73.33 | 92.76 |
| MH301 | MH302 | 18 inch | Corrugated HDPE (Smooth Interior) | 118.0 | 0.0128 | 8.67 | 10.33 | 6.53 | 61.25 | 5.05 | 67.80 | 62.39 | 62.95 | 59.74 | 4.06 | 65.30 | 61.04 | 61.48 | 84.19 |
| RD201 | MH204 | 10 inch | PVC | 98.0 | 0.0219 | 3.03 | 4.22 | 8.41 | 59.54 | 4.26 | 65.30 | 60.68 | 61.24 | 58.74 | 5.84 | 66.08 | 59.73 | 60.50 | 76.79 |
| MH403 | EW101 | 24 inch | Corrugated HDPE (Smooth Interior) | 124.0 | 0.0100 | 12.98 | 19.61 | 6.67 | 58.24 | 5.84 | 78.00 | 74.75 | 75.28 | 71.85 | 1.92 | 74.60 | 72.37 | 73.47 | 71.80 |
| RD302 | MH401 | 18 inch | Corrugated HDPE (Smooth Interior) | 42.0 | 0.0062 | 4.53 | 7.16 | 4.29 | 61.55 | 2.00 | 65.05 | 62.42 | 62.70 | 61.29 | 3.00 | 62.00 | 58.19 | 58.88 | 66.21 |
| OS301 | MH304 | 8 inch | PVC | 12.0 | 0.0492 | 2.02 | 3.48 | 10.35 | 68.00 | 3.45 | 72.12 | 68.63 | 69.17 | 67.41 | 3.33 | 71.41 | 67.85 | 62.44 | 63.28 |
| IN502 | MH301 | 18 inch | Corrugated HDPE (Smooth Interior) | 7.0 | 0.0286 | 8.41 | 15.39 | 8.90 | 62.10 | 4.28 | 67.88 | 63.22 | 63.77 | 61.90 | 4.40 | 67.80 | 62.82 | 63.67 | 54.66 |
| IN503 | IN503 | 18 inch | Corrugated HDPE (Smooth Interior) | 15.0 | 0.0053 | 3.30 | 6.65 | 5.08 | 81.52 | 2.98 | 86.00 | 82.65 | 82.73 | 81.44 | 3.34 | 86.28 | 82.64 | 82.71 | 49.69 |
| OS401 | MH403 | 18 inch | Corrugated HDPE (Smooth Interior) | 26.0 | 0.0100 | 4.31 | 9.10 | 5.08 | 59.00 | 4.87 | 65.37 | 59.80 | 60.11 | 58.74 | 5.84 | 66.08 | 59.62 | 59.87 | 47.35 |
| IN107 | IN105 | 18 inch | Corrugated HDPE (Smooth Interior) | 63.0 | 0.0100 | 3.94 | 9.10 | 4.97 | 76.95 | 3.51 | 81.96 | 77.71 | 78.01 | 76.32 | 3.82 | 81.64 | 77.17 | 77.40 | 43.32 |
| IN105 | MH105 | 18 inch | Corrugated HDPE (Smooth Interior) | 10.0 | 0.0220 | 5.14 | 13.50 | 7.13 | 76.12 | 4.02 | 81.96 | 76.99 | 77.35 | 75.90 | 4.50 | 81.90 | 76.60 | 77.22 | 38.09 |
| IN101 | MH101 | 18 inch | Corrugated HDPE (Smooth Interior) | 18.0 | 0.0072 | 2.91 | 7.74 | 4.07 | 76.00 | 1.75 | 79.25 | 76.73 | 76.91 | 75.87 | 2.66 | 80.03 | 76.73 | 76.85 | 37.66 |
| IN402 | MH402 | 18 inch | Corrugated HDPE (Smooth Interior) | 21.0 | 0.0081 | 2.98 | 8.19 | 1.69 | 59.55 | 2.20 | 63.25 | 62.01 | 62.06 | 59.38 | 2.75 | 63.63 | 61.99 | 62.03 | 36.39 |
| IN503 | MH503 | 18 inch | Corrugated HDPE (Smooth Interior) | 8.0 | 0.0380 | 4.71 | 15.77 | 7.79 | 81.24 | 3.54 | 86.28 | 82.61 | 82.73 | 81.00 | 4.04 | 86.54 | 82.60 | 82.71 | 29.84 |
| IN202 | MH202 | 18 inch | Corrugated HDPE (Smooth Interior) | 17.0 | 0.0053 | 1.64 | 6.62 | 3.11 | 70.80 | 2.00 | 74.30 | 71.55 | 71.60 | 70.71 | 2.02 | 74.23 | 71.54 | 71.58 | 24.70 |
| IN201 | MH201 | 18 inch | Corrugated HDPE (Smooth Interior) | 23.0 | 0.0113 | 1.90 | 9.68 | 4.25 | 73.40 | 2.00 | 76.90 | 73.92 | 74.11 | 73.14 | 2.50 | 77.14 | 73.59 | 73.87 | 19.61 |
| IN106 | MH106 | 18 inch | Corrugated HDPE (Smooth Interior) | 12.0 | 0.0083 | 1.59 | 8.31 | 3.63 | 75.82 | 2.00 | 79.32 | 76.73 | 76.76 | 75.72 | 2.50 | 79.72 | 76.73 | 76.75 | 19.18 |
| IN504 | MH502 | 18 inch | Corrugated HDPE (Smooth Interior) | 11.0 | 0.0236 | 1.99 | 14.00 | 5.61 | 81.26 | 4.19 | 86.95 | 82.60 | 82.62 | 81.00 | 4.60 | 87.10 | 82.60 | 82.62 | 14.24 |
| MH504 | MH505 | 18 inch | Corrugated HDPE (Smooth Interior) | 24.0 | 0.0050 | 0.69 | 6.44 | 2.38 | 71.12 | 16.20 | 88.82 | 71.45 | 71.54 | 71.00 | 2.50 | 75.00 | 71.31 | 71.42 | 10.72 |
| IN501 | IN501 | 18 inch | Corrugated HDPE (Smooth Interior) | 35.0 | 0.0380 | 1.72 | 17.75 | 6.36 | 83.05 | 2.00 | 86.55 | 83.54 | 83.72 | 81.72 | 2.78 | 86.00 | 82.69 | 82.73 | 9.70 |
| IN109 | IN108 | 18 inch | Corrugated HDPE (Smooth Interior) | 86.0 | 0.0077 | 0.73 | 7.97 | 2.81 | 83.71 | 2.00 | 87.21 | 84.03 | 84.14 | 83.05 | 2.00 | 86.55 | 83.38 | 83.48 | 9.10 |
| IN506 | IN504 | 18 inch | Corrugated HDPE (Smooth Interior) | 70.0 | 0.0050 | 0.57 | 6.44 | 2.25 | 81.81 | 2.20 | 85.51 | 82.61 | 82.62 | 81.46 | 3.99 | 86.95 | 82.61 | 82.61 | 8.93 |
| IN108 | IN107 | 18 inch | Corrugated HDPE (Smooth Interior) | 106.0 | 0.0414 | 1.57 | 18.53 | 6.39 | 82.85 | 2.20 | 86.55 | 83.32 | 83.49 | 78.46 | 2.00 | 81.96 | 78.76 | 79.39 | 8.48 |
| OS501 | MH504 | 18 inch | Corrugated HDPE (Smooth Interior) | 105.0 | 0.0091 | 0.69 | 8.70 | 2.94 | 80.00 | 5.80 | 87.30 | 80.31 | 80.42 | 79.04 | 8.28 | 88.82 | 79.33 | 79.46 | 7.93 |
| IN104 | MH104 | 18 inch | Corrugated HDPE (Smooth Interior) | 73.0 | 0.0307 | 1.26 | 15.95 | 5.38 | 84.17 | 4.00 | 89.67 | 84.59 | 84.74 | 81.93 | 2.00 | 85.43 | 82.22 | 82.66 | 7.89 |
| IN110 | IN109 | 18 inch | Corrugated HDPE (Smooth Interior) | 53.0 | 0.0051 | 0.52 | 8.12 | 2.58 | 84.18 | 1.96 | 87.64 | 84.45 | 84.54 | 83.91 | 1.80 | 87.21 | 84.17 | 84.27 | 6.44 |
| IN102 | MH102 | 18 inch | Corrugated HDPE (Smooth Interior) | 11.0 | 0.0136 | 0.62 | 10.63 | 3.28 | 78.97 | 2.00 | 82.47 | 79.26 | 79.36 | 78.82 | 3.80 | 82.82 | 79.07 | 79.23 | 5.84 |
| MH505 | MH506 | 18 inch | Corrugated HDPE (Smooth Interior) | 62.0 | 0.0371 | 0.69 | 17.53 | 4.82 | 68.00 | 5.50 | 75.00 | 68.31 | 68.42 | 65.70 | 3.80 | 71.00 | 65.90 | 66.26 | 3.94 |
| MH506 | EW102 | 18 inch | Corrugated HDPE (Smooth Interior) | 37.0 | 0.0405 | 0.69 | 18.32 | 4.97 | 65.50 | 4.00 | 71.00 | 65.81 | 65.92 | 64.00 | 2.00 | 67.50 | 64.20 | 64.58 | 3.77 |
| IN505 | IN506 | 18 inch | Corrugated HDPE (Smooth Interior) | 31.0 | 0.0081 | 0.29 | 8.17 | 2.18 | 82.26 | 2.00 | 85.76 | 82.61 | 82.62 | 82.01 | 2.00 | 85.51 | 82.61 | 82.62 | 3.55 |
| IN103 | MH103 | 18 inch | Corrugated HDPE (Smooth Interior) | 11.0 | 0.0200 | 0.42 | 12.87 | 3.34 | 79.38 | 2.00 | 82.88 | 79.62 | 79.70 | 79.16 | 2.50 | 83.16 | 79.34 | 79.52 | 3.24 |
| IN403 | IN402 | 18 inch | Corrugated HDPE (Smooth Interior) | 34.0 | 0.0415 | 0.56 | 18.54 | 4.69 | 61.16 | 2.00 | 64.66 | 62.04 | 62.05 | 59.75 | 2.00 | 63.25 | 62.04 | 62.05 | 3.01 |
| YD101 | IN107 | 18 inch | Corrugated HDPE (Smooth Interior) | 60.0 | 0.0100 | 0.26 | 9.10 | 2.26 | 77.75 | 2.00 | 81.25 | 77.94 | 78.00 | 77.15 | 3.31 | 81.96 | 77.74 | 77.74 | 2.83 |
| MH107 | MH108 | 18 inch | Corrugated HDPE (Smooth Interior) | 282.0 | 0.0050 | 0.18 | 6.44 | 1.59 | 68.86 | 9.64 | 80.00 | 69.03 | 69.07 | 67.45 | 5.65 | 74.60 | 67.61 | 67.66 | 2.80 |
| MH108 | MH205 | 18 inch | Corrugated HDPE (Smooth Interior) | 24.0 | 0.0050 | 0.18 | 6.44 | 1.59 | 67.25 | 5.85 | 74.00 | 67.42 | 67.46 | 67.13 | 5.37 | 74.00 | 67.29 | 67.34 | 2.80 |
| MH205 | MH206 | 18 inch | Corrugated HDPE (Smooth Interior) | 89.0 | 0.0151 | 0.26 | 11.17 | 2.62 | 66.93 | 5.57 | 74.00 | 67.12 | 67.18 | 65.59 | 4.75 | 71.84 | 65.75 | 65.85 | 2.33 |
| MH206 | MH301 | 18 inch | Corrugated HDPE (Smooth Interior) | 218.0 | 0.0158 | 0.26 | 11.44 | 2.66 | 65.39 | 4.95 | 71.84 | 65.58 | 65.64 | 61.95 | 4.35 | 67.80 | 62.45 | 62.46 | 2.27 |
| IN404 | MH404 | 18 inch | Corrugated HDPE (Smooth Interior) | 19.0 | 0.0568 | 0.34 | 21.70 | 4.52 | 62.40 | 2.00 | 65.90 | 62.61 | 62.69 | 61.32 | 2.00 | 64.82 | 61.99 | 61.99 | 1.56 |
| OS101 | MH107 | 18 inch | Corrugated HDPE (Smooth Interior) | 62.0 | 0.0797 | 0.18 | 25.70 | 4.20 | 74.00 | 5.76 | 81.26 | 74.16 | 74.21 | 69.06 | 9.44 | 80.00 | 69.15 | 69.42 | 0.70 |
| OS201 | MH205 | 18 inch | Corrugated HDPE (Smooth Interior) | 13.0 | 0.0231 | 0.08 | 13.83 | 2.12 | 69.30 | 3.57 | 74.37 | 69.40 | 69.44 | 69.00 | 3.50 | 74.00 | 69.08 | 69.15 | 0.58 |

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Runoff Calculations C Worksheet

Project: 400 West Elm

Description: Inlet Drainage Areas

| Drainage Area | Land Use Description | C | Area (Acres) | Total Area (Acres) | Weighted C |
|---------------|----------------------|------|--------------|--------------------|-------------|
| IN101 | Impervious | 0.95 | 0.34 | 0.44 | 0.81 |
| | Pervious | 0.35 | 0.10 | | |
| | | | | | |
| | | | | | |
| IN102 | Impervious | 0.95 | 0.08 | 0.08 | 0.95 |
| | Pervious | 0.35 | | | |
| | | | | | |
| | | | | | |
| IN103 | Impervious | 0.95 | 0.05 | 0.06 | 0.85 |
| | Pervious | 0.35 | 0.01 | | |
| | | | | | |
| | | | | | |
| IN104 | Impervious | 0.95 | 0.14 | 0.20 | 0.77 |
| | Pervious | 0.35 | 0.06 | | |
| | | | | | |
| | | | | | |
| IN105 | Impervious | 0.95 | 0.15 | 0.20 | 0.80 |
| | Pervious | 0.35 | 0.05 | | |
| | | | | | |
| | | | | | |
| IN106 | Impervious | 0.95 | 0.18 | 0.25 | 0.78 |
| | Pervious | 0.35 | 0.07 | | |
| | | | | | |
| | | | | | |
| IN107 | Impervious | 0.95 | 0.27 | 0.32 | 0.86 |
| | Pervious | 0.35 | 0.05 | | |
| | | | | | |
| | | | | | |
| IN108 | Impervious | 0.95 | 0.10 | 0.14 | 0.78 |
| | Pervious | 0.35 | 0.04 | | |
| | | | | | |
| | | | | | |

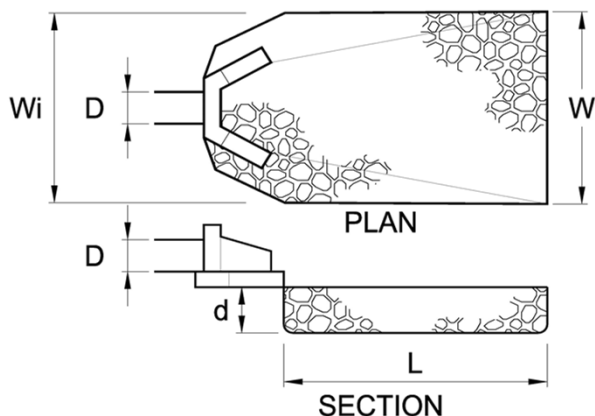
| | | | | | |
|-------|------------|------|------|------|------|
| IN109 | Impervious | 0.95 | 0.02 | 0.04 | 0.65 |
| | Pervious | 0.35 | 0.02 | | |
| | | | | | |
| IN110 | Impervious | 0.95 | 0.06 | 0.08 | 0.80 |
| | Pervious | 0.35 | 0.02 | | |
| | | | | | |
| IN201 | Impervious | 0.95 | 0.23 | 0.27 | 0.86 |
| | Pervious | 0.35 | 0.04 | | |
| | | | | | |
| IN202 | Impervious | 0.95 | 0.20 | 0.23 | 0.87 |
| | Pervious | 0.35 | 0.03 | | |
| | | | | | |
| IN401 | Impervious | 0.95 | 0.54 | 0.66 | 0.84 |
| | Pervious | 0.35 | 0.12 | | |
| | | | | | |
| IN402 | Impervious | 0.95 | 0.25 | 0.42 | 0.71 |
| | Pervious | 0.35 | 0.17 | | |
| | | | | | |
| IN403 | Impervious | 0.95 | 0.05 | 0.11 | 0.62 |
| | Pervious | 0.35 | 0.06 | | |
| | | | | | |
| IN404 | Impervious | 0.95 | 0.04 | 0.05 | 0.83 |
| | Pervious | 0.35 | 0.01 | | |
| | | | | | |
| IN501 | Impervious | 0.95 | 0.20 | 0.26 | 0.81 |
| | Pervious | 0.35 | 0.06 | | |
| | | | | | |
| IN502 | Impervious | 0.95 | 0.18 | 0.25 | 0.78 |
| | Pervious | 0.35 | 0.07 | | |
| | | | | | |
| IN503 | Impervious | 0.95 | 0.16 | 0.22 | 0.79 |
| | Pervious | 0.35 | 0.06 | | |
| | | | | | |

| | | | | | |
|--------------|------------|------|------|-------------|-------------|
| IN504 | Impervious | 0.95 | 0.18 | 0.21 | 0.86 |
| | Pervious | 0.35 | 0.03 | | |
| | | | | | |
| | | | | | |
| IN505 | Impervious | 0.95 | 0.03 | 0.05 | 0.71 |
| | Pervious | 0.35 | 0.02 | | |
| | | | | | |
| | | | | | |
| IN506 | Impervious | 0.95 | 0.03 | 0.05 | 0.71 |
| | Pervious | 0.35 | 0.02 | | |
| | | | | | |
| | | | | | |
| YD101 | Impervious | 0.95 | 0.09 | 0.09 | 0.35 |
| | Pervious | 0.35 | | | |
| | | | | | |
| | | | | | |

Rip-Rap Apron Worksheet

Project: 400 West Elm

Description: EW101



Rip-Rap Dimensions:

L = 15.0 ft
 W = 21.0 ft
 W_i = 6.0 ft

Rip-rap Size = R-4
 d₅₀ = 6.0 in
 d = 18.0 in

Design Values:

n = Manning's n
 D = Diameter of Pipe
 S = Slope of Pipe
 Q_d = Design Discharge
 V_d = Velocity
 T_w = Tailwater Condition
 A = Full Flow Area of Pipe

| | |
|----------------|--------|
| n | 0.012 |
| D | 24 |
| S | 0.0093 |
| Q _d | 12.98 |
| V _d | 6.67 |
| T _w | MIN |
| A | 3.14 |

in. ← Rise (in.) 24 × Span (in.) 24 ← Barrels 1
 ft/ft
 cfs*** ← 12.98
 fps*** ← 6.67
 either MIN or MAX
 sf

*** Formulas based on full-flow capacity.

Full Flow Pipe Discharge:

Q_f = $0.464/n * D^{8/3} * S^{1/2}$ = 23.68 cfs

Ratio of Part-Full to Full Flow Discharge:

d/D = Q_d/Q_f = 0.55

Figure 20 Ratios:

Area of Flow = 0.53
 Depth of Flow = 0.53

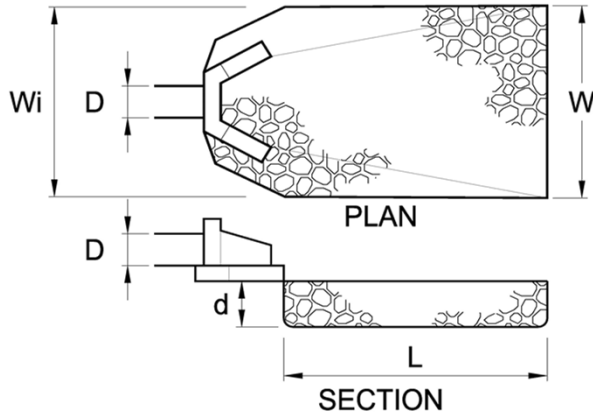
Calculate Equivalent Flow:

A * Ratio = 1.67 sf
 Equivalent Pipe Size full-flow = 15 in (smaller size = larger rip-rap (factor of safety))

Rip-Rap Apron Worksheet

Project: 400 West Elm

Description: EW102



Rip-Rap Dimensions:

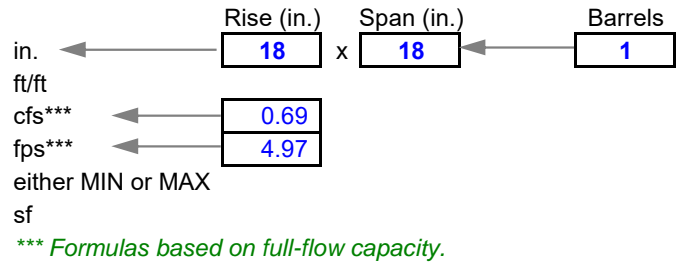
L = 8.0 ft
 W = 12.5 ft
 Wi = 4.5 ft

Rip-rap Size = R-3
 d50 = 3.0 in
 d = 9.0 in

Design Values:

n = Manning's n
 D = Diameter of Pipe
 S = Slope of Pipe
 Q_d = Design Discharge
 V_d = Velocity
 T_w = Tailwater Condition
 A = Full Flow Area of Pipe

| | |
|----------------|--------|
| n | 0.012 |
| D | 18 |
| S | 0.0481 |
| Q _d | 0.69 |
| V _d | 4.97 |
| T _w | MIN |
| A | 1.77 |



Full Flow Pipe Discharge:

Q_f = $0.464/n * D^{8/3} * S^{1/2} =$ 25.00 cfs

Ratio of Part-Full to Full Flow Discharge:

d/D = Q_d/Q_f = 0.03

Figure 20 Ratios:

Area of Flow = 0.04
 Depth of Flow = 0.08

Calculate Equivalent Flow:

A * Ratio = 0.08 sf
 Equivalent Pipe Size full-flow = 12 in (smaller size = larger rip-rap (factor of safety))

Appendix A

**INFILTRATION RATES AT TEST LOCATIONS
DOUBLE RING INFILTROMETER METHOD**

| Infiltration Test Number | 1.) Ground Surface Elevation (feet) | 2.) Infiltration Test Depth (feet) | Infiltration Test Elevation (feet) | Test Interval (minutes) | Final Drop in Water Level (inches) | 3.) Infiltration Rate (inches/hour) |
|---------------------------------|--|---|---|--------------------------------|---|--|
| DR-1A | 83.4 | 9.0 | 74.4 | 30 | 0.125 | 0.250 |
| DR-1B | 83.4 | 9.0 | 74.4 | 30 | 0.000 | 0.000 |
| DR-2A | 76.8 | 3.0 | 73.8 | 30 | 0.000 | 0.000 |
| DR-2B | 76.8 | 3.0 | 73.8 | 30 | 0.000 | 0.000 |
| DR-3A | 83.4 | 14.5 | 68.9 | 30 | 0.125 | 0.250 |
| DR-3B | 83.4 | 14.5 | 68.9 | 30 | 0.875 | 1.750 |
| DR-4A | 73.8 | 5.5 | 68.3 | 30 | 1.125 | 2.250 |
| DR-4B | 73.8 | 5.5 | 68.3 | 30 | 1.250 | 2.500 |
| DR-5A | 66.1 | 3.0 | 63.1 | 30 | 0.125 | 0.250 |
| DR-5B | 66.1 | 3.0 | 63.1 | 30 | 0.375 | 0.750 |
| DR-6A | 70.6 | 8.0 | 62.6 | 10 | 0.500 | 3.000 |
| DR-6B | 70.6 | 8.0 | 62.6 | 10 | 1.875 | 11.250 |
| DR-7 | No test | | | | | |
| DR-8 | No test | | | | | |
| DR-9A | 85.2 | 3.0 | 82.2 | 30 | 0.625 | 1.250 |
| DR-9B | 85.2 | 3.0 | 82.2 | 30 | 0.250 | 0.500 |
| DR-10A | 82.5 | 3.5 | 79.0 | 10 | 1.000 | 6.000 |
| DR-10B | 82.5 | 3.5 | 79.0 | 10 | 1.250 | 7.500 |

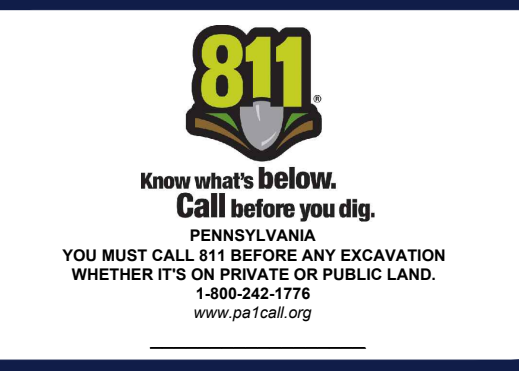
1.) Ground surface elevations were provided by surveyor.

2.) Infiltration test depths were measured from existing site grades at the time of the investigation.

3.) The infiltration rates are field measured values and do not include a factor of safety for design purposes.

| LEGEND | |
|-----------------------|-------|
| PROPOSED | |
| OVERALL DRAINAGE AREA | |
| TIME OF CONCENTRATION | |
| SOIL BOUNDARY | |
| SOIL BOUNDARY GROUP | XxxxX |

| REVISIONS | | | | |
|-----------|------------|------------------|------------|----------|
| REV | DATE | COMMENT | CHECKED BY | DRAWN BY |
| 1 | 05/06/2021 | MCCD SUBMISSION | KDS | JPA |
| 2 | 06/04/2021 | PER TWP COMMENTS | KDS | JPA |



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| | |
|--------------|-----------------|
| PROJECT NO.: | PC201167 |
| DRAWN BY: | ATW |
| CHECKED BY: | LNB |
| DATE: | 3/30/2021 |
| CAD ID: | PC201167-SPP-02 |

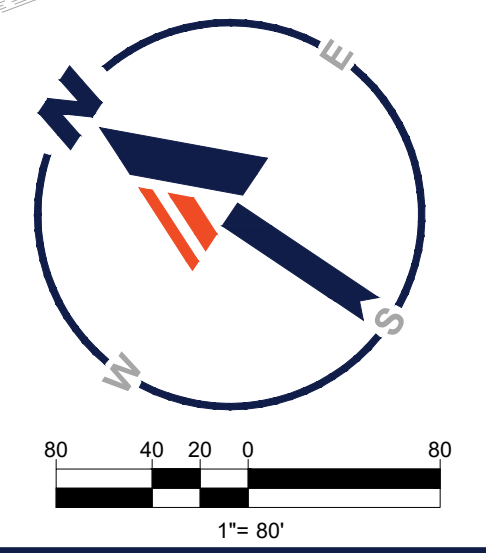
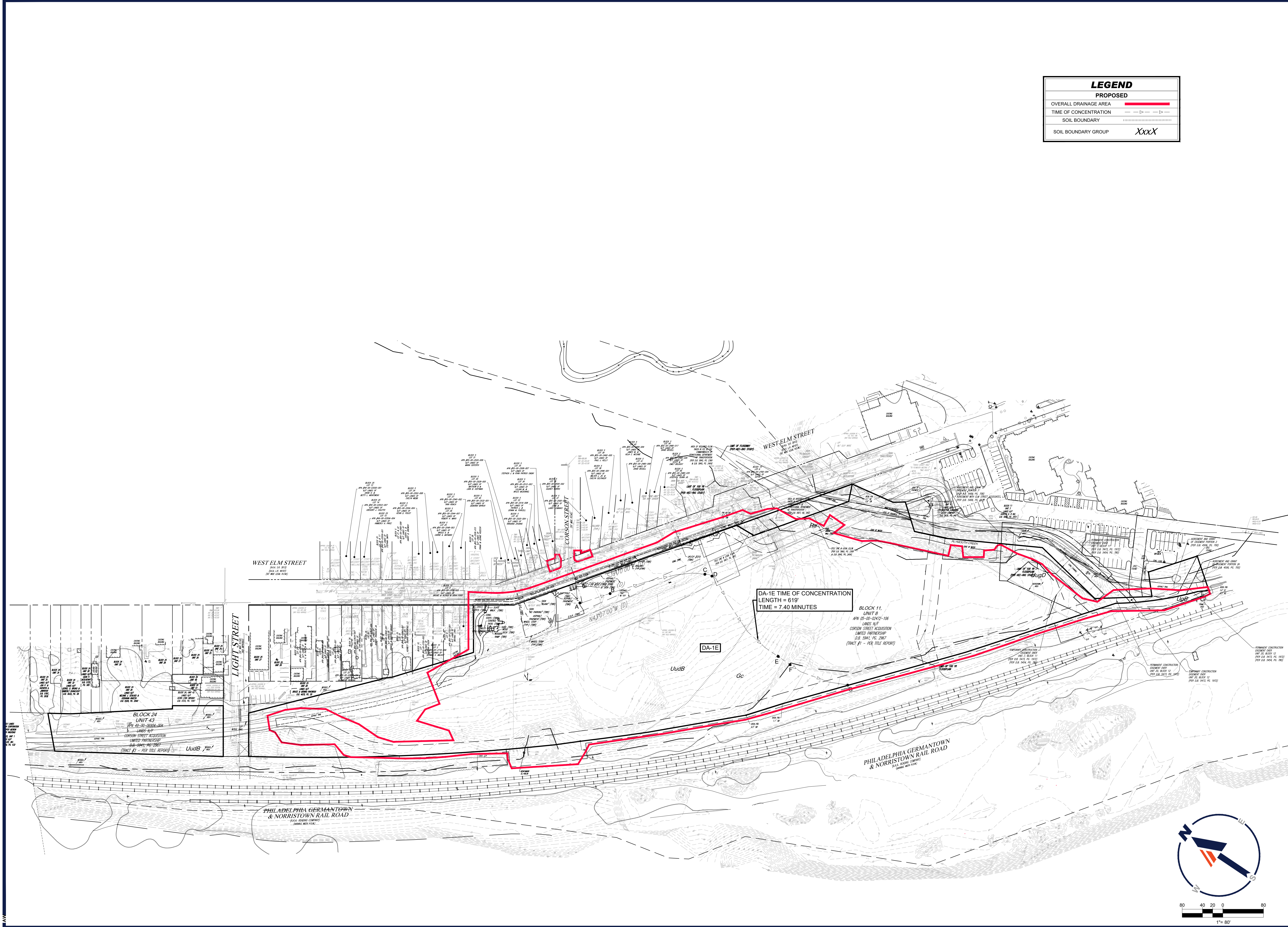
**PRELIMINARY!
 FINAL LAND DEVELOPMENT PLANS**
 FOR
CORSON STREET ACQUISITION LIMITED PARTNERSHIP

WEST ELM STREET
 CONSHOHOCKEN BOROUGH &
 PLYMOUTH TOWNSHIP
 MONTGOMERY COUNTY, PA

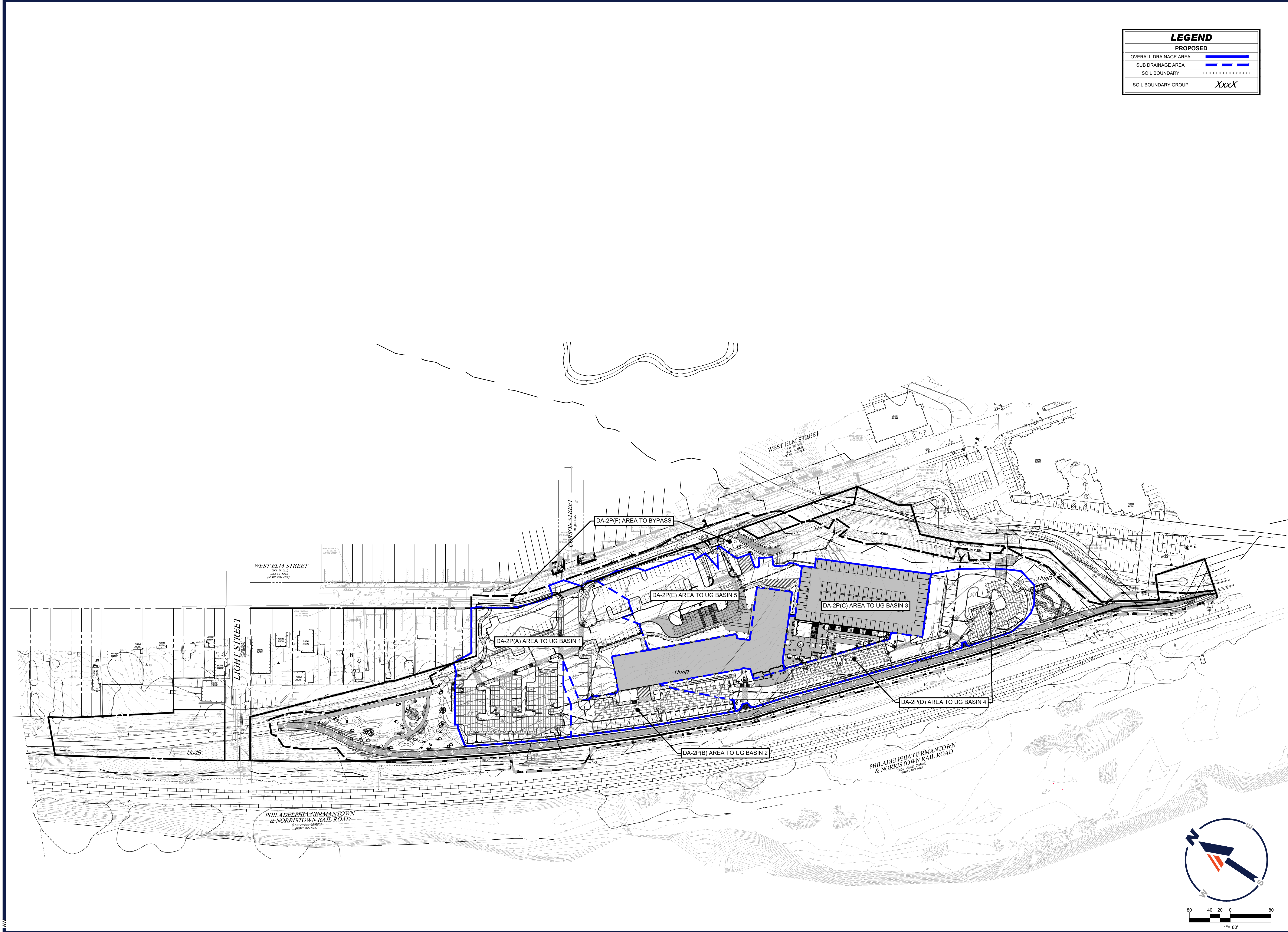
BOHLER
 1600 MANOR DRIVE, SUITE 200
 CHALFONT, PA 18914
 Phone: (215) 996-9100
 Fax: (215) 996-9102
 www.BohlerEngineering.com

W.R. REARDEN
 PROFESSIONAL ENGINEER
 PENNSYLVANIA LICENSE NO. PE073948
 NEW JERSEY LICENSE NO. 240E04694500

SHEET TITLE:
PRE-DEVELOPMENT DRAINAGE AREA PLAN
 SHEET NUMBER:
X-1



R:\2020\201167\DRAWINGS\PLAN SET\LAND DEVELOPMENT\REVISION 2\201167-SPP-02-X-1 PRE.DWG



| LEGEND | |
|-----------------------|------|
| PROPOSED | |
| OVERALL DRAINAGE AREA | |
| SUB DRAINAGE AREA | |
| SOIL BOUNDARY | |
| SOIL BOUNDARY GROUP | Xxxx |

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| REV | DATE | COMMENT | CHECKED BY | DRAWN BY |
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| 1 | 05/06/2021 | MCCD SUBMISSION | KDS | JPA |
| 2 | 06/04/2021 | PER TWP COMMENTS | KDS | JPA |

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PROJECT No.: PC201167
 DRAWN BY: ATW
 CHECKED BY: LNS
 DATE: 3/30/2021
 CAD I.D.: PC201167-SPP-02

PROJECT:
**PRELIMINARY/
 FINAL LAND
 DEVELOPMENT
 PLANS**

FOR
**CORSON STREET
 ACQUISITION LIMITED
 PARTNERSHIP**

WEST ELM STREET
 CONSHOHOCKEN BOROUGH &
 PLYMOUTH TOWNSHIP
 MONTGOMERY COUNTY, PA

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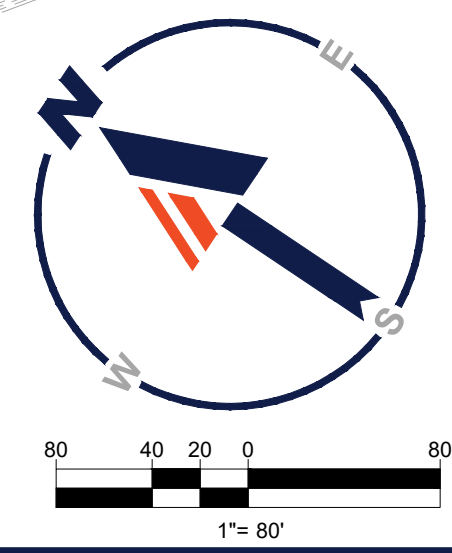
W.R. REARDEN

PROFESSIONAL ENGINEER
 PENNSYLVANIA LICENSE NO. PE073945
 NEW JERSEY LICENSE NO. 240604904500

SHEET TITLE:
**POST-
 DEVELOPMENT
 DRAINAGE
 AREA PLAN**

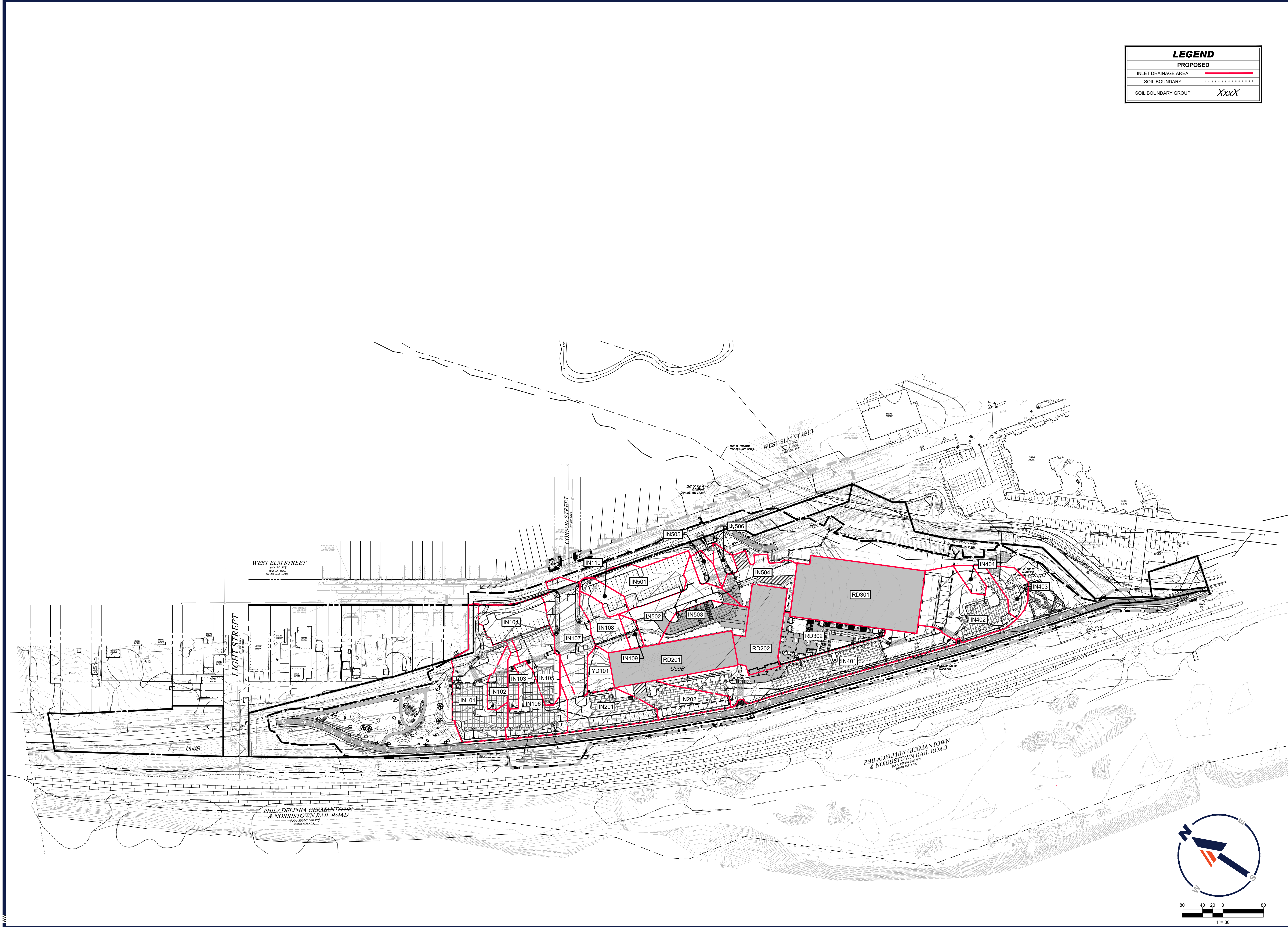
SHEET NUMBER:
X-2

REVISION 2 - 06/04/2021



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R:\2021\21167\DRAWINGS\PLAN SET\LAND DEVELOPMENT\REVISION 02\PC201167-SPP-02-LAYOUT-X-3 INLET.DWG



| LEGEND | |
|---------------------|----------------------|
| PROPOSED | (Red line symbol) |
| INLET DRAINAGE AREA | (Red line symbol) |
| SOIL BOUNDARY | (Dashed line symbol) |
| SOIL BOUNDARY GROUP | Xxxx |

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| REVISIONS | | | | |
|-----------|------------|------------------|------------|----------|
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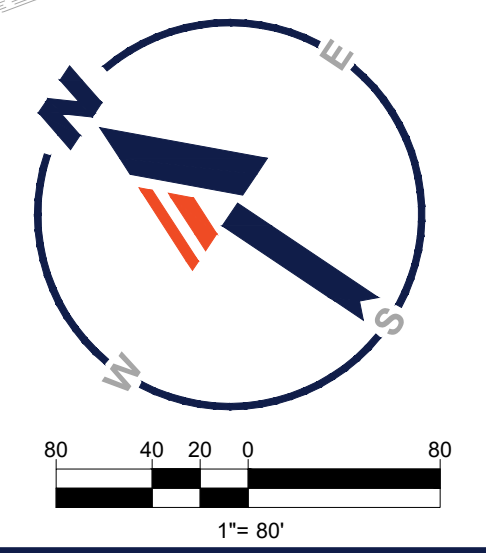
PROJECT No.: PC201167
 DRAWN BY: ATW
 CHECKED BY: LNB
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PROJECT: **PRELIMINARY/ FINAL LAND DEVELOPMENT PLANS**
 FOR **CORSON STREET ACQUISITION LIMITED PARTNERSHIP**
 WEST ELM STREET
 CONSHOHOCKEN BOROUGH &
 PLYMOUTH TOWNSHIP
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W.R. REARDEN
 PROFESSIONAL ENGINEER
 PENNSYLVANIA LICENSE NO. PE073945
 NEW JERSEY LICENSE NO. 24CE0694500

SHEET TITLE:
INLET DRAINAGE AREA PLAN
 SHEET NUMBER:
X-3
 REVISION 2 - 06/04/2021



March 31, 2021
Via: Courier

Conshohocken Borough
400 Fayette Street, Suite 200
Conshohocken, PA 19428

Attention: Stephanie Cecco, Borough Manager

Re: Requested Waivers
Elm Street Apartments
400 W. Elm Street
Borough of Conshohocken
Montgomery County, PA
PC201167

Dear Stephanie:

On behalf of the Applicant, Corson Street Acquisitions, LP, we have identified for your consideration the following waivers from the Conshohocken Borough Subdivision and Land Development Ordinance as listed below:

Subdivision and Land Development Ordinance

1. A partial waiver is requested from SALDO Section 22-306.A(1) to not show all existing and proposed features within 100 feet of the property, subject to the applicant providing such information deemed necessary by the borough engineer.
 - An aerial plan is included within the plan set in lieu of the survey information. Adjacent property owner information has been provided on the Aerial Plan.
2. A waiver is requested from SALDO Section 22-308.A and C to permit simultaneous submission, review, and approval of preliminary and final subdivision and land development.
 - Due to the complexity of the project, it is not anticipated that the proposed use will require a separate review of preliminary and final plans.
3. A waiver is requested from SALDO Section 22-404.2.B to permit driveway width to exceed 25 feet.
 - Due to the proposed volume of traffic anticipated, driveways wider than 25 feet have been provided to attempt to reduce potential conflicts.
4. A waiver is requested from SALDO Section 22-404.2.C to permit a driveway to be located closer than 40 feet from the intersection of west elm street and Corson Street, subject to the approval of the borough engineer.
 - This driveway has been shifted as far to the north as possible, while maintaining separation from the adjacent neighbors.
5. A waiver is requested from SALDO Section 22-404.2.F to permit more than two driveways provided to any single property tract.
 - Due to the proposed nature of the proposed development, multiple driveways have been provided to attempt to provide safe and efficient ingress and egress.
6. A waiver is requested from SALDO Section 22-405.1.C to permit sidewalk of less than 15' in width, subject to the condition that all sidewalks shall be a minimum of 5' in width (including the top of the curb) along the private roadway.
 - Due to the physical site constraints, 15-foot sidewalks would be too wide on the proposed site. Larger pedestrian and sidewalk areas have been provided located adjacent to the proposed building, where heavier pedestrian traffic is anticipated.

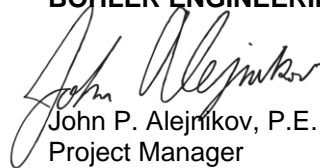
7. A waiver is requested from SALDO Section 22-405.2 to permit flush curb.
 - Bollards are proposed along the flush curbing in lieu of full reveal curb to provide for pedestrian safety in this area.

8. A waiver is requested from SALDO Section 22-409.2 to permit grading within 3 feet of the property line and rights-of-way.
 - The proposed development is coordinating with the adjacent properties as it relates to site features and grading.

Should you have any questions or require any additional information, please feel free to contact me directly at 215.996.9100.

Sincerely,

BOHLER ENGINEERING PA, LLC



John P. Alejnikov, P.E.
Project Manager

cc: File

/KEJ/JCS
R:\20\PC201167\Administrative\Correspondence\Township\PC201167_2021-03-31_Waiver Request Letter.doc

BEFORE THE ZONING HEARING BOARD OF CONSHOHOCKEN

IN RE: APPLICATION OF CORSON STREET ACQUISITIONS, LP

REGARDING

400 WEST ELM STREET

APPLICATION Z-2020-14

DECISION OF THE BOARD

AMENDED

I. HISTORY

On or about November 2, 2020, Corson Street Acquisitions, LP (hereinafter “Applicant”), filed the within Application seeking variances from Sections 27-1714.A, B, D, F, H, and K, to permit a portion of the proposed development within the Floodplain Conservation District, and a variance from Section 27-1608.6, for building bulk, of the Conshohocken Borough Zoning Ordinance of 2001 (together with all amendments thereto, the “Zoning Ordinance”), for the property located at 400 West Elm Street, Conshohocken, Pennsylvania (hereinafter called “Subject Property”). The Applicant proposes to construct a multifamily residential development consisting of a 13-story building containing 352 units on a 30,987 square-foot building footprint, 2-story parking garage with 189 spaces, and 248 surface parking space on the Subject Property. The Applicant also proposed a realignment of the Schuylkill River Trail, a public access parking lot, and a new trailhead.

After notice was duly given and advertised, a hearing was held on said Application using a Go-To-Meeting platform, pursuant to state law, on December 14, 2020. At the hearing, the following Exhibits were introduced and admitted:

P-1: Zoning Notice

P-2: Zoning Determination

- P-3: Letter from E. Johnson to S. Cecco dated December 12, 2020
- P-4: Entry of Appearance of David Bissell
- P-5: Entry of Appearance of Jina Lee
- A-1: Zoning Application
- A-2: Zoning Ordinance
- A-3: Deeds
- A-4: Zoning Plan prepared by Bohler Engineering, dated November 23, 2020.
- A-5: Conditional Use Decision by Conshohocken Borough Council dated August 21, 2013.
- A-6: Zoning Determination dated November 24, 2020
- A-7: Project Renderings
- A-8: Zoning Hearing Board Decision dated July 2014
- A-9: Constraints Plan prepared by Bohler Engineering
- A-10: Floodplain Analysis, Narrative and Calculations prepared by Bohler Engineering, dated November 11, 2020, last revised December 2, 2020
- A-11: Grading Concept Plan prepared by Bohler Engineering, dated December 2, 2020
- A-12: Floodplain Analysis Plan prepared by Bohler Engineering, dated December 2, 2020
- A-13: E-mail from Zoning Officer dated December 8, 2020

I. FINDINGS OF FACT

1. The Subject Property is located at 400 West Elm Street, Conshohocken, Pennsylvania in the SP-3 Specially-Planned District 3 Zoning District.
2. The Subject Property is owned by Corson Street Acquisitions, LP (the “Owner”).

3. The Applicant is represented by Alyson Fritzges, Esquire.
4. The Zoning Hearing Board of the Borough of Conshohocken (the “Board”) met all of the requirements of the Zoning Ordinance and the Pennsylvania Municipalities Planning Code as to the requisite Legal Notice of the hearings.
5. The Applicant seeks variances from Sections 27-1714.A, B, D, F, H, and K, to permit a portion of the proposed development within the Floodplain Conservation District.
6. The Applicant seeks an appeal of the Zoning Officer’s determination of, or in the alternative, a variance from, Section 27-1608.6, for building bulk.
7. Bob Dwyer was present and offered the following testimony on behalf of the Applicant:
 - a. Bob Dwyer is the representative of Equus (d/b/a/ Corson Street Acquisitions, LP). .
 - b. Equus is a pension fund manager with real estate investments. The Subject Property was purchased to develop on behalf of the fund.
 - c. The Applicant has pursued six (6) or seven (7) similar development projects in Montgomery and Chester Counties.
 - d. The Applicant uses the name “Madison” for these development projects.
 - e. The Subject Property is composed of ten (10) parcels owned by the Applicant.
 - f. The Applicant proposes a 130-foot high,¹ 352-unit multifamily project with two (2) levels of parking adjacent to the building.
 - g. There will be 189 parking spaces in the garage as part of a total of 359 parking spaces across the Subject Property.

¹ The height of the building, as shown on Exhibit A-4, is 134 feet.

- h. Twenty (20) spaces will be designated as public parking for users of the Schuylkill River Trail.
- i. The Applicant proposes to relocate the Schuylkill River Trail and complete other required improvements including stormwater management, landscaping, trail relocation, recreational uses, and traffic improvements.
- j. A similar version of the proposed project with similar relief was approved in 2013.
- k. The Board previously permitted a building bulk plane of 574 feet.
- l. An office building with similar relief was also proposed and approved for the Subject Property in 2014.
- m. The Applicant designed the building in a manner to comply with the bulk building requirement.
- n. The Applicant determined that per the definitions of the Ordinance, no building plane exceeded 245 feet.
- o. The Zoning Officer determined that the length is 392 feet.
- p. The requested variance would be 92 feet.
- q. The Subject Property is encumbered by the floodplain, and Aqua easement, catenary power lines, steep slopes, and the adjacent Plymouth Creek.
- r. The proposed development is similar in nature to and consistent with the character of adjacent development.
- s. The proposed development is consistent with the Borough's Comprehensive Plan.
- t. The main entrance to the proposed development is at Corson Street.

- u. There will be a secondary entrance to the east of the main entrance.
- v. An access point for public parking for trail use will be at the west end of the Subject Property.

8. William Rearden was present and offered the following testimony on behalf of the Applicant:

- a. William Rearden is a professional engineer with Bohler Engineering.
- b. Mr. Rearden and Bohler Engineering are the civil engineers for the proposed development.
- c. The floodplain impacted by the proposed development is associated with the Schuylkill River.
- d. The floodplain associated with the Plymouth Creek is not impacted by the proposed development.
- e. The encroachments on the floodplain are associated with a parking area on the northern (upriver) portion of the Subject Property, parking next to the building (downriver), and the relocation of the Schuylkill River Trail.
- f. The area adjacent to the Plymouth Creek floodway will be stabilized, but no fill will be added to that area.
- g. Each project proposed for the Subject Property has required floodplain relief, with the proposed project requiring the least relief.
- h. The proposed project has 0.48 acres of disturbance; the previous office project proposed 0.54 acres of disturbance.
- i. The PECO catenary wires also constrain the buildable area on the Subject Property and forces development towards the floodplain.

- j. Most of the disturbance proposed in the floodplain is related to the relocation of the Schuylkill River Trail.
- k. The impact to the floodplain is de minimis at less than half of one inch increase in elevation.
- l. A retaining wall will minimize the disturbance of the floodplain.
- m. There will be no site improvements in the 100-year flood plain.

9. David Bissell of 405 West Elm Street, Conshohocken, Pennsylvania, requested and was granted party status. Mr. Bissell also owns 407 West Elm Street and 411 Rear West Elm Street.

10. Jina Lee of 300 West Elm Street, Conshohocken, Pennsylvania, requested and was granted party status.

11. Chris Boccelli requested party status but did not appear at the hearing.

12. No residents offered comments regarding the application.

II. DISCUSSION

Section 27-1608.6 of the Ordinance states:

Building Bulk. The maximum building profile, as seen from end to end from any side or elevation, and measured perpendicular to such side or elevation, shall not exceed 300 linear feet in total horizontal length on any floor or floors.

Section 27-1714 of the Ordinance states:

Uses Prohibited in Floodplain Conservation District.

1. Any use or activity not authorized within § 27-1713 shall be prohibited within the Floodplain Conservation District, and the following activities and facilities are specifically prohibited, except

as part of a redevelopment project in compliance with § 27-1713, Subsection 1G:

A. No new construction, alteration, or improvement of any buildings and any other type of permanent structure, including fences, shall be permitted in the floodway or the one-hundred-year floodplain.

B. New construction of buildings or placement of fill within the one-hundred-year floodplain is prohibited.

C. No encroachment, alteration, or improvement of any kind shall be made to any watercourse.

D. Clearing of all existing vegetation, except where such clearing is necessary to prepare land for a use permitted under § 27-1713, and where the effects of these actions are mitigated by re-establishment of vegetation.

E. Use of fertilizers, pesticides, herbicides, and/or other chemicals in excess of prescribed industry standards.

F. Roads or driveways, except where permitted as corridor crossings in compliance with § 27-1713.

G. Motor or wheeled traffic in any area not designed to accommodate adequately the type and volume.

H. Parking lots.

I. Subsurface sewage disposal areas.

J. Sod farming.

K. Stormwater basins, including necessary berms and outfall facilities.

In a request for a variance, the Board is guided by Section 910.2 of the Pennsylvania Municipalities Planning Code (hereinafter called “MPC”). An applicant for a variance has the burden of establishing that literal enforcement of the provisions of the Ordinance will result in an unnecessary hardship as that term is defined by law, including court decisions, and that the allowance of the variance will not be contrary to the public interest. Section 910.2 of the MPC

permits the Board to grant a variance where it is alleged that the provisions of the Ordinance inflict unnecessary hardship upon the Applicant and when the Board can make certain prescribed findings where relevant in a given case.

The variances requested are dimensional in nature. When seeking a dimensional variance within a permitted use, the owner is asking only for a reasonable adjustment of the zoning regulations in order to utilize the property in a manner consistent with the applicable regulations. Hertzberg v. Zoning Bd. of Adjustment of City of Pittsburgh, 721 A.2d 43, 47 (Pa. 1998). Thus, the grant of a dimensional variance is of lesser moment than the grant of a use variance, since the latter involves a proposal to use the property in a manner that is wholly outside the zoning regulation. Id.

III. CONCLUSIONS OF LAW

From the facts presented, it is the judgment of the Board that Applicant shall be granted the requested variances. The Applicant has proven an unnecessary hardship unique or peculiar to the property and that the variances are not contrary to the public interest. Accordingly, the Board is able to make the following relevant findings under Section 910.2 of the MPC:

1. That there are unique physical circumstances or conditions, including irregularity, narrowness or shallowness of lot size or shape, or exceptional topographical or other physical conditions peculiar to the property, and that the unnecessary hardship is due to such condition, and not the circumstances or conditions generally created by the provisions of the Ordinance in the neighborhood or district in which the property is located;

2. That because of such physical circumstances or conditions there is no possibility that the property can be developed in strict conformity with the provisions of the Ordinance and

that the authorization for variances is therefore necessary to enable the reasonable use of the Subject Property;

3. That the variances will not alter the essential character of the neighborhood or district in which the Subject property is located, nor substantially or permanently impair the appropriate use or development of the adjacent property, or be detrimental to the public welfare;

4. That the unnecessary hardship has not been created by the Applicant; and,

5. That the variances will represent the minimum variances that will afford relief and will represent the least modification possible under Sections 27-1608.6 and 27-1714.1.A, B, D, F, H & K.

ORDER

AND NOW, this 28th day of January, 2021, the Application of Corson Street Acquisitions, LP seeking a variances from Sections 27-1608.6 and 1714.1.A, B, D, F, H and K of the Conshohocken Borough Zoning Ordinance of 2001 is **GRANTED** to permit the proposed multifamily residential development and related improvements as indicated in this Application at the Subject Property.

The Applicant is directed to apply to the Borough Zoning Officer to obtain any appropriate permits.

CONSHOHOCKEN ZONING HEARING BOARD

Date Personally Delivered:

Richard D. Barton

Or Date emailed:

Mark S. Danek

2/12/2021

Gregory Scharff

In accordance with :

1. Governor Wolf’s March 6, 2020, proclamation of a disaster emergency under 35 Pa.C.S. §7301(c); and
2. Governor Wolf’s Stay at Home Order of March 23, 2020; and

I, Alexander Glassman, the Solicitor of the Conshohocken Zoning Hearing Board, hereby certify that each member of said Board has read and approved this written opinion, which accurately reflects the actions and vote by said Board at its December 14, 2020 hearing in this matter. Said Board members have consented to their signatures to be affixed to this Decision as above.

Alexander M. Glassman

Alexander M. Glassman, Esquire

AMENDMENT OF DECISION

The Decision of the Board in this matter, dated January 28, 2021 and transmitted to the Applicant on January 29, 2021, has been hereby amended, this 5th day of February, 2021, to make certain clerical corrections. The January 28, 2021 has not been affected by these amendments.

I, Alexander Glassman, the Solicitor of the Conshohocken Zoning Hearing Board, hereby certify that each member of said Board has read and approved this written opinion, as amended, which accurately reflects the actions and vote by said Board at its December 14, 2020 hearing in this matter. Said Board members have consented to their signatures to be affixed to this Decision, as amended, as above.

Alexander M. Glassman

Alexander M. Glassman, Esquire

BEFORE THE ZONING HEARING BOARD OF CONSHOHOCKEN

IN RE: APPLICATION OF CORSON STREET ACQUISITIONS, LP

REGARDING

400 WEST ELM STREET

APPLICATION Z-2020-14

DECISION OF THE BOARD

I. HISTORY

On or about November 2, 2020, Corson Street Acquisitions, LP (hereinafter “Applicant”), filed the within Application seeking variances from Sections 27-1714.A, B, D, F, H, and K, to permit a portion of the proposed development within the Floodplain Conservation District, and a variance from Section 27-1608.6, for building bulk, of the Conshohocken Borough Zoning Ordinance of 2001 (together with all amendments thereto, the “Zoning Ordinance”), for the property located at 400 West Elm Street, Conshohocken, Pennsylvania (hereinafter called “Subject Property”). The Applicant proposes to construct a multifamily residential development consisting of a 13-story, 30,987 square-foot building containing 352 units, 2-story parking garage with 189 spaces, and 248 surface parking space on the Subject Property. The Applicant also proposed a realignment of the Schuylkill River Trail, a public access parking lot, and a new trailhead.

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- A-12: Floodplain Analysis Plan prepared by Bohler Engineering, dated December 2, 2020
- A-13: E-mail from Zoning Officer dated December 8, 2020

I. FINDINGS OF FACT

1. The Subject Property is located at 400 West Elm Street, Conshohocken, Pennsylvania in the SP-3 Specially-Planned District 3 Zoning District.
2. The Subject Property is owned by Corson Street Acquisitions, LP (the “Owner”).
3. The Applicant is represented by Alyson Fritzges, Esquire.

4. The Zoning Hearing Board of the Borough of Conshohocken (the “Board”) met all of the requirements of the Zoning Ordinance and the Pennsylvania Municipalities Planning Code as to the requisite Legal Notice of the hearings.

5. The Applicant seeks variances from Sections 27-1714.A, B, D, F, H, and K, to permit a portion of the proposed development within the Floodplain Conservation District.

6. The Applicant seeks an appeal of the Zoning Officer’s determination of, or in the alternative, a variance from, Section 27-1608.6, for building bulk.

7. Bob Dwyer was present and offered the following testimony on behalf of the Applicant:

- a. Bob Dwyer is the representative of Equus (d/b/a/ Corson Street Acquisitions, LP).
- b. Equus is a pension fund manager with real estate investments. The Subject Property was purchased to develop on behalf of the fund.
- c. The Applicant has pursued six (6) or seven (7) similar development projects in Montgomery and Chester Counties.
- d. The Applicant uses the name “Madison” for these development projects.
- e. The Subject Property is composed of three (3) parcels owned by the Applicant.
- f. The Applicant proposes a 130-foot high, 352-unit multifamily project with two (2) levels of parking adjacent to the building.
- g. There will be 189 parking spaces in the garage as part of a total of 359 parking spaces across the Subject Property.

- h. Twenty (20) spaces will be designated as public parking for users of the Schuylkill River Trail.
- i. The Applicant proposes to relocate the Schuylkill River Trail and complete other required improvements including stormwater management, landscaping, trail relocation, recreational uses, and traffic improvements.
- j. A similar version of the proposed project with similar relief was approved in 2013.
- k. The Board previously permitted a building bulk plane of 574 feet.
- l. An office building with similar relief was also proposed and approved for the Subject Property in 2014.
- m. The Applicant designed the building in a manner to comply with the bulk building requirement.
- n. The Applicant determined that per the definitions of the Ordinance, no building plane exceeded 245 feet.
- o. The Zoning Officer determined that the length is 392 feet.
- p. The requested variance would be 92 feet.
- q. The Subject Property is encumbered by the floodplain, and Aqua easement, catenary power lines, steep slopes, and the adjacent Plymouth Creek.
- r. The proposed development is similar in nature to and consistent with the character of adjacent development.
- s. The proposed development is consistent with the Borough's Comprehensive Plan.
- t. The main entrance to the proposed development is at Corson Street.

- u. There will be a secondary entrance to the east of the main entrance.
- v. An access point for public parking for trail use will be at the west end of the Subject Property.

8. William Rearden was present and offered the following testimony on behalf of the Applicant:

- a. William Rearden is a professional engineer with Bohler Engineering.
- b. Mr. Rearden and Bohler Engineering are the civil engineers for the proposed development.
- c. The floodplain impacted by the proposed development is associated with the Schuylkill River.
- d. The floodplain associated with the Plymouth Creek is not impacted by the proposed development.
- e. The encroachments on the floodplain are associated with a parking area on the northern (upriver) portion of the Subject Property, parking next to the building (downriver), and the relocation of the Schuylkill River Trail.
- f. The area adjacent to the Plymouth Creek floodway will be stabilized, but no fill will be added to that area.
- g. Each project proposed for the Subject Property has required floodplain relief, with the proposed project requiring the least relief.
- h. The proposed project has 0.48 acres of disturbance; the previous office project proposed 0.54 acres of disturbance.
- i. The PECO catenary wires also constrain the buildable area on the Subject Property and forces development towards the floodplain.

- j. Most of the disturbance proposed in the floodplain is related to the relocation of the Schuylkill River Trail.
- k. The impact to the floodplain is de minimis at less than half of one inch increase in elevation.
- l. A retaining wall will minimize the disturbance of the floodplain.
- m. There will be no site improvements in the 100-year flood plain.

9. David Bissell of 405 West Elm Street, Conshohocken, Pennsylvania, requested and was granted party status. Mr. Bissell also owns 407 West Elm Street and 411 Rear West Elm Street.

10. Jina Lee of 300 West Elm Street, Conshohocken, Pennsylvania, requested and was granted party status.

11. Chris Boccelli requested party status but did not appear at the hearing.

12. No residents offered comments regarding the application.

II. DISCUSSION

Section 27-1608.6 of the Ordinance states:

Building Bulk. The maximum building profile, as seen from end to end from any side or elevation, and measured perpendicular to such side or elevation, shall not exceed 300 linear feet in total horizontal length on any floor or floors.

Section 27-1714 of the Ordinance states:

Uses Prohibited in Floodplain Conservation District.

1. Any use or activity not authorized within § 27-1713 shall be prohibited within the Floodplain Conservation District, and the following activities and facilities are specifically prohibited, except

as part of a redevelopment project in compliance with § 27-1713, Subsection 1G:

A. No new construction, alteration, or improvement of any buildings and any other type of permanent structure, including fences, shall be permitted in the floodway or the one-hundred-year floodplain.

B. New construction of buildings or placement of fill within the one-hundred-year floodplain is prohibited.

C. No encroachment, alteration, or improvement of any kind shall be made to any watercourse.

D. Clearing of all existing vegetation, except where such clearing is necessary to prepare land for a use permitted under § 27-1713, and where the effects of these actions are mitigated by re-establishment of vegetation.

E. Use of fertilizers, pesticides, herbicides, and/or other chemicals in excess of prescribed industry standards.

F. Roads or driveways, except where permitted as corridor crossings in compliance with § 27-1713.

G. Motor or wheeled traffic in any area not designed to accommodate adequately the type and volume.

H. Parking lots.

I. Subsurface sewage disposal areas.

J. Sod farming.

K. Stormwater basins, including necessary berms and outfall facilities.

In a request for a variance, the Board is guided by Section 910.2 of the Pennsylvania Municipalities Planning Code (hereinafter called “MPC”). An applicant for a variance has the burden of establishing that literal enforcement of the provisions of the Ordinance will result in an unnecessary hardship as that term is defined by law, including court decisions, and that the allowance of the variance will not be contrary to the public interest. Section 910.2 of the MPC

permits the Board to grant a variance where it is alleged that the provisions of the Ordinance inflict unnecessary hardship upon the Applicant and when the Board can make certain prescribed findings where relevant in a given case.

The variances requested are dimensional in nature. When seeking a dimensional variance within a permitted use, the owner is asking only for a reasonable adjustment of the zoning regulations in order to utilize the property in a manner consistent with the applicable regulations. Hertzberg v. Zoning Bd. of Adjustment of City of Pittsburgh, 721 A.2d 43, 47 (Pa. 1998). Thus, the grant of a dimensional variance is of lesser moment than the grant of a use variance, since the latter involves a proposal to use the property in a manner that is wholly outside the zoning regulation. Id.

III. CONCLUSIONS OF LAW

From the facts presented, it is the judgment of the Board that Applicant shall be granted the requested variances. The Applicant has proven an unnecessary hardship unique or peculiar to the property and that the variances are not contrary to the public interest. Accordingly, the Board is able to make the following relevant findings under Section 910.2 of the MPC:

1. That there are unique physical circumstances or conditions, including irregularity, narrowness or shallowness of lot size or shape, or exceptional topographical or other physical conditions peculiar to the property, and that the unnecessary hardship is due to such condition, and not the circumstances or conditions generally created by the provisions of the Ordinance in the neighborhood or district in which the property is located;

2. That because of such physical circumstances or conditions there is no possibility that the property can be developed in strict conformity with the provisions of the Ordinance and

that the authorization for variances is therefore necessary to enable the reasonable use of the Subject Property;

3. That the variances will not alter the essential character of the neighborhood or district in which the Subject property is located, nor substantially or permanently impair the appropriate use or development of the adjacent property, or be detrimental to the public welfare;

4. That the unnecessary hardship has not been created by the Applicant; and,

5. That the variances will represent the minimum variances that will afford relief and will represent the least modification possible under Sections 27-1608.6 and 27-1714.1.A, B, D, F, H & K.

ORDER

AND NOW, this 28th day of January, 2021, the Application of Corson Street Acquisitions, LP seeking a variances from Sections 27-1608.6 and 1714.1.A, B, D, F, H and K of the Conshohocken Borough Zoning Ordinance of 2001 is **GRANTED** to permit the proposed multifamily residential development and related improvements as indicated in this Application at the Subject Property.

The Applicant is directed to apply to the Borough Zoning Officer to obtain any appropriate permits.

CONSHOHOCKEN ZONING HEARING BOARD

Date Personally Delivered:

Richard D. Barton

Or Date emailed:

Mark S. Danek

1/29/2021

Gregory Scharff

In accordance with :

1. Governor Wolf’s March 6, 2020, proclamation of a disaster emergency under 35 Pa.C.S. §7301(c); and
2. Governor Wolf’s Stay at Home Order of March 23, 2020; and

I, Alexander Glassman, the Solicitor of the Conshohocken Zoning Hearing Board, hereby certify that each member of said Board has read and approved this written opinion, which accurately reflects the actions and vote by said Board at its December 14, 2020 hearing in this matter. Said Board members have consented to their signatures to be affixed to this Decision as above.

Alexander M. Glassman

Alexander M. Glassman, Esquire

October 30, 2020

Mr. Bob Dwyer
LandTrust Properties
721 Old State Road
Berwyn, PA 19312

RE: West Elm Street Apartments – Transportation Impact Study Supplement
Conshohocken Borough, Montgomery County
McMahon Project No. 811675.12

Dear Mr. Dwyer:

As requested, McMahon Associates, Inc. prepared this supplement to the prior traffic studies completed for this site located on the south side of West Elm Street (S.R. 3013) and southeast of the intersection of West Elm Street and Corson Street. Whereas previously it was proposed to construct a 400,000 square foot office development on this site, it is now proposed to construct 352 apartment units, which results in much less traffic, and therefore results in a lesser traffic impact. This traffic study supplement compares the trip generation differences between the previously approved office use and the currently proposed apartment use for the purpose of understanding the relative traffic impact differences between the two land uses for this site.

Approved Office Development

Prior traffic studies prepared for this site as an office development include the *Transportation Impact Study for the Elm Street Office Development*, dated February 24, 2016, as well as the trip generation study update dated January 18, 2018. This site received approval from the Borough for a 400,000 square feet office development. Also, as an office development, this site received Highway Occupancy Permit (HOP) approval from the Pennsylvania Department of Transportation (PennDOT) in 2018.

The prior traffic study accounted for the following in connection with the office development:

- Evaluated six study intersections along West Elm Street between Corson Street and Fayette Street.
- Evaluated traffic conditions during the weekday morning and weekday afternoon commuter peak hours.
- Evaluated future traffic conditions in the year 2024, which accounted for a 15 percent increase in traffic to reflect local development and regional growth. For planning purposes, this growth rate is higher than expected, as it is based on pre-COVID conditions and at the time of the study, it was double the recommended PennDOT traffic growth rate.
- Conducted a speed study along West Elm Street in the vicinity of the site.
- Sight distance evaluation at the access locations.

Based on the results of the traffic study, the following conclusions and recommendations were identified:

- Most study intersections operate with unchanged conditions with the added traffic from the office.

- The intersection of Fayette Street and Elm Street operates with certain movements experiencing delay and queuing during the weekday commuter peak hours today, and this continues in the future with added background traffic growth and with the added traffic from the office development.
- Through the course of the review of the office development traffic study, the following improvements were identified for the intersection of Fayette Street and Elm Street:
 - o Widen northbound Fayette Street for double left-turn lanes.
 - o Modify the traffic signal timing and phasing to accommodate the double left-turn lanes.
- Based on the completed traffic study and the proposed improvements, the previously proposed office development received approval from the Borough and PennDOT.

The improvements described above for the intersection of Fayette Street and Elm Street represents a substantial opportunity to add capacity at this intersection. Based on the office development approval, the applicant completed the engineering and permitting for the intersection improvements.

Proposed Apartments

Presently it is proposed to develop 352 apartments on this site, which from a traffic standpoint is in dramatic contrast to the previously approved office development, as presented below. Traffic volumes generated by the proposed development were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 10th Edition*. **Table 1** below presents the anticipated vehicular trip generation for the proposed apartments.

Table 1. New Vehicular Trip Generation¹ - Proposed Apartments

| Land Use | Size | Daily | Weekday Morning Peak Hour | | | Weekday Afternoon Peak Hour | | |
|------------------------------------|-----------|--------------|---------------------------|-----------|-----------|-----------------------------|-----------|------------|
| | | | In | Out | Total | In | Out | Total |
| Apartments ¹ | 352 Units | 1,917 | 30 | 87 | 117 | 90 | 58 | 148 |
| Modal Split Reduction ² | | -383 | -6 | -17 | -23 | -18 | -12 | -30 |
| Total Site Trip Generation | | 1,534 | 24 | 70 | 94 | 72 | 46 | 118 |

1 – ITE Land Use Code 221 for Multifamily Housing (Mid-Rise) from *Trip Generation Manual, 10th Edition*.

2 – Modal split reduction of 20 percent.

As outlined in PennDOT’s *Policies and Procedures for Transportation Impact Studies*, modal split trip generation reductions are allowed if certain criteria are satisfied. Based on these criteria, as shown in Table 1, a modal split trip reduction of 20 percent is applied to the site trip generation, based on the following assumptions which were previously approved by PennDOT and the Borough for this site.

- A four percent trip reduction for pedestrian accommodations since sidewalks are provided along both sides of West Elm Street and most of the study roadways.

- A one percent trip reduction for bicycle accommodations since the Schuylkill River Trail runs through the site, and since the Cross County Trail is located immediately adjacent to the site.
- Based on the ITE publication *Trip Generation Handbook, 3rd Edition*, an average trip reduction of 32 percent is appropriate for residential developments located in close proximity to commuter rail stations. However, for the purposes of this study, a 15 percent trip reduction is assumed. The site is located in close proximity to the SEPTA Regional Rail Conshohocken Station, and convenient off-street pedestrian facilities (Schuylkill River Trail) connect the site to the rail station.

Table 2 below presents the anticipated vehicular trip generation for the previously approved office development, which also reflects the same 20 percent modal split trip reduction, which was previously approved by PennDOT and the Borough for this site.

Table 2. New Vehicular Trip Generation¹ - Approved Office

| Land Use | Size | Daily | Weekday Morning Peak Hour | | | Weekday Afternoon Peak Hour | | |
|------------------------------------|--------------|--------------|---------------------------|-----------|------------|-----------------------------|------------|------------|
| | | | In | Out | Total | In | Out | Total |
| Office ¹ | 400,000 s.f. | 4,071 | 346 | 56 | 402 | 68 | 357 | 425 |
| Modal Split Reduction ² | | -814 | -69 | -11 | -80 | -14 | -71 | -85 |
| Total Site Trip Generation | | 3,257 | 277 | 45 | 322 | 54 | 286 | 340 |

1 – ITE Land Use Code 710, for General Office from *Trip Generation Manual, 10th Edition*.

2 – Modal split reduction of 20 percent.

Table 3 below presents the trip generation comparison between the previously approved office development and the currently proposed apartment development, based on the data presented in Table 1 and 2. As shown in Table 3, the proposed apartments generate significantly less traffic during the weekday commuter peak hours and over the course of a traditional day. Specifically, the proposed apartments generate 1,723 less daily trips, 228 less weekday morning commuter peak hour trips, and 222 less weekday afternoon commuter peak hour trips, as compared to the approved office development.

Table 3. Trip Generation Comparison - Approved Office vs. Proposed Apartments

| Land Use | Size | Daily | Weekday Morning Peak Hour | | | Weekday Afternoon Peak Hour | | |
|---|--------------|---------------|---------------------------|-----------|-------------|-----------------------------|-------------|-------------|
| | | | In | Out | Total | In | Out | Total |
| Office | 400,000 s.f. | 3,257 | 277 | 45 | 322 | 54 | 286 | 340 |
| Apartments | 352 Units | 1,534 | 24 | 70 | 94 | 72 | 46 | 118 |
| New Trip Reduction With Apartments | | -1,723 | -253 | 25 | -228 | 18 | -240 | -222 |

Traffic Impact Assessment

The proposed apartments generate significantly less daily and weekday peak hour traffic as compared to the previously approved office development, which equates to 53 percent less traffic over the course of a full day, 71 percent less traffic during the critical weekday morning commuter peak hour, and 65 percent less traffic during the critical weekday afternoon commuter peak hour. As a result of these trip generation differences, we can conclude the anticipated traffic impact associated with the newly proposed apartments is less than the impact associated with approved office development. Furthermore, the above trip generation figures reflect normal conditions, and at least for the time being as more people are working remotely, it is likely that the traffic associated with any development on this site will be less than described in this study.

Despite the reduced traffic and traffic impact associated with the apartments, the applicant agrees to honor the prior commitment made with PennDOT and the Borough of contributing \$500,000 with credit for any amount spent on the design and permitting of the improvements at the intersection of Fayette Street and Elm Street.

Conclusion

The newly proposed apartments generate significantly less daily and weekday peak hour traffic as compared to the previously approved office development, and as a result, we conclude the traffic impact associated with the newly proposed apartments is much less than the impact associated with approved office development. However, despite this reduction in traffic and traffic impact, the applicant commits to contribute to local solutions to benefit traffic circulation and operations in the area.

If there are any questions or comments regarding this traffic study supplement, please do not hesitate to contact our office.

Sincerely,



Christopher J. Williams, P.E.
Vice President & Regional Manager – Mid-Atlantic

CJW/

cc: Louis J. Colagreco, Jr., Riley Riper Hollin & Colagreco

Transportation Impact Study for the Elm Street Office Development

Conshohocken Borough, Montgomery County, PA



Christopher J. Williams, P.E.
Pennsylvania License # 53062-E

Prepared by



Exton Office

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www.mcmahonassociates.com

Prepared for
Corson Street Acquisition
Limited Partnership

February 24, 2016

McMahon Project Number 811675.12

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Executive Summary

Corson Street Acquisition Limited Partnership proposes to construct 324,860 square feet of office space, located on the south side of West Elm Street (S.R. 3013), west of Colwell Lane in Conshohocken Borough, Montgomery County, Pennsylvania. Access to the site is proposed via one site access opposite Old Elm Street, and one site access opposite Corson Street.

The scope of the transportation impact analysis was reviewed and approved by PennDOT. The scope of this traffic impact study includes an evaluation of the existing weekday morning and weekday afternoon peak hours, as well as the future 2019 and 2024 weekday morning and weekday afternoon peak hours, both without-development and upon completion of the proposed office development at each of the following study intersections.

- Fayette Street (S.R. 3016) and East/West Elm Street (S.R. 3013)
- West Elm Street (S.R. 3013) and Oak Street
- West Elm Street (S.R. 3013) and Maple Street
- West Elm Street (S.R. 3013) and Colwell Lane/Wood Street
- West Elm Street (S.R. 3013) and Old Elm Street
- West Elm Street (S.R. 3013) and Corson Street

Traffic volumes generated by the proposed development were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 9th Edition*. Accordingly, the proposed development will result in approximately 393 total (inbound and outbound) new trips during the weekday morning peak hour, and approximately 354 total (inbound and outbound) new trips during the weekday afternoon peak hour.

Based on the results of the foregoing analysis, the site access intersections operate with acceptable/reasonable levels of service in both peak hours, and the increased traffic generated by the proposed office development can be accommodated along the surrounding roadway network. In addition, the following improvements are proposed as part of this development.

Fayette Street and Elm Street

As discussed with PennDOT and the Borough of Conshohocken, it is proposed to widen and reconfigure the intersection to provide a second northbound Fayette Street left-turn lane. In addition, it is proposed to provide protected-prohibited traffic signal phasing for the proposed northbound dual left-turn lanes.

Eastern West Elm Street Site Access

- Restrict the westbound West Elm Street left-turn movement into the site access as requested by PennDOT.

- Provide one curbed ingress lane and one curbed egress lane with a channelization island to restrict the left-turn entering movement.
- Provide stop control.
- Provide curb radii as needed to accommodate emergency vehicles and delivery/service trucks.
- Install ADA compliant curb ramps on the southwest and southeast corners of this intersection, as well as a crosswalk along the south leg of the intersection.

Western West Elm Street Site Access

- Provide one curbed ingress lane and one curbed egress lane.
- Provide stop control.
- Provide curb radii as needed to accommodate emergency vehicles and delivery/service trucks.
- A westbound left-turn lane is warranted for traffic entering the western site access. The length of this lane should be maximized so that the transition taper does not reduce the lane width along West Elm Street bridge to the east.
- An eastbound West Elm Street left-turn lane is not warranted.
- Install ADA compliant curb ramps on all four corners of this intersection, as well as crosswalks along the north, south, and west legs of the intersection.
- Install a Side Road (W2-2) sign along eastbound West Elm Street in advance of the site access intersection.

Introduction

Corson Street Acquisition Limited Partnership proposes to construct 324,860 square feet of office space, located on the south side of West Elm Street (S.R. 3013), west of Colwell Lane in Conshohocken Borough, Montgomery County, Pennsylvania. Access to the site is proposed via one site access opposite Old Elm Street, and one site access opposite Corson Street. The site plan of the proposed development is shown in **Figure 1**.

The purpose of this traffic study is to present an evaluation of the incremental traffic impacts of the proposed development within the study area in Conshohocken Borough, as well as provide recommendations regarding the proposed site access design in order to provide efficient access to the site. The study scope was reviewed with PennDOT. The scoping application and additional project correspondence is contained in **Appendix A**.

Manual turning movement traffic counts were completed at six intersections during the weekday morning peak period (7:00 AM to 9:00 AM) and the weekday afternoon peak period (4:00 PM to 6:00 PM). In order to assess the existing traffic conditions, these existing traffic volumes were subjected to detailed capacity/level-of-service analysis, in accordance with accepted methodologies, for the highest peak hour during each peak period, which serves as the basis for this evaluation.

Next, future traffic volumes without the proposed office development were projected utilizing an annual traffic growth rate to account for regional traffic growth. The future traffic volumes were projected to the year 2019, the anticipated build-out year of the development, and the PennDOT design year 2024 (or five years after the build-out year) at each of the study intersections. The future traffic volumes without development were then subjected to detailed capacity/level-of-service analysis.

Finally, the traffic generated by the proposed office development was established based on the Institute of Transportation Engineers methodology, and assigned to the roadway network and site accesses. The site-generated traffic volumes were added to the future without-development traffic volumes, and subjected to detailed capacity/level-of-service analysis to assess the future traffic conditions with the development.

Existing Transportation Setting & Conditions

The proposed office development will be located on the south side of West Elm Street (S.R. 3013), west of Colwell Lane in Conshohocken Borough, Montgomery County, Pennsylvania (**Figure 2**). The existing roadways and intersections in the vicinity of the site, which comprise the study area roadway network, are described in this section. Based on the PennDOT publication, *Smart Transportation Guidebook*, the land use context of the study area is Town/Village Neighborhood.

Roadway Characteristics

The study area roadway network and characteristics are summarized below in **Table 1**.

Table 1. Existing Roadway Characteristics

| Roadway | Roadway Jurisdiction | Travel Lanes (per direction) | Shoulders | Speed Limit | Smart Transportation Classification ⁽¹⁾ |
|-----------------------------|----------------------|------------------------------|-----------|-------------|--|
| West Elm Street (S.R. 3013) | State | 1 | Varies | 25 mph | Community Collector |
| Fayette Street (S.R. 3016) | State | 2 | No | 25 mph | Community Arterial |
| Oak Street | Borough | 1 | No | Not Posted | Local |
| Maple Street | Borough | 1 | No | Not Posted | Neighborhood Collector |
| Colwell Lane | Borough | 1 | No | 25 mph | Community Collector |
| Corson Street | Borough | 1 | No | Not posted | Local |
| Old Elm Street | Borough | 1 | No | 25 mph | Local |

1 – Assumed classifications based on the PennDOT publication *Smart Transportation Guidebook*.

The following key intersections in the vicinity of the site comprise the study area.

- Fayette Street (S.R. 3016) and East/West Elm Street (S.R. 3013)
- West Elm Street (S.R. 3013) and Oak Street
- West Elm Street (S.R. 3013) and Maple Street
- West Elm Street (S.R. 3013) and Colwell Lane/Wood Street
- West Elm Street (S.R. 3013) and Old Elm Street
- West Elm Street (S.R. 3013) and Corson Street

The existing characteristics of the study intersections, including field sketches and photographs, are summarized in **Appendix B**.

Pedestrian/Bicycle Evaluation

All of the study area roadways provide sidewalk on at least one side of the street, with the exception of Colwell Lane. In addition, the site is located along the Schuylkill River Trail and adjacent to the Cross County Trail, and a portion of the Schuylkill River Trail passes through the site, which will accommodate bicyclists and pedestrians destined to/from the proposed office development.

Transit Evaluation

The Conshohocken train station is located along West Washington Street just east of the site, and this station is served by SEPTA's Manayunk/Norristown Regional Rail Line. The train station is located approximately 0.34 miles from the site and is accessible from the site by pedestrians and bicyclists via both sidewalk connections on public streets and the Schuylkill River Trail. In addition, SEPTA Bus Routes 95 and 97 provide service at the Conshohocken train station.

In addition, it is our understanding that SEPTA proposes to provide station upgrades that will include relocation of the existing rail station further to the west and upgraded ADA accessibility. It is anticipated that construction of the Conshohocken train station upgrades will be begin in 2019.

Traffic Count Data

Based on PennDOT's iTMS website, the ADT along West Elm Street (S.R. 3013) is approximately 6,900 vehicles per day, and the ADT along Fayette Street (S.R. 3016) is approximately 45,400 vehicles per day.

Manual turning movement traffic counts were conducted in May 2012 during the weekday morning peak period (7:00 AM to 9:00 AM) and the weekday afternoon peak period (4:00 PM to 8:00 PM) at each of the study intersections. The results of these traffic counts are tabulated by 15-minute intervals in **Appendix C**. The four highest consecutive 15-minute peak intervals during these traffic count periods constitute the peak hours that are the basis of this traffic analysis.

Seasonal adjustment factors contained in the PennDOT publication, *2010 Pennsylvania Traffic Data*, were reviewed to ensure that the collected counts reflect typical conditions. The collected traffic data reflects higher than average data, and therefore, seasonal adjustment factors were not utilized to adjust the data. Also, the existing traffic counts were adjusted to the year 2015 using a 1.5% per year background traffic growth rate compounded for three years or 4.57% total. The resultant existing weekday morning and weekday afternoon peak hour traffic volumes are illustrated in **Figures 3A and 3B**, respectively.

Crash Analysis

Reportable crash data was obtained from PennDOT for the time period between January 1, 2006 and December 31, 2011 at the study intersections. Based on a review of this crash data, very few crashes occurred at the study intersections, as follows:

- West Elm Street and Maple Street
 - 1 rear-end crash

- Fayette Street and East/West Elm Street
 - 2 rear-end crashes
 - 1 angle crash
 - 1 side swipe crash

In addition, five mid-block crashes occurred where drivers hit fixed objects, including two crashes at the West Elm Street Bridge, which has since been reconstructed and improved by PennDOT.

Capacity/Level-of-Service Analysis

The peak hour traffic volumes were analyzed to determine the existing operating conditions, in accordance with the standard techniques contained in the current *Highway Capacity Manual (2010)*. These standard capacity/level-of-service analysis techniques, which calculate total control delay, are more thoroughly described in **Appendix D** for both signalized and unsignalized intersections, as well the correlation between average total control delay and the respective level of service (LOS) criteria for each intersection type. The results of the capacity/level-of-service analyses are illustrated in **Figure 3C** for the existing peak hour conditions, and the detailed capacity/level-of-service analysis worksheets are contained in **Appendix E**. Specific details regarding the analysis results and traffic operations are provided later in this report.

Site Characteristics

This section presents the details regarding the proposed site, including the incremental increase in traffic volumes generated by the development during the peak hours and the distribution of this site traffic to the study area roadways, as well as the proposed site access configuration, traffic control, and sight distance requirements.

Trip Generation

Traffic volumes generated by the proposed development were prepared based on trip generation data compiled from numerous studies contained in the Institute of Transportation Engineers (ITE) publication, *Trip Generation, 9th Edition*. Table 2 presents the anticipated vehicular trip generation for the proposed development.

**Table 2. New Vehicular Trip Generation¹
Elm Street Apartment Development**

| Land Use | Size | Daily | Weekday Morning Peak Hour | | | Weekday Afternoon Peak Hour | | |
|------------------------------------|--------------|--------------|---------------------------|-----------|------------|-----------------------------|------------|------------|
| | | | In | Out | Total | In | Out | Total |
| Office ¹ | 324,860 s.f. | 3,214 | 432 | 59 | 491 | 75 | 367 | 442 |
| Modal Split Reduction ² | | -642 | -86 | -12 | -98 | -15 | -73 | -88 |
| Total Site Trip Generation | | 2,572 | 346 | 47 | 393 | 60 | 294 | 354 |

1 – ITE Land Use Code 7120, for General Office.

2 – Modal split reduction of 20 percent.

In addition, please note that the site presently contains a gas station; however, no credit was assumed for the traffic associated with the prior gas station use.

Modal Split Reductions

As outlined on Pages 20 through 22 of PennDOT's *Policies and Procedures for Transportation Impact Studies*, modal split trip generation reductions are allowed if certain criteria are satisfied. Based on these criteria, a total modal split reduction of 20 percent is applied to the site trip generation. The following modal split reductions were approved by PennDOT District 6-0.

- A **four percent trip reduction** for pedestrian accommodations since sidewalks are provided along both sides of West Elm Street and most of the study roadways.

- A **one percent trip reduction** for bicycle accommodations since the Schuylkill River Trail runs through the site, and since the Cross County Trail is located immediately adjacent to the site.
- Based on the ITE publication *Trip Generation Handbook, Second Edition*, up to a **15 percent reduction** in trip generation can be taken for office developments located within close proximity of a light rail station. The site is located in close proximity to the SEPTA Regional Rail Conshohocken Station, and convenient off-street pedestrian facilities (Schuylkill River Trail) connect the site to the rail station.

Conshohocken Borough, and specifically the Elm Street corridor continues to experience development, and clearly a major reason for locating here is the convenience of transportation options including rail service and pedestrian connections. As such, a 20 percent reduction for total modal split was applied to the trip generation in Table 2.

Site Access Configuration Scenarios

This development provides an opportunity to improve access management along this section of West Elm Street. Presently, the site is occupied by a former gas station. In the vicinity of the gas station, there are a total of four accesses, which consist of either depressed curb driveways or open sections of pavement, and in all cases, the four existing driveways provide very shallow driveway throats.

As part of this development it is proposed to reduce the number of existing site driveways from four to provide only two new site accesses along West Elm Street to serve the office development. During the scoping review, PennDOT suggested the need to restrict left-turn entering movements at the eastern access due to its close spacing with the new West Elm Street bridge immediately to the east. As such, two future access scenarios were evaluated, as follows:

- **Scenario 1** – Under this scenario, it is assumed that both site access intersections are full-movement, unsignalized intersections.
- **Scenario 2** – Under this scenario, it is assumed that the western site access (opposite Corson Street) is a full-movement, unsignalized intersection, whereas the eastern unsignalized access accommodates all movements except for the left-turn entering movement.

Trip Distribution and Assignment

Site-generated traffic will approach and depart the site via different routes depending on factors such as the existing traffic patterns, location of major roadways, and the location of the development's site access. The overall directions of approach and departure, as well as the trip assignment percentages for the anticipated directions of approach and departure are illustrated in **Figure 4A** for both access scenarios. Application of the percentages illustrated in Figure 4A to the new peak hour trips contained in Table 2, provides an estimate of site traffic to be added to the study area, and the resultant site

generated traffic added to the study area during the weekday morning and weekday afternoon peak hours is shown in **Figure 4B** for both access scenarios.

Site Access Configuration and Traffic Control

As previously described, as part of this development it is proposed to reduce the number of existing site driveways from four to provide only two new site accesses along West Elm Street to serve the office development. One access is located opposite Old Elm Street and the other access is located opposite Corson Street. The access evaluation is based on criteria and guidelines accepted by PennDOT contained in PennDOT's *Chapter 441, Access to and Occupancy of Highways by Driveways and Local Roads*, PennDOT's *Publication 46, Traffic Engineering Manual*, and local PennDOT District policies. All auxiliary turn lane worksheets, traffic signal warrant worksheets, and a left-turn conflict factor evaluation at the Fayette Street/Elm Street intersection are shown in **Appendix F**.

Based on PennDOT's warrants for installation of auxiliary turn lanes, separate right-turn lanes are not warranted at either site access intersection for both access scenarios; however, separate left-turn lanes are warranted at both site access intersections under Scenario 1, and only at the western access intersection (opposite Corson Street) under Scenario 2.

Under Scenario 1, due to the constraint of the bridge just east of the eastern site access (opposite Old Elm Street), it is not possible to widen West Elm Street over the newly reconstructed bridge. However, since West Elm Street provides a 30-foot cartway width in the vicinity of the site and over the newly reconstructed bridge, at minimum it is possible to restripe West Elm Street to provide three 10-foot lanes in order to accommodate a new center left-turn lane east of the eastern access. Then, this three lane cross-section can be continued west of the eastern access and through the western access with some widening along the site frontage in order to accommodate lane widths ranging from 10 to 12 feet wide.

Under Scenario 2, only a westbound left-turn lane is necessary along West Elm Street at the western access intersection. With some widening of West Elm Street along the site frontage as well as restriping, a three lane cross-section can be provided with lanes ranging from 10 to 12 feet wide in order to provide a westbound left-turn lane at the western access intersection.

Based on feedback from PennDOT, due to the limitation of providing a left-turn lane across the West Elm Street bridge just east of the eastern site access intersection, it is proposed to restrict the left-turn entering movement at the eastern site access intersection (i.e., Scenario 2 described above). As such, the following site access improvements are recommended:

Eastern West Elm Street Site Access

- Restrict the westbound West Elm Street left-turn movement into the site access.
- Provide one curbed ingress lane and one curbed egress lane with a channelization island to restrict the left-turn entering movement.

- Provide stop control.
- Provide curb radii as needed to accommodate emergency vehicles and delivery/service trucks.
- Install ADA compliant curb ramps on the southwest and southeast corners of this intersection, as well as a crosswalk along the south leg of the intersection.

Western West Elm Street Site Access

- Provide one curbed ingress lane and one curbed egress lane.
- Provide stop control.
- Provide curb radii as needed to accommodate emergency vehicles and delivery/service trucks.
- A westbound left-turn lane is warranted for traffic entering the western site access. The length of this lane should be maximized so that the transition taper does not reduce the lane width along West Elm Street bridge.
- An eastbound West Elm Street left-turn lane is not warranted.
- Install ADA compliant curb ramps on all four corners of this intersection, as well as crosswalks along the north, south, and west legs of the intersection.
- Install a Side Road (W2-2) sign along eastbound West Elm Street in advance of the site access intersection.

Sight Distance

Sight distance field measurements and evaluation were performed for each of the proposed unsignalized site access intersections along West Elm Street. Generally, the posted speed limit, roadway grades and profiles, and the number of travel lanes play a role in determining if safe sight distances are available for egress and ingress at the each of the proposed accesses. The available sight distances at the proposed access locations were measured and compared to PennDOT's safe stopping sight distance requirements. In addition, our office completed speed studies along West Elm Street (25 miles per hour posted speed limit) in the vicinity of the site access intersections. The results of the speed study are listed below for each intersection, and the speed study results are detailed in **Appendix G**.

- **Eastern Site Access 85th Percentile Speeds**
 - Eastbound West Elm Street – 33 miles per hour
 - Westbound West Elm Street – 35 miles per hour
- **Western Site Access Speeds 85th Percentile Speeds**
 - Eastbound West Elm Street – 31 miles per hour
 - Westbound West Elm Street – 35 miles per hour

Table 3 summarizes the available sight distance measurements, as well as safe stopping sight distances at the proposed access locations.

Table 3. Sight Distance Evaluation¹

Eastern Elm Street Site Access

| Movement | Direction | Approximate Approach Grade | 85 th Percentile Speed (mph) ¹ | Safe Stopping Sight Distance (feet) | |
|--------------------|---------------|----------------------------|--|-------------------------------------|-----------|
| | | | | Required ² | Available |
| Exiting | Looking Left | -2.1% | 33 | 234 | 508 |
| | Looking Right | -0.0% | 35 | 249 | 574 |
| Left turn Entering | Looking Ahead | -2.1% | 33 | 234 | 483 |
| | From the Rear | -2.6% | 35 | 259 | 1,000+ |

Western Elm Street Site Access

| Movement | Direction | Approximate Approach Grade | 85 th Percentile Speed (mph) ¹ | Safe Stopping Sight Distance (feet) | |
|--------------------|---------------|----------------------------|--|-------------------------------------|-----------|
| | | | | Required ² | Available |
| Exiting | Looking Left | -1.4% | 31 | 210 | 600+ |
| | Looking Right | +2.1% | 35 | 242 | 800+ |
| Left turn Entering | Looking Ahead | -1.4% | 31 | 210 | 218 |
| | From the Rear | +2.1% | 35 | 242 | 800+ |

1 – Based on the results of a speed study in the vicinity of the site access

2 – Based on PennDOT requirements and the prevailing (85th percentile) speed in accordance with Pennsylvania Code, Title 67, Transportation, Chapter 441.8.h.2.iv.

Based on the above sight distance evaluation, adequate sight distance can be provided at the site access intersections. Proper landscaping must be maintained along the West Elm Street site frontage for provision of sight distance according to the above table. Also, the available sight distance at the site accesses must be verified during the detailed engineering of the site access design.

Future Build-Out Year Traffic Conditions

This section presents the projected build-out year traffic conditions, both without and with the proposed development, which is anticipated to be 2019. The future 2019 build-out year without-development traffic volumes were estimated by increasing the existing 2012 peak hour traffic volumes to account for regional and local traffic growth, as described below. The incremental increase due to the anticipated trip generation for the site was then added, resulting in the future 2019 build-out year with-development traffic volumes.

Future 2019 Without-Development Traffic Volumes

Based on discussions with representatives of Conshohocken Borough, there are several area developments which are currently in various stages of planning within the Borough. Several of these developments are in the preliminary planning stages, and have not been approved by the Borough. As such, the traffic generated by these developments will not be specifically accounted for in this study. However, an increased background traffic growth factor of 1.50% per year, compounded for four years, or 6.41 percent total was applied to the existing traffic volumes. This background traffic growth rate exceeds (double) PennDOT's recommended growth rate of 0.76% per year for similar roadways in Montgomery County, in order to account for traffic generated by these other area developments. It is also noted that the Borough has completed a traffic study which examines traffic conditions in the Borough associated with local future development growth.

The future year 2019 without-development traffic volumes for the weekday morning and weekday afternoon peak hours are illustrated in **Figures 5A and 5B**, respectively.

Future 2019 With-Development Traffic Volumes

The site generated traffic volumes shown in Figure 4B were added to the 2019 future without-development traffic volumes, and the resultant 2019 with-development weekday morning and weekday afternoon peak hours are illustrated in **Figures 5C and 5D**.

Capacity/Level-of-Service Analysis

The future 2019 peak hour traffic volumes, as illustrated in Figures 5A through 5D, were then subjected to detailed capacity/level-of-service analysis. The results of the capacity/level-of-service analyses are illustrated in **Figures 5E and 5F**, and the detailed capacity/level-of-service analysis worksheets are contained in **Appendices H and I**. Specific details regarding the analysis results and traffic operations are provided later in this report.

Future Design Year Traffic Conditions

This section presents projected design year traffic conditions, both without and with the proposed development, which is 2024 (or five years after the 2019 build-out year). The future 2024 design year without-development traffic volumes were estimated by increasing the existing 2012 peak hour traffic volumes to account for regional and local traffic growth, as described below. The incremental increase due to the anticipated trip generation for the site was then added, resulting in the future 2024 design year with-development traffic volumes.

Future 2024 Without-Development Traffic Volumes

As under the 2019 future build-out year traffic conditions, an increased background traffic growth factor of 1.50% per year, compounded for nine years, or 14.98 percent total was applied to the existing traffic volumes. The future year 2024 without-development traffic volumes for the weekday morning and weekday afternoon peak hours are illustrated in **Figures 6A and 6B**, respectively.

Future 2024 With-Development Traffic Volumes

The site generated traffic volumes shown in Figure 4B were added to the 2024 future without-development traffic volumes, and the resultant 2024 with-development weekday morning and weekday afternoon peak hours are illustrated in **Figures 6C and 6D**.

Capacity/Level-of-Service Analysis

The future 2024 peak hour traffic volumes, as illustrated in Figures 6A through 6D, were then subjected to detailed capacity/level-of-service analysis. The results of the capacity/level-of-service analyses are illustrated in **Figures 6E and 6F**, and the detailed capacity/level-of-service analysis worksheets are contained in **Appendices J and K**. Specific details regarding the analysis results and traffic operations are provided later in this report.

Capacity/Level-of-Service Analyses

This section presents a detailed summary of the traffic analysis results for the existing and future traffic conditions, both without and with the proposed development for the two peak hours at each of the study area intersections and site accesses. **Tables 4 through 9** summarize the existing and future without and with development overall levels of service at each of the study intersections.

West Elm Street and Corson Street/Western Site Access

This stop controlled intersection currently operates at acceptable overall level-of-service A, and all movements at LOS C or better during both the weekday morning and weekday afternoon peak hours. Under Access Scenario 1, the intersection will continue to operate at acceptable LOS A overall, and LOS D or better for all movements in both 2019 and 2024 without and with the proposed development. Under Access Scenario 2, the intersection will operate at overall LOS A during both peak hours in 2019 and 2024. In addition, most movements will operate at acceptable LOS C or better with the exception of the southbound Corson Street approach, which will operate at LOS E due to the added traffic because of the restriction of the westbound left-turn movement at the eastern site access opposite Old Elm Street. Installation of a traffic signal would improve the level-of-service conditions at this intersection; however, a traffic signal is not warranted according to the existing or future peak hour traffic volumes based on the traffic signal warrants contained in PennDOT's *Publication 212, Official Traffic Control Devices*. As you are aware, LOS E conditions for stop controlled side streets at unsignalized intersections is not uncommon in suburban and urban settings. Furthermore, the southbound Corson Street approach is a low volume approach, and it is connected as part of a grid street system, and therefore, traffic has the option of using another intersection.

**Table 4. Overall LOS Comparison
West Elm Street and Corson Street/Western Site Access (Scenario 2)**

| | Existing | 2019 Future Without Dev | 2019 Future With Dev | 2024 Future Without Dev | 2024 Future With Dev |
|------------------------------------|----------|----------------------------|-------------------------|----------------------------|-------------------------|
| <i>Weekday Morning Peak Hour</i> | | | | | |
| Overall Intersection LOS | A | A | A | A | A |
| Overall Intersection Delay | 0.4 | 0.5 | 4.5 | 0.5 | 4.5 |
| Delay Change (if applicable) | | | N/A | | N/A |
| Mitigates? | | | Yes | | Yes |
| <i>Weekday Afternoon Peak Hour</i> | | | | | |
| Overall Intersection LOS | A | A | A | A | A |
| Overall Intersection Delay | 0.4 | 0.4 | 3.2 | 0.4 | 3.3 |
| Delay Change (if applicable) | | | N/A | | N/A |
| Mitigates? | | | Yes | | Yes |

West Elm Street and Old Elm Street/Eastern Site Access

This stop controlled intersection currently operates at acceptable overall LOS A, and all movements at LOS B or better during both the weekday morning and weekday afternoon peak hours. The intersection will continue to operate at acceptable LOS A overall, and LOS C or better for all movements in both 2019 and 2024 without and with the development under Access Scenarios 1 and 2.

**Table 5. Overall LOS Comparison
West Elm Street and Old Elm Street/Eastern Site Access (Scenario 2)**

| | Existing | 2019 Future Without Dev | 2019 Future With Dev | 2024 Future Without Dev | 2024 Future With Dev |
|------------------------------------|----------|----------------------------|-------------------------|----------------------------|-------------------------|
| <i>Weekday Morning Peak Hour</i> | | | | | |
| Overall Intersection LOS | A | A | A | A | A |
| Overall Intersection Delay | 0.1 | 0.1 | 0.3 | 0.1 | 0.3 |
| Delay Change (if applicable) | | | N/A | | N/A |
| Mitigates? | | | Yes | | Yes |
| <i>Weekday Afternoon Peak Hour</i> | | | | | |
| Overall Intersection LOS | A | A | A | A | A |
| Overall Intersection Delay | 0.0 | 0.0 | 2.4 | 0.0 | 2.5 |
| Delay Change (if applicable) | | | N/A | | N/A |
| Mitigates? | | | Yes | | Yes |

West Elm Street and Colwell Lane/Wood Street

Since this intersection is a five-leg signalized intersection, the Synchro Percentile analysis methodology was used to evaluate the intersection. Under existing conditions, this signalized intersection currently operates at overall LOS C or better and individual movements at LOS D or better during the weekday morning and weekday afternoon peak hours. The intersection will continue to operate acceptably at LOS C overall and LOS D or better for all movements during both peak hours in both 2019 and 2024 without and with the traffic generated by the proposed development. The impact of the development is mitigated at this intersection based on the overall level of service.

Despite the level of service mitigation, please note the Wood Street southbound approach is a minor, low volume fifth leg of the intersection. Without this fifth leg, or if there is no volume demand, the intersection levels of service are further improved within acceptable levels beyond the analysis results contained in this traffic study.

**Table 6. Overall LOS Comparison
West Elm Street and Colwell Lane/Wood Street**

| | Existing | 2019 Future Without Dev | 2019 Future With Dev | 2024 Future Without Dev | 2024 Future With Dev |
|------------------------------------|----------|----------------------------|-------------------------|----------------------------|-------------------------|
| <i>Weekday Morning Peak Hour</i> | | | | | |
| Overall Intersection LOS | B | B | C | C | C |
| Overall Intersection Delay | 19.1 | 19.8 | 25.5 | 20.8 | 27.4 |
| Delay Change (if applicable) | | | +5.7 | | N/A |
| Mitigates? | | | Yes | | Yes |
| <i>Weekday Afternoon Peak Hour</i> | | | | | |
| Overall Intersection LOS | B | C | C | C | C |
| Overall Intersection Delay | 19.6 | 21.0 | 22.6 | 23.0 | 27.0 |
| Delay Change (if applicable) | | | N/A | | N/A |
| Mitigates? | | | Yes | | Yes |

West Elm Street and Maple Street

This signalized intersection currently operates at overall LOS A, and all movements currently operate at acceptable LOS D or better during both the weekday morning and weekday afternoon peak hours. The intersection will continue to operate acceptably at LOS A overall and LOS D or better for all movements in both 2019 and 2024 without and with the proposed development. The impact of the development is mitigated at this intersection based on overall levels of service.

**Table 7. Overall LOS Comparison
West Elm Street and Maple Street**

| | Existing | 2019 Future Without Dev | 2019 Future With Dev | 2024 Future Without Dev | 2024 Future With Dev |
|------------------------------------|----------|----------------------------|-------------------------|----------------------------|-------------------------|
| <i>Weekday Morning Peak Hour</i> | | | | | |
| Overall Intersection LOS | A | A | A | A | A |
| Overall Intersection Delay | 6.2 | 6.3 | 5.7 | 6.4 | 5.8 |
| Delay Change (if applicable) | | | N/A | | N/A |
| Mitigates? | | | Yes | | Yes |
| <i>Weekday Afternoon Peak Hour</i> | | | | | |
| Overall Intersection LOS | A | A | A | A | A |
| Overall Intersection Delay | 2.5 | 2.6 | 2.5 | 2.8 | 2.7 |
| Delay Change (if applicable) | | | N/A | | N/A |
| Mitigates? | | | Yes | | Yes |

West Elm Street and Oak Street

This signalized intersection currently operates at overall LOS C or better, and all movements currently operate at acceptable LOS D or better during both the weekday morning and weekday afternoon peak hours. The intersection will continue to operate acceptably at LOS C or better overall and at LOS D or better for all movements in both 2019 and 2024 without and with the proposed development. The impact of the development is mitigated at this intersection based on the overall levels of service.

**Table 8. Overall LOS Comparison
West Elm Street and Oak Street**

| | Existing | 2019 Future Without Dev | 2019 Future With Dev | 2024 Future Without Dev | 2024 Future With Dev |
|------------------------------------|----------|----------------------------|-------------------------|----------------------------|-------------------------|
| <i>Weekday Morning Peak Hour</i> | | | | | |
| Overall Intersection LOS | A | A | A | A | A |
| Overall Intersection Delay | 5.9 | 6.0 | 5.3 | 6.1 | 5.5 |
| Delay Change (if applicable) | | | N/A | | N/A |
| Mitigates? | | | Yes | | Yes |
| <i>Weekday Afternoon Peak Hour</i> | | | | | |
| Overall Intersection LOS | C | C | C | C | C |
| Overall Intersection Delay | 21.8 | 22.6 | 22.3 | 24.1 | 20.6 |
| Delay Change (if applicable) | | | N/A | | N/A |
| Mitigates? | | | Yes | | Yes |

Fayette Street and East/West Elm Street

Under existing conditions, this signalized intersection operates at overall LOS D; however, several movements currently operate with delay (LOS F) during both during the weekday morning and weekday afternoon peak hours due to the high volume of turning movements at the intersection. Furthermore, actual conditions may be impacted at times due to congestion in West Conshohocken Borough which may extend over the bridge into Conshohocken Borough.

Under 2019 and 2024 future conditions, this signalized intersection will operate with overall delay (LOS E or F) during the weekday morning and weekday afternoon peak hours both without and with the traffic generated by the development. During both the 2019 and 2024 with-development conditions, it would only be necessary to provide signal timing changes to shift green time to the northbound Fayette Street left-turn advance/eastbound West Elm Street right-turn overlap phase to mitigate the impact of the development at this intersection.

Although the traffic impact is mitigated, through coordination with PennDOT and the Borough, there is interest in additional improvements at this intersection. The applicant completed a conceptual design evaluation of the intersection, at the request of PennDOT and the Borough, and based on this evaluation, at this time it appears to be feasible to widen and reconfigure the intersection in order to

provide northbound Fayette Street dual left-turn lanes. Therefore, on the basis that this improvement is feasible, the applicant also proposes to provide the northbound Fayette Street dual left-turn lanes. A ball park opinion of construction cost for this improvement is \$600,000 to \$700,000.

As part of the proposed intersection improvements, a left-turn conflict factor analysis was completed to determine if the traffic signal phasing at this intersection is adequate. Based on this evaluation, please note the following.

- **Eastbound Elm Street Single Left-Turn Lane** – Based on the conflict factor evaluation, advance left-turn phasing is not warranted during the weekday morning or weekday afternoon peak hour based on the future traffic volumes. However, due to the alignment of the single eastbound left-turn lane and the opposing westbound Elm Street dual left-turn lanes, the intersection currently provides split phasing for eastbound and westbound Elm Street traffic. As such, it is not recommended to modify the existing phasing for this movement as part of this project.
- **Westbound Elm Street Dual Left-Turn Lanes** – Based on the conflict factor evaluation, protected-prohibited advance left-turn phasing is warranted during the weekday afternoon peak hour only based on the future traffic volumes. However, due to the alignment of the dual westbound left-turn lanes and the opposing eastbound Elm Street single left-turn lane, the intersection currently provides split phasing for eastbound and westbound Elm Street traffic. As such, it is not recommended to modify the existing phasing for this movement as part of this project.
- **Northbound Fayette Street Dual Left-Turn Lanes** – Based on the conflict factor evaluation, protected-prohibited advance left-turn phasing is warranted during the weekday morning and weekday afternoon peak hour based on the future traffic volumes. As such, it is proposed to modify the phasing for the northbound left-turn advance phase from protected-permitted to protected-prohibited.
- **Southbound Fayette Street Single Left-Turn Lane** – Based on the conflict factor evaluation, advance left-turn phasing is not warranted during the weekday morning or weekday afternoon peak hour based on the future traffic volumes. In addition, as shown on the concept plan, it is proposed to provide an additional southbound gore area in order to align the southbound Fayette Street single left-turn lane and the northbound Fayette Street dual left-turn lanes. With this configuration, southbound Fayette Street left-turn traffic can operate with permitted left-turn operation, as occurs today. As such, it is not recommended to modify the existing phasing for this movement as part of this project.

**Table 9. Overall LOS Comparison
Fayette Street and East/West Elm Street**

| | Existing | 2019 Future Without Dev | 2019 Future With Dev ¹ | 2024 Future Without Dev | 2024 Future With Dev ¹ |
|------------------------------------|----------|----------------------------|--------------------------------------|----------------------------|--------------------------------------|
| <i>Weekday Morning Peak Hour</i> | | | | | |
| Overall Intersection LOS | D | E | E | F | E |
| Overall Intersection Delay | 53.0 | 60.8 | 59.4 | 83.4 | 76.9 |
| Delay Change (if applicable) | | | N/A | | N/A |
| Mitigates? | | | Yes | | Yes |
| <i>Weekday Afternoon Peak Hour</i> | | | | | |
| Overall Intersection LOS | E | E | E | F | E |
| Overall Intersection Delay | 61.4 | 66.0 | 59.4 | 81.3 | 73.1 |
| Delay Change (if applicable) | | | N/A | | N/A |
| Mitigates? | | | Yes | | Yes |

1. With construction of a second northbound left-turn lane along northbound Fayette Street.

Queuing Analysis

Queuing analysis was completed at the study area intersections using the HCM 2010 methodology by multiplying the HCM queue length (reported in number of vehicles) by 25 feet.

West Elm Street Intersections with Maple Street and Oak Street

Based on the results of this analysis, the queues at the West Elm Street intersections with Maple Street and Oak Street are accommodated within the existing storage lane lengths.

West Elm Street and Colwell Lane/Wood Street

At the intersection of West Elm Street and Colwell Lane/Wood Street, the eastbound left-turn queue may extend outside of the existing storage lane length during the weekday afternoon peak hour in 2024. It may be possible to slightly lengthen this lane through restriping; however, major lane widening improvements are not possible due to the West Elm Street bridge. However, please note the Wood Street southbound approach is a minor, low volume fifth leg of the intersection. Without this fifth leg, or if there is no volume demand, the intersection queues are improved within the available turn lane storage without the need for lane modifications. Additionally, it is possible to mitigate the westbound West Elm Street queue during the weekday morning peak hour with traffic signal timing modifications; however, these modifications would cause the southeastbound Colwell Lane approach to operate at LOS E or F, which is not desirable. During the weekday afternoon peak hour, this queue extends through the Maple Street intersection under existing conditions, and the additional site traffic will only increase the queue by approximately two vehicles (55 feet) in the future with development

conditions as compared to the future without development conditions. Therefore, no improvements are recommended.

Fayette Street and East/West Elm Street

At the intersection of East/West Elm Street and Fayette Street, several queues extend out of the existing auxiliary lanes today, and this condition will continue in the future. Due to the close intersection spacing, and the limitation of the Fayette Street Bridge, it is not possible to provide additional lanes, or lengthen the existing storage lanes at this intersection without a major construction project, which is outside the scope of this development. However, it is proposed to provide northbound Fayette Street dual left-turn lanes.

There is no single solution that will improve all queues at this intersection. With the proposed improvements for northbound Fayette Street dual left-turn lanes, the left-turn queues are greatly improved and mitigated; however, there is no improvement to the eastbound right-turn movement queues, and potentially some impact to the right-turn movement queues due to the shorter right-turn overlap phase because of the dual northbound left-turn lanes. The only improvement that will truly address the eastbound right-turn movement queue is the construction of dual eastbound right-turn lanes; however, due to alignment issues across Fayette Street, this improvement is not possible at this time. Dual eastbound Elm Street right-turn lanes require widening along the north side of Elm Street in order to realign the through movements. It is recommended to examine this more closely and consider this additional improvement as part of any proposed development at this intersection on the north side of Elm Street.

Additionally, there are several movements where the Synchro percentile queuing methodology reports the # footnote (mostly at the Fayette Street/Elm Street intersection). Based on a review of the Synchro Traffic Signal Software Uses Guide, *"The # footnote indicates that the volume for the 95th percentile cycle exceeds capacity. This traffic was simulated for two complete cycles of 95th percentile traffic to account for the effects of spillover between cycles. If the reported $v/c < 1$ for this movement, the methods used represent a valid method for estimating the 95th percentile queue. In practice, 95th percentile queue shown will rarely be exceeded and the queues shown with the # footnote are acceptable for the design of storage bays."* Please note that the # footnote only applies to the Synchro percentile queuing methodology, and not the HCM 2010 queuing methodology, which is the basis of the results shown in the TIS. Regardless, as outlined in the Synchro Users Guide, the queues displaying the # footnote are adequate for use in designing storage bay lengths. Table 21 includes a note for all instances where the volume to capacity ratio exceeds 1.0.

The detailed LOS results are summarized in **Tables 10 through 15**, and the 95th percentile vehicular queues are summarized in **Tables 16 through 21**.

Conclusions and Recommendations

Based on the results of the foregoing analysis, the site access intersections operate with acceptable/reasonable levels of service in both peak hours, and the increased traffic generated by the proposed office development can be accommodated along the surrounding roadway network. In addition, the following improvements are proposed as part of this development.

Fayette Street and Elm Street

As discussed with PennDOT and the Borough of Conshohocken, it is proposed to widen northbound Fayette Street to provide a second left-turn lane. In addition, it is proposed to provide protected-prohibited traffic signal phasing for the proposed northbound dual left-turn lanes.

Eastern West Elm Street Site Access

- Restrict the westbound West Elm Street left-turn movement into the site access.
- Provide one curbed ingress lane and one curbed egress lane.
- Provide stop control.
- Provide curb radii as needed to accommodate emergency vehicles and delivery/service trucks.
- Install ADA compliant curb ramps on the southwest and southeast corners of this intersection, as well as a crosswalk along the south leg of the intersection.

Western West Elm Street Site Access

- Provide one curbed ingress lane and one curbed egress lane.
- Provide stop control.
- Provide curb radii as needed to accommodate emergency vehicles and delivery/service trucks.
- A westbound left-turn lane is warranted for traffic entering the western site access. The length of this lane should be maximized so that the transition taper does not reduce the lane width along West Elm Street bridge.
- An eastbound West Elm Street left-turn lane is not warranted.
- Install ADA compliant curb ramps on all four corners of this intersection, as well as a crosswalk on the north, south, and east legs of the intersection.
- Install a Side Road (W2-2) sign along eastbound West Elm Street in advance of the site access intersection.

Table 10 - Level of Service Matrices
Elm Street and Corson Street/Western Site Access

| Time Period | | Weekday Morning Peak Hour | | | | | | | Weekday Afternoon Peak Hour | | | | | | | |
|-----------------------------------|--------------------------|---------------------------|------|---------------------|---------|------------------|------------------|---------|-----------------------------|------------------|----------|------------------|------------------|------------------|---------|------------------|
| | | Design Year | | 2019 Build-Out Year | | | 2024 Design Year | | | Design Year | | 2024 Design Year | | | | |
| | | Development Condition | | Existing | w/o Dev | w/Dev Scenario 1 | w/Dev Scenario 2 | w/o Dev | w/Dev Scenario 1 | w/Dev Scenario 2 | Existing | w/o Dev | w/Dev Scenario 1 | w/Dev Scenario 2 | w/o Dev | w/Dev Scenario 1 |
| Elm Street | Left EB Thru Right | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 9.4 | 9.5 | 9.6 | 9.6 | 9.7 | 9.8 | 9.8 | |
| Elm Street | Left WB Thru Right | A | A | A | B | A | B | B | A | A | A | A | A | A | A | A |
| | 8.9 | 8.9 | 10.0 | 11.4 | 9.0 | 10.2 | 11.6 | 9.2 | 9.3 | 9.5 | 9.7 | 9.4 | 9.6 | 9.8 | | |
| Corson Street/Western Site Access | Left NB Thru Right | A | A | B | C | A | B | C | A | A | C | C | A | C | C | |
| | 0.0 | 0.0 | 12.7 | 15.9 | 0.0 | 13.2 | 16.8 | 0.0 | 0.0 | 0.0 | 16.9 | 17.8 | 0.0 | 18.4 | 19.4 | |
| Corson Street/Western Site Access | Left SB Thru Right | B | B | C | E | B | C | E | C | C | D | D | C | D | E | |
| | 12.6 | 13.1 | 22.3 | 41.5 | 13.6 | 23.6 | 45.1 | 18.2 | 19.6 | 30.0 | 33.1 | 21.7 | 34.5 | 38.3 | | |
| Overall | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | |
| | | 0.4 | 0.5 | 2.6 | 4.5 | 0.5 | 2.5 | 4.5 | 0.4 | 0.4 | 2.9 | 3.2 | 0.4 | 3.0 | 3.3 | |

Table 11 - Level of Service Matrices
Elm Street and Old Elm Street/Eastern Site Access

| Time Period | | Weekday Morning Peak Hour | | | | | | | Weekday Afternoon Peak Hour | | | | | | |
|---------------------------------------|--------------------------|---------------------------|------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-----------------------------|------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Design Year | | 2015 | 2019 Build-Out Year | | | 2024 Design Year | | | 2015 | 2019 Build-Out Year | | | 2024 Design Year | | |
| Development Condition | | Existing | w/o Dev | w/Dev Scenario 1 | w/Dev Scenario 2 | w/o Dev | w/Dev Scenario 1 | w/Dev Scenario 2 | Existing | w/o Dev | w/Dev Scenario 1 | w/Dev Scenario 2 | w/o Dev | w/Dev Scenario 1 | w/Dev Scenario 2 |
| Elm Street | Left EB Thru Right | A 8.8 | A 8.8 | A 9.3 | A 9.9 | A 8.9 | A 9.4 | A 10.0 | A 0.0 | A 0.0 | A 0.0 | A 0.0 | A 0.0 | A 0.0 | A 0.0 |
| | Left WB Thru Right | A 8.9 | A 8.9 | A 9.9 | A 0.0 | A 9.0 | B 10.1 | A 0.0 | A 0.0 | A 0.0 | A 9.9 | A 0.0 | A 0.0 | B 10.1 | A 0.0 |
| Old Elm Street/Eastern Site Access | Left NB Thru Right | A 9.7 | A 9.9 | B 11.6 | B 12.3 | A 10.0 | B 11.9 | B 12.7 | B 10.4 | B 10.6 | C 15.8 | C 19.9 | B 10.9 | C 16.6 | C 22.1 |
| Overall | | A 0.1 | A 0.1 | A 1.8 | A 0.3 | A 0.1 | A 1.9 | A 0.3 | A 0.0 | A 0.0 | A 2.1 | A 2.4 | A 0.0 | A 2.1 | A 2.5 |

Table 12 - Level of Service Matrices

Elm Street and Colwell Lane/Wood Street

| Time Period | | Weekday Morning Peak Hour | | | | | Weekday Afternoon Peak Hour | | | | | |
|-----------------------|--------------------------|---------------------------|---------------------|-----------|------------------|-----------|-----------------------------|---------------------|-----------|------------------|-----------|-----------|
| Design Year | | 2015 | 2019 Build-Out Year | | 2024 Design Year | | 2015 | 2019 Build-Out Year | | 2024 Design Year | | |
| Development Condition | | Existing | w/o Dev | w/Dev | w/o Dev | w/Dev | Existing | w/o Dev | w/Dev | w/o Dev | w/Dev | |
| Elm Street | EB | Left | B 14.2 | B 14.8 | C 26.3 | B 15.7 | D 35.9 | B 14.6 | B 17.2 | C 34.2 | C 24.1 | E 76.9 |
| | | Thru | B | B | B | B | B | B | B | B | B | B |
| | | Right | 14.0 | 14.5 | 16.2 | 15.3 | 17.0 | 11.8 | 12.2 | 15.0 | 12.8 | 15.8 |
| | | Approach | B 14.0 | B 14.6 | B 17.8 | B 15.3 | B 20.0 | B 12.2 | B 12.9 | B 18.1 | B 14.4 | C 25.5 |
| | WB | Left | B | B | C | B | C | B | B | B | B | B |
| | | Thru | 11.9 | 12.7 | 23.0 | 14.2 | 25.2 | 12.6 | 14.5 | 16.1 | 16.8 | 18.7 |
| | | Right | B | F | C | B | C | B | B | B | B | B |
| | | Approach | 11.9 | 127.7 | 23.0 | 14.2 | 25.2 | 12.6 | 14.5 | 16.1 | 16.8 | 18.7 |
| | Colwell Lane/Wood Street | NB | Left | C | C | B | C | B | C | C | C | C |
| | | | Thru | 21.3 | 20.9 | 19.7 | 20.7 | 19.7 | 26.6 | 26.5 | 26.4 | 26.3 |
| Right | | | C | C | B | C | B | C | C | C | C | |
| Approach | | | 21.3 | 20.9 | 19.7 | 20.7 | 19.7 | 26.6 | 26.5 | 26.4 | 26.3 | 26.3 |
| SB* | | Left | C | C | C | C | C | D | D | D | D | D |
| | | Thru | 34.3 | 34.5 | 34.5 | 34.5 | 34.5 | 38.9 | 38.9 | 38.9 | 38.9 | 38.9 |
| | | Right | C | C | C | C | C | D | D | D | D | D |
| | | Approach | 34.3 | 34.5 | 34.5 | 34.5 | 34.5 | 38.9 | 38.9 | 38.9 | 38.9 | 38.9 |
| SE | | Left | D | D | D | D | D | D | D | D | D | D |
| | | Thru | 37.1 | 37.6 | 40.3 | 38.4 | 41.8 | 46.2 | 47.7 | 48.5 | 49.9 | 51.2 |
| | Right | D | D | D | D | D | D | D | D | D | D | |
| | Approach | 37.1 | 37.6 | 40.3 | 38.4 | 41.9 | 46.2 | 47.7 | 48.5 | 49.9 | 51.2 | |
| Overall | | B 19.1 | B 19.8 | C 25.5 | C 20.8 | C 27.4 | B 19.6 | C 21.0 | C 22.6 | C 23.0 | C 27.0 | |

* The Wood Street southbound approach is a minor, low volume fifth leg of the intersection. Without this fifth leg, or if there is no volume demand, the intersection levels of service are further improved within acceptable levels beyond the results contained in this traffic study.

Table 13 - Level of Service Matrices

Elm Street and Maple Street

| Time Period | | Weekday Morning Peak Hour | | | | | Weekday Afternoon Peak Hour | | | | | |
|-----------------------|----|---------------------------|------------------------|----------|---------------------|----------|-----------------------------|------------------------|----------|---------------------|----------|----------|
| Design Year | | 2015 | 2019 Build-Out Year | | 2024 Design Year | | 2015 | 2019 Build-Out Year | | 2024 Design Year | | |
| Development Condition | | Existing | w/o Dev | w/Dev | w/o Dev | w/Dev | Existing | w/o Dev | w/Dev | w/o Dev | w/Dev | |
| Elm Street | EB | Left | A 0.0 | A 0.0 | A 0.1 | A 0.0 | A 0.1 | A 0.1 | A 0.1 | A 0.2 | A 0.2 | A 0.2 |
| | | Thru | A | A | A | A | A | A | A | A | A | A |
| | | Right | 0.5 | 0.6 | 0.6 | 0.7 | 0.7 | 0.5 | 0.5 | 0.7 | 0.5 | 0.8 |
| | | Approach | A 0.5 | A 0.6 | A 0.6 | A 0.6 | A 0.7 | A 0.4 | A 0.5 | A 0.7 | A 0.5 | A 0.8 |
| | WB | Left | A 0.0 | A 0.0 | A 0.0 | A 0.0 | A 0.0 | A 0.1 | A 0.1 | A 0.1 | A 0.1 | A 0.1 |
| | | Thru | A | A | A | A | A | A | A | A | A | A |
| | | Right | 0.4 | 0.4 | 0.9 | 0.5 | 1.0 | 0.9 | 1.0 | 1.1 | 1.1 | 1.2 |
| | | Approach | A 0.4 | A 0.4 | A 0.9 | A 0.5 | A 1.0 | A 0.9 | A 1.0 | A 1.0 | A 1.1 | A 1.2 |
| Maple Street | NB | Left | D | D | C | D | C | D | D | D | D | D |
| | | Thru | 36.7 | 36.4 | 35.0 | 36.1 | 34.7 | 41.9 | 41.6 | 41.3 | 41.1 | 40.9 |
| | | Right | D | D | C | D | C | D | D | D | D | D |
| | | Approach | 36.7 | 36.4 | 35.0 | 36.1 | 34.7 | 41.9 | 41.6 | 41.3 | 41.1 | 40.9 |
| | SB | Left | D | D | D | D | D | D | D | D | D | D |
| | | Thru | 37.3 | 37.2 | 36.8 | 37.0 | 36.6 | 44.3 | 44.1 | 44.0 | 43.9 | 43.8 |
| | | Right | D | D | D | D | D | D | D | D | D | D |
| | | Approach | 37.3 | 37.2 | 36.8 | 37.0 | 36.6 | 44.3 | 44.1 | 44.0 | 43.9 | 43.8 |
| Overall | | A 6.2 | A 6.3 | A 5.7 | A 6.4 | A 5.8 | A 2.5 | A 2.6 | A 2.5 | A 2.8 | A 2.7 | |

Table 14 - Level of Service Matrices

Elm Street and Oak Street

| Time Period | | Weekday Morning Peak Hour | | | | | Weekday Afternoon Peak Hour | | | | | |
|-----------------------|----|---------------------------|---------------------|-----------|------------------|-----------|-----------------------------|---------------------|-----------|------------------|-----------|-----------|
| Design Year | | 2015 | 2019 Build-Out Year | | 2024 Design Year | | 2015 | 2019 Build-Out Year | | 2024 Design Year | | |
| Development Condition | | Existing | w/o Dev | w/Dev | w/o Dev | w/Dev | Existing | w/o Dev | w/Dev | w/o Dev | w/Dev | |
| Elm Street | EB | Left | A 0.0 | A 0.0 | A 0.0 | A 0.0 | A 0.1 | C 20.7 | C 24.8 | C 20.2 | C 26.3 | B 15.7 |
| | | Thru | A | A | A | A | A | C | C | C | C | C |
| | | Right | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 25.1 | 27.9 | 26.1 | 29.2 | 20.1 |
| | | Approach | A 1.1 | A 1.2 | A 1.3 | A 1.4 | A 1.5 | C 25.0 | C 27.8 | C 26.0 | C 29.4 | B 20.0 |
| | WB | Left | A 1.7 | A 1.8 | A 1.8 | A 1.9 | A 1.9 | A 9.0 | B 10.7 | B 13.1 | B 11.4 | B 12.6 |
| | | Thru | A 1.7 | A 1.8 | A 2.1 | A 1.9 | A 2.2 | A 7.3 | A 9.1 | A 9.4 | A 9.5 | A 9.8 |
| | | Right | A 1.4 | A 1.4 | A 1.4 | A 1.5 | A 1.5 | A 5.0 | A 6.1 | A 6.1 | A 6.1 | A 6.1 |
| | | Approach | A 1.7 | A 1.8 | A 2.1 | A 1.9 | A 2.2 | A 7.4 | A 9.2 | A 9.5 | A 9.5 | A 9.9 |
| Oak Street | NB | Left | C | C | C | C | C | D | D | D | D | D |
| | | Thru | 34.5 | 34.2 | 34.2 | 33.9 | 33.9 | 52.5 | 47.4 | 47.4 | 54.3 | 54.3 |
| | | Right | D 38.6 | D 38.4 | D 38.4 | D 38.1 | D 38.1 | C 28.8 | C 26.4 | C 26.4 | C 26.2 | C 26.6 |
| | | Approach | D 37.6 | D 37.4 | D 37.4 | D 37.1 | D 37.1 | D 42.4 | D 38.4 | D 38.4 | D 42.5 | D 42.5 |
| | SB | Left | D | C | C | C | C | C | C | C | C | C |
| | | Thru | 35.1 | 34.8 | 34.8 | 34.5 | 34.5 | 29.2 | 27.7 | 27.7 | 27.9 | 27.9 |
| | | Right | D | C | C | C | C | C | C | C | C | C |
| | | Approach | 35.1 | 34.8 | 34.8 | 34.5 | 34.5 | 29.2 | 27.7 | 27.7 | 27.9 | 27.9 |
| Overall | | A 5.9 | A 6.0 | A 5.3 | A 6.1 | A 5.5 | C 21.8 | C 22.6 | C 22.3 | C 24.1 | C 20.6 | |

Table 15 - Level of Service Matrices

Fayette Street and Elm Street

| Time Period | | Weekday Morning Peak Hour | | | | | | | | Weekday Afternoon Peak Hour | | | | | | | | |
|-----------------------|----------|---------------------------|---------------------|-------|----------------------------|---------------------|------------------|-------|----------------------------|-----------------------------|----------|---------------------|-------|---------------------|---------|------------------|---------------------|-------|
| Design Year | | 2015 | 2019 Build-Out Year | | | | 2024 Design Year | | | | 2015 | 2019 Build-Out Year | | | | 2024 Design Year | | |
| Development Condition | | Existing | w/o Dev | w/Dev | w/Dev w/Signal Timing Imps | w/Dev w/Dual NB LTL | w/o Dev | w/Dev | w/Dev w/Signal Timing Imps | w/Dev w/Dual NB LTL | Existing | w/o Dev | w/Dev | w/Dev w/Dual NB LTL | w/o Dev | w/Dev | w/Dev w/Dual NB LTL | |
| Elm Street | EB | Left | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | |
| | | Thru | 43.0 | 41.2 | 41.4 | 49.8 | 44.2 | 41.3 | 41.5 | 50.0 | 43.3 | 45.8 | 45.8 | 45.5 | 49.7 | 44.1 | 46.1 | 50.8 |
| | | Right | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D |
| | | Approach | 43.0 | 41.2 | 41.4 | 49.8 | 44.2 | 41.3 | 41.4 | 49.9 | 43.3 | 44.9 | 43.0 | 44.1 | 46.8 | 43.2 | 44.3 | 47.4 |
| | WB | Left | F | E | E | F | F | F | F | F | F | F | D | E | F | D | F | F |
| | | Thru | 130.9 | 61.9 | 71.8 | 81.0 | 102.0 | 82.8 | 95.2 | 120.0 | 120.0 | 119.1 | 39.5 | 77.1 | 136.7 | 51.9 | 113.5 | 167.2 |
| | | Right | F | E | E | F | F | E | F | F | F | F | D | E | F | D | F | F |
| | | Approach | 119.8 | 59.3 | 67.6 | 76.7 | 94.0 | 77.7 | 87.9 | 110.5 | 109.6 | 97.7 | 40.6 | 67.5 | 110.5 | 49.6 | 93.5 | 132.6 |
| | | Left | F | F | F | F | F | E | E | F | F | F | F | F | F | F | F | F |
| | | Approach | 108.0 | 87.2 | 87.2 | 106.1 | 87.2 | 76.0 | 76.0 | 110.6 | 135.3 | 112.9 | 115.9 | 115.9 | 82.0 | 149.5 | 149.5 | 106.9 |
| Fayette Street | NB | Left | D | D | D | D | D | D | D | D | D | D | D | D | D | D | D | |
| | | Thru | 42.9 | 41.2 | 42.3 | 43.4 | 42.3 | 39.5 | 40.5 | 42.6 | 43.6 | 40.7 | 40.0 | 40.2 | 38.3 | 40.3 | 40.5 | 38.6 |
| | | Right | F | F | E | F | E | E | E | F | F | F | F | F | E | F | F | F |
| | | Approach | 99.4 | 81.1 | 79.2 | 95.0 | 79.2 | 71.2 | 69.9 | 98.8 | 119.6 | 102.4 | 104.9 | 104.4 | 75.3 | 133.7 | 133.0 | 96.6 |
| | SB | Left | E | E | F | F | E | F | F | F | F | F | F | F | D | F | F | D |
| | | Thru | 73.6 | 79.2 | 242.8 | 104.8 | 69.9 | 100.5 | 276.6 | 142.3 | 81.7 | 142.9 | 101.8 | 122.3 | 44.7 | 149.7 | 173.9 | 51.4 |
| | | Right | B | B | B | A | B | B | B | A | B | B | B | B | B | C | C | C |
| | | Approach | 11.0 | 13.2 | 13.2 | 8.8 | 11.6 | 14.5 | 14.5 | 9.4 | 11.8 | 16.4 | 19.2 | 19.2 | 19.2 | 20.1 | 20.1 | 20.1 |
| | | Left | C | C | C | B | C | D | D | C | D | C | C | C | C | C | C | C |
| | | Approach | 22.9 | 33.6 | 33.6 | 19.8 | 27.9 | 54.7 | 54.7 | 25.5 | 35.9 | 21.3 | 26.7 | 26.7 | 26.7 | 30.9 | 30.9 | 30.9 |
| Overall | Left | C | D | F | D | C | D | F | D | D | D | D | D | C | D | E | C | |
| | Thru | 29.4 | 36.3 | 83.9 | 39.4 | 34.4 | 51.2 | 101.4 | 51.6 | 40.9 | 46.5 | 40.0 | 45.5 | 27.3 | 52.4 | 59.1 | 30.5 | |
| | Right | B | C | C | C | C | C | C | C | C | C | D | D | C | D | D | C | |
| | Approach | 19.0 | 26.1 | 26.1 | 24.6 | 23.9 | 28.2 | 28.2 | 25.2 | 24.5 | 24.4 | 35.6 | 35.6 | 32.7 | 36.0 | 36.0 | 34.3 | |
| Overall | Thru | C | F | F | F | E | F | F | F | F | C | F | F | E | F | F | F | |
| | Right | 34.2 | 82.7 | 94.9 | 76.8 (v/>1.0) | 69.4 | 134.0 | 150.4 | 100.2 | 90.2 | 34.0 | 107.1 | 110.4 | 74.1 | 121.5 | 124.5 | 98.2 | |
| | Approach | C | F | F | F | E | F | F | F | F | C | F | F | E | F | F | F | |
| | Overall | 34.0 | 82.2 | 95.0 | 76.8 (v/>1.0) | 69.4 | 134.1 | 151.5 | 100.9 | 90.8 | 33.9 | 106.8 | 110.2 | 73.8 | 121.3 | 124.4 | 98.0 | |
| Overall | Left | C | F | F | E | E | F | F | F | F | C | F | F | E | F | F | F | |
| | Thru | 33.8 | 81.4 | 93.6 | 78.8 | 68.5 | 132.0 | 148.6 | 99.1 | 89.3 | 33.7 | 105.4 | 108.7 | 73.0 | 119.5 | 122.5 | 96.7 | |
| | Right | D | E | F | E | E | F | F | F | E | E | E | E | F | F | E | E | |
| | Approach | 53.0 | 60.8 | 84.2 | 64.2 | 59.4 | 83.4 | 109.2 | 81.0 | 76.9 | 61.4 | 66.0 | 72.7 | 59.4 | 81.3 | 91.1 | 73.1 | |

Table 16 - 95th Percentile Queue Matrices
Elm Street and Corson Street/Western Site Access

| Time Period | | Weekday Morning Peak Hour | | | | | | | Weekday Afternoon Peak Hour | | | | | | |
|-----------------------------------|--------------------------|---------------------------|------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-----------------------------|------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Design Year | | 2015 | 2019 Build-Out Year | | | 2024 Design Year | | | 2015 | 2019 Build-Out Year | | | 2024 Design Year | | |
| Development Condition | | Existing | w/o Dev | w/Dev Scenario 1 | w/Dev Scenario 2 | w/o Dev | w/Dev Scenario 1 | w/Dev Scenario 2 | Existing | w/o Dev | w/Dev Scenario 1 | w/Dev Scenario 2 | w/o Dev | w/Dev Scenario 1 | w/Dev Scenario 2 |
| Elm Street | Left EB Thru Right | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Left WB Thru Right | 0 | 0 | 25 | 45 | 0 | 25 | 45 | 0 | 0 | 0 | 25 | 0 | 0 | 25 |
| Corson Street/Western Site Access | Left NB Thru Right | 0 | 0 | 25 | 25 | 0 | 25 | 25 | 0 | 0 | 25 | 40 | 0 | 25 | 45 |
| | Left SB Thru Right | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |

Table 17 - 95th Percentile Queue Matrices
Elm Street and Old Elm Street/Eastern Site Access

| Time Period | | Weekday Morning Peak Hour | | | | | | | Weekday Afternoon Peak Hour | | | | | | | |
|------------------------------------|--------------------------|---------------------------|---------------------|---------|------------------|------------------|---------|------------------|-----------------------------|---------------------|----------|---------|------------------|------------------|---------|------------------|
| | | 2015 | 2019 Build-Out Year | | | 2024 Design Year | | | 2015 | 2019 Build-Out Year | | | 2024 Design Year | | | |
| | | | Existing | w/o Dev | w/Dev Scenario 1 | w/Dev Scenario 2 | w/o Dev | w/Dev Scenario 1 | | w/Dev Scenario 2 | Existing | w/o Dev | w/Dev Scenario 1 | w/Dev Scenario 2 | w/o Dev | w/Dev Scenario 1 |
| Elm Street | Left EB Thru Right | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Left WB Thru Right | 0 | 0 | 28 | 0 | 0 | 31 | 0 | 0 | 0 | 25 | 0 | 0 | 25 | 0 | 0 |
| Old Elm Street/Eastern Site Access | Left NB Thru Right | 0 | 0 | 25 | 25 | 0 | 25 | 25 | 0 | 0 | 65 | 48 | 0 | 75 | 53 | 0 |

**Table 18 - 95th Percentile Queue Matrices
Elm Street and Colwell Lane/Wood Street**

| Time Period | | Current Storage | Weekday Morning Peak Hour | | | | | Weekday Afternoon Peak Hour | | | | |
|--------------------------|----------------|-----------------|---------------------------|---------------------|-------|------------------|-------|-----------------------------|---------------------|-------|------------------|-------|
| Design Year | | | 2015 | 2019 Build-Out Year | | 2024 Design Year | | 2015 | 2019 Build-Out Year | | 2024 Design Year | |
| Development Condition | | | Existing | w/o Dev | w/Dev | w/o Dev | w/Dev | Existing | w/o Dev | w/Dev | w/o Dev | w/Dev |
| Elm Street | Left | 110 | 48 | 51 | 88 | 57 | 107 | 51 | 58 | 148 | 84 | 176 |
| | EB Thru Right | | 191 | 203 | 228 | 221 | 247 | 191 | 204 | 358 | 221 | 381 |
| | WB Thru Right | | 196 | 211 | 570 | 248 | 608 | 548 | 603 | 658 | 679 | 732 |
| Colwell Lane/Wood Street | NB Thru Right | | 25 | 25 | 25 | 25 | 25 | 28 | 31 | 31 | 32 | 32 |
| | SB* Thru Right | | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| | SE Thru Right | | 167 | 178 | 222 | 193 | 245 | 223 | 239 | 265 | 283 | 295 |

* The Wood Street southbound approach is a minor, low volume fifth leg of the intersection. Without this fifth leg, or if there is no volume demand, the intersection queues are improved within available turn lane storage.

**Table 19 - 95th Percentile Queue Matrices
Elm Street and Maple Street**

| Time Period | | Current Storage ⁽¹⁾ | Weekday Morning Peak Hour | | | | | Weekday Afternoon Peak Hour | | | | |
|-----------------------|---------|--------------------------------|---------------------------|---------------------|-------|------------------|-------|-----------------------------|---------------------|-------|------------------|-------|
| Design Year | | | 2015 | 2019 Build-Out Year | | 2024 Design Year | | 2015 | 2019 Build-Out Year | | 2024 Design Year | |
| Development Condition | | | Existing | w/o Dev | w/Dev | w/o Dev | w/Dev | Existing | w/o Dev | w/Dev | w/o Dev | w/Dev |
| Elm Street | Left | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 25 | 25 | 25 |
| | EB Thru | | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| | Right | | | | | | | | | | | |
| | Left | 79 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 |
| Maple Street | WB Thru | | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| | Right | | | | | | | | | | | |
| | Left | | 63 | 68 | 65 | 73 | 70 | 25 | 25 | 25 | 25 | 25 |
| | NB Thru | | | | | | | | | | | |
| Maple Street | Left | | 83 | 90 | 108 | 98 | 118 | 50 | 55 | 58 | 63 | 65 |
| | SB Thru | | | | | | | | | | | |
| | Right | | | | | | | | | | | |

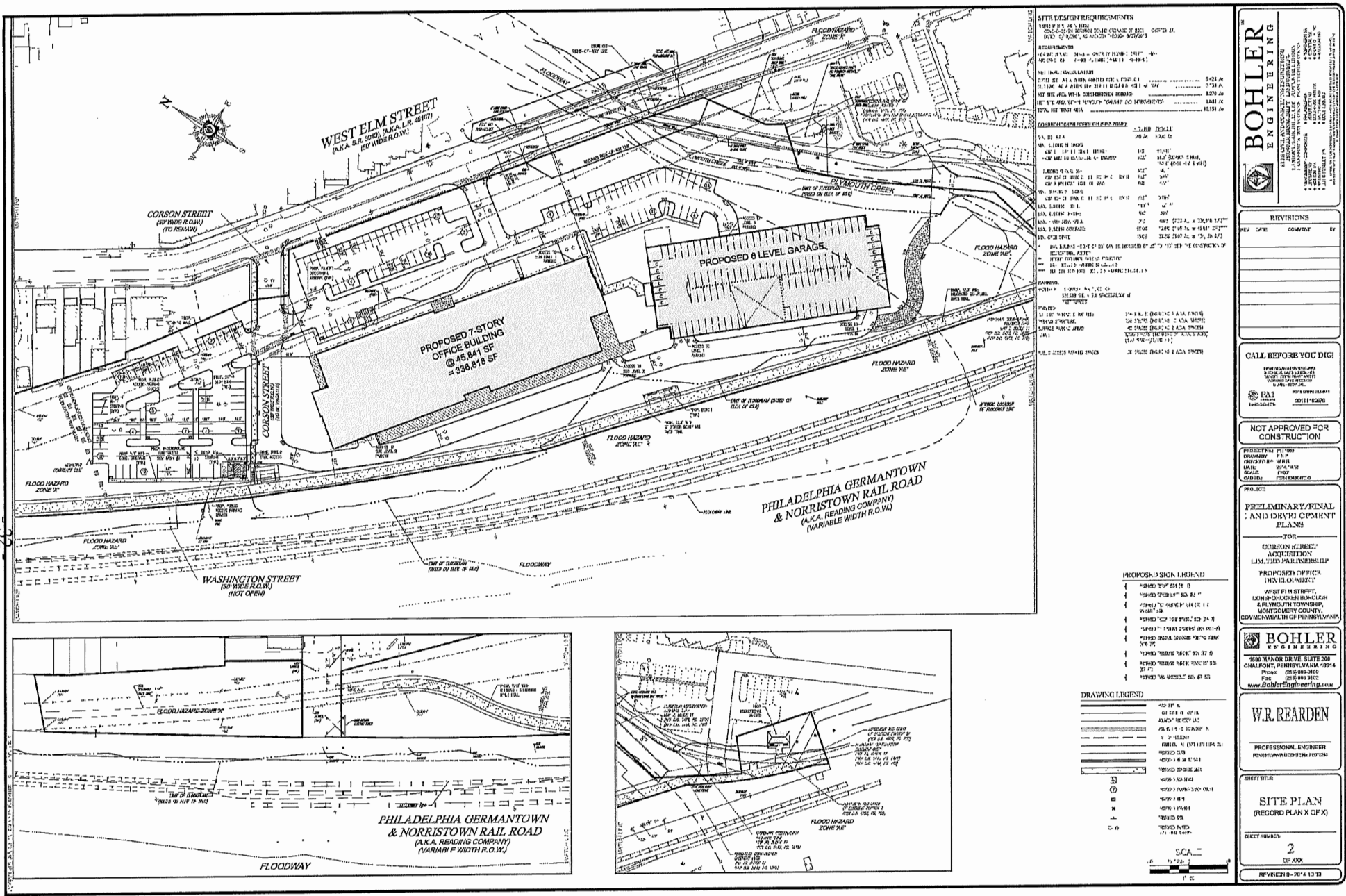
**Table 20 - 95th Percentile Queue Matrices
Elm Street and Oak Street**

| Time Period | | Current Storage | Weekday Morning Peak Hour | | | | | Weekday Afternoon Peak Hour | | | | |
|-----------------------|---------|-----------------|---------------------------|---------------------|-------|------------------|-------|-----------------------------|---------------------|-------|------------------|-------|
| Design Year | | | 2015 | 2019 Build-Out Year | | 2024 Design Year | | 2015 | 2019 Build-Out Year | | 2024 Design Year | |
| Development Condition | | | Existing | w/o Dev | w/Dev | w/o Dev | w/Dev | Existing | w/o Dev | w/Dev | w/o Dev | w/Dev |
| Elm Street | Left | 77 | 0 | 0 | 0 | 0 | 0 | 25 | 25 | 25 | 25 | 25 |
| | EB Thru | | 25 | 25 | 25 | 25 | 25 | 423 | 453 | 570 | 488 | 548 |
| | Right | | | | | | | | | | | |
| | Left | 95 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| | WB Thru | | 55 | 58 | 93 | 58 | 98 | 193 | 230 | 253 | 255 | 275 |
| | Right | 95 | 0 | 0 | 0 | 0 | 0 | 25 | 25 | 25 | 25 | 25 |
| Oak Street | Left | | 25 | 25 | 25 | 25 | 25 | 48 | 40 | 40 | 60 | 60 |
| | NB Thru | | 65 | 70 | 70 | 75 | 75 | 123 | 125 | 125 | 138 | 138 |
| | Right | | | | | | | | | | | |
| | Left | | 35 | 38 | 38 | 40 | 40 | 35 | 35 | 35 | 38 | 38 |
| | SB Thru | | | | | | | | | | | |
| | Right | | | | | | | | | | | |

Table 21 - 95th Percentile Queue Matrices

Fayette Street and Elm Street

| Time Period | | Current Storage | Weekday Morning Peak Hour | | | | | | | | Weekday Afternoon Peak Hour | | | | | | | | |
|----------------|-----------------------|------------------|---------------------------|---------------------|-------------------|----------------------------|---------------------|------------------|-------------------|----------------------------|-----------------------------|-------------------|---------------------|------------------|---------------------|-------------------|-------------------|---------------------|-------------------|
| | | | 2015 | 2019 Build-Out Year | | | | 2024 Design Year | | | | 2015 | 2019 Build-Out Year | | | 2024 Design Year | | | |
| Design Year | Development Condition | | Existing | w/o Dev | w/Dev | w/Dev w/Signal Timing Imps | w/Dev w/Dual NB LTL | w/o Dev | w/Dev | w/Dev w/Signal Timing Imps | w/Dev w/Dual NB LTL | Existing | w/o Dev | w/Dev | w/Dev w/Dual NB LTL | w/o Dev | w/Dev | w/Dev w/Dual NB LTL | |
| | | | Elm Street | EB | Left | 206 | 33 | 35 | 40 | 45 | 43 | 38 | 43 | 48 | 45 | 123 | 128 | 165 | 173 |
| Thru | | 35 | | | 38 | 43 | 48 | 45 | 38 | 45 | 50 | 48 | 100 | 105 | 143 | 148 | 113 | 148 | 153 |
| Right | 206 | 818 (v/c > 1) | | | 523 | 578 | 820 | 845 (v/c > 1) | 833 (v/c > 1) | 897 (v/c > 1) | 968 (v/c > 1) | 968 (v/c > 1) | 883 (v/c > 1) | 483 | 1048 (v/c > 1) | 1258 (v/c > 1) | 583 | 1265 (v/c > 1) | 1608 (v/c > 1) |
| WB | Left | 200 | | 513 (v/c > 1) | 508 (v/c > 1) | 508 (v/c > 1) | 540 (v/c > 1) | 508 (v/c > 1) | 428 | 428 | 587 (v/c > 1) | 633 (v/c > 1) | 685 (v/c > 1) | 735 (v/c > 1) | 735 (v/c > 1) | 659 (v/c > 1) | 870 (v/c > 1) | 870 (v/c > 1) | 767 (v/c > 1) |
| | Thru | | | 98 | 103 | 148 | 150 | 145 | 108 | 153 | 155 | 160 | 143 | 150 | 160 | 155 | 164 | 173 | 170 |
| | Right | | | | | | | | | | | | | | | | | | |
| Fayette Street | NB | Left | 302 | 470 | 488 | 1250 (v/c > 1) | 925 (v/c > 1) | 328 | 693 (v/c > 1) | 1385 (v/c > 1) | 1080 (v/c > 1) | 365 | 840 (v/c > 1) | 968 (v/c > 1) | 1080 (v/c > 1) | 298 | 1185 (v/c > 1) | 1313 (v/c > 1) | 335 |
| | | Thru | | 153 | 178 | 178 | 143 | 165 | 198 | 198 | 160 | 180 | 360 | 408 | 408 | 408 | 450 | 450 | 450 |
| | | Right | 140 | 590 | 745 | 745 | 595 | 690 | 990 | 990 | 730 | 835 | 463 | 550 | 550 | 550 | 635 | 635 | 635 |
| | SB | Left | 275 | 25 | 25 | 25 | 25 | 25 | 30 | 30 | 28 | 28 | 25 | 28 | 28 | 25 | 30 | 30 | 30 |
| | | Thru | | 558 | 1113 (v/c > 1) | 1195 (v/c > 1) | 1130 (v/c > 1) | 815 | 1395 (v/c > 1) | 1500 (v/c > 1) | 1308 (v/c > 1) | 1268 (v/c > 1) | 443 | 940 (v/c > 1) | 958 (v/c > 1) | 645 | 1058 (v/c > 1) | 1073 (v/c > 1) | 995 (v/c > 1) |
| | | Thru/Right | | 580 | 1153 (v/c > 1) | 1233 (v/c > 1) | 1163 (v/c > 1) | 838 | 1450 (v/c > 1) | 1552 (v/c > 1) | 1350 (v/c > 1) | 1308 (v/c > 1) | 450 | 955 (v/c > 1) | 970 (v/c > 1) | 655 | 1073 (v/c > 1) | 1088 (v/c > 1) | 1008 (v/c > 1) |



SITE DESIGN REQUIREMENTS

10/11/12 10:15 AM
 10/11/12 10:15 AM
 10/11/12 10:15 AM

REQUIREMENTS

1. SITE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

2. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

3. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

4. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

5. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

6. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

7. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

8. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

9. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

10. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

11. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

12. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

13. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

14. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

15. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

16. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

17. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

18. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

19. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

20. THE DESIGN SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

BOHLER ENGINEERING

4000 MANOR DRIVE, SUITE 306
 CHALFONT, PENNSYLVANIA 18914
 PHONE: 610-281-0800
 FAX: 610-281-0802
 WWW.BOHLERENGINEERING.COM

REVISIONS

| REV | DATE | COMMENT | BY |
|-----|------|---------|----|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

CALL BEFORE YOU DIG!

PHILADELPHIA WATERWORKS & POWER DEPARTMENT
 1500 MARKET STREET, PHILADELPHIA, PA 19102
 215-686-1000

PAI
 PHILADELPHIA AREA INFORMATION

PHILADELPHIA WATERWORKS & POWER DEPARTMENT
 1500 MARKET STREET, PHILADELPHIA, PA 19102
 215-686-1000

NOT APPROVED FOR CONSTRUCTION

PROPOSED PLAN: 10/11/12
 DRAWING: P11-P
 CHECKED BY: W.R. REARDEN
 DATE: 10/11/12
 SCALE: 1/8" = 1'-0"
 GDS: W.R. REARDEN

PRELIMINARY/FINAL AND DVI COMMENT PLANS

FOR
 CORSON STREET ACQUISITION
 LIMITED PARTNERSHIP
 PROPOSED OFFICE AND GARAGE
 WEST PHILADELPHIA
 LINDSEY-CORSON BARRINGTON & FLEMING TOWNSHIP
 MONTGOMERY COUNTY,
 COMMONWEALTH OF PENNSYLVANIA

BOHLER ENGINEERING

4000 MANOR DRIVE, SUITE 306
 CHALFONT, PENNSYLVANIA 18914
 PHONE: 610-281-0800
 FAX: 610-281-0802
 WWW.BOHLERENGINEERING.COM

W.R. REARDEN

PROFESSIONAL ENGINEER
 PENNSYLVANIA LICENSE NO. 10201

SHEET TITLE

SITE PLAN
 (RECORD PLAN X OF X)

SHEET NUMBER

2
 OF 30X

PROJECT NUMBER

11-08-1449

REVISED: 11-08-1449

FIGURE 1
 Site Plan
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

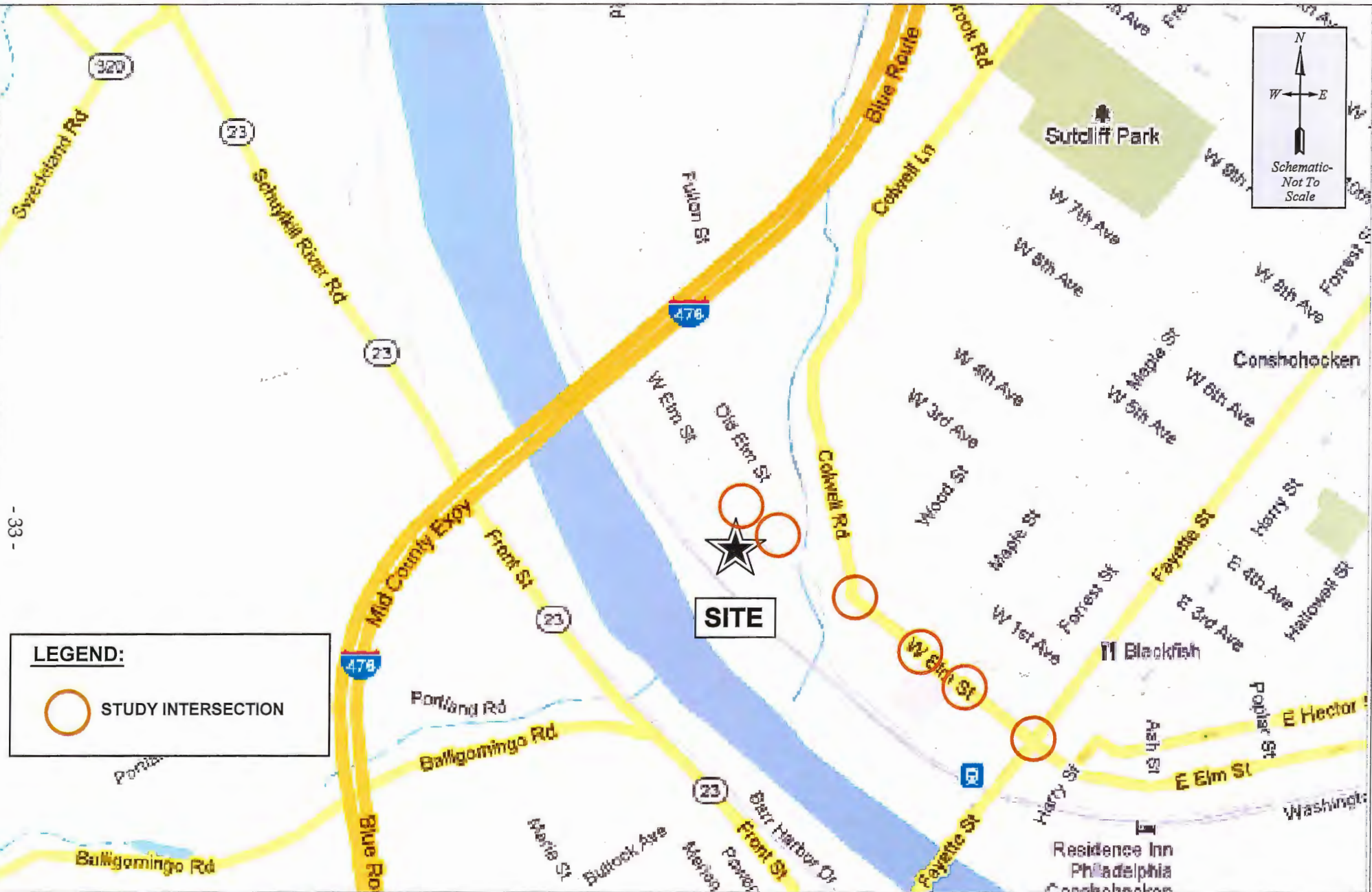


FIGURE 2
 Site Location Map
ELM STREET OFFICE DEVELOPMENT
CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA



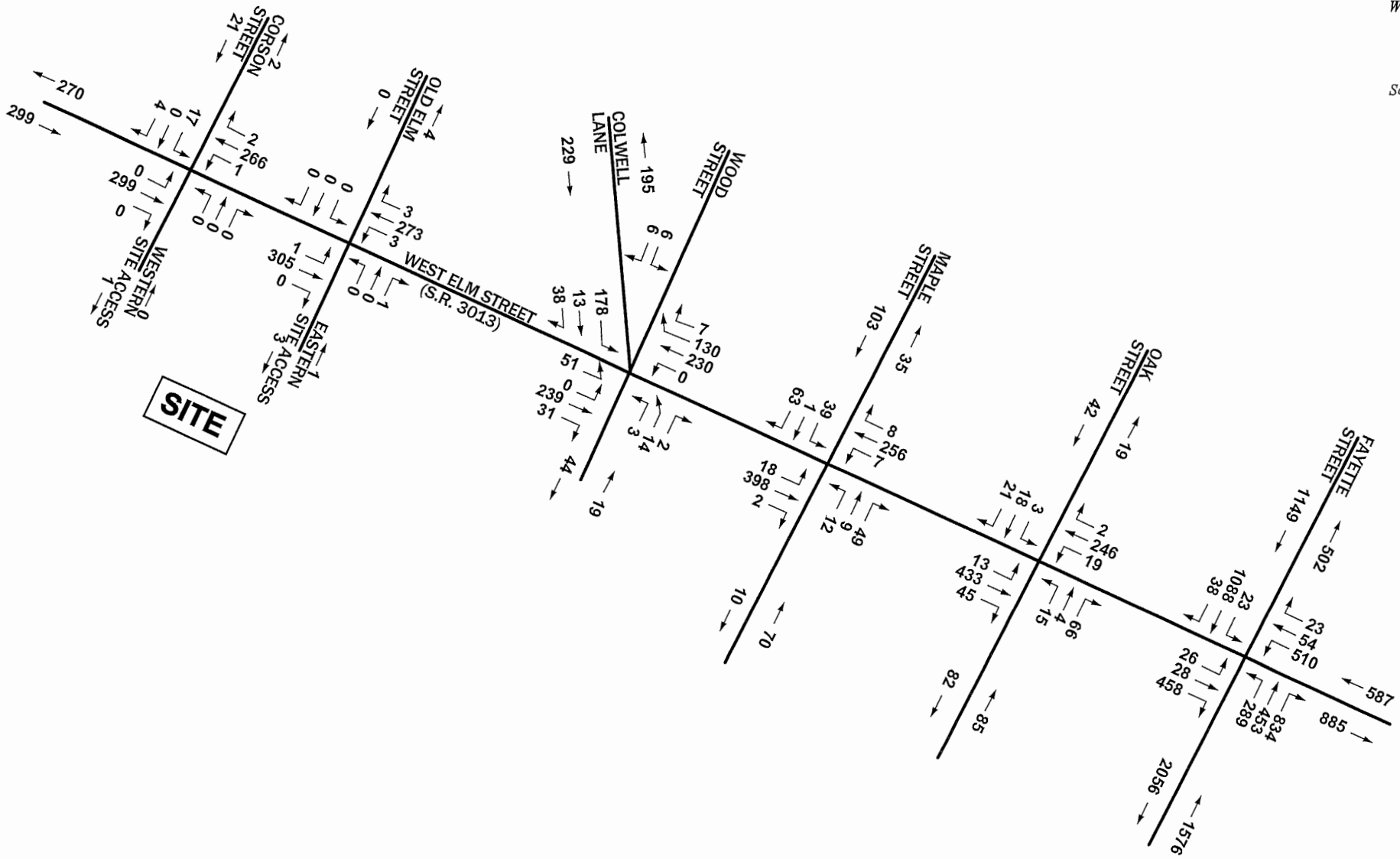
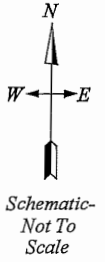
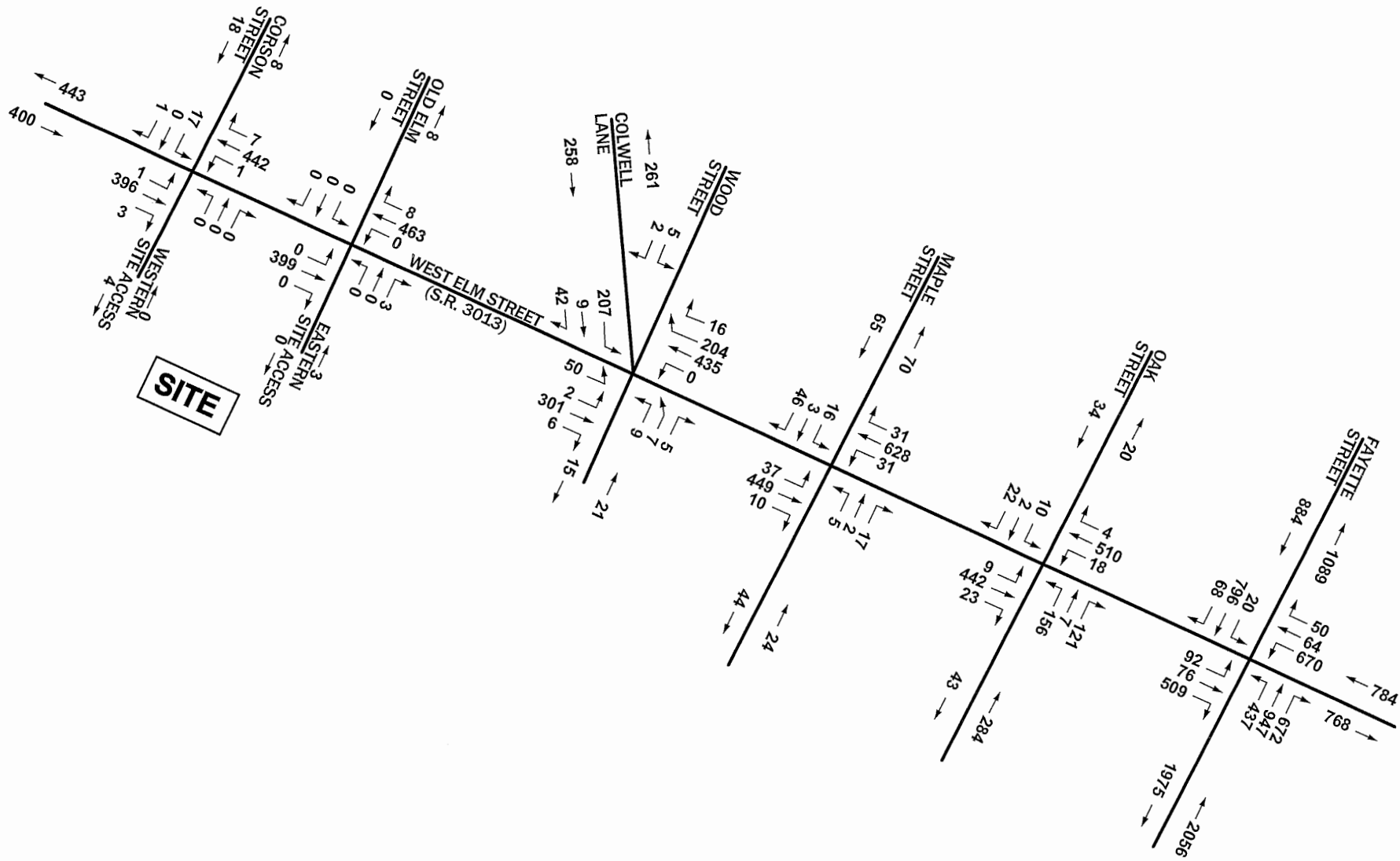
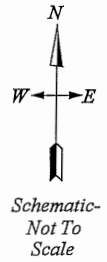


FIGURE 3A
 2015 Existing Weekday Morning Peak Hour Traffic Volumes
ELM STREET OFFICE DEVELOPMENT
CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA



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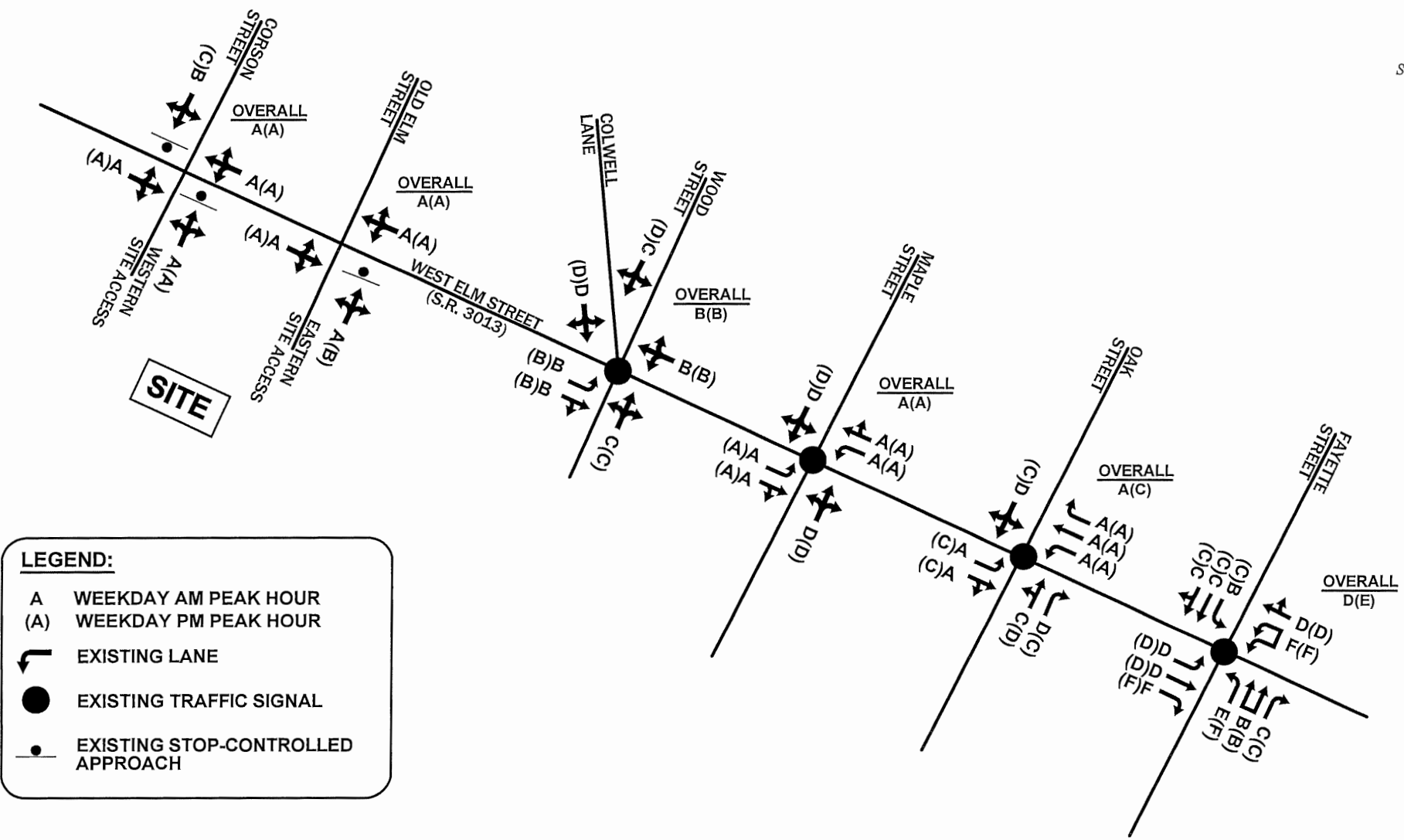
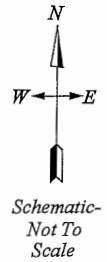


- 35 -

FIGURE 3B
 2015 Existing Weekday Afternoon Peak Hour Traffic Volumes
ELM STREET OFFICE DEVELOPMENT
CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA



(8/24/12-TML-AB) i:\Eng\811675\Dwg\Figures\Figure 3B.dwg



LEGEND:

- A WEEKDAY AM PEAK HOUR
- (A) WEEKDAY PM PEAK HOUR
- ↪ EXISTING LANE
- EXISTING TRAFFIC SIGNAL
- EXISTING STOP-CONTROLLED APPROACH

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FIGURE 3C
 2015 Existing Peak Hour Levels of Service
ELM STREET OFFICE DEVELOPMENT
CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA



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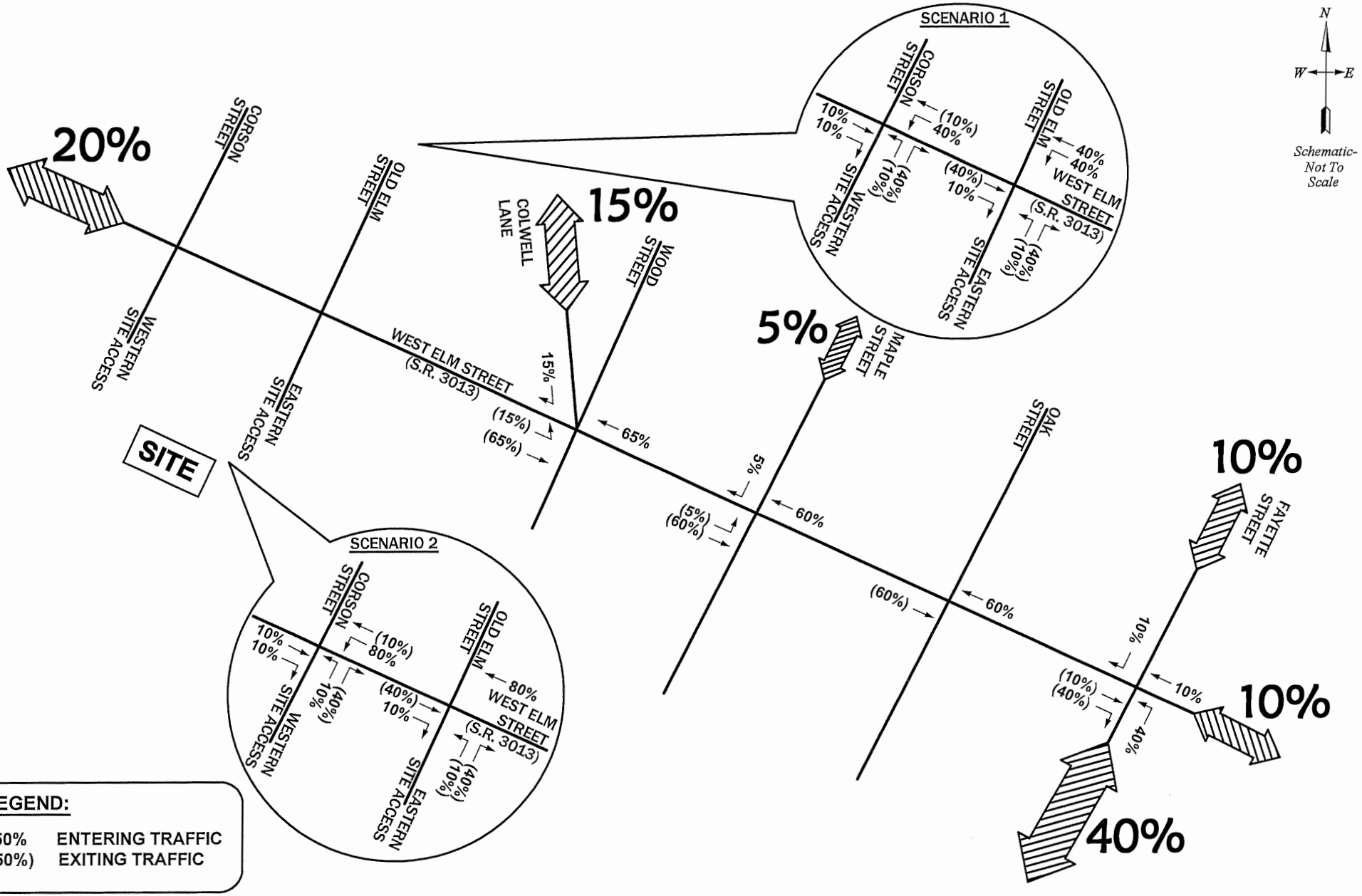


FIGURE 4A
 Directions of Approach and Departure
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

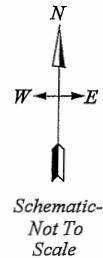
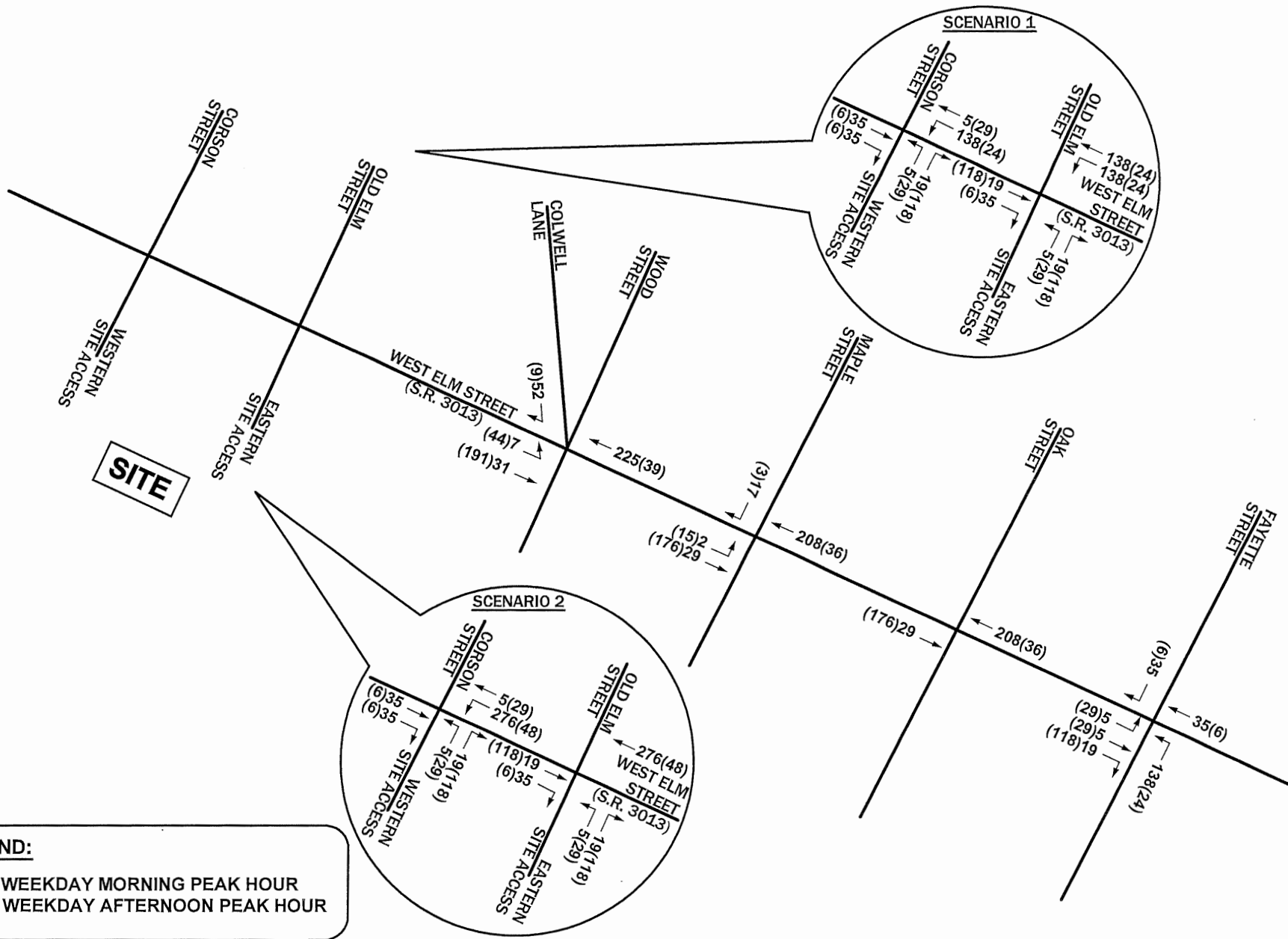
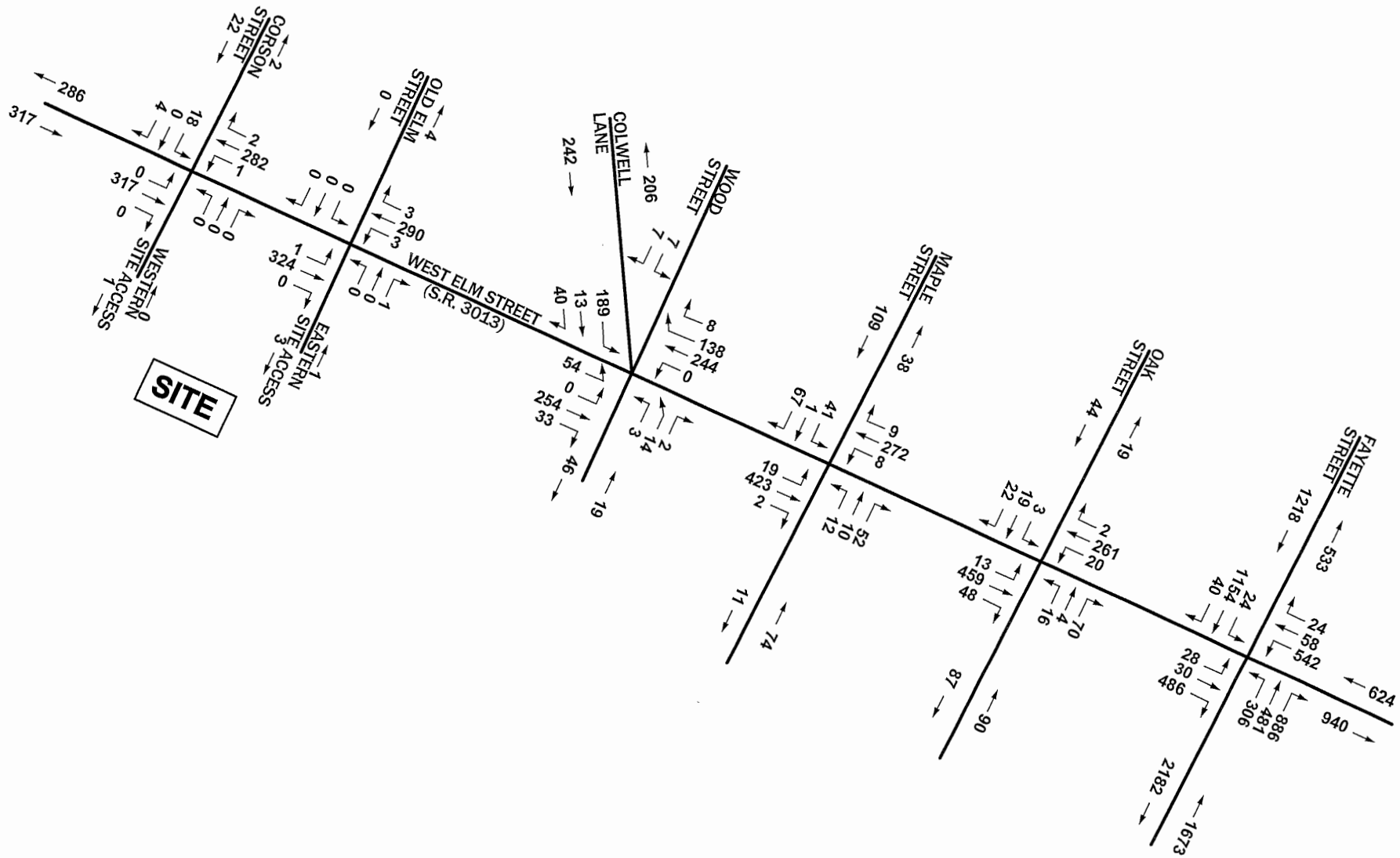
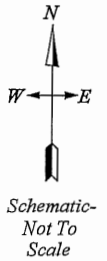


FIGURE 4B
 Site-Generated Traffic Assignment
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

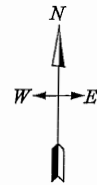


- 39 -

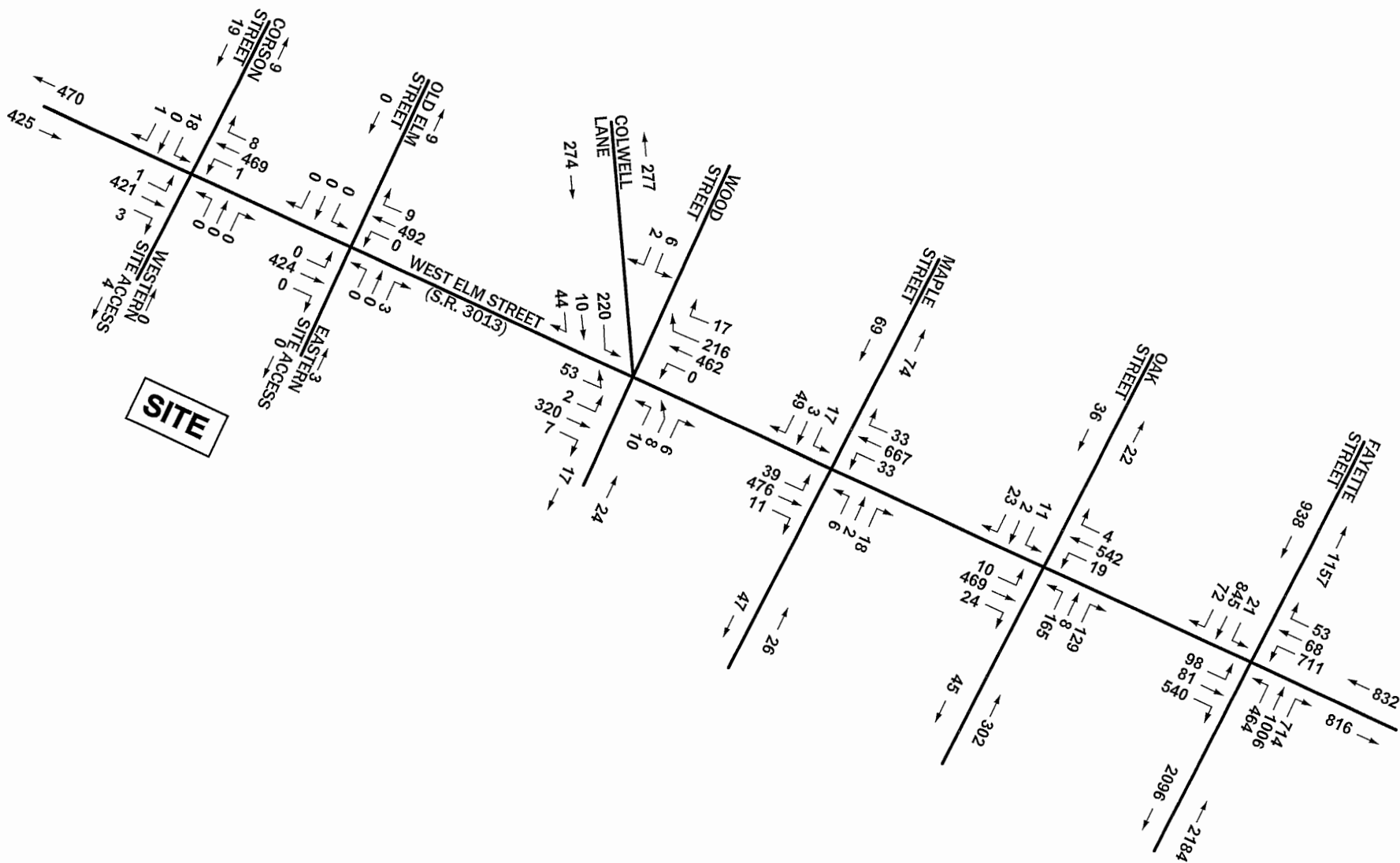
FIGURE 5A
 2019 Future Weekday Morning Peak Hour Traffic Volumes Without Development
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA



(6/2/2014 - TML) I:\eng\811675\12\dwg\Figures\Figure 5A.dwg



Schematic
Not To
Scale



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FIGURE 5B
 2019 Future Weekday Afternoon Peak Hour Traffic Volumes Without Development
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA



(6/2/2014 - TML) I:\eng\811675\12\dwg\Figures\Figure 5B.dwg

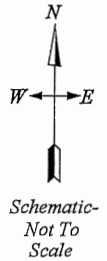
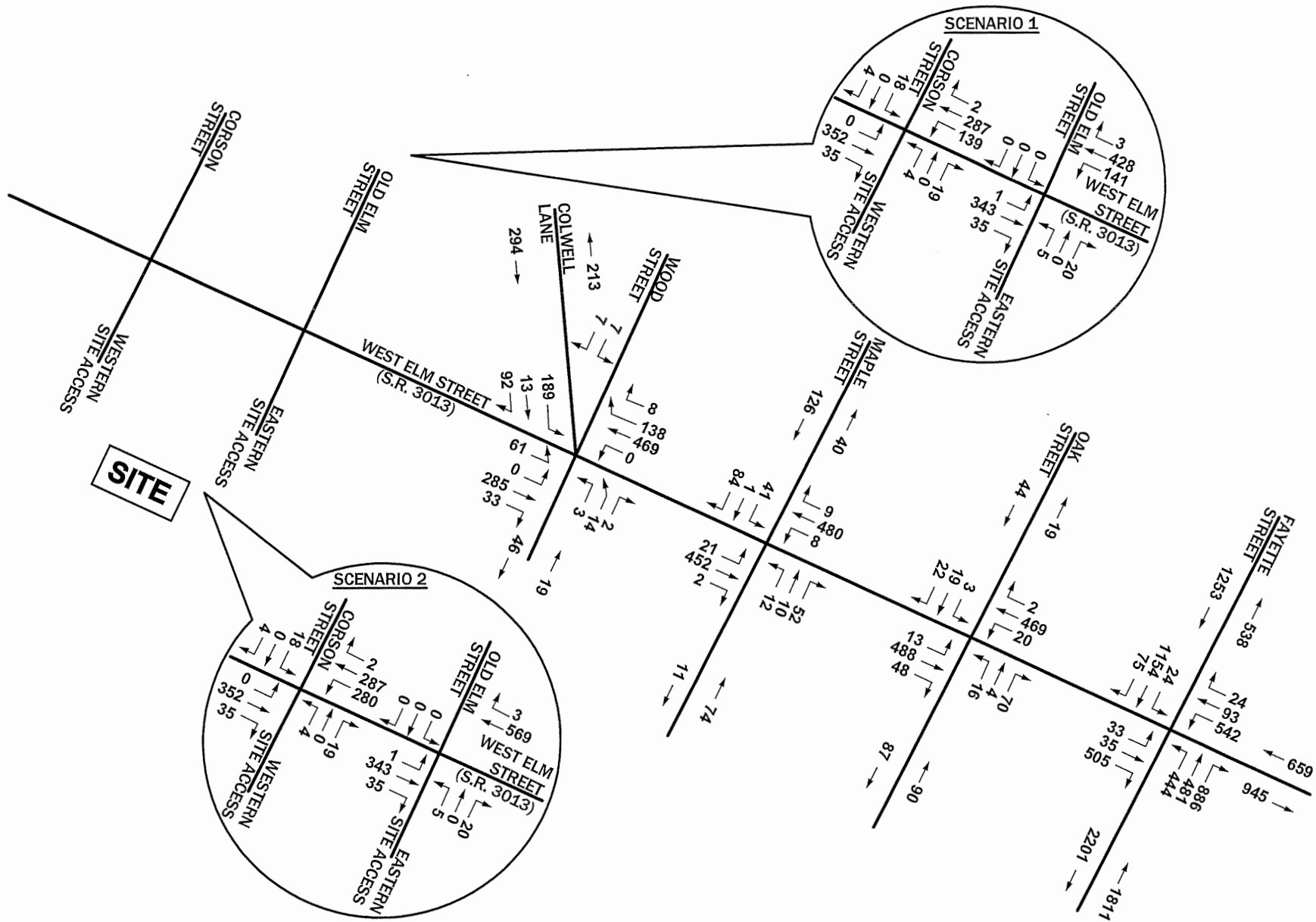


FIGURE 5C
 2019 Future Weekday Morning Peak Hour Traffic Volumes With Development
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA



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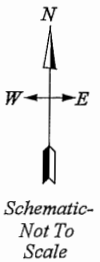
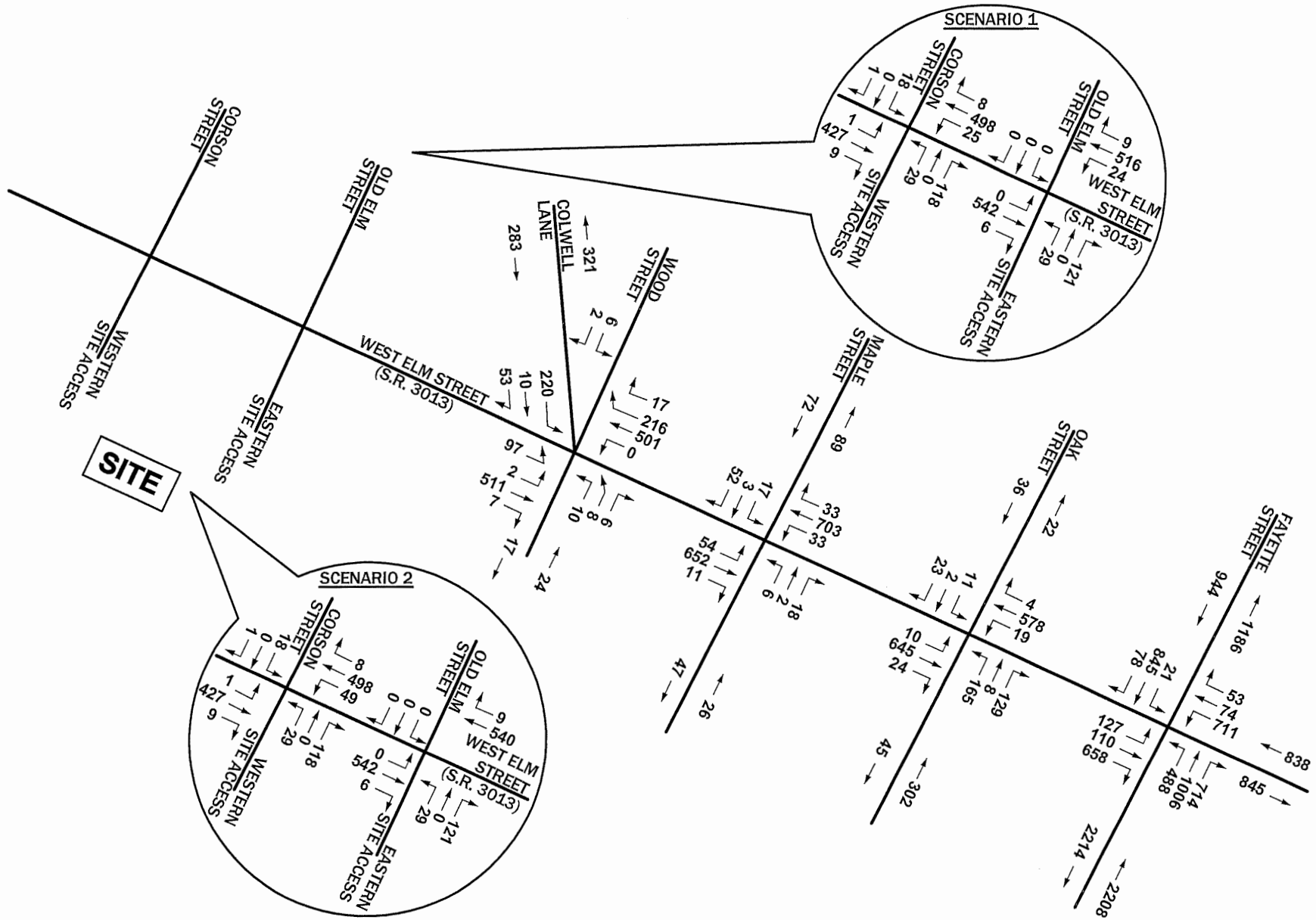
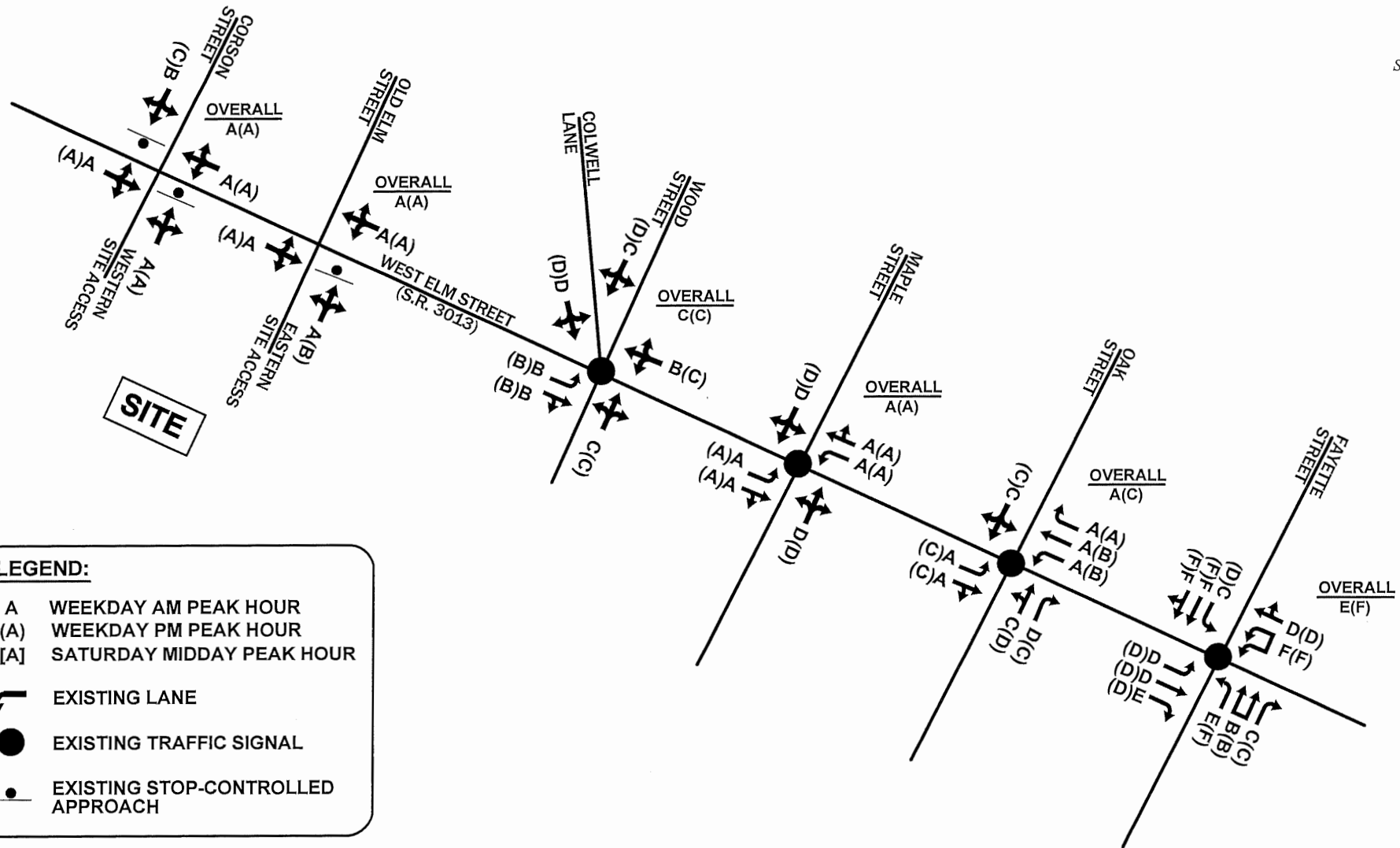
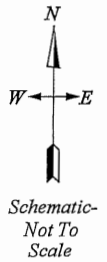


FIGURE 5D
 2019 Future Weekday Afternoon Peak Hour Traffic Volumes With Development
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA



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FIGURE 5E
 2019 Future Peak Hour Levels of Service Without Development
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA



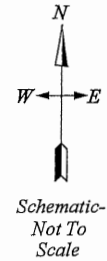
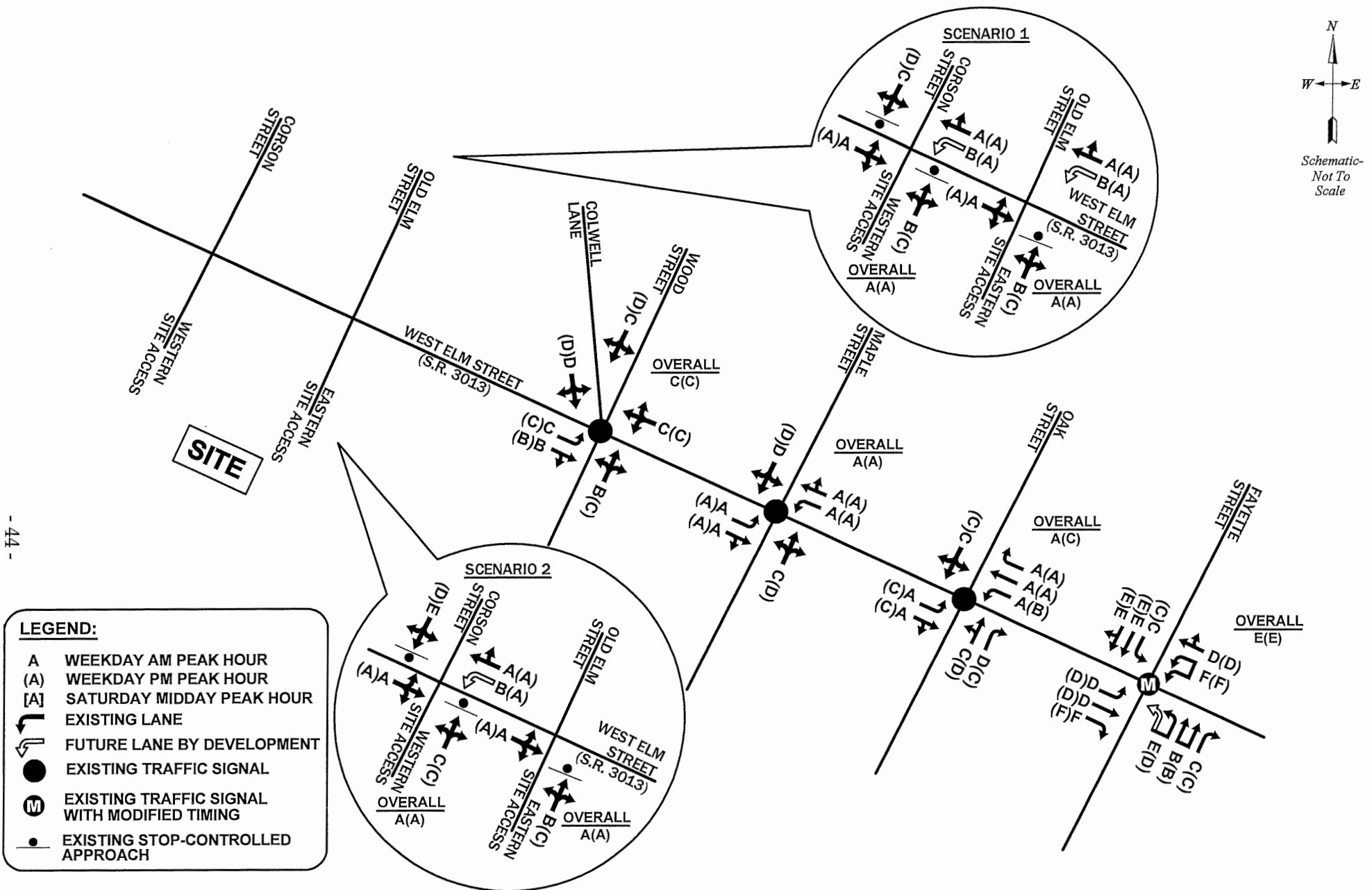
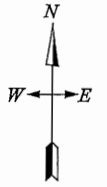


FIGURE 5F
 2019 Future Peak Hour Levels of Service With Development
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA





Schematic-
Not To
Scale

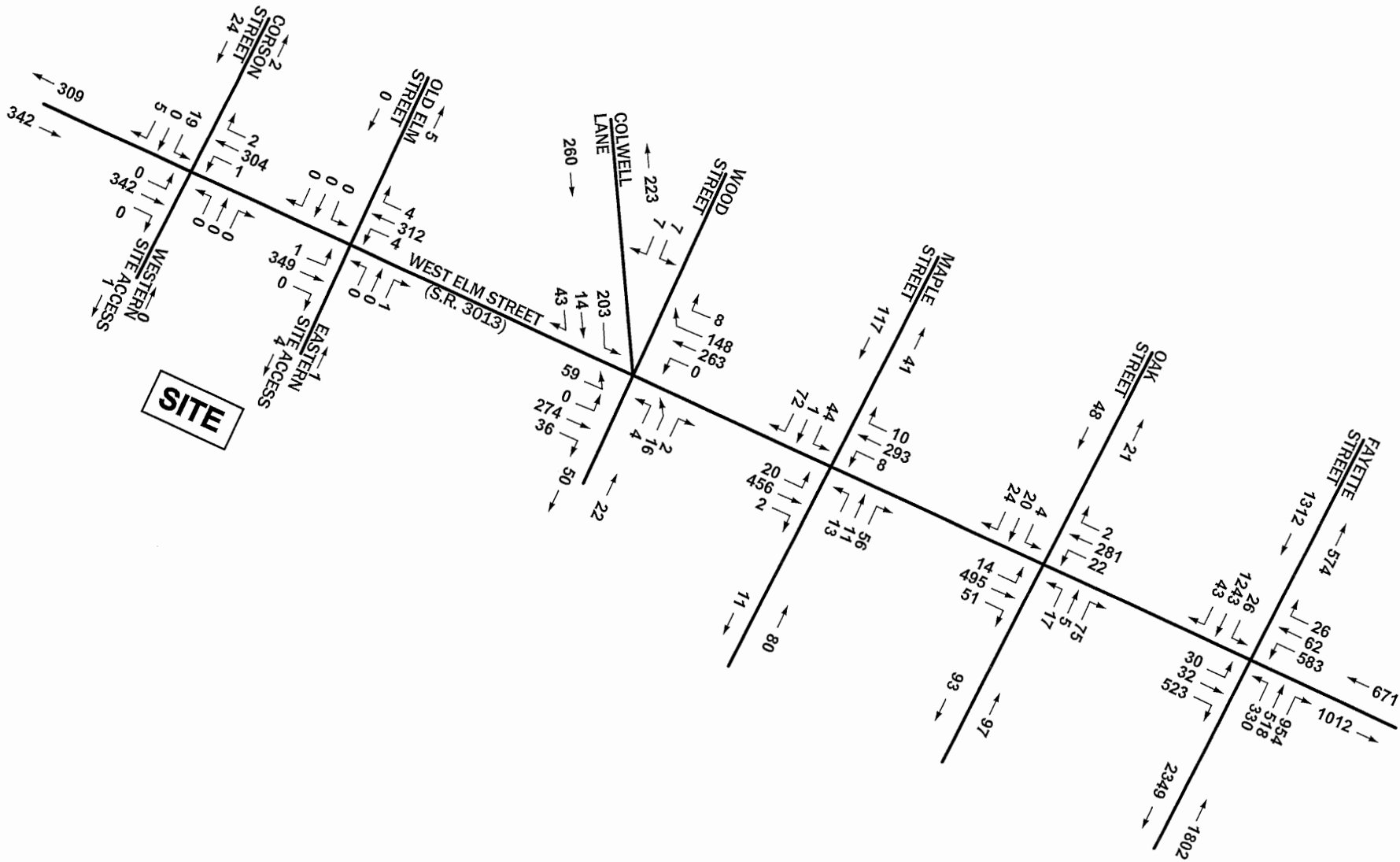
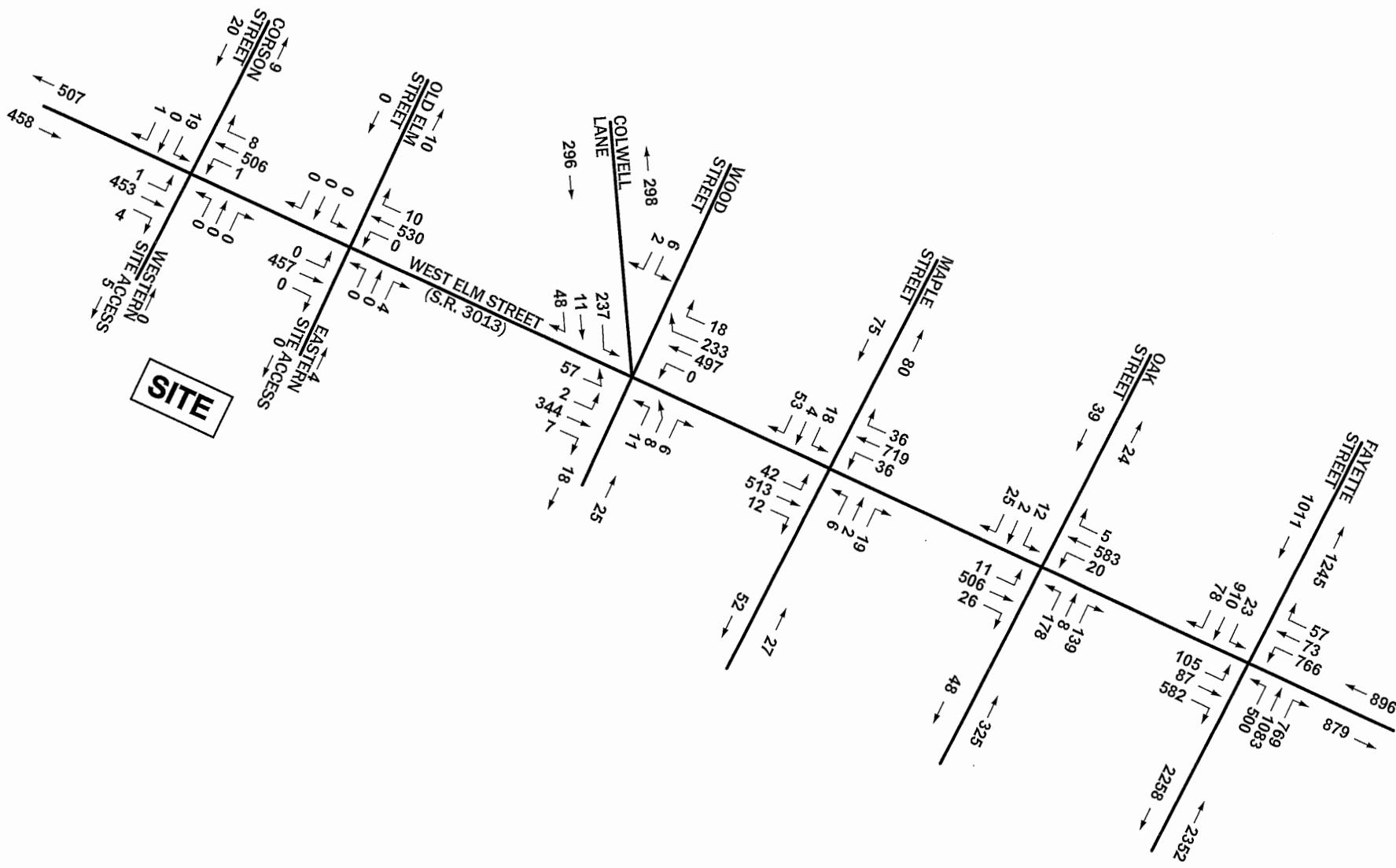
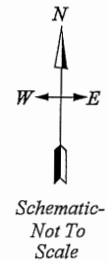


FIGURE 6A
2024 Design Year Weekday Morning Peak Hour Traffic Volumes Without Development
ELM STREET OFFICE DEVELOPMENT
CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA



(6/2/2014 - TML) I:\eng\811675\12\dwg\Figures\Figure 6A.dwg



SITE

FIGURE 6B
 2024 Design Year Weekday Afternoon Peak Hour Traffic Volumes Without Development
ELM STREET OFFICE DEVELOPMENT
CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA



(6/2/2014 - TML) I:\eng\811675\12\dwg\Figures\Figure 6B.dwg

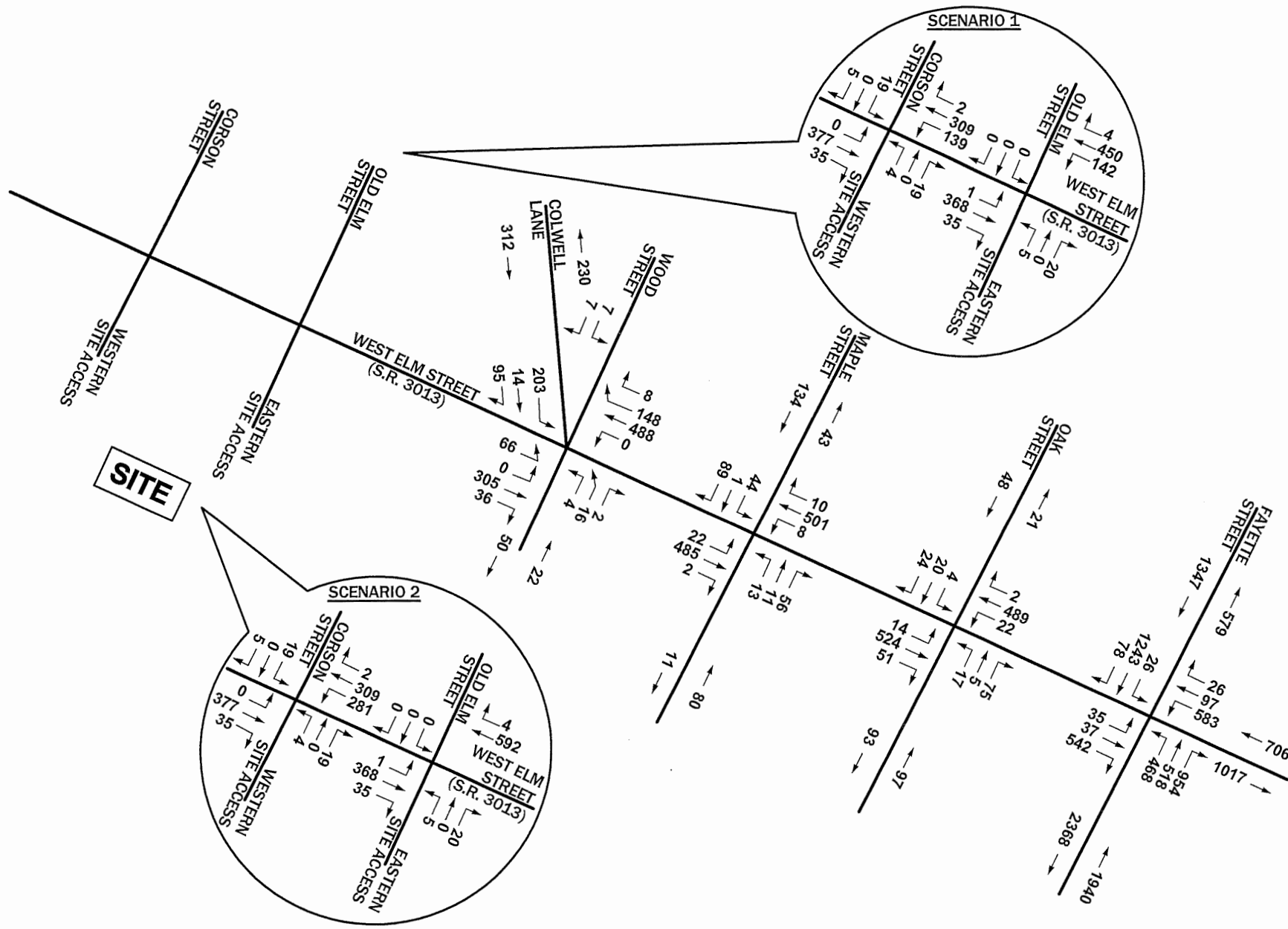


FIGURE 6C
 2024 Design Year Weekday Morning Peak Hour Traffic Volumes With Development
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

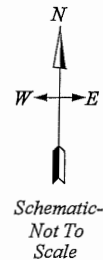
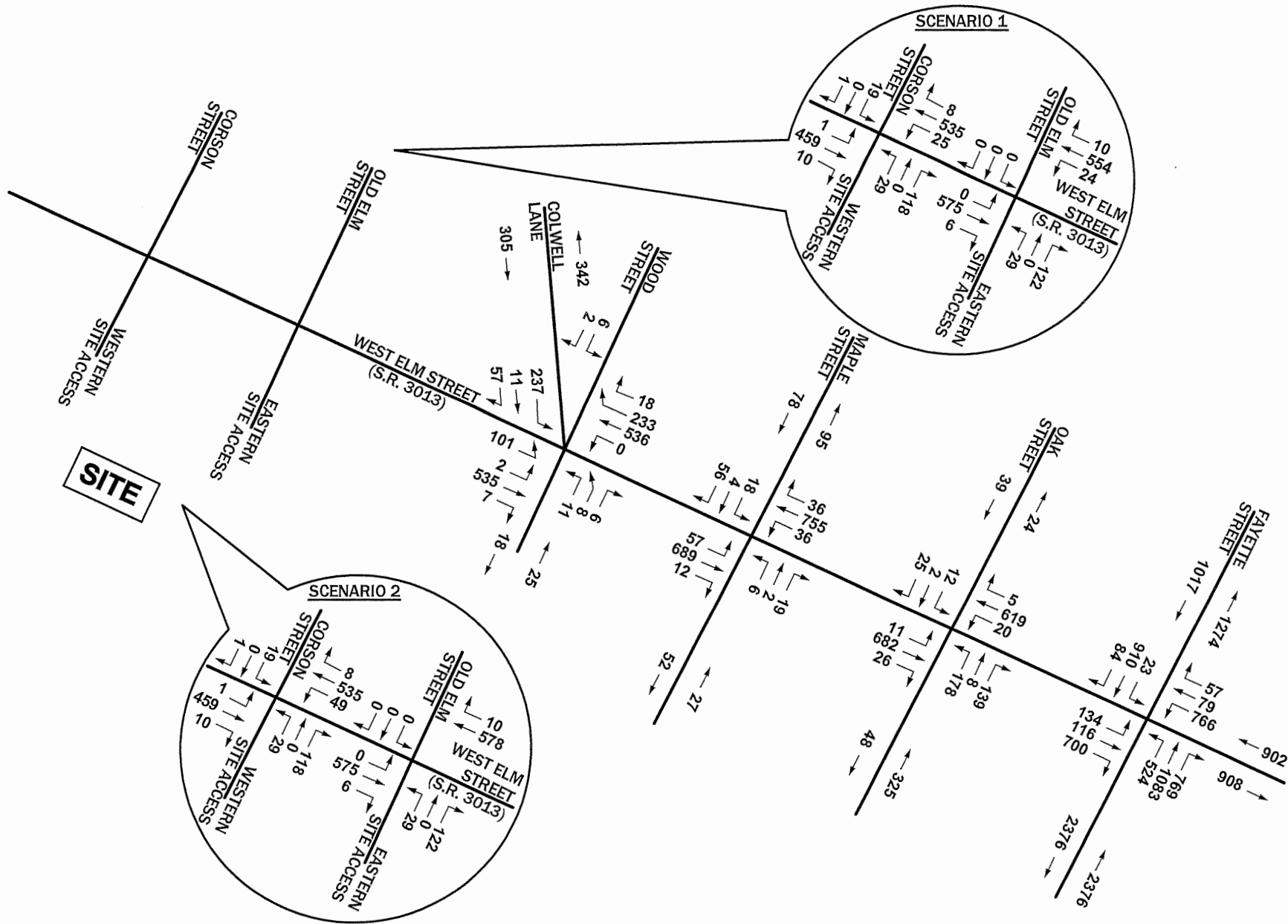
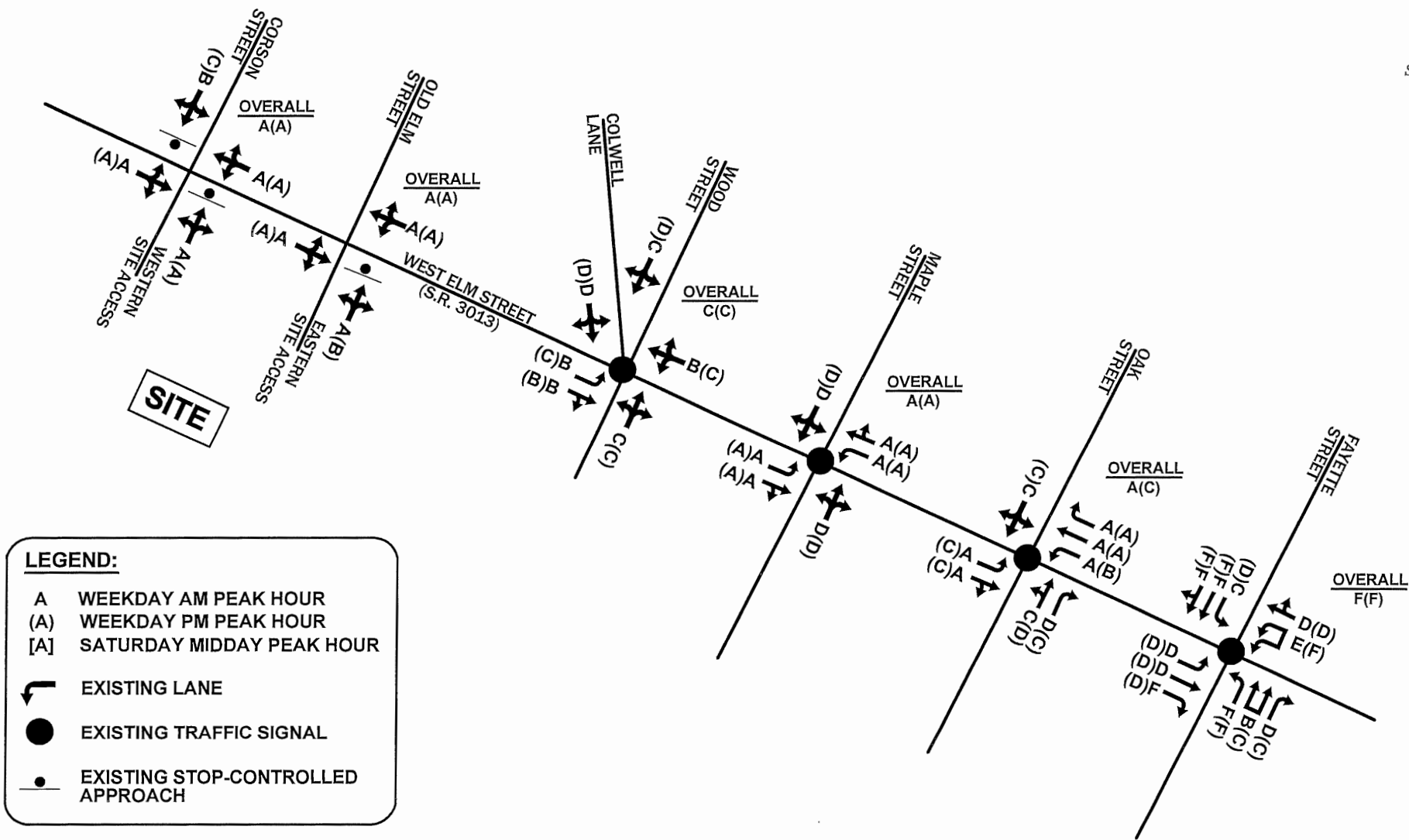
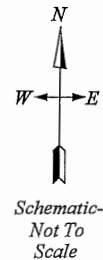





FIGURE 6D
 2024 Design Year Weekday Afternoon Peak Hour Traffic Volumes With Development
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA





LEGEND:

- A WEEKDAY AM PEAK HOUR
- (A) WEEKDAY PM PEAK HOUR
- [A] SATURDAY MIDDAY PEAK HOUR
-  EXISTING LANE
-  EXISTING TRAFFIC SIGNAL
-  EXISTING STOP-CONTROLLED APPROACH

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FIGURE 6E
 2024 Design Year Peak Hour Levels of Service Without Development
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

LEGEND:

- A WEEKDAY AM PEAK HOUR
- (A) WEEKDAY PM PEAK HOUR
- [A] SATURDAY MIDDAY PEAK HOUR
- EXISTING LANE
- ← FUTURE LANE BY DEVELOPMENT
- EXISTING TRAFFIC SIGNAL
- Ⓜ EXISTING TRAFFIC SIGNAL WITH MODIFIED TIMING
- EXISTING STOP-CONTROLLED APPROACH

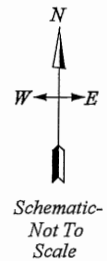
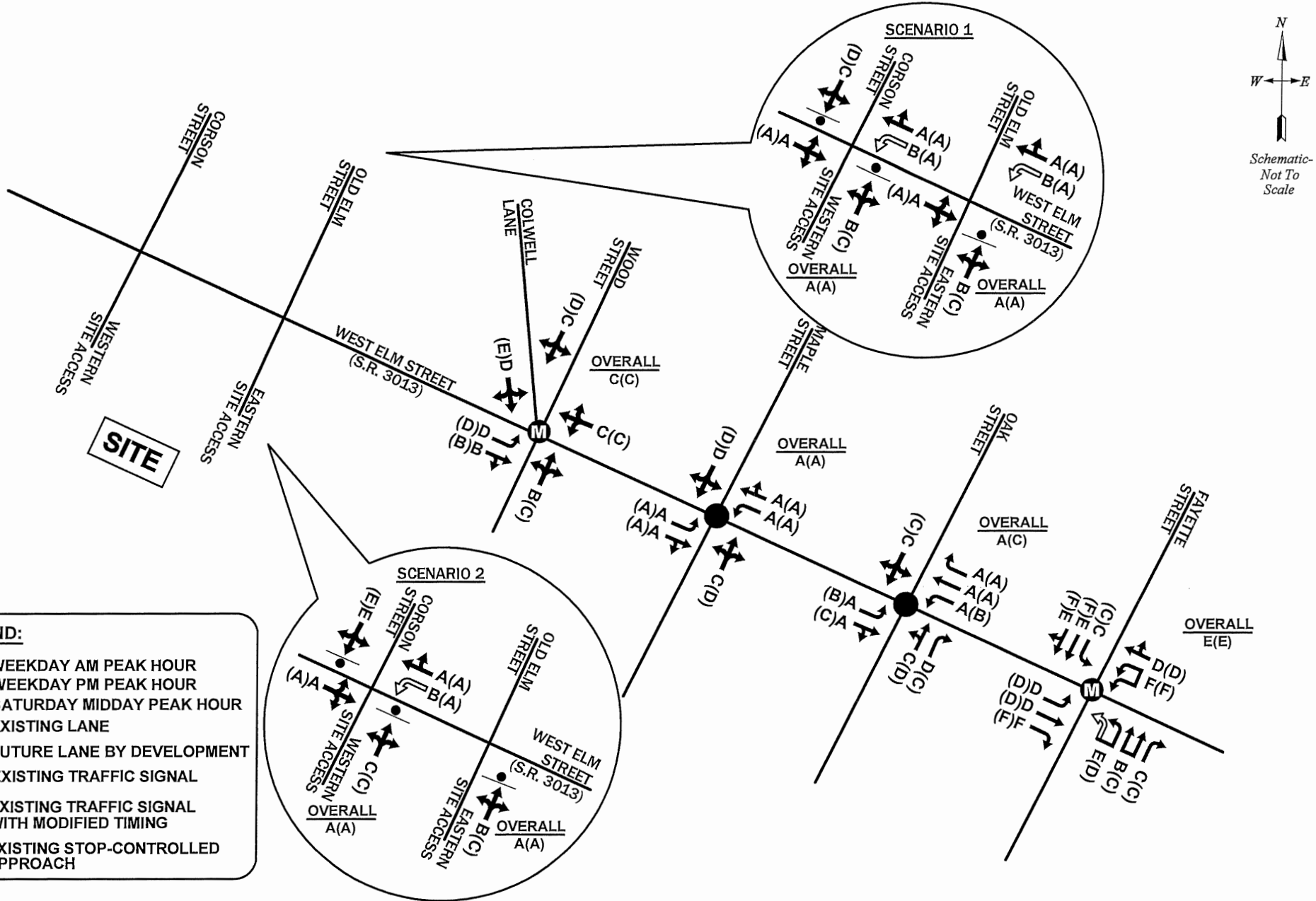


FIGURE 6F
 2024 Design Year Peak Hour Levels of Service With Development
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA



APPENDIX A

PennDOT Correspondence



McMAHON ASSOCIATES, INC.
 840 Springdale Drive | Exton, PA 19341
 P 610-594-9995 | F 610-594-9565
 www.mcmahonassociates.com

April 14, 2014

PRINCIPALS
 Joseph W. McMahon, P.E.
 Joseph J. Donsanis, P.E., PTOE
 John S. DePalma
 William T. Stetler
 Casey A. Moore, P.E.
 Gary R. McLaughlin, P.E., PTOE

Mr. Francis J. Hanney
 Traffic Control Services Manager
 PennDOT District 6-0
 7000 Geerdes Boulevard
 King of Prussia, PA 19406

ASSOCIATES
 John J. Mitchell, P.E.
 Christopher J. Williams, P.E.
 R. Trent Ebersole, P.E.
 Matthew M. Kozsusch, P.E.

RE: **Transportation Impact Study Scoping Meeting Application**

Elm Street Office Development

Conshohocken Borough, Montgomery County, PA
 Traffic Log No. M12-039XP
 McMahon Project No. 811675.12

Dear Mr. Hanney:

McMahon Associates, Inc. (McMahon) is pleased to submit the following Transportation Impact Study (TIS) Scoping Meeting Application, per the *Policies and Procedures for Transportation Impact Studies Related to Highway Occupancy Permits*, Revised October 21, 2013 (Strike-off Letter 494-13-13) for the proposed 324,860 square-foot office development located on the south side of Elm Street (S.R. 3013) just west of Colwell Lane in Conshohocken Borough, Montgomery County. Please be advised that we previously submitted, and PennDOT approved, a transportation impact study scoping application for an apartment development on this property (Traffic Log No. M12-039XP). The scope for this modified application generally follows the scope outlined in the original approved application. We respectfully request your review of this application.

**TRANSPORTATION IMPACT STUDY
 (TIS) SCOPING MEETING APPLICATION**

Scoping Meeting Date: *To be determined.*

Applicant: *Equus Capital Partners, Ltd.*

Applicant's Consultant: *McMahon Associates, Inc.*

Applicant's Primary Contact: *Christopher J. Williams, P.E.*

List of meeting attendees along with phone numbers and email addresses

Corporate Headquarters: Fort Washington, Pennsylvania
 Serving the East Coast from 11 offices throughout the Mid-Atlantic, New England, and Florida

Mr. Francis J. Hanney
 April 14, 2014
 Page 2 of 10

Francis J. Hanney, PennDOT District 6-0
 610-205-6560
fhannec@pa.gov

Christine Stetler, Conshohocken Borough
 610-828-1092
cstetler@conshohockenpa.org

Paul Hughes, P.E., Remington, Vernick & Beach Engineers (Representing Conshohocken Borough)
 610-940-1050
paul.hughes@rvc.com

John Forde, Equus Capital Partners, Ltd.
 215-496-0400
jforde@eqpltd.com

Lou Colagreco, Riley, Ripper, Hollin & Colagreco
 (610) 647-5800
lou@rrhc.com

Bill Rearden, P.E., Bohler Engineering, Inc.
 215-996-9100
wrearden@bohlereng.com

Christopher J. Williams, P.E., McMahon Associates, Inc.
 610-594-9995
cwilliams@mcmahonassociates.com

- (1) LOCATION OF PROPOSED DEVELOPMENT: (Attach location map if available)
- PennDOT Engineering Dist.: 6-0 County: *Montgomery*
- Municipality: *Conshohocken Borough*
- State Route(s) (SR): *3013*
- Segment(s): *0020* Offset(s): *0000*
- A map of the study area is provided in **Exhibit 1**.
- (2) DESCRIPTION OF PROPOSED DEVELOPMENT: (Attach site plan if available)

Proposed site access: One unsignalized access opposite Old Elm Street, and one unsignalized access opposite Carson Street.

Proposed land uses: 324,860 square feet of office space

A site plan is provided attached for your reference.

Community linkages (access to neighboring properties, cross easements, pedestrian and transit accommodations):

The Conshohocken train station is located along West Washington Street just east of the site, and this station is served by SEPTA's Norristown/Mannayunk Regional Rail Line. The train station is located approximately 0.34 miles from the site and is accessible from the site by pedestrians and bicyclists.

SEPTA Bus Routes 95 and 97 provide service at the Conshohocken train station.

The site is located along the Schuylkill River Trail and adjacent to the Cross County Trail, and a portion of the Schuylkill River Trail passes through the site.

(3) DEVELOPMENT SCHEDULE AND STAGING:

Anticipated Opening Date: 2017

Full Buildout Date: 2017

Describe Proposed Development Schedule/Staging:

No phasing is proposed.

(4) TRIP GENERATION

(Use the most recent edition of "Institute of Transportation Engineers (ITE) Trip Generation," unless the Department approves another source. Non-ITE methods must be fully justified based on surveys of multiple sites of the same land use type and size.)

Trip generation for the proposed development will be based on:

ITE Trip Generation Manual.

(List proposed development land uses and associated ITE Land Use Codes)

Other independent surveys.

(Attach justification for non-ITE methods)

List land development and trip generation information, as appropriate. If necessary, attach additional sheets to indicate additional land uses or development phases.

| Land Use | Size | Daily | Weekday Morning Peak Hour | | | Weekday Afternoon Peak Hour | | |
|------------------------------------|--------------|--------------|---------------------------|-----------|------------|-----------------------------|------------|------------|
| | | | In | Out | Total | In | Out | Total |
| Office ¹ | 324,860 s.f. | 3,214 | 432 | 59 | 491 | 75 | 367 | 442 |
| Modal Split Reduction ² | | -642 | -86 | -12 | -98 | -15 | -73 | -88 |
| Total Site Trip Generation | | 2,572 | 346 | 47 | 393 | 60 | 294 | 354 |

¹ - ITE Land Use Code 700 at General Office
² - Modal split reduction of 20 percent.

(5) ESTIMATED DAILY TRIP GENERATION/DRIVEWAY CLASSIFICATION:

(a) Estimated Daily Trip Generation of Proposed Development – Assuming One Access Point and Full Build out/Occupancy of Entire Tract: 2,572 trips/day

(b) Driveway Classification Based on Trip Generation and One Access Point

Medium Volume:

High Volume: _____

(6) TRANSPORTATION IMPACT STUDY REQUIRED?

_____ No

Yes, based on: _____ 3,000 or more vehicle trips/day generated

During any one-hour time period, 100 or more new (added) vehicle trips generated entering or 100 or more new (added) vehicle trips generated exiting development

_____ Other considerations as described below:

(7) TRAFFIC IMPACT ASSESSMENT REQUIRED? No _____ Yes

(If a TIS is required, the following sections of this checklist will be discussed at the TIS Scoping Meeting. The applicant may provide preliminary information.)

(8) TIS STUDY AREA: (Describe; attach map and/or diagram)

Roadway and Study Intersections

- Fayette Street (S.R. 3016) and Elm Street (S.R. 3013 and 3059) [signalized]
- Elm Street (S.R. 3013) and Oak Street [signalized]
- Elm Street (S.R. 3013) and Maple Street [signalized]
- Elm Street (S.R. 3013) and Catwail Lane [signalized]
- Elm Street (S.R. 3013) and Old Elm Street
- Elm Street (S.R. 3013) and Corson Street

Land use context (Keeler to Smart Transportation Handbook)

Town/Village Neighborhood

Known Congestion Areas

Fayette Street corridor

Known Safety Concerns

None at this time.

Known Environmental Constraints

- 50-foot right-of-way along Elm Street.
- Buildings located close to the edge of Elm Street.
- Two-lane bridge over Plymouth Creek located approximately 75 feet east of the main site access.
- Existing utility poles are located just beyond the back of curb along both sides of Elm Street in the vicinity of the site.

Pedestrian/Bike Review (Community Centers, Parks, Schools, etc.)

Sidewalks are currently provided on both sides of Elm Street in the vicinity of the site. In addition, the site is located along the Schuylkill River Trail and adjacent to the Cross County Trail, and a portion of the Schuylkill River Trail passes through the site.

Transit Review (Current routes/stops)

The Conshohocken train station is located along West Washington Street just east of the site, and this station is served by SEPTA's Norrisstown/Maryland Regional Rail Line. The train station is located approximately 0.34 miles from the site and is accessible from the site by pedestrians and bicyclists.

SEPTA Bus Routes 95 and 97 provide service at the Conshohocken train station.

(9) STUDY AREA TYPE: Urban X Rural _____

(10) TIS ANALYSIS PERIODS AND TIMES:

(List periods and times. Normal analysis periods are existing conditions, 5 years in the future without development, and 5 years in the future with development. Normal analysis times for each period are the AM peak hour, the PM peak hour, and the peak hour of site-generated traffic).

The weekday morning commuter (7:00 AM to 9:00 AM) and weekday afternoon commuter (4:00 PM to 6:00 PM) peak periods will be studied under existing and future conditions (without development and with development) during the development build-out year (2017), as well as five years after the build-out year (2022), per PennDOT's transportation impact study guidelines.

(11) TRAFFIC ADJUSTMENT FACTORS:

(a) Seasonal Adjustment (Identify counts requiring adjustment and methodology)

N/A

(b) Annual Base Traffic Growth: 1.5%/yr. Source: This growth rate exceeds the 0.76% per year annual growth rate recommended by the Bureau of Planning and Research Growth Factors for September 2012 to July 2013 for similar roadways in Montgomery County. It is our understanding that Conshohocken Borough is completing a traffic study that is evaluating the traffic impacts of several pending developments within the Borough, of which several are still in the preliminary planning stages and not yet approved. Therefore, so as not to replicate the Borough study, but in order to have some accounting of local development background traffic growth, we propose a higher (double) annual growth rate.

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

| Land Use | % | Source |
|----------|---|--------|
|----------|---|--------|

N/A

(d) Captured Trips for Multi-Use Sites:
 (List % and manner of application. Attach justification where required.)

N/A

(e) Modal Split Reductions

A four percent trip reduction for pedestrian accommodations since sidewalks are provided along both sides of Elm Street and most of the study roadways.

A one percent trip reduction for bicycle accommodations since the Schuylkill River Trail runs through the site, and since the Cross County Trail is located immediately adjacent to the site.

Based on the ITE publication Trip Generation Handbook, Second Edition, up to a 15 percent reduction in trip generation can be taken for office developments due to the close proximity of a light rail station. The site is located in close proximity to the SEPTA Regional Rail Conshohocken Station, and convenient off-street pedestrian facilities (Schuylkill River Trail) connect the site to the rail station. Furthermore, another trip generation count of a suburban office development located along SEPTA's Norristown/Maryland Regional Rail Line revealed a trip generation reduction due to train use alone of approximately 20 percent.

Conshohocken Borough, and specifically the Elm Street corridor continues to experience development, and clearly a major reason for locating here is the convenience of transportation options including the rail service, and pedestrian connections. Based on our observations and knowledge of the area, we recommend at least a 20 percent reduction for total modal split.

(f) Other Reductions

N/A

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

(Identify proposed developments with issues permits that need to be included.)

Based on discussions with Conshohocken Borough officials, there are several area developments which are currently in various stages of planning within the Borough. Several of these developments are in the preliminary planning stages, and have not been approved by the Borough. As such, the traffic generated by these developments will not be specifically accounted for in the study. However, an increased background traffic growth factor of 1.50% per year, which exceeds (double) PennDOT's recommended growth rate of 0.76% per year for similar roadways in Montgomery County, will be used to account for traffic generated by these developments. It is also noted that the Borough is completing a traffic study which examines the traffic impact of several pending developments within the Borough, and we are not attempting to replicate that study as part of this application.

(13) TRIP DISTRIBUTION AND ASSIGNMENT:

(Describe, explain/justify, attach diagram and related information.)

The trip distribution of the site-generated traffic is shown in Exhibit 2, as previously approved by PennDOT.

(14) APPROVAL OF DATA COLLECTION ELEMENTS AND METHODOLOGIES:

| Location | Period | Type |
|---------------------------------|--------|--------------|
| - Fayette Street and Elm Street | AM/PM | Manual Count |
| - Elm Street and Oak Street | AM/PM | Manual Count |
| - Elm Street and Maple Street | AM/PM | Manual Count |
| - Elm Street and Caldwell Lane | AM/PM | Manual Count |
| - Elm Street and Old Elm Street | AM/PM | Manual Count |
| - Elm Street and Corson Street | AM/PM | Manual Count |

These traffic counts were conducted on May 17 and May 22, 2012, and the traffic counts, as well as a plot of the existing counted traffic volumes are provided in Exhibit 3.

(15) CAPACITY/LOS ANALYSIS:

| Location | Period | Type |
|---------------------------------|--------|-----------|
| - Fayette Street and Elm Street | AM/PM | Synchro 8 |
| - Elm Street and Oak Street | AM/PM | Synchro 8 |
| - Elm Street and Maple Street | AM/PM | Synchro 8 |
| - Elm Street and Caldwell Lane | AM/PM | Synchro 8 |
| - Elm Street and Old Elm Street | AM/PM | Synchro 8 |
| - Elm Street and Corson Street | AM/PM | Synchro 8 |

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

(Projects programmed for construction of other developments with issued permits.)

To be determined.

(17) OTHER NEEDED ANALYSES:

(a) Sight Distance Analysis:
 (Required for all site access driveways; identify other locations)

Not applicable.

(b) Signal Warrant Analysis:
 (Identify locations)

To be determined.

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

To be determined.

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

To be determined.

(e) Analysis of the Need for Turning Lanes:
 (Identify locations/methodology)

PennDOT's guidelines outlined in Publication 46, Engineering and Traffic Studies, will be used to determine the need for auxiliary turn lanes.

- (f) Turning Lane Lengths:
(Identify methodology to be used)

PennDOT's guidelines outlined in Publication 46, Engineering and Traffic Studies, will be used to determine the length of any proposed auxiliary turn lanes.

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

To be determined.

- (h) Queuing Analysis:
(Identify locations/methodology)

Queuing analysis will be conducted at the signalized study intersections.

- (i) Gap Studies:
(Identify locations/methodology)

To be determined.

- (j) Crash Analysis:
(Identify locations)

Crash analysis will be conducted at all of the study intersections.

- (k) Weaving Analysis:
(Identify locations)

Not applicable.

- (l) Other Required Studies:
(Specify locations/methodology)

To be determined.

(18) ADDITIONAL COMMENTS OR RECOMMENDATIONS RELATIVE TO THE SCOPE OF THE TTS:

Signature of Applicant's Engineer _____ Date: _____

Signature of District Traffic PennDOT Representative _____ Date: _____

Signature of District Permit PennDOT Representative (if present) _____ Date: _____

Signature of Municipal Traffic Representative _____ Date: _____

Please do not hesitate to contact me with any questions. Thank you.

Sincerely,



Christopher J. Williams, P.E.
Vice President & General Manager - Exton

CJW//DG/ab
Attachments

cc: Christine Stetler, Conshohocken Borough
Paul Hughes, P.E., Remington, Vernick & Beach Engineers
John Forde, Equus Capital Partners, Ltd.
Lou Colagreco, Riley, Riper, Hollin & Colagreco
Bill Rearden, P.E., Bohler Engineering, Inc.

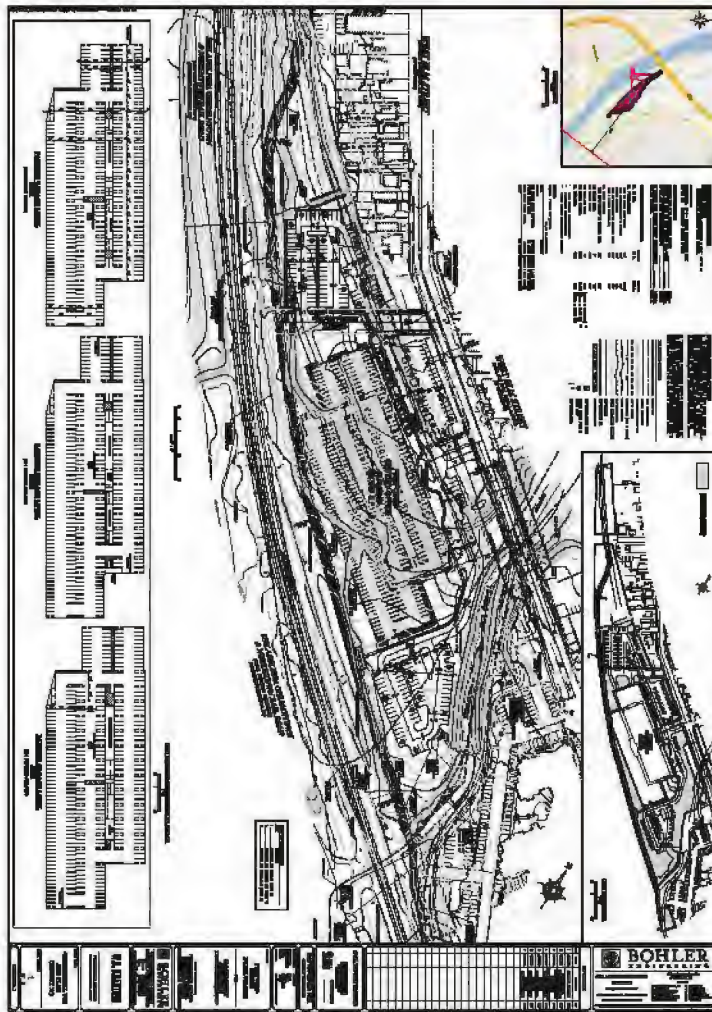


EXHIBIT 1
 Site Location Map
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

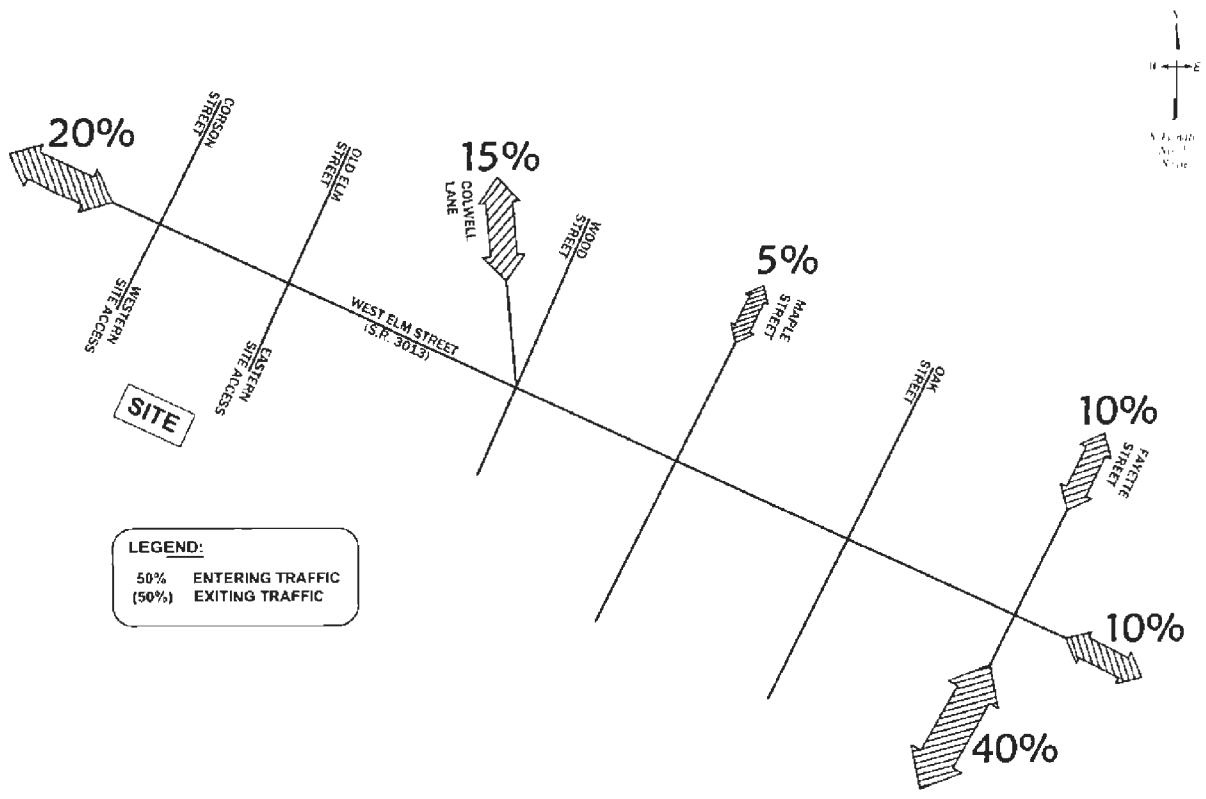


EXHIBIT 2
 Directions of Approach and Departure
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA



EXHIBIT 3

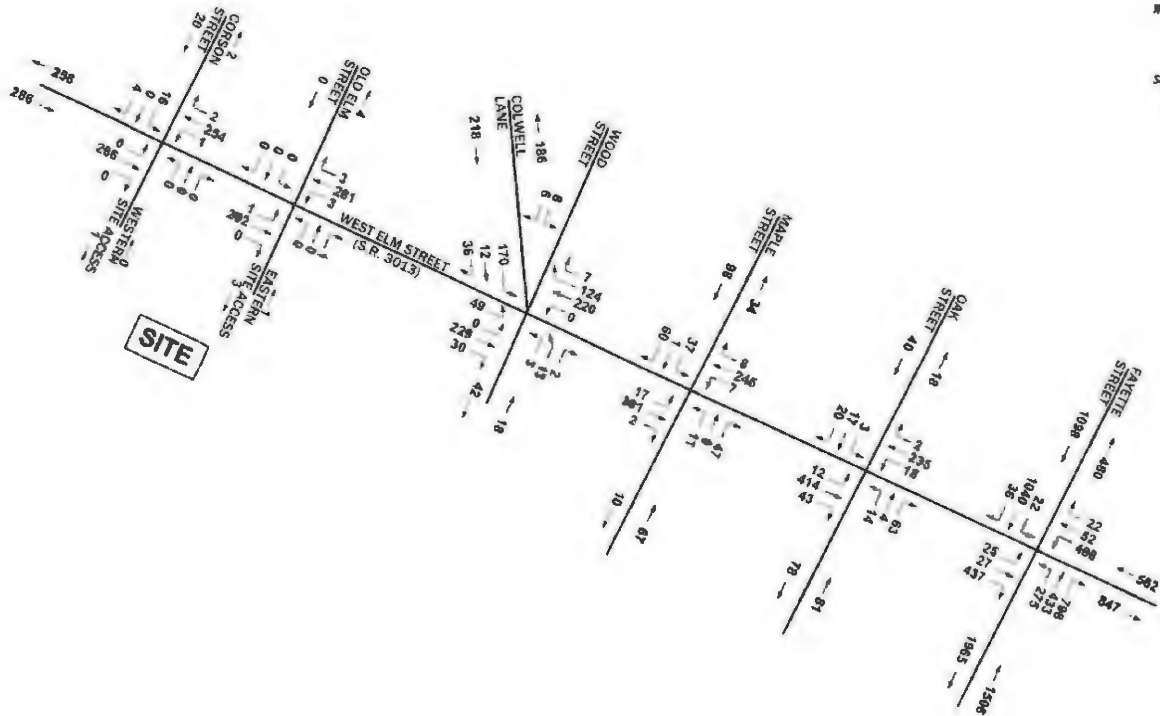


EXHIBIT 3-1
 2012 Existing Weekday Morning Peak Hour Traffic Volumes
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA

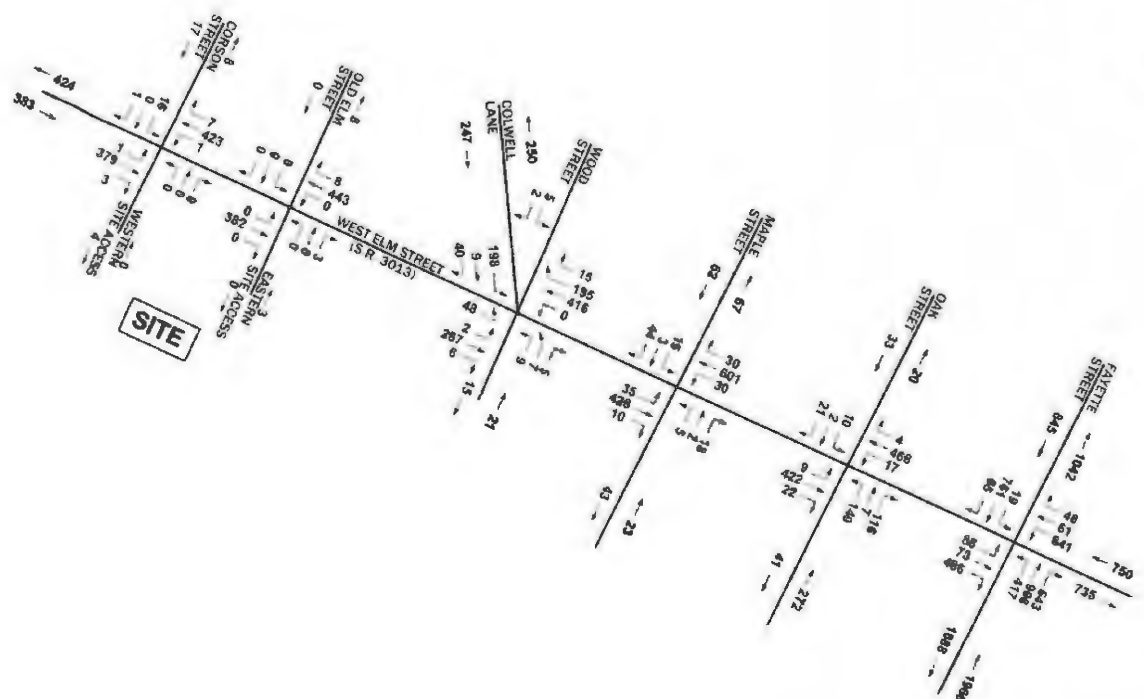


EXHIBIT 3-2
 2012 Existing Weekday Afternoon Peak Hour Traffic Volumes
ELM STREET OFFICE DEVELOPMENT
 CONSHOHOCKEN BOROUGH, MONTGOMERY COUNTY, PA



Gehman, Jeff

From: Williams, Chris
Sent: Tuesday, May 06, 2014 4:56 PM
To: Gehman, Jeff
Subject: FW: M12-039 BPG Office Development

We are on the clock

Christopher J. Williams, P.E.
McMahon Associates, Inc.
p: 610.594.9995 x 5104
www.mcmahonassociates.com

From: Lapenta, Susan [mailto:SLAPENTA@pa.gov]
Sent: Tuesday, May 06, 2014 1:33 PM
To: Williams, Chris
Cc: Hanney, Francis J.
Subject: FW: M12-039 BPG Office Development

Chris,

Scoping Comments:

1. Verify the build out year of 2017 of the 8 story office building at 324, 860 S.F. What is the status of the municipal land development approval?
2. Trip generation, type of study TIS, TIS Study area are acceptable.
3. Signal Equipment upgrades may be required for mitigation.
4. With the intense use of the project, it is anticipated that a left turn lane with be warranted for the site. The main access should be located at Corson Street. A left turn lane could be provided with widening along the frontage.
5. The proposed main access is too close to the structure for a left turn lane to be developed. Entering lefts will need to be restricted.
6. Be advised, based on the results of the TIS the applicant may be responsible for off-site transportation improvements if the development results in significant impacts to a study area intersection.

The Department has performed this preliminary review of the scoping application based on the limited information provided. We reserve the right to make future, additional, detailed comments based on the formal submission of the TIS and application for a Highway Occupancy Permit.

Susan

Susan LaPenta | Traffic Services Engineer
PA Department of Transportation | Engineering District 6-0
7000 Geerdes Blvd.
King of Prussia, PA 19406-1525
Phone: 610-205-6595 | Fax: 610-205-6598
www.dot.state.pa.gov



Date: 07/16/2015
Subject: Highway Occupancy Permit Application No. 88175 Returned For Revisions
To: Corson Street Acquisition Limited Partnership
3815 West Chester Pike
Newtown Square, PA 19073
From: PennDOT Engineering District 6-0
7000 Geerdes Boulevard
King of Prussia, PA 19406

Dear Applicant,

PennDOT has reviewed your application for completeness, consistency and compliance with applicable Department Regulations. This review has identified issues that must be addressed in order for our review to continue.

The Department's review comments are attached.

Once the comments have been addressed, please resubmit the application and associated material for further review.

Upon resubmission, the applicant's engineer should put together a letter that describes how each comment has been addressed and where each can be found. This will help expedite the review. For guidance on HOP applications refer to 67 PA Code, Chapter 441, Chapter 459 and PennDOT Publication 282, "Highway Occupancy Permit Guidelines". Additional comments may follow upon review of the resubmitted application.

If you have any questions regarding this matter, you may contact Scott Bechard, at (717)732-8576.

Response Comments

Date: 07/16/2015

Application Number: 88175

Form Letter Notes

(1) * Upon resubmission, the applicant's engineer should put together a letter that describes how each comment has been addressed and where each can be found in the study. A copy of these comments should also be provided.

* Additional comments may follow upon review of the resubmitted application. If you have any questions pertaining to the technical aspects of this review, please contact the Department's representative, Chad J. Decker, PE, PTOE at cdecker@dawood.cc or (717) 732-8576.

* For guidance on Highway Occupancy Permit applications refer to PA Code Title 67, Chapter 441, Chapter 459 and PennDOT Publication 282. This will help expedite the review.

Transportation Impact Study/Transportation Impact Assessment

- (1) Provide a copy of review comments from Montgomery County in the next submission.
- (2) Address all municipal comments to the Boroughs satisfaction.
- (3) Note that TE-160 forms and Resolutions from the Conshohocken Borough will be required prior to approval of the revised signal plans or HOP. Note that Pedestrian Studies (PennDOT form TE-672) will also be required at any modified traffic signal location.
- (4) Coordinate with SEPTA regarding the feasibility of providing bus service between the office building and the train station.
- (5) The Capacity / Level of Service Analysis section of the TIS indicates that the traffic analysis was performed in accordance with Highway Capacity Manual (HCM) 2000. Update the text / analysis as necessary to conform to HCM 2010.
- (6) Include the spot speed data for the westbound West Elm Street (SR 3013) approach at the western site access in Appendix G.
- (7) List the ADT of the study area roadways in the TIS.
- (8) List the study recommendations in the TIS following the conclusions section and in the executive summary.
- (9) Include a phasing analysis for the West Elm Street (SR 3013) / Fayette Street intersection.
- (10) The annotation and plots have been depicted incorrectly on the turn lane warrants. Utilize the standard PennDOT Turn Lane Warrant and Length Analysis Workbook for the left and right turn

lane warrant analysis. The spreadsheets can be found at the Traffic Signal Portal on PennDOT's website.

- (11) Use of the 2012 manual turning movement counts was identified in the scoping application. However, these counts must be factored to the year 2015 for the existing year traffic analysis.
- (12) Recommend ADA compliant facilities be constructed at both site access locations. Curb ramps are required for both driveway crossings. Curb ramps are also required on both corners of each driveway to serve the West Elm Street crossings, unless the crossing is restricted by an approved pedestrian study.
- (13) The most direct connection between the proposed Office Development and the rail station / bus stops is the relocated Schuylkill River Trail. If lighting is not proposed along the trail, evaluate an alternate pedestrian route along the roadway network between these destinations. Recommend ADA compliant pedestrian facilities to remove any barriers to access such as vertical curbs or non-traversable areas.
- (14) A significant portion of multi-modal site traffic has been assumed. Due to the separation between the proposed Office Development and the neighboring rail station / bus stops, the majority of this traffic is expected to consist of bike and pedestrian trips. Evaluate the travel routes between these destinations to determine accessibility and ADA compliance. Ensure that an ADA compliant crossing exists across the rail road tracks along the route to the rail station.
- (15) Tables 6 and 12 show a year 2024 improvement scenario at the West Elm Street (SR 3013) / Colwell Lane / Wood Street intersection. Discuss these improvements in the text of the TIS.
- (16) Identify all turning movements or intersections where the V/C ratio is > 1.0 and locations where the 95th percentile queue exceed capacity (#). Address mitigation alternatives.
- (17) The southbound approach of the West Elm Street (SR 3013) / Corson Street intersection is anticipated to experience a significant increase in delay and a drop to LOS E during the years 2019 and 2024 with Development Scenario 2. Provide an expanded discussion addressing potential alternatives to address the drop in level of service.
- (18) The available safe stopping sight distance for vehicles turning left into the western access only exceeds the required value by 8 feet. Update the TIS to recommend placement of a W2-2 (Side Road Sign) on the eastbound approach in advance of the intersection.
- (19) The proposed 10 foot travel lanes across the West Elm Street (SR 3013) bridge is undesirable due to safety concerns and do not meet PennDOT Smart Transportation criteria in DM-2, due to the lack of an adequate shoulder width. As such, Scenario 2, requiring a left turn restriction into the eastern site access is the preferred alternative for ingress access.
- (20) The TIS indicates excessive queue impacts in certain locations. The following approaches are of

particular concern:

West Elm Street (SR 3013) / Colwell Lane / Wood Street

oWestbound Through. (Extends through the Maple Street intersection).

West Elm Street (SR 3013) / Fayette Street

oEastbound Right. (Nearly extends to Colwell Lane)

oNorthbound Left. (Note whether the opposing SBL lane on the bridge could be restriped to provide additional storage)

Revise the TIS to re-evaluate potential alternatives to address these concerns. Also discuss the results of a SimTraffic simulation of the study area to confirm the additional queueing does not result in gridlock. See also comments from the PennDOT Signals Unit presented later in this letter.

- (21) The applicant must apply for a 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, please visit: <https://www.dot14.state.pa.us/EPS/home/manageBPRegistration.jsp> (Please make sure that you follow the instructions that are in the PINK area). After a BPID is obtained and activated by the system administrator, please provide the following information in the applicant contact information tab under "Applicant Team":

BPID

Contact information (name/title/phone/email) for a general contact person (person that typically deals with the Highway Occupancy Permit application process)

Contact information (name/title/phone/email) for a billing contact person (person that typically deals with the Highway Occupancy Permit invoicing process)

- (22) The Traffic Signals Section has reviewed EPS #88175 and offers the following comments:

1. Please also study the Front/Fayette intersection in West Conshohocken as part of the TIS.

Consider volumes from the proposed FedEx distribution center. Utilize a West Conshohocken system model, since coordination is critical for these closely spaced intersections.

2. These signals are part of a proposed signal system in Conshohocken. Please include Elm/Harry and the Fayette Street corridor in your Synchro for the purpose of analyzing effects on coordination and queuing. You may utilize the attached Synchro files.

3. Your analysis did not adequately model the Fayette/Elm intersection, since this intersection has an all-ped phase. Please model accurately per the field operation. In addition, the northbound left turn and eastbound right overlap would be non-locking in the field rather than recalled. Provide results from both the Synchro macro and SimTraffic micro analyses.

4. Because Fayette/Elm includes an all-ped phase, please include pedestrian volumes at this

intersection in your study.

5. In your Synchro analysis, please address the following inputs:

- C-Max for coordinated phase

- Correct loop locations (utilize 40-foot loops at -3 starting location)

- Lane widths

- Approach grades

- Lost time adjustment

- Peak hour factor

- SimTraffic fatal errors

6. Provide direct connect fiber Ethernet signal system and coordinate with Conshohocken boroughs CMAQ project.

January 11, 2016

Mr. Francis Hanney
District Traffic Services Manager
PennDOT District 6-0
7000 Geerdes Boulevard
King of Prussia, PA 19406

PRINCIPALS
Joseph W. McMahon, P.E.
Joseph J. DeSantis, P.E., PTOE
John S. DePalma
William T. Steffens
Casey A. Moore, P.E.
Gary R. McNaughton, P.E., PTOE

ASSOCIATES
John J. Mitchell, P.E.
Christopher J. Williams, P.E.
R. Trent Ebersole, P.E.
Matthew M. Kozsuch, P.E.
Maureen Chlebek, P.E., PTOE

RE: Transportation Impact Study - Elm Street Office Development
Application No. 88175
Conshohocken Borough, Montgomery County, PA
McMahon Project No. 811675.12

Dear Mr. Hanney:

On behalf of Corson Street Acquisition Limited Partnership, we are submitting a revised Transportation Impact Study for the 324,860 square-foot office development, located on the south side of West Elm Street (S.R. 3013), west of Colwell Lane in Conshohocken Borough, Montgomery County, Pennsylvania.

This submission is being made electronically through PennDOT's EPS and includes the following:

1. Transportation Impact Study for the Elm Street Office Development, dated January 11, 2016
2. Traffic Analysis Synchro Files
3. Fayette St. Northbound Dual Left Concept Exhibit, dated January 11, 2016
4. Conceptual Access Improvements on West Elm Street, dated January 11, 2016

A hard copy of the submission will be provided upon request. If you require additional information or have further questions, please do not hesitate to contact our office.

This submission is based on extensive coordination with the Borough and PennDOT, including a meeting at PennDOT on September 2, 2015, as well as follow-up conversations and meetings with Borough staff and consultants.

Comment #1: Provide a copy of review comments from Montgomery County in the next submission.

Response: Attached with this letter is a March 6, 2015 letter from the Montgomery County Planning Commission. All comments have been addressed to the satisfaction of the Borough. The direct connection to the railroad corridor, outlined in comment 1, was not considered feasible for a number of reasons mostly due to the steep grades over such a short distance. In the end, the Borough approved the vacation of Corson Street south of West Elm Street and approved the plan as submitted.

Comment #2: Address all municipal comments to the Borough's satisfaction.

Response: Corson Street Acquisition Limited Partnership has coordinated extensively with the Borough, and especially as it relates to the newly proposed off-site traffic improvements, which are described in this submission. The Borough has been copied on this submission, and we will continue to coordinate collaboratively with the Borough and PennDOT as this project continues through the Highway Occupancy Permit (HOP) design process.

Comment #3: Note that TE-160 forms and Resolutions from the Conshohocken Borough will be required prior to approval of the revised signal plans or HOP. Note that Pedestrian Studies (PennDOT form TE-672) will also be required at any modified traffic signal location.

Response: All necessary documentation will be provided during the detailed HOP design phase of the project.

Comment #4: Coordinate with SEPTA regarding the feasibility of providing bus service between the office building and the train station.

Response: Our office spoke with John Calnan of SEPTA, and based on SEPTA's preliminary review, the distance between the proposed office development and the existing train station is within reasonable walking standards, primarily along the existing Schuylkill River Trail, and therefore, no additional bus service is needed. Additionally, this walking distance may only improve in light of future plans to relocate the train station to the west of its current site. Furthermore, there are two existing SEPTA bus routes which provide service along Elm Street immediately to the east of the office development, and based on this existing bus service, there would be no plans at this time to modify this service; however, this bus service may also relocate to the west in conjunction with a relocated train station.

Comment #5: The Capacity / Level of Service Analysis section of the TIS indicates that the traffic analysis was performed in accordance with Highway Capacity Manual (HCM) 2000. Update the text / analysis as necessary to conform to HCM 2010.

Response: The TIS has been revised as requested.

Comment #6: Include the spot speed data for the westbound West Elm Street (SR 3013) approach at the western site access in Appendix G.

Response: The speeds for westbound West Elm Street traffic at the western site access are based on the speeds collected at the eastern site access based on the close proximity of these locations and since the roadway geometry/characteristics of West Elm Street does not change between the eastern and western site accesses.

Comment #7: List the ADT of the study area roadways in the TIS.

Response: The TIS has been updated as requested to include the ADT for the state roads.

Comment #8: List the study recommendations in the TIS following the conclusions section and in the executive summary.

Response: The TIS has been updated as requested

Comment #9: Include a phasing analysis for the West Elm Street (SR 3013) / Fayette Street intersection.

Response: The TIS has been updated as requested.

Comment #10: The annotation and plots have been depicted incorrectly on the turn lane warrants. Utilize the standard PennDOT Turn Lane Warrant and Length Analysis Workbook for the left and right turn lane warrant analysis. The spreadsheets can be found at the Traffic Signal Portal on PennDOT's website.

Response: The TIS has been updated as requested.

Comment #11: Use of the 2012 manual turning movement counts was identified in the scoping application. However, these counts must be factored to the year 2015 for the existing year traffic analysis.

Response: The TIS has been updated as requested.

Comment #12: Recommend ADA compliant facilities be constructed at both site access locations. Curb ramps are required for both driveway crossings. Curb ramps are also required on both corners of each driveway to serve the West Elm Street crossings, unless the crossing is restricted by an approved pedestrian study.

Response: Per coordination with the Borough and PennDOT, ADA curb ramps will be provided on both sides of the eastern access in order to cross the driveway and in six locations at the western access opposite Corson Street in order to cross the driveway (south leg), Corson Street (north leg) and West Elm Street (west leg).

Comment #13: The most direct connection between the proposed Office Development and the rail station / bus stops is the relocated Schuylkill River Trail. If lighting is not proposed along the trail, evaluate an alternate pedestrian route along the roadway network between these destinations. Recommend ADA compliant pedestrian facilities to remove any barriers to access such as vertical curbs or non-traversable areas.

Response: As discussed with PennDOT and the Borough, the proposed office building and parking areas will be lit, which will create better ambient lighting along the trail.

This is also consistent with the neighboring property to the east, the Grande at Riverview apartments, which provides ambient lighting along the trail.

Comment #14: A significant portion of multi-modal site traffic has been assumed. Due to the separation between the proposed Office Development and the neighboring rail station / bus stops, the majority of this traffic is expected to consist of bike and pedestrian trips. Evaluate the travel routes between these destinations to determine accessibility and ADA compliance. Ensure that an ADA compliant crossing exists across the rail road tracks along the route to the rail station.

Response: The proposed office development is located less than one half mile from the existing SEPTA train station, which is within reasonable walking standards according to SEPTA. There are a few possible pedestrian route options; however, the trail route is the most direct and most accessible. There is an existing crossing of the rail line to access the station. However, it is also noted that the existing SEPTA station, which interestingly is not ADA accessible, is planned to be relocated further to the west and upgraded for ADA accessibility. These improvements will not only relocate the station closer to the proposed office development, but also address ADA accessibility to the station.

Comment #15: Tables 6 and 12 show a year 2024 improvement scenario at the West Elm Street (SR 3013) / Colwell Lane / Wood Street intersection. Discuss these improvements in the text of the TIS.

Response: The TIS has been revised to more clearly show there are no improvements proposed at this intersection. The intersection level of service (LOS) is mitigated as shown in the TIS. Although not needed for LOS mitigation, signal timing modifications would further improve the LOS along Elm Street; however, at the detriment to Colwell Lane. Lastly, it is reminded that Wood Street is the fifth leg to the intersection, and since it is a very low traffic volume approach, it will rarely be served by the signal. Therefore, this intersection will operate with better levels of service since the Wood Street approach will rarely be served by the signal.

Comment #16: Identify all turning movements or intersections where the V/C ratio is > 1.0 and locations where the 95th percentile queue exceed capacity (#). Address mitigation alternatives.

Response: There are several movements where the Synchro percentile queuing methodology reports the # footnote (mostly at the Fayette Street/Elm Street intersection). Based on a review of the Synchro Traffic Signal Software Uses Guide, "The # footnote indicates that the volume for the 95th percentile cycle exceeds capacity. This traffic was simulated for two complete cycles of 95th percentile traffic to account for the effects of spillover between cycles. If the reported $v/c < 1$ for this movement, the methods used represent a valid method for estimating the 95th percentile queue. In practice, 95th percentile queue shown will rarely be exceeded and the queues shown with the # footnote are acceptable for the design of storage bays." Please note that the # footnote only applies to the Synchro percentile queuing

methodology, and not the HCM 2010 queuing methodology, which is the basis of the results shown in the TIS. Regardless, as outlined in the Synchro Users Guide, the queues displaying the # footnote are adequate for use in designing storage bay lengths.

Comment #17: The southbound approach of the West Elm Street (SR 3013) / Corson Street intersection is anticipated to experience a significant increase in delay and a drop to LOS E during the years 2019 and 2024 with Development Scenario 2. Provide an expanded discussion addressing potential alternatives to address the drop in level of service.

Response: Installation of a traffic signal would improve the level-of-service conditions at this intersection; however, a traffic signal is not warranted according to the existing or future peak hour traffic volumes based on the traffic signal warrants contained in PennDOT's *Publication 212, Official Traffic Control Devices*. As you are aware, LOS E conditions for stop controlled side streets at unsignalized intersections is not uncommon in suburban and urban settings. Furthermore, the southbound Corson Street approach is a low volume approach, and it is connected as part of a grid street system, and therefore, traffic has the option of using another intersection.

Comment #18: The available safe stopping sight distance for vehicles turning left into the western access only exceeds the required value by 8 feet. Update the TIS to recommend placement of a W2-2 (Side Road Sign) on the eastbound approach in advance of the intersection.

Response: The TIS has been updated as requested to recommend the suggested sign.

Comment #19: The proposed 10 foot travel lanes across the West Elm Street (SR 3013) bridge is undesirable due to safety concerns and do not meet PennDOT Smart Transportation criteria in DM-2, due to the lack of an adequate shoulder width. As such, Scenario 2, requiring a left turn restriction into the eastern site access is the preferred alternative for ingress access.

Response: The TIS evaluates both access scenarios; however, the study proposes Scenario 2 based on PennDOT's feedback.

Comment #20: The TIS indicates excessive queue impacts in certain locations. The following approaches are of particular concern:

- West Elm Street (SR 3013) / Colwell Lane / Wood Street
 - Westbound Through. (Extends through the Maple Street intersection).
- West Elm Street (SR 3013) / Fayette Street
 - Eastbound Right. (Nearly extends to Colwell Lane).
 - Northbound Left. (Note whether the opposing SBL lane on the bridge could be restriped to provide additional storage).

Revise the TIS to re-evaluate potential alternatives to address these concerns. Also discuss the results of a SimTraffic simulation of the study area to confirm the additional queueing

does not result in gridlock. See also comments from the PennDOT Signals Unit presented later in this letter.

Response: At the West Elm Street/Colwell Lane/Wood Street intersection, it is possible to mitigate the westbound West Elm Street queue during the weekday morning peak hour with traffic signal timing modifications; however, these modifications would cause the southeastbound Colwell Lane approach to operate at LOS E or F, which is not desirable. During the weekday afternoon peak hour, this queue extends through the Maple Street intersection under existing conditions, and the additional site traffic will only increase the queue by approximately 2 vehicles (55 feet) in the future with development conditions as compared to the future without development conditions. Therefore, no improvements are recommended, and again, it is reminded that this intersection will operate better when the low traffic volume Wood Street is not served by the traffic signal.

As discussed with PennDOT and the Borough of Conshohocken on September 2, 2015, the intersection of Fayette Street and Elm Street is a key study intersection. This intersection currently experiences peak hour congestion, and operations at this intersection are further complicated by traffic conditions across the Fayette Street bridge in West Conshohocken. Rather than spend resources with more studies, although the LOS is mitigated with signal timing changes, the applicant offered to potentially implement lane improvements at this intersection if feasible. PennDOT and the Borough agreed, and based on the meeting, the applicant was asked to prepare a conceptual improvement exhibit to examine the feasibility for intersection improvements. Based on this evaluation, and assuming more in-depth HOP design continues to show feasibility, the applicant proposes to widen and reconfigure the intersection to provide northbound Fayette Street dual left-turn lanes. This improvement proposal has also been reviewed with the Borough prior to submission of this revised TIS.

There is no single solution that will improve all queues at this intersection. With the proposed improvements for northbound Fayette Street dual left-turn lanes, the left-turn queues are greatly improved and mitigated; however, there is no improvement to the eastbound right-turn movement queues, and potentially some impact to the right-turn movement queues due to the shorter right-turn overlap phase because of the dual northbound left-turn lanes. The only improvement that will truly address the eastbound right-turn movement queue is the construction of dual eastbound right-turn lanes; however, due to alignment issues across Fayette Street, this improvement is not possible at this time. Dual eastbound Elm Street right-turn lanes require widening along the north side of Elm Street in order to realign the through movements. It is recommended to examine this more closely and consider this additional improvement as part of any proposed development at this intersection on the north side of Elm Street.

Comment #21: The applicant must apply for a 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, please visit:

<https://www.dot14.state.pa.us/EPS/home/manageBPRegistration.jsp>

(Please make sure that you follow the instructions that are in the PINK area). After a BPID is obtained and activated by the system administrator, please provide the following information in the applicant contact information tab under "Applicant Team":

BPID

Contact information (name/title/phone/email) for a general contact person (person that typically deals with the Highway Occupancy Permit application process).

Contact information (name/title/phone/email) for a billing contact person (person that typically deals with the Highway Occupancy Permit invoicing process).

Response: So noted.

Comment #22: The Traffic Signals Section has reviewed EPS #88175 and offers the following comments:

- 1. Please also study the Front/Fayette intersection in West Conshohocken as part of the TIS. Consider volumes from the proposed FedEx distribution center. Utilize a West Conshohocken system model, since coordination is critical for these closely spaced intersections.*
- 2. These signals are part of a proposed signal system in Conshohocken. Please include Elm/Harry and the Fayette Street corridor in your Synchro for the purpose of analyzing effects on coordination and queuing. You may utilize the attached Synchro files.*
- 3. Your analysis did not adequately model the Fayette/Elm intersection, since this intersection has an all-ped phase. Please model accurately per the field operation. In addition, the northbound left turn and eastbound right overlap would be non-locking in the field rather than recalled. Provide results from both the Synchro macro and SimTraffic micro analyses.*
- 4. Because Fayette/Elm includes an all-ped phase, please include pedestrian volumes at this intersection in your study.*
- 5. In your Synchro analysis, please address the following inputs:*
 - C-Max for coordinated phase*
 - Correct loop locations (utilize 40-foot loops at -3 starting location)*
 - Lane widths*
 - Approach grades*
 - Lost time adjustment*
 - Peak hour factor*
 - SimTraffic fatal errors*
- 6. Provide direct connect fiber Ethernet signal system and coordinate with Conshohocken boroughs CMAQ project.*

Response: As discussed with PennDOT and the Borough of Conshohocken on September 2, 2015, the intersection of Fayette Street and Elm Street is the key study intersection. Therefore, rather than spend resources with more studies of this intersection and

Mr. Francis Hanney
January 11, 2016
Application No. 88175
Page 8 of 8

other intersections (not originally required during the TIS scoping process), as described above in the response to comment 20, the applicant offered to potentially implement lane improvements at this intersection if feasible. PennDOT and the Borough agreed, and based on the meeting, the applicant was asked to prepare a conceptual improvement exhibit to examine the feasibility for intersection improvements. Based on this evaluation, the applicant proposes to widen and reconfigure the intersection to provide northbound Fayette Street dual left-turn lanes. This improvement proposal has also been reviewed with the Borough prior to submission of this revised TIS. The detailed signalized traffic analysis comments related to the Synchro inputs can be addressed during the signal design associated with the proposed HOP improvements at Fayette Street and Elm Street. Furthermore, the applicant is willing to amend the signal permit plan and modify the signal phasing as part of the proposed improvements to eliminate the exclusive pedestrian phase at Fayette Street and Elm Street, provided the Borough and PennDOT officially support this modification, as also discussed and supported at the September 2, 2015 meeting.

The HOP design is currently being prepared for the access improvements along West Elm Street and a plan submission will be made through EPS within the next few weeks. The design for the Fayette Street dual left-turn lanes will follow under a separate EPS application since topographic survey and final support from PennDOT are still pending. This will allow the applicant to expedite their approval schedule and begin site work more quickly. The Borough supports the concept of separating the access improvement permit from the Fayette Street and Elm Street intersection improvement permit.

Please do not hesitate to contact our office if you have any questions or comments related to this letter or any of the submitted materials.

Sincerely,



Christopher J. Williams, P.E.,
Vice President & General Manager – Exton

CJW/JDG/ab
Attachment

cc: John P. Forde, Corson Street Acquisition Limited Partnership
Bob Dwyer, Corson Street Acquisition Limited Partnership
Richard J. Manfredi, Manager, Conshohocken Borough
Brian Keaveney, P.E., PTOE, Pennoni Associates, Inc. for Conshohocken Borough
James J. Kouch, P.E., McMahon Associates, Inc.

PennDOT Meeting Notes
September 2, 2015
Elm Street Office Development
Corson Street Acquisition Limited Partnership
Conshohocken Borough, Montgomery County, PA
Application No. 88175

PRINCIPALS
Joseph W. McMahon, P.E.
Joseph J. DeSantis, P.E., PTOE
John S. DePalma
William T. Steffens
Casey A. Moore, P.E.
Gary R. McNaughton, P.E., PTOE

ASSOCIATES
John J. Mitchell, P.E.
Christopher J. Williams, P.E.
R. Trent Ebersole, P.E.
Matthew M. Kozsuch, P.E.
Maureen Chlebek, P.E., PTOE

Attendees:

Fran Hanney, PennDOT District 6-0
Ashwin Patel, PennDOT District 6-0
Susan LaPenta, PennDOT District 6-0
Dave Adams, PennDOT District 6-0
Scott Bechard, Dawood
Brian Keaveney, Pennoni Associates
Bob Dwyer, Corson Street Acquisition Limited Partnership
Chris Williams, McMahon Associates
Jamie Kouch, McMahon Associates

The purpose of the meeting is to review the comments in PennDOT's July 16, 2015 TIS review letter.

1. Chris opened the meeting and explained it is the interest of the applicant to use resources for traffic improvements rather than additional studies, since the Borough and PennDOT already have a good idea as to what is needed, based on the Borough's own multi-municipal transportation study, the ongoing CMAQ project, and other studies. Also, several of the requested additional traffic studies were not required during the TIS scoping process.
2. The meeting immediately focused on the Fayette Street corridor. The group discussed the impact of the traffic conditions in West Conshohocken on traffic conditions in Conshohocken along the Fayette Street corridor/bridge. Brian explained the proposed Fed Ex improvements at Fayette Street/Matson Ford Road and Front Street in West Conshohocken.
3. Brian explained the pending ARLE project for adaptive signal control at eight intersections along the Fayette Street corridor, including intersections in both Conshohocken and West Conshohocken.
4. The group discussed pedestrian access to the train station.
 - a. The Schuylkill River Trail provides the most direct access between the office development and the train station.
 - b. Improved lighting of the trail will be provided by lighting on the office building and in the parking lot, as occurs today with the neighboring Grande at Riverview apartment development.
 - c. The intersection of Fayette Street and Elm Street does not experience high pedestrian volumes based on the traffic counts.

- d. Ashwin believes the existing exclusive pedestrian phase at the Fayette Street/Elm Street intersection was because of a blind pedestrian in the local area; however, at this time, nobody is aware if that pedestrian still lives in the area and uses the intersection. It may be possible to justify eliminating the exclusive pedestrian phase.
 - e. There was discussion about the need for and feasibility of a pedestrian crossing of the rail line at Oak Street.
 - f. Brian indicated SEPTA's capital plan includes a new Conshohocken train station for 2018 or 2019. The group discussed SEPTA providing another pedestrian crossing of the rail line as part of the station improvements. The applicant will coordinate further with the Borough and SEPTA.
5. Dave described a wish list of traffic signal improvements within Conshohocken, consisting of the following:
- a. audible pedestrian signal at Fayette Street/Elm Street,
 - b. battery back-up at Fayette Street/Elm Street and Elm Street/Harry Street,
 - c. test switch for rail road pre-emption, and
 - d. full actuation at Fayette Street/Elm Street, if there is no adaptive signal improvement project.
6. Ashwin stated his preference for traffic improvements in connection with this development are as follows:
- a. eliminate the exclusive pedestrian phase at Fayette Street and Elm Street,
 - b. provide Fayette Street northbound dual left-turn lanes at Elm Street, OR if dual left-turn lanes are not feasible, then
 - c. provide Elm Street eastbound dual right-turn lanes at Fayette Street.
7. By the conclusion of the meeting, the group favored Fayette Street/Elm Street intersection lane capacity improvements over other off-site traffic improvements. Therefore, the applicant agreed to prepare a concept sketch of the Fayette Street/Elm Street intersection and coordinate further with the Borough regarding possible intersection improvements. The off-site traffic improvements that will be considered are (1) northbound Fayette Street dual left-turn lanes, or (2) eastbound Elm Street dual right-turn lanes. The applicant expressed their willingness to implement improvements at this intersection provided the improvements are feasible.
8. The group reviewed McMahon's concept plan for the proposed West Elm Street access improvements, and provided the following comments:
- a. Restrict the left-turn movement into the eastern access due to proximity to the new Elm Street bridge.
 - b. PennDOT is ok with the proposed lane widths along Elm Street.
 - c. Provide an ADA compliant crossing of West Elm Street at the western site access intersection opposite Corson Street.

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PLANNING COMMISSION**

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JODY L. HOLTON, AICP
EXECUTIVE DIRECTOR

March 6, 2015

Ms. Christine M. Stetler
Community Development and Zoning Officer
Borough of Conshohocken
1 West First Avenue- Suite 200
Conshohocken, Pennsylvania 19040

Re: MCPC #13-003-003
Plan Name: Proposed Office Development
(1 lot/324,860 sq. ft. comprising 10.159 acres)
Situate: South of Elm Street/ East of Corson Street
Borough of Conshohocken

Applicant's Name and Address

Corson Street Acquisition, LP
3815 West Chester Pike
Newtown Square, PA 19073

Contact: John Forde
jforde@bpgltd.com
Phone: 610-355-1872

Dear Ms. Stetler:

We have reviewed the above-referenced subdivision and land development plan application in accordance with Section 502 of Act 247, "The Pennsylvania Municipalities Planning Code," as requested by the borough in a letter received February 12, 2015. We forward this letter as a report of our review and recommendations.

Background

The application is a new proposal for the development of a seven story, 324,860 sq. ft. office building and a separate six level parking structure with 642 parking spaces on a 10.159 acre development tract. The development tract is a linear parcel which lies immediately north of the SEPTA Regional Rail corridor and south of West Elm Street. The tract lies immediately west of the Plymouth Creek, and the Schuylkill Trail and its easement area crosses the entire development tract. The tract lies within two municipalities - 8.275 acres is in Conshohocken Borough and 1.884 acres is in Plymouth Township. The plan shows a 50 ft. wide Corson Street right-of-way extending from West Elm Street to the railroad right-of-way.

The plans show that the 100 year floodplain, the floodway and the flood hazard zone of the Schuylkill River are within the applicant's development tract. It is located in the Borough's SSP-3 Specially Planned Development District Three Zoning, which permits office development as a by-right land use. The development tract consists of several tax parcels totaling 10.159 acres.

The Planning Commission's most recent review of this tract was in a letter to the Borough dated April 24, 2013, which was a "conditional use" review for the development of 352 unit apartment units on the property. The applicant received conditional use approval for the residential land use in a decision by the Borough on August 21, 2013.

Comments

1. Roadway Connection Opportunities

a. *Roadway Opportunity*

We recommended in our 2013 "Conditional Use" review of this parcel that the Borough consider future vehicular access and a roadway to the properties that lie south of the SEPTA railroad corridor. We continue to believe that the Corson Street driveway access presents an important opportunity for the Borough to use the driveway as a connector across the railroad corridor and ultimately connecting to Washington Street near the commuter rail station. We recognize that there are a number of constraints to this route, yet it may represent the most viable route to create a connected river-front roadway. This could become a significant transportation improvement to the Borough as an alternative route for the very congested Fayette Street and Elm Street intersection. It could be arranged in a similar manner as Bar Harbor Drive in West Conshohocken, which provides a way to avoid the PA Rt. 23 intersection with Matsonford Road. This connection could be a significant benefit for the borough in traffic-congestion relief and potentially spur economic development along vacant and underutilized riverfront lands and we recommend the Borough pursue this opportunity.

b. *Vacation" of Corson Street*

According to the site plan, Corson Street is proposed to be vacated. This is directly related to the above comment and would render the roadway opportunity a moot point. In addition to the above comment, SEPTA is planning for a new commuter rail station and garage west of its current site and would need to extend Washington Street and engineer another crossing and connection to West Elm Street. We strongly recommend the Borough reserve this street for its potential use as a roadway and not exhaust the Borough's rights to use Corson Street as a connector for a riverfront drive.

2. Schuylkill River Trail (SRTrail) Re-alignment – The County is receptive to the conceptual ideas shown in the applicant's site plan (01-30-2015) prepared by Bohler Engineering. The letter from Ken Starr, Director of Assets and Infrastructure, dated February 26, 2013 to Mr. John Forde, VP of Development continues to serve as a condition relevant for a staff recommendation for the County Commissioner's authorization for the Schuylkill River Trail relocation. We are attaching a copy of this letter. The new issues to be resolved include:

a. *Trail-Restroom Amenity*

The applicant is addressing the office development bonus height requirement with a recreation "public amenity" that appears to be a bathroom. We would like this improvement noted on the final site plan and discussed in the record plan notes. It is located at the eastern-most end of

the applicants' property - adjacent to where the relocated SR trail rejoins the existing trail. We support the development of a trail restroom and the applicant should contact the County to clarify the proposed structure and to discuss the design and future operation/maintenance of the facility. Please contact:

Ronald H. Ahlbrandt, Deputy Director, Assets and Infrastructure
Division of Parks, Trails and Historic Sites
Montgomery County Courthouse - P.O. Box 311
Norristown, PA 19404-0311
Phone 610-278-3555

b. *Trail Users' Parking*

The plan shows 20 parking spaces designated for trail users in an area of the surface parking lot near West Elm Street. We would like information signs at the office building entrance driveway that directs vehicles to this area, and signage that indicates the time that parking is available for trail users.

c. *Trail Setback Area*

The sidewalk along Corson Street ends with a stairs and a ramp structure that appears to have very little or no setback to the Schuylkill Trail. We strongly recommend a 4' setback. The absolute minimum acceptable setback is 2 feet between the trail edge and the proposed wall structure.

d. *Access Points to the Schuylkill River Trail*

It is not clear from the site plan how the existing connection to the Cross-County Trail and the sidewalk along West Elm Street will be preserved. The trail-sidewalk connection is important for the Borough and they should be preserved as a condition of development approval. We recommend that all pedestrian and bike connections impacted by the proposed development should be recreated to equal or higher standards with the trail's relocation.

e. *Retaining Wall and Garage Façade*

The relocated SRTrail will be immediately adjacent to a large retaining wall and a 6-level garage. We suggest the proposed retaining wall (8-9 ft. in height in places) and garage facade be considered as an opportunity for public art such as mural(s). A good opportunity for collaboration exists with Creative MontCo. – an effort within the arts community, coordinated by the Planning Commission to promote the creative community. "Art on Our Trails", is an early initiative of this group which is seeking opportunities to make the trail experience more enjoyable and memorable for its users with public art enhancements. We recommend the Borough include in its approval, a condition that the applicant explore with this group the use of public art, such as murals or relief panels on the retaining wall and garage trail-side façade. Please see this document for additional information on this initiative.

<http://creativemontco.crcollier.com/wp-content/uploads/2014/12/art-on-trail-report-web.pdf>

3. Potential Open Space – Plymouth Township Parcel – A portion of the development tract consisting of 1.884 acres lies in Plymouth Township and is situated in two narrow linear lots separated by a regional gas transmission corridor. We recommend the Borough, in its consideration of the development, require as a condition of approval a deed restriction to prevent future development on this 1.9 acres site. The narrow lot serves an important role as a natural setting buffering the Schuylkill River Trail that passes through the tract and its development would negatively impact the

trail through this narrow area. The County would very much like to see it protected from future subdivision and development and recommend that a preservation easement be placed on this area.

4. Flood-Prone Areas in the Site – It appears that a portion of the parking garage may be within the flood plain of the Plymouth Creek. If that is the case, some type of emergency management plan should be developed to ensure the safe evacuation of vehicles parked in that portion of the garage. Also, appropriate signage should be placed in flood prone areas of the garage. We recommend the Borough obtain this emergency information in case of severe flooding of the Schuylkill River.
5. Architectural Renderings – The plan documentation includes several renderings which illustrate “as built” views from both the east and west along West Elm Street. The six level garage does not appear in any of the views from various angles. We recommend the applicant submit for the Borough’s review a more accurate illustration depicting how the garage will be situated and its context.

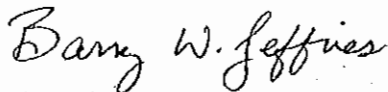
Recommendation

We recommend approval of this proposal provided that the above review comments are addressed to the satisfaction of the Borough and the proposed plan complies with your municipal land use regulations and all other appropriate regulations are addressed.

Please note that the review comments and recommendations contained in this report are advisory to the municipality and final disposition for the approval of any proposal will be made by the municipality.

Should the governing body approve a final plat of this proposal, the applicant must present the plan to our office for stamp 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,

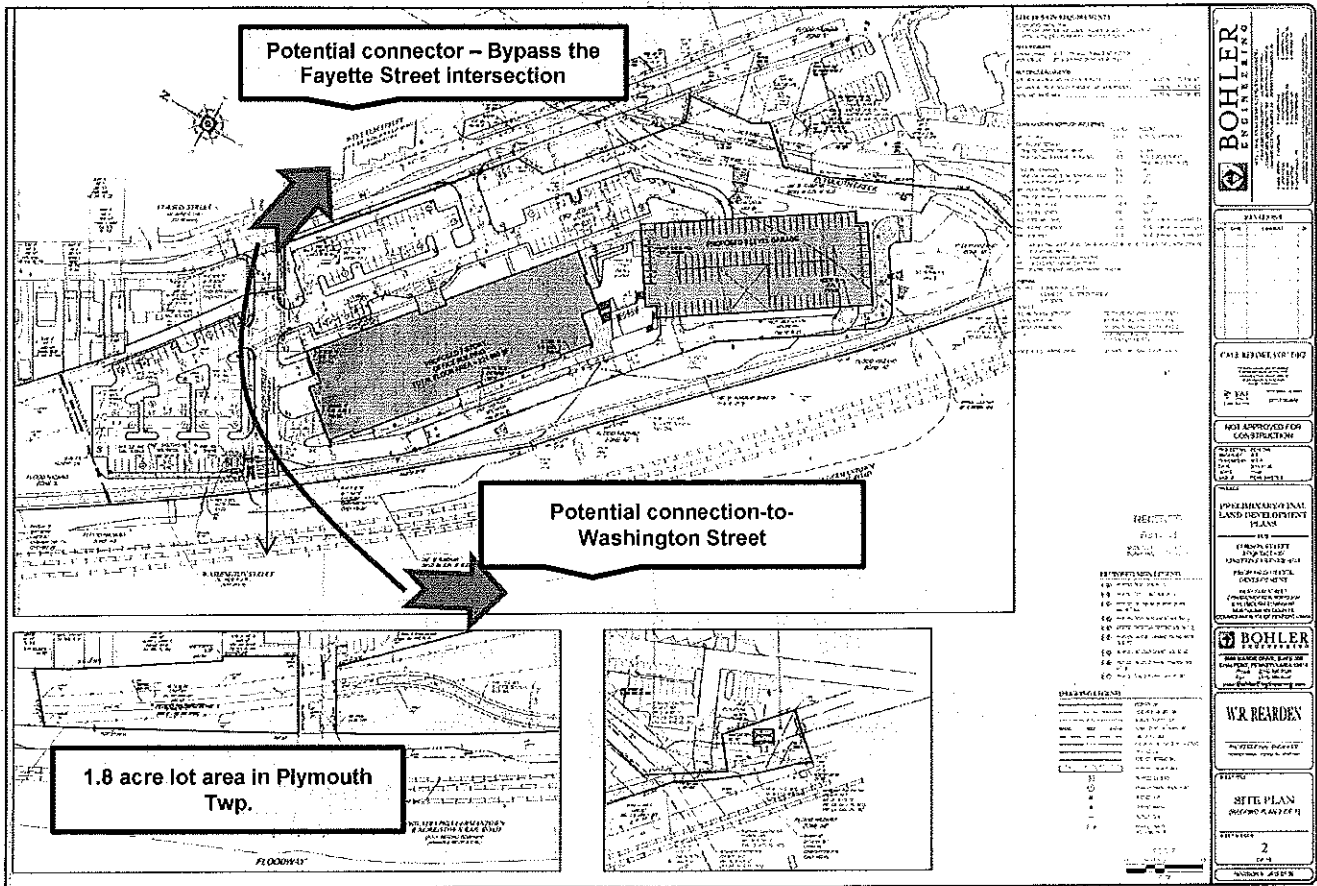


Barry W. Jeffries, Senior Design Planner, ASLA
610-278-3444 – bjeffrie@montcopa.org

c: Corson Street Acquisition, LP, Applicant
Bohler Engineering, Applicant’s Engineer
Brian Tobin, Chrm., Borough Planning Commission
Michael Savona, Borough Solicitor
Paul Hughes, Borough Engineer
Karen B. Weiss, Mgr., Plymouth Township

Attachments: Reduced Copy of Site Plan
February 26, 2013 Letter from Kenneth Starr, Director

Applicant's Site Development Plan



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**KENNETH STARR
DIRECTOR**

February 26, 2013

Mr. John Forde, VP - Development
BPG Development Company, L.P.
3815 West Chester Pike
Newtown Square, PA 19073

RE: Madison Proposal & Schuylkill River Trail West Elm Street, Conshohocken Borough


Dear Mr. Forde:

Thank you for taking the time to visit with county staff regarding your proposed development along West Elm Street and future impacts on the existing Schuylkill River Trail (SRT) in Conshohocken Borough. The County is receptive to your concept of relocating the SRT to the rear of your property. County staff will recommend County Commissioner authorization contingent on the following conditions:

- Montgomery County will have approval authority on all components related to designing and constructing the relocated SRT on the subject development property.
- Montgomery County will dissolve existing trail rights along the subject property after a permanent 20' wide trail easement agreement is crafted between the property owner and the county.
- Montgomery County conceptually accepts the proposed relocated trail alignment on the Conditional Use Site Plan (Exhibit 'A') highlighted in pink.
- The relocated SRT and trail gateway (SRT and Cross County Trail) must be completed and open for public use prior to decommissioning the existing SRT at the front of the subject property.
- Montgomery County commends BPG Development Company for their willingness to negotiate and designate trail-head parking spaces (highlighted in green - Exhibit 'A') with Conshohocken Borough to accommodate a constant trail use need.
- Montgomery County is open to accepting the donated easement area (highlighted in yellow - Exhibit 'A') for trail/open space public use purposes barring any land use or environmental issues/restrictions.
- Montgomery County proposes that BPG Development Company or the responsible property owner maintain the relocated trail corridor for ten (10) years by entering into a trail maintenance agreement with the County.
- Confirmation that BPG Development Company and partners are actively seeking approval and compliance from the municipality, governmental review agencies, and utility companies regarding the proposed development and assumed rights.

Montgomery County believes the project is noteworthy and is prepared to work with BPG Development Company to create a new SRT experience along the subject property once the above-stated conditions are realized.

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth Starr", with a long horizontal flourish extending to the right.

Kenneth Starr
Director



pennsylvania
DEPARTMENT OF TRANSPORTATION

Date: 02/09/2016
Subject: Highway Occupancy Permit Application No. 88175 Returned For Revisions
To: Corson Street Acquisition Limited Partnership
3815 West Chester Pike
Newtown Square, PA 19073
From: PennDOT Engineering District 6-0
7000 Geerdes Boulevard
King of Prussia, PA 19406

Dear Applicant,

PennDOT has reviewed your application for completeness, consistency and compliance with applicable Department Regulations. This review has identified issues that must be addressed in order for our review to continue.

The Department's review comments are attached.

Once the comments have been addressed, please resubmit the application and associated material for further review.

Upon resubmission, the applicant's engineer should put together a letter that describes how each comment has been addressed and where each can be found. This will help expedite the review. For guidance on HOP applications refer to 67 PA Code, Chapter 441, Chapter 459 and PennDOT Publication 282, "Highway Occupancy Permit Guidelines". Additional comments may follow upon review of the resubmitted application.

If you have any questions regarding this matter, you may contact Scott Bechard, at (717) 732-8576.

Response Comments

Date: 02/09/2016

Application Number: 88175

Form Letter Notes

(1) * Upon resubmission, the applicant's engineer should put together a letter that describes how each comment has been addressed and where each can be found in the plan set. A copy of these comments and any previously submitted plans should also be provided.

* Additional comments may follow upon review of the resubmitted application. If you have any questions pertaining to the technical aspects of this review, please contact the Department's representative, Chad J. Decker, PE, PTOE at cdecker@dawood.cc or (717)732-8576.

* For guidance on Highway Occupancy Permit applications refer to PA Code Title 67, Chapter 441, Chapter 459 and PennDOT Publication 282. This will help expedite the review.

General

(1) Please submit a check for \$75.00 made payable to PennDOT- Attn: Mary Ellen Culhane, Permits Unit, 7000 Geerdes Blvd. King of Prussia, Pa. 19406. Please include the application number on the check.

Transportation Impact Study/Transportation Impact Assessment

- (1) It appears the proposed eastbound left turn lane would limit sight distance for vehicles turning left from West Elm Street (SR 3013) into the western site access due to the bend in West Elm Street (SR 3013). Eliminate the proposed eastbound left turn lane onto Corson Street and provide gore markings in this area instead. Also consider improvements to increase the radius for the eastbound path of travel around this bend.
- (2) Note that TE-160 forms and Resolutions from the Conshohocken Borough will be required prior to approval of the revised signal plans or HOP. Note that Pedestrian Studies (PennDOT form TE-672) will also be required at any modified signal location. The Applicant has noted the required information will be provided during the HOP design phase.
- (3) Update the text of the TIS to include the information conveyed in the response to comments for Comment #20.
- (4) In order to further highlight areas of significant concern, it is requested the TIS provide a discussion of any approaches / turning movements where the v/c ratio exceeds 1.0 and potential

improvements for queues of significant impact (i.e. right turn movement at West Elm Street (SR 3013) / Fayette Street (SR 3016) intersection). This will help identify future priorities within the study area.

- (5) Correct the errors in Synchro so that the SimTraffic model can be run.
- (6) Coordinate and document further coordination with SEPTA to confirm that pedestrian upgrades will be installed at the railroad crossing connecting the Schuylkill River Trail with the train station. If the station is not constructed, or significantly delayed, the Applicant will be responsible for providing an ADA compliant crossing across the railroad tracks along the pedestrian route to the rail station.
- (7) Update the TIS to include an analysis of the safety of the permitted movements that are currently proposed to cross dual through or left turn lanes (southbound left and eastbound left) at the West Elm Street (SR 3013) / Fayette Street (SR 3016) intersection. Provide a discussion of the left turn phasing analysis in the text of the TIS. Also correct the left turn lane conflict factor worksheet to report the correct number of opposing lanes and associated conflict factor thresholds. Revise the analysis if unsafe conditions are anticipated.
- (8) The applicant must apply for a 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, please visit: <https://www.dot14.state.pa.us/EPS/home/manageBPRegistration.jsp> (Please make sure that you follow the instructions that are in the PINK area). After a BPID is obtained and activated by the system administrator, please provide the following information in the applicant contact information tab under "Applicant Team":
BPID
Contact information (name/title/phone/email) for a general contact person (person that typically deals with the Highway Occupancy Permit application process)
Contact information (name/title/phone/email) for a billing contact person (person that typically deals with the Highway Occupancy Permit invoicing process)
- (9) A raised concrete island will be required to physically restrict left turns into the eastern site access driveway. Revise the study recommendations accordingly.
- (10) The Traffic Signals Section has reviewed EPS #88175 and offers the following comments:
 1. Please indicate if an investigation was performed to determine whether the all-ped phase is still needed. Perhaps the conditions have changed since the initial implementation. Modern technology allows for a leading ped interval that might be an alternative treatment. Keep in mind that your Synchro analyses are showing phasing without an exclusive ped phase and need to coincide with actual operations.

2. Provide turning templates for the design vehicle.

3. During the September 2, 2015 meeting, signal items including Accessible Pedestrian Signals meeting current standards, battery backup, railroad pre-emption test switch, and full actuation were requested.

Signal Section (Publication 46, 148 And 149)

(1) Improvements to the intersection of Fayette and Elm should be part of site access permit. At a minimum condition to the permit to have the improvements of the intersection built prior to occupancy of the office building.

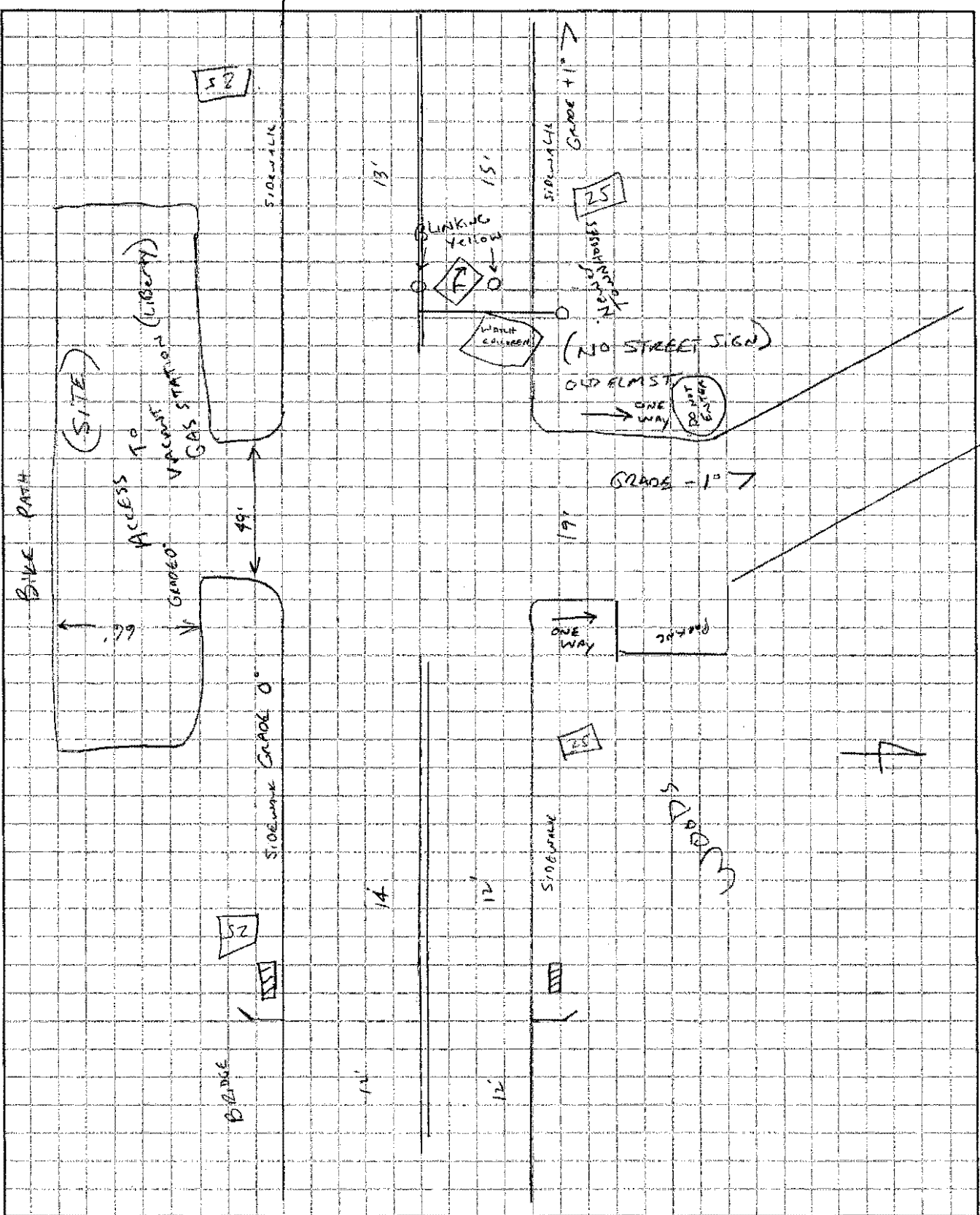
APPENDIX B

Traffic Signal Plans and Field Sketches

Job CONSHOHOCKEN
 Description OLD ELM ST & W.
ELM ST

McMahon Project No. _____
 Designed By JEFF CRANE
 Checked By _____

Sheet _____ of _____
 Date 5-17-12
 Date _____



MCM MAHON

TRANSPORTATION ENGINEERS & PLANNERS

Job CONSKO/HOCKAN

McMahon Project No. _____

Sheet _____ of _____

Description E. ELM/W. ELM ST &

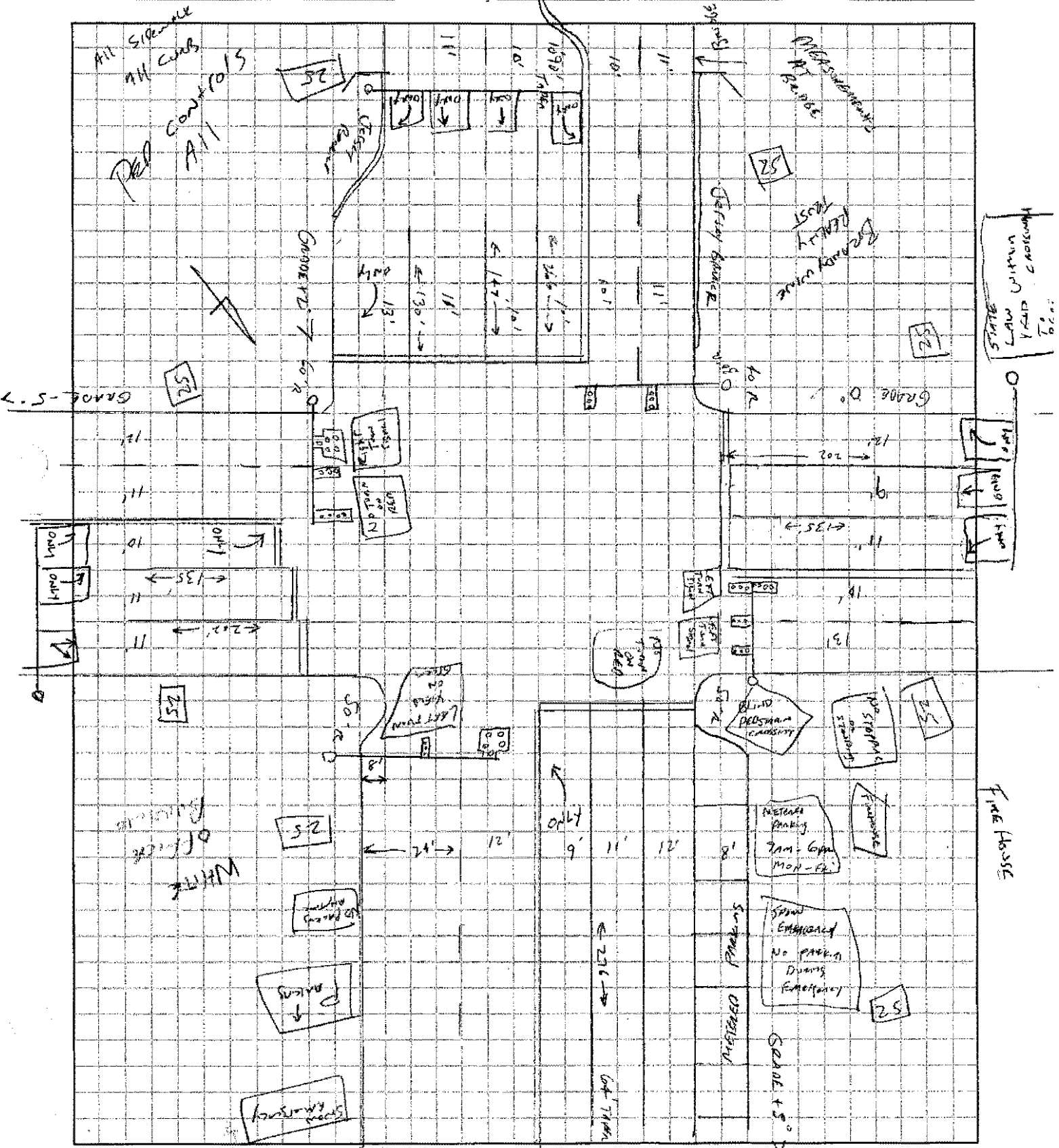
Designed By JEFF CERRE

Date 5-17-12

FAYETTE ST

Checked By _____

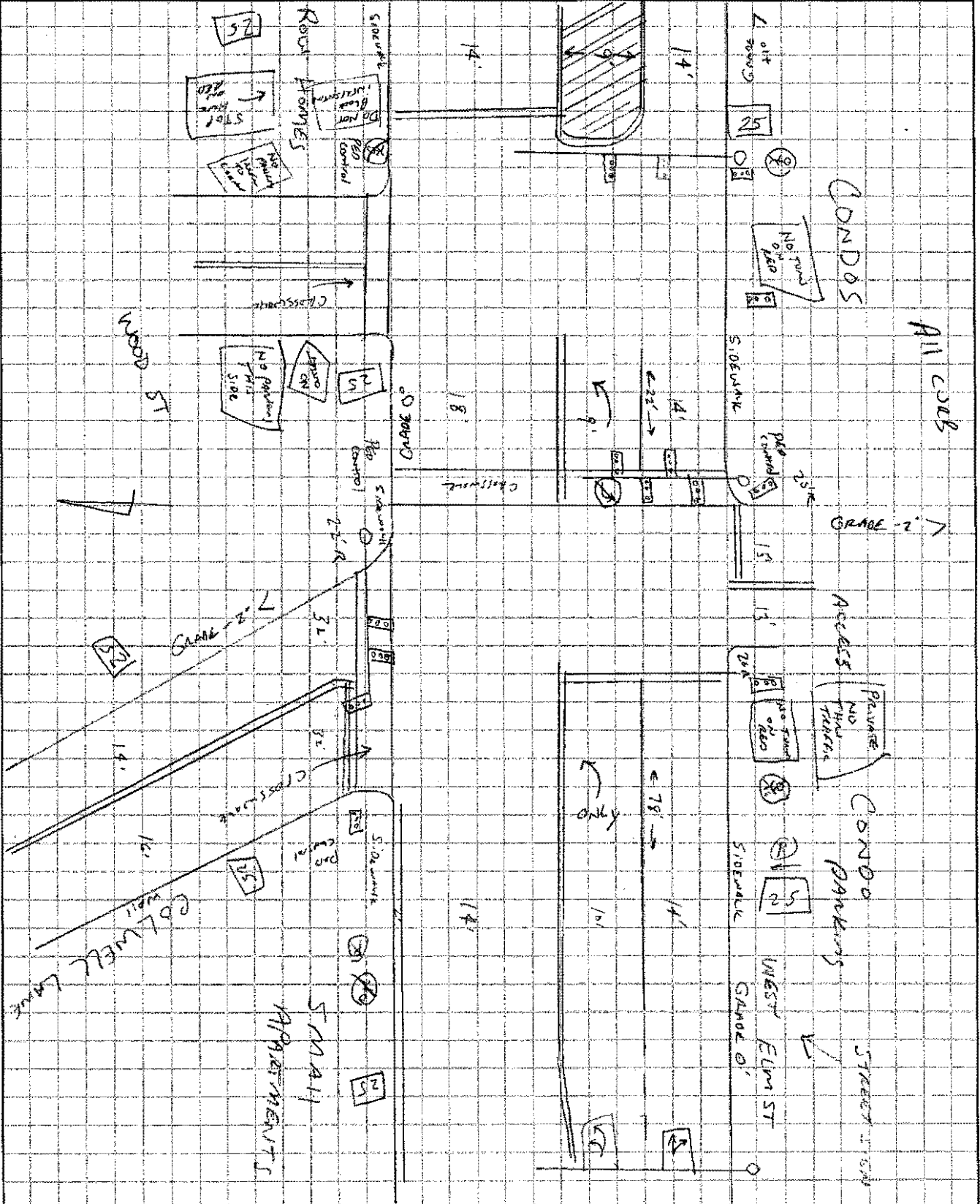
Date _____



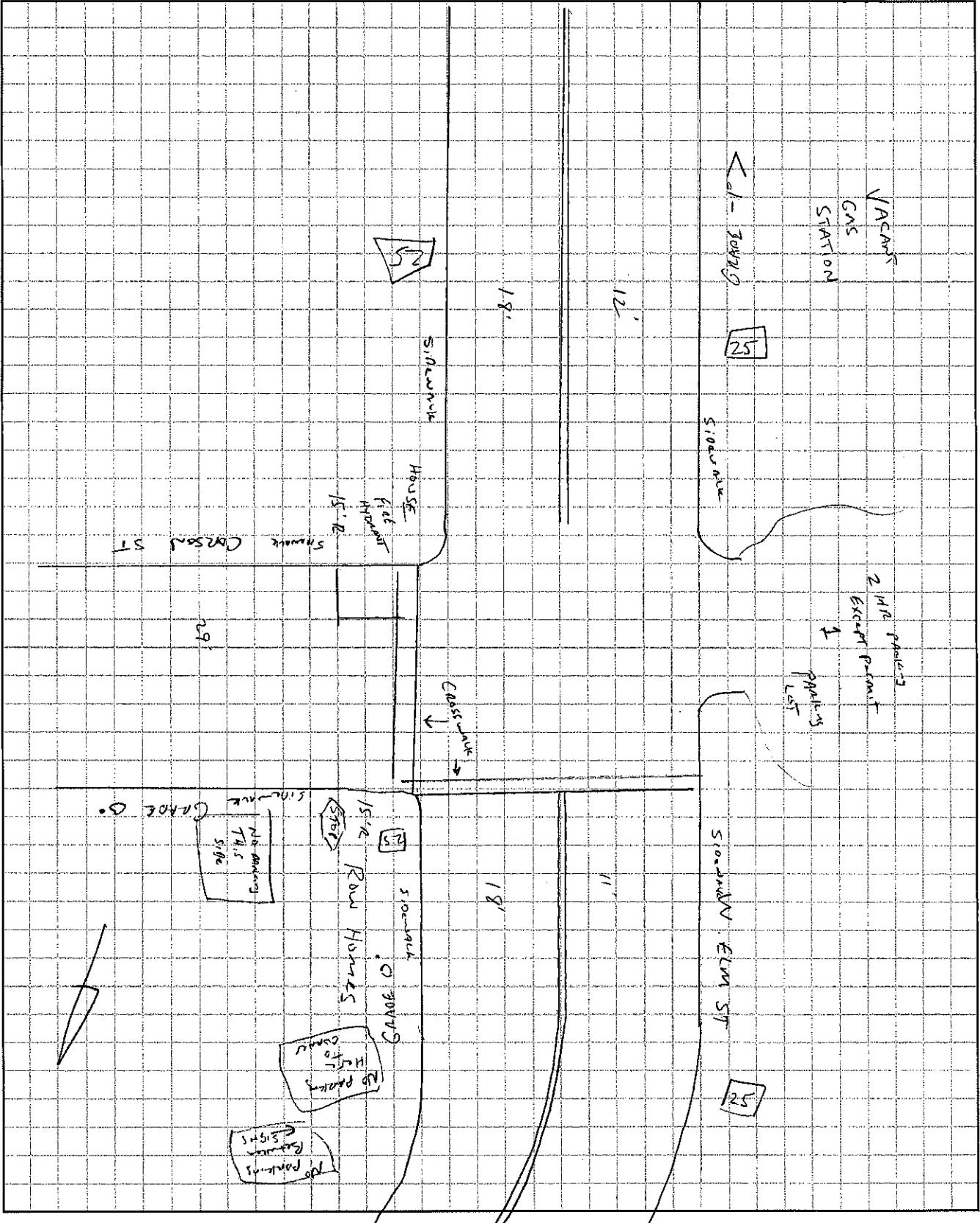
Job CONSHOHOCKEN McMahon Project No. _____ Sheet _____ of _____

Description COLWELL LANE/CONDOS ^{ACCESS} Designed By JEFF CRANE Date 5-17-12

ELM ST Checked By _____ Date _____



Job CONSHOHOCKEN McMahon Project No. _____ Sheet _____ of _____
 Description CORSON ST & W. ELM ST Designed By JEFF CRANE Date 5-17-12
 Checked By _____ Date _____



MCMMAHON

TRANSPORTATION ENGINEERS & PLANNERS

Job CONS/Ho/HOCKER

McMahon Project No. _____

Sheet _____ of _____

Description MAPLE ST @ WEST

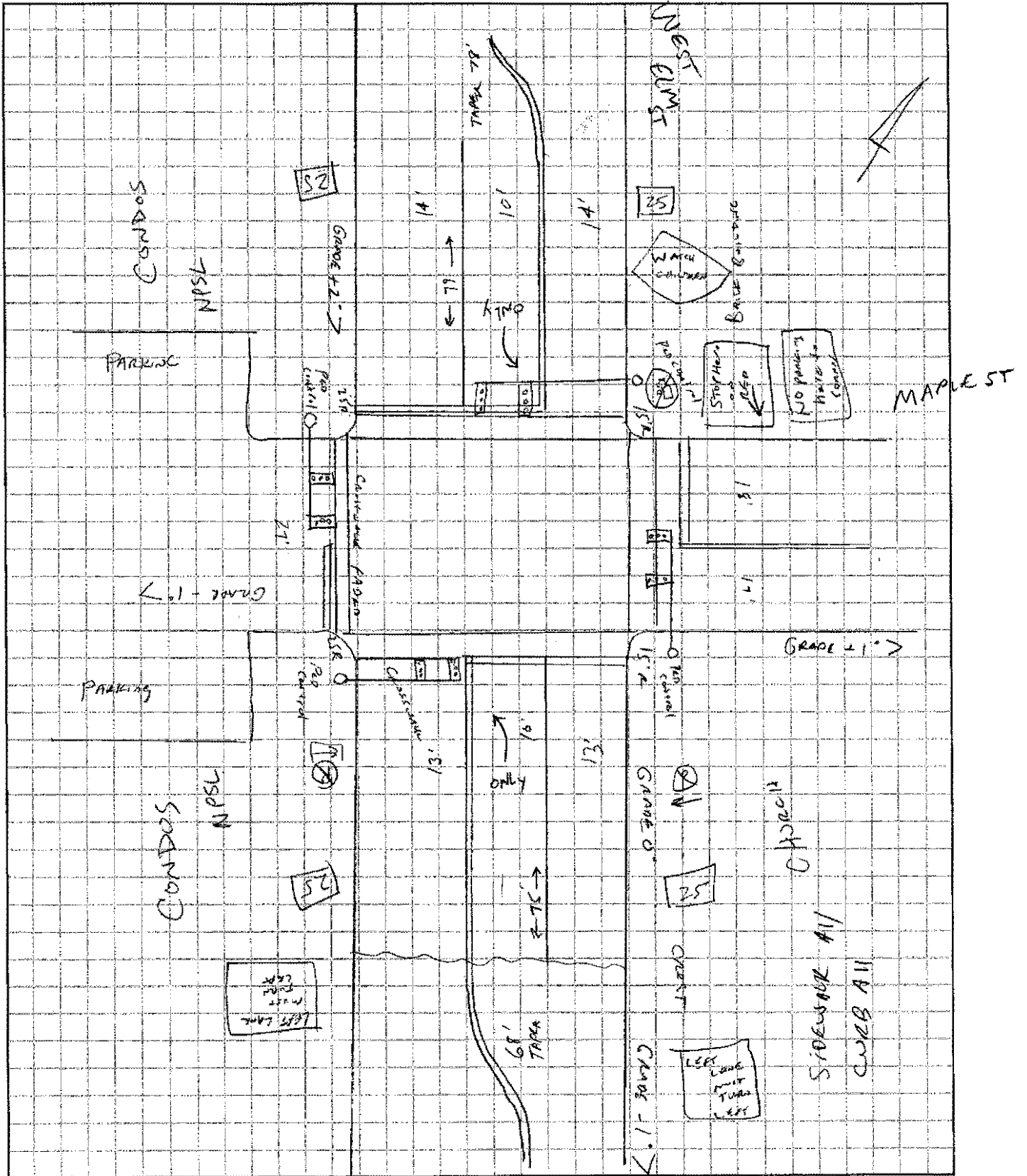
Designed By JEFF CRANE

Date 5-17-12

ELM ST

Checked By _____

Date _____



Job CON. 5th & Hickman

McMahon Project No. _____

Sheet _____ of _____

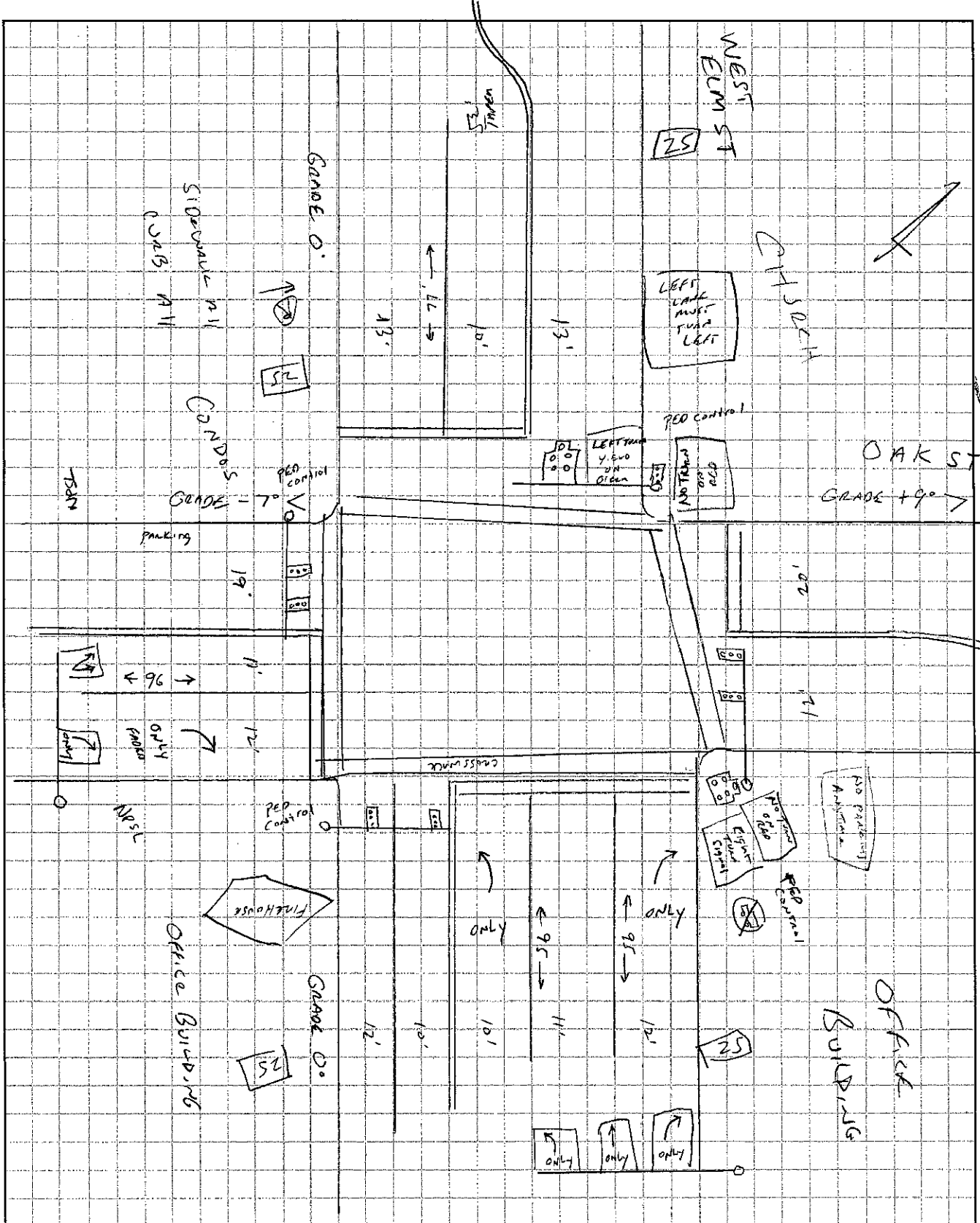
Description WEST ELM ST & OAK ST

Designed By JEFF CLANE

Date 5-17-12

Checked By _____

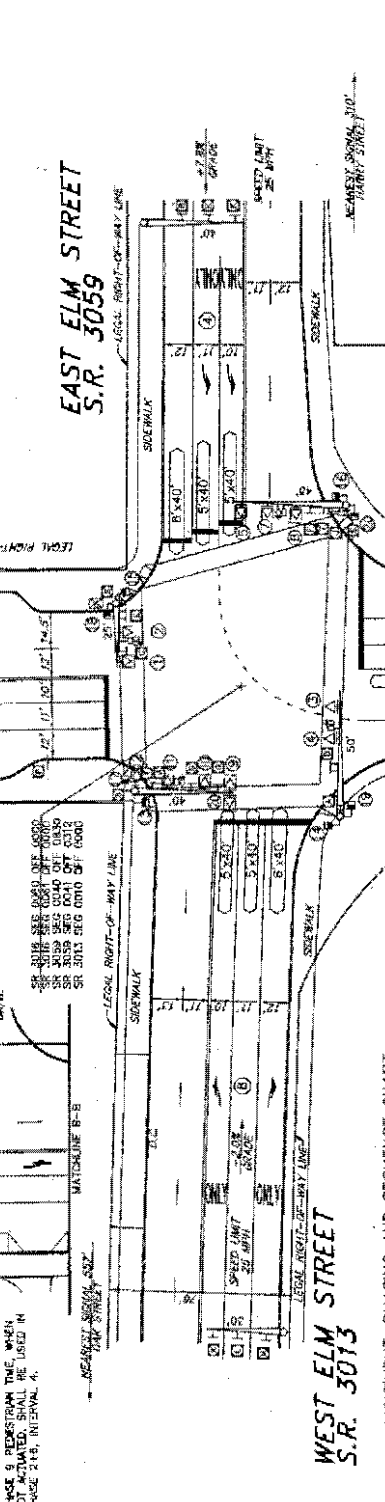
Date _____



| SYMBOL | SERIES | SIZE | DESCRIPTION |
|--------|---------|-----------|--|
| A | R10-20R | 9" x 12" | REGULATORY PANEL, BILITON FOR WALKING PERSON SIGNAL WITH COUNTDOWN TIMER |
| B | R3-7L | 16" x 24" | LEFT LANE MUST TURN LEFT |
| C | R10-17 | 16" x 24" | LEFT TURN YIELD ON GREEN |
| D | D3-S | 16" x 24" | DOUBLE-LINE OVERHEAD STREET NAME SIGN |
| E | O3-A | 16" x 24" | DOUBLE-LINE OVERHEAD STREET NAME SIGN |
| F | R10-20R | 9" x 12" | REGULATORY PANEL, BILITON FOR WALKING PERSON SIGNAL |
| G | R10-16L | 16" x 24" | LEFT TURN SIGNAL |
| H | R3-S | 16" x 24" | LEFT TURN |
| I | R3-S | 16" x 24" | STRAIGHT THROUGH |
| J | R3-S | 16" x 24" | FRONT TURN |
| K | R3-S | 16" x 24" | BACK TURN |
| L | R3-S | 16" x 24" | PEDESTRIAN CROSSING |
| M | R3-S | 16" x 24" | PEDESTRIAN CROSSING |
| N | R10-16R | 16" x 24" | RIGHT TURN SIGNAL |
| O | R10-16R | 16" x 24" | RIGHT TURN SIGNAL WITH COUNTDOWN TIMER |
| P | R10-16R | 16" x 24" | RIGHT TURN SIGNAL WITH COUNTDOWN TIMER |
| Q | R10-11 | 16" x 24" | NO TURN ON RED |

OPERATION NOTES:

- 1) 6/4- R FOLLOWED BY PHASE 2+6
- 2) 6 IF FOLLOWED BY PHASE 2+6
- 3) 6/4- R FOLLOWED BY PHASE 1+6
- 4) 6/4- R FOLLOWED BY PHASE 1+6
- 5) SIGNAL TO DWELL IN PHASE 2+6
- 6) SIGNAL ACTIVATED BY PHASE 4, 5, OR 6
- 7) PHASE 9 PEDESTRIAN TIME WHEN NOT ACTIVATED, SHALL BE USED IN PHASE 2+6, INTERVAL 4.



GENERAL NOTES

NO MODIFICATIONS TO THIS INSTALLATION ARE PERMITTED UNLESS APPROVED BY THE ENGINEER OR THE DEPARTMENT OF TRANSPORTATION.

ALL MATERIALS MUST MEASURE UP TO THE SPECIFICATIONS OF THE DEPARTMENT OF TRANSPORTATION.

ALL SIGNS AND PAINTWORK MARKINGS ACCORDING TO THIS DRAWING ARE TO BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH REGULATIONS AND SPECIFICATIONS OF THE DEPARTMENT OF TRANSPORTATION.

ALL OVERHEAD SIGNS MUST BE PROPERLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKLITES.

THE BENCH MARK DISTANCES BETWEEN SIGNALS MEASURED AT POINTS INDICATED BY DIMENSIONS SHALL BE 6 FEET.

EXACT LOCATION OF INTERMEDIATE SIGNALS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION.

ALL MATERIALS MUST MEASURE UP TO THE SPECIFICATIONS OF THE DEPARTMENT OF TRANSPORTATION.

ALL SIGNS AND PAINTWORK MARKINGS ACCORDING TO THIS DRAWING ARE TO BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH REGULATIONS AND SPECIFICATIONS OF THE DEPARTMENT OF TRANSPORTATION.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MCKISSENEY

MUNICIPALITY: CONEHOEKKEN BOROUGH

INTERSECTIONS: W. ELM STREET (S.R. 3013) & E. ELM STREET (S.R. 3059) & FAYETTE ST. (S.R. 3016)

PROJECT NO: 1001

DATE: 11-1-84

DESIGNED BY: MARK L. KEAY

DRAWN BY: DOUGLAS MAY

CHECKED BY: []

APPROVED BY: []

MOVEMENT, PHASING AND SEQUENCE CHART

| PHASE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|
| WEST ELM | | | | | | | | | | | | | | | |
| EAST ELM | | | | | | | | | | | | | | | |
| FAYETTE | | | | | | | | | | | | | | | |

LEGEND

- (A) MAXIMUM SPEED LIMIT
- (B) MINIMUM SPEED LIMIT
- (C) STOP
- (D) AHEAD OF STOP
- (E) AHEAD OF STOP
- (F) AHEAD OF STOP
- (G) AHEAD OF STOP
- (H) AHEAD OF STOP
- (I) AHEAD OF STOP
- (J) AHEAD OF STOP
- (K) AHEAD OF STOP
- (L) AHEAD OF STOP
- (M) AHEAD OF STOP
- (N) AHEAD OF STOP
- (O) AHEAD OF STOP
- (P) AHEAD OF STOP
- (Q) AHEAD OF STOP

GENERAL NOTES

NO INTERFERE OF THE SIGNALS AND ASSOCIATED WIRING SHALL BE PERMITTED IN THE DEPARTMENT OF TRANSPORTATION. ALL INTERFERE WORK INCLUDING REPAIRS OF SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND SIGNALS INDICATED ON THIS DRAWING SHALL BE INSTALLED IN ACCORDANCE WITH THE PENNSYLVANIA MANUAL ON SIGNALS AND SHALL BE MAINTAINED IN ACCORDANCE WITH SECTION 102.02. ALL SIGNS AND SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 3 FEET TO THE FACE OF CURB ON THE EDGE OF THE ROADWAY. SUPPORT PILES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE OF 14 FEET. SIGNALS LOCATED OVER THE ROADWAY SHALL HAVE A MINIMUM CLEARANCE OF 14 FEET. SIGNALS SHALL BE A MINIMUM OF 5 FEET ABOVE THE ROADWAY OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE PROPERLY SUPPORTED, ADJUSTED, AND EQUIPPED WITH INDICATORS.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 5 FEET.

EXACT LOCATION OF DETECTOR SHALL BE DETERMINED PRIOR TO INSTALLATION OF THE DETECTOR.

DETECTORS TO BE INSTALLED BY THE CONTRACTOR AND WHERE NOTED, DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 102.02.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIAL AND CITY ENGINEER TO DETERMINE ANY UTILITY WHICH MAY BE LOCATED IN THE LOCATION OF THE DETECTOR.

THE DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITS COMPLY WITH THE PROVISIONS OF THE PENNSYLVANIA MANUAL ON SIGNALS AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE LOCAL OFFICIAL AND CITY ENGINEER.

PERMITS SHALL BE OBTAINED FROM THE LOCAL OFFICIAL AND CITY ENGINEER PRIOR TO THE START OF WORK AND A COPY OF THE PERMITS SHALL BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO WORKING.

PERMITS SHALL BE OBTAINED FROM THE LOCAL OFFICIAL AND CITY ENGINEER PRIOR TO THE START OF WORK AND A COPY OF THE PERMITS SHALL BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO WORKING.

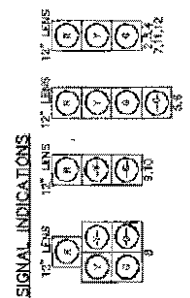
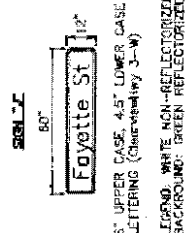
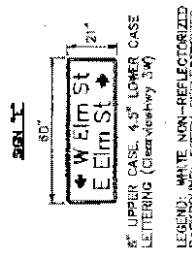
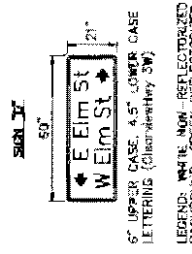
PERMITS SHALL BE OBTAINED FROM THE LOCAL OFFICIAL AND CITY ENGINEER PRIOR TO THE START OF WORK AND A COPY OF THE PERMITS SHALL BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO WORKING.

NOTE: THIS SIGNAL TO BE COORDINATED WITH THE ADJACENT SIGNAL AT EAST ELM STREET & MARKET STREET VIA TRC

WEEKLY PROGRAM CHART

| EVENT | DAY | TIME | LENGTH | OFFSET | PROGRAM | REMARKS |
|-------|-----|---------|--------|--------|---------|---------|
| 1 | MON | 5:00 AM | 1:00 | 0 | GREEN | 1 |
| 2 | TUE | 5:00 AM | 1:00 | 0 | GREEN | 2 |
| 3 | WED | 5:00 AM | 1:00 | 0 | GREEN | 3 |
| 4 | THU | 5:00 AM | 1:00 | 0 | GREEN | 4 |
| 5 | FRI | 5:00 AM | 1:00 | 0 | GREEN | 5 |
| 6 | SAT | 5:00 AM | 1:00 | 0 | GREEN | 6 |
| 7 | SUN | 5:00 AM | 1:00 | 0 | GREEN | 7 |

MONDAY = DAY 1
OFFSET REFERENCE TO START OF YELLOW ON PATRIOT STREET (INTERVAL 5)



* AUDIBLE PEDESTRIAN SIGNAL HEADS
SIGNALS TO BE EQUIPPED WITH TUNNEL WARNING 1,2,5,8,10,11,12.

EMERGENCY PRE-EMPTION NOTES:

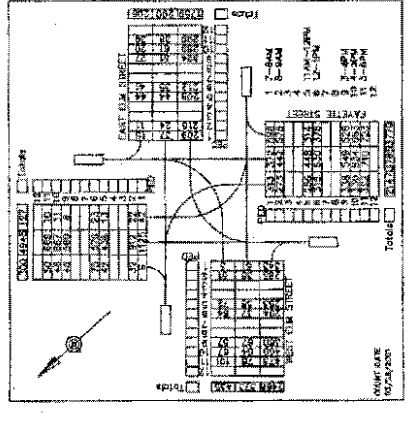
- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE APPROACH AND SOUTHBOUND APPROACHES OF FAYETTE STREET AND THE EAST ELM STREET APPROACHES OF PATRIOT STREET WITH A FLASHING RED LIGHT FOR EACH APPROACH OF OPERATIONAL PHASE AND THE EMERGENCY SIGNAL SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.
- THE SIGNALS SHALL EXHAUST ALL GREEN INDICATIONS IMMEDIATELY WHEN ACTED UPON BY AN EMERGENCY VEHICLE, FOLLOWED BY THE COMPLETE YELLOW AND RED PHASES OF THE SIGNAL. IMMEDIATELY AFTER THE GREEN INTERVAL FOR THE PRE-EMPTED PHASE SHALL FOLLOW.
- THE SIGNALS SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, WHICH ARE ACTIVATED BY EMERGENCY VEHICLE, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE OPERATED BY THE APPROACHING EMERGENCY VEHICLE.
- IF SIGNALS HAD BEEN ACTIVATED BY PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED DURING THE MAIN INTERVAL, THE MAIN INTERVAL SHALL BE ITS ENTIRETY FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE PROCEEDING INTO THE PRE-EMPTION PHASE.
- IF THE SIGNALS ARE FLASHING WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ALL SIGNALS SHALL REMAIN FLASHING.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- UPON COMPLETION OF PRE-EMPTION, PHASE 2, 4, 6 OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2, 4, 6 OR 8 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED.
- PRE-EMPTION SHALL BE A FIRST COME FIRST SERVED OPERATION.

EMERGENCY PRE-EMPTION PHASING CHART

| PHASE | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|-------|----|----|----|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|
| 1 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 2 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 3 | G | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 4 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 5 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 6 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 7 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 8 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 9 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 10 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 11 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 12 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 13 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 14 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 15 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 16 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 17 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |
| 18 | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |

NOTE:
IF PRE-EMPTION EQUIPMENT HAS ENDORSED CAPABILITIES FOR VEHICLE DETECTION, IT IS RECOMMENDED TO HAVE THE ZERO OUT FAILURE INDICATION INCORPORATED INTO THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

** FOR OPERATION OF PRE-EMPTION
* G * WHEN RETURNING TO PHASE 2-6



PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 5-8

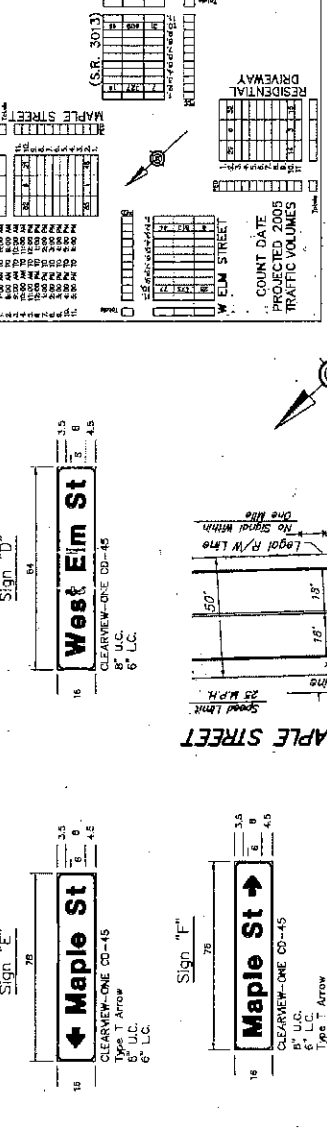
COUNTY: MONTGOMERY
MUNICIPALITY: CONESTOGA TOWNSHIP BOROUGHS
INTERSECTION: W. ELM STREET (S.R. 3013) / E. ELM STREET (S.R. 3019) & FAYETTE ST. (S.R. 3016)

DESIGNED BY: MARK L. VRAAY
CHECKED BY: DOUGLAS MAY
DATE: 11-2-84

| NO. | DESCRIPTION | DATE | BY |
|-----|------------------------|---------|---------------|
| 1 | NEW SIGNAL INDICATIONS | 11/2/84 | MARK L. VRAAY |
| 2 | REVISIONS | | |
| 3 | REVISIONS | | |
| 4 | AND NO. FAYETTE ST. | | |
| 5 | AND NO. PATRIOT ST. | | |
| 6 | AND NO. PATRIOT ST. | | |
| 7 | | | |
| 8 | | | |

SHEET 3 OF 3 PERMIT # 04-0913 FILE # 0913

| PLAN SYMBOL | SIZE | REMARKS |
|-------------|---------|--|
| A | 30"x30" | LEFT LANE MUST TURN LEFT |
| B | 18"x36" | EDUCATIONAL PUSH BUTTON FOR WALKING PERSON |
| C | R10-36R | EDUCATIONAL PUSH BUTTON FOR WALKING PERSON |
| D | D3-4 | WEST ELM ST |
| E | D3-4 | MAPLE ST |
| F | D3-4 | MAPLE ST |



- EMERGENCY PRE-EMPTION NOTES:**
- SIGNALS TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE EASTBOUND & WESTBOUND APPROACHES OF WEST ELM STREET (S.R. 3013), THE SOUTHBOUND APPROACH OF MAPLE STREET AND THE NORTHBOUND APPROACH OF RESIDENTIAL DRIVEWAY, WITH A FLASHING FAIL SAFE DEVICE FOR EACH DIRECTION OF TRAVEL.
 - THE FLASHING FAIL SAFE DEVICE SHALL BE A FLASHING WHITE CROSS LIGHT, AND SHALL OPERATE FOR A DURATION OF 3 SECONDS IMMEDIATELY UPON INTERSECTION FOR THE APPROPRIATE APPROACH.
 - THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATORS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS ACCORDINGLY, FOLLOWED BY THE GREEN INTERVAL FOR THE PREEMPTED PHASE.
 - IF THE SIGNALS ARE IN OTHER YELLOW OR RED CLEARANCE, THE CLEARANCE PHASE SHALL BE COMPLETED BEFORE THE GREEN INTERVAL OF THE PRE-EMPTION PHASE OCCURS.
 - SIGNALS SHALL REMAIN FLASHING.
 - IF THE SIGNALS ARE FLASHING WHEN ACTIVATED BY AN EMERGENCY VEHICLE ALL SIGNALS SHALL REMAIN FLASHING.
 - UPON COMPLETION OF PRE-EMPTION PHASE 2, 4, 6 OR 8, IN RETURNING TO NORMAL OPERATION PHASE 2+6 INTERVAL 1 SHALL FOLLOW.
 - IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
 - IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED.
 - THE FIELD LOCATIONS OF THE PRE-EMPTION DETECTORS MAY DIFFER FROM THE RED TO BE RELAYED AND/OR ADJUSTED TO PROVIDE ACCEPTABLE OPERATION AS DEEMED APPROPRIATE BY DEPARTMENT PERSONNEL.
 - IF THE SIGNAL HAS BEEN ACTIVATED BY A PEDESTRIAN PUSH BUTTON, AND THE SIGNAL IS PRE-EMPTED, THE "WALK (HAND)" INTERVAL SHALL TERMINATE IMMEDIATELY, FOLLOWED BY THE "CLEAR (HAND)" INTERVAL. THIS INTERVAL SHALL TIME OUT FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES, BEFORE GOING INTO EMERGENCY PRE-EMPTION PHASE.

EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

| PHASE | SEQUENCE | INTERVAL | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
|-------------|----------|----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|---|
| 1-2 | C | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 3-4 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 5-6 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 7-8 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 9,10,11,12 | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | |
| 13,14,15,16 | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | |
| FIXED TIME | | 1 | | 3 | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 |

NOTE: FOR PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES, FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION.

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS APPROVED 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 PAINT MARKINGS INDICATED ON THIS DRAWING SHALL BE MAINTAINED IN ACCORDANCE WITH THE SPECIFICATIONS AND MAINTAINED IN ACCORDANCE WITH REGULATION NO. 86.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS OF THE SIGNALS A MINIMUM OF 2 FEET ABOVE THE TOP OF THE SHOULDER, SUPPORT PILES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE DIMENSION OF 2 FEET ABOVE THE SIGNALS.

ALL OVERHEAD SIGNALS MUST BE SECURELY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH DIAPHRAGMS.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 5 FEET.

INSTALLATION OF PRE-EMPTION DETECTORS SHALL BE PERFORMED PRIOR TO THE INSTALLATION OF THE SIGNALS.

OPERATIONS TO BE PERFORMED BY MUNICIPALITY AND WERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FROM 108.

IF AT INSTALLATION THE CONTRACTOR SHALL NOTIFY WITH THE DEPARTMENT OF TRANSPORTATION OF ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

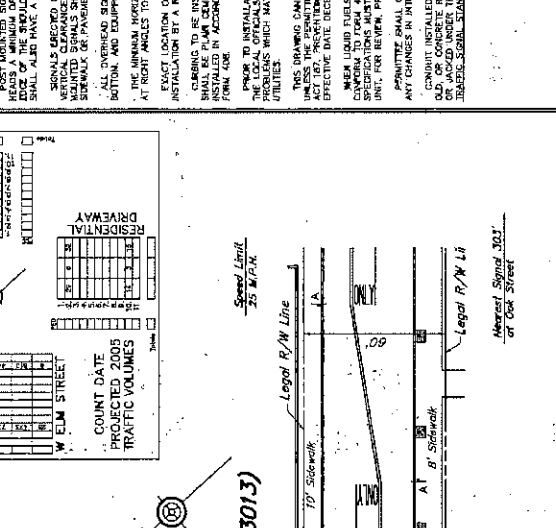
THIS DRAWING CANNOT BE USED AS A CONSTRUCTOR DRAWING UNTIL APPROVED BY THE DEPARTMENT OF TRANSPORTATION, EFFECTIVE DATE DECEMBER 10, 1998.

WHERE LIQUID FUELS ARE USED, SIGNAL INSTALLATION MUST BE ACCORDING TO DEPARTMENT SPECIFICATIONS FOR THE INSTALLATION OF LIQUID FUEL PUMP STATIONS, FOR REPAIR PRIOR TO BEING.

PAVEMENT SHALL BE AT LEAST A 4" ASPHALT CONCRETE FINISH. ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXISTING CONDITIONS INSTALLED IN BIRMINGHAM ROADWAY LESS THAN 5 YEARS OLD OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED TO DEPTH AND REPAIRED IN ACCORDANCE WITH THE DEPARTMENT TRAFFIC SIGNAL STANDARDS, 10-7860 SERIES.

TRAFFIC SIGNAL SYSTEM NOTE:

REFER TO SYSTEM PERMIT # 1-0085 FOR PROGRAM TIMES AND WEEKLY PROGRAM CHART.



SIGNAL INDICATIONS

11" SIGNALS 12" USRS

| Signal Type | Color | Meaning |
|---|----------------------------------|--------------------|
| Vertical Signal Head <td>Red <td>STOP</td> </td> | Red <td>STOP</td> | STOP |
| Vertical Signal Head <td>Yellow <td>CAUTION</td> </td> | Yellow <td>CAUTION</td> | CAUTION |
| Vertical Signal Head <td>Green <td>GO</td> </td> | Green <td>GO</td> | GO |
| Vertical Signal Head <td>Blue <td>PEDESTRIAN WALKING</td> </td> | Blue <td>PEDESTRIAN WALKING</td> | PEDESTRIAN WALKING |
| Vertical Signal Head <td>Red <td>STOP</td> </td> | Red <td>STOP</td> | STOP |
| Vertical Signal Head <td>Yellow <td>CAUTION</td> </td> | Yellow <td>CAUTION</td> | CAUTION |
| Vertical Signal Head <td>Green <td>GO</td> </td> | Green <td>GO</td> | GO |
| Vertical Signal Head <td>Blue <td>PEDESTRIAN WALKING</td> </td> | Blue <td>PEDESTRIAN WALKING</td> | PEDESTRIAN WALKING |

EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

| PHASE | SEQUENCE | INTERVAL | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
|-------------|----------|----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|---|
| 1-2 | C | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 3-4 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 5-6 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 7-8 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 9,10,11,12 | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | |
| 13,14,15,16 | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | |
| FIXED TIME | | 1 | | 3 | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 |

TRAFFIC SIGNAL SYSTEM NOTE:

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SIGNAL INDICATIONS

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| Signal Type | Color | Meaning |
|---|----------------------------------|--------------------|
| Vertical Signal Head <td>Red <td>STOP</td> </td> | Red <td>STOP</td> | STOP |
| Vertical Signal Head <td>Yellow <td>CAUTION</td> </td> | Yellow <td>CAUTION</td> | CAUTION |
| Vertical Signal Head <td>Green <td>GO</td> </td> | Green <td>GO</td> | GO |
| Vertical Signal Head <td>Blue <td>PEDESTRIAN WALKING</td> </td> | Blue <td>PEDESTRIAN WALKING</td> | PEDESTRIAN WALKING |
| Vertical Signal Head <td>Red <td>STOP</td> </td> | Red <td>STOP</td> | STOP |
| Vertical Signal Head <td>Yellow <td>CAUTION</td> </td> | Yellow <td>CAUTION</td> | CAUTION |
| Vertical Signal Head <td>Green <td>GO</td> </td> | Green <td>GO</td> | GO |
| Vertical Signal Head <td>Blue <td>PEDESTRIAN WALKING</td> </td> | Blue <td>PEDESTRIAN WALKING</td> | PEDESTRIAN WALKING |

EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

| PHASE | SEQUENCE | INTERVAL | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
|-------------|----------|----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|---|
| 1-2 | C | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 3-4 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 5-6 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 7-8 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 9,10,11,12 | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | |
| 13,14,15,16 | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | |
| FIXED TIME | | 1 | | 3 | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 |

NOTE: FOR PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES, FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION.

EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

| PHASE | SEQUENCE | INTERVAL | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
|-------------|----------|----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|---|
| 1-2 | C | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 3-4 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 5-6 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 7-8 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 9,10,11,12 | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | |
| 13,14,15,16 | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | |
| FIXED TIME | | 1 | | 3 | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 |

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| 1-2 | C | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 3-4 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 5-6 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 7-8 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 9,10,11,12 | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | |
| 13,14,15,16 | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | |
| FIXED TIME | | 1 | | 3 | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 |

NOTE: FOR PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES, FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION.

EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

| PHASE | SEQUENCE | INTERVAL | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |
|-------------|----------|----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|---|
| 1-2 | C | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 3-4 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 5-6 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 7-8 | R | Y | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | |
| 9,10,11,12 | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | |
| 13,14,15,16 | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | |
| FIXED TIME | | 1 | | 3 | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 | 3 | | 2 |

NOTE: FOR PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES, FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION.

GENERAL NOTES

- 1. ALL MODIFICATIONS TO THIS INSTALLATION ARE LIMITED TO THE INFORMATION CONTAINED HEREIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXISTING CONDITIONS OF THE BORGH OF GOSHOPKEN.
- 2. ALL MODIFICATIONS TO THIS INSTALLATION SHALL BE APPROVED BY THE ENGINEERING DISTRICT.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE BOROUGH OF GOSHOPKEN AND THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION.
- 4. ALL SIGNALS SHALL BE INSTALLED WITHIN THE RIGHT-OF-WAY OF THE STREET TO WHICH THEY ARE BEING INSTALLED.
- 5. ALL SIGNALS SHALL BE INSTALLED WITHIN THE RIGHT-OF-WAY OF THE STREET TO WHICH THEY ARE BEING INSTALLED.
- 6. ALL SIGNALS SHALL BE INSTALLED WITHIN THE RIGHT-OF-WAY OF THE STREET TO WHICH THEY ARE BEING INSTALLED.
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- 10. ALL SIGNALS SHALL BE INSTALLED WITHIN THE RIGHT-OF-WAY OF THE STREET TO WHICH THEY ARE BEING INSTALLED.

TRAFFIC VOLUMES

PROJECTED 2008

| STREET | PHASE | DAILY VOLUME |
|--------------|---------|--------------|
| WOOD STREET | THROUGH | 150 |
| WOOD STREET | LEFT | 100 |
| WOOD STREET | RIGHT | 200 |
| COLWELL LANE | THROUGH | 50 |
| COLWELL LANE | LEFT | 30 |
| COLWELL LANE | RIGHT | 50 |

OPERATION NOTES

- 1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXISTING CONDITIONS OF THE BORGH OF GOSHOPKEN.
- 2. ALL MODIFICATIONS TO THIS INSTALLATION SHALL BE APPROVED BY THE ENGINEERING DISTRICT.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE BOROUGH OF GOSHOPKEN AND THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION.

EMERGENCY PRECAUTION NOTES

- 1. SIGNALS TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR ALL APPROACHES TO THE SIGNAL.
- 2. SIGNALS TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR ALL APPROACHES TO THE SIGNAL.
- 3. SIGNALS TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR ALL APPROACHES TO THE SIGNAL.

TRAFFIC SIGNAL SYSTEM NOTE:

- 1. REFER TO SYSTEM PERMIT # 1-0395 FOR PHASE 4+3.
- 2. AND WEEKLY PROGRAM CHART.

OPERATION NOTES

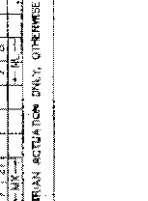
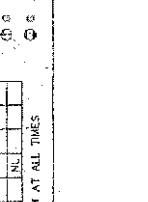
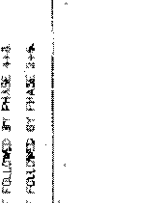
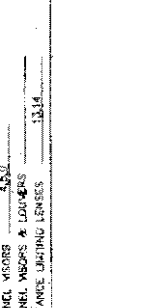
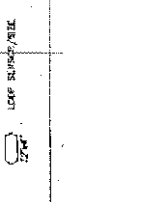
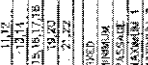
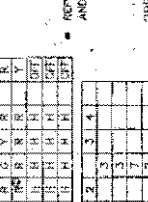
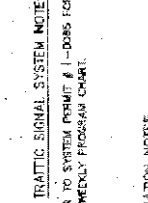
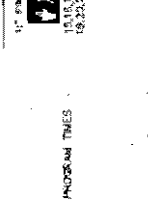
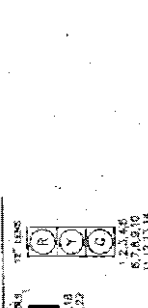
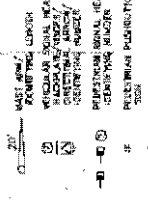
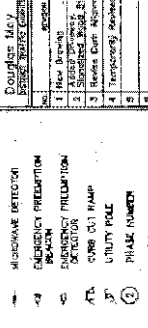
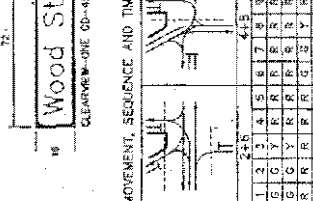
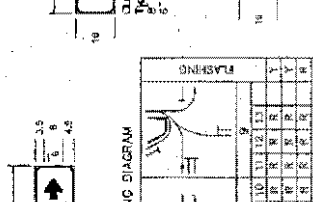
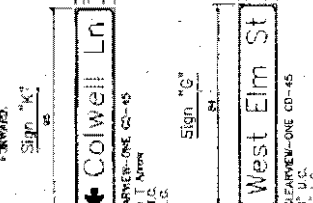
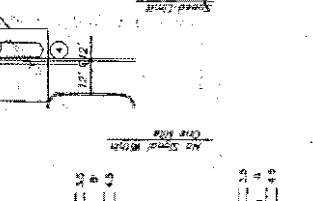
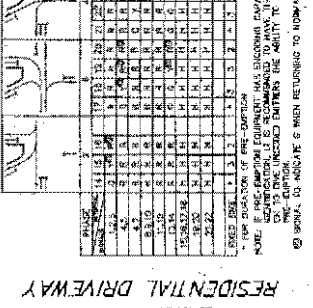
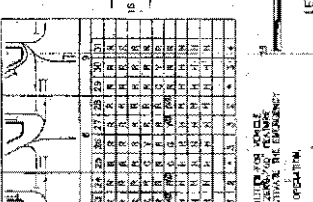
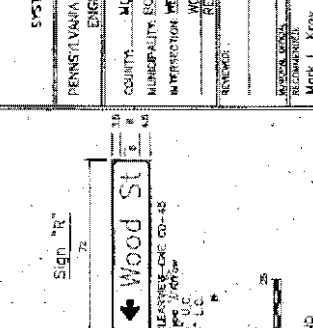
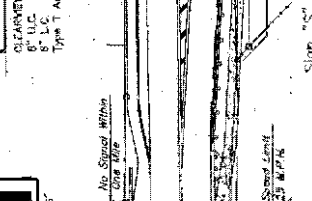
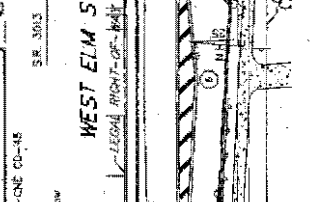
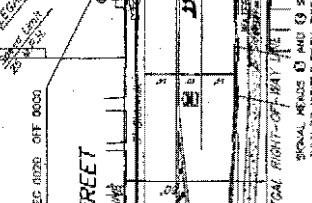
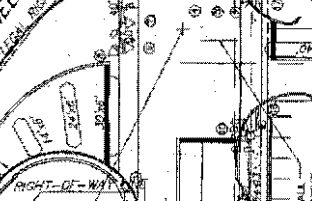
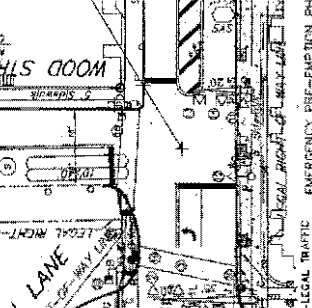
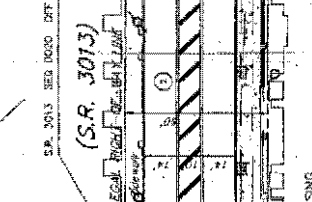
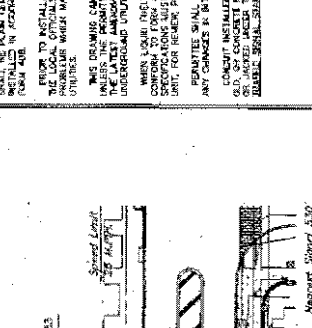
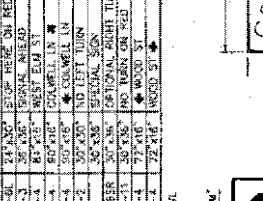
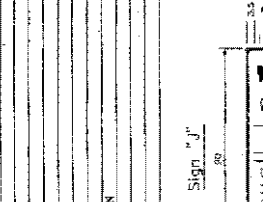
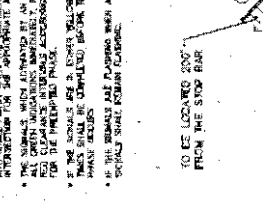
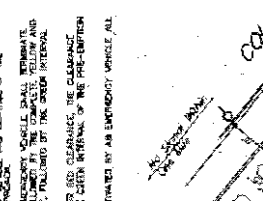
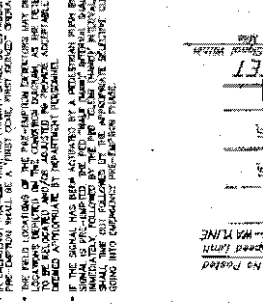
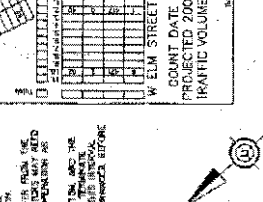
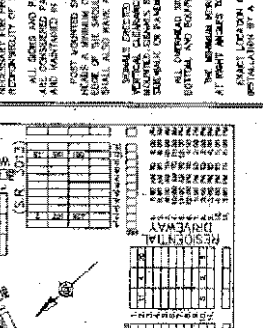
- 1. SIGNALS TO BE EQUIPPED WITH TUNNEL WEAR & LOGS.
- 2. SIGNALS TO BE EQUIPPED WITH TUNNEL WEAR & LOGS.
- 3. SIGNALS TO BE EQUIPPED WITH TUNNEL WEAR & LOGS.

OPERATION NOTES

- 1. SIGNALS TO BE EQUIPPED WITH TUNNEL WEAR & LOGS.
- 2. SIGNALS TO BE EQUIPPED WITH TUNNEL WEAR & LOGS.
- 3. SIGNALS TO BE EQUIPPED WITH TUNNEL WEAR & LOGS.

OPERATION NOTES

- 1. SIGNALS TO BE EQUIPPED WITH TUNNEL WEAR & LOGS.
- 2. SIGNALS TO BE EQUIPPED WITH TUNNEL WEAR & LOGS.
- 3. SIGNALS TO BE EQUIPPED WITH TUNNEL WEAR & LOGS.



GENERAL NOTES

NO MODIFICATIONS TO THE INSTALLATION ARE PERMITTED WITHOUT THE PRIOR APPROVAL OF THE DEPARTMENT OF TRANSPORTATION. ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, REPAIRS TO THE SIGNALS OR THE SIGNALS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

ALL SIGNALS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING SHALL BE INSTALLED IN ACCORDANCE WITH THE SIGNALS AND PAVEMENT MARKINGS MANUAL, PUBLISHED BY THE DEPARTMENT OF TRANSPORTATION, AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 88.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET ABOVE THE FACE OF CURB OR THE FACE OF THE ROADWAY. ALL SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY AND VERTICALLY AS SPECIFIED ON THE DRAWING.

VERTICAL CLEARANCE OF 18 FT. ABOVE THE ROADWAY SURFACE SHALL BE MAINTAINED AT ALL POINTS ALONG THE ROADWAY. ALL SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SURFACE OF PAVEMENT.

OVERHEAD SIGNALS SHALL BE WATER TIGHT, TOP AND BOTTOM, AND SHALL BE PROTECTED BY A SIGNAL HOUSING. THE SIGNAL HOUSING SHALL BE WATER TIGHT AND SHALL BE PROTECTED BY A SIGNAL HOUSING. AT RIGHT ANGLES TO THE APPROACH SIGNAL BE A SIGNAL HOUSING.

EXACT LOCATION OF INTERSECTION SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF THE CONTRACTOR. CURBS TO BE INSTALLED BY INDIVIDUALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, WITH A MINIMUM OF 4 INCHES THICKNESS.

WORK SHALL BE IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FOR SIGNALS WHICH MAY BE OBTAINED FROM THE LOCATION OF THE SIGNALS.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS IT IS ACCOMPANIED BY A LETTER FROM THE ENGINEER. ANY CHANGES TO THIS DRAWING SHALL BE MADE BY THE ENGINEER. ANY CHANGES TO THIS DRAWING SHALL BE MADE BY THE ENGINEER.

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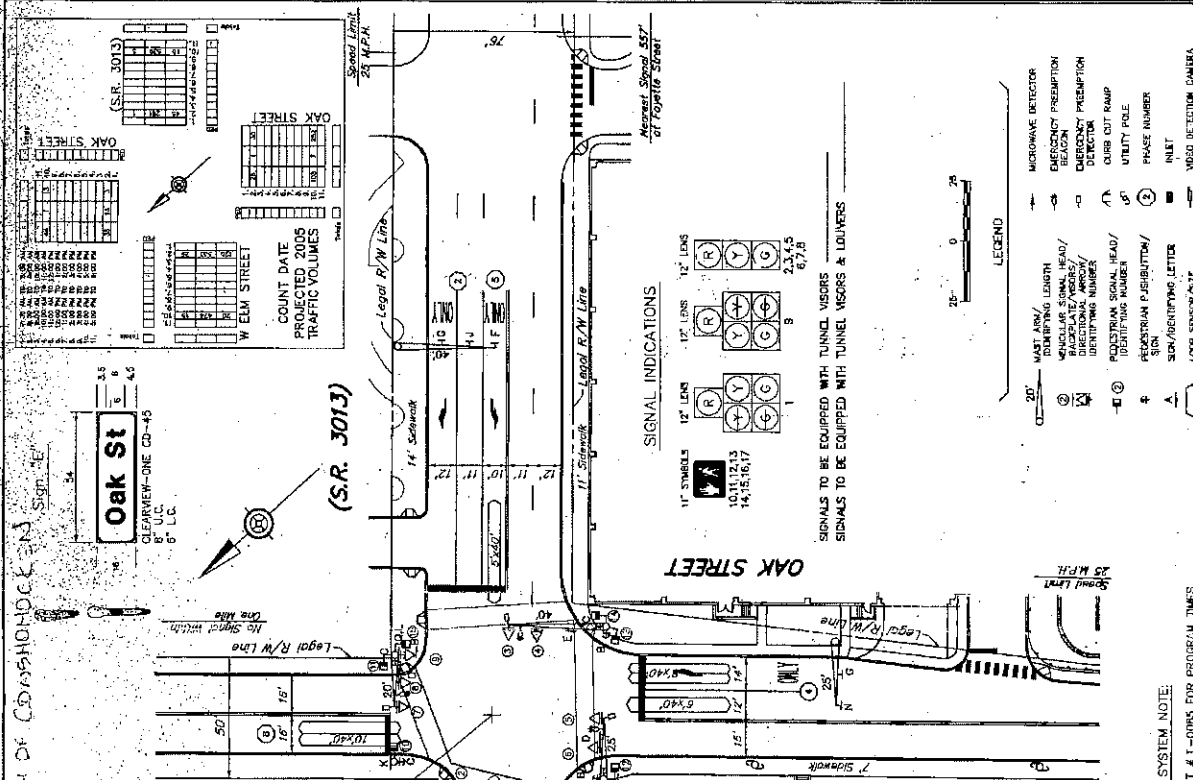
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COUNT DATE
PROJECTED 2005 TRAFFIC VOLUMES

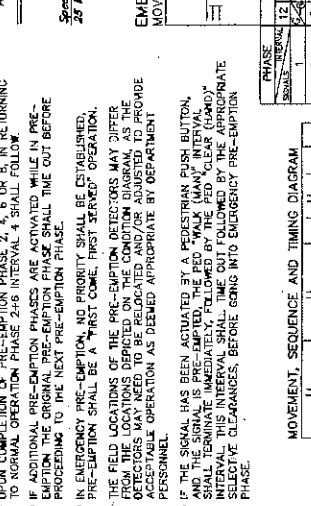
| APPROACH | PHASE | 2005 |
|---------------|-------|------|
| W. ELM STREET | THRU | 100 |
| | LEFT | 50 |
| OAK STREET | THRU | 150 |
| | LEFT | 75 |

OPERATION NOTES

| PHASE | MOVEMENT | SEQUENCE | TIMING |
|-------|----------|----------|--------|
| 1 | THRU | R | 20 |
| 2 | THRU | R | 20 |
| 3 | THRU | R | 20 |
| 4 | THRU | R | 20 |
| 5 | THRU | R | 20 |
| 6 | THRU | R | 20 |
| 7 | THRU | R | 20 |
| 8 | THRU | R | 20 |
| 9 | THRU | R | 20 |
| 10 | THRU | R | 20 |
| 11 | THRU | R | 20 |
| 12 | THRU | R | 20 |
| 13 | THRU | R | 20 |
| 14 | THRU | R | 20 |
| 15 | THRU | R | 20 |
| 16 | THRU | R | 20 |
| 17 | THRU | R | 20 |
| 18 | THRU | R | 20 |
| 19 | THRU | R | 20 |
| 20 | THRU | R | 20 |
| 21 | THRU | R | 20 |
| 22 | THRU | R | 20 |
| 23 | THRU | R | 20 |

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE EASTBOUND AND WESTBOUND APPROACHES OF WEST ELM STREET AND OAK STREET, WITH FLASHING PANE SAFE DEVICE FOR EACH DIRECTION OF OPERATION.
- THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL COMPLETE YELLOW AND RED CLEARANCE INTERVALS ACCORDING TO THE PRE-EMPTION PHASING.
- IF THE SIGNALS ARE IN EITHER YELLOW OR RED CLEARANCE THE CLEARANCE TIMES SHALL BE COMPLETED BEFORE THE GREEN INTERVAL OF THE PRE-EMPTION PHASE OCCURS.
- IF THE SIGNALS ARE FLASHING WHEN ACTIVATED BY AN EMERGENCY VEHICLE ALL SIGNALS SHALL REMAIN FLASHING.
- UPON COMPLETION OF PRE-EMPTION PHASE 2, 4, 6 OR 8, IN RETURNING TO NORMAL OPERATION PHASE 2+6 INTERVAL 4 SHALL FOLLOW.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVED" OPERATION.
- THE FIELD LOCATIONS OF THE PRE-EMPTION DETECTORS MAY DIFFER FROM THE LOCATIONS DEPICTED ON THE CONDITION DIAGRAM, AS THE DETECTORS MAY NEED TO BE RELOCATED AND/OR ADJUSTED TO PROMOTE ACCEPTABLE OPERATION AS DEEMED APPROPRIATE BY DEPARTMENT PERSONNEL.
- IF THE SIGNAL HAS BEEN ACTIVATED BY A PEDESTRIAN PUSH BUTTON, SIGNALS SHALL TERMINATE IMMEDIATELY FOLLOWED BY THE PEDESTRIAN CLEARANCE INTERVAL. THIS INTERVAL SHALL TIME OUT FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES, BEFORE GOING INTO EMERGENCY PRE-EMPTION PHASE.



OPERATION NOTES

- FOR DURATION OF PRE-EMPTION PHASES, THE SIGNALS SHALL BE FLASHING WHITE FLOOD LIGHTS.
- IF PRE-EMPTION EQUIPMENT HAS EXCEEDED CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO TO ZERO ACTIVATE THE EMERGENCY PRE-EMPTION.
- SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION.
- SIGNAL TO INDICATE G/Y WHEN RETURNING TO NORMAL OPERATION.

TRAFFIC SIGNAL SYSTEM NOTE:

- REFER TO SYSTEM PERMIT # I-0085 FOR PROGRAM TIMES AND WEEKLY PROGRAM CHART.

CLOSED LOOP SYSTEM PERMIT # I-0085

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: BOROUGH OF CONSCHOHOCKEN
INTERSECTION: WEST ELM STREET (S.R. 3013)
AND OAK STREET

APPROVED: [Signature]

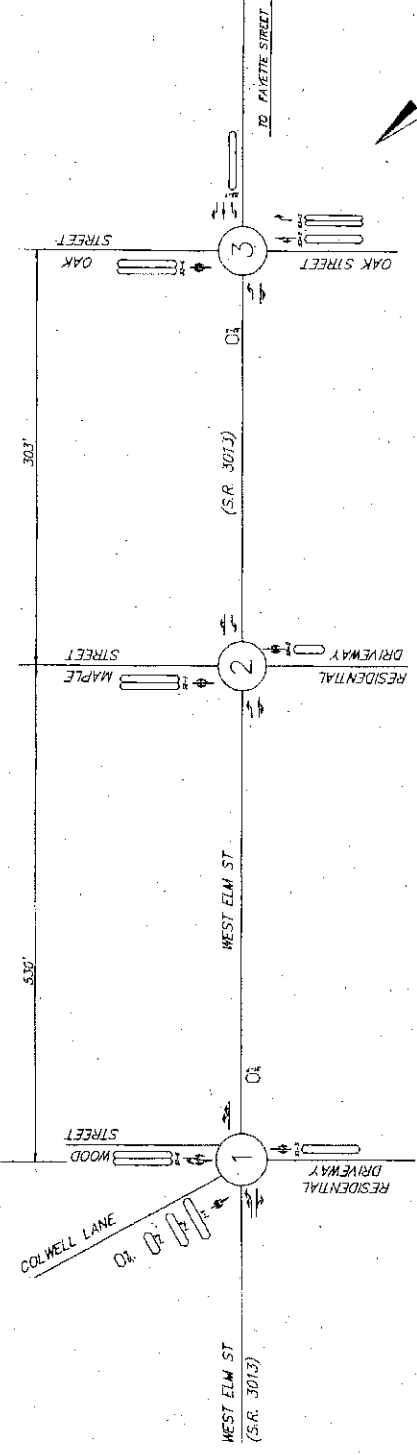
DATE: 07/13/09

RECOMMENDED BY: Douglas K. May
STREET LIGHTING ENGINEER

| NO. | DESCRIPTION | DATE | BY | CHKD | DATE |
|-----|-------------------------|---------|-----|------|---------|
| 1 | Received "NOTICE" Sign | 7/13/09 | DKM | DKM | 7/13/09 |
| 2 | Added 80 Volt Turn Lane | 7/13/09 | DKM | DKM | 7/13/09 |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |

PERMIT # I-0085 FILE # 3014

Consto backenBarovich I-0085



GENERAL NOTES

NO MODIFICATIONS TO THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS OBTAINED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

REFER TO TRAFFIC SIGNAL PERMIT DRAWING FOR INDIVIDUAL INTERSECTION OPERATION, GEOMETRY, PHASING AND DETAIL. THESE SHOULD ALWAYS BE ACCOMPANIED WITH TRAFFIC SIGNAL PERMIT DRAWING.

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, LOCAL CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE END UP LEVEL.

ENTER THE SYSTEM FAILURE CRITICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.

SET UP PRODUCT DISTRICT 6-0 COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SIGNALS PROGRAMS.

CONTRACTOR SHALL REPROGRAM THE CONTROLLERS TO OBTAIN EXACT LOCATION OF REFERENCE SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PERIODIC TRAFFIC VOLUMES IN WHATS INTERSECTION. THESE VOLUMES MUST BE OBTAINED FROM THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BEGIN.

MAINTAIN MASTER CONTROLLER COMMUNICATION SUIT AS PHONE DRIVES.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY UTILITIES WHICH MAY BE CREATED DUE TO THE LOCATION OF THE SIGNALS.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLETES WITH THE PROVISIONS OF EFFECTIVE DATE 08/15/05.

THIS DRAWING IS NOT TO BE USED FOR ANY OTHER PURPOSES UNLESS THE PERMITTEE OBTAINS THE NECESSARY PERMISSIONS FROM THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BEGIN.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY

MUNICIPALITY: BOROUGH OF CONSHOHOCKEN

INTERSECTION: WEST ELM STREET (S.R. 3013)

FROM COLWELL LN/RESIDENTIAL DRIVEWAY
TO OAK STREET

REVIEWED:

MUNICIPAL OFFICIAL: _____ DATE: _____

RECOMMENDED: ASHWINI B. PATEL 3/9/05

LOUIS R. BELMONTI 3/15/05

DISTRICT TRAFFIC ENGINEER: _____ DATE: _____

| NO. | REVISION | DATE | BY | DATE | REASON |
|-----|----------------------------------|----------|-----|------|--------|
| 1 | INTERSECTION AT TEMPORARY RETURN | 05/06/04 | ASB | LRB | DATE |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |

SYSTEM PERMIT # 1-0085
TRAM 0303 FILE: SYSTEM PERMIT 05/06/04

System Detector Assignment

| Detector | Location | Assignment |
|----------|-------------|------------|
| 1 | West Elm St | ... |
| 2 | Maple St | ... |
| 3 | Oak St | ... |
| 4 | Fayette St | ... |

Competition Channel Select

| Channel | Assignment |
|---------|------------|
| 1 | ... |
| 2 | ... |
| 3 | ... |
| 4 | ... |

Threshold Parameters

| Parameter | Value |
|-----------|-------|
| ... | ... |
| ... | ... |
| ... | ... |

Cycle/Split/Offset

| Phase | Color | Split | Offset | Cycle |
|-------|--------|-------|--------|-------|
| 1 | Green | ... | ... | ... |
| 2 | Yellow | ... | ... | ... |
| 3 | Red | ... | ... | ... |
| 4 | Green | ... | ... | ... |
| 5 | Yellow | ... | ... | ... |
| 6 | Red | ... | ... | ... |

WEEKLY PROGRAM CHART

| EVENT | DAY | TIME | CYCLE | OFFSET | PROGRAM | REMARKS |
|-------|-----|------|-------|--------|-------------|-------------|
| 1 | 1-7 | 0600 | 80 | 0 | MAX 1 | FREE |
| 2 | 1-5 | 0600 | 80 | 0 | COORDINATED | COORDINATED |
| 3 | 1-5 | 1400 | 50 | 0 | MAX 1 | FREE |
| 4 | 1-5 | 1800 | 50 | 0 | MAX 1 | FREE |

*DAY 1 = MONDAY

SYSTEM NOTES

- PROGRAM TO BE SELECTED BY CLOSED LOOP SYSTEM MASTER CONTROLLER OR TBC BACKUP.
- OFFSET REFERENCED TO THE BEGINNING OF YELLOW PHASE 214.
- SYSTEM STREET ROAD (S INTERSECTIONS): WEST ELM STREET
MASTER CONTROLLER LOCATION: WEST ELM STREET
PRIMARY COORDINATION: COLWELL LN/RESIDENTIAL DRIVEWAY AND COLWELL LANE
SECONDARY COORDINATION: TRUE PARK COORDINATION (DEFAULT)
SECONDARY COORDINATION: TO WEEKLY PROGRAM CHART.

General Note

- *THRESHOLD PARAMETERS ARE IN VOLUME-OCCUPANCY (PERCENTAGE) OF THE CAPACITY.
- REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX 2 AND CLEARANCE TIMES.
- NOTE: - ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
- LEVELS CORRESPOND TO THE TRAFFIC RESPONSIVE THRESHOLD CHARTS.

NOT TO SCALE

APPENDIX C

Manual Turning Movement Traffic Counts

McMahon Associates, Inc.
 Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA 19034

Municipality: Borough of Conshohocken
 Location: Elm Street &
 Fayette Street
 Counter/Countboard No.: M

File Name : conshyJG01w
 Site Code :
 Start Date : 5/22/2012
 Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

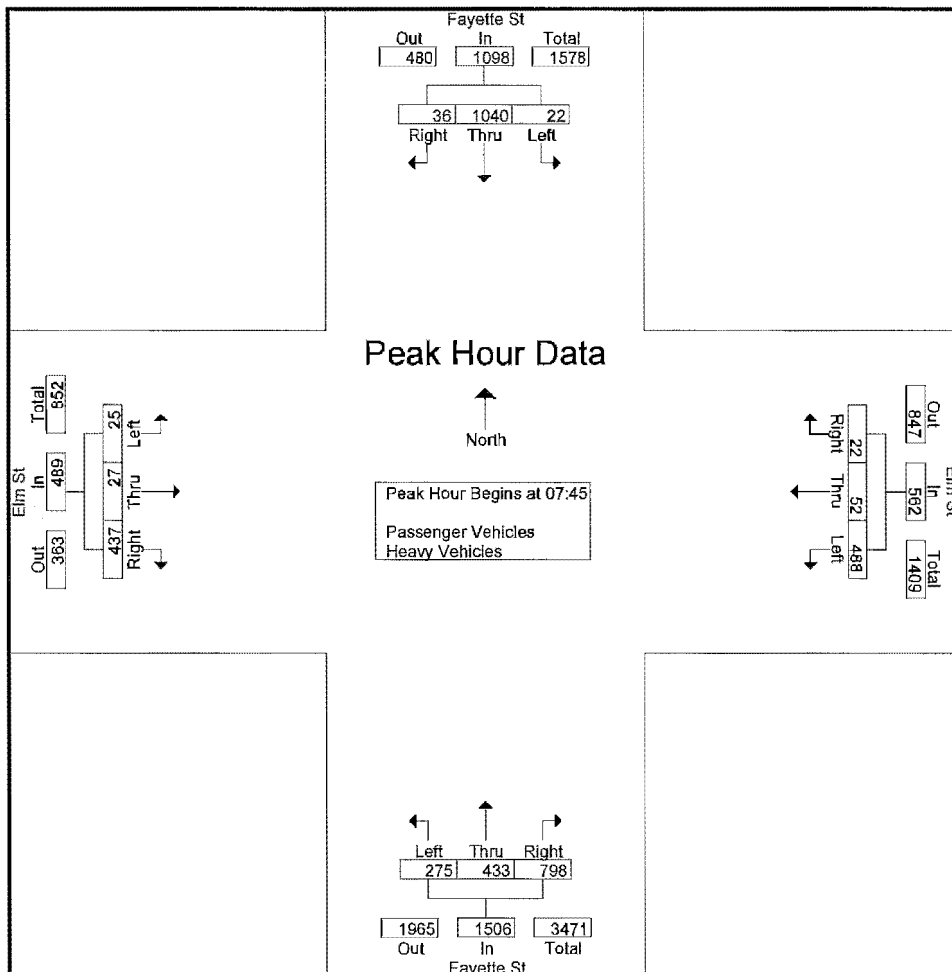
| Start Time | Fayette St Southbound | | | Elm St Westbound | | | Fayette St Northbound | | | Elm St Eastbound | | | Int. Total |
|----------------------|-----------------------|------|-------|------------------|------|-------|-----------------------|------|-------|------------------|------|-------|------------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 07:00 | 11 | 274 | 1 | 108 | 9 | 6 | 65 | 51 | 137 | 5 | 6 | 125 | 798 |
| 07:15 | 10 | 269 | 8 | 123 | 7 | 3 | 65 | 65 | 147 | 4 | 7 | 85 | 793 |
| 07:30 | 5 | 250 | 7 | 125 | 10 | 2 | 67 | 64 | 160 | 3 | 9 | 99 | 801 |
| 07:45 | 4 | 286 | 10 | 126 | 19 | 2 | 70 | 93 | 196 | 6 | 6 | 103 | 921 |
| Total | 30 | 1079 | 26 | 482 | 45 | 13 | 267 | 273 | 640 | 18 | 28 | 412 | 3313 |
| 08:00 | 5 | 225 | 6 | 127 | 12 | 4 | 76 | 100 | 194 | 8 | 5 | 121 | 883 |
| 08:15 | 8 | 267 | 8 | 116 | 7 | 8 | 69 | 118 | 212 | 4 | 5 | 101 | 923 |
| 08:30 | 5 | 262 | 12 | 119 | 14 | 8 | 60 | 122 | 196 | 7 | 11 | 112 | 928 |
| 08:45 | 8 | 230 | 10 | 117 | 13 | 4 | 66 | 129 | 189 | 14 | 15 | 101 | 896 |
| Total | 26 | 984 | 36 | 479 | 46 | 24 | 271 | 469 | 791 | 33 | 36 | 435 | 3630 |
| 16:00 | 3 | 127 | 9 | 143 | 6 | 5 | 93 | 165 | 150 | 16 | 20 | 115 | 852 |
| 16:15 | 3 | 145 | 9 | 116 | 13 | 3 | 100 | 206 | 139 | 14 | 15 | 111 | 874 |
| 16:30 | 5 | 163 | 18 | 130 | 13 | 13 | 89 | 202 | 172 | 25 | 16 | 120 | 966 |
| 16:45 | 5 | 150 | 11 | 148 | 7 | 10 | 84 | 194 | 172 | 18 | 25 | 116 | 940 |
| Total | 16 | 585 | 47 | 537 | 39 | 31 | 366 | 767 | 633 | 73 | 76 | 462 | 3632 |
| 17:00 | 1 | 205 | 18 | 176 | 16 | 11 | 95 | 213 | 167 | 27 | 17 | 129 | 1075 |
| 17:15 | 3 | 206 | 13 | 158 | 13 | 14 | 101 | 225 | 168 | 21 | 23 | 128 | 1073 |
| 17:30 | 7 | 193 | 18 | 164 | 11 | 14 | 106 | 229 | 158 | 14 | 16 | 107 | 1037 |
| 17:45 | 8 | 157 | 16 | 143 | 21 | 9 | 115 | 239 | 150 | 26 | 17 | 122 | 1023 |
| Total | 19 | 761 | 65 | 641 | 61 | 48 | 417 | 906 | 643 | 88 | 73 | 486 | 4208 |
| Grand Total | 91 | 3409 | 174 | 2139 | 191 | 116 | 1321 | 2415 | 2707 | 212 | 213 | 1795 | 14783 |
| Apprch % | 2.5 | 92.8 | 4.7 | 87.4 | 7.8 | 4.7 | 20.5 | 37.5 | 42 | 9.5 | 9.6 | 80.9 | |
| Total % | 0.6 | 23.1 | 1.2 | 14.5 | 1.3 | 0.8 | 8.9 | 16.3 | 18.3 | 1.4 | 1.4 | 12.1 | |
| Passenger Vehicles | 86 | 3334 | 159 | 2110 | 184 | 110 | 1228 | 2382 | 2658 | 196 | 202 | 1702 | 14351 |
| % Passenger Vehicles | 94.5 | 97.8 | 91.4 | 98.6 | 96.3 | 94.8 | 93 | 98.6 | 98.2 | 92.5 | 94.8 | 94.8 | 97.1 |
| Heavy Vehicles | 5 | 75 | 15 | 29 | 7 | 6 | 93 | 33 | 49 | 16 | 11 | 93 | 432 |
| % Heavy Vehicles | 5.5 | 2.2 | 8.6 | 1.4 | 3.7 | 5.2 | 7 | 1.4 | 1.8 | 7.5 | 5.2 | 5.2 | 2.9 |

McMahon Associates, Inc.
 Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA 19034

Municipality: Borough of Conshohocken
 Location: Elm Street &
 Fayette Street
 Counter/Countboard No.: M

File Name : conshyJG01w
 Site Code :
 Start Date : 5/22/2012
 Page No : 2

| Start Time | Fayette St Southbound | | | | Elm St Westbound | | | | Fayette St Northbound | | | | Elm St Eastbound | | | | Int. Total |
|--|-----------------------|------|-------|------------|------------------|------|-------|------------|-----------------------|------|-------|------------|------------------|------|-------|------------|------------|
| | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | |
| Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 | | | | | | | | | | | | | | | | | |
| 07:45 | 4 | 286 | 10 | 300 | 126 | 19 | 2 | 147 | 70 | 93 | 196 | 359 | 6 | 6 | 103 | 115 | 921 |
| 08:00 | 5 | 225 | 6 | 236 | 127 | 12 | 4 | 143 | 76 | 100 | 194 | 370 | 8 | 5 | 121 | 134 | 883 |
| 08:15 | 8 | 267 | 8 | 283 | 116 | 7 | 8 | 131 | 69 | 118 | 212 | 399 | 4 | 5 | 101 | 110 | 923 |
| 08:30 | 5 | 262 | 12 | 279 | 119 | 14 | 8 | 141 | 60 | 122 | 196 | 378 | 7 | 11 | 112 | 130 | 928 |
| Total Volume | 22 | 1040 | 36 | 1098 | 488 | 52 | 22 | 562 | 275 | 433 | 798 | 1506 | 25 | 27 | 437 | 489 | 3655 |
| % App. Total | 2 | 94.7 | 3.3 | | 86.8 | 9.3 | 3.9 | | 18.3 | 28.8 | 53 | | 5.1 | 5.5 | 89.4 | | |
| PHF | .688 | .909 | .750 | .915 | .961 | .684 | .688 | .956 | .905 | .887 | .941 | .944 | .781 | .614 | .903 | .912 | .985 |



McMahon Associates, Inc.

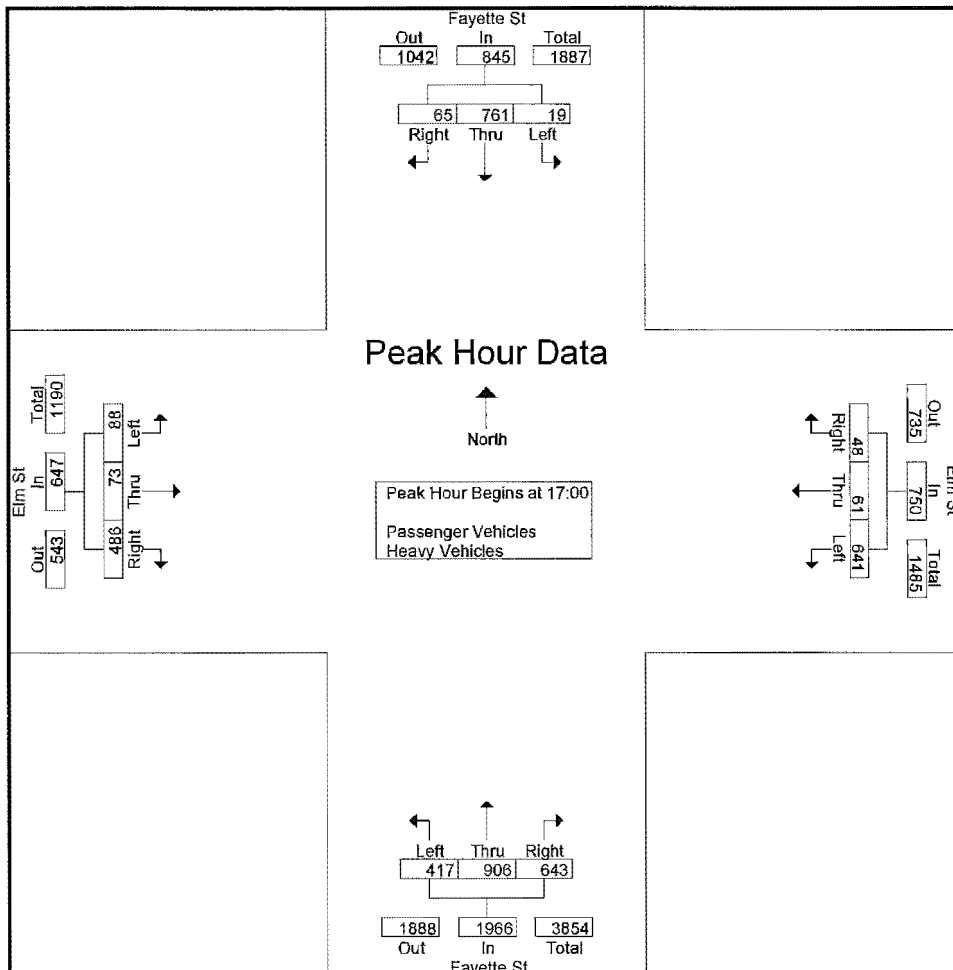
Transportation Engineers and Planners

425 Commerce Drive, Suite 200
 Fort Washington, PA 19034

Municipality: Borough of Conshohocken
 Location: Elm Street &
 Fayette Street
 Counter/Countboard No.: M

File Name : conshyJG01w
 Site Code :
 Start Date : 5/22/2012
 Page No : 3

| Start Time | Fayette St Southbound | | | | Elm St Westbound | | | | Fayette St Northbound | | | | Elm St Eastbound | | | | Int. Total |
|--|-----------------------|------|-------|------------|------------------|------|-------|------------|-----------------------|------|-------|------------|------------------|------|-------|------------|------------|
| | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | |
| Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 17:00 | | | | | | | | | | | | | | | | | |
| 17:00 | 1 | 205 | 18 | 224 | 176 | 16 | 11 | 203 | 95 | 213 | 167 | 475 | 27 | 17 | 129 | 173 | 1075 |
| 17:15 | 3 | 206 | 13 | 222 | 158 | 13 | 14 | 185 | 101 | 225 | 168 | 494 | 21 | 23 | 128 | 172 | 1073 |
| 17:30 | 7 | 193 | 18 | 218 | 164 | 11 | 14 | 189 | 106 | 229 | 158 | 493 | 14 | 16 | 107 | 137 | 1037 |
| 17:45 | 8 | 157 | 16 | 181 | 143 | 21 | 9 | 173 | 115 | 239 | 150 | 504 | 26 | 17 | 122 | 165 | 1023 |
| Total Volume | 19 | 761 | 65 | 845 | 641 | 61 | 48 | 750 | 417 | 906 | 643 | 1966 | 88 | 73 | 486 | 647 | 4208 |
| % App. Total | 2.2 | 90.1 | 7.7 | | 85.5 | 8.1 | 6.4 | | 21.2 | 46.1 | 32.7 | | 13.6 | 11.3 | 75.1 | | |
| PHF | .594 | .924 | .903 | .943 | .911 | .726 | .857 | .924 | .907 | .948 | .957 | .975 | .815 | .793 | .942 | .935 | .979 |



McMahon Associates, Inc.
 Transportation Engineers and Planners
 425 Commerce Drive, Suite 200

Municipality: Conshohocken Borough Fort Washington, PA 19034
 Location: Elm Street &
 Oak Street
 Counter/Countboard No.: JB

File Name : conschyJG02a
 Site Code : 81167502
 Start Date : 5/17/2012
 Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

| Start Time | Oak St Southbound | | | | Elm St Westbound | | | | Oak St Northbound | | | | Elm St Eastbound | | | | Int. Total |
|----------------------|-------------------|------|-----|-------|------------------|------|-----|-------|-------------------|------|-----|-------|------------------|------|-----|-------|------------|
| | Left | Thru | ROR | Right | Left | Thru | ROR | Right | Left | Thru | ROR | Right | Left | Thru | ROR | Right | |
| 07:00 | 1 | 2 | 1 | 2 | 3 | 54 | 0 | 0 | 2 | 2 | 0 | 8 | 3 | 121 | 0 | 18 | 217 |
| 07:15 | 1 | 0 | 3 | 1 | 4 | 52 | 0 | 1 | 5 | 0 | 4 | 9 | 0 | 86 | 0 | 8 | 174 |
| 07:30 | 0 | 4 | 3 | 4 | 4 | 51 | 0 | 1 | 3 | 2 | 1 | 22 | 2 | 97 | 0 | 4 | 198 |
| 07:45 | 2 | 6 | 0 | 6 | 4 | 60 | 0 | 0 | 4 | 1 | 3 | 12 | 2 | 110 | 0 | 6 | 216 |
| Total | 4 | 12 | 7 | 13 | 15 | 217 | 0 | 2 | 14 | 5 | 8 | 51 | 7 | 414 | 0 | 36 | 805 |
| 08:00 | 1 | 4 | 4 | 2 | 5 | 57 | 1 | 0 | 1 | 0 | 1 | 8 | 0 | 111 | 1 | 12 | 208 |
| 08:15 | 0 | 3 | 1 | 0 | 5 | 67 | 0 | 0 | 6 | 1 | 1 | 15 | 8 | 96 | 1 | 19 | 223 |
| 08:30 | 1 | 2 | 2 | 2 | 5 | 57 | 0 | 1 | 2 | 1 | 1 | 6 | 3 | 94 | 1 | 14 | 192 |
| 08:45 | 1 | 3 | 2 | 0 | 2 | 60 | 0 | 1 | 3 | 1 | 1 | 6 | 7 | 119 | 0 | 15 | 221 |
| Total | 3 | 12 | 9 | 4 | 17 | 241 | 1 | 2 | 12 | 3 | 4 | 35 | 18 | 420 | 3 | 60 | 844 |
| Grand Total | 7 | 24 | 16 | 17 | 32 | 458 | 1 | 4 | 26 | 8 | 12 | 86 | 25 | 834 | 3 | 96 | 1649 |
| Apprch % | 10.9 | 37.5 | 25 | 26.6 | 6.5 | 92.5 | 0.2 | 0.8 | 19.7 | 6.1 | 9.1 | 65.2 | 2.6 | 87.1 | 0.3 | 10 | |
| Total % | 0.4 | 1.5 | 1 | 1 | 1.9 | 27.8 | 0.1 | 0.2 | 1.6 | 0.5 | 0.7 | 5.2 | 1.5 | 50.6 | 0.2 | 5.8 | |
| Passenger Vehicles | 7 | 24 | 16 | 17 | 29 | 394 | 1 | 4 | 25 | 7 | 12 | 79 | 25 | 734 | 3 | 96 | 1473 |
| % Passenger Vehicles | 100 | 100 | 100 | 100 | 90.6 | 86 | 100 | 100 | 96.2 | 87.5 | 100 | 91.9 | 100 | 88 | 100 | 100 | 89.3 |
| Heavy Vehicles | 0 | 0 | 0 | 0 | 3 | 64 | 0 | 0 | 1 | 1 | 0 | 7 | 0 | 100 | 0 | 0 | 176 |
| % Heavy Vehicles | 0 | 0 | 0 | 0 | 9.4 | 14 | 0 | 0 | 3.8 | 12.5 | 0 | 8.1 | 0 | 12 | 0 | 0 | 10.7 |

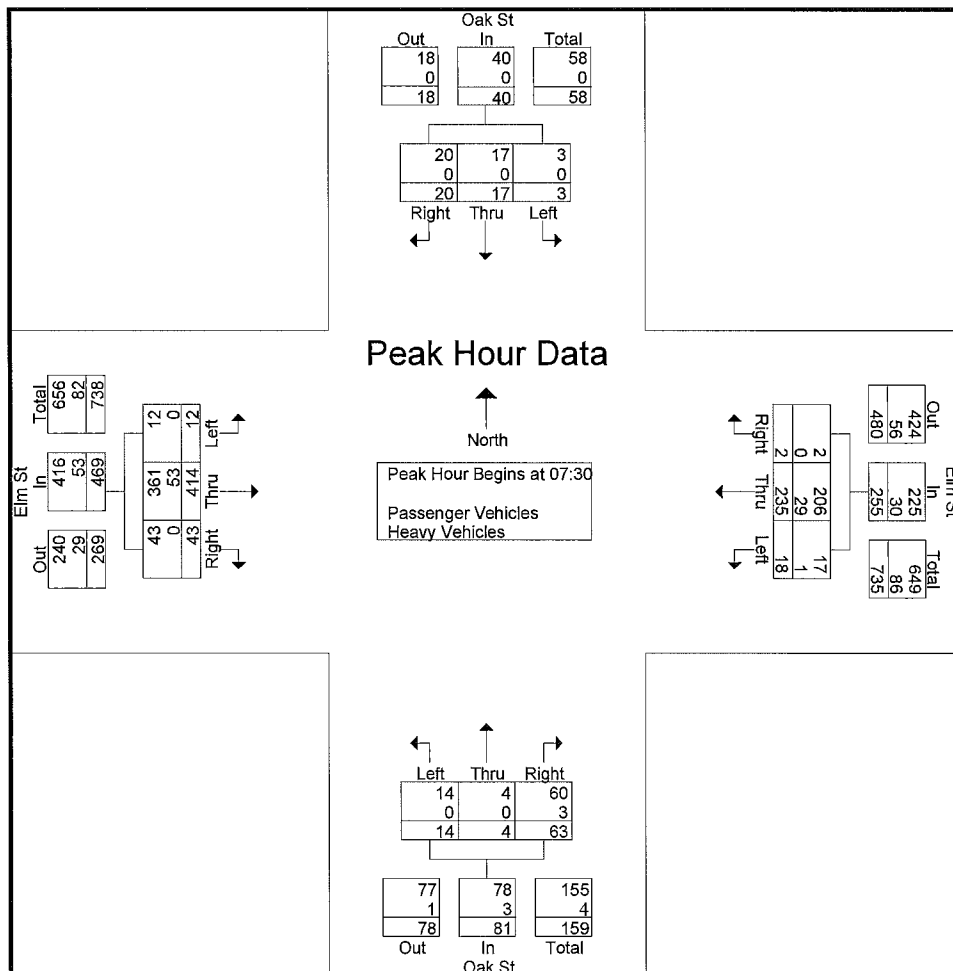
McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Conshohocken Borough
Location: Elm Street &
Oak Street
Counter/Countboard No.: JB

File Name : conshyJG02a
Site Code : 81167502
Start Date : 5/17/2012
Page No : 2

| Start Time | Oak St Southbound | | | | | Elm St Westbound | | | | | Oak St Northbound | | | | | Elm St Eastbound | | | | | Int. Total |
|--|-------------------|------|------|-------|------------|------------------|------|------|-------|------------|-------------------|------|------|-------|------------|------------------|------|------|-------|------------|------------|
| | Left | Thru | ROR | Right | App. Total | Left | Thru | ROR | Right | App. Total | Left | Thru | ROR | Right | App. Total | Left | Thru | ROR | Right | App. Total | |
| Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 | | | | | | | | | | | | | | | | | | | | | |
| 07:30 | 0 | 4 | 3 | 4 | 11 | 4 | 51 | 0 | 1 | 56 | 3 | 2 | 1 | 22 | 28 | 2 | 97 | 0 | 4 | 103 | 198 |
| 07:45 | 2 | 6 | 0 | 6 | 14 | 4 | 60 | 0 | 0 | 64 | 4 | 1 | 3 | 12 | 20 | 2 | 110 | 0 | 6 | 118 | 216 |
| 08:00 | 1 | 4 | 4 | 2 | 11 | 5 | 57 | 1 | 0 | 63 | 1 | 0 | 1 | 8 | 10 | 0 | 111 | 1 | 12 | 124 | 208 |
| 08:15 | 0 | 3 | 1 | 0 | 4 | 5 | 67 | 0 | 0 | 72 | 6 | 1 | 1 | 15 | 23 | 8 | 96 | 1 | 19 | 124 | 223 |
| Total Volume | 3 | 17 | 8 | 12 | 40 | 18 | 235 | 1 | 1 | 255 | 14 | 4 | 6 | 57 | 81 | 12 | 414 | 2 | 41 | 469 | 845 |
| % App. Total | 7.5 | 42.5 | 20 | 30 | | 7.1 | 92.2 | 0.4 | 0.4 | | 17.3 | 4.9 | 7.4 | 70.4 | | 2.6 | 88.3 | 0.4 | 8.7 | | |
| PHF | .375 | .708 | .500 | .500 | .714 | .900 | .877 | .250 | .250 | .885 | .583 | .500 | .500 | .648 | .723 | .375 | .932 | .500 | .539 | .946 | .947 |
| Passenger Vehicles | | | | | | | | | | | | | | | | | | | | | |
| % Passenger Vehicles | 100 | 100 | 100 | 100 | 100 | 94.4 | 87.7 | 100 | 100 | 88.2 | 100 | 100 | 100 | 94.7 | 96.3 | 100 | 87.2 | 100 | 100 | 88.7 | 89.8 |
| Heavy Vehicles | | | | | | | | | | | | | | | | | | | | | |
| % Heavy Vehicles | 0 | 0 | 0 | 0 | 0 | 5.6 | 12.3 | 0 | 0 | 11.8 | 0 | 0 | 0 | 5.3 | 3.7 | 0 | 12.8 | 0 | 0 | 11.3 | 10.2 |



McMahon Associates, Inc.
 Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA 19034

Municipality: Borough of Conshohocken
 Location: Elm Street &
 Oak Street
 Counter/Countboard No.: BW

File Name : conshyJG02p
 Site Code : 81167502
 Start Date : 5/22/2012
 Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

| Start Time | Oak St Southbound | | | Elm St Westbound | | | Oak St Northbound | | | Elm St Eastbound | | | Int. Total |
|----------------------|-------------------|----------|-----------|------------------|------------|----------|-------------------|-----------|------------|------------------|------------|-----------|-------------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 16:00 | 3 | 1 | 1 | 1 | 101 | 0 | 13 | 2 | 8 | 2 | 103 | 1 | 236 |
| 16:15 | 2 | 0 | 5 | 2 | 116 | 2 | 17 | 0 | 10 | 1 | 100 | 3 | 258 |
| 16:30 | 3 | 2 | 6 | 4 | 101 | 1 | 16 | 1 | 17 | 2 | 101 | 3 | 257 |
| 16:45 | 5 | 0 | 5 | 0 | 111 | 1 | 23 | 1 | 20 | 8 | 108 | 6 | 288 |
| Total | 13 | 3 | 17 | 7 | 429 | 4 | 69 | 4 | 55 | 13 | 412 | 13 | 1039 |
| 17:00 | 2 | 0 | 6 | 3 | 111 | 1 | 37 | 3 | 31 | 3 | 105 | 3 | 305 |
| 17:15 | 2 | 0 | 5 | 3 | 126 | 0 | 43 | 0 | 42 | 2 | 106 | 5 | 334 |
| 17:30 | 1 | 1 | 2 | 7 | 118 | 1 | 33 | 3 | 17 | 2 | 98 | 6 | 289 |
| 17:45 | 5 | 1 | 8 | 4 | 133 | 2 | 36 | 1 | 26 | 2 | 113 | 8 | 339 |
| Total | 10 | 2 | 21 | 17 | 488 | 4 | 149 | 7 | 116 | 9 | 422 | 22 | 1267 |
| Grand Total | 23 | 5 | 38 | 24 | 917 | 8 | 218 | 11 | 171 | 22 | 834 | 35 | 2306 |
| Apprch % | 34.8 | 7.6 | 57.6 | 2.5 | 96.6 | 0.8 | 54.5 | 2.8 | 42.8 | 2.5 | 93.6 | 3.9 | |
| Total % | 1 | 0.2 | 1.6 | 1 | 39.8 | 0.3 | 9.5 | 0.5 | 7.4 | 1 | 36.2 | 1.5 | |
| Passenger Vehicles | 22 | 5 | 38 | 22 | 861 | 8 | 215 | 11 | 163 | 21 | 805 | 35 | 2206 |
| % Passenger Vehicles | 95.7 | 100 | 100 | 91.7 | 93.9 | 100 | 98.6 | 100 | 95.3 | 95.5 | 96.5 | 100 | 95.7 |
| Heavy Vehicles | 1 | 0 | 0 | 2 | 56 | 0 | 3 | 0 | 8 | 1 | 29 | 0 | 100 |
| % Heavy Vehicles | 4.3 | 0 | 0 | 8.3 | 6.1 | 0 | 1.4 | 0 | 4.7 | 4.5 | 3.5 | 0 | 4.3 |

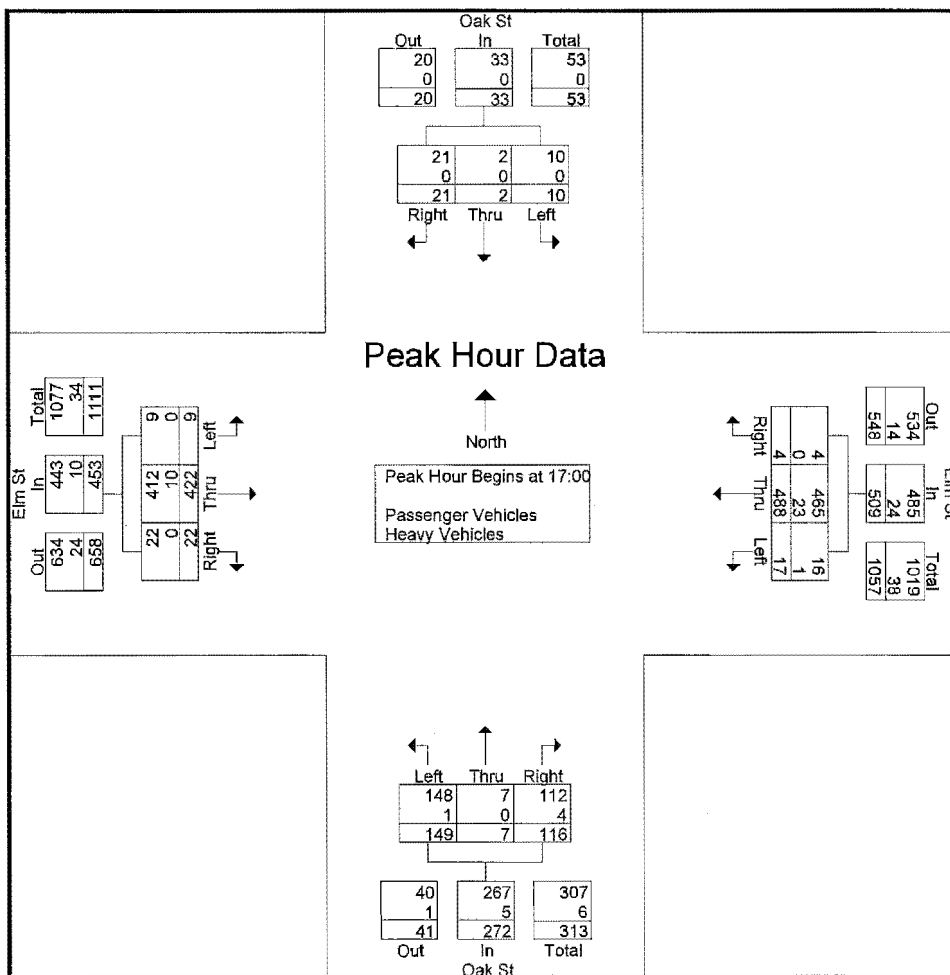
McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Borough of Conshohocken
Location: Elm Street &
Oak Street
Counter/Countboard No.: BW

File Name : conshyJG02p
Site Code : 81167502
Start Date : 5/22/2012
Page No : 2

| Start Time | Oak St Southbound | | | | Elm St Westbound | | | | Oak St Northbound | | | | Elm St Eastbound | | | | Int. Total |
|--|-------------------|------|-------|------------|------------------|------|-------|------------|-------------------|------|-------|------------|------------------|------|-------|------------|------------|
| | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | |
| Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 17:00 | | | | | | | | | | | | | | | | | |
| 17:00 | 2 | 0 | 6 | 8 | 3 | 111 | 1 | 115 | 37 | 3 | 31 | 71 | 3 | 105 | 3 | 111 | 305 |
| 17:15 | 2 | 0 | 5 | 7 | 3 | 126 | 0 | 129 | 43 | 0 | 42 | 85 | 2 | 106 | 5 | 113 | 334 |
| 17:30 | 1 | 1 | 2 | 4 | 7 | 118 | 1 | 126 | 33 | 3 | 17 | 53 | 2 | 98 | 6 | 106 | 289 |
| 17:45 | 5 | 1 | 8 | 14 | 4 | 133 | 2 | 139 | 36 | 1 | 26 | 63 | 2 | 113 | 8 | 123 | 339 |
| Total Volume | 10 | 2 | 21 | 33 | 17 | 488 | 4 | 509 | 149 | 7 | 116 | 272 | 9 | 422 | 22 | 453 | 1267 |
| % App. Total | 30.3 | 6.1 | 63.6 | | 3.3 | 95.9 | 0.8 | | 54.8 | 2.6 | 42.6 | | 2 | 93.2 | 4.9 | | |
| PHF | .500 | .500 | .656 | .589 | .607 | .917 | .500 | .915 | .866 | .583 | .690 | .800 | .750 | .934 | .688 | .921 | .934 |
| Passenger Vehicles | 10 | 2 | 21 | 33 | 16 | 465 | 4 | 485 | 148 | 7 | 112 | 267 | 9 | 412 | 22 | 443 | 1228 |
| % Passenger Vehicles | 100 | 100 | 100 | 100 | 94.1 | 95.3 | 100 | 95.3 | 99.3 | 100 | 96.6 | 98.2 | 100 | 97.6 | 100 | 97.8 | 96.9 |
| Heavy Vehicles | 0 | 0 | 0 | 0 | 1 | 23 | 0 | 24 | 1 | 0 | 4 | 5 | 0 | 10 | 0 | 10 | 39 |
| % Heavy Vehicles | 0 | 0 | 0 | 0 | 5.9 | 4.7 | 0 | 4.7 | 0.7 | 0 | 3.4 | 1.8 | 0 | 2.4 | 0 | 2.2 | 3.1 |



McMahon Associates, Inc.
 Transportation Engineers and Planners
 425 Commerce Drive, Suite 200

Municipality: Conshohocken Borough Fort Washington, PA 19034
 Location: Elm Street &
 Maple Street
 Counter/Countboard No.: LB

File Name : conschyJG03a
 Site Code : 81167503
 Start Date : 5/17/2012
 Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

| Start Time | Maple St Southbound | | | | Elm St Westbound | | | | Access Northbound | | | | Elm St Eastbound | | | | Int. Total |
|----------------------|---------------------|------|------|-------|------------------|------|-----|-------|-------------------|------|------|-------|------------------|------|-----|-------|------------|
| | Left | Thru | ROR | Right | Left | Thru | ROR | Right | Left | Thru | ROR | Right | Left | Thru | ROR | Right | |
| 07:00 | 13 | 0 | 6 | 4 | 3 | 45 | 0 | 3 | 0 | 0 | 2 | 8 | 5 | 124 | 0 | 0 | 213 |
| 07:15 | 12 | 1 | 5 | 3 | 1 | 59 | 0 | 1 | 2 | 3 | 6 | 12 | 2 | 77 | 0 | 1 | 185 |
| 07:30 | 6 | 1 | 8 | 4 | 2 | 57 | 0 | 0 | 1 | 4 | 3 | 6 | 1 | 83 | 0 | 1 | 177 |
| 07:45 | 9 | 0 | 9 | 16 | 2 | 64 | 0 | 0 | 3 | 4 | 3 | 14 | 1 | 100 | 0 | 0 | 225 |
| Total | 40 | 2 | 28 | 27 | 8 | 225 | 0 | 4 | 6 | 11 | 14 | 40 | 9 | 384 | 0 | 2 | 800 |
| 08:00 | 12 | 0 | 9 | 4 | 0 | 58 | 0 | 3 | 5 | 1 | 4 | 7 | 5 | 89 | 0 | 0 | 197 |
| 08:15 | 9 | 1 | 3 | 7 | 2 | 61 | 0 | 3 | 2 | 1 | 6 | 10 | 6 | 105 | 0 | 1 | 217 |
| 08:30 | 7 | 0 | 8 | 4 | 3 | 62 | 0 | 2 | 1 | 3 | 1 | 2 | 5 | 87 | 0 | 1 | 186 |
| 08:45 | 14 | 0 | 6 | 10 | 2 | 58 | 0 | 1 | 6 | 1 | 7 | 8 | 5 | 105 | 0 | 0 | 223 |
| Total | 42 | 1 | 26 | 25 | 7 | 239 | 0 | 9 | 14 | 6 | 18 | 27 | 21 | 386 | 0 | 2 | 823 |
| Grand Total | 82 | 3 | 54 | 52 | 15 | 464 | 0 | 13 | 20 | 17 | 32 | 67 | 30 | 770 | 0 | 4 | 1623 |
| Apprch % | 42.9 | 1.6 | 28.3 | 27.2 | 3 | 94.3 | 0 | 2.6 | 14.7 | 12.5 | 23.5 | 49.3 | 3.7 | 95.8 | 0 | 0.5 | |
| Total % | 5.1 | 0.2 | 3.3 | 3.2 | 0.9 | 28.6 | 0 | 0.8 | 1.2 | 1 | 2 | 4.1 | 1.8 | 47.4 | 0 | 0.2 | |
| Passenger Vehicles | 81 | 3 | 54 | 50 | 14 | 400 | 0 | 13 | 20 | 17 | 32 | 67 | 29 | 676 | 0 | 4 | 1460 |
| % Passenger Vehicles | 98.8 | 100 | 100 | 96.2 | 93.3 | 86.2 | 0 | 100 | 100 | 100 | 100 | 100 | 96.7 | 87.8 | 0 | 100 | 90 |
| Heavy Vehicles | 1 | 0 | 0 | 2 | 1 | 64 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 94 | 0 | 0 | 163 |
| % Heavy Vehicles | 1.2 | 0 | 0 | 3.8 | 6.7 | 13.8 | 0 | 0 | 0 | 0 | 0 | 0 | 3.3 | 12.2 | 0 | 0 | 10 |

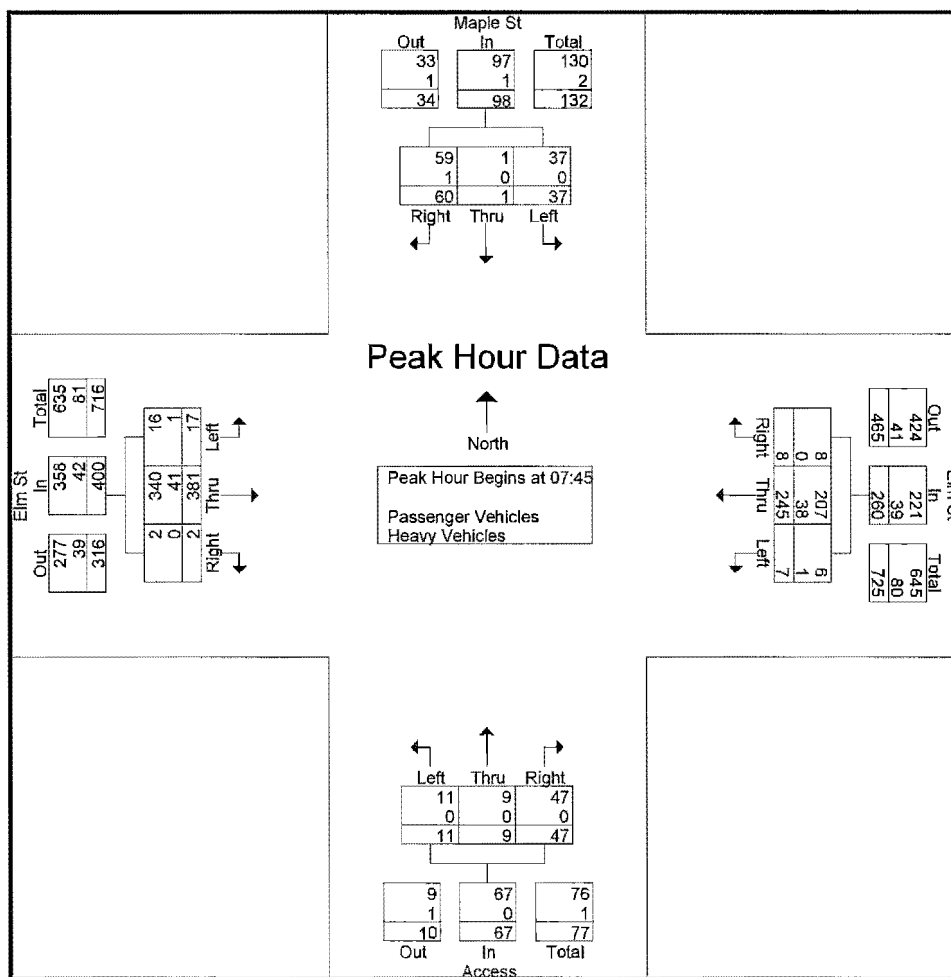
McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200

Municipality: Conshohocken Borough
Location: Elm Street & Maple Street
Counter/Countboard No.: LB

File Name : conschyJG03a
Site Code : 81167503
Start Date : 5/17/2012
Page No : 2

| Start Time | Maple St Southbound | | | | | Elm St Westbound | | | | | Access Northbound | | | | | Elm St Eastbound | | | | | Int. Total | |
|--|---------------------|------|------|-------|------------|------------------|------|------|-------|------------|-------------------|------|------|-------|------------|------------------|------|------|-------|------------|------------|--|
| | Left | Thru | ROR | Right | App. Total | Left | Thru | ROR | Right | App. Total | Left | Thru | ROR | Right | App. Total | Left | Thru | ROR | Right | App. Total | | |
| Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 | | | | | | | | | | | | | | | | | | | | | | |
| 07:45 | 9 | 0 | 9 | 16 | 34 | 2 | 64 | 0 | 0 | 66 | 3 | 4 | 3 | 14 | 24 | 1 | 100 | 0 | 0 | 101 | 225 | |
| 08:00 | 12 | 0 | 9 | 4 | 25 | 0 | 58 | 0 | 3 | 61 | 5 | 1 | 4 | 7 | 17 | 5 | 89 | 0 | 0 | 94 | 197 | |
| 08:15 | 9 | 1 | 3 | 7 | 20 | 2 | 61 | 0 | 3 | 66 | 2 | 1 | 6 | 10 | 19 | 6 | 105 | 0 | 1 | 112 | 217 | |
| 08:30 | 7 | 0 | 8 | 4 | 19 | 3 | 62 | 0 | 2 | 67 | 1 | 3 | 1 | 2 | 7 | 5 | 87 | 0 | 1 | 93 | 186 | |
| Total Volume | 37 | 1 | 29 | 31 | 98 | 7 | 245 | 0 | 8 | 260 | 11 | 9 | 14 | 33 | 67 | 17 | 381 | 0 | 2 | 400 | 825 | |
| % App. Total | 37.8 | 1 | 29.6 | 31.6 | | 2.7 | 94.2 | 0 | 3.1 | | 16.4 | 13.4 | 20.9 | 49.3 | | 4.2 | 95.2 | 0 | 0.5 | | | |
| PHF | .771 | .250 | .806 | .484 | .721 | .583 | .957 | .000 | .667 | .970 | .550 | .563 | .583 | .589 | .698 | .708 | .907 | .000 | .500 | .893 | .917 | |
| Passenger Vehicles | 100 | 100 | 100 | 96.8 | 99.0 | 85.7 | 84.5 | 0 | 100 | 85.0 | 100 | 100 | 100 | 100 | 100 | 94.1 | 89.2 | 0 | 100 | 89.5 | 90.1 | |
| % Passenger Vehicles | | | | | | | | | | | | | | | | | | | | | | |
| Heavy Vehicles | 0 | 0 | 0 | 3.2 | 1.0 | 14.3 | 15.5 | 0 | 0 | 15.0 | 0 | 0 | 0 | 0 | 0 | 5.9 | 10.8 | 0 | 0 | 10.5 | 9.9 | |
| % Heavy Vehicles | | | | | | | | | | | | | | | | | | | | | | |



McMahon Associates, Inc.
 Transportation Engineers and Planners
 425 Commerce Drive, Suite 200

Municipality: Borough of Conshohocken Fort Washington, PA 19034
 Location: Elm Street &
 Maple Street
 Counter/Countboard No.: TD

File Name : conshyJG03p
 Site Code : 81167503
 Start Date : 5/22/2012
 Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

| Start Time | Maple St Southbound | | | | Elm St Westbound | | | | Maple St Northbound | | | | Elm St Eastbound | | | | Int. Total |
|----------------------|---------------------|----------|-----------|-----------|------------------|-------------|----------|-----------|---------------------|----------|-----------|----------|------------------|------------|----------|-----------|-------------|
| | Left | Thru | ROR | Right | Left | Thru | ROR | Right | Left | Thru | ROR | Right | Left | Thru | ROR | Right | |
| 16:00 | 2 | 1 | 4 | 5 | 6 | 116 | 0 | 7 | 2 | 0 | 3 | 2 | 10 | 95 | 0 | 3 | 256 |
| 16:15 | 3 | 0 | 2 | 13 | 6 | 118 | 0 | 6 | 1 | 0 | 1 | 0 | 10 | 102 | 0 | 3 | 265 |
| 16:30 | 3 | 2 | 3 | 4 | 6 | 120 | 0 | 7 | 3 | 1 | 2 | 0 | 13 | 106 | 0 | 0 | 270 |
| 16:45 | 3 | 1 | 4 | 2 | 8 | 114 | 0 | 6 | 0 | 2 | 0 | 1 | 8 | 109 | 0 | 1 | 259 |
| Total | 11 | 4 | 13 | 24 | 26 | 468 | 0 | 26 | 6 | 3 | 6 | 3 | 41 | 412 | 0 | 7 | 1050 |
| 17:00 | 5 | 1 | 7 | 8 | 4 | 157 | 0 | 5 | 2 | 0 | 1 | 2 | 5 | 112 | 0 | 3 | 312 |
| 17:15 | 5 | 1 | 9 | 7 | 6 | 154 | 0 | 7 | 0 | 0 | 3 | 1 | 7 | 99 | 0 | 3 | 302 |
| 17:30 | 3 | 1 | 5 | 0 | 10 | 133 | 0 | 9 | 0 | 0 | 3 | 0 | 15 | 101 | 0 | 3 | 283 |
| 17:45 | 2 | 0 | 5 | 3 | 10 | 157 | 0 | 9 | 3 | 2 | 4 | 2 | 8 | 116 | 0 | 1 | 322 |
| Total | 15 | 3 | 26 | 18 | 30 | 601 | 0 | 30 | 5 | 2 | 11 | 5 | 35 | 428 | 0 | 10 | 1219 |
| Grand Total | 26 | 7 | 39 | 42 | 56 | 1069 | 0 | 56 | 11 | 5 | 17 | 8 | 76 | 840 | 0 | 17 | 2269 |
| Apprch % | 22.8 | 6.1 | 34.2 | 36.8 | 4.7 | 90.5 | 0 | 4.7 | 26.8 | 12.2 | 41.5 | 19.5 | 8.1 | 90 | 0 | 1.8 | |
| Total % | 1.1 | 0.3 | 1.7 | 1.9 | 2.5 | 47.1 | 0 | 2.5 | 0.5 | 0.2 | 0.7 | 0.4 | 3.3 | 37 | 0 | 0.7 | |
| Passenger Vehicles | 26 | 6 | 39 | 35 | 54 | 986 | 0 | 53 | 9 | 5 | 17 | 5 | 73 | 805 | 0 | 16 | 2129 |
| % Passenger Vehicles | 100 | 85.7 | 100 | 83.3 | 96.4 | 92.2 | 0 | 94.6 | 81.8 | 100 | 100 | 62.5 | 96.1 | 95.8 | 0 | 94.1 | 93.8 |
| Heavy Vehicles | 0 | 1 | 0 | 7 | 2 | 83 | 0 | 3 | 2 | 0 | 0 | 3 | 3 | 35 | 0 | 1 | 140 |
| % Heavy Vehicles | 0 | 14.3 | 0 | 16.7 | 3.6 | 7.8 | 0 | 5.4 | 18.2 | 0 | 0 | 37.5 | 3.9 | 4.2 | 0 | 5.9 | 6.2 |

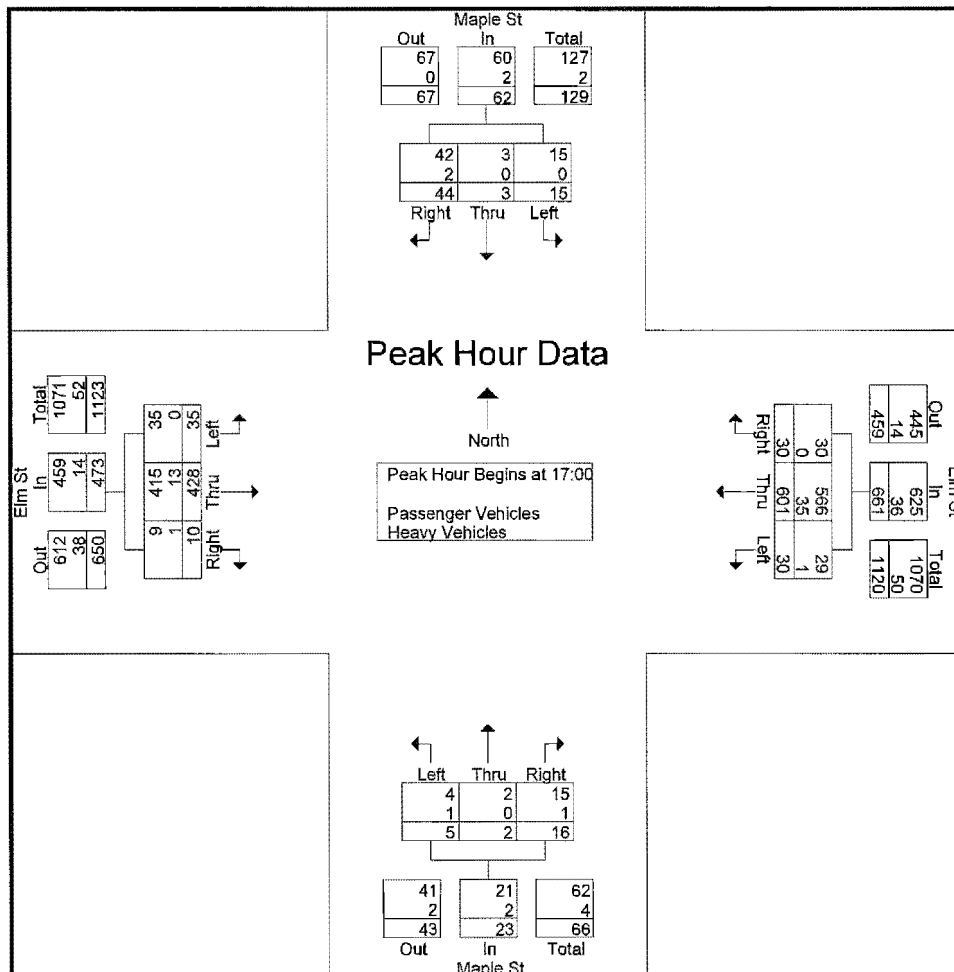
McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Borough of Conshohocken
Location: Elm Street &
Maple Street
Counter/Countboard No.: TD

File Name : conschyJG03p
Site Code : 81167503
Start Date : 5/22/2012
Page No : 2

| Start Time | Maple St Southbound | | | | | Elm St Westbound | | | | | Maple St Northbound | | | | | Elm St Eastbound | | | | | Int. Total |
|--|---------------------|------|------|-------|------------|------------------|------|------|-------|------------|---------------------|------|------|-------|------------|------------------|------|------|-------|------------|------------|
| | Left | Thru | ROR | Right | App. Total | Left | Thru | ROR | Right | App. Total | Left | Thru | ROR | Right | App. Total | Left | Thru | ROR | Right | App. Total | |
| Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 17:00 | | | | | | | | | | | | | | | | | | | | | |
| 17:00 | 5 | 1 | 7 | 8 | 21 | 4 | 157 | 0 | 5 | 166 | 2 | 0 | 1 | 2 | 5 | 5 | 112 | 0 | 3 | 120 | 312 |
| 17:15 | 5 | 1 | 9 | 7 | 22 | 6 | 154 | 0 | 7 | 167 | 0 | 0 | 3 | 1 | 4 | 7 | 99 | 0 | 3 | 109 | 302 |
| 17:30 | 3 | 1 | 5 | 0 | 9 | 10 | 133 | 0 | 9 | 152 | 0 | 0 | 3 | 0 | 3 | 15 | 101 | 0 | 3 | 119 | 283 |
| 17:45 | 2 | 0 | 5 | 3 | 10 | 10 | 157 | 0 | 9 | 176 | 3 | 2 | 4 | 2 | 11 | 8 | 116 | 0 | 1 | 125 | 322 |
| Total Volume | 15 | 3 | 26 | 18 | 62 | 30 | 601 | 0 | 30 | 661 | 5 | 2 | 11 | 5 | 23 | 35 | 428 | 0 | 10 | 473 | 1219 |
| % App. Total | 24.2 | 4.8 | 41.9 | 29 | | 4.5 | 90.9 | 0 | 4.5 | | 21.7 | 8.7 | 47.8 | 21.7 | | 7.4 | 90.5 | 0 | 2.1 | | |
| PHF | .750 | .750 | .722 | .563 | .705 | .750 | .957 | .000 | .833 | .939 | .417 | .250 | .688 | .625 | .523 | .583 | .922 | .000 | .833 | .946 | .946 |
| Passenger Vehicles | | | | | | | | | | | | | | | | | | | | | |
| % Passenger Vehicles | 100 | 100 | 100 | 88.9 | 96.8 | 96.7 | 94.2 | 0 | 100 | 94.6 | 80.0 | 100 | 100 | 80.0 | 91.3 | 100 | 97.0 | 0 | 90.0 | 97.0 | 95.6 |
| Heavy Vehicles | | | | | | | | | | | | | | | | | | | | | |
| % Heavy Vehicles | 0 | 0 | 0 | 11.1 | 3.2 | 3.3 | 5.8 | 0 | 0 | 5.4 | 20.0 | 0 | 0 | 20.0 | 8.7 | 0 | 3.0 | 0 | 10.0 | 3.0 | 4.4 |



McMahon Associates, Inc.
 Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA 19034

Municipality: Conshohocken Borough
 Location: Elm Street &
 Colwell Lane / Access
 Counter/Countboard No.: JG

File Name : conshyJG04w
 Site Code : 81167504
 Start Date : 5/17/2012
 Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

| Start Time | Colwell Ln Southbound | | | Elm St Westbound | | | Access Northbound | | | Elm St Eastbound | | | Int. Total |
|----------------------|-----------------------|------|-------|------------------|------|-------|-------------------|------|-------|------------------|------|-------|------------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 07:00 | 55 | 2 | 4 | 0 | 32 | 16 | 0 | 0 | 2 | 12 | 77 | 3 | 203 |
| 07:15 | 44 | 3 | 5 | 1 | 45 | 22 | 1 | 4 | 1 | 12 | 66 | 3 | 207 |
| 07:30 | 43 | 3 | 6 | 0 | 50 | 31 | 0 | 2 | 0 | 15 | 46 | 14 | 210 |
| 07:45 | 41 | 6 | 2 | 0 | 53 | 34 | 3 | 2 | 2 | 15 | 48 | 11 | 217 |
| Total | 183 | 14 | 17 | 1 | 180 | 103 | 4 | 8 | 5 | 54 | 237 | 31 | 837 |
| 08:00 | 44 | 3 | 12 | 0 | 62 | 35 | 0 | 5 | 0 | 12 | 61 | 3 | 237 |
| 08:15 | 42 | 0 | 16 | 0 | 55 | 24 | 0 | 4 | 0 | 7 | 74 | 2 | 224 |
| 08:30 | 32 | 2 | 13 | 0 | 56 | 14 | 0 | 2 | 0 | 6 | 62 | 0 | 187 |
| 08:45 | 61 | 1 | 2 | 0 | 50 | 31 | 0 | 1 | 1 | 12 | 57 | 2 | 218 |
| Total | 179 | 6 | 43 | 0 | 223 | 104 | 0 | 12 | 1 | 37 | 254 | 7 | 866 |
| *** BREAK *** | | | | | | | | | | | | | |
| 16:00 | 31 | 0 | 12 | 0 | 85 | 37 | 0 | 0 | 1 | 13 | 80 | 0 | 259 |
| 16:15 | 41 | 0 | 15 | 0 | 92 | 54 | 0 | 1 | 0 | 15 | 58 | 0 | 276 |
| 16:30 | 33 | 1 | 14 | 0 | 92 | 46 | 1 | 1 | 1 | 15 | 76 | 0 | 280 |
| 16:45 | 44 | 5 | 13 | 0 | 109 | 50 | 3 | 1 | 2 | 18 | 62 | 1 | 308 |
| Total | 149 | 6 | 54 | 0 | 378 | 187 | 4 | 3 | 4 | 61 | 276 | 1 | 1123 |
| 17:00 | 56 | 1 | 10 | 0 | 105 | 46 | 5 | 1 | 2 | 12 | 81 | 1 | 320 |
| 17:15 | 54 | 0 | 7 | 0 | 114 | 44 | 1 | 3 | 0 | 9 | 64 | 1 | 297 |
| 17:30 | 44 | 3 | 10 | 0 | 88 | 55 | 0 | 2 | 1 | 9 | 80 | 3 | 295 |
| 17:45 | 40 | 3 | 10 | 3 | 76 | 38 | 0 | 2 | 0 | 15 | 79 | 0 | 266 |
| Total | 194 | 7 | 37 | 3 | 383 | 183 | 6 | 8 | 3 | 45 | 304 | 5 | 1178 |
| Grand Total | 705 | 33 | 151 | 4 | 1164 | 577 | 14 | 31 | 13 | 197 | 1071 | 44 | 4004 |
| Apprch % | 79.3 | 3.7 | 17 | 0.2 | 66.7 | 33.1 | 24.1 | 53.4 | 22.4 | 15 | 81.6 | 3.4 | |
| Total % | 17.6 | 0.8 | 3.8 | 0.1 | 29.1 | 14.4 | 0.3 | 0.8 | 0.3 | 4.9 | 26.7 | 1.1 | |
| Passenger Vehicles | 653 | 33 | 140 | 4 | 1061 | 540 | 14 | 31 | 13 | 189 | 999 | 44 | 3721 |
| % Passenger Vehicles | 92.6 | 100 | 92.7 | 100 | 91.2 | 93.6 | 100 | 100 | 100 | 95.9 | 93.3 | 100 | 92.9 |
| Heavy Vehicles | 52 | 0 | 11 | 0 | 103 | 37 | 0 | 0 | 0 | 8 | 72 | 0 | 283 |
| % Heavy Vehicles | 7.4 | 0 | 7.3 | 0 | 8.8 | 6.4 | 0 | 0 | 0 | 4.1 | 6.7 | 0 | 7.1 |

McMahon Associates, Inc.

Transportation Engineers and Planners

425 Commerce Drive, Suite 200

Municipality: Conshohocken Borough Fort Washington, PA 19034

Location: Elm Street &

Colwell Lane / Access

Counter/Countboard No.: JG

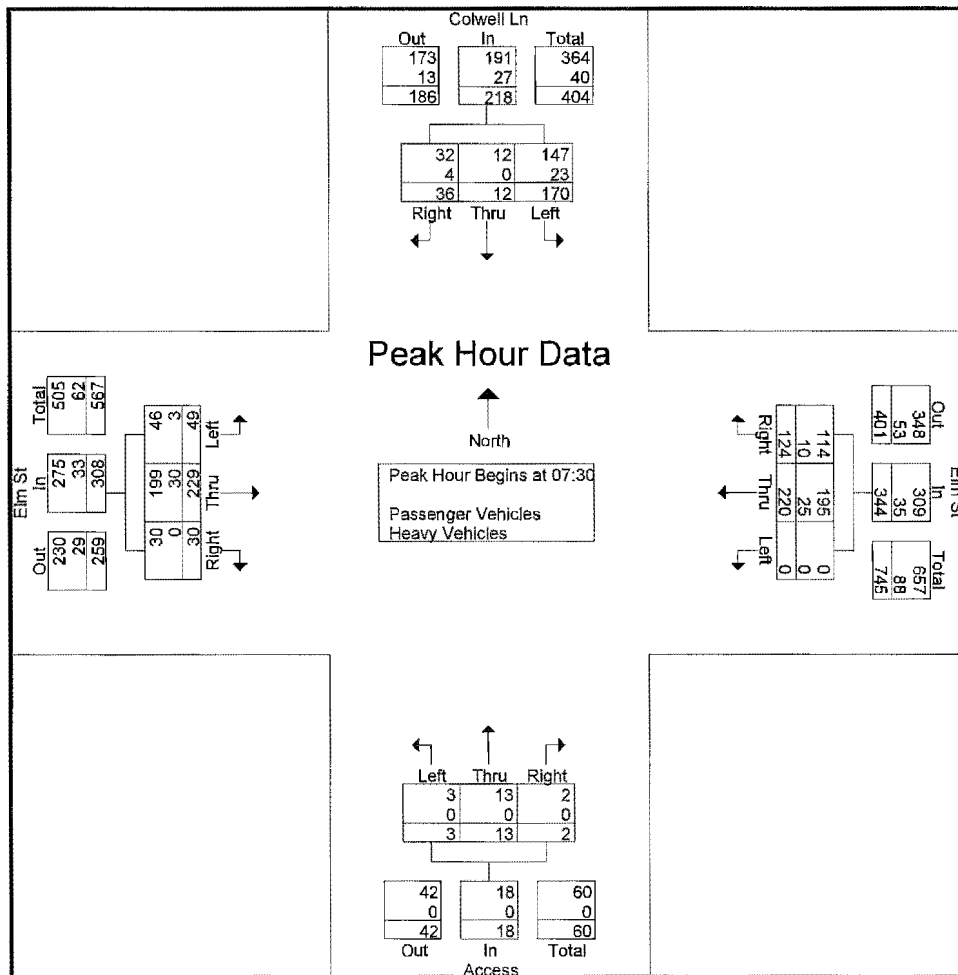
File Name : conshyJG04w

Site Code : 81167504

Start Date : 5/17/2012

Page No : 2

| Start Time | Colwell Ln Southbound | | | | Elm St Westbound | | | | Access Northbound | | | | Elm St Eastbound | | | | Int. Total |
|--|-----------------------|------|-------|------------|------------------|------|-------|------------|-------------------|------|-------|------------|------------------|------|-------|------------|------------|
| | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | |
| Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:30 | | | | | | | | | | | | | | | | | |
| 07:30 | 43 | 3 | 6 | 52 | 0 | 50 | 31 | 81 | 0 | 2 | 0 | 2 | 15 | 46 | 14 | 75 | 210 |
| 07:45 | 41 | 6 | 2 | 49 | 0 | 53 | 34 | 87 | 3 | 2 | 2 | 7 | 15 | 48 | 11 | 74 | 217 |
| 08:00 | 44 | 3 | 12 | 59 | 0 | 62 | 35 | 97 | 0 | 5 | 0 | 5 | 12 | 61 | 3 | 76 | 237 |
| 08:15 | 42 | 0 | 16 | 58 | 0 | 55 | 24 | 79 | 0 | 4 | 0 | 4 | 7 | 74 | 2 | 83 | 224 |
| Total Volume | 170 | 12 | 36 | 218 | 0 | 220 | 124 | 344 | 3 | 13 | 2 | 18 | 49 | 229 | 30 | 308 | 888 |
| % App. Total | 78 | 5.5 | 16.5 | | 0 | 64 | 36 | | 16.7 | 72.2 | 11.1 | | 15.9 | 74.4 | 9.7 | | |
| PHF | .966 | .500 | .563 | .924 | .000 | .887 | .886 | .887 | .250 | .650 | .250 | .643 | .817 | .774 | .536 | .928 | .937 |
| Passenger Vehicles | 147 | 12 | 32 | 191 | 0 | 195 | 114 | 309 | 3 | 13 | 2 | 18 | 46 | 199 | 30 | 275 | 793 |
| % Passenger Vehicles | 86.5 | 100 | 88.9 | 87.6 | 0 | 88.6 | 91.9 | 89.8 | 100 | 100 | 100 | 100 | 93.9 | 86.9 | 100 | 89.3 | 89.3 |
| Heavy Vehicles | 23 | 0 | 4 | 27 | 0 | 25 | 10 | 35 | 0 | 0 | 0 | 0 | 3 | 30 | 0 | 33 | 95 |
| % Heavy Vehicles | 13.5 | 0 | 11.1 | 12.4 | 0 | 11.4 | 8.1 | 10.2 | 0 | 0 | 0 | 0 | 6.1 | 13.1 | 0 | 10.7 | 10.7 |



McMahon Associates, Inc.

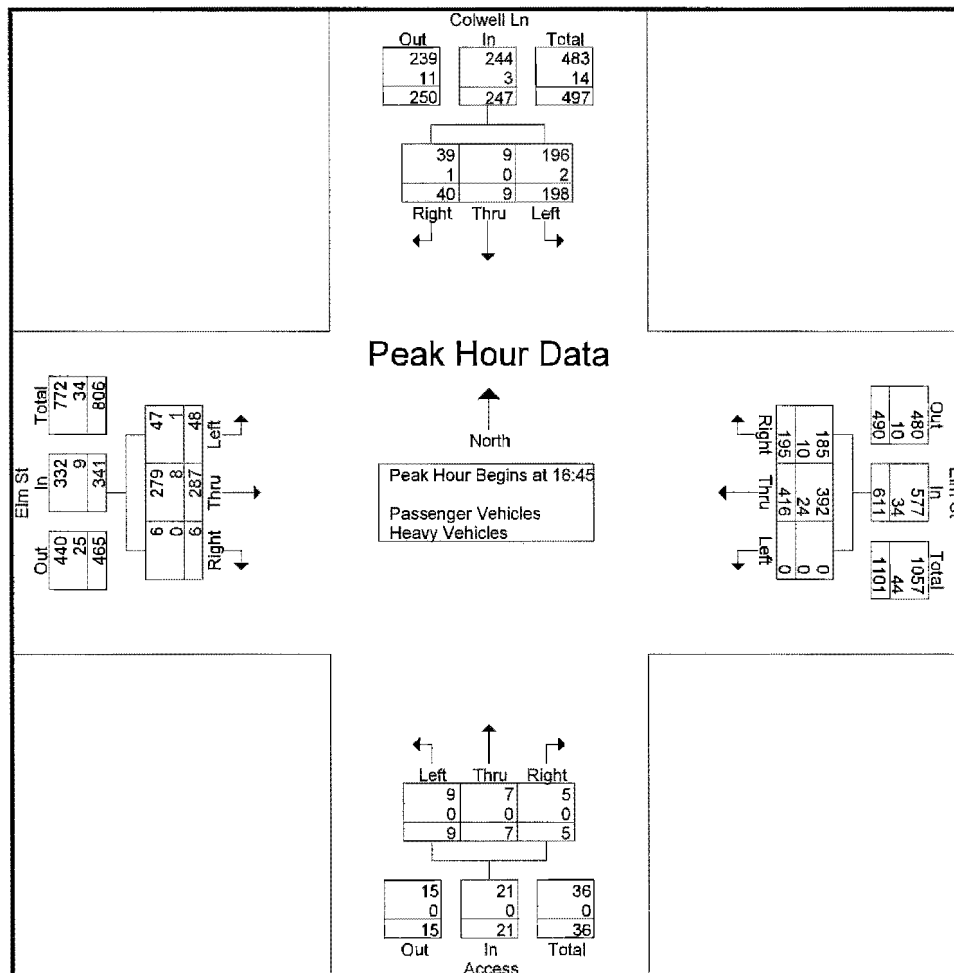
Transportation Engineers and Planners

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Conshohocken Borough
 Location: Elm Street &
 Colwell Lane / Access
 Counter/Countboard No.: JG

File Name : conshyJG04w
 Site Code : 81167504
 Start Date : 5/17/2012
 Page No : 3

| Start Time | Colwell Ln Southbound | | | | Elm St Westbound | | | | Access Northbound | | | | Elm St Eastbound | | | | Int. Total |
|----------------------|-----------------------|------|-------|------------|------------------|------|-------|------------|-------------------|------|-------|------------|------------------|------|-------|------------|------------|
| | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | |
| 16:45 | 44 | 5 | 13 | 62 | 0 | 109 | 50 | 159 | 3 | 1 | 2 | 6 | 18 | 62 | 1 | 81 | 308 |
| 17:00 | 56 | 1 | 10 | 67 | 0 | 105 | 46 | 151 | 5 | 1 | 2 | 8 | 12 | 81 | 1 | 94 | 320 |
| 17:15 | 54 | 0 | 7 | 61 | 0 | 114 | 44 | 158 | 1 | 3 | 0 | 4 | 9 | 64 | 1 | 74 | 297 |
| 17:30 | 44 | 3 | 10 | 57 | 0 | 88 | 55 | 143 | 0 | 2 | 1 | 3 | 9 | 80 | 3 | 92 | 295 |
| Total Volume | 198 | 9 | 40 | 247 | 0 | 416 | 195 | 611 | 9 | 7 | 5 | 21 | 48 | 287 | 6 | 341 | 1220 |
| % App. Total | 80.2 | 3.6 | 16.2 | | 0 | 68.1 | 31.9 | | 42.9 | 33.3 | 23.8 | | 14.1 | 84.2 | 1.8 | | |
| PHF | .884 | .450 | .769 | .922 | .000 | .912 | .886 | .961 | .450 | .583 | .625 | .656 | .667 | .886 | .500 | .907 | .953 |
| Passenger Vehicles | 196 | 9 | 39 | 244 | 0 | 392 | 185 | 577 | 9 | 7 | 5 | 21 | 47 | 279 | 6 | 332 | 1174 |
| % Passenger Vehicles | 99.0 | 100 | 97.5 | 98.8 | 0 | 94.2 | 94.9 | 94.4 | 100 | 100 | 100 | 100 | 97.9 | 97.2 | 100 | 97.4 | 96.2 |
| Heavy Vehicles | 2 | 0 | 1 | 3 | 0 | 24 | 10 | 34 | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 9 | 46 |
| % Heavy Vehicles | 1.0 | 0 | 2.5 | 1.2 | 0 | 5.8 | 5.1 | 5.6 | 0 | 0 | 0 | 0 | 2.1 | 2.8 | 0 | 2.6 | 3.8 |



McMahon Associates, Inc.

Transportation Engineers and Planners

425 Commerce Drive, Suite 200

Municipality: Conshohocken Borough Fort Washington, PA 19034
 Location: Elm Street &
 Old Elm Street / Lot Access
 Counter/Countboard No.: BW+KB

File Name : conshyJG05w
 Site Code : 81167505
 Start Date : 5/17/2012
 Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

| Start Time | Old Elm St Southbound | | | Elm St Westbound | | | Lot Access Northbound | | | Elm St Eastbound | | | Int. Total |
|----------------------|-----------------------|------|-------|------------------|------|-------|-----------------------|------|-------|------------------|------|-------|------------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 07:00 | 0 | 0 | 0 | 0 | 47 | 0 | 0 | 0 | 0 | 0 | 86 | 0 | 133 |
| 07:15 | 0 | 0 | 0 | 0 | 59 | 0 | 1 | 0 | 1 | 0 | 77 | 0 | 138 |
| 07:30 | 0 | 0 | 0 | 0 | 54 | 0 | 0 | 0 | 0 | 0 | 67 | 0 | 121 |
| 07:45 | 0 | 0 | 0 | 0 | 56 | 0 | 0 | 0 | 0 | 1 | 78 | 0 | 135 |
| Total | 0 | 0 | 0 | 0 | 216 | 0 | 1 | 0 | 1 | 1 | 308 | 0 | 527 |
| 08:00 | 0 | 0 | 0 | 1 | 75 | 1 | 0 | 0 | 1 | 0 | 69 | 0 | 147 |
| 08:15 | 0 | 0 | 0 | 1 | 65 | 0 | 0 | 0 | 0 | 1 | 74 | 0 | 141 |
| 08:30 | 0 | 0 | 0 | 1 | 63 | 1 | 0 | 0 | 0 | 0 | 70 | 0 | 135 |
| 08:45 | 0 | 0 | 0 | 0 | 58 | 1 | 0 | 0 | 0 | 0 | 79 | 0 | 138 |
| Total | 0 | 0 | 0 | 3 | 261 | 3 | 0 | 0 | 1 | 1 | 292 | 0 | 561 |
| *** BREAK *** | | | | | | | | | | | | | |
| 16:00 | 0 | 0 | 0 | 0 | 89 | 1 | 0 | 0 | 0 | 0 | 93 | 0 | 183 |
| 16:15 | 0 | 0 | 0 | 0 | 107 | 3 | 0 | 0 | 1 | 0 | 79 | 0 | 190 |
| 16:30 | 0 | 0 | 0 | 1 | 101 | 0 | 0 | 0 | 0 | 0 | 88 | 0 | 190 |
| 16:45 | 0 | 0 | 0 | 0 | 127 | 3 | 0 | 0 | 1 | 0 | 84 | 0 | 215 |
| Total | 0 | 0 | 0 | 1 | 424 | 7 | 0 | 0 | 2 | 0 | 344 | 0 | 778 |
| 17:00 | 0 | 0 | 0 | 0 | 117 | 3 | 0 | 0 | 2 | 0 | 101 | 0 | 223 |
| 17:15 | 0 | 0 | 0 | 0 | 110 | 0 | 0 | 0 | 0 | 0 | 83 | 0 | 193 |
| 17:30 | 0 | 0 | 0 | 0 | 89 | 2 | 0 | 0 | 0 | 0 | 114 | 0 | 205 |
| 17:45 | 0 | 0 | 0 | 0 | 82 | 1 | 0 | 0 | 0 | 0 | 99 | 0 | 182 |
| Total | 0 | 0 | 0 | 0 | 398 | 6 | 0 | 0 | 2 | 0 | 397 | 0 | 803 |
| Grand Total | 0 | 0 | 0 | 4 | 1299 | 16 | 1 | 0 | 6 | 2 | 1341 | 0 | 2669 |
| Apprch % | 0 | 0 | 0 | 0.3 | 98.5 | 1.2 | 14.3 | 0 | 85.7 | 0.1 | 99.9 | 0 | |
| Total % | 0 | 0 | 0 | 0.1 | 48.7 | 0.6 | 0 | 0 | 0.2 | 0.1 | 50.2 | 0 | |
| Passenger Vehicles | 0 | 0 | 0 | 2 | 1210 | 16 | 1 | 0 | 6 | 2 | 1255 | 0 | 2492 |
| % Passenger Vehicles | 0 | 0 | 0 | 50 | 93.1 | 100 | 100 | 0 | 100 | 100 | 93.6 | 0 | 93.4 |
| Heavy Vehicles | 0 | 0 | 0 | 2 | 89 | 0 | 0 | 0 | 0 | 0 | 86 | 0 | 177 |
| % Heavy Vehicles | 0 | 0 | 0 | 50 | 6.9 | 0 | 0 | 0 | 0 | 0 | 6.4 | 0 | 6.6 |

McMahon Associates, Inc.

Transportation Engineers and Planners

425 Commerce Drive, Suite 200

Municipality: Conshohocken Borough Fort Washington, PA 19034

Location: Elm Street &

Old Elm Street / Lot Access

Counter/Countboard No.: BW+KB

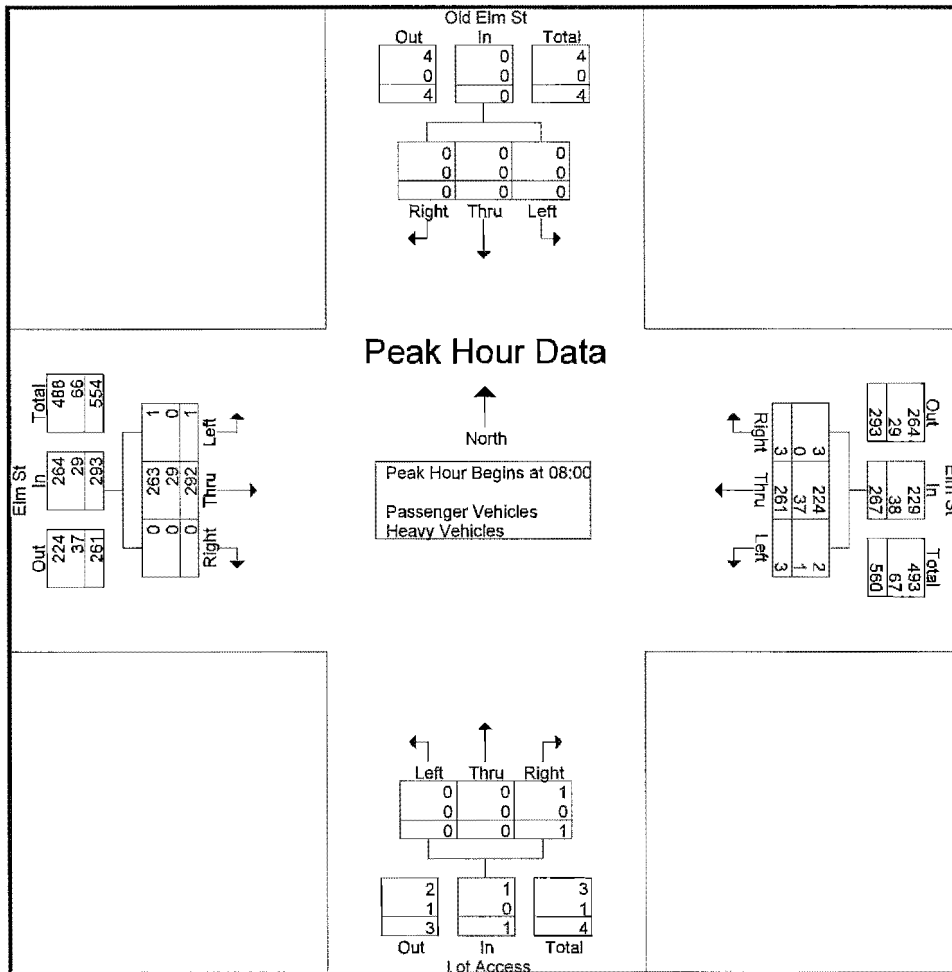
File Name : conshyJG05w

Site Code : 81167505

Start Date : 5/17/2012

Page No : 2

| Start Time | Old Elm St Southbound | | | | Elm St Westbound | | | | Lot Access Northbound | | | | Elm St Eastbound | | | | Int. Total |
|--|-----------------------|------|-------|------------|------------------|------|-------|------------|-----------------------|------|-------|------------|------------------|------|-------|------------|------------|
| | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | |
| Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 08:00 | | | | | | | | | | | | | | | | | |
| 08:00 | 0 | 0 | 0 | 0 | 1 | 75 | 1 | 77 | 0 | 0 | 1 | 1 | 0 | 69 | 0 | 69 | 147 |
| 08:15 | 0 | 0 | 0 | 0 | 1 | 65 | 0 | 66 | 0 | 0 | 0 | 0 | 1 | 74 | 0 | 75 | 141 |
| 08:30 | 0 | 0 | 0 | 0 | 1 | 63 | 1 | 65 | 0 | 0 | 0 | 0 | 0 | 70 | 0 | 70 | 135 |
| 08:45 | 0 | 0 | 0 | 0 | 0 | 58 | 1 | 59 | 0 | 0 | 0 | 0 | 0 | 79 | 0 | 79 | 138 |
| Total Volume | 0 | 0 | 0 | 0 | 3 | 261 | 3 | 267 | 0 | 0 | 1 | 1 | 1 | 292 | 0 | 293 | 561 |
| % App. Total | 0 | 0 | 0 | 0 | 1.1 | 97.8 | 1.1 | | 0 | 0 | 100 | | 0.3 | 99.7 | 0 | | |
| PHF | .000 | .000 | .000 | .000 | .750 | .870 | .750 | .867 | .000 | .000 | .250 | .250 | .250 | .924 | .000 | .927 | .954 |
| Passenger Vehicles | 0 | 0 | 0 | 0 | 2 | 224 | 3 | 229 | 0 | 0 | 1 | 1 | 1 | 263 | 0 | 264 | 494 |
| % Passenger Vehicles | 0 | 0 | 0 | 0 | 66.7 | 85.8 | 100 | 85.8 | 0 | 0 | 100 | 100 | 100 | 90.1 | 0 | 90.1 | 88.1 |
| Heavy Vehicles | 0 | 0 | 0 | 0 | 1 | 37 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 29 | 67 |
| % Heavy Vehicles | 0 | 0 | 0 | 0 | 33.3 | 14.2 | 0 | 14.2 | 0 | 0 | 0 | 0 | 0 | 9.9 | 0 | 9.9 | 11.9 |



McMahon Associates, Inc.

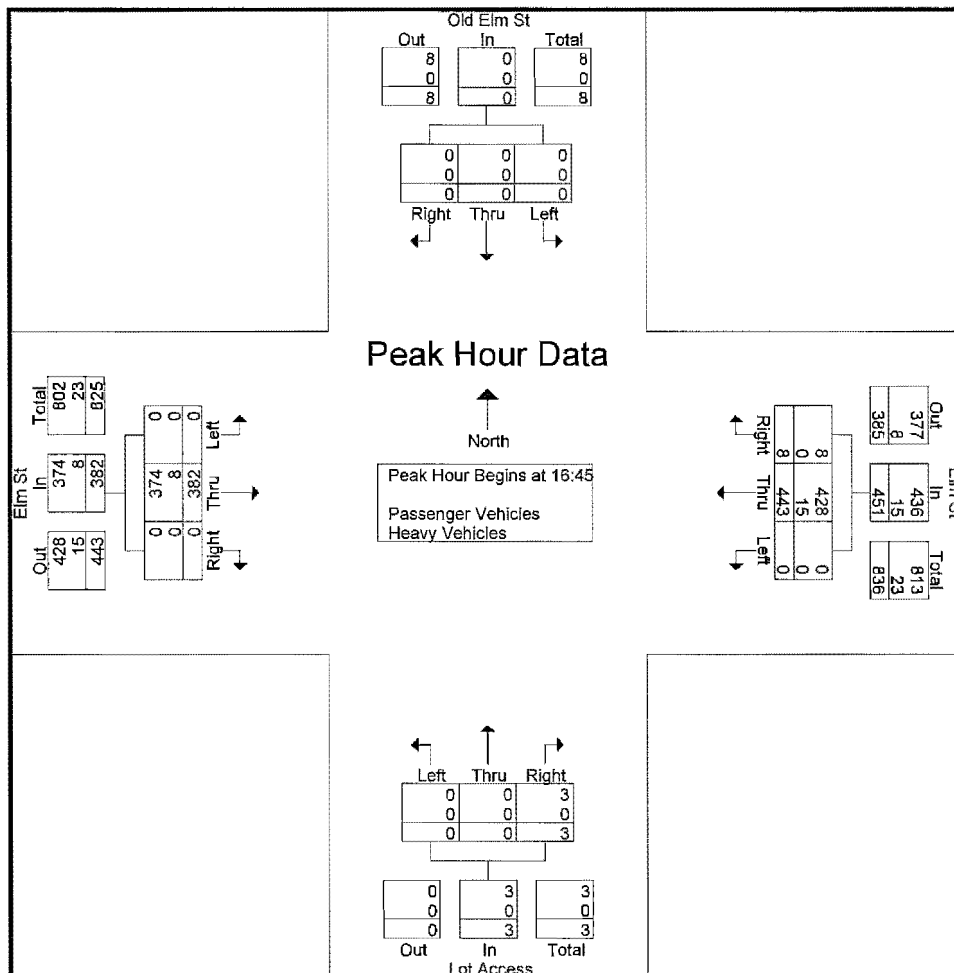
Transportation Engineers and Planners

425 Commerce Drive, Suite 200

Municipality: Conshohocken Borough Fort Washington, PA 19034
 Location: Elm Street &
 Old Elm Street / Lot Access
 Counter/Countboard No.: BW+KB

File Name : conshyJG05w
 Site Code : 81167505
 Start Date : 5/17/2012
 Page No : 3

| Start Time | Old Elm St Southbound | | | | Elm St Westbound | | | | Lot Access Northbound | | | | Elm St Eastbound | | | | Int. Total |
|--|-----------------------|------|-------|------------|------------------|------|-------|------------|-----------------------|------|-------|------------|------------------|------|-------|------------|------------|
| | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | |
| Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 16:45 | | | | | | | | | | | | | | | | | |
| 16:45 | 0 | 0 | 0 | 0 | 0 | 127 | 3 | 130 | 0 | 0 | 1 | 1 | 0 | 84 | 0 | 84 | 215 |
| 17:00 | 0 | 0 | 0 | 0 | 0 | 117 | 3 | 120 | 0 | 0 | 2 | 2 | 0 | 101 | 0 | 101 | 223 |
| 17:15 | 0 | 0 | 0 | 0 | 0 | 110 | 0 | 110 | 0 | 0 | 0 | 0 | 0 | 83 | 0 | 83 | 193 |
| 17:30 | 0 | 0 | 0 | 0 | 0 | 89 | 2 | 91 | 0 | 0 | 0 | 0 | 0 | 114 | 0 | 114 | 205 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 443 | 8 | 451 | 0 | 0 | 3 | 3 | 0 | 382 | 0 | 382 | 836 |
| % App. Total | 0 | 0 | 0 | 0 | 0 | 98.2 | 1.8 | | 0 | 0 | 100 | | 0 | 100 | 0 | | |
| PHF | .000 | .000 | .000 | .000 | .000 | .872 | .667 | .867 | .000 | .000 | .375 | .375 | .000 | .838 | .000 | .838 | .937 |
| Passenger Vehicles | 0 | 0 | 0 | 0 | 0 | 428 | 8 | 436 | 0 | 0 | 3 | 3 | 0 | 374 | 0 | 374 | 813 |
| % Passenger Vehicles | 0 | 0 | 0 | 0 | 0 | 96.6 | 100 | 96.7 | 0 | 0 | 100 | 100 | 0 | 97.9 | 0 | 97.9 | 97.2 |
| Heavy Vehicles | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 8 | 23 |
| % Heavy Vehicles | 0 | 0 | 0 | 0 | 0 | 3.4 | 0 | 3.3 | 0 | 0 | 0 | 0 | 0 | 2.1 | 0 | 2.1 | 2.8 |



McMahon Associates, Inc.
 Transportation Engineers and Planners
 425 Commerce Drive, Suite 200

Municipality: Conshohocken Borough Fort Washington, PA 19034
 Location: Elm Street &
 Corson Street / Access
 Counter/Countboard No.: TD+RG

File Name : conshyJG06w
 Site Code : 81167506
 Start Date : 5/17/2012
 Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

| Start Time | Corson St Southbound | | | Elm St Westbound | | | Access Northbound | | | Elm St Eastbound | | | Int. Total |
|-----------------------------|----------------------|----------|-----------|------------------|-------------|-----------|-------------------|----------|----------|------------------|-------------|----------|-------------|
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | |
| 07:00 | 8 | 0 | 1 | 0 | 53 | 0 | 0 | 0 | 0 | 0 | 81 | 0 | 143 |
| 07:15 | 4 | 0 | 2 | 0 | 61 | 0 | 0 | 0 | 0 | 0 | 72 | 0 | 139 |
| 07:30 | 2 | 0 | 0 | 0 | 51 | 1 | 0 | 0 | 0 | 0 | 57 | 0 | 111 |
| 07:45 | 7 | 0 | 4 | 0 | 60 | 1 | 0 | 0 | 0 | 0 | 79 | 0 | 151 |
| Total | 21 | 0 | 7 | 0 | 225 | 2 | 0 | 0 | 0 | 0 | 289 | 0 | 544 |
| 08:00 | 4 | 0 | 0 | 1 | 71 | 0 | 0 | 0 | 0 | 0 | 72 | 0 | 148 |
| 08:15 | 2 | 0 | 0 | 0 | 70 | 1 | 0 | 0 | 0 | 0 | 64 | 0 | 137 |
| 08:30 | 3 | 0 | 0 | 0 | 53 | 0 | 0 | 0 | 0 | 0 | 71 | 0 | 127 |
| 08:45 | 6 | 0 | 1 | 0 | 61 | 1 | 0 | 0 | 0 | 0 | 63 | 0 | 132 |
| Total | 15 | 0 | 1 | 1 | 255 | 2 | 0 | 0 | 0 | 0 | 270 | 0 | 544 |
| *** BREAK *** | | | | | | | | | | | | | |
| 16:00 | 2 | 0 | 1 | 1 | 88 | 3 | 0 | 0 | 0 | 1 | 92 | 0 | 188 |
| 16:15 | 3 | 0 | 0 | 0 | 103 | 2 | 0 | 0 | 0 | 0 | 77 | 0 | 185 |
| 16:30 | 2 | 0 | 1 | 1 | 100 | 3 | 0 | 0 | 0 | 0 | 79 | 0 | 186 |
| 16:45 | 1 | 0 | 1 | 0 | 118 | 1 | 0 | 0 | 0 | 1 | 93 | 0 | 215 |
| Total | 8 | 0 | 3 | 2 | 409 | 9 | 0 | 0 | 0 | 2 | 341 | 0 | 774 |
| 17:00 | 6 | 0 | 0 | 1 | 115 | 2 | 0 | 0 | 0 | 0 | 94 | 2 | 220 |
| 17:15 | 3 | 0 | 0 | 0 | 103 | 2 | 0 | 0 | 0 | 0 | 79 | 1 | 188 |
| 17:30 | 6 | 0 | 0 | 0 | 87 | 2 | 0 | 0 | 0 | 0 | 113 | 0 | 208 |
| 17:45 | 2 | 0 | 1 | 0 | 75 | 2 | 1 | 1 | 2 | 0 | 91 | 1 | 176 |
| Total | 17 | 0 | 1 | 1 | 380 | 8 | 1 | 1 | 2 | 0 | 377 | 4 | 792 |
| Grand Total | 61 | 0 | 12 | 4 | 1269 | 21 | 1 | 1 | 2 | 2 | 1277 | 4 | 2654 |
| Apprch % | 83.6 | 0 | 16.4 | 0.3 | 98.1 | 1.6 | 25 | 25 | 50 | 0.2 | 99.5 | 0.3 | |
| Total % | 2.3 | 0 | 0.5 | 0.2 | 47.8 | 0.8 | 0 | 0 | 0.1 | 0.1 | 48.1 | 0.2 | |
| Passenger Vehicles | 61 | 0 | 12 | 4 | 1153 | 21 | 1 | 1 | 2 | 2 | 1170 | 4 | 2431 |
| % Passenger Vehicles | 100 | 0 | 100 | 100 | 90.9 | 100 | 100 | 100 | 100 | 100 | 91.6 | 100 | 91.6 |
| Heavy Vehicles | 0 | 0 | 0 | 0 | 116 | 0 | 0 | 0 | 0 | 0 | 107 | 0 | 223 |
| % Heavy Vehicles | 0 | 0 | 0 | 0 | 9.1 | 0 | 0 | 0 | 0 | 0 | 8.4 | 0 | 8.4 |

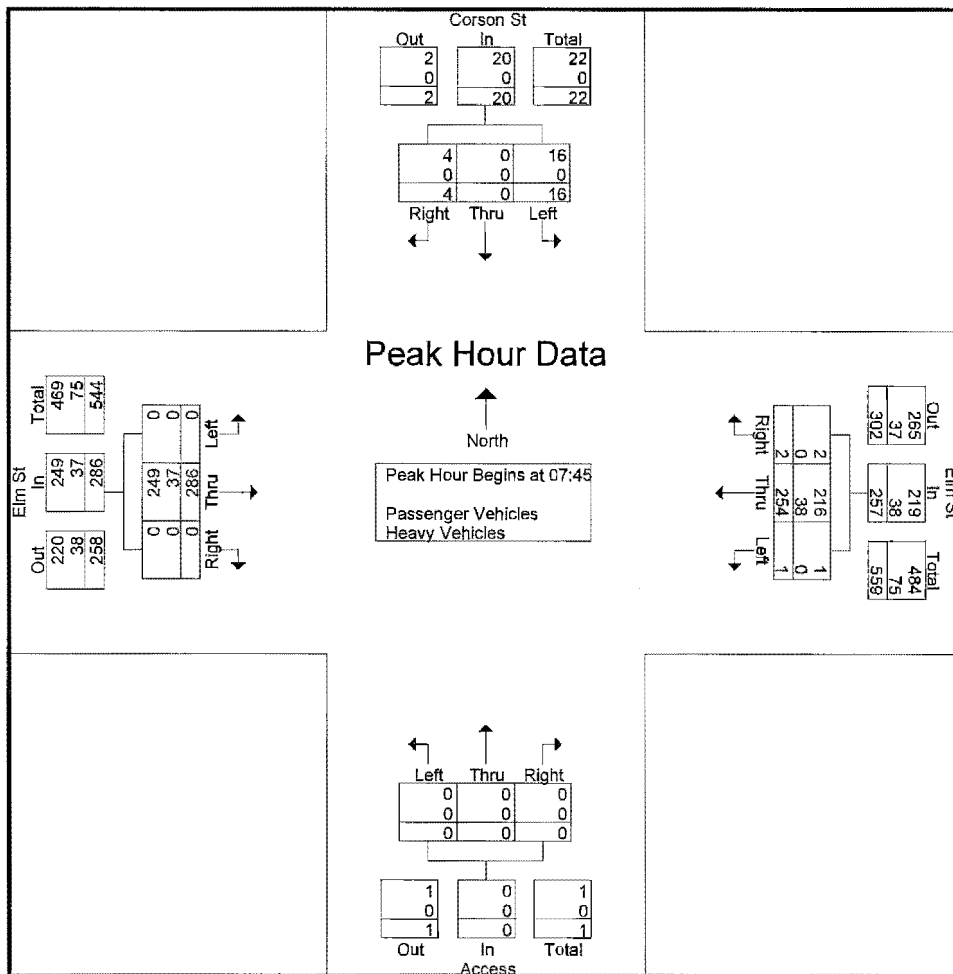
McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200

Municipality: Conshohocken Borough Fort Washington, PA 19034
 Location: Elm Street & Corson Street / Access
 Counter/Countboard No.: TD+RG

File Name : conshyJG06w
 Site Code : 81167506
 Start Date : 5/17/2012
 Page No : 2

| Start Time | Corson St Southbound | | | | Elm St Westbound | | | | Access Northbound | | | | Elm St Eastbound | | | | Int. Total |
|--|----------------------|------|-------|------------|------------------|------|-------|------------|-------------------|------|-------|------------|------------------|------|-------|------------|------------|
| | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | |
| Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 07:45 | | | | | | | | | | | | | | | | | |
| 07:45 | 7 | 0 | 4 | 11 | 0 | 60 | 1 | 61 | 0 | 0 | 0 | 0 | 0 | 79 | 0 | 79 | 151 |
| 08:00 | 4 | 0 | 0 | 4 | 1 | 71 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 72 | 0 | 72 | 148 |
| 08:15 | 2 | 0 | 0 | 2 | 0 | 70 | 1 | 71 | 0 | 0 | 0 | 0 | 0 | 64 | 0 | 64 | 137 |
| 08:30 | 3 | 0 | 0 | 3 | 0 | 53 | 0 | 53 | 0 | 0 | 0 | 0 | 0 | 71 | 0 | 71 | 127 |
| Total Volume | 16 | 0 | 4 | 20 | 1 | 254 | 2 | 257 | 0 | 0 | 0 | 0 | 0 | 286 | 0 | 286 | 563 |
| % App. Total | 80 | 0 | 20 | | 0.4 | 98.8 | 0.8 | | 0 | 0 | 0 | | 0 | 100 | 0 | | |
| PHF | .571 | .000 | .250 | .455 | .250 | .894 | .500 | .892 | .000 | .000 | .000 | .000 | .000 | .905 | .000 | .905 | .932 |
| Passenger Vehicles | 16 | 0 | 4 | 20 | 1 | 216 | 2 | 219 | 0 | 0 | 0 | 0 | 0 | 249 | 0 | 249 | 488 |
| % Passenger Vehicles | 100 | 0 | 100 | 100 | 100 | 85.0 | 100 | 85.2 | 0 | 0 | 0 | 0 | 0 | 87.1 | 0 | 87.1 | 86.7 |
| Heavy Vehicles | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 37 | 75 |
| % Heavy Vehicles | 0 | 0 | 0 | 0 | 0 | 15.0 | 0 | 14.8 | 0 | 0 | 0 | 0 | 0 | 12.9 | 0 | 12.9 | 13.3 |



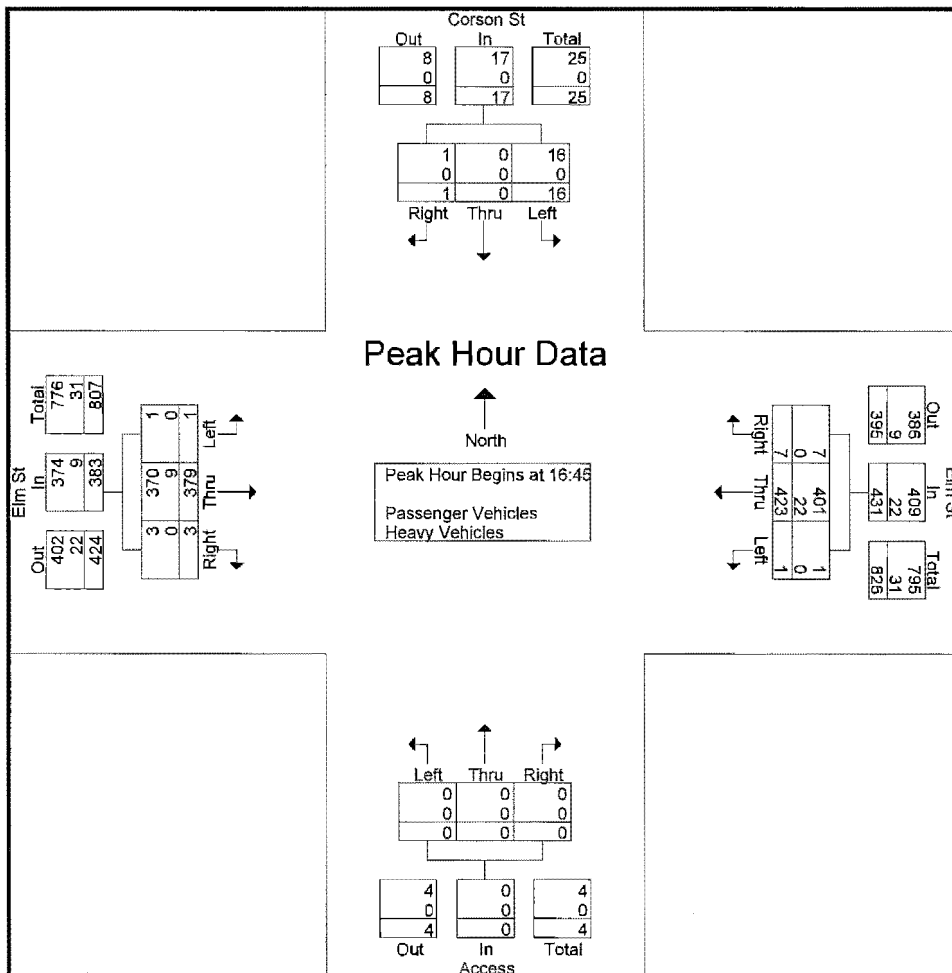
McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Conshohocken Borough
Location: Elm Street &
Corson Street / Access
Counter/Countboard No.: TD+RG

File Name : conshyJG06w
Site Code : 81167506
Start Date : 5/17/2012
Page No : 3

| Start Time | Corson St Southbound | | | | Elm St Westbound | | | | Access Northbound | | | | Elm St Eastbound | | | | Int. Total |
|--|----------------------|------|-------|------------|------------------|------|-------|------------|-------------------|------|-------|------------|------------------|------|-------|------------|------------|
| | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | App. Total | |
| Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1 | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 16:45 | | | | | | | | | | | | | | | | | |
| 16:45 | 1 | 0 | 1 | 2 | 0 | 118 | 1 | 119 | 0 | 0 | 0 | 0 | 1 | 93 | 0 | 94 | 215 |
| 17:00 | 6 | 0 | 0 | 6 | 1 | 115 | 2 | 118 | 0 | 0 | 0 | 0 | 0 | 94 | 2 | 96 | 220 |
| 17:15 | 3 | 0 | 0 | 3 | 0 | 103 | 2 | 105 | 0 | 0 | 0 | 0 | 0 | 79 | 1 | 80 | 188 |
| 17:30 | 6 | 0 | 0 | 6 | 0 | 87 | 2 | 89 | 0 | 0 | 0 | 0 | 0 | 113 | 0 | 113 | 208 |
| Total Volume | 16 | 0 | 1 | 17 | 1 | 423 | 7 | 431 | 0 | 0 | 0 | 0 | 1 | 379 | 3 | 383 | 831 |
| % App. Total | 94.1 | 0 | 5.9 | | 0.2 | 98.1 | 1.6 | | 0 | 0 | 0 | | 0.3 | 99 | 0.8 | | |
| PHF | .667 | .000 | .250 | .708 | .250 | .896 | .875 | .905 | .000 | .000 | .000 | .000 | .250 | .838 | .375 | .847 | .944 |
| Passenger Vehicles | 16 | 0 | 1 | 17 | 1 | 401 | 7 | 409 | 0 | 0 | 0 | 0 | 1 | 370 | 3 | 374 | 800 |
| % Passenger Vehicles | 100 | 0 | 100 | 100 | 100 | 94.8 | 100 | 94.9 | 0 | 0 | 0 | 0 | 100 | 97.6 | 100 | 97.7 | 96.3 |
| Heavy Vehicles | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 31 |
| % Heavy Vehicles | 0 | 0 | 0 | 0 | 0 | 5.2 | 0 | 5.1 | 0 | 0 | 0 | 0 | 0 | 2.4 | 0 | 2.3 | 3.7 |



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Municipality: Conshohocken Borough Fort Washington, PA 19034
 Location: Elm Street &
 Corson Street / Access
 Counter/Countboard No.: TD+RG

File Name : conshyJG06w
 Site Code : 81167506
 Start Date : 5/17/2012
 Page No : 1

Groups Printed- Pedestrians

| | Corson St Southbound | Elm St Westbound | Access Northbound | Elm St Eastbound | |
|--------------------|---------------------------------|-----------------------------|------------------------------|-----------------------------|------------|
| Start Time | E/W Peds | N/S Peds | E/W Peds | N/S Peds | Int. Total |
| *** BREAK *** | | | | | |
| 07:15 | 1 | 0 | 1 | 0 | 2 |
| *** BREAK *** | | | | | |
| Total | 1 | 0 | 1 | 0 | 2 |
| *** BREAK *** | | | | | |
| 08:15 | 0 | 0 | 1 | 0 | 1 |
| 08:30 | 1 | 0 | 0 | 0 | 1 |
| *** BREAK *** | | | | | |
| Total | 1 | 0 | 1 | 0 | 2 |
| *** BREAK *** | | | | | |
| 09:15 | 1 | 0 | 1 | 0 | 2 |
| *** BREAK *** | | | | | |
| Total | 1 | 0 | 1 | 0 | 2 |
| *** BREAK *** | | | | | |
| 16:15 | 1 | 0 | 0 | 1 | 2 |
| 16:30 | 0 | 0 | 3 | 0 | 3 |
| 16:45 | 1 | 1 | 1 | 0 | 3 |
| Total | 2 | 1 | 4 | 1 | 8 |
| 17:00 | 1 | 2 | 0 | 0 | 3 |
| *** BREAK *** | | | | | |
| 17:30 | 0 | 0 | 2 | 0 | 2 |
| 17:45 | 1 | 0 | 1 | 2 | 4 |
| Total | 2 | 2 | 3 | 2 | 9 |
| Grand Total | 7 | 3 | 10 | 3 | 23 |
| Apprch % | 100 | 100 | 100 | 100 | |
| Total % | 30.4 | 13 | 43.5 | 13 | |

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Municipality: Conshohocken Borough Fort Washington, PA 19034
 Location: Elm Street &
 Old Elm Street / Lot Access
 Counter/Countboard No.: BW+KB

File Name : conshyJG05w
 Site Code : 81167505
 Start Date : 5/17/2012
 Page No : 1

Groups Printed- Pedestrians

| | Old Elm St Southbound | Elm St Westbound | Lot Access Northbound | Elm St Eastbound | |
|---------------|----------------------------------|-----------------------------|----------------------------------|-----------------------------|------------|
| Start Time | E/W Peds | N/S Peds | E/W Peds | N/S Peds | Int. Total |
| 07:00 | 0 | 0 | 1 | 0 | 1 |
| *** BREAK *** | | | | | |
| 07:30 | 0 | 1 | 0 | 0 | 1 |
| 07:45 | 1 | 0 | 0 | 0 | 1 |
| Total | 1 | 1 | 1 | 0 | 3 |
| 08:00 | 1 | 0 | 0 | 0 | 1 |
| *** BREAK *** | | | | | |
| 08:45 | 1 | 0 | 0 | 0 | 1 |
| Total | 2 | 0 | 0 | 0 | 2 |
| *** BREAK *** | | | | | |
| 16:00 | 0 | 0 | 0 | 4 | 4 |
| *** BREAK *** | | | | | |
| 16:30 | 1 | 0 | 0 | 0 | 1 |
| 16:45 | 0 | 0 | 0 | 1 | 1 |
| Total | 1 | 0 | 0 | 5 | 6 |
| 17:00 | 0 | 0 | 0 | 1 | 1 |
| 17:15 | 0 | 0 | 0 | 1 | 1 |
| *** BREAK *** | | | | | |
| 17:45 | 0 | 2 | 0 | 3 | 5 |
| Total | 0 | 2 | 0 | 5 | 7 |
| Grand Total | 4 | 3 | 1 | 10 | 18 |
| Apprch % | 100 | 100 | 100 | 100 | |
| Total % | 22.2 | 16.7 | 5.6 | 55.6 | |

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Municipality: Conshohocken Borough Fort Washington, PA 19034
 Location: Elm Street &
 Colwell Lane / Access
 Counter/Countboard No.: JG

File Name : conshyJG04w
 Site Code : 81167504
 Start Date : 5/17/2012
 Page No : 1

Groups Printed- Pedestrians

| | Colwell Ln Southbound | Elm St Westbound | Access Northbound | Elm St Eastbound | |
|---------------|----------------------------------|-----------------------------|------------------------------|-----------------------------|------------|
| Start Time | E/W Peds | N/S Peds | E/W Peds | N/S Peds | Int. Total |
| *** BREAK *** | | | | | |
| 07:15 | 0 | 1 | 2 | 1 | 4 |
| *** BREAK *** | | | | | |
| 07:45 | 0 | 6 | 1 | 0 | 7 |
| Total | 0 | 7 | 3 | 1 | 11 |
| *** BREAK *** | | | | | |
| 08:45 | 1 | 0 | 0 | 0 | 1 |
| Total | 1 | 0 | 0 | 0 | 1 |
| *** BREAK *** | | | | | |
| 16:00 | 2 | 1 | 3 | 0 | 6 |
| 16:15 | 0 | 0 | 0 | 1 | 1 |
| 16:30 | 0 | 2 | 2 | 0 | 4 |
| 16:45 | 0 | 0 | 2 | 0 | 2 |
| Total | 2 | 3 | 7 | 1 | 13 |
| 17:00 | 1 | 1 | 1 | 0 | 3 |
| 17:15 | 0 | 0 | 0 | 1 | 1 |
| 17:30 | 0 | 0 | 1 | 0 | 1 |
| 17:45 | 1 | 1 | 3 | 2 | 7 |
| Total | 2 | 2 | 5 | 3 | 12 |
| Grand Total | 5 | 12 | 15 | 5 | 37 |
| Apprch % | 100 | 100 | 100 | 100 | |
| Total % | 13.5 | 32.4 | 40.5 | 13.5 | |

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Municipality: Borough of Conshohocken Fort Washington, PA 19034

Location: Elm Street &

Maple Street

Counter/Countboard No.: TD

File Name : conshyJG03p

Site Code : 81167503

Start Date : 5/22/2012

Page No : 1

Groups Printed- Pedestrians

| | Maple St Southbound | Elm St Westbound | Maple St Northbound | Elm St Eastbound | |
|---------------|------------------------|---------------------|------------------------|---------------------|------------|
| Start Time | E/W Peds | N/S Peds | E/W Peds | N/S Peds | Int. Total |
| *** BREAK *** | | | | | |
| 16:15 | 2 | 1 | 0 | 0 | 3 |
| 16:30 | 1 | 0 | 1 | 1 | 3 |
| 16:45 | 2 | 1 | 3 | 0 | 6 |
| Total | 5 | 2 | 4 | 1 | 12 |
| 17:00 | 1 | 1 | 1 | 0 | 3 |
| 17:15 | 3 | 1 | 1 | 3 | 8 |
| 17:30 | 3 | 1 | 1 | 1 | 6 |
| 17:45 | 3 | 2 | 4 | 3 | 12 |
| Total | 10 | 5 | 7 | 7 | 29 |
| Grand Total | 15 | 7 | 11 | 8 | 41 |
| Apprch % | 100 | 100 | 100 | 100 | |
| Total % | 36.6 | 17.1 | 26.8 | 19.5 | |

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Municipality: Conshohocken Borough Fort Washington, PA 19034

Location: Elm Street &

Maple Street

Counter/Countboard No.: LB

File Name : conshyJG03a

Site Code : 81167503

Start Date : 5/17/2012

Page No : 1

Groups Printed- Pedestrians

| | Maple St Southbound | Elm St Westbound | Access Northbound | Elm St Eastbound | |
|-------------|------------------------|---------------------|----------------------|---------------------|------------|
| Start Time | E/W Peds | N/S Peds | E/W Peds | N/S Peds | Int. Total |
| 07:00 | 0 | 0 | 0 | 1 | 1 |
| 07:15 | 0 | 0 | 2 | 0 | 2 |
| 07:30 | 3 | 1 | 1 | 2 | 7 |
| 07:45 | 0 | 3 | 1 | 2 | 6 |
| Total | 3 | 4 | 4 | 5 | 16 |
| 08:00 | 2 | 0 | 0 | 0 | 2 |
| 08:15 | 1 | 0 | 2 | 2 | 5 |
| 08:30 | 4 | 2 | 0 | 0 | 6 |
| 08:45 | 1 | 1 | 1 | 0 | 3 |
| Total | 8 | 3 | 3 | 2 | 16 |
| Grand Total | 11 | 7 | 7 | 7 | 32 |
| Apprch % | 100 | 100 | 100 | 100 | |
| Total % | 34.4 | 21.9 | 21.9 | 21.9 | |

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Municipality: Borough of ConshohockenFort Washington, PA 19034

Location: Elm Street &

Oak Street

Counter/Countboard No.: BW

File Name : conshyJG02p

Site Code : 81167502

Start Date : 5/22/2012

Page No : 1

Groups Printed- Pedestrians

| Start Time | Oak St | Elm St | Oak St | Elm St | Int. Total |
|---------------|------------|-----------|------------|-----------|------------|
| | Southbound | Westbound | Northbound | Eastbound | |
| | E/W Peds | N/S Peds | E/W Peds | N/S Peds | |
| 16:00 | 1 | 0 | 0 | 0 | 1 |
| 16:15 | 2 | 0 | 0 | 2 | 4 |
| 16:30 | 1 | 0 | 1 | 1 | 3 |
| 16:45 | 0 | 0 | 2 | 2 | 4 |
| Total | 4 | 0 | 3 | 5 | 12 |
| 17:00 | 1 | 1 | 1 | 0 | 3 |
| *** BREAK *** | | | | | |
| 17:30 | 2 | 1 | 1 | 0 | 4 |
| 17:45 | 2 | 0 | 2 | 1 | 5 |
| Total | 5 | 2 | 4 | 1 | 12 |
| Grand Total | 9 | 2 | 7 | 6 | 24 |
| Apprch % | 100 | 100 | 100 | 100 | |
| Total % | 37.5 | 8.3 | 29.2 | 25 | |

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Municipality: Conshohocken Borough Fort Washington, PA 19034

Location: Elm Street &

Oak Street

Counter/Countboard No.: JB

File Name : conshyJG02a

Site Code : 81167502

Start Date : 5/17/2012

Page No : 1

Groups Printed- Pedestrians

| | Oak St Southbound | Elm St Westbound | Oak St Northbound | Elm St Eastbound | |
|-------------|----------------------|---------------------|----------------------|---------------------|------------|
| Start Time | E/W Peds | N/S Peds | E/W Peds | N/S Peds | Int. Total |
| 07:00 | 0 | 0 | 2 | 1 | 3 |
| 07:15 | 0 | 0 | 2 | 0 | 2 |
| 07:30 | 0 | 1 | 3 | 0 | 4 |
| 07:45 | 3 | 1 | 1 | 1 | 6 |
| Total | 3 | 2 | 8 | 2 | 15 |
| 08:00 | 2 | 1 | 0 | 0 | 3 |
| 08:15 | 0 | 1 | 0 | 0 | 1 |
| 08:30 | 4 | 0 | 2 | 0 | 6 |
| 08:45 | 2 | 2 | 2 | 0 | 6 |
| Total | 8 | 4 | 4 | 0 | 16 |
| Grand Total | 11 | 6 | 12 | 2 | 31 |
| Apprch % | 100 | 100 | 100 | 100 | |
| Total % | 35.5 | 19.4 | 38.7 | 6.5 | |

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 Port Washington, PA 19034

Municipality: Borough of Conshohocken
 Location: Elm Street &
 Fayette Street
 Counter/Countboard No.: M

File Name : conshyJG01w
 Site Code :
 Start Date : 5/22/2012
 Page No : 1

Groups Printed- Pedestrians

| Start Time | Fayette St | Elm St | Fayette St | Elm St | Int. Total |
|-------------|------------|-----------|------------|-----------|------------|
| | Southbound | Westbound | Northbound | Eastbound | |
| | E/W Peds | N/S Peds | E/W Peds | N/S Peds | |
| 07:15 | 0 | 0 | 0 | 2 | 2 |
| 07:30 | 1 | 0 | 2 | 3 | 6 |
| 07:45 | 2 | 1 | 0 | 0 | 3 |
| Total | 3 | 1 | 2 | 5 | 11 |
| 08:00 | 0 | 0 | 0 | 4 | 4 |
| 08:30 | 0 | 1 | 0 | 3 | 4 |
| 08:45 | 0 | 2 | 2 | 0 | 4 |
| Total | 0 | 3 | 2 | 7 | 12 |
| 16:00 | 0 | 1 | 0 | 0 | 1 |
| 16:15 | 0 | 1 | 0 | 1 | 2 |
| 16:30 | 1 | 0 | 0 | 4 | 5 |
| Total | 1 | 2 | 0 | 5 | 8 |
| 17:00 | 0 | 0 | 0 | 7 | 7 |
| 17:15 | 0 | 2 | 0 | 5 | 7 |
| 17:30 | 0 | 2 | 0 | 3 | 5 |
| 17:45 | 1 | 0 | 0 | 3 | 4 |
| Total | 1 | 4 | 0 | 18 | 23 |
| Grand Total | 5 | 10 | 4 | 35 | 54 |
| Apprch % | 100 | 100 | 100 | 100 | |
| Total % | 9.3 | 18.5 | 7.4 | 64.8 | |

APPENDIX D

Capacity/Level of Service Methodology

CAPACITY/LEVEL-OF-SERVICE ANALYSIS METHODOLOGY

The detailed capacity/level-of-service analysis contained in this transportation impact study was performed in accordance with the standard techniques contained in the *Highway Capacity Manual 2010*. By definition, capacity represents “the maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.” The level at which an intersection or a uniform section of a lane or roadway function can be expressed in terms of a level of service. Level of service (LOS) is defined as “a quantitative stratification of a performance measure or measures that represent quality of service, measured on an A-F scale, with LOS A representing the best operating conditions from the traveler’s perspective and LOS F the worst.”

Stop-Controlled Intersections

At unsignalized stop-controlled intersections, such as two-way stop-controlled (TWSC) or all-way stop-controlled (AWSC), a methodology for evaluating the relative functioning of these intersections is based upon the control delay. For these types of unsignalized intersections, the analysis of the control delay is based upon the following data:

- Number and configuration of lanes on each approach;
- Percentage of heavy vehicles on each approach;
- Demand flow rate for each entering vehicular movement and pedestrian crossing movement;
- Unique geometric factors such as, channelization aspects; two-way left-turn lanes, raised or striped median storage; approach grades, flared approaches on the minor street; and upstream signals within 0.25 miles.

At TWSC intersections, only drivers on the minor street approaches are required to stop before proceeding into the intersection and left-turning drivers from the major street may have to yield to on-coming major street through or right-turning traffic, but are not required to stop in the absence of on-coming traffic. The capacity at stop-controlled legs is based primarily on three factors: the distribution of gaps in the major stream, driver judgment in selecting the gaps, and the follow-up headways required by each driver in a queue.

At AWSC intersections, every vehicle is required to stop at the intersection before proceeding, and as a result, the decision to proceed is a function of the traffic conditions on the other approaches. Each driver proceeds only after determining that no vehicles are currently in the intersection and that it is the driver’s turn to proceed. Capacity at an AWSC intersection is described by the saturation headway or time between departures of successive vehicles on a given approach for a particular case assuming a continuous queue; departure headway or the average time between departures of successive vehicles on a given approach accounting for the probability of each possible case; and service time or the average time sent by a vehicle in first position waiting to depart.

At both TWSC and AWSC intersections, the level of service is based upon the control delay, as well as the corresponding volume-to-capacity ratio for each movement/lane group. For TWSC intersections, the level of service is not calculated for major-street approaches or for the intersection as a whole; however, the intersection-wide level of service is calculated for AWSC intersections. The following table provides a summary of the relationship between the level of service, control delay, and volume-to-capacity ratio for TWSC and AWSC intersections.

| Control Delay (Sec/Veh) | <u>LOS by Volume-to-Capacity Ratio</u> | |
|----------------------------|--|-------------|
| | $v/c \leq 1.0$ | $v/c > 1.0$ |
| ≤ 10 | A | F |
| > 10 – 15 | B | F |
| > 15 – 25 | C | F |
| > 25 – 35 | D | F |
| > 35 – 50 | E | F |
| > 50 | F | F |

Signalized Intersections

At three or four-legged signalized intersections, a methodology for evaluating the capacity and quality of service provided to road users traveling through the signalized intersection. For signalized intersections, the level of service can be characterized for the entire intersection, each approach, and each lane group. The level of service is based upon the control delay and volume-to-capacity ratio. The delay quantifies the increase in travel time due to the traffic signal control and is a surrogate measure of driver discomfort and fuel consumption, while the volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group. Input data in determining the delay and volume-to-capacity ratio include:

- Demand flow rate for each entering vehicular movement and pedestrian crossing movement, including right-turn on red volumes and percent of heavy vehicles;
- Initial queue for each lane group;
- Number and configuration of lanes on each approach;
- Type of signal control and phase sequence;
- Allocation of minimum/maximum green times and clearance intervals (Yellow plus All Red phases); and
- Phase recall.

At signalized intersections, the level of service is based upon the control delay, as well as the corresponding volume-to-capacity ratio for each movement/lane group. The following table provides a summary of the relationship between the level of service, control delay, and volume-to-capacity ratio for signalized intersections.

| Control Delay (Sec/Veh) | <u>LOS by Volume-to-Capacity Ratio</u> | |
|----------------------------|--|-------------|
| | $v/c \leq 1.0$ | $v/c > 1.0$ |
| ≤ 10 | A | F |
| > 10 – 20 | B | F |
| > 20 – 35 | C | F |
| > 35 – 55 | D | F |
| > 55 – 80 | E | F |
| > 80 | F | F |

APPENDIX E

**Existing Capacity/Level-of-Service
Analysis Worksheets**

Lanes, Volumes, Timings
4: Maple Street & Elm Street

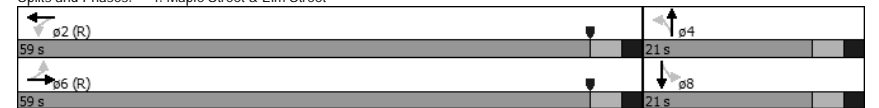
2015 Existing Conditions
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 18 | 398 | 2 | 7 | 256 | 8 | 12 | 9 | 49 | 39 | 1 | 63 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 14 | 12 | 10 | 13 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | | 2% | | | 0% | | | 1% | | | -1% | |
| Storage Length (ft) | 79 | | 0 | 75 | | 0 | 0 | | 0 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.98 | | | 0.98 | |
| Frt | | 0.999 | | | 0.995 | | | 0.906 | | | 0.917 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.992 | | | 0.981 | |
| Satd. Flow (prot) | 1491 | 1711 | 0 | 1400 | 1601 | 0 | 0 | 1574 | 0 | 0 | 1789 | 0 |
| Flt Permitted | 0.584 | | | 0.501 | | | | 0.918 | | | 0.865 | |
| Satd. Flow (perm) | 913 | 1711 | 0 | 737 | 1601 | 0 | 0 | 1455 | 0 | 0 | 1572 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 1 | | | 5 | | | 53 | | | | 68 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | | 25 |
| Link Distance (ft) | | 600 | | | 300 | | | 222 | | | | 228 |
| Travel Time (s) | | 16.4 | | | 8.2 | | | 6.1 | | | | 6.2 |
| Confl. Peds. (#/hr) | 7 | | 3 | 3 | | 7 | 4 | | 5 | 5 | | 4 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 6% | 11% | 0% | 14% | 16% | 0% | 0% | 0% | 0% | 0% | 0% | 2% |
| Adj. Flow (vph) | 20 | 433 | 2 | 8 | 278 | 9 | 13 | 10 | 53 | 42 | 1 | 68 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 20 | 435 | 0 | 8 | 287 | 0 | 0 | 76 | 0 | 0 | 111 | 0 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 1 | | 1 | 1 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | | 20 | 100 | | 20 | 15 | | 20 | 35 | |
| Trailing Detector (ft) | 0 | 0 | | 0 | 0 | | 0 | -5 | | 0 | -5 | |
| Detector 1 Position(ft) | 0 | 0 | | 0 | 0 | | 0 | -5 | | 0 | -5 | |
| Detector 1 Size(ft) | 20 | 6 | | 20 | 6 | | 20 | 20 | | 20 | 40 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | 94 | | | 94 | | | | | | | |
| Detector 2 Size(ft) | | 6 | | | 6 | | | | | | | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | | | | | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | | | | | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 6 | | | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | | 4 | | | 8 | | |
| Detector Phase | 6 | 6 | | 2 | 2 | | 4 | 4 | | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |

Lanes, Volumes, Timings
4: Maple Street & Elm Street

2015 Existing Conditions
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|--|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Total Split (s) | 59.0 | 59.0 | | 59.0 | 59.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |
| Total Split (%) | 73.8% | 73.8% | | 73.8% | 73.8% | | 26.3% | 26.3% | | 26.3% | 26.3% | |
| Maximum Green (s) | 54.0 | 54.0 | | 54.0 | 54.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 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 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| v/c Ratio | 0.03 | 0.31 | | 0.01 | 0.22 | | | 0.36 | | | 0.46 | |
| Control Delay | 3.5 | 3.8 | | 1.6 | 2.4 | | | 18.6 | | | 21.0 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.3 | | | 0.0 | | | 0.0 | |
| Total Delay | 3.5 | 3.8 | | 1.6 | 2.7 | | | 18.6 | | | 21.0 | |
| Queue Length 50th (ft) | 2 | 43 | | 0 | 39 | | | 11 | | | 20 | |
| Queue Length 95th (ft) | m8 | 88 | | 2 | 82 | | | 46 | | | 63 | |
| Internal Link Dist (ft) | | 520 | | | 220 | | | 142 | | | 148 | |
| Turn Bay Length (ft) | 79 | | | 75 | | | | | | | | |
| Base Capacity (vph) | 749 | 1405 | | 605 | 1315 | | | 350 | | | 387 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 557 | | | 0 | | | 0 | |
| Spillback Cap Reductn | 0 | 8 | | 0 | 0 | | | 0 | | | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | | 0 | | | 0 | |
| Reduced v/c Ratio | 0.03 | 0.31 | | 0.01 | 0.38 | | | 0.22 | | | 0.29 | |
| Intersection Summary | | | | | | | | | | | | |
| Area Type: | Other | | | | | | | | | | | |
| Cycle Length: | 80 | | | | | | | | | | | |
| Actuated Cycle Length: | 80 | | | | | | | | | | | |
| Offset: | 31 (39%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow | | | | | | | | | | | |
| Natural Cycle: | 45 | | | | | | | | | | | |
| Control Type: | Actuated-Coordinated | | | | | | | | | | | |
| m | Volume for 95th percentile queue is metered by upstream signal. | | | | | | | | | | | |
| Splits and Phases: | 4: Maple Street & Elm Street | | | | | | | | | | | |



HCM 2010 Signalized Intersection Summary
4: Maple Street & Elm Street

2015 Existing Conditions
Weekday Morning Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 18 | 398 | 2 | 7 | 256 | 8 | 12 | 9 | 49 | 39 | 1 | 63 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 | 0.98 | | 0.96 | 0.98 | | 0.96 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1681 | 1670 | 1782 | 1579 | 1621 | 1800 | 1791 | 1791 | 1791 | 1809 | 1859 | 1809 |
| Adj Flow Rate, veh/h | 20 | 433 | 2 | 8 | 278 | 9 | 13 | 10 | 38 | 42 | 1 | 36 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 6 | 11 | 11 | 14 | 16 | 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap, veh/h | 889 | 1357 | 6 | 746 | 1275 | 41 | 74 | 31 | 83 | 133 | 8 | 60 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.07 | 0.08 | 0.07 | 0.07 | 0.08 | 0.07 |
| Sat Flow, veh/h | 979 | 1661 | 8 | 803 | 1561 | 51 | 233 | 370 | 995 | 769 | 97 | 725 |
| Grp Volume(v), veh/h | 20 | 0 | 435 | 8 | 0 | 287 | 61 | 0 | 0 | 79 | 0 | 0 |
| Grp Sat Flow(s), veh/h/ln | 979 | 0 | 1669 | 803 | 0 | 1612 | 1597 | 0 | 0 | 1591 | 0 | 0 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.9 | 0.0 | 0.0 | 3.6 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.00 | 1.00 | | 0.03 | 0.21 | | 0.62 | 0.53 | | 0.46 |
| Lane Grp Cap(c), veh/h | 889 | 0 | 1363 | 746 | 0 | 1316 | 168 | 0 | 0 | 181 | 0 | 0 |
| V/C Ratio(X) | 0.02 | 0.00 | 0.32 | 0.01 | 0.00 | 0.22 | 0.36 | 0.00 | 0.00 | 0.44 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 889 | 0 | 1363 | 746 | 0 | 1316 | 357 | 0 | 0 | 364 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.87 | 0.00 | 0.87 | 0.99 | 0.00 | 0.99 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 35.4 | 0.0 | 0.0 | 35.7 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 | 0.4 | 1.3 | 0.0 | 0.0 | 1.6 | 0.0 | 0.0 |
| 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 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.2 | 2.5 | 0.0 | 0.0 | 3.3 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 | 0.4 | 36.7 | 0.0 | 0.0 | 37.3 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | | A | D | | | D | | |
| Approach Vol, veh/h | 455 | | | 295 | | | 61 | | | 79 | | |
| Approach Delay, s/veh | 0.5 | | | 0.4 | | | 36.7 | | | 37.3 | | |
| Approach LOS | A | | | A | | | D | | | D | | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 2 | | 4 | | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc), s | 69.3 | | 10.7 | | 69.3 | | 10.7 | | | | | |
| Change Period (Y+Rc), s | 5.0 | | 5.0 | | 5.0 | | 5.0 | | | | | |
| Max Green Setting (Gmax), s | 54.0 | | 16.0 | | 54.0 | | 16.0 | | | | | |
| Max Q Clear Time (g_c+1t1), s | 2.5 | | 4.9 | | 2.5 | | 5.6 | | | | | |
| Green Ext Time (p_c), s | 5.9 | | 0.3 | | 5.9 | | 0.3 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | 6.2 | | | | | | | | | | | |
| HCM 2010 LOS | A | | | | | | | | | | | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

2015 Existing Conditions
Weekday Morning Peak Hour

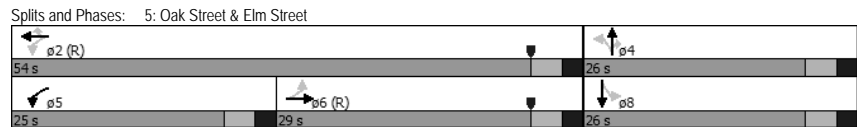
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 13 | 433 | 45 | 19 | 246 | 2 | 15 | 4 | 66 | 3 | 18 | 21 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 13 | 12 | 10 | 11 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Grade (%) | | 7% | | | -9% | | | 0% | | | 0% | |
| Storage Length (ft) | 77 | | 0 | 95 | | 95 | 0 | | 95 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 1 | 0 | | 1 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | 75 | | | 75 | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.99 | 1.00 | | 1.00 | | 0.98 | | 1.00 | 0.97 | | 0.99 | |
| Frt | | 0.986 | | | | 0.850 | | | 0.850 | | | 0.932 |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.962 | | | | 0.997 |
| Satd. Flow (prot) | 1540 | 1579 | 0 | 1573 | 1623 | 1599 | 0 | 1674 | 1457 | 0 | 1875 | 0 |
| Flt Permitted | 0.599 | | | 0.401 | | | | 0.774 | | | | 0.982 |
| Satd. Flow (perm) | 966 | 1579 | 0 | 663 | 1623 | 1561 | 0 | 1345 | 1418 | 0 | 1846 | 0 |
| Right Turn on Red | | Yes | | | | Yes | | | No | | | No |
| Satd. Flow (RTOR) | | 7 | | | | 27 | | | | | | |
| Link Speed (mph) | 25 | | | 25 | | | 25 | | | 25 | | |
| Link Distance (ft) | 300 | | | 550 | | | 247 | | | 248 | | |
| Travel Time (s) | 8.2 | | | 15.0 | | | 6.7 | | | 6.8 | | |
| Conf. Peds. (#/hr) | 5 | | 4 | 4 | | 5 | 1 | | 4 | 4 | | 1 |
| 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% | 13% | 0% | 6% | 12% | 0% | 0% | 0% | 5% | 0% | 0% | 0% |
| Adj. Flow (vph) | 14 | 456 | 47 | 20 | 259 | 2 | 16 | 4 | 69 | 3 | 19 | 22 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 14 | 503 | 0 | 20 | 259 | 2 | 0 | 20 | 69 | 0 | 44 | 0 |
| Number of Detectors | 1 | 2 | | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Detector Template | Left | Thru | | Left | Thru | Right | Left | Thru | Right | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | | 35 | 100 | 20 | 20 | 35 | 35 | 20 | 35 | |
| Trailing Detector (ft) | 0 | 0 | | -5 | 0 | 0 | 0 | -5 | -5 | 0 | -5 | |
| Detector 1 Position(ft) | 0 | 0 | | -5 | 0 | 0 | 0 | -5 | -5 | 0 | -5 | |
| Detector 1 Size(ft) | 20 | 6 | | 40 | 6 | 20 | 20 | 40 | 40 | 20 | 40 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 2 Position(ft) | 94 | | | 94 | | | | | | | | |
| Detector 2 Size(ft) | 6 | | | 6 | | | | | | | | |
| Detector 2 Type | Cl+Ex | | | Cl+Ex | | | | | | | | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | 0.0 | | | 0.0 | | | | | | | | |
| Turn Type | Perm | NA | | pm+pt | NA | Perm | Perm | NA | Perm | Perm | NA | |
| Protected Phases | 6 | | 5 | | 2 | | 4 | | 4 | | 8 | |
| Permitted Phases | 6 | | 2 | | 2 | | 4 | | 4 | | 8 | |
| Detector Phase | 6 | 6 | | 5 | 2 | 2 | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 13.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

2015 Existing Conditions
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Split (s) | 29.0 | 29.0 | | 25.0 | 54.0 | 54.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Total Split (%) | 36.3% | 36.3% | | 31.3% | 67.5% | 67.5% | 32.5% | 32.5% | 32.5% | 32.5% | 32.5% | 32.5% |
| Maximum Green (s) | 24.0 | 24.0 | | 20.0 | 49.0 | 49.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | | -1.0 | -1.0 | -1.0 | | -1.0 | -1.0 | | -1.0 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lead/Lag | Lag | Lag | | Lead | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | C-Max | C-Max | | None | C-Max | C-Max | None | None | None | None | None | None |
| v/c Ratio | 0.02 | 0.42 | | 0.03 | 0.20 | 0.00 | 0.12 | 0.38 | 0.18 | 0.38 | 0.18 | 0.18 |
| Control Delay | 4.4 | 5.1 | | 2.8 | 3.1 | 0.0 | 30.6 | 36.9 | 31.5 | 31.5 | 31.5 | 31.5 |
| Queue Delay | 0.0 | 0.4 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 4.4 | 5.5 | | 2.8 | 3.1 | 0.0 | 30.6 | 36.9 | 31.5 | 31.5 | 31.5 | 31.5 |
| Queue Length 50th (ft) | 1 | 21 | | 2 | 26 | 0 | 9 | 32 | 20 | 20 | 20 | 20 |
| Queue Length 95th (ft) | m6 | 137 | | 7 | 58 | 0 | 27 | 67 | 46 | 46 | 46 | 46 |
| Internal Link Dist (ft) | | 220 | | | 470 | | 167 | | 168 | | 168 | |
| Turn Bay Length (ft) | 77 | | | 95 | | 95 | | 95 | | | | |
| Base Capacity (vph) | 725 | 1187 | | 767 | 1310 | 1265 | 369 | 389 | 507 | 507 | 507 | 507 |
| Starvation Cap Reductn | 0 | 264 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.02 | 0.54 | | 0.03 | 0.20 | 0.00 | 0.05 | 0.18 | 0.09 | 0.09 | 0.09 | 0.09 |

| Intersection Summary | |
|------------------------|--|
| Area Type: | Other |
| Cycle Length: | 80 |
| Actuated Cycle Length: | 80 |
| Offset: | 15 (19%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow |
| Natural Cycle: | 60 |
| Control Type: | Actuated-Coordinated |
| m | Volume for 95th percentile queue is metered by upstream signal. |



HCM 2010 Signalized Intersection Summary
5: Oak Street & Elm Street

2015 Existing Conditions
Weekday Morning Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 13 | 433 | 45 | 19 | 246 | 2 | 15 | 4 | 66 | 3 | 18 | 21 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 | 0.98 | | 0.98 | 0.98 | | 0.97 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1737 | 1616 | 1737 | 1775 | 1679 | 1881 | 1800 | 1800 | 1714 | 1800 | 1872 | 1800 |
| Adj Flow Rate, veh/h | 14 | 456 | 45 | 20 | 259 | 1 | 16 | 4 | 63 | 3 | 19 | 14 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
| 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 | 13 | 13 | 6 | 12 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| Cap, veh/h | 857 | 1070 | 106 | 762 | 1370 | 1300 | 170 | 35 | 120 | 55 | 82 | 56 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 0.03 | 0.82 | 0.82 | 0.07 | 0.08 | 0.08 | 0.07 | 0.08 | 0.07 |
| Sat Flow, veh/h | 1037 | 1447 | 143 | 1690 | 1679 | 1594 | 1051 | 418 | 1423 | 69 | 972 | 662 |
| Grp Volume(v), veh/h | 14 | 0 | 501 | 20 | 259 | 1 | 20 | 0 | 63 | 36 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 1037 | 0 | 1590 | 1690 | 1679 | 1594 | 1469 | 0 | 1423 | 1703 | 0 | 0 |
| Q Serve(g,s) | 0.0 | 0.0 | 0.0 | 0.2 | 2.7 | 0.0 | 0.0 | 0.0 | 3.4 | 0.0 | 0.0 | 0.0 |
| Cycle Q Clear(g,c), s | 0.0 | 0.0 | 0.0 | 0.2 | 2.7 | 0.0 | 0.9 | 0.0 | 3.4 | 1.6 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.09 | 1.00 | | 1.00 | 0.80 | | 1.00 | 0.08 | | 0.39 |
| Lane Grp Cap(c), veh/h | 857 | 0 | 1176 | 762 | 1370 | 1300 | 187 | 0 | 120 | 171 | 0 | 0 |
| V/C Ratio(X) | 0.02 | 0.00 | 0.43 | 0.03 | 0.19 | 0.00 | 0.11 | 0.00 | 0.52 | 0.21 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 857 | 0 | 1176 | 1162 | 1370 | 1300 | 448 | 0 | 391 | 490 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 0.96 | 0.00 | 0.96 | 0.27 | 0.27 | 0.27 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 1.7 | 1.6 | 1.4 | 34.3 | 0.0 | 35.1 | 34.5 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.0 | 0.0 | 1.1 | 0.0 | 0.1 | 0.0 | 0.2 | 0.0 | 3.5 | 0.6 | 0.0 | 0.0 |
| 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 | 0.0 | 0.0 | 0.6 | 0.2 | 2.2 | 0.0 | 0.8 | 0.0 | 2.6 | 1.4 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.0 | 0.0 | 1.1 | 1.7 | 1.7 | 1.4 | 34.5 | 0.0 | 38.6 | 35.1 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | A | A | C | | D | D | | |
| Approach Vol, veh/h | | 515 | | | 280 | | | 83 | | | | 36 |
| Approach Delay, s/veh | | 1.1 | | | 1.7 | | | 37.6 | | | | 35.1 |
| Approach LOS | | A | | | A | | | D | | | | D |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | | 4 | 5 | 6 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 69.2 | | | 10.8 | 6.1 | 63.2 | 10.8 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | | 5.0 | 5.0 | 5.0 | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 49.0 | | | 21.0 | 20.0 | 24.0 | 21.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 5.2 | | | 5.9 | 2.7 | 2.5 | 3.6 | | | | |
| Green Ext Time (p_c), s | | 6.3 | | | 0.3 | 0.0 | 5.4 | 0.3 | | | | |

| Intersection Summary | |
|----------------------|-----|
| HCM 2010 Ctrl Delay | 5.9 |
| HCM 2010 LOS | A |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2015 Existing Conditions
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↑ | ↘ | ↔ | ↘ | ↘ | ↔ | ↑ | ↘ | ↘ | ↓ | ↘ |
| Volume (vph) | 26 | 28 | 458 | 510 | 54 | 23 | 289 | 453 | 834 | 23 | 1088 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | | 2% | | | -5% | | | 5% | | | | 0% |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 1 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | | | | 1.00 | 1.00 | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.956 | | | | 0.850 | | 0.995 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1411 | 1445 | 1402 | 3081 | 1653 | 0 | 1415 | 3022 | 1511 | 1539 | 3179 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.138 | | | 0.488 | | |
| Satd. Flow (perm) | 1405 | 1445 | 1402 | 3081 | 1653 | 0 | 205 | 3022 | 1479 | 790 | 3179 | 0 |
| Right Turn on Red | | | No | | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 842 | | | 4 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | | 25 |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | | 462 |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | | 12.6 |
| Conf. Peds. (#/hr) | 2 | | | | | 2 | 7 | | 2 | 2 | | 7 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Heavy Vehicles (%) | 16% | 11% | 8% | 3% | 0% | 9% | 10% | 3% | 2% | 0% | 3% | 14% |
| Adj. Flow (vph) | 26 | 28 | 463 | 515 | 55 | 23 | 292 | 458 | 842 | 23 | 1099 | 38 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 26 | 28 | 463 | 515 | 78 | 0 | 292 | 458 | 842 | 23 | 1137 | 0 |
| Number of Detectors | 1 | 1 | 1 | 1 | 1 | | 1 | 2 | 1 | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | Right | Left | Thru | |
| Leading Detector (ft) | 35 | 35 | 35 | 35 | 35 | | 30 | 100 | 20 | 20 | 100 | |
| Trailing Detector (ft) | -5 | -5 | -5 | -5 | -5 | | -10 | 0 | 0 | 0 | 0 | |
| Detector 1 Position(ft) | -5 | -5 | -5 | -5 | -5 | | -10 | 0 | 0 | 0 | 0 | |
| Detector 1 Size(ft) | 40 | 40 | 40 | 40 | 40 | | 40 | 6 | 20 | 20 | 6 | |
| Detector 1 Type | CI+Ex | CI+Ex | CI+Ex | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | CI+Ex | CI+Ex | CI+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | | | | | | | | 94 | | 94 | |
| Detector 2 Size(ft) | | | | | | | | | 6 | | 6 | |
| Detector 2 Type | | | | | | | | | CI+Ex | | CI+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | | | | | | | | 0.0 | | 0.0 | |
| Turn Type | Split | NA | pm+ov | Split | NA | | pm+pt | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | 8 | | | | 6 | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

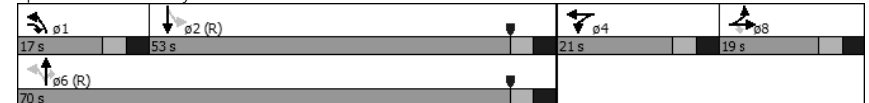
2015 Existing Conditions
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Total Split (s) | 19.0 | 19.0 | 17.0 | 21.0 | 21.0 | | 17.0 | 70.0 | 70.0 | 53.0 | 53.0 | |
| Total Split (%) | 17.3% | 17.3% | 15.5% | 19.1% | 19.1% | | 15.5% | 63.6% | 63.6% | 48.2% | 48.2% | |
| Maximum Green (s) | 13.0 | 13.0 | 11.0 | 15.0 | 15.0 | | 11.0 | 64.0 | 64.0 | 47.0 | 47.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |
| v/c Ratio | 0.23 | 0.24 | 1.73 | 1.15 | 0.33 | | 1.08 | 0.22 | 0.66 | 0.06 | 0.68 | |
| Control Delay | 51.6 | 51.9 | 375.1 | 132.9 | 46.4 | | 97.9 | 7.8 | 3.5 | 16.1 | 23.1 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Total Delay | 51.6 | 51.9 | 375.1 | 132.9 | 46.4 | | 97.9 | 7.8 | 3.5 | 16.1 | 23.1 | |
| Queue Length 50th (ft) | 18 | 19 | -442 | -221 | 50 | | -154 | 66 | 0 | 8 | 326 | |
| Queue Length 95th (ft) | 45 | 47 | #615 | #327 | 97 | | #336 | 98 | 46 | 25 | 433 | |
| Internal Link Dist (ft) | | 470 | | | 350 | | | 372 | | | 382 | |
| Turn Bay Length (ft) | 135 | | 202 | 135 | | | 266 | | 130 | 276 | | |
| Base Capacity (vph) | 179 | 183 | 267 | 448 | 240 | | 271 | 2061 | 1276 | 416 | 1678 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Reduced v/c Ratio | 0.15 | 0.15 | 1.73 | 1.15 | 0.33 | | 1.08 | 0.22 | 0.66 | 0.06 | 0.68 | |

Intersection Summary

- Area Type: Other
- Cycle Length: 110
- Actuated Cycle Length: 110
- Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow
- Natural Cycle: 105
- Control Type: Actuated-Coordinated
- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

Splits and Phases: 6: Fayette Street & Elm Street



HCM 2010 Signalized Intersection Summary
6: Fayette Street & Elm Street

2015 Existing Conditions
Weekday Morning Peak Hour

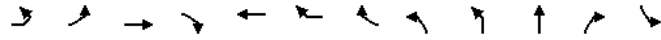
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|-------|------|-------|-------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ |
| Volume (veh/h) | 26 | 28 | 458 | 510 | 54 | 23 | 289 | 453 | 834 | 23 | 1088 | 38 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), 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 | | 0.99 | 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 |
| Adj Sat Flow, veh/h/ln | 1536 | 1541 | 1650 | 1791 | 1797 | 1845 | 1595 | 1704 | 1789 | 1728 | 1741 | 1800 |
| Adj Flow Rate, veh/h | 26 | 28 | 375 | 515 | 55 | 23 | 292 | 458 | 681 | 23 | 1099 | 38 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Percent Heavy Veh, % | 16 | 11 | 8 | 3 | 0 | 0 | 10 | 3 | 2 | 0 | 3 | 3 |
| Cap, veh/h | 186 | 196 | 331 | 481 | 175 | 73 | 294 | 1913 | 893 | 264 | 1423 | 49 |
| Arrive On Green | 0.13 | 0.13 | 0.13 | 0.15 | 0.15 | 0.14 | 0.11 | 0.59 | 0.59 | 0.44 | 0.44 | 0.43 |
| Sat Flow, veh/h | 1463 | 1541 | 1396 | 3310 | 1203 | 503 | 1519 | 3237 | 1512 | 456 | 3262 | 113 |
| Grp Volume(v), veh/h | 26 | 28 | 375 | 515 | 0 | 78 | 292 | 458 | 681 | 23 | 557 | 580 |
| Grp Sat Flow(s),veh/h/ln | 1463 | 1541 | 1396 | 1655 | 0 | 1706 | 1519 | 1619 | 1512 | 456 | 1654 | 1720 |
| Q Serve(g_s), s | 1.7 | 1.8 | 14.0 | 16.0 | 0.0 | 4.5 | 11.8 | 7.4 | 36.9 | 3.3 | 31.5 | 31.5 |
| Cycle Q Clear(g_c), s | 1.7 | 1.8 | 14.0 | 16.0 | 0.0 | 4.5 | 11.8 | 7.4 | 36.9 | 3.3 | 31.5 | 31.5 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.29 | 1.00 | | 1.00 | 1.00 | | 0.07 |
| Lane Grp Cap(c), veh/h | 186 | 196 | 331 | 481 | 0 | 248 | 294 | 1913 | 893 | 264 | 722 | 751 |
| V/C Ratio(X) | 0.14 | 0.14 | 1.13 | 1.07 | 0.00 | 0.31 | 0.99 | 0.24 | 0.76 | 0.09 | 0.77 | 0.77 |
| Avail Cap(c_a), veh/h | 186 | 196 | 331 | 481 | 0 | 248 | 294 | 1913 | 893 | 264 | 722 | 751 |
| 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) | 0.91 | 0.91 | 0.91 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 42.6 | 42.7 | 42.0 | 47.0 | 0.0 | 42.2 | 23.6 | 10.7 | 16.7 | 18.4 | 26.3 | 26.4 |
| Incr Delay (d2), s/veh | 0.3 | 0.3 | 88.9 | 61.0 | 0.0 | 0.7 | 50.0 | 0.3 | 6.1 | 0.6 | 7.8 | 7.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 1.3 | 1.4 | 32.7 | 20.5 | 0.0 | 3.9 | 18.8 | 6.1 | 23.6 | 0.8 | 22.3 | 23.2 |
| LnGrp Delay(d),s/veh | 43.0 | 43.0 | 130.9 | 108.0 | 0.0 | 42.9 | 73.6 | 11.0 | 22.9 | 19.0 | 34.2 | 34.0 |
| LnGrp LOS | D | D | F | F | | D | E | B | C | B | C | C |
| Approach Vol, veh/h | 429 | | | 593 | | | 1431 | | | 1160 | | |
| Approach Delay, s/veh | 119.8 | | | 99.4 | | | 29.4 | | | 33.8 | | |
| Approach LOS | F | | | F | | | C | | | C | | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | 4 | | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc), s | 17.0 | 53.0 | 21.0 | | 70.0 | | 19.0 | | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | | 6.0 | | 6.0 | | | | | |
| Max Green Setting (Gmax), s | 11.0 | 47.0 | 15.0 | | 64.0 | | 13.0 | | | | | |
| Max Q Clear Time (g_c+I1), s | 14.3 | 34.0 | 18.5 | | 39.4 | | 16.5 | | | | | |
| Green Ext Time (p_c), s | 0.0 | 10.2 | 0.0 | | 16.8 | | 0.0 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | 53.0 | | | | | | | | | | | |
| HCM 2010 LOS | D | | | | | | | | | | | |

Lanes, Volumes, Timings

3: Access/Wood Street & Elm Street & Colwell Street

2015 Existing Conditions

Weekday Morning Peak Hour



| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|-------|-------|-------|------|-------|------|------|-------|-------|-------|------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 51 | 0 | 239 | 31 | 230 | 130 | 7 | 3 | 14 | 0 | 2 | 6 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 12 | 14 | 12 | 16 | 12 | 12 | 12 | 15 | 12 | 12 | 12 |
| Grade (%) | | | 0% | | 0% | | | | | -2% | | |
| Storage Length (ft) | | 78 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Storage Lanes | | 1 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Taper Length (ft) | | 75 | | | | | | | 75 | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 1.00 | | | | | | 1.00 | | | |
| Frt | | | 0.983 | | 0.950 | | | | 0.986 | | | |
| Flt Protected | | 0.950 | | | | | | | 0.957 | | | |
| Satd. Flow (prot) | 0 | 1613 | 1688 | 0 | 1765 | 0 | 0 | 0 | 0 | 1710 | 0 | 0 |
| Flt Permitted | | 0.468 | | | | | | | 0.634 | | | |
| Satd. Flow (perm) | 0 | 795 | 1688 | 0 | 1765 | 0 | 0 | 0 | 0 | 1133 | 0 | 0 |
| Right Turn on Red | | | | No | | | No | | | | No | |
| Satd. Flow (RTOR) | | | | | | | | | | | | |
| Link Speed (mph) | | | 25 | | 25 | | | | | 25 | | |
| Link Distance (ft) | | | 571 | | 600 | | | | | 211 | | |
| Travel Time (s) | | | 15.6 | | 16.4 | | | | | 5.8 | | |
| Confl. Peds. (#/hr) | | | | 1 | | | | | | | 6 | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 6% | 2% | 13% | 0% | 11% | 8% | 2% | 0% | 0% | 2% | 0% | 2% |
| Adj. Flow (vph) | 54 | 0 | 254 | 33 | 245 | 138 | 7 | 3 | 15 | 0 | 2 | 6 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 54 | 287 | 0 | 390 | 0 | 0 | 0 | 0 | 20 | 0 | 0 |
| Number of Detectors | 1 | 1 | 2 | | 2 | | | 1 | 1 | 2 | | 1 |
| Detector Template | Left | Left | Thru | | Thru | | | Left | Left | Thru | | Left |
| Leading Detector (ft) | 20 | 20 | 100 | | 100 | | | 20 | 20 | 100 | | 20 |
| Trailing Detector (ft) | 0 | 0 | 0 | | 0 | | | 0 | 0 | 0 | | 0 |
| Detector 1 Position(ft) | 0 | 0 | 0 | | 0 | | | 0 | 0 | 0 | | 0 |
| Detector 1 Size(ft) | 20 | 20 | 6 | | 6 | | | 20 | 20 | 6 | | 20 |
| Detector 1 Type | CI+Ex | CI+Ex | CI+Ex | | CI+Ex | | | CI+Ex | CI+Ex | CI+Ex | | CI+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 2 Position(ft) | | | 94 | | 94 | | | | | 94 | | |
| Detector 2 Size(ft) | | | 6 | | 6 | | | | | 6 | | |
| Detector 2 Type | | | CI+Ex | | CI+Ex | | | | | CI+Ex | | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | | 0.0 | | 0.0 | | | | | 0.0 | | |
| Turn Type | Perm | Perm | NA | | NA | | | Perm | Perm | NA | | Perm |
| Protected Phases | | | 6 | | 2 | | | | | 4 | | |
| Permitted Phases | 6 | 6 | | | | | | 4 | 4 | | | 9 |
| Detector Phase | 6 | 6 | 6 | | 2 | | | 4 | 4 | 4 | | 9 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | | 21.0 | | | 21.0 | 21.0 | 21.0 | | 21.0 |

Lanes, Volumes, Timings

3: Access/Wood Street & Elm Street & Colwell Street

2015 Existing Conditions

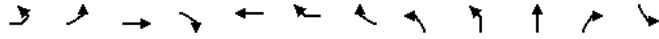
Weekday Morning Peak Hour



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|-------|------|-------|------|------|
| Lane Configurations | | | | | |
| Volume (vph) | 0 | 6 | 178 | 13 | 38 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | 2% | | |
| Storage Length (ft) | | 0 | 0 | 0 | 0 |
| Storage Lanes | | 0 | 1 | 0 | 0 |
| Taper Length (ft) | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 0.99 | | |
| Frt | 0.932 | | 0.970 | | |
| Flt Protected | 0.976 | | 0.963 | | |
| Satd. Flow (prot) | 1605 | 0 | 1477 | 0 | 0 |
| Flt Permitted | | | 0.963 | | |
| Satd. Flow (perm) | 1645 | 0 | 1466 | 0 | 0 |
| Right Turn on Red | | | | | No |
| Satd. Flow (RTOR) | | | | | |
| Link Speed (mph) | 25 | | 25 | | |
| Link Distance (ft) | 274 | | 302 | | |
| Travel Time (s) | 7.5 | | 8.2 | | |
| Confl. Peds. (#/hr) | | | 6 | | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 2% | 2% | 14% | 0% | 11% |
| Adj. Flow (vph) | 0 | 6 | 189 | 14 | 40 |
| Shared Lane Traffic (%) | | | | | |
| Lane Group Flow (vph) | 12 | 0 | 243 | 0 | 0 |
| Number of Detectors | 2 | | 1 | | |
| Detector Template | Thru | | Left | | |
| Leading Detector (ft) | 100 | | 20 | | |
| Trailing Detector (ft) | 0 | | 0 | | |
| Detector 1 Position(ft) | 0 | | 0 | | |
| Detector 1 Size(ft) | 6 | | 20 | | |
| Detector 1 Type | CI+Ex | | CI+Ex | | |
| Detector 1 Channel | | | | | |
| Detector 1 Extend (s) | 0.0 | | 0.0 | | |
| Detector 1 Queue (s) | 0.0 | | 0.0 | | |
| Detector 1 Delay (s) | 0.0 | | 0.0 | | |
| Detector 2 Position(ft) | | | 94 | | |
| Detector 2 Size(ft) | | | 6 | | |
| Detector 2 Type | | | CI+Ex | | |
| Detector 2 Channel | | | | | |
| Detector 2 Extend (s) | | | 0.0 | | |
| Turn Type | NA | | Perm | | |
| Protected Phases | 9 | | | | |
| Permitted Phases | | | 8 | | |
| Detector Phase | 9 | | 8 | | |
| Switch Phase | | | | | |
| Minimum Initial (s) | 3.0 | | 3.0 | | |
| Minimum Split (s) | 21.0 | | 21.0 | | |

Lanes, Volumes, Timings
3: Access/Wood Street & Elm Street & Colwell Street

2015 Existing Conditions
Weekday Morning Peak Hour

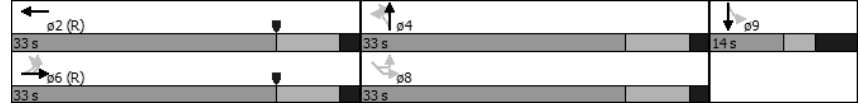


| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|-------|-------|-------|-------|-------|-----|------|-------|-------|-------|-----|-------|
| Total Split (s) | 33.0 | 33.0 | 33.0 | 33.0 | 33.0 | | | 33.0 | 33.0 | 33.0 | | 14.0 |
| Total Split (%) | 41.3% | 41.3% | 41.3% | 41.3% | | | | 41.3% | 41.3% | 41.3% | | 17.5% |
| Maximum Green (s) | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | | | 25.0 | 25.0 | 25.0 | | 7.0 |
| Yellow Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | | | 2.0 | 2.0 | 2.0 | | 4.0 |
| Lost Time Adjust (s) | | -1.0 | -1.0 | -1.0 | -1.0 | | | | | -1.0 | | |
| Total Lost Time (s) | | 7.0 | 7.0 | 7.0 | 7.0 | | | | | 7.0 | | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Recall Mode | C-Max | C-Max | C-Max | C-Max | C-Max | | | None | None | None | | None |
| v/c Ratio | 0.12 | 0.31 | 0.31 | 0.40 | 0.40 | | | 0.07 | 0.07 | 0.07 | | 0.07 |
| Control Delay | | 14.2 | 14.0 | 11.9 | 11.9 | | | | | 21.3 | | |
| Queue Delay | | 0.0 | 0.0 | 0.0 | 0.0 | | | | | 0.0 | | |
| Total Delay | | 14.2 | 14.0 | 11.9 | 11.9 | | | | | 21.3 | | |
| Queue Length 50th (ft) | | 11 | 66 | 76 | 76 | | | | | 8 | | |
| Queue Length 95th (ft) | | 48 | 191 | 196 | 196 | | | | | 22 | | |
| Internal Link Dist (ft) | | | 491 | 520 | 520 | | | | | 131 | | |
| Turn Bay Length (ft) | | 78 | | | | | | | | | | |
| Base Capacity (vph) | | 435 | 925 | 967 | 967 | | | | | 368 | | |
| Starvation Cap Reductn | | 0 | 0 | 0 | 0 | | | | | 0 | | |
| Spillback Cap Reductn | | 0 | 0 | 0 | 0 | | | | | 0 | | |
| Storage Cap Reductn | | 0 | 0 | 0 | 0 | | | | | 0 | | |
| Reduced v/c Ratio | | 0.12 | 0.31 | 0.40 | 0.40 | | | | | 0.05 | | |

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Access/Wood Street & Elm Street & Colwell Street



Lanes, Volumes, Timings
3: Access/Wood Street & Elm Street & Colwell Street

2015 Existing Conditions
Weekday Morning Peak Hour



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|-------|-------|-----|-----|------|
| Total Split (s) | 14.0 | 33.0 | | | |
| Total Split (%) | 17.5% | 41.3% | | | |
| Maximum Green (s) | 7.0 | 25.0 | | | |
| Yellow Time (s) | 3.0 | 6.0 | | | |
| All-Red Time (s) | 4.0 | 2.0 | | | |
| Lost Time Adjust (s) | -1.0 | -1.0 | | | |
| Total Lost Time (s) | 6.0 | 7.0 | | | |
| Lead/Lag | | | | | |
| Lead-Lag Optimize? | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | | |
| Recall Mode | None | None | | | |
| v/c Ratio | 0.08 | 0.69 | | | |
| Control Delay | 34.3 | 37.1 | | | |
| Queue Delay | 0.0 | 0.0 | | | |
| Total Delay | 34.3 | 37.1 | | | |
| Queue Length 50th (ft) | 6 | 110 | | | |
| Queue Length 95th (ft) | 21 | 167 | | | |
| Internal Link Dist (ft) | 194 | 222 | | | |
| Turn Bay Length (ft) | | | | | |
| Base Capacity (vph) | 164 | 476 | | | |
| Starvation Cap Reductn | 0 | 0 | | | |
| Spillback Cap Reductn | 0 | 0 | | | |
| Storage Cap Reductn | 0 | 0 | | | |
| Reduced v/c Ratio | 0.07 | 0.51 | | | |

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
1: Corson Street & Elm Street

2015 Existing Conditions
Weekday Morning Peak Hour

| | ↖ | → | ↘ | ↙ | ← | ↖ | ↙ | ↘ | ↙ | ↘ | ↙ | ↘ |
|-----------------------------|--------------|------|------|------|------|-------|------|------|------|------|------|------|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | ↕ | | |
| Volume (vph) | 0 | 299 | 0 | 1 | 266 | 2 | 0 | 0 | 0 | 17 | 0 | 4 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 11 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | | 1% | | | 0% | | | 0% | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | 0.999 | | | | | 0.975 | | | | | | |
| Flt Protected | 0.961 | | | | | | | | | | | |
| Satd. Flow (prot) | 0 | 1625 | 0 | 0 | 1864 | 0 | 0 | 1900 | 0 | 0 | 2018 | 0 |
| Flt Permitted | 0.961 | | | | | | | | | | | |
| Satd. Flow (perm) | 0 | 1625 | 0 | 0 | 1864 | 0 | 0 | 1900 | 0 | 0 | 2018 | 0 |
| Link Speed (mph) | 25 | | 25 | | 25 | | 25 | | 25 | | 25 | |
| Link Distance (ft) | 275 | | 276 | | 219 | | 188 | | 188 | | 188 | |
| Travel Time (s) | 7.5 | | 7.5 | | 6.0 | | 5.1 | | 5.1 | | 5.1 | |
| Confl. Peds. (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles (%) | 0% | 13% | 0% | 0% | 15% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 0 | 322 | 0 | 1 | 286 | 2 | 0 | 0 | 0 | 18 | 0 | 4 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 322 | 0 | 0 | 289 | 0 | 0 | 0 | 0 | 0 | 22 | 0 |
| Sign Control | Free | | Free | | Stop | | Stop | | Stop | | Stop | |
| Intersection Summary | | | | | | | | | | | | |
| Area Type: | Other | | | | | | | | | | | |
| Control Type: | Unsignalized | | | | | | | | | | | |

HCM 2010 TWSC
1: Corson Street & Elm Street

2015 Existing Conditions
Weekday Morning Peak Hour

| Intersection | | | | | | | | | | | | |
|------------------------------|--------|------|------|--------|-------|------|--------|-------|------|--------|------|------|
| Int Delay, s/veh | 0.4 | | | | | | | | | | | |
| Movement | | | | | | | | | | | | |
| | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 0 | 299 | 0 | 1 | 266 | 2 | 0 | 0 | 0 | 17 | 0 | 4 |
| Conflicting Peds, #/hr | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 13 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 322 | 0 | 1 | 286 | 2 | 0 | 0 | 0 | 18 | 0 | 4 |
| Major/Minor | | | | | | | | | | | | |
| | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
| Conflicting Flow All | 288 | 0 | 0 | 322 | 0 | 0 | 613 | 612 | 323 | 611 | 611 | 288 |
| Stage 1 | - | - | - | - | - | - | 322 | 322 | - | 289 | 289 | - |
| Stage 2 | - | - | - | - | - | - | 291 | 290 | - | 322 | 322 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 957 | - | - | 931 | - | - | 457 | 411 | 763 | 459 | 411 | 798 |
| Stage 1 | - | - | - | - | - | - | 793 | 655 | - | 827 | 677 | - |
| Stage 2 | - | - | - | - | - | - | 825 | 676 | - | 793 | 655 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 956 | - | - | 930 | - | - | 454 | 411 | 762 | 458 | 411 | 797 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 454 | 411 | - | 458 | 411 | - |
| Stage 1 | - | - | - | - | - | - | 793 | 655 | - | 827 | 676 | - |
| Stage 2 | - | - | - | - | - | - | 819 | 675 | - | 792 | 655 | - |
| Approach | | | | | | | | | | | | |
| | EB | | WB | | | NB | | | SB | | | |
| HCM Control Delay, s | 0 | | 0 | | | 0 | | | 12.6 | | | |
| HCM LOS | A | | A | | | A | | | B | | | |
| Minor Lane/Major Mvmt | | | | | | | | | | | | |
| | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | | | | |
| Capacity (veh/h) | - | 956 | - | - | 930 | - | - | 498 | | | | |
| HCM Lane V/C Ratio | - | - | - | - | 0.001 | - | - | 0.045 | | | | |
| HCM Control Delay (s) | 0 | 0 | - | - | 8.9 | 0 | - | 12.6 | | | | |
| HCM Lane LOS | A | A | - | - | A | A | - | B | | | | |
| HCM 95th %tile Q(veh) | - | 0 | - | - | 0 | - | - | 0.1 | | | | |

Lanes, Volumes, Timings

2: Lot Access/Old Elm Street & Elm Street

2015 Existing Conditions

Weekday Morning Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|-------|------|------|------|------|------|-------|
| Lane Configurations | ↔ | | | ↔ | | | ↔ | | | | | |
| Volume (vph) | 1 | 305 | 0 | 3 | 273 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 12 | 12 |
| Grade (%) | | -1% | | | 0% | | | 0% | | | -1% | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | | | | | | 0.999 | | | | | | 0.865 |
| Flt Protected | | | | | | | | | | | | |
| Satd. Flow (prot) | 0 | 1794 | 0 | 0 | 1663 | 0 | 0 | 1644 | 0 | 0 | 0 | 0 |
| Flt Permitted | | | | | | | | | | | | |
| Satd. Flow (perm) | 0 | 1794 | 0 | 0 | 1663 | 0 | 0 | 1644 | 0 | 0 | 0 | 0 |
| Link Speed (mph) | 25 | | | | 25 | | | | 25 | | | |
| Link Distance (ft) | 276 | | | | 571 | | | | 199 | | | |
| Travel Time (s) | 7.5 | | | | 15.6 | | | | 5.4 | | | |
| Confl. Peds. (#/hr) | 2 | | | | | | | | 2 | | | |
| 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% | 10% | 0% | 33% | 14% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 321 | 0 | 3 | 287 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 322 | 0 | 0 | 293 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Sign Control | Free | | | | Free | | | | Stop | | | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC

2: Lot Access/Old Elm Street & Elm Street

2015 Existing Conditions

Weekday Morning Peak Hour

| Intersection | | | | | | | | | | | | |
|------------------|-----|--|--|--|--|--|--|--|--|--|--|--|
| Int Delay, s/veh | 0.1 | | | | | | | | | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h | 1 | 305 | 0 | 3 | 273 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -1 | - | - | 0 | - | - | 0 | - | - | -1 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 0 | 10 | 0 | 33 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 321 | 0 | 3 | 287 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|----------------------|--------|---|---|--------|---|---|--------|-----|-----|
| Conflicting Flow All | 291 | 0 | 0 | 321 | 0 | 0 | 618 | 620 | 323 |
| Stage 1 | - | - | - | - | - | - | 323 | 323 | - |
| Stage 2 | - | - | - | - | - | - | 295 | 297 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 955 | - | - | 932 | - | - | 454 | 407 | 763 |
| Stage 1 | - | - | - | - | - | - | 843 | 654 | - |
| Stage 2 | - | - | - | - | - | - | 870 | 671 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 953 | - | - | 930 | - | - | 451 | 0 | 762 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 451 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 842 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 865 | 0 | - |

| Approach | EB | WB | NB |
|----------------------|----|-----|-----|
| HCM Control Delay, s | 0 | 0.1 | 9.7 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|
| Capacity (veh/h) | 762 | 953 | - | - | 930 | - | - |
| HCM Lane V/C Ratio | 0.001 | 0.001 | - | - | 0.003 | - | - |
| HCM Control Delay (s) | 9.7 | 8.8 | 0 | - | 8.9 | 0 | - |
| HCM Lane LOS | A | A | A | - | A | A | - |
| HCM 95th %tile Q(veh) | 0 | 0 | - | - | 0 | - | - |

Lanes, Volumes, Timings
4: Maple Street & Elm Street

2015 Existing Conditions
Weekday Afternoon Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 37 | 449 | 10 | 31 | 628 | 31 | 5 | 2 | 17 | 16 | 3 | 46 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 14 | 12 | 10 | 13 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 2% | | 0% | | 0% | | 1% | | | | -1% | |
| Storage Length (ft) | 79 | | 0 | 75 | | 0 | 0 | | 0 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.97 | | 1.00 | 0.97 | |
| Frt | 0.997 | | | | 0.993 | | | | 0.903 | | 0.905 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.990 | | | | 0.988 |
| Satd. Flow (prot) | 1580 | 1836 | 0 | 1550 | 1745 | 0 | 0 | 1443 | 0 | 0 | 1723 | 0 |
| Flt Permitted | 0.372 | | | 0.477 | | | | 0.948 | | | 0.907 | |
| Satd. Flow (perm) | 617 | 1836 | 0 | 776 | 1745 | 0 | 0 | 1377 | 0 | 0 | 1577 | 0 |
| Right Turn on Red | | | Yes | | | | Yes | | | | Yes | |
| Satd. Flow (RTOR) | 3 | | | | 7 | | | | 18 | | 48 | |
| Link Speed (mph) | 25 | | | | 25 | | | | 25 | | 25 | |
| Link Distance (ft) | 600 | | | | 300 | | | | 222 | | 228 | |
| Travel Time (s) | 16.4 | | | | 8.2 | | | | 6.1 | | 6.2 | |
| Confl. Peds. (#/hr) | 10 | | 7 | 7 | | 10 | 7 | | 5 | 5 | | 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% | 3% | 10% | 3% | 6% | 0% | 20% | 0% | 6% | 0% | 0% | 5% |
| Adj. Flow (vph) | 39 | 473 | 11 | 33 | 661 | 33 | 5 | 2 | 18 | 17 | 3 | 48 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 39 | 484 | 0 | 33 | 694 | 0 | 0 | 25 | 0 | 0 | 68 | 0 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | | 20 | 100 | | 20 | 100 | | 20 | 100 | |
| Trailing Detector (ft) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Detector 1 Position(ft) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Detector 1 Size(ft) | 20 | 6 | | 20 | 6 | | 20 | 6 | | 20 | 6 | |
| Detector 1 Type | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(ft) | 94 | | | | 94 | | | | 94 | | 94 | |
| Detector 2 Size(ft) | 6 | | | | 6 | | | | 6 | | 6 | |
| Detector 2 Type | CI+Ex | | | | CI+Ex | | | | CI+Ex | | CI+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | 0.0 | | | | 0.0 | | | | 0.0 | | 0.0 | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | 6 | | | | 2 | | | | 4 | | 8 | |
| Permitted Phases | 6 | | | | 2 | | | | 4 | | 8 | |
| Detector Phase | 6 | 6 | | 2 | 2 | | 4 | 4 | | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |

Lanes, Volumes, Timings
4: Maple Street & Elm Street

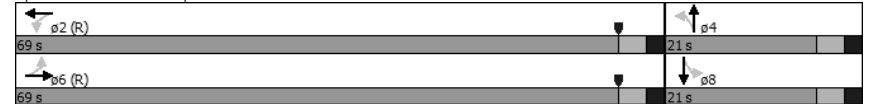
2015 Existing Conditions
Weekday Afternoon Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Total Split (s) | 69.0 | 69.0 | | 69.0 | 69.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |
| Total Split (%) | 76.7% | 76.7% | | 76.7% | 76.7% | | 23.3% | 23.3% | | 23.3% | 23.3% | |
| Maximum Green (s) | 64.0 | 64.0 | | 64.0 | 64.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 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 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| v/c Ratio | 0.07 | 0.31 | | 0.05 | 0.47 | | 0.18 | 0.18 | | 0.18 | 0.37 | |
| Control Delay | 1.2 | 1.4 | | 1.4 | 2.8 | | 23.0 | 23.0 | | 22.2 | 22.2 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.2 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 1.2 | 1.4 | | 1.4 | 3.0 | | 23.0 | 23.0 | | 22.2 | 22.2 | |
| Queue Length 50th (ft) | 2 | 21 | | 2 | 21 | | 4 | 4 | | 11 | 11 | |
| Queue Length 95th (ft) | m4 | 28 | | m4 | 107 | | 27 | 27 | | 49 | 49 | |
| Internal Link Dist (ft) | 520 | | | | 220 | | 142 | | | | 148 | |
| Turn Bay Length (ft) | 79 | | | | 75 | | | | | | | |
| Base Capacity (vph) | 526 | | 1565 | | 661 | | 1488 | | | | 274 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 235 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 110 | | 0 | 65 | | 1 | 1 | | 2 | 2 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.07 | 0.33 | | 0.05 | 0.55 | | 0.09 | 0.09 | | 0.20 | 0.20 | |

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 6 (7%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Maple Street & Elm Street



HCM 2010 Signalized Intersection Summary
4: Maple Street & Elm Street

2015 Existing Conditions
Weekday Afternoon Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | | | ↔ | | | ↔ | ↔ |
| Volume (veh/h) | 37 | 449 | 10 | 31 | 628 | 31 | 5 | 2 | 17 | 16 | 3 | 46 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.99 | 1.00 | | 0.99 | 0.94 | | 0.91 | 0.92 | | 0.91 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1782 | 1797 | 1782 | 1748 | 1771 | 1800 | 1791 | 1653 | 1791 | 1809 | 1817 | 1809 |
| Adj Flow Rate, veh/h | 39 | 473 | 11 | 33 | 661 | 33 | 5 | 2 | 6 | 17 | 3 | 21 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 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 | 3 | 3 | 3 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap, veh/h | 695 | 1507 | 35 | 812 | 1441 | 72 | 77 | 17 | 33 | 85 | 6 | 36 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.04 | 0.05 | 0.04 | 0.04 | 0.05 | 0.04 |
| Sat Flow, veh/h | 713 | 1748 | 41 | 849 | 1672 | 83 | 448 | 344 | 679 | 581 | 120 | 736 |
| Grp Volume(v), veh/h | 39 | 0 | 484 | 33 | 0 | 694 | 13 | 0 | 0 | 41 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 713 | 0 | 1789 | 849 | 0 | 1755 | 1471 | 0 | 0 | 1437 | 0 | 0 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.7 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.0 | 0.0 | 2.5 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.02 | 1.00 | | 0.05 | 0.38 | | 0.46 | 0.41 | | 0.51 |
| Lane Grp Cap(c), veh/h | 695 | 0 | 1542 | 812 | 0 | 1513 | 111 | 0 | 0 | 111 | 0 | 0 |
| V/C Ratio(X) | 0.06 | 0.00 | 0.31 | 0.04 | 0.00 | 0.46 | 0.12 | 0.00 | 0.00 | 0.37 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 695 | 0 | 1542 | 812 | 0 | 1513 | 289 | 0 | 0 | 301 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.86 | 0.00 | 0.86 | 0.90 | 0.00 | 0.90 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 41.5 | 0.0 | 0.0 | 42.3 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.5 | 0.1 | 0.0 | 0.9 | 0.5 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| 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 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.7 | 0.6 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.1 | 0.0 | 0.5 | 0.1 | 0.0 | 0.9 | 41.9 | 0.0 | 0.0 | 44.3 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | | A | D | | | D | | |
| Approach Vol, veh/h | 523 | | | 727 | | | 13 | | | 41 | | |
| Approach Delay, s/veh | 0.4 | | | 0.9 | | | 41.9 | | | 44.3 | | |
| Approach LOS | A | | | A | | | D | | | D | | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 2 | | 4 | | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc), s | 81.6 | | 8.4 | | 81.6 | | 8.4 | | | | | |
| Change Period (Y+Rc), s | 5.0 | | 5.0 | | 5.0 | | 5.0 | | | | | |
| Max Green Setting (Gmax), s | 64.0 | | 16.0 | | 64.0 | | 16.0 | | | | | |
| Max Q Clear Time (g_c+I1), s | 2.5 | | 2.8 | | 2.5 | | 4.5 | | | | | |
| Green Ext Time (p_c), s | 13.1 | | 0.2 | | 13.1 | | 0.1 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | 2.5 | | | | | | | | | | | |
| HCM 2010 LOS | A | | | | | | | | | | | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

2015 Existing Conditions
Weekday Afternoon Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | | | ↔ | | | ↔ | ↔ |
| Volume (vph) | 9 | 442 | 23 | 18 | 510 | 4 | 156 | 7 | 121 | 10 | 2 | 22 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 13 | 12 | 10 | 11 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Grade (%) | 7% | | | | -9% | | 0% | | | | 0% | |
| Storage Length (ft) | 77 | | 0 | 95 | | 95 | 0 | | 95 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 1 | 0 | | 1 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | 75 | | | 75 | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | | 0.98 | | 1.00 | 0.98 | | 0.98 | |
| Frt | | 0.992 | | | | 0.850 | | | 0.850 | | 0.912 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.954 | | | 0.985 | |
| Satd. Flow (prot) | 1540 | 1745 | 0 | 1573 | 1732 | 1599 | 0 | 1644 | 1485 | 0 | 1806 | 0 |
| Flt Permitted | 0.459 | | | 0.377 | | | | 0.709 | | | 0.906 | |
| Satd. Flow (perm) | 742 | 1745 | 0 | 624 | 1732 | 1561 | 0 | 1220 | 1450 | 0 | 1660 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | No | | | | No |
| Satd. Flow (RTOR) | | 3 | | | | 24 | | | | | | |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 300 | | | 550 | | | 247 | | | 248 | |
| Travel Time (s) | | 8.2 | | | 15.0 | | | 6.7 | | | 6.8 | |
| Conf. Peds. (#/hr) | 5 | | 4 | 4 | | 5 | 1 | | 2 | 2 | | 1 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 6% | 5% | 0% | 1% | 0% | 3% | 0% | 0% | 0% |
| Adj. Flow (vph) | 10 | 475 | 25 | 19 | 548 | 4 | 168 | 8 | 130 | 11 | 2 | 24 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 10 | 500 | 0 | 19 | 548 | 4 | 0 | 176 | 130 | 0 | 37 | 0 |
| Number of Detectors | 1 | 2 | | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | Right | Left | Thru | Right | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | | 20 | 100 | 20 | 20 | 100 | 20 | 20 | 100 | |
| Trailing Detector (ft) | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Detector 1 Position(ft) | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Detector 1 Size(ft) | 20 | 6 | | 20 | 6 | 20 | 20 | 6 | 20 | 20 | 6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | 94 | | | 94 | | | 94 | | | 94 | |
| Detector 2 Size(ft) | | 6 | | | 6 | | | 6 | | | 6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | pm+pt | NA | Perm | Perm | NA | Perm | Perm | NA | |
| Protected Phases | | 6 | | 5 | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | 2 | 4 | | 4 | 8 | | |
| Detector Phase | 6 | 6 | | 5 | 2 | 2 | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 13.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

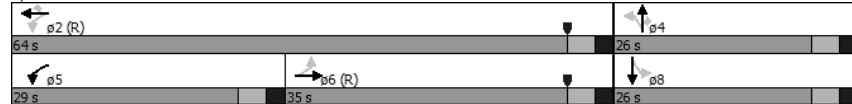
2015 Existing Conditions
Weekday Afternoon Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Split (s) | 35.0 | 35.0 | | 29.0 | 64.0 | 64.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Total Split (%) | 38.9% | 38.9% | | 32.2% | 71.1% | 71.1% | 28.9% | 28.9% | 28.9% | 28.9% | 28.9% | 28.9% |
| Maximum Green (s) | 30.0 | 30.0 | | 24.0 | 59.0 | 59.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | | -1.0 | -1.0 | -1.0 | | -1.0 | -1.0 | | -1.0 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lead/Lag | Lag | Lag | | Lead | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | C-Max | C-Max | | None | C-Max | C-Max | None | None | None | None | None | None |
| v/c Ratio | 0.02 | 0.43 | | 0.04 | 0.45 | 0.00 | | 0.72 | 0.45 | | 0.11 | |
| Control Delay | 6.4 | 8.2 | | 5.0 | 7.6 | 0.0 | | 49.8 | 35.6 | | 28.2 | |
| Queue Delay | 0.0 | 0.5 | | 0.0 | 0.5 | 0.0 | | 0.0 | 0.0 | | 0.0 | |
| Total Delay | 6.4 | 8.7 | | 5.0 | 8.1 | 0.0 | | 49.8 | 35.6 | | 28.2 | |
| Queue Length 50th (ft) | 0 | 67 | | 3 | 118 | 0 | | 93 | 64 | | 17 | |
| Queue Length 95th (ft) | m8 | 224 | | 10 | 202 | 0 | | 159 | 114 | | 41 | |
| Internal Link Dist (ft) | | 220 | | | 470 | | | 167 | | | 168 | |
| Turn Bay Length (ft) | 77 | | | 95 | | 95 | | | 95 | | | |
| Base Capacity (vph) | 489 | 1152 | | 706 | 1230 | 1115 | | 298 | 354 | | 405 | |
| Starvation Cap Reductn | 0 | 275 | | 0 | 306 | 0 | | 0 | 0 | | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | | 0 | |
| Reduced v/c Ratio | 0.02 | 0.57 | | 0.03 | 0.59 | 0.00 | | 0.59 | 0.37 | | 0.09 | |

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 8 (9%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Oak Street & Elm Street



HCM 2010 Signalized Intersection Summary
5: Oak Street & Elm Street

2015 Existing Conditions
Weekday Afternoon Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 9 | 442 | 23 | 18 | 510 | 4 | 156 | 7 | 121 | 10 | 2 | 22 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 |
| Adj Sat Flow, veh/h/ln | 1737 | 1773 | 1737 | 1775 | 1791 | 1881 | 1800 | 1783 | 1748 | 1800 | 1872 | 1800 |
| Adj Flow Rate, veh/h | 10 | 475 | 25 | 19 | 548 | 4 | 168 | 8 | 130 | 11 | 2 | 24 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 6 | 5 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Cap, veh/h | 492 | 999 | 53 | 420 | 1194 | 1062 | 224 | 7 | 362 | 52 | 32 | 58 |
| Arrive On Green | 0.20 | 0.20 | 0.19 | 0.02 | 0.67 | 0.67 | 0.23 | 0.24 | 0.24 | 0.23 | 0.24 | 0.23 |
| Sat Flow, veh/h | 793 | 1669 | 88 | 1690 | 1791 | 1593 | 597 | 28 | 1479 | 0 | 129 | 239 |
| Grp Volume(v), veh/h | 10 | 0 | 500 | 19 | 548 | 4 | 176 | 0 | 130 | 37 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 793 | 0 | 1757 | 1690 | 1791 | 1593 | 625 | 0 | 1479 | 368 | 0 | 0 |
| Q Serve(g_s), s | 0.9 | 0.0 | 22.7 | 0.4 | 13.2 | 0.1 | 0.0 | 0.0 | 6.6 | 0.0 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 8.0 | 0.0 | 22.7 | 0.4 | 13.2 | 0.1 | 21.0 | 0.0 | 6.6 | 21.0 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.05 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.30 | | 0.65 |
| Lane Grp Cap(c), veh/h | 492 | 0 | 1051 | 420 | 1194 | 1062 | 224 | 0 | 362 | 138 | 0 | 0 |
| V/C Ratio(X) | 0.02 | 0.00 | 0.48 | 0.05 | 0.46 | 0.00 | 0.79 | 0.00 | 0.36 | 0.27 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 492 | 0 | 1051 | 849 | 1194 | 1062 | 224 | 0 | 362 | 138 | 0 | 0 |
| HCM Platoon Ratio | 0.33 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.96 | 0.00 | 0.96 | 0.09 | 0.09 | 0.09 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 20.7 | 0.0 | 23.6 | 9.0 | 7.2 | 5.0 | 35.9 | 0.0 | 28.2 | 28.1 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 1.5 | 0.0 | 0.1 | 0.0 | 16.7 | 0.0 | 0.6 | 1.0 | 0.0 | 0.0 |
| 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 | 0.4 | 0.0 | 16.9 | 0.3 | 7.7 | 0.1 | 1.9 | 0.0 | 4.9 | 1.4 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 20.7 | 0.0 | 25.1 | 9.0 | 7.3 | 5.0 | 52.5 | 0.0 | 28.8 | 29.2 | 0.0 | 0.0 |
| LnGrp LOS | C | | C | A | A | A | D | | C | C | | |
| Approach Vol, veh/h | | 510 | | | 571 | | | 306 | | | | 37 |
| Approach Delay, s/veh | | 25.0 | | | 7.4 | | | 42.4 | | | | 29.2 |
| Approach LOS | | C | | | A | | | D | | | | C |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 64.0 | | 26.0 | 6.1 | 57.9 | | 26.0 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 59.0 | | 21.0 | 24.0 | 30.0 | | 21.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 15.7 | | 23.0 | 2.9 | 24.7 | | 23.0 | | | | |
| Green Ext Time (p_c), s | | 9.5 | | 0.0 | 0.0 | 3.1 | | 0.0 | | | | |

Intersection Summary

HCM 2010 Ctrl Delay: 21.8
 HCM 2010 LOS: C

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2015 Existing Conditions
Weekday Afternoon Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 92 | 76 | 509 | 670 | 64 | 50 | 437 | 947 | 672 | 20 | 796 | 68 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | 2% | | -5% | | | | 5% | | 0% | | | |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 1 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | | | | 0.99 | 1.00 | | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.934 | | | | 0.850 | | 0.988 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1589 | 1557 | 1485 | 3174 | 1580 | 0 | 1511 | 3112 | 1526 | 1466 | 3213 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.172 | | | 0.296 | | |
| Satd. Flow (perm) | 1586 | 1557 | 1485 | 3174 | 1580 | 0 | 272 | 3112 | 1490 | 456 | 3213 | 0 |
| Right Turn on Red | | | No | | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 615 | | 9 | |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | 18 | | 4 | 4 | | 18 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 7% | 2% | 3% | 0% | 1% | 5% | 1% | 5% |
| Adj. Flow (vph) | 94 | 78 | 519 | 684 | 65 | 51 | 446 | 966 | 686 | 20 | 812 | 69 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 94 | 78 | 519 | 684 | 116 | 0 | 446 | 966 | 686 | 20 | 881 | 0 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | 1 | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | Right | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | 20 | 20 | 100 | | 20 | 100 | 20 | 20 | 100 | |
| Trailing Detector (ft) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Detector 1 Position(ft) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Detector 1 Size(ft) | 20 | 6 | 20 | 20 | 6 | | 20 | 6 | 20 | 20 | 6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | 94 | | | 94 | | | 94 | | | 94 | |
| Detector 2 Size(ft) | | 6 | | | 6 | | | 6 | | | 6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Split | NA | pm+ov | Split | NA | | pm+pt | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | 8 | | | | 6 | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

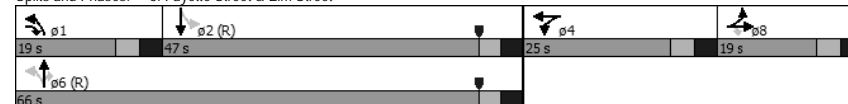
2015 Existing Conditions
Weekday Afternoon Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|-----|-------|-------|-------|---------|-------|-----|
| Total Split (s) | 19.0 | 19.0 | 19.0 | 25.0 | 25.0 | | 19.0 | 66.0 | 66.0 | 47.0 | 47.0 | |
| Total Split (%) | 17.3% | 17.3% | 17.3% | 22.7% | 22.7% | | 17.3% | 60.0% | 60.0% | 42.7% | 42.7% | |
| Maximum Green (s) | 13.0 | 13.0 | 13.0 | 19.0 | 19.0 | | 13.0 | 60.0 | 60.0 | 41.0 | 41.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | Lead | | | | | | | Lead | | Lag Lag | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |
| v/c Ratio | 0.55 | 0.46 | 1.24 | 1.19 | 0.40 | | 1.42 | 0.54 | 0.61 | 0.11 | 0.68 | |
| Control Delay | 58.2 | 54.6 | 163.8 | 140.1 | 44.6 | | 229.8 | 16.3 | 4.5 | 23.9 | 30.6 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Total Delay | 58.2 | 54.6 | 163.8 | 140.1 | 44.6 | | 229.8 | 16.3 | 4.5 | 23.9 | 30.6 | |
| Queue Length 50th (ft) | 63 | 52 | -448 | -300 | 73 | | -340 | 214 | 22 | 9 | 266 | |
| Queue Length 95th (ft) | 117 | 100 | #644 | #416 | 130 | | #547 | 280 | 95 | 28 | 347 | |
| Internal Link Dist (ft) | | 470 | | | 350 | | | 372 | | | 382 | |
| Turn Bay Length (ft) | 135 | | 202 | 135 | | | 266 | | 130 | 276 | | |
| Base Capacity (vph) | 202 | 198 | 417 | 577 | 287 | | 313 | 1784 | 1116 | 182 | 1293 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Reduced v/c Ratio | 0.47 | 0.39 | 1.24 | 1.19 | 0.40 | | 1.42 | 0.54 | 0.61 | 0.11 | 0.68 | |

Intersection Summary

| | |
|------------------------|--|
| Area Type: | Other |
| Cycle Length: | 110 |
| Actuated Cycle Length: | 110 |
| Offset: | 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow |
| Natural Cycle: | 115 |
| Control Type: | Actuated-Coordinated |
| - | Volume exceeds capacity, queue is theoretically infinite. |
| - | Queue shown is maximum after two cycles. |
| # | 95th percentile volume exceeds capacity, queue may be longer. |
| - | Queue shown is maximum after two cycles. |

Splits and Phases: 6: Fayette Street & Elm Street



HCM 2010 Signalized Intersection Summary
6: Fayette Street & Elm Street

2015 Existing Conditions
Weekday Afternoon Peak Hour

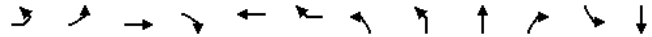
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|-------|-------|-------|------|-------|------|------|------|------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖↗ | ↑ | | ↖ | ↑↑ | ↗ | ↖ | ↑↗ | |
| Volume (veh/h) | 92 | 76 | 509 | 670 | 64 | 50 | 437 | 947 | 672 | 20 | 796 | 68 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), 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 | | 0.98 | 1.00 | | 0.98 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1730 | 1661 | 1747 | 1845 | 1760 | 1845 | 1704 | 1755 | 1807 | 1646 | 1777 | 1800 |
| Adj Flow Rate, veh/h | 94 | 78 | 420 | 684 | 65 | 51 | 446 | 966 | 554 | 20 | 812 | 69 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Percent Heavy Veh, % | 3 | 3 | 2 | 0 | 7 | 7 | 3 | 0 | 1 | 5 | 1 | 1 |
| Cap, veh/h | 210 | 211 | 378 | 620 | 166 | 130 | 367 | 1849 | 838 | 178 | 1200 | 102 |
| Arrive On Green | 0.13 | 0.13 | 0.13 | 0.18 | 0.18 | 0.17 | 0.13 | 0.55 | 0.55 | 0.38 | 0.38 | 0.37 |
| Sat Flow, veh/h | 1648 | 1661 | 1481 | 3409 | 915 | 718 | 1623 | 3335 | 1511 | 301 | 3143 | 267 |
| Grp Volume(v), veh/h | 94 | 78 | 420 | 684 | 0 | 116 | 446 | 966 | 554 | 20 | 436 | 445 |
| Grp Sat Flow(s),veh/h/ln | 1648 | 1661 | 1481 | 1704 | 0 | 1632 | 1623 | 1667 | 1511 | 301 | 1688 | 1722 |
| Q Serve(g_s), s | 5.8 | 4.7 | 14.0 | 20.0 | 0.0 | 6.9 | 14.0 | 20.0 | 28.4 | 4.9 | 23.7 | 23.7 |
| Cycle Q Clear(g_c), s | 5.8 | 4.7 | 14.0 | 20.0 | 0.0 | 6.9 | 14.0 | 20.0 | 28.4 | 5.9 | 23.7 | 23.7 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.44 | 1.00 | | 1.00 | 1.00 | | 0.16 |
| Lane Grp Cap(c), veh/h | 210 | 211 | 378 | 620 | 0 | 297 | 367 | 1849 | 838 | 178 | 644 | 657 |
| V/C Ratio(X) | 0.45 | 0.37 | 1.11 | 1.10 | 0.00 | 0.39 | 1.21 | 0.52 | 0.66 | 0.11 | 0.68 | 0.68 |
| Avail Cap(c_a), veh/h | 210 | 211 | 378 | 620 | 0 | 297 | 367 | 1849 | 838 | 178 | 644 | 657 |
| 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(l) | 0.90 | 0.90 | 0.90 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 44.4 | 44.0 | 41.0 | 45.0 | 0.0 | 39.8 | 23.7 | 15.4 | 17.2 | 23.2 | 28.3 | 28.4 |
| Incr Delay (d2), s/veh | 1.4 | 1.0 | 78.1 | 67.9 | 0.0 | 0.8 | 119.2 | 1.1 | 4.1 | 1.3 | 5.6 | 5.5 |
| 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 | 4.9 | 4.0 | 35.3 | 27.4 | 0.0 | 5.7 | 30.6 | 14.4 | 18.5 | 0.8 | 17.7 | 18.0 |
| LnGrp Delay(d),s/veh | 45.8 | 44.9 | 119.1 | 112.9 | 0.0 | 40.7 | 142.9 | 16.4 | 21.3 | 24.4 | 34.0 | 33.9 |
| LnGrp LOS | D | D | F | F | | D | F | B | C | C | C | C |
| Approach Vol, veh/h | | 592 | | | 800 | | | 1966 | | | | 901 |
| Approach Delay, s/veh | | 97.7 | | | 102.4 | | | 46.5 | | | | 33.7 |
| Approach LOS | | F | | | F | | | D | | | | C |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 19.0 | 47.0 | | 25.0 | | 66.0 | | 19.0 | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | 13.0 | 41.0 | | 19.0 | | 60.0 | | 13.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 16.5 | 26.2 | | 22.5 | | 30.9 | | 16.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 12.0 | | 0.0 | | 20.3 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 61.4 | | | | | | | | | |
| HCM 2010 LOS | | | E | | | | | | | | | |

Lanes, Volumes, Timings

2015 Existing Conditions

3: Access/Wood Street & Elm Street & Colwell Street

Weekday Afternoon Peak Hour



| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT |
|-------------------------|-------|-------|-------|------|-------|------|-------|-------|-------|------|-------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 50 | 2 | 301 | 6 | 435 | 204 | 9 | 7 | 0 | 5 | 5 | 0 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 12 | 14 | 12 | 16 | 12 | 12 | 15 | 12 | 12 | 12 | 12 |
| Grade (%) | | | 0% | | 0% | | | | -2% | | | 0% |
| Storage Length (ft) | | 78 | | 0 | | 0 | | 0 | | 0 | | 0 |
| Storage Lanes | | 1 | | 0 | | 0 | | 0 | | 0 | | 0 |
| Taper Length (ft) | | 75 | | | | | | 75 | | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | 1.00 | 1.00 | | 0.99 | | | | 0.99 | | | |
| Frt | | | 0.997 | | 0.957 | | | | 0.968 | | | 0.961 |
| Flt Protected | | 0.950 | | | | | | | 0.963 | | | 0.966 |
| Satd. Flow (prot) | 0 | 1676 | 1859 | 0 | 1835 | 0 | 0 | 0 | 1686 | 0 | 0 | 1638 |
| Flt Permitted | | 0.253 | | | | | | | 0.821 | | | |
| Satd. Flow (perm) | 0 | 446 | 1859 | 0 | 1835 | 0 | 0 | 0 | 1436 | 0 | 0 | 1696 |
| Right Turn on Red | | | | No | | | | | | No | | |
| Satd. Flow (RTOR) | | | | | | | | | | | | |
| Link Speed (mph) | | | 25 | | 25 | | | | 25 | | | 25 |
| Link Distance (ft) | | | 571 | | 600 | | | | 211 | | | 267 |
| Travel Time (s) | | | 15.6 | | 16.4 | | | | 5.8 | | | 7.3 |
| Confl. Peds. (#/hr) | 1 | | | 4 | | 1 | 1 | | | 1 | | |
| 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 (%) | 2% | 2% | 3% | 0% | 6% | 5% | 0% | 0% | 2% | 0% | 2% | 2% |
| Adj. Flow (vph) | 53 | 2 | 317 | 6 | 458 | 215 | 9 | 7 | 0 | 5 | 5 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 55 | 323 | 0 | 673 | 0 | 0 | 0 | 21 | 0 | 0 | 7 |
| Number of Detectors | 1 | 1 | 2 | | 2 | | 1 | 1 | 2 | | 1 | 2 |
| Detector Template | Left | Left | Thru | | Thru | | Left | Left | Thru | | Left | Thru |
| Leading Detector (ft) | 20 | 20 | 100 | | 100 | | 20 | 20 | 100 | | 20 | 100 |
| Trailing Detector (ft) | 0 | 0 | 0 | | 0 | | 0 | 0 | 0 | | 0 | 0 |
| Detector 1 Position(ft) | 0 | 0 | 0 | | 0 | | 0 | 0 | 0 | | 0 | 0 |
| Detector 1 Size(ft) | 20 | 20 | 6 | | 6 | | 20 | 20 | 6 | | 20 | 6 |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 |
| Detector 2 Position(ft) | | | 94 | | 94 | | | | 94 | | | 94 |
| Detector 2 Size(ft) | | | 6 | | 6 | | | | 6 | | | 6 |
| Detector 2 Type | | | Cl+Ex | | Cl+Ex | | | | Cl+Ex | | | Cl+Ex |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | | 0.0 | | 0.0 | | | | 0.0 | | | 0.0 |
| Turn Type | Perm | Perm | NA | | NA | | Perm | Perm | NA | | Perm | NA |
| Protected Phases | | | 6 | | 2 | | | | 4 | | | 9 |
| Permitted Phases | 6 | 6 | | | | | 4 | 4 | | | 9 | |
| Detector Phase | 6 | 6 | 6 | | 2 | | 4 | 4 | 4 | | 9 | 9 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | | 21.0 | | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 |

Lanes, Volumes, Timings

2015 Existing Conditions

3: Access/Wood Street & Elm Street & Colwell Street

Weekday Afternoon Peak Hour



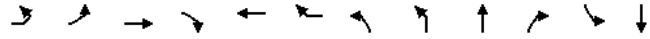
| Lane Group | SBR | SEL | SER | SER2 |
|-------------------------|------|-------|------|------|
| Lane Configurations | | | | |
| Volume (vph) | 2 | 207 | 9 | 42 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 12 | 12 | 16 | 12 |
| Grade (%) | | 2% | | |
| Storage Length (ft) | 0 | 0 | 0 | |
| Storage Lanes | 0 | 1 | 0 | |
| Taper Length (ft) | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | 0.99 | | |
| Frt | | 0.974 | | |
| Flt Protected | | 0.961 | | |
| Satd. Flow (prot) | 0 | 1642 | 0 | 0 |
| Flt Permitted | | 0.961 | | |
| Satd. Flow (perm) | 0 | 1640 | 0 | 0 |
| Right Turn on Red | | | | No |
| Satd. Flow (RTOR) | | | | |
| Link Speed (mph) | | 25 | | |
| Link Distance (ft) | | 303 | | |
| Travel Time (s) | | 8.3 | | |
| Confl. Peds. (#/hr) | | 1 | | 1 |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 |
| Heavy Vehicles (%) | 2% | 1% | 0% | 2% |
| Adj. Flow (vph) | 2 | 218 | 9 | 44 |
| Shared Lane Traffic (%) | | | | |
| Lane Group Flow (vph) | 0 | 271 | 0 | 0 |
| Number of Detectors | | 1 | | |
| Detector Template | | Left | | |
| Leading Detector (ft) | | 20 | | |
| Trailing Detector (ft) | | 0 | | |
| Detector 1 Position(ft) | | 0 | | |
| Detector 1 Size(ft) | | 20 | | |
| Detector 1 Type | | Cl+Ex | | |
| Detector 1 Channel | | | | |
| Detector 1 Extend (s) | | 0.0 | | |
| Detector 1 Queue (s) | | 0.0 | | |
| Detector 1 Delay (s) | | 0.0 | | |
| Detector 2 Position(ft) | | | | |
| Detector 2 Size(ft) | | | | |
| Detector 2 Type | | | | |
| Detector 2 Channel | | | | |
| Detector 2 Extend (s) | | | | |
| Turn Type | | Perm | | |
| Protected Phases | | | | |
| Permitted Phases | | 8 | | |
| Detector Phase | | 8 | | |
| Switch Phase | | | | |
| Minimum Initial (s) | | 3.0 | | |
| Minimum Split (s) | | 21.0 | | |

Lanes, Volumes, Timings

2015 Existing Conditions

3: Access/Wood Street & Elm Street & Colwell Street

Weekday Afternoon Peak Hour

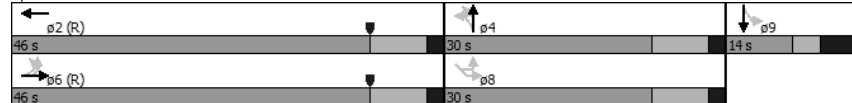


| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | NBL2 | NBL | NBT | NBR | SBL | SBT |
|-------------------------|--------------------|-------|-------|-------|-------|-----|-------|-------|-------|-----|-------|-------|
| Total Split (s) | 46.0 | 46.0 | 46.0 | 46.0 | 46.0 | | 30.0 | 30.0 | 30.0 | | 14.0 | 14.0 |
| Total Split (%) | 51.1% | 51.1% | 51.1% | 51.1% | 51.1% | | 33.3% | 33.3% | 33.3% | | 15.6% | 15.6% |
| Maximum Green (s) | 38.0 | 38.0 | 38.0 | 38.0 | 38.0 | | 22.0 | 22.0 | 22.0 | | 7.0 | 7.0 |
| Yellow Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 3.0 | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | | 4.0 | 4.0 |
| Lost Time Adjust (s) | | -1.0 | -1.0 | -1.0 | -1.0 | | | | -1.0 | | | -1.0 |
| Total Lost Time (s) | | 7.0 | 7.0 | 7.0 | 7.0 | | | | 7.0 | | | 6.0 |
| Lead/Lag | Lead-Lag Optimize? | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 |
| Recall Mode | C-Max | C-Max | C-Max | C-Max | C-Max | | None | None | None | | None | None |
| v/c Ratio | 0.21 | 0.21 | 0.29 | 0.62 | 0.62 | | 0.07 | 0.07 | 0.07 | | 0.07 | 0.05 |
| Control Delay | | 14.6 | 11.8 | 12.5 | 12.5 | | 26.6 | 26.6 | 26.6 | | 38.9 | 38.9 |
| Queue Delay | | 0.0 | 0.0 | 0.1 | 0.1 | | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 |
| Total Delay | | 14.6 | 11.8 | 12.6 | 12.6 | | 26.6 | 26.6 | 26.6 | | 38.9 | 38.9 |
| Queue Length 50th (ft) | | 13 | 79 | 90 | 90 | | 9 | 9 | 9 | | 4 | 4 |
| Queue Length 95th (ft) | | 51 | 191 | #548 | #548 | | 28 | 28 | 28 | | 17 | 17 |
| Internal Link Dist (ft) | | | 491 | 520 | 520 | | 131 | 131 | 131 | | 187 | 187 |
| Turn Bay Length (ft) | | 78 | | | | | | | | | | |
| Base Capacity (vph) | | 264 | 1103 | 1089 | 1089 | | 366 | 366 | 366 | | 150 | 150 |
| Starvation Cap Reductn | | 0 | 0 | 35 | 35 | | 0 | 0 | 0 | | 0 | 0 |
| Spillback Cap Reductn | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 |
| Storage Cap Reductn | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 |
| Reduced v/c Ratio | | 0.21 | 0.29 | 0.64 | 0.64 | | 0.06 | 0.06 | 0.06 | | 0.05 | 0.05 |

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Access/Wood Street & Elm Street & Colwell Street



Lanes, Volumes, Timings

2015 Existing Conditions

3: Access/Wood Street & Elm Street & Colwell Street

Weekday Afternoon Peak Hour



| Lane Group | SBR | SEL | SER | SER2 |
|-------------------------|--------------------|-----|-----|-------|
| Total Split (s) | | | | 30.0 |
| Total Split (%) | | | | 33.3% |
| Maximum Green (s) | | | | 22.0 |
| Yellow Time (s) | | | | 6.0 |
| All-Red Time (s) | | | | 2.0 |
| Lost Time Adjust (s) | | | | -1.0 |
| Total Lost Time (s) | | | | 7.0 |
| Lead/Lag | Lead-Lag Optimize? | | | |
| Vehicle Extension (s) | | | | 3.0 |
| Recall Mode | | | | None |
| v/c Ratio | | | | 0.75 |
| Control Delay | | | | 46.2 |
| Queue Delay | | | | 0.0 |
| Total Delay | | | | 46.2 |
| Queue Length 50th (ft) | | | | 142 |
| Queue Length 95th (ft) | | | | 223 |
| Internal Link Dist (ft) | | | | 223 |
| Turn Bay Length (ft) | | | | |
| Base Capacity (vph) | | | | 419 |
| Starvation Cap Reductn | | | | 0 |
| Spillback Cap Reductn | | | | 0 |
| Storage Cap Reductn | | | | 0 |
| Reduced v/c Ratio | | | | 0.65 |

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
1: Corson Street & Elm Street

2015 Existing Conditions
Weekday Afternoon Peak Hour

| | ↖ | → | ↘ | ↙ | ← | ↖ | ↙ | ↘ | ↙ | ↘ | ↙ | ↘ |
|-------------------------|-------|------|------|-------|------|------|------|------|------|-------|------|------|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | ↕ | | |
| Volume (vph) | 1 | 396 | 3 | 1 | 442 | 7 | 0 | 0 | 0 | 17 | 0 | 1 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 11 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | | 1% | | | 0% | | | 0% | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.999 | | | 0.998 | | | | | | 0.993 | | |
| Frt | | | | | | | | | | 0.955 | | |
| Flt Protected | | | | | | | | | | 0.955 | | |
| Satd. Flow (prot) | 0 | 1799 | 0 | 0 | 2038 | 0 | 0 | 1900 | 0 | 0 | 2042 | 0 |
| Flt Permitted | | | | | | | | | | 0.955 | | |
| Satd. Flow (perm) | 0 | 1799 | 0 | 0 | 2038 | 0 | 0 | 1900 | 0 | 0 | 2042 | 0 |
| Link Speed (mph) | 25 | | 25 | | 25 | | 25 | | 25 | | 25 | |
| Link Distance (ft) | 275 | | 276 | | 219 | | 188 | | 188 | | 188 | |
| Travel Time (s) | 7.5 | | 7.5 | | 6.0 | | 5.1 | | 5.1 | | 5.1 | |
| Confl. Peds. (#/hr) | 2 | | 3 | 3 | | 2 | | 3 | 3 | | | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 5% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 421 | 3 | 1 | 470 | 7 | 0 | 0 | 0 | 18 | 0 | 1 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 425 | 0 | 0 | 478 | 0 | 0 | 0 | 0 | 0 | 19 | 0 |
| Sign Control | Free | | Free | | Stop | | Stop | | Stop | | Stop | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC
1: Corson Street & Elm Street

2015 Existing Conditions
Weekday Afternoon Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.4 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 1 | 396 | 3 | 1 | 442 | 7 | 0 | 0 | 0 | 17 | 0 | 1 |
| Conflicting Peds, #/hr | 2 | 0 | 3 | 3 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 421 | 3 | 1 | 470 | 7 | 0 | 0 | 0 | 18 | 0 | 1 |

| Major/Minor | Major1 | Major2 | Minor1 | Minor2 |
|----------------------|--------|--------|--------|--------|
| Conflicting Flow All | 481 | 0 | 0 | 427 |
| Stage 1 | - | - | - | 428 |
| Stage 2 | - | - | - | 480 |
| Critical Hdwy | 4.3 | - | - | 4.3 |
| Critical Hdwy Stg 1 | - | - | - | 6.1 |
| Critical Hdwy Stg 2 | - | - | - | 6.1 |
| Follow-up Hdwy | 3 | - | - | 3 |
| Pot Cap-1 Maneuver | 820 | - | - | 856 |
| Stage 1 | - | - | - | 691 |
| Stage 2 | - | - | - | 646 |
| Platoon blocked, % | - | - | - | - |
| Mov Cap-1 Maneuver | 818 | - | - | 853 |
| Mov Cap-2 Maneuver | - | - | - | - |
| Stage 1 | - | - | - | 688 |
| Stage 2 | - | - | - | 642 |

| Approach | EB | WB | NB | SB |
|----------------------|----|----|----|------|
| HCM Control Delay, s | 0 | 0 | 0 | 18.2 |
| HCM LOS | A | A | A | C |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | - | 818 | - | - | 853 | - | - | 292 |
| HCM Lane V/C Ratio | - | 0.001 | - | - | 0.001 | - | - | 0.066 |
| HCM Control Delay (s) | 0 | 9.4 | 0 | - | 9.2 | 0 | - | 18.2 |
| HCM Lane LOS | A | A | A | - | A | A | - | C |
| HCM 95th %tile Q(veh) | - | 0 | - | - | 0 | - | - | 0.2 |

Lanes, Volumes, Timings

2: Lot Access/Old Elm Street & Elm Street

2015 Existing Conditions

Weekday Afternoon Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations | ↔ | | | ↔ | | | ↔ | | | | | |
| Volume (vph) | 0 | 399 | 0 | 0 | 463 | 8 | 0 | 0 | 3 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 12 | 12 |
| Grade (%) | | -1% | | | 0% | | | 0% | | | -1% | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.998 | | | | | | 0.865 | | | | | |
| Flt Protected | | | | | | | | | | | | |
| Satd. Flow (prot) | 0 | 1934 | 0 | 0 | 1842 | 0 | 0 | 1644 | 0 | 0 | 0 | 0 |
| Flt Permitted | | | | | | | | | | | | |
| Satd. Flow (perm) | 0 | 1934 | 0 | 0 | 1842 | 0 | 0 | 1644 | 0 | 0 | 0 | 0 |
| Link Speed (mph) | 25 | | 25 | | 25 | | 25 | | 25 | | 25 | |
| Link Distance (ft) | 276 | | 571 | | 199 | | 208 | | 5.7 | | | |
| Travel Time (s) | 7.5 | | 15.6 | | 5.4 | | | | | | | |
| Confl. Peds. (#/hr) | | | | | | | 2 | | | | | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 0 | 424 | 0 | 0 | 493 | 9 | 0 | 0 | 3 | 0 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 424 | 0 | 0 | 502 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| Sign Control | Free | | Free | | Stop | | Stop | | Stop | | Stop | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC

2: Lot Access/Old Elm Street & Elm Street

2015 Existing Conditions

Weekday Afternoon Peak Hour

| Intersection | | | | | | | | | | | | |
|------------------|---|--|--|--|--|--|--|--|--|--|--|--|
| Int Delay, s/veh | 0 | | | | | | | | | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h | 0 | 399 | 0 | 0 | 463 | 8 | 0 | 0 | 3 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -1 | - | - | 0 | - | - | 0 | - | - | -1 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 424 | 0 | 0 | 493 | 9 | 0 | 0 | 3 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|----------------------|--------|---|---|--------|---|---|--------|-----|-----|
| Conflicting Flow All | 501 | 0 | 0 | 426 | 0 | 0 | 923 | 927 | 426 |
| Stage 1 | - | - | - | - | - | - | 426 | 426 | - |
| Stage 2 | - | - | - | - | - | - | 497 | 501 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 807 | - | - | 857 | - | - | 279 | 270 | 666 |
| Stage 1 | - | - | - | - | - | - | 752 | 589 | - |
| Stage 2 | - | - | - | - | - | - | 695 | 546 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 807 | - | - | 857 | - | - | 279 | 0 | 665 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 279 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 751 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 695 | 0 | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 10.4 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|-----------------------|-------|-----|-----|-----|-----|-----|-----|
| Capacity (veh/h) | 665 | 807 | - | - | 857 | - | - |
| HCM Lane V/C Ratio | 0.005 | - | - | - | - | - | - |
| HCM Control Delay (s) | 10.4 | 0 | - | - | 0 | - | - |
| HCM Lane LOS | B | A | - | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | 0 | - | - | 0 | - | - |

APPENDIX F

Auxiliary Turn Lane Warrant Worksheets

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

| | |
|---|---|
| Municipality: <input type="text" value="Conshohocken Borough"/> County: <input type="text" value="Montgomery County"/> PennDOT Engineering District: <input type="text" value="6"/> | Analysis Date: <input type="text" value="1/5/2016"/> Conducted By: <input type="text" value="TDK"/> Checked By: <input type="text" value=""/> Agency/Company Name: <input type="text" value="McMahon Associates"/> |
| Intersection & Approach Description: <input type="text" value="West Elm Street and Eastern Access - Eastbound Right off of West Elm Street into Eastern Site Access - Scenario 1 and 2"/> | |
| Analysis Period: <input type="text" value="2024 Buid Year"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Level"/> | Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/> |

VOLUME CALCULATIONS

| Left Turn Lane Volume Calculations | | | | | |
|------------------------------------|----------|--------|----------|------|-----|
| Movement | Include? | Volume | % Trucks | PCEV | |
| Advancing | Left | Yes | 0 | 0.0% | N/A |
| | Through | - | 0 | 0.0% | N/A |
| | Right | Yes | 0 | 0.0% | N/A |
| Opposing | Left | Yes | 0 | 0.0% | N/A |
| | Through | - | 0 | 0.0% | N/A |
| | Right | Yes | 0 | 0.0% | N/A |

| | |
|-----------------------------------|----------------------------------|
| Advancing Volume: | <input type="text" value="N/A"/> |
| Opposing Volume: | <input type="text" value="N/A"/> |
| Left Turn Volume: | <input type="text" value="N/A"/> |
| % Left Turns in Advancing Volume: | <input type="text" value="N/A"/> |

| Right Turn Lane Volume Calculations | | | | | |
|-------------------------------------|----------|--------|----------|-------|-----|
| Movement | Include? | Volume | % Trucks | PCEV | |
| Advancing | Left | Yes | 1 | 0.0% | 1 |
| | Through | - | 368 | 10.0% | 387 |
| | Right | - | 35 | 0.0% | 35 |

| | |
|--------------------|----------------------------------|
| Advancing Volume: | <input type="text" value="423"/> |
| Right Turn Volume: | <input type="text" value="35"/> |

TURN LANE WARRANT FINDINGS

| Left Turn Lane Warrant Findings | Right Turn Lane Warrant Findings |
|---|--|
| Applicable Warrant Figure: <input type="text" value="N/A"/> | Applicable Warrant Figure: <input type="text" value="Figure 9"/> |
| Warrant Met?: <input type="text" value="N/A"/> | Warrant Met?: <input type="text" value="No"/> |

TURN LANE LENGTH CALCULATIONS

| | |
|--|---|
| Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="35"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="40"/> | Average # of Vehicles/Cycle: <input type="text" value="N/A"/> |
|--|---|

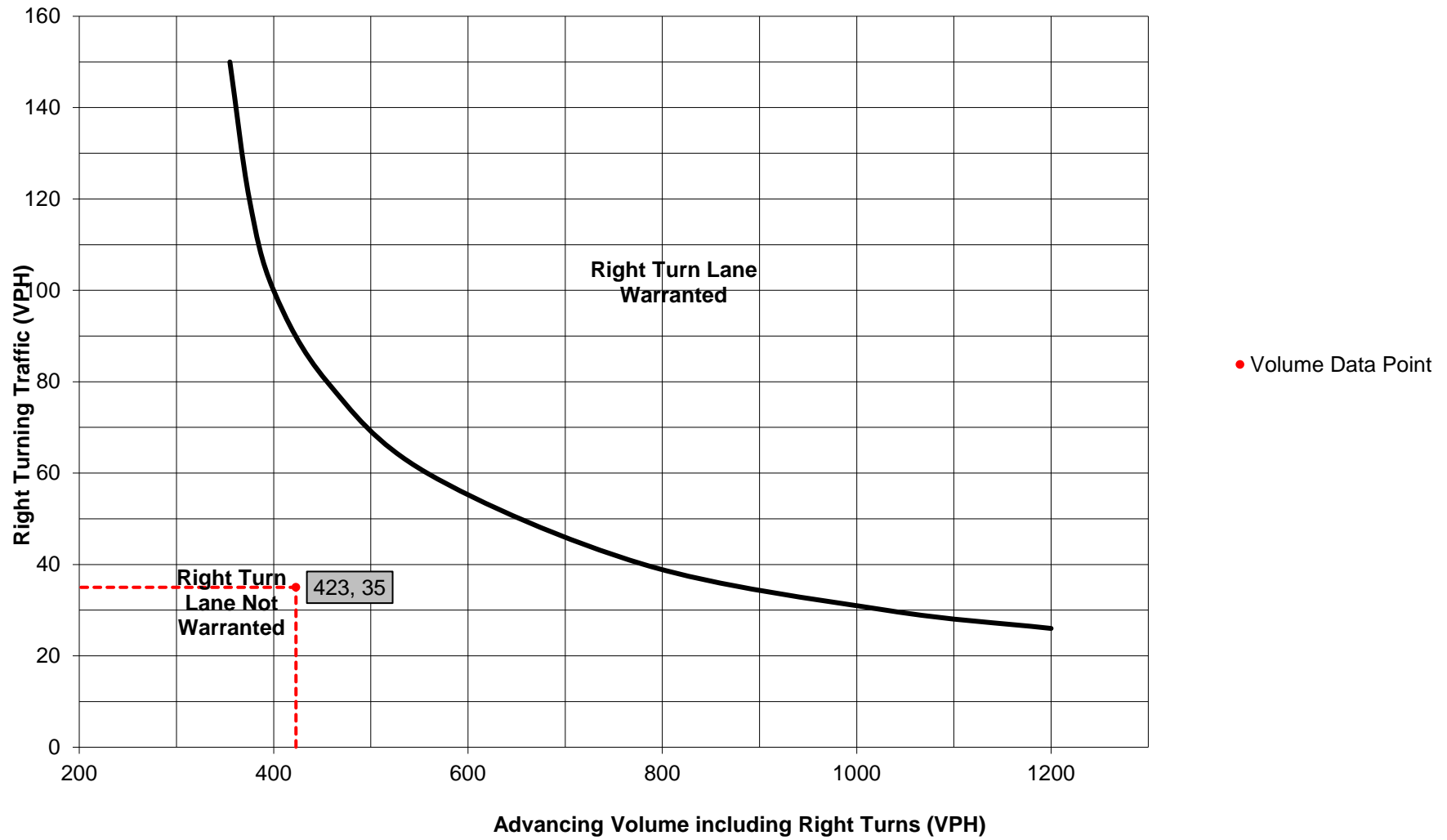
| Type of Traffic Control | Speed (MPH) | | | | | |
|-------------------------|--------------------|-----|--------|--------|--------|--------|
| | 25-35 | | 40-45 | | 50-60 | |
| | Turn Demand Volume | | | | | |
| | High | Low | High | Low | High | Low |
| Signalized | A | A | B or C | B or C | B or C | B or C |
| Unsignalized | A | A | C | B | B or C | B |

| | | |
|--|----------------------------------|------|
| Right Turn Lane Storage Length, Condition A: | <input type="text" value="N/A"/> | Feet |
| Condition B: | <input type="text" value="N/A"/> | Feet |
| Condition C: | <input type="text" value="N/A"/> | Feet |
| Required Right Turn Lane Storage Length: | <input type="text" value="N/A"/> | Feet |

Additional Findings:

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

| | |
|---|--|
| Municipality: <input type="text" value="Conshohocken Borough"/> County: <input type="text" value="Montgomery County"/> PennDOT Engineering District: <input type="text" value="6"/> | Analysis Date: <input type="text" value="1/5/2016"/> Conducted By: <input type="text" value="TDK"/> Checked By: <input type="text" value=""/> Agency/Company Name: <input type="text" value="McMahon Associates"/> |
| Intersection & Approach Description: <input type="text" value="West Elm Street and Eastern Access - Eastbound Right off of West Elm Street into Eastern Site Access - Scenario 1 and 2"/> | |
| Analysis Period: <input type="text" value="2024 Buid Year"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Level"/> | Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Type of Analysis: Right Turn Lane Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/> |

VOLUME CALCULATIONS

| Left Turn Lane Volume Calculations | | | | | |
|------------------------------------|----------|--------|----------|------|-----|
| Movement | Include? | Volume | % Trucks | PCEV | |
| Advancing | Left | Yes | 0 | 0.0% | N/A |
| | Through | - | 0 | 0.0% | N/A |
| | Right | Yes | 0 | 0.0% | N/A |
| Opposing | Left | Yes | 0 | 0.0% | N/A |
| | Through | - | 0 | 0.0% | N/A |
| | Right | Yes | 0 | 0.0% | N/A |

| Right Turn Lane Volume Calculations | | | | | |
|-------------------------------------|----------|--------|----------|------|-----|
| Movement | Include? | Volume | % Trucks | PCEV | |
| Advancing | Left | Yes | 0 | 0.0% | 0 |
| | Through | - | 575 | 2.0% | 581 |
| | Right | - | 6 | 0.0% | 6 |

Advancing Volume:
 Opposing Volume:
 Left Turn Volume:
 % Left Turns in Advancing Volume:
 Advancing Volume:
 Right Turn Volume:

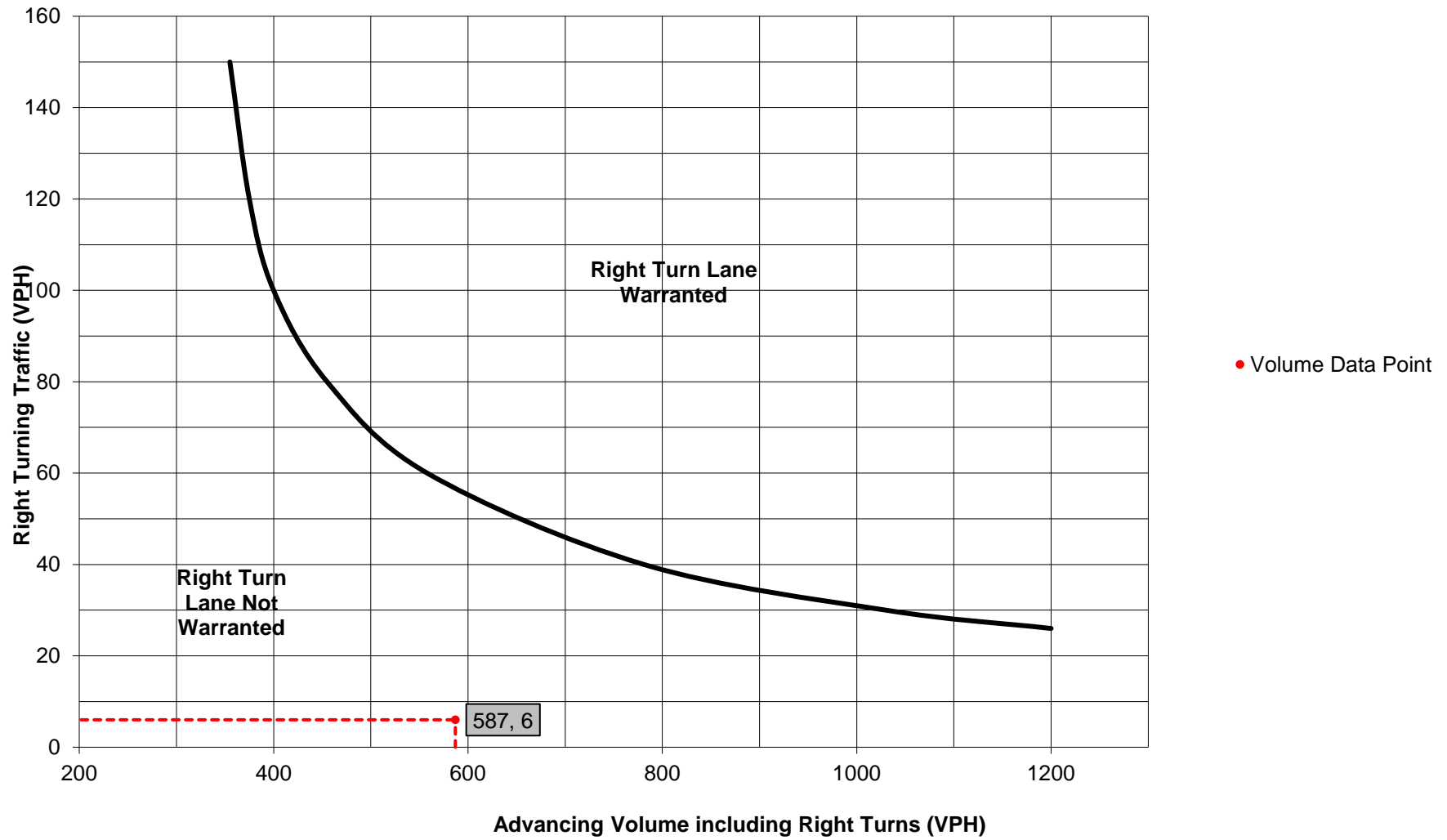
TURN LANE WARRANT FINDINGS

| Left Turn Lane Warrant Findings | Right Turn Lane Warrant Findings |
|---|---|
| Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/> | Applicable Warrant Figure: <input type="text" value="Figure 9"/> Warrant Met?: <input type="text" value="No"/> |

TURN LANE LENGTH CALCULATIONS

| Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="6"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="40"/> | Average # of Vehicles/Cycle: <input type="text" value="N/A"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------------|-------------|--------|--------|--------|--|--|-------|--|-------|--|-------|--|--------------------|--|--|--|--|--|--|------|-----|------|-----|------|-----|------------|---|---|--------|--------|--------|--------|--------------|---|---|---|---|--------|---|
| PennDOT Publication 46, Exhibit 11-6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr style="background-color: #FFDAB9;"> <th rowspan="3" style="width: 15%;">Type of Traffic Control</th> <th colspan="6" style="text-align: center;">Speed (MPH)</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="2" style="text-align: center;">25-35</th> <th colspan="2" style="text-align: center;">40-45</th> <th colspan="2" style="text-align: center;">50-60</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="6" style="text-align: center;">Turn Demand Volume</th> </tr> <tr> <th></th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Signalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> </tr> <tr> <td style="text-align: center;">Unsignalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">C</td> <td style="text-align: center;">B</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B</td> </tr> </tbody> </table> | | 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 |
| 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: <input type="text" value="N/A"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Right Turn Lane Storage Length: <input type="text" value="N/A"/> Feet | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Findings: <input type="text" value="N/A"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Comments / Justifications: <input style="width: 100%; height: 40px;" type="text"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

| | |
|---|---|
| Municipality: <input type="text" value="Conshohocken Borough"/> County: <input type="text" value="Montgomery County"/> PennDOT Engineering District: <input type="text" value="6"/> | Analysis Date: <input type="text" value="1/5/2016"/> Conducted By: <input type="text" value="TDK"/> Checked By: <input type="text" value=""/> Agency/Company Name: <input type="text" value="McMahon Associates"/> |
| Intersection & Approach Description: <input type="text" value="West Elm Street and Eastern Access - Westbound Left off of West Elm Street into Eastern Site Access - Scenario 1"/> | |
| Analysis Period: <input type="text" value="2024 Buid Year"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Level"/> | Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid red; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/> |

VOLUME CALCULATIONS

| Left Turn Lane Volume Calculations | | | | | | |
|-------------------------------------|----------|--------|----------|-------|-----|---|
| Movement | Include? | Volume | % Trucks | PCEV | | |
| Advancing | Left | Yes | 142 | 33.0% | 166 | Advancing Volume: <input type="text" value="652"/> Opposing Volume: <input type="text" value="423"/> Left Turn Volume: <input type="text" value="166"/> |
| | Through | - | 450 | 14.0% | 482 | |
| | Right | Yes | 4 | 0.0% | 4 | |
| Opposing | Left | Yes | 1 | 0.0% | 1 | % Left Turns in Advancing Volume: <input type="text" value="25.46%"/> |
| | Through | - | 368 | 10.0% | 387 | |
| | Right | Yes | 35 | 0.0% | 35 | |
| Right Turn Lane Volume Calculations | | | | | | |
| Movement | Include? | Volume | % Trucks | PCEV | | |
| Advancing | Left | Yes | 0 | 0.0% | N/A | Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/> |
| | Through | - | 0 | 0.0% | N/A | |
| | Right | - | 0 | 0.0% | N/A | |

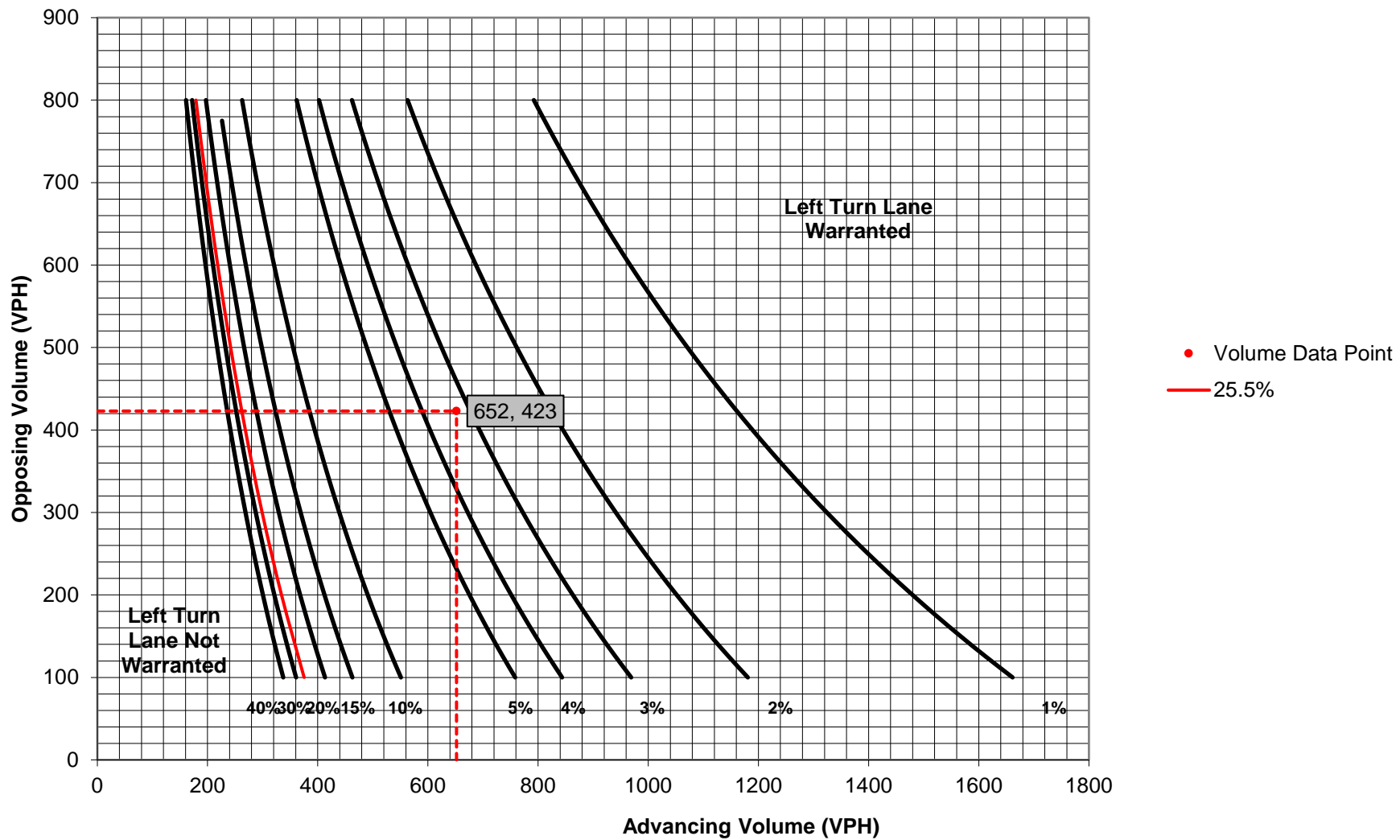
TURN LANE WARRANT FINDINGS

| Left Turn Lane Warrant Findings | Right Turn Lane Warrant Findings |
|--|---|
| Applicable Warrant Figure: <input type="text" value="Figure 1"/> Warrant Met?: <input type="text" value="Yes"/> | Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/> |

TURN LANE LENGTH CALCULATIONS

| Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="166"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="40"/> | Average # of Vehicles/Cycle: <input type="text" value="4.0"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------------|-------------|--------|--------|--------|--|--|-------|--|-------|--|-------|--|--------------------|--|--|--|--|--|--|------|-----|------|-----|------|-----|------------|---|---|--------|--------|--------|--------|--------------|---|---|---|---|--------|---|
| PennDOT Publication 46, Exhibit 11-6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #FFDAB9;"> <th rowspan="3" style="text-align: left;">Type of Traffic Control</th> <th colspan="6" style="text-align: center;">Speed (MPH)</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="2" style="text-align: center;">25-35</th> <th colspan="2" style="text-align: center;">40-45</th> <th colspan="2" style="text-align: center;">50-60</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="6" style="text-align: center;">Turn Demand Volume</th> </tr> <tr> <th></th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Signalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> </tr> <tr> <td style="text-align: center;">Unsignalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">C</td> <td style="text-align: center;">B</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B</td> </tr> </tbody> </table> | | 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 |
| 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: <input type="text" value="175"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Left Turn Lane Storage Length: <input type="text" value="175"/> Feet | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Findings: <input type="text" value="N/A"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Comments / Justifications: <input style="height: 40px;" type="text"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

| | |
|---|---|
| Municipality: <input type="text" value="Conshohocken Borough"/> County: <input type="text" value="Montgomery County"/> PennDOT Engineering District: <input type="text" value="6"/> | Analysis Date: <input type="text" value="1/5/2016"/> Conducted By: <input type="text" value="TDK"/> Checked By: <input type="text" value=""/> Agency/Company Name: <input type="text" value="McMahon Associates"/> |
| Intersection & Approach Description: <input type="text" value="West Elm Street and Eastern Access - Westbound Left off of West Elm Street into Eastern Site Access - Scenario 1"/> | |
| Analysis Period: <input type="text" value="2024 Buid Year"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Level"/> | Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid red; padding: 2px;"> Type of Analysis: <input type="text" value="Left Turn Lane"/> </div> |

VOLUME CALCULATIONS

| Left Turn Lane Volume Calculations | | | | | |
|------------------------------------|---------|----------|--------|----------|------|
| Movement | | Include? | Volume | % Trucks | PCEV |
| Advancing | Left | Yes | 24 | 0.0% | 24 |
| | Through | - | 554 | 3.0% | 563 |
| | Right | Yes | 10 | 0.0% | 10 |
| Opposing | Left | Yes | 0 | 0.0% | 0 |
| | Through | - | 575 | 2.0% | 581 |
| | Right | Yes | 6 | 0.0% | 6 |

| | |
|--|----------------------------------|
| Advancing Volume: | <input type="text" value="597"/> |
| Opposing Volume: | <input type="text" value="587"/> |
| Left Turn Volume: | <input type="text" value="24"/> |
| % Left Turns in Advancing Volume: <input type="text" value="4.02%"/> | |

| Right Turn Lane Volume Calculations | | | | | |
|-------------------------------------|---------|----------|--------|----------|------|
| Movement | | Include? | Volume | % Trucks | PCEV |
| Advancing | Left | Yes | 0 | 0.0% | N/A |
| | Through | - | 0 | 0.0% | N/A |
| | Right | - | 0 | 0.0% | N/A |

| | |
|--------------------|----------------------------------|
| Advancing Volume: | <input type="text" value="N/A"/> |
| Right Turn Volume: | <input type="text" value="N/A"/> |

TURN LANE WARRANT FINDINGS

| Left Turn Lane Warrant Findings | Right Turn Lane Warrant Findings |
|--|---|
| Applicable Warrant Figure: <input style="width: 100px;" type="text" value="Figure 1"/> | Applicable Warrant Figure: <input style="width: 100px;" type="text" value="N/A"/> |
| Warrant Met?: <input style="width: 100px;" type="text" value="Yes"/> | Warrant Met?: <input style="width: 100px;" type="text" value="N/A"/> |

TURN LANE LENGTH CALCULATIONS

| | |
|--|---|
| Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="24"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="40"/> | Average # of Vehicles/Cycle: <input style="width: 100px;" type="text" value="1.0"/> |
|--|---|

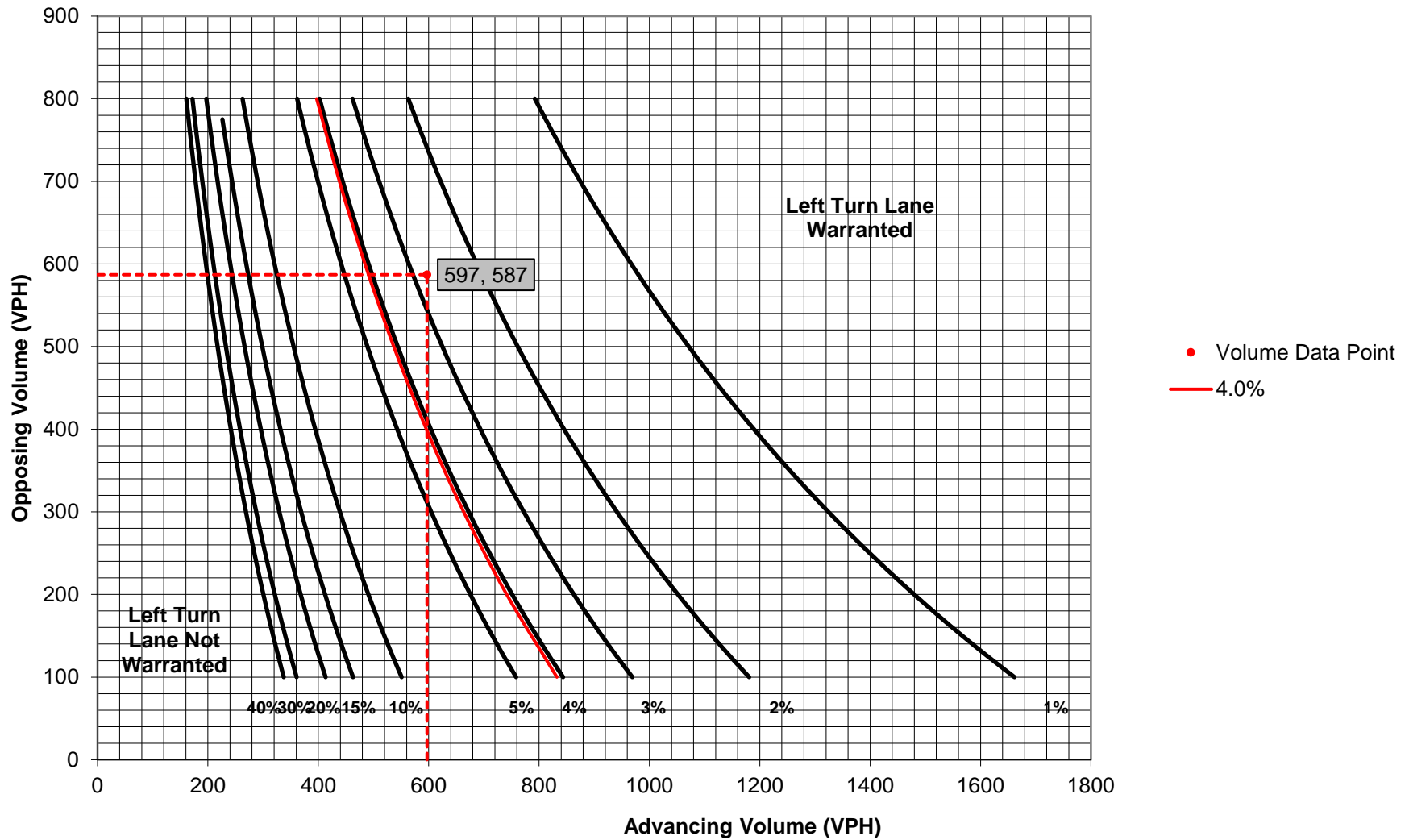
| Type of Traffic Control | PennDOT Publication 46, Exhibit 11-6 | | | | | |
|-------------------------|--------------------------------------|-----|--------|--------|--------|--------|
| | Speed (MPH) | | | | | |
| | 25-35 | | 40-45 | | 50-60 | |
| | Turn Demand Volume | | | | | |
| | High | Low | High | 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: | <input style="width: 100px;" type="text" value="75"/> | Feet |
| Condition B: | <input style="width: 100px;" type="text" value="N/A"/> | Feet |
| Condition C: | <input style="width: 100px;" type="text" value="N/A"/> | Feet |
| Required Left Turn Lane Storage Length: | <input style="width: 100px;" type="text" value="75"/> | Feet |

| | |
|----------------------|--|
| Additional Findings: | <input style="width: 100px;" type="text" value="N/A"/> |
|----------------------|--|

| |
|---|
| Additional Comments / Justifications: <input style="width: 100%; height: 40px;" type="text"/> |
|---|

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

| | |
|---|--|
| Municipality: <input type="text" value="Conshohocken Borough"/> County: <input type="text" value="Montgomery County"/> PennDOT Engineering District: <input type="text" value="6"/> | Analysis Date: <input type="text" value="1/5/2016"/> Conducted By: <input type="text" value="TDK"/> Checked By: <input type="text" value=""/> Agency/Company Name: <input type="text" value="McMahon Associates"/> |
| Intersection & Approach Description: <input type="text" value="West Elm Street and Western Access - Eastbound Right off of West Elm Street into Western Site Access - Scenario 1 and 2"/> | |
| Analysis Period: <input type="text" value="2024 Buid Year"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Level"/> | Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid red; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/> |

VOLUME CALCULATIONS

| Left Turn Lane Volume Calculations | | | | | |
|------------------------------------|----------|--------|----------|------|-----|
| Movement | Include? | Volume | % Trucks | PCEV | |
| Advancing | Left | Yes | 0 | 0.0% | N/A |
| | Through | - | 0 | 0.0% | N/A |
| | Right | Yes | 0 | 0.0% | N/A |
| Opposing | Left | Yes | 0 | 0.0% | N/A |
| | Through | - | 0 | 0.0% | N/A |
| | Right | Yes | 0 | 0.0% | N/A |

| | |
|-----------------------------------|----------------------------------|
| Advancing Volume: | <input type="text" value="N/A"/> |
| Opposing Volume: | <input type="text" value="N/A"/> |
| Left Turn Volume: | <input type="text" value="N/A"/> |
| % Left Turns in Advancing Volume: | <input type="text" value="N/A"/> |

| Right Turn Lane Volume Calculations | | | | | |
|-------------------------------------|----------|--------|----------|-------|-----|
| Movement | Include? | Volume | % Trucks | PCEV | |
| Advancing | Left | Yes | 0 | 0.0% | 0 |
| | Through | - | 377 | 13.0% | 402 |
| | Right | - | 35 | 0.0% | 35 |

| | |
|--------------------|----------------------------------|
| Advancing Volume: | <input type="text" value="437"/> |
| Right Turn Volume: | <input type="text" value="35"/> |

TURN LANE WARRANT FINDINGS

| Left Turn Lane Warrant Findings | Right Turn Lane Warrant Findings |
|---|--|
| Applicable Warrant Figure: <input type="text" value="N/A"/> | Applicable Warrant Figure: <input type="text" value="Figure 9"/> |
| Warrant Met?: <input type="text" value="N/A"/> | Warrant Met?: <input type="text" value="No"/> |

TURN LANE LENGTH CALCULATIONS

| | | | |
|-------------------------------------|---|------------------------------|----------------------------------|
| Intersection Control: | <input type="text" value="Unsignalized"/> | | |
| Design Hour Volume of Turning Lane: | <input type="text" value="35"/> | | |
| Cycles Per Hour (Assumed): | <input type="text" value="Known"/> | | |
| Cycles Per Hour (If Known): | <input type="text" value="40"/> | Average # of Vehicles/Cycle: | <input type="text" value="N/A"/> |

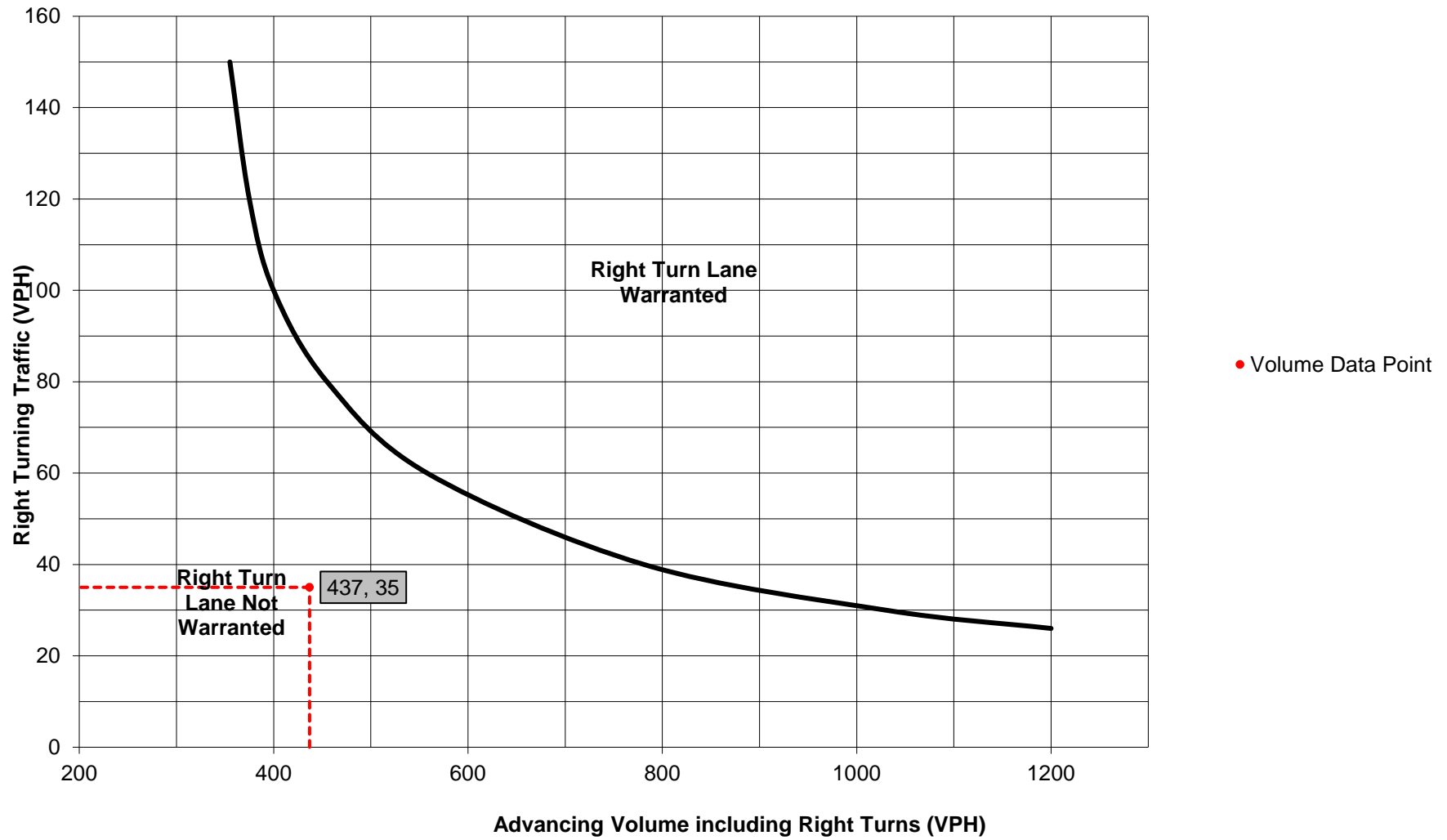
| Type of Traffic Control | PennDOT Publication 46, Exhibit 11-6 | | | | | |
|-------------------------|--------------------------------------|-----|--------|--------|--------|--------|
| | Speed (MPH) | | | | | |
| | 25-35 | | 40-45 | | 50-60 | |
| | Turn Demand Volume | | | | | |
| | High | Low | High | 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: | <input type="text" value="N/A"/> | Feet |
| Condition B: | <input type="text" value="N/A"/> | Feet |
| Condition C: | <input type="text" value="N/A"/> | Feet |
| Required Right Turn Lane Storage Length: | <input type="text" value="N/A"/> | Feet |

| | |
|----------------------|----------------------------------|
| Additional Findings: | <input type="text" value="N/A"/> |
|----------------------|----------------------------------|

| | |
|---------------------------------------|----------------------------------|
| Additional Comments / Justifications: | <input type="text" value="N/A"/> |
|---------------------------------------|----------------------------------|

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

| | |
|---|--|
| Municipality: <input type="text" value="Conshohocken Borough"/> County: <input type="text" value="Montgomery County"/> PennDOT Engineering District: <input type="text" value="6"/> | Analysis Date: <input type="text" value="1/5/2016"/> Conducted By: <input type="text" value="TDK"/> Checked By: <input type="text" value=""/> Agency/Company Name: <input type="text" value="McMahon Associates"/> |
| Intersection & Approach Description: <input type="text" value="West Elm Street and Western Access - Eastbound Right off of West Elm Street into Western Site Access - Scenario 1 and 2"/> | |
| Analysis Period: <input type="text" value="2024 Buid Year"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Level"/> | Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid red; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Right Turn Lane"/> |

VOLUME CALCULATIONS

| Left Turn Lane Volume Calculations | | | | | |
|------------------------------------|----------|--------|----------|------|-----|
| Movement | Include? | Volume | % Trucks | PCEV | |
| Advancing | Left | Yes | 0 | 0.0% | N/A |
| | Through | - | 0 | 0.0% | N/A |
| | Right | Yes | 0 | 0.0% | N/A |
| Opposing | Left | Yes | 0 | 0.0% | N/A |
| | Through | - | 0 | 0.0% | N/A |
| | Right | Yes | 0 | 0.0% | N/A |

| Right Turn Lane Volume Calculations | | | | | |
|-------------------------------------|----------|--------|----------|------|-----|
| Movement | Include? | Volume | % Trucks | PCEV | |
| Advancing | Left | Yes | 1 | 0.0% | 1 |
| | Through | - | 459 | 2.0% | 464 |
| | Right | - | 10 | 0.0% | 10 |

| | |
|-----------------------------------|-----|
| Advancing Volume: | N/A |
| Opposing Volume: | N/A |
| Left Turn Volume: | N/A |
| % Left Turns in Advancing Volume: | N/A |

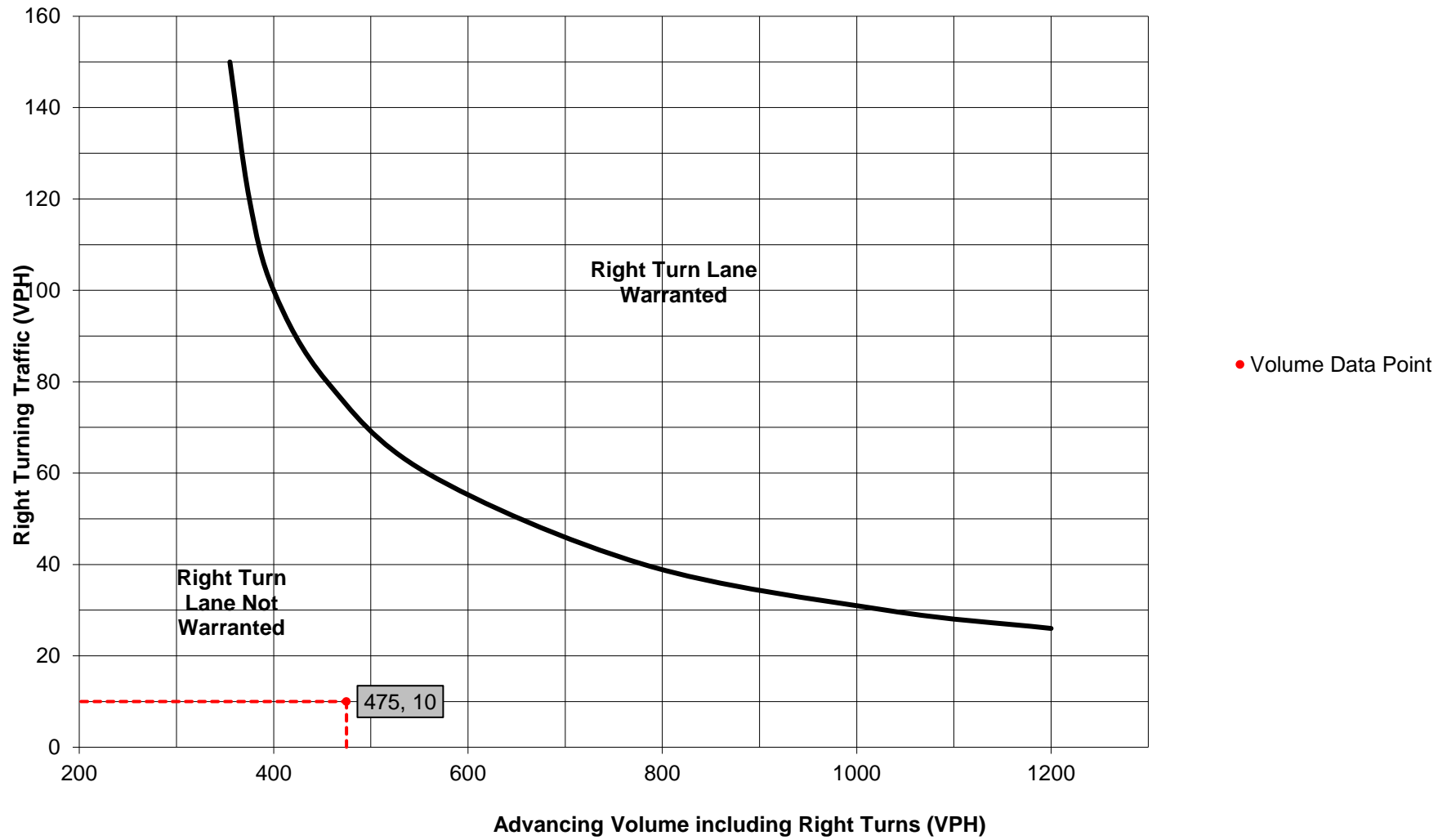
TURN LANE WARRANT FINDINGS

| Left Turn Lane Warrant Findings | Right Turn Lane Warrant Findings |
|--|---|
| Applicable Warrant Figure: <input style="width: 80px;" type="text" value="N/A"/> | Applicable Warrant Figure: <input style="width: 80px;" type="text" value="Figure 9"/> |
| Warrant Met?: <input style="width: 80px;" type="text" value="N/A"/> | Warrant Met?: <input style="width: 80px;" type="text" value="No"/> |

TURN LANE LENGTH CALCULATIONS

| Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="10"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="40"/> | Average # of Vehicles/Cycle: <input style="width: 100px;" type="text" value="N/A"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|-------------------------|-------------|--------|--------|--------|--|--|-------|--|-------|--|-------|--|--------------------|--|--|--|--|--|--|------|-----|------|-----|------|-----|------------|---|---|--------|--------|--------|--------|--------------|---|---|---|---|--------|---|
| PennDOT Publication 46, Exhibit 11-6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #FFDAB9;"> <th rowspan="3" style="width: 20%;">Type of Traffic Control</th> <th colspan="6" style="background-color: #FFDAB9;">Speed (MPH)</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="2" style="background-color: #FFDAB9;">25-35</th> <th colspan="2" style="background-color: #FFDAB9;">40-45</th> <th colspan="2" style="background-color: #FFDAB9;">50-60</th> </tr> <tr style="background-color: #FFDAB9;"> <th colspan="6" style="text-align: center; background-color: #FFDAB9;">Turn Demand Volume</th> </tr> <tr> <th></th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> <th style="text-align: center;">High</th> <th style="text-align: center;">Low</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Signalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> </tr> <tr> <td style="text-align: center;">Unsignalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">C</td> <td style="text-align: center;">B</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B</td> </tr> </tbody> </table> | | 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 |
| 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: <input style="width: 80px;" type="text" value="N/A"/> Feet Condition B: <input style="width: 80px;" type="text" value="N/A"/> Feet Condition C: <input style="width: 80px;" type="text" value="N/A"/> Feet Required Right Turn Lane Storage Length: <input style="width: 80px;" type="text" value="N/A"/> Feet | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Findings: <input style="width: 150px;" type="text" value="N/A"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Comments / Justifications: <input style="width: 100%; height: 40px;" type="text" value=""/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

| | |
|---|---|
| Municipality: <input type="text" value="Conshohocken Borough"/> County: <input type="text" value="Montgomery County"/> PennDOT Engineering District: <input type="text" value="6"/> | Analysis Date: <input type="text" value="1/5/2016"/> Conducted By: <input type="text" value="TDK"/> Checked By: <input type="text" value=""/> Agency/Company Name: <input type="text" value="McMahon Associates"/> |
| Intersection & Approach Description: <input type="text" value="West Elm Street and Western Access - Westbound Left off of West Elm Street into Western Site Access - Scenario 1"/> | |
| Analysis Period: <input type="text" value="2024 Buid Year"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Level"/> | Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid red; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/> |

VOLUME CALCULATIONS

| Left Turn Lane Volume Calculations | | | | | | |
|-------------------------------------|----------|--------|----------|-------|-----|---|
| Movement | Include? | Volume | % Trucks | PCEV | | |
| Advancing | Left | Yes | 139 | 0.0% | 139 | Advancing Volume: <input type="text" value="474"/> Opposing Volume: <input type="text" value="437"/> Left Turn Volume: <input type="text" value="139"/> |
| | Through | - | 309 | 15.0% | 333 | |
| | Right | Yes | 2 | 0.0% | 2 | |
| Opposing | Left | Yes | 0 | 0.0% | 0 | % Left Turns in Advancing Volume: <input type="text" value="29.32%"/> |
| | Through | - | 377 | 13.0% | 402 | |
| | Right | Yes | 35 | 0.0% | 35 | |
| Right Turn Lane Volume Calculations | | | | | | |
| Movement | Include? | Volume | % Trucks | PCEV | | |
| Advancing | Left | Yes | 0 | 0.0% | N/A | Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/> |
| | Through | - | 0 | 0.0% | N/A | |
| | Right | - | 0 | 0.0% | N/A | |

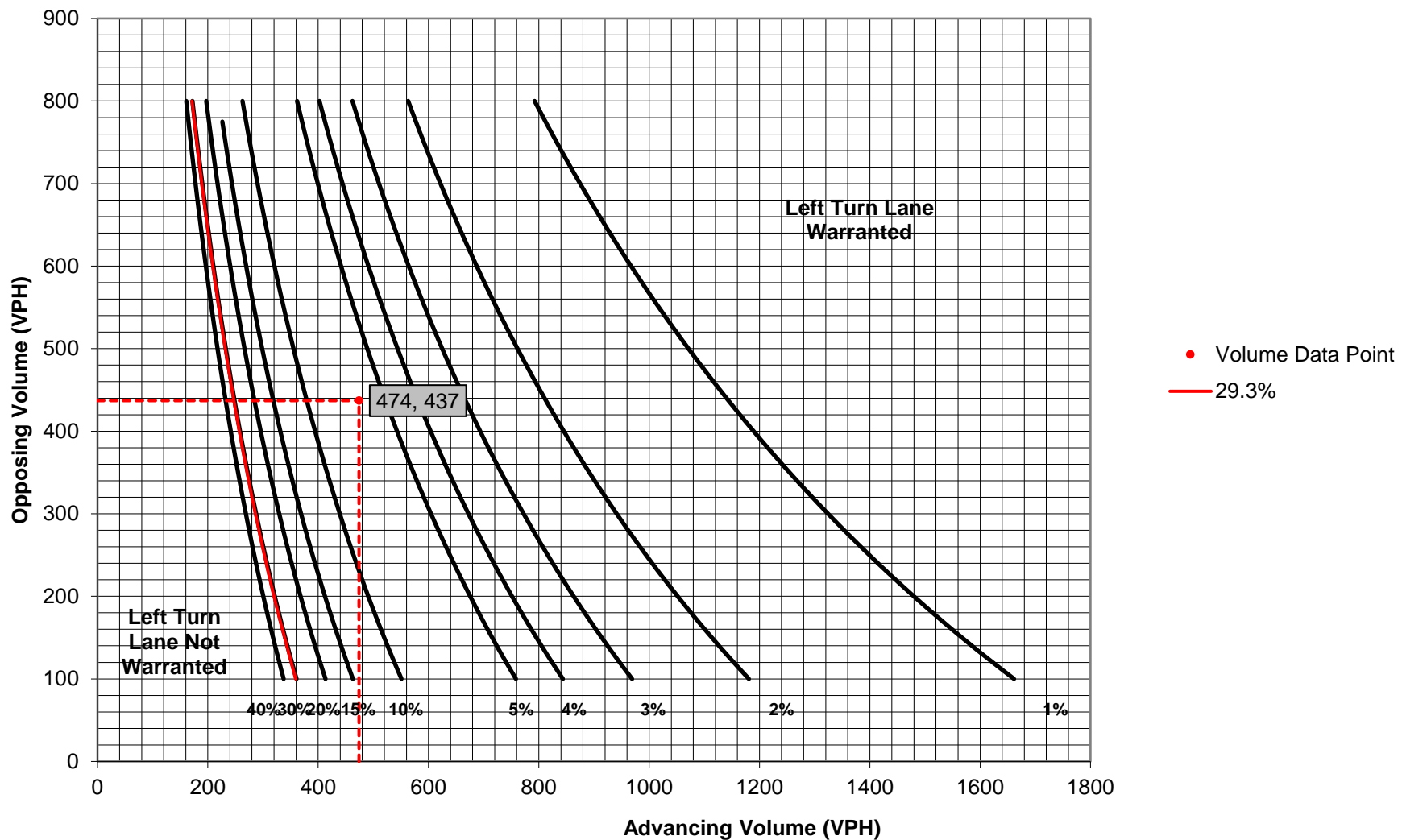
TURN LANE WARRANT FINDINGS

| Left Turn Lane Warrant Findings | Right Turn Lane Warrant Findings |
|--|---|
| Applicable Warrant Figure: <input type="text" value="Figure 1"/> Warrant Met?: <input type="text" value="Yes"/> | Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/> |

TURN LANE LENGTH CALCULATIONS

| Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="139"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="40"/> | Average # of Vehicles/Cycle: <input type="text" value="3.0"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------------|-------------|--------|--------|--------|--|--|-------|--|-------|--|-------|--|--------------------|--|--|--|--|--|--|------|-----|------|-----|------|-----|------------|---|---|--------|--------|--------|--------|--------------|---|---|---|---|--------|---|
| PennDOT Publication 46, Exhibit 11-6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 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: <input type="text" value="150"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Left Turn Lane Storage Length: <input type="text" value="150"/> Feet | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Findings: <input type="text" value="N/A"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Comments / Justifications: <input style="width: 100%; height: 40px;" type="text"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

| | |
|---|--|
| Municipality: <input type="text" value="Conshohocken Borough"/> County: <input type="text" value="Montgomery County"/> PennDOT Engineering District: <input type="text" value="6"/> | Analysis Date: <input type="text" value="1/5/2016"/> Conducted By: <input type="text" value="TDK"/> Checked By: <input type="text" value=""/> Agency/Company Name: <input type="text" value="McMahon Associates"/> |
| Intersection & Approach Description: <input type="text" value="West Elm Street and Western Access - Westbound Left off of West Elm Street into Western Site Access - Scenario 2"/> | |
| Analysis Period: <input type="text" value="2024 Buid Year"/> Design Hour: <input type="text" value="AM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Level"/> | Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Type of Analysis: Left Turn Lane Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/> |

VOLUME CALCULATIONS

| Left Turn Lane Volume Calculations | | | | | | |
|-------------------------------------|----------|--------|----------|-------|-----|---|
| Movement | Include? | Volume | % Trucks | PCEV | | |
| Advancing | Left | Yes | 281 | 0.0% | 281 | Advancing Volume: <input type="text" value="616"/> Opposing Volume: <input type="text" value="437"/> Left Turn Volume: <input type="text" value="281"/> |
| | Through | - | 309 | 15.0% | 333 | |
| | Right | Yes | 2 | 0.0% | 2 | |
| Opposing | Left | Yes | 0 | 0.0% | 0 | % Left Turns in Advancing Volume: <input type="text" value="45.62%"/> |
| | Through | - | 377 | 13.0% | 402 | |
| | Right | Yes | 35 | 0.0% | 35 | |
| Right Turn Lane Volume Calculations | | | | | | |
| Movement | Include? | Volume | % Trucks | PCEV | | |
| Advancing | Left | Yes | 0 | 0.0% | N/A | Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/> |
| | Through | - | 0 | 0.0% | N/A | |
| | Right | - | 0 | 0.0% | N/A | |

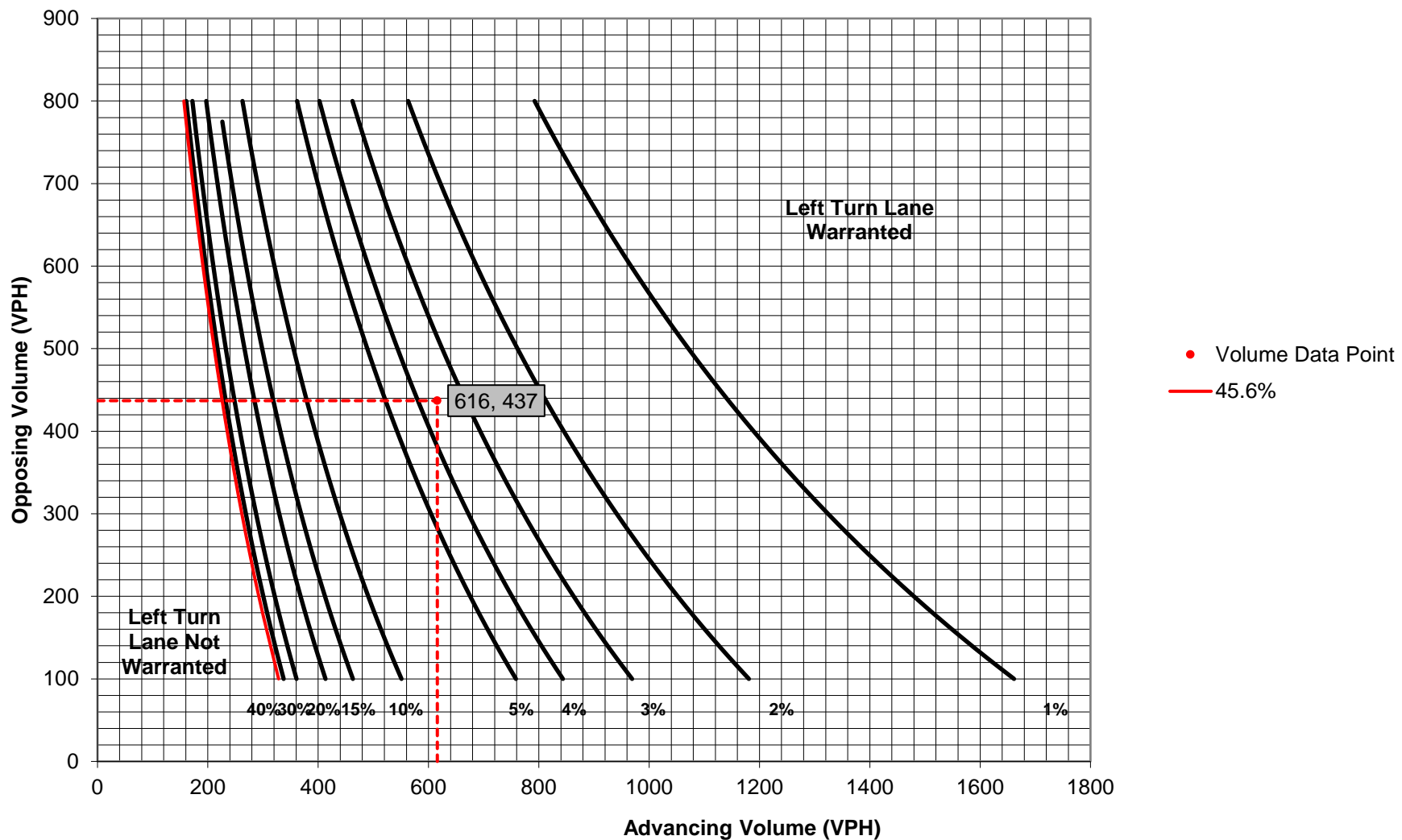
TURN LANE WARRANT FINDINGS

| Left Turn Lane Warrant Findings | Right Turn Lane Warrant Findings |
|--|---|
| Applicable Warrant Figure: <input type="text" value="Figure 1"/> Warrant Met?: <input type="text" value="Yes"/> | Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/> |

TURN LANE LENGTH CALCULATIONS

| Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="281"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="40"/> | Average # of Vehicles/Cycle: <input type="text" value="7.0"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------------|-------------|--------|--------|--------|--|--|-------|--|-------|--|-------|--|--------------------|--|--|--|--|--|--|------|-----|------|-----|------|-----|------------|---|---|--------|--------|--------|--------|--------------|---|---|---|---|--------|---|
| PennDOT Publication 46, Exhibit 11-6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 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: <input type="text" value="275"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Left Turn Lane Storage Length: <input type="text" value="275"/> Feet | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Findings: <input type="text" value="N/A"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Comments / Justifications: <input style="height: 40px;" type="text"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

| | |
|---|--|
| Municipality: <input type="text" value="Conshohocken Borough"/> County: <input type="text" value="Montgomery County"/> PennDOT Engineering District: <input type="text" value="6"/> | Analysis Date: <input type="text" value="1/5/2016"/> Conducted By: <input type="text" value="TDK"/> Checked By: <input type="text" value=""/> Agency/Company Name: <input type="text" value="McMahon Associates"/> |
| Intersection & Approach Description: <input type="text" value="West Elm Street and Western Access - Westbound Left off of West Elm Street into Western Site Access - Scenario 1"/> | |
| Analysis Period: <input type="text" value="2024 Buid Year"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Level"/> | Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> Type of Analysis: Left Turn Lane Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/> |

VOLUME CALCULATIONS

| Left Turn Lane Volume Calculations | | | | | | |
|------------------------------------|----------|--------|----------|------|-----|--|
| Movement | Include? | Volume | % Trucks | PCEV | | |
| Advancing | Left | Yes | 25 | 0.0% | 25 | Advancing Volume: <input type="text" value="582"/> Opposing Volume: <input type="text" value="475"/> Left Turn Volume: <input type="text" value="25"/> |
| | Through | - | 535 | 5.0% | 549 | |
| | Right | Yes | 8 | 0.0% | 8 | |
| Opposing | Left | Yes | 1 | 0.0% | 1 | % Left Turns in Advancing Volume: <input type="text" value="4.30%"/> |
| | Through | - | 459 | 2.0% | 464 | |
| | Right | Yes | 10 | 0.0% | 10 | |

| Right Turn Lane Volume Calculations | | | | | | |
|-------------------------------------|----------|--------|----------|------|-----|---|
| Movement | Include? | Volume | % Trucks | PCEV | | |
| Advancing | Left | Yes | 0 | 0.0% | N/A | Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/> |
| | Through | - | 0 | 0.0% | N/A | |
| | Right | - | 0 | 0.0% | N/A | |

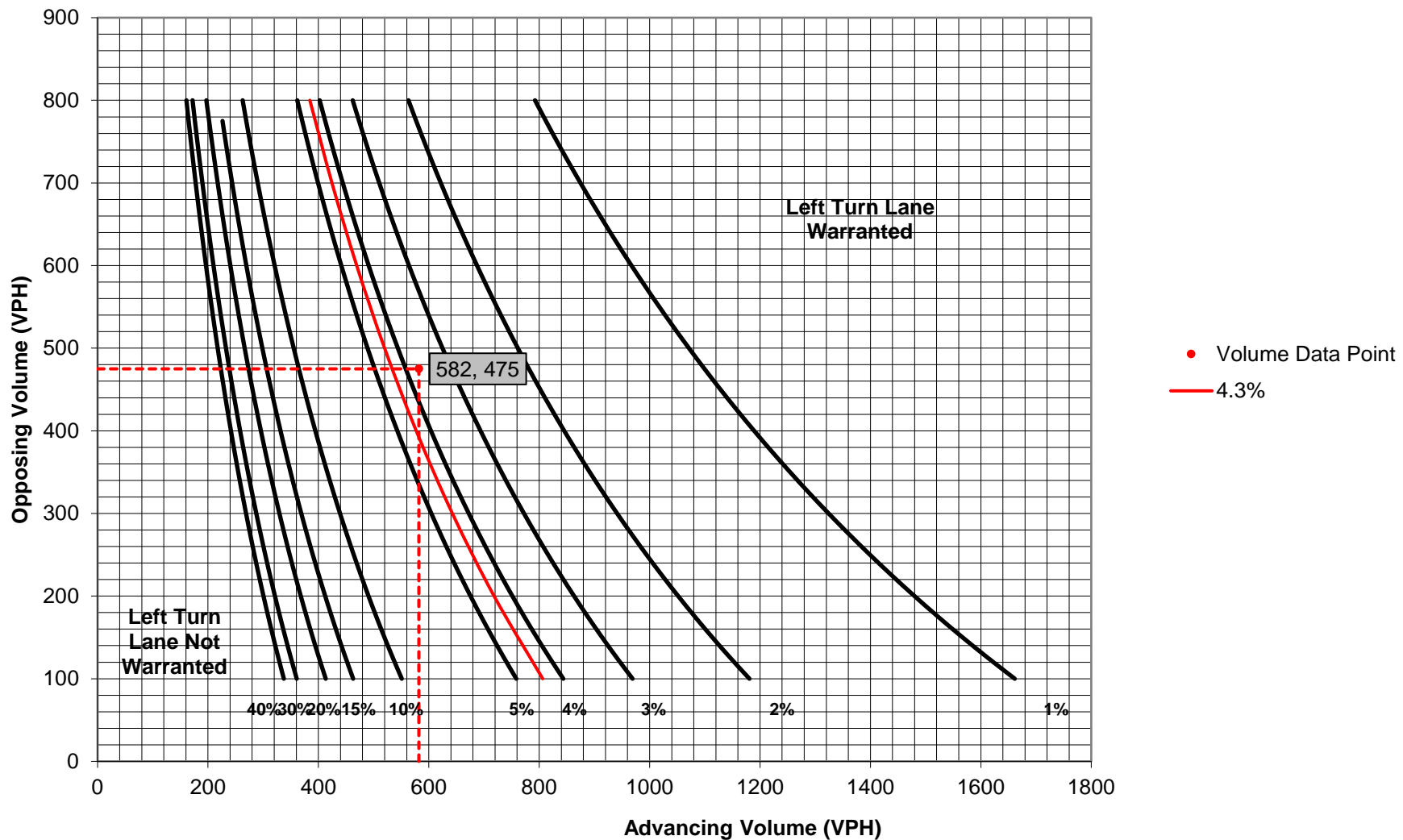
TURN LANE WARRANT FINDINGS

| Left Turn Lane Warrant Findings | Right Turn Lane Warrant Findings |
|--|---|
| Applicable Warrant Figure: <input type="text" value="Figure 1"/> Warrant Met?: <input type="text" value="Yes"/> | Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/> |

TURN LANE LENGTH CALCULATIONS

| Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="25"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="40"/> | Average # of Vehicles/Cycle: <input type="text" value="1.0"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------------|-------------|--------|--------|--------|--|--|-------|--|-------|--|-------|--|--------------------|--|--|--|--|--|--|------|-----|------|-----|------|-----|------------|---|---|--------|--------|--------|--------|--------------|---|---|---|---|--------|---|
| PennDOT Publication 46, Exhibit 11-6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 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: <input type="text" value="75"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Left Turn Lane Storage Length: <input type="text" value="75"/> Feet | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Findings: <input type="text" value="N/A"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Comments / Justifications: <input style="width: 100%; height: 40px;" type="text"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

| | |
|---|---|
| Municipality: <input type="text" value="Conshohocken Borough"/> County: <input type="text" value="Montgomery County"/> PennDOT Engineering District: <input type="text" value="6"/> | Analysis Date: <input type="text" value="1/5/2016"/> Conducted By: <input type="text" value="TDK"/> Checked By: <input type="text" value=""/> Agency/Company Name: <input type="text" value="McMahon Associates"/> |
| Intersection & Approach Description: <input type="text" value="West Elm Street and Western Access - Westbound Left off of West Elm Street into Western Site Access - Scenario 2"/> | |
| Analysis Period: <input type="text" value="2024 Buid Year"/> Design Hour: <input type="text" value="PM Peak Hour"/> Intersection Control: <input type="text" value="Unsignalized"/> Posted Speed Limit (MPH): <input type="text" value="25"/> Type of Terrain: <input type="text" value="Level"/> | Number of Approach Lanes: <input type="text" value="1"/> Undivided or Divided Highway: <input type="text" value="Undivided"/> <div style="border: 1px solid red; padding: 2px; display: inline-block;">Type of Analysis</div> Left or Right-Turn Lane Analysis?: <input type="text" value="Left Turn Lane"/> |

VOLUME CALCULATIONS

| Left Turn Lane Volume Calculations | | | | | | |
|------------------------------------|----------|--------|----------|------|-----|--|
| Movement | Include? | Volume | % Trucks | PCEV | | |
| Advancing | Left | Yes | 49 | 0.0% | 49 | Advancing Volume: <input type="text" value="606"/> Opposing Volume: <input type="text" value="475"/> Left Turn Volume: <input type="text" value="49"/> |
| | Through | - | 535 | 5.0% | 549 | |
| | Right | Yes | 8 | 0.0% | 8 | |
| Opposing | Left | Yes | 1 | 0.0% | 1 | % Left Turns in Advancing Volume: <input type="text" value="8.09%"/> |
| | Through | - | 459 | 2.0% | 464 | |
| | Right | Yes | 10 | 0.0% | 10 | |

| Right Turn Lane Volume Calculations | | | | | | |
|-------------------------------------|----------|--------|----------|------|-----|---|
| Movement | Include? | Volume | % Trucks | PCEV | | |
| Advancing | Left | Yes | 0 | 0.0% | N/A | Advancing Volume: <input type="text" value="N/A"/> Right Turn Volume: <input type="text" value="N/A"/> |
| | Through | - | 0 | 0.0% | N/A | |
| | Right | - | 0 | 0.0% | N/A | |

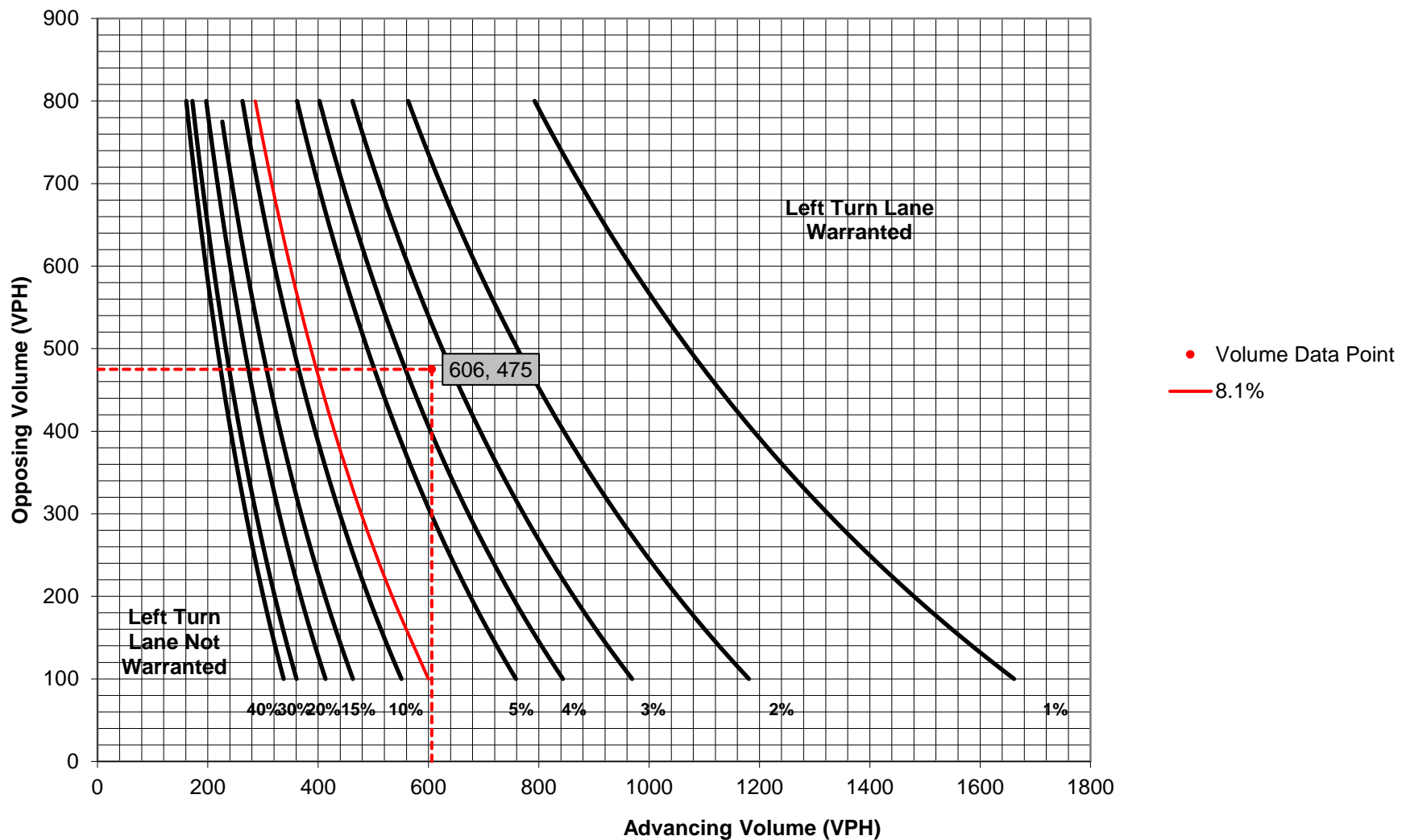
TURN LANE WARRANT FINDINGS

| Left Turn Lane Warrant Findings | Right Turn Lane Warrant Findings |
|--|---|
| Applicable Warrant Figure: <input type="text" value="Figure 1"/> Warrant Met?: <input type="text" value="Yes"/> | Applicable Warrant Figure: <input type="text" value="N/A"/> Warrant Met?: <input type="text" value="N/A"/> |

TURN LANE LENGTH CALCULATIONS

| Intersection Control: <input type="text" value="Unsignalized"/> Design Hour Volume of Turning Lane: <input type="text" value="49"/> Cycles Per Hour (Assumed): <input type="text" value="Known"/> Cycles Per Hour (If Known): <input type="text" value="40"/> | Average # of Vehicles/Cycle: <input type="text" value="1.0"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------------|-------------|--------|--------|--------|--|--|-------|--|-------|--|-------|--|--------------------|--|--|--|--|--|--|------|-----|------|-----|------|-----|------------|---|---|--------|--------|--------|--------|--------------|---|---|---|---|--------|---|
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| 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: <input type="text" value="75"/> Feet Condition B: <input type="text" value="N/A"/> Feet Condition C: <input type="text" value="N/A"/> Feet Required Left Turn Lane Storage Length: <input type="text" value="75"/> Feet | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Findings: <input type="text" value="N/A"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Comments / Justifications: <input style="width: 100%; height: 40px;" type="text"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Figure 1. Warrant for left turn lanes on two-lane roadways
 (speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



STUDY AND ANALYSIS INFORMATION

Municipality: Conshocken Borough
 County: Montgomery County
 PennDOT Engineering District: 6

Analysis Date: 1/6/2016
 Conducted By: TDK
 Agency/Company Name: McMahon

Analysis Information

Data Collection Date: 7/25/2012
 Day of the Week: Monday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Major Street Information

Major Street Name and Route Number: West Elm Street (S.R. 3013)
 Major Street Approach #1 Direction: E-Bound
 Major Street Approach #2 Direction: W-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach: 1 LANE(S)
 Speed Limit or 85th Percentile Speed on the Major Street: 25 MPH

Minor Street Information

Minor Street Name and Route Number: Corson Street
 Minor Street Approach #1 Direction: S-Bound
 Minor Street Approach #2 Direction: N-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach: 1 LANE(S)

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

| | Applicable? | Warrant Met? |
|---|-------------|--------------|
| Warrant 1, Eight-Hour Vehicular Volume | No | N/A |
| Warrant 2, Four-Hour Vehicular Volume | No | N/A |
| Warrant 3, Peak Hour | Yes | No |
| Warrant 4, Pedestrian Volume | No | N/A |
| Warrant 5, School Crossing | No | N/A |
| Warrant 6, Coordinated Signal System | No | N/A |
| Warrant 7, Crash Experience | No | N/A |
| Warrant 8, Roadway Network | No | N/A |
| Warrant 9, Intersection Near a Grade Crossing | No | N/A |
| Warrant PA-1, ADT Volume Warrant | No | N/A |
| Warrant PA-2, Midblock and Trail Crossings | No | N/A |

| ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH | | | | | | |
|--|----------|------------------------------------|------------------------------------|-----------------------|------------------------------------|------------------------------------|
| Time Interval | | Major Street Approach #1 (E-Bound) | Major Street Approach #2 (W-Bound) | Major Street Combined | Minor Street Approach #1 (S-Bound) | Minor Street Approach #2 (N-Bound) |
| Begin At | End Of | Volume | Volume | Total Volume | Volume | Volume |
| 12:00 AM | 12:14 AM | | | 0 | | |
| 12:15 AM | 12:29 AM | | | 0 | | |
| 12:30 AM | 12:44 AM | | | 0 | | |
| 12:45 AM | 12:59 AM | | | 0 | | |
| 1:00 AM | 1:14 AM | | | 0 | | |
| 1:15 AM | 1:29 AM | | | 0 | | |
| 1:30 AM | 1:44 AM | | | 0 | | |
| 1:45 AM | 1:59 AM | | | 0 | | |
| 2:00 AM | 2:14 AM | | | 0 | | |
| 2:15 AM | 2:29 AM | | | 0 | | |
| 2:30 AM | 2:44 AM | | | 0 | | |
| 2:45 AM | 2:59 AM | | | 0 | | |
| 3:00 AM | 3:14 AM | | | 0 | | |
| 3:15 AM | 3:29 AM | | | 0 | | |
| 3:30 AM | 3:44 AM | | | 0 | | |
| 3:45 AM | 3:59 AM | | | 0 | | |
| 4:00 AM | 4:14 AM | | | 0 | | |
| 4:15 AM | 4:29 AM | | | 0 | | |
| 4:30 AM | 4:44 AM | | | 0 | | |
| 4:45 AM | 4:59 AM | | | 0 | | |
| 5:00 AM | 5:14 AM | | | 0 | | |
| 5:15 AM | 5:29 AM | | | 0 | | |
| 5:30 AM | 5:44 AM | | | 0 | | |
| 5:45 AM | 5:59 AM | | | 0 | | |
| 6:00 AM | 6:14 AM | | | 0 | | |
| 6:15 AM | 6:29 AM | | | 0 | | |
| 6:30 AM | 6:44 AM | | | 0 | | |
| 6:45 AM | 6:59 AM | | | 0 | | |
| 7:00 AM | 7:14 AM | 592 | 412 | 1004 | 24 | 23 |
| 7:15 AM | 7:29 AM | | | 0 | | |
| 7:30 AM | 7:44 AM | | | 0 | | |
| 7:45 AM | 7:59 AM | | | 0 | | |
| 8:00 AM | 8:14 AM | | | 0 | | |
| 8:15 AM | 8:29 AM | | | 0 | | |
| 8:30 AM | 8:44 AM | | | 0 | | |
| 8:45 AM | 8:59 AM | | | 0 | | |
| 9:00 AM | 9:14 AM | | | 0 | | |
| 9:15 AM | 9:29 AM | | | 0 | | |
| 9:30 AM | 9:44 AM | | | 0 | | |
| 9:45 AM | 9:59 AM | | | 0 | | |
| 10:00 AM | 10:14 AM | | | 0 | | |
| 10:15 AM | 10:29 AM | | | 0 | | |
| 10:30 AM | 10:44 AM | | | 0 | | |
| 10:45 AM | 10:59 AM | | | 0 | | |
| 11:00 AM | 11:14 AM | | | 0 | | |
| 11:15 AM | 11:29 AM | | | 0 | | |
| 11:30 AM | 11:44 AM | | | 0 | | |
| 11:45 AM | 11:59 AM | | | 0 | | |

| ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH | | | | | | |
|--|----------|------------------------------------|------------------------------------|-----------------------|------------------------------------|------------------------------------|
| Time Interval | | Major Street Approach #1 (E-Bound) | Major Street Approach #2 (W-Bound) | Major Street Combined | Minor Street Approach #1 (S-Bound) | Minor Street Approach #2 (N-Bound) |
| Begin At | End Of | Volume | Volume | Total Volume | Volume | Volume |
| 12:00 PM | 12:14 PM | | | 0 | | |
| 12:15 PM | 12:29 PM | | | 0 | | |
| 12:30 PM | 12:44 PM | | | 0 | | |
| 12:45 PM | 12:59 PM | | | 0 | | |
| 1:00 PM | 1:14 PM | | | 0 | | |
| 1:15 PM | 1:29 PM | | | 0 | | |
| 1:30 PM | 1:44 PM | | | 0 | | |
| 1:45 PM | 1:59 PM | | | 0 | | |
| 2:00 PM | 2:14 PM | | | 0 | | |
| 2:15 PM | 2:29 PM | | | 0 | | |
| 2:30 PM | 2:44 PM | | | 0 | | |
| 2:45 PM | 2:59 PM | | | 0 | | |
| 3:00 PM | 3:14 PM | | | 0 | | |
| 3:15 PM | 3:29 PM | | | 0 | | |
| 3:30 PM | 3:44 PM | | | 0 | | |
| 3:45 PM | 3:59 PM | | | 0 | | |
| 4:00 PM | 4:14 PM | 592 | 470 | 1062 | 20 | 147 |
| 4:15 PM | 4:29 PM | | | 0 | | |
| 4:30 PM | 4:44 PM | | | 0 | | |
| 4:45 PM | 4:59 PM | | | 0 | | |
| 5:00 PM | 5:14 PM | | | 0 | | |
| 5:15 PM | 5:29 PM | | | 0 | | |
| 5:30 PM | 5:44 PM | | | 0 | | |
| 5:45 PM | 5:59 PM | | | 0 | | |
| 6:00 PM | 6:14 PM | | | 0 | | |
| 6:15 PM | 6:29 PM | | | 0 | | |
| 6:30 PM | 6:44 PM | | | 0 | | |
| 6:45 PM | 6:59 PM | | | 0 | | |
| 7:00 PM | 7:14 PM | | | 0 | | |
| 7:15 PM | 7:29 PM | | | 0 | | |
| 7:30 PM | 7:44 PM | | | 0 | | |
| 7:45 PM | 7:59 PM | | | 0 | | |
| 8:00 PM | 8:14 PM | | | 0 | | |
| 8:15 PM | 8:29 PM | | | 0 | | |
| 8:30 PM | 8:44 PM | | | 0 | | |
| 8:45 PM | 8:59 PM | | | 0 | | |
| 9:00 PM | 9:14 PM | | | 0 | | |
| 9:15 PM | 9:29 PM | | | 0 | | |
| 9:30 PM | 9:44 PM | | | 0 | | |
| 9:45 PM | 9:59 PM | | | 0 | | |
| 10:00 PM | 10:14 PM | | | 0 | | |
| 10:15 PM | 10:29 PM | | | 0 | | |
| 10:30 PM | 10:44 PM | | | 0 | | |
| 10:45 PM | 10:59 PM | | | 0 | | |
| 11:00 PM | 11:14 PM | | | 0 | | |
| 11:15 PM | 11:29 PM | | | 0 | | |
| 11:30 PM | 11:44 PM | | | 0 | | |
| 11:45 PM | 11:59 PM | | | 0 | | |

| ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH | | | | | | |
|--|--------|------------------------------------|------------------------------------|-----------------------|------------------------------------|------------------------------------|
| Time Interval | | Major Street Approach #1 (E-Bound) | Major Street Approach #2 (W-Bound) | Major Street Combined | Minor Street Approach #1 (S-Bound) | Minor Street Approach #2 (N-Bound) |
| Begin At | End Of | Volume | Volume | Total Volume | Volume | Volume |
| Approach Totals: | | 1184 | 882 | 2066 | 44 | 170 |

MUTCD WARRANT 3, PEAK HOUR

| Number of Lanes for Moving Traffic on Each Approach | |
|---|--------|
| Major Street: | 1 Lane |
| Minor Street: | 1 Lane |

| | |
|---|----|
| Built-up Isolated Community With Less Than 10,000 Population or Above 40 MPH on Major Street? | No |
|---|----|

| | |
|---|----|
| Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time? | No |
|---|----|

| Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present* | |
|--|-----|
| Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach? | Yes |
| Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes? | Yes |
| Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches? | Yes |
| <i>*If applicable, attach all supporting calculations and documentation.</i> | |

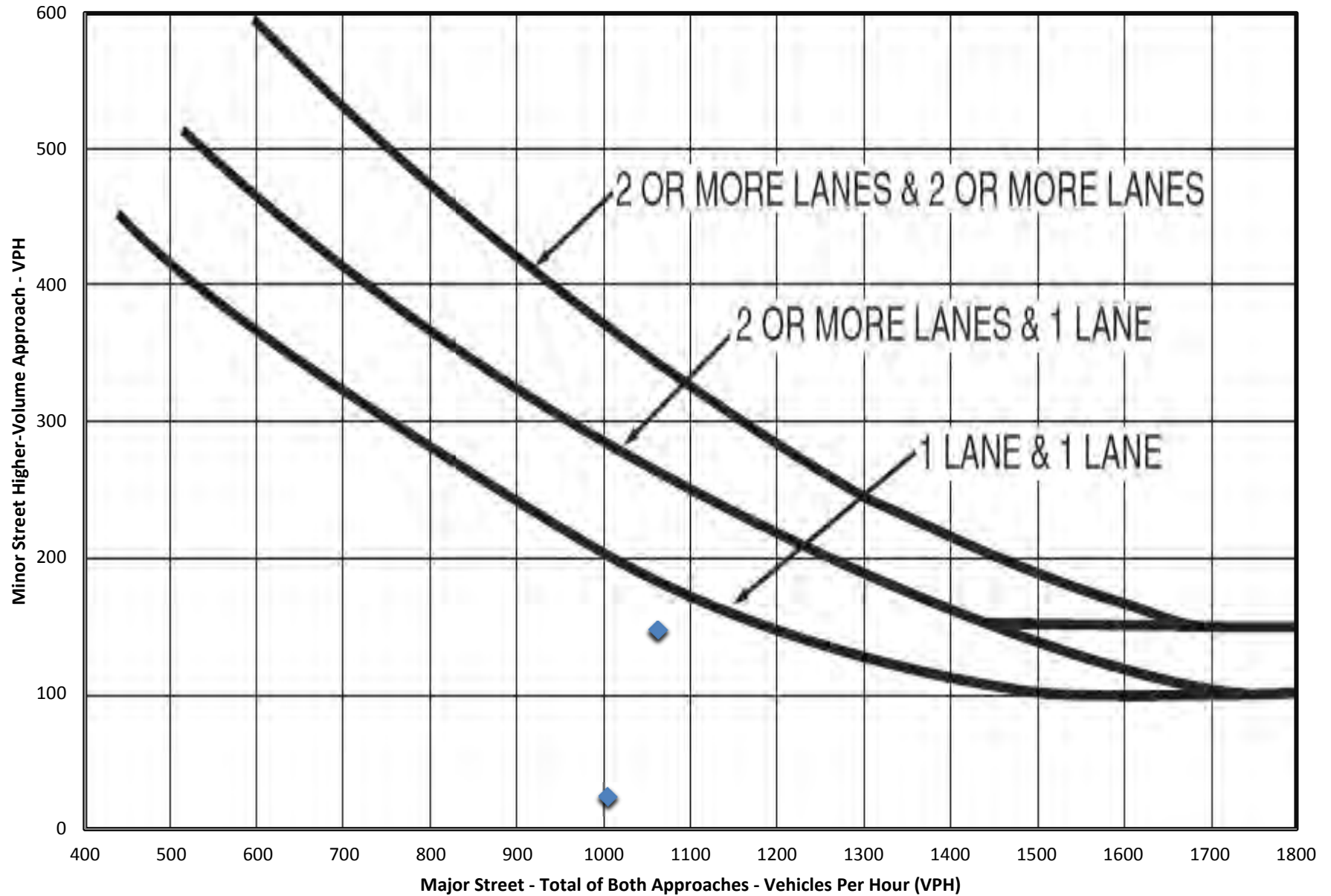
| |
|--|
| Total Number of Unique Hours Met On Figure 4C-3 |
| 0 |

| Hourly Vehicular Volume | | | |
|-------------------------|-------------------------|-------------------------------|-----------|
| Hour Interval | Major Street Combined | Highest Minor Street Approach | Hour Met? |
| Beginning At | Vehicles Per Hour (VPH) | Vehicles Per Hour (VPH) | |
| 12:00 AM | 0 | 0 | |
| 12:15 AM | 0 | 0 | |
| 12:30 AM | 0 | 0 | |
| 12:45 AM | 0 | 0 | |
| 1:00 AM | 0 | 0 | |
| 1:15 AM | 0 | 0 | |
| 1:30 AM | 0 | 0 | |
| 1:45 AM | 0 | 0 | |
| 2:00 AM | 0 | 0 | |
| 2:15 AM | 0 | 0 | |
| 2:30 AM | 0 | 0 | |
| 2:45 AM | 0 | 0 | |
| 3:00 AM | 0 | 0 | |
| 3:15 AM | 0 | 0 | |
| 3:30 AM | 0 | 0 | |
| 3:45 AM | 0 | 0 | |
| 4:00 AM | 0 | 0 | |
| 4:15 AM | 0 | 0 | |
| 4:30 AM | 0 | 0 | |
| 4:45 AM | 0 | 0 | |
| 5:00 AM | 0 | 0 | |
| 5:15 AM | 0 | 0 | |
| 5:30 AM | 0 | 0 | |
| 5:45 AM | 0 | 0 | |
| 6:00 AM | 0 | 0 | |
| 6:15 AM | 1004 | 24 | |
| 6:30 AM | 1004 | 24 | |
| 6:45 AM | 1004 | 24 | |
| 7:00 AM | 1004 | 24 | |
| 7:15 AM | 0 | 0 | |
| 7:30 AM | 0 | 0 | |
| 7:45 AM | 0 | 0 | |
| 8:00 AM | 0 | 0 | |

| Hourly Vehicular Volume | | | |
|-------------------------|-------------------------|-------------------------------|-----------|
| Hour Interval | Major Street Combined | Highest Minor Street Approach | Hour Met? |
| Beginning At | Vehicles Per Hour (VPH) | Vehicles Per Hour (VPH) | |
| 8:15 AM | 0 | 0 | |

| Hourly Vehicular Volume | | | |
|-------------------------|-------------------------|-------------------------------|-----------|
| Hour Interval | Major Street Combined | Highest Minor Street Approach | Hour Met? |
| Beginning At | Vehicles Per Hour (VPH) | Vehicles Per Hour (VPH) | |
| 8:30 AM | 0 | 0 | |
| 8:45 AM | 0 | 0 | |
| 9:00 AM | 0 | 0 | |
| 9:15 AM | 0 | 0 | |
| 9:30 AM | 0 | 0 | |
| 9:45 AM | 0 | 0 | |
| 10:00 AM | 0 | 0 | |
| 10:15 AM | 0 | 0 | |
| 10:30 AM | 0 | 0 | |
| 10:45 AM | 0 | 0 | |
| 11:00 AM | 0 | 0 | |
| 11:15 AM | 0 | 0 | |
| 11:30 AM | 0 | 0 | |
| 11:45 AM | 0 | 0 | |
| 12:00 PM | 0 | 0 | |
| 12:15 PM | 0 | 0 | |
| 12:30 PM | 0 | 0 | |
| 12:45 PM | 0 | 0 | |
| 1:00 PM | 0 | 0 | |
| 1:15 PM | 0 | 0 | |
| 1:30 PM | 0 | 0 | |
| 1:45 PM | 0 | 0 | |
| 2:00 PM | 0 | 0 | |
| 2:15 PM | 0 | 0 | |
| 2:30 PM | 0 | 0 | |
| 2:45 PM | 0 | 0 | |
| 3:00 PM | 0 | 0 | |
| 3:15 PM | 1062 | 147 | |
| 3:30 PM | 1062 | 147 | |
| 3:45 PM | 1062 | 147 | |
| 4:00 PM | 1062 | 147 | |
| 4:15 PM | 0 | 0 | |
| 4:30 PM | 0 | 0 | |
| 4:45 PM | 0 | 0 | |
| 5:00 PM | 0 | 0 | |
| 5:15 PM | 0 | 0 | |
| 5:30 PM | 0 | 0 | |
| 5:45 PM | 0 | 0 | |
| 6:00 PM | 0 | 0 | |
| 6:15 PM | 0 | 0 | |
| 6:30 PM | 0 | 0 | |
| 6:45 PM | 0 | 0 | |
| 7:00 PM | 0 | 0 | |
| 7:15 PM | 0 | 0 | |
| 7:30 PM | 0 | 0 | |
| 7:45 PM | 0 | 0 | |
| 8:00 PM | 0 | 0 | |
| 8:15 PM | 0 | 0 | |
| 8:30 PM | 0 | 0 | |
| 8:45 PM | 0 | 0 | |
| 9:00 PM | 0 | 0 | |
| 9:15 PM | 0 | 0 | |
| 9:30 PM | 0 | 0 | |
| 9:45 PM | 0 | 0 | |
| 10:00 PM | 0 | 0 | |
| 10:15 PM | 0 | 0 | |
| 10:30 PM | 0 | 0 | |
| 10:45 PM | 0 | 0 | |
| 11:00 PM | 0 | 0 | |

MUTCD Figure 4C-3. Warrant 3, Peak Hour



Left Turn Conflict Worksheet



Intersection: West Elm Street and Fayette Street

County: Montgomery Municipality: Conshohocken Borough

Count Date: File Number: 811675.12

NB Approach: **Fayette Street**

| | |
|--------------------------------------|-------|
| Exclusive Left-Turn Lane | Y |
| Number of Opposing Lanes | 2 |
| Include Right Turns | N |
| Required C.F. (Protected/Permitted) | 65000 |
| Required C.F. (Protected/Prohibited) | 90000 |

SB Approach: **Fayette Street**

| | |
|--------------------------------------|-------|
| Exclusive Lane | Y |
| Number of Opposing Lanes | 2 |
| Include Right Turns | N |
| Required C.F. (Protected/Permitted) | 65000 |
| Required C.F. (Protected/Prohibited) | 90000 |

| Hour | NB Left | SB Through | Cycle Length | Turns Per Cycle | NB Conflict Factor | L.T.P. Justified |
|----------|---------|------------|--------------|-----------------|--------------------|------------------|
| 7:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 8:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 9:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 10:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 11:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 12:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 1:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 2:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 3:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 4:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 5:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| AM Peak | 468 | 1243 | 110 | 14.3 | 581724 | Yes |
| MID Peak | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| PM Peak | 524 | 910 | 110 | 16.011 | 476840 | Yes |

| Hour | SB Left | NB Through | Cycle Length | Turns Per Cycle | SB Conflict Factor | L.T.P. Justified |
|----------|---------|------------|--------------|-----------------|--------------------|------------------|
| 7:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 8:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 9:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 10:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 11:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 12:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 1:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 2:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 3:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 4:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 5:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| AM Peak | 26 | 518 | 110 | 0.7944 | 13468 | No |
| MID Peak | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| PM Peak | 23 | 1083 | 110 | 0.7028 | 24909 | No |

EB Approach: **Elm Street**

| | |
|--------------------------------------|-------|
| Exclusive Lane | Y |
| Number of Opposing Lanes | 1 |
| Include Right Turns | N |
| Required C.F. (Protected/Permitted) | 50000 |
| Required C.F. (Protected/Prohibited) | 67500 |

WB Approach: **Elm Street**

| | |
|--------------------------------------|-------|
| Exclusive Lane | Y |
| Number of Opposing Lanes | 1 |
| Include Right Turns | N |
| Required C.F. (Protected/Permitted) | 50000 |
| Required C.F. (Protected/Prohibited) | 67500 |

| Hour | EB Left | WB Through | Cycle Length | Turns Per Cycle | EB Conflict Factor | L.T.P. Justified |
|----------|---------|------------|--------------|-----------------|--------------------|------------------|
| 7:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 8:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 9:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 10:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 11:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 12:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 1:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 2:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 3:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 4:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 5:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| AM Peak | 35 | 97 | 110 | 1.0694 | 3395 | No |
| MID Peak | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| PM Peak | 134 | 79 | 110 | 4.0944 | 10586 | No |

| Hour | WB Left | EB Through | Cycle Length | Turns Per Cycle | WB Conflict Factor | L.T.P. Justified |
|----------|---------|------------|--------------|-----------------|--------------------|------------------|
| 7:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 8:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 9:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 10:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 11:00 AM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 12:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 1:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 2:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 3:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 4:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| 5:00 PM | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| AM Peak | 583 | 37 | 110 | 17.814 | 21571 | No |
| MID Peak | 0 | 0 | 0 | #DIV/0! | 0 | ##### |
| PM Peak | 766 | 116 | 110 | 23.406 | 88856 | Yes |

Remarks:

Compiled By TDK
 Checked By JDG
 Date: January 5, 2016

APPENDIX G

Speed Study Data

Eastern Access

McMahon Associates, Inc.
 Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA

Municipality: Conshohocken
 Comments: None
 Weather: Variable
 ATR #/ Operator: NDB

Site Code: 000000000000000000
 Station ID: 000000000000000000
 Elm Street east of
 Old Elm Street
 Latitude: 0' 0.000 Undefined

| Westbound | | | | | | | | | | | | | | | Total | 85th Percent | 95th Percent |
|----------------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-------|-------|-----------------|-----------------|
| Start Time | 0 15 | 16 20 | 21 25 | 26 30 | 31 35 | 38 40 | 41 45 | 46 50 | 51 55 | 56 60 | 61 65 | 66 70 | 71 75 | | | | |
| 05/23/12 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 01:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 02:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 03:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 04:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 05:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 06:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 07:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 08:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 09:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 10:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 11:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 12 PM | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 13:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 14:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 15:00 | 4 | 11 | 38 | 98 | 129 | 51 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 335 | 36 | 39 | |
| 16:00 | 0 | 10 | 52 | 103 | 98 | 28 | 3 | 0 | 2 | 1 | 0 | 0 | 0 | 297 | 35 | 39 | |
| 17:00 | 0 | 5 | 20 | 113 | 77 | 25 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 244 | 35 | 39 | |
| 18:00 | 0 | 9 | 18 | 80 | 80 | 25 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 197 | 35 | 39 | |
| 19:00 | 0 | 8 | 23 | 79 | 41 | 6 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 159 | 33 | 35 | |
| 20:00 | 1 | 3 | 11 | 40 | 27 | 11 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 96 | 35 | 39 | |
| 21:00 | 0 | 0 | 6 | 18 | 14 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 49 | 37 | 41 | |
| 22:00 | 0 | 0 | 2 | 11 | 10 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 37 | 40 | |
| 23:00 | 0 | 1 | 3 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 32 | 33 | |
| Total | 5 | 47 | 173 | 544 | 459 | 159 | 19 | 2 | 2 | 4 | 1 | 0 | 0 | 1415 | | | |
| Percent | 0.4% | 3.3% | 12.2% | 36.4% | 32.4% | 11.2% | 1.3% | 0.1% | 0.1% | 0.3% | 0.1% | 0.0% | 0.0% | | | | |
| AM Peak | | | | | | | | | | | | | | | | | |
| Vol. | | | | | | | | | | | | | | | | | |
| PM Peak | 15:00 | 15:00 | 16:00 | 17:00 | 15:00 | 15:00 | 18:00 | 15:00 | 18:00 | 18:00 | 20:00 | | | 15:00 | | | |
| Vol. | 4 | 11 | 52 | 113 | 129 | 51 | 4 | 1 | 2 | 1 | 1 | | | 335 | | | |

McMahon Associates, Inc.

Transportation Engineers and Planners
425 Commerce Drive, Suite 200
Fort Washington, PA

Municipality: Conshohocken
Comments: None
Weather: Variable
ATR #/ Operator: NDB

Site Code: 000000000000000000
Station ID: 000000000000000000

Elm Street east of
Old Elm Street
Latitude: 0' 0.000 Undefined

Westbound

| Start Time | 0 | 16 | 21 | 26 | 31 | 36 | 41 | 46 | 51 | 56 | 61 | 66 | 71 | Total | 95th Percent | 95th Percent |
|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|--------------|
| | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | | | |
| 05/24/12 | 0 | 0 | 1 | 2 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 36 | 37 |
| 01:00 | 0 | 0 | 1 | 13 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 33 | 35 |
| 02:00 | 0 | 0 | 4 | 11 | 3 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 39 | 41 |
| 03:00 | 0 | 0 | 5 | 8 | 9 | 9 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 34 | 39 | 41 |
| 04:00 | 0 | 4 | 15 | 25 | 34 | 10 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 93 | 36 | 40 |
| 05:00 | 2 | 3 | 14 | 58 | 74 | 31 | 10 | 0 | 0 | 1 | 0 | 0 | 0 | 193 | 37 | 41 |
| 06:00 | 0 | 7 | 36 | 81 | 81 | 40 | 3 | 0 | 1 | 0 | 1 | 0 | 0 | 250 | 36 | 39 |
| 07:00 | 0 | 5 | 50 | 112 | 96 | 27 | 4 | 0 | 0 | 2 | 1 | 0 | 0 | 297 | 35 | 39 |
| 08:00 | 0 | 4 | 38 | 92 | 109 | 28 | 5 | 0 | 1 | 1 | 0 | 0 | 0 | 278 | 35 | 39 |
| 09:00 | 1 | 10 | 42 | 122 | 82 | 28 | 4 | 1 | 0 | 1 | 0 | 0 | 0 | 291 | 35 | 39 |
| 10:00 | 10 | 13 | 38 | 81 | 94 | 27 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 267 | 35 | 39 |
| 11:00 | 0 | 6 | 52 | 91 | 78 | 38 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 270 | 36 | 39 |
| 12 PM | 2 | 18 | 41 | 114 | 72 | 25 | 5 | 0 | 1 | 1 | 0 | 0 | 0 | 279 | 35 | 39 |
| 13:00 | 1 | 28 | 59 | 119 | 92 | 9 | 2 | 1 | 1 | 1 | 2 | 0 | 0 | 315 | 34 | 35 |
| 14:00 | 0 | 24 | 76 | 122 | 76 | 20 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 319 | 34 | 37 |
| 15:00 | 4 | 7 | 55 | 132 | 92 | 30 | 5 | 1 | 0 | 1 | 0 | 0 | 0 | 327 | 35 | 39 |
| 16:00 | 0 | 3 | 44 | 109 | 102 | 33 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 295 | 35 | 39 |
| 17:00 | 1 | 10 | 28 | 104 | 73 | 17 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 236 | 34 | 37 |
| 18:00 | 0 | 10 | 30 | 103 | 85 | 15 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 246 | 34 | 37 |
| 19:00 | 0 | 3 | 23 | 72 | 50 | 7 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 157 | 34 | 36 |
| 20:00 | 0 | 3 | 20 | 58 | 25 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 111 | 33 | 35 |
| 21:00 | 0 | 4 | 6 | 18 | 13 | 8 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 51 | 36 | 39 |
| 22:00 | 0 | 0 | 4 | 11 | 7 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 35 | 38 |
| 23:00 | 0 | 1 | 2 | 5 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 34 | 35 |
| Total | 21 | 163 | 684 | 1683 | 1360 | 415 | 68 | 5 | 5 | 9 | 6 | 0 | 0 | 4399 | | |
| Percent | 0.5% | 3.7% | 15.5% | 37.8% | 30.9% | 9.4% | 1.5% | 0.1% | 0.1% | 0.2% | 0.1% | 0.0% | 0.0% | | | |
| AM Peak | 10:00 | 10:00 | 11:00 | 09:00 | 05:00 | 06:00 | 05:00 | 09:00 | 06:00 | 07:00 | 03:00 | | | | | 07:00 |
| Vol. | 10 | 13 | 52 | 122 | 109 | 40 | 10 | 1 | 1 | 2 | 1 | | | 297 | | |
| PM Peak | 15:00 | 13:00 | 14:00 | 15:00 | 16:00 | 16:00 | 12:00 | 18:00 | 12:00 | 12:00 | 13:00 | | | 15:00 | | |
| Vol. | 4 | 28 | 78 | 132 | 102 | 33 | 5 | 2 | 1 | 1 | 2 | | | 327 | | |

McMahon Associates, Inc.
 Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA

Municipality: Conshohocken
 Comments: None
 Weather: Variable
 ATR #/ Operator: NDB

Site Code: 00000000000000000000
 Station ID: 00000000000000000000
 Old Elm Street east of
 Old Elm Street
 Latitude: 0' 0.000 Undefined

| Westbound | | | | | | | | | | | | | | | 85th | 95th |
|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|--------------|---------|--------------|
| Start Time | 0 | 16 | 21 | 26 | 31 | 36 | 41 | 45 | 51 | 56 | 61 | 66 | 71 | Total | Percent | Percent |
| 05/25/12 | 0 | 1 | 0 | 5 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 36 | 37 |
| 01:00 | 0 | 0 | 0 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 34 | 35 |
| 02:00 | 0 | 1 | 1 | 7 | 9 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 34 | 40 |
| 03:00 | 0 | 1 | 7 | 15 | 20 | 8 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 36 | 39 |
| 04:00 | 0 | 7 | 8 | 29 | 24 | 16 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 89 | 36 | 41 |
| 05:00 | 0 | 0 | 22 | 70 | 72 | 18 | 7 | 0 | 0 | 1 | 0 | 0 | 0 | 190 | 35 | 40 |
| 06:00 | 1 | 7 | 26 | 104 | 85 | 35 | 3 | 0 | 2 | 1 | 0 | 0 | 0 | 264 | 36 | 39 |
| 07:00 | 3 | 5 | 31 | 112 | 87 | 23 | 8 | 0 | 1 | 1 | 0 | 0 | 0 | 271 | 35 | 39 |
| 08:00 | 2 | 18 | 50 | 122 | 76 | 27 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 299 | 35 | 38 |
| 09:00 | 0 | 13 | 57 | 124 | 96 | 18 | 6 | 0 | 1 | 1 | 3 | 0 | 0 | 319 | 34 | 39 |
| 10:00 | 4 | 22 | 42 | 101 | 94 | 18 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 288 | 34 | 38 |
| 11:00 | 8 | 21 | 43 | 137 | 76 | 14 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 306 | 34 | 37 |
| 12 PM | 2 | 9 | 75 | 158 | 79 | 23 | 5 | 5 | 1 | 1 | 0 | 0 | 0 | 358 | 34 | 39 |
| 13:00 | 10 | 12 | 56 | 145 | 118 | 22 | 3 | 4 | 1 | 0 | 0 | 0 | 0 | 369 | 34 | 38 |
| 14:00 | 5 | 16 | 70 | 150 | 130 | 23 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 398 | 34 | 37 |
| 15:00 | 3 | 10 | 56 | 143 | 120 | 37 | 3 | 2 | 0 | 4 | 0 | 0 | 0 | 378 | 35 | 39 |
| 16:00 | 8 | 12 | 72 | 127 | 128 | 29 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 382 | 35 | 38 |
| 17:00 | 0 | 5 | 25 | 85 | 88 | 21 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 227 | 35 | 36 |
| 18:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 19:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 20:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 21:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 22:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 23:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Total | 46 | 160 | 641 | 1637 | 1305 | 335 | 63 | 13 | 10 | 13 | 4 | 0 | 0 | 4227 | | |
| Percent | 1.1% | 3.8% | 15.2% | 38.7% | 30.9% | 7.9% | 1.5% | 0.3% | 0.2% | 0.3% | 0.1% | 0.0% | 0.0% | | | |
| AM Peak | 11:00 | 10:00 | 09:00 | 11:00 | 09:00 | 06:00 | 07:00 | | 06:00 | 04:00 | 09:00 | | | | | 09:00 |
| Vol. | 8 | 22 | 57 | 137 | 96 | 35 | 8 | | 2 | 1 | 3 | | | | | 319 |
| PM Peak | 13:00 | 14:00 | 12:00 | 12:00 | 14:00 | 15:00 | 16:00 | 12:00 | 12:00 | 15:00 | | | | | | 14:00 |
| Vol. | 10 | 16 | 75 | 158 | 130 | 37 | 6 | 5 | 1 | 4 | | | | | | 398 |
| Grand Total | 72 | 370 | 1498 | 3844 | 3124 | 909 | 150 | 20 | 17 | 26 | 11 | 0 | 0 | 10041 | | |
| Percent | 0.7% | 3.7% | 14.9% | 38.3% | 31.1% | 9.1% | 1.5% | 0.2% | 0.2% | 0.3% | 0.1% | 0.0% | 0.0% | | | |

15th Percentile : 24 MPH
 50th Percentile : 30 MPH
 85th Percentile : 35 MPH
 95th Percentile : 39 MPH

Stats
 10 MPH Pace Speed : 26-35 MPH
 Number in Pace : 6968
 Percent in Pace : 69.4%
 Number of Vehicles > 55 MPH : 37
 Percent of Vehicles > 55 MPH : 0.4%
 Mean Speed(Average) : 30 MPH

McMahon Associates, Inc.
 Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA

Municipality: Conshohocken
 Comments: None
 Weather: Variable
 ATR #/ Operator: NDB

Site Code: 000000000000000000
 Station ID: 000000000000000000
 Old Elm Street east of
 Old Elm Street
 Latitude: 0' 0.000 Undefined

| Eastbound | 0 | 16 | 21 | 26 | 31 | 36 | 41 | 46 | 51 | 56 | 61 | 66 | 71 | Total | 85th Percent | 95th Percent |
|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|-------|--------------|--------------|
| Start Time | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | | | |
| 05/23/12 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 01:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 02:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 03:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 04:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 05:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 06:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 07:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 08:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 09:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 10:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 11:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 12 PM | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 13:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 14:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 15:00 | 3 | 16 | 74 | 170 | 75 | 17 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 362 | 33 | 37 |
| 16:00 | 5 | 19 | 53 | 125 | 76 | 10 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 292 | 33 | 35 |
| 17:00 | 0 | 2 | 39 | 90 | 61 | 9 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 204 | 34 | 36 |
| 18:00 | 0 | 4 | 42 | 82 | 64 | 7 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 201 | 34 | 35 |
| 19:00 | 0 | 6 | 48 | 53 | 36 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 151 | 33 | 35 |
| 20:00 | 0 | 2 | 21 | 26 | 16 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 70 | 33 | 36 |
| 21:00 | 0 | 1 | 5 | 12 | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 33 | 37 |
| 22:00 | 0 | 0 | 5 | 18 | 11 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 34 | 35 |
| 23:00 | 0 | 0 | 6 | 4 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 33 | 34 |
| Total | 8 | 50 | 293 | 580 | 348 | 57 | 13 | 3 | 1 | 3 | 0 | 0 | 0 | 1356 | | |
| Percent | 0.6% | 3.7% | 21.6% | 42.8% | 25.7% | 4.2% | 1.0% | 0.2% | 0.1% | 0.2% | 0.0% | 0.0% | 0.0% | | | |
| AM Peak Vol. | | | | | | | | | | | | | | | | |
| PM Peak Vol. | 16:00 | 16:00 | 15:00 | 15:00 | 16:00 | 15:00 | 15:00 | 16:00 | 15:00 | 16:00 | | | | 15:00 | | |
| Vol. | 5 | 19 | 74 | 170 | 76 | 17 | 6 | 2 | 1 | 2 | | | | 362 | | |

McMahon Associates, Inc.
 Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA

Municipality: Conshohocken
 Comments: None
 Weather: Variable
 ATR #/ Operator: NDB

Site Code: 00000000000000000000
 Station ID: 00000000000000000000
 Elm Street east of
 Old Elm Street
 Latitude: 0' 0.000 Undefined

| Eastbound | 0 | 16 | 21 | 26 | 31 | 36 | 41 | 46 | 51 | 56 | 61 | 66 | 71 | Total | 85th Percent | 95th Percent |
|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|--------------|--------------|--------------|
| Start Time | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | | | |
| 05/24/12 | 0 | 1 | 2 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 33 | 34 |
| 01:00 | 0 | 0 | 2 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 31 | 32 |
| 02:00 | 1 | 4 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 31 | 32 |
| 03:00 | 0 | 0 | 12 | 13 | 14 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 41 | 34 | 35 |
| 04:00 | 0 | 1 | 2 | 38 | 15 | 5 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 63 | 35 | 39 |
| 05:00 | 0 | 2 | 13 | 62 | 49 | 5 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 135 | 34 | 37 |
| 06:00 | 2 | 8 | 33 | 137 | 72 | 10 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 265 | 34 | 35 |
| 07:00 | 0 | 6 | 56 | 112 | 63 | 10 | 5 | 0 | 2 | 1 | 0 | 0 | 0 | 255 | 34 | 38 |
| 08:00 | 1 | 3 | 54 | 142 | 76 | 8 | 6 | 0 | 0 | 1 | 0 | 0 | 0 | 291 | 34 | 35 |
| 09:00 | 2 | 10 | 58 | 119 | 58 | 7 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 262 | 33 | 37 |
| 10:00 | 4 | 16 | 73 | 136 | 60 | 8 | 4 | 1 | 0 | 2 | 0 | 0 | 0 | 304 | 33 | 35 |
| 11:00 | 1 | 7 | 66 | 139 | 81 | 9 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 309 | 34 | 35 |
| 12 PM | 2 | 17 | 72 | 99 | 51 | 9 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 254 | 33 | 35 |
| 13:00 | 5 | 30 | 80 | 124 | 60 | 5 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 313 | 33 | 35 |
| 14:00 | 8 | 24 | 81 | 179 | 53 | 1 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 354 | 31 | 35 |
| 15:00 | 0 | 25 | 97 | 156 | 79 | 5 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 368 | 33 | 35 |
| 16:00 | 0 | 7 | 50 | 137 | 84 | 9 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 293 | 34 | 35 |
| 17:00 | 0 | 5 | 35 | 92 | 65 | 6 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 208 | 34 | 36 |
| 18:00 | 1 | 12 | 38 | 87 | 46 | 9 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 197 | 34 | 37 |
| 19:00 | 0 | 2 | 31 | 48 | 33 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 118 | 33 | 35 |
| 20:00 | 0 | 4 | 22 | 64 | 18 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 110 | 31 | 34 |
| 21:00 | 0 | 1 | 8 | 20 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 33 | 36 |
| 22:00 | 0 | 1 | 5 | 14 | 11 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 33 | 35 |
| 23:00 | 0 | 2 | 3 | 8 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 32 | 34 |
| Total | 27 | 188 | 893 | 1939 | 1012 | 114 | 66 | 6 | 10 | 9 | 0 | 0 | 0 | 4264 | | |
| Percent | 0.6% | 4.4% | 20.9% | 45.5% | 23.7% | 2.7% | 1.5% | 0.1% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% | | | |
| AM Peak | 10:00 | 10:00 | 10:00 | 08:00 | 11:00 | 06:00 | 09:00 | 05:00 | 07:00 | 06:00 | | | | 11:00 | | |
| Vol. | 4 | 16 | 73 | 142 | 81 | 10 | 7 | 1 | 2 | 2 | | | | 309 | | |
| PM Peak | 14:00 | 13:00 | 15:00 | 14:00 | 16:00 | 12:00 | 13:00 | 16:00 | 17:00 | 15:00 | | | | 15:00 | | |
| Vol. | 8 | 30 | 97 | 179 | 84 | 9 | 9 | 1 | 2 | 1 | | | | 368 | | |

McMahon Associates, Inc.
 Transportation Engineers and Planners
 425 Commerce Drive, Suite 200
 Fort Washington, PA

Municipality: Conshohocken
 Comments: None
 Weather: Variable
 ATR #/ Operator: NDB

Site Code: 000000000000000000
 Station ID: 000000000000000000
 Elm Street east of
 Old Elm Street
 Latitude: 0' 0.000 Undefined

| Eastbound | 0 | 16 | 21 | 26 | 31 | 36 | 41 | 46 | 51 | 56 | 61 | 66 | 71 | 85th | 95th | |
|--------------|-----------|------------|-------------|-------------|------------|-----------|-----------|-----------|----------|----------|----------|----------|----------|-------------|---------|---------|
| Start Time | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | Total | Percent | Percent |
| 05/25/12 | 0 | 0 | 4 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 30 | 31 |
| 01:00 | 0 | 0 | 2 | 4 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 36 | 37 |
| 02:00 | 0 | 1 | 3 | 6 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 32 | 40 |
| 03:00 | 0 | 0 | 7 | 14 | 9 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 34 | 34 | 37 |
| 04:00 | 0 | 1 | 8 | 32 | 26 | 5 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 75 | 35 | 39 |
| 05:00 | 0 | 1 | 15 | 64 | 63 | 11 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 158 | 35 | 38 |
| 06:00 | 4 | 16 | 61 | 126 | 51 | 7 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 266 | 32 | 35 |
| 07:00 | 2 | 10 | 63 | 123 | 39 | 8 | 3 | 0 | 1 | 2 | 0 | 0 | 0 | 271 | 32 | 35 |
| 08:00 | 0 | 7 | 51 | 105 | 51 | 9 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 227 | 33 | 36 |
| 09:00 | 3 | 18 | 99 | 144 | 42 | 4 | 3 | 2 | 0 | 2 | 0 | 0 | 0 | 317 | 31 | 35 |
| 10:00 | 5 | 32 | 90 | 144 | 50 | 8 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 335 | 32 | 35 |
| 11:00 | 4 | 24 | 96 | 135 | 60 | 3 | 3 | 2 | 0 | 2 | 0 | 0 | 0 | 329 | 32 | 35 |
| 12 PM | 6 | 16 | 78 | 157 | 49 | 4 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 313 | 31 | 34 |
| 13:00 | 5 | 11 | 95 | 121 | 50 | 6 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 293 | 32 | 35 |
| 14:00 | 2 | 22 | 104 | 125 | 61 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 322 | 32 | 35 |
| 15:00 | 6 | 27 | 85 | 162 | 69 | 6 | 4 | 2 | 2 | 0 | 0 | 0 | 0 | 363 | 33 | 35 |
| 16:00 | 1 | 22 | 88 | 119 | 62 | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 303 | 33 | 35 |
| 17:00 | 9 | 14 | 31 | 81 | 46 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 187 | 33 | 35 |
| 18:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 19:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 20:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 21:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 22:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| 23:00 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Total | 47 | 222 | 1000 | 1668 | 735 | 92 | 41 | 10 | 7 | 9 | 0 | 0 | 0 | 3831 | | |
| Percent | 1.2% | 5.8% | 26.1% | 43.5% | 19.2% | 2.4% | 1.1% | 0.3% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% | | | |
| AM Peak | 10:00 | 10:00 | 09:00 | 09:00 | 05:00 | 05:00 | 10:00 | 05:00 | 10:00 | 07:00 | | | | 10:00 | | |
| Vol. | 5 | 32 | 99 | 144 | 83 | 11 | 4 | 2 | 2 | 2 | | | | 335 | | |
| PM Peak | 17:00 | 15:00 | 14:00 | 15:00 | 15:00 | 13:00 | 14:00 | 15:00 | 15:00 | 12:00 | | | | 15:00 | | |
| Vol. | 9 | 27 | 104 | 162 | 69 | 6 | 5 | 2 | 2 | 1 | | | | 363 | | |
| Grand Total | 82 | 460 | 2186 | 4187 | 2095 | 263 | 120 | 19 | 18 | 21 | 0 | 0 | 0 | 9451 | | |
| Percent | 0.9% | 4.9% | 23.1% | 44.3% | 22.2% | 2.8% | 1.3% | 0.2% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% | | | |

15th Percentile : 23 MPH
 50th Percentile : 28 MPH
 85th Percentile : 33 MPH
 95th Percentile : 35 MPH

Stats
 10 MPH Pace Speed : 21-30 MPH
 Number in Pace : 6373
 Percent in Pace : 67.4%
 Number of Vehicles > 55 MPH : 21
 Percent of Vehicles > 55 MPH : 0.2%
 Mean Speed(Average) : 28 MPH

Western Access

Route WEST ELM STREET
 Nearest Intersection W Elm and Colson St

Distance From _____
 Township CONSHOHOCKEN BOROUGH
 County MONT Date 8/2/2012
 Station _____ No. of Lanes 1 over Direction
 Speed Limit 25 mph
 Type Pavement Asphalt
 Roadway Width _____
 Direction of Traffic EASTBOUND
 Time Start 12:20
 Time Finish 13:30
 Weather Clear / Sun
 Conditions Dry

Total Vehicles _____

| | | |
|-------|-------------|---|
| Blue | Car | ● |
| Red | Heavy Truck | ■ |
| Green | Light Truck | ▲ |

Modal Speed
 _____ M.P.H.

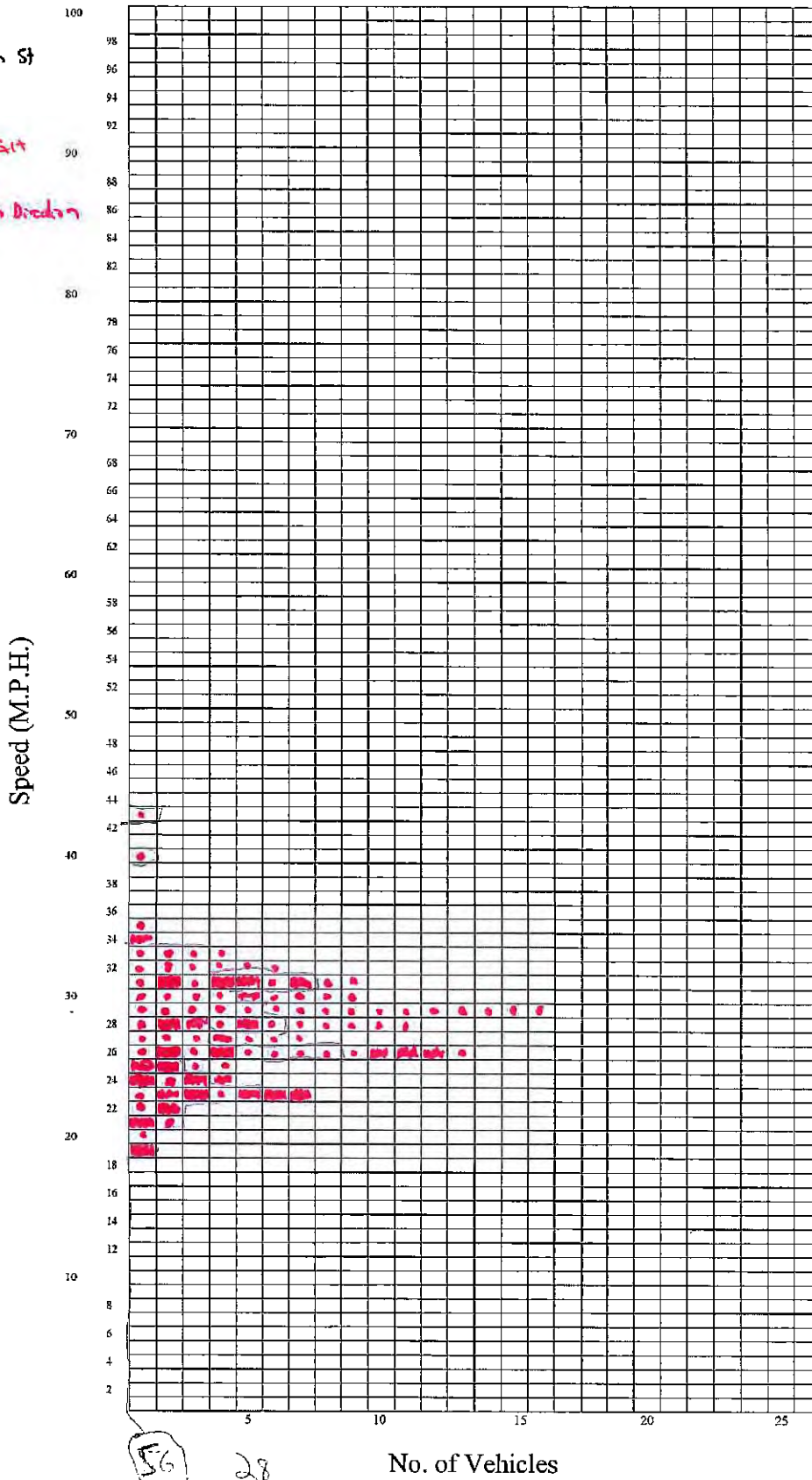
Pace
 _____ M.P.H. to
 _____ M.P.H.

% Vehicles in Pace
 _____ %
 % Vehicles Above Pace
 _____ %
 % Vehicles Below Pace
 _____ %

85 Percentile Speed
31 M.P.H.

COUNT DATE _____

OBSERVER _____
i:\adm\forms\speed_study_sheet



APPENDIX H

Future (2019) without Development Capacity/ Level-of-Service Analysis Worksheets

Lanes, Volumes, Timings
4: Maple Street & Elm Street

2019 Future without Development
Weekday Morning Peak Hour

| | ← | → | ↙ | ↘ | ← | ↙ | ↘ | ↑ | ↗ | ↘ | ↓ | ↖ |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | | | ↔ | | ↔ | ↔ | |
| Volume (vph) | 19 | 423 | 2 | 8 | 272 | 9 | 12 | 10 | 52 | 41 | 1 | 67 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 14 | 12 | 10 | 13 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | | 2% | | | 0% | | | 1% | | | -1% | |
| Storage Length (ft) | 79 | | 0 | 75 | | 0 | 0 | | 0 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.98 | | | 0.98 | |
| Frt | | 0.999 | | | 0.995 | | | 0.905 | | | 0.917 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.992 | | | 0.981 | |
| Satd. Flow (prot) | 1491 | 1711 | 0 | 1400 | 1601 | 0 | 0 | 1572 | 0 | 0 | 1789 | 0 |
| Flt Permitted | 0.574 | | | 0.485 | | | | 0.917 | | | 0.852 | |
| Satd. Flow (perm) | 898 | 1711 | 0 | 714 | 1601 | 0 | 0 | 1452 | 0 | 0 | 1548 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 1 | | | 5 | | | 57 | | | 73 | |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 600 | | | 300 | | | 222 | | | 228 | |
| Travel Time (s) | | 16.4 | | | 8.2 | | | 6.1 | | | 6.2 | |
| Confl. Peds. (#/hr) | 7 | | 3 | 3 | | 7 | 4 | | 5 | 5 | | 4 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 6% | 11% | 0% | 14% | 16% | 0% | 0% | 0% | 0% | 0% | 0% | 2% |
| Adj. Flow (vph) | 21 | 460 | 2 | 9 | 296 | 10 | 13 | 11 | 57 | 45 | 1 | 73 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 21 | 462 | 0 | 9 | 306 | 0 | 0 | 81 | 0 | 0 | 119 | 0 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 1 | | 1 | 1 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | | 20 | 100 | | 20 | 15 | | 20 | 35 | |
| Trailing Detector (ft) | 0 | 0 | | 0 | 0 | | 0 | -5 | | 0 | -5 | |
| Detector 1 Position(ft) | 0 | 0 | | 0 | 0 | | 0 | -5 | | 0 | -5 | |
| Detector 1 Size(ft) | 20 | 6 | | 20 | 6 | | 20 | 20 | | 20 | 40 | |
| Detector 1 Type | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | 94 | | | 94 | | | | | | | |
| Detector 2 Size(ft) | | 6 | | | 6 | | | | | | | |
| Detector 2 Type | | CI+Ex | | | CI+Ex | | | | | | | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | | | | | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 6 | | | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | | 4 | | | 8 | | |
| Detector Phase | 6 | 6 | | 2 | 2 | | 4 | 4 | | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |

Lanes, Volumes, Timings
4: Maple Street & Elm Street

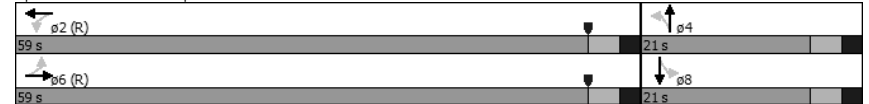
2019 Future without Development
Weekday Morning Peak Hour

| | ← | → | ↙ | ↘ | ← | ↙ | ↘ | ↑ | ↗ | ↘ | ↓ | ↖ |
|-------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Total Split (s) | 59.0 | 59.0 | | 59.0 | 59.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |
| Total Split (%) | 73.8% | 73.8% | | 73.8% | 73.8% | | 26.3% | 26.3% | | 26.3% | 26.3% | |
| Maximum Green (s) | 54.0 | 54.0 | | 54.0 | 54.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 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 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| v/c Ratio | 0.03 | 0.33 | | 0.02 | 0.23 | | | 0.37 | | | 0.48 | |
| Control Delay | 3.7 | 4.0 | | 1.5 | 2.5 | | | 18.2 | | | 21.2 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.3 | | | 0.0 | | | 0.0 | |
| Total Delay | 3.7 | 4.0 | | 1.5 | 2.8 | | | 18.2 | | | 21.2 | |
| Queue Length 50th (ft) | 2 | 49 | | 0 | 43 | | | 11 | | | 21 | |
| Queue Length 95th (ft) | m8 | 95 | | 2 | 90 | | | 47 | | | 65 | |
| Internal Link Dist (ft) | | 520 | | | 220 | | | 142 | | | 148 | |
| Turn Bay Length (ft) | 79 | | | 75 | | | | | | | | |
| Base Capacity (vph) | 735 | 1400 | | 584 | 1311 | | | 353 | | | 386 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 532 | | | 0 | | | 0 | |
| Spillback Cap Reductn | 0 | 17 | | 0 | 0 | | | 0 | | | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | | 0 | | | 0 | |
| Reduced v/c Ratio | 0.03 | 0.33 | | 0.02 | 0.39 | | | 0.23 | | | 0.31 | |

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 31 (39%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Maple Street & Elm Street



HCM 2010 Signalized Intersection Summary
4: Maple Street & Elm Street

2019 Future without Development
Weekday Morning Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 19 | 423 | 2 | 8 | 272 | 9 | 12 | 10 | 52 | 41 | 1 | 67 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 | 0.98 | | 0.97 | 0.98 | | 0.97 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1681 | 1670 | 1782 | 1579 | 1621 | 1800 | 1791 | 1791 | 1791 | 1809 | 1859 | 1809 |
| Adj Flow Rate, veh/h | 21 | 460 | 2 | 9 | 296 | 10 | 13 | 11 | 42 | 45 | 1 | 41 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh. % | 6 | 11 | 11 | 14 | 16 | 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap. veh/h | 870 | 1348 | 6 | 725 | 1264 | 43 | 72 | 33 | 90 | 134 | 9 | 67 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.08 | 0.09 | 0.08 | 0.08 | 0.09 | 0.08 |
| Sat Flow, veh/h | 962 | 1662 | 7 | 783 | 1559 | 53 | 207 | 374 | 1017 | 740 | 102 | 751 |
| Grp Volume(v), veh/h | 21 | 0 | 462 | 9 | 0 | 306 | 66 | 0 | 0 | 87 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 962 | 0 | 1669 | 783 | 0 | 1612 | 1599 | 0 | 0 | 1593 | 0 | 0 |
| Q Serve(g.s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.1 | 0.0 | 0.0 | 4.0 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.00 | 1.00 | | 0.03 | 0.20 | | 0.64 | 0.52 | | 0.47 |
| Lane Grp Cap(c), veh/h | 870 | 0 | 1354 | 725 | 0 | 1307 | 176 | 0 | 0 | 190 | 0 | 0 |
| V/C Ratio(X) | 0.02 | 0.00 | 0.34 | 0.01 | 0.00 | 0.23 | 0.37 | 0.00 | 0.00 | 0.46 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 870 | 0 | 1354 | 725 | 0 | 1307 | 358 | 0 | 0 | 364 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.85 | 0.00 | 0.85 | 0.99 | 0.00 | 0.99 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 35.1 | 0.0 | 0.0 | 35.4 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.0 | 0.0 | 0.6 | 0.0 | 0.0 | 0.4 | 1.3 | 0.0 | 0.0 | 1.7 | 0.0 | 0.0 |
| 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 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.3 | 2.7 | 0.0 | 0.0 | 3.6 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.0 | 0.0 | 0.6 | 0.0 | 0.0 | 0.4 | 36.4 | 0.0 | 0.0 | 37.2 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | | A | D | | | D | | |
| Approach Vol, veh/h | | 483 | | | 315 | | | 66 | | | 87 | |
| Approach Delay, s/veh | | 0.6 | | | 0.4 | | | 36.4 | | | 37.2 | |
| Approach LOS | | A | | | A | | | D | | | D | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 68.9 | | 11.1 | | 68.9 | | 11.1 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 54.0 | | 16.0 | | 54.0 | | 16.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 2.5 | | 5.1 | | 2.5 | | 6.0 | | | | |
| Green Ext Time (p_c), s | | 6.5 | | 0.3 | | 6.5 | | 0.3 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 6.3 | | | | | | | | | |
| HCM 2010 LOS | | | A | | | | | | | | | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

2019 Future without Development
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | | | ↕ | | | ↕ | |
| Volume (vph) | 13 | 459 | 48 | 20 | 261 | 2 | 16 | 4 | 70 | 3 | 19 | 22 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 13 | 12 | 10 | 11 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Grade (%) | | 7% | | | -9% | | | 0% | | | 0% | |
| Storage Length (ft) | 77 | | 0 | 95 | | 95 | 0 | | 95 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 1 | 0 | | 1 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | 75 | | | 75 | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.99 | 1.00 | | 1.00 | | 0.98 | | 1.00 | 0.97 | | 0.99 | |
| Frt | | 0.986 | | | | 0.850 | | | 0.850 | | 0.932 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.961 | | | 0.997 | |
| Satd. Flow (prot) | 1540 | 1580 | 0 | 1573 | 1623 | 1599 | 0 | 1672 | 1457 | 0 | 1875 | 0 |
| Flt Permitted | 0.590 | | | 0.382 | | | | 0.772 | | | 0.983 | |
| Satd. Flow (perm) | 951 | 1580 | 0 | 632 | 1623 | 1561 | 0 | 1341 | 1418 | 0 | 1848 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | No | | | No |
| Satd. Flow (RTOR) | | 7 | | | | 27 | | | | | | |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 300 | | | 550 | | | 247 | | | 248 | |
| Travel Time (s) | | 8.2 | | | 15.0 | | | 6.7 | | | 6.8 | |
| Conf. Peds. (#/hr) | 5 | | 4 | 4 | | 5 | 1 | | 4 | 4 | | 1 |
| 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% | 13% | 0% | 6% | 12% | 0% | 0% | 5% | 0% | 5% | 0% | 0% |
| Adj. Flow (vph) | 14 | 483 | 51 | 21 | 275 | 2 | 17 | 4 | 74 | 3 | 20 | 23 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 14 | 534 | 0 | 21 | 275 | 2 | 0 | 21 | 74 | 0 | 46 | 0 |
| Number of Detectors | 1 | 2 | | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Detector Template | Left | Thru | | Left | Thru | Right | Left | Thru | Right | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | | 35 | 100 | 20 | 20 | 35 | 35 | 20 | 35 | |
| Trailing Detector (ft) | 0 | 0 | | -5 | 0 | 0 | 0 | -5 | -5 | 0 | -5 | |
| Detector 1 Position(ft) | 0 | 0 | | -5 | 0 | 0 | 0 | -5 | -5 | 0 | -5 | |
| Detector 1 Size(ft) | 20 | 6 | | 40 | 6 | 20 | 20 | 40 | 40 | 20 | 40 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | 94 | | | 94 | | | | | | | |
| Detector 2 Size(ft) | | 6 | | | 6 | | | | | | | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | | | | | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | | | | | |
| Turn Type | Perm | NA | | pm+pt | NA | Perm | Perm | NA | Perm | Perm | NA | |
| Protected Phases | | 6 | | 5 | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | 2 | 4 | | 4 | 8 | | |
| Detector Phase | 6 | 6 | | 5 | 2 | 2 | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 13.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

2019 Future without Development
Weekday Morning Peak Hour

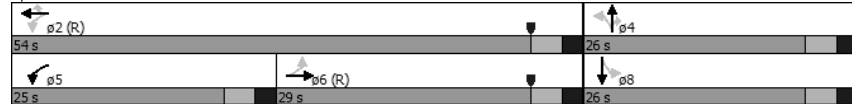


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Split (s) | 29.0 | 29.0 | | 25.0 | 54.0 | 54.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Total Split (%) | 36.3% | 36.3% | | 31.3% | 67.5% | 67.5% | 32.5% | 32.5% | 32.5% | 32.5% | 32.5% | 32.5% |
| Maximum Green (s) | 24.0 | 24.0 | | 20.0 | 49.0 | 49.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | | -1.0 | -1.0 | -1.0 | | -1.0 | -1.0 | | -1.0 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lead/Lag | Lag | Lag | | Lead | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | C-Max | C-Max | | None | C-Max | C-Max | None | None | None | None | None | None |
| v/c Ratio | 0.02 | 0.45 | | 0.04 | 0.21 | 0.00 | 0.12 | 0.39 | 0.19 | 0.19 | 0.19 | 0.19 |
| Control Delay | 4.8 | 5.6 | | 3.0 | 3.3 | 0.0 | 30.3 | 36.9 | 31.2 | 31.2 | 31.2 | 31.2 |
| Queue Delay | 0.0 | 0.3 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 4.8 | 6.0 | | 3.0 | 3.3 | 0.0 | 30.3 | 36.9 | 31.2 | 31.2 | 31.2 | 31.2 |
| Queue Length 50th (ft) | 1 | 23 | | 2 | 29 | 0 | 9 | 34 | 21 | 21 | 21 | 21 |
| Queue Length 95th (ft) | m7 | 150 | | 8 | 64 | 0 | 28 | 70 | 48 | 48 | 48 | 48 |
| Internal Link Dist (ft) | | 220 | | | 470 | | | 167 | | | 168 | |
| Turn Bay Length (ft) | 77 | | | 95 | | 95 | | 95 | | | | |
| Base Capacity (vph) | 710 | 1182 | | 748 | 1304 | 1259 | 368 | 389 | 508 | 508 | 508 | 508 |
| Starvation Cap Reductn | 0 | 229 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.02 | 0.56 | | 0.03 | 0.21 | 0.00 | 0.06 | 0.19 | 0.09 | 0.09 | 0.09 | 0.09 |

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 15 (19%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Oak Street & Elm Street



HCM 2010 Signalized Intersection Summary
5: Oak Street & Elm Street

2019 Future without Development
Weekday Morning Peak Hour



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | ↔ | | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (veh/h) | 13 | 459 | 48 | 20 | 261 | 2 | 16 | 4 | 70 | 3 | 19 | 22 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 | 0.98 | | 0.98 | 0.98 | | 0.97 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1737 | 1616 | 1737 | 1775 | 1679 | 1881 | 1800 | 1800 | 1714 | 1800 | 1872 | 1800 |
| Adj Flow Rate, veh/h | 14 | 483 | 49 | 21 | 275 | 1 | 17 | 4 | 68 | 3 | 20 | 15 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
| 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 | 13 | 13 | 6 | 12 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| Cap, veh/h | 841 | 1061 | 108 | 742 | 1362 | 1293 | 177 | 35 | 126 | 54 | 86 | 60 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 0.03 | 0.81 | 0.81 | 0.08 | 0.09 | 0.09 | 0.08 | 0.09 | 0.08 |
| Sat Flow, veh/h | 1022 | 1444 | 146 | 1690 | 1679 | 1594 | 1074 | 391 | 1424 | 63 | 969 | 673 |
| Grp Volume(v), veh/h | 14 | 0 | 532 | 21 | 275 | 1 | 21 | 0 | 68 | 38 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 1022 | 0 | 1590 | 1690 | 1679 | 1594 | 1464 | 0 | 1424 | 1704 | 0 | 0 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.2 | 3.0 | 0.0 | 0.0 | 0.0 | 3.7 | 0.0 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 0.2 | 3.0 | 0.0 | 0.9 | 0.0 | 3.7 | 1.7 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.09 | 1.00 | | 1.00 | 0.81 | | 1.00 | 0.08 | | 0.39 |
| Lane Grp Cap(c), veh/h | 841 | 0 | 1168 | 742 | 1362 | 1293 | 193 | 0 | 126 | 179 | 0 | 0 |
| V/C Ratio(X) | 0.02 | 0.00 | 0.46 | 0.03 | 0.20 | 0.00 | 0.11 | 0.00 | 0.54 | 0.21 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 841 | 0 | 1168 | 1141 | 1362 | 1293 | 448 | 0 | 392 | 491 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.95 | 0.00 | 0.95 | 0.28 | 0.28 | 0.28 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 1.8 | 1.7 | 1.4 | 34.0 | 0.0 | 34.9 | 34.2 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.0 | 0.0 | 1.2 | 0.0 | 0.1 | 0.0 | 0.2 | 0.0 | 3.5 | 0.6 | 0.0 | 0.0 |
| 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 | 0.0 | 0.0 | 0.7 | 0.2 | 2.3 | 0.0 | 0.8 | 0.0 | 2.8 | 1.5 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.0 | 0.0 | 1.2 | 1.8 | 1.8 | 1.4 | 34.2 | 0.0 | 38.4 | 34.8 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | A | A | C | | D | C | | |
| Approach Vol, veh/h | | 546 | | | 297 | | | 89 | | | | 38 |
| Approach Delay, s/veh | | 1.2 | | | 1.8 | | | 37.4 | | | | 34.8 |
| Approach LOS | | A | | | A | | | D | | | | C |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 68.9 | | 11.1 | 6.1 | 62.8 | | 11.1 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 49.0 | | 21.0 | 20.0 | 24.0 | | 21.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 5.5 | | 6.2 | 2.7 | 2.5 | | 3.7 | | | | |
| Green Ext Time (p_c), s | | 6.8 | | 0.3 | 0.0 | 5.8 | | 0.4 | | | | |

Intersection Summary

HCM 2010 Ctrl Delay: 6.0
 HCM 2010 LOS: A

Lanes, Volumes, Timings

2019 Future without Development

6: Fayette Street & Elm Street

Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 28 | 30 | 486 | 542 | 58 | 24 | 306 | 481 | 886 | 24 | 1154 | 40 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | 2% | | | | -5% | | 5% | | | | 0% | |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 1 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | | | | 1.00 | 1.00 | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.957 | | | | 0.850 | | 0.995 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1411 | 1445 | 1402 | 3081 | 1656 | 0 | 1415 | 3022 | 1511 | 1539 | 3179 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.078 | | | 0.475 | | |
| Satd. Flow (perm) | 1406 | 1445 | 1402 | 3081 | 1656 | 0 | 116 | 3022 | 1478 | 768 | 3179 | 0 |
| Right Turn on Red | | | No | | No | | | Yes | | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 895 | | | 3 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 7 | | 2 | 2 | | 7 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Heavy Vehicles (%) | 16% | 11% | 8% | 3% | 0% | 9% | 10% | 3% | 2% | 0% | 3% | 14% |
| Adj. Flow (vph) | 28 | 30 | 491 | 547 | 59 | 24 | 309 | 486 | 895 | 24 | 1166 | 40 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 28 | 30 | 491 | 547 | 83 | 0 | 309 | 486 | 895 | 24 | 1206 | 0 |
| Number of Detectors | 1 | 1 | 1 | 1 | 1 | | 1 | 2 | 1 | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | Right | Left | Thru | |
| Leading Detector (ft) | 35 | 35 | 35 | 35 | 35 | | 30 | 100 | 20 | 20 | 100 | |
| Trailing Detector (ft) | -5 | -5 | -5 | -5 | -5 | | -10 | 0 | 0 | 0 | 0 | |
| Detector 1 Position(ft) | -5 | -5 | -5 | -5 | -5 | | -10 | 0 | 0 | 0 | 0 | |
| Detector 1 Size(ft) | 40 | 40 | 40 | 40 | 40 | | 40 | 6 | 20 | 20 | 6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | | | | | | | 94 | | | 94 | |
| Detector 2 Size(ft) | | | | | | | | 6 | | | 6 | |
| Detector 2 Type | | | | | | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | | | | | | | 0.0 | | | 0.0 | |
| Turn Type | Split | NA | pm+ov | Split | NA | | pm+pt | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | 8 | | | | 6 | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |

Lanes, Volumes, Timings

2019 Future without Development

6: Fayette Street & Elm Street

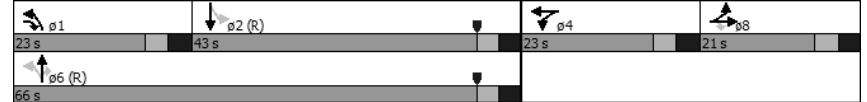
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Total Split (s) | 21.0 | 21.0 | 23.0 | 23.0 | 23.0 | | 23.0 | 66.0 | 66.0 | 43.0 | 43.0 | |
| Total Split (%) | 19.1% | 19.1% | 20.9% | 20.9% | 20.9% | | 20.9% | 60.0% | 60.0% | 39.1% | 39.1% | |
| Maximum Green (s) | 15.0 | 15.0 | 17.0 | 17.0 | 17.0 | | 17.0 | 60.0 | 60.0 | 37.0 | 37.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |
| v/c Ratio | 0.25 | 0.26 | 1.30 | 1.09 | 0.31 | | 1.08 | 0.25 | 0.71 | 0.07 | 0.88 | |
| Control Delay | 51.8 | 52.1 | 187.9 | 108.9 | 44.1 | | 107.8 | 9.7 | 4.2 | 21.7 | 38.8 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Total Delay | 51.8 | 52.1 | 187.9 | 108.9 | 44.1 | | 107.8 | 9.7 | 4.2 | 21.7 | 38.8 | |
| Queue Length 50th (ft) | 19 | 20 | -425 | -223 | 52 | | -206 | 75 | 0 | 10 | 416 | |
| Queue Length 95th (ft) | 47 | 50 | #602 | #332 | 100 | | #388 | 111 | 50 | 29 | #596 | |
| Internal Link Dist (ft) | | 470 | | | 350 | | | 372 | | | 382 | |
| Turn Bay Length (ft) | 135 | | 202 | 135 | | | 266 | | 130 | 276 | | |
| Base Capacity (vph) | 205 | 210 | 377 | 504 | 270 | | 286 | 1933 | 1268 | 330 | 1371 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Reduced v/c Ratio | 0.14 | 0.14 | 1.30 | 1.09 | 0.31 | | 1.08 | 0.25 | 0.71 | 0.07 | 0.88 | |

Intersection Summary

- Area Type: Other
- Cycle Length: 110
- Actuated Cycle Length: 110
- Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow
- Natural Cycle: 115
- Control Type: Actuated-Coordinated
- Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Fayette Street & Elm Street



HCM 2010 Signalized Intersection Summary
6: Fayette Street & Elm Street

2019 Future without Development
Weekday Morning Peak Hour

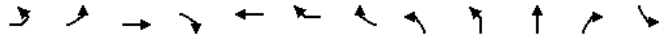
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ |
| Volume (veh/h) | 28 | 30 | 486 | 542 | 58 | 24 | 306 | 481 | 886 | 24 | 1154 | 40 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), 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 | | 0.99 | 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 |
| Adj Sat Flow, veh/h/ln | 1536 | 1541 | 1650 | 1791 | 1798 | 1845 | 1595 | 1704 | 1789 | 1728 | 1741 | 1800 |
| Adj Flow Rate, veh/h | 28 | 30 | 403 | 547 | 59 | 24 | 309 | 486 | 734 | 24 | 1166 | 40 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Percent Heavy Veh, % | 16 | 11 | 8 | 3 | 0 | 0 | 10 | 3 | 2 | 0 | 3 | 3 |
| Cap, veh/h | 213 | 224 | 433 | 542 | 199 | 81 | 314 | 1795 | 838 | 211 | 1127 | 39 |
| Arrive On Green | 0.15 | 0.15 | 0.15 | 0.16 | 0.16 | 0.15 | 0.16 | 0.55 | 0.55 | 0.35 | 0.35 | 0.34 |
| Sat Flow, veh/h | 1463 | 1541 | 1397 | 3310 | 1215 | 494 | 1519 | 3237 | 1511 | 422 | 3263 | 112 |
| Grp Volume(v), veh/h | 28 | 30 | 403 | 547 | 0 | 83 | 309 | 486 | 734 | 24 | 591 | 615 |
| Grp Sat Flow(s),veh/h/ln | 1463 | 1541 | 1397 | 1655 | 0 | 1709 | 1519 | 1619 | 1511 | 422 | 1654 | 1720 |
| Q Serve(g.s), s | 1.8 | 1.9 | 16.0 | 18.0 | 0.0 | 4.7 | 17.5 | 8.7 | 46.3 | 4.3 | 38.0 | 38.0 |
| Cycle Q Clear(g_c), s | 1.8 | 1.9 | 16.0 | 18.0 | 0.0 | 4.7 | 17.5 | 8.7 | 46.3 | 4.3 | 38.0 | 38.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.29 | 1.00 | | 1.00 | 1.00 | | 0.07 |
| Lane Grp Cap(c), veh/h | 213 | 224 | 433 | 542 | 0 | 280 | 314 | 1795 | 838 | 211 | 571 | 594 |
| V/C Ratio(X) | 0.13 | 0.13 | 0.93 | 1.01 | 0.00 | 0.30 | 0.98 | 0.27 | 0.88 | 0.11 | 1.03 | 1.03 |
| Avail Cap(c_a), veh/h | 213 | 224 | 433 | 542 | 0 | 280 | 314 | 1795 | 838 | 211 | 571 | 594 |
| 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) | 0.90 | 0.90 | 0.90 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 40.9 | 41.0 | 36.9 | 46.0 | 0.0 | 40.6 | 33.0 | 12.8 | 21.2 | 25.0 | 36.0 | 36.0 |
| Incr Delay (d2), s/veh | 0.2 | 0.2 | 25.0 | 41.2 | 0.0 | 0.6 | 46.2 | 0.4 | 12.4 | 1.1 | 46.7 | 46.2 |
| 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 | 1.4 | 1.5 | 20.9 | 20.3 | 0.0 | 4.1 | 19.4 | 7.1 | 29.8 | 1.0 | 44.5 | 46.1 |
| LnGrp Delay(d),s/veh | 41.2 | 41.2 | 61.9 | 87.2 | 0.0 | 41.2 | 79.2 | 13.2 | 33.6 | 26.1 | 82.7 | 82.2 |
| LnGrp LOS | D | D | E | F | | D | E | B | C | C | F | F |
| Approach Vol, veh/h | | 461 | | | 630 | | | 1529 | | | 1230 | |
| Approach Delay, s/veh | | 59.3 | | | 81.1 | | | 36.3 | | | 81.4 | |
| Approach LOS | | E | | | F | | | D | | | F | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 23.0 | 43.0 | | 23.0 | | 66.0 | | 21.0 | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | 17.0 | 37.0 | | 17.0 | | 60.0 | | 15.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 20.0 | 40.5 | | 20.5 | | 48.8 | | 18.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | | 9.4 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 60.8 | | | | | | | | | |
| HCM 2010 LOS | | | E | | | | | | | | | |

Lanes, Volumes, Timings

2019 Future without Development

3: Access/Wood Street & Elm Street & Colwell Street

Weekday Morning Peak Hour



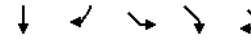
| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|-------|-------|-------|------|-------|------|------|-------|-------|-------|------|-------|
| Lane Configurations | | ↔ | ↔ | | ↔ | | | | | ↕ | | |
| Volume (vph) | 54 | 0 | 254 | 33 | 244 | 138 | 8 | 3 | 14 | 0 | 2 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 12 | 14 | 12 | 16 | 12 | 12 | 12 | 15 | 12 | 12 | 12 |
| Grade (%) | | | 0% | | 0% | | | | | -2% | | |
| Storage Length (ft) | | 78 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Storage Lanes | | 1 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Taper Length (ft) | | 75 | | | | | | 75 | | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 1.00 | | | | | | 1.00 | | | |
| Frt | | | 0.983 | | 0.949 | | | | 0.986 | | | |
| Flt Protected | | 0.950 | | | | | | | 0.957 | | | |
| Satd. Flow (prot) | 0 | 1613 | 1688 | 0 | 1764 | 0 | 0 | 0 | 1710 | 0 | 0 | 0 |
| Flt Permitted | | 0.440 | | | | | | | 0.639 | | | |
| Satd. Flow (perm) | 0 | 747 | 1688 | 0 | 1764 | 0 | 0 | 0 | 1142 | 0 | 0 | 0 |
| Right Turn on Red | | | No | | No | | | | No | | | |
| Satd. Flow (RTOR) | | | | | | | | | | | | |
| Link Speed (mph) | | | 25 | | 25 | | | | 25 | | | |
| Link Distance (ft) | | | 571 | | 600 | | | | 211 | | | |
| Travel Time (s) | | | 15.6 | | 16.4 | | | | 5.8 | | | |
| Confl. Peds. (#/hr) | | | | 1 | | | | | | | 6 | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 6% | 2% | 13% | 0% | 11% | 8% | 2% | 0% | 0% | 2% | 0% | 2% |
| Adj. Flow (vph) | 57 | 0 | 270 | 35 | 260 | 147 | 9 | 3 | 15 | 0 | 2 | 7 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 57 | 305 | 0 | 416 | 0 | 0 | 0 | 20 | 0 | 0 | 0 |
| Number of Detectors | 1 | 1 | 2 | | 2 | | | 1 | 1 | 2 | | 1 |
| Detector Template | Left | Left | Thru | | Thru | | | Left | Left | Thru | | Left |
| Leading Detector (ft) | 20 | 20 | 100 | | 100 | | | 20 | 20 | 100 | | 20 |
| Trailing Detector (ft) | 0 | 0 | 0 | | 0 | | | 0 | 0 | 0 | | 0 |
| Detector 1 Position(ft) | 0 | 0 | 0 | | 0 | | | 0 | 0 | 0 | | 0 |
| Detector 1 Size(ft) | 20 | 20 | 6 | | 6 | | | 20 | 20 | 6 | | 20 |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | | | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 2 Position(ft) | | | 94 | | 94 | | | | | 94 | | |
| Detector 2 Size(ft) | | | 6 | | 6 | | | | | 6 | | |
| Detector 2 Type | | | Cl+Ex | | Cl+Ex | | | | | Cl+Ex | | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | | 0.0 | | 0.0 | | | | | 0.0 | | |
| Turn Type | Perm | Perm | NA | | NA | | | Perm | Perm | NA | | Perm |
| Protected Phases | | | 6 | | 2 | | | | | 4 | | |
| Permitted Phases | 6 | 6 | | | | | | 4 | 4 | | | 9 |
| Detector Phase | 6 | 6 | 6 | | 2 | | | 4 | 4 | 4 | | 9 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | | 21.0 | | | 21.0 | 21.0 | 21.0 | | 21.0 |

Lanes, Volumes, Timings

2019 Future without Development

3: Access/Wood Street & Elm Street & Colwell Street

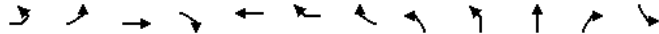
Weekday Morning Peak Hour



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|-------|------|-------|------|------|
| Lane Configurations | ↔ | ↔ | ↔ | | |
| Volume (vph) | 0 | 7 | 189 | 13 | 40 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | 2% | | |
| Storage Length (ft) | | 0 | 0 | 0 | |
| Storage Lanes | | 0 | 1 | 0 | |
| Taper Length (ft) | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 0.99 | | |
| Frt | 0.932 | | 0.970 | | |
| Flt Protected | 0.976 | | 0.963 | | |
| Satd. Flow (prot) | 1605 | 0 | 1476 | 0 | 0 |
| Flt Permitted | | | 0.963 | | |
| Satd. Flow (perm) | 1645 | 0 | 1466 | 0 | 0 |
| Right Turn on Red | | | | | No |
| Satd. Flow (RTOR) | | | | | |
| Link Speed (mph) | 25 | | 25 | | |
| Link Distance (ft) | 274 | | 302 | | |
| Travel Time (s) | 7.5 | | 8.2 | | |
| Confl. Peds. (#/hr) | | | 6 | | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 2% | 2% | 14% | 0% | 11% |
| Adj. Flow (vph) | 0 | 7 | 201 | 14 | 43 |
| Shared Lane Traffic (%) | | | | | |
| Lane Group Flow (vph) | 14 | 0 | 258 | 0 | 0 |
| Number of Detectors | 2 | | 1 | | |
| Detector Template | Thru | | Left | | |
| Leading Detector (ft) | 100 | | 20 | | |
| Trailing Detector (ft) | 0 | | 0 | | |
| Detector 1 Position(ft) | 0 | | 0 | | |
| Detector 1 Size(ft) | 6 | | 20 | | |
| Detector 1 Type | Cl+Ex | | Cl+Ex | | |
| Detector 1 Channel | | | | | |
| Detector 1 Extend (s) | 0.0 | | 0.0 | | |
| Detector 1 Queue (s) | 0.0 | | 0.0 | | |
| Detector 1 Delay (s) | 0.0 | | 0.0 | | |
| Detector 2 Position(ft) | | | 94 | | |
| Detector 2 Size(ft) | | | 6 | | |
| Detector 2 Type | | | Cl+Ex | | |
| Detector 2 Channel | | | | | |
| Detector 2 Extend (s) | | | 0.0 | | |
| Turn Type | NA | | Perm | | |
| Protected Phases | 9 | | | | |
| Permitted Phases | | | 8 | | |
| Detector Phase | 9 | | 8 | | |
| Switch Phase | | | | | |
| Minimum Initial (s) | 3.0 | | 3.0 | | |
| Minimum Split (s) | 21.0 | | 21.0 | | |

Lanes, Volumes, Timings
3: Access/Wood Street & Elm Street & Colwell Street

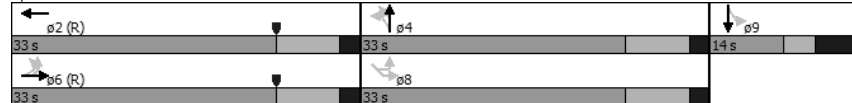
2019 Future without Development
Weekday Morning Peak Hour



| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|-------|-------|-------|-----|-------|-----|------|-------|-------|-------|-----|-------|
| Total Split (s) | 33.0 | 33.0 | 33.0 | | 33.0 | | | 33.0 | 33.0 | 33.0 | | 14.0 |
| Total Split (%) | 41.3% | 41.3% | 41.3% | | 41.3% | | | 41.3% | 41.3% | 41.3% | | 17.5% |
| Maximum Green (s) | 25.0 | 25.0 | 25.0 | | 25.0 | | | 25.0 | 25.0 | 25.0 | | 7.0 |
| Yellow Time (s) | 6.0 | 6.0 | 6.0 | | 6.0 | | | 6.0 | 6.0 | 6.0 | | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | 2.0 | | 2.0 | | | 2.0 | 2.0 | 2.0 | | 4.0 |
| Lost Time Adjust (s) | | -1.0 | -1.0 | | -1.0 | | | | | -1.0 | | |
| Total Lost Time (s) | | 7.0 | 7.0 | | 7.0 | | | | | 7.0 | | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Recall Mode | C-Max | C-Max | C-Max | | C-Max | | | None | None | None | | None |
| v/c Ratio | 0.14 | 0.33 | 0.33 | | 0.44 | | | | | 0.07 | | |
| Control Delay | | 14.8 | 14.5 | | 12.7 | | | | | 20.9 | | |
| Queue Delay | | 0.0 | 0.0 | | 0.0 | | | | | 0.0 | | |
| Total Delay | | 14.8 | 14.5 | | 12.7 | | | | | 20.9 | | |
| Queue Length 50th (ft) | | 12 | 73 | | 86 | | | | | 8 | | |
| Queue Length 95th (ft) | | 51 | 203 | | #211 | | | | | 22 | | |
| Internal Link Dist (ft) | | | 491 | | 520 | | | | | 131 | | |
| Turn Bay Length (ft) | | 78 | | | | | | | | | | |
| Base Capacity (vph) | | 403 | 913 | | 954 | | | | | 371 | | |
| Starvation Cap Reductn | | 0 | 0 | | 0 | | | | | 0 | | |
| Spillback Cap Reductn | | 0 | 0 | | 0 | | | | | 0 | | |
| Storage Cap Reductn | | 0 | 0 | | 0 | | | | | 0 | | |
| Reduced v/c Ratio | | 0.14 | 0.33 | | 0.44 | | | | | 0.05 | | |

Intersection Summary
 Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Access/Wood Street & Elm Street & Colwell Street



Lanes, Volumes, Timings
3: Access/Wood Street & Elm Street & Colwell Street

2019 Future without Development
Weekday Morning Peak Hour



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|-------|-----|-------|-----|------|
| Total Split (s) | 14.0 | | 33.0 | | |
| Total Split (%) | 17.5% | | 41.3% | | |
| Maximum Green (s) | 7.0 | | 25.0 | | |
| Yellow Time (s) | 3.0 | | 6.0 | | |
| All-Red Time (s) | 4.0 | | 2.0 | | |
| Lost Time Adjust (s) | -1.0 | | -1.0 | | |
| Total Lost Time (s) | 6.0 | | 7.0 | | |
| Lead/Lag | | | | | |
| Lead-Lag Optimize? | | | | | |
| Vehicle Extension (s) | 3.0 | | 3.0 | | |
| Recall Mode | None | | None | | |
| v/c Ratio | 0.09 | | 0.71 | | |
| Control Delay | 34.5 | | 37.6 | | |
| Queue Delay | 0.0 | | 0.0 | | |
| Total Delay | 34.5 | | 37.6 | | |
| Queue Length 50th (ft) | 7 | | 117 | | |
| Queue Length 95th (ft) | 24 | | 178 | | |
| Internal Link Dist (ft) | 194 | | 222 | | |
| Turn Bay Length (ft) | | | | | |
| Base Capacity (vph) | 164 | | 476 | | |
| Starvation Cap Reductn | 0 | | 0 | | |
| Spillback Cap Reductn | 0 | | 0 | | |
| Storage Cap Reductn | 0 | | 0 | | |
| Reduced v/c Ratio | 0.09 | | 0.54 | | |

Intersection Summary

Lanes, Volumes, Timings
1: Corson Street & Elm Street

2019 Future without Development
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|------|------|-------|------|------|------|------|------|------|
| Lane Configurations | ↔ | | | ↔ | | | ↔ | | | ↔ | | |
| Volume (vph) | 0 | 317 | 0 | 1 | 282 | 2 | 0 | 0 | 0 | 18 | 0 | 4 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 11 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | | 1% | | | 0% | | | 0% | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | 0.999 | | | | | 0.977 | | | | | | |
| Flt Protected | 0.960 | | | | | | | | | | | |
| Satd. Flow (prot) | 0 | 1625 | 0 | 0 | 1864 | 0 | 0 | 1900 | 0 | 0 | 2020 | 0 |
| Flt Permitted | 0.960 | | | | | | | | | | | |
| Satd. Flow (perm) | 0 | 1625 | 0 | 0 | 1864 | 0 | 0 | 1900 | 0 | 0 | 2020 | 0 |
| Link Speed (mph) | 25 | | 25 | | 25 | | 25 | | 25 | | 25 | |
| Link Distance (ft) | 275 | | 276 | | 219 | | 188 | | 188 | | 188 | |
| Travel Time (s) | 7.5 | | 7.5 | | 6.0 | | 5.1 | | 5.1 | | 5.1 | |
| Confl. Peds. (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles (%) | 0% | 13% | 0% | 0% | 15% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 0 | 341 | 0 | 1 | 303 | 2 | 0 | 0 | 0 | 19 | 0 | 4 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 341 | 0 | 0 | 306 | 0 | 0 | 0 | 0 | 0 | 23 | 0 |
| Sign Control | Free | | Free | | Stop | | Stop | | Stop | | Stop | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC
1: Corson Street & Elm Street

2019 Future without Development
Weekday Morning Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.5 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 0 | 317 | 0 | 1 | 282 | 2 | 0 | 0 | 0 | 18 | 0 | 4 |
| Conflicting Peds, #/hr | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 13 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 341 | 0 | 1 | 303 | 2 | 0 | 0 | 0 | 19 | 0 | 4 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-----|-----|--------|-----|-----|
| Conflicting Flow All | 305 | 0 | 0 | 341 | 0 | 0 | 650 | 649 | 342 | 647 | 647 | 305 |
| Stage 1 | - | - | - | - | - | - | 341 | 341 | - | 306 | 306 | - |
| Stage 2 | - | - | - | - | - | - | 309 | 308 | - | 341 | 341 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 944 | - | - | 917 | - | - | 431 | 391 | 744 | 433 | 392 | 781 |
| Stage 1 | - | - | - | - | - | - | 774 | 642 | - | 809 | 665 | - |
| Stage 2 | - | - | - | - | - | - | 806 | 664 | - | 774 | 642 | - |
| Platoon blocked, % | - | | | | | | | | | | | |
| Mov Cap-1 Maneuver | 943 | - | - | 916 | - | - | 428 | 391 | 743 | 432 | 392 | 780 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 428 | 391 | - | 432 | 392 | - |
| Stage 1 | - | - | - | - | - | - | 774 | 642 | - | 809 | 664 | - |
| Stage 2 | - | - | - | - | - | - | 800 | 663 | - | 773 | 642 | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|----|----|------|
| HCM Control Delay, s | 0 | 0 | 0 | 13.1 |
| HCM LOS | A | A | A | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | - | 943 | - | - | 916 | - | - | 470 |
| HCM Lane V/C Ratio | - | - | - | - | 0.001 | - | - | 0.05 |
| HCM Control Delay (s) | 0 | 0 | - | - | 8.9 | 0 | - | 13.1 |
| HCM Lane LOS | A | A | - | - | A | A | - | B |
| HCM 95th %tile Q(veh) | - | 0 | - | - | 0 | - | - | 0.2 |

Lanes, Volumes, Timings

2019 Future without Development

2: Lot Access/Old Elm Street & Elm Street

Weekday Morning Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|-------|------|-------|------|------|------|------|
| Lane Configurations | ↔ | | | ↔ | | | ↔ | | | | | |
| Volume (vph) | 1 | 324 | 0 | 3 | 290 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 12 | 12 |
| Grade (%) | | -1% | | | 0% | | | 0% | | | -1% | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | 0.999 | | 0.865 | | | | |
| Flt Protected | | | | | | | | | | | | |
| Satd. Flow (prot) | 0 | 1794 | 0 | 0 | 1664 | 0 | 0 | 1644 | 0 | 0 | 0 | 0 |
| Flt Permitted | | | | | | | | | | | | |
| Satd. Flow (perm) | 0 | 1794 | 0 | 0 | 1664 | 0 | 0 | 1644 | 0 | 0 | 0 | 0 |
| Link Speed (mph) | 25 | | 25 | | 25 | | 25 | | 25 | | 25 | |
| Link Distance (ft) | 276 | | 571 | | 199 | | 208 | | 5.7 | | | |
| Travel Time (s) | 7.5 | | 15.6 | | 5.4 | | | | | | | |
| Confl. Peds. (#/hr) | 2 | | | | 2 | | | | | | | |
| 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% | 10% | 0% | 33% | 14% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 341 | 0 | 3 | 305 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 342 | 0 | 0 | 311 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Sign Control | Free | | | | Free | | | | Stop | | Stop | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC

2019 Future without Development

2: Lot Access/Old Elm Street & Elm Street

Weekday Morning Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.1 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 1 | 324 | 0 | 3 | 290 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -1 | - | - | 0 | - | - | 0 | - | - | -1 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 0 | 10 | 0 | 33 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 341 | 0 | 3 | 305 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|----------------------|--------|---|---|--------|---|---|--------|-----|-----|
| Conflicting Flow All | 308 | 0 | 0 | 341 | 0 | 0 | 656 | 658 | 343 |
| Stage 1 | - | - | - | - | - | - | 343 | 343 | - |
| Stage 2 | - | - | - | - | - | - | 313 | 315 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 942 | - | - | 917 | - | - | 427 | 387 | 743 |
| Stage 1 | - | - | - | - | - | - | 825 | 641 | - |
| Stage 2 | - | - | - | - | - | - | 852 | 659 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 940 | - | - | 915 | - | - | 424 | 0 | 742 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 424 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 824 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 847 | 0 | - |

| Approach | EB | WB | NB |
|----------------------|----|-----|-----|
| HCM Control Delay, s | 0 | 0.1 | 9.9 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|
| Capacity (veh/h) | 742 | 940 | - | - | 915 | - | - |
| HCM Lane V/C Ratio | 0.001 | 0.001 | - | - | 0.003 | - | - |
| HCM Control Delay (s) | 9.9 | 8.8 | 0 | - | 8.9 | 0 | - |
| HCM Lane LOS | A | A | A | - | A | A | - |
| HCM 95th %tile Q(veh) | 0 | 0 | - | - | 0 | - | - |

Lanes, Volumes, Timings
4: Maple Street & Elm Street

2019 Future without Development
Weekday Afternoon Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|---|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Configurations | [Diagrammatic arrows for lane configurations] | | | | | | | | | | | |
| Volume (vph) | 39 | 476 | 11 | 33 | 667 | 33 | 6 | 2 | 18 | 17 | 3 | 49 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 14 | 12 | 10 | 13 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 2% | | 0% | | 0% | | 1% | | | | -1% | |
| Storage Length (ft) | 79 | | 0 | 75 | | 0 | 0 | | 0 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.97 | | | 0.97 | |
| Frt | | 0.996 | | | 0.993 | | | 0.905 | | | 0.904 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.989 | | | 0.988 | |
| Satd. Flow (prot) | 1580 | 1834 | 0 | 1550 | 1745 | 0 | 0 | 1441 | 0 | 0 | 1720 | 0 |
| Flt Permitted | 0.352 | | | 0.462 | | | | 0.932 | | | 0.907 | |
| Satd. Flow (perm) | 584 | 1834 | 0 | 752 | 1745 | 0 | 0 | 1353 | 0 | 0 | 1574 | 0 |
| Right Turn on Red | Yes | | | | Yes | | | | Yes | | | |
| Satd. Flow (RTOR) | 3 | | | | 7 | | | | 19 | | | |
| Link Speed (mph) | 25 | | | | 25 | | | | 25 | | | |
| Link Distance (ft) | 600 | | | | 300 | | | | 222 | | | |
| Travel Time (s) | 16.4 | | | | 8.2 | | | | 6.1 | | | |
| Confl. Peds. (#/hr) | 10 | | 7 | 7 | | 10 | 7 | | 5 | 5 | | 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% | 3% | 10% | 3% | 6% | 20% | 0% | 6% | 0% | 0% | 5% | 5% |
| Adj. Flow (vph) | 41 | 501 | 12 | 35 | 702 | 35 | 6 | 2 | 19 | 18 | 3 | 52 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 41 | 513 | 0 | 35 | 737 | 0 | 0 | 27 | 0 | 0 | 73 | 0 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | | 20 | 100 | | 20 | 100 | | 20 | 100 | |
| Trailing Detector (ft) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Detector 1 Position(ft) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Detector 1 Size(ft) | 20 | 6 | | 20 | 6 | | 20 | 6 | | 20 | 6 | |
| Detector 1 Type | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | 94 | | | 94 | | | 94 | | | 94 | |
| Detector 2 Size(ft) | | 6 | | | 6 | | | 6 | | | 6 | |
| Detector 2 Type | | CI+Ex | | | CI+Ex | | | CI+Ex | | | CI+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | 6 | | | | 2 | | | | 4 | | | |
| Permitted Phases | 6 | | | | 2 | | | | 4 | | | |
| Detector Phase | 6 | 6 | | 2 | 2 | | 4 | 4 | | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |

Lanes, Volumes, Timings
4: Maple Street & Elm Street

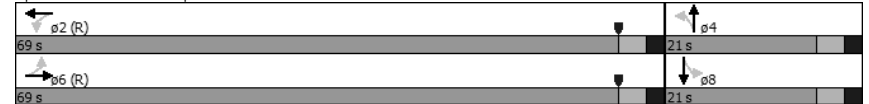
2019 Future without Development
Weekday Afternoon Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Total Split (s) | 69.0 | 69.0 | | 69.0 | 69.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |
| Total Split (%) | 76.7% | 76.7% | | 76.7% | 76.7% | | 23.3% | 23.3% | | 23.3% | 23.3% | |
| Maximum Green (s) | 64.0 | 64.0 | | 64.0 | 64.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 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 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| v/c Ratio | 0.08 | 0.33 | | 0.05 | 0.50 | | 0.19 | 0.38 | | 0.19 | 0.38 | |
| Control Delay | 1.2 | 1.4 | | 1.4 | 2.9 | | 23.1 | 22.0 | | 23.1 | 22.0 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.2 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 1.2 | 1.4 | | 1.4 | 3.1 | | 23.1 | 22.0 | | 23.1 | 22.0 | |
| Queue Length 50th (ft) | 2 | 11 | | 2 | 23 | | 4 | 11 | | 4 | 11 | |
| Queue Length 95th (ft) | m3 | 15 | | m4 | 112 | | 28 | 50 | | 28 | 50 | |
| Internal Link Dist (ft) | 520 | | | | 220 | | 142 | | | | 148 | |
| Turn Bay Length (ft) | 79 | | | | 75 | | | | | | | |
| Base Capacity (vph) | 497 | 1562 | | 640 | 1487 | | 270 | 339 | | 270 | 339 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 183 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 136 | | 0 | 72 | | 1 | 3 | | 1 | 3 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.08 | 0.36 | | 0.05 | 0.57 | | 0.10 | 0.22 | | 0.10 | 0.22 | |

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 6 (7%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Maple Street & Elm Street



HCM 2010 Signalized Intersection Summary
4: Maple Street & Elm Street

2019 Future without Development
Weekday Afternoon Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | | ↔ | ↔ | | ↔ | ↔ | ↔ |
| Volume (veh/h) | 39 | 476 | 11 | 33 | 667 | 33 | 6 | 2 | 18 | 17 | 3 | 49 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.99 | 1.00 | | 0.99 | 0.95 | | 0.92 | 0.93 | | 0.92 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1782 | 1796 | 1782 | 1748 | 1771 | 1800 | 1791 | 1648 | 1791 | 1809 | 1817 | 1809 |
| Adj Flow Rate, veh/h | 41 | 501 | 12 | 35 | 702 | 35 | 6 | 2 | 7 | 18 | 3 | 25 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 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 | 3 | 3 | 3 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap. veh/h | 667 | 1497 | 36 | 789 | 1433 | 71 | 80 | 19 | 37 | 84 | 8 | 42 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.04 | 0.05 | 0.04 | 0.04 | 0.05 | 0.04 |
| Sat Flow, veh/h | 685 | 1747 | 42 | 827 | 1672 | 83 | 437 | 343 | 682 | 517 | 142 | 785 |
| Grp Volume(v), veh/h | 41 | 0 | 513 | 35 | 0 | 737 | 15 | 0 | 0 | 46 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 685 | 0 | 1789 | 827 | 0 | 1756 | 1461 | 0 | 0 | 1445 | 0 | 0 |
| Q Serve(g.s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.9 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 0.0 | 0.0 | 2.8 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.02 | 1.00 | | 0.05 | 0.40 | | 0.47 | 0.39 | | 0.54 |
| Lane Grp Cap(c), veh/h | 667 | 0 | 1533 | 789 | 0 | 1504 | 119 | 0 | 0 | 118 | 0 | 0 |
| V/C Ratio(X) | 0.06 | 0.00 | 0.33 | 0.04 | 0.00 | 0.49 | 0.13 | 0.00 | 0.00 | 0.39 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 667 | 0 | 1533 | 789 | 0 | 1504 | 290 | 0 | 0 | 303 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.84 | 0.00 | 0.84 | 0.87 | 0.00 | 0.87 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 41.1 | 0.0 | 0.0 | 42.0 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.5 | 0.1 | 0.0 | 1.0 | 0.5 | 0.0 | 0.0 | 2.1 | 0.0 | 0.0 |
| 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 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.7 | 0.7 | 0.0 | 0.0 | 2.2 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.1 | 0.0 | 0.5 | 0.1 | 0.0 | 1.0 | 41.6 | 0.0 | 0.0 | 44.1 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | | A | D | | | D | | |
| Approach Vol, veh/h | | 554 | | | 772 | | | 15 | | | | 46 |
| Approach Delay, s/veh | | 0.5 | | | 1.0 | | | 41.6 | | | | 44.1 |
| Approach LOS | | A | | | A | | | D | | | | D |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 81.1 | | 8.9 | | 81.1 | | 8.9 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 64.0 | | 16.0 | | 64.0 | | 16.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 2.5 | | 2.9 | | 2.5 | | 4.8 | | | | |
| Green Ext Time (p_c), s | | 14.6 | | 0.2 | | 14.6 | | 0.2 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 2.6 | | | | | | | | | |
| HCM 2010 LOS | | | A | | | | | | | | | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

2019 Future without Development
Weekday Afternoon Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | | ↔ | ↔ | | ↔ | ↔ | ↔ |
| Volume (vph) | 10 | 469 | 24 | 19 | 542 | 4 | 165 | 8 | 129 | 11 | 2 | 23 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 13 | 12 | 10 | 11 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Grade (%) | | 7% | | -9% | | | | 0% | | | 0% | |
| Storage Length (ft) | 77 | | 0 | 95 | | 95 | 0 | | 95 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 1 | 0 | | 1 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | 75 | | | 75 | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | | 0.98 | | 1.00 | 0.98 | | 0.99 | |
| Frt | | 0.993 | | | | 0.850 | | | 0.850 | | | 0.913 |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.955 | | | | 0.985 |
| Satd. Flow (prot) | 1540 | 1747 | 0 | 1573 | 1732 | 1599 | 0 | 1646 | 1485 | 0 | 1809 | 0 |
| Flt Permitted | 0.433 | | | 0.352 | | | | 0.708 | | | | 0.901 |
| Satd. Flow (perm) | 699 | 1747 | 0 | 582 | 1732 | 1561 | 0 | 1218 | 1450 | 0 | 1653 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | No | | | | No |
| Satd. Flow (RTOR) | | 3 | | | | 24 | | | | | | |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 300 | | | 550 | | | 247 | | | 248 | |
| Travel Time (s) | | 8.2 | | | 15.0 | | | 6.7 | | | 6.8 | |
| Conf. Peds. (#/hr) | 5 | | 4 | 4 | | 5 | 1 | | 2 | 2 | | 1 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 6% | 5% | 0% | 1% | 0% | 3% | 0% | 0% | 0% |
| Adj. Flow (vph) | 11 | 504 | 26 | 20 | 583 | 4 | 177 | 9 | 139 | 12 | 2 | 25 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 11 | 530 | 0 | 20 | 583 | 4 | 0 | 186 | 139 | 0 | 39 | 0 |
| Number of Detectors | 1 | 2 | | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | Right | Left | Thru | Right | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | | 20 | 100 | 20 | 20 | 100 | 20 | 20 | 100 | |
| Trailing Detector (ft) | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Detector 1 Position(ft) | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Detector 1 Size(ft) | 20 | 6 | | 20 | 6 | 20 | 20 | 6 | 20 | 20 | 6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | 94 | | | 94 | | | 94 | | | 94 | |
| Detector 2 Size(ft) | | 6 | | | 6 | | | 6 | | | 6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | pm+pt | NA | Perm | Perm | NA | Perm | Perm | NA | |
| Protected Phases | | 6 | | 5 | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | 2 | 4 | | 4 | 8 | | |
| Detector Phase | 6 | 6 | | 5 | 2 | 2 | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 13.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

2019 Future without Development
Weekday Afternoon Peak Hour

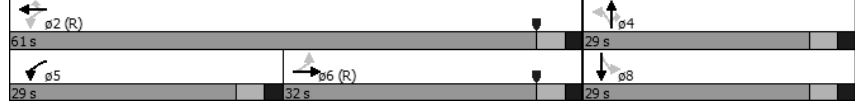


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Split (s) | 32.0 | 32.0 | | 29.0 | 61.0 | 61.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 |
| Total Split (%) | 35.6% | 35.6% | | 32.2% | 67.8% | 67.8% | 32.2% | 32.2% | 32.2% | 32.2% | 32.2% | 32.2% |
| Maximum Green (s) | 27.0 | 27.0 | | 24.0 | 56.0 | 56.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | | -1.0 | -1.0 | -1.0 | | -1.0 | -1.0 | | -1.0 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lead/Lag | Lag | Lag | | Lead | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | C-Max | C-Max | | None | C-Max | C-Max | None | None | None | None | None | None |
| v/c Ratio | 0.02 | 0.47 | | 0.04 | 0.48 | 0.00 | 0.71 | 0.45 | | | 0.11 | |
| Control Delay | 7.4 | 9.4 | | 5.7 | 8.8 | 0.0 | 47.2 | 34.1 | | | 26.8 | |
| Queue Delay | 0.0 | 0.5 | | 0.0 | 0.6 | 0.0 | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 7.4 | 9.8 | | 5.7 | 9.4 | 0.0 | 47.2 | 34.1 | | | 26.8 | |
| Queue Length 50th (ft) | 0 | 94 | | 3 | 134 | 0 | 98 | 68 | | | 18 | |
| Queue Length 95th (ft) | m9 | 239 | | 12 | 249 | 0 | 160 | 116 | | | 41 | |
| Internal Link Dist (ft) | | 220 | | | 470 | | | 167 | | | 168 | |
| Turn Bay Length (ft) | 77 | | | 95 | | 95 | | 95 | | | | |
| Base Capacity (vph) | 451 | 1128 | | 680 | 1206 | 1094 | 338 | 402 | | | 459 | |
| Starvation Cap Reductn | 0 | 235 | | 0 | 279 | 0 | 0 | 0 | | | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | | 0 | |
| Reduced v/c Ratio | 0.02 | 0.59 | | 0.03 | 0.63 | 0.00 | 0.55 | 0.35 | | | 0.08 | |

Intersection Summary

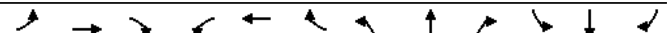
Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 8 (9%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Oak Street & Elm Street



HCM 2010 Signalized Intersection Summary
5: Oak Street & Elm Street

2019 Future without Development
Weekday Afternoon Peak Hour



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| Volume (veh/h) | 10 | 469 | 24 | 19 | 542 | 4 | 165 | 8 | 129 | 11 | 2 | 23 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 |
| Adj Sat Flow, veh/h/ln | 1737 | 1773 | 1737 | 1775 | 1791 | 1881 | 1800 | 1783 | 1748 | 1800 | 1872 | 1800 |
| Adj Flow Rate, veh/h | 11 | 504 | 26 | 20 | 583 | 4 | 177 | 9 | 139 | 12 | 2 | 25 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 6 | 5 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Cap, veh/h | 431 | 943 | 49 | 367 | 1135 | 1009 | 242 | 8 | 411 | 52 | 31 | 55 |
| Arrive On Green | 0.19 | 0.19 | 0.18 | 0.02 | 0.63 | 0.63 | 0.27 | 0.28 | 0.28 | 0.27 | 0.28 | 0.27 |
| Sat Flow, veh/h | 768 | 1671 | 86 | 1690 | 1791 | 1593 | 589 | 30 | 1480 | 0 | 112 | 199 |
| Grp Volume(v), veh/h | 11 | 0 | 530 | 20 | 583 | 4 | 186 | 0 | 139 | 39 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 768 | 0 | 1757 | 1690 | 1791 | 1593 | 619 | 0 | 1480 | 311 | 0 | 0 |
| Q Serve(g_s), s | 1.1 | 0.0 | 24.5 | 0.4 | 15.9 | 0.1 | 0.0 | 0.0 | 6.7 | 0.0 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 10.8 | 0.0 | 24.5 | 0.4 | 15.9 | 0.1 | 24.0 | 0.0 | 6.7 | 24.0 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.05 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.31 | | 0.64 |
| Lane Grp Cap(c), veh/h | 431 | 0 | 992 | 367 | 1135 | 1009 | 243 | 0 | 411 | 135 | 0 | 0 |
| V/C Ratio(X) | 0.03 | 0.00 | 0.53 | 0.05 | 0.51 | 0.00 | 0.76 | 0.00 | 0.34 | 0.29 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 431 | 0 | 992 | 796 | 1135 | 1009 | 243 | 0 | 411 | 135 | 0 | 0 |
| HCM Platoon Ratio | 0.33 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(l) | 0.95 | 0.00 | 0.95 | 0.09 | 0.09 | 0.09 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 24.5 | 0.0 | 25.9 | 10.7 | 9.0 | 6.1 | 34.0 | 0.0 | 25.9 | 26.5 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 2.0 | 0.0 | 0.2 | 0.0 | 13.5 | 0.0 | 0.5 | 1.2 | 0.0 | 0.0 |
| 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 | 0.4 | 0.0 | 18.1 | 0.3 | 9.2 | 0.1 | 1.6 | 0.0 | 5.0 | 1.4 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 24.6 | 0.0 | 27.9 | 10.7 | 9.1 | 6.1 | 47.4 | 0.0 | 26.4 | 27.7 | 0.0 | 0.0 |
| LnGrp LOS | C | | C | B | A | A | D | | C | C | | |
| Approach Vol, veh/h | | 541 | | | 607 | | | 325 | | | | 39 |
| Approach Delay, s/veh | | 27.8 | | | 9.2 | | | 38.4 | | | | 27.7 |
| Approach LOS | | C | | | A | | | D | | | | C |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 61.0 | | 29.0 | 6.2 | 54.8 | | 29.0 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 56.0 | | 24.0 | 24.0 | 27.0 | | 24.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 18.4 | | 26.0 | 2.9 | 26.5 | | 26.0 | | | | |
| Green Ext Time (p_c), s | | 10.1 | | 0.0 | 0.0 | 0.3 | | 0.0 | | | | |

Intersection Summary

HCM 2010 Ctrl Delay 22.6
 HCM 2010 LOS C

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2019 Future without Development
Weekday Afternoon Peak Hour

| | ↖ | → | ↘ | ↙ | ← | ↖ | ↙ | ↑ | ↗ | ↘ | ↓ | ↘ |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↙ | ↙ | ↑ | ↑ | ↗ | ↖ | ↗ | ↘ |
| Volume (vph) | 98 | 81 | 540 | 711 | 68 | 53 | 464 | 1006 | 714 | 21 | 845 | 72 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | | 2% | | | -5% | | | 5% | | | | 0% |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 1 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | | | | 0.99 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.934 | | | | 0.850 | | 0.988 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1589 | 1557 | 1485 | 3174 | 1580 | 0 | 1511 | 3112 | 1526 | 1466 | 3210 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.110 | | | 0.279 | | |
| Satd. Flow (perm) | 1586 | 1557 | 1485 | 3174 | 1580 | 0 | 174 | 3112 | 1490 | 430 | 3210 | 0 |
| Right Turn on Red | | | No | | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 578 | | | 8 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | 18 | | 4 | 4 | | 18 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 7% | 2% | 3% | 0% | 1% | 5% | 1% | 5% |
| Adj. Flow (vph) | 100 | 83 | 551 | 726 | 69 | 54 | 473 | 1027 | 729 | 21 | 862 | 73 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 100 | 83 | 551 | 726 | 123 | 0 | 473 | 1027 | 729 | 21 | 935 | 0 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | 1 | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | Right | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | 20 | 20 | 100 | | 20 | 100 | 20 | 20 | 100 | |
| Trailing Detector (ft) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Detector 1 Position(ft) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Detector 1 Size(ft) | 20 | 6 | 20 | 20 | 6 | | 20 | 6 | 20 | 20 | 6 | |
| Detector 1 Type | CI+Ex | CI+Ex | CI+Ex | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | CI+Ex | CI+Ex | CI+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | 94 | | | 94 | | | 94 | | | 94 | |
| Detector 2 Size(ft) | | 6 | | | 6 | | | 6 | | | 6 | |
| Detector 2 Type | | CI+Ex | | | CI+Ex | | | CI+Ex | | | CI+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Split | NA | pm+ov | Split | NA | | pm+pt | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | 8 | | | | 6 | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2019 Future without Development
Weekday Afternoon Peak Hour

| | ↖ | → | ↘ | ↙ | ← | ↖ | ↙ | ↑ | ↗ | ↘ | ↓ | ↘ |
|-------------------------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Total Split (s) | 21.0 | 21.0 | 30.0 | 26.0 | 26.0 | | 30.0 | 63.0 | 63.0 | 33.0 | 33.0 | |
| Total Split (%) | 19.1% | 19.1% | 27.3% | 23.6% | 23.6% | | 27.3% | 57.3% | 57.3% | 30.0% | 30.0% | |
| Maximum Green (s) | 15.0 | 15.0 | 24.0 | 20.0 | 20.0 | | 24.0 | 57.0 | 57.0 | 27.0 | 27.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |
| v/c Ratio | 0.54 | 0.46 | 0.95 | 1.20 | 0.41 | | 1.18 | 0.59 | 0.67 | 0.17 | 1.02 | |
| Control Delay | 56.4 | 53.0 | 60.9 | 144.6 | 43.8 | | 135.1 | 18.4 | 7.0 | 36.0 | 74.5 | |
| Queue Delay | 0.0 | 0.0 | 1.3 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Total Delay | 56.4 | 53.0 | 62.1 | 144.6 | 43.8 | | 135.1 | 18.4 | 7.0 | 36.0 | 74.5 | |
| Queue Length 50th (ft) | 67 | 55 | 370 | -321 | 77 | | -361 | 242 | 51 | 11 | -372 | |
| Queue Length 95th (ft) | 120 | 103 | #566 | #439 | 135 | | #573 | 326 | 183 | 35 | #536 | |
| Internal Link Dist (ft) | | 470 | | | 350 | | | 372 | | | 382 | |
| Turn Bay Length (ft) | 135 | | 202 | 135 | | | 266 | | 130 | 276 | | |
| Base Capacity (vph) | 231 | 226 | 577 | 605 | 301 | | 400 | 1731 | 1085 | 122 | 916 | |
| Starvation Cap Reductn | 0 | 0 | 5 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Reduced v/c Ratio | 0.43 | 0.37 | 0.96 | 1.20 | 0.41 | | 1.18 | 0.59 | 0.67 | 0.17 | 1.02 | |

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated
- Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Fayette Street & Elm Street



HCM 2010 Signalized Intersection Summary
6: Fayette Street & Elm Street

2019 Future without Development
Weekday Afternoon Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|-------|-------|------|-------|------|------|------|-------|-------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ |
| Volume (veh/h) | 98 | 81 | 540 | 711 | 68 | 53 | 464 | 1006 | 714 | 21 | 845 | 72 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), 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 | | 0.98 | 1.00 | | 0.96 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1730 | 1661 | 1747 | 1845 | 1760 | 1845 | 1704 | 1755 | 1807 | 1646 | 1777 | 1800 |
| Adj Flow Rate, veh/h | 100 | 83 | 452 | 726 | 69 | 54 | 473 | 1027 | 597 | 21 | 862 | 73 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Percent Heavy Veh, % | 3 | 3 | 2 | 0 | 7 | 7 | 3 | 0 | 1 | 5 | 1 | 1 |
| Cap, veh/h | 240 | 242 | 553 | 651 | 175 | 137 | 434 | 1758 | 796 | 135 | 799 | 68 |
| Arrive On Green | 0.15 | 0.15 | 0.15 | 0.19 | 0.19 | 0.18 | 0.23 | 0.53 | 0.53 | 0.25 | 0.25 | 0.25 |
| Sat Flow, veh/h | 1648 | 1661 | 1482 | 3409 | 916 | 717 | 1623 | 3335 | 1510 | 272 | 3140 | 266 |
| Grp Volume(v), veh/h | 100 | 83 | 452 | 726 | 0 | 123 | 473 | 1027 | 597 | 21 | 463 | 472 |
| Grp Sat Flow(s),veh/h/ln | 1648 | 1661 | 1482 | 1704 | 0 | 1633 | 1623 | 1667 | 1510 | 272 | 1688 | 1718 |
| Q Serve(g_s), s | 6.1 | 4.9 | 16.0 | 21.0 | 0.0 | 7.3 | 25.0 | 23.1 | 34.0 | 6.9 | 28.0 | 28.0 |
| Cycle Q Clear(g_c), s | 6.1 | 4.9 | 16.0 | 21.0 | 0.0 | 7.3 | 25.0 | 23.1 | 34.0 | 6.9 | 28.0 | 28.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.44 | 1.00 | | 1.00 | 1.00 | | 0.15 |
| Lane Grp Cap(c), veh/h | 240 | 242 | 553 | 651 | 0 | 312 | 434 | 1758 | 796 | 135 | 430 | 437 |
| V/C Ratio(X) | 0.42 | 0.34 | 0.82 | 1.12 | 0.00 | 0.39 | 1.09 | 0.58 | 0.75 | 0.16 | 1.08 | 1.08 |
| Avail Cap(c_a), veh/h | 240 | 242 | 553 | 651 | 0 | 312 | 434 | 1758 | 796 | 135 | 430 | 437 |
| 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) | 0.88 | 0.88 | 0.88 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 42.8 | 42.3 | 31.1 | 44.5 | 0.0 | 39.1 | 32.4 | 17.8 | 20.3 | 33.1 | 41.0 | 41.1 |
| Incr Delay (d2), s/veh | 1.0 | 0.7 | 8.3 | 71.4 | 0.0 | 0.8 | 69.4 | 1.4 | 6.4 | 2.5 | 66.1 | 65.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 5.1 | 4.2 | 19.3 | 29.4 | 0.0 | 6.0 | 38.7 | 16.3 | 22.0 | 1.1 | 37.6 | 38.2 |
| LnGrp Delay(d),s/veh | 43.8 | 43.0 | 39.5 | 115.9 | 0.0 | 40.0 | 101.8 | 19.2 | 26.7 | 35.6 | 107.1 | 106.8 |
| LnGrp LOS | D | D | D | F | | D | F | B | C | D | F | F |
| Approach Vol, veh/h | | 635 | | | 849 | | | 2097 | | | 956 | |
| Approach Delay, s/veh | | 40.6 | | | 104.9 | | | 40.0 | | | 105.4 | |
| Approach LOS | | D | | | F | | | D | | | F | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 30.0 | 33.0 | | 26.0 | | 63.0 | | 21.0 | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | 24.0 | 27.0 | | 20.0 | | 57.0 | | 15.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 27.5 | 30.5 | | 23.5 | | 36.5 | | 18.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | | 16.4 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 66.0 | | | | | | | | | |
| HCM 2010 LOS | | | E | | | | | | | | | |

Lanes, Volumes, Timings
3: Access/Wood Street & Elm Street & Colwell Street

2019 Future without Development
Weekday Afternoon Peak Hour

| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|-------|-------|-------|------|-------|------|------|-------|-------|-------|------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 53 | 2 | 320 | 7 | 462 | 216 | 17 | 10 | 8 | 0 | 6 | 6 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 12 | 14 | 12 | 16 | 12 | 12 | 12 | 15 | 12 | 12 | 12 |
| Grade (%) | | | 0% | | 0% | | | | | -2% | | |
| Storage Length (ft) | | 78 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Storage Lanes | | 1 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Taper Length (ft) | | 75 | | | | | | 75 | | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | 1.00 | 1.00 | | 0.99 | | | | 0.99 | | | |
| Frt | | | 0.997 | | 0.955 | | | | 0.968 | | | |
| Flt Protected | | 0.950 | | | | | | | 0.963 | | | |
| Satd. Flow (prot) | 0 | 1676 | 1859 | 0 | 1832 | 0 | 0 | 0 | 1686 | 0 | 0 | 0 |
| Flt Permitted | | 0.205 | | | | | | | 0.841 | | | |
| Satd. Flow (perm) | 0 | 362 | 1859 | 0 | 1832 | 0 | 0 | 0 | 1471 | 0 | 0 | 0 |
| Right Turn on Red | | | | No | | | No | | | | No | |
| Satd. Flow (RTOR) | | | | | | | | | | | | |
| Link Speed (mph) | | | 25 | | 25 | | | | 25 | | | |
| Link Distance (ft) | | | 571 | | 600 | | | | 211 | | | |
| Travel Time (s) | | | 15.6 | | 16.4 | | | | 5.8 | | | |
| Confl. Peds. (#/hr) | 1 | | | 4 | | 1 | | 1 | | | 1 | |
| 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 (%) | 2% | 2% | 3% | 0% | 6% | 5% | 2% | 0% | 0% | 2% | 0% | 2% |
| Adj. Flow (vph) | 56 | 2 | 337 | 7 | 486 | 227 | 18 | 11 | 8 | 0 | 6 | 6 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 58 | 344 | 0 | 731 | 0 | 0 | 0 | 25 | 0 | 0 | 0 |
| Number of Detectors | 1 | 1 | 2 | | 2 | | | 1 | 1 | 2 | | 1 |
| Detector Template | Left | Left | Thru | | Thru | | | Left | Left | Thru | | Left |
| Leading Detector (ft) | 20 | 20 | 100 | | 100 | | | 20 | 20 | 100 | | 20 |
| Trailing Detector (ft) | 0 | 0 | 0 | | 0 | | | 0 | 0 | 0 | | 0 |
| Detector 1 Position(ft) | 0 | 0 | 0 | | 0 | | | 0 | 0 | 0 | | 0 |
| Detector 1 Size(ft) | 20 | 20 | 6 | | 6 | | | 20 | 20 | 6 | | 20 |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | | | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 2 Position(ft) | | | 94 | | 94 | | | | | 94 | | |
| Detector 2 Size(ft) | | | 6 | | 6 | | | | | 6 | | |
| Detector 2 Type | | | Cl+Ex | | Cl+Ex | | | | | Cl+Ex | | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | | 0.0 | | 0.0 | | | | | 0.0 | | |
| Turn Type | Perm | Perm | NA | | NA | | | Perm | Perm | NA | | Perm |
| Protected Phases | | | 6 | | 2 | | | | | 4 | | |
| Permitted Phases | 6 | 6 | | | | | | 4 | 4 | | | 9 |
| Detector Phase | 6 | 6 | 6 | | 2 | | | 4 | 4 | 4 | | 9 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | | 21.0 | | | 21.0 | 21.0 | 21.0 | | 21.0 |

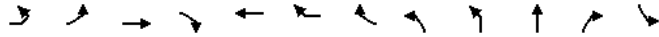
Lanes, Volumes, Timings
3: Access/Wood Street & Elm Street & Colwell Street

2019 Future without Development
Weekday Afternoon Peak Hour

| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|-------|------|-------|------|------|
| Lane Configurations | | | | | |
| Volume (vph) | 0 | 2 | 220 | 10 | 44 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | 2% | | |
| Storage Length (ft) | | 0 | 0 | 0 | |
| Storage Lanes | | 0 | 1 | 0 | |
| Taper Length (ft) | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 0.99 | | |
| Frt | 0.966 | | 0.973 | | |
| Flt Protected | 0.964 | | 0.961 | | |
| Satd. Flow (prot) | 1643 | 0 | 1641 | 0 | 0 |
| Flt Permitted | | | 0.961 | | |
| Satd. Flow (perm) | 1705 | 0 | 1638 | 0 | 0 |
| Right Turn on Red | | | | | No |
| Satd. Flow (RTOR) | | | | | |
| Link Speed (mph) | 25 | | 25 | | |
| Link Distance (ft) | 267 | | 303 | | |
| Travel Time (s) | 7.3 | | 8.3 | | |
| Confl. Peds. (#/hr) | | | 1 | | 1 |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Heavy Vehicles (%) | 2% | 2% | 1% | 0% | 2% |
| Adj. Flow (vph) | 0 | 2 | 232 | 11 | 46 |
| Shared Lane Traffic (%) | | | | | |
| Lane Group Flow (vph) | 8 | 0 | 289 | 0 | 0 |
| Number of Detectors | 2 | | 1 | | |
| Detector Template | Thru | | Left | | |
| Leading Detector (ft) | 100 | | 20 | | |
| Trailing Detector (ft) | 0 | | 0 | | |
| Detector 1 Position(ft) | 0 | | 0 | | |
| Detector 1 Size(ft) | 6 | | 20 | | |
| Detector 1 Type | Cl+Ex | | Cl+Ex | | |
| Detector 1 Channel | | | | | |
| Detector 1 Extend (s) | 0.0 | | 0.0 | | |
| Detector 1 Queue (s) | 0.0 | | 0.0 | | |
| Detector 1 Delay (s) | 0.0 | | 0.0 | | |
| Detector 2 Position(ft) | | | 94 | | |
| Detector 2 Size(ft) | | | 6 | | |
| Detector 2 Type | Cl+Ex | | | | |
| Detector 2 Channel | | | | | |
| Detector 2 Extend (s) | 0.0 | | | | |
| Turn Type | NA | | Perm | | |
| Protected Phases | 9 | | | | |
| Permitted Phases | | | 8 | | |
| Detector Phase | 9 | | 8 | | |
| Switch Phase | | | | | |
| Minimum Initial (s) | 3.0 | | 3.0 | | |
| Minimum Split (s) | 21.0 | | 21.0 | | |

Lanes, Volumes, Timings
3: Access/Wood Street & Elm Street & Colwell Street

2019 Future without Development
Weekday Afternoon Peak Hour

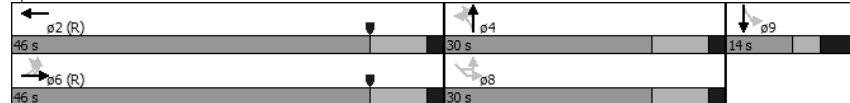


| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|-------|-------|-------|-------|-----|-----|------|-------|-------|-------|-----|-------|
| Total Split (s) | 46.0 | 46.0 | 46.0 | 46.0 | | | | 30.0 | 30.0 | 30.0 | | 14.0 |
| Total Split (%) | 51.1% | 51.1% | 51.1% | 51.1% | | | | 33.3% | 33.3% | 33.3% | | 15.6% |
| Maximum Green (s) | 38.0 | 38.0 | 38.0 | 38.0 | | | | 22.0 | 22.0 | 22.0 | | 7.0 |
| Yellow Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | | | | 6.0 | 6.0 | 6.0 | | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | 2.0 | 2.0 | | | | 2.0 | 2.0 | 2.0 | | 4.0 |
| Lost Time Adjust (s) | | -1.0 | -1.0 | -1.0 | | | | | | -1.0 | | |
| Total Lost Time (s) | | 7.0 | 7.0 | 7.0 | | | | | | 7.0 | | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Recall Mode | C-Max | C-Max | C-Max | C-Max | | | | None | None | None | | None |
| v/c Ratio | 0.27 | 0.32 | 0.32 | 0.68 | | | | | | 0.08 | | |
| Control Delay | | 17.2 | 12.2 | 14.4 | | | | | | 26.5 | | |
| Queue Delay | | 0.0 | 0.0 | 0.1 | | | | | | 0.0 | | |
| Total Delay | | 17.2 | 12.2 | 14.5 | | | | | | 26.5 | | |
| Queue Length 50th (ft) | | 14 | 88 | 99 | | | | | | 11 | | |
| Queue Length 95th (ft) | | 58 | 204 | #603 | | | | | | 31 | | |
| Internal Link Dist (ft) | | | 491 | 520 | | | | | | 131 | | |
| Turn Bay Length (ft) | | 78 | | | | | | | | | | |
| Base Capacity (vph) | | 212 | 1091 | 1075 | | | | | | 375 | | |
| Starvation Cap Reductn | | 0 | 0 | 22 | | | | | | 0 | | |
| Spillback Cap Reductn | | 0 | 0 | 0 | | | | | | 0 | | |
| Storage Cap Reductn | | 0 | 0 | 0 | | | | | | 0 | | |
| Reduced v/c Ratio | | 0.27 | 0.32 | 0.69 | | | | | | 0.07 | | |

Intersection Summary

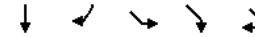
Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Access/Wood Street & Elm Street & Colwell Street



Lanes, Volumes, Timings
3: Access/Wood Street & Elm Street & Colwell Street

2019 Future without Development
Weekday Afternoon Peak Hour



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|-------|-----|-------|-----|------|
| Total Split (s) | 14.0 | | 30.0 | | |
| Total Split (%) | 15.6% | | 33.3% | | |
| Maximum Green (s) | 7.0 | | 22.0 | | |
| Yellow Time (s) | 3.0 | | 6.0 | | |
| All-Red Time (s) | 4.0 | | 2.0 | | |
| Lost Time Adjust (s) | -1.0 | | -1.0 | | |
| Total Lost Time (s) | 6.0 | | 7.0 | | |
| Lead/Lag | | | | | |
| Lead-Lag Optimize? | | | | | |
| Vehicle Extension (s) | 3.0 | | 3.0 | | |
| Recall Mode | None | | None | | |
| v/c Ratio | 0.06 | | 0.78 | | |
| Control Delay | 38.9 | | 47.7 | | |
| Queue Delay | 0.0 | | 0.0 | | |
| Total Delay | 38.9 | | 47.7 | | |
| Queue Length 50th (ft) | 4 | | 151 | | |
| Queue Length 95th (ft) | 18 | | #239 | | |
| Internal Link Dist (ft) | 187 | | 223 | | |
| Turn Bay Length (ft) | | | | | |
| Base Capacity (vph) | 151 | | 418 | | |
| Starvation Cap Reductn | 0 | | 0 | | |
| Spillback Cap Reductn | 0 | | 0 | | |
| Storage Cap Reductn | 0 | | 0 | | |
| Reduced v/c Ratio | 0.05 | | 0.69 | | |

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
1: Corson Street & Elm Street

2019 Future without Development
Weekday Afternoon Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|------|------|------|------|------|-------|------|------|
| Lane Configurations | ↔ | | | ↔ | | | ↔ | | | ↔ | | |
| Volume (vph) | 1 | 421 | 3 | 1 | 469 | 8 | 0 | 0 | 0 | 18 | 0 | 1 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 11 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | | 1% | | | 0% | | | 0% | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.999 | | | 0.998 | | | | | | 0.993 | | |
| Frt | | | | | | | | | | 0.955 | | |
| Flt Protected | | | | | | | | | | 0.955 | | |
| Satd. Flow (prot) | 0 | 1799 | 0 | 0 | 2038 | 0 | 0 | 1900 | 0 | 0 | 2042 | 0 |
| Flt Permitted | | | | | | | | | | 0.955 | | |
| Satd. Flow (perm) | 0 | 1799 | 0 | 0 | 2038 | 0 | 0 | 1900 | 0 | 0 | 2042 | 0 |
| Link Speed (mph) | 25 | | 25 | | 25 | | 25 | | 25 | | 25 | |
| Link Distance (ft) | 275 | | 276 | | 219 | | 188 | | 188 | | 188 | |
| Travel Time (s) | 7.5 | | 7.5 | | 6.0 | | 5.1 | | 5.1 | | 5.1 | |
| Confl. Peds. (#/hr) | 2 | | 3 | 3 | | 2 | | 3 | 3 | | | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 5% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 448 | 3 | 1 | 499 | 9 | 0 | 0 | 0 | 19 | 0 | 1 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 452 | 0 | 0 | 509 | 0 | 0 | 0 | 0 | 0 | 20 | 0 |
| Sign Control | Free | | Free | | Stop | | Stop | | Stop | | Stop | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC
1: Corson Street & Elm Street

2019 Future without Development
Weekday Afternoon Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.4 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 1 | 421 | 3 | 1 | 469 | 8 | 0 | 0 | 0 | 18 | 0 | 1 |
| Conflicting Peds, #/hr | 2 | 0 | 3 | 3 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 448 | 3 | 1 | 499 | 9 | 0 | 0 | 0 | 19 | 0 | 1 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-----|-----|--------|-----|-----|
| Conflicting Flow All | 510 | 0 | 0 | 454 | 0 | 0 | 964 | 968 | 455 | 963 | 964 | 509 |
| Stage 1 | - | - | - | - | - | - | 455 | 455 | - | 508 | 508 | - |
| Stage 2 | - | - | - | - | - | - | 509 | 513 | - | 455 | 456 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 801 | - | - | 838 | - | - | 261 | 256 | 641 | 261 | 257 | 597 |
| Stage 1 | - | - | - | - | - | - | 667 | 572 | - | 622 | 542 | - |
| Stage 2 | - | - | - | - | - | - | 622 | 539 | - | 667 | 572 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 799 | - | - | 835 | - | - | 258 | 253 | 637 | 258 | 254 | 594 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 258 | 253 | - | 258 | 254 | - |
| Stage 1 | - | - | - | - | - | - | 664 | 569 | - | 619 | 539 | - |
| Stage 2 | - | - | - | - | - | - | 618 | 536 | - | 663 | 569 | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|----|----|------|
| HCM Control Delay, s | 0 | 0 | 0 | 19.6 |
| HCM LOS | A | A | A | C |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | - | 799 | - | - | 835 | - | - | 266 |
| HCM Lane V/C Ratio | - | 0.001 | - | - | 0.001 | - | - | 0.076 |
| HCM Control Delay (s) | 0 | 9.5 | 0 | - | 9.3 | 0 | - | 19.6 |
| HCM Lane LOS | A | A | A | - | A | A | - | C |
| HCM 95th %tile Q(veh) | - | 0 | - | - | 0 | - | - | 0.2 |

Lanes, Volumes, Timings

2019 Future without Development

2: Lot Access/Old Elm Street & Elm Street

Weekday Afternoon Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations | ↔ | | | ↔ | | | ↔ | | | | | |
| Volume (vph) | 0 | 424 | 0 | 0 | 492 | 9 | 0 | 0 | 3 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 12 | 12 |
| Grade (%) | | -1% | | | 0% | | | 0% | | | -1% | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.997 | | | | | | 0.865 | | | | | |
| Flt Protected | | | | | | | | | | | | |
| Satd. Flow (prot) | 0 | 1934 | 0 | 0 | 1840 | 0 | 0 | 1644 | 0 | 0 | 0 | 0 |
| Flt Permitted | | | | | | | | | | | | |
| Satd. Flow (perm) | 0 | 1934 | 0 | 0 | 1840 | 0 | 0 | 1644 | 0 | 0 | 0 | 0 |
| Link Speed (mph) | 25 | | 25 | | 25 | | 25 | | 25 | | 25 | |
| Link Distance (ft) | 276 | | 571 | | 199 | | 208 | | 5.7 | | | |
| Travel Time (s) | 7.5 | | 15.6 | | 5.4 | | 5.7 | | | | | |
| Confl. Peds. (#/hr) | | | | | | | 2 | | | | | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 0 | 451 | 0 | 0 | 523 | 10 | 0 | 0 | 3 | 0 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 451 | 0 | 0 | 533 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| Sign Control | Free | | Free | | Stop | | Stop | | Stop | | | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC

2019 Future without Development

2: Lot Access/Old Elm Street & Elm Street

Weekday Afternoon Peak Hour

| Intersection | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Int Delay, s/veh | 0 | | | | | | | | | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h | 0 | 424 | 0 | 0 | 492 | 9 | 0 | 0 | 3 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -1 | - | - | 0 | - | - | 0 | - | - | -1 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 451 | 0 | 0 | 523 | 10 | 0 | 0 | 3 | 0 | 0 | 0 |

| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 533 | 0 | 0 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | 4.3 | - | - |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | 3 | - | - |
| Pot Cap-1 Maneuver | 786 | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 786 | - | - |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 10.6 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|-----------------------|-------|-----|-----|-----|-----|-----|-----|
| Capacity (veh/h) | 642 | 786 | - | - | 839 | - | - |
| HCM Lane V/C Ratio | 0.005 | - | - | - | - | - | - |
| HCM Control Delay (s) | 10.6 | 0 | - | - | 0 | - | - |
| HCM Lane LOS | B | A | - | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | 0 | - | - | 0 | - | - |

APPENDIX I

Future (2019) with Development Capacity/ Level-of-Service Analysis Worksheets

Lanes, Volumes, Timings
1: Corson Street & Elm Street

2019 Future with Development
Weekday Morning Peak Hour - Scenario 1

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 0 | 352 | 35 | 139 | 287 | 2 | 4 | 0 | 19 | 18 | 0 | 4 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 11 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | | 1% | | | 0% | | | 0% | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | 0.988 | | | 0.999 | | | 0.887 | | | 0.977 | | |
| Frt Protected | | | | 0.950 | | | 0.992 | | | 0.960 | | |
| Satd. Flow (prot) | 0 | 1623 | 0 | 1796 | 1863 | 0 | 0 | 1672 | 0 | 0 | 2020 | 0 |
| Frt Permitted | | | | 0.950 | | | 0.992 | | | 0.960 | | |
| Satd. Flow (perm) | 0 | 1623 | 0 | 1796 | 1863 | 0 | 0 | 1672 | 0 | 0 | 2020 | 0 |
| Link Speed (mph) | 25 | | | 25 | | | 25 | | | 25 | | |
| Link Distance (ft) | 275 | | | 276 | | | 219 | | | 188 | | |
| Travel Time (s) | 7.5 | | | 7.5 | | | 6.0 | | | 5.1 | | |
| Confl. Peds. (#/hr) | 1 | 1 | | 1 | 1 | | 1 | | 1 | | 1 | |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles (%) | 0% | 13% | 0% | 0% | 15% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 0 | 378 | 38 | 149 | 309 | 2 | 4 | 0 | 20 | 19 | 0 | 4 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 416 | 0 | 149 | 311 | 0 | 0 | 24 | 0 | 0 | 23 | 0 |
| Sign Control | Free | | | | Free | | Stop | | | | Stop | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC
1: Corson Street & Elm Street

2019 Future with Development
Weekday Morning Peak Hour - Scenario 1

| Intersection | | | | | | | | | | | | |
|------------------|-----|--|--|--|--|--|--|--|--|--|--|--|
| Int Delay, s/veh | 2.6 | | | | | | | | | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h | 0 | 352 | 35 | 139 | 287 | 2 | 4 | 0 | 19 | 18 | 0 | 4 |
| Conflicting Peds, #/hr | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 13 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 378 | 38 | 149 | 309 | 2 | 4 | 0 | 20 | 19 | 0 | 4 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|------|-----|--------|------|-----|
| Conflicting Flow All | 311 | 0 | 0 | 416 | 0 | 0 | 1008 | 1007 | 398 | 1017 | 1025 | 311 |
| Stage 1 | - | - | - | - | - | - | 397 | 397 | - | 609 | 609 | - |
| Stage 2 | - | - | - | - | - | - | 611 | 610 | - | 408 | 416 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 940 | - | - | 864 | - | - | 243 | 243 | 691 | 239 | 237 | 775 |
| Stage 1 | - | - | - | - | - | - | 719 | 607 | - | 545 | 488 | - |
| Stage 2 | - | - | - | - | - | - | 544 | 488 | - | 709 | 595 | - |
| Platoon blocked, % | | | | | | | | | | | | |
| Mov Cap-1 Maneuver | 939 | - | - | 863 | - | - | 209 | 201 | 690 | 201 | 196 | 774 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 209 | 201 | - | 201 | 196 | - |
| Stage 1 | - | - | - | - | - | - | 719 | 607 | - | 545 | 404 | - |
| Stage 2 | - | - | - | - | - | - | 447 | 404 | - | 687 | 595 | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|-----|------|------|
| HCM Control Delay, s | 0 | 3.3 | 12.7 | 22.3 |
| HCM LOS | | | B | C |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 493 | 939 | - | - | 863 | - | - | 232 |
| HCM Lane V/C Ratio | 0.05 | - | - | - | 0.173 | - | - | 0.102 |
| HCM Control Delay (s) | 12.7 | 0 | - | - | 10 | - | - | 22.3 |
| HCM Lane LOS | B | A | - | - | B | - | - | C |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 0.6 | - | - | 0.3 |

Lanes, Volumes, Timings

2: Lot Access/Old Elm Street & Elm Street

2019 Future with Development

Weekday Morning Peak Hour - Scenario 1



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-----------------------------|------|------|-------|------|------|-------|------|------|------|------|------|
| Lane Configurations | ↔ ↗ ↘ ↙ ↘ ↗ ↙ ↘ ↗ ↘ ↙ ↘ ↙ ↘ | | | | | | | | | | | |
| Volume (vph) | 1 | 343 | 35 | 141 | 428 | 3 | 5 | 0 | 20 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 12 | 12 |
| Grade (%) | | -1% | | | 0% | | | 0% | | | -1% | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | 0.987 | | | 0.999 | | | 0.891 | | | | | |
| Flt Protected | | | | 0.950 | | | 0.990 | | | | | |
| Satd. Flow (prot) | 0 | 1786 | 0 | 1357 | 1666 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 |
| Flt Permitted | | | | 0.950 | | | 0.990 | | | | | |
| Satd. Flow (perm) | 0 | 1786 | 0 | 1357 | 1666 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 |
| Link Speed (mph) | 25 | | | 25 | | | 25 | | | 25 | | |
| Link Distance (ft) | 276 | | | 571 | | | 199 | | | 208 | | |
| Travel Time (s) | 7.5 | | | 15.6 | | | 5.4 | | | 5.7 | | |
| Confl. Peds. (#/hr) | 2 | | | | | | 2 | | | | | |
| 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% | 10% | 0% | 33% | 14% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 361 | 37 | 148 | 451 | 3 | 5 | 0 | 21 | 0 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 399 | 0 | 148 | 454 | 0 | 0 | 26 | 0 | 0 | 0 | 0 |
| Sign Control | Free | | | | Free | | Stop | | | | Stop | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC

2: Lot Access/Old Elm Street & Elm Street

2019 Future with Development

Weekday Morning Peak Hour - Scenario 1

| Intersection | | | | | | | | | | | | |
|------------------|-----|--|--|--|--|--|--|--|--|--|--|--|
| Int Delay, s/veh | 1.8 | | | | | | | | | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h | 1 | 343 | 35 | 141 | 428 | 3 | 5 | 0 | 20 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 1 | - | - | 0 | - |
| Grade, % | - | -1 | - | - | 0 | - | - | 0 | - | - | -1 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 0 | 10 | 0 | 33 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 361 | 37 | 148 | 451 | 3 | 5 | 0 | 21 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|----------------------|--------|---|---|--------|---|---|--------|------|-----|
| Conflicting Flow All | 454 | 0 | 0 | 398 | 0 | 0 | 1131 | 1133 | 381 |
| Stage 1 | - | - | - | - | - | - | 382 | 382 | - |
| Stage 2 | - | - | - | - | - | - | 749 | 751 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 838 | - | - | 877 | - | - | 199 | 205 | 707 |
| Stage 1 | - | - | - | - | - | - | 790 | 616 | - |
| Stage 2 | - | - | - | - | - | - | 525 | 421 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 836 | - | - | 876 | - | - | 165 | 0 | 706 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 323 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 788 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 436 | 0 | - |

| Approach | EB | WB | NB |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0 | 2.5 | 11.6 |
| HCM LOS | | | B |

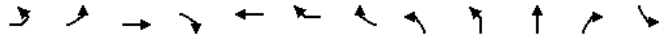
| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|
| Capacity (veh/h) | 571 | 836 | - | - | 876 | - | - |
| HCM Lane V/C Ratio | 0.046 | 0.001 | - | - | 0.169 | - | - |
| HCM Control Delay (s) | 11.6 | 9.3 | 0 | - | 9.9 | - | - |
| HCM Lane LOS | B | A | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0.1 | 0 | - | - | 0.6 | - | - |

Lanes, Volumes, Timings

3: Access/Wood Street & Elm Street & Colwell Street

2019 Future with Development

Weekday Morning Peak Hour - Scenario 1



| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|-------|-------|-------|------|-------|------|------|-------|-------|-------|------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 61 | 0 | 285 | 33 | 469 | 138 | 8 | 3 | 14 | 0 | 2 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 12 | 14 | 12 | 16 | 12 | 12 | 12 | 15 | 12 | 12 | 12 |
| Grade (%) | | | 0% | | 0% | | | | | -2% | | |
| Storage Length (ft) | | 78 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Storage Lanes | | 1 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Taper Length (ft) | | 75 | | | | | | | 75 | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 1.00 | | | | | | 1.00 | | | |
| Frt | | | 0.984 | | 0.968 | | | | 0.986 | | | |
| Flt Protected | | 0.950 | | | | | | | 0.957 | | | |
| Satd. Flow (prot) | 0 | 1613 | 1688 | 0 | 1792 | 0 | 0 | 0 | 1710 | 0 | 0 | 0 |
| Flt Permitted | | 0.200 | | | | | | | 0.657 | | | |
| Satd. Flow (perm) | 0 | 340 | 1688 | 0 | 1792 | 0 | 0 | 0 | 1174 | 0 | 0 | 0 |
| Right Turn on Red | | | | No | | | No | | | | No | |
| Satd. Flow (RTOR) | | | | | | | | | | | | |
| Link Speed (mph) | | | 25 | | 25 | | | | 25 | | | |
| Link Distance (ft) | | | 571 | | 600 | | | | 211 | | | |
| Travel Time (s) | | | 15.6 | | 16.4 | | | | 5.8 | | | |
| Confl. Peds. (#/hr) | | | | 1 | | | | | | | 6 | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 6% | 2% | 13% | 0% | 11% | 8% | 2% | 0% | 0% | 2% | 0% | 2% |
| Adj. Flow (vph) | 65 | 0 | 303 | 35 | 499 | 147 | 9 | 3 | 15 | 0 | 2 | 7 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 65 | 338 | 0 | 655 | 0 | 0 | 0 | 20 | 0 | 0 | 0 |
| Turn Type | Perm | Perm | NA | | NA | | | Perm | Perm | NA | | Perm |
| Protected Phases | | | 6 | | 2 | | | | 4 | | | 4 |
| Permitted Phases | 6 | 6 | | | | | | 4 | 4 | | | 9 |
| Detector Phase | 6 | 6 | 6 | | 2 | | | 4 | 4 | 4 | | 9 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | | 21.0 | | | 21.0 | 21.0 | 21.0 | | 21.0 |
| Total Split (s) | 33.0 | 33.0 | 33.0 | | 33.0 | | | 33.0 | 33.0 | 33.0 | | 33.0 |
| Total Split (%) | 41.3% | 41.3% | 41.3% | | 41.3% | | | 41.3% | 41.3% | 41.3% | | 17.5% |
| Maximum Green (s) | 25.0 | 25.0 | 25.0 | | 25.0 | | | 25.0 | 25.0 | 25.0 | | 7.0 |
| Yellow Time (s) | 6.0 | 6.0 | 6.0 | | 6.0 | | | 6.0 | 6.0 | 6.0 | | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | 2.0 | | 2.0 | | | 2.0 | 2.0 | 2.0 | | 4.0 |
| Lost Time Adjust (s) | | -1.0 | -1.0 | | -1.0 | | | | | -1.0 | | |
| Total Lost Time (s) | | 7.0 | 7.0 | | 7.0 | | | | | 7.0 | | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Recall Mode | C-Max | C-Max | C-Max | | C-Max | | | None | None | None | | None |
| Act Effect Green (s) | | 41.1 | 41.1 | | 41.1 | | | | | 22.1 | | |
| Actuated g/C Ratio | | 0.51 | 0.51 | | 0.51 | | | | | 0.28 | | |
| v/c Ratio | | 0.37 | 0.39 | | 0.71 | | | | | 0.06 | | |
| Control Delay | | 26.3 | 16.2 | | 23.0 | | | | | 19.7 | | |
| Queue Delay | | 0.0 | 0.0 | | 0.0 | | | | | 0.0 | | |

Lanes, Volumes, Timings

3: Access/Wood Street & Elm Street & Colwell Street

2019 Future with Development

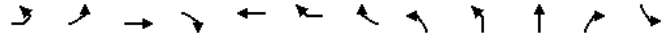
Weekday Morning Peak Hour - Scenario 1



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|-------|-------|-------|------|------|
| Lane Configurations | | | | | |
| Volume (vph) | 0 | 7 | 189 | 13 | 92 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | 2% | | |
| Storage Length (ft) | | 0 | 0 | 0 | 0 |
| Storage Lanes | | 0 | 1 | 0 | |
| Taper Length (ft) | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 0.99 | | |
| Frt | | 0.932 | 0.952 | | |
| Flt Protected | | 0.976 | 0.969 | | |
| Satd. Flow (prot) | 1605 | 0 | 1462 | 0 | 0 |
| Flt Permitted | | | 0.969 | | |
| Satd. Flow (perm) | 1645 | 0 | 1453 | 0 | 0 |
| Right Turn on Red | | | | | No |
| Satd. Flow (RTOR) | | | | | |
| Link Speed (mph) | 25 | | 25 | | |
| Link Distance (ft) | 274 | | 302 | | |
| Travel Time (s) | 7.5 | | 8.2 | | |
| Confl. Peds. (#/hr) | | | 6 | | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 2% | 2% | 14% | 0% | 11% |
| Adj. Flow (vph) | 0 | 7 | 201 | 14 | 98 |
| Shared Lane Traffic (%) | | | | | |
| Lane Group Flow (vph) | 14 | 0 | 313 | 0 | 0 |
| Turn Type | NA | | Perm | | |
| Protected Phases | 9 | | | | |
| Permitted Phases | | | 8 | | |
| Detector Phase | 9 | | 8 | | |
| Switch Phase | | | | | |
| Minimum Initial (s) | 3.0 | | 3.0 | | |
| Minimum Split (s) | 21.0 | | 21.0 | | |
| Total Split (s) | 14.0 | | 33.0 | | |
| Total Split (%) | 17.5% | | 41.3% | | |
| Maximum Green (s) | 7.0 | | 25.0 | | |
| Yellow Time (s) | 3.0 | | 6.0 | | |
| All-Red Time (s) | 4.0 | | 2.0 | | |
| Lost Time Adjust (s) | -1.0 | | -1.0 | | |
| Total Lost Time (s) | 6.0 | | 7.0 | | |
| Lead/Lag | | | | | |
| Lead-Lag Optimize? | | | | | |
| Vehicle Extension (s) | 3.0 | | 3.0 | | |
| Recall Mode | None | | None | | |
| Act Effect Green (s) | | 7.2 | 22.1 | | |
| Actuated g/C Ratio | 0.09 | | 0.28 | | |
| v/c Ratio | 0.09 | | 0.78 | | |
| Control Delay | 34.5 | | 40.3 | | |
| Queue Delay | 0.0 | | 0.0 | | |

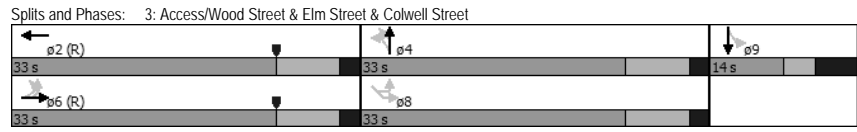
Lanes, Volumes, Timings
 3: Access/Wood Street & Elm Street & Colwell Street

2019 Future with Development
 Weekday Morning Peak Hour - Scenario 1



| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|------|------|------|-----|------|-----|------|------|-----|------|-----|-----|
| Total Delay | | 26.3 | 16.2 | | 23.0 | | | | | 19.7 | | |
| LOS | | C | B | | C | | | | | B | | |
| Approach Delay | | | 17.8 | | 23.0 | | | | | 19.7 | | |
| Approach LOS | | | B | | C | | | | | B | | |
| Queue Length 50th (ft) | | 18 | 92 | | 184 | | | | | 7 | | |
| Queue Length 95th (ft) | | #88 | 228 | | #570 | | | | | 22 | | |
| Internal Link Dist (ft) | | | 491 | | 520 | | | | | 131 | | |
| Turn Bay Length (ft) | | 78 | | | | | | | | | | |
| Base Capacity (vph) | 174 | 867 | | | 920 | | | | | 381 | | |
| Starvation Cap Reductn | 0 | 0 | | | 0 | | | | | 0 | | |
| Spillback Cap Reductn | 0 | 0 | | | 0 | | | | | 0 | | |
| Storage Cap Reductn | 0 | 0 | | | 0 | | | | | 0 | | |
| Reduced v/c Ratio | 0.37 | 0.39 | | | 0.71 | | | | | 0.05 | | |

Intersection Summary
 Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 25.5 Intersection LOS: C
 Intersection Capacity Utilization 83.5% ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings
 3: Access/Wood Street & Elm Street & Colwell Street

2019 Future with Development
 Weekday Morning Peak Hour - Scenario 1



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|------|-----|------|-----|------|
| Total Delay | 34.5 | | 40.3 | | |
| LOS | C | | D | | |
| Approach Delay | 34.5 | | 40.3 | | |
| Approach LOS | C | | D | | |
| Queue Length 50th (ft) | 7 | | 141 | | |
| Queue Length 95th (ft) | 24 | | 222 | | |
| Internal Link Dist (ft) | 194 | | 222 | | |
| Turn Bay Length (ft) | | | | | |
| Base Capacity (vph) | 164 | | 472 | | |
| Starvation Cap Reductn | 0 | | 0 | | |
| Spillback Cap Reductn | 0 | | 0 | | |
| Storage Cap Reductn | 0 | | 0 | | |
| Reduced v/c Ratio | 0.09 | | 0.66 | | |

Intersection Summary

Lanes, Volumes, Timings
4: Maple Street & Elm Street

2019 Future with Development
Weekday Morning Peak Hour - Scenario 1

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | | | ↕ | ↕ | | ↕ | ↕ |
| Volume (vph) | 21 | 452 | 2 | 8 | 480 | 9 | 12 | 10 | 52 | 41 | 1 | 84 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 14 | 12 | 10 | 13 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | | 2% | | 0% | | | | 1% | | | -1% | |
| Storage Length (ft) | 79 | | 0 | 75 | | 0 | 0 | | 0 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.98 | | | 0.98 | |
| Frt | | 0.999 | | | 0.997 | | | 0.905 | | | 0.910 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.992 | | | 0.984 | |
| Satd. Flow (prot) | 1491 | 1711 | 0 | 1400 | 1602 | 0 | 0 | 1572 | 0 | 0 | 1777 | 0 |
| Flt Permitted | 0.441 | | | 0.463 | | | | 0.919 | | | 0.871 | |
| Satd. Flow (perm) | 690 | 1711 | 0 | 682 | 1602 | 0 | 0 | 1455 | 0 | 0 | 1567 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 1 | | | 3 | | | 57 | | | | 91 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | | 25 |
| Link Distance (ft) | | 600 | | | 300 | | | 222 | | | | 228 |
| Travel Time (s) | | 16.4 | | | 8.2 | | | 6.1 | | | | 6.2 |
| Confl. Peds. (#/hr) | 7 | | 3 | 3 | | 7 | 4 | | 5 | 5 | | 4 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 6% | 11% | 0% | 14% | 16% | 0% | 0% | 0% | 0% | 0% | 0% | 2% |
| Adj. Flow (vph) | 23 | 491 | 2 | 9 | 522 | 10 | 13 | 11 | 57 | 45 | 1 | 91 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 23 | 493 | 0 | 9 | 532 | 0 | 0 | 81 | 0 | 0 | 137 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 6 | | | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | | 4 | | | 8 | | |
| Detector Phase | 6 | 6 | | 2 | 2 | | 4 | 4 | | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |
| Total Split (s) | 59.0 | 59.0 | | 59.0 | 59.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |
| Total Split (%) | 73.8% | 73.8% | | 73.8% | 73.8% | | 26.3% | 26.3% | | 26.3% | 26.3% | |
| Maximum Green (s) | 54.0 | 54.0 | | 54.0 | 54.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 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 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Intersection Summary | | | | | | | | | | | | |
| Area Type: | Other | | | | | | | | | | | |
| Cycle Length: | 80 | | | | | | | | | | | |
| Actuated Cycle Length: | 80 | | | | | | | | | | | |

Lanes, Volumes, Timings
4: Maple Street & Elm Street

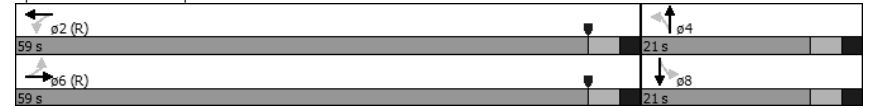
2019 Future with Development
Weekday Morning Peak Hour - Scenario 1

Offset: 31 (39%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Splits and Phases: 4: Maple Street & Elm Street



HCM 2010 Signalized Intersection Summary
4: Maple Street & Elm Street

2019 Future with Development
Weekday Morning Peak Hour - Scenario 1

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 21 | 452 | 2 | 8 | 480 | 9 | 12 | 10 | 52 | 41 | 1 | 84 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 | 0.98 | | 0.97 | 0.98 | | 0.97 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1681 | 1670 | 1782 | 1579 | 1618 | 1800 | 1791 | 1791 | 1791 | 1809 | 1857 | 1809 |
| Adj Flow Rate, veh/h | 23 | 491 | 2 | 9 | 522 | 10 | 13 | 11 | 42 | 45 | 1 | 59 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 6 | 11 | 11 | 14 | 16 | 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap, veh/h | 714 | 1326 | 5 | 697 | 1262 | 24 | 74 | 40 | 104 | 123 | 12 | 90 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.09 | 0.10 | 0.09 | 0.09 | 0.10 | 0.09 |
| Sat Flow, veh/h | 782 | 1662 | 7 | 761 | 1582 | 30 | 193 | 390 | 1021 | 572 | 118 | 884 |
| Grp Volume(v), veh/h | 23 | 0 | 493 | 9 | 0 | 532 | 66 | 0 | 0 | 105 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 782 | 0 | 1669 | 761 | 0 | 1612 | 1604 | 0 | 0 | 1574 | 0 | 0 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.9 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.1 | 0.0 | 0.0 | 5.0 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.00 | 1.00 | | 0.02 | 0.20 | | 0.64 | 0.43 | | 0.56 |
| Lane Grp Cap(c), veh/h | 714 | 0 | 1332 | 697 | 0 | 1286 | 198 | 0 | 0 | 205 | 0 | 0 |
| V/C Ratio(X) | 0.03 | 0.00 | 0.37 | 0.01 | 0.00 | 0.41 | 0.33 | 0.00 | 0.00 | 0.51 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 714 | 0 | 1332 | 697 | 0 | 1286 | 360 | 0 | 0 | 364 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.79 | 0.00 | 0.79 | 0.93 | 0.00 | 0.93 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 34.1 | 0.0 | 0.0 | 34.9 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.6 | 0.0 | 0.0 | 0.9 | 1.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| 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 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.6 | 2.6 | 0.0 | 0.0 | 4.3 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.1 | 0.0 | 0.6 | 0.0 | 0.0 | 0.9 | 35.0 | 0.0 | 0.0 | 36.8 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | | A | D | | | D | | |
| Approach Vol, veh/h | | 516 | | | 541 | | | 66 | | | 105 | |
| Approach Delay, s/veh | | 0.6 | | | 0.9 | | | 35.0 | | | 36.8 | |
| Approach LOS | | A | | | A | | | D | | | D | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 67.8 | | 12.2 | | 67.8 | | 12.2 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 54.0 | | 16.0 | | 54.0 | | 16.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 2.5 | | 5.1 | | 2.5 | | 7.0 | | | | |
| Green Ext Time (p_c), s | | 9.8 | | 0.4 | | 9.8 | | 0.3 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 5.7 | | | | | | | | | |
| HCM 2010 LOS | | | A | | | | | | | | | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

2019 Future with Development
Weekday Morning Peak Hour - Scenario 1

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 13 | 488 | 48 | 20 | 469 | 2 | 16 | 4 | 70 | 3 | 19 | 22 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 13 | 12 | 10 | 11 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Grade (%) | | 7% | | -9% | | | | 0% | | | | |
| Storage Length (ft) | 77 | | 0 | 95 | | 95 | 0 | | 95 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 1 | 0 | | 1 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | 75 | | | 75 | | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | | 0.98 | | 1.00 | 0.97 | | 0.99 | |
| Frt | | 0.986 | | | | 0.850 | | | 0.850 | | 0.932 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.961 | | | 0.997 | |
| Satd. Flow (prot) | 1540 | 1579 | 0 | 1573 | 1623 | 1599 | 0 | 1672 | 1457 | 0 | 1875 | 0 |
| Flt Permitted | 0.483 | | | 0.365 | | | | 0.772 | | | 0.983 | |
| Satd. Flow (perm) | 780 | 1579 | 0 | 604 | 1623 | 1561 | 0 | 1341 | 1418 | 0 | 1848 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | No | | | No |
| Satd. Flow (RTOR) | | 6 | | | | 27 | | | | | | |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 300 | | | 550 | | | 247 | | | 248 | |
| Travel Time (s) | | 8.2 | | | 15.0 | | | 6.7 | | | 6.8 | |
| Confl. Peds. (#/hr) | 5 | | 4 | 4 | | 5 | 1 | | 4 | 4 | | 1 |
| 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% | 13% | 0% | 6% | 12% | 0% | 0% | 0% | 5% | 0% | 0% | 0% |
| Adj. Flow (vph) | 14 | 514 | 51 | 21 | 494 | 2 | 17 | 4 | 74 | 3 | 20 | 23 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 14 | 565 | 0 | 21 | 494 | 2 | 0 | 21 | 74 | 0 | 46 | 0 |
| Turn Type | Perm | NA | | pm+pt | NA | Perm | Perm | NA | Perm | Perm | NA | |
| Protected Phases | | 6 | | 5 | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | 2 | 4 | | 4 | 8 | | |
| Detector Phase | 6 | 6 | | 5 | 2 | 2 | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 13.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 |
| Total Split (s) | 29.0 | 29.0 | | 25.0 | 54.0 | 54.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | |
| Total Split (%) | 36.3% | 36.3% | | 31.3% | 67.5% | 67.5% | 32.5% | 32.5% | 32.5% | 32.5% | 32.5% | |
| Maximum Green (s) | 24.0 | 24.0 | | 20.0 | 49.0 | 49.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | | -1.0 | -1.0 | -1.0 | | -1.0 | -1.0 | | -1.0 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lead/Lag | Lag | Lag | | Lead | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | C-Max | C-Max | | None | C-Max | C-Max | None | None | None | None | None | None |

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80

Lanes, Volumes, Timings
5: Oak Street & Elm Street

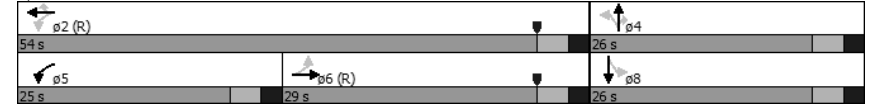
2019 Future with Development
Weekday Morning Peak Hour - Scenario 1

Offset: 15 (19%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Splits and Phases: 5: Oak Street & Elm Street



HCM 2010 Signalized Intersection Summary
5: Oak Street & Elm Street

2019 Future with Development
Weekday Morning Peak Hour - Scenario 1

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | ↖ | ↖ | ↗ | ↖ | ↗ | ↖ | ↗ |
| Volume (veh/h) | 13 | 488 | 48 | 20 | 469 | 2 | 16 | 4 | 70 | 3 | 19 | 22 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 | 0.98 | | 0.98 | 0.98 | | 0.97 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1737 | 1615 | 1737 | 1775 | 1679 | 1881 | 1800 | 1800 | 1714 | 1800 | 1872 | 1800 |
| Adj Flow Rate, veh/h | 14 | 514 | 49 | 21 | 494 | 1 | 17 | 4 | 68 | 3 | 20 | 15 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 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 | 13 | 13 | 6 | 12 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| Cap, veh/h | 703 | 1067 | 102 | 725 | 1362 | 1293 | 177 | 35 | 126 | 54 | 86 | 60 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 0.03 | 0.81 | 0.81 | 0.08 | 0.09 | 0.09 | 0.08 | 0.09 | 0.08 |
| Sat Flow, veh/h | 836 | 1452 | 138 | 1690 | 1679 | 1594 | 1074 | 391 | 1424 | 63 | 969 | 673 |
| Grp Volume(v), veh/h | 14 | 0 | 563 | 21 | 494 | 1 | 21 | 0 | 68 | 38 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 836 | 0 | 1590 | 1690 | 1679 | 1594 | 1464 | 0 | 1424 | 1704 | 0 | 0 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.2 | 6.3 | 0.0 | 0.0 | 0.0 | 3.7 | 0.0 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 0.2 | 0.0 | 0.0 | 0.2 | 6.3 | 0.0 | 0.9 | 0.0 | 3.7 | 1.7 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.09 | 1.00 | | 1.00 | 0.81 | | 1.00 | 0.08 | | 0.39 |
| Lane Grp Cap(c), veh/h | 703 | 0 | 1169 | 725 | 1362 | 1293 | 193 | 0 | 126 | 179 | 0 | 0 |
| V/C Ratio(X) | 0.02 | 0.00 | 0.48 | 0.03 | 0.36 | 0.00 | 0.11 | 0.00 | 0.54 | 0.21 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 703 | 0 | 1169 | 1123 | 1362 | 1293 | 448 | 0 | 392 | 491 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.94 | 0.00 | 0.94 | 0.09 | 0.09 | 0.09 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 1.8 | 2.0 | 1.4 | 34.0 | 0.0 | 34.9 | 34.2 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.0 | 0.0 | 1.3 | 0.0 | 0.1 | 0.0 | 0.2 | 0.0 | 3.5 | 0.6 | 0.0 | 0.0 |
| 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 | 0.0 | 0.0 | 0.8 | 0.2 | 3.7 | 0.0 | 0.8 | 0.0 | 2.8 | 1.5 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.0 | 0.0 | 1.3 | 1.8 | 2.1 | 1.4 | 34.2 | 0.0 | 38.4 | 34.8 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | A | A | C | | D | C | | |
| Approach Vol, veh/h | | 577 | | | 516 | | | 89 | | | 38 | |
| Approach Delay, s/veh | | 1.3 | | | 2.1 | | | 37.4 | | | 34.8 | |
| Approach LOS | | A | | | A | | | D | | | C | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 68.9 | | 11.1 | 6.1 | 62.8 | | 11.1 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 49.0 | | 21.0 | 20.0 | 24.0 | | 21.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 8.8 | | 6.2 | 2.7 | 2.7 | | 3.7 | | | | |
| Green Ext Time (p_c), s | | 9.7 | | 0.3 | 0.0 | 7.9 | | 0.4 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 5.3 | | | | | | | | | |
| HCM 2010 LOS | | | A | | | | | | | | | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2019 Future with Development
Weekday Morning Peak Hour - Scenario 1

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↑ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 33 | 35 | 505 | 542 | 93 | 24 | 444 | 481 | 886 | 24 | 1154 | 75 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | | 2% | | | -5% | | | 5% | | | 0% | |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 1 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | | | | 1.00 | 1.00 | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.969 | | | | 0.850 | | 0.991 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1411 | 1445 | 1402 | 3081 | 1692 | 0 | 1415 | 3022 | 1511 | 1539 | 3154 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.079 | | | 0.475 | | |
| Satd. Flow (perm) | 1406 | 1445 | 1402 | 3081 | 1692 | 0 | 118 | 3022 | 1478 | 768 | 3154 | 0 |
| Right Turn on Red | | | No | | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 895 | | | 7 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 7 | | 2 | 2 | | 7 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Heavy Vehicles (%) | 16% | 11% | 8% | 3% | 0% | 9% | 10% | 3% | 2% | 0% | 3% | 14% |
| Adj. Flow (vph) | 33 | 35 | 510 | 547 | 94 | 24 | 448 | 486 | 895 | 24 | 1166 | 76 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 33 | 35 | 510 | 547 | 118 | 0 | 448 | 486 | 895 | 24 | 1242 | 0 |
| Turn Type | Split | NA | pm+ov | Split | NA | | pm+pt | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | 8 | | | | 6 | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | Lead | | | | Lead | | | Lag | Lag | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |
| Total Split (s) | 21.0 | 21.0 | 23.0 | 23.0 | 23.0 | | 23.0 | 66.0 | 66.0 | 43.0 | 43.0 | |
| Total Split (%) | 19.1% | 19.1% | 20.9% | 20.9% | 20.9% | | 20.9% | 60.0% | 60.0% | 39.1% | 39.1% | |
| Maximum Green (s) | 15.0 | 15.0 | 17.0 | 17.0 | 17.0 | | 17.0 | 60.0 | 60.0 | 37.0 | 37.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |

Intersection Summary

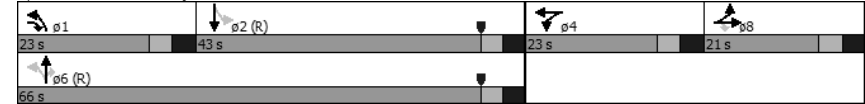
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2019 Future with Development
Weekday Morning Peak Hour - Scenario 1

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

Splits and Phases: 6: Fayette Street & Elm Street




HCM 2010 Signalized Intersection Summary
6: Fayette Street & Elm Street

2019 Future with Development
Weekday Morning Peak Hour - Scenario 1

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 33 | 35 | 505 | 542 | 93 | 24 | 444 | 481 | 886 | 24 | 1154 | 75 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), 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 | | 0.99 | 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 |
| Adj Sat Flow, veh/h/ln | 1536 | 1541 | 1650 | 1791 | 1812 | 1845 | 1595 | 1704 | 1789 | 1728 | 1736 | 1800 |
| Adj Flow Rate, veh/h | 33 | 35 | 422 | 547 | 94 | 24 | 448 | 486 | 734 | 24 | 1166 | 76 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Percent Heavy Veh, % | 16 | 11 | 8 | 3 | 0 | 0 | 10 | 3 | 2 | 0 | 3 | 7 |
| Cap, veh/h | 213 | 224 | 433 | 542 | 228 | 58 | 314 | 1795 | 838 | 211 | 1086 | 71 |
| Arrive On Green | 0.15 | 0.15 | 0.15 | 0.16 | 0.16 | 0.15 | 0.16 | 0.55 | 0.55 | 0.35 | 0.35 | 0.34 |
| Sat Flow, veh/h | 1463 | 1541 | 1397 | 3310 | 1392 | 355 | 1519 | 3237 | 1511 | 422 | 3142 | 205 |
| Grp Volume(v), veh/h | 33 | 35 | 422 | 547 | 0 | 118 | 448 | 486 | 734 | 24 | 612 | 630 |
| Grp Sat Flow(s),veh/h/ln | 1463 | 1541 | 1397 | 1655 | 0 | 1747 | 1519 | 1619 | 1511 | 422 | 1649 | 1698 |
| Q Serve(g_s), s | 2.2 | 2.2 | 16.0 | 18.0 | 0.0 | 6.7 | 18.0 | 8.7 | 46.3 | 4.3 | 38.0 | 38.0 |
| Cycle Q Clear(g_c), s | 2.2 | 2.2 | 16.0 | 18.0 | 0.0 | 6.7 | 18.0 | 8.7 | 46.3 | 4.3 | 38.0 | 38.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.20 | 1.00 | | 1.00 | 1.00 | | 0.12 |
| Lane Grp Cap(c), veh/h | 213 | 224 | 433 | 542 | 0 | 286 | 314 | 1795 | 838 | 211 | 570 | 586 |
| V/C Ratio(X) | 0.16 | 0.16 | 0.98 | 1.01 | 0.00 | 0.41 | 1.43 | 0.27 | 0.88 | 0.11 | 1.07 | 1.08 |
| Avail Cap(c_a), veh/h | 213 | 224 | 433 | 542 | 0 | 286 | 314 | 1795 | 838 | 211 | 570 | 586 |
| 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) | 0.88 | 0.88 | 0.88 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 41.1 | 41.1 | 37.6 | 46.0 | 0.0 | 41.4 | 33.4 | 12.8 | 21.2 | 25.0 | 36.0 | 36.1 |
| Incr Delay (d2), s/veh | 0.3 | 0.3 | 34.2 | 41.2 | 0.0 | 1.0 | 209.4 | 0.4 | 12.4 | 1.1 | 58.9 | 59.0 |
| 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 | 1.6 | 1.7 | 23.1 | 20.3 | 0.0 | 5.9 | 50.0 | 7.1 | 29.8 | 1.0 | 47.8 | 49.3 |
| LnGrp Delay(d),s/veh | 41.4 | 41.4 | 71.8 | 87.2 | 0.0 | 42.3 | 242.8 | 13.2 | 33.6 | 26.1 | 94.9 | 95.0 |
| LnGrp LOS | D | D | E | F | | D | F | B | C | C | F | F |
| Approach Vol, veh/h | 490 | | | 665 | | | 1668 | | | 1266 | | |
| Approach Delay, s/veh | 67.6 | | | 79.2 | | | 83.9 | | | 93.6 | | |
| Approach LOS | E | | | E | | | F | | | F | | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 23.0 | 43.0 | | 23.0 | | 66.0 | | 21.0 | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | 17.0 | 37.0 | | 17.0 | | 60.0 | | 15.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 20.5 | 40.5 | | 20.5 | | 48.8 | | 18.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | | 9.5 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | 84.2 | | | | | | | | | | | |
| HCM 2010 LOS | F | | | | | | | | | | | |

Lanes, Volumes, Timings
 1: Corson Street & Elm Street
 2019 Future with Development - Access Scenario 2 Imps
 Weekday Morning Peak Hour




| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|-------|------|-------|-------|------|------|-------|------|------|-------|------|
| Lane Configurations | | ↔ | | ↔ | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 0 | 352 | 35 | 280 | 287 | 2 | 4 | 0 | 19 | 10 | 0 | 4 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 11 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | | 0% | | | 1% | | | 0% | | | 0% | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | 0.988 | | | 0.999 | | | 0.887 | | | 0.964 | |
| Frt | | | | | | | | | | | | |
| Flt Protected | | | | 0.950 | | | | 0.992 | | | 0.965 | |
| Satd. Flow (prot) | 0 | 1623 | 0 | 1796 | 1863 | 0 | 0 | 1672 | 0 | 0 | 2003 | 0 |
| Flt Permitted | | | | 0.950 | | | | 0.992 | | | 0.965 | |
| Satd. Flow (perm) | 0 | 1623 | 0 | 1796 | 1863 | 0 | 0 | 1672 | 0 | 0 | 2003 | 0 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 275 | | | 276 | | | 219 | | | 188 | |
| Travel Time (s) | | 7.5 | | | 7.5 | | | 6.0 | | | 5.1 | |
| Confl. Peds. (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles (%) | 0% | 13% | 0% | 0% | 15% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 0 | 378 | 38 | 301 | 309 | 2 | 4 | 0 | 20 | 11 | 0 | 4 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 416 | 0 | 301 | 311 | 0 | 0 | 24 | 0 | 0 | 15 | 0 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

HCM 2010 TWSC
 1: Corson Street & Elm Street
 2019 Future with Development - Access Scenario 2 Imps
 Weekday Morning Peak Hour

| Intersection | | | | | | | | | | | | |
|------------------------------|---------------|------------|------------|---------------|------------|------------|---------------|--------------|------------|---------------|------------|------------|
| Int Delay, s/veh | 4.1 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 0 | 352 | 35 | 280 | 287 | 2 | 4 | 0 | 19 | 10 | 0 | 4 |
| Conflicting Peds, #/hr | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 13 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 378 | 38 | 301 | 309 | 2 | 4 | 0 | 20 | 11 | 0 | 4 |
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
| Conflicting Flow All | 311 | 0 | 0 | 416 | 0 | 0 | 1311 | 1310 | 398 | 1320 | 1328 | 311 |
| Stage 1 | - | - | - | - | - | - | 397 | 397 | - | 912 | 912 | - |
| Stage 2 | - | - | - | - | - | - | 914 | 913 | - | 408 | 416 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 940 | - | - | 864 | - | - | 149 | 160 | 691 | 146 | 157 | 775 |
| Stage 1 | - | - | - | - | - | - | 719 | 607 | - | 365 | 355 | - |
| Stage 2 | - | - | - | - | - | - | 364 | 355 | - | 709 | 595 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 939 | - | - | 863 | - | - | 108 | 104 | 690 | 103 | 102 | 774 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 108 | 104 | - | 103 | 102 | - |
| Stage 1 | - | - | - | - | - | - | 719 | 607 | - | 365 | 231 | - |
| Stage 2 | - | - | - | - | - | - | 236 | 231 | - | 687 | 595 | - |
| Approach | EB | | | WB | | | NB | | | SB | | |
| HCM Control Delay, s | 0 | | | 5.6 | | | 15.9 | | | 34.5 | | |
| HCM LOS | C | | | A | | | C | | | D | | |
| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | | | | |
| Capacity (veh/h) | 356 | 939 | - | - | 863 | - | - | 137 | | | | |
| HCM Lane V/C Ratio | 0.069 | - | - | - | 0.349 | - | - | 0.11 | | | | |
| HCM Control Delay (s) | 15.9 | 0 | - | - | 11.4 | - | - | 34.5 | | | | |
| HCM Lane LOS | C | A | - | - | B | - | - | D | | | | |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 1.6 | - | - | 0.4 | | | | |

Lanes, Volumes, Timings 2019 Future with Development - Access Scenario 2 Imps
 2: Lot Access/Old Elm Street & Elm Street Weekday Morning Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|------|------|-------|------|------|------|------|------|
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | | | |
| Volume (vph) | 1 | 343 | 35 | 0 | 569 | 3 | 5 | 0 | 20 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 12 | 12 |
| Grade (%) | | -1% | | | 0% | | | 0% | | | -1% | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.987 | | | 0.999 | | | 0.891 | | | | | |
| Frt | 0.987 | | | 0.999 | | | 0.891 | | | | | |
| Flt Protected | | | | | | | 0.990 | | | | | |
| Satd. Flow (prot) | 0 | 1786 | 0 | 0 | 1666 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 |
| Flt Permitted | | | | | | | 0.990 | | | | | |
| Satd. Flow (perm) | 0 | 1786 | 0 | 0 | 1666 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 |
| Link Speed (mph) | 25 | | | 25 | | | 25 | | | 25 | | |
| Link Distance (ft) | 276 | | | 571 | | | 199 | | | 208 | | |
| Travel Time (s) | 7.5 | | | 15.6 | | | 5.4 | | | 5.7 | | |
| Confl. Peds. (#/hr) | 2 | | | 2 | | | 2 | | | 2 | | |
| 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% | 10% | 0% | 33% | 14% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 361 | 37 | 0 | 599 | 3 | 5 | 0 | 21 | 0 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 399 | 0 | 0 | 602 | 0 | 0 | 26 | 0 | 0 | 0 | 0 |
| Sign Control | Free | | | Free | | | Stop | | | Stop | | |

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

HCM 2010 TWSC 2019 Future with Development - Access Scenario 2 Imps
 2: Lot Access/Old Elm Street & Elm Street Weekday Morning Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|--------|-------|------|--------|------|------|--------|------|------|------|------|------|
| Int Delay, s/veh | 0.3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 1 | 343 | 35 | 0 | 569 | 3 | 5 | 0 | 20 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -1 | - | - | 0 | - | - | 0 | - | - | 0 | -1 |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 0 | 10 | 0 | 33 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 361 | 37 | 0 | 599 | 3 | 5 | 0 | 21 | 0 | 0 | 0 |
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | | | |
| Conflicting Flow All | 602 | 0 | 0 | 398 | 0 | 0 | 983 | 984 | 381 | | | |
| Stage 1 | - | - | - | - | - | - | 382 | 382 | - | | | |
| Stage 2 | - | - | - | - | - | - | 601 | 602 | - | | | |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 | | | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.4 | 5.5 | - | | | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.4 | 5.5 | - | | | |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 | | | |
| Pot Cap-1 Maneuver | 744 | - | - | 877 | - | - | 253 | 250 | 707 | | | |
| Stage 1 | - | - | - | - | - | - | 790 | 616 | - | | | |
| Stage 2 | - | - | - | - | - | - | 619 | 492 | - | | | |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | | | |
| Mov Cap-1 Maneuver | 743 | - | - | 876 | - | - | 252 | 0 | 706 | | | |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 252 | 0 | - | | | |
| Stage 1 | - | - | - | - | - | - | 788 | 0 | - | | | |
| Stage 2 | - | - | - | - | - | - | 618 | 0 | - | | | |
| Approach | EB | | | WB | | | NB | | | | | |
| HCM Control Delay, s | 0 | | | 0 | | | 12.3 | | | | | |
| HCM LOS | | | | | | | B | | | | | |
| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | | | | | |
| Capacity (veh/h) | 519 | 743 | - | - | 876 | - | - | | | | | |
| HCM Lane V/C Ratio | 0.051 | 0.001 | - | - | - | - | - | | | | | |
| HCM Control Delay (s) | 12.3 | 9.9 | 0 | - | 0 | - | - | | | | | |
| HCM Lane LOS | B | A | A | - | A | - | - | | | | | |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 0 | - | - | | | | | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2019 Future with Development
Weekday Morning Peak Hour - Signal Timing Imps

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↑ | ↘ | ↙ | ↔ | ↔ | ↑ | ↑ | ↘ | ↙ | ↔ | ↔ |
| Volume (vph) | 33 | 35 | 505 | 542 | 93 | 24 | 444 | 481 | 886 | 24 | 1154 | 75 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | | 2% | | | -5% | | | 5% | | | 0% | |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 1 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 0.99 | | | | 1.00 | 1.00 | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.969 | | | | 0.850 | | 0.991 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1411 | 1445 | 1402 | 3081 | 1692 | 0 | 1415 | 3022 | 1511 | 1539 | 3154 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.086 | | | 0.475 | | |
| Satd. Flow (perm) | 1401 | 1445 | 1402 | 3081 | 1692 | 0 | 128 | 3022 | 1479 | 768 | 3154 | 0 |
| Right Turn on Red | | | No | | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 895 | | | 7 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 7 | | 2 | 2 | | 7 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Heavy Vehicles (%) | 16% | 11% | 8% | 3% | 0% | 9% | 10% | 3% | 2% | 0% | 3% | 14% |
| Adj. Flow (vph) | 33 | 35 | 510 | 547 | 94 | 24 | 448 | 486 | 895 | 24 | 1166 | 76 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 33 | 35 | 510 | 547 | 118 | 0 | 448 | 486 | 895 | 24 | 1242 | 0 |
| Turn Type | Split | NA | pm+ov | Split | NA | | pm+pt | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | 8 | | | | 6 | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | Lead | | | | Lead | | | Lag | Lag | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |
| Total Split (s) | 13.0 | 13.0 | 30.0 | 22.0 | 22.0 | | 30.0 | 75.0 | 75.0 | 45.0 | 45.0 | |
| Total Split (%) | 11.8% | 11.8% | 27.3% | 20.0% | 20.0% | | 27.3% | 68.2% | 68.2% | 40.9% | 40.9% | |
| Maximum Green (s) | 7.0 | 7.0 | 24.0 | 16.0 | 16.0 | | 24.0 | 69.0 | 69.0 | 39.0 | 39.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |

Intersection Summary

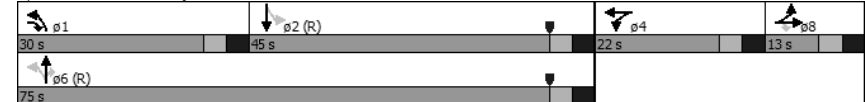
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2019 Future with Development
Weekday Morning Peak Hour - Signal Timing Imps

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

Splits and Phases: 6: Fayette Street & Elm Street



HCM 2010 Signalized Intersection Summary
 6: Fayette Street & Elm Street

2019 Future with Development
 Weekday Morning Peak Hour - Signal Timing Imps

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|-------|------|------|-------|------|------|------|------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ |
| Volume (veh/h) | 33 | 35 | 505 | 542 | 93 | 24 | 444 | 481 | 886 | 24 | 1154 | 75 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 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 |
| Adj Sat Flow, veh/h/ln | 1536 | 1541 | 1650 | 1791 | 1812 | 1845 | 1595 | 1704 | 1789 | 1728 | 1736 | 1800 |
| Adj Flow Rate, veh/h | 33 | 35 | 422 | 547 | 94 | 24 | 448 | 486 | 734 | 24 | 1166 | 76 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Percent Heavy Veh, % | 16 | 11 | 8 | 3 | 0 | 0 | 10 | 3 | 2 | 0 | 3 | 3 |
| Cap, veh/h | 106 | 112 | 420 | 511 | 215 | 55 | 411 | 2060 | 963 | 219 | 1143 | 74 |
| Arrive On Green | 0.07 | 0.07 | 0.07 | 0.15 | 0.15 | 0.15 | 0.23 | 0.64 | 0.64 | 0.36 | 0.36 | 0.35 |
| Sat Flow, veh/h | 1463 | 1541 | 1391 | 3310 | 1392 | 355 | 1519 | 3237 | 1513 | 422 | 3142 | 205 |
| Grp Volume(v), veh/h | 33 | 35 | 422 | 547 | 0 | 118 | 448 | 486 | 734 | 24 | 612 | 630 |
| Grp Sat Flow(s),veh/h/ln | 1463 | 1541 | 1391 | 1655 | 0 | 1747 | 1519 | 1619 | 1513 | 422 | 1649 | 1698 |
| Q Serve(g_s), s | 2.4 | 2.4 | 8.0 | 17.0 | 0.0 | 6.7 | 25.0 | 7.1 | 37.7 | 4.2 | 40.0 | 40.0 |
| Cycle Q Clear(g_c), s | 2.4 | 2.4 | 8.0 | 17.0 | 0.0 | 6.7 | 25.0 | 7.1 | 37.7 | 4.2 | 40.0 | 40.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.20 | 1.00 | | 1.00 | 1.00 | | 0.12 |
| Lane Grp Cap(c), veh/h | 106 | 112 | 420 | 511 | 0 | 270 | 411 | 2060 | 963 | 219 | 600 | 617 |
| V/C Ratio(X) | 0.31 | 0.31 | 1.00 | 1.07 | 0.00 | 0.44 | 1.09 | 0.24 | 0.76 | 0.11 | 1.02 | 1.02 |
| Avail Cap(c_a), veh/h | 106 | 112 | 420 | 511 | 0 | 270 | 411 | 2060 | 963 | 219 | 600 | 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) | 0.88 | 0.88 | 0.88 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 48.4 | 48.4 | 38.5 | 46.5 | 0.0 | 42.3 | 33.7 | 8.6 | 14.1 | 23.6 | 35.0 | 35.1 |
| Incr Delay (d2), s/veh | 1.4 | 1.4 | 42.5 | 59.6 | 0.0 | 1.1 | 71.0 | 0.3 | 5.7 | 1.0 | 41.8 | 41.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 1.8 | 1.9 | 31.8 | 21.6 | 0.0 | 6.0 | 37.0 | 5.7 | 23.8 | 1.0 | 45.2 | 46.5 |
| LnGrp Delay(d),s/veh | 49.8 | 49.8 | 81.0 | 106.1 | 0.0 | 43.4 | 104.8 | 8.8 | 19.8 | 24.6 | 76.8 | 76.8 |
| LnGrp LOS | D | D | F | F | | D | F | A | B | C | F | F |
| Approach Vol, veh/h | | 490 | | | 665 | | | 1668 | | | 1266 | |
| Approach Delay, s/veh | | 76.7 | | | 95.0 | | | 39.4 | | | 75.8 | |
| Approach LOS | | E | | | F | | | D | | | E | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 30.0 | 45.0 | | 22.0 | | 75.0 | | 13.0 | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | 24.0 | 39.0 | | 16.0 | | 69.0 | | 7.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 27.5 | 42.5 | | 19.5 | | 40.2 | | 10.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | | 20.4 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 64.2 | | | | | | | | | |
| HCM 2010 LOS | | | E | | | | | | | | | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2019 Future with Development
Weekday Morning Peak Hour - Dual Northbound Lefts

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↑ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 33 | 35 | 505 | 542 | 93 | 24 | 444 | 481 | 886 | 24 | 1154 | 75 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | | 2% | | | -5% | | | 5% | | | 0% | |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 2 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | | | | 1.00 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.969 | | | | 0.850 | | 0.991 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1411 | 1445 | 1402 | 3081 | 1692 | 0 | 2744 | 3022 | 1511 | 1539 | 3155 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.950 | | | 0.475 | | |
| Satd. Flow (perm) | 1405 | 1445 | 1402 | 3081 | 1692 | 0 | 2734 | 3022 | 1478 | 768 | 3155 | 0 |
| Right Turn on Red | | | No | | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 895 | | | 7 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 7 | | 2 | 2 | | 7 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Heavy Vehicles (%) | 16% | 11% | 8% | 3% | 0% | 9% | 10% | 3% | 2% | 0% | 3% | 14% |
| Adj. Flow (vph) | 33 | 35 | 510 | 547 | 94 | 24 | 448 | 486 | 895 | 24 | 1166 | 76 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 33 | 35 | 510 | 547 | 118 | 0 | 448 | 486 | 895 | 24 | 1242 | 0 |
| Turn Type | Split | NA | pm+ov | Split | NA | | Prot | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | 8 | | | | | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | Lead | | | | Lead | | | Lag | Lag | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |
| Total Split (s) | 18.0 | 18.0 | 23.0 | 23.0 | 23.0 | | 23.0 | 69.0 | 69.0 | 46.0 | 46.0 | |
| Total Split (%) | 16.4% | 16.4% | 20.9% | 20.9% | 20.9% | | 20.9% | 62.7% | 62.7% | 41.8% | 41.8% | |
| Maximum Green (s) | 12.0 | 12.0 | 17.0 | 17.0 | 17.0 | | 17.0 | 63.0 | 63.0 | 40.0 | 40.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

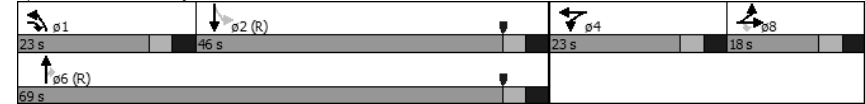
2019 Future with Development
Weekday Morning Peak Hour - Dual Northbound Lefts

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Splits and Phases: 6: Fayette Street & Elm Street



HCM 2010 Signalized Intersection Summary
 6: Fayette Street & Elm Street

2019 Future with Development
 Weekday Morning Peak Hour - Dual Northbound Lefts

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|-------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ |
| Volume (veh/h) | 33 | 35 | 505 | 542 | 93 | 24 | 444 | 481 | 886 | 24 | 1154 | 75 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 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 |
| Adj Sat Flow, veh/h/ln | 1536 | 1541 | 1650 | 1791 | 1812 | 1845 | 1595 | 1704 | 1789 | 1728 | 1736 | 1800 |
| Adj Flow Rate, veh/h | 33 | 35 | 422 | 547 | 94 | 24 | 448 | 486 | 734 | 24 | 1166 | 76 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 2 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Percent Heavy Veh, % | 16 | 11 | 8 | 3 | 0 | 0 | 10 | 3 | 2 | 0 | 3 | 7 |
| Cap, veh/h | 173 | 182 | 394 | 542 | 228 | 58 | 482 | 1884 | 880 | 223 | 1171 | 630 |
| Arrive On Green | 0.12 | 0.12 | 0.12 | 0.16 | 0.16 | 0.15 | 0.16 | 0.58 | 0.58 | 0.37 | 0.37 | 0.36 |
| Sat Flow, veh/h | 1463 | 1541 | 1395 | 3310 | 1392 | 355 | 2948 | 3237 | 1512 | 422 | 3143 | 205 |
| Grp Volume(v), veh/h | 33 | 35 | 422 | 547 | 0 | 118 | 448 | 486 | 734 | 24 | 612 | 630 |
| Grp Sat Flow(s),veh/h/ln | 1463 | 1541 | 1395 | 1655 | 0 | 1747 | 1474 | 1619 | 1512 | 422 | 1649 | 1698 |
| Q Serve(g_s), s | 2.2 | 2.3 | 13.0 | 18.0 | 0.0 | 6.7 | 16.5 | 8.1 | 43.4 | 4.2 | 40.7 | 40.8 |
| Cycle Q Clear(g_c), s | 2.2 | 2.3 | 13.0 | 18.0 | 0.0 | 6.7 | 16.5 | 8.1 | 43.4 | 4.2 | 40.7 | 40.8 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.20 | 1.00 | | 1.00 | 1.00 | | 0.12 |
| Lane Grp Cap(c), veh/h | 173 | 182 | 394 | 542 | 0 | 286 | 482 | 1884 | 880 | 223 | 615 | 633 |
| V/C Ratio(X) | 0.19 | 0.19 | 1.07 | 1.01 | 0.00 | 0.41 | 0.93 | 0.26 | 0.83 | 0.11 | 0.99 | 1.00 |
| Avail Cap(c_a), veh/h | 173 | 182 | 394 | 542 | 0 | 286 | 482 | 1884 | 880 | 223 | 615 | 633 |
| 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) | 0.88 | 0.88 | 0.88 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 43.8 | 43.8 | 39.5 | 46.0 | 0.0 | 41.4 | 45.4 | 11.3 | 18.7 | 22.9 | 34.4 | 34.5 |
| Incr Delay (d2), s/veh | 0.5 | 0.4 | 62.5 | 41.2 | 0.0 | 1.0 | 24.5 | 0.3 | 9.2 | 1.0 | 35.0 | 34.9 |
| 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 | 1.7 | 1.8 | 33.8 | 20.3 | 0.0 | 5.9 | 13.1 | 6.6 | 27.6 | 1.0 | 32.6 | 33.5 |
| LnGrp Delay(d),s/veh | 44.2 | 44.2 | 102.0 | 87.2 | 0.0 | 42.3 | 69.9 | 11.6 | 27.9 | 23.9 | 69.4 | 69.4 |
| LnGrp LOS | D | D | F | F | | D | E | B | C | C | E | E |
| Approach Vol, veh/h | | 490 | | | 665 | | | 1668 | | | 1266 | |
| Approach Delay, s/veh | | 94.0 | | | 79.2 | | | 34.4 | | | 68.5 | |
| Approach LOS | | F | | | E | | | C | | | E | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 23.0 | 46.0 | | 23.0 | | 69.0 | | 18.0 | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | 17.0 | 40.0 | | 17.0 | | 63.0 | | 12.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 19.0 | 43.2 | | 20.5 | | 45.9 | | 15.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | | 13.6 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 59.4 | | | | | | | | | |
| HCM 2010 LOS | | | E | | | | | | | | | |

Lanes, Volumes, Timings
1: Corson Street & Elm Street

2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 1 | 427 | 9 | 25 | 498 | 8 | 29 | 0 | 118 | 18 | 0 | 1 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 11 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | | 1% | | | 0% | | | 0% | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | 0.997 | | | 0.997 | | | 0.892 | | | 0.993 | | |
| Flt Protected | | | | 0.950 | | | 0.990 | | | 0.955 | | |
| Satd. Flow (prot) | 0 | 1796 | 0 | 1796 | 2036 | 0 | 0 | 1678 | 0 | 0 | 2042 | 0 |
| Flt Permitted | | | | 0.950 | | | 0.990 | | | 0.955 | | |
| Satd. Flow (perm) | 0 | 1796 | 0 | 1796 | 2036 | 0 | 0 | 1678 | 0 | 0 | 2042 | 0 |
| Link Speed (mph) | 25 | | | 25 | | | 25 | | | 25 | | |
| Link Distance (ft) | 275 | | | 276 | | | 219 | | | 188 | | |
| Travel Time (s) | 7.5 | | | 7.5 | | | 6.0 | | | 5.1 | | |
| Confl. Peds. (#/hr) | 2 | 3 | | 3 | 2 | | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 5% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 454 | 10 | 27 | 530 | 9 | 31 | 0 | 126 | 19 | 0 | 1 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 465 | 0 | 27 | 539 | 0 | 0 | 157 | 0 | 0 | 20 | 0 |
| Sign Control | Free | | | Free | | | Stop | | | Stop | | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC
1: Corson Street & Elm Street

2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.9 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 1 | 427 | 9 | 25 | 498 | 8 | 29 | 0 | 118 | 18 | 0 | 1 |
| Conflicting Peds, #/hr | 2 | 0 | 3 | 3 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 454 | 10 | 27 | 530 | 9 | 31 | 0 | 126 | 19 | 0 | 1 |


| Major/Minor | Major1 | Major2 | Minor1 | Minor2 |
|----------------------|--------|--------|--------|--------|
| Conflicting Flow All | 541 | 0 | 0 | 467 |
| Stage 1 | - | - | - | 464 |
| Stage 2 | - | - | - | 591 |
| Critical Hdwy | 4.3 | - | - | 4.3 |
| Critical Hdwy Stg 1 | - | - | - | 6.1 |
| Critical Hdwy Stg 2 | - | - | - | 6.1 |
| Follow-up Hdwy | 3 | - | - | 3 |
| Pot Cap-1 Maneuver | 781 | - | - | 829 |
| Stage 1 | - | - | - | 659 |
| Stage 2 | - | - | - | 558 |
| Platoon blocked, % | - | - | - | - |
| Mov Cap-1 Maneuver | 779 | - | - | 826 |
| Mov Cap-2 Maneuver | - | - | - | - |
| Stage 1 | - | - | - | 656 |
| Stage 2 | - | - | - | 538 |

| Approach | EB | WB | NB | SB |
|----------------------|----|-----|------|----|
| HCM Control Delay, s | 0 | 0.4 | 16.9 | 30 |
| HCM LOS | C | A | C | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 458 | 779 | - | - | 826 | - | - | 164 |
| HCM Lane V/C Ratio | 0.341 | 0.001 | - | - | 0.032 | - | - | 0.123 |
| HCM Control Delay (s) | 16.9 | 9.6 | 0 | - | 9.5 | - | - | 30 |
| HCM Lane LOS | C | A | A | - | A | - | - | D |
| HCM 95th %tile Q(veh) | 1.5 | 0 | - | - | 0.1 | - | - | 0.4 |

Lanes, Volumes, Timings
2: Lot Access/Old Elm Street & Elm Street

2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|-------|------|-------|-------|------|------|-------|------|------|------|------|
| Lane Configurations | | ↔ | | ↔ | ↔ | | | ↔ | | | | |
| Volume (vph) | 0 | 542 | 6 | 24 | 516 | 9 | 29 | 0 | 121 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 12 | 12 |
| Grade (%) | | -1% | | | 0% | | | 0% | | | -1% | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | 0.999 | | | 0.997 | | | 0.891 | | | | |
| Frt | | | | | | | | | | | | |
| Flt Protected | | | | 0.950 | | | | 0.990 | | | | |
| Satd. Flow (prot) | 0 | 1933 | 0 | 1805 | 1840 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 |
| Flt Permitted | | | | 0.950 | | | | 0.990 | | | | |
| Satd. Flow (perm) | 0 | 1933 | 0 | 1805 | 1840 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | | 25 |
| Link Distance (ft) | | 276 | | | 571 | | | 199 | | | | 208 |
| Travel Time (s) | | 7.5 | | | 15.6 | | | 5.4 | | | | 5.7 |
| Confl. Peds. (#/hr) | | | | | | | 2 | | | | | 2 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 0 | 577 | 6 | 26 | 549 | 10 | 31 | 0 | 129 | 0 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 583 | 0 | 26 | 559 | 0 | 0 | 160 | 0 | 0 | 0 | 0 |
| Sign Control | | Free | | | Free | | | Stop | | | | Stop |

Intersection Summary
Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC
2: Lot Access/Old Elm Street & Elm Street

2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.1 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 0 | 542 | 6 | 24 | 516 | 9 | 29 | 0 | 121 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 1 | - | - | 0 | - |
| Grade, % | - | -1 | - | - | 0 | - | - | 0 | - | - | - | -1 |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 577 | 6 | 26 | 549 | 10 | 31 | 0 | 129 | 0 | 0 | 0 |

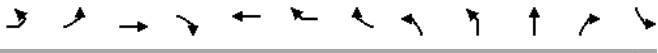
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|----------------------|--------|---|---|--------|---|---|--------|------|-----|
| Conflicting Flow All | 559 | 0 | 0 | 585 | 0 | 0 | 1187 | 1192 | 582 |
| Stage 1 | - | - | - | - | - | - | 582 | 582 | - |
| Stage 2 | - | - | - | - | - | - | 605 | 610 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 770 | - | - | 754 | - | - | 182 | 189 | 542 |
| Stage 1 | - | - | - | - | - | - | 633 | 502 | - |
| Stage 2 | - | - | - | - | - | - | 617 | 488 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 770 | - | - | 754 | - | - | 175 | 0 | 541 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 360 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 632 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 596 | 0 | - |

| Approach | EB | WB | NB |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0 | 0.4 | 15.8 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|-----------------------|-------|-----|-----|-----|-------|-----|-----|
| Capacity (veh/h) | 493 | 770 | - | - | 754 | - | - |
| HCM Lane V/C Ratio | 0.324 | - | - | - | 0.034 | - | - |
| HCM Control Delay (s) | 15.8 | 0 | - | - | 9.9 | - | - |
| HCM Lane LOS | C | A | - | - | A | - | - |
| HCM 95th %tile Q(veh) | 1.4 | 0 | - | - | 0.1 | - | - |

Lanes, Volumes, Timings
3: Access/Wood Street & Elm Street & Colwell Street


2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1



| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|-------|-------|-------|------|-------|------|------|-------|-------|-------|------|-------|
| Lane Configurations | | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 97 | 2 | 511 | 7 | 501 | 216 | 17 | 10 | 8 | 0 | 6 | 6 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 12 | 14 | 12 | 16 | 12 | 12 | 12 | 15 | 12 | 12 | 12 |
| Grade (%) | | | 0% | | 0% | | | | | -2% | | |
| Storage Length (ft) | | 78 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Storage Lanes | | 1 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Taper Length (ft) | | 75 | | | | | | 75 | | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | 1.00 | 1.00 | | 0.99 | | | | 0.99 | | | |
| Frt | | | 0.998 | | 0.957 | | | | 0.968 | | | |
| Flt Protected | | 0.950 | | | | | | | 0.963 | | | |
| Satd. Flow (prot) | 0 | 1676 | 1860 | 0 | 1836 | 0 | 0 | 0 | 1686 | 0 | 0 | 0 |
| Flt Permitted | | 0.171 | | | | | | | 0.842 | | | |
| Satd. Flow (perm) | 0 | 302 | 1860 | 0 | 1836 | 0 | 0 | 0 | 1473 | 0 | 0 | 0 |
| Right Turn on Red | | | | No | | | No | | | | No | |
| Satd. Flow (RTOR) | | | | | | | | | | | | |
| Link Speed (mph) | | | 25 | | 25 | | | | 25 | | | |
| Link Distance (ft) | | | 571 | | 600 | | | | 211 | | | |
| Travel Time (s) | | | 15.6 | | 16.4 | | | | 5.8 | | | |
| Confl. Peds. (#/hr) | 1 | | | 4 | | 1 | | 1 | | | 1 | |
| 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 (%) | 2% | 2% | 3% | 0% | 6% | 5% | 2% | 0% | 0% | 2% | 0% | 2% |
| Adj. Flow (vph) | 102 | 2 | 538 | 7 | 527 | 227 | 18 | 11 | 8 | 0 | 6 | 6 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 104 | 545 | 0 | 772 | 0 | 0 | 0 | 25 | 0 | 0 | 0 |
| Turn Type | Perm | Perm | NA | | NA | | | Perm | Perm | NA | | Perm |
| Protected Phases | | | 6 | | 2 | | | | 4 | | | |
| Permitted Phases | 6 | 6 | | | | | | 4 | 4 | | | 9 |
| Detector Phase | 6 | 6 | 6 | | 2 | | | 4 | 4 | 4 | | 9 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | | 21.0 | | | 21.0 | 21.0 | 21.0 | | 21.0 |
| Total Split (s) | 46.0 | 46.0 | 46.0 | | 46.0 | | | 30.0 | 30.0 | 30.0 | | 14.0 |
| Total Split (%) | 51.1% | 51.1% | 51.1% | | 51.1% | | | 33.3% | 33.3% | 33.3% | | 15.6% |
| Maximum Green (s) | 38.0 | 38.0 | 38.0 | | 38.0 | | | 22.0 | 22.0 | 22.0 | | 7.0 |
| Yellow Time (s) | 6.0 | 6.0 | 6.0 | | 6.0 | | | 6.0 | 6.0 | 6.0 | | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | 2.0 | | 2.0 | | | 2.0 | 2.0 | 2.0 | | 4.0 |
| Lost Time Adjust (s) | | -1.0 | -1.0 | | -1.0 | | | | | -1.0 | | |
| Total Lost Time (s) | | 7.0 | 7.0 | | 7.0 | | | | | 7.0 | | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Recall Mode | C-Max | C-Max | C-Max | | C-Max | | | None | None | None | | None |
| Act Effect Green (s) | | 52.5 | 52.5 | | 52.5 | | | | 20.7 | | | |
| Actuated g/C Ratio | | 0.58 | 0.58 | | 0.58 | | | | 0.23 | | | |
| v/c Ratio | | 0.59 | 0.50 | | 0.72 | | | | 0.07 | | | |
| Control Delay | | 34.2 | 15.0 | | 16.0 | | | | 26.4 | | | |
| Queue Delay | | 0.0 | 0.0 | | 0.1 | | | | 0.0 | | | |

Lanes, Volumes, Timings
3: Access/Wood Street & Elm Street & Colwell Street

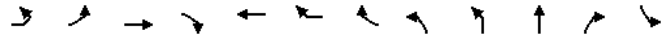
2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|-------|------|-------|------|------|
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 0 | 2 | 220 | 10 | 53 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | 2% | | |
| Storage Length (ft) | | 0 | 0 | 0 | 0 |
| Storage Lanes | | 0 | 1 | 0 | |
| Taper Length (ft) | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 1.00 | | |
| Frt | 0.966 | | 0.970 | | |
| Flt Protected | 0.964 | | 0.963 | | |
| Satd. Flow (prot) | 1643 | 0 | 1641 | 0 | 0 |
| Flt Permitted | | | 0.963 | | |
| Satd. Flow (perm) | 1705 | 0 | 1638 | 0 | 0 |
| Right Turn on Red | | | | | No |
| Satd. Flow (RTOR) | | | | | |
| Link Speed (mph) | 25 | | 25 | | |
| Link Distance (ft) | 267 | | 303 | | |
| Travel Time (s) | 7.3 | | 8.3 | | |
| Confl. Peds. (#/hr) | | | 1 | | 1 |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Heavy Vehicles (%) | 2% | 2% | 1% | 0% | 2% |
| Adj. Flow (vph) | 0 | 2 | 232 | 11 | 56 |
| Shared Lane Traffic (%) | | | | | |
| Lane Group Flow (vph) | 8 | 0 | 299 | 0 | 0 |
| Turn Type | NA | | Perm | | |
| Protected Phases | 9 | | | | |
| Permitted Phases | | | 8 | | |
| Detector Phase | 9 | | 8 | | |
| Switch Phase | | | | | |
| Minimum Initial (s) | 3.0 | | 3.0 | | |
| Minimum Split (s) | 21.0 | | 21.0 | | |
| Total Split (s) | 14.0 | | 30.0 | | |
| Total Split (%) | 15.6% | | 33.3% | | |
| Maximum Green (s) | 7.0 | | 22.0 | | |
| Yellow Time (s) | 3.0 | | 6.0 | | |
| All-Red Time (s) | 4.0 | | 2.0 | | |
| Lost Time Adjust (s) | -1.0 | | -1.0 | | |
| Total Lost Time (s) | 6.0 | | 7.0 | | |
| Lead/Lag | | | | | |
| Lead-Lag Optimize? | | | | | |
| Vehicle Extension (s) | 3.0 | | 3.0 | | |
| Recall Mode | None | | None | | |
| Act Effect Green (s) | 7.1 | | 20.7 | | |
| Actuated g/C Ratio | 0.08 | | 0.23 | | |
| v/c Ratio | 0.06 | | 0.79 | | |
| Control Delay | 38.9 | | 48.5 | | |
| Queue Delay | 0.0 | | 0.0 | | |

Lanes, Volumes, Timings
 3: Access/Wood Street & Elm Street & Colwell Street

2019 Future with Development
 Weekday Afternoon Peak Hour - Scenario 1



| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|------|------|------|-----|------|-----|------|------|-----|------|-----|-----|
| Total Delay | | 34.2 | 15.0 | | 16.1 | | | | | 26.4 | | |
| LOS | | C | B | | B | | | | | C | | |
| Approach Delay | | | 18.1 | | 16.1 | | | | | 26.4 | | |
| Approach LOS | | | B | | B | | | | | C | | |
| Queue Length 50th (ft) | | 34 | 164 | | 220 | | | | | 11 | | |
| Queue Length 95th (ft) | | #148 | 358 | | #658 | | | | | 31 | | |
| Internal Link Dist (ft) | | | 491 | | 520 | | | | | 131 | | |
| Turn Bay Length (ft) | | 78 | | | | | | | | | | |
| Base Capacity (vph) | | 175 | 1084 | | 1070 | | | | | 376 | | |
| Starvation Cap Reductn | | 0 | 0 | | 20 | | | | | 0 | | |
| Spillback Cap Reductn | | 0 | 0 | | 0 | | | | | 0 | | |
| Storage Cap Reductn | | 0 | 0 | | 0 | | | | | 0 | | |
| Reduced v/c Ratio | | 0.59 | 0.50 | | 0.74 | | | | | 0.07 | | |

Intersection Summary
 Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 22.6 Intersection LOS: C
 Intersection Capacity Utilization 92.3% ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings
 3: Access/Wood Street & Elm Street & Colwell Street

2019 Future with Development
 Weekday Afternoon Peak Hour - Scenario 1



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|------|-----|------|-----|------|
| Total Delay | 38.9 | | 48.5 | | |
| LOS | D | | D | | |
| Approach Delay | 38.9 | | 48.5 | | |
| Approach LOS | D | | D | | |
| Queue Length 50th (ft) | 4 | | 156 | | |
| Queue Length 95th (ft) | 18 | | #265 | | |
| Internal Link Dist (ft) | 187 | | 223 | | |
| Turn Bay Length (ft) | | | | | |
| Base Capacity (vph) | 151 | | 418 | | |
| Starvation Cap Reductn | 0 | | 0 | | |
| Spillback Cap Reductn | 0 | | 0 | | |
| Storage Cap Reductn | 0 | | 0 | | |
| Reduced v/c Ratio | 0.05 | | 0.72 | | |

Intersection Summary

Lanes, Volumes, Timings
4: Maple Street & Elm Street

2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | | | ↔ | | | ↔ | ↔ |
| Volume (vph) | 54 | 652 | 11 | 33 | 703 | 33 | 6 | 2 | 18 | 17 | 3 | 52 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 14 | 12 | 10 | 13 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | | 2% | | | 0% | | | 1% | | | -1% | |
| Storage Length (ft) | 79 | | 0 | 75 | | 0 | 0 | | 0 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.97 | | | 0.97 | |
| Frt | | 0.997 | | | 0.993 | | | 0.905 | | | 0.902 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.989 | | | 0.988 | |
| Satd. Flow (prot) | 1580 | 1837 | 0 | 1550 | 1745 | 0 | 0 | 1441 | 0 | 0 | 1715 | 0 |
| Flt Permitted | 0.335 | | | 0.370 | | | | 0.929 | | | 0.910 | |
| Satd. Flow (perm) | 556 | 1837 | 0 | 602 | 1745 | 0 | 0 | 1349 | 0 | 0 | 1574 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | Yes | | | | Yes |
| Satd. Flow (RTOR) | | 3 | | | 7 | | | 19 | | | | 55 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | | 25 |
| Link Distance (ft) | | 600 | | | 300 | | | 222 | | | | 228 |
| Travel Time (s) | | 16.4 | | | 8.2 | | | 6.1 | | | | 6.2 |
| Confl. Peds. (#/hr) | 10 | | 7 | 7 | | 10 | 7 | | 5 | 5 | | 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% | 3% | 10% | 3% | 6% | 0% | 20% | 0% | 6% | 0% | 0% | 5% |
| Adj. Flow (vph) | 57 | 686 | 12 | 35 | 740 | 35 | 6 | 2 | 19 | 18 | 3 | 55 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 57 | 698 | 0 | 35 | 775 | 0 | 0 | 27 | 0 | 0 | 76 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 6 | | | 2 | | | 4 | | | | 8 |
| Permitted Phases | 6 | | | 2 | | | 4 | | | 8 | | |
| Detector Phase | 6 | 6 | | 2 | 2 | | 4 | 4 | | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |
| Total Split (s) | 69.0 | 69.0 | | 69.0 | 69.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |
| Total Split (%) | 76.7% | 76.7% | | 76.7% | 76.7% | | 23.3% | 23.3% | | 23.3% | 23.3% | |
| Maximum Green (s) | 64.0 | 64.0 | | 64.0 | 64.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 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 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Intersection Summary | | | | | | | | | | | | |
| Area Type: | Other | | | | | | | | | | | |
| Cycle Length: | 90 | | | | | | | | | | | |
| Actuated Cycle Length: | 90 | | | | | | | | | | | |

Lanes, Volumes, Timings
4: Maple Street & Elm Street

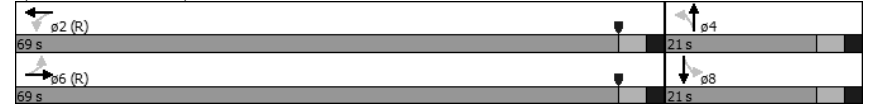
2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1

Offset: 6 (7%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Splits and Phases: 4: Maple Street & Elm Street



HCM 2010 Signalized Intersection Summary
4: Maple Street & Elm Street

2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 54 | 652 | 11 | 33 | 703 | 33 | 6 | 2 | 18 | 17 | 3 | 52 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.99 | 1.00 | | 0.99 | 0.95 | | 0.92 | 0.93 | | 0.92 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1782 | 1797 | 1782 | 1748 | 1771 | 1800 | 1791 | 1648 | 1791 | 1809 | 1816 | 1809 |
| Adj Flow Rate, veh/h | 57 | 686 | 12 | 35 | 740 | 35 | 6 | 2 | 7 | 18 | 3 | 28 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 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 | 3 | 3 | 3 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap, veh/h | 645 | 1504 | 26 | 675 | 1432 | 68 | 80 | 21 | 39 | 81 | 9 | 47 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.05 | 0.06 | 0.05 | 0.05 | 0.06 | 0.05 |
| Sat Flow, veh/h | 662 | 1761 | 31 | 697 | 1677 | 79 | 419 | 361 | 682 | 467 | 151 | 823 |
| Grp Volume(v), veh/h | 57 | 0 | 698 | 35 | 0 | 775 | 15 | 0 | 0 | 49 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 662 | 0 | 1792 | 697 | 0 | 1756 | 1462 | 0 | 0 | 1441 | 0 | 0 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.1 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.02 | 1.00 | | 0.05 | 0.40 | | 0.47 | 0.37 | | 0.57 |
| Lane Grp Cap(c), veh/h | 645 | 0 | 1530 | 675 | 0 | 1500 | 123 | 0 | 0 | 121 | 0 | 0 |
| V/C Ratio(X) | 0.09 | 0.00 | 0.46 | 0.05 | 0.00 | 0.52 | 0.12 | 0.00 | 0.00 | 0.41 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 645 | 0 | 1530 | 675 | 0 | 1500 | 291 | 0 | 0 | 303 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.76 | 0.00 | 0.76 | 0.85 | 0.00 | 0.85 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 40.9 | 0.0 | 0.0 | 41.8 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.2 | 0.0 | 0.7 | 0.1 | 0.0 | 1.1 | 0.4 | 0.0 | 0.0 | 2.2 | 0.0 | 0.0 |
| 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 | 0.1 | 0.0 | 0.6 | 0.0 | 0.0 | 0.8 | 0.7 | 0.0 | 0.0 | 2.3 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.2 | 0.0 | 0.7 | 0.1 | 0.0 | 1.1 | 41.3 | 0.0 | 0.0 | 44.0 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | | A | D | | | D | | |
| Approach Vol, veh/h | | 755 | | | 810 | | | 15 | | | 49 | |
| Approach Delay, s/veh | | 0.7 | | | 1.0 | | | 41.3 | | | 44.0 | |
| Approach LOS | | A | | | A | | | D | | | D | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 80.9 | | 9.1 | | 80.9 | | 9.1 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 64.0 | | 16.0 | | 64.0 | | 16.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 2.5 | | 2.9 | | 2.5 | | 5.0 | | | | |
| Green Ext Time (p_c), s | | 20.1 | | 0.2 | | 20.1 | | 0.2 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 2.5 | | | | | | | | | |
| HCM 2010 LOS | | | A | | | | | | | | | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 10 | 645 | 24 | 19 | 578 | 4 | 165 | 8 | 129 | 11 | 2 | 23 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 13 | 12 | 10 | 11 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Grade (%) | | 7% | | -9% | | | | 0% | | | | |
| Storage Length (ft) | 77 | | 0 | 95 | | 95 | 0 | | 95 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 1 | 0 | | 1 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | 75 | | | 75 | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | | 0.98 | | 1.00 | 0.98 | | 0.99 | |
| Frt | | 0.995 | | | | 0.850 | | | 0.850 | | 0.913 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.955 | | | 0.985 | |
| Satd. Flow (prot) | 1540 | 1750 | 0 | 1573 | 1732 | 1599 | 0 | 1646 | 1485 | 0 | 1809 | 0 |
| Flt Permitted | 0.407 | | | 0.237 | | | | 0.708 | | | 0.901 | |
| Satd. Flow (perm) | 658 | 1750 | 0 | 392 | 1732 | 1561 | 0 | 1218 | 1450 | 0 | 1653 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | No | | | No |
| Satd. Flow (RTOR) | | 2 | | | | 24 | | | | | | |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 300 | | | 550 | | | 247 | | | 248 | |
| Travel Time (s) | | 8.2 | | | 15.0 | | | 6.7 | | | 6.8 | |
| Confl. Peds. (#/hr) | 5 | | 4 | 4 | | 5 | 1 | | 2 | 2 | | 1 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 6% | 5% | 0% | 1% | 0% | 3% | 0% | 0% | 0% |
| Adj. Flow (vph) | 11 | 694 | 26 | 20 | 622 | 4 | 177 | 9 | 139 | 12 | 2 | 25 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 11 | 720 | 0 | 20 | 622 | 4 | 0 | 186 | 139 | 0 | 39 | 0 |
| Turn Type | Perm | NA | | pm+pt | NA | Perm | Perm | NA | Perm | Perm | NA | |
| Protected Phases | | 6 | | 5 | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | 2 | 4 | | 4 | 8 | | |
| Detector Phase | 6 | 6 | | 5 | 2 | 2 | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 13.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 |
| Total Split (s) | 32.0 | 32.0 | | 29.0 | 61.0 | 61.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | |
| Total Split (%) | 35.6% | 35.6% | | 32.2% | 67.8% | 67.8% | 32.2% | 32.2% | 32.2% | 32.2% | 32.2% | |
| Maximum Green (s) | 27.0 | 27.0 | | 24.0 | 56.0 | 56.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| 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 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lead/Lag | Lag | Lag | | Lead | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | None | C-Max | C-Max | None | None | None | None | None | |

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90

Lanes, Volumes, Timings
5: Oak Street & Elm Street

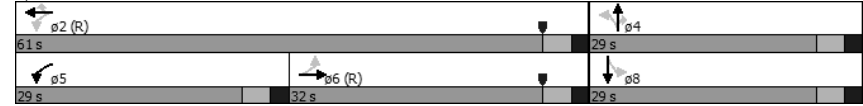
2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1

Offset: 8 (9%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Splits and Phases: 5: Oak Street & Elm Street



HCM 2010 Signalized Intersection Summary
5: Oak Street & Elm Street

2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | ↖ | ↖ | ↗ | ↖ | ↗ | ↖ | ↗ |
| Volume (veh/h) | 10 | 645 | 24 | 19 | 578 | 4 | 165 | 8 | 129 | 11 | 2 | 23 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 |
| Adj Sat Flow, veh/h/ln | 1737 | 1772 | 1737 | 1775 | 1791 | 1881 | 1800 | 1783 | 1748 | 1800 | 1872 | 1800 |
| Adj Flow Rate, veh/h | 11 | 694 | 26 | 20 | 622 | 4 | 177 | 9 | 139 | 12 | 2 | 25 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 6 | 5 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Cap, veh/h | 405 | 958 | 36 | 274 | 1135 | 1009 | 242 | 8 | 411 | 52 | 31 | 55 |
| Arrive On Green | 0.38 | 0.38 | 0.37 | 0.02 | 0.63 | 0.63 | 0.27 | 0.28 | 0.28 | 0.27 | 0.28 | 0.27 |
| Sat Flow, veh/h | 741 | 1697 | 64 | 1690 | 1791 | 1593 | 589 | 30 | 1480 | 0 | 112 | 199 |
| Grp Volume(v), veh/h | 11 | 0 | 720 | 20 | 622 | 4 | 186 | 0 | 139 | 39 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 741 | 0 | 1761 | 1690 | 1791 | 1593 | 619 | 0 | 1480 | 311 | 0 | 0 |
| Q Serve(g_s), s | 1.0 | 0.0 | 31.5 | 0.4 | 17.6 | 0.1 | 0.0 | 0.0 | 6.7 | 0.0 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 12.3 | 0.0 | 31.5 | 0.4 | 17.6 | 0.1 | 24.0 | 0.0 | 6.7 | 24.0 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.04 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.31 | | 0.64 |
| Lane Grp Cap(c), veh/h | 405 | 0 | 994 | 274 | 1135 | 1009 | 243 | 0 | 411 | 135 | 0 | 0 |
| V/C Ratio(X) | 0.03 | 0.00 | 0.72 | 0.07 | 0.55 | 0.00 | 0.76 | 0.00 | 0.34 | 0.29 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 405 | 0 | 994 | 702 | 1135 | 1009 | 243 | 0 | 411 | 135 | 0 | 0 |
| HCM Platoon Ratio | 0.67 | 0.67 | 0.67 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.90 | 0.00 | 0.90 | 0.09 | 0.09 | 0.09 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 20.1 | 0.0 | 22.0 | 13.1 | 9.3 | 6.1 | 34.0 | 0.0 | 25.9 | 26.5 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 4.1 | 0.0 | 0.2 | 0.0 | 13.5 | 0.0 | 0.5 | 1.2 | 0.0 | 0.0 |
| 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 | 0.4 | 0.0 | 22.8 | 0.3 | 10.1 | 0.1 | 1.6 | 0.0 | 5.0 | 1.4 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 20.2 | 0.0 | 26.1 | 13.1 | 9.4 | 6.1 | 47.4 | 0.0 | 26.4 | 27.7 | 0.0 | 0.0 |
| LnGrp LOS | C | | C | B | A | A | D | | C | C | | |
| Approach Vol, veh/h | | 731 | | | 646 | | | 325 | | | 39 | |
| Approach Delay, s/veh | | 26.0 | | | 9.5 | | | 38.4 | | | 27.7 | |
| Approach LOS | | C | | | A | | | D | | | C | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 61.0 | | 29.0 | 6.2 | 54.8 | | 29.0 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 56.0 | | 24.0 | 24.0 | 27.0 | | 24.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 20.1 | | 26.0 | 2.9 | 33.5 | | 26.0 | | | | |
| Green Ext Time (p_c), s | | 13.4 | | 0.0 | 0.0 | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | | 22.3 | | | | | | | | |
| HCM 2010 LOS | | | | C | | | | | | | | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1

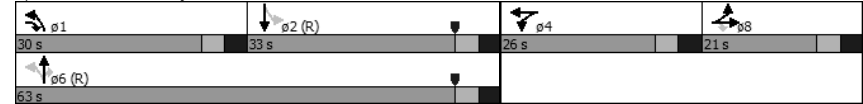
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↑ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 127 | 110 | 658 | 711 | 74 | 53 | 488 | 1006 | 714 | 21 | 845 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | | 2% | | | -5% | | | 5% | | | 0% | |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 1 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | | | | 0.99 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.938 | | | | 0.850 | | 0.987 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1589 | 1557 | 1485 | 3174 | 1585 | 0 | 1511 | 3112 | 1526 | 1466 | 3205 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.114 | | | 0.279 | | |
| Satd. Flow (perm) | 1586 | 1557 | 1485 | 3174 | 1585 | 0 | 181 | 3112 | 1490 | 430 | 3205 | 0 |
| Right Turn on Red | | | No | | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 578 | | | 8 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | 18 | | 4 | 4 | | 18 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 7% | 2% | 3% | 0% | 1% | 5% | 1% | 5% |
| Adj. Flow (vph) | 130 | 112 | 671 | 726 | 76 | 54 | 498 | 1027 | 729 | 21 | 862 | 80 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 130 | 112 | 671 | 726 | 130 | 0 | 498 | 1027 | 729 | 21 | 942 | 0 |
| Turn Type | Split | NA | pm+ov | Split | NA | | pm+pt | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | 8 | | | | 6 | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |
| Total Split (s) | 21.0 | 21.0 | 30.0 | 26.0 | 26.0 | | 30.0 | 63.0 | 63.0 | 33.0 | 33.0 | |
| Total Split (%) | 19.1% | 19.1% | 27.3% | 23.6% | 23.6% | | 27.3% | 57.3% | 57.3% | 30.0% | 30.0% | |
| Maximum Green (s) | 15.0 | 15.0 | 24.0 | 20.0 | 20.0 | | 24.0 | 57.0 | 57.0 | 27.0 | 27.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |
| Intersection Summary | | | | | | | | | | | | |
| Area Type: | Other | | | | | | | | | | | |
| Cycle Length: | 110 | | | | | | | | | | | |
| Actuated Cycle Length: | 110 | | | | | | | | | | | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

Splits and Phases: 6: Fayette Street & Elm Street




HCM 2010 Signalized Intersection Summary
6: Fayette Street & Elm Street

2019 Future with Development
Weekday Afternoon Peak Hour - Scenario 1

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|-------|------|------|-------|------|------|-------|-------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 127 | 110 | 658 | 711 | 74 | 53 | 488 | 1006 | 714 | 21 | 845 | 78 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), 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 | | 0.98 | 1.00 | | 0.96 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1730 | 1661 | 1747 | 1845 | 1758 | 1845 | 1704 | 1755 | 1807 | 1646 | 1776 | 1800 |
| Adj Flow Rate, veh/h | 130 | 112 | 572 | 726 | 76 | 54 | 498 | 1027 | 597 | 21 | 862 | 80 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Percent Heavy Veh, % | 3 | 3 | 2 | 0 | 7 | 7 | 3 | 0 | 1 | 5 | 1 | 1 |
| Cap, veh/h | 240 | 242 | 553 | 651 | 183 | 130 | 434 | 1758 | 796 | 135 | 792 | 73 |
| Arrive On Green | 0.15 | 0.15 | 0.15 | 0.19 | 0.19 | 0.18 | 0.23 | 0.53 | 0.53 | 0.25 | 0.25 | 0.25 |
| Sat Flow, veh/h | 1648 | 1661 | 1482 | 3409 | 957 | 680 | 1623 | 3335 | 1510 | 272 | 3111 | 289 |
| Grp Volume(v), veh/h | 130 | 112 | 572 | 726 | 0 | 130 | 498 | 1027 | 597 | 21 | 468 | 474 |
| Grp Sat Flow(s),veh/h/ln | 1648 | 1661 | 1482 | 1704 | 0 | 1637 | 1623 | 1667 | 1510 | 272 | 1687 | 1712 |
| Q Serve(g_s), s | 8.1 | 6.8 | 16.0 | 21.0 | 0.0 | 7.7 | 25.0 | 23.1 | 34.0 | 6.9 | 28.0 | 28.0 |
| Cycle Q Clear(g_c), s | 8.1 | 6.8 | 16.0 | 21.0 | 0.0 | 7.7 | 25.0 | 23.1 | 34.0 | 6.9 | 28.0 | 28.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.42 | 1.00 | | 1.00 | 1.00 | | 0.17 |
| Lane Grp Cap(c), veh/h | 240 | 242 | 553 | 651 | 0 | 313 | 434 | 1758 | 796 | 135 | 430 | 436 |
| V/C Ratio(X) | 0.54 | 0.46 | 1.03 | 1.12 | 0.00 | 0.42 | 1.15 | 0.58 | 0.75 | 0.16 | 1.09 | 1.09 |
| Avail Cap(c_a), veh/h | 240 | 242 | 553 | 651 | 0 | 313 | 434 | 1758 | 796 | 135 | 430 | 436 |
| 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) | 0.76 | 0.76 | 0.76 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 43.6 | 43.1 | 34.5 | 44.5 | 0.0 | 39.3 | 32.4 | 17.8 | 20.3 | 33.1 | 41.0 | 41.1 |
| Incr Delay (d2), s/veh | 1.9 | 1.1 | 42.5 | 71.4 | 0.0 | 0.9 | 89.9 | 1.4 | 6.4 | 2.5 | 69.4 | 69.1 |
| 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 | 6.6 | 5.7 | 41.9 | 29.4 | 0.0 | 6.4 | 43.2 | 16.3 | 22.0 | 1.1 | 38.3 | 38.8 |
| LnGrp Delay(d),s/veh | 45.5 | 44.1 | 77.1 | 115.9 | 0.0 | 40.2 | 122.3 | 19.2 | 26.7 | 35.6 | 110.4 | 110.2 |
| LnGrp LOS | D | D | F | F | | D | F | B | C | D | F | F |
| Approach Vol, veh/h | 814 | | | 856 | | | 2122 | | | 963 | | |
| Approach Delay, s/veh | 67.5 | | | 104.4 | | | 45.5 | | | 108.7 | | |
| Approach LOS | E | | | F | | | D | | | F | | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 30.0 | 33.0 | | 26.0 | | 63.0 | | 21.0 | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | 24.0 | 27.0 | | 20.0 | | 57.0 | | 15.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 27.5 | 30.5 | | 23.5 | | 36.5 | | 18.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | | 16.4 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | 72.7 | | | | | | | | | | | |
| HCM 2010 LOS | E | | | | | | | | | | | |

Lanes, Volumes, Timings
1: Corson Street & Elm Street

2019 Future with Development - Access Scenario 2
Weekday Afternoon Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | ↔ | | | ↔ | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 1 | 427 | 9 | 49 | 498 | 8 | 29 | 0 | 118 | 18 | 0 | 1 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 11 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | | 1% | | | 0% | | | 0% | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.997 | | | 0.997 | | | 0.892 | | | 0.993 | | |
| Frt | 0.997 | | | 0.997 | | | 0.892 | | | 0.993 | | |
| Frt Protected | 0.950 | | | 0.950 | | | 0.990 | | | 0.955 | | |
| Satd. Flow (prot) | 0 | 1796 | 0 | 1796 | 2036 | 0 | 0 | 1678 | 0 | 0 | 2042 | 0 |
| Frt Permitted | 0.950 | | | 0.950 | | | 0.990 | | | 0.955 | | |
| Satd. Flow (perm) | 0 | 1796 | 0 | 1796 | 2036 | 0 | 0 | 1678 | 0 | 0 | 2042 | 0 |
| Link Speed (mph) | 25 | | | 25 | | | 25 | | | 25 | | |
| Link Distance (ft) | 275 | | | 276 | | | 219 | | | 188 | | |
| Travel Time (s) | 7.5 | | | 7.5 | | | 6.0 | | | 5.1 | | |
| Confl. Peds. (#/hr) | 2 | | 3 | 3 | | 2 | | 3 | 3 | | | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 5% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 454 | 10 | 52 | 530 | 9 | 31 | 0 | 126 | 19 | 0 | 1 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 465 | 0 | 52 | 539 | 0 | 0 | 157 | 0 | 0 | 20 | 0 |
| Sign Control | Free | | | | Free | | Stop | | | | Stop | |

| Intersection Summary | |
|----------------------|--------------|
| Area Type: | Other |
| Control Type: | Unsignalized |

HCM 2010 TWSC
1: Corson Street & Elm Street

2019 Future with Development - Access Scenario 2
Weekday Afternoon Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 3.2 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 1 | 427 | 9 | 49 | 498 | 8 | 29 | 0 | 118 | 18 | 0 | 1 |
| Conflicting Peds, #/hr | 2 | 0 | 3 | 3 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 454 | 10 | 52 | 530 | 9 | 31 | 0 | 126 | 19 | 0 | 1 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|------|-----|--------|------|-----|
| Conflicting Flow All | 541 | 0 | 0 | 467 | 0 | 0 | 1106 | 1110 | 465 | 1168 | 1110 | 540 |
| Stage 1 | - | - | - | - | - | - | 464 | 464 | - | 641 | 641 | - |
| Stage 2 | - | - | - | - | - | - | 642 | 646 | - | 527 | 469 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 781 | - | - | 829 | - | - | 207 | 211 | 633 | 188 | 211 | 573 |
| Stage 1 | - | - | - | - | - | - | 659 | 567 | - | 523 | 473 | - |
| Stage 2 | - | - | - | - | - | - | 522 | 470 | - | 607 | 564 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 779 | - | - | 826 | - | - | 195 | 196 | 629 | 142 | 196 | 570 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 195 | 196 | - | 142 | 196 | - |
| Stage 1 | - | - | - | - | - | - | 656 | 564 | - | 520 | 442 | - |
| Stage 2 | - | - | - | - | - | - | 487 | 439 | - | 483 | 561 | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|-----|------|------|
| HCM Control Delay, s | 0 | 0.9 | 17.8 | 33.1 |
| HCM LOS | C | A | C | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 437 | 779 | - | - | 826 | - | - | 148 |
| HCM Lane V/C Ratio | 0.358 | 0.001 | - | - | 0.063 | - | - | 0.137 |
| HCM Control Delay (s) | 17.8 | 9.6 | 0 | - | 9.7 | - | - | 33.1 |
| HCM Lane LOS | C | A | A | - | A | - | - | D |
| HCM 95th %tile Q(veh) | 1.6 | 0 | - | - | 0.2 | - | - | 0.5 |

Lanes, Volumes, Timings 2019 Future with Development - Access Scenario 2
 2: Lot Access/Old Elm Street & Elm Street Weekday Afternoon Peak Hour

| | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|------|------|-------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 0 | 542 | 6 | 0 | 540 | 9 | 29 | 0 | 121 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 12 | 12 |
| Grade (%) | | -1% | | | 0% | | | 0% | | | -1% | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | - | | | | | | | | | | | |
| Frt | 0.999 | | | 0.998 | | | 0.891 | | | - | | |
| Flt Protected | - | | | | | | | | | | | |
| Satd. Flow (prot) | 0 | 1933 | 0 | 0 | 1842 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 |
| Flt Permitted | - | | | | | | | | | | | |
| Satd. Flow (perm) | 0 | 1933 | 0 | 0 | 1842 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 |
| Link Speed (mph) | 25 | | 25 | | 25 | | 25 | | 25 | | 25 | |
| Link Distance (ft) | 276 | | 571 | | 199 | | 208 | | 5.7 | | - | |
| Travel Time (s) | 7.5 | | 15.6 | | 5.4 | | - | | - | | - | |
| Confl. Peds. (#/hr) | - | | | | | | 2 | | - | | | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 0 | 577 | 6 | 0 | 574 | 10 | 31 | 0 | 129 | 0 | 0 | 0 |
| Shared Lane Traffic (%) | - | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 583 | 0 | 0 | 584 | 0 | 0 | 160 | 0 | 0 | 0 | 0 |
| Sign Control | Free | | - | | Free | | Stop | | - | | Stop | |

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

HCM 2010 TWSC 2019 Future with Development - Access Scenario 2
 2: Lot Access/Old Elm Street & Elm Street Weekday Afternoon Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.4 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 0 | 542 | 6 | 0 | 540 | 9 | 29 | 0 | 121 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -1 | - | - | 0 | - | - | 0 | - | - | - | -1 |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 577 | 6 | 0 | 574 | 10 | 31 | 0 | 129 | 0 | 0 | 0 |

| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 584 | 0 | 0 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | 4.3 | - | - |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | 3 | - | - |
| Pot Cap-1 Maneuver | 754 | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 754 | - | - |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 19.9 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|-----------------------|-------|-----|-----|-----|-----|-----|-----|
| Capacity (veh/h) | 399 | 754 | - | - | 754 | - | - |
| HCM Lane V/C Ratio | 0.4 | - | - | - | - | - | - |
| HCM Control Delay (s) | 19.9 | 0 | - | - | 0 | - | - |
| HCM Lane LOS | C | A | - | - | A | - | - |
| HCM 95th %tile Q(veh) | 1.9 | 0 | - | - | 0 | - | - |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2019 Future with Development
Weekday Afternoon Peak Hour - Dual NB Lefts

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↑ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 127 | 110 | 658 | 711 | 74 | 53 | 488 | 1006 | 714 | 21 | 845 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | | 2% | | | -5% | | | 5% | | | 0% | |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 2 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | | | | 0.99 | | 0.99 | | 0.98 | 1.00 | 0.99 | |
| Frt | | | 0.850 | | 0.938 | | | | 0.850 | | 0.987 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1589 | 1557 | 1485 | 3174 | 1586 | 0 | 2931 | 3112 | 1526 | 1466 | 3200 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.950 | | | 0.279 | | |
| Satd. Flow (perm) | 1586 | 1557 | 1485 | 3174 | 1586 | 0 | 2908 | 3112 | 1490 | 429 | 3200 | 0 |
| Right Turn on Red | | | | No | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 578 | | | 8 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | 18 | | 4 | 4 | | 18 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 7% | 2% | 3% | 0% | 1% | 5% | 1% | 5% |
| Adj. Flow (vph) | 130 | 112 | 671 | 726 | 76 | 54 | 498 | 1027 | 729 | 21 | 862 | 80 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 130 | 112 | 671 | 726 | 130 | 0 | 498 | 1027 | 729 | 21 | 942 | 0 |
| Turn Type | Split | NA | pm+ov | Split | NA | | Prot | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | | 8 | | | | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |
| Total Split (s) | 19.0 | 19.0 | 39.0 | 28.0 | 28.0 | | 39.0 | 63.0 | 63.0 | 24.0 | 24.0 | |
| Total Split (%) | 17.3% | 17.3% | 35.5% | 25.5% | 25.5% | | 35.5% | 57.3% | 57.3% | 21.8% | 21.8% | |
| Maximum Green (s) | 13.0 | 13.0 | 33.0 | 22.0 | 22.0 | | 33.0 | 57.0 | 57.0 | 18.0 | 18.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |
| Intersection Summary | | | | | | | | | | | | |
| Area Type: | Other | | | | | | | | | | | |
| Cycle Length: | 110 | | | | | | | | | | | |
| Actuated Cycle Length: | 110 | | | | | | | | | | | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2019 Future with Development
Weekday Afternoon Peak Hour - Dual NB Lefts

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

Splits and Phases: 6: Fayette Street & Elm Street



HCM 2010 Signalized Intersection Summary
 6: Fayette Street & Elm Street

2019 Future with Development
 Weekday Afternoon Peak Hour - Dual NB Lefts

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|-------|------|-------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ |
| Volume (veh/h) | 127 | 110 | 658 | 711 | 74 | 53 | 488 | 1006 | 714 | 21 | 845 | 78 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), 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 | | 0.98 | 1.00 | | 0.97 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1730 | 1661 | 1747 | 1845 | 1758 | 1845 | 1704 | 1755 | 1807 | 1646 | 1776 | 1800 |
| Adj Flow Rate, veh/h | 130 | 112 | 572 | 726 | 76 | 54 | 498 | 1027 | 597 | 21 | 862 | 80 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 2 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Percent Heavy Veh, % | 3 | 3 | 2 | 0 | 7 | 7 | 3 | 0 | 1 | 5 | 1 | 1 |
| Cap, veh/h | 210 | 211 | 482 | 713 | 200 | 142 | 622 | 1758 | 796 | 143 | 885 | 82 |
| Arrive On Green | 0.13 | 0.13 | 0.13 | 0.21 | 0.21 | 0.20 | 0.20 | 0.53 | 0.53 | 0.28 | 0.28 | 0.28 |
| Sat Flow, veh/h | 1648 | 1661 | 1481 | 3409 | 957 | 680 | 3148 | 3335 | 1510 | 272 | 3112 | 289 |
| Grp Volume(v), veh/h | 130 | 112 | 572 | 726 | 0 | 130 | 498 | 1027 | 597 | 21 | 467 | 475 |
| Grp Sat Flow(s),veh/h/ln | 1648 | 1661 | 1481 | 1704 | 0 | 1637 | 1574 | 1667 | 1510 | 272 | 1687 | 1714 |
| Q Serve(g_s), s | 8.2 | 6.9 | 14.0 | 23.0 | 0.0 | 7.5 | 16.6 | 23.1 | 34.0 | 6.6 | 30.2 | 30.2 |
| Cycle Q Clear(g_c), s | 8.2 | 6.9 | 14.0 | 23.0 | 0.0 | 7.5 | 16.6 | 23.1 | 34.0 | 6.6 | 30.2 | 30.2 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.42 | 1.00 | | 1.00 | 1.00 | | 0.17 |
| Lane Grp Cap(c), veh/h | 210 | 211 | 482 | 713 | 0 | 342 | 622 | 1758 | 796 | 143 | 480 | 487 |
| V/C Ratio(X) | 0.62 | 0.53 | 1.19 | 1.02 | 0.00 | 0.38 | 0.80 | 0.58 | 0.75 | 0.15 | 0.97 | 0.97 |
| Avail Cap(c_a), veh/h | 210 | 211 | 482 | 713 | 0 | 342 | 973 | 1758 | 796 | 143 | 480 | 487 |
| 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) | 0.76 | 0.76 | 0.76 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 45.5 | 44.9 | 37.2 | 43.5 | 0.0 | 37.6 | 42.1 | 17.8 | 20.3 | 30.5 | 39.0 | 39.0 |
| Incr Delay (d2), s/veh | 4.2 | 1.9 | 99.6 | 38.5 | 0.0 | 0.7 | 2.7 | 1.4 | 6.4 | 2.2 | 35.1 | 34.8 |
| 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 | 6.9 | 5.9 | 50.3 | 26.3 | 0.0 | 6.2 | 11.9 | 16.3 | 22.0 | 1.0 | 25.8 | 26.1 |
| LnGrp Delay(d),s/veh | 49.7 | 46.8 | 136.7 | 82.0 | 0.0 | 38.3 | 44.7 | 19.2 | 26.7 | 32.7 | 74.1 | 73.8 |
| LnGrp LOS | D | D | F | F | | D | D | B | C | C | E | E |
| Approach Vol, veh/h | 814 | | | 856 | | | 2122 | | | 963 | | |
| Approach Delay, s/veh | 110.5 | | | 75.3 | | | 27.3 | | | 73.0 | | |
| Approach LOS | F | | | E | | | C | | | E | | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | 4 | | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc), s | 26.7 | 36.3 | 28.0 | | 63.0 | | 19.0 | | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | | 6.0 | | 6.0 | | | | | |
| Max Green Setting (Gmax), s | 33.0 | 18.0 | 22.0 | | 57.0 | | 13.0 | | | | | |
| Max Q Clear Time (g_c+I1), s | 19.1 | 32.7 | 25.5 | | 36.5 | | 16.5 | | | | | |
| Green Ext Time (p_c), s | 1.6 | 0.0 | 0.0 | | 16.4 | | 0.0 | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | 59.4 | | | | | | | | | | | |
| HCM 2010 LOS | E | | | | | | | | | | | |

APPENDIX J

Future (2024) without Development Capacity/ Level-of-Service Analysis Worksheets

Lanes, Volumes, Timings
4: Maple Street & Elm Street

2024 Future without Development
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 20 | 456 | 2 | 8 | 293 | 10 | 13 | 11 | 56 | 44 | 1 | 72 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 14 | 12 | 10 | 13 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | | 2% | | | 0% | | | 1% | | | -1% | |
| Storage Length (ft) | 79 | | 0 | 75 | | 0 | 0 | | 0 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.98 | | | 0.98 | |
| Frt | | 0.999 | | | 0.995 | | | 0.905 | | | 0.917 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.992 | | | 0.981 | |
| Satd. Flow (prot) | 1491 | 1711 | 0 | 1400 | 1601 | 0 | 0 | 1572 | 0 | 0 | 1789 | 0 |
| Flt Permitted | 0.562 | | | 0.464 | | | | 0.910 | | | 0.835 | |
| Satd. Flow (perm) | 879 | 1711 | 0 | 683 | 1601 | 0 | 0 | 1441 | 0 | 0 | 1517 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 1 | | | 5 | | | 61 | | | | 78 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | | 25 |
| Link Distance (ft) | | 600 | | | 300 | | | 222 | | | | 228 |
| Travel Time (s) | | 16.4 | | | 8.2 | | | 6.1 | | | | 6.2 |
| Confl. Peds. (#/hr) | 7 | | 3 | 3 | | 7 | 4 | | 5 | 5 | | 4 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 6% | 11% | 0% | 14% | 16% | 0% | 0% | 0% | 0% | 0% | 0% | 2% |
| Adj. Flow (vph) | 22 | 496 | 2 | 9 | 318 | 11 | 14 | 12 | 61 | 48 | 1 | 78 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 22 | 498 | 0 | 9 | 329 | 0 | 0 | 87 | 0 | 0 | 127 | 0 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 1 | | 1 | 1 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | | 20 | 100 | | 20 | 15 | | 20 | 35 | |
| Trailing Detector (ft) | 0 | 0 | | 0 | 0 | | 0 | -5 | | 0 | -5 | |
| Detector 1 Position(ft) | 0 | 0 | | 0 | 0 | | 0 | -5 | | 0 | -5 | |
| Detector 1 Size(ft) | 20 | 6 | | 20 | 6 | | 20 | 20 | | 20 | 40 | |
| Detector 1 Type | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | 94 | | | 94 | | | | | | | |
| Detector 2 Size(ft) | | 6 | | | 6 | | | | | | | |
| Detector 2 Type | | CI+Ex | | | CI+Ex | | | | | | | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | | | | | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 6 | | | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | | 4 | | | 8 | | |
| Detector Phase | 6 | 6 | | 2 | 2 | | 4 | 4 | | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |

Lanes, Volumes, Timings
4: Maple Street & Elm Street

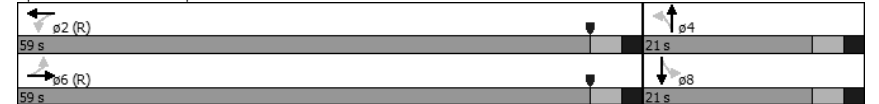
2024 Future without Development
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Total Split (s) | 59.0 | 59.0 | | 59.0 | 59.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |
| Total Split (%) | 73.8% | 73.8% | | 73.8% | 73.8% | | 26.3% | 26.3% | | 26.3% | 26.3% | |
| Maximum Green (s) | 54.0 | 54.0 | | 54.0 | 54.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 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 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | | | 4.0 | 4.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| v/c Ratio | 0.03 | 0.36 | | 0.02 | 0.25 | | | 0.38 | | | 0.51 | |
| Control Delay | 3.8 | 4.2 | | 1.5 | 2.6 | | | 18.1 | | | 21.5 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.3 | | | 0.0 | | | 0.0 | |
| Total Delay | 3.8 | 4.3 | | 1.5 | 2.9 | | | 18.1 | | | 21.5 | |
| Queue Length 50th (ft) | 2 | 58 | | 0 | 48 | | | 12 | | | 23 | |
| Queue Length 95th (ft) | m8 | 105 | | 1 | 100 | | | 50 | | | 69 | |
| Internal Link Dist (ft) | | 520 | | | 220 | | | 142 | | | 148 | |
| Turn Bay Length (ft) | 79 | | | 75 | | | | | | | | |
| Base Capacity (vph) | 718 | 1397 | | 557 | 1308 | | | 354 | | | 383 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 503 | | | 0 | | | 0 | |
| Spillback Cap Reductn | 0 | 29 | | 0 | 0 | | | 1 | | | 1 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | | 0 | | | 0 | |
| Reduced v/c Ratio | 0.03 | 0.36 | | 0.02 | 0.41 | | | 0.25 | | | 0.33 | |

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 31 (39%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Maple Street & Elm Street



HCM 2010 Signalized Intersection Summary
4: Maple Street & Elm Street

2024 Future without Development
Weekday Morning Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | | ↕ | | ↖ | ↗ | ↕ |
| Volume (veh/h) | 20 | 456 | 2 | 8 | 293 | 10 | 13 | 11 | 56 | 44 | 1 | 72 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 | 0.98 | | 0.97 | 0.98 | | 0.97 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1681 | 1670 | 1782 | 1579 | 1621 | 1800 | 1791 | 1791 | 1791 | 1809 | 1859 | 1809 |
| Adj Flow Rate, veh/h | 22 | 496 | 2 | 9 | 318 | 11 | 14 | 12 | 46 | 48 | 1 | 46 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh. % | 6 | 11 | 11 | 14 | 16 | 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap, veh/h | 849 | 1339 | 5 | 701 | 1255 | 43 | 73 | 36 | 97 | 136 | 10 | 73 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.08 | 0.09 | 0.08 | 0.08 | 0.09 | 0.08 |
| Sat Flow, veh/h | 942 | 1662 | 7 | 758 | 1558 | 54 | 202 | 376 | 1023 | 719 | 105 | 774 |
| Grp Volume(v), veh/h | 22 | 0 | 498 | 9 | 0 | 329 | 72 | 0 | 0 | 95 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 942 | 0 | 1669 | 758 | 0 | 1611 | 1601 | 0 | 0 | 1598 | 0 | 0 |
| Q Serve(g.s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 |
| Cycle Q Clear(g.c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.4 | 0.0 | 0.0 | 4.4 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.00 | 1.00 | | 0.03 | 0.19 | | 0.64 | 0.51 | | 0.48 |
| Lane Grp Cap(c), veh/h | 849 | 0 | 1345 | 701 | 0 | 1298 | 185 | 0 | 0 | 199 | 0 | 0 |
| V/C Ratio(X) | 0.03 | 0.00 | 0.37 | 0.01 | 0.00 | 0.25 | 0.39 | 0.00 | 0.00 | 0.48 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 849 | 0 | 1345 | 701 | 0 | 1298 | 359 | 0 | 0 | 365 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.83 | 0.00 | 0.83 | 0.98 | 0.00 | 0.98 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 34.8 | 0.0 | 0.0 | 35.2 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.0 | 0.0 | 0.7 | 0.0 | 0.0 | 0.5 | 1.3 | 0.0 | 0.0 | 1.8 | 0.0 | 0.0 |
| 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 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.3 | 2.9 | 0.0 | 0.0 | 3.9 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.0 | 0.0 | 0.7 | 0.0 | 0.0 | 0.5 | 36.1 | 0.0 | 0.0 | 37.0 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | | A | D | | | D | | |
| Approach Vol, veh/h | | 520 | | | 338 | | | 72 | | | 95 | |
| Approach Delay, s/veh | | 0.6 | | | 0.5 | | | 36.1 | | | 37.0 | |
| Approach LOS | | A | | | A | | | D | | | D | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 68.4 | | 11.6 | | 68.4 | | 11.6 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 54.0 | | 16.0 | | 54.0 | | 16.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 2.5 | | 5.4 | | 2.5 | | 6.4 | | | | |
| Green Ext Time (p_c), s | | 7.2 | | 0.4 | | 7.2 | | 0.3 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 6.4 | | | | | | | | | |
| HCM 2010 LOS | | | A | | | | | | | | | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

2024 Future without Development
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | | ↕ | | ↖ | ↗ | ↕ |
| Volume (vph) | 14 | 495 | 51 | 22 | 281 | 2 | 17 | 5 | 75 | 4 | 20 | 24 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 13 | 12 | 10 | 11 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Grade (%) | | 7% | | | -9% | | | 0% | | | | 0% |
| Storage Length (ft) | 77 | | 0 | 95 | | 95 | 0 | | 95 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 1 | 0 | | 1 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | 75 | | | 75 | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.99 | 1.00 | | 1.00 | | 0.98 | | 1.00 | 0.97 | | 0.99 | |
| Frt | | 0.986 | | | | 0.850 | | | 0.850 | | 0.932 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.962 | | | 0.996 | |
| Satd. Flow (prot) | 1540 | 1579 | 0 | 1573 | 1623 | 1599 | 0 | 1674 | 1457 | 0 | 1873 | 0 |
| Flt Permitted | 0.579 | | | 0.357 | | | | 0.777 | | | 0.979 | |
| Satd. Flow (perm) | 934 | 1579 | 0 | 591 | 1623 | 1561 | 0 | 1350 | 1418 | 0 | 1840 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | No | | | No |
| Satd. Flow (RTOR) | | 7 | | | | 27 | | | | | | |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 300 | | | 150 | | | 247 | | | 248 | |
| Travel Time (s) | | 8.2 | | | 15.0 | | | 6.7 | | | 6.8 | |
| Conf. Peds. (#/hr) | 5 | | 4 | 4 | | 5 | 1 | | 4 | 4 | | 1 |
| 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% | 13% | 0% | 6% | 12% | 0% | 0% | 0% | 5% | 0% | 0% | 0% |
| Adj. Flow (vph) | 15 | 521 | 54 | 23 | 296 | 2 | 18 | 5 | 79 | 4 | 21 | 25 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 15 | 575 | 0 | 23 | 296 | 2 | 0 | 23 | 79 | 0 | 50 | 0 |
| Number of Detectors | 1 | 2 | | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Detector Template | Left | Thru | | Left | Thru | Right | Left | Thru | Right | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | | 35 | 100 | 20 | 20 | 35 | 35 | 20 | 35 | |
| Trailing Detector (ft) | 0 | 0 | | -5 | 0 | 0 | 0 | -5 | -5 | 0 | -5 | |
| Detector 1 Position(ft) | 0 | 0 | | -5 | 0 | 0 | 0 | -5 | -5 | 0 | -5 | |
| Detector 1 Size(ft) | 20 | 6 | | 40 | 6 | 20 | 20 | 40 | 40 | 20 | 40 | |
| Detector 1 Type | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | CI+Ex | CI+Ex | CI+Ex | CI+Ex | CI+Ex | CI+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | 94 | | | 94 | | | | | | | |
| Detector 2 Size(ft) | | 6 | | | 6 | | | | | | | |
| Detector 2 Type | | CI+Ex | | | CI+Ex | | | | | | | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | | | | | |
| Turn Type | Perm | NA | | pm+pt | NA | Perm | Perm | NA | Perm | Perm | NA | |
| Protected Phases | | 6 | | 5 | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | 2 | 4 | | 4 | 8 | | |
| Detector Phase | 6 | 6 | | 5 | 2 | 2 | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 13.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

2024 Future without Development
Weekday Morning Peak Hour

| | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Split (s) | 29.0 | 29.0 | | 25.0 | 54.0 | 54.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 |
| Total Split (%) | 36.3% | 36.3% | | 31.3% | 67.5% | 67.5% | 32.5% | 32.5% | 32.5% | 32.5% | 32.5% | 32.5% |
| Maximum Green (s) | 24.0 | 24.0 | | 20.0 | 49.0 | 49.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | | -1.0 | -1.0 | -1.0 | | -1.0 | -1.0 | | -1.0 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lead/Lag | Lag | Lag | | Lead | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | C-Max | C-Max | | None | C-Max | C-Max | None | None | None | None | None | None |
| v/c Ratio | 0.02 | 0.49 | | 0.04 | 0.23 | 0.00 | 0.13 | 0.41 | | | 0.20 | |
| Control Delay | 5.1 | 6.3 | | 3.1 | 3.5 | 0.0 | 30.1 | 37.0 | | | 31.1 | |
| Queue Delay | 0.0 | 0.3 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 5.1 | 6.6 | | 3.1 | 3.5 | 0.0 | 30.1 | 37.0 | | | 31.1 | |
| Queue Length 50th (ft) | 1 | 25 | | 2 | 33 | 0 | 10 | 37 | | | 23 | |
| Queue Length 95th (ft) | m7 | 166 | | 8 | 71 | 0 | 29 | 73 | | | 50 | |
| Internal Link Dist (ft) | | 220 | | | 470 | | | 167 | | | 168 | |
| Turn Bay Length (ft) | 77 | | | 95 | | 95 | | 95 | | | | |
| Base Capacity (vph) | 695 | 1176 | | 725 | 1299 | 1255 | 371 | 389 | | | 506 | |
| Starvation Cap Reductn | 0 | 184 | | 0 | 0 | 0 | 0 | 0 | | | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | | 0 | |
| Reduced v/c Ratio | 0.02 | 0.58 | | 0.03 | 0.23 | 0.00 | 0.06 | 0.20 | | | 0.10 | |

Intersection Summary

Area Type: Other

Cycle Length: 80

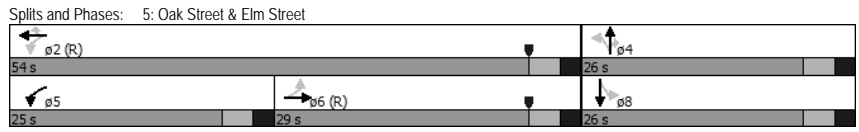
Actuated Cycle Length: 80

Offset: 15 (19%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.



HCM 2010 Signalized Intersection Summary
5: Oak Street & Elm Street

2024 Future without Development
Weekday Morning Peak Hour

| | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (veh/h) | 14 | 495 | 51 | 22 | 281 | 2 | 17 | 5 | 75 | 4 | 20 | 24 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 | 0.98 | | 0.98 | 0.98 | | 0.98 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1737 | 1616 | 1737 | 1775 | 1679 | 1881 | 1800 | 1800 | 1714 | 1800 | 1872 | 1800 |
| Adj Flow Rate, veh/h | 15 | 521 | 52 | 23 | 296 | 1 | 18 | 5 | 73 | 4 | 21 | 17 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 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 | 13 | 13 | 6 | 12 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| Cap, veh/h | 821 | 1054 | 105 | 716 | 1355 | 1286 | 177 | 41 | 133 | 56 | 87 | 64 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 0.03 | 0.81 | 0.81 | 0.08 | 0.09 | 0.09 | 0.08 | 0.09 | 0.08 |
| Sat Flow, veh/h | 1003 | 1446 | 144 | 1690 | 1679 | 1594 | 1036 | 441 | 1426 | 76 | 934 | 687 |
| Grp Volume(v), veh/h | 15 | 0 | 573 | 23 | 296 | 1 | 23 | 0 | 73 | 42 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 1003 | 0 | 1590 | 1690 | 1679 | 1594 | 1477 | 0 | 1426 | 1696 | 0 | 0 |
| Q Serve(g,s) | 0.0 | 0.0 | 0.0 | 0.2 | 3.3 | 0.0 | 0.0 | 0.0 | 3.9 | 0.0 | 0.0 | 0.0 |
| Cycle Q Clear(g,c), s | 0.0 | 0.0 | 0.0 | 0.2 | 3.3 | 0.0 | 1.0 | 0.0 | 3.9 | 1.8 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.09 | 1.00 | | 1.00 | 0.78 | | 1.00 | 0.10 | | 0.40 |
| Lane Grp Cap(c), veh/h | 821 | 0 | 1159 | 716 | 1355 | 1286 | 200 | 0 | 133 | 186 | 0 | 0 |
| V/C Ratio(X) | 0.02 | 0.00 | 0.49 | 0.03 | 0.22 | 0.00 | 0.12 | 0.00 | 0.55 | 0.23 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 821 | 0 | 1159 | 1114 | 1355 | 1286 | 450 | 0 | 392 | 488 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.94 | 0.00 | 0.94 | 0.14 | 0.14 | 0.14 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 1.9 | 1.8 | 1.5 | 33.7 | 0.0 | 34.7 | 33.9 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.0 | 0.0 | 1.4 | 0.0 | 0.1 | 0.0 | 0.3 | 0.0 | 3.5 | 0.6 | 0.0 | 0.0 |
| 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 | 0.0 | 0.0 | 0.8 | 0.2 | 2.3 | 0.0 | 0.9 | 0.0 | 3.0 | 1.6 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.0 | 0.0 | 1.4 | 1.9 | 1.9 | 1.5 | 33.9 | 0.0 | 38.1 | 34.5 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | A | A | C | | D | C | | |
| Approach Vol, veh/h | | 588 | | | 320 | | | 96 | | | | 42 |
| Approach Delay, s/veh | | 1.4 | | | 1.9 | | | 37.1 | | | | 34.5 |
| Approach LOS | | A | | | A | | | D | | | | C |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | | 4 | 5 | 6 | | 8 | | | |
| Phs Duration (G+Y+Rc), s | | 68.5 | | | 11.5 | 6.2 | 62.3 | | 11.5 | | | |
| Change Period (Y+Rc), s | | 5.0 | | | 5.0 | 5.0 | 5.0 | | 5.0 | | | |
| Max Green Setting (Gmax), s | | 49.0 | | | 21.0 | 20.0 | 24.0 | | 21.0 | | | |
| Max Q Clear Time (g_c+I1), s | | 5.8 | | | 6.4 | 2.7 | 2.5 | | 3.8 | | | |
| Green Ext Time (p_c), s | | 7.6 | | | 0.4 | 0.0 | 6.4 | | 0.4 | | | |

Intersection Summary

HCM 2010 Ctrl Delay: 6.1

HCM 2010 LOS: A

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2024 Future without Development
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 30 | 32 | 523 | 583 | 62 | 26 | 330 | 518 | 954 | 26 | 1243 | 43 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | 2% | | | | -5% | | 5% | | | | 0% | |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 1 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | | | | 1.00 | 1.00 | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.956 | | | | 0.850 | | 0.995 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1411 | 1445 | 1402 | 3081 | 1654 | 0 | 1415 | 3022 | 1511 | 1539 | 3179 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.082 | | | 0.458 | | |
| Satd. Flow (perm) | 1406 | 1445 | 1402 | 3081 | 1654 | 0 | 122 | 3022 | 1478 | 741 | 3179 | 0 |
| Right Turn on Red | | | No | | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 964 | | | 3 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 7 | | 2 | 2 | | 7 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Heavy Vehicles (%) | 16% | 11% | 8% | 3% | 0% | 9% | 10% | 3% | 2% | 0% | 3% | 14% |
| Adj. Flow (vph) | 30 | 32 | 528 | 589 | 63 | 26 | 333 | 523 | 964 | 26 | 1256 | 43 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 30 | 32 | 528 | 589 | 89 | 0 | 333 | 523 | 964 | 26 | 1299 | 0 |
| Number of Detectors | 1 | 1 | 1 | 1 | 1 | | 1 | 2 | 1 | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | Right | Left | Thru | |
| Leading Detector (ft) | 35 | 35 | 35 | 35 | 35 | | 30 | 100 | 20 | 20 | 100 | |
| Trailing Detector (ft) | -5 | -5 | -5 | -5 | -5 | | -10 | 0 | 0 | 0 | 0 | |
| Detector 1 Position(ft) | -5 | -5 | -5 | -5 | -5 | | -10 | 0 | 0 | 0 | 0 | |
| Detector 1 Size(ft) | 40 | 40 | 40 | 40 | 40 | | 40 | 6 | 20 | 20 | 6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | | | | | | | | 94 | | 94 | |
| Detector 2 Size(ft) | | | | | | | | | 6 | | 6 | |
| Detector 2 Type | | | | | | | | | Cl+Ex | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | | | | | | | | 0.0 | | 0.0 | |
| Turn Type | Split | NA | pm+ov | Split | NA | | pm+pt | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | 8 | | | | 6 | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

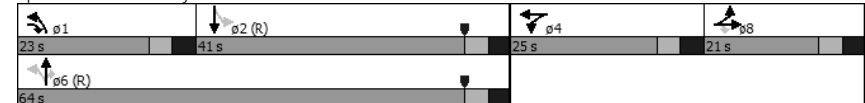
2024 Future without Development
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Total Split (s) | 21.0 | 21.0 | 23.0 | 25.0 | 25.0 | | 23.0 | 64.0 | 64.0 | 41.0 | 41.0 | |
| Total Split (%) | 19.1% | 19.1% | 20.9% | 22.7% | 22.7% | | 20.9% | 58.2% | 58.2% | 37.3% | 37.3% | |
| Maximum Green (s) | 15.0 | 15.0 | 17.0 | 19.0 | 19.0 | | 17.0 | 58.0 | 58.0 | 35.0 | 35.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |
| v/c Ratio | 0.26 | 0.27 | 1.39 | 1.05 | 0.30 | | 1.16 | 0.28 | 0.75 | 0.09 | 0.99 | |
| Control Delay | 52.0 | 52.2 | 224.9 | 96.3 | 42.1 | | 134.9 | 10.9 | 5.2 | 23.3 | 56.9 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Total Delay | 52.0 | 52.2 | 224.9 | 96.3 | 42.1 | | 134.9 | 10.9 | 5.2 | 23.3 | 56.9 | |
| Queue Length 50th (ft) | 20 | 22 | -478 | -234 | 55 | | -241 | 87 | 0 | 11 | -523 | |
| Queue Length 95th (ft) | 50 | 52 | #658 | #345 | 103 | | #430 | 127 | 53 | 33 | #697 | |
| Internal Link Dist (ft) | | 470 | | | 350 | | | 372 | | | 382 | |
| Turn Bay Length (ft) | 135 | | 202 | 135 | | | 266 | | 130 | 276 | | |
| Base Capacity (vph) | 205 | 210 | 379 | 560 | 300 | | 287 | 1874 | 1282 | 304 | 1309 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Reduced v/c Ratio | 0.15 | 0.15 | 1.39 | 1.05 | 0.30 | | 1.16 | 0.28 | 0.75 | 0.09 | 0.99 | |

Intersection Summary

- Area Type: Other
- Cycle Length: 110
- Actuated Cycle Length: 110
- Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow
- Natural Cycle: 115
- Control Type: Actuated-Coordinated
- Volume exceeds capacity, queue is theoretically infinite.
- Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.

Splits and Phases: 6: Fayette Street & Elm Street



HCM 2010 Signalized Intersection Summary
6: Fayette Street & Elm Street

2024 Future without Development
Weekday Morning Peak Hour

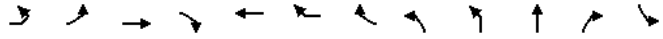
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|-------|------|------|------|-------|-------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ |
| Volume (veh/h) | 30 | 32 | 523 | 583 | 62 | 26 | 330 | 518 | 954 | 26 | 1243 | 43 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), 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 | | 0.99 | 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 |
| Adj Sat Flow, veh/h/ln | 1536 | 1541 | 1650 | 1791 | 1798 | 1845 | 1595 | 1704 | 1789 | 1728 | 1741 | 1800 |
| Adj Flow Rate, veh/h | 30 | 32 | 440 | 589 | 63 | 26 | 333 | 523 | 803 | 26 | 1256 | 43 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Percent Heavy Veh, % | 16 | 11 | 8 | 3 | 0 | 0 | 10 | 3 | 2 | 0 | 3 | 3 |
| Cap, veh/h | 213 | 224 | 433 | 602 | 220 | 91 | 314 | 1736 | 810 | 190 | 1068 | 37 |
| Arrive On Green | 0.15 | 0.15 | 0.15 | 0.18 | 0.18 | 0.17 | 0.16 | 0.54 | 0.54 | 0.33 | 0.33 | 0.32 |
| Sat Flow, veh/h | 1463 | 1541 | 1397 | 3310 | 1209 | 499 | 1519 | 3237 | 1511 | 381 | 3263 | 112 |
| Grp Volume(v), veh/h | 30 | 32 | 440 | 589 | 0 | 89 | 333 | 523 | 803 | 26 | 636 | 663 |
| Grp Sat Flow(s),veh/h/ln | 1463 | 1541 | 1397 | 1655 | 0 | 1708 | 1519 | 1619 | 1511 | 381 | 1654 | 1720 |
| Q Serve(g_s), s | 2.0 | 2.0 | 16.0 | 19.5 | 0.0 | 5.0 | 18.0 | 9.8 | 57.8 | 5.4 | 36.0 | 36.0 |
| Cycle Q Clear(g_c), s | 2.0 | 2.0 | 16.0 | 19.5 | 0.0 | 5.0 | 18.0 | 9.8 | 57.8 | 5.4 | 36.0 | 36.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.29 | 1.00 | | 1.00 | 1.00 | | 0.06 |
| Lane Grp Cap(c), veh/h | 213 | 224 | 433 | 602 | 0 | 310 | 314 | 1736 | 810 | 190 | 541 | 563 |
| V/C Ratio(X) | 0.14 | 0.14 | 1.02 | 0.98 | 0.00 | 0.29 | 1.06 | 0.30 | 0.99 | 0.14 | 1.18 | 1.18 |
| Avail Cap(c_a), veh/h | 213 | 224 | 433 | 602 | 0 | 310 | 314 | 1736 | 810 | 190 | 541 | 563 |
| 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(l) | 0.87 | 0.87 | 0.87 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 41.0 | 41.0 | 38.0 | 44.8 | 0.0 | 39.0 | 33.0 | 14.1 | 25.2 | 26.7 | 37.0 | 37.0 |
| Incr Delay (d2), s/veh | 0.3 | 0.3 | 44.8 | 31.2 | 0.0 | 0.5 | 67.6 | 0.4 | 29.5 | 1.5 | 97.0 | 97.1 |
| 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 | 1.5 | 1.5 | 33.3 | 17.1 | 0.0 | 4.3 | 27.7 | 7.9 | 39.6 | 1.2 | 55.8 | 58.0 |
| LnGrp Delay(d),s/veh | 41.3 | 41.3 | 82.8 | 76.0 | 0.0 | 39.5 | 100.5 | 14.5 | 54.7 | 28.2 | 134.0 | 134.1 |
| LnGrp LOS | D | D | F | E | | D | F | B | D | C | F | F |
| Approach Vol, veh/h | | 502 | | | 678 | | | 1659 | | | 1325 | |
| Approach Delay, s/veh | | 77.7 | | | 71.2 | | | 51.2 | | | 132.0 | |
| Approach LOS | | E | | | E | | | D | | | F | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 23.0 | 41.0 | | 25.0 | | 64.0 | | 21.0 | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | 17.0 | 35.0 | | 19.0 | | 58.0 | | 15.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 20.5 | 38.5 | | 22.0 | | 60.3 | | 18.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 83.4 | | | | | | | | | |
| HCM 2010 LOS | | | F | | | | | | | | | |

Lanes, Volumes, Timings

2024 Future without Development

3: Access/Wood Street & Elm Street & Colwell Street

Weekday Morning Peak Hour



| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|-------|-------|-------|------|-------|------|------|-------|-------|-------|------|-------|
| Lane Configurations | | ↔ | ↔ | | ↔ | | | | | ↕ | | |
| Volume (vph) | 59 | 0 | 274 | 36 | 263 | 148 | 8 | 4 | 16 | 0 | 2 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 12 | 14 | 12 | 16 | 12 | 12 | 12 | 15 | 12 | 12 | 12 |
| Grade (%) | | | 0% | | 0% | | | | | -2% | | |
| Storage Length (ft) | | 78 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Storage Lanes | | 1 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Taper Length (ft) | | 75 | | | | | | | 75 | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 1.00 | | | | | | 1.00 | | | |
| Frt | | | 0.983 | | 0.950 | | | | 0.988 | | | |
| Flt Protected | | 0.950 | | | | | | | 0.956 | | | |
| Satd. Flow (prot) | 0 | 1613 | 1689 | 0 | 1766 | 0 | 0 | 0 | 1713 | 0 | 0 | 0 |
| Flt Permitted | | 0.406 | | | | | | | 0.629 | | | |
| Satd. Flow (perm) | 0 | 689 | 1689 | 0 | 1766 | 0 | 0 | 0 | 1127 | 0 | 0 | 0 |
| Right Turn on Red | | | | No | | | No | | | | No | |
| Satd. Flow (RTOR) | | | | | | | | | | | | |
| Link Speed (mph) | | | 25 | | 25 | | | | 25 | | | |
| Link Distance (ft) | | | 571 | | 600 | | | | 211 | | | |
| Travel Time (s) | | | 15.6 | | 16.4 | | | | 5.8 | | | |
| Conf. Peds. (#/hr) | | | | 1 | | | | | | | 6 | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 6% | 2% | 13% | 0% | 11% | 8% | 2% | 0% | 0% | 2% | 0% | 2% |
| Adj. Flow (vph) | 63 | 0 | 291 | 38 | 280 | 157 | 9 | 4 | 17 | 0 | 2 | 7 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 63 | 329 | 0 | 446 | 0 | 0 | 0 | 23 | 0 | 0 | 0 |
| Number of Detectors | 1 | 1 | 2 | | 2 | | | 1 | 1 | 2 | | 1 |
| Detector Template | Left | Left | Thru | | Thru | | | Left | Left | Thru | | Left |
| Leading Detector (ft) | 20 | 20 | 100 | | 100 | | | 20 | 20 | 100 | | 20 |
| Trailing Detector (ft) | 0 | 0 | 0 | | 0 | | | 0 | 0 | 0 | | 0 |
| Detector 1 Position(ft) | 0 | 0 | 0 | | 0 | | | 0 | 0 | 0 | | 0 |
| Detector 1 Size(ft) | 20 | 20 | 6 | | 6 | | | 20 | 20 | 6 | | 20 |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | | | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 2 Position(ft) | | | 94 | | 94 | | | | | 94 | | |
| Detector 2 Size(ft) | | | 6 | | 6 | | | | | 6 | | |
| Detector 2 Type | | | Cl+Ex | | Cl+Ex | | | | | Cl+Ex | | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | | 0.0 | | 0.0 | | | | | 0.0 | | |
| Turn Type | Perm | Perm | NA | | NA | | | Perm | Perm | NA | | Perm |
| Protected Phases | | | 6 | | 2 | | | | | 4 | | |
| Permitted Phases | 6 | 6 | | | | | | 4 | 4 | | | 9 |
| Detector Phase | 6 | 6 | 6 | | 2 | | | 4 | 4 | 4 | | 9 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | | 21.0 | | | 21.0 | 21.0 | 21.0 | | 21.0 |

Lanes, Volumes, Timings

2024 Future without Development

3: Access/Wood Street & Elm Street & Colwell Street

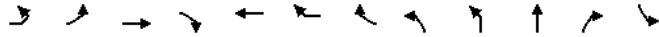
Weekday Morning Peak Hour



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|-------|------|-------|------|------|
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 0 | 7 | 203 | 14 | 43 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | 2% | | |
| Storage Length (ft) | | 0 | 0 | 0 | |
| Storage Lanes | | 0 | 1 | 0 | |
| Taper Length (ft) | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 0.99 | | |
| Frt | 0.932 | | 0.970 | | |
| Flt Protected | 0.976 | | 0.962 | | |
| Satd. Flow (prot) | 1605 | 0 | 1475 | 0 | 0 |
| Flt Permitted | | | 0.962 | | |
| Satd. Flow (perm) | 1645 | 0 | 1464 | 0 | 0 |
| Right Turn on Red | | | | | No |
| Satd. Flow (RTOR) | | | | | |
| Link Speed (mph) | 25 | | 25 | | |
| Link Distance (ft) | 274 | | 302 | | |
| Travel Time (s) | 7.5 | | 8.2 | | |
| Conf. Peds. (#/hr) | | | 6 | | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 2% | 2% | 14% | 0% | 11% |
| Adj. Flow (vph) | 0 | 7 | 216 | 15 | 46 |
| Shared Lane Traffic (%) | | | | | |
| Lane Group Flow (vph) | 14 | 0 | 277 | 0 | 0 |
| Number of Detectors | 2 | | 1 | | |
| Detector Template | Thru | | Left | | |
| Leading Detector (ft) | 100 | | 20 | | |
| Trailing Detector (ft) | 0 | | 0 | | |
| Detector 1 Position(ft) | 0 | | 0 | | |
| Detector 1 Size(ft) | 6 | | 20 | | |
| Detector 1 Type | Cl+Ex | | Cl+Ex | | |
| Detector 1 Channel | | | | | |
| Detector 1 Extend (s) | 0.0 | | 0.0 | | |
| Detector 1 Queue (s) | 0.0 | | 0.0 | | |
| Detector 1 Delay (s) | 0.0 | | 0.0 | | |
| Detector 2 Position(ft) | | | 94 | | |
| Detector 2 Size(ft) | | | 6 | | |
| Detector 2 Type | | | Cl+Ex | | |
| Detector 2 Channel | | | | | |
| Detector 2 Extend (s) | | | 0.0 | | |
| Turn Type | NA | | Perm | | |
| Protected Phases | 9 | | | | |
| Permitted Phases | | | 8 | | |
| Detector Phase | 9 | | 8 | | |
| Switch Phase | | | | | |
| Minimum Initial (s) | 3.0 | | 3.0 | | |
| Minimum Split (s) | 21.0 | | 21.0 | | |

Lanes, Volumes, Timings
3: Access/Wood Street & Elm Street & Colwell Street

2024 Future without Development
Weekday Morning Peak Hour

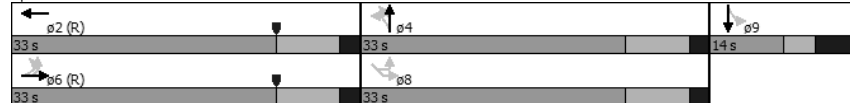


| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|-------|-------|-------|-------|------|-----|------|-------|-------|-------|-----|-------|
| Total Split (s) | 33.0 | 33.0 | 33.0 | 33.0 | 33.0 | | | 33.0 | 33.0 | 33.0 | | 14.0 |
| Total Split (%) | 41.3% | 41.3% | 41.3% | 41.3% | | | | 41.3% | 41.3% | 41.3% | | 17.5% |
| Maximum Green (s) | 25.0 | 25.0 | 25.0 | 25.0 | | | | 25.0 | 25.0 | 25.0 | | 7.0 |
| Yellow Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | | 6.0 | 6.0 | 6.0 | | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | 2.0 | 2.0 | | | | 2.0 | 2.0 | 2.0 | | 4.0 |
| Lost Time Adjust (s) | | -1.0 | -1.0 | -1.0 | | | | | | -1.0 | | |
| Total Lost Time (s) | | 7.0 | 7.0 | 7.0 | | | | | | 7.0 | | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Recall Mode | C-Max | C-Max | C-Max | C-Max | | | | None | None | None | | None |
| v/c Ratio | 0.17 | 0.37 | 0.37 | 0.48 | | | | | | 0.08 | | |
| Control Delay | | 15.7 | 15.3 | 14.2 | | | | | | 20.7 | | |
| Queue Delay | | 0.0 | 0.0 | 0.0 | | | | | | 0.0 | | |
| Total Delay | | 15.7 | 15.3 | 14.2 | | | | | | 20.7 | | |
| Queue Length 50th (ft) | | 14 | 83 | 96 | | | | | | 9 | | |
| Queue Length 95th (ft) | | 57 | 221 | #248 | | | | | | 24 | | |
| Internal Link Dist (ft) | | | 491 | 520 | | | | | | 131 | | |
| Turn Bay Length (ft) | | 78 | | | | | | | | | | |
| Base Capacity (vph) | | 366 | 897 | 938 | | | | | | 366 | | |
| Starvation Cap Reductn | | 0 | 0 | 0 | | | | | | 0 | | |
| Spillback Cap Reductn | | 0 | 0 | 0 | | | | | | 0 | | |
| Storage Cap Reductn | | 0 | 0 | 0 | | | | | | 0 | | |
| Reduced v/c Ratio | | 0.17 | 0.37 | 0.48 | | | | | | 0.06 | | |

Intersection Summary

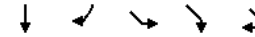
Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Access/Wood Street & Elm Street & Colwell Street



Lanes, Volumes, Timings
3: Access/Wood Street & Elm Street & Colwell Street

2024 Future without Development
Weekday Morning Peak Hour



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|-------|-----|-------|-----|------|
| Total Split (s) | 14.0 | | 33.0 | | |
| Total Split (%) | 17.5% | | 41.3% | | |
| Maximum Green (s) | 7.0 | | 25.0 | | |
| Yellow Time (s) | 3.0 | | 6.0 | | |
| All-Red Time (s) | 4.0 | | 2.0 | | |
| Lost Time Adjust (s) | -1.0 | | -1.0 | | |
| Total Lost Time (s) | 6.0 | | 7.0 | | |
| Lead/Lag | | | | | |
| Lead-Lag Optimize? | | | | | |
| Vehicle Extension (s) | 3.0 | | 3.0 | | |
| Recall Mode | None | | None | | |
| v/c Ratio | 0.09 | | 0.73 | | |
| Control Delay | 34.5 | | 38.4 | | |
| Queue Delay | 0.0 | | 0.0 | | |
| Total Delay | 34.5 | | 38.4 | | |
| Queue Length 50th (ft) | 7 | | 125 | | |
| Queue Length 95th (ft) | 24 | | 193 | | |
| Internal Link Dist (ft) | 194 | | 222 | | |
| Turn Bay Length (ft) | | | | | |
| Base Capacity (vph) | 164 | | 475 | | |
| Starvation Cap Reductn | 0 | | 0 | | |
| Spillback Cap Reductn | 0 | | 0 | | |
| Storage Cap Reductn | 0 | | 0 | | |
| Reduced v/c Ratio | 0.09 | | 0.58 | | |

Intersection Summary

Area Type: Other

Lanes, Volumes, Timings
1: Corson Street & Elm Street

2024 Future without Development
Weekday Morning Peak Hour

| | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↔ | | | ↔ | | | ↔ | | | | ↔ | |
| Volume (vph) | 0 | 342 | 0 | 1 | 304 | 2 | 0 | 0 | 0 | 19 | 0 | 5 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 11 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | | 1% | | | 0% | | | 0% | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | | | | | | | | | | | | |
| Fit Protected | | | | | | | | | | | | |
| Satd. Flow (prot) | 0 | 1625 | 0 | 0 | 1863 | 0 | 0 | 1900 | 0 | 0 | 2016 | 0 |
| Fit Permitted | | | | | | | | | | | | |
| Satd. Flow (perm) | 0 | 1625 | 0 | 0 | 1863 | 0 | 0 | 1900 | 0 | 0 | 2016 | 0 |
| Link Speed (mph) | 25 | | 25 | | 25 | | 25 | | 25 | | 25 | |
| Link Distance (ft) | 275 | | 276 | | 219 | | 188 | | 188 | | 188 | |
| Travel Time (s) | 7.5 | | 7.5 | | 6.0 | | 5.1 | | 5.1 | | 5.1 | |
| Confl. Peds. (#/hr) | 1 | | 1 | 1 | | 1 | | | | | | |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles (%) | 0% | 13% | 0% | 0% | 15% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 0 | 368 | 0 | 1 | 327 | 2 | 0 | 0 | 0 | 20 | 0 | 5 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 368 | 0 | 0 | 330 | 0 | 0 | 0 | 0 | 0 | 25 | 0 |
| Sign Control | Free | | Free | | Stop | | Stop | | Stop | | Stop | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC
1: Corson Street & Elm Street

2024 Future without Development
Weekday Morning Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|--------|------|------|--------|------|------|--------|------|------|--------|------|------|
| Int Delay, s/veh | 0.5 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 0 | 342 | 0 | 1 | 304 | 2 | 0 | 0 | 0 | 19 | 0 | 5 |
| Conflicting Peds, #/hr | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 13 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 368 | 0 | 1 | 327 | 2 | 0 | 0 | 0 | 20 | 0 | 5 |
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
| Conflicting Flow All | 329 | 0 | 0 | 368 | 0 | 0 | 701 | 699 | 369 | 698 | 698 | 329 |
| Stage 1 | - | - | - | - | - | - | 368 | 368 | - | 330 | 330 | - |
| Stage 2 | - | - | - | - | - | - | 333 | 331 | - | 368 | 368 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 926 | - | - | 898 | - | - | 398 | 366 | 718 | 400 | 367 | 757 |
| Stage 1 | - | - | - | - | - | - | 747 | 625 | - | 785 | 649 | - |
| Stage 2 | - | - | - | - | - | - | 782 | 649 | - | 747 | 625 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 925 | - | - | 897 | - | - | 395 | 366 | 717 | 399 | 367 | 756 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 395 | 366 | - | 399 | 367 | - |
| Stage 1 | - | - | - | - | - | - | 747 | 625 | - | 785 | 648 | - |
| Stage 2 | - | - | - | - | - | - | 775 | 648 | - | 746 | 625 | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|----|----|------|
| HCM Control Delay, s | 0 | 0 | 0 | 13.6 |
| HCM LOS | A | A | A | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | - | 925 | - | - | 897 | - | - | 443 |
| HCM Lane V/C Ratio | - | - | - | - | 0.001 | - | - | 0.058 |
| HCM Control Delay (s) | 0 | 0 | - | - | 9 | 0 | - | 13.6 |
| HCM Lane LOS | A | A | - | - | A | A | - | B |
| HCM 95th %tile Q(veh) | - | 0 | - | - | 0 | - | - | 0.2 |

Lanes, Volumes, Timings

2024 Future without Development

2: Lot Access/Old Elm Street & Elm Street

Weekday Morning Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|-------|------|------|------|------|------|-------|
| Lane Configurations | ↔ | | | ↔ | | | ↔ | | | | | |
| Volume (vph) | 1 | 349 | 0 | 4 | 312 | 4 | 0 | 0 | 1 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 12 | 12 |
| Grade (%) | | -1% | | | 0% | | | 0% | | | -1% | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | 0.998 | | | | | | 0.865 |
| Frt | | | | | | 0.999 | | | | | | |
| Flt Protected | | | | | | 0.999 | | | | | | |
| Satd. Flow (prot) | 0 | 1794 | 0 | 0 | 1661 | 0 | 0 | 1644 | 0 | 0 | 0 | 0 |
| Flt Permitted | | | | | | 0.999 | | | | | | |
| Satd. Flow (perm) | 0 | 1794 | 0 | 0 | 1661 | 0 | 0 | 1644 | 0 | 0 | 0 | 0 |
| Link Speed (mph) | 25 | | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | 276 | | | | 571 | | | 199 | | | 208 | |
| Travel Time (s) | 7.5 | | | | 15.6 | | | 5.4 | | | 5.7 | |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | | | | | | |
| 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% | 10% | 0% | 33% | 14% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 367 | 0 | 4 | 328 | 4 | 0 | 0 | 1 | 0 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 368 | 0 | 0 | 336 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Sign Control | Free | | | | Free | | | Stop | | | Stop | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC

2024 Future without Development

2: Lot Access/Old Elm Street & Elm Street

Weekday Morning Peak Hour

| Intersection | | | | | | | | | | | | |
|------------------|-----|--|--|--|--|--|--|--|--|--|--|--|
| Int Delay, s/veh | 0.1 | | | | | | | | | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h | 1 | 349 | 0 | 4 | 312 | 4 | 0 | 0 | 1 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -1 | - | - | 0 | - | - | 0 | - | - | - | -1 |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 0 | 10 | 0 | 33 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 367 | 0 | 4 | 328 | 4 | 0 | 0 | 1 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|----------------------|--------|---|---|--------|---|---|--------|-----|-----|
| Conflicting Flow All | 333 | 0 | 0 | 367 | 0 | 0 | 708 | 710 | 369 |
| Stage 1 | - | - | - | - | - | - | 369 | 369 | - |
| Stage 2 | - | - | - | - | - | - | 339 | 341 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 923 | - | - | 899 | - | - | 393 | 361 | 718 |
| Stage 1 | - | - | - | - | - | - | 801 | 624 | - |
| Stage 2 | - | - | - | - | - | - | 828 | 642 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 921 | - | - | 898 | - | - | 390 | 0 | 717 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 390 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 800 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 822 | 0 | - |

| Approach | EB | WB | NB |
|----------------------|----|-----|----|
| HCM Control Delay, s | 0 | 0.1 | 10 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|
| Capacity (veh/h) | 717 | 921 | - | - | 898 | - | - |
| HCM Lane V/C Ratio | 0.001 | 0.001 | - | - | 0.005 | - | - |
| HCM Control Delay (s) | 10 | 8.9 | 0 | - | 9 | 0 | - |
| HCM Lane LOS | B | A | A | - | A | A | - |
| HCM 95th %tile Q(veh) | 0 | 0 | - | - | 0 | - | - |

Lanes, Volumes, Timings
4: Maple Street & Elm Street

2024 Future without Development
Weekday Afternoon Peak Hour

| | ← | → | ↙ | ↘ | ← | ↙ | ↘ | ↑ | ↗ | ↘ | ↓ | ↙ |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | | | ↔ | | ↔ | ↔ | |
| Volume (vph) | 42 | 513 | 12 | 36 | 719 | 36 | 6 | 2 | 19 | 18 | 4 | 53 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 14 | 12 | 10 | 13 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | | 2% | | | 0% | | | 1% | | | -1% | |
| Storage Length (ft) | 79 | | 0 | 75 | | 0 | 0 | | 0 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.97 | | | 0.97 | |
| Frt | | 0.996 | | | 0.993 | | | 0.904 | | | 0.904 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.989 | | | 0.988 | |
| Satd. Flow (prot) | 1580 | 1834 | 0 | 1550 | 1745 | 0 | 0 | 1440 | 0 | 0 | 1721 | 0 |
| Flt Permitted | 0.325 | | | 0.440 | | | | 0.928 | | | 0.909 | |
| Satd. Flow (perm) | 539 | 1834 | 0 | 716 | 1745 | 0 | 0 | 1347 | 0 | 0 | 1578 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 3 | | | 7 | | | 20 | | | | 56 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | | 25 |
| Link Distance (ft) | | 600 | | | 300 | | | 222 | | | | 228 |
| Travel Time (s) | | 16.4 | | | 8.2 | | | 6.1 | | | | 6.2 |
| Confl. Peds. (#/hr) | 10 | | 7 | 7 | | 10 | 7 | | 5 | 5 | | 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% | 3% | 10% | 3% | 6% | 0% | 20% | 0% | 6% | 0% | 0% | 5% |
| Adj. Flow (vph) | 44 | 540 | 13 | 38 | 757 | 38 | 6 | 2 | 20 | 19 | 4 | 56 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 44 | 553 | 0 | 38 | 795 | 0 | 0 | 28 | 0 | 0 | 79 | 0 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | | 20 | 100 | | 20 | 100 | | 20 | 100 | |
| Trailing Detector (ft) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Detector 1 Position(ft) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Detector 1 Size(ft) | 20 | 6 | | 20 | 6 | | 20 | 6 | | 20 | 6 | |
| Detector 1 Type | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | 94 | | | 94 | | | 94 | | | 94 | |
| Detector 2 Size(ft) | | 6 | | | 6 | | | 6 | | | 6 | |
| Detector 2 Type | | CI+Ex | | | CI+Ex | | | CI+Ex | | | CI+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 6 | | | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | | 4 | | | 8 | | |
| Detector Phase | 6 | 6 | | 2 | 2 | | 4 | 4 | | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |

Lanes, Volumes, Timings
4: Maple Street & Elm Street

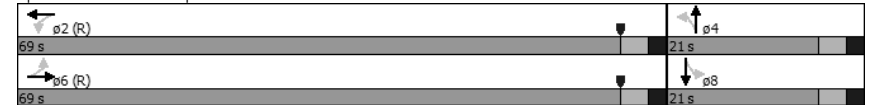
2024 Future without Development
Weekday Afternoon Peak Hour

| | ← | → | ↙ | ↘ | ← | ↙ | ↘ | ↑ | ↗ | ↘ | ↓ | ↙ |
|-------------------------|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Total Split (s) | 69.0 | 69.0 | | 69.0 | 69.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |
| Total Split (%) | 76.7% | 76.7% | | 76.7% | 76.7% | | 23.3% | 23.3% | | 23.3% | 23.3% | |
| Maximum Green (s) | 64.0 | 64.0 | | 64.0 | 64.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 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 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| v/c Ratio | 0.10 | 0.35 | | 0.06 | 0.54 | | 0.20 | 0.20 | | 0.20 | 0.40 | |
| Control Delay | 1.4 | 1.5 | | 1.5 | 3.1 | | 22.8 | 22.0 | | 22.0 | 22.0 | |
| Queue Delay | 0.0 | 0.1 | | 0.0 | 0.2 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 1.4 | 1.6 | | 1.5 | 3.3 | | 22.8 | 22.0 | | 22.0 | 22.0 | |
| Queue Length 50th (ft) | 2 | 24 | | 2 | 26 | | 4 | 12 | | 4 | 12 | |
| Queue Length 95th (ft) | m4 | 32 | | m4 | 126 | | 29 | 52 | | 29 | 52 | |
| Internal Link Dist (ft) | | 520 | | | 220 | | 142 | 148 | | | 148 | |
| Turn Bay Length (ft) | 79 | | | 75 | | | | | | | | |
| Base Capacity (vph) | 458 | 1560 | | 609 | 1484 | | 270 | 343 | | 270 | 343 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 166 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 149 | | 0 | 96 | | 1 | 4 | | 1 | 4 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.10 | 0.39 | | 0.06 | 0.60 | | 0.10 | 0.23 | | 0.10 | 0.23 | |

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 6 (7%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Maple Street & Elm Street



HCM 2010 Signalized Intersection Summary
4: Maple Street & Elm Street

2024 Future without Development
Weekday Afternoon Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | ↖ | ↗ | ↖ | ↗ |
| Volume (veh/h) | 42 | 513 | 12 | 36 | 719 | 36 | 6 | 2 | 19 | 18 | 4 | 53 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.99 | 1.00 | | 0.99 | 0.96 | | 0.93 | 0.94 | | 0.93 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1782 | 1796 | 1782 | 1748 | 1771 | 1800 | 1791 | 1650 | 1791 | 1809 | 1817 | 1809 |
| Adj Flow Rate, veh/h | 44 | 540 | 13 | 38 | 757 | 38 | 6 | 2 | 8 | 19 | 4 | 29 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 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 | 3 | 3 | 3 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap, veh/h | 633 | 1487 | 36 | 759 | 1423 | 71 | 77 | 21 | 43 | 82 | 11 | 48 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.05 | 0.06 | 0.05 | 0.05 | 0.06 | 0.05 |
| Sat Flow, veh/h | 649 | 1747 | 42 | 797 | 1672 | 84 | 378 | 352 | 730 | 458 | 183 | 808 |
| Grp Volume(v), veh/h | 44 | 0 | 553 | 38 | 0 | 795 | 16 | 0 | 0 | 52 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 649 | 0 | 1789 | 797 | 0 | 1755 | 1460 | 0 | 0 | 1449 | 0 | 0 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.2 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 3.1 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.02 | 1.00 | | 0.05 | 0.37 | | 0.50 | 0.37 | | 0.56 |
| Lane Grp Cap(c), veh/h | 633 | 0 | 1523 | 759 | 0 | 1495 | 126 | 0 | 0 | 125 | 0 | 0 |
| V/C Ratio(X) | 0.07 | 0.00 | 0.36 | 0.05 | 0.00 | 0.53 | 0.13 | 0.00 | 0.00 | 0.42 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 633 | 0 | 1523 | 759 | 0 | 1495 | 291 | 0 | 0 | 305 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.81 | 0.00 | 0.81 | 0.84 | 0.00 | 0.84 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 40.7 | 0.0 | 0.0 | 41.7 | 0.0 |
| Incr Delay (d2), s/veh | 0.2 | 0.0 | 0.5 | 0.1 | 0.0 | 1.1 | 0.5 | 0.0 | 0.0 | 2.2 | 0.0 | 0.0 |
| 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 | 0.1 | 0.0 | 0.4 | 0.0 | 0.0 | 0.8 | 0.7 | 0.0 | 0.0 | 2.5 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.2 | 0.0 | 0.5 | 0.1 | 0.0 | 1.1 | 41.1 | 0.0 | 0.0 | 43.9 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | | A | D | | | D | | |
| Approach Vol, veh/h | | 597 | | | 833 | | | 16 | | | | 52 |
| Approach Delay, s/veh | | 0.5 | | | 1.1 | | | 41.1 | | | | 43.9 |
| Approach LOS | | A | | | A | | | D | | | | D |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 80.6 | | 9.4 | | 80.6 | | 9.4 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 64.0 | | 16.0 | | 64.0 | | 16.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 2.5 | | 3.0 | | 2.5 | | 5.1 | | | | |
| Green Ext Time (p_c), s | | 17.0 | | 0.2 | | 17.0 | | 0.2 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 2.8 | | | | | | | | | |
| HCM 2010 LOS | | | A | | | | | | | | | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

2024 Future without Development
Weekday Afternoon Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | ↖ | ↗ | ↖ | ↗ |
| Volume (vph) | 11 | 506 | 26 | 20 | 583 | 5 | 178 | 8 | 139 | 12 | 2 | 25 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 13 | 12 | 10 | 11 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Grade (%) | | 7% | | | -9% | | | 0% | | | | 0% |
| Storage Length (ft) | 77 | | 0 | 95 | | 95 | 0 | | 95 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 1 | 0 | | 1 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | 75 | | | 75 | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | | 0.98 | | 1.00 | 0.98 | | 0.99 | |
| Frt | | 0.993 | | | | 0.850 | | | 0.850 | | 0.913 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.954 | | | 0.985 | |
| Satd. Flow (prot) | 1540 | 1747 | 0 | 1573 | 1732 | 1599 | 0 | 1644 | 1485 | 0 | 1809 | 0 |
| Flt Permitted | 0.400 | | | 0.321 | | | | 0.705 | | | 0.898 | |
| Satd. Flow (perm) | 646 | 1747 | 0 | 531 | 1732 | 1561 | 0 | 1213 | 1450 | 0 | 1648 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | No | | | No | |
| Satd. Flow (RTOR) | | 3 | | | | 24 | | | | | | |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 300 | | | 550 | | | 247 | | | 248 | |
| Travel Time (s) | | 8.2 | | | 15.0 | | | 6.7 | | | 6.8 | |
| Confl. Peds. (#/hr) | 5 | | 4 | 4 | | 5 | 1 | | 2 | 2 | | 1 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 6% | 5% | 0% | 1% | 0% | 3% | 0% | 0% | 0% |
| Adj. Flow (vph) | 12 | 544 | 28 | 22 | 627 | 5 | 191 | 9 | 149 | 13 | 2 | 27 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 12 | 572 | 0 | 22 | 627 | 5 | 0 | 200 | 149 | 0 | 42 | 0 |
| Number of Detectors | 1 | 2 | | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | Right | Left | Thru | Right | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | | 20 | 100 | 20 | 20 | 100 | 20 | 20 | 100 | |
| Trailing Detector (ft) | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Detector 1 Position(ft) | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Detector 1 Size(ft) | 20 | 6 | | 20 | 6 | 20 | 20 | 6 | 20 | 20 | 6 | |
| Detector 1 Type | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | CI+Ex | CI+Ex | CI+Ex | CI+Ex | CI+Ex | CI+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | 94 | | | 94 | | | 94 | | | 94 | |
| Detector 2 Size(ft) | | 6 | | | 6 | | | 6 | | | 6 | |
| Detector 2 Type | | CI+Ex | | | CI+Ex | | | CI+Ex | | | CI+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Perm | NA | | pm+pt | NA | Perm | Perm | NA | Perm | Perm | NA | |
| Protected Phases | | 6 | | 5 | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | 2 | 4 | | 4 | 8 | | |
| Detector Phase | 6 | 6 | | 5 | 2 | 2 | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 13.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

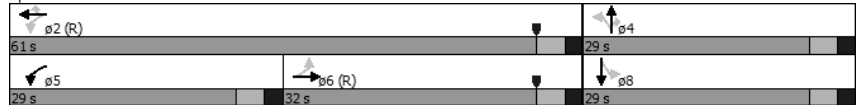
2024 Future without Development
Weekday Afternoon Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Split (s) | 32.0 | 32.0 | | 29.0 | 61.0 | 61.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 |
| Total Split (%) | 35.6% | 35.6% | | 32.2% | 67.8% | 67.8% | 32.2% | 32.2% | 32.2% | 32.2% | 32.2% | 32.2% |
| Maximum Green (s) | 27.0 | 27.0 | | 24.0 | 56.0 | 56.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | | -1.0 | -1.0 | -1.0 | | -1.0 | -1.0 | | -1.0 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lead/Lag | Lag | Lag | | Lead | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | C-Max | C-Max | | None | C-Max | C-Max | None | None | None | None | None | None |
| v/c Ratio | 0.03 | 0.52 | | 0.05 | 0.53 | 0.00 | | 0.74 | 0.46 | | 0.11 | |
| Control Delay | 7.8 | 10.4 | | 6.0 | 9.9 | 0.0 | | 47.9 | 33.7 | | 26.2 | |
| Queue Delay | 0.0 | 0.4 | | 0.0 | 0.7 | 0.0 | | 0.2 | 0.0 | | 0.0 | |
| Total Delay | 7.8 | 10.8 | | 6.0 | 10.6 | 0.0 | | 48.0 | 33.7 | | 26.2 | |
| Queue Length 50th (ft) | 1 | 131 | | 4 | 157 | 0 | | 105 | 73 | | 19 | |
| Queue Length 95th (ft) | m9 | 251 | | 13 | 278 | 0 | | 172 | 123 | | 43 | |
| Internal Link Dist (ft) | | 220 | | | 470 | | | 167 | | | 168 | |
| Turn Bay Length (ft) | 77 | | | 95 | | 95 | | | 95 | | | |
| Base Capacity (vph) | 410 | 1110 | | 653 | 1188 | 1078 | | 336 | 402 | | 457 | |
| Starvation Cap Reductn | 0 | 187 | | 0 | 259 | 0 | | 0 | 0 | | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | 0 | | 6 | 0 | | 8 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | | 0 | |
| Reduced v/c Ratio | 0.03 | 0.62 | | 0.03 | 0.67 | 0.00 | | 0.61 | 0.37 | | 0.09 | |

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 8 (9%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Oak Street & Elm Street



HCM 2010 Signalized Intersection Summary
5: Oak Street & Elm Street

2024 Future without Development
Weekday Afternoon Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (veh/h) | 11 | 506 | 26 | 20 | 583 | 5 | 178 | 8 | 139 | 12 | 2 | 25 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 |
| Adj Sat Flow, veh/h/ln | 1737 | 1773 | 1737 | 1775 | 1791 | 1881 | 1800 | 1783 | 1748 | 1800 | 1872 | 1800 |
| Adj Flow Rate, veh/h | 12 | 544 | 28 | 22 | 627 | 5 | 191 | 9 | 149 | 13 | 2 | 27 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 6 | 5 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Cap, veh/h | 401 | 942 | 48 | 339 | 1135 | 1009 | 243 | 8 | 411 | 52 | 31 | 55 |
| Arrive On Green | 0.19 | 0.19 | 0.18 | 0.03 | 0.63 | 0.63 | 0.27 | 0.28 | 0.28 | 0.27 | 0.28 | 0.27 |
| Sat Flow, veh/h | 737 | 1671 | 86 | 1690 | 1791 | 1593 | 592 | 28 | 1480 | 0 | 110 | 198 |
| Grp Volume(v), veh/h | 12 | 0 | 572 | 22 | 627 | 5 | 200 | 0 | 149 | 42 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 737 | 0 | 1757 | 1690 | 1791 | 1593 | 620 | 0 | 1480 | 308 | 0 | 0 |
| Q Serve(g_s), s | 1.3 | 0.0 | 26.7 | 0.5 | 17.8 | 0.1 | 0.0 | 0.0 | 7.3 | 0.0 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 12.8 | 0.0 | 26.7 | 0.5 | 17.8 | 0.1 | 24.0 | 0.0 | 7.3 | 24.0 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.05 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.31 | | 0.64 |
| Lane Grp Cap(c), veh/h | 401 | 0 | 990 | 339 | 1135 | 1009 | 244 | 0 | 411 | 135 | 0 | 0 |
| V/C Ratio(X) | 0.03 | 0.00 | 0.58 | 0.06 | 0.55 | 0.00 | 0.82 | 0.00 | 0.36 | 0.31 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 401 | 0 | 990 | 766 | 1135 | 1009 | 244 | 0 | 411 | 135 | 0 | 0 |
| HCM Platoon Ratio | 0.33 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.94 | 0.00 | 0.94 | 0.09 | 0.09 | 0.09 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 26.1 | 0.0 | 26.9 | 11.4 | 9.3 | 6.1 | 34.7 | 0.0 | 26.1 | 26.6 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 2.3 | 0.0 | 0.2 | 0.0 | 19.6 | 0.0 | 0.5 | 1.3 | 0.0 | 0.0 |
| 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 | 0.5 | 0.0 | 19.5 | 0.4 | 10.2 | 0.1 | 2.4 | 0.0 | 5.5 | 1.5 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 26.3 | 0.0 | 29.2 | 11.4 | 9.5 | 6.1 | 54.3 | 0.0 | 26.6 | 27.9 | 0.0 | 0.0 |
| LnGrp LOS | C | | C | B | A | A | D | | C | C | | |
| Approach Vol, veh/h | | 584 | | | 654 | | | 349 | | | | 42 |
| Approach Delay, s/veh | | 29.1 | | | 9.5 | | | 42.5 | | | | 27.9 |
| Approach LOS | | C | | | A | | | D | | | | C |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | | 4 | 5 | 6 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 61.0 | | | 29.0 | 6.3 | 54.7 | 29.0 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | | 5.0 | 5.0 | 5.0 | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 56.0 | | | 24.0 | 24.0 | 27.0 | 24.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 20.3 | | | 26.0 | 3.0 | 28.7 | 26.0 | | | | |
| Green Ext Time (p_c), s | | 11.2 | | | 0.0 | 0.0 | 0.0 | 0.0 | | | | |

Intersection Summary

HCM 2010 Ctrl Delay 24.1
 HCM 2010 LOS C

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2024 Future without Development
Weekday Afternoon Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 105 | 87 | 582 | 766 | 73 | 57 | 500 | 1083 | 769 | 23 | 910 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | | 2% | | | -5% | | | 5% | | | 0% | |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 1 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | | | | 0.99 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.934 | | | | 0.850 | | 0.988 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1589 | 1557 | 1485 | 3174 | 1580 | 0 | 1511 | 3112 | 1526 | 1466 | 3210 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.108 | | | 0.258 | | |
| Satd. Flow (perm) | 1586 | 1557 | 1485 | 3174 | 1580 | 0 | 171 | 3112 | 1490 | 397 | 3210 | 0 |
| Right Turn on Red | | | No | | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 579 | | | 8 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | 18 | | 4 | 4 | | 18 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 7% | 2% | 3% | 0% | 1% | 5% | 1% | 5% |
| Adj. Flow (vph) | 107 | 89 | 594 | 782 | 74 | 58 | 510 | 1105 | 785 | 23 | 929 | 80 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 107 | 89 | 594 | 782 | 132 | 0 | 510 | 1105 | 785 | 23 | 1009 | 0 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | 1 | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | Right | Left | Thru | |
| Leading Detector (ft) | 20 | 100 | 20 | 20 | 100 | | 20 | 100 | 20 | 20 | 100 | |
| Trailing Detector (ft) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Detector 1 Position(ft) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Detector 1 Size(ft) | 20 | 6 | 20 | 20 | 6 | | 20 | 6 | 20 | 20 | 6 | |
| Detector 1 Type | CI+Ex | CI+Ex | CI+Ex | CI+Ex | CI+Ex | | CI+Ex | CI+Ex | CI+Ex | CI+Ex | CI+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Detector 2 Position(ft) | | 94 | | | 94 | | | 94 | | | 94 | |
| Detector 2 Size(ft) | | 6 | | | 6 | | | 6 | | | 6 | |
| Detector 2 Type | | CI+Ex | | | CI+Ex | | | CI+Ex | | | CI+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Turn Type | Split | NA | pm+ov | Split | NA | | pm+pt | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | 8 | | | | 6 | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2024 Future without Development
Weekday Afternoon Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--|---|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-----|
| Total Split (s) | 21.0 | 21.0 | 29.0 | 26.0 | 26.0 | | 29.0 | 63.0 | 63.0 | 34.0 | 34.0 | |
| Total Split (%) | 19.1% | 19.1% | 26.4% | 23.6% | 23.6% | | 26.4% | 57.3% | 57.3% | 30.9% | 30.9% | |
| Maximum Green (s) | 15.0 | 15.0 | 23.0 | 20.0 | 20.0 | | 23.0 | 57.0 | 57.0 | 28.0 | 28.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |
| v/c Ratio | 0.57 | 0.48 | 1.05 | 1.29 | 0.44 | | 1.32 | 0.64 | 0.72 | 0.20 | 1.08 | |
| Control Delay | 57.0 | 53.3 | 83.9 | 180.8 | 44.6 | | 189.9 | 19.7 | 9.0 | 36.7 | 90.9 | |
| Queue Delay | 0.0 | 0.0 | 1.9 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Total Delay | 57.0 | 53.3 | 85.9 | 180.8 | 44.6 | | 189.9 | 19.7 | 9.0 | 36.7 | 90.9 | |
| Queue Length 50th (ft) | 72 | 59 | -450 | -363 | 83 | | -427 | 273 | 82 | 12 | -424 | |
| Queue Length 95th (ft) | 127 | 109 | #644 | #484 | 144 | | #644 | 364 | 253 | 38 | #584 | |
| Internal Link Dist (ft) | | 470 | | | 350 | | | 372 | | | 382 | |
| Turn Bay Length (ft) | 135 | | 202 | 135 | | | 266 | | 130 | 276 | | |
| Base Capacity (vph) | 231 | 226 | 568 | 605 | 301 | | 387 | 1722 | 1083 | 114 | 936 | |
| Starvation Cap Reductn | 0 | 0 | 3 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | |
| Reduced v/c Ratio | 0.46 | 0.39 | 1.05 | 1.29 | 0.44 | | 1.32 | 0.64 | 0.72 | 0.20 | 1.08 | |
| Intersection Summary | | | | | | | | | | | | |
| Area Type: | Other | | | | | | | | | | | |
| Cycle Length: | 110 | | | | | | | | | | | |
| Actuated Cycle Length: | 110 | | | | | | | | | | | |
| Offset: | 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow | | | | | | | | | | | |
| Natural Cycle: | 115 | | | | | | | | | | | |
| Control Type: | Actuated-Coordinated | | | | | | | | | | | |
| - | Volume exceeds capacity, queue is theoretically infinite. | | | | | | | | | | | |
| | Queue shown is maximum after two cycles. | | | | | | | | | | | |
| # | 95th percentile volume exceeds capacity, queue may be longer. | | | | | | | | | | | |
| | Queue shown is maximum after two cycles. | | | | | | | | | | | |
| Splits and Phases: 6: Fayette Street & Elm Street | | | | | | | | | | | | |
| | | | | | | | | | | | | |

HCM 2010 Signalized Intersection Summary
6: Fayette Street & Elm Street

2024 Future without Development
Weekday Afternoon Peak Hour

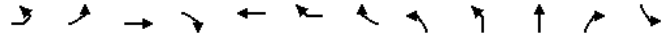
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|-------|-------|------|-------|------|------|------|-------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 105 | 87 | 582 | 766 | 73 | 57 | 500 | 1083 | 769 | 23 | 910 | 78 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), 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 | | 0.98 | 1.00 | | 0.96 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1730 | 1661 | 1747 | 1845 | 1760 | 1845 | 1704 | 1755 | 1807 | 1646 | 1777 | 1800 |
| Adj Flow Rate, veh/h | 107 | 89 | 495 | 782 | 74 | 58 | 510 | 1105 | 653 | 23 | 929 | 80 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Percent Heavy Veh, % | 3 | 3 | 2 | 0 | 7 | 7 | 3 | 0 | 1 | 5 | 1 | 1 |
| Cap, veh/h | 240 | 242 | 540 | 651 | 175 | 137 | 420 | 1758 | 796 | 129 | 827 | 71 |
| Arrive On Green | 0.15 | 0.15 | 0.15 | 0.19 | 0.19 | 0.18 | 0.22 | 0.53 | 0.53 | 0.26 | 0.26 | 0.25 |
| Sat Flow, veh/h | 1648 | 1661 | 1482 | 3409 | 915 | 717 | 1623 | 3335 | 1510 | 239 | 3135 | 270 |
| Grp Volume(v), veh/h | 107 | 89 | 495 | 782 | 0 | 132 | 510 | 1105 | 653 | 23 | 500 | 509 |
| Grp Sat Flow(s),veh/h/ln | 1648 | 1661 | 1482 | 1704 | 0 | 1632 | 1623 | 1667 | 1510 | 239 | 1688 | 1717 |
| Q Serve(g_s), s | 6.5 | 5.3 | 16.0 | 21.0 | 0.0 | 7.9 | 24.0 | 25.8 | 39.6 | 8.6 | 29.0 | 29.0 |
| Cycle Q Clear(g_c), s | 6.5 | 5.3 | 16.0 | 21.0 | 0.0 | 7.9 | 24.0 | 25.8 | 39.6 | 8.6 | 29.0 | 29.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.44 | 1.00 | | 1.00 | 1.00 | | 0.16 |
| Lane Grp Cap(c), veh/h | 240 | 242 | 540 | 651 | 0 | 312 | 420 | 1758 | 796 | 129 | 445 | 453 |
| V/C Ratio(X) | 0.45 | 0.37 | 0.92 | 1.20 | 0.00 | 0.42 | 1.22 | 0.63 | 0.82 | 0.18 | 1.12 | 1.12 |
| Avail Cap(c_a), veh/h | 240 | 242 | 540 | 651 | 0 | 312 | 420 | 1758 | 796 | 129 | 445 | 453 |
| 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) | 0.86 | 0.86 | 0.86 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 43.0 | 42.4 | 33.4 | 44.5 | 0.0 | 39.4 | 32.6 | 18.4 | 21.7 | 33.0 | 40.5 | 40.6 |
| Incr Delay (d2), s/veh | 1.1 | 0.8 | 18.4 | 105.0 | 0.0 | 0.9 | 117.1 | 1.7 | 9.3 | 3.0 | 81.0 | 80.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(95%),veh/ln | 5.5 | 4.5 | 23.3 | 34.8 | 0.0 | 6.5 | 47.4 | 18.0 | 25.4 | 1.2 | 42.3 | 42.9 |
| LnGrp Delay(d),s/veh | 44.1 | 43.2 | 51.9 | 149.5 | 0.0 | 40.3 | 149.7 | 20.1 | 30.9 | 36.0 | 121.5 | 121.3 |
| LnGrp LOS | D | D | D | F | | D | F | C | C | D | F | F |
| Approach Vol, veh/h | | 691 | | | 914 | | | 2268 | | | 1032 | |
| Approach Delay, s/veh | | 49.6 | | | 133.7 | | | 52.4 | | | 119.5 | |
| Approach LOS | | D | | | F | | | D | | | F | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 29.0 | 34.0 | | 26.0 | | 63.0 | | 21.0 | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | 23.0 | 28.0 | | 20.0 | | 57.0 | | 15.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 26.5 | 31.5 | | 23.5 | | 42.1 | | 18.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | | 13.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 81.3 | | | | | | | | | |
| HCM 2010 LOS | | | F | | | | | | | | | |

Lanes, Volumes, Timings

2024 Future without Development

3: Access/Wood Street & Elm Street & Colwell Street

Weekday Afternoon Peak Hour



| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|-------|-------|-------|------|-------|------|------|-------|-------|-------|------|-------|
| Lane Configurations | | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 57 | 2 | 344 | 7 | 497 | 233 | 18 | 11 | 8 | 0 | 6 | 6 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 12 | 14 | 12 | 16 | 12 | 12 | 12 | 15 | 12 | 12 | 12 |
| Grade (%) | | | 0% | | 0% | | | | | -2% | | |
| Storage Length (ft) | | 78 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Storage Lanes | | 1 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Taper Length (ft) | | 75 | | | | | | | 75 | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | 1.00 | 1.00 | | 0.99 | | | | 0.99 | | | |
| Frt | | | 0.997 | | 0.955 | | | | 0.969 | | | |
| Flt Protected | | 0.950 | | | | | | | 0.963 | | | |
| Satd. Flow (prot) | 0 | 1676 | 1859 | 0 | 1832 | 0 | 0 | 0 | 1688 | 0 | 0 | 0 |
| Flt Permitted | | 0.156 | | | | | | | 0.840 | | | |
| Satd. Flow (perm) | 0 | 275 | 1859 | 0 | 1832 | 0 | 0 | 0 | 1471 | 0 | 0 | 0 |
| Right Turn on Red | | | | No | | | No | | | | No | |
| Satd. Flow (RTOR) | | | | | | | | | | | | |
| Link Speed (mph) | | | 25 | | 25 | | | | 25 | | | |
| Link Distance (ft) | | | 571 | | 600 | | | | 211 | | | |
| Travel Time (s) | | | 15.6 | | 16.4 | | | | 5.8 | | | |
| Confl. Peds. (#/hr) | 1 | | | 4 | | 1 | | 1 | | | 1 | |
| 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 (%) | 2% | 2% | 3% | 0% | 6% | 5% | 2% | 0% | 0% | 2% | 0% | 2% |
| Adj. Flow (vph) | 60 | 2 | 362 | 7 | 523 | 245 | 19 | 12 | 8 | 0 | 6 | 6 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 62 | 369 | 0 | 787 | 0 | 0 | 0 | 26 | 0 | 0 | 0 |
| Number of Detectors | 1 | 1 | 2 | | 2 | | | 1 | 1 | 2 | | 1 |
| Detector Template | Left | Left | Thru | | Thru | | | Left | Left | Thru | | Left |
| Leading Detector (ft) | 20 | 20 | 100 | | 100 | | | 20 | 20 | 100 | | 20 |
| Trailing Detector (ft) | 0 | 0 | 0 | | 0 | | | 0 | 0 | 0 | | 0 |
| Detector 1 Position(ft) | 0 | 0 | 0 | | 0 | | | 0 | 0 | 0 | | 0 |
| Detector 1 Size(ft) | 20 | 20 | 6 | | 6 | | | 20 | 20 | 6 | | 20 |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | | | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | | 0.0 | | | 0.0 | 0.0 | 0.0 | | 0.0 |
| Detector 2 Position(ft) | | | 94 | | 94 | | | | | 94 | | |
| Detector 2 Size(ft) | | | 6 | | 6 | | | | | 6 | | |
| Detector 2 Type | | | Cl+Ex | | Cl+Ex | | | | | Cl+Ex | | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | | 0.0 | | 0.0 | | | | | 0.0 | | |
| Turn Type | Perm | Perm | NA | | NA | | | Perm | Perm | NA | | Perm |
| Protected Phases | | | 6 | | 2 | | | | | 4 | | |
| Permitted Phases | 6 | 6 | | | | | | 4 | 4 | | | 9 |
| Detector Phase | 6 | 6 | 6 | | 2 | | | 4 | 4 | 4 | | 9 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | | 21.0 | | | 21.0 | 21.0 | 21.0 | | 21.0 |

Lanes, Volumes, Timings

2024 Future without Development

3: Access/Wood Street & Elm Street & Colwell Street

Weekday Afternoon Peak Hour



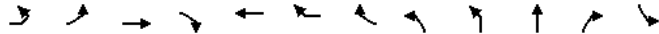
| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|-------|------|-------|------|------|
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 0 | 2 | 237 | 11 | 48 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | 2% | | |
| Storage Length (ft) | | 0 | 0 | 0 | 0 |
| Storage Lanes | | 0 | 1 | 0 | |
| Taper Length (ft) | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 0.99 | | |
| Frt | 0.966 | | 0.973 | | |
| Flt Protected | 0.964 | | 0.962 | | |
| Satd. Flow (prot) | 1643 | 0 | 1642 | 0 | 0 |
| Flt Permitted | | | 0.962 | | |
| Satd. Flow (perm) | 1705 | 0 | 1640 | 0 | 0 |
| Right Turn on Red | | | | | No |
| Satd. Flow (RTOR) | | | | | |
| Link Speed (mph) | 25 | | 25 | | |
| Link Distance (ft) | 267 | | 303 | | |
| Travel Time (s) | 7.3 | | 8.3 | | |
| Confl. Peds. (#/hr) | | | 1 | | 1 |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Heavy Vehicles (%) | 2% | 2% | 1% | 0% | 2% |
| Adj. Flow (vph) | 0 | 2 | 249 | 12 | 51 |
| Shared Lane Traffic (%) | | | | | |
| Lane Group Flow (vph) | 8 | 0 | 312 | 0 | 0 |
| Number of Detectors | 2 | | 1 | | |
| Detector Template | Thru | | Left | | |
| Leading Detector (ft) | 100 | | 20 | | |
| Trailing Detector (ft) | 0 | | 0 | | |
| Detector 1 Position(ft) | 0 | | 0 | | |
| Detector 1 Size(ft) | 6 | | 20 | | |
| Detector 1 Type | Cl+Ex | | Cl+Ex | | |
| Detector 1 Channel | | | | | |
| Detector 1 Extend (s) | 0.0 | | 0.0 | | |
| Detector 1 Queue (s) | 0.0 | | 0.0 | | |
| Detector 1 Delay (s) | 0.0 | | 0.0 | | |
| Detector 2 Position(ft) | | | 94 | | |
| Detector 2 Size(ft) | | | 6 | | |
| Detector 2 Type | | | Cl+Ex | | |
| Detector 2 Channel | | | | | |
| Detector 2 Extend (s) | | | 0.0 | | |
| Turn Type | NA | | Perm | | |
| Protected Phases | 9 | | | | |
| Permitted Phases | | | 8 | | |
| Detector Phase | 9 | | 8 | | |
| Switch Phase | | | | | |
| Minimum Initial (s) | 3.0 | | 3.0 | | |
| Minimum Split (s) | 21.0 | | 21.0 | | |

Lanes, Volumes, Timings

2024 Future without Development

3: Access/Wood Street & Elm Street & Colwell Street

Weekday Afternoon Peak Hour

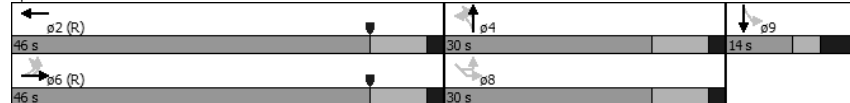


| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|-------|-------|-------|-------|------|-----|------|-------|-------|-------|-----|-------|
| Total Split (s) | 46.0 | 46.0 | 46.0 | 46.0 | | | | 30.0 | 30.0 | 30.0 | | 14.0 |
| Total Split (%) | 51.1% | 51.1% | 51.1% | 51.1% | | | | 33.3% | 33.3% | 33.3% | | 15.6% |
| Maximum Green (s) | 38.0 | 38.0 | 38.0 | 38.0 | | | | 22.0 | 22.0 | 22.0 | | 7.0 |
| Yellow Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | | | | 6.0 | 6.0 | 6.0 | | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | 2.0 | 2.0 | | | | 2.0 | 2.0 | 2.0 | | 4.0 |
| Lost Time Adjust (s) | | -1.0 | -1.0 | -1.0 | | | | | | -1.0 | | |
| Total Lost Time (s) | | 7.0 | 7.0 | 7.0 | | | | | | 7.0 | | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Recall Mode | C-Max | C-Max | C-Max | C-Max | | | | None | None | None | | None |
| v/c Ratio | | 0.39 | 0.34 | | | | | | | 0.08 | | |
| Control Delay | | 24.1 | 12.8 | | 16.7 | | | | | 26.3 | | |
| Queue Delay | | 0.0 | 0.0 | | 0.1 | | | | | 0.0 | | |
| Total Delay | | 24.1 | 12.8 | | 16.8 | | | | | 26.3 | | |
| Queue Length 50th (ft) | | 17 | 99 | | 251 | | | | | 11 | | |
| Queue Length 95th (ft) | | #84 | 221 | | #679 | | | | | 32 | | |
| Internal Link Dist (ft) | | | 491 | | 520 | | | | | 131 | | |
| Turn Bay Length (ft) | | 78 | | | | | | | | | | |
| Base Capacity (vph) | | 159 | 1076 | | 1060 | | | | | 375 | | |
| Starvation Cap Reductn | | 0 | 0 | | 19 | | | | | 0 | | |
| Spillback Cap Reductn | | 0 | 0 | | 0 | | | | | 0 | | |
| Storage Cap Reductn | | 0 | 0 | | 0 | | | | | 0 | | |
| Reduced v/c Ratio | | 0.39 | 0.34 | | 0.76 | | | | | 0.07 | | |

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Access/Wood Street & Elm Street & Colwell Street



Lanes, Volumes, Timings

2024 Future without Development

3: Access/Wood Street & Elm Street & Colwell Street

Weekday Afternoon Peak Hour



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|-------|-----|-------|-----|------|
| Total Split (s) | 14.0 | | 30.0 | | |
| Total Split (%) | 15.6% | | 33.3% | | |
| Maximum Green (s) | 7.0 | | 22.0 | | |
| Yellow Time (s) | 3.0 | | 6.0 | | |
| All-Red Time (s) | 4.0 | | 2.0 | | |
| Lost Time Adjust (s) | -1.0 | | -1.0 | | |
| Total Lost Time (s) | 6.0 | | 7.0 | | |
| Lead/Lag | | | | | |
| Lead-Lag Optimize? | | | | | |
| Vehicle Extension (s) | 3.0 | | 3.0 | | |
| Recall Mode | None | | None | | |
| v/c Ratio | 0.06 | | 0.81 | | |
| Control Delay | 38.9 | | 49.9 | | |
| Queue Delay | 0.0 | | 0.0 | | |
| Total Delay | 38.9 | | 49.9 | | |
| Queue Length 50th (ft) | 4 | | 163 | | |
| Queue Length 95th (ft) | 18 | | #283 | | |
| Internal Link Dist (ft) | 187 | | 223 | | |
| Turn Bay Length (ft) | | | | | |
| Base Capacity (vph) | 151 | | 419 | | |
| Starvation Cap Reductn | 0 | | 0 | | |
| Spillback Cap Reductn | 0 | | 0 | | |
| Storage Cap Reductn | 0 | | 0 | | |
| Reduced v/c Ratio | 0.05 | | 0.74 | | |

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
1: Corson Street & Elm Street

2024 Future without Development
Weekday Afternoon Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|------|------|------|------|------|-------|------|------|
| Lane Configurations | ↔ | | | ↔ | | | ↔ | | | ↔ | | |
| Volume (vph) | 1 | 453 | 4 | 1 | 506 | 8 | 0 | 0 | 0 | 19 | 0 | 1 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 11 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | | 1% | | | 0% | | | 0% | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.999 | | | 0.998 | | | | | | 0.994 | | |
| Frt | | | | | | | | | | 0.955 | | |
| Flt Protected | | | | | | | | | | 0.955 | | |
| Satd. Flow (prot) | 0 | 1799 | 0 | 0 | 2038 | 0 | 0 | 1900 | 0 | 0 | 2044 | 0 |
| Flt Permitted | | | | | | | | | | 0.955 | | |
| Satd. Flow (perm) | 0 | 1799 | 0 | 0 | 2038 | 0 | 0 | 1900 | 0 | 0 | 2044 | 0 |
| Link Speed (mph) | 25 | | 25 | | 25 | | 25 | | 25 | | 25 | |
| Link Distance (ft) | 275 | | 276 | | 219 | | 188 | | 188 | | 188 | |
| Travel Time (s) | 7.5 | | 7.5 | | 6.0 | | 5.1 | | 5.1 | | 5.1 | |
| Confl. Peds. (#/hr) | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 5% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 482 | 4 | 1 | 538 | 9 | 0 | 0 | 0 | 20 | 0 | 1 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 487 | 0 | 0 | 548 | 0 | 0 | 0 | 0 | 0 | 21 | 0 |
| Sign Control | Free | | Free | | Stop | | Stop | | Stop | | Stop | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC
1: Corson Street & Elm Street

2024 Future without Development
Weekday Afternoon Peak Hour

| Intersection | Int Delay, s/veh |
|--------------|------------------|
| | 0.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h | 1 | 453 | 4 | 1 | 506 | 8 | 0 | 0 | 0 | 19 | 0 | 1 |
| Conflicting Peds, #/hr | 2 | 0 | 3 | 3 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | - |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 482 | 4 | 1 | 538 | 9 | 0 | 0 | 0 | 20 | 0 | 1 |

| Major/Minor | Major1 | Major2 | Minor1 | Minor2 |
|----------------------|--------|--------|--------|--------|
| Conflicting Flow All | 550 | 0 | 0 | 489 |
| Stage 1 | - | - | - | 489 |
| Stage 2 | - | - | - | 548 |
| Critical Hdwy | 4.3 | - | - | 4.3 |
| Critical Hdwy Stg 1 | - | - | - | 6.1 |
| Critical Hdwy Stg 2 | - | - | - | 5.5 |
| Follow-up Hdwy | 3 | - | - | 3 |
| Pot Cap-1 Maneuver | 776 | - | - | 815 |
| Stage 1 | - | - | - | 232 |
| Stage 2 | - | - | - | 232 |
| Platoon blocked, % | - | - | - | 612 |
| Mov Cap-1 Maneuver | 774 | - | - | 812 |
| Stage 1 | - | - | - | 230 |
| Stage 2 | - | - | - | 230 |
| Mov Cap-2 Maneuver | - | - | - | 608 |
| Stage 1 | - | - | - | 230 |
| Stage 2 | - | - | - | 230 |

| Approach | EB | WB | NB | SB |
|----------------------|----|----|----|------|
| HCM Control Delay, s | 0 | 0 | 0 | 21.7 |
| HCM LOS | A | A | A | C |

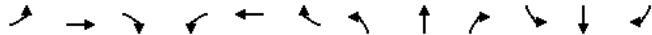
| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | - | 774 | - | - | 812 | - | - | 237 |
| HCM Lane V/C Ratio | - | 0.001 | - | - | 0.001 | - | - | 0.09 |
| HCM Control Delay (s) | 0 | 9.7 | 0 | - | 9.4 | 0 | - | 21.7 |
| HCM Lane LOS | A | A | A | - | A | A | - | C |
| HCM 95th %tile Q(veh) | - | 0 | - | - | 0 | - | - | 0.3 |

Lanes, Volumes, Timings

2024 Future without Development

2: Lot Access/Old Elm Street & Elm Street

Weekday Afternoon Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|-------------------------|------|------|------|------|------|-------|------|------|------|------|------|-------|---|
| Lane Configurations | ↔ | | | ↔ | | | ↔ | | | | | | |
| Volume (vph) | 0 | 457 | 0 | 0 | 530 | 10 | 0 | 0 | 4 | 0 | 0 | 0 | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | |
| Lane Width (ft) | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | |
| Grade (%) | | -1% | | | 0% | | | 0% | | | -1% | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Ped Bike Factor | | | | | | 0.997 | | | | | | 0.865 | |
| Flt Protected | | | | | | | | | | | | | |
| Satd. Flow (prot) | 0 | 1934 | 0 | 0 | 1840 | 0 | 0 | 1644 | 0 | 0 | 0 | 0 | |
| Flt Permitted | | | | | | | | | | | | | |
| Satd. Flow (perm) | 0 | 1934 | 0 | 0 | 1840 | 0 | 0 | 1644 | 0 | 0 | 0 | 0 | |
| Link Speed (mph) | 25 | | | | 25 | | | | 25 | | | | |
| Link Distance (ft) | 276 | | | | 571 | | | | 199 | | | | |
| Travel Time (s) | 7.5 | | | | 15.6 | | | | 5.4 | | | | |
| Confl. Peds. (#/hr) | | | | | | | 2 | | | | | | 2 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | |
| Adj. Flow (vph) | 0 | 486 | 0 | 0 | 564 | 11 | 0 | 0 | 4 | 0 | 0 | 0 | |
| Shared Lane Traffic (%) | | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 486 | 0 | 0 | 575 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | |
| Sign Control | Free | | | | Free | | | | Stop | | | | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC

2024 Future without Development

2: Lot Access/Old Elm Street & Elm Street

Weekday Afternoon Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 0 | 457 | 0 | 0 | 530 | 10 | 0 | 0 | 4 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -1 | - | - | 0 | - | - | 0 | - | - | - | -1 |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 486 | 0 | 0 | 564 | 11 | 0 | 0 | 4 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|----------------------|--------|---|---|--------|---|---|--------|------|-----|
| Conflicting Flow All | 574 | 0 | 0 | 488 | 0 | 0 | 1057 | 1062 | 488 |
| Stage 1 | - | - | - | - | - | - | 488 | 488 | - |
| Stage 2 | - | - | - | - | - | - | 569 | 574 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 761 | - | - | 815 | - | - | 224 | 225 | 614 |
| Stage 1 | - | - | - | - | - | - | 702 | 553 | - |
| Stage 2 | - | - | - | - | - | - | 642 | 506 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 761 | - | - | 815 | - | - | 224 | 0 | 613 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 224 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 701 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 642 | 0 | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 10.9 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|-----------------------|-------|-----|-----|-----|-----|-----|-----|
| Capacity (veh/h) | 613 | 761 | - | - | 815 | - | - |
| HCM Lane V/C Ratio | 0.007 | - | - | - | - | - | - |
| HCM Control Delay (s) | 10.9 | 0 | - | - | 0 | - | - |
| HCM Lane LOS | B | A | - | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | 0 | - | - | 0 | - | - |

APPENDIX K

**Future (2024) with Development Capacity/
Level-of-Service Analysis Worksheets**

Lanes, Volumes, Timings
1: Corson Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 0 | 377 | 35 | 139 | 309 | 2 | 4 | 0 | 19 | 19 | 0 | 5 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 11 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | | 1% | | | 0% | | | 0% | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | - | | | | | | | | | | | |
| Frt | 0.988 | | | 0.999 | | | 0.887 | | | 0.973 | | |
| Frt Protected | - | | | 0.950 | | | 0.992 | | | 0.962 | | |
| Satd. Flow (prot) | 0 | 1622 | 0 | 1796 | 1863 | 0 | 0 | 1672 | 0 | 0 | 2016 | 0 |
| Frt Permitted | - | | | 0.950 | | | 0.992 | | | 0.962 | | |
| Satd. Flow (perm) | 0 | 1622 | 0 | 1796 | 1863 | 0 | 0 | 1672 | 0 | 0 | 2016 | 0 |
| Link Speed (mph) | 25 | | | 25 | | | 25 | | | 25 | | |
| Link Distance (ft) | 275 | | | 276 | | | 219 | | | 188 | | |
| Travel Time (s) | 7.5 | | | 7.5 | | | 6.0 | | | 5.1 | | |
| Confl. Peds. (#/hr) | 1 | 1 | | 1 | 1 | | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles (%) | 0% | 13% | 0% | 0% | 15% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 0 | 405 | 38 | 149 | 332 | 2 | 4 | 0 | 20 | 20 | 0 | 5 |
| Shared Lane Traffic (%) | - | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 443 | 0 | 149 | 334 | 0 | 0 | 24 | 0 | 0 | 25 | 0 |
| Sign Control | Free | | | Free | | | Stop | | | Stop | | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC
1: Corson Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Morning Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|--------|------|------|--------|------|------|--------|------|------|--------|------|------|
| Int Delay, s/veh | 2.5 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 0 | 377 | 35 | 139 | 309 | 2 | 4 | 0 | 19 | 19 | 0 | 5 |
| Conflicting Peds, #/hr | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 13 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 405 | 38 | 149 | 332 | 2 | 4 | 0 | 20 | 20 | 0 | 5 |
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
| Conflicting Flow All | 334 | 0 | 0 | 443 | 0 | 0 | 1059 | 1057 | 425 | 1066 | 1075 | 334 |
| Stage 1 | - | - | - | - | - | - | 424 | 424 | - | 632 | 632 | - |
| Stage 2 | - | - | - | - | - | - | 635 | 633 | - | 434 | 443 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 922 | - | - | 845 | - | - | 224 | 227 | 667 | 221 | 221 | 752 |
| Stage 1 | - | - | - | - | - | - | 694 | 590 | - | 529 | 477 | - |
| Stage 2 | - | - | - | - | - | - | 527 | 476 | - | 685 | 579 | - |
| Platoon blocked, % | - | | | | | | | | | | | |
| Mov Cap-1 Maneuver | 921 | - | - | 844 | - | - | 192 | 187 | 666 | 185 | 182 | 751 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 192 | 187 | - | 185 | 182 | - |
| Stage 1 | - | - | - | - | - | - | 694 | 590 | - | 529 | 393 | - |
| Stage 2 | - | - | - | - | - | - | 431 | 392 | - | 663 | 579 | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|-----|------|------|
| HCM Control Delay, s | 0 | 3.1 | 13.2 | 23.6 |
| HCM LOS | | | B | C |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 466 | 921 | - | - | 844 | - | - | 219 |
| HCM Lane V/C Ratio | 0.053 | - | - | - | 0.177 | - | - | 0.118 |
| HCM Control Delay (s) | 13.2 | 0 | - | - | 10.2 | - | - | 23.6 |
| HCM Lane LOS | B | A | - | - | B | - | - | C |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 0.6 | - | - | 0.4 |

Lanes, Volumes, Timings

2024 Future with Development - Scenario 1

2: Lot Access/Old Elm Street & Elm Street

Weekday Morning Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|------|------|-------|------|------|------|------|------|
| Lane Configurations | ↕ | | | ↖ | ↗ | | | ↕ | | | | |
| Volume (vph) | 1 | 368 | 35 | 142 | 450 | 4 | 5 | 0 | 20 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 12 | 12 |
| Grade (%) | | -1% | | | 0% | | | 0% | | | -1% | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.988 | | | 0.999 | | | 0.891 | | | | | |
| Frt | 0.988 | | | 0.999 | | | 0.891 | | | | | |
| Flt Protected | | | | 0.950 | | | 0.990 | | | | | |
| Satd. Flow (prot) | 0 | 1787 | 0 | 1357 | 1667 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 |
| Flt Permitted | | | | 0.950 | | | 0.990 | | | | | |
| Satd. Flow (perm) | 0 | 1787 | 0 | 1357 | 1667 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 276 | | | 571 | | | 199 | | | 208 | |
| Travel Time (s) | | 7.5 | | | 15.6 | | | 5.4 | | | 5.7 | |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | | | | | | |
| 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% | 10% | 0% | 33% | 14% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 387 | 37 | 149 | 474 | 4 | 5 | 0 | 21 | 0 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 425 | 0 | 149 | 478 | 0 | 0 | 26 | 0 | 0 | 0 | 0 |
| Sign Control | Free | | | Free | | | Stop | | | Stop | | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC

2024 Future with Development - Scenario 1

2: Lot Access/Old Elm Street & Elm Street

Weekday Morning Peak Hour

| Intersection | Int Delay, s/veh |
|--------------|------------------|
| | 1.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h | 1 | 368 | 35 | 142 | 450 | 4 | 5 | 0 | 20 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 1 | - | - | 0 | - |
| Grade, % | - | -1 | - | - | 0 | - | - | 0 | - | - | -1 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 0 | 10 | 0 | 33 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 387 | 37 | 149 | 474 | 4 | 5 | 0 | 21 | 0 | 0 | 0 |

| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 478 | 0 | 0 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | 4.3 | - | - |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | 3 | - | - |
| Pot Cap-1 Maneuver | 822 | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 821 | - | - |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0 | 2.4 | 11.9 |
| HCM LOS | | | B |

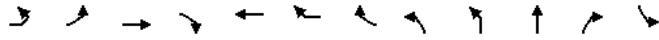
| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|
| Capacity (veh/h) | 548 | 821 | - | - | 857 | - | - |
| HCM Lane V/C Ratio | 0.048 | 0.001 | - | - | 0.174 | - | - |
| HCM Control Delay (s) | 11.9 | 9.4 | 0 | - | 10.1 | - | - |
| HCM Lane LOS | B | A | A | - | B | - | - |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 0.6 | - | - |

Lanes, Volumes, Timings

2024 Future with Development - Scenario 1

3: Access/Wood Street & Elm Street & Colwell Street

Weekday Morning Peak Hour



| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|-------|-------|-------|------|-------|------|------|-------|-------|-------|------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 66 | 0 | 305 | 36 | 488 | 148 | 8 | 4 | 16 | 0 | 2 | 7 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 12 | 14 | 12 | 16 | 12 | 12 | 12 | 15 | 12 | 12 | 12 |
| Grade (%) | | | 0% | | 0% | | | | | -2% | | |
| Storage Length (ft) | | 78 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Storage Lanes | | 1 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Taper Length (ft) | | 75 | | | | | | | 75 | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 1.00 | | | | | | 1.00 | | | |
| Frt | | | 0.984 | | 0.967 | | | | 0.988 | | | |
| Flt Protected | | 0.950 | | | | | | | 0.956 | | | |
| Satd. Flow (prot) | 0 | 1613 | 1689 | 0 | 1790 | 0 | 0 | 0 | 1713 | 0 | 0 | 0 |
| Flt Permitted | | 0.163 | | | | | | | 0.645 | | | |
| Satd. Flow (perm) | 0 | 277 | 1689 | 0 | 1790 | 0 | 0 | 0 | 1156 | 0 | 0 | 0 |
| Right Turn on Red | | | | No | | | No | | | | No | |
| Satd. Flow (RTOR) | | | | | | | | | | | | |
| Link Speed (mph) | | | 25 | | 25 | | | | 25 | | | |
| Link Distance (ft) | | | 571 | | 600 | | | | 211 | | | |
| Travel Time (s) | | | 15.6 | | 16.4 | | | | 5.8 | | | |
| Confl. Peds. (#/hr) | | | | 1 | | | | | | | 6 | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 6% | 2% | 13% | 0% | 11% | 8% | 2% | 0% | 0% | 2% | 0% | 2% |
| Adj. Flow (vph) | 70 | 0 | 324 | 38 | 519 | 157 | 9 | 4 | 17 | 0 | 2 | 7 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 70 | 362 | 0 | 685 | 0 | 0 | 0 | 23 | 0 | 0 | 0 |
| Turn Type | Perm | Perm | NA | | NA | | | Perm | Perm | NA | | Perm |
| Protected Phases | | | 6 | | 2 | | | | 4 | | | |
| Permitted Phases | 6 | 6 | | | | | | | 4 | 4 | | 9 |
| Detector Phase | 6 | 6 | 6 | | 2 | | | | 4 | 4 | | 9 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | | 21.0 | | | 21.0 | 21.0 | 21.0 | | 21.0 |
| Total Split (s) | 33.0 | 33.0 | 33.0 | | 33.0 | | | 33.0 | 33.0 | 33.0 | | 33.0 |
| Total Split (%) | 41.3% | 41.3% | 41.3% | | 41.3% | | | 41.3% | 41.3% | 41.3% | | 17.5% |
| Maximum Green (s) | 25.0 | 25.0 | 25.0 | | 25.0 | | | 25.0 | 25.0 | 25.0 | | 7.0 |
| Yellow Time (s) | 6.0 | 6.0 | 6.0 | | 6.0 | | | 6.0 | 6.0 | 6.0 | | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | 2.0 | | 2.0 | | | 2.0 | 2.0 | 2.0 | | 4.0 |
| Lost Time Adjust (s) | | -1.0 | -1.0 | | -1.0 | | | | | -1.0 | | |
| Total Lost Time (s) | | 7.0 | 7.0 | | 7.0 | | | | | 7.0 | | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Recall Mode | C-Max | C-Max | C-Max | | C-Max | | | None | None | None | | None |
| Act Effect Green (s) | | 40.4 | 40.4 | | 40.4 | | | | | 22.8 | | |
| Actuated g/C Ratio | | 0.50 | 0.50 | | 0.50 | | | | | 0.28 | | |
| v/c Ratio | | 0.50 | 0.42 | | 0.76 | | | | | 0.07 | | |
| Control Delay | | 35.9 | 17.0 | | 25.2 | | | | | 19.7 | | |
| Queue Delay | | 0.0 | 0.0 | | 0.0 | | | | | 0.0 | | |

Lanes, Volumes, Timings

2024 Future with Development - Scenario 1

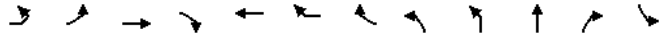
3: Access/Wood Street & Elm Street & Colwell Street

Weekday Morning Peak Hour



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|------|-------|-------|------|------|
| Lane Configurations | | | | | |
| Volume (vph) | 0 | 7 | 203 | 14 | 95 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | 2% | | |
| Storage Length (ft) | | 0 | 0 | 0 | |
| Storage Lanes | | 0 | 1 | 0 | |
| Taper Length (ft) | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 0.99 | | |
| Frt | | 0.932 | 0.953 | | |
| Flt Protected | | 0.976 | 0.968 | | |
| Satd. Flow (prot) | 1605 | 0 | 1462 | 0 | 0 |
| Flt Permitted | | | 0.968 | | |
| Satd. Flow (perm) | 1645 | 0 | 1453 | 0 | 0 |
| Right Turn on Red | | | | | No |
| Satd. Flow (RTOR) | | | | | |
| Link Speed (mph) | | 25 | 25 | | |
| Link Distance (ft) | | 274 | 302 | | |
| Travel Time (s) | | 7.5 | 8.2 | | |
| Confl. Peds. (#/hr) | | | 6 | | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 2% | 2% | 14% | 0% | 11% |
| Adj. Flow (vph) | 0 | 7 | 216 | 15 | 101 |
| Shared Lane Traffic (%) | | | | | |
| Lane Group Flow (vph) | 14 | 0 | 332 | 0 | 0 |
| Turn Type | NA | | Perm | | |
| Protected Phases | | 9 | | | |
| Permitted Phases | | | 8 | | |
| Detector Phase | | 9 | 8 | | |
| Switch Phase | | | | | |
| Minimum Initial (s) | | 3.0 | 3.0 | | |
| Minimum Split (s) | | 21.0 | 21.0 | | |
| Total Split (s) | | 14.0 | 33.0 | | |
| Total Split (%) | | 17.5% | 41.3% | | |
| Maximum Green (s) | | 7.0 | 25.0 | | |
| Yellow Time (s) | | 3.0 | 6.0 | | |
| All-Red Time (s) | | 4.0 | 2.0 | | |
| Lost Time Adjust (s) | | -1.0 | -1.0 | | |
| Total Lost Time (s) | | 6.0 | 7.0 | | |
| Lead/Lag | | | | | |
| Lead-Lag Optimize? | | | | | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | |
| Recall Mode | | None | None | | |
| Act Effect Green (s) | | 7.2 | 22.8 | | |
| Actuated g/C Ratio | | 0.09 | 0.28 | | |
| v/c Ratio | | 0.09 | 0.80 | | |
| Control Delay | | 34.5 | 41.8 | | |
| Queue Delay | | 0.0 | 0.0 | | |

Lanes, Volumes, Timings
 3: Access/Wood Street & Elm Street & Colwell Street
 2024 Future with Development - Scenario 1
 Weekday Morning Peak Hour



| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|------|------|------|-----|------|-----|------|------|-----|------|-----|-----|
| Total Delay | | 35.9 | 17.0 | | 25.2 | | | | | 19.7 | | |
| LOS | | D | B | | C | | | | | B | | |
| Approach Delay | | | 20.0 | | 25.2 | | | | | 19.7 | | |
| Approach LOS | | | C | | C | | | | | B | | |
| Queue Length 50th (ft) | | 21 | 104 | | 195 | | | | | 8 | | |
| Queue Length 95th (ft) | | #107 | 247 | | #608 | | | | | 24 | | |
| Internal Link Dist (ft) | | | 491 | | 520 | | | | | 131 | | |
| Turn Bay Length (ft) | | 78 | | | | | | | | | | |
| Base Capacity (vph) | | 140 | 853 | | 904 | | | | | 375 | | |
| Starvation Cap Reductn | | 0 | 0 | | 0 | | | | | 0 | | |
| Spillback Cap Reductn | | 0 | 0 | | 0 | | | | | 0 | | |
| Storage Cap Reductn | | 0 | 0 | | 0 | | | | | 0 | | |
| Reduced v/c Ratio | | 0.50 | 0.42 | | 0.76 | | | | | 0.06 | | |

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

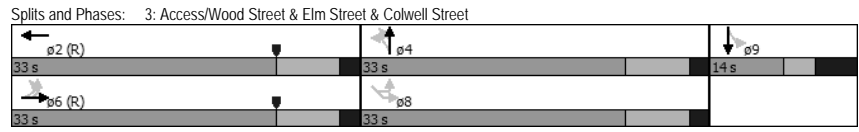
Maximum v/c Ratio: 0.80

Intersection Signal Delay: 27.4 Intersection LOS: C

Intersection Capacity Utilization 86.6% ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings
 3: Access/Wood Street & Elm Street & Colwell Street
 2024 Future with Development - Scenario 1
 Weekday Morning Peak Hour



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|------|-----|------|-----|------|
| Total Delay | 34.5 | | 41.8 | | |
| LOS | C | | D | | |
| Approach Delay | 34.5 | | 41.8 | | |
| Approach LOS | C | | D | | |
| Queue Length 50th (ft) | 7 | | 148 | | |
| Queue Length 95th (ft) | 24 | | #245 | | |
| Internal Link Dist (ft) | 194 | | 222 | | |
| Turn Bay Length (ft) | | | | | |
| Base Capacity (vph) | 164 | | 472 | | |
| Starvation Cap Reductn | 0 | | 0 | | |
| Spillback Cap Reductn | 0 | | 0 | | |
| Storage Cap Reductn | 0 | | 0 | | |
| Reduced v/c Ratio | 0.09 | | 0.70 | | |

Intersection Summary

Lanes, Volumes, Timings
4: Maple Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 22 | 485 | 2 | 8 | 501 | 10 | 13 | 11 | 56 | 44 | 1 | 89 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 14 | 12 | 10 | 13 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 2% | | 0% | | 0% | | 1% | | -1% | | 0% | |
| Storage Length (ft) | 79 | | 0 | 75 | | 0 | 0 | | 0 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.98 | | | 0.98 | |
| Frt | | 0.999 | | | 0.997 | | | 0.905 | | | 0.910 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.992 | | | 0.984 | |
| Satd. Flow (prot) | 1491 | 1711 | 0 | 1400 | 1602 | 0 | 0 | 1572 | 0 | 0 | 1777 | 0 |
| Flt Permitted | 0.427 | | | 0.442 | | | | 0.910 | | | 0.858 | |
| Satd. Flow (perm) | 669 | 1711 | 0 | 651 | 1602 | 0 | 0 | 1441 | 0 | 0 | 1544 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | Yes | | | Yes | Yes |
| Satd. Flow (RTOR) | 1 | | | 3 | | | 61 | | 97 | | | |
| Link Speed (mph) | 25 | | 25 | | 25 | | 25 | | 25 | | 25 | |
| Link Distance (ft) | 600 | | 300 | | 222 | | 228 | | 228 | | 228 | |
| Travel Time (s) | 16.4 | | 8.2 | | 6.1 | | 6.2 | | 6.2 | | 6.2 | |
| Confl. Peds. (#/hr) | 7 | | 3 | 3 | | 7 | 4 | | 5 | 5 | | 4 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 6% | 11% | 0% | 14% | 16% | 0% | 0% | 0% | 0% | 0% | 0% | 2% |
| Adj. Flow (vph) | 24 | 527 | 2 | 9 | 545 | 11 | 14 | 12 | 61 | 48 | 1 | 97 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 24 | 529 | 0 | 9 | 556 | 0 | 0 | 87 | 0 | 0 | 146 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | 6 | | 2 | | 4 | | 8 | | 8 | | 8 | |
| Permitted Phases | 6 | | 2 | | 4 | | 8 | | 8 | | 8 | |
| Detector Phase | 6 | 6 | | 2 | 2 | | 4 | 4 | | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |
| Total Split (s) | 59.0 | 59.0 | | 59.0 | 59.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |
| Total Split (%) | 73.8% | 73.8% | | 73.8% | 73.8% | | 26.3% | 26.3% | | 26.3% | 26.3% | |
| Maximum Green (s) | 54.0 | 54.0 | | 54.0 | 54.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 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 | | | | | | | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Intersection Summary | | | | | | | | | | | | |
| Area Type: | Other | | | | | | | | | | | |
| Cycle Length: | 80 | | | | | | | | | | | |
| Actuated Cycle Length: | 80 | | | | | | | | | | | |

Lanes, Volumes, Timings
4: Maple Street & Elm Street

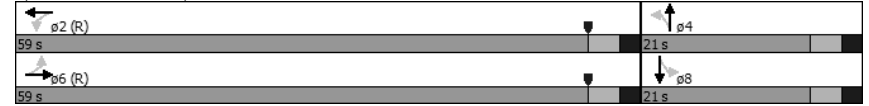
2024 Future with Development - Scenario 1
Weekday Morning Peak Hour

Offset: 31 (39%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Splits and Phases: 4: Maple Street & Elm Street



HCM 2010 Signalized Intersection Summary 2024 Future with Development - Scenario 1
 4: Maple Street & Elm Street Weekday Morning Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 22 | 485 | 2 | 8 | 501 | 10 | 13 | 11 | 56 | 44 | 1 | 89 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 | 0.98 | | 0.97 | 0.98 | | 0.97 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1681 | 1670 | 1782 | 1579 | 1618 | 1800 | 1791 | 1791 | 1791 | 1809 | 1857 | 1809 |
| Adj Flow Rate, veh/h | 24 | 527 | 2 | 9 | 545 | 11 | 14 | 12 | 46 | 48 | 1 | 65 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 6 | 11 | 11 | 14 | 16 | 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap, veh/h | 696 | 1316 | 5 | 673 | 1251 | 25 | 74 | 42 | 111 | 125 | 13 | 97 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.10 | 0.11 | 0.10 | 0.10 | 0.11 | 0.10 |
| Sat Flow, veh/h | 765 | 1663 | 6 | 737 | 1581 | 32 | 189 | 391 | 1027 | 561 | 117 | 899 |
| Grp Volume(v), veh/h | 24 | 0 | 529 | 9 | 0 | 556 | 72 | 0 | 0 | 114 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 765 | 0 | 1669 | 737 | 0 | 1612 | 1607 | 0 | 0 | 1577 | 0 | 0 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.4 | 0.0 | 0.0 | 5.4 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.00 | 1.00 | | 0.02 | 0.19 | | 0.64 | 0.42 | | 0.57 |
| Lane Grp Cap(c), veh/h | 696 | 0 | 1321 | 673 | 0 | 1277 | 208 | 0 | 0 | 215 | 0 | 0 |
| V/C Ratio(X) | 0.03 | 0.00 | 0.40 | 0.01 | 0.00 | 0.44 | 0.35 | 0.00 | 0.00 | 0.53 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 696 | 0 | 1321 | 673 | 0 | 1277 | 361 | 0 | 0 | 365 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.76 | 0.00 | 0.76 | 0.92 | 0.00 | 0.92 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 33.7 | 0.0 | 0.0 | 34.6 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.7 | 0.0 | 0.0 | 1.0 | 1.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| 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 | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 | 0.6 | 2.8 | 0.0 | 0.0 | 4.7 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.1 | 0.0 | 0.7 | 0.0 | 0.0 | 1.0 | 34.7 | 0.0 | 0.0 | 36.6 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | | A | C | | | D | | |
| Approach Vol, veh/h | | 553 | | | 565 | | | 72 | | | 114 | |
| Approach Delay, s/veh | | 0.7 | | | 1.0 | | | 34.7 | | | 36.6 | |
| Approach LOS | | A | | | A | | | C | | | D | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 67.3 | | 12.7 | | 67.3 | | 12.7 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 54.0 | | 16.0 | | 54.0 | | 16.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 2.5 | | 5.4 | | 2.5 | | 7.4 | | | | |
| Green Ext Time (p_c), s | | 10.7 | | 0.4 | | 10.7 | | 0.4 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 5.8 | | | | | | | | | |
| HCM 2010 LOS | | | A | | | | | | | | | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 14 | 524 | 51 | 22 | 489 | 2 | 17 | 5 | 75 | 4 | 20 | 24 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 13 | 12 | 10 | 11 | 12 | 12 | 11 | 12 | 12 | 16 | 12 |
| Grade (%) | | 7% | | | -9% | | | 0% | | | 0% | |
| Storage Length (ft) | 77 | | 0 | 95 | | 95 | 0 | | 95 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 1 | 0 | | 1 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | 75 | | | 75 | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | | 0.98 | | 1.00 | 0.97 | | 0.99 | |
| Frt | | 0.987 | | | | 0.850 | | | 0.850 | | 0.932 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.962 | | | 0.996 | |
| Satd. Flow (prot) | 1540 | 1580 | 0 | 1573 | 1623 | 1599 | 0 | 1674 | 1457 | 0 | 1873 | 0 |
| Flt Permitted | 0.474 | | | 0.340 | | | | 0.777 | | | 0.979 | |
| Satd. Flow (perm) | 765 | 1580 | 0 | 563 | 1623 | 1561 | 0 | 1350 | 1418 | 0 | 1840 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | No | | | No |
| Satd. Flow (RTOR) | | 6 | | | | 27 | | | | | | |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 300 | | | 550 | | | 247 | | | 248 | |
| Travel Time (s) | | 8.2 | | | 15.0 | | | 6.7 | | | 6.8 | |
| Confl. Peds. (#/hr) | 5 | | 4 | 4 | | 5 | 1 | | 4 | 4 | | 1 |
| 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% | 13% | 0% | 6% | 12% | 0% | 0% | 0% | 5% | 0% | 0% | 0% |
| Adj. Flow (vph) | 15 | 552 | 54 | 23 | 515 | 2 | 18 | 5 | 79 | 4 | 21 | 25 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 15 | 606 | 0 | 23 | 515 | 2 | 0 | 23 | 79 | 0 | 50 | 0 |
| Turn Type | Perm | NA | | pm+pt | NA | Perm | Perm | NA | Perm | Perm | NA | |
| Protected Phases | | 6 | | 5 | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | 2 | 4 | | 4 | 8 | | |
| Detector Phase | 6 | 6 | | 5 | 2 | 2 | 4 | 4 | 4 | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 13.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 |
| Total Split (s) | 29.0 | 29.0 | | 25.0 | 54.0 | 54.0 | 26.0 | 26.0 | 26.0 | 26.0 | 26.0 | |
| Total Split (%) | 36.3% | 36.3% | | 31.3% | 67.5% | 67.5% | 32.5% | 32.5% | 32.5% | 32.5% | 32.5% | |
| Maximum Green (s) | 24.0 | 24.0 | | 20.0 | 49.0 | 49.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Lost Time Adjust (s) | -1.0 | -1.0 | | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | |
| Lead/Lag | Lag | Lag | | Lead | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | C-Max | C-Max | | None | C-Max | C-Max | None | None | None | None | None | None |

Intersection Summary

| | |
|------------------------|-------|
| Area Type: | Other |
| Cycle Length: | 80 |
| Actuated Cycle Length: | 80 |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

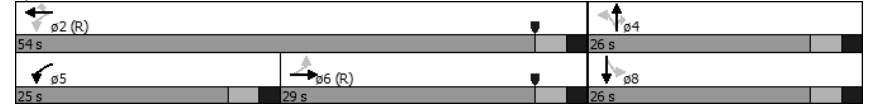
2024 Future with Development - Scenario 1
Weekday Morning Peak Hour

Offset: 15 (19%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Splits and Phases: 5: Oak Street & Elm Street



HCM 2010 Signalized Intersection Summary
5: Oak Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Morning Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | ↔ | | ↔ | ↔ | | ↔ | ↔ |
| Volume (veh/h) | 14 | 524 | 51 | 22 | 489 | 2 | 17 | 5 | 75 | 4 | 20 | 24 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 | 0.98 | | 0.98 | 0.98 | | 0.98 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1737 | 1615 | 1737 | 1775 | 1679 | 1881 | 1800 | 1800 | 1714 | 1800 | 1872 | 1800 |
| Adj Flow Rate, veh/h | 15 | 552 | 52 | 23 | 515 | 1 | 18 | 5 | 73 | 4 | 21 | 17 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 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 | 13 | 13 | 6 | 12 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| Cap, veh/h | 682 | 1060 | 100 | 700 | 1355 | 1286 | 177 | 41 | 133 | 56 | 87 | 64 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 0.03 | 0.81 | 0.81 | 0.08 | 0.09 | 0.09 | 0.08 | 0.09 | 0.08 |
| Sat Flow, veh/h | 820 | 1454 | 137 | 1690 | 1679 | 1594 | 1036 | 441 | 1426 | 76 | 934 | 687 |
| Grp Volume(v), veh/h | 15 | 0 | 604 | 23 | 515 | 1 | 23 | 0 | 73 | 42 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 820 | 0 | 1590 | 1690 | 1679 | 1594 | 1477 | 0 | 1426 | 1696 | 0 | 0 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.2 | 6.8 | 0.0 | 0.0 | 0.0 | 3.9 | 0.0 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 0.7 | 0.0 | 0.0 | 0.2 | 6.8 | 0.0 | 1.0 | 0.0 | 3.9 | 1.8 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.09 | 1.00 | | 1.00 | 0.78 | | 1.00 | 0.10 | | 0.40 |
| Lane Grp Cap(c), veh/h | 682 | 0 | 1160 | 700 | 1355 | 1286 | 200 | 0 | 133 | 186 | 0 | 0 |
| V/C Ratio(X) | 0.02 | 0.00 | 0.52 | 0.03 | 0.38 | 0.00 | 0.12 | 0.00 | 0.55 | 0.23 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 682 | 0 | 1160 | 1097 | 1355 | 1286 | 450 | 0 | 392 | 488 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.92 | 0.00 | 0.92 | 0.09 | 0.09 | 0.09 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 1.9 | 2.2 | 1.5 | 33.7 | 0.0 | 34.7 | 33.9 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 1.5 | 0.0 | 0.1 | 0.0 | 0.3 | 0.0 | 3.5 | 0.6 | 0.0 | 0.0 |
| 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 | 0.0 | 0.0 | 0.9 | 0.2 | 3.9 | 0.0 | 0.9 | 0.0 | 3.0 | 1.6 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.1 | 0.0 | 1.5 | 1.9 | 2.2 | 1.5 | 33.9 | 0.0 | 38.1 | 34.5 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | A | A | C | | D | C | | |
| Approach Vol, veh/h | | 619 | | | 539 | | | 96 | | | 42 | |
| Approach Delay, s/veh | | 1.5 | | | 2.2 | | | 37.1 | | | 34.5 | |
| Approach LOS | | A | | | A | | | D | | | C | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 68.5 | | 11.5 | 6.2 | 62.3 | | 11.5 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 49.0 | | 21.0 | 20.0 | 24.0 | | 21.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 9.3 | | 6.4 | 2.7 | 3.2 | | 3.8 | | | | |
| Green Ext Time (p_c), s | | 10.6 | | 0.4 | 0.0 | 8.5 | | 0.4 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 5.5 | | | | | | | | | |
| HCM 2010 LOS | | | A | | | | | | | | | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↑ | ↘ | ↙ | ↔ | ↔ | ↔ | ↑ | ↘ | ↙ | ↔ | ↔ |
| Volume (vph) | 35 | 37 | 542 | 583 | 97 | 26 | 468 | 518 | 954 | 26 | 1243 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | | 2% | | | -5% | | | 5% | | | 0% | |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 1 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | | | | 1.00 | 1.00 | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.969 | | | | 0.850 | | 0.991 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1411 | 1445 | 1402 | 3081 | 1691 | 0 | 1415 | 3022 | 1511 | 1539 | 3155 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.082 | | | 0.458 | | |
| Satd. Flow (perm) | 1406 | 1445 | 1402 | 3081 | 1691 | 0 | 122 | 3022 | 1478 | 741 | 3155 | 0 |
| Right Turn on Red | | | No | | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 958 | | | 6 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 7 | | 2 | 2 | | 7 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Heavy Vehicles (%) | 16% | 11% | 8% | 3% | 0% | 9% | 10% | 3% | 2% | 0% | 3% | 14% |
| Adj. Flow (vph) | 35 | 37 | 547 | 589 | 98 | 26 | 473 | 523 | 964 | 26 | 1256 | 79 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 35 | 37 | 547 | 589 | 124 | 0 | 473 | 523 | 964 | 26 | 1335 | 0 |
| Turn Type | Split | NA | pm+ov | Split | NA | | pm+pt | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | 8 | | | | 6 | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | Lead | | | | Lead | | | Lag | Lag | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |
| Total Split (s) | 21.0 | 21.0 | 23.0 | 25.0 | 25.0 | | 23.0 | 64.0 | 64.0 | 41.0 | 41.0 | |
| Total Split (%) | 19.1% | 19.1% | 20.9% | 22.7% | 22.7% | | 20.9% | 58.2% | 58.2% | 37.3% | 37.3% | |
| Maximum Green (s) | 15.0 | 15.0 | 17.0 | 19.0 | 19.0 | | 17.0 | 58.0 | 58.0 | 35.0 | 35.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Morning Peak Hour

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

Splits and Phases: 6: Fayette Street & Elm Street

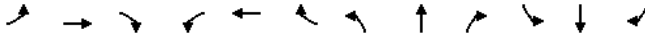


HCM 2010 Signalized Intersection Summary 2024 Future with Development - Scenario 1
 6: Fayette Street & Elm Street Weekday Morning Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|-------|------|------|------|------|------|-------|------|------|-------|-------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 35 | 37 | 542 | 583 | 97 | 26 | 468 | 518 | 954 | 26 | 1243 | 78 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), 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 | | 0.99 | 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 |
| Adj Sat Flow, veh/h/ln | 1536 | 1541 | 1650 | 1791 | 1811 | 1845 | 1595 | 1704 | 1789 | 1728 | 1737 | 1800 |
| Adj Flow Rate, veh/h | 35 | 37 | 459 | 589 | 98 | 26 | 473 | 523 | 803 | 26 | 1256 | 79 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Percent Heavy Veh, % | 16 | 11 | 8 | 3 | 0 | 0 | 10 | 3 | 2 | 0 | 3 | 3 |
| Cap, veh/h | 213 | 224 | 433 | 602 | 251 | 67 | 314 | 1736 | 810 | 190 | 1031 | 65 |
| Arrive On Green | 0.15 | 0.15 | 0.15 | 0.18 | 0.18 | 0.17 | 0.16 | 0.54 | 0.54 | 0.33 | 0.33 | 0.32 |
| Sat Flow, veh/h | 1463 | 1541 | 1397 | 3310 | 1379 | 366 | 1519 | 3237 | 1511 | 381 | 3151 | 198 |
| Grp Volume(v), veh/h | 35 | 37 | 459 | 589 | 0 | 124 | 473 | 523 | 803 | 26 | 657 | 678 |
| Grp Sat Flow(s),veh/h/ln | 1463 | 1541 | 1397 | 1655 | 0 | 1745 | 1519 | 1619 | 1511 | 381 | 1650 | 1699 |
| Q Serve(g_s), s | 2.3 | 2.3 | 16.0 | 19.5 | 0.0 | 6.9 | 18.0 | 9.8 | 57.8 | 5.4 | 36.0 | 36.0 |
| Cycle Q Clear(g_c), s | 2.3 | 2.3 | 16.0 | 19.5 | 0.0 | 6.9 | 18.0 | 9.8 | 57.8 | 5.4 | 36.0 | 36.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.21 | 1.00 | | 1.00 | 1.00 | | 0.12 |
| Lane Grp Cap(c), veh/h | 213 | 224 | 433 | 602 | 0 | 317 | 314 | 1736 | 810 | 190 | 540 | 556 |
| V/C Ratio(X) | 0.16 | 0.17 | 1.06 | 0.98 | 0.00 | 0.39 | 1.51 | 0.30 | 0.99 | 0.14 | 1.22 | 1.22 |
| Avail Cap(c_a), veh/h | 213 | 224 | 433 | 602 | 0 | 317 | 314 | 1736 | 810 | 190 | 540 | 556 |
| 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) | 0.86 | 0.86 | 0.86 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 41.1 | 41.2 | 38.0 | 44.8 | 0.0 | 39.7 | 33.0 | 14.1 | 25.2 | 26.7 | 37.0 | 37.1 |
| Incr Delay (d2), s/veh | 0.3 | 0.3 | 57.1 | 31.2 | 0.0 | 0.8 | 243.6 | 0.4 | 29.5 | 1.5 | 113.4 | 114.5 |
| 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 | 1.7 | 1.8 | 35.9 | 17.1 | 0.0 | 6.1 | 55.4 | 7.9 | 39.6 | 1.2 | 60.0 | 62.1 |
| LnGrp Delay(d),s/veh | 41.5 | 41.4 | 95.2 | 76.0 | 0.0 | 40.5 | 276.6 | 14.5 | 54.7 | 28.2 | 150.4 | 151.5 |
| LnGrp LOS | D | D | F | E | | D | F | B | D | C | F | F |
| Approach Vol, veh/h | 531 | | | 713 | | | 1799 | | | 1361 | | |
| Approach Delay, s/veh | 87.9 | | | 69.9 | | | 101.4 | | | 148.6 | | |
| Approach LOS | F | | | E | | | F | | | F | | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 23.0 | 41.0 | | 25.0 | | 64.0 | | 21.0 | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | 17.0 | 35.0 | | 19.0 | | 58.0 | | 15.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 20.5 | 38.5 | | 22.0 | | 60.3 | | 18.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | 109.2 | | | | | | | | | | | |
| HCM 2010 LOS | F | | | | | | | | | | | |

Lanes, Volumes, Timings
1: Corson Street & Elm Street

2024 Future with Development - Access Scenario 2 Imps
Weekday Morning Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|---|------|------|-------|------|------|-------|------|------|-------|------|------|
| Lane Configurations |  | | | | | | | | | | | |
| Volume (vph) | 0 | 377 | 35 | 281 | 309 | 2 | 4 | 0 | 19 | 9 | 0 | 5 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 11 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | | 1% | | | 0% | | | 0% | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | - | | | | | | | | | | | |
| Frt | 0.987 | | | 0.999 | | | 0.887 | | | 0.955 | | |
| Flt Protected | - | | | 0.950 | | | 0.992 | | | 0.968 | | |
| Satd. Flow (prot) | 1900 | 1620 | 0 | 1796 | 1863 | 0 | 0 | 1672 | 0 | 0 | 1991 | 0 |
| Flt Permitted | - | | | 0.950 | | | 0.992 | | | 0.968 | | |
| Satd. Flow (perm) | 1900 | 1620 | 0 | 1796 | 1863 | 0 | 0 | 1672 | 0 | 0 | 1991 | 0 |
| Link Speed (mph) | 25 | | | 25 | | | 25 | | | 25 | | |
| Link Distance (ft) | 275 | | | 276 | | | 219 | | | 188 | | |
| Travel Time (s) | 7.5 | | | 7.5 | | | 6.0 | | | 5.1 | | |
| Confl. Peds. (#/hr) | 1 | 1 | | 1 | 1 | | 1 | | 1 | | 1 | 0.93 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles (%) | 0% | 13% | 0% | 0% | 15% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 0 | 405 | 38 | 302 | 332 | 2 | 4 | 0 | 20 | 10 | 0 | 5 |
| Shared Lane Traffic (%) | - | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 443 | 0 | 302 | 334 | 0 | 0 | 24 | 0 | 0 | 15 | 0 |
| Sign Control | Free | | - | | Free | | Stop | | - | | Stop | |

Intersection Summary


Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC
1: Corson Street & Elm Street

2024 Future with Development - Access Scenario 2 Imps
Weekday Morning Peak Hour

| Intersection | | | | | | | | | | | | |
|--------------------------|--------|------|------|--------|-------|------|--------|-------|------|--------|------|------|
| Int Delay, s/veh | 4 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Vol, veh/h | 0 | 377 | 35 | 281 | 309 | 2 | 4 | 0 | 19 | 9 | 0 | 5 |
| Conflicting Peds, #/hr | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 0 | - | - | 0 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 13 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 405 | 38 | 302 | 332 | 2 | 4 | 0 | 20 | 10 | 0 | 5 |
| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
| Conflicting Flow All | 334 | 0 | 0 | 443 | 0 | 0 | 1364 | 1363 | 425 | 1372 | 1381 | 334 |
| Stage 1 | - | - | - | - | - | - | 424 | 424 | - | 938 | 938 | - |
| Stage 2 | - | - | - | - | - | - | 940 | 939 | - | 434 | 443 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.1 | 5.5 | - | 6.1 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 922 | - | - | 845 | - | - | 136 | 149 | 667 | 135 | 145 | 752 |
| Stage 1 | - | - | - | - | - | - | 694 | 590 | - | 353 | 346 | - |
| Stage 2 | - | - | - | - | - | - | 352 | 345 | - | 685 | 579 | - |
| Platoon blocked, % | - | | | | | | | | | | | |
| Mov Cap-1 Maneuver | 921 | - | - | 844 | - | - | 97 | 96 | 666 | 94 | 93 | 751 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 97 | 96 | - | 94 | 93 | - |
| Stage 1 | - | - | - | - | - | - | 694 | 590 | - | 353 | 222 | - |
| Stage 2 | - | - | - | - | - | - | 224 | 222 | - | 663 | 579 | - |
| Approach | EB | | | WB | | | NB | | | SB | | |
| HCM Control Delay, s | 0 | | | 5.5 | | | 16.8 | | | 34.5 | | |
| HCM LOS | C | | | A | | | C | | | D | | |
| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | | | | |
| Capacity (veh/h) | 330 | 921 | - | - | 844 | - | - | 137 | | | | |
| HCM Lane V/C Ratio | 0.075 | - | - | - | 0.358 | - | - | 0.11 | | | | |
| HCM Control Delay (s) | 16.8 | 0 | - | - | 11.6 | - | - | 34.5 | | | | |
| HCM Lane LOS | C | A | - | - | B | - | - | D | | | | |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 1.6 | - | - | 0.4 | | | | |

Lanes, Volumes, Timings 2024 Future with Development - Access Scenario 2 Imps
 2: Lot Access/Old Elm Street & Elm Street Weekday Morning Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|------|------|-------|------|------|------|------|------|
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | | | |
| Volume (vph) | 1 | 368 | 35 | 0 | 592 | 4 | 5 | 0 | 20 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 12 | 12 |
| Grade (%) | | -1% | | | 0% | | | 0% | | | -1% | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.988 | | | 0.999 | | | 0.891 | | | | | |
| Frt | 0.988 | | | 0.999 | | | 0.891 | | | | | |
| Fit Protected | | | | | | | 0.990 | | | | | |
| Satd. Flow (prot) | 0 | 1787 | 0 | 0 | 1666 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 |
| Fit Permitted | | | | | | | 0.990 | | | | | |
| Satd. Flow (perm) | 0 | 1787 | 0 | 0 | 1666 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 |
| Link Speed (mph) | 25 | | 25 | | 25 | | 25 | | 25 | | 25 | |
| Link Distance (ft) | 276 | | 571 | | 199 | | 208 | | 208 | | 208 | |
| Travel Time (s) | 7.5 | | 15.6 | | 5.4 | | 5.7 | | 5.7 | | 5.7 | |
| Confl. Peds. (#/hr) | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | |
| 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% | 10% | 0% | 33% | 14% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 387 | 37 | 0 | 623 | 4 | 5 | 0 | 21 | 0 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 425 | 0 | 0 | 627 | 0 | 0 | 26 | 0 | 0 | 0 | 0 |
| Sign Control | Free | | Free | | Free | | Stop | | Stop | | Stop | |

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

HCM 2010 TWSC 2024 Future with Development - Access Scenario 2 Imps
 2: Lot Access/Old Elm Street & Elm Street Weekday Morning Peak Hour

Intersection
 Int Delay, s/veh 0.3

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h | 1 | 368 | 35 | 0 | 592 | 4 | 5 | 0 | 20 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -1 | - | - | 0 | - | - | 0 | - | - | - | -1 |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 0 | 10 | 0 | 33 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 387 | 37 | 0 | 623 | 4 | 5 | 0 | 21 | 0 | 0 | 0 |

| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 627 | 0 | 0 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | 4.3 | - | - |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | 3 | - | - |
| Pot Cap-1 Maneuver | 729 | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 728 | - | - |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 12.7 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|-----------------------|-------|-------|-----|-----|-----|-----|-----|
| Capacity (veh/h) | 491 | 728 | - | - | 857 | - | - |
| HCM Lane V/C Ratio | 0.054 | 0.001 | - | - | - | - | - |
| HCM Control Delay (s) | 12.7 | 10 | 0 | - | 0 | - | - |
| HCM Lane LOS | B | A | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0.2 | 0 | - | - | 0 | - | - |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2024 Future with Development
Weekday Morning Peak Hour - Signal Timing Imps

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↑ | ↔ | ↔ | ↔ | ↔ | ↑ | ↑ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 35 | 37 | 542 | 583 | 97 | 26 | 468 | 518 | 954 | 26 | 1243 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | | 2% | | | -5% | | | 5% | | | 0% | |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 1 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 0.99 | | | | 1.00 | 1.00 | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.969 | | | | 0.850 | | 0.991 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1411 | 1445 | 1402 | 3081 | 1691 | 0 | 1415 | 3022 | 1511 | 1539 | 3155 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.086 | | | 0.458 | | |
| Satd. Flow (perm) | 1401 | 1445 | 1402 | 3081 | 1691 | 0 | 128 | 3022 | 1479 | 741 | 3155 | 0 |
| Right Turn on Red | | | No | | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 938 | | | 7 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 7 | | 2 | 2 | | 7 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Heavy Vehicles (%) | 16% | 11% | 8% | 3% | 0% | 9% | 10% | 3% | 2% | 0% | 3% | 14% |
| Adj. Flow (vph) | 35 | 37 | 547 | 589 | 98 | 26 | 473 | 523 | 964 | 26 | 1256 | 79 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 35 | 37 | 547 | 589 | 124 | 0 | 473 | 523 | 964 | 26 | 1335 | 0 |
| Turn Type | Split | NA | pm+ov | Split | NA | | pm+pt | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | 8 | | | | 6 | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | Lead | | | | Lead | | | Lag | Lag | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |
| Total Split (s) | 13.0 | 13.0 | 29.0 | 23.0 | 23.0 | | 29.0 | 74.0 | 74.0 | 45.0 | 45.0 | |
| Total Split (%) | 11.8% | 11.8% | 26.4% | 20.9% | 20.9% | | 26.4% | 67.3% | 67.3% | 40.9% | 40.9% | |
| Maximum Green (s) | 7.0 | 7.0 | 23.0 | 17.0 | 17.0 | | 23.0 | 68.0 | 68.0 | 39.0 | 39.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |

Intersection Summary

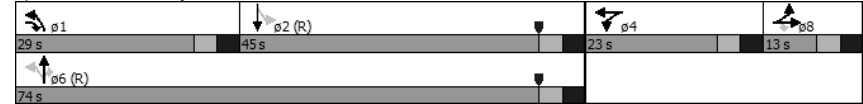
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2024 Future with Development
Weekday Morning Peak Hour - Signal Timing Imps

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

Splits and Phases: 6: Fayette Street & Elm Street



HCM 2010 Signalized Intersection Summary
 6: Fayette Street & Elm Street

2024 Future with Development
 Weekday Morning Peak Hour - Signal Timing Imps

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|-------|-------|-------|------|------|-------|------|------|------|-------|-------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ |
| Volume (veh/h) | 35 | 37 | 542 | 583 | 97 | 26 | 468 | 518 | 954 | 26 | 1243 | 78 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 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 |
| Adj Sat Flow, veh/h/ln | 1536 | 1541 | 1650 | 1791 | 1811 | 1845 | 1595 | 1704 | 1789 | 1728 | 1737 | 1800 |
| Adj Flow Rate, veh/h | 35 | 37 | 459 | 589 | 98 | 26 | 473 | 523 | 803 | 26 | 1256 | 79 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Percent Heavy Veh, % | 16 | 11 | 8 | 3 | 0 | 0 | 10 | 3 | 2 | 0 | 3 | 3 |
| Cap, veh/h | 106 | 112 | 407 | 542 | 226 | 60 | 397 | 2031 | 949 | 204 | 1146 | 72 |
| Arrive On Green | 0.07 | 0.07 | 0.07 | 0.16 | 0.16 | 0.15 | 0.22 | 0.63 | 0.63 | 0.36 | 0.36 | 0.35 |
| Sat Flow, veh/h | 1463 | 1541 | 1391 | 3310 | 1379 | 366 | 1519 | 3237 | 1513 | 381 | 3151 | 198 |
| Grp Volume(v), veh/h | 35 | 37 | 459 | 589 | 0 | 124 | 473 | 523 | 803 | 26 | 657 | 678 |
| Grp Sat Flow(s),veh/h/ln | 1463 | 1541 | 1391 | 1655 | 0 | 1745 | 1519 | 1619 | 1513 | 381 | 1650 | 1699 |
| Q Serve(g_s), s | 2.5 | 2.5 | 8.0 | 18.0 | 0.0 | 7.0 | 24.0 | 7.9 | 46.4 | 5.1 | 40.0 | 40.0 |
| Cycle Q Clear(g_c), s | 2.5 | 2.5 | 8.0 | 18.0 | 0.0 | 7.0 | 24.0 | 7.9 | 46.4 | 5.1 | 40.0 | 40.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.21 | 1.00 | | 1.00 | 1.00 | | 0.12 |
| Lane Grp Cap(c), veh/h | 106 | 112 | 407 | 542 | 0 | 285 | 397 | 2031 | 949 | 204 | 600 | 618 |
| V/C Ratio(X) | 0.33 | 0.33 | 1.13 | 1.09 | 0.00 | 0.43 | 1.19 | 0.26 | 0.85 | 0.13 | 1.09 | 1.10 |
| Avail Cap(c_a), veh/h | 106 | 112 | 407 | 542 | 0 | 285 | 397 | 2031 | 949 | 204 | 600 | 618 |
| 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) | 0.86 | 0.86 | 0.86 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 48.4 | 48.5 | 39.0 | 46.0 | 0.0 | 41.5 | 33.8 | 9.1 | 16.3 | 23.9 | 35.0 | 35.1 |
| Incr Delay (d2), s/veh | 1.5 | 1.5 | 81.0 | 64.6 | 0.0 | 1.0 | 108.6 | 0.3 | 9.2 | 1.3 | 65.2 | 65.9 |
| 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 | 1.9 | 2.0 | 38.7 | 23.5 | 0.0 | 6.2 | 43.2 | 6.4 | 29.2 | 1.1 | 52.3 | 54.0 |
| LnGrp Delay(d),s/veh | 50.0 | 49.9 | 120.0 | 110.6 | 0.0 | 42.6 | 142.4 | 9.4 | 25.5 | 25.2 | 100.2 | 100.9 |
| LnGrp LOS | D | D | F | F | | D | F | A | C | C | F | F |
| Approach Vol, veh/h | | 531 | | | 713 | | | 1799 | | | 1361 | |
| Approach Delay, s/veh | | 110.5 | | | 98.8 | | | 51.6 | | | 99.1 | |
| Approach LOS | | F | | | F | | | D | | | F | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 29.0 | 45.0 | | 23.0 | | 74.0 | | 13.0 | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | 23.0 | 39.0 | | 17.0 | | 68.0 | | 7.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 26.5 | 42.5 | | 20.5 | | 48.9 | | 10.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | | 15.8 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | | 81.0 | | | | | | | | |
| HCM 2010 LOS | | | | F | | | | | | | | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Morning Peak Hour - Dual NB Lefts

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↑ | ↘ | ↘ | ↙ | ↙ | ↑ | ↑ | ↗ | ↗ | ↓ | ↘ |
| Volume (vph) | 35 | 37 | 542 | 583 | 97 | 26 | 468 | 518 | 954 | 26 | 1243 | 78 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | | 2% | | | -5% | | | 5% | | | 0% | |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 2 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | | | | 1.00 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.969 | | | | 0.850 | | 0.991 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1411 | 1445 | 1402 | 3081 | 1691 | 0 | 2744 | 3022 | 1511 | 1539 | 3155 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.950 | | | 0.458 | | |
| Satd. Flow (perm) | 1405 | 1445 | 1402 | 3081 | 1691 | 0 | 2735 | 3022 | 1478 | 741 | 3155 | 0 |
| Right Turn on Red | | | No | | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 939 | | | 7 |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 2 | | | | | 2 | 7 | | 2 | 2 | | 7 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Heavy Vehicles (%) | 16% | 11% | 8% | 3% | 0% | 9% | 10% | 3% | 2% | 0% | 3% | 14% |
| Adj. Flow (vph) | 35 | 37 | 547 | 589 | 98 | 26 | 473 | 523 | 964 | 26 | 1256 | 79 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 35 | 37 | 547 | 589 | 124 | 0 | 473 | 523 | 964 | 26 | 1335 | 0 |
| Turn Type | Split | NA | pm+ov | Split | NA | | Prot | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | | 8 | | | | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |
| Total Split (s) | 19.0 | 19.0 | 23.0 | 22.0 | 22.0 | | 23.0 | 69.0 | 69.0 | 46.0 | 46.0 | |
| Total Split (%) | 17.3% | 17.3% | 20.9% | 20.0% | 20.0% | | 20.9% | 62.7% | 62.7% | 41.8% | 41.8% | |
| Maximum Green (s) | 13.0 | 13.0 | 17.0 | 16.0 | 16.0 | | 17.0 | 63.0 | 63.0 | 40.0 | 40.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |

Intersection Summary

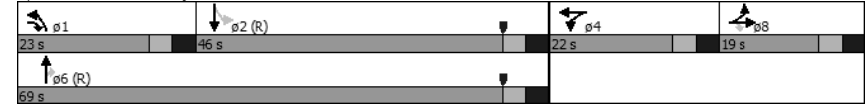
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Morning Peak Hour - Dual NB Lefts

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

Splits and Phases: 6: Fayette Street & Elm Street



HCM 2010 Signalized Intersection Summary
 6: Fayette Street & Elm Street

2024 Future with Development - Scenario 1
 Weekday Morning Peak Hour - Dual NB Lefts

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|-------|-------|-------|-------|------|------|------|------|------|------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ |
| Volume (veh/h) | 35 | 37 | 542 | 583 | 97 | 26 | 468 | 518 | 954 | 26 | 1243 | 78 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), 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 | | 0.99 | 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 |
| Adj Sat Flow, veh/h/ln | 1536 | 1541 | 1650 | 1791 | 1811 | 1845 | 1595 | 1704 | 1789 | 1728 | 1737 | 1800 |
| Adj Flow Rate, veh/h | 35 | 37 | 459 | 589 | 98 | 26 | 473 | 523 | 803 | 26 | 1256 | 79 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 2 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Percent Heavy Veh, % | 16 | 11 | 8 | 3 | 0 | 0 | 10 | 3 | 2 | 0 | 3 | 3 |
| Cap, veh/h | 186 | 196 | 407 | 511 | 213 | 57 | 482 | 1884 | 880 | 208 | 1175 | 74 |
| Arrive On Green | 0.13 | 0.13 | 0.13 | 0.15 | 0.15 | 0.15 | 0.16 | 0.58 | 0.58 | 0.37 | 0.37 | 0.36 |
| Sat Flow, veh/h | 1463 | 1541 | 1396 | 3310 | 1379 | 366 | 2948 | 3237 | 1512 | 381 | 3151 | 198 |
| Grp Volume(v), veh/h | 35 | 37 | 459 | 589 | 0 | 124 | 473 | 523 | 803 | 26 | 657 | 678 |
| Grp Sat Flow(s),veh/h/ln | 1463 | 1541 | 1396 | 1655 | 0 | 1744 | 1474 | 1619 | 1512 | 381 | 1650 | 1699 |
| Q Serve(g_s), s | 2.4 | 2.4 | 14.0 | 17.0 | 0.0 | 7.1 | 17.6 | 8.9 | 52.1 | 5.0 | 41.0 | 41.0 |
| Cycle Q Clear(g_c), s | 2.4 | 2.4 | 14.0 | 17.0 | 0.0 | 7.1 | 17.6 | 8.9 | 52.1 | 5.0 | 41.0 | 41.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.21 | 1.00 | | 1.00 | 1.00 | | 0.12 |
| Lane Grp Cap(c), veh/h | 186 | 196 | 407 | 511 | 0 | 270 | 482 | 1884 | 880 | 208 | 615 | 633 |
| V/C Ratio(X) | 0.19 | 0.19 | 1.13 | 1.15 | 0.00 | 0.46 | 0.98 | 0.28 | 0.91 | 0.13 | 1.07 | 1.07 |
| Avail Cap(c_a), veh/h | 186 | 196 | 407 | 511 | 0 | 270 | 482 | 1884 | 880 | 208 | 615 | 633 |
| 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) | 0.86 | 0.86 | 0.86 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 42.9 | 42.9 | 39.0 | 46.5 | 0.0 | 42.4 | 45.8 | 11.5 | 20.5 | 23.2 | 34.5 | 34.6 |
| Incr Delay (d2), s/veh | 0.4 | 0.4 | 81.0 | 88.8 | 0.0 | 1.2 | 35.8 | 0.4 | 15.4 | 1.2 | 55.7 | 56.3 |
| 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 | 1.8 | 1.9 | 38.7 | 25.3 | 0.0 | 6.4 | 14.6 | 7.2 | 33.4 | 1.1 | 50.7 | 52.3 |
| LnGrp Delay(d),s/veh | 43.3 | 43.3 | 120.0 | 135.3 | 0.0 | 43.6 | 81.7 | 11.8 | 35.9 | 24.5 | 90.2 | 90.8 |
| LnGrp LOS | D | D | F | F | | D | F | B | D | C | F | F |
| Approach Vol, veh/h | | 531 | | | 713 | | | 1799 | | | 1361 | |
| Approach Delay, s/veh | | 109.6 | | | 119.3 | | | 40.9 | | | 89.3 | |
| Approach LOS | | F | | | F | | | D | | | F | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 23.0 | 46.0 | | 22.0 | | 69.0 | | 19.0 | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | 17.0 | 40.0 | | 16.0 | | 63.0 | | 13.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 20.1 | 43.5 | | 19.5 | | 54.6 | | 16.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | | 7.6 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 76.9 | | | | | | | | | |
| HCM 2010 LOS | | | E | | | | | | | | | |

Lanes, Volumes, Timings
1: Corson Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Afternoon Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | ↔ | | | ↔ | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 1 | 459 | 10 | 25 | 535 | 8 | 29 | 0 | 118 | 19 | 0 | 1 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 11 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | | 1% | | | 0% | | | 0% | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.997 | | | 0.998 | | | 0.892 | | | 0.994 | | |
| Frt | 0.997 | | | 0.998 | | | 0.892 | | | 0.994 | | |
| Flt Protected | 0.950 | | | 0.990 | | | 0.955 | | | 0.955 | | |
| Satd. Flow (prot) | 0 | 1796 | 0 | 1796 | 2038 | 0 | 0 | 1678 | 0 | 0 | 2044 | 0 |
| Flt Permitted | 0.950 | | | 0.990 | | | 0.955 | | | 0.955 | | |
| Satd. Flow (perm) | 0 | 1796 | 0 | 1796 | 2038 | 0 | 0 | 1678 | 0 | 0 | 2044 | 0 |
| Link Speed (mph) | 25 | | | 25 | | | 25 | | | 25 | | |
| Link Distance (ft) | 275 | | | 276 | | | 219 | | | 188 | | |
| Travel Time (s) | 7.5 | | | 7.5 | | | 6.0 | | | 5.1 | | |
| Confl. Peds. (#/hr) | 2 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 5% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 488 | 11 | 27 | 569 | 9 | 31 | 0 | 126 | 20 | 0 | 1 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 500 | 0 | 27 | 578 | 0 | 0 | 157 | 0 | 0 | 21 | 0 |
| Sign Control | Free | | Free | | Stop | | Stop | | Stop | | Stop | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC
1: Corson Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Afternoon Peak Hour

| Intersection | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Int Delay, s/veh | 3 | | | | | | | | | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h | 1 | 459 | 10 | 25 | 535 | 8 | 29 | 0 | 118 | 19 | 0 | 1 |
| Conflicting Peds, #/hr | 2 | 0 | 3 | 3 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 488 | 11 | 27 | 569 | 9 | 31 | 0 | 126 | 20 | 0 | 1 |

| Major/Minor | Major1 | Major2 | Minor1 | Minor2 |
|----------------------|--------|--------|--------|--------|
| Conflicting Flow All | 581 | 0 | 0 | 502 |
| Stage 1 | - | - | - | - |
| Stage 2 | - | - | - | - |
| Critical Hdwy | 4.3 | - | - | 4.3 |
| Critical Hdwy Stg 1 | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - |
| Follow-up Hdwy | 3 | - | - | 3 |
| Pot Cap-1 Maneuver | 756 | - | - | 806 |
| Stage 1 | - | - | - | - |
| Stage 2 | - | - | - | - |
| Platoon blocked, % | - | - | - | - |
| Mov Cap-1 Maneuver | 754 | - | - | 803 |
| Mov Cap-2 Maneuver | - | - | - | - |
| Stage 1 | - | - | - | - |
| Stage 2 | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|-----|------|------|
| HCM Control Delay, s | 0 | 0.4 | 18.4 | 34.5 |
| HCM LOS | C | C | D | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 424 | 754 | - | - | 803 | - | - | 143 |
| HCM Lane V/C Ratio | 0.369 | 0.001 | - | - | 0.033 | - | - | 0.149 |
| HCM Control Delay (s) | 18.4 | 9.8 | 0 | - | 9.6 | - | - | 34.5 |
| HCM Lane LOS | C | A | A | - | A | - | - | D |
| HCM 95th %tile Q(veh) | 1.7 | 0 | - | - | 0.1 | - | - | 0.5 |

Lanes, Volumes, Timings

2024 Future with Development - Scenario 1

2: Lot Access/Old Elm Street & Elm Street

Weekday Afternoon Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | |
|-------------------------|-------|------|-------|------|-------|------|-------|------|-------|------|------|------|--|--|
| Lane Configurations | | | | | | | | | | | | | | |
| Volume (vph) | 0 | 575 | 6 | 24 | 554 | 10 | 29 | 0 | 122 | 0 | 0 | 0 | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | |
| Lane Width (ft) | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 12 | 12 | | |
| Grade (%) | | -1% | | | 0% | | | 0% | | | -1% | | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Ped Bike Factor | | | | | | | | | | | | | | |
| Frt | 0.999 | | | | 0.997 | | | | 0.891 | | | | | |
| Flt Protected | | | 0.950 | | | | 0.990 | | | | | | | |
| Satd. Flow (prot) | 0 | 1933 | 0 | 1805 | 1840 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 | | |
| Flt Permitted | | | 0.950 | | | | 0.990 | | | | | | | |
| Satd. Flow (perm) | 0 | 1933 | 0 | 1805 | 1840 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 | | |
| Link Speed (mph) | 25 | | | | 25 | | | | 25 | | | | | |
| Link Distance (ft) | 276 | | | | 571 | | | | 199 | | | | | |
| Travel Time (s) | 7.5 | | | | 15.6 | | | | 5.4 | | | | | |
| Confl. Peds. (#/hr) | | | | | | | 2 | | | | | | | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | | |
| Adj. Flow (vph) | 0 | 612 | 6 | 26 | 589 | 11 | 31 | 0 | 130 | 0 | 0 | 0 | | |
| Shared Lane Traffic (%) | | | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 618 | 0 | 26 | 600 | 0 | 0 | 161 | 0 | 0 | 0 | 0 | | |
| Sign Control | Free | | | | Free | | | | Stop | | | | | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC

2024 Future with Development - Scenario 1

2: Lot Access/Old Elm Street & Elm Street

Weekday Afternoon Peak Hour

| Intersection | | | | | | | | | | | | |
|------------------|-----|--|--|--|--|--|--|--|--|--|--|--|
| Int Delay, s/veh | 2.1 | | | | | | | | | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h | 0 | 575 | 6 | 24 | 554 | 10 | 29 | 0 | 122 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 1 | - | - | 0 | - |
| Grade, % | - | -1 | - | - | 0 | - | - | 0 | - | - | -1 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 612 | 6 | 26 | 589 | 11 | 31 | 0 | 130 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|----------------------|--------|---|---|--------|---|---|--------|------|-----|
| Conflicting Flow All | 600 | 0 | 0 | 620 | 0 | 0 | 1263 | 1268 | 617 |
| Stage 1 | - | - | - | - | - | - | 617 | 617 | - |
| Stage 2 | - | - | - | - | - | - | 646 | 651 | - |
| Critical Hdwy | 4.3 | - | - | 4.3 | - | - | 7.1 | 6.5 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.4 | 5.5 | - |
| Follow-up Hdwy | 3 | - | - | 3 | - | - | 3 | 4 | 3.1 |
| Pot Cap-1 Maneuver | 745 | - | - | 733 | - | - | 161 | 170 | 517 |
| Stage 1 | - | - | - | - | - | - | 608 | 484 | - |
| Stage 2 | - | - | - | - | - | - | 589 | 468 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 745 | - | - | 733 | - | - | 155 | 0 | 516 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 338 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 607 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 568 | 0 | - |

| Approach | EB | WB | NB |
|----------------------|----|-----|------|
| HCM Control Delay, s | 0 | 0.4 | 16.6 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|-----------------------|-------|-----|-----|-----|-------|-----|-----|
| Capacity (veh/h) | 469 | 745 | - | - | 733 | - | - |
| HCM Lane V/C Ratio | 0.343 | - | - | - | 0.035 | - | - |
| HCM Control Delay (s) | 16.6 | 0 | - | - | 10.1 | - | - |
| HCM Lane LOS | C | A | - | - | B | - | - |
| HCM 95th %tile Q(veh) | 1.5 | 0 | - | - | 0.1 | - | - |

Lanes, Volumes, Timings

2024 Future with Development - Scenario 1

3: Access/Wood Street & Elm Street & Colwell Street

Weekday Afternoon Peak Hour

| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|-------|-------|-------|------|-------|------|------|-------|-------|-------|------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 101 | 2 | 535 | 7 | 536 | 233 | 18 | 11 | 8 | 0 | 6 | 6 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 12 | 14 | 12 | 16 | 12 | 12 | 12 | 15 | 12 | 12 | 12 |
| Grade (%) | | | 0% | | 0% | | | | | -2% | | |
| Storage Length (ft) | | 78 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Storage Lanes | | 1 | | 0 | | 0 | | | 0 | | 0 | 0 |
| Taper Length (ft) | | 75 | | | | | | 75 | | | | 75 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | 1.00 | 1.00 | | 0.99 | | | | 0.99 | | | |
| Frt | | | 0.998 | | 0.957 | | | | 0.969 | | | |
| Flt Protected | | 0.950 | | | | | | | 0.963 | | | |
| Satd. Flow (prot) | 0 | 1676 | 1860 | 0 | 1836 | 0 | 0 | 0 | 1688 | 0 | 0 | 0 |
| Flt Permitted | | 0.123 | | | | | | | 0.840 | | | |
| Satd. Flow (perm) | 0 | 217 | 1860 | 0 | 1836 | 0 | 0 | 0 | 1472 | 0 | 0 | 0 |
| Right Turn on Red | | | | No | | | No | | | | No | |
| Satd. Flow (RTOR) | | | | | | | | | | | | |
| Link Speed (mph) | | | 25 | | 25 | | | | 25 | | | |
| Link Distance (ft) | | | 571 | | 600 | | | | 211 | | | |
| Travel Time (s) | | | 15.6 | | 16.4 | | | | 5.8 | | | |
| Confl. Peds. (#/hr) | 1 | | | 4 | | 1 | | 1 | | | 1 | |
| 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 (%) | 2% | 2% | 3% | 0% | 6% | 5% | 2% | 0% | 0% | 2% | 0% | 2% |
| Adj. Flow (vph) | 106 | 2 | 563 | 7 | 564 | 245 | 19 | 12 | 8 | 0 | 6 | 6 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 108 | 570 | 0 | 828 | 0 | 0 | 0 | 26 | 0 | 0 | 0 |
| Turn Type | Perm | Perm | NA | | NA | | | Perm | Perm | NA | | Perm |
| Protected Phases | | | 6 | | 2 | | | | 4 | | | |
| Permitted Phases | 6 | 6 | | | | | | | 4 | 4 | | 9 |
| Detector Phase | 6 | 6 | 6 | | 2 | | | 4 | 4 | 4 | | 9 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | | 21.0 | | | 21.0 | 21.0 | 21.0 | | 21.0 |
| Total Split (s) | 46.0 | 46.0 | 46.0 | | 46.0 | | | 30.0 | 30.0 | 30.0 | | 14.0 |
| Total Split (%) | 51.1% | 51.1% | 51.1% | | 51.1% | | | 33.3% | 33.3% | 33.3% | | 15.6% |
| Maximum Green (s) | 38.0 | 38.0 | 38.0 | | 38.0 | | | 22.0 | 22.0 | 22.0 | | 7.0 |
| Yellow Time (s) | 6.0 | 6.0 | 6.0 | | 6.0 | | | 6.0 | 6.0 | 6.0 | | 3.0 |
| All-Red Time (s) | 2.0 | 2.0 | 2.0 | | 2.0 | | | 2.0 | 2.0 | 2.0 | | 4.0 |
| Lost Time Adjust (s) | | -1.0 | -1.0 | | -1.0 | | | | | -1.0 | | |
| Total Lost Time (s) | | 7.0 | 7.0 | | 7.0 | | | | | 7.0 | | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | | 3.0 | | | 3.0 | 3.0 | 3.0 | | 3.0 |
| Recall Mode | C-Max | C-Max | C-Max | | C-Max | | | None | None | None | | None |
| Act Effect Green (s) | | 51.9 | 51.9 | | 51.9 | | | | 21.3 | | | |
| Actuated g/C Ratio | | 0.58 | 0.58 | | 0.58 | | | | 0.24 | | | |
| v/c Ratio | | 0.86 | 0.53 | | 0.78 | | | | 0.07 | | | |
| Control Delay | | 76.9 | 15.8 | | 18.5 | | | | 26.3 | | | |
| Queue Delay | | 0.0 | 0.0 | | 0.2 | | | | 0.0 | | | |

Lanes, Volumes, Timings

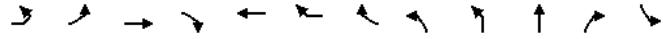
2024 Future with Development - Scenario 1

3: Access/Wood Street & Elm Street & Colwell Street

Weekday Afternoon Peak Hour

| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|-------|------|-------|------|------|
| Lane Configurations | | | | | |
| Volume (vph) | 0 | 2 | 237 | 11 | 57 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | 2% | | |
| Storage Length (ft) | | 0 | 0 | 0 | |
| Storage Lanes | | 0 | 1 | 0 | |
| Taper Length (ft) | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 1.00 | | |
| Frt | 0.966 | | 0.970 | | |
| Flt Protected | 0.964 | | 0.963 | | |
| Satd. Flow (prot) | 1643 | 0 | 1641 | 0 | 0 |
| Flt Permitted | | | 0.963 | | |
| Satd. Flow (perm) | 1705 | 0 | 1638 | 0 | 0 |
| Right Turn on Red | | | | | No |
| Satd. Flow (RTOR) | | | | | |
| Link Speed (mph) | 25 | | 25 | | |
| Link Distance (ft) | 267 | | 303 | | |
| Travel Time (s) | 7.3 | | 8.3 | | |
| Confl. Peds. (#/hr) | | | 1 | | 1 |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Heavy Vehicles (%) | 2% | 2% | 1% | 0% | 2% |
| Adj. Flow (vph) | 0 | 2 | 249 | 12 | 60 |
| Shared Lane Traffic (%) | | | | | |
| Lane Group Flow (vph) | 8 | 0 | 321 | 0 | 0 |
| Turn Type | NA | | Perm | | |
| Protected Phases | 9 | | | | |
| Permitted Phases | | | 8 | | |
| Detector Phase | 9 | | 8 | | |
| Switch Phase | | | | | |
| Minimum Initial (s) | 3.0 | | 3.0 | | |
| Minimum Split (s) | 21.0 | | 21.0 | | |
| Total Split (s) | 14.0 | | 30.0 | | |
| Total Split (%) | 15.6% | | 33.3% | | |
| Maximum Green (s) | 7.0 | | 22.0 | | |
| Yellow Time (s) | 3.0 | | 6.0 | | |
| All-Red Time (s) | 4.0 | | 2.0 | | |
| Lost Time Adjust (s) | -1.0 | | -1.0 | | |
| Total Lost Time (s) | 6.0 | | 7.0 | | |
| Lead/Lag | | | | | |
| Lead-Lag Optimize? | | | | | |
| Vehicle Extension (s) | 3.0 | | 3.0 | | |
| Recall Mode | None | | None | | |
| Act Effect Green (s) | 7.1 | | 21.3 | | |
| Actuated g/C Ratio | 0.08 | | 0.24 | | |
| v/c Ratio | 0.06 | | 0.83 | | |
| Control Delay | 38.9 | | 51.2 | | |
| Queue Delay | 0.0 | | 0.0 | | |

Lanes, Volumes, Timings
 3: Access/Wood Street & Elm Street & Colwell Street
 2024 Future with Development - Scenario 1
 Weekday Afternoon Peak Hour



| Lane Group | EBL2 | EBL | EBT | EBR | WBT | WBR | WBR2 | NBL2 | NBL | NBT | NBR | SBL |
|-------------------------|------|------|------|-----|------|-----|------|------|-----|------|-----|-----|
| Total Delay | | 76.9 | 15.8 | | 18.7 | | | | | 26.3 | | |
| LOS | | E | B | | B | | | | | C | | |
| Approach Delay | | | 25.5 | | 18.7 | | | | | 26.3 | | |
| Approach LOS | | | C | | B | | | | | C | | |
| Queue Length 50th (ft) | | 46 | 177 | | 268 | | | | | 11 | | |
| Queue Length 95th (ft) | | #176 | 381 | | #732 | | | | | 32 | | |
| Internal Link Dist (ft) | | | 491 | | 520 | | | | | 131 | | |
| Turn Bay Length (ft) | | 78 | | | | | | | | | | |
| Base Capacity (vph) | | 125 | 1071 | | 1057 | | | | | 376 | | |
| Starvation Cap Reductn | | 0 | 0 | | 19 | | | | | 0 | | |
| Spillback Cap Reductn | | 0 | 0 | | 0 | | | | | 0 | | |
| Storage Cap Reductn | | 0 | 0 | | 0 | | | | | 0 | | |
| Reduced v/c Ratio | | 0.86 | 0.53 | | 0.80 | | | | | 0.07 | | |

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 27.0 Intersection LOS: C

Intersection Capacity Utilization 96.9% ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings
 3: Access/Wood Street & Elm Street & Colwell Street
 2024 Future with Development - Scenario 1
 Weekday Afternoon Peak Hour



| Lane Group | SBT | SBR | SEL | SER | SER2 |
|-------------------------|------|-----|------|-----|------|
| Total Delay | 38.9 | | 51.2 | | |
| LOS | D | | D | | |
| Approach Delay | 38.9 | | 51.2 | | |
| Approach LOS | D | | D | | |
| Queue Length 50th (ft) | 4 | | 169 | | |
| Queue Length 95th (ft) | 18 | | #295 | | |
| Internal Link Dist (ft) | 187 | | 223 | | |
| Turn Bay Length (ft) | | | | | |
| Base Capacity (vph) | 151 | | 418 | | |
| Starvation Cap Reductn | 0 | | 0 | | |
| Spillback Cap Reductn | 0 | | 0 | | |
| Storage Cap Reductn | 0 | | 0 | | |
| Reduced v/c Ratio | 0.05 | | 0.77 | | |

Intersection Summary

Lanes, Volumes, Timings
4: Maple Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Afternoon Peak Hour

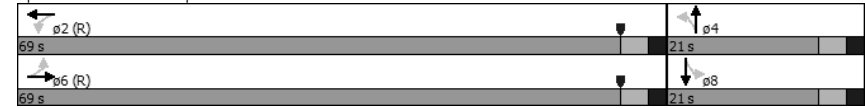
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|
| Lane Configurations | ↔ | ↔ | | ↔ | ↔ | | | ↕ | | | ↕ | |
| Volume (vph) | 57 | 689 | 12 | 36 | 755 | 36 | 6 | 2 | 19 | 18 | 4 | 56 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 10 | 14 | 12 | 10 | 13 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | | 2% | | | 0% | | | 1% | | | -1% | |
| Storage Length (ft) | 79 | | 0 | 75 | | 0 | 0 | | 0 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 0.97 | | | 0.97 | |
| Frt | | 0.997 | | | 0.993 | | | 0.904 | | | 0.903 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.989 | | | 0.989 | |
| Satd. Flow (prot) | 1580 | 1837 | 0 | 1550 | 1745 | 0 | 0 | 1440 | 0 | 0 | 1719 | 0 |
| Flt Permitted | 0.309 | | | 0.351 | | | | 0.922 | | | 0.912 | |
| Satd. Flow (perm) | 513 | 1837 | 0 | 572 | 1745 | 0 | 0 | 1338 | 0 | 0 | 1580 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | Yes | | | Yes | |
| Satd. Flow (RTOR) | | 3 | | | 7 | | | 20 | | | 59 | |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 600 | | | 300 | | | 222 | | | 228 | |
| Travel Time (s) | | 16.4 | | | 8.2 | | | 6.1 | | | 6.2 | |
| Confl. Peds. (#/hr) | 10 | | 7 | 7 | | 10 | 7 | | 5 | 5 | | 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% | 3% | 10% | 3% | 6% | 0% | 20% | 0% | 6% | 0% | 0% | 5% |
| Adj. Flow (vph) | 60 | 725 | 13 | 38 | 795 | 38 | 6 | 2 | 20 | 19 | 4 | 59 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 60 | 738 | 0 | 38 | 833 | 0 | 0 | 28 | 0 | 0 | 82 | 0 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 6 | | | 2 | | | 4 | | | 8 | |
| Permitted Phases | 6 | | | 2 | | | 4 | | | 8 | | |
| Detector Phase | 6 | 6 | | 2 | 2 | | 4 | 4 | | 8 | 8 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |
| Total Split (s) | 69.0 | 69.0 | | 69.0 | 69.0 | | 21.0 | 21.0 | | 21.0 | 21.0 | |
| Total Split (%) | 76.7% | 76.7% | | 76.7% | 76.7% | | 23.3% | 23.3% | | 23.3% | 23.3% | |
| Maximum Green (s) | 64.0 | 64.0 | | 64.0 | 64.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 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 | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 4.0 | | | 4.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | C-Max | C-Max | | C-Max | C-Max | | None | None | | None | None | |
| Intersection Summary | | | | | | | | | | | | |
| Area Type: | Other | | | | | | | | | | | |
| Cycle Length: | 90 | | | | | | | | | | | |
| Actuated Cycle Length: | 90 | | | | | | | | | | | |

Lanes, Volumes, Timings
4: Maple Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Afternoon Peak Hour

Offset: 6 (7%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 4: Maple Street & Elm Street



HCM 2010 Signalized Intersection Summary
4: Maple Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Afternoon Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|------|------|------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 57 | 689 | 12 | 36 | 755 | 36 | 6 | 2 | 19 | 18 | 4 | 56 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.99 | 1.00 | | 0.99 | 0.96 | | 0.93 | 0.94 | | 0.93 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1782 | 1797 | 1782 | 1748 | 1771 | 1800 | 1791 | 1650 | 1791 | 1809 | 1816 | 1809 |
| Adj Flow Rate, veh/h | 60 | 725 | 13 | 38 | 795 | 38 | 6 | 2 | 8 | 19 | 4 | 32 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 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 | 3 | 3 | 3 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cap, veh/h | 612 | 1494 | 27 | 650 | 1423 | 68 | 78 | 23 | 45 | 80 | 12 | 52 |
| Arrive On Green | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.05 | 0.06 | 0.05 | 0.05 | 0.06 | 0.05 |
| Sat Flow, veh/h | 627 | 1760 | 32 | 671 | 1676 | 80 | 364 | 366 | 731 | 418 | 186 | 841 |
| Grp Volume(v), veh/h | 60 | 0 | 738 | 38 | 0 | 833 | 16 | 0 | 0 | 55 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 627 | 0 | 1791 | 671 | 0 | 1756 | 1461 | 0 | 0 | 1446 | 0 | 0 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.4 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 0.0 | 0.0 | 3.3 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.02 | 1.00 | | 0.05 | 0.37 | | 0.50 | 0.35 | | 0.58 |
| Lane Grp Cap(c), veh/h | 612 | 0 | 1521 | 650 | 0 | 1491 | 130 | 0 | 0 | 128 | 0 | 0 |
| V/C Ratio(X) | 0.10 | 0.00 | 0.49 | 0.06 | 0.00 | 0.56 | 0.12 | 0.00 | 0.00 | 0.43 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 612 | 0 | 1521 | 650 | 0 | 1491 | 292 | 0 | 0 | 305 | 0 | 0 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.73 | 0.00 | 0.73 | 0.81 | 0.00 | 0.81 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 40.4 | 0.0 | 0.0 | 41.5 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.2 | 0.0 | 0.8 | 0.1 | 0.0 | 1.2 | 0.4 | 0.0 | 0.0 | 2.3 | 0.0 | 0.0 |
| 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 | 0.1 | 0.0 | 0.6 | 0.0 | 0.0 | 0.9 | 0.7 | 0.0 | 0.0 | 2.6 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 0.2 | 0.0 | 0.8 | 0.1 | 0.0 | 1.2 | 40.9 | 0.0 | 0.0 | 43.8 | 0.0 | 0.0 |
| LnGrp LOS | A | | A | A | | A | D | | | D | | |
| Approach Vol, veh/h | | 798 | | | 871 | | | 16 | | | 55 | |
| Approach Delay, s/veh | | 0.8 | | | 1.2 | | | 40.9 | | | 43.8 | |
| Approach LOS | | A | | | A | | | D | | | D | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 80.4 | | 9.6 | | 80.4 | | 9.6 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 64.0 | | 16.0 | | 64.0 | | 16.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 2.5 | | 2.9 | | 2.5 | | 5.3 | | | | |
| Green Ext Time (p_c), s | | 23.1 | | 0.2 | | 23.1 | | 0.2 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 2.7 | | | | | | | | | |
| HCM 2010 LOS | | | A | | | | | | | | | |

Lanes, Volumes, Timings
5: Oak Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Afternoon Peak Hour

| | ← | → | ↙ | ↘ | ← | ↖ | ↗ | ↘ | ↙ | ↖ | ↗ | ↘ | ↙ | ↖ | ↗ |
|-------------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | | |
| Lane Configurations | ↖ | ↖ | ↖ | ↖ | ↖ | ↖ | ↖ | ↖ | ↖ | ↖ | ↖ | ↖ | ↖ | ↖ | ↖ |
| Volume (vph) | 11 | 682 | 26 | 20 | 619 | 5 | 178 | 8 | 139 | 12 | 2 | 25 | | | |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | | | |
| Lane Width (ft) | 10 | 13 | 12 | 10 | 11 | 12 | 12 | 11 | 12 | 12 | 16 | 12 | | | |
| Grade (%) | | 7% | | | -9% | | | 0% | | | 0% | | | | |
| Storage Length (ft) | 77 | | 0 | 95 | | 95 | 0 | | 95 | 0 | | 0 | | | |
| Storage Lanes | 1 | | 0 | 1 | | 1 | 0 | | 1 | 0 | | 0 | | | |
| Taper Length (ft) | 75 | | | 75 | | 75 | | | 75 | | | 75 | | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | | 0.98 | | 1.00 | 0.98 | | 0.99 | | | | |
| Frt | | 0.994 | | | | 0.850 | | | 0.850 | | 0.913 | | | | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.954 | | | 0.985 | | | | |
| Satd. Flow (prot) | 1540 | 1749 | 0 | 1573 | 1732 | 1599 | 0 | 1644 | 1485 | 0 | 1809 | 0 | | | |
| Flt Permitted | 0.374 | | | 0.207 | | | | 0.705 | | | 0.898 | | | | |
| Satd. Flow (perm) | 604 | 1749 | 0 | 343 | 1732 | 1561 | 0 | 1213 | 1450 | 0 | 1648 | 0 | | | |
| Right Turn on Red | | | Yes | | | Yes | | | No | | | No | | | |
| Satd. Flow (RTOR) | | 2 | | | | 24 | | | | | | | | | |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | | | | |
| Link Distance (ft) | | 300 | | | 550 | | | 247 | | | 248 | | | | |
| Travel Time (s) | | 8.2 | | | 15.0 | | | 6.7 | | | 6.8 | | | | |
| Confl. Peds. (#/hr) | 5 | | 4 | 4 | | 5 | 1 | | 2 | 2 | | 1 | | | |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 6% | 5% | 0% | 1% | 0% | 3% | 0% | 0% | 0% | | | |
| Adj. Flow (vph) | 12 | 733 | 28 | 22 | 666 | 5 | 191 | 9 | 149 | 13 | 2 | 27 | | | |
| Shared Lane Traffic (%) | | | | | | | | | | | | | | | |
| Lane Group Flow (vph) | 12 | 761 | 0 | 22 | 666 | 5 | 0 | 200 | 149 | 0 | 42 | 0 | | | |
| Turn Type | Perm | NA | | pm+pt | NA | Perm | Perm | NA | Perm | Perm | NA | | | | |
| Protected Phases | | 6 | | 5 | 2 | | | 4 | | | 8 | | | | |
| Permitted Phases | 6 | | | 2 | | 2 | 4 | | 4 | 8 | | | | | |
| Detector Phase | 6 | 6 | | 5 | 2 | 2 | 4 | 4 | 4 | 8 | 8 | | | | |
| Switch Phase | | | | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Minimum Split (s) | 21.0 | 21.0 | | 13.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | | |
| Total Split (s) | 32.0 | 32.0 | | 29.0 | 61.0 | 61.0 | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | | | | |
| Total Split (%) | 35.6% | 35.6% | | 32.2% | 67.8% | 67.8% | 32.2% | 32.2% | 32.2% | 32.2% | 32.2% | | | | |
| Maximum Green (s) | 27.0 | 27.0 | | 24.0 | 56.0 | 56.0 | 24.0 | 24.0 | 24.0 | 24.0 | 24.0 | | | | |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| 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 | | | | |
| Total Lost Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 | | | 4.0 | 4.0 | 4.0 | | | | |
| Lead/Lag | Lag | Lag | | Lead | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | | | |
| Recall Mode | C-Max | C-Max | | None | C-Max | C-Max | None | None | None | None | None | | | | |

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90

Lanes, Volumes, Timings
5: Oak Street & Elm Street

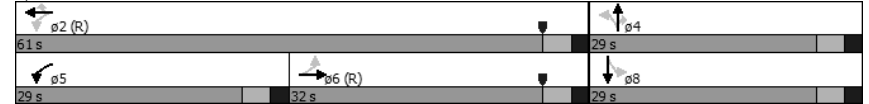
2024 Future with Development - Scenario 1
Weekday Afternoon Peak Hour

Offset: 8 (9%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

Splits and Phases: 5: Oak Street & Elm Street



HCM 2010 Signalized Intersection Summary 2024 Future with Development - Scenario 1
 5: Oak Street & Elm Street Weekday Afternoon Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | ↖ | ↖ | ↗ | ↖ | ↗ | ↖ | ↗ |
| Volume (veh/h) | 11 | 682 | 26 | 20 | 619 | 5 | 178 | 8 | 139 | 12 | 2 | 25 |
| Number | 1 | 6 | 16 | 5 | 2 | 12 | 7 | 4 | 14 | 3 | 8 | 18 |
| Initial Q (Ob), 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 |
| Adj Sat Flow, veh/h/ln | 1737 | 1772 | 1737 | 1775 | 1791 | 1881 | 1800 | 1783 | 1748 | 1800 | 1872 | 1800 |
| Adj Flow Rate, veh/h | 12 | 733 | 28 | 22 | 666 | 5 | 191 | 9 | 149 | 13 | 2 | 27 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 6 | 5 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Cap, veh/h | 376 | 956 | 37 | 281 | 1135 | 1009 | 243 | 8 | 411 | 52 | 31 | 55 |
| Arrive On Green | 0.56 | 0.56 | 0.55 | 0.03 | 0.63 | 0.63 | 0.27 | 0.28 | 0.28 | 0.27 | 0.28 | 0.27 |
| Sat Flow, veh/h | 711 | 1696 | 65 | 1690 | 1791 | 1593 | 592 | 28 | 1480 | 0 | 110 | 198 |
| Grp Volume(v), veh/h | 12 | 0 | 761 | 22 | 666 | 5 | 200 | 0 | 149 | 42 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 711 | 0 | 1761 | 1690 | 1791 | 1593 | 620 | 0 | 1480 | 308 | 0 | 0 |
| Q Serve(g_s), s | 0.9 | 0.0 | 29.9 | 0.5 | 19.5 | 0.1 | 0.0 | 0.0 | 7.3 | 0.0 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 14.2 | 0.0 | 29.9 | 0.5 | 19.5 | 0.1 | 24.0 | 0.0 | 7.3 | 24.0 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.04 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.31 | | 0.64 |
| Lane Grp Cap(c), veh/h | 376 | 0 | 992 | 281 | 1135 | 1009 | 244 | 0 | 411 | 135 | 0 | 0 |
| V/C Ratio(X) | 0.03 | 0.00 | 0.77 | 0.08 | 0.59 | 0.00 | 0.82 | 0.00 | 0.36 | 0.31 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 376 | 0 | 992 | 708 | 1135 | 1009 | 244 | 0 | 411 | 135 | 0 | 0 |
| 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) | 0.88 | 0.00 | 0.88 | 0.09 | 0.09 | 0.09 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 15.6 | 0.0 | 15.1 | 12.5 | 9.6 | 6.1 | 34.7 | 0.0 | 26.1 | 26.6 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 5.0 | 0.0 | 0.2 | 0.0 | 19.6 | 0.0 | 0.5 | 1.3 | 0.0 | 0.0 |
| 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 | 0.3 | 0.0 | 21.9 | 0.4 | 11.0 | 0.1 | 2.4 | 0.0 | 5.5 | 1.5 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 15.7 | 0.0 | 20.1 | 12.6 | 9.8 | 6.1 | 54.3 | 0.0 | 26.6 | 27.9 | 0.0 | 0.0 |
| LnGrp LOS | B | | C | B | A | A | D | | C | C | | |
| Approach Vol, veh/h | | 773 | | | 693 | | | 349 | | | 42 | |
| Approach Delay, s/veh | | 20.0 | | | 9.9 | | | 42.5 | | | 27.9 | |
| Approach LOS | | C | | | A | | | D | | | C | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 61.0 | | 29.0 | 6.3 | 54.7 | | 29.0 | | | | |
| Change Period (Y+Rc), s | | 5.0 | | 5.0 | 5.0 | 5.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | | 56.0 | | 24.0 | 24.0 | 27.0 | | 24.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 22.0 | | 26.0 | 3.0 | 31.9 | | 26.0 | | | | |
| Green Ext Time (p_c), s | | 14.4 | | 0.0 | 0.0 | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | | | 20.6 | | | | | | | | | |
| HCM 2010 LOS | | | C | | | | | | | | | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Afternoon Peak Hour

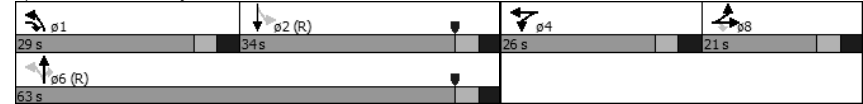
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↑ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 134 | 116 | 700 | 766 | 79 | 57 | 524 | 1083 | 769 | 23 | 910 | 84 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | | 2% | | | -5% | | | 5% | | | 0% | |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 1 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | | | | 0.99 | | 1.00 | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.937 | | | | 0.850 | | 0.987 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1589 | 1557 | 1485 | 3174 | 1584 | 0 | 1511 | 3112 | 1526 | 1466 | 3205 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.112 | | | 0.258 | | |
| Satd. Flow (perm) | 1586 | 1557 | 1485 | 3174 | 1584 | 0 | 178 | 3112 | 1490 | 397 | 3205 | 0 |
| Right Turn on Red | | | No | | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 579 | | 9 | |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | 18 | | 4 | 4 | | 18 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 7% | 2% | 3% | 0% | 1% | 5% | 1% | 5% |
| Adj. Flow (vph) | 137 | 118 | 714 | 782 | 81 | 58 | 535 | 1105 | 785 | 23 | 929 | 86 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 137 | 118 | 714 | 782 | 139 | 0 | 535 | 1105 | 785 | 23 | 1015 | 0 |
| Turn Type | Split | NA | pm+ov | Split | NA | | pm+pt | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | | 1 | 4 | 4 | | 1 | 6 | | 2 | |
| Permitted Phases | | | | 8 | | | | 6 | | 6 | 2 | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |
| Total Split (s) | 21.0 | 21.0 | 29.0 | 26.0 | 26.0 | | 29.0 | 63.0 | 63.0 | 34.0 | 34.0 | |
| Total Split (%) | 19.1% | 19.1% | 26.4% | 23.6% | 23.6% | | 26.4% | 57.3% | 57.3% | 30.9% | 30.9% | |
| Maximum Green (s) | 15.0 | 15.0 | 23.0 | 20.0 | 20.0 | | 23.0 | 57.0 | 57.0 | 28.0 | 28.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |
| Intersection Summary | | | | | | | | | | | | |
| Area Type: | Other | | | | | | | | | | | |
| Cycle Length: | 110 | | | | | | | | | | | |
| Actuated Cycle Length: | 110 | | | | | | | | | | | |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Afternoon Peak Hour

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated

Splits and Phases: 6: Fayette Street & Elm Street



HCM 2010 Signalized Intersection Summary 2024 Future with Development - Scenario 1
 6: Fayette Street & Elm Street Weekday Afternoon Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|------|------|-------|-------|------|------|-------|------|------|-------|-------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 134 | 116 | 700 | 766 | 79 | 57 | 524 | 1083 | 769 | 23 | 910 | 84 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), 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 | | 0.98 | 1.00 | | 0.96 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1730 | 1661 | 1747 | 1845 | 1759 | 1845 | 1704 | 1755 | 1807 | 1646 | 1776 | 1800 |
| Adj Flow Rate, veh/h | 137 | 118 | 615 | 782 | 81 | 58 | 535 | 1105 | 653 | 23 | 929 | 86 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Percent Heavy Veh, % | 3 | 3 | 2 | 0 | 7 | 7 | 3 | 0 | 1 | 5 | 1 | 1 |
| Cap, veh/h | 240 | 242 | 540 | 651 | 182 | 130 | 420 | 1758 | 796 | 129 | 821 | 76 |
| Arrive On Green | 0.15 | 0.15 | 0.15 | 0.19 | 0.19 | 0.18 | 0.22 | 0.53 | 0.53 | 0.26 | 0.26 | 0.25 |
| Sat Flow, veh/h | 1648 | 1661 | 1482 | 3409 | 954 | 683 | 1623 | 3335 | 1510 | 239 | 3112 | 288 |
| Grp Volume(v), veh/h | 137 | 118 | 615 | 782 | 0 | 139 | 535 | 1105 | 653 | 23 | 504 | 511 |
| Grp Sat Flow(s),veh/h/ln | 1648 | 1661 | 1482 | 1704 | 0 | 1637 | 1623 | 1667 | 1510 | 239 | 1687 | 1713 |
| Q Serve(g_s), s | 8.5 | 7.2 | 16.0 | 21.0 | 0.0 | 8.3 | 24.0 | 25.8 | 39.6 | 8.6 | 29.0 | 29.0 |
| Cycle Q Clear(g_c), s | 8.5 | 7.2 | 16.0 | 21.0 | 0.0 | 8.3 | 24.0 | 25.8 | 39.6 | 8.6 | 29.0 | 29.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.42 | 1.00 | | 1.00 | 1.00 | | 0.17 |
| Lane Grp Cap(c), veh/h | 240 | 242 | 540 | 651 | 0 | 312 | 420 | 1758 | 796 | 129 | 445 | 452 |
| V/C Ratio(X) | 0.57 | 0.49 | 1.14 | 1.20 | 0.00 | 0.44 | 1.28 | 0.63 | 0.82 | 0.18 | 1.13 | 1.13 |
| Avail Cap(c_a), veh/h | 240 | 242 | 540 | 651 | 0 | 312 | 420 | 1758 | 796 | 129 | 445 | 452 |
| 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) | 0.72 | 0.72 | 0.72 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 43.8 | 43.2 | 35.0 | 44.5 | 0.0 | 39.5 | 32.6 | 18.4 | 21.7 | 33.0 | 40.5 | 40.6 |
| Incr Delay (d2), s/veh | 2.3 | 1.1 | 78.5 | 105.0 | 0.0 | 1.0 | 141.3 | 1.7 | 9.3 | 3.0 | 84.0 | 83.8 |
| 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 | 6.8 | 5.9 | 50.6 | 34.8 | 0.0 | 6.9 | 52.5 | 18.0 | 25.4 | 1.2 | 42.9 | 43.5 |
| LnGrp Delay(d),s/veh | 46.1 | 44.3 | 113.5 | 149.5 | 0.0 | 40.5 | 173.9 | 20.1 | 30.9 | 36.0 | 124.5 | 124.4 |
| LnGrp LOS | D | D | F | F | | D | F | C | C | D | F | F |
| Approach Vol, veh/h | 870 | | | 921 | | | 2293 | | | 1038 | | |
| Approach Delay, s/veh | 93.5 | | | 133.0 | | | 59.1 | | | 122.5 | | |
| Approach LOS | F | | | F | | | E | | | F | | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 29.0 | 34.0 | | 26.0 | | 63.0 | | 21.0 | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | 23.0 | 28.0 | | 20.0 | | 57.0 | | 15.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 26.5 | 31.5 | | 23.5 | | 42.1 | | 18.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | | 13.1 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | 91.1 | | | | | | | | | | | |
| HCM 2010 LOS | F | | | | | | | | | | | |

Lanes, Volumes, Timings
1: Corson Street & Elm Street

2024 Future with Development - Access Scenario 2 Imps
Weekday Afternoon Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | ↔ | | | ↔ | ↔ | | | ↔ | | | ↔ | |
| Volume (vph) | 1 | 459 | 10 | 49 | 535 | 8 | 29 | 0 | 118 | 11 | 0 | 1 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 11 | 12 | 12 | 16 | 12 | 12 | 12 | 12 | 12 | 16 | 12 |
| Grade (%) | 0% | | | 1% | | | 0% | | | 0% | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.997 | | | 0.998 | | | 0.892 | | | 0.990 | | |
| Frt | 0.997 | | | 0.998 | | | 0.892 | | | 0.990 | | |
| Frt Protected | | | | 0.950 | | | 0.990 | | | 0.956 | | |
| Satd. Flow (prot) | 0 | 1796 | 0 | 1796 | 2038 | 0 | 0 | 1678 | 0 | 0 | 2038 | 0 |
| Frt Permitted | | | | 0.950 | | | 0.990 | | | 0.956 | | |
| Satd. Flow (perm) | 0 | 1796 | 0 | 1796 | 2038 | 0 | 0 | 1678 | 0 | 0 | 2038 | 0 |
| Link Speed (mph) | 25 | | | 25 | | | 25 | | | 25 | | |
| Link Distance (ft) | 275 | | | 276 | | | 219 | | | 188 | | |
| Travel Time (s) | 7.5 | | | 7.5 | | | 6.0 | | | 5.1 | | |
| Confl. Peds. (#/hr) | 2 | | 3 | 3 | | 2 | | | 3 | 3 | | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 5% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 488 | 11 | 52 | 569 | 9 | 31 | 0 | 126 | 12 | 0 | 1 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 500 | 0 | 52 | 578 | 0 | 0 | 157 | 0 | 0 | 13 | 0 |
| Sign Control | Free | | | | Free | | Stop | | | | Stop | |

Intersection Summary

Area Type: Other
Control Type: Unsignalized

HCM 2010 TWSC
1: Corson Street & Elm Street

2024 Future with Development - Access Scenario 2 Imps
Weekday Afternoon Peak Hour

| Intersection | Int Delay, s/veh |
|--------------|------------------|
| | 3.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h | 1 | 459 | 10 | 49 | 535 | 8 | 29 | 0 | 118 | 11 | 0 | 1 |
| Conflicting Peds, #/hr | 2 | 0 | 3 | | | | 3 | 0 | 2 | | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 488 | 11 | 52 | 569 | 9 | 31 | 0 | 126 | 12 | 0 | 1 |

| Major/Minor | Major1 | Major2 | Minor1 | Minor2 |
|----------------------|--------|--------|--------|--------|
| Conflicting Flow All | 581 | 0 | 0 | 502 |
| Stage 1 | - | - | - | - |
| Stage 2 | - | - | - | - |
| Critical Hdwy | 4.3 | - | - | 4.3 |
| Critical Hdwy Stg 1 | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - |
| Follow-up Hdwy | 3 | - | - | 3 |
| Pot Cap-1 Maneuver | 756 | - | - | 806 |
| Stage 1 | - | - | - | - |
| Stage 2 | - | - | - | - |
| Platoon blocked, % | - | - | - | - |
| Mov Cap-1 Maneuver | 754 | - | - | 803 |
| Mov Cap-2 Maneuver | - | - | - | - |
| Stage 1 | - | - | - | - |
| Stage 2 | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|-----|------|------|
| HCM Control Delay, s | 0 | 0.8 | 19.4 | 34.9 |
| HCM LOS | | | C | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 404 | 754 | - | - | 803 | - | - | 133 |
| HCM Lane V/C Ratio | 0.387 | 0.001 | - | - | 0.065 | - | - | 0.096 |
| HCM Control Delay (s) | 19.4 | 9.8 | 0 | - | 9.8 | - | - | 34.9 |
| HCM Lane LOS | C | A | A | - | A | - | - | D |
| HCM 95th %tile Q(veh) | 1.8 | 0 | - | - | 0.2 | - | - | 0.3 |

Lanes, Volumes, Timings 2024 Future with Development - Access Scenario 2 Imps
 2: Lot Access/Old Elm Street & Elm Street Weekday Afternoon Peak Hour



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|------|------|-------|------|------|-------|------|------|------|------|------|
| Lane Configurations | ↕ | | | ↕ | | | ↕ | | | | | |
| Volume (vph) | 0 | 575 | 6 | 0 | 578 | 10 | 29 | 0 | 122 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width (ft) | 12 | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 16 | 12 | 12 |
| Grade (%) | | -1% | | | 0% | | | 0% | | | -1% | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.999 | | | 0.998 | | | 0.891 | | | | | |
| Frt | 0.999 | | | 0.998 | | | 0.891 | | | | | |
| Flt Protected | | | | | | | 0.990 | | | | | |
| Satd. Flow (prot) | 0 | 1933 | 0 | 0 | 1842 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 |
| Flt Permitted | | | | | | | 0.990 | | | | | |
| Satd. Flow (perm) | 0 | 1933 | 0 | 0 | 1842 | 0 | 0 | 1676 | 0 | 0 | 0 | 0 |
| Link Speed (mph) | 25 | | | 25 | | | 25 | | | 25 | | |
| Link Distance (ft) | 276 | | | 571 | | | 199 | | | 208 | | |
| Travel Time (s) | 7.5 | | | 15.6 | | | 5.4 | | | 5.7 | | |
| Confl. Peds. (#/hr) | 0.94 | | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 2 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 0 | 612 | 6 | 0 | 615 | 11 | 31 | 0 | 130 | 0 | 0 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 618 | 0 | 0 | 626 | 0 | 0 | 161 | 0 | 0 | 0 | 0 |
| Sign Control | Free | | | Free | | | Stop | | | Stop | | |

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized

HCM 2010 TWSC 2024 Future with Development - Access Scenario 2 Imps
 2: Lot Access/Old Elm Street & Elm Street Weekday Afternoon Peak Hour

| Intersection | Int Delay, s/veh |
|--------------|------------------|
| | 2.5 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Vol, veh/h | 0 | 575 | 6 | 0 | 578 | 10 | 29 | 0 | 122 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -1 | - | - | 0 | - | - | 0 | - | - | -1 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 612 | 6 | 0 | 615 | 11 | 31 | 0 | 130 | 0 | 0 | 0 |

| Major/Minor | Major1 | Major2 | Minor1 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 626 | 0 | 0 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | 4.3 | - | - |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | 3 | - | - |
| Pot Cap-1 Maneuver | 729 | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 729 | - | - |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | EB | WB | NB |
|----------------------|----|----|------|
| HCM Control Delay, s | 0 | 0 | 22.1 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR |
|-----------------------|-------|-----|-----|-----|-----|-----|-----|
| Capacity (veh/h) | 369 | 729 | - | - | 733 | - | - |
| HCM Lane V/C Ratio | 0.435 | - | - | - | - | - | - |
| HCM Control Delay (s) | 22.1 | 0 | - | - | 0 | - | - |
| HCM Lane LOS | C | A | - | - | A | - | - |
| HCM 95th %tile Q(veh) | 2.1 | 0 | - | - | 0 | - | - |

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Afternoon Peak Hour - Dual NB Lefts

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Configurations | ↔ | ↑ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Volume (vph) | 134 | 116 | 700 | 766 | 79 | 57 | 524 | 1083 | 769 | 23 | 910 | 84 |
| Ideal Flow (vphpl) | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 | 1800 |
| Lane Width (ft) | 11 | 9 | 12 | 10 | 11 | 12 | 10 | 10 | 13 | 9 | 11 | 12 |
| Grade (%) | | 2% | | | -5% | | | 5% | | | 0% | |
| Storage Length (ft) | 135 | | 202 | 135 | | 0 | 266 | | 130 | 276 | | 0 |
| Storage Lanes | 1 | | 1 | 2 | | 0 | 2 | | 1 | 1 | | 0 |
| Taper Length (ft) | 75 | | | 75 | | | 75 | | | 75 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | | | | 0.99 | | 0.99 | | 0.98 | 1.00 | 1.00 | |
| Frt | | | 0.850 | | 0.937 | | | | 0.850 | | 0.987 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1589 | 1557 | 1485 | 3174 | 1584 | 0 | 2931 | 3112 | 1526 | 1466 | 3205 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.950 | | | 0.258 | | |
| Satd. Flow (perm) | 1586 | 1557 | 1485 | 3174 | 1584 | 0 | 2901 | 3112 | 1490 | 397 | 3205 | 0 |
| Right Turn on Red | | | No | | | No | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | | | | | | | 579 | | 9 | |
| Link Speed (mph) | | 25 | | | 25 | | | 25 | | | 25 | |
| Link Distance (ft) | | 550 | | | 430 | | | 452 | | | 462 | |
| Travel Time (s) | | 15.0 | | | 11.7 | | | 12.3 | | | 12.6 | |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | 18 | | 4 | 4 | | 18 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Heavy Vehicles (%) | 3% | 3% | 2% | 0% | 7% | 2% | 3% | 0% | 1% | 5% | 1% | 5% |
| Adj. Flow (vph) | 137 | 118 | 714 | 782 | 81 | 58 | 535 | 1105 | 785 | 23 | 929 | 86 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 137 | 118 | 714 | 782 | 139 | 0 | 535 | 1105 | 785 | 23 | 1015 | 0 |
| Turn Type | Split | NA | pm+ov | Split | NA | | Prot | NA | Perm | Perm | NA | |
| Protected Phases | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | | 6 | 2 | |
| Permitted Phases | | | | 8 | | | | | 6 | 2 | | |
| Detector Phase | 8 | 8 | 1 | 4 | 4 | | 1 | 6 | 6 | 2 | 2 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Minimum Split (s) | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | |
| Total Split (s) | 19.0 | 19.0 | 29.0 | 28.0 | 28.0 | | 29.0 | 63.0 | 63.0 | 34.0 | 34.0 | |
| Total Split (%) | 17.3% | 17.3% | 26.4% | 25.5% | 25.5% | | 26.4% | 57.3% | 57.3% | 30.9% | 30.9% | |
| Maximum Green (s) | 13.0 | 13.0 | 23.0 | 22.0 | 22.0 | | 23.0 | 57.0 | 57.0 | 28.0 | 28.0 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lost Time Adjust (s) | -1.0 | -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 | 5.0 | |
| Lead/Lag | | | Lead | | | | Lead | | | Lag | Lag | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | |
| Recall Mode | None | None | Min | None | None | | Min | C-Max | C-Max | C-Max | C-Max | |

Intersection Summary

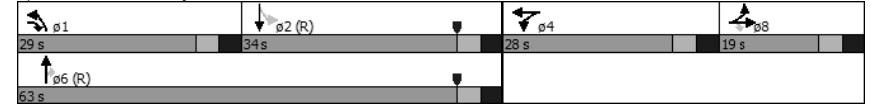
Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110

Lanes, Volumes, Timings
6: Fayette Street & Elm Street

2024 Future with Development - Scenario 1
Weekday Afternoon Peak Hour - Dual NB Lefts

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Yellow
 Natural Cycle: 115
 Control Type: Actuated-Coordinated

Splits and Phases: 6: Fayette Street & Elm Street



HCM 2010 Signalized Intersection Summary
 6: Fayette Street & Elm Street

2024 Future with Development - Scenario 1
 Weekday Afternoon Peak Hour - Dual NB Lefts

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------------|-------|------|-------|-------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ |
| Volume (veh/h) | 134 | 116 | 700 | 766 | 79 | 57 | 524 | 1083 | 769 | 23 | 910 | 84 |
| Number | 3 | 8 | 18 | 7 | 4 | 14 | 1 | 6 | 16 | 5 | 2 | 12 |
| Initial Q (Ob), 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 | | 0.98 | 1.00 | | 0.97 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1730 | 1661 | 1747 | 1845 | 1759 | 1845 | 1704 | 1755 | 1807 | 1646 | 1776 | 1800 |
| Adj Flow Rate, veh/h | 137 | 118 | 615 | 782 | 81 | 58 | 535 | 1105 | 653 | 23 | 929 | 86 |
| Adj No. of Lanes | 1 | 1 | 1 | 2 | 1 | 0 | 2 | 2 | 1 | 1 | 2 | 0 |
| Peak Hour Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Percent Heavy Veh, % | 3 | 3 | 2 | 0 | 7 | 7 | 3 | 0 | 1 | 5 | 1 | 1 |
| Cap, veh/h | 210 | 211 | 487 | 713 | 199 | 143 | 632 | 1758 | 796 | 133 | 474 | 482 |
| Arrive On Green | 0.13 | 0.13 | 0.13 | 0.21 | 0.21 | 0.20 | 0.20 | 0.53 | 0.53 | 0.28 | 0.28 | 0.27 |
| Sat Flow, veh/h | 1648 | 1661 | 1481 | 3409 | 954 | 683 | 3148 | 3335 | 1510 | 239 | 3113 | 288 |
| Grp Volume(v), veh/h | 137 | 118 | 615 | 782 | 0 | 139 | 535 | 1105 | 653 | 23 | 504 | 511 |
| Grp Sat Flow(s),veh/h/ln | 1648 | 1661 | 1481 | 1704 | 0 | 1637 | 1574 | 1667 | 1510 | 239 | 1687 | 1714 |
| Q Serve(g_s), s | 8.7 | 7.3 | 14.0 | 23.0 | 0.0 | 8.1 | 18.0 | 25.8 | 39.6 | 8.4 | 30.9 | 30.9 |
| Cycle Q Clear(g_c), s | 8.7 | 7.3 | 14.0 | 23.0 | 0.0 | 8.1 | 18.0 | 25.8 | 39.6 | 8.4 | 30.9 | 30.9 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.42 | 1.00 | | 1.00 | 1.00 | | 0.17 |
| Lane Grp Cap(c), veh/h | 210 | 211 | 487 | 713 | 0 | 342 | 632 | 1758 | 796 | 133 | 474 | 482 |
| V/C Ratio(X) | 0.65 | 0.56 | 1.26 | 1.10 | 0.00 | 0.41 | 0.85 | 0.63 | 0.82 | 0.17 | 1.06 | 1.06 |
| Avail Cap(c_a), veh/h | 210 | 211 | 487 | 713 | 0 | 342 | 687 | 1758 | 796 | 133 | 474 | 482 |
| 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) | 0.72 | 0.72 | 0.72 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 45.7 | 45.1 | 37.0 | 43.5 | 0.0 | 37.8 | 42.3 | 18.4 | 21.7 | 31.4 | 39.5 | 39.6 |
| Incr Delay (d2), s/veh | 5.1 | 2.3 | 130.3 | 63.4 | 0.0 | 0.8 | 9.1 | 1.7 | 9.3 | 2.8 | 58.7 | 58.4 |
| 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 | 7.1 | 6.1 | 58.2 | 30.7 | 0.0 | 6.8 | 13.4 | 18.0 | 25.4 | 1.2 | 39.8 | 40.3 |
| LnGrp Delay(d),s/veh | 50.8 | 47.4 | 167.2 | 106.9 | 0.0 | 38.6 | 51.4 | 20.1 | 30.9 | 34.3 | 98.2 | 98.0 |
| LnGrp LOS | D | D | F | F | | D | D | C | C | C | F | F |
| Approach Vol, veh/h | 870 | | | 921 | | | 2293 | | | 1038 | | |
| Approach Delay, s/veh | 132.6 | | | 96.6 | | | 30.5 | | | 96.7 | | |
| Approach LOS | F | | | F | | | C | | | F | | |
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| Assigned Phs | 1 | 2 | | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 27.1 | 35.9 | | 28.0 | | 63.0 | | 19.0 | | | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | 23.0 | 28.0 | | 22.0 | | 57.0 | | 13.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 20.5 | 33.4 | | 25.5 | | 42.1 | | 16.5 | | | | |
| Green Ext Time (p_c), s | 0.6 | 0.0 | | 0.0 | | 13.1 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2010 Ctrl Delay | 73.1 | | | | | | | | | | | |
| HCM 2010 LOS | E | | | | | | | | | | | |



June 30, 2021

File No. 18-01166

Stephanie Cecco, Borough Manager
Borough of Conshohocken
400 Fayette Street, Suite 200
Conshohocken, PA 19428

Reference: 400 West Elm Street, LD 2021-03
Parcels 05-00-00136-003, 05-00-00136-012, 05-00-00136-021, 05-00-02472-106, 05-00-02474-205,
05-00-02696-008, 05-00-02704-009, 05-00-11873-002, 05-00-11874-001, 49-00-06904-004, and 49-
00-06910-016
Preliminary/Final Land Development - Review 2

Dear Ms. Cecco:

Pursuant to the Borough's request, Gilmore & Associates, Inc. has reviewed the Preliminary/Final Land Development submission for the above-referenced project. Upon review, we offer the following comments for consideration by the Conshohocken Borough Council:

I. Submission

- A. Preliminary/Final Land Development Plans for 400 West Elm Street, consisting of sheets 1 through 29 of 29, dated March 30, 2021 and last revised June 4, 2021, as prepared by Bohler Engineering for Corson Street Acquisition Limited Partnership
- B. Landscape and lighting plans consisting of sheets 1 through 7 of 7, dated March 30, 2021 and last revised June 4, 2021, as prepared by Stuart & Associates, LLC for 400 West Elm
- C. Post Construction Stormwater Management Calculations dated June 4, 2021, as prepared by Bohler Engineering for Engineering for Corson Street Acquisition Limited Partnership

II. Project Description

The subject properties, located at 400 West Elm Street, consists of 8.556 acres proposed to be developed within the SP-3 Specially Planned District 3 Zoning District and an additional 1.884 acres within Plymouth Township for a cumulative gross lot area of 10.44 acres. The site currently contains several paved areas, walking trails, a retaining wall, a portion of Plymouth Creek, and several existing easements. Conditional Use approval was granted by Borough Council on January 20, 2021 to permit a multifamily residential use in the SP-3 Zoning District and the Applicant was granted variances pursuant to a Zoning Hearing Board Order dated January 28, 2021 and amended February 5, 2021 to permit the building to exceed the building bulk of 300 feet and to permit development within the 100-year floodplain.

The Applicant proposes to demolish all existing features and construct a 13-story 30,210 square-foot footprint residential building containing 348 dwelling units, a two-story 30,745 square-foot footprint parking garage containing 189 parking spaces, and 238 surface parking spaces, for a total of 427 parking spaces. Associated improvements include a pool/courtyard area, retaining walls, paving, landscaping, lighting, signage, etc. and two driveways to West Elm Street. Public improvements include realignment of the Schuylkill River Trail, 20 public parking spaces, a new trailhead, and roadway improvements along West Elm Street, including road widening, curbing, and sidewalk. The Applicant is proposing to install four underground infiltration basins and one underground detention basin to address stormwater management.

III. Review Comments

A. Zoning Ordinance

We defer all comments with respect to the Conshohocken Borough Zoning Ordinance, Conditional Use Decision, and Zoning Hearing Board Decision and Order to the Borough's Zoning Officer.

65 East Butler Avenue | Suite 100 | New Britain, PA 18901 | Phone: 215-345-4330 | Fax: 215-345-8606

B. Subdivision and Land Development Ordinance

We offer the following comments with respect to the Conshohocken Borough Subdivision and Land Development Ordinance:

1. §22-304.B(4) – We offer the following comments with respect to the tract boundary information on the Lot Consolidation Plan, Sheet 3, and Site Plan, Sheet 6:
 - a. The textbox and Lot Area Tabulation on Sheet 3 shall be revised to reference Block 10 Unit 8 as parcel number 05-00-02704-009. In addition, the areas noted within the textbox and Lot Area Tabulation for Parcel A do not appear to incorporate the additional area of Corson Street to be vacated and shall be updated for consistency with the Site Calculations on the Notes Sheet, Sheet 2.
 - b. The bearings and distances associated with Tract 1 deed segments 4 and 5 shall be added to the plan.
 - c. The noted bearing and distance of Tract 3 shall be revised to consistency with segment 1 of the provided deed.
 - d. The bearing and distance of Parcel A along West Elm Street east of Corson Street shall be clarified on Sheet 6 as it is duplicated and inconsistent.
 - e. The Property Line linetype closest to West Elm Street shall be removed from within the limits of the right-of-way area taken by PennDOT to clarify it is outside the property limits.
2. §22-306.A(1) – The Applicant is requesting a partial waiver from showing existing features within 100 feet of the subject property, which we support conditioned upon the Applicant providing any additional information our office deems necessary during the course of the review process.
3. §22-306.A(1)(d) – We offer the following comments with respect to the proposed parking:
 - a. Based on our calculations, a total of 238 surface parking spaces are shown in plan view. This shall be confirmed and references to the number of surface and total parking spaces updated accordingly.
 - b. Since a vehicular connection is not provided between the two parking garage levels, we recommend the Applicant agree to assign parking spaces to tenants to alleviate the need for tenants to circulate the site searching for parking spaces on both levels.
 - c. The 1st Floor garage entrance shows a 4 foot bump out on the northern side of the garage. The location of the garage entrance and curblines in plan view shall be revised to accommodate the bump out and maintain the 24 foot wide access.
 - d. A north arrow shall be added to the Architectural Parking Layout Plan, Sheet 9.
 - e. We defer review of the accessible parking spaces located in the garage, including the required number, type, grading, and access, to the Borough's Building Code Official.
4. §22-307.D – Any signature blocks required by Plymouth Township shall be added to the Cover Sheet, Sheet 1.
5. §22-308.A & C – The Applicant is requesting a waiver to permit only one submission for Preliminary and Final subdivision and land development approval.
6. §22-403.A – The additional area of the Corson Street right-of-way to be vacated and included in Parcel A shall be clearly labeled on the Lot Consolidation Plan, Sheet 3. Documentation for the right-of-way vacation shall be provided in a form acceptable to the Borough Solicitor.
7. §22-404.2 – We defer review of sight distance to the Borough's Traffic Engineer.
8. §22-404.2.B – The Applicant has requested a waiver to permit driveway widths greater than 25 feet. Based on the provided truck turning diagrams, we are in support of the proposed site access driveway widths.

9. §22-404.2.C – The Applicant has requested a waiver to permit a driveway to be located closer than 40 feet from the intersection of West Elm Street and Corson Street. Since the proposed configuration moved the driveway access from West Elm Street into the site, we support this waiver request.
10. §22-404.2.F – The requested waiver from this section is no longer required since only the two permitted driveways to West Elm Street are proposed. The list of Waivers Requested located on the Cover Sheet, Sheet 1, shall be updated accordingly.
11. §22-404.3.B – The Site Plan, Sheet 6, indicates the proposed crosswalks and an area of the site driveway by the main building entrance are proposed be constructed as a decorative surface. Information shall be provided to confirm the proposed Streetprint patterning detailed on the Site Details plan, Sheet 26, complies with accessibility standards for vertical changes in level and can withstand emergency vehicle loading.
12. §22-404.3.E- The lighting design shall be revised to show the required minimum 0.5 footcandles will be provided in the lower level of the garage.
13. §22-404.3.F.(1) – The proposed fence locations shall be added to the land development plans.
14. §22-404.3.F.(7) – This section requires 9 foot wide by 18 foot long parking spaces. A waiver would be required to permit two 7.8 feet wide by 16 feet long compact public parking spaces by Trailhead West and the northeastern-most parking spaces located in both garage levels to be 8.83 feet wide. Also, we recommend the internal driveway between the two entrances be straightened to remove the jog in the curbline while maintaining the required minimum 24 foot width.
15. §22-405.1.C – The Applicant has requested a waiver to permit sidewalk widths less than the minimum required 15 feet within the Specially Planned District. The Applicant proposes five (5) foot wide sidewalks, including the top of curb width.
16. §22-405.1.D – Sidewalks shall be located a minimum of four (4) feet from the curbline. A waiver would be required to permit the proposed variable width grass verge.
17. §22-405.2 – The Applicant has requested a waiver to permit flush curbing with bollards at the building entrance and Plymouth Creek maintenance access. We recommend any waiver of this section be conditioned upon the bollards being extended along the flush curbing at the building entrance.
18. §22-409 – We offer the following comments with respect to the Grading and ADA Accessibility Plans, Sheets 10 and 11 respectively:
 - a. The plans shall be revised to address the comments noted on the enclosed markup of the ADA Accessibility Plan in order to comply with the current PennDOT Publication 72 RC-67 standards.
 - b. Spot elevations shall be provided where the proposed asphalt trail and concrete sidewalk tie into the existing features to show the longitudinal and cross slopes comply with Borough standards or detail how any transitions will be constructed.
 - c. Additional grading information shall be provided within the proposed park areas including the Trailhead Park, River Trail Park, Cross Country Park, Dog Park, and where the trails connect to the Schuylkill River Trail.
 - d. Retaining walls are shown to accommodate the proposed grading, which shall be provided with enhanced materials, textures, and coloring to enhance the site and provide visible interest. Additional top and bottom of wall elevations shall be added to the Grading Plan, Sheet 10, including at the terminus sections, curves, and near the stairs. Engineered designs and calculations shall be submitted, reviewed, and approved by our office prior to recording of the plans.
 - e. We defer to the Borough's Building Code Official regarding any required railing and/or fall protection, including at the stairs proposed in the Trailhard West area.

19. §22-409.2 – The Applicant has requested a waiver to permit grading within three (3) feet of property lines and rights-of-way, which we support subject to the Applicant obtaining temporary easements and/or other permission for any encroachments on adjacent properties to the satisfaction of the Borough Solicitor.
20. §22-410.4.B – The provided storm Profiles, Sheets 21 to 24, shall be revised to include the storm crossings between MH107 and MH108.
21. §22-410.4.D – The Utility Plan, Sheet 12, shall be revised to label Inlet 110.
22. §22-410.4.L – We offer the following comments related to the Post Construction Stormwater Management Calculations and the proposed underground basins:
 - a. A full copy of the infiltration testing report shall be included within the Post Construction Stormwater Management Calculations to confirm the summarized rates and that adequate separation is provided from any limiting zones located within the limits of the proposed BMPs.
 - b. Per the response letter, a note shall be added to the Notes Sheet, Sheet 2, indicating that any potential sump pumps in the ground floor of the proposed building is to be handled by the internal stormwater or sanitary systems; therefore, there is no sump pump discharging to the exterior of the building footprint. The location and erosion control for any proposed sump pit drainage and outflow from the garage shall be identified on the plans or a similar note provided.
23. §22-410.6 – The Owner shall sign an Operations and Maintenance Agreement with the Borough of Conshohocken, in a form acceptable to the Borough Solicitor's office, for the proposed stormwater management facilities. The Operations and Maintenance Agreement shall be transferred with transfer of ownership.
24. §22-411 – We offer the following comments with respect to the Easement Plan, Sheet 7:
 - a. Additional easements shall be proposed on the plan, including for the public trail and amenities located within Trailhead Park and access over, to, and from the 20 public parking spaces.
 - b. We defer to the Borough Solicitor regarding whether metes and bounds are required on the plans for the portion of the existing trail easement to be extinguished and whether any documentation is required to permit continuation of the encroachments associated with parcels 05-00-02708-005, 05-00-02712-001, 05-00-02716-006, and 05-00-02720-002.
 - c. Portions of the Prop. 20' Wide Hiking & Biking Trail Easement are located outside the property limits and would need to be conveyed by that property owner. We defer to the Borough Solicitor regarding the required documentation from SEPTA.
 - d. A copy of the approved Grading Easement with SEPTA shall be provided to the Borough, in a form satisfactory to the Borough Solicitor, prior to start of the related work.
 - e. The plans propose improvements within existing easements throughout the property. The Applicant shall obtain approval, to the satisfaction of the Borough Solicitor, from the easement owners to permit the proposed construction.
25. §22-417 – We offer the following comments with respect to the Soil Erosion & Sediment Pollution Control plans, Sheets 13 through 16:
 - a. The Sequence of Construction shall be revised to include the construction of the park areas.
 - b. Details for the proposed inlet protection with marine grade plywood and sumps shall be provided.
 - c. The Visi-fencing shall be removed from the Legend since it is not proposed on the plans.
 - d. The area within the limit of disturbance identified in the viewport for the southeast section of the site shall be revised to 9.70 acres for consistency with the plans.
26. §22-421.2 – We recommend the limits of the underground infiltration basins be coordinated with above ground landscape islands to prevent root intrusion into the infiltration beds.
27. §22-421.6 – We offer the following comments with respect to the lighting plans, Sheets 4-7:

- a. All light fixtures shall be labeled in plan view and mounting heights for all fixtures clearly identified.
 - b. We recommend the 20.3 and 30.6 footcandle illuminance values along the walkway at the rear of the building be revised to provide more consistent illuminance of the area.
28. §22-422 – We offer the following comments related to the Open Space Area Plan, Sheet 8:
- a. The Applicant shall obtain the approval of Borough Council for the proposed open space amenities, including Trailhead Park, River Trail Park, Cross-Country Park, east and west trailheads, and realignment of the Schuylkill River Trail.
 - b. The Applicant shall seek all necessary approvals and permissions to improve the existing footbridge over Plymouth Creek. If the Applicant obtains the necessary approvals and permissions, the Applicant shall improve the footbridge to the satisfaction and approval of Borough Council.
 - c. The plan does not currently depict any benches, picnic areas, pedestrian scale lighting, trash receptacles, or bicycles facilities along the Schuylkill River trail. We recommend such facilities be provided along the trail to accommodate the public.
 - d. Per Conditional Use approval condition 5, the Applicant shall provide open space maintenance agreements to the Borough Solicitor's satisfaction. We recommend this include a conservation easement in favor of the Borough for the open space portion of the property located in Plymouth Township and identifying maintenance responsibilities for the portion of the proposed Trails located within Plymouth Township and the SEPTA property.
 - e. The gray square shape in the southeastern area of the site shall be removed from the plan.
29. §22-423 – Bicycle facilities shall be proposed throughout the property to encourage the use of bicycles along the Schuylkill River Trail. We recommend additional bike racks be proposed near the building entrances and adjacent to the park areas. All bicycle facilities shall be clearly labeled on the plan.
30. §22-804 – The Applicant is required to dedicate ten percent (10%) of the total site area to the Borough for park and recreational use. We note that the Open Space Area Plan, Sheet 8, proposes to deed restrict 2.67 acres (31.2% of the total site area located within Conshohocken Borough) as open space though no specific areas are identified for dedication as park and recreational use.

C. General Comments

We offer the following general comments:

1. The Applicant shall obtain all required approvals, permits, etc. (e.g. PennDOT, PADEP, MCPC, Conshohocken Borough Sewer Authority, Fire Marshal, Aqua, etc.). Prior to recording, all approvals, permitting, etc. related to the improvements proposed within Plymouth Township shall be resolved to the Borough Solicitor's satisfaction. Copies of these approvals and permits shall be submitted to the Borough of Conshohocken and our office.
2. Additional signage and related details shall be provided, including wayfinding signage for Trail users, wayfinding and identification signage for the public parking spaces, and signage by the grass pavers restricting permitted access to the Borough.
3. The Drawing Sheet Index on the Cover Sheet, Sheet 1, shall be revised to reference the updated landscape and lighting plans.
4. The Reserved Parking Space with Penalties & Van Accessible Signs detail on the Site Details plan, Sheet 26, shall be revised to indicate that the bottom of the Van Accessible sign shall be placed a minimum of 5'-0" above ground.
5. Details for all proposed improvements, including the water fountain and cross-section for the food truck amenity area, shall be added plans.
6. Legal descriptions for the proposed lot, easements, and right-of-way vacation shall be provided to our office for review and approval.

-
7. Per Conditional Use approval condition 4, the Applicant shall pay the Borough a traffic impact fee in the amount of \$500,000 subject to a credit for the design work funded by the Applicant for traffic improvements at the intersection of Fayette and West Elm Streets.

If you have any questions regarding the above, please contact this office.

Sincerely,

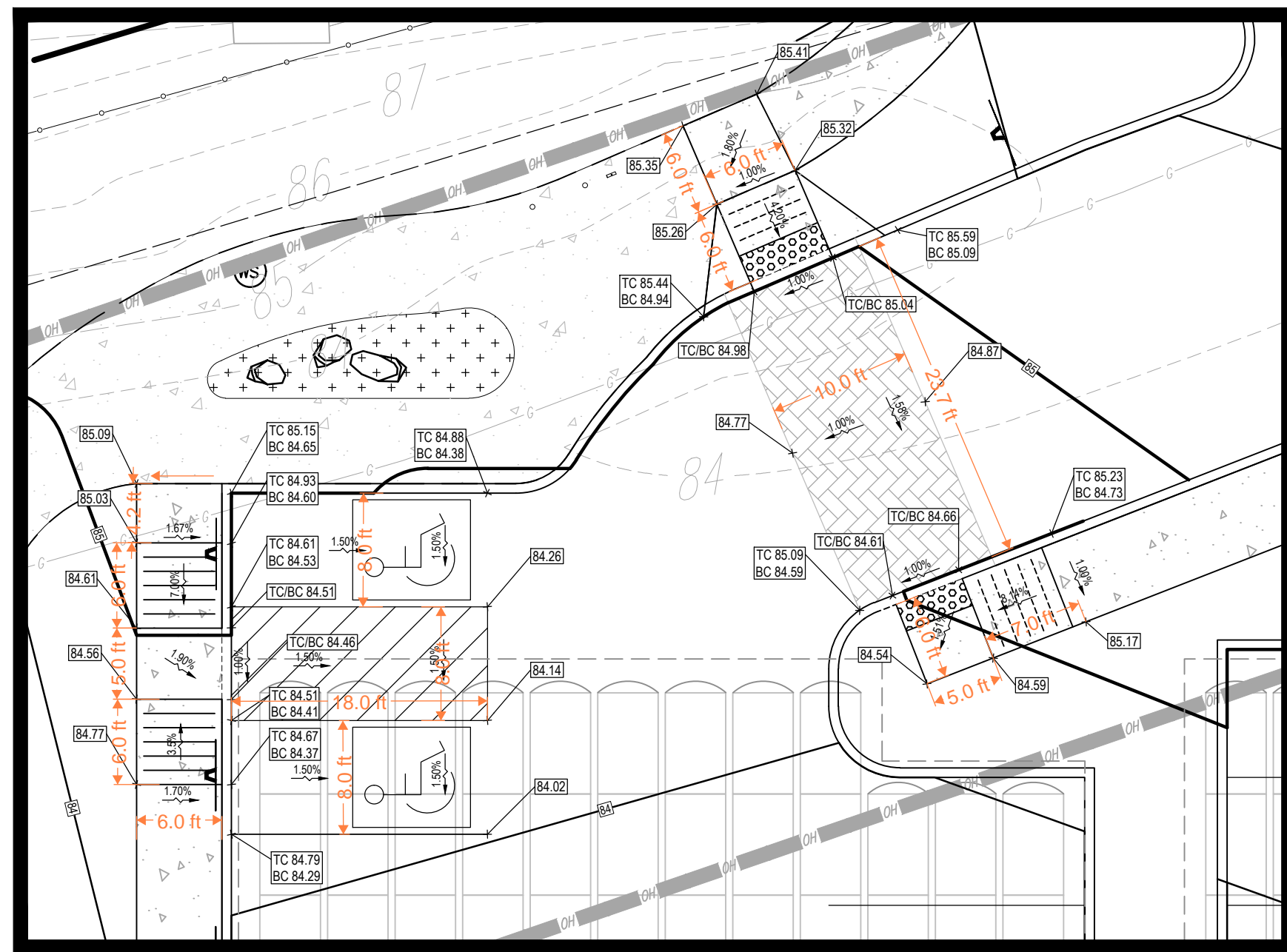


Karen M. MacNair, P.E.
Gilmore & Associates, Inc.
Borough Engineer

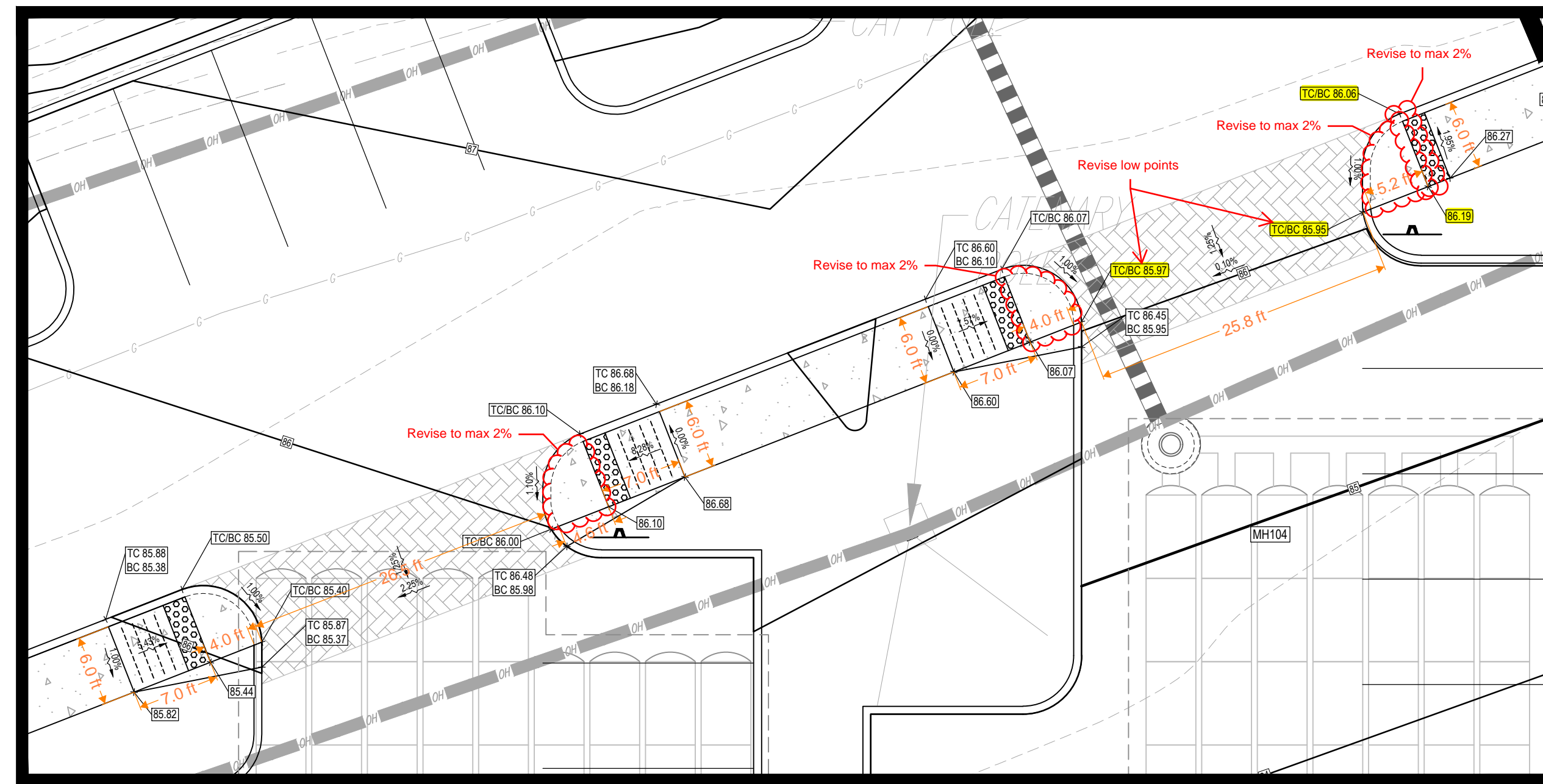
KMM/ve

Enc: as referenced

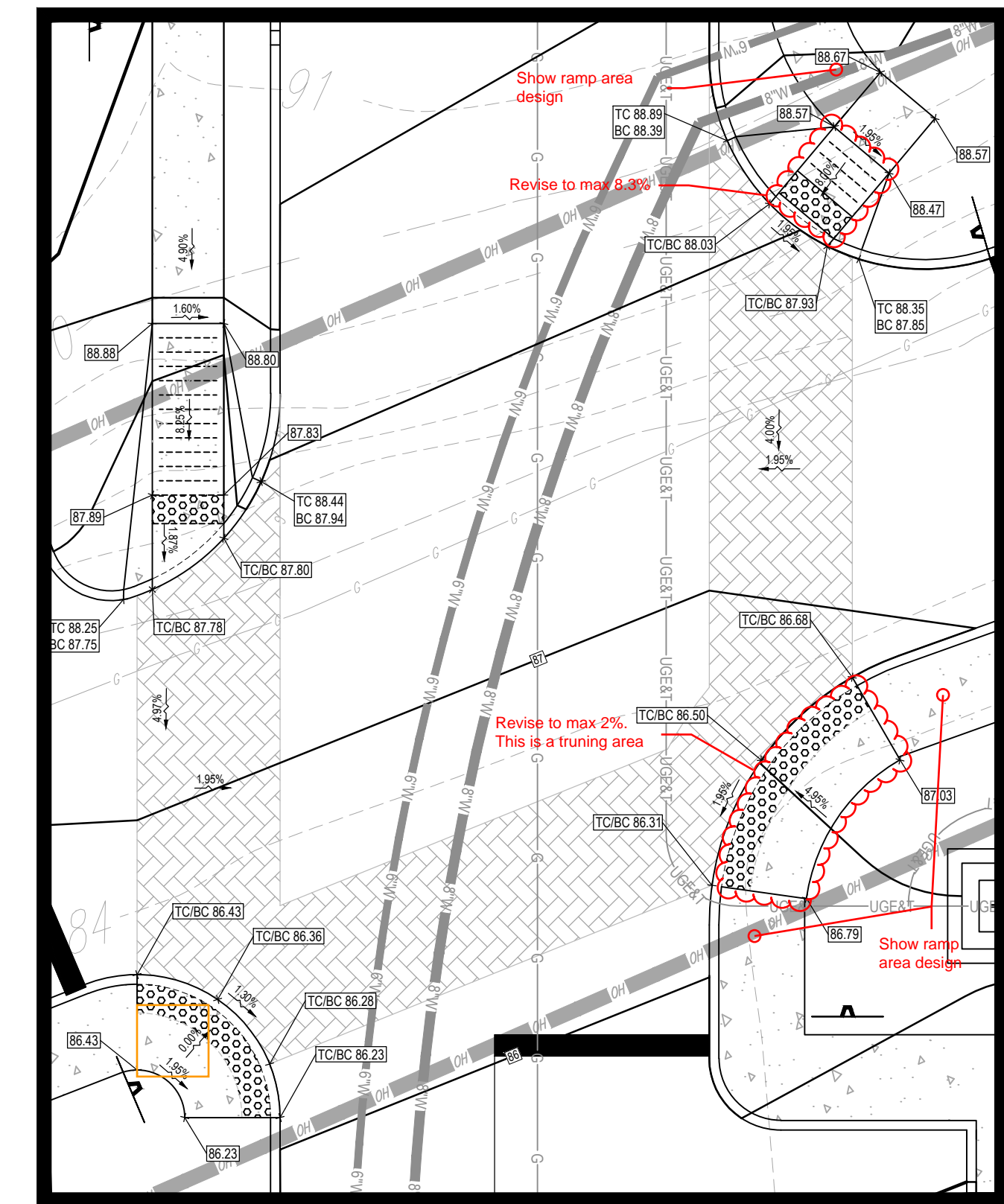
cc: Ray Sokolowski, Director of Public Services and Building Code Official
Brittany Rogers, Executive Assistant
Michael E. Peters, Esq., Borough Solicitor



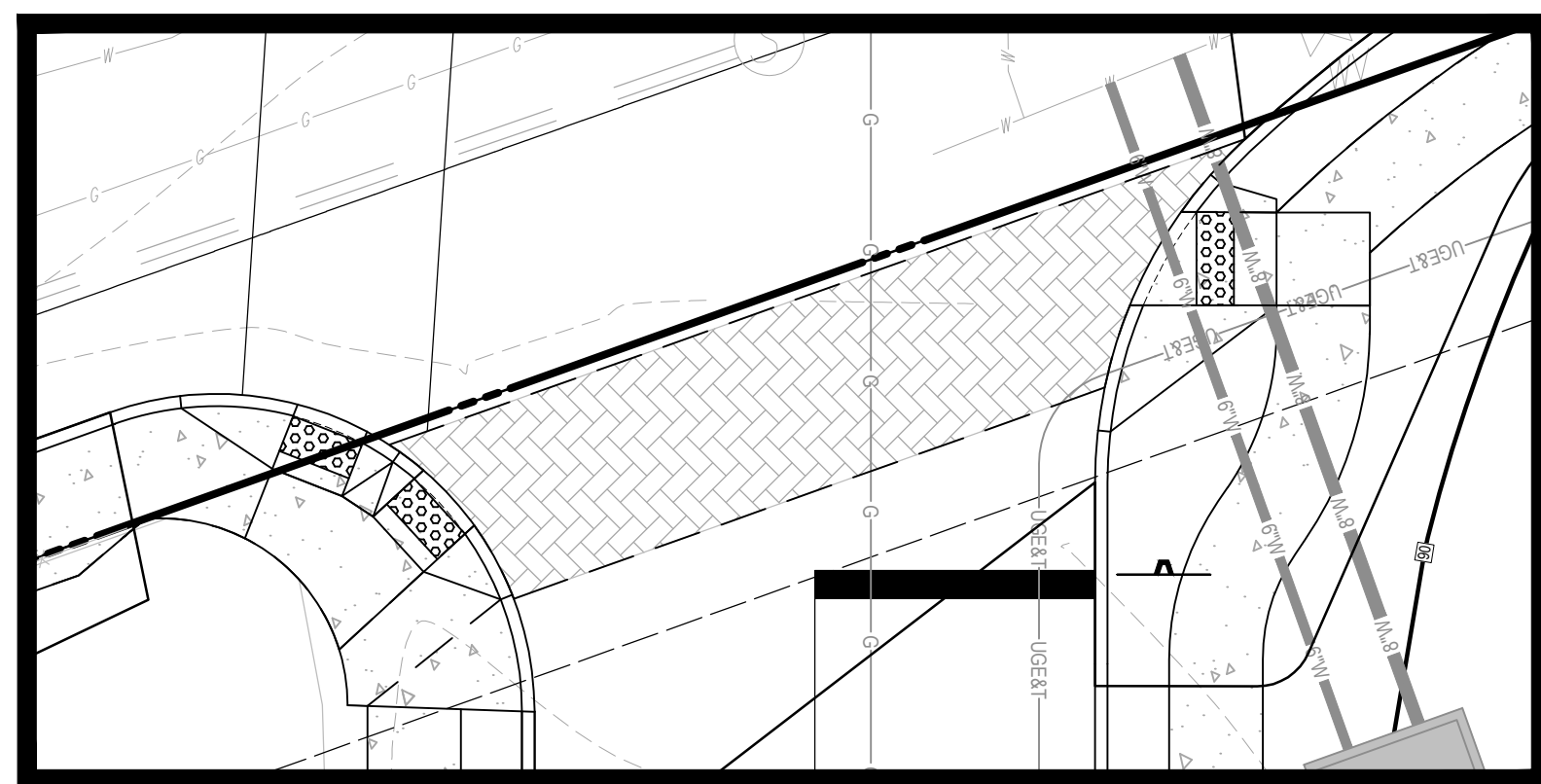
ADA INSERT #1



ADA INSERT #2

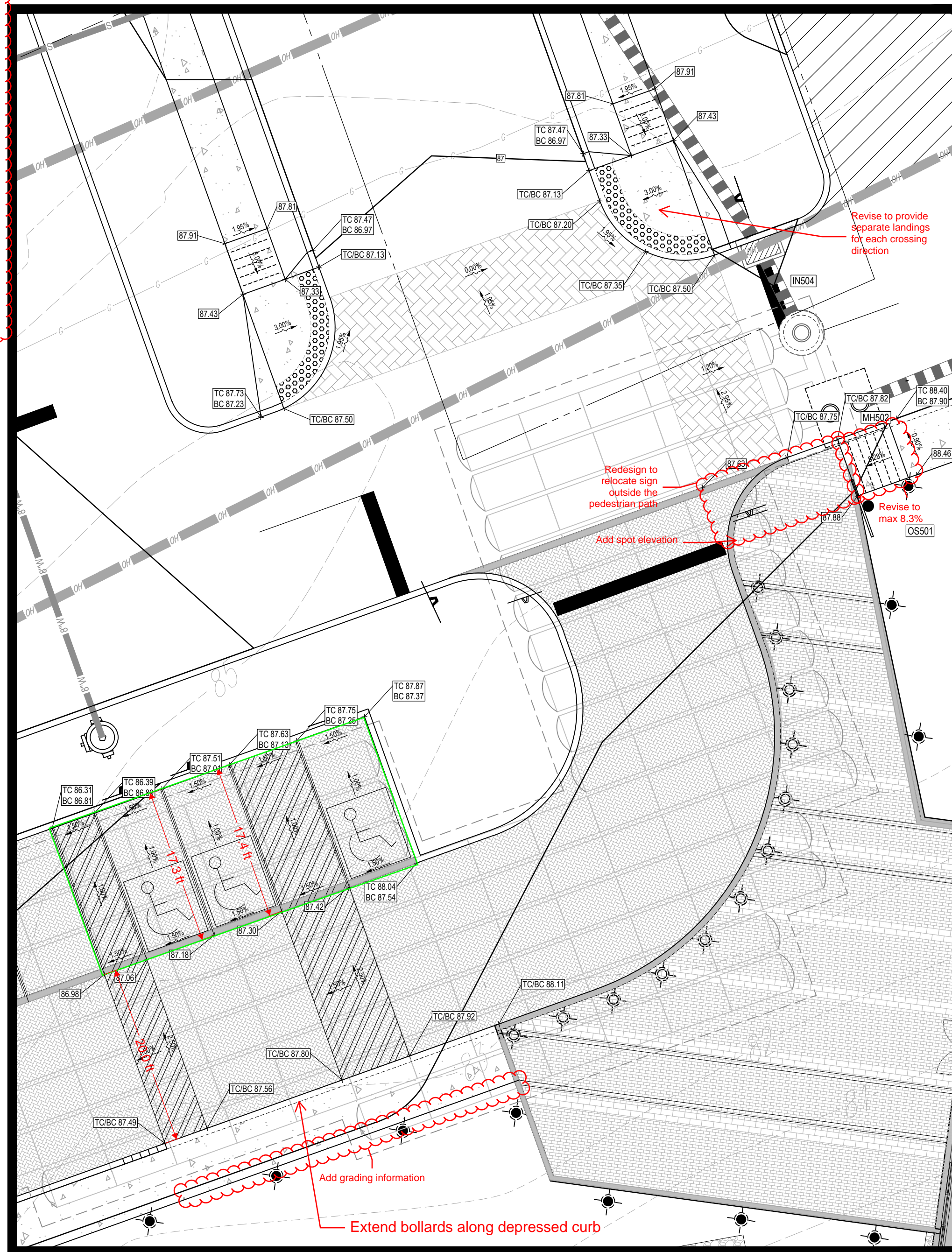


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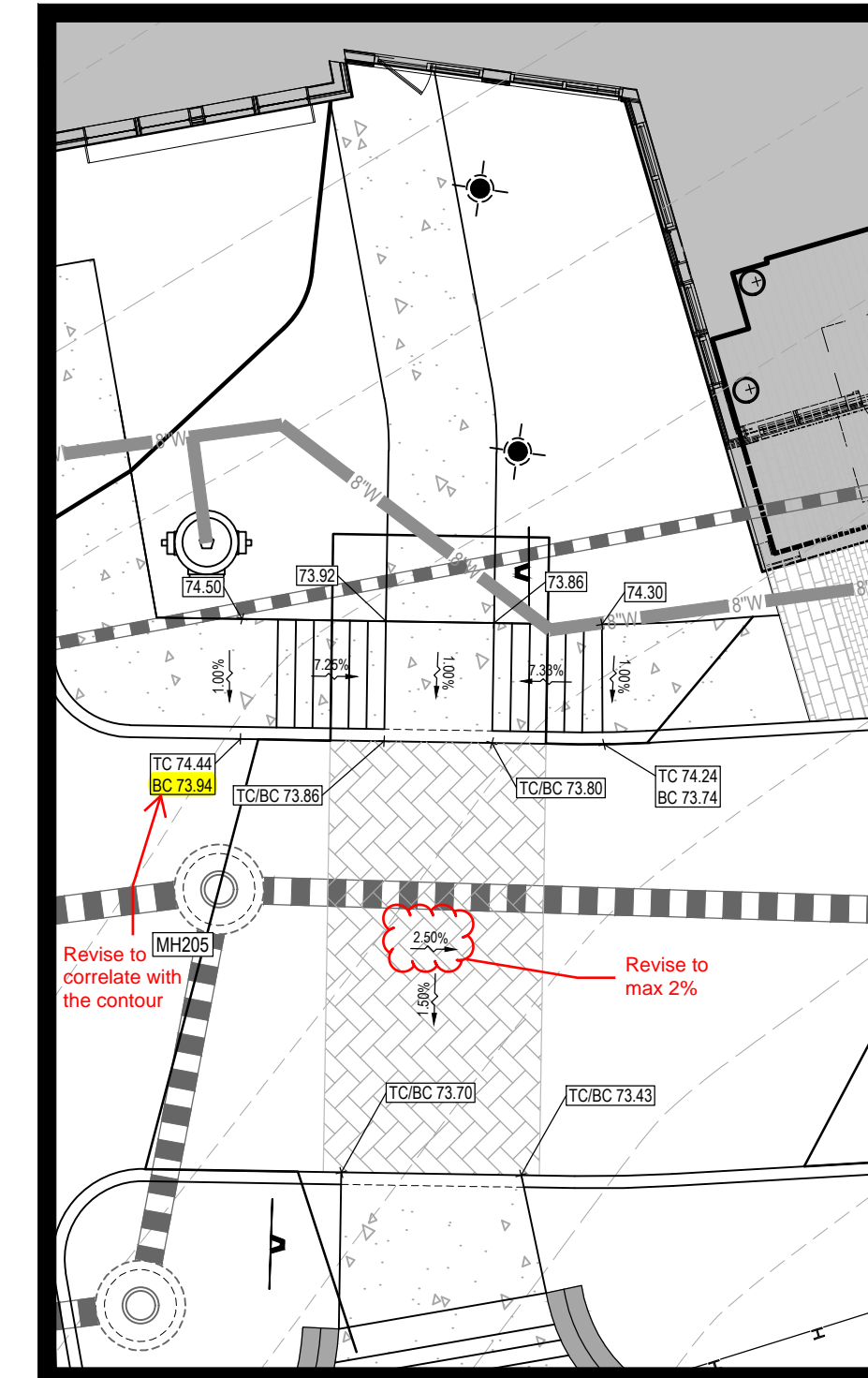


ADA INSERT #4

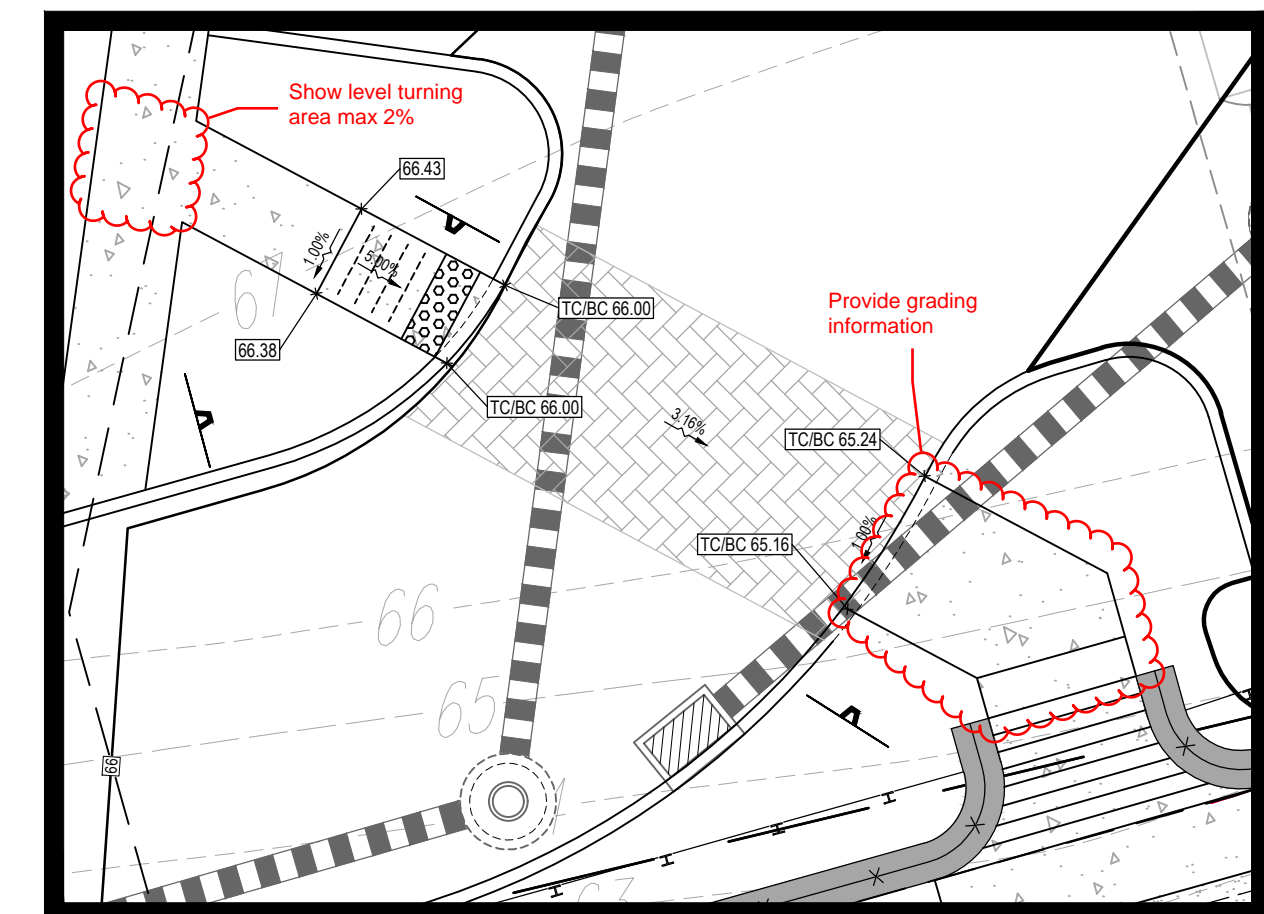
Several of the noted slopes include the curb width within the calculation. The curb width shall be excluded from the slope calculation since it is expected that the curb will be placed at a separate time and will be level, as opposed to sloped.



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ADA INSERT #8

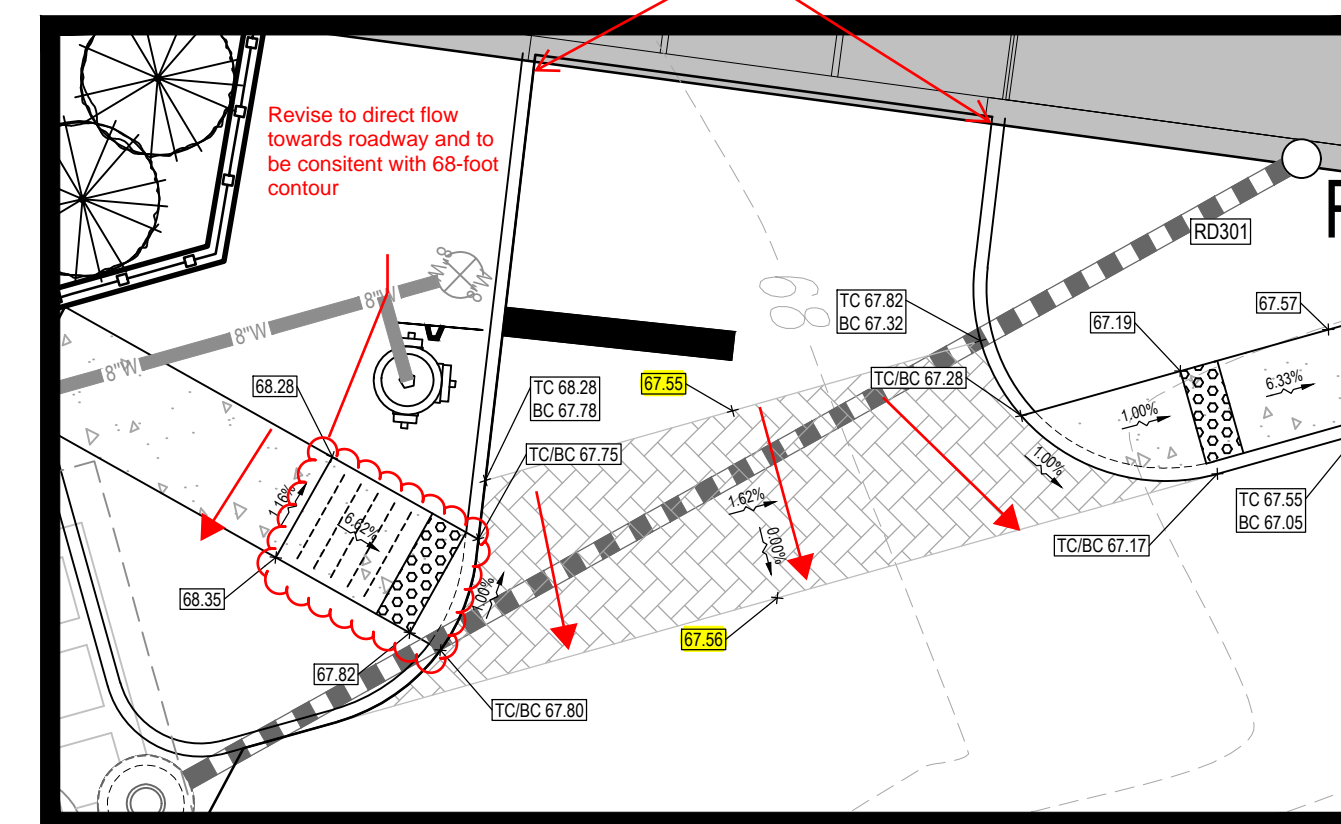


ADA INSERT #10

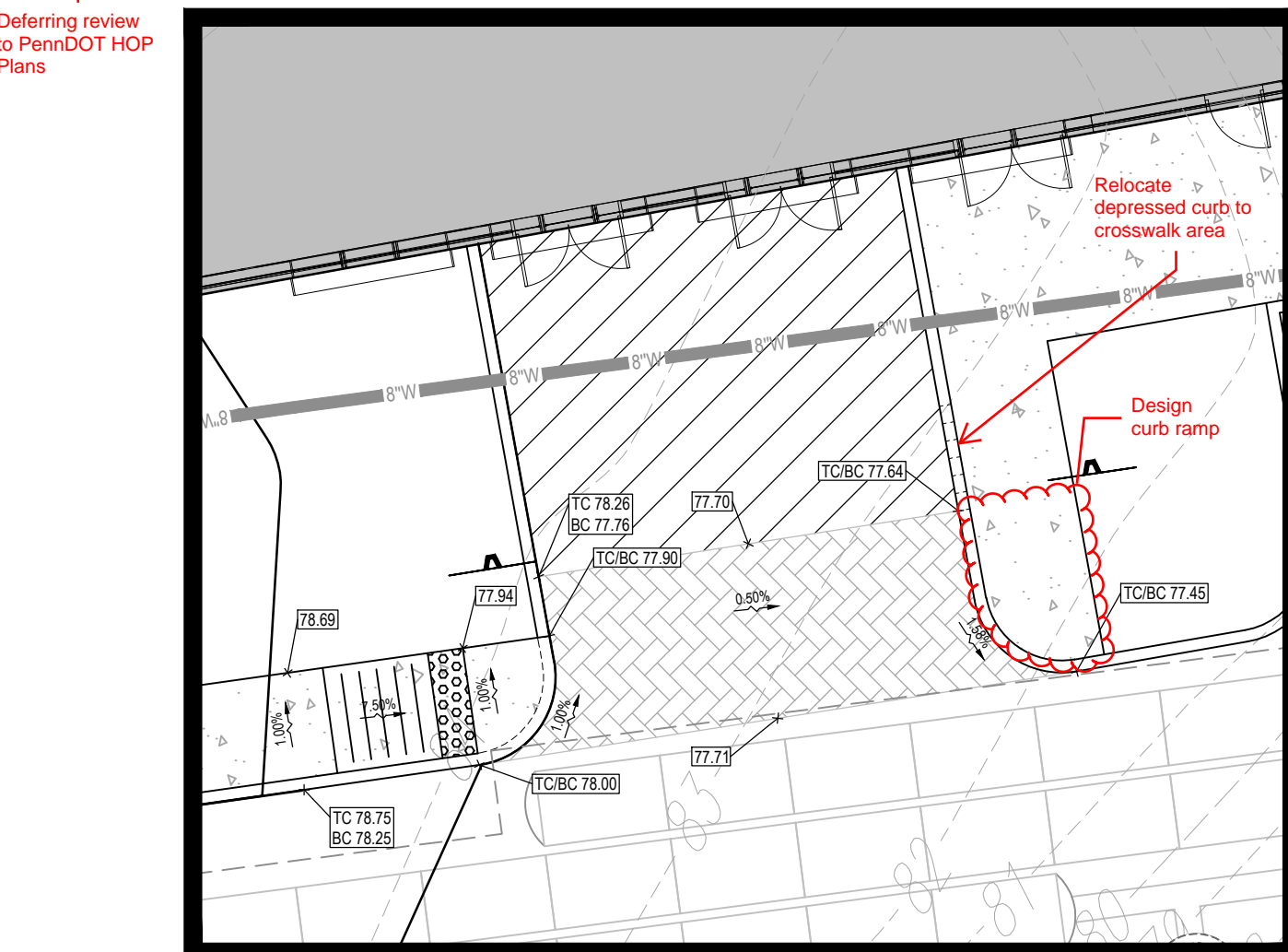
GENERAL ACCESSIBILITY NOTES

1. SLOPES AT INTERSECTIONS OF ACCESSIBLE ROUTES ARE NOT TO EXCEED 2% IN ANY DIRECTION.
2. SLOPES OF MANEUVERING CLEARANCES AT DOORS ARE NOT TO EXCEED 2% IN ANY DIRECTION.
3. SLOPES OF CLEAR FLOOR SPACES AT FIXTURES AND CONTROLS ARE NOT TO EXCEED 2% IN ANY DIRECTION.
4. VERTICAL LEVEL CHANGES ARE NOT TO EXCEED 1/4" INCH.
5. LEVEL CHANGES UP TO 1/2" INCH ARE TO BE BEVELED WITH A SLOPE NOT EXCEEDING 1:2.
6. LEVEL CHANGES EXCEEDING 1/2" INCH ARE TO BE RAMPED.
7. GAPS OR OPENINGS ALONG THE ACCESSIBLE ROUTE ARE NOT TO EXCEED 1/2" INCH IN WIDTH, PERPENDICULAR TO THE PREDOMINANT FLOW OF PEDESTRIAN TRAFFIC.

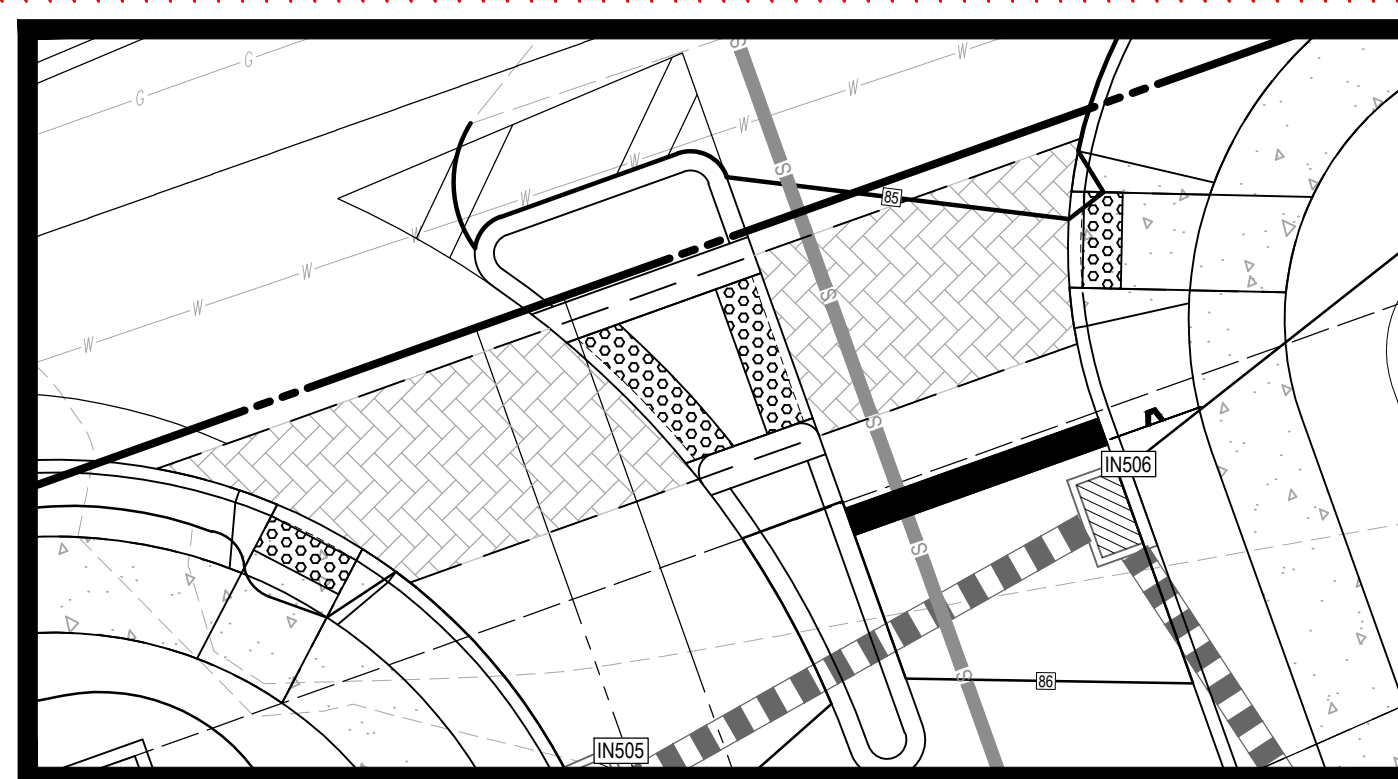
NOTE: SEE HOP PLANS FOR RAMPS IN ROW.



ADA INSERT #9



ADA INSERT #5



ADA INSERT #6

REVISIONS

| REV | DATE | COMMENT | DRAWN BY |
|-----|------------|------------------|----------|
| 1 | 05/06/2021 | MCCD SUBMISSION | KDS |
| 2 | 06/04/2021 | PER TWP COMMENTS | KDS |



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.: PC201167
 DRAWN BY: ATW
 CHECKED BY: LNB
 DATE: 3/30/2021
 CAD LID: PC201167-SPP-02

PROJECT: **PRELIMINARY/ FINAL LAND DEVELOPMENT PLANS**
 FOR **CORSON STREET ACQUISITION LIMITED PARTNERSHIP**

WEST ELM STREET
 CONSHOHOCKEN BOROUGH &
 PLYMOUTH TOWNSHIP
 MONTGOMERY COUNTY, PA

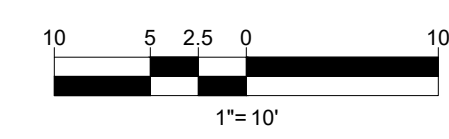
BOHLER
 1600 MANOR DRIVE, SUITE 200
 CHALFONT, PA 18914
 Phone: (215) 996-9100
 Fax: (215) 996-9102
 www.BohlerEngineering.com

W.R. REARDEN
 PROFESSIONAL ENGINEER
 PENNSYLVANIA LICENSE NO. PE073945
 NEW JERSEY LICENSE NO. 240694694500

SHEET TITLE:
ADA ACCESSIBILITY PLAN

SHEET NUMBER:
C-402
 (11 OF 29)

REVISION 2 - 06/04/2021



R:\2021\167\DRAWINGS\PLAN SET\LAND DEVELOPMENT\REVISION 2\PC201167-SPP-02-LAYOUT_C-402_ADA

Deferring review to PennDOT HOP Plans



BOROUGH OF CONSHOHOCKEN

Fire Marshal

MAYOR
Yaniv Aronson

BOROUGH COUNCIL
Colleen Leonard, President
Tina Sokolowski, Vice-President
Robert Stokley, Senior Member
Anita Barton, Member
James Griffin, Member
Jane Flanagan, Member
Karen Tutino, Member

Stephanie Cecco
Borough Manager

Date: June 30, 2021

To: Stephanie Cecco, Borough Manager

From: Timothy Gunning, Fire Marshal
John Robitaille, Commercial Building Inspector

Re: Fire Marshal Review
400 West Elm Street
Preliminary/Final Land Development

As requested, the following materials submitted for the above referenced land development proposal were reviewed:

- A. Preliminary/Final Land Development Plans for 400 West Elm Street, consisting of sheets 1 through 29 of 29, dated March 30, 2021 and last revised June 4, 2021, as prepared by Bohler Engineering for Corson Street Acquisition Limited Partnership

The following comments are presented:

1. The sidewalk area around the fire access road front entrance must support the aerial apparatus weight. The concrete must be 75,000 pounds. A detail on the land development plans shall be added for the concrete that can withstand the 75,000-pound loading.
2. Additional no parking fire lane signs may need to be added around the front entrances off of West Elm Street when the final inspection is completed at the end of the project.
3. The Fire Accessibility Exhibit, dated June 17, 2021, shall be incorporated in the land development plans in the next submission.

**MONTGOMERY COUNTY
BOARD OF COMMISSIONERS**

VALERIE A. ARKOOSH, MD, MPH, CHAIR
KENNETH E. LAWRENCE, JR., VICE CHAIR
JOSEPH C. GALE, COMMISSIONER



**MONTGOMERY COUNTY
PLANNING COMMISSION**

MONTGOMERY COUNTY COURTHOUSE • PO Box 311
NORRISTOWN, PA 19404-0311
610-278-3722
FAX: 610-278-3941 • TDD: 610-631-1211
WWW.MONTCOPA.ORG

SCOTT FRANCE, AICF
EXECUTIVE DIRECTOR

May 5, 2021

Stephanie Cecco, Borough Manager
Borough of Conshohocken
400 Fayette Street, Suite 200
Conshohocken, Pennsylvania 19428

Re: MCPC #20-0223-002
Plan Name: 400 West Elm Street
(352 D.U.'s / 453,862 Sq. ft. / 11 tax parcels comprising +/- 8.0 acres in Conshohocken
Borough and +/- 2.0 acres in Plymouth Township
Situate: West Elm Street (south) at Corson Street
Borough of Conshohocken

Ms. Cecco:

We have reviewed the above-referenced subdivision and land development plan in accordance with Section 502 of Act 247, "The Pennsylvania Municipalities Planning Code," as you requested the electronic submission received on April 8, 2021. We forward this letter as a report of our review.

BACKGROUND

The applicant, Corson Street Acquisitions, LP has submitted a preliminary plan seeking approval for the development of a 13-story multi-family residential building with 352 units and an adjacent two-level parking structure with 189 spaces. The site plan shows two access driveways to the development and a separate access to the 20-space parking lot for the public to access the Schuylkill River Trail. The existing trail and a PECO high-voltage electrical transmission corridor lie along the frontage of the development tract.

The proposed development is situated within a largely vacant development tract immediately northwest of the SEPTA's Norristown Regional Rail line, west of the Plymouth Creek and at the intersection of Corson Street. Eleven tax parcels comprise the development tract which is located in the borough's SP-3 Specially Planned Zoning District. The submitted development plan proposes the relocation of the Schuylkill River Trail from its current location along West Elm Street. The new location is between the Norristown/Manayunk SEPTA Regional Rail corridor and an +/- 890 ft. long retaining wall that supports the development's surface parking lot

The Planning Commission provided the borough with several review letters for various development proposals for this tract in the past five years. The most recent review was for the applicant's Conditional Use



submission that was provided to the Borough in a letter dated December 7, 2020. We stated our support for the redevelopment of the site as multi-family residential development and we raised concerns regarding several of the two required public park amenities and issues surrounding the relocation of the Schuylkill River Trail along the rear of the site development. Several of these issues remain outstanding and are discussed below. The applicant was granted Conditional Use approval for this project in a decision of the Borough Council on January 20, 2021. A decision of the Conshohocken Borough Zoning Hearing Board on January 28, 2021 granted the applicant a variance from Section 27-1608.6- Building Bulk- which limits the building's horizontal length to no greater than 300 ft. and several variances from Sections 27-1714. A. B. D. F. H. & K. - Uses Prohibited in the Floodplain Conservation District.

Related to this site's development, the County of Montgomery entered into an Easement Agreement with Corson Street Acquisition LP for the relocation of the 20 ft. wide Schuylkill River Trail Easement to an area along the rear of the development tract adjacent to the SEPTA Regional Rail corridor. According to the Montgomery County Recorder of Deeds, the existing easement area has been extinguished and an agreement exists for the realignment of the Schuylkill River Trail. The agreement was signed by the applicant and the county on March 19, 2019 and recorded on April 15, 2019. The agreement will be executed upon the satisfaction of the terms of the agreement between the two parties. Several county planning commission staff members met with Bob Dwyer, the applicant's representative on April 28, 2021 via a video Zoom call and for an exchange of concerns. The applicant agreed to provide the county with cross-sections of showing the proposed relocated Schuylkill River Trail and the retaining wall in several locations after concerns about the retaining wall were expressed.

COMPREHENSIVE PLAN COMPLIANCE

The proposed residential development at 400 West Elm Street is generally consistent with the goals and recommendations of MONTCO 2040, A Shared Vision; the county comprehensive plan. The project advances and supports the plan's land use goal of "Create(ing) Sustainable Places" by supporting the reinvestment in the inner suburban boroughs where infrastructure and regional transit assets are in place. Creating a 'live, work, and play' environment at vacant sites in proximity to transportation assets helps to expand living options for county residents. The proposal is broadly compatible with the Conshohocken Comprehensive Plan, adopted June 2018 that designates the future land use of this area as 'Mixed-Use'. This designation supports the redevelopment of vacant tracts into 'Live, Work, and Play' environments. We believe this project helps the borough to advance these goals.

RECOMMENDATION

The Montgomery County Planning Commission (MCPC) continues to support the multi-family residential development of this property. We stated at Conditional Use and continue to believe the project has the potential to become a signature residential development which could yield multiple benefits when combined with other reinvestment projects such as the transit-oriented improvements underway in the borough.

We have several concerns on issues that we recommend the borough consider during its preliminary plan review. We are especially concerned about the construction and proposed arrangement of the +/- 890 ft. retaining wall which in some areas is between 9-10 ft. high. In addition it appears that the retaining wall is

within the 20 ft. wide trail easement area. We have concerns about the lack of design development presented in the site plans for the two required public amenities, the Trailhead Park and the River Trail Park and the need to create a permanent public access to the amenities with an access easement. These and other issues are discussed in greater detail below.

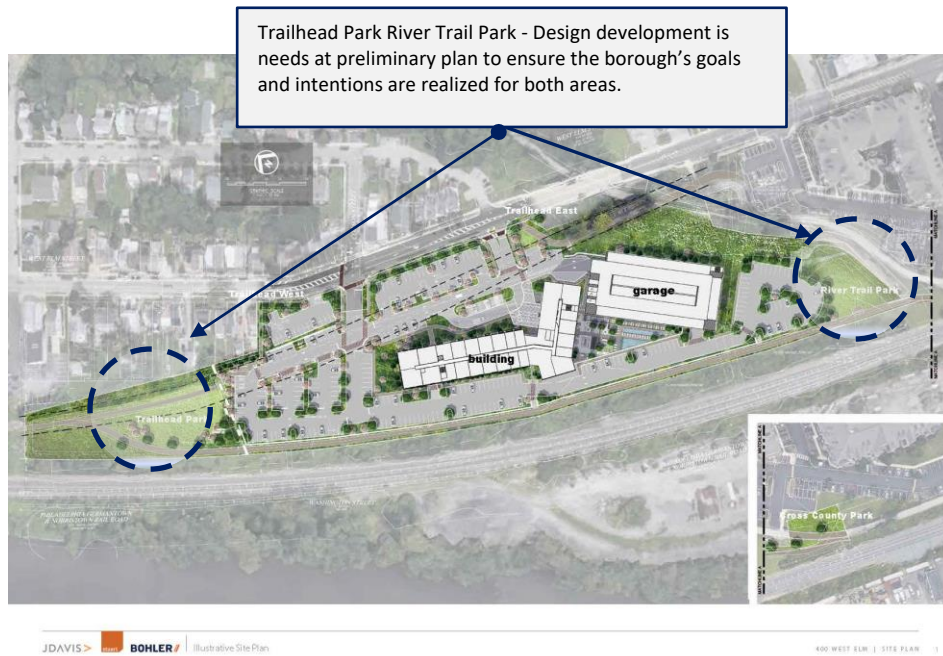
REVIEW COMMENTS

1. Relocation of the Schuylkill River Trail (SRT)

- a. *Structures within the Schuylkill River Trail easement area.* It appears that an extensive area of the +/- 890 ft. wall is within the 20 ft. wide Schuylkill River Trail easement area. According to the trail easement agreement between the applicant and the County of Montgomery, any type of structure is expressly prohibited within the 20 ft. wide trail easement. The applicant should modify the plans and ensure that the arrangement of the retaining wall is consistent with the terms of the agreement. We recommend the applicant should coordinate the retaining wall and trail issues with the county's Open Space and Trails Manager, Bill Hartman, BHartman@montcopa.org.
- b. *Retaining wall height and need for an adequate setback area for the trail shoulder.* We have concerns regarding the height of the extensive retaining wall and the lack of an adequate setback area between the relocated Schuylkill River Trail and the wall. The large retaining wall proposed adjacent to the trail and its height as submitted is a concern. It is approximately 9-10 ft. for +/- 740 ft. of its +/- 890 ft. length. The wall's arrangement in its current position could negatively impact the trail user and the trail experience. The close proximity of the wall and the lack of an adequate setback area between the wall and the trail create a safety concern. The trail user may not have an adequate area to step off the trail. It appears the base of the wall and the trail edge are separated by less than 3-4 feet. We are concerned the retaining wall's height and length create an imposing and monotonous element for the trail user which is not a pleasant experience for such a long distance. Also the applicant should clarify a site plan note that appears in several places in the plans, which states that the retaining wall and the steps are, "To be constructed by Others".
- c. *Schuylkill River Trail signage.* The applicant should include in the preliminary plans, a signage plan for how borough residents and trail users are able legally access and exit the Schuylkill River Trail via the private property of the planned development. The applicant's has extensive trail frontage and multiple ways of access are shown in several submitted plans. We suggest that a trail wayfinding or orientation map/kiosk be included at the trailhead parking lot as a means of orientation. In addition signage is needed between Elm Street and along the Schuylkill River Trail to ensure safety and comfort for trail users. We recommend the borough as a condition of preliminary plan approval, place a condition on the applicant to submit a signage plan for review both to the borough and to Montgomery County Open Space and Trails Manager, Bill Hartman.

2. Public Amenities and Public Access - Open Space Amenities- Bonus Provisions to Increase the Building Height- §27- 1608.8.

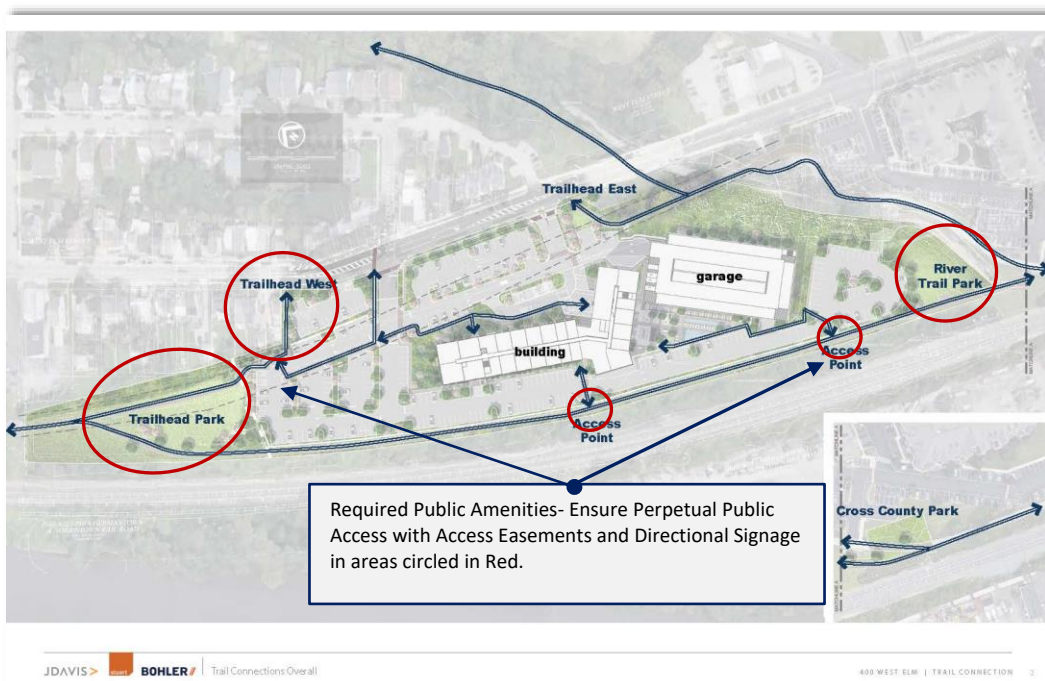
a. *Open Space Amenities- Bonus Provisions.* The proposed development is required to provide two recreational amenities and improvements to increase the building height from the maximum height of 85 ft. to the proposed 130 ft. that yields a 13-story residential building. The site plan shows both the ‘Trailhead Park’ and a small area adjacent to the trailhead parking lot situated in Plymouth Township near the borough boundary, and a River Trail Park located at the eastern side of the property in the 100 year floodplain near Plymouth Creek. Since several of the open space areas which satisfy the Borough’s bonus provisions are located in Plymouth Township and not within the direct control of Conshohocken Borough, the Borough Solicitor should advise on whether this is in compliance with the Zoning Code.



The Conditional Use plans referenced several illustrative plans (Stuart & Associates) which provided a wide variety of images for potential open space and amenity improvements for each of the two areas. These areas are not included in the submitted preliminary site plan submission. The reference images and leave a great deal of latitude and should be part of the submission. We recommend the borough ensure as a condition of approval that a more detailed design is provided for the two required public amenities. This will ensure the borough receives the type of improvements that will advance public use and enjoyment of the trail and adjacent areas. We believe these areas provide a significant opportunity for

borough residents to enjoy the trail and passive recreational opportunities both for this development and neighboring residential areas.

b. Signage & Public Amenities. We believe that access to and the future use of the public amenities and access to the Schuylkill River Trail could be strengthened by ensuring that signage is provided that describes and illustrates in a kiosk/map area what are the public areas and recreational opportunities of the site. Public access is required by the zoning requirements for both the public parking lot and the two public improvement areas- the Trailhead Park in Plymouth Township and the River Trail Park at the eastern end of the site. We recommend the borough ensure that the applicant provides an appropriate wayfinding or directional signage and directional mapping which can ensure full public use and enjoyment of these areas.



Applicant's Trail Connections Plans- Bohler

c. Public Access Easement.

The right of the public to use the recreational amenities provided by this development should be secured in perpetuity with a public access easement that is recorded with Montgomery County Recorder of Deeds. The applicant's site development has several public amenities which are required as part of the development. These include a 20-space parking lot with a connecting pathway to the Schuylkill River Trail; a 'Trailhead Park' in Plymouth Township; and a 'River Trail Park' in the borough along with and two access points to the Schuylkill River Trail. These areas should be secured in perpetuity with a permanent public access easement.

3. **Driveways & Site Access- Section 22-404.2.F- Driveways**

The site plan shows three driveways to the applicant's development. Two driveways provide access to the residential building; the first at Corson Street permits full movement of vehicles, while the eastern-most driveway permits right-in and right-out movements. The third driveway is a curb cut/access to a the public trailhead parking lot is approximately 47 ft. from the Corson Street/West Elm Street Intersection, which is the primary access point for access to the site. Access for public parking trailhead users has restricted access for motorists driving westbound from the Fayette St. intersection, due to the median that prevents left turns into the site and restricted left turns out.

A third driveway as proposed is not permitted according to Section 22-404.2.F- Driveways. The site is limited to no more than two driveways to the property. The arrangement appears to create potentially unsafe traffic movements due to restricted access for motorist to the parking lot by a divided center median area in West Elm Street. We recommend the proposed access point be removed and arranged in a manner that complies with the borough's Driveway Access regulations (Section 22-404.2.F).

4. **Plymouth Township Municipal Approval**

The applicant's development tract includes a +/- 2-acre tract of land in Plymouth Township consisting of two tax parcels -- TP# 49-00-06910-016 and TP# 49-00-06904-004. This area of the development site is shown in the plans as the Trailhead Park and is an required amenity for the development to comply with the Bonus Provisions (**§27- 1608.8.**) which satisfy the requirements allowing the applicant to increase the apartment building's height to 130 ft. The borough and the applicant should be aware that the municipal approval of Plymouth Township's Board of Supervisors is required for this plan to be recorded. The applicant should ensure that the municipal signatures and seal of the township are included on the Record Plan when presenting to the Montgomery County Recorder of Deeds.


CONCLUSION

We wish to reiterate that MCPC generally supports the applicant's proposal and we recommend the borough address to its satisfaction the above mentioned review comments for this proposal.

Please note that any recommendations 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 #20-0223-002 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, ASLA, Senior Design Planner
bjeffrie@montcopa.org
610-278-3444

c: Corson Street Acquisition LLP, Applicant
Bohler Engineering, Applicant's Representative
Chairperson, Conshohocken Boro Planning Commission
Karen Weiss, Plymouth Township Manager
Fran Hanney, District Six- PennDOT
Alicia Nardo, SEPTA Project Manager
Jen Dougherty, SEPTA Manager of Long-Range Planning
Karen Weiss, Plymouth Township Manager

Attachments: 1) Site Plan; 2) Aerial Photo



400 West Elm Street
MCPC #20023002

Montgomery County Planning Commission

Montgomery County/Conshohocken - Planning Commission
PO Box 100000
Philadelphia, PA 19108-0000
(610) 275-3722 • (610) 278-3941
www.montcopa.org/planning
Aerial photography provided by ViewMap

BCON1601

June 30, 2021

Stephanie Cecco
Borough Manager
Borough of Conshohocken
400 Fayette Street, Suite 200
Conshohocken, PA 19428

**RE: Traffic Engineering Review
400 West Elm Street - Residential**

Dear Ms. Cecco:

We have completed our review of the revised material submitted for the above referenced land development proposal. The submission consisted of Preliminary/Final Land Development Plans, last revised 6/4/21, and a 'Public Parking Access Exhibit', dated 5/20/21, both prepared by Bohler. The proposed development consists of 352 apartments with 430 parking spaces. Access to the site is proposed via two (2) new driveways to W. Elm Street (SR 3013). We offer the following comments and information for your consideration:

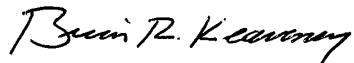
1. SLDO 27-824 - Traffic Impact Study - The applicant has submitted an updated Traffic Impact Study supplement that indicates the currently proposed residential development will generate less weekday morning and evening peak hour traffic volume than the previously proposed office use. We concur with this determination. It is our understanding that the applicant has agreed to maintain their previous financial commitment to future transportation related improvements within the Borough.
2. SLDO 22-404 – Alleys, Driveways, and Parking Areas
 - a. The applicant has indicated that they will obtain an amended Pennsylvania Department of Transportation Highway Occupancy Permit for the development. The applicant has acknowledged that the Borough will be included in all correspondence to/from PennDOT and included in any meetings with PennDOT.
 - b. As requested, the applicant has revised the access point to the proposed parking lot for trail users, located on the northwest corner of the site, to an internal connection to the site driveway, and will remove the driveway to W. Elm Street. We would note that the applicant also provided an alternative design that would connect the trail user parking lot to the larger site parking lot, however this alternate results in undesirable grading and a reduction in the number of available parking spaces. As such, we concur with the design shown on the current plan.

- c. The maneuverability diagrams shown on the plans for fire and emergency services vehicles should be approved by the Borough Fire Marshal. On Sheet 29, the entering movement for the refuse vehicle should be verified.

If you have any questions or require additional information, please do not hesitate to contact me.

Very truly yours,

PENNONI ASSOCIATES INC.



Brian R. Keaveney, PE, PTOE
Transportation Division

cc: Ray Sokolowski, Executive Director of Operations
George Metz, Chief of Police
Timothy Gunning, Fire Chief and Fire Marshal
Karen MacNair, PE, Borough Engineer
Michael Peters, Esq., Borough Solicitor
Brittany Rogers, Executive Assistant

July 1, 2021

BCONS 21010

Stephanie Cecco, Borough Manager
Conshohocken Borough
400 Fayette Street, Suite 200
Conshohocken, PA 19428

**RE: Zoning Review
400 W. Elm Street – Preliminary/Final Land Development Plan Application**

Dear Ms. Cecco:

As requested, we reviewed the following in connection with the referenced project:

- *“Preliminary/Final Land Development Plans for Corson Street Acquisition Limited Partnership,”* (29 sheets) prepared by Bohler, dated March 30, 2021, last revised June 4, 2021.
- *“Landscape and Lighting Plans – 400 West Elm Street,”* (7 sheets) prepared by Stuart and Associates, LLC, dated March 30, 2021, last revised June 4, 2021.

The applicant, Corson Street Acquisition Limited Partnership c/o Equus Capital Partners, proposes to develop the subject property bounded by W. Elm Street, Plymouth Creek, the SEPTA railway right-of-way, and Plymouth Township. The property is mostly located in the SP-3 - Specially Planned District Three, with small portions of the property in the BR-2 - Borough Residential District Two and LI - Limited Industrial zoning district. The property is mostly vacant land with an existing single-family dwelling and asphalt parking lot. A portion of the Schuylkill River Trail, high tension power lines, and a water transmission main cross the property. The applicant proposes to remove the existing dwelling and parking lots and relocate the Schuylkill River Trail to construct a 13-story, 352-unit residential building with site improvements and amenities. The applicant proposes a 2-story, 189 space parking garage located adjacent to the building, along with a 239-space surface parking lot to meet the off-street parking requirement. The applicant is also proposing various recreational amenities, including 20 public access parking spaces and a new trail head for the Schuylkill River Trail. A portion of the property is located in the Floodplain Conservation District and redevelopment is subject to all local, state, and federal floodplain requirements.

The applicant was granted the following conditional use approval by the Borough Council during the January 20, 2021 meeting, with conditions:

- §27-1603.4 to permit a multifamily residential use in the SP-3 zoning district.

The applicant was granted the following zoning relief by the Zoning Hearing Board during the December 14, 2020 meeting:

- §27-1608.6 - To allow a building bulk of 392 feet.
- §27-1714.1.A, B, D, F, H, and K – To permit a portion of the proposed development within the Floodplain Conservation District.

We offer the following comments, new comments are in *italics*:

1. A portion of the proposed development is located within the Floodplain Conservation District and the applicant has been granted the required variance by the Zoning Hearing Board. The development will need to comply with the technical provisions upon grant of a floodplain variance as outlined in Part 17, Article G of the Borough Zoning Code, including but not limited to:

- a. Obtaining a letter of map revision (LOMR) from FEMA. (§27-1723.B)

The applicant is in the process of coordinating and eventually obtaining a CLOMR for the portions of the proposed improvements within the Floodplain Conservation District and the LOMR will follow after the completion of construction. The applicant is to include the Borough on submissions and correspondence to FEMA.

- b. No development is permitted within the area measured 50 feet landward from the top-of-bank of any watercourse; otherwise a permit shall be obtained from the Department of Environmental Protection Regional Office. The applicant is to provide dimensions of the setbacks from Plymouth Creek to confirm compliance.

The applicant is to include the Borough on submissions and correspondence with PADEP for all required permitting.

2. The maximum permitted building height in the SP-3 zoning district is 85 feet. (§27-1608.1.A) The applicant is proposing to provide two (2) recreational amenities in accordance with §27-1608.8 in order to increase the permitted building height by 50 feet to a maximum height of 135 feet. The zoning compliance table indicates the building is less than 135 feet but does not give the specific height. Borough Council may award building height bonuses for certain open space and recreation facility improvements included in the development. The proposed facilities must be constructed, maintained, and operated at the developer's expense and are subject to the review and approval by the Borough Engineer and Borough Planning Commission. The applicant is proposing a public access parking facility and new Schuylkill River Trail head from E. Elm Street as one of the proposed recreational amenities. During the conditional use hearing, the applicant provided general concepts for additional required recreational facilities and indicated greater detail would be provided during the land development process. However, the plans do not appear to show a further developed plan for the public spaces.

The revised plan indicates a passive use park on the west end of the site, a dog park for residents use on the east end of the site, a picnic area with food truck parking along the existing E. Elm Street trailhead, six river view lounge chairs, and the new public use parking lot and trail access on the western end of the site. The proposed facilities should be reviewed by the Borough Council and Planning Commission to confirm if they are sufficient to permit the 50-foot height bonus.

3. The Montgomery County Planning Commission review of the project raised concern regarding the retaining wall up to 10 feet in height along the relocated Schuylkill River Trail negatively impacting the trail users experience. The applicant should provide details on the proposed retaining wall materials and provide illustrations of the trail users experience.

The applicant has noted that more details will be provided at a future submission date.

4. In accordance with §27-1610, in the SP-3 zoning district, the developer is required to provide riverfront access with pedestrian accommodations. While the property does not front directly on the Schuylkill River, it does front on Plymouth Creek and contains a trail. The applicant will need to provide pedestrian accommodations as outlined in §27-1610.1, including:

- a. Seating at suitable intervals, not exceeding 200 feet.

The applicant has provided benches within the proposed passive park and a few lounge chairs along the Schuylkill River trail on the east end of the site; however, the majority of the trails do not have seating.

- b. Designated picnic areas.

The applicant is proposing a picnic area with food truck parking along the existing Elm Street trailhead.

- c. Pedestrian-oriented lighting for the walking surface and associated connections to Borough Streets.

Pedestrian-oriented lighting for the trail walking surface is required, including the connection from E. Elm Street.

- d. One-half of the required seating areas shall be shaded by trees.
- e. Trash receptacles.

The trail and pedestrian accommodations shall have unrestricted dawn to dusk daily public access with at least one direct pedestrian public access connection from an adjoining public street through the property not more than 500 feet apart. The public access shall be safe, accessible, landscaped, illuminated, convenient, and well marked with appropriate signage approved by the Borough. (§27-1610.2)

5. The plan indicates 20 public access parking spaces are proposed in addition to the required parking for the residential development. The applicant should clarify how these specific public access parking spaces will be delineated and where signage is proposed both from the adjacent roadways and within the proposed surface parking lot.

The applicant has proposed signage identifying the public parking spaces and should continue to work with the Borough on signage to direct users to the public facilities.

- 6. *The Table of dimensional requirements should be amended to reflect the maximum allowable parking spaces for compact cars in a parking garage in Specially Planned Districts is 35%. (27-2011.B.3)***

If you have any questions or concerns, please feel free to contact the undersigned.

Sincerely,



Eric P. Johnson, PE
Zoning Officer
PENNONI ASSOCIATES INC.

EPJ/adg

BOROUGH OF CONSHOHOCKEN
MONTGOMERY COUNTY, PENNSYLVANIA

APPLICATION FOR SUBDIVISION/ LAND DEVELOPMENT

To be completed by the Borough:

| | |
|---------------------------------------|------------------------------|
| Submission Information: | |
| File Number: <u>LD-2021-04</u> | File Date: <u>5/20/21</u> |
| Project Title: <u>333 W. 7th Ave.</u> | Date Complete: <u>6/8/21</u> |
| Received By: <u>B. Rogers</u> | 90 Day Date: <u>Waived</u> |

REQUIRED MATERIALS FOR ALL LAND DEVELOPMENT/SUBDIVISION APPLICATIONS

1. This form MUST be completed and submitted with the Borough's Land Development/Subdivision application.
2. A Land Development/Subdivision Application MUST include all of the items listed in the application checklist to be considered complete.

Incomplete applications will NOT be placed on a Planning Commission agenda. Incomplete applications will be returned to the applicant.
3. Complete applications must be received at least 38 DAYS (see schedule) prior to the Planning Commission meeting at which it will be heard.

It is highly encouraged to submit applications in a digital format.
4. One (1) digital copy plus seven (7) paper copies of the complete application are required if submitting digitally, or fifteen (15) paper copies of the complete application are required.

Applicant Information:
Name: DJB PROPERTIES, LLC
c/o DAVID J. BROSSO
Address: 1125 ROBIN ROAD
GLADWYNE, PA 19035
Phone: 610-310-5055
Fax: (NONE)
E-Mail*: djbprop@gmail.com

Property Owner Information (if different):
Name: ESTATE OF AUGUSTINE PERSEO
Address: 333 W. SEVENTH AVENUE
CONSHOHOCKEN, PA 19428
Phone: _____
Fax: _____
E-Mail*: _____

Architect/Planner: L.R. BETTS & ASSOCIATES ARCHITECTS & PLANNERS
Address: 661 W. GERMANTOWN PIKE, SUITE 215, PLYMOUTH MEETING, PA 19462
E-mail*: _____
Phone/Fax: 610-279-3131

Engineer/Surveyor: JOSEPH M. ESTOCK, PE, PLS
Address: 355 S. HENDERSON ROAD, KING OF PRUSSIA, PA 19406-2407
E-mail*: joe@josephmestock.com
Phone/Fax: 610-265-3035
610-962-9855 (Fax)

Landscape Architect: (NONE)
Address: _____
E-mail*: _____
Phone/Fax: _____

Attorney: CRAIG ROBERT LEWIS @ KAPLIN STEWART
Address: 910 HARVEST DRIVE, SUITE 200, PO BOX 3007, BLUE BELL, PA 19422
E-mail*: rlewis@kaplaw.com
Phone/Fax: 610-260-6000

*All correspondence regarding this application from the Planning Commission and staff will be made via e-mail. All persons involved with this application should provide their e-mail addresses so that information including, but not limited to, meeting dates and plan reviews replaces revisions here, is distributed appropriately.

Application For: (See Section 22-305.A or the bottom of page 10 of the application packet for clarification)

- Minor Land Development
- Preliminary Major Land Development
- Final Major Land Development

- Minor Subdivision
- Preliminary Major Subdivision
- Final Major Subdivision

Project Information:

Location (Street Address): 333 WEST SEVENTH AVENUE

Tax Assessment Parcel No. 09-00-08280-10-3 County Deed Book No. 4847 Page No. 817

Description of Proposed Work: TO SUBDIVIDE THE EXISTING LOT INTO TWO(2) LOTS TO BE DEVELOPED AS TWO(2) SINGLE-FAMILY SEMIDETACHED DWELLINGS (TWINS).

Total Tract Acreage: 8,260 SF (0.1896 AC) Project Acreage 8,260 SF (0.1890 AC)

Zoning District "BR-1" Existing Number of Lots: 1 Proposed Number of Lots: 2

Proposed Land Use: Single-Family Detached Single-Family Semi-Detached Multi-Family
 Single-Family Attached Commercial Office Industrial

Other (Describe): _____

Existing Sewer Flows: 1 EDU Proposed Sewer Flows: 2 EDU'S

Check List - Plans:

The applicant must provide all of the following plans for an application to be considered complete. Section 22, Part 3 of the SALDO outlines plan submission requirements and the criteria that must be met in order for submissions to be deemed complete. These requirements are listed on information sheets provided at the end of this application package. If the required plans listed below do not have sufficient information to allow for staff reviews, the application may be considered incomplete and returned, requesting additional information.

- Record Plan
- Existing Features Site Plan
- Grading Plan
- Erosion and Sediment Control Plan
- N/A Lighting Plan_Major
- N/A Circulation Plan_Major
- Stormwater Calculations
- Landscape Plan (sealed by a Landscape Architect)
- Demolition Plan
- Detail Sheets
- N/A Traffic Study (if applicable)
- Post Construction Stormwater Management Plan
- Utility Plan

Check List - Proof of ownership and zoning relief:

- Proof of equitable ownership or interest in the property - copy of the deed to the subject property
- N/A Copy of adjudication of Zoning Hearing Board related to the application

Check List - Color Photographs of Site and Existing Conditions:

- Streetscape in all directions, showing subject property in each
- Façade and secondary elevations of existing building(s) on site
- Sidewalk and curb conditions
- Street trees
- Alley conditions, if present

Check List - Building Elevations:

- Architectural drawings and renderings of proposed building(s)

Check List - Setback of Proposed Building(s):

- Established building line for the block on which the property is located (eg: scale off an aerial) (In plan, show setbacks of all existing buildings on same side of the street as project for entire block.)

List of Requested Waivers:

Section/Requirement:

Relief Requested:

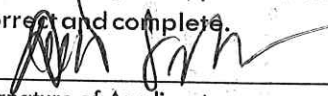
(SEE ATTACHED LIST)

(SEE ATTACHED LIST)

Have you met with the Zoning Officer regarding this plan? Yes No
 Are there known variances/any zoning relief necessary for this project? Yes No
 If YES, have you submitted an application for the Zoning Hearing Board? Yes No
 Has this plan been reviewed by the Zoning Hearing Board? Yes No

*Please be advised that if any variances are found to be necessary during the course of the review of this plan, you will be required to go to the Zoning Hearing Board prior to proceeding to the Planning Commission. In addition, you will be requested to grant the Borough a waiver to the 90-day action period or an immediate denial of this application will be made, and you will be required to resubmit the application.

The undersigned represents that to the best of his/her knowledge and belief, all the above statements are true, correct and complete.


 Signature of Applicant
 5/18/2021
 Date

Signature of Property Owner (if not the same as applicant)
 Date

ALL MAJOR subdivision/land use applications require a pre-submission meeting to discuss the project prior to full application submittal.

MINOR subdivision/land use applications may request a pre-submission meeting; if one is desired.

Meetings are held the second and fourth Tuesday of each month beginning at 1:30pm at the Borough Administrative Offices.

Applicants assume responsibility of any fees associated with this meeting.

Applicant signature _____ date _____

To schedule a pre-submission meeting, please contact the office of the Borough Manager
 ph: 610.828.1092
 e: landuse@conshohockenpa.gov

Borough Use Only:

| | | |
|--|-----------------|-----------------|
| <input type="checkbox"/> Filing Fee | Amount \$ _____ | Check No. _____ |
| <input type="checkbox"/> Pre-Construction Professional Services Escrow | Amount \$ _____ | Check No. _____ |

Decision Information:

Approval _____ Denial _____ Decision Date: _____

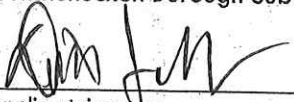
Comments/Conditions:

BOROUGH OF CONSHOHOCKEN
MONTGOMERY COUNTY, PENNSYLVANIA

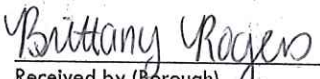
Planning Process Extension Agreement

The Pennsylvania Municipality Planning Code (MPC) and the Conshohocken Borough Subdivision and Land Development Ordinance state that action must be taken by the Borough within ninety (90) days after a complete application is filed with the Borough. In the Borough, larger and complicated projects have historically required additional time in order to complete a thorough review before being considered for approval. As such, an applicant may voluntarily waive the timing requirement at any time, but is encouraged to submit this waiver with the completed application.

I, the applicant, hereby voluntarily waive the timing requirement as set forth in the MPC (Section 509) and the Conshohocken Borough Subdivision and Land Development Ordinance (Section 22-308).


Applicant signature

5/18/2021
Date


Received by (Borough)

5/20/21
Date

BOROUGH OF CONSHOHOCKEN
MONTGOMERY COUNTY, PENNSYLVANIA

ESCROW AGREEMENT
FOR PROFESSIONAL REVIEW FEES

SUBDIVISION/LAND DEVELOPMENT APPLICATIONS

The undersigned hereby agrees to post an escrow to cover the costs of the review of subdivision and land development applications by the Borough Planner, Engineer, and Solicitor. The amount of said escrow shall be according to the attached "Schedule of Fees" and shall be posted at the time of initial submission of an application to the Borough. Said fees shall be placed in an escrow account and any balance remaining shall be returned to the applicant subsequent to the receipt of final approval.

The applicant is advised that the "Schedule of Fees" represents only an estimate of the costs associated with plan review. The completeness and quality of the submission, the complexity of the project, the number of revisions and other factors may cause costs to exceed the established escrow amounts. If during the course of a subdivision/land development review an escrow amount falls to 10% of the original escrow amount or \$250, whichever is greater, the Borough may require the posting of additional escrow.

NOTE: NO FINAL APPROVALS, CONSTRUCTION, BUILDING OR OCCUPANCY PERMITS SHALL BE ISSUED UNTIL ALL OUTSTANDING PROFESSIONAL REVIEW FEES HAVE BEEN SATISFIED.

Signed  Date: 5/18/2021
Applicant

ORIGINAL
SIGNATURES

BOROUGH OF CONSHOHOCKEN
MONTGOMERY COUNTY, PENNSYLVANIA


ESCROW AGREEMENT
FOR PROFESSIONAL REVIEW FEES

PRE-SUBMISSION MEETING

The undersigned hereby agrees to post an escrow to cover the costs of the review of subdivision and land development applications by the Borough Planner, Engineer, and Solicitor. The amount of said escrow shall be according to the attached "Schedule of Fees" and shall be posted at the time of initial submission of an application to the Borough. Said fees shall be placed in an escrow account and any balance remaining shall be returned to the applicant subsequent to the receipt of final approval.

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Signed  Date: 5/18/2021
Applicant

BOROUGH OF CONSHOHOCKEN
MONTGOMERY COUNTY, PENNSYLVANIA

ALL PLANS SHOULD CONFORM TO THE FOLLOWING:

[Section 22-304.A]

- 1. Plan is clearly and legibly drawn.
- 2. Plan scale does not exceed one (1) inch equals fifty (50) feet (sites >5 Acres may be drawn 1:100). 1" = 10'
- 3. Dimensions are in feet and decimals and bearings in degrees, minutes and seconds.
- 4. Sheet size shall be 15" x 18", 18" x 30", 24" x 36" or 30"x42".
- 5. A key map has been provided when there are two or more sheets.

[Section 22-304.B]

- 6. Name and address of the subdivider or developer and the registered engineer or surveyor.
- 7. Subdivision/development name, location in terms of significant bounding roads, and name of municipality.
- 8. The date of preparation (or revision) of the plan, scale and north point.
- 9. Entire tract boundary with bearings and distances and a statement of the tract size.
- 10. Layout and dimensions of all lots and the net lot area of each parcel.
- 11. Floor Area and/or gross leasable area of each existing/proposed building, as applicable.
- 12. A key map relating the subdivision to at least three (3) intersecting streets.
- 13. A legend sufficient to indicate clearly between existing and proposed conditions.
- 14. A schedule of all zoning requirements and classifications.
- 15. A list of all requested/obtained variances, waivers or special exceptions.

[Section 22-410.5]

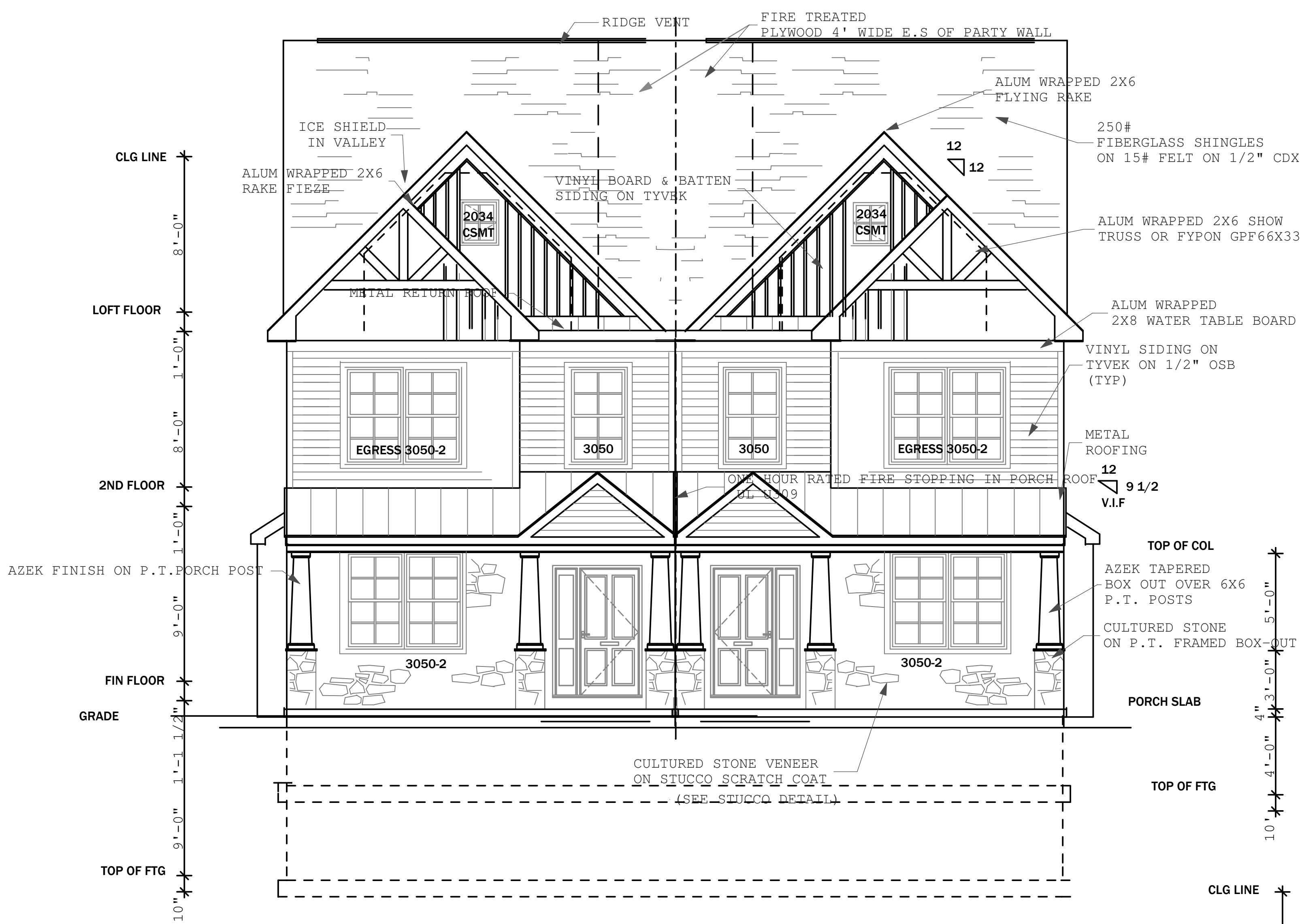
- 16. Narrative/description of the project
- N/A 17. All bodies of water
- 18. All physical features
- 19. All underground utilities
- 20. Proposed change to land surface and vegetative cover
- 21. Areas to be cut and filled
- 22. Stormwater management controls and maintenance program during construction
- 23. Stormwater management controls and maintenance program after construction
- N/A 24. Easements
- 25. Expected project schedule

Address the following to determine which application to submit:

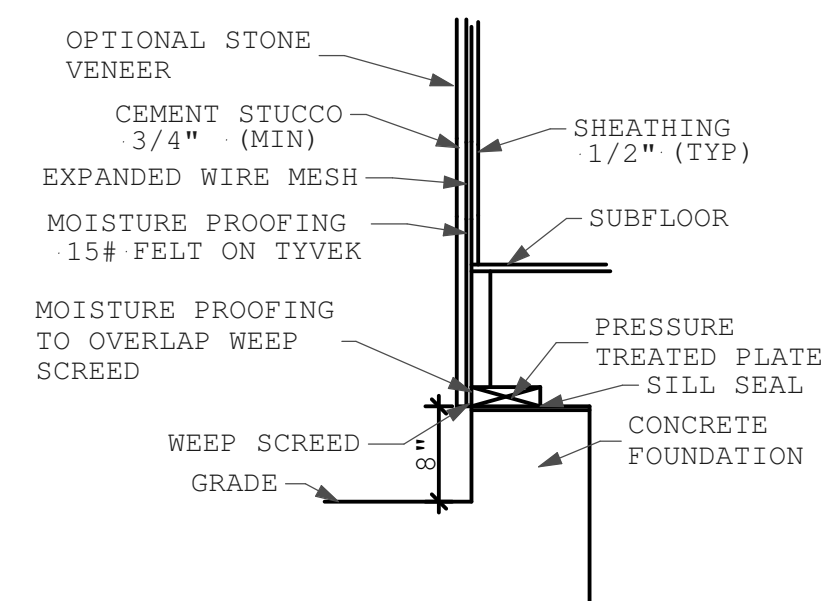
[Section 22-305.A]

| | Yes | No |
|--|-------------------------------------|--------------------------|
| 1. There are less than three (3) lots. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. There is only one residential building with less than five (5) dwelling units. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. The property has not been part of a subdivision or land development submitted within the past three (3) years. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. The property fronts on a physically improved street that is legally open to the public. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. The project will not involve the construction of any new street or road, the extension of municipal facilities or the creation of any other public improvements. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. The project will not require a variance(s) from the Borough Zoning Ordinance for no more than one of the proposed lots on which new construction will occur or may occur in the future. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. The project is in general conformance with the Borough Master Plan and other plans. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

If ALL responses were YES, please file a MINOR subdivision and/or land development application.
If ANY response was NO, please file a MAJOR subdivision and/or land development application.



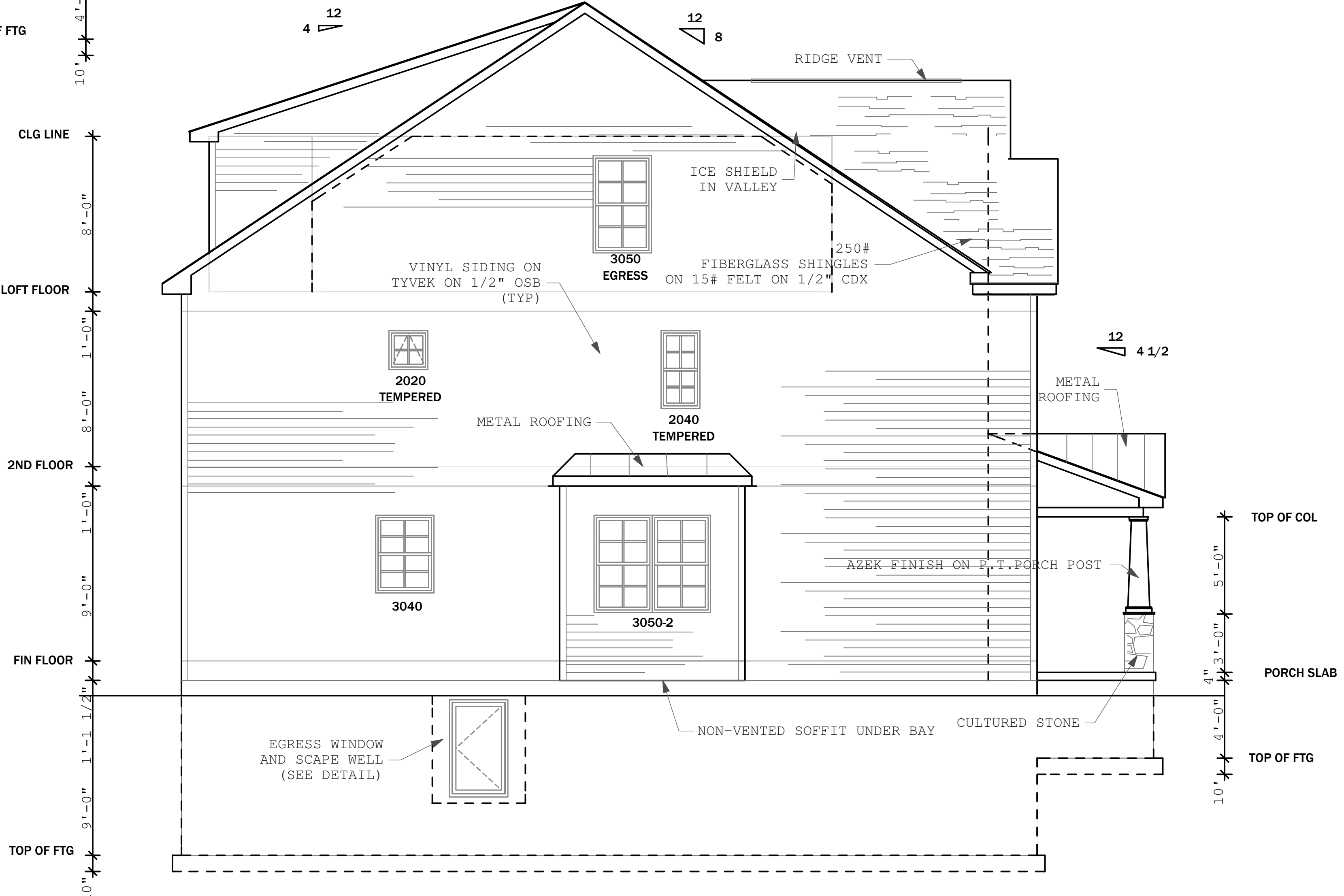
FRONT ELEVATION
SCALE 1/4" = 1'-0"



STUCCO DETAIL (AREAS OF CULTURED STONE)
SCALE 3/4" = 1'-0"

GENERAL NOTES :

- All construction shall conform to the IRC 2015 Residential Building Code.
- All concrete shall be a minimum strength of 3000 psi at 28days
- Reinforcing bars shall conform to ASTM-A615 grade 60
- Welded wire fabric shall conform to ASTM185
- Bar laps at splices shall be a minimum of 30diameter lap of welded wire to be 8"
- CMU shall be hollow load bearing ASTM C90.70 with a compressive strength of 2000psi
- All foundations shall receive a coat of liquid applied waterproofing
- All structural lumber shall be #2 or better hem fir or spf and have a minimum fiber stress of 975psi E = 1200000
- Provide bridging on spans over 8' or as required by code
- All openings in exterior and interior bearing walls shall have ganged 2x10 unless noted otherwise
- Interior wall shall be 2x4 on 16" centers unless noted otherwise with 1/2" drywall both side 5/8" type X in garages and MR in wet areas
- Exterior walls shall be 2x6 on 16" centers unless noted otherwise with 1/2" drywall inside and 1/2" OSB outside
- All window shall be vinyl or clad wood with insulated low E glass else as noted Bedrooms shall have egress size windows Minimum sill height shall be 24" or as code permits
- All plumbing shall be by a licensed contractor and shall meet national and local plumbing codes
- All plumbing fixtures shall be manufactured by Kohler or equal or as selected by owner
- HVAC shall be by a licensed contractor and shall meet 2015 IMC
- HVAC equipment shall be manufactured by Bryant or equal
- Contractor shall be responsible for sizing HVAC and design of the system
- Contractor shall field locate air conditioning compressor (s)
- All electrical work shall be performed by a licensed contractor and shall meet NEC and IRC codes
- Contractor shall be responsible for service panel as required to handle electrical requirements
- Contractor to provide underwriters certificate for all electrical work
- All exterior doors to be insulated steel or fiberglass manufactured by Therma True or equal
- IRC 2015 Code:
Use Group - R3
Construction Class - VB (5B)
Roof/snow load 30 psf
Wind speed 90 mph
Seismic zone C
Flame spread III
Fire Grading 1 hour
- All wood decks and steps shall have pressure treated structural elements decking and railings shall be pressure treated or vinyl products as selected by owner
- Contractor shall supply Engineered design information for all trusses and engineered Lumber
- Designed Loads
Floors 40 psf live load/ 10 psf dead load
Roof 20 psf live load/ 10 psf dead load
Decks 50 psf live load/ 10 psf dead load
Ground snow load 30 psf
Assumed soil bearing capacity 3000 psf
- Fire stopping shall be provide per IRC2015 at connections between horizontal and vertical spaces in soffits, tray ceilings, stairways and required floor and ceiling openings
- All balusters and hand rails on stairs, balconies and walkways shall comply with IRC2015 with regards to heights, spacing, mounting and interruptions Maximum rise to be 7 3/4" Minimum tread 10" Minimum nosing 3/4"
- Clear ceiling heights shall be 7'-6". Corridors, bedrooms, kitchens, laundry room and habitable basements shall be a minimum of 7'-0"
- All interior egress doors shall have a minimum clear width of 29 3/4"
- All windows and doors shown as tempered safety glass shall be permanently etched to show this Safety glazing shall be required in all hazardous areas or as required by code



LEFT SIDE ELEVATION
SCALE 1/4" = 1'-0"

| | | |
|------|---------|-----------|
| DWN | JRB | REVISIONS |
| DATE | 5/13/20 | |

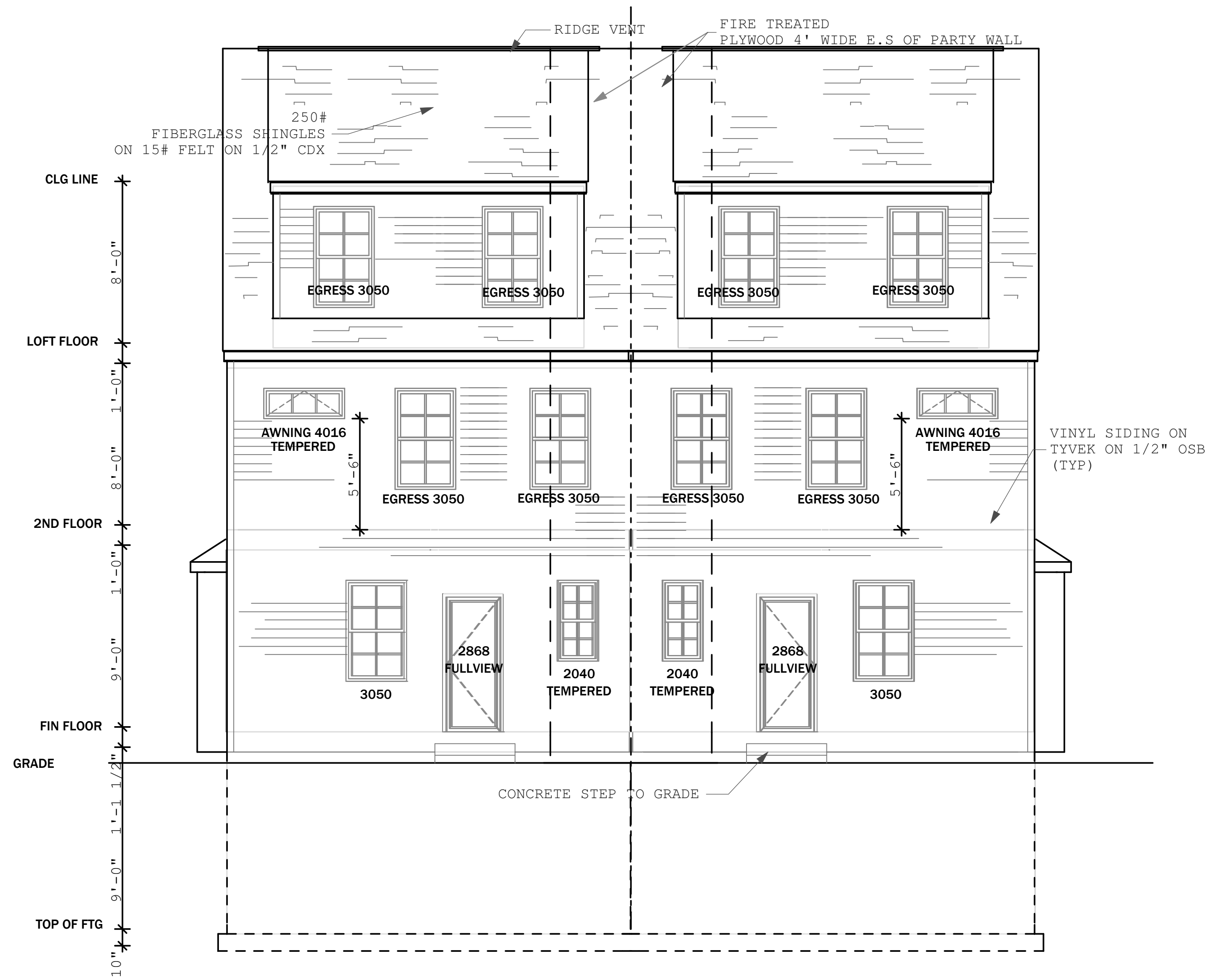
J. R. BETTS & ASSOCIATES
ARCHITECTS & PLANNERS
661 W. GERMANTOWN PIKE, SUITE 215
PLYMOUTH MEETING, PA 19462 610-279-3131

SHEET TITLE

PROPOSED TWIN RESIDENCE
DJB PROPERTIES
331 W 7TH AVENUE, LOTS 2 & 3
CONSHOCKEN, PA

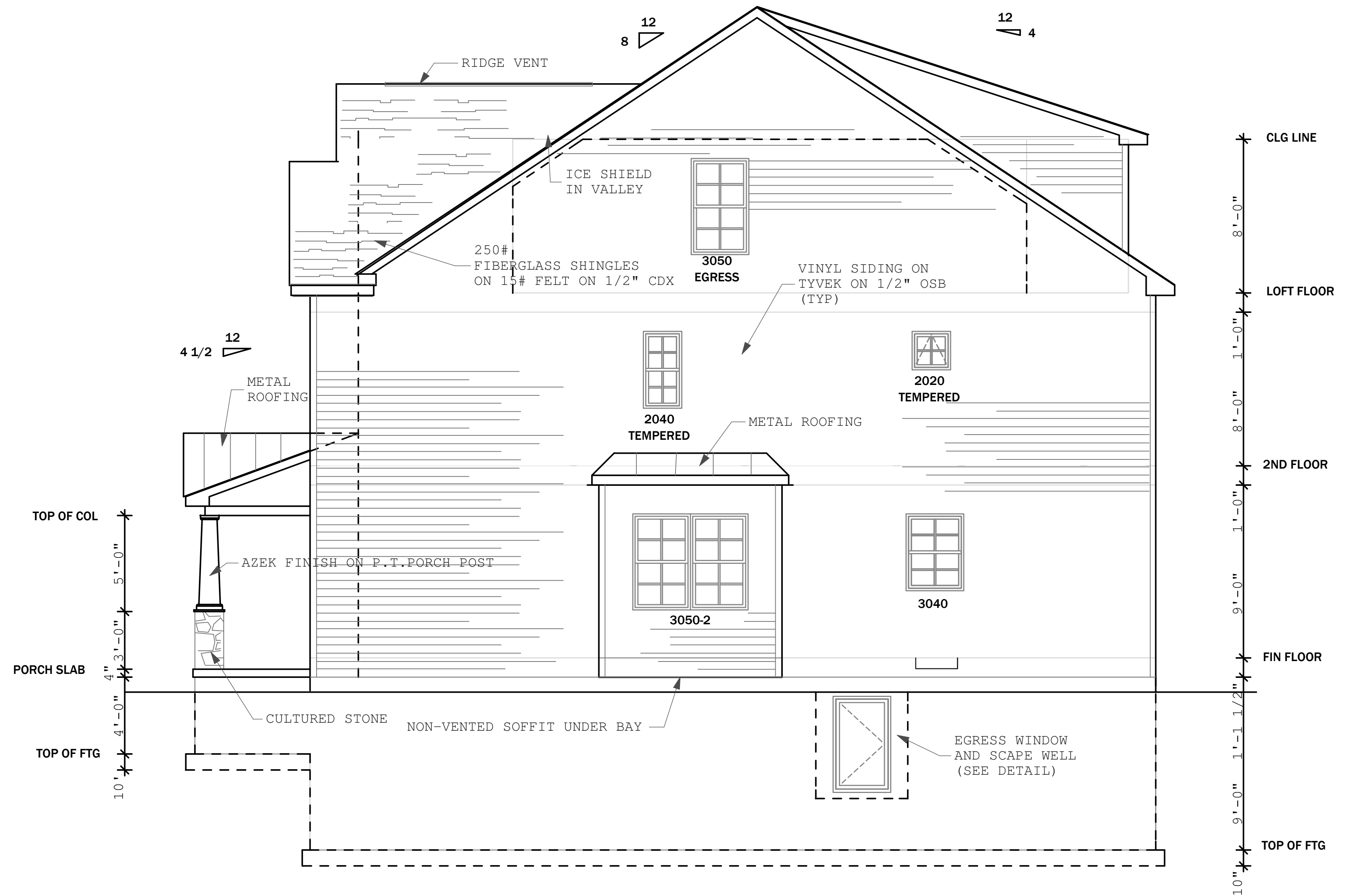
.DRAWING NO

A1



REAR ELEVATION

SCALE 1/4" = 1'-0"



RIGHT SIDE ELEVATION

SCALE 1/4" = 1'-0"

FASTENING SCHEDULE

1. Floor construction
 Floor joist to sill or girder 8d common, 3 toe nail
 Wood subflooring, 8d common, 8" o.c. direct at edges and 12" o.c. intermediate
2. Wall construction:
 Stud to sole or to cap plate 8d common, 4 toe nail or two direct
 Double studs 10d common 12" o.c. direct
 Corner studs 16d common 24" o.c. direct
 Sole plate to joist or blocking 16d common 76" o.c.
 Double cap plate 10d common 15" o.c. direct nail
 Cap plate laps 10d common 2 direct nail
 Interior braced wall top plate to joist or blocking 10d common 12" o.c.
 Continuous header to stud 8d common 4 toe nail
3. Roof and ceiling construction:
 Ceiling joist to plate 16d common 3 toe nail
 Ceiling joist, parallel to rafter, 10d common 3 direct
 Collar beam 10d common 3 direct
 Rafter to plate 8d common 3 toe nail
 Rafter to ridge 16d common 2 toe nail or direct
4. Wall and roof:
 Particleboard 1/2" or less, 6d common 6" o.c. direct edges 12" o.c. intermediate
 Wood structural panels 5/8" or less, 8d common 6" o.c. direct edges 12" o.c. intermediate
 6" o.c. to gable end walls where spans are 12' or more 6" o.c. within 48" of ridge eaves and end walls

| DATE | DWN | REVISIONS |
|---------|-----|-----------|
| 5/13/20 | JRB | |

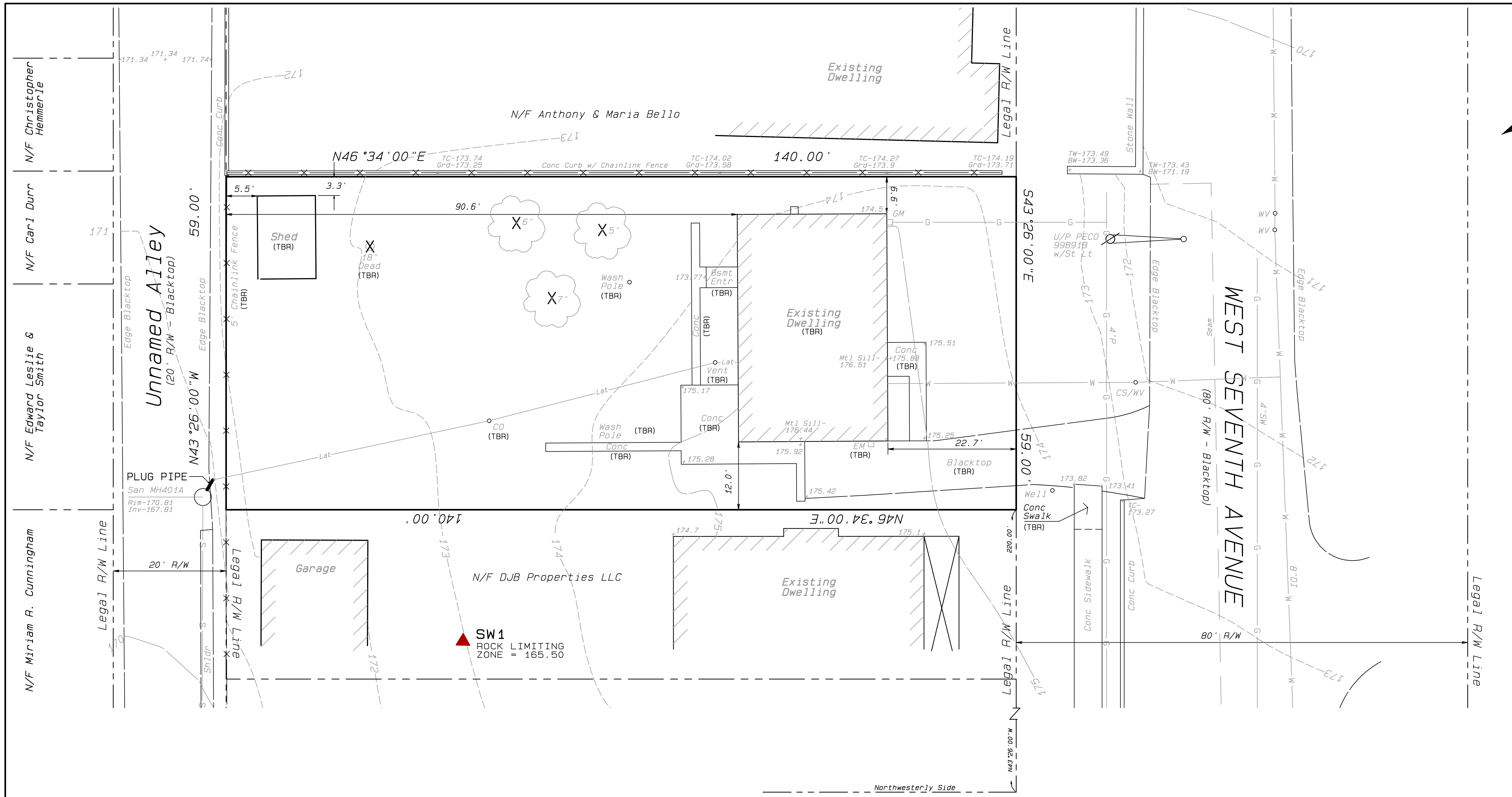
J. R. BETTS & ASSOCIATES
 ARCHITECTS & PLANNERS
 661 W. GERMANTOWN PIKE, SUITE 215
 PLYMOUTH MEETING, PA 19462 610-279-3131

SHEET TITLE

PROPOSED TWIN RESIDENCE
DJB PROPERTIES
 331 W 7TH AVENUE, LOTS 2 & 3
 CONSHOCKEN, PA

.DRAWING NO

A2



LEGEND

- Centerline
- Tract Boundary
- Property Line
- Legal R.O.W., Easements
- Required R.O.W.
- Existing Contour
- Existing Water Line
- Existing San. Sewer Line
- Existing Telephone Line
- Existing Gas Line
- Existing Electric Line
- Existing Storm Sewer/Inlet
- Existing Manhole
- Existing Curbside
- Utility Pole
- Existing Valve, Vent. Co.
- To Be Removed
- SW1 SW Test Location

SOILS LEGEND

THE ENTIRE SITE IS COMPRISED OF THE FOLLOWING SOIL TYPE:

UuqB Urban Land-Udorthents
Schist and Gneiss Complex
0-8% Slopes
Depth to Bedrock: 10-99 Inches
Depth to Water Table: About 60 Inches

HYDROLOGIC SOIL GROUP: C

TOPOGRAPHY

BOUNDARY AND TOPOGRAPHIC INFORMATION HAS BEEN OBTAINED FROM A RECENT FIELD SURVEY PREPARED BY JOSEPH M. ESTOCK, P.E., PLS

DATUM BASED ON NAVD 1988

Benchmark:
Nail Set in Curb Along the Southwesterly Side of West Seventh Avenue at the Southeastly End of the Concrete Driveway Apron on 305 West Seventh Avenue.
Elev=173.97 (NAVD-88 Approx Datum)

FLOODPLAIN NOTE:

THE SITE IS LOCATED IN FEMA FLOOD ZONE 'X', BEING AN AREA DETERMINED TO BE OUTSIDE THE 500 YEAR FLOODPLAIN, AS INDICATED ON FLOOD INSURANCE RATE MAP NO. 42091C0396G, HAVING AN EFFECTIVE DATE OF 03-02-2016.

Test Method: Double-Ring Infiltrometer

Profile Descriptions:

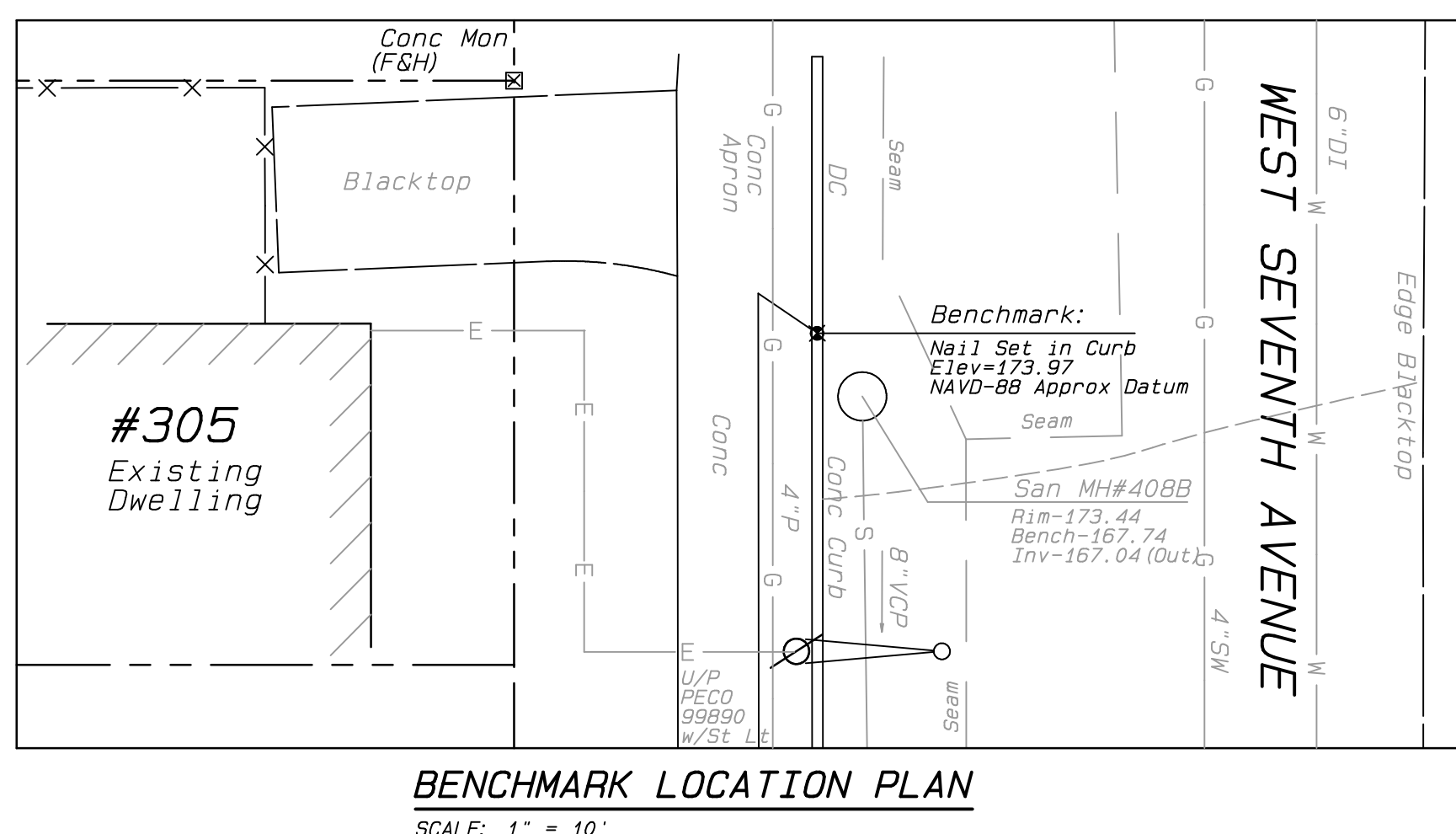
| Horizon | Depth (in.) | Description |
|-------------------------------------|-------------|--|
| SW1 | | |
| A | 0-15 | Dark Brown silt loam, weak granular, very friable, clear boundary |
| B | 15-42 | Brown silt loam, moderate/weak granular, very friable, wavy boundary |
| C | 42-90 | Grey/brown channely silt loam/sandy loam, weak granular, very friable, 10-20% coarse frag. |
| Rock Limiting Zone encountered @90" | | |
| SW2 | | |
| A | 0-12 | Dark Brown silt loam, weak granular, very friable, clear boundary |
| B | 12-40 | Brown silt loam, moderate/weak granular, very friable, wavy boundary |
| C | 40-84 | Grey/brown channely silt loam/sandy loam, weak granular, very friable, 10-20% coarse frag. |
| Rock Limiting Zone encountered @64" | | |

| Hole No. | Test Depth (in.) | Start Depth (in.) | PS1 | PS2 | 1 | 2 | 3 | 4 | 5 | 6 |
|----------|------------------|-------------------|-------|-----|-------|-------|-------|-------|---|---|
| SW1A | 66 | 12 | 6+ | 5 | 1 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | | |
| Time: | | | :30 | :30 | :10 | :10 | :10 | :10 | | |
| SW1B | 66 | 12 | 6+ | 4 | 1 3/8 | 1 3/8 | 1 3/8 | 1 3/8 | | |
| Time: | | | :30 | :30 | :10 | :10 | :10 | :10 | | |
| SW2A | 60 | 12 | 2 3/8 | 2 | 5/8 | 5/8 | 5/8 | 5/8 | | |
| Time: | | | :30 | :30 | :10 | :10 | :10 | :10 | | |
| SW2B | 60 | 12 | 2 1/8 | 2 | 5/8 | 5/8 | 5/8 | 5/8 | | |
| Time: | | | :30 | :30 | :10 | :10 | :10 | :10 | | |

Calculation of Infiltration Rate:

| Hole No. | Drop In Final Per. | Reading Interval | Minutes | Inches | Inches/ Hour |
|----------|--------------------|------------------|---------|--------|--------------|
| SW1A | 1 3/4 | 10 | 5.71 | 10.50 | |
| SW1B | 1 3/8 | 10 | 7.27 | 8.25 | |
| SW2A | 5/8 | 10 | 16.00 | 3.75 | |
| SW2B | 5/8 | 10 | 16.00 | 3.75 | |

Avg. In./Hr. SW1: 9.38, SW2: 3.75



PROJECT TITLE:
333 WEST SEVENTH AVENUE
CONSHOHOCKEN BOROUGH - MONTGOMERY COUNTY - PENNSYLVANIA

DRAWING TITLE:
EXISTING FEATURES
DEMOLITION PLAN

PREPARED BY:
JOSEPH M. ESTOCK
Consulting Engineers & Land Surveyors

SCALE: 1" = 10'

DATE: 05 MAY 2021

FILE NO.: 21004

FIELD BOOK: 334

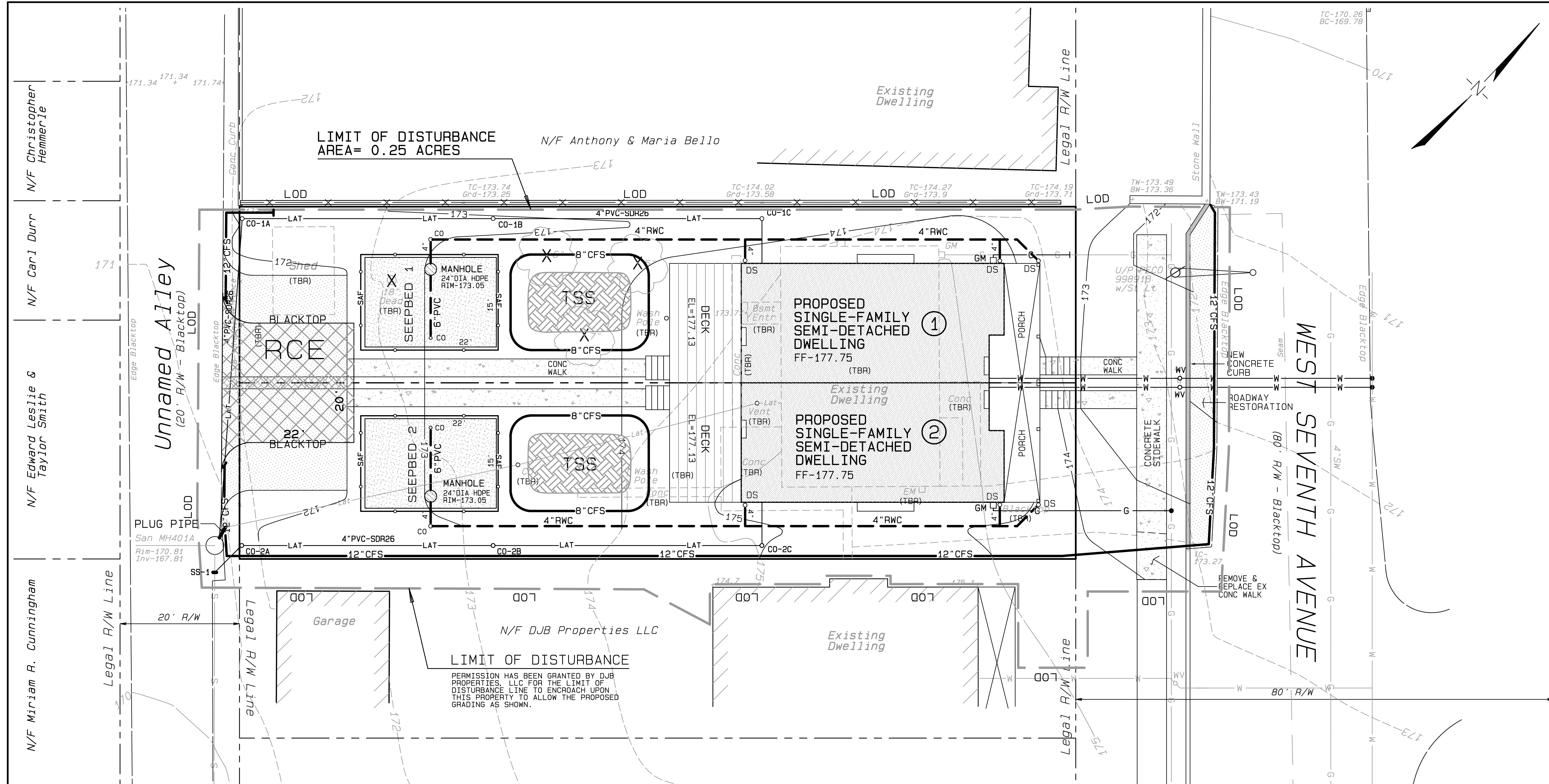
SHT. NO.: 2 of 8

REVISIONS:

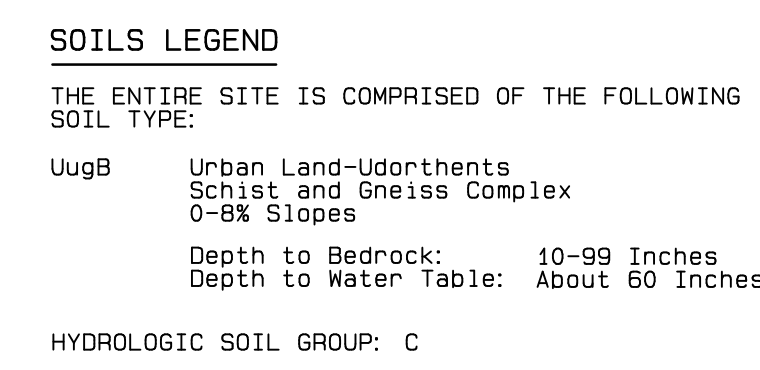
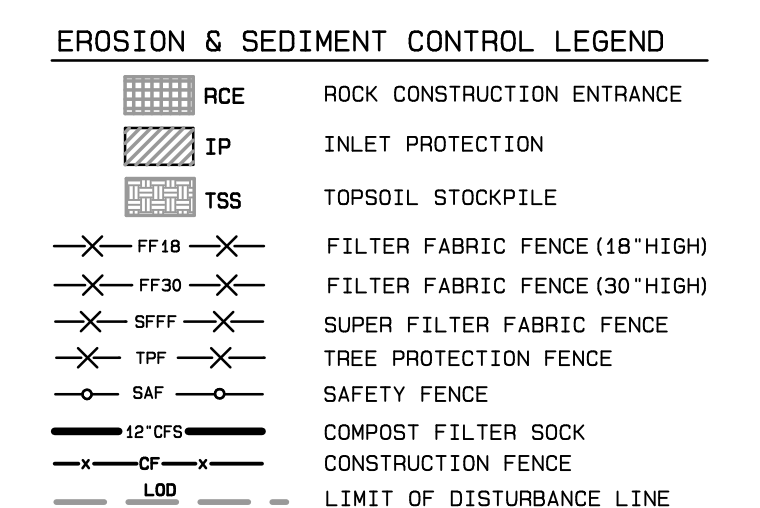
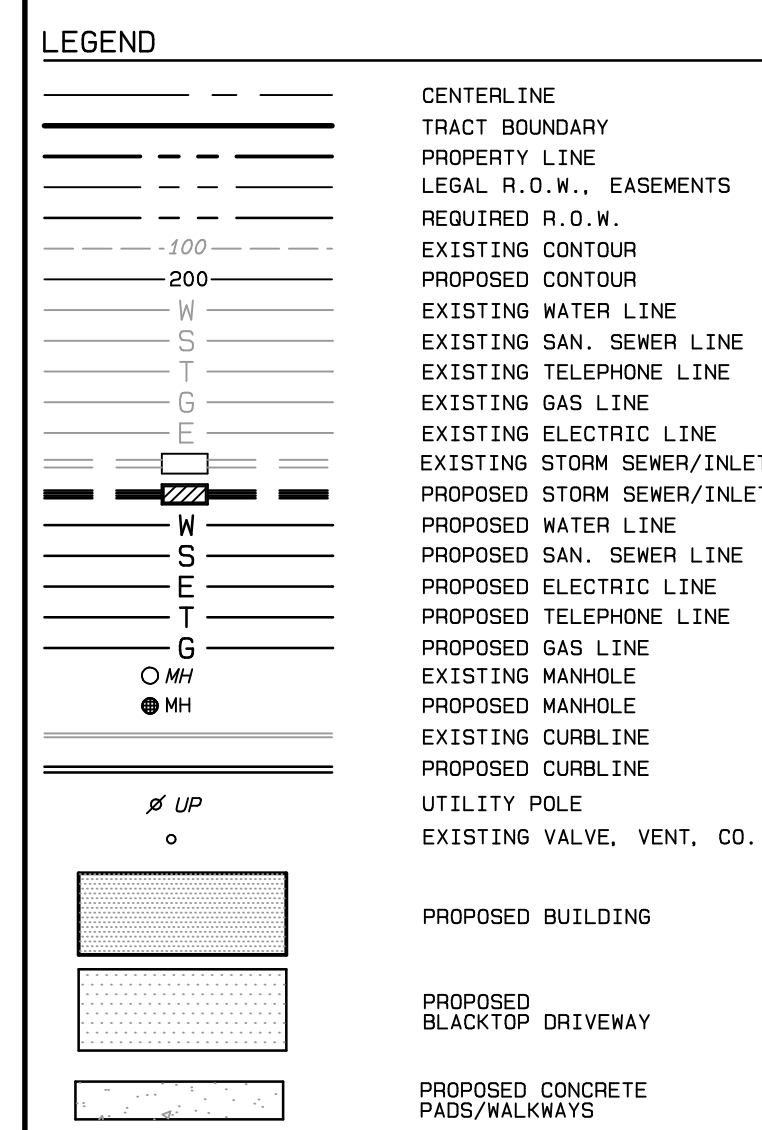
| DATE | REVISIONS |
|------|-----------|
| | |

UNDERGROUND UTILITIES
PA. ACT 187 OF 1996-ONE CALL NOTIFICATION (1-800-242-1776)
DATE: 04-15-2021 SERIAL NO.: 20211051393

ALL LOCATIONS OF EXISTING UTILITIES SHOWN ON THE PLAN HAVE BEEN DEVELOPED FROM EXISTING UTILITY CO. RECORDS AND/OR ABOVE GROUND EXAMINATION OF THE SITE. THE EXISTENCE OR DEPTH OF UTILITIES AND DEPTH OF UNDERGROUND UTILITIES ARE SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXISTENCE OF UTILITIES AND FOR NOTIFYING THE UTILITY COMPANIES AT LEAST THREE (3) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION TO VERIFY LOCATION AND DEPTH OF SAME.



- CONSTRUCTION SEQUENCE/PROJECT SCHEDULE:**
1. THE APPLICANT MUST NOTIFY THE BOROUGH OF CONSHOHOCKEN AND THE CONSHOHOCKEN BOROUGH ENGINEER A MINIMUM OF FORTY-EIGHT (48) HOURS PRIOR TO THE START OF CONSTRUCTION.
 2. INSTALL SAFETY FENCING AROUND THE TWO(2) SEEPAGE BEDS
 3. INSTALL ALL COMPOST FILTER SOCK AROUND THE PERIMETER OF THE SITE. DO NOT INSTALL THAT COMPOST FILTER SOCK AROUND THE TOPSOIL STOCKPILE.
 4. INSTALL THE ROCK CONSTRUCTION ENTRANCE.
 5. CLEAR AND GRUB SITE OF EXISTING TREES AND OTHER VEGETATION.
 6. CAP ALL EXISTING UTILITY SERVICES.
 7. REMOVE EXISTING DWELLING, WALKWAYS AND OTHER EXISTING FEATURES CALLED TO BE REMOVED. PROPERLY DISPOSE.
 8. STRIP TOPSOIL AND STOCKPILE AT DESIGNATED LOCATIONS. PROTECT WITH COMPOST FILTER SOCK.
 9. COMMENCE WITH ALL BASEMENT EXCAVATIONS AND SUBSEQUENT BUILDING CONSTRUCTION.
 10. UPON COMPLETION OF THE INSTALLATION OF THE BUILDING FOUNDATION WALLS ROUGH GRADE THE ENTIRE SITE TO SUBGRADE ELEVATIONS.
 11. INSTALL SANITARY SEWER LATERALS TO ALLEY.
 12. INSTALL ALL UTILITY SERVICE CONNECTIONS.
 13. INSTALL ALL RAINWATER CONDUCTORS LEADING UP TO THE SEEPAGE BED AREAS.
 14. FINISH GRADE AND TOPSOIL ALL DISTURBED AREAS; EXCEPT THOSE AREAS OVER THE SEEPAGE BEDS. RESERVE SMALL AMOUNT OF TOPSOIL FOR THE AREA OVER THE SEEPAGE BEDS.
 15. INSTALL THE SEEPAGE BEDS, MAKE FINAL RAINWATER CONDUCTOR CONNECTIONS, AND FINISH GRADE AND TOPSOIL.
 16. EXTEND CONCRETE CURB ALONG THE WEST SEVENTH AVENUE PROPERTY FRONTAGE.
 17. CONSTRUCT THE DRIVEWAYS AND COMPLETE ALL PAVING OPERATIONS, EXCEPT FINAL WEARING COURSE.
 18. INSTALL ALL SIDEWALKS AND OTHER WALKWAYS.
 19. SEED AND MULCH ALL DISTURBED AREAS AND ESTABLISH PERMANENT VEGETATIVE COVER. DO NOT PROCEED TO THE NEXT ITEM IN THE SEQUENCE UNTIL PERMANENT STABILIZATION IS ACHIEVED.
 20. FOR AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY TO BE CONSIDERED PERMANENTLY STABILIZED, THE DISTURBED AREA SHALL BE COVERED BY A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER, WITH A DENSITY CAPABLE OF RESISTING ACCELERATED EROSION AND SEDIMENTATION.
 21. REMOVE ALL REMAINING TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES.
 22. PLACE WEARING COURSE IN ALL PAVED SURFACES.



UNDERGROUND UTILITIES
PA. ACT 187 OF 1996-ONE CALL NOTIFICATION(1-800-242-1776)
DATE: 04-15-2021 SERIAL NO.: 20211051393

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PROJECT TITLE :
333 WEST SEVENTH AVENUE
CONSHOHOCKEN BOROUGH - MONTGOMERY COUNTY - PENNSYLVANIA

DRAWING TITLE :
EROSION AND SEDIMENT CONTROL PLAN

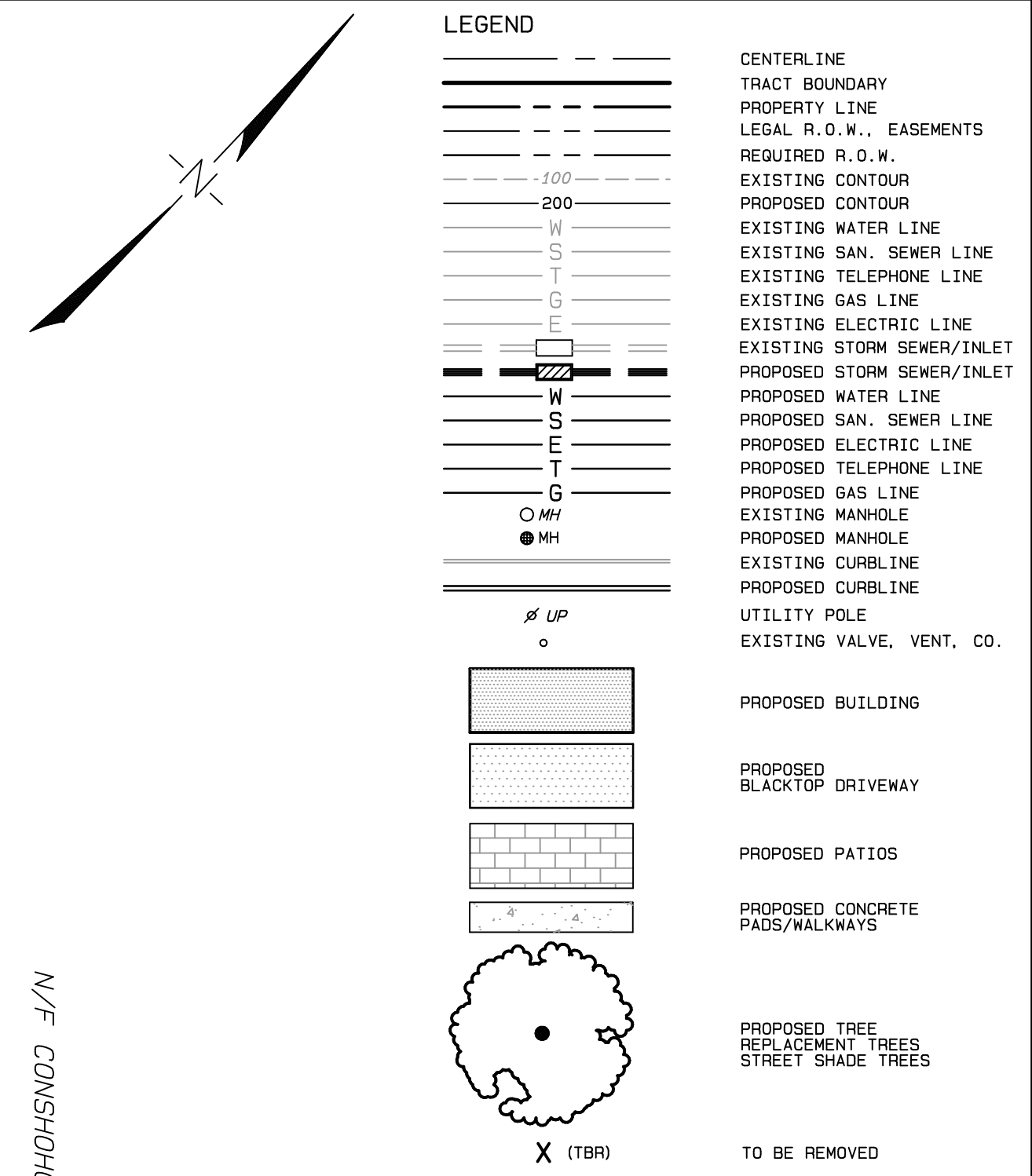
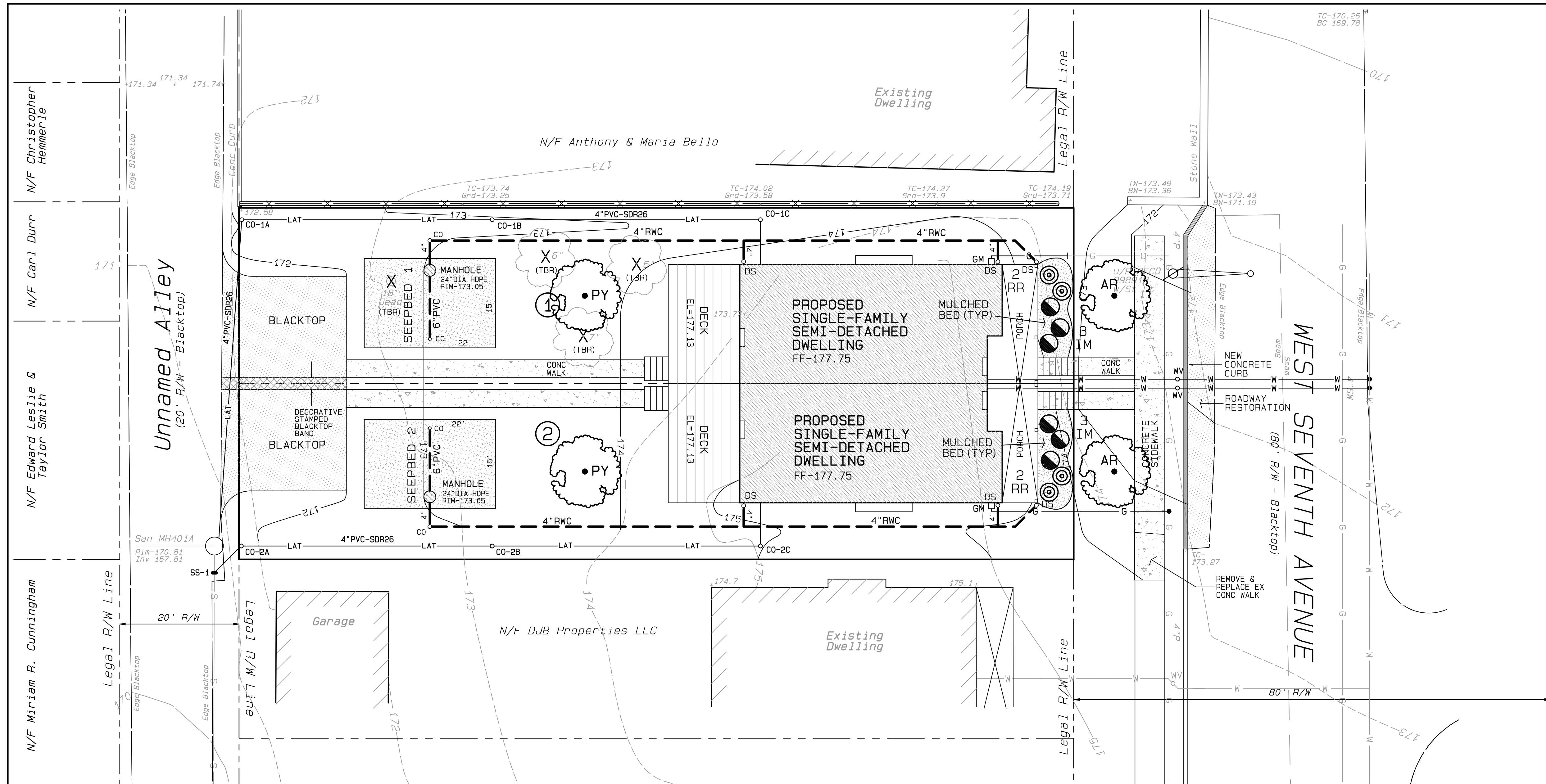
REVISIONS

REVISION NO.

PREPARED BY :
JOSEPH M. ESTOCK
Consulting Engineers & Land Surveyors

355 South Henderson Road
King of Prussia, PA 19406-2407
(610) 265-3035 - Fax (610) 962-9855
joe@josephmestock.com

SCALE: 1" = 10'
DATE: 05 MAY 2021
FILE NO.: 21004
FIELD BOOK: 334
SHT. NO.: 3 of 8



CONSHOHOCKEN BOROUGH LANDSCAPE COMPLIANCE CHART

§ 22-420.2 TREE PRESERVATION
A 3.5" CALIPER REPLACEMENT TREE IS REQUIRED FOR EACH TREE SIX (6) INCHES IN CALIPER OR GREATER WHICH IS REMOVED

| | | | | | |
|-------------------------|---|----------|---------|----------|---------|
| EXISTING TREES REMOVED: | 2 | REQUIRED | 2 TREES | PROVIDED | 2 TREES |
|-------------------------|---|----------|---------|----------|---------|

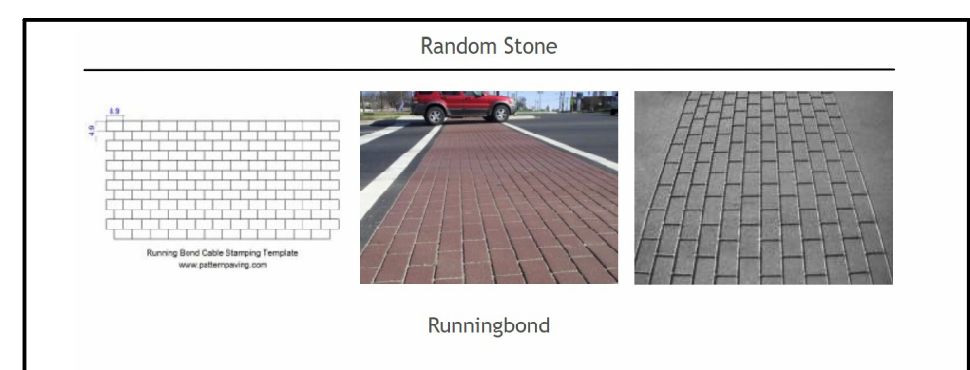
§ 22-421.4 STREET SHADE TREES
TREES PLANTED NO MORE THAN 30 FEET APART

| | | | | |
|------------------------|----------|-----------|----------|---------|
| SEVENTH AVENUE: 59 LF= | REQUIRED | 1.9 TREES | PROVIDED | 2 TREES |
|------------------------|----------|-----------|----------|---------|

PLANT LIST

| SYMBOL | QTY. | BOTANICAL NAME | COMMON NAME | CAL. | HGT. | SPREAD |
|--------|------|----------------------------|---------------------------|------|---------|-----------------------|
| AR | 2 | ACER RUBRUM | RED MAPLE | 3.5" | 14'-16' | 8'-10' |
| PY | 2 | PRUNUS X YEDDENSIS | YOSHINO CHERRY | 3.5" | 10'-12' | 8'-10' |
| IM | 6 | ILEX MESERVE BLUE PRINCESS | BLUE PRINCESS HOLLY | | 2'-3' | |
| RR | 4 | ROSA RED DRAGON | RED DRAGON KNOCK OUT ROSE | | | SIZE: 1 GAL CONTAINER |

- LANDSCAPE GENERAL NOTES:**
- ALL PLANT MATERIAL SHALL MEET THE AMERICAN STANDARD FOR NURSERY STOCK BY THE AMERICAN NURSERYMAN'S ASSOCIATION.
 - ALL PLANT MATERIAL IS TO BE GUARANTEED FOR A MINIMUM OF TWO (2) GROWING SEASONS.
 - ALL STREET TREES TO BE PRUNED TO PROVIDE 12' CLEARANCE FROM THE GROUND.
 - ALL CANOPY TREES TO BE PRUNED TO HAVE A SPREAD EQUAL TO 80% OF THE HEIGHT.
 - ALL LAWN AREAS SHALL BE PLANTED WITH A BLUEGRASS SEED MIX. SEE SEEDING FORMULA.



DECORATIVE STAMPED BLACKTOP DETAIL

Stamped Asphalt Cable Stamping Patterns

Pattern: Running Bond
Item No. CSTA-RMBD
Spd: 600 x 12" x 1/2" (22.25 cm x 12.0 cm)
Cable size: 305" (525 cm)

Pattern Paving Products
1750 West 102 Street
Lombard, IL 60148
Phone: 630-270-2700
Fax: 630-270-2701
www.patternpaving.com

TYPICAL SHRUB PLANTING DETAIL

NOTES:
1. WATER THOROUGHLY AFTER INSTALLATION.
2. FOR PLANTING BED INSTALLATION EXCAVATE ENTIRE SHRUB BED AS SHOWN ON PROJECT DRAWINGS.

NOT TO SCALE

TYPICAL DECIDUOUS TREE PLANTING DETAIL

NOTES:
1. DO NOT DAMAGE MAIN ROOTS OR ROOT BALL WHEN INSTALLING TREE STAKE.
2. MAIN TRUNK SHOULD BE 1/4" FROM BALL.
3. REMOVE STAKE TWO WEEKS AFTER INSTALLATION.
4. CONTRACTOR IS NOT TO USE TREE STAKE.

NOT TO SCALE

UNDERGROUND UTILITIES
PA. ACT 187 OF 1996-ONE CALL NOTIFICATION (1-800-242-1776)
DATE: 04-15-2021 SERIAL NO.: 20211051393

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PROJECT TITLE:
333 WEST SEVENTH AVENUE
CONSHOHOCKEN BOROUGH - MONTGOMERY COUNTY - PENNSYLVANIA

DRAWING TITLE:
LANDSCAPE PLAN

PREPARED BY:
JOSEPH M. ESTOCK
Consulting Engineers & Land Surveyors

REVISION NO.

SCALE: 1" = 10'

DATE: 05 MAY 2021

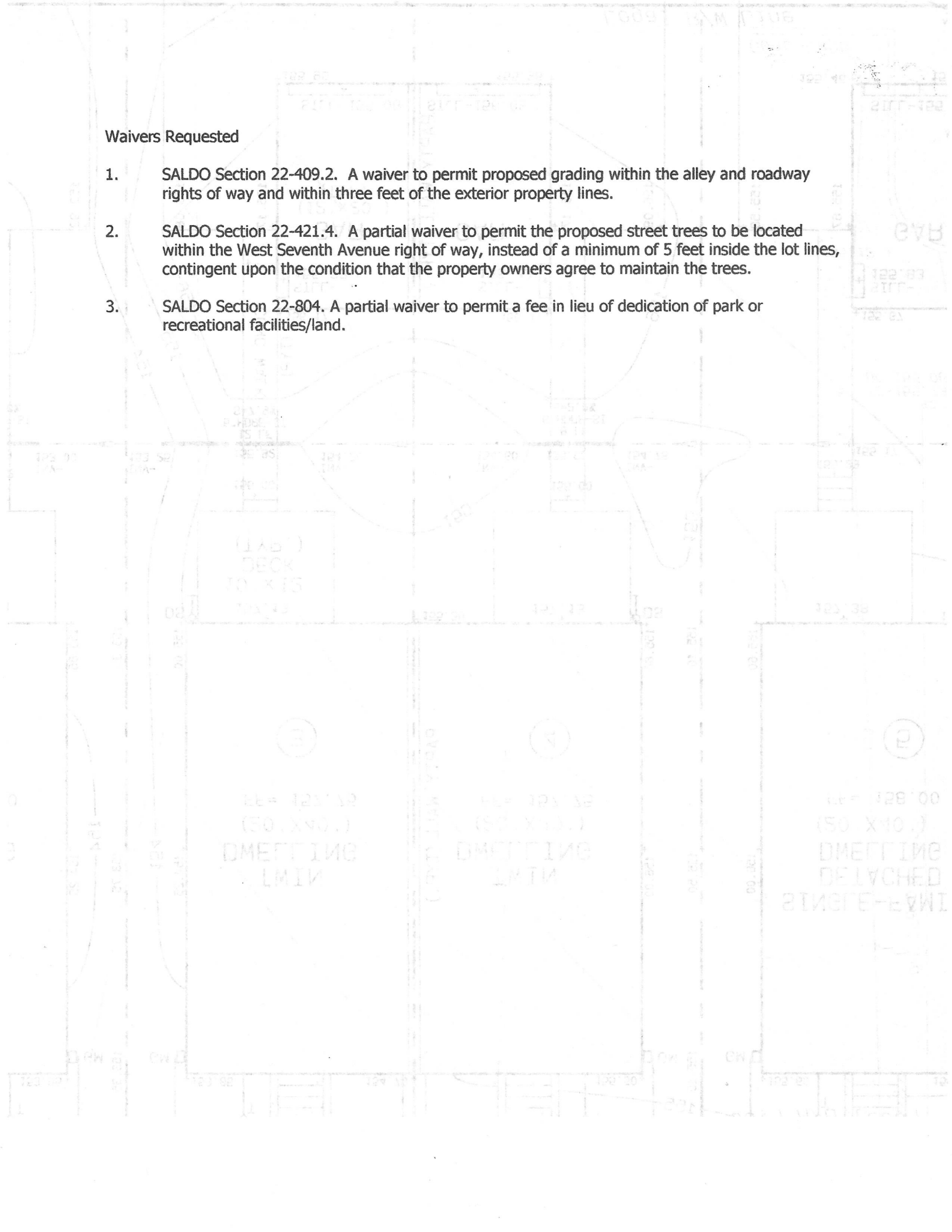
FILE NO.: 21004

FIELD BOOK: 334

SHT. NO.: 6 of 8

Waivers Requested

1. SALDO Section 22-409.2. A waiver to permit proposed grading within the alley and roadway rights of way and within three feet of the exterior property lines.
2. SALDO Section 22-421.4. A partial waiver to permit the proposed street trees to be located within the West Seventh Avenue right of way, instead of a minimum of 5 feet inside the lot lines, contingent upon the condition that the property owners agree to maintain the trees.
3. SALDO Section 22-804. A partial waiver to permit a fee in lieu of dedication of park or recreational facilities/land.





**POST-CONSTRUCTION STORMWATER MANAGEMENT
WRITTEN NARRATIVE**

for

333 WEST SEVENTH AVENUE

in

**Conshohocken Borough
Montgomery County
Pennsylvania**

prepared for

**DJB Properties, LP
c/o Mr. David Brosso
1125 Robin Road
Gladwyne, PA 19035
(610) 310-5055**

May 5, 2021

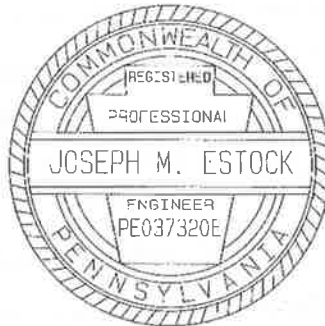


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SITE DESCRIPTION AND ANALYSIS

Project Description

This project consists of the construction of a single-family semi-detached dwelling (twin) within the BR-1 – Residential zoning district. The property is located at 333 West Seventh Avenue in Conshohocken Borough, Montgomery County, Pennsylvania on 2,800 square feet (0.064 acres) of land.

Existing Conditions

The current site consists of a residential dwelling, a shed, and lawn. The site is bordered by West Seventh Avenue along the front and residential properties along the left and right, and an alley to the rear.

Soils

Soils information was obtained from the USDA NRCS Web Soil Survey conducted on April 15, 2021.

The site consists of Urban land-Udorthents, schist and gneiss complex, 0-8% slopes (UugB) on the entire site.

Hydrology & Chapter 93 Classification

Runoff from the site drains to the Schuylkill River, which has a Chapter 93 Designated Use of Warm Water Fishes (WWF) & Migratory Fishes (MF).

Limestone Geology

There is no indication within the soil mapping or geologic mapping that there is any presence of limestone geology. However, subsurface soil and geologic testing and/or evaluations are beyond the scope of this work and not within the specific expertise of Joseph M. Estock, P.E., P.L.S. The owner should engage the services of a separate consultant having the expertise in this type of work in order to evaluate the limitations, if any, in the development of this property.

Resolutions to soils limitations

High water table - All building foundations are to be designed to withstand high water table conditions. This includes basement wall waterproofing, the installation of foundation drains and the installation of sump pumps. A pumped water filter bag is to be used when groundwater is encountered during construction activities. When evidence of high water table conditions are observed, appropriate measures must be used to mitigate these conditions, such as the installation of underdrains, pumping, waterproofing, etc.

Bedrock - This project was designed to minimize the depth of excavation for roads, utilities, basements and other underground facilities. Bedrock encountered during construction activities must be appropriately removed by ripping and/or blasting. All blasting must adhere to all local, state and federal regulations and procedures.

Grading - Construction activities must be scheduled to minimize winter grading activities. Frozen material must be removed before grading and/or filling in accordance with PennDOT Publication 408 specifications. If on-site soils do not provide the appropriate level of compaction and/or the desired moisture content per specifications, then suitable soil must be imported for embankment construction. Adequacy of the soil is to be determined by the project geotechnical engineer. All unsuitable soils must be properly disposed. Finish grading must not be performed during the winter season.

Hydric soils - No wetlands have been delineated and shown on the plan. No work will be performed within wetland areas. Work will be minimized within those soils listed as hydric but not delineated as wetlands.

Topsoil & reaction (ph) - Fertilizer and lime rates must be applied according to topsoil suitability and ph levels. Suitable topsoil must be imported to the site if inadequate quantities of suitable topsoil exist on site. Adequacy of the topsoil is to be determined by the project landscape architect.

Landscaping - All plant materials are to be selected based upon their suitability to the site.

Stormwater Design Methodology

Water quality design, rate control, and volume control are used within this design. The permanent BMPs on the site are two (2) seepage beds.

Computer hydrologic modeling was performed using the VT/PSUHM software package. Specifically, the Modified Rational Method was used in this modeling. All seven (7) storms from the 1 year to 100 year were analyzed and routed. A Summary of these peak flow rates is included within this report.

During Construction Controls

Temporary BMP's include a rock construction entrance, compost filter socks, a temporary soil stockpile, seeding and mulching. Temporary and permanent ground cover is provided for all non-paved areas.

The contractor is responsible for the operation and maintenance of the BMP's during construction and the removal of temporary BMP's after construction. The homeowner's association will be responsible for the permanent facilities after construction.

SOILS INFORMATION

Custom Soil Resource Report for Montgomery County, Pennsylvania

333 West Seventh Avenue



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (333 West Seventh Avenue)

75° 18' 23" W

75° 18' 21" W

40° 4' 54" N

40° 4' 54" N



40° 4' 51" N

40° 4' 51" N

75° 18' 23" W

75° 18' 21" W
























Map Scale: 1:377 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84

MAP LEGEND

| | | | |
|---|------------------------|---|-----------------------|
|  | Area of Interest (AOI) |  | Spoil Area |
|  | Area of Interest (AOI) |  | Stony Spot |
| Soils | |  | Very Stony Spot |
|  | Soil Map Unit Polygons |  | Wet Spot |
|  | Soil Map Unit Lines |  | Other |
|  | Soil Map Unit Points |  | Special Line Features |
| Special Point Features | |  | Water Features |
|  | Blowout |  | Streams and Canals |
|  | Borrow Pit | Transportation | |
|  | Clay Spot |  | Rails |
|  | Closed Depression |  | Interstate Highways |
|  | Gravel Pit |  | US Routes |
|  | Gravelly Spot |  | Major Roads |
|  | Landfill |  | Local Roads |
|  | Lava Flow |  | Aerial Photography |
|  | Marsh or swamp | | |
|  | Mine or Quarry | | |
|  | Miscellaneous Water | | |
|  | Perennial Water | | |
|  | Rock Outcrop | | |
|  | Saline Spot | | |
|  | Sandy Spot | | |
|  | Severely Eroded Spot | | |
|  | Sinkhole | | |
|  | Slide or Slip | | |
|  | Sodic Spot | | |

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Montgomery County, Pennsylvania
 Survey Area Data: Version 15, Jun 5, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 25, 2014—Aug 11, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (333 West Seventh Avenue)

| Map Unit Symbol | Map Unit Name | Acres In AOI | Percent of AOI |
|------------------------------------|---|--------------|----------------|
| UugB | Urban land-Udorthents, schist and gneiss complex, 0 to 8 percent slopes | 0.3 | 100.0% |
| Totals for Area of Interest | | 0.3 | 100.0% |

Map Unit Descriptions (333 West Seventh Avenue)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

Custom Soil Resource Report

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Montgomery County, Pennsylvania

UugB—Urban land-Udorthents, schist and gneiss complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2dtz7
Elevation: 200 to 2,000 feet
Mean annual precipitation: 35 to 55 inches
Mean annual air temperature: 45 to 61 degrees F
Frost-free period: 110 to 235 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 80 percent
Udorthents, schist and gneiss, and similar soils: 15 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Pavement, buildings and other artificially covered areas

Typical profile

C - 0 to 6 inches: variable

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 10 to 99 inches to lithic bedrock
Available water capacity: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Description of Udorthents, Schist And Gneiss

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Graded areas of schist and/or gneiss

Typical profile

Ap - 0 to 6 inches: loam
C - 6 to 40 inches: silty clay loam
R - 40 to 60 inches: bedrock

Custom Soil Resource Report

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 20 to 70 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Gleneig

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Edgemont

Percent of map unit: 1 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Glenville

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope, head slope
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Hydric soil rating: No

Baile

Percent of map unit: 1 percent
Landform: Depressions
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Custom Soil Resource Report

Gladstone

Percent of map unit: 1 percent

Landform: Hillslopes

Landform position (two-dimensional): Summit, shoulder

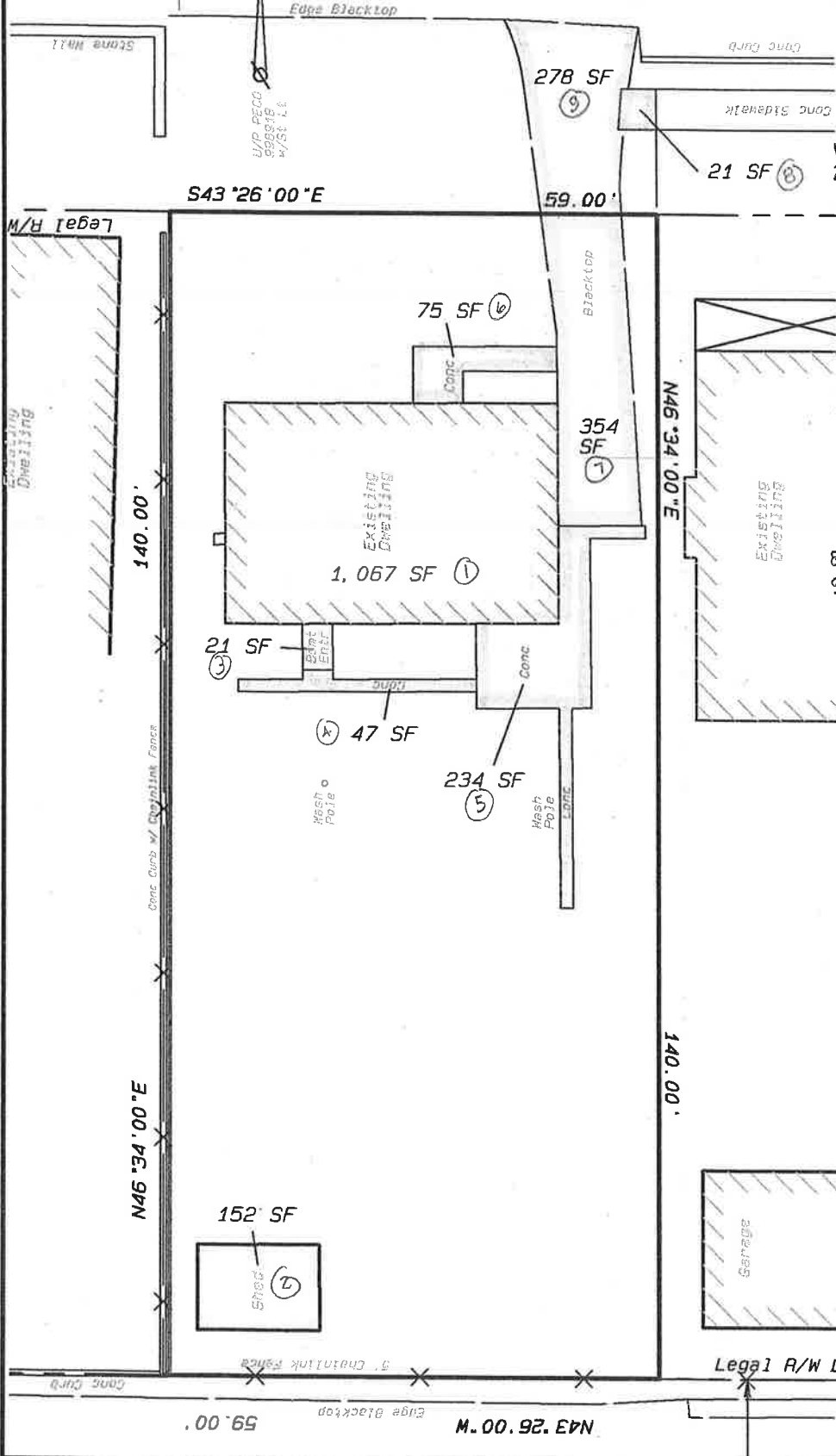
Landform position (three-dimensional): Nose slope, side slope

Down-slope shape: Linear, convex

Across-slope shape: Linear, convex

Hydric soil rating: No

DRAINAGE AREA MAPS



Lot Area= 8,260 SF

Building Area:

| | |
|---------------|-------------------------|
| 1 Dwelling= | 1,067 SF |
| 2 Shed= | 152 SF |
| Total= | 1,129 SF (14.8%) |

Impervious Area:

| | |
|---------------------|-------------------------|
| Building Area= | 1,219 SF |
| 3 Bsmt Entr= | 21 SF |
| 4 Conc (Rear)= | 47 SF |
| 5 Conc (Rear/Side)= | 234 SF |
| 6 Conc (Front)= | 75 SF |
| 7 Blacktop Drive= | 354 SF |
| Total= | 1,950 SF (23.6%) |

R/W Area:

| | |
|-------------------|-------------------------|
| 8 Conc Walk= | 278 SF |
| 9 Blacktop Drive= | 21 SF |
| Total= | 1,950 SF (23.6%) |

Grand Total= 2,249 SF

EXISTING IMPERVIOUS SURFACE AREAS

333 WEST SEVENTH AVENUE

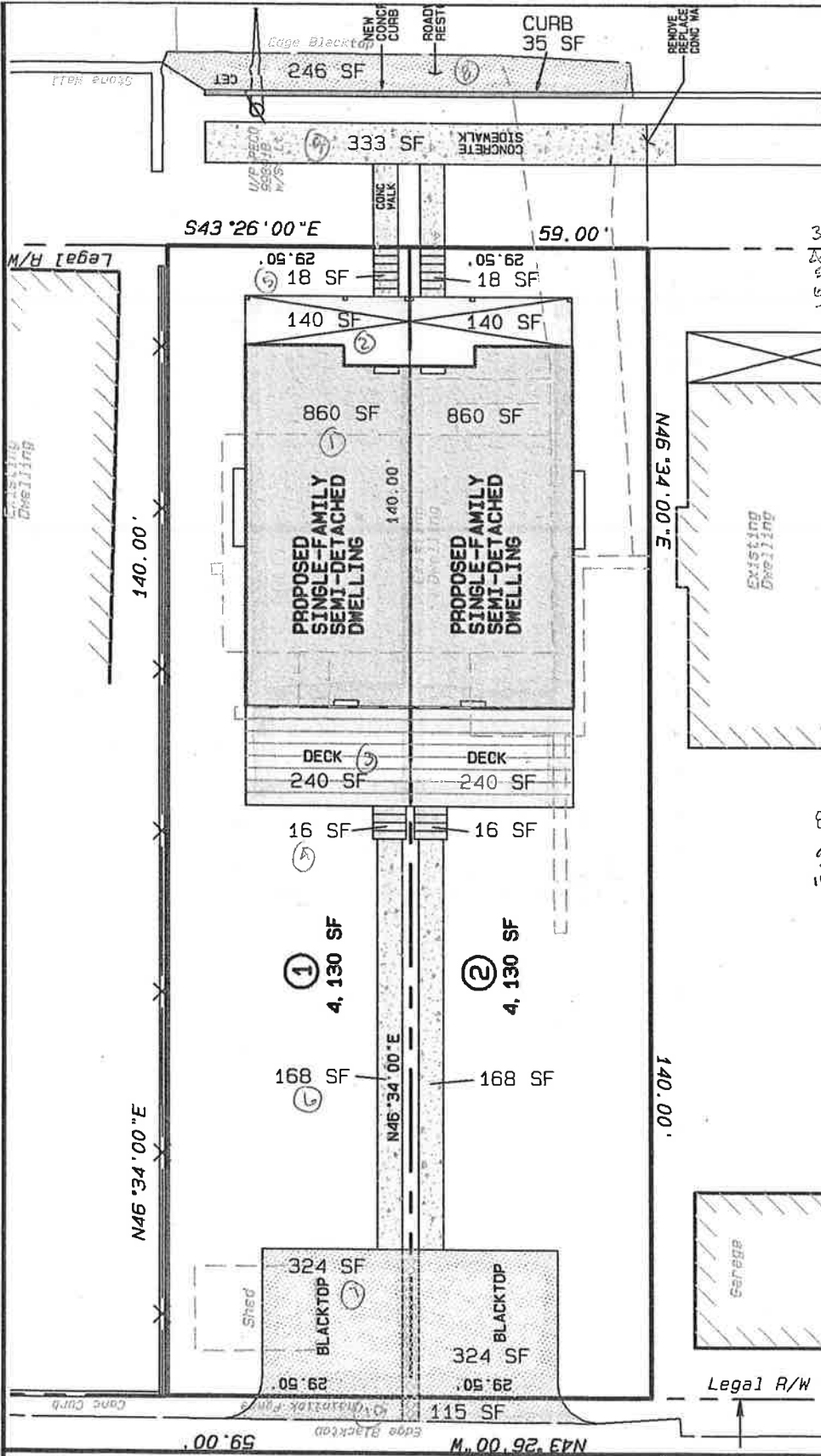
CONSHOHOCKEN BOROUGH - MONTGOMERY COUNTY - PENNSYLVANIA

SCALE:
1" = 20'
JOB NO.:
21004
DATE:
14 APR 2021

JOSEPH M. ESTOCK
Consulting Engineers & Land Surveyors



355 South Henderson Road
King of Prussia, PA 19406-2407
(610) 265-3035 - Fax (610) 962-9855
joe@josephmestock.com



LOT 1 = 4,130 SF

| | |
|-----------------------|-------------------------|
| BUILDING AREA: | |
| DWELLING= | 860 SF |
| PORCH= | 140 SF |
| TOTAL= | 1,000 SF (24.2%) |

IMPERVIOUS AREAS:

| | |
|----------------|-------------------------|
| BUILDING AREA= | 1,000 SF |
| DECK= | 240 SF |
| STEPS= | 16 SF |
| CONC (FRONT) = | 18 SF |
| CONC (REAR) = | 168 SF |
| BLACKTOP= | 324 SF |
| TOTAL= | 1,766 SF (42.8%) |

LOT 2 = 4,130 SF

| | |
|-----------------------|-------------------------|
| BUILDING AREA: | |
| DWELLING= | 860 SF |
| PORCH= | 140 SF |
| TOTAL= | 1,000 SF (24.2%) |

IMPERVIOUS AREAS:

| | |
|----------------|-------------------------|
| BUILDING AREA= | 1,000 SF |
| DECK= | 240 SF |
| STEPS= | 16 SF |
| CONC (FRONT) = | 18 SF |
| CONC (REAR) = | 168 SF |
| BLACKTOP= | 324 SF |
| TOTAL= | 1,766 SF (42.8%) |

ADDITIONAL IMPERVIOUS AREAS:

| | |
|--------------------------|---------------|
| SEVENTH AVE WIDENING= | 281 SF |
| (PAVING AND CURB) | |
| SEVENTH AVE SIDEWALK= | 333 SF |
| BLACKTOP DRIVE (ALLEY) = | 115 SF |
| TOTAL= | 729 SF |

Total Imp = 4261 sf

PROPOSED IMPERVIOUS SURFACE AREAS

333 WEST SEVENTH AVENUE

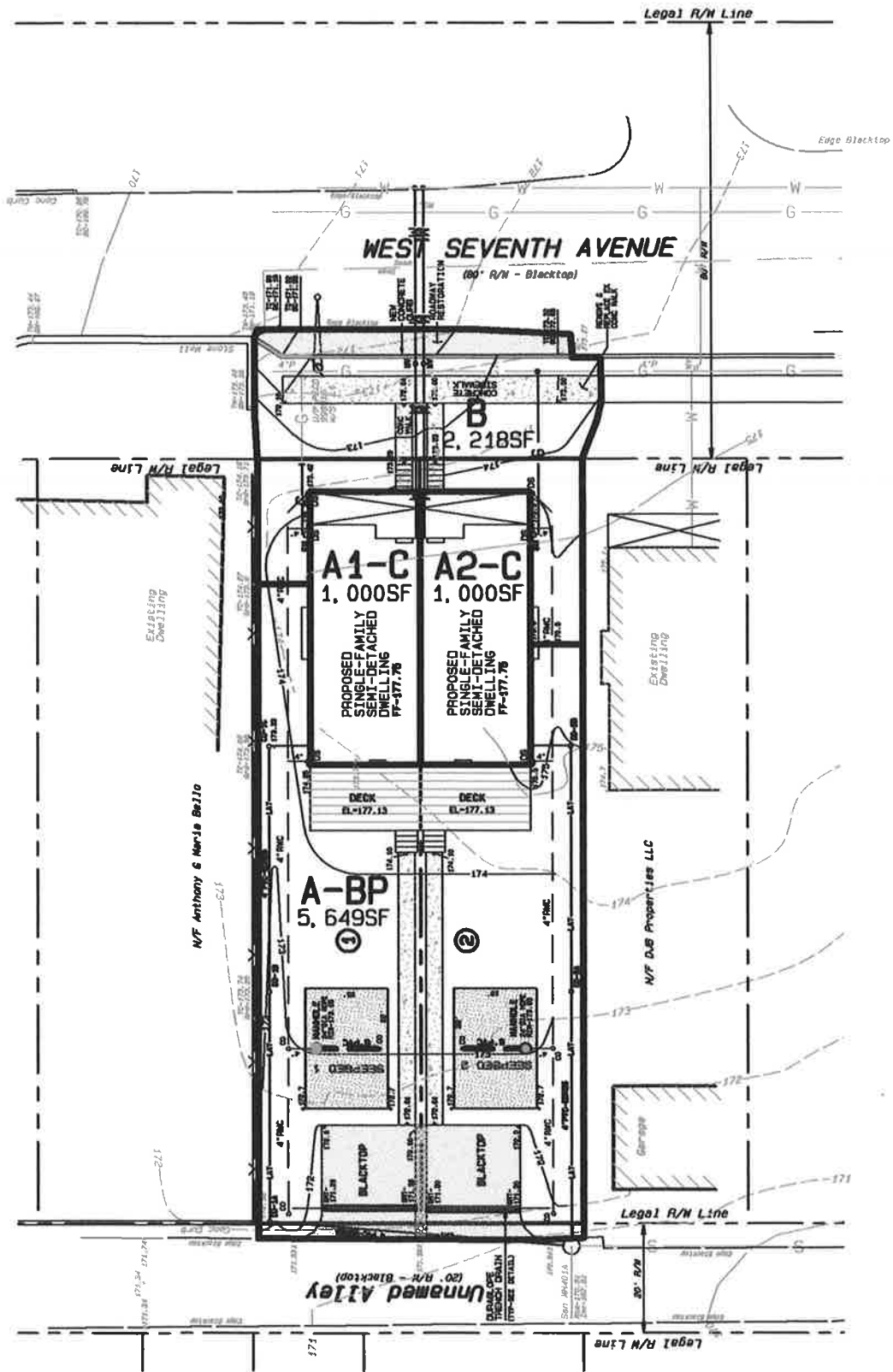
CONSHOHOCKEN BOROUGH - MONTGOMERY COUNTY - PENNSYLVANIA

SCALE:
1" = 20'
JOB NO.:
17020
DATE:
14 AUG 2019

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**POST-DEVELOPMENT
WATERSHED MAP**

333 WEST SEVENTH AVENUE

CONSHOHOCKEN BOROUGH - MONTGOMERY COUNTY - PENNSYLVANIA

SCALE:
1" = 30'
JOB NO.:
21004
DATE:
05-05-21

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| PRE-DEVELOPMENT | A | B | Total |
|-------------------------|--------------|---------------|-------------|
| 1 Dwelling | 533.5 | 533.5 | 1067 |
| 2 Shed | 152 | 0 | 152 |
| 3 Bsmt Entr | 21 | 0 | 21 |
| 4 Conc (Rear) | 47 | 0 | 47 |
| 5 Conc (Rear/Side) | 234 | 0 | 234 |
| 6 Conc (Front) | 0 | 75 | 75 |
| 7 Blacktop Drive | 0 | 354 | 354 |
| 8 Conc Walk | 0 | 21 | 21 |
| 9 Blacktop Drive | 0 | 278 | 278 |
| Total Impervious | 987.5 | 1261.5 | 2249 |
| Lawn | 5383.5 | 2234.5 | 7618 |
| Watershed Area | 6371 | 3496 | 9867 |

ON-SITE
1950 SF

OFF-SITE
299 SF

| POST-DEVELOPMENT | A1C | A2C | A Bypass | B | TOTAL |
|---------------------------|-------------|-------------|-------------|------------|-------------|
| 1 Building | 860 | 860 | 0 | 0 | 1720 |
| 2 Porch | 140 | 140 | 0 | 0 | 280 |
| 3 Deck | 0 | 0 | 480 | 0 | 480 |
| 4 Steps | 0 | 0 | 32 | 0 | 32 |
| 5 Conc (Front) | 0 | 0 | 0 | 36 | 36 |
| 6 Conc (Rear) | 0 | 0 | 336 | 0 | 336 |
| 7 Blacktop | 0 | 0 | 648 | 0 | 648 |
| 8 7th Ave Widening | 0 | 0 | 0 | 333 | 333 |
| 9 7th Ave Sidewalk | 0 | 0 | 0 | 281 | 281 |
| 10 Blacktop Drive (alley) | 0 | 0 | 115 | 0 | 115 |
| Total Impervious | 1000 | 1000 | 1611 | 650 | 4261 |
| Lawn | 0 | 0 | 4038 | 1568 | 5606 |
| Watershed Area | 1000 | 1000 | 5649 | 2218 | 9867 |

ON-SITE
3,532 SF

OFF-SITE
729 SF

PRE-DEVELOPMENT RUNOFF CALCULATIONS
WITH LAND USE COEFFICIENTS

RATIONAL 'C' WORKSHEET

Pre-Development Condition - A

| Cover Description | C | Area (sf) | CxA |
|-------------------------------|------|----------------|-----------------|
| Impervious | 0.95 | 987.5 | 938 |
| Lawn | 0.40 | 5,383.5 | 2,153 |
| Total | | 6,371.0 | 3,092 |
| C (weighted) | | | = 0.4852 |
| Watershed Area (acres) | | | = 0.1463 |

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

1 Year Storm in PA. Region 5 at Pre-Dev - A

Time of Concentration: 5 min.

Drainage Area: 0.1463 acres.

Weighted 'C' Factor: 0.4852

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|---------------|-------------------------------|-------------------------------|----------------------------------|---------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.06 | 0.06 | 0.75 | 0.05 |
| 10 | 0.12 | 0.19 | 1.49 | 0.11 |
| 15 | 0.33 | 0.52 | 4.00 | 0.28 |
| 20 | 0.18 | 0.70 | 2.16 | 0.15 |
| 25 | 0.09 | 0.79 | 1.13 | 0.08 |
| 30 | 0.08 | 0.87 | 0.91 | 0.06 |
| 35 | 0.05 | 0.92 | 0.63 | 0.04 |
| 40 | 0.05 | 0.97 | 0.54 | 0.04 |
| 45 | 0.04 | 1.01 | 0.47 | 0.03 |
| 50 | 0.03 | 1.04 | 0.41 | 0.03 |

At time = 125 minutes, the flow is 0.01 CFS.

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

2 Year Storm in PA. Region 5 at Pre-Dev - A

Time of Concentration: 5 min.

Drainage Area: 0.1463 acres.

Weighted 'C' Factor: 0.4852

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|---------------|-------------------------------|-------------------------------|----------------------------------|---------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.08 | 0.08 | 0.96 | 0.07 |
| 10 | 0.15 | 0.23 | 1.82 | 0.13 |
| 15 | 0.38 | 0.62 | 4.60 | 0.33 |
| 20 | 0.21 | 0.83 | 2.57 | 0.18 |
| 25 | 0.12 | 0.95 | 1.41 | 0.10 |
| 30 | 0.10 | 1.04 | 1.15 | 0.08 |
| 35 | 0.07 | 1.11 | 0.82 | 0.06 |
| 40 | 0.06 | 1.17 | 0.72 | 0.05 |
| 45 | 0.05 | 1.22 | 0.63 | 0.04 |
| 50 | 0.05 | 1.27 | 0.56 | 0.04 |

At time = 125 minutes, the flow is 0.02 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

5 Year Storm in PA. Region 5 at Pre-Dev - A
Time of Concentration: 5 min.
Drainage Area: 0.1463 acres.
Weighted 'C' Factor: 0.4852

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|--|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.09 | 0.09 | 1.14 | 0.08 |
| 10 | 0.19 | 0.28 | 2.23 | 0.16 |
| 15 | 0.45 | 0.73 | 5.39 | 0.38 |
| 20 | 0.26 | 0.99 | 3.17 | 0.22 |
| 25 | 0.14 | 1.14 | 1.71 | 0.12 |
| 30 | 0.11 | 1.25 | 1.37 | 0.10 |
| 35 | 0.08 | 1.33 | 0.96 | 0.07 |
| 40 | 0.07 | 1.40 | 0.83 | 0.06 |
| 45 | 0.06 | 1.46 | 0.72 | 0.05 |
| 50 | 0.05 | 1.51 | 0.63 | 0.04 |

At time = 125 minutes, the flow is 0.02 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

10 Year Storm in PA. Region 5 at Pre-Dev - A
Time of Concentration: 5 min.
Drainage Area: 0.1463 acres.
Weighted 'C' Factor: 0.4852

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|--|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.11 | 0.11 | 1.35 | 0.10 |
| 10 | 0.21 | 0.32 | 2.51 | 0.18 |
| 15 | 0.50 | 0.82 | 6.02 | 0.43 |
| 20 | 0.29 | 1.11 | 3.49 | 0.25 |
| 25 | 0.16 | 1.28 | 1.96 | 0.14 |
| 30 | 0.13 | 1.41 | 1.60 | 0.11 |
| 35 | 0.10 | 1.51 | 1.16 | 0.08 |
| 40 | 0.08 | 1.59 | 1.02 | 0.07 |
| 45 | 0.08 | 1.67 | 0.90 | 0.06 |
| 50 | 0.07 | 1.73 | 0.80 | 0.06 |

At time = 125 minutes, the flow is 0.03 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

25 Year Storm in PA. Region 5 at Pre-Dev - A
Time of Concentration: 5 min.
Drainage Area: 0.1463 acres.
Weighted 'C' Factor: 0.4852

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.13 | 0.13 | 1.60 | 0.11 |
| 10 | 0.25 | 0.38 | 2.98 | 0.21 |
| 15 | 0.56 | 0.94 | 6.70 | 0.48 |
| 20 | 0.34 | 1.28 | 4.12 | 0.29 |
| 25 | 0.19 | 1.48 | 2.33 | 0.17 |
| 30 | 0.16 | 1.64 | 1.90 | 0.14 |
| 35 | 0.11 | 1.75 | 1.37 | 0.10 |
| 40 | 0.10 | 1.85 | 1.19 | 0.08 |
| 45 | 0.09 | 1.94 | 1.05 | 0.07 |
| 50 | 0.08 | 2.02 | 0.94 | 0.07 |

At time = 125 minutes, the flow is 0.03 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

50 Year Storm in PA. Region 5 at Pre-Dev - A
Time of Concentration: 5 min.
Drainage Area: 0.1463 acres.
Weighted 'C' Factor: 0.4852

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.17 | 0.17 | 2.01 | 0.14 |
| 10 | 0.31 | 0.47 | 3.69 | 0.26 |
| 15 | 0.63 | 1.10 | 7.50 | 0.53 |
| 20 | 0.42 | 1.52 | 5.02 | 0.36 |
| 25 | 0.24 | 1.76 | 2.91 | 0.21 |
| 30 | 0.20 | 1.96 | 2.38 | 0.17 |
| 35 | 0.14 | 2.10 | 1.72 | 0.12 |
| 40 | 0.12 | 2.23 | 1.50 | 0.11 |
| 45 | 0.11 | 2.34 | 1.32 | 0.09 |
| 50 | 0.10 | 2.44 | 1.17 | 0.08 |

At time = 125 minutes, the flow is 0.04 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

100 Year Storm in PA. Region 5 at Pre-Dev - A

Time of Concentration: 5 min.

Drainage Area: 0.1463 acres.

Weighted 'C' Factor: 0.4852

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|--|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.20 | 0.20 | 2.36 | 0.17 |
| 10 | 0.35 | 0.55 | 4.20 | 0.30 |
| 15 | 0.68 | 1.23 | 8.19 | 0.58 |
| 20 | 0.47 | 1.70 | 5.61 | 0.40 |
| 25 | 0.28 | 1.98 | 3.35 | 0.24 |
| 30 | 0.23 | 2.21 | 2.78 | 0.20 |
| 35 | 0.17 | 2.38 | 2.04 | 0.14 |
| 40 | 0.15 | 2.53 | 1.79 | 0.13 |
| 45 | 0.13 | 2.66 | 1.59 | 0.11 |
| 50 | 0.12 | 2.78 | 1.42 | 0.10 |

At time = 125 minutes, the flow is 0.04 CFS.

| RATIONAL 'C' WORKSHEET | | | |
|-------------------------------|------|----------------|--------------|
| Pre-Development Condition - B | | | |
| Cover Description | C | Area (sf) | CxA |
| Impervious | 0.95 | 1,261.5 | 1,198 |
| Lawn | 0.40 | 2,234.5 | 894 |
| Total | | 3,496.0 | 2,092 |
| C (weighted) | | = | 0.5985 |
| Watershed Area (acres) | | = | 0.0803 |

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

1 Year Storm in PA. Region 5 at Pre-Dev B
Time of Concentration: 5 min.
Drainage Area: 0.0803 acres.
Weighted 'C' Factor: 0.5985

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.06 | 0.06 | 0.75 | 0.04 |
| 10 | 0.12 | 0.19 | 1.49 | 0.07 |
| 15 | 0.33 | 0.52 | 4.00 | 0.19 |
| 20 | 0.18 | 0.70 | 2.16 | 0.10 |
| 25 | 0.09 | 0.79 | 1.13 | 0.05 |
| 30 | 0.08 | 0.87 | 0.91 | 0.04 |
| 35 | 0.05 | 0.92 | 0.63 | 0.03 |
| 40 | 0.05 | 0.97 | 0.54 | 0.03 |
| 45 | 0.04 | 1.01 | 0.47 | 0.02 |
| 50 | 0.03 | 1.04 | 0.41 | 0.02 |

At time = 125 minutes, the flow is 0.01 CFS.

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

2 Year Storm in PA. Region 5 at Pre-Dev B
Time of Concentration: 5 min.
Drainage Area: 0.0803 acres.
Weighted 'C' Factor: 0.5985

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.08 | 0.08 | 0.96 | 0.05 |
| 10 | 0.15 | 0.23 | 1.82 | 0.09 |
| 15 | 0.38 | 0.62 | 4.60 | 0.22 |
| 20 | 0.21 | 0.83 | 2.57 | 0.12 |
| 25 | 0.12 | 0.95 | 1.41 | 0.07 |
| 30 | 0.10 | 1.04 | 1.15 | 0.06 |
| 35 | 0.07 | 1.11 | 0.82 | 0.04 |
| 40 | 0.06 | 1.17 | 0.72 | 0.03 |
| 45 | 0.05 | 1.22 | 0.63 | 0.03 |
| 50 | 0.05 | 1.27 | 0.56 | 0.03 |

At time = 125 minutes, the flow is 0.01 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

5 Year Storm in PA. Region 5 at Pre-Dev B
Time of Concentration: 5 min.
Drainage Area: 0.0803 acres.
Weighted 'C' Factor: 0.5985

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.09 | 0.09 | 1.14 | 0.05 |
| 10 | 0.19 | 0.28 | 2.23 | 0.11 |
| 15 | 0.45 | 0.73 | 5.39 | 0.26 |
| 20 | 0.26 | 0.99 | 3.17 | 0.15 |
| 25 | 0.14 | 1.14 | 1.71 | 0.08 |
| 30 | 0.11 | 1.25 | 1.37 | 0.07 |
| 35 | 0.08 | 1.33 | 0.96 | 0.05 |
| 40 | 0.07 | 1.40 | 0.83 | 0.04 |
| 45 | 0.06 | 1.46 | 0.72 | 0.03 |
| 50 | 0.05 | 1.51 | 0.63 | 0.03 |

At time = 125 minutes, the flow is 0.02 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

10 Year Storm in PA. Region 5 at Pre-Dev B
Time of Concentration: 5 min.
Drainage Area: 0.0803 acres.
Weighted 'C' Factor: 0.5985

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.11 | 0.11 | 1.35 | 0.07 |
| 10 | 0.21 | 0.32 | 2.51 | 0.12 |
| 15 | 0.50 | 0.82 | 6.02 | 0.29 |
| 20 | 0.29 | 1.11 | 3.49 | 0.17 |
| 25 | 0.16 | 1.28 | 1.96 | 0.09 |
| 30 | 0.13 | 1.41 | 1.60 | 0.08 |
| 35 | 0.10 | 1.51 | 1.16 | 0.06 |
| 40 | 0.08 | 1.59 | 1.02 | 0.05 |
| 45 | 0.08 | 1.67 | 0.90 | 0.04 |
| 50 | 0.07 | 1.73 | 0.80 | 0.04 |

At time = 125 minutes, the flow is 0.02 CFS.

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

25 Year Storm in PA. Region 5 at Pre-Dev B
Time of Concentration: 5 min.
Drainage Area: 0.0803 acres.
Weighted 'C' Factor: 0.5985

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.13 | 0.13 | 1.60 | 0.08 |
| 10 | 0.25 | 0.38 | 2.98 | 0.14 |
| 15 | 0.56 | 0.94 | 6.70 | 0.32 |
| 20 | 0.34 | 1.28 | 4.12 | 0.20 |
| 25 | 0.19 | 1.48 | 2.33 | 0.11 |
| 30 | 0.16 | 1.64 | 1.90 | 0.09 |
| 35 | 0.11 | 1.75 | 1.37 | 0.07 |
| 40 | 0.10 | 1.85 | 1.19 | 0.06 |
| 45 | 0.09 | 1.94 | 1.05 | 0.05 |
| 50 | 0.08 | 2.02 | 0.94 | 0.05 |

At time = 125 minutes, the flow is 0.02 CFS.

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

50 Year Storm in PA. Region 5 at Pre-Dev B
Time of Concentration: 5 min.
Drainage Area: 0.0803 acres.
Weighted 'C' Factor: 0.5985

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.17 | 0.17 | 2.01 | 0.10 |
| 10 | 0.31 | 0.47 | 3.69 | 0.18 |
| 15 | 0.63 | 1.10 | 7.50 | 0.36 |
| 20 | 0.42 | 1.52 | 5.02 | 0.24 |
| 25 | 0.24 | 1.76 | 2.91 | 0.14 |
| 30 | 0.20 | 1.96 | 2.38 | 0.11 |
| 35 | 0.14 | 2.10 | 1.72 | 0.08 |
| 40 | 0.12 | 2.23 | 1.50 | 0.07 |
| 45 | 0.11 | 2.34 | 1.32 | 0.06 |
| 50 | 0.10 | 2.44 | 1.17 | 0.06 |

At time = 125 minutes, the flow is 0.02 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

100 Year Storm in PA. Region 5 at Pre-Dev B
Time of Concentration: 5 min.
Drainage Area: 0.0803 acres.
Weighted 'C' Factor: 0.5985

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.20 | 0.20 | 2.36 | 0.11 |
| 10 | 0.35 | 0.55 | 4.20 | 0.20 |
| 15 | 0.68 | 1.23 | 8.19 | 0.39 |
| 20 | 0.47 | 1.70 | 5.61 | 0.27 |
| 25 | 0.28 | 1.98 | 3.35 | 0.16 |
| 30 | 0.23 | 2.21 | 2.78 | 0.13 |
| 35 | 0.17 | 2.38 | 2.04 | 0.10 |
| 40 | 0.15 | 2.53 | 1.79 | 0.09 |
| 45 | 0.13 | 2.66 | 1.59 | 0.08 |
| 50 | 0.12 | 2.78 | 1.42 | 0.07 |

At time = 125 minutes, the flow is 0.03 CFS.

POST-DEVELOPMENT CONTROLLED RUNOFF
CALCULATIONS WITH LAND USE
COEFFICIENTS

RATIONAL 'C' WORKSHEET

Post-Development Condition - A1C

| Cover Description | C | Area (sf) | CxA |
|------------------------|------|--------------|------------|
| Impervious | 0.95 | 1,000 | 950 |
| Lawn | 0.40 | 0 | 0 |
| Total | | 1,000 | 950 |
| | | | |
| C (weighted) | | = | 0.9500 |
| Watershed Area (acres) | | = | 0.0230 |

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

1 Year Storm in PA. Region 5 at Post-Dev A1C
Time of Concentration: 5 min.
Drainage Area: 0.0230 acres.
Weighted 'C' Factor: 0.9500

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.06 | 0.06 | 0.75 | 0.02 |
| 10 | 0.12 | 0.19 | 1.49 | 0.03 |
| 15 | 0.33 | 0.52 | 4.00 | 0.09 |
| 20 | 0.18 | 0.70 | 2.16 | 0.05 |
| 25 | 0.09 | 0.79 | 1.13 | 0.02 |
| 30 | 0.08 | 0.87 | 0.91 | 0.02 |
| 35 | 0.05 | 0.92 | 0.63 | 0.01 |
| 40 | 0.05 | 0.97 | 0.54 | 0.01 |
| 45 | 0.04 | 1.01 | 0.47 | 0.01 |
| 50 | 0.03 | 1.04 | 0.41 | 0.01 |

At time = 125 minutes, the flow is 0.00 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

2 Year Storm in PA. Region 5 at Post-Dev A1C
Time of Concentration: 5 min.
Drainage Area: 0.0230 acres.
Weighted 'C' Factor: 0.9500

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.08 | 0.08 | 0.96 | 0.02 |
| 10 | 0.15 | 0.23 | 1.82 | 0.04 |
| 15 | 0.38 | 0.62 | 4.60 | 0.10 |
| 20 | 0.21 | 0.83 | 2.57 | 0.06 |
| 25 | 0.12 | 0.95 | 1.41 | 0.03 |
| 30 | 0.10 | 1.04 | 1.15 | 0.03 |
| 35 | 0.07 | 1.11 | 0.82 | 0.02 |
| 40 | 0.06 | 1.17 | 0.72 | 0.02 |
| 45 | 0.05 | 1.22 | 0.63 | 0.01 |
| 50 | 0.05 | 1.27 | 0.56 | 0.01 |

At time = 125 minutes, the flow is 0.01 CFS.

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

5 Year Storm in PA. Region 5 at Post-Dev A1C

Time of Concentration: 5 min.

Drainage Area: 0.0230 acres.

Weighted 'C' Factor: 0.9500

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|---------------|-------------------|-------------------------------|----------------------------------|---------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.09 | 0.09 | 1.14 | 0.02 |
| 10 | 0.19 | 0.28 | 2.23 | 0.05 |
| 15 | 0.45 | 0.73 | 5.39 | 0.12 |
| 20 | 0.26 | 0.99 | 3.17 | 0.07 |
| 25 | 0.14 | 1.14 | 1.71 | 0.04 |
| 30 | 0.11 | 1.25 | 1.37 | 0.03 |
| 35 | 0.08 | 1.33 | 0.96 | 0.02 |
| 40 | 0.07 | 1.40 | 0.83 | 0.02 |
| 45 | 0.06 | 1.46 | 0.72 | 0.02 |
| 50 | 0.05 | 1.51 | 0.63 | 0.01 |

At time = 125 minutes, the flow is 0.01 CFS.

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

10 Year Storm in PA. Region 5 at Post-Dev A1C

Time of Concentration: 5 min.

Drainage Area: 0.0230 acres.

Weighted 'C' Factor: 0.9500

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|---------------|-------------------|-------------------------------|----------------------------------|---------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.11 | 0.11 | 1.35 | 0.03 |
| 10 | 0.21 | 0.32 | 2.51 | 0.05 |
| 15 | 0.50 | 0.82 | 6.02 | 0.13 |
| 20 | 0.29 | 1.11 | 3.49 | 0.08 |
| 25 | 0.16 | 1.28 | 1.96 | 0.04 |
| 30 | 0.13 | 1.41 | 1.60 | 0.04 |
| 35 | 0.10 | 1.51 | 1.16 | 0.03 |
| 40 | 0.08 | 1.59 | 1.02 | 0.02 |
| 45 | 0.08 | 1.67 | 0.90 | 0.02 |
| 50 | 0.07 | 1.73 | 0.80 | 0.02 |

At time = 125 minutes, the flow is 0.01 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

25 Year Storm in PA. Region 5 at Post-Dev A1C
Time of Concentration: 5 min.
Drainage Area: 0.0230 acres.
Weighted 'C' Factor: 0.9500

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.13 | 0.13 | 1.60 | 0.03 |
| 10 | 0.25 | 0.38 | 2.98 | 0.07 |
| 15 | 0.56 | 0.94 | 6.70 | 0.15 |
| 20 | 0.34 | 1.28 | 4.12 | 0.09 |
| 25 | 0.19 | 1.48 | 2.33 | 0.05 |
| 30 | 0.16 | 1.64 | 1.90 | 0.04 |
| 35 | 0.11 | 1.75 | 1.37 | 0.03 |
| 40 | 0.10 | 1.85 | 1.19 | 0.03 |
| 45 | 0.09 | 1.94 | 1.05 | 0.02 |
| 50 | 0.08 | 2.02 | 0.94 | 0.02 |

At time = 125 minutes, the flow is 0.01 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

50 Year Storm in PA. Region 5 at Post-Dev A1C
Time of Concentration: 5 min.
Drainage Area: 0.0230 acres.
Weighted 'C' Factor: 0.9500

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.17 | 0.17 | 2.01 | 0.04 |
| 10 | 0.31 | 0.47 | 3.69 | 0.08 |
| 15 | 0.63 | 1.10 | 7.50 | 0.16 |
| 20 | 0.42 | 1.52 | 5.02 | 0.11 |
| 25 | 0.24 | 1.76 | 2.91 | 0.06 |
| 30 | 0.20 | 1.96 | 2.38 | 0.05 |
| 35 | 0.14 | 2.10 | 1.72 | 0.04 |
| 40 | 0.12 | 2.23 | 1.50 | 0.03 |
| 45 | 0.11 | 2.34 | 1.32 | 0.03 |
| 50 | 0.10 | 2.44 | 1.17 | 0.03 |

At time = 125 minutes, the flow is 0.01 CFS.

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

100 Year Storm in PA. Region 5 at Post-Dev A1C

Time of Concentration: 5 min.

Drainage Area: 0.0230 acres.

Weighted 'C' Factor: 0.9500

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|---------------|-------------------|-------------------------------|----------------------------------|---------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.20 | 0.20 | 2.36 | 0.05 |
| 10 | 0.35 | 0.55 | 4.20 | 0.09 |
| 15 | 0.68 | 1.23 | 8.19 | 0.18 |
| 20 | 0.47 | 1.70 | 5.61 | 0.12 |
| 25 | 0.28 | 1.98 | 3.35 | 0.07 |
| 30 | 0.23 | 2.21 | 2.78 | 0.06 |
| 35 | 0.17 | 2.38 | 2.04 | 0.04 |
| 40 | 0.15 | 2.53 | 1.79 | 0.04 |
| 45 | 0.13 | 2.66 | 1.59 | 0.03 |
| 50 | 0.12 | 2.78 | 1.42 | 0.03 |

At time = 125 minutes, the flow is 0.01 CFS.

RATIONAL 'C' WORKSHEET

Post-Development Condition - A2C

| Cover Description | C | Area (sf) | CxA |
|------------------------|------|--------------|------------|
| Impervious | 0.95 | 1,000 | 950 |
| Lawn | 0.40 | 0 | 0 |
| Total | | 1,000 | 950 |
| | | | |
| C (weighted) | | = | 0.9500 |
| Watershed Area (acres) | | = | 0.0230 |

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

1 Year Storm in PA. Region 5 at Post-Dev A2C

Time of Concentration: 5 min.

Drainage Area: 0.0230 acres.

Weighted 'C' Factor: 0.9500

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|--|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.06 | 0.06 | 0.75 | 0.02 |
| 10 | 0.12 | 0.19 | 1.49 | 0.03 |
| 15 | 0.33 | 0.52 | 4.00 | 0.09 |
| 20 | 0.18 | 0.70 | 2.16 | 0.05 |
| 25 | 0.09 | 0.79 | 1.13 | 0.02 |
| 30 | 0.08 | 0.87 | 0.91 | 0.02 |
| 35 | 0.05 | 0.92 | 0.63 | 0.01 |
| 40 | 0.05 | 0.97 | 0.54 | 0.01 |
| 45 | 0.04 | 1.01 | 0.47 | 0.01 |
| 50 | 0.03 | 1.04 | 0.41 | 0.01 |

At time = 125 minutes, the flow is 0.00 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

2 Year Storm in PA. Region 5 at Post-Dev A2C

Time of Concentration: 5 min.

Drainage Area: 0.0230 acres.

Weighted 'C' Factor: 0.9500

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|--|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.08 | 0.08 | 0.96 | 0.02 |
| 10 | 0.15 | 0.23 | 1.82 | 0.04 |
| 15 | 0.38 | 0.62 | 4.60 | 0.10 |
| 20 | 0.21 | 0.83 | 2.57 | 0.06 |
| 25 | 0.12 | 0.95 | 1.41 | 0.03 |
| 30 | 0.10 | 1.04 | 1.15 | 0.03 |
| 35 | 0.07 | 1.11 | 0.82 | 0.02 |
| 40 | 0.06 | 1.17 | 0.72 | 0.02 |
| 45 | 0.05 | 1.22 | 0.63 | 0.01 |
| 50 | 0.05 | 1.27 | 0.56 | 0.01 |

At time = 125 minutes, the flow is 0.01 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

5 Year Storm in PA. Region 5 at Post-Dev A2C

Time of Concentration: 5 min.

Drainage Area: 0.0230 acres.

Weighted 'C' Factor: 0.9500

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.09 | 0.09 | 1.14 | 0.02 |
| 10 | 0.19 | 0.28 | 2.23 | 0.05 |
| 15 | 0.45 | 0.73 | 5.39 | 0.12 |
| 20 | 0.26 | 0.99 | 3.17 | 0.07 |
| 25 | 0.14 | 1.14 | 1.71 | 0.04 |
| 30 | 0.11 | 1.25 | 1.37 | 0.03 |
| 35 | 0.08 | 1.33 | 0.96 | 0.02 |
| 40 | 0.07 | 1.40 | 0.83 | 0.02 |
| 45 | 0.06 | 1.46 | 0.72 | 0.02 |
| 50 | 0.05 | 1.51 | 0.63 | 0.01 |

At time = 125 minutes, the flow is 0.01 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

10 Year Storm in PA. Region 5 at Post-Dev A2C

Time of Concentration: 5 min.

Drainage Area: 0.0230 acres.

Weighted 'C' Factor: 0.9500

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.11 | 0.11 | 1.35 | 0.03 |
| 10 | 0.21 | 0.32 | 2.51 | 0.05 |
| 15 | 0.50 | 0.82 | 6.02 | 0.13 |
| 20 | 0.29 | 1.11 | 3.49 | 0.08 |
| 25 | 0.16 | 1.28 | 1.96 | 0.04 |
| 30 | 0.13 | 1.41 | 1.60 | 0.04 |
| 35 | 0.10 | 1.51 | 1.16 | 0.03 |
| 40 | 0.08 | 1.59 | 1.02 | 0.02 |
| 45 | 0.08 | 1.67 | 0.90 | 0.02 |
| 50 | 0.07 | 1.73 | 0.80 | 0.02 |

At time = 125 minutes, the flow is 0.01 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

25 Year Storm in PA. Region 5 at Post-Dev A2C

Time of Concentration: 5 min.

Drainage Area: 0.0230 acres.

Weighted 'C' Factor: 0.9500

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|--|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.13 | 0.13 | 1.60 | 0.03 |
| 10 | 0.25 | 0.38 | 2.98 | 0.07 |
| 15 | 0.56 | 0.94 | 6.70 | 0.15 |
| 20 | 0.34 | 1.28 | 4.12 | 0.09 |
| 25 | 0.19 | 1.48 | 2.33 | 0.05 |
| 30 | 0.16 | 1.64 | 1.90 | 0.04 |
| 35 | 0.11 | 1.75 | 1.37 | 0.03 |
| 40 | 0.10 | 1.85 | 1.19 | 0.03 |
| 45 | 0.09 | 1.94 | 1.05 | 0.02 |
| 50 | 0.08 | 2.02 | 0.94 | 0.02 |

At time = 125 minutes, the flow is 0.01 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

50 Year Storm in PA. Region 5 at Post-Dev A2C

Time of Concentration: 5 min.

Drainage Area: 0.0230 acres.

Weighted 'C' Factor: 0.9500

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|--|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.17 | 0.17 | 2.01 | 0.04 |
| 10 | 0.31 | 0.47 | 3.69 | 0.08 |
| 15 | 0.63 | 1.10 | 7.50 | 0.16 |
| 20 | 0.42 | 1.52 | 5.02 | 0.11 |
| 25 | 0.24 | 1.76 | 2.91 | 0.06 |
| 30 | 0.20 | 1.96 | 2.38 | 0.05 |
| 35 | 0.14 | 2.10 | 1.72 | 0.04 |
| 40 | 0.12 | 2.23 | 1.50 | 0.03 |
| 45 | 0.11 | 2.34 | 1.32 | 0.03 |
| 50 | 0.10 | 2.44 | 1.17 | 0.03 |

At time = 125 minutes, the flow is 0.01 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

100 Year Storm in PA. Region 5 at Post-Dev A2C

Time of Concentration: 5 min.

Drainage Area: 0.0230 acres.

Weighted 'C' Factor: 0.9500

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|--|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.20 | 0.20 | 2.36 | 0.05 |
| 10 | 0.35 | 0.55 | 4.20 | 0.09 |
| 15 | 0.68 | 1.23 | 8.19 | 0.18 |
| 20 | 0.47 | 1.70 | 5.61 | 0.12 |
| 25 | 0.28 | 1.98 | 3.35 | 0.07 |
| 30 | 0.23 | 2.21 | 2.78 | 0.06 |
| 35 | 0.17 | 2.38 | 2.04 | 0.04 |
| 40 | 0.15 | 2.53 | 1.79 | 0.04 |
| 45 | 0.13 | 2.66 | 1.59 | 0.03 |
| 50 | 0.12 | 2.78 | 1.42 | 0.03 |

At time = 125 minutes, the flow is 0.01 CFS.

RATIONAL 'C' WORKSHEET

Post-Development Condition - B

| Cover Description | C | Area (sf) | CxA |
|-------------------------------|------|--------------|-----------------|
| Impervious | 0.95 | 650 | 618 |
| Lawn | 0.40 | 1,568 | 627 |
| Total | | 2,218 | 1,245 |
| C (weighted) | | | = 0.5612 |
| Watershed Area (acres) | | | = 0.0509 |

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

1 Year Storm in PA. Region 5 at Post-Dev B
Time of Concentration: 5 min.
Drainage Area: 0.0509 acres.
Weighted 'C' Factor: 0.5612

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.06 | 0.06 | 0.75 | 0.02 |
| 10 | 0.12 | 0.19 | 1.49 | 0.04 |
| 15 | 0.33 | 0.52 | 4.00 | 0.11 |
| 20 | 0.18 | 0.70 | 2.16 | 0.06 |
| 25 | 0.09 | 0.79 | 1.13 | 0.03 |
| 30 | 0.08 | 0.87 | 0.91 | 0.03 |
| 35 | 0.05 | 0.92 | 0.63 | 0.02 |
| 40 | 0.05 | 0.97 | 0.54 | 0.02 |
| 45 | 0.04 | 1.01 | 0.47 | 0.01 |
| 50 | 0.03 | 1.04 | 0.41 | 0.01 |

At time = 125 minutes, the flow is 0.01 CFS.

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

2 Year Storm in PA. Region 5 at Post-Dev B
Time of Concentration: 5 min.
Drainage Area: 0.0509 acres.
Weighted 'C' Factor: 0.5612

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.08 | 0.08 | 0.96 | 0.03 |
| 10 | 0.15 | 0.23 | 1.82 | 0.05 |
| 15 | 0.38 | 0.62 | 4.60 | 0.13 |
| 20 | 0.21 | 0.83 | 2.57 | 0.07 |
| 25 | 0.12 | 0.95 | 1.41 | 0.04 |
| 30 | 0.10 | 1.04 | 1.15 | 0.03 |
| 35 | 0.07 | 1.11 | 0.82 | 0.02 |
| 40 | 0.06 | 1.17 | 0.72 | 0.02 |
| 45 | 0.05 | 1.22 | 0.63 | 0.02 |
| 50 | 0.05 | 1.27 | 0.56 | 0.02 |

At time = 125 minutes, the flow is 0.01 CFS.

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

5 Year Storm in PA. Region 5 at Post-Dev B

Time of Concentration: 5 min.

Drainage Area: 0.0509 acres.

Weighted 'C' Factor: 0.5612

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|---------------|-------------------|-------------------------------|----------------------------------|---------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.09 | 0.09 | 1.14 | 0.03 |
| 10 | 0.19 | 0.28 | 2.23 | 0.06 |
| 15 | 0.45 | 0.73 | 5.39 | 0.15 |
| 20 | 0.26 | 0.99 | 3.17 | 0.09 |
| 25 | 0.14 | 1.14 | 1.71 | 0.05 |
| 30 | 0.11 | 1.25 | 1.37 | 0.04 |
| 35 | 0.08 | 1.33 | 0.96 | 0.03 |
| 40 | 0.07 | 1.40 | 0.83 | 0.02 |
| 45 | 0.06 | 1.46 | 0.72 | 0.02 |
| 50 | 0.05 | 1.51 | 0.63 | 0.02 |

At time = 125 minutes, the flow is 0.01 CFS.

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

10 Year Storm in PA. Region 5 at Post-Dev B

Time of Concentration: 5 min.

Drainage Area: 0.0509 acres.

Weighted 'C' Factor: 0.5612

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|---------------|-------------------|-------------------------------|----------------------------------|---------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.11 | 0.11 | 1.35 | 0.04 |
| 10 | 0.21 | 0.32 | 2.51 | 0.07 |
| 15 | 0.50 | 0.82 | 6.02 | 0.17 |
| 20 | 0.29 | 1.11 | 3.49 | 0.10 |
| 25 | 0.16 | 1.28 | 1.96 | 0.06 |
| 30 | 0.13 | 1.41 | 1.60 | 0.05 |
| 35 | 0.10 | 1.51 | 1.16 | 0.03 |
| 40 | 0.08 | 1.59 | 1.02 | 0.03 |
| 45 | 0.08 | 1.67 | 0.90 | 0.03 |
| 50 | 0.07 | 1.73 | 0.80 | 0.02 |

At time = 125 minutes, the flow is 0.01 CFS.

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

25 Year Storm in PA. Region 5 at Post-Dev B
Time of Concentration: 5 min.
Drainage Area: 0.0509 acres.
Weighted 'C' Factor: 0.5612

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|------------|----------------|-------------------------|----------------------------|-------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.13 | 0.13 | 1.60 | 0.05 |
| 10 | 0.25 | 0.38 | 2.98 | 0.09 |
| 15 | 0.56 | 0.94 | 6.70 | 0.19 |
| 20 | 0.34 | 1.28 | 4.12 | 0.12 |
| 25 | 0.19 | 1.48 | 2.33 | 0.07 |
| 30 | 0.16 | 1.64 | 1.90 | 0.05 |
| 35 | 0.11 | 1.75 | 1.37 | 0.04 |
| 40 | 0.10 | 1.85 | 1.19 | 0.03 |
| 45 | 0.09 | 1.94 | 1.05 | 0.03 |
| 50 | 0.08 | 2.02 | 0.94 | 0.03 |

At time = 125 minutes, the flow is 0.01 CFS.

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

50 Year Storm in PA. Region 5 at Post-Dev B
Time of Concentration: 5 min.
Drainage Area: 0.0509 acres.
Weighted 'C' Factor: 0.5612

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|------------|----------------|-------------------------|----------------------------|-------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.17 | 0.17 | 2.01 | 0.06 |
| 10 | 0.31 | 0.47 | 3.69 | 0.11 |
| 15 | 0.63 | 1.10 | 7.50 | 0.21 |
| 20 | 0.42 | 1.52 | 5.02 | 0.14 |
| 25 | 0.24 | 1.76 | 2.91 | 0.08 |
| 30 | 0.20 | 1.96 | 2.38 | 0.07 |
| 35 | 0.14 | 2.10 | 1.72 | 0.05 |
| 40 | 0.12 | 2.23 | 1.50 | 0.04 |
| 45 | 0.11 | 2.34 | 1.32 | 0.04 |
| 50 | 0.10 | 2.44 | 1.17 | 0.03 |

At time = 125 minutes, the flow is 0.01 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

100 Year Storm in PA. Region 5 at Post-Dev B

Time of Concentration: 5 min.

Drainage Area: 0.0509 acres.

Weighted 'C' Factor: 0.5612

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|---------------------------|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.20 | 0.20 | 2.36 | 0.07 |
| 10 | 0.35 | 0.55 | 4.20 | 0.12 |
| 15 | 0.68 | 1.23 | 8.19 | 0.23 |
| 20 | 0.47 | 1.70 | 5.61 | 0.16 |
| 25 | 0.28 | 1.98 | 3.35 | 0.10 |
| 30 | 0.23 | 2.21 | 2.78 | 0.08 |
| 35 | 0.17 | 2.38 | 2.04 | 0.06 |
| 40 | 0.15 | 2.53 | 1.79 | 0.05 |
| 45 | 0.13 | 2.66 | 1.59 | 0.05 |
| 50 | 0.12 | 2.78 | 1.42 | 0.04 |

At time = 125 minutes, the flow is 0.02 CFS.

RATIONAL 'C' WORKSHEET

Post-Development Condition - Bypass

| Cover Description | C | Area (sf) | CxA |
|-------------------------------|------|--------------|---------------|
| Impervious | 0.95 | 1,611 | 1,530 |
| Lawn | 0.40 | 4,038 | 1,615 |
| Total | | 5,649 | 3,146 |
| C (weighted) | | = | 0.5569 |
| Watershed Area (acres) | | = | 0.1297 |

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

1 Year Storm in PA. Region 5 at Post-Dev Bypass
Time of Concentration: 5 min.
Drainage Area: 0.1297 acres.
Weighted 'C' Factor: 0.5569

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|------------|----------------|-------------------------|----------------------------|-------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.06 | 0.06 | 0.75 | 0.05 |
| 10 | 0.12 | 0.19 | 1.49 | 0.11 |
| 15 | 0.33 | 0.52 | 4.00 | 0.29 |
| 20 | 0.18 | 0.70 | 2.16 | 0.16 |
| 25 | 0.09 | 0.79 | 1.13 | 0.08 |
| 30 | 0.08 | 0.87 | 0.91 | 0.07 |
| 35 | 0.05 | 0.92 | 0.63 | 0.05 |
| 40 | 0.05 | 0.97 | 0.54 | 0.04 |
| 45 | 0.04 | 1.01 | 0.47 | 0.03 |
| 50 | 0.03 | 1.04 | 0.41 | 0.03 |

At time = 125 minutes, the flow is 0.01 CFS.

Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart

2 Year Storm in PA. Region 5 at Post-Dev Bypass
Time of Concentration: 5 min.
Drainage Area: 0.1297 acres.
Weighted 'C' Factor: 0.5569

| Time (min) | Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|------------|----------------|-------------------------|----------------------------|-------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.08 | 0.08 | 0.96 | 0.07 |
| 10 | 0.15 | 0.23 | 1.82 | 0.13 |
| 15 | 0.38 | 0.62 | 4.60 | 0.33 |
| 20 | 0.21 | 0.83 | 2.57 | 0.19 |
| 25 | 0.12 | 0.95 | 1.41 | 0.10 |
| 30 | 0.10 | 1.04 | 1.15 | 0.08 |
| 35 | 0.07 | 1.11 | 0.82 | 0.06 |
| 40 | 0.06 | 1.17 | 0.72 | 0.05 |
| 45 | 0.05 | 1.22 | 0.63 | 0.05 |
| 50 | 0.05 | 1.27 | 0.56 | 0.04 |

At time = 125 minutes, the flow is 0.02 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

5 Year Storm in PA. Region 5 at Post-Dev Bypass

Time of Concentration: 5 min.

Drainage Area: 0.1297 acres.

Weighted 'C' Factor: 0.5569

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|--|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.09 | 0.09 | 1.14 | 0.08 |
| 10 | 0.19 | 0.28 | 2.23 | 0.16 |
| 15 | 0.45 | 0.73 | 5.39 | 0.39 |
| 20 | 0.26 | 0.99 | 3.17 | 0.23 |
| 25 | 0.14 | 1.14 | 1.71 | 0.12 |
| 30 | 0.11 | 1.25 | 1.37 | 0.10 |
| 35 | 0.08 | 1.33 | 0.96 | 0.07 |
| 40 | 0.07 | 1.40 | 0.83 | 0.06 |
| 45 | 0.06 | 1.46 | 0.72 | 0.05 |
| 50 | 0.05 | 1.51 | 0.63 | 0.05 |

At time = 125 minutes, the flow is 0.02 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

10 Year Storm in PA. Region 5 at Post-Dev Bypass

Time of Concentration: 5 min.

Drainage Area: 0.1297 acres.

Weighted 'C' Factor: 0.5569

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|--|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.11 | 0.11 | 1.35 | 0.10 |
| 10 | 0.21 | 0.32 | 2.51 | 0.18 |
| 15 | 0.50 | 0.82 | 6.02 | 0.43 |
| 20 | 0.29 | 1.11 | 3.49 | 0.25 |
| 25 | 0.16 | 1.28 | 1.96 | 0.14 |
| 30 | 0.13 | 1.41 | 1.60 | 0.12 |
| 35 | 0.10 | 1.51 | 1.16 | 0.08 |
| 40 | 0.08 | 1.59 | 1.02 | 0.07 |
| 45 | 0.08 | 1.67 | 0.90 | 0.07 |
| 50 | 0.07 | 1.73 | 0.80 | 0.06 |

At time = 125 minutes, the flow is 0.03 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

25 Year Storm in PA. Region 5 at Post-Dev Bypass
Time of Concentration: 5 min.
Drainage Area: 0.1297 acres.
Weighted 'C' Factor: 0.5569

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|--|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.13 | 0.13 | 1.60 | 0.12 |
| 10 | 0.25 | 0.38 | 2.98 | 0.22 |
| 15 | 0.56 | 0.94 | 6.70 | 0.48 |
| 20 | 0.34 | 1.28 | 4.12 | 0.30 |
| 25 | 0.19 | 1.48 | 2.33 | 0.17 |
| 30 | 0.16 | 1.64 | 1.90 | 0.14 |
| 35 | 0.11 | 1.75 | 1.37 | 0.10 |
| 40 | 0.10 | 1.85 | 1.19 | 0.09 |
| 45 | 0.09 | 1.94 | 1.05 | 0.08 |
| 50 | 0.08 | 2.02 | 0.94 | 0.07 |

At time = 125 minutes, the flow is 0.03 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

50 Year Storm in PA. Region 5 at Post-Dev Bypass
Time of Concentration: 5 min.
Drainage Area: 0.1297 acres.
Weighted 'C' Factor: 0.5569

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|--|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.17 | 0.17 | 2.01 | 0.14 |
| 10 | 0.31 | 0.47 | 3.69 | 0.27 |
| 15 | 0.63 | 1.10 | 7.50 | 0.54 |
| 20 | 0.42 | 1.52 | 5.02 | 0.36 |
| 25 | 0.24 | 1.76 | 2.91 | 0.21 |
| 30 | 0.20 | 1.96 | 2.38 | 0.17 |
| 35 | 0.14 | 2.10 | 1.72 | 0.12 |
| 40 | 0.12 | 2.23 | 1.50 | 0.11 |
| 45 | 0.11 | 2.34 | 1.32 | 0.10 |
| 50 | 0.10 | 2.44 | 1.17 | 0.08 |

At time = 125 minutes, the flow is 0.04 CFS.

**Rational Formula Hydrograph
PDT-IDF Storm Intensity Chart**

100 Year Storm in PA. Region 5 at Post-Dev Bypass

Time of Concentration: 5 min.

Drainage Area: 0.1297 acres.

Weighted 'C' Factor: 0.5569

| Time (min) | Rainfall Incr. (inches) | Rainfall Total (inches) | Rainfall Intensity (in/hr) | Flow (cfs) |
|-----------------------|--|--|---|-----------------------|
| 0 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.20 | 0.20 | 2.36 | 0.17 |
| 10 | 0.35 | 0.55 | 4.20 | 0.30 |
| 15 | 0.68 | 1.23 | 8.19 | 0.59 |
| 20 | 0.47 | 1.70 | 5.61 | 0.41 |
| 25 | 0.28 | 1.98 | 3.35 | 0.24 |
| 30 | 0.23 | 2.21 | 2.78 | 0.20 |
| 35 | 0.17 | 2.38 | 2.04 | 0.15 |
| 40 | 0.15 | 2.53 | 1.79 | 0.13 |
| 45 | 0.13 | 2.66 | 1.59 | 0.11 |
| 50 | 0.12 | 2.78 | 1.42 | 0.10 |

At time = 125 minutes, the flow is 0.04 CFS.

ROUTING ANALYSIS

| |
|---|
| SEEPAGE BED STORAGE VOLUME WORKSHEET |
|---|

| | | |
|---------------------------------|--------|-------|
| TOTAL BED VOLUME #1 | | |
| Length - L | 15.0 | feet |
| Width - W | 22.0 | feet |
| Depth - D | 3.1 | feet |
| Void Ratio - VR | 0.40 | |
| Total Storage Volume (LxWxDxVR) | 406.6 | cf |
| Total Storage Volume (LxWxDxVR) | 0.0093 | ac-ft |

| | | |
|---------------------------------|--------|-------|
| TOTAL BED VOLUME #2 | | |
| Length - L | 15.0 | feet |
| Width - W | 22.0 | feet |
| Depth - D | 3.1 | feet |
| Void Ratio - VR | 0.40 | |
| Total Storage Volume (LxWxDxVR) | 406.6 | cf |
| Total Storage Volume (LxWxDxVR) | 0.0093 | ac-ft |

Basin Storage/Elevation Input

| Elevation (ft) | Storage (acre-ft) |
|----------------|-------------------|
| 169.25 | 0.0000 |
| 170.00 | 0.0023 |
| 170.50 | 0.0038 |
| 171.00 | 0.0053 |
| 171.50 | 0.0068 |
| 173.05 | 0.0069 |
| 174.00 | 0.0070 |

Project Files:

Outlet Structure Configuration: C:\Users\Andrew\Desktop\Jobs\21004\SWM1.OSC

Discharge/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM1.EO

Outlet Structure Configuration

Stage 1: Riser Pipe

Crest Elevation = 173.05 feet

Effective Perimeter = 6.28 feet

Effective Flow Area = 3.14 square feet

Discharge Coefficient = 3.1

Basin Rating Curve

| Basin Water Elevation | Basin Outflow (cfs) | Riser Box Water Elevation | Tailwater Elevation (ft) | Outfall Culvert Control | Outfall Culvert Override? |
|------------------------------|----------------------------|----------------------------------|---------------------------------|--------------------------------|----------------------------------|
| 169.25 | 0.00 | N/A | N/A | N/A | N/A |
| 169.50 | 0.00 | N/A | N/A | N/A | N/A |
| 169.75 | 0.00 | N/A | N/A | N/A | N/A |
| 170.00 | 0.00 | N/A | N/A | N/A | N/A |
| 170.25 | 0.00 | N/A | N/A | N/A | N/A |
| 170.50 | 0.00 | N/A | N/A | N/A | N/A |
| 170.75 | 0.00 | N/A | N/A | N/A | N/A |
| 171.00 | 0.00 | N/A | N/A | N/A | N/A |
| 171.25 | 0.00 | N/A | N/A | N/A | N/A |
| 171.50 | 0.00 | N/A | N/A | N/A | N/A |
| 171.75 | 0.00 | N/A | N/A | N/A | N/A |
| 172.00 | 0.00 | N/A | N/A | N/A | N/A |
| 172.25 | 0.00 | N/A | N/A | N/A | N/A |
| 172.50 | 0.00 | N/A | N/A | N/A | N/A |
| 172.75 | 0.00 | N/A | N/A | N/A | N/A |
| 173.00 | 0.00 | N/A | N/A | N/A | N/A |
| 173.25 | 1.74 | N/A | N/A | N/A | N/A |
| 173.50 | 5.88 | N/A | N/A | N/A | N/A |
| 173.75 | 11.40 | N/A | N/A | N/A | N/A |
| 174.00 | 18.03 | N/A | N/A | N/A | N/A |

Modified Puls Routing

Inflow Hydrograph: C:\Users\Andrew\Desktop\Jobs\21004\SWM\Hydrographs\Post\A1C11.HYD
 Storage/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM\1.ES

Basin Bypass Capacity = 0.00 cfs
 Starting Pool Elevation = 169.25 feet
 Time Interval = 0.021 hours

1 year

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 0.00 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.02 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.04 | 0.01 | 0.01 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.06 | 0.01 | 0.01 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.08 | 0.02 | 0.02 | 0.0001 | 169.27 | 0.00 | 0.00 |
| 0.10 | 0.02 | 0.02 | 0.0001 | 169.28 | 0.00 | 0.00 |
| 0.12 | 0.02 | 0.02 | 0.0001 | 169.29 | 0.00 | 0.00 |
| 0.15 | 0.03 | 0.03 | 0.0002 | 169.31 | 0.00 | 0.00 |
| 0.17 | 0.03 | 0.03 | 0.0002 | 169.32 | 0.00 | 0.00 |
| 0.19 | 0.05 | 0.05 | 0.0003 | 169.35 | 0.00 | 0.00 |
| 0.21 | 0.06 | 0.06 | 0.0004 | 169.38 | 0.00 | 0.00 |
| 0.23 | 0.07 | 0.07 | 0.0005 | 169.41 | 0.00 | 0.00 |
| 0.25 | 0.09 | 0.09 | 0.0006 | 169.46 | 0.00 | 0.00 |
| 0.27 | 0.08 | 0.08 | 0.0008 | 169.50 | 0.00 | 0.00 |
| 0.29 | 0.07 | 0.07 | 0.0009 | 169.54 | 0.00 | 0.00 |
| 0.31 | 0.06 | 0.06 | 0.0010 | 169.58 | 0.00 | 0.00 |
| 0.33 | 0.05 | 0.05 | 0.0011 | 169.61 | 0.00 | 0.00 |
| 0.35 | 0.04 | 0.04 | 0.0012 | 169.63 | 0.00 | 0.00 |
| 0.37 | 0.04 | 0.04 | 0.0012 | 169.66 | 0.00 | 0.00 |
| 0.40 | 0.03 | 0.03 | 0.0013 | 169.67 | 0.00 | 0.00 |
| 0.42 | 0.02 | 0.02 | 0.0013 | 169.69 | 0.00 | 0.00 |
| 0.44 | 0.02 | 0.02 | 0.0014 | 169.70 | 0.00 | 0.00 |
| 0.46 | 0.02 | 0.02 | 0.0014 | 169.72 | 0.00 | 0.00 |
| 0.48 | 0.02 | 0.02 | 0.0015 | 169.73 | 0.00 | 0.00 |
| 0.50 | 0.02 | 0.02 | 0.0015 | 169.74 | 0.00 | 0.00 |
| 0.52 | 0.02 | 0.02 | 0.0015 | 169.75 | 0.00 | 0.00 |
| 0.54 | 0.02 | 0.02 | 0.0016 | 169.76 | 0.00 | 0.00 |
| 0.56 | 0.02 | 0.02 | 0.0016 | 169.77 | 0.00 | 0.00 |
| 0.58 | 0.01 | 0.01 | 0.0016 | 169.78 | 0.00 | 0.00 |
| 0.60 | 0.01 | 0.01 | 0.0016 | 169.79 | 0.00 | 0.00 |
| 0.62 | 0.01 | 0.01 | 0.0017 | 169.79 | 0.00 | 0.00 |
| 0.65 | 0.01 | 0.01 | 0.0017 | 169.80 | 0.00 | 0.00 |
| 0.67 | 0.01 | 0.01 | 0.0017 | 169.81 | 0.00 | 0.00 |
| 0.69 | 0.01 | 0.01 | 0.0017 | 169.81 | 0.00 | 0.00 |
| 0.71 | 0.01 | 0.01 | 0.0017 | 169.82 | 0.00 | 0.00 |
| 0.73 | 0.01 | 0.01 | 0.0018 | 169.83 | 0.00 | 0.00 |
| 0.75 | 0.01 | 0.01 | 0.0018 | 169.83 | 0.00 | 0.00 |
| 0.77 | 0.01 | 0.01 | 0.0018 | 169.84 | 0.00 | 0.00 |
| 0.79 | 0.01 | 0.01 | 0.0018 | 169.84 | 0.00 | 0.00 |
| 0.81 | 0.01 | 0.01 | 0.0018 | 169.85 | 0.00 | 0.00 |
| 0.83 | 0.01 | 0.01 | 0.0018 | 169.85 | 0.00 | 0.00 |
| 0.85 | 0.01 | 0.01 | 0.0019 | 169.86 | 0.00 | 0.00 |
| 0.87 | 0.01 | 0.01 | 0.0019 | 169.86 | 0.00 | 0.00 |
| 0.90 | 0.01 | 0.01 | 0.0019 | 169.87 | 0.00 | 0.00 |
| 0.92 | 0.01 | 0.01 | 0.0019 | 169.87 | 0.00 | 0.00 |
| 0.94 | 0.01 | 0.01 | 0.0019 | 169.88 | 0.00 | 0.00 |
| 0.96 | 0.01 | 0.01 | 0.0019 | 169.88 | 0.00 | 0.00 |
| 0.98 | 0.01 | 0.01 | 0.0019 | 169.89 | 0.00 | 0.00 |
| 1.00 | 0.01 | 0.01 | 0.0020 | 169.89 | 0.00 | 0.00 |
| 1.02 | 0.01 | 0.01 | 0.0020 | 169.89 | 0.00 | 0.00 |

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|---------------------------|--------------------------------|---------------------------|-------------------------------|-----------------------------------|----------------------------|----------------------------|
| 1.04 | 0.01 | 0.01 | 0.0020 | 169.90 | 0.00 | 0.00 |
| 1.06 | 0.01 | 0.01 | 0.0020 | 169.90 | 0.00 | 0.00 |
| 1.08 | 0.01 | 0.01 | 0.0020 | 169.91 | 0.00 | 0.00 |
| 1.10 | 0.01 | 0.01 | 0.0020 | 169.91 | 0.00 | 0.00 |
| 1.12 | 0.01 | 0.01 | 0.0020 | 169.91 | 0.00 | 0.00 |
| 1.15 | 0.01 | 0.01 | 0.0020 | 169.92 | 0.00 | 0.00 |
| 1.17 | 0.01 | 0.01 | 0.0021 | 169.92 | 0.00 | 0.00 |
| 1.19 | 0.01 | 0.01 | 0.0021 | 169.92 | 0.00 | 0.00 |
| 1.21 | 0.01 | 0.01 | 0.0021 | 169.93 | 0.00 | 0.00 |
| 1.23 | 0.01 | 0.01 | 0.0021 | 169.93 | 0.00 | 0.00 |
| 1.25 | 0.01 | 0.01 | 0.0021 | 169.93 | 0.00 | 0.00 |
| 1.27 | 0.01 | 0.01 | 0.0021 | 169.94 | 0.00 | 0.00 |
| 1.29 | 0.01 | 0.01 | 0.0021 | 169.94 | 0.00 | 0.00 |
| 1.31 | 0.01 | 0.01 | 0.0021 | 169.94 | 0.00 | 0.00 |
| 1.33 | 0.01 | 0.01 | 0.0021 | 169.95 | 0.00 | 0.00 |
| 1.35 | 0.01 | 0.01 | 0.0021 | 169.95 | 0.00 | 0.00 |
| 1.37 | 0.01 | 0.01 | 0.0022 | 169.95 | 0.00 | 0.00 |
| 1.40 | 0.01 | 0.01 | 0.0022 | 169.95 | 0.00 | 0.00 |
| 1.42 | 0.01 | 0.01 | 0.0022 | 169.96 | 0.00 | 0.00 |
| 1.44 | 0.01 | 0.01 | 0.0022 | 169.96 | 0.00 | 0.00 |
| 1.46 | 0.01 | 0.01 | 0.0022 | 169.96 | 0.00 | 0.00 |
| 1.48 | 0.01 | 0.01 | 0.0022 | 169.97 | 0.00 | 0.00 |
| 1.50 | 0.01 | 0.01 | 0.0022 | 169.97 | 0.00 | 0.00 |
| 1.52 | 0.01 | 0.01 | 0.0022 | 169.97 | 0.00 | 0.00 |
| 1.54 | 0.01 | 0.01 | 0.0022 | 169.98 | 0.00 | 0.00 |
| 1.56 | 0.00 | 0.00 | 0.0022 | 169.98 | 0.00 | 0.00 |
| 1.58 | 0.00 | 0.00 | 0.0022 | 169.98 | 0.00 | 0.00 |
| 1.60 | 0.00 | 0.00 | 0.0022 | 169.98 | 0.00 | 0.00 |
| 1.62 | 0.00 | 0.00 | 0.0023 | 169.99 | 0.00 | 0.00 |
| 1.65 | 0.00 | 0.00 | 0.0023 | 169.99 | 0.00 | 0.00 |
| 1.67 | 0.00 | 0.00 | 0.0023 | 169.99 | 0.00 | 0.00 |
| 1.69 | 0.00 | 0.00 | 0.0023 | 169.99 | 0.00 | 0.00 |
| 1.71 | 0.00 | 0.00 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 1.73 | 0.00 | 0.00 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 1.75 | 0.00 | 0.00 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 1.77 | 0.00 | 0.00 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 1.79 | 0.00 | 0.00 | 0.0023 | 170.01 | 0.00 | 0.00 |
| 1.81 | 0.00 | 0.00 | 0.0023 | 170.01 | 0.00 | 0.00 |
| 1.83 | 0.00 | 0.00 | 0.0023 | 170.01 | 0.00 | 0.00 |
| 1.85 | 0.00 | 0.00 | 0.0023 | 170.02 | 0.00 | 0.00 |
| 1.87 | 0.00 | 0.00 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 1.90 | 0.00 | 0.00 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 1.92 | 0.00 | 0.00 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 1.94 | 0.00 | 0.00 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 1.96 | 0.00 | 0.00 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 1.98 | 0.00 | 0.00 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0.00 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 2.02 | 0.00 | 0.00 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 2.04 | 0.00 | 0.00 | 0.0024 | 170.04 | 0.00 | 0.00 |
| 2.06 | 0.00 | 0.00 | 0.0024 | 170.04 | 0.00 | 0.00 |
| 2.08 | 0.00 | 0.00 | 0.0024 | 170.04 | 0.00 | 0.00 |

Modified Puls Routing

Inflow Hydrograph: C:\Users\Andrew\Desktop\Jobs\21004\SWM\Hydrographs\Post\A1C12.HYD
 Storage/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM\1.ES

Basin Bypass Capacity = 0.00 cfs
 Starting Pool Elevation = 169.25 feet
 Time Interval = 0.021 hours

2 year

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 0.00 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.02 | 0.01 | 0.01 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.04 | 0.01 | 0.01 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.06 | 0.02 | 0.02 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.08 | 0.02 | 0.02 | 0.0001 | 169.27 | 0.00 | 0.00 |
| 0.10 | 0.03 | 0.03 | 0.0001 | 169.29 | 0.00 | 0.00 |
| 0.12 | 0.03 | 0.03 | 0.0002 | 169.30 | 0.00 | 0.00 |
| 0.15 | 0.04 | 0.04 | 0.0002 | 169.32 | 0.00 | 0.00 |
| 0.17 | 0.04 | 0.04 | 0.0003 | 169.34 | 0.00 | 0.00 |
| 0.19 | 0.06 | 0.06 | 0.0004 | 169.37 | 0.00 | 0.00 |
| 0.21 | 0.07 | 0.07 | 0.0005 | 169.40 | 0.00 | 0.00 |
| 0.23 | 0.09 | 0.09 | 0.0006 | 169.45 | 0.00 | 0.00 |
| 0.25 | 0.10 | 0.10 | 0.0008 | 169.50 | 0.00 | 0.00 |
| 0.27 | 0.09 | 0.09 | 0.0009 | 169.55 | 0.00 | 0.00 |
| 0.29 | 0.08 | 0.08 | 0.0011 | 169.60 | 0.00 | 0.00 |
| 0.31 | 0.07 | 0.07 | 0.0012 | 169.64 | 0.00 | 0.00 |
| 0.33 | 0.06 | 0.06 | 0.0013 | 169.68 | 0.00 | 0.00 |
| 0.35 | 0.05 | 0.05 | 0.0014 | 169.71 | 0.00 | 0.00 |
| 0.37 | 0.04 | 0.04 | 0.0015 | 169.73 | 0.00 | 0.00 |
| 0.40 | 0.04 | 0.04 | 0.0015 | 169.75 | 0.00 | 0.00 |
| 0.42 | 0.03 | 0.03 | 0.0016 | 169.77 | 0.00 | 0.00 |
| 0.44 | 0.03 | 0.03 | 0.0017 | 169.79 | 0.00 | 0.00 |
| 0.46 | 0.03 | 0.03 | 0.0017 | 169.81 | 0.00 | 0.00 |
| 0.48 | 0.03 | 0.03 | 0.0018 | 169.82 | 0.00 | 0.00 |
| 0.50 | 0.03 | 0.03 | 0.0018 | 169.84 | 0.00 | 0.00 |
| 0.52 | 0.02 | 0.02 | 0.0018 | 169.85 | 0.00 | 0.00 |
| 0.54 | 0.02 | 0.02 | 0.0019 | 169.86 | 0.00 | 0.00 |
| 0.56 | 0.02 | 0.02 | 0.0019 | 169.87 | 0.00 | 0.00 |
| 0.58 | 0.02 | 0.02 | 0.0019 | 169.88 | 0.00 | 0.00 |
| 0.60 | 0.02 | 0.02 | 0.0020 | 169.89 | 0.00 | 0.00 |
| 0.62 | 0.02 | 0.02 | 0.0020 | 169.90 | 0.00 | 0.00 |
| 0.65 | 0.02 | 0.02 | 0.0020 | 169.91 | 0.00 | 0.00 |
| 0.67 | 0.02 | 0.02 | 0.0021 | 169.92 | 0.00 | 0.00 |
| 0.69 | 0.02 | 0.02 | 0.0021 | 169.93 | 0.00 | 0.00 |
| 0.71 | 0.01 | 0.01 | 0.0021 | 169.94 | 0.00 | 0.00 |
| 0.73 | 0.01 | 0.01 | 0.0021 | 169.95 | 0.00 | 0.00 |
| 0.75 | 0.01 | 0.01 | 0.0022 | 169.96 | 0.00 | 0.00 |
| 0.77 | 0.01 | 0.01 | 0.0022 | 169.96 | 0.00 | 0.00 |
| 0.79 | 0.01 | 0.01 | 0.0022 | 169.97 | 0.00 | 0.00 |
| 0.81 | 0.01 | 0.01 | 0.0022 | 169.98 | 0.00 | 0.00 |
| 0.83 | 0.01 | 0.01 | 0.0023 | 169.98 | 0.00 | 0.00 |
| 0.85 | 0.01 | 0.01 | 0.0023 | 169.99 | 0.00 | 0.00 |
| 0.87 | 0.01 | 0.01 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 0.90 | 0.01 | 0.01 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 0.92 | 0.01 | 0.01 | 0.0023 | 170.01 | 0.00 | 0.00 |
| 0.94 | 0.01 | 0.01 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 0.96 | 0.01 | 0.01 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 0.98 | 0.01 | 0.01 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 1.00 | 0.01 | 0.01 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 1.02 | 0.01 | 0.01 | 0.0024 | 170.04 | 0.00 | 0.00 |

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|---------------------------|--------------------------------|---------------------------|-------------------------------|-----------------------------------|----------------------------|----------------------------|
| 1.04 | 0.01 | 0.01 | 0.0024 | 170.05 | 0.00 | 0.00 |
| 1.06 | 0.01 | 0.01 | 0.0025 | 170.05 | 0.00 | 0.00 |
| 1.08 | 0.01 | 0.01 | 0.0025 | 170.06 | 0.00 | 0.00 |
| 1.10 | 0.01 | 0.01 | 0.0025 | 170.06 | 0.00 | 0.00 |
| 1.12 | 0.01 | 0.01 | 0.0025 | 170.07 | 0.00 | 0.00 |
| 1.15 | 0.01 | 0.01 | 0.0025 | 170.07 | 0.00 | 0.00 |
| 1.17 | 0.01 | 0.01 | 0.0025 | 170.08 | 0.00 | 0.00 |
| 1.19 | 0.01 | 0.01 | 0.0025 | 170.08 | 0.00 | 0.00 |
| 1.21 | 0.01 | 0.01 | 0.0026 | 170.08 | 0.00 | 0.00 |
| 1.23 | 0.01 | 0.01 | 0.0026 | 170.09 | 0.00 | 0.00 |
| 1.25 | 0.01 | 0.01 | 0.0026 | 170.09 | 0.00 | 0.00 |
| 1.27 | 0.01 | 0.01 | 0.0026 | 170.10 | 0.00 | 0.00 |
| 1.29 | 0.01 | 0.01 | 0.0026 | 170.10 | 0.00 | 0.00 |
| 1.31 | 0.01 | 0.01 | 0.0026 | 170.11 | 0.00 | 0.00 |
| 1.33 | 0.01 | 0.01 | 0.0026 | 170.11 | 0.00 | 0.00 |
| 1.35 | 0.01 | 0.01 | 0.0026 | 170.12 | 0.00 | 0.00 |
| 1.37 | 0.01 | 0.01 | 0.0027 | 170.12 | 0.00 | 0.00 |
| 1.40 | 0.01 | 0.01 | 0.0027 | 170.12 | 0.00 | 0.00 |
| 1.42 | 0.01 | 0.01 | 0.0027 | 170.13 | 0.00 | 0.00 |
| 1.44 | 0.01 | 0.01 | 0.0027 | 170.13 | 0.00 | 0.00 |
| 1.46 | 0.01 | 0.01 | 0.0027 | 170.14 | 0.00 | 0.00 |
| 1.48 | 0.01 | 0.01 | 0.0027 | 170.14 | 0.00 | 0.00 |
| 1.50 | 0.01 | 0.01 | 0.0027 | 170.14 | 0.00 | 0.00 |
| 1.52 | 0.01 | 0.01 | 0.0027 | 170.15 | 0.00 | 0.00 |
| 1.54 | 0.01 | 0.01 | 0.0028 | 170.15 | 0.00 | 0.00 |
| 1.56 | 0.01 | 0.01 | 0.0028 | 170.15 | 0.00 | 0.00 |
| 1.58 | 0.01 | 0.01 | 0.0028 | 170.16 | 0.00 | 0.00 |
| 1.60 | 0.01 | 0.01 | 0.0028 | 170.16 | 0.00 | 0.00 |
| 1.62 | 0.01 | 0.01 | 0.0028 | 170.17 | 0.00 | 0.00 |
| 1.65 | 0.01 | 0.01 | 0.0028 | 170.17 | 0.00 | 0.00 |
| 1.67 | 0.01 | 0.01 | 0.0028 | 170.17 | 0.00 | 0.00 |
| 1.69 | 0.01 | 0.01 | 0.0028 | 170.18 | 0.00 | 0.00 |
| 1.71 | 0.01 | 0.01 | 0.0028 | 170.18 | 0.00 | 0.00 |
| 1.73 | 0.01 | 0.01 | 0.0029 | 170.18 | 0.00 | 0.00 |
| 1.75 | 0.01 | 0.01 | 0.0029 | 170.19 | 0.00 | 0.00 |
| 1.77 | 0.01 | 0.01 | 0.0029 | 170.19 | 0.00 | 0.00 |
| 1.79 | 0.01 | 0.01 | 0.0029 | 170.19 | 0.00 | 0.00 |
| 1.81 | 0.01 | 0.01 | 0.0029 | 170.20 | 0.00 | 0.00 |
| 1.83 | 0.01 | 0.01 | 0.0029 | 170.20 | 0.00 | 0.00 |
| 1.85 | 0.01 | 0.01 | 0.0029 | 170.20 | 0.00 | 0.00 |
| 1.87 | 0.01 | 0.01 | 0.0029 | 170.21 | 0.00 | 0.00 |
| 1.90 | 0.01 | 0.01 | 0.0029 | 170.21 | 0.00 | 0.00 |
| 1.92 | 0.01 | 0.01 | 0.0029 | 170.21 | 0.00 | 0.00 |
| 1.94 | 0.01 | 0.01 | 0.0029 | 170.22 | 0.00 | 0.00 |
| 1.96 | 0.01 | 0.01 | 0.0030 | 170.22 | 0.00 | 0.00 |
| 1.98 | 0.01 | 0.01 | 0.0030 | 170.22 | 0.00 | 0.00 |
| 2.00 | 0.01 | 0.01 | 0.0030 | 170.23 | 0.00 | 0.00 |
| 2.02 | 0.01 | 0.01 | 0.0030 | 170.23 | 0.00 | 0.00 |
| 2.04 | 0.01 | 0.01 | 0.0030 | 170.23 | 0.00 | 0.00 |
| 2.06 | 0.01 | 0.01 | 0.0030 | 170.24 | 0.00 | 0.00 |
| 2.08 | 0.01 | 0.01 | 0.0030 | 170.24 | 0.00 | 0.00 |

Modified Puls Routing

Inflow Hydrograph: C:\Users\Andrew\Desktop\Jobs\21004\SWM\Hydrographs\Post\A1C15.HYD
 Storage/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM\1.ES

5 year

Basin Bypass Capacity = 0.00 cfs
 Starting Pool Elevation = 169.25 feet
 Time Interval = 0.021 hours

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 0.00 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.02 | 0.01 | 0.01 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.04 | 0.01 | 0.01 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.06 | 0.02 | 0.02 | 0.0000 | 169.27 | 0.00 | 0.00 |
| 0.08 | 0.02 | 0.02 | 0.0001 | 169.28 | 0.00 | 0.00 |
| 0.10 | 0.03 | 0.03 | 0.0001 | 169.29 | 0.00 | 0.00 |
| 0.12 | 0.04 | 0.04 | 0.0002 | 169.31 | 0.00 | 0.00 |
| 0.15 | 0.04 | 0.04 | 0.0003 | 169.33 | 0.00 | 0.00 |
| 0.17 | 0.05 | 0.05 | 0.0003 | 169.36 | 0.00 | 0.00 |
| 0.19 | 0.07 | 0.07 | 0.0004 | 169.39 | 0.00 | 0.00 |
| 0.21 | 0.08 | 0.08 | 0.0006 | 169.43 | 0.00 | 0.00 |
| 0.23 | 0.10 | 0.10 | 0.0007 | 169.49 | 0.00 | 0.00 |
| 0.25 | 0.12 | 0.12 | 0.0009 | 169.55 | 0.00 | 0.00 |
| 0.27 | 0.11 | 0.11 | 0.0011 | 169.61 | 0.00 | 0.00 |
| 0.29 | 0.09 | 0.09 | 0.0013 | 169.67 | 0.00 | 0.00 |
| 0.31 | 0.08 | 0.08 | 0.0014 | 169.72 | 0.00 | 0.00 |
| 0.33 | 0.07 | 0.07 | 0.0016 | 169.76 | 0.00 | 0.00 |
| 0.35 | 0.06 | 0.06 | 0.0017 | 169.79 | 0.00 | 0.00 |
| 0.37 | 0.05 | 0.05 | 0.0018 | 169.83 | 0.00 | 0.00 |
| 0.40 | 0.05 | 0.05 | 0.0019 | 169.85 | 0.00 | 0.00 |
| 0.42 | 0.04 | 0.04 | 0.0019 | 169.88 | 0.00 | 0.00 |
| 0.44 | 0.04 | 0.04 | 0.0020 | 169.90 | 0.00 | 0.00 |
| 0.46 | 0.03 | 0.03 | 0.0020 | 169.92 | 0.00 | 0.00 |
| 0.48 | 0.03 | 0.03 | 0.0021 | 169.94 | 0.00 | 0.00 |
| 0.50 | 0.03 | 0.03 | 0.0022 | 169.95 | 0.00 | 0.00 |
| 0.52 | 0.03 | 0.03 | 0.0022 | 169.97 | 0.00 | 0.00 |
| 0.54 | 0.03 | 0.03 | 0.0023 | 169.98 | 0.00 | 0.00 |
| 0.56 | 0.02 | 0.02 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 0.58 | 0.02 | 0.02 | 0.0023 | 170.01 | 0.00 | 0.00 |
| 0.60 | 0.02 | 0.02 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 0.62 | 0.02 | 0.02 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 0.65 | 0.02 | 0.02 | 0.0024 | 170.04 | 0.00 | 0.00 |
| 0.67 | 0.02 | 0.02 | 0.0025 | 170.06 | 0.00 | 0.00 |
| 0.69 | 0.02 | 0.02 | 0.0025 | 170.07 | 0.00 | 0.00 |
| 0.71 | 0.02 | 0.02 | 0.0025 | 170.08 | 0.00 | 0.00 |
| 0.73 | 0.02 | 0.02 | 0.0026 | 170.08 | 0.00 | 0.00 |
| 0.75 | 0.02 | 0.02 | 0.0026 | 170.09 | 0.00 | 0.00 |
| 0.77 | 0.02 | 0.02 | 0.0026 | 170.10 | 0.00 | 0.00 |
| 0.79 | 0.01 | 0.01 | 0.0026 | 170.11 | 0.00 | 0.00 |
| 0.81 | 0.01 | 0.01 | 0.0027 | 170.12 | 0.00 | 0.00 |
| 0.83 | 0.01 | 0.01 | 0.0027 | 170.13 | 0.00 | 0.00 |
| 0.85 | 0.01 | 0.01 | 0.0027 | 170.14 | 0.00 | 0.00 |
| 0.87 | 0.01 | 0.01 | 0.0027 | 170.14 | 0.00 | 0.00 |
| 0.90 | 0.01 | 0.01 | 0.0028 | 170.15 | 0.00 | 0.00 |
| 0.92 | 0.01 | 0.01 | 0.0028 | 170.16 | 0.00 | 0.00 |
| 0.94 | 0.01 | 0.01 | 0.0028 | 170.16 | 0.00 | 0.00 |
| 0.96 | 0.01 | 0.01 | 0.0028 | 170.17 | 0.00 | 0.00 |
| 0.98 | 0.01 | 0.01 | 0.0028 | 170.18 | 0.00 | 0.00 |
| 1.00 | 0.01 | 0.01 | 0.0029 | 170.18 | 0.00 | 0.00 |
| 1.02 | 0.01 | 0.01 | 0.0029 | 170.19 | 0.00 | 0.00 |

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 1.04 | 0.01 | 0.01 | 0.0029 | 170.20 | 0.00 | 0.00 |
| 1.06 | 0.01 | 0.01 | 0.0029 | 170.20 | 0.00 | 0.00 |
| 1.08 | 0.01 | 0.01 | 0.0029 | 170.21 | 0.00 | 0.00 |
| 1.10 | 0.01 | 0.01 | 0.0029 | 170.22 | 0.00 | 0.00 |
| 1.12 | 0.01 | 0.01 | 0.0030 | 170.22 | 0.00 | 0.00 |
| 1.15 | 0.01 | 0.01 | 0.0030 | 170.23 | 0.00 | 0.00 |
| 1.17 | 0.01 | 0.01 | 0.0030 | 170.23 | 0.00 | 0.00 |
| 1.19 | 0.01 | 0.01 | 0.0030 | 170.24 | 0.00 | 0.00 |
| 1.21 | 0.01 | 0.01 | 0.0030 | 170.25 | 0.00 | 0.00 |
| 1.23 | 0.01 | 0.01 | 0.0031 | 170.25 | 0.00 | 0.00 |
| 1.25 | 0.01 | 0.01 | 0.0031 | 170.26 | 0.00 | 0.00 |
| 1.27 | 0.01 | 0.01 | 0.0031 | 170.26 | 0.00 | 0.00 |
| 1.29 | 0.01 | 0.01 | 0.0031 | 170.27 | 0.00 | 0.00 |
| 1.31 | 0.01 | 0.01 | 0.0031 | 170.28 | 0.00 | 0.00 |
| 1.33 | 0.01 | 0.01 | 0.0031 | 170.28 | 0.00 | 0.00 |
| 1.35 | 0.01 | 0.01 | 0.0032 | 170.29 | 0.00 | 0.00 |
| 1.37 | 0.01 | 0.01 | 0.0032 | 170.29 | 0.00 | 0.00 |
| 1.40 | 0.01 | 0.01 | 0.0032 | 170.30 | 0.00 | 0.00 |
| 1.42 | 0.01 | 0.01 | 0.0032 | 170.30 | 0.00 | 0.00 |
| 1.44 | 0.01 | 0.01 | 0.0032 | 170.31 | 0.00 | 0.00 |
| 1.46 | 0.01 | 0.01 | 0.0032 | 170.31 | 0.00 | 0.00 |
| 1.48 | 0.01 | 0.01 | 0.0033 | 170.32 | 0.00 | 0.00 |
| 1.50 | 0.01 | 0.01 | 0.0033 | 170.32 | 0.00 | 0.00 |
| 1.52 | 0.01 | 0.01 | 0.0033 | 170.33 | 0.00 | 0.00 |
| 1.54 | 0.01 | 0.01 | 0.0033 | 170.33 | 0.00 | 0.00 |
| 1.56 | 0.01 | 0.01 | 0.0033 | 170.34 | 0.00 | 0.00 |
| 1.58 | 0.01 | 0.01 | 0.0033 | 170.34 | 0.00 | 0.00 |
| 1.60 | 0.01 | 0.01 | 0.0033 | 170.35 | 0.00 | 0.00 |
| 1.62 | 0.01 | 0.01 | 0.0034 | 170.35 | 0.00 | 0.00 |
| 1.65 | 0.01 | 0.01 | 0.0034 | 170.36 | 0.00 | 0.00 |
| 1.67 | 0.01 | 0.01 | 0.0034 | 170.36 | 0.00 | 0.00 |
| 1.69 | 0.01 | 0.01 | 0.0034 | 170.37 | 0.00 | 0.00 |
| 1.71 | 0.01 | 0.01 | 0.0034 | 170.37 | 0.00 | 0.00 |
| 1.73 | 0.01 | 0.01 | 0.0034 | 170.38 | 0.00 | 0.00 |
| 1.75 | 0.01 | 0.01 | 0.0034 | 170.38 | 0.00 | 0.00 |
| 1.77 | 0.01 | 0.01 | 0.0035 | 170.39 | 0.00 | 0.00 |
| 1.79 | 0.01 | 0.01 | 0.0035 | 170.39 | 0.00 | 0.00 |
| 1.81 | 0.01 | 0.01 | 0.0035 | 170.39 | 0.00 | 0.00 |
| 1.83 | 0.01 | 0.01 | 0.0035 | 170.40 | 0.00 | 0.00 |
| 1.85 | 0.01 | 0.01 | 0.0035 | 170.40 | 0.00 | 0.00 |
| 1.87 | 0.01 | 0.01 | 0.0035 | 170.41 | 0.00 | 0.00 |
| 1.90 | 0.01 | 0.01 | 0.0035 | 170.41 | 0.00 | 0.00 |
| 1.92 | 0.01 | 0.01 | 0.0035 | 170.42 | 0.00 | 0.00 |
| 1.94 | 0.01 | 0.01 | 0.0036 | 170.42 | 0.00 | 0.00 |
| 1.96 | 0.01 | 0.01 | 0.0036 | 170.42 | 0.00 | 0.00 |
| 1.98 | 0.01 | 0.01 | 0.0036 | 170.43 | 0.00 | 0.00 |
| 2.00 | 0.01 | 0.01 | 0.0036 | 170.43 | 0.00 | 0.00 |
| 2.02 | 0.01 | 0.01 | 0.0036 | 170.44 | 0.00 | 0.00 |
| 2.04 | 0.01 | 0.01 | 0.0036 | 170.44 | 0.00 | 0.00 |
| 2.06 | 0.01 | 0.01 | 0.0036 | 170.44 | 0.00 | 0.00 |
| 2.08 | 0.01 | 0.01 | 0.0036 | 170.45 | 0.00 | 0.00 |

Modified Puls Routing

Inflow Hydrograph: C:\Users\Andrew\Desktop\Jobs\21004\SWMHydrographs\Post\A1C\10.HYD
 Storage/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM1.ES

Basin Bypass Capacity = 0.00 cfs
 Starting Pool Elevation = 169.25 feet
 Time Interval = 0.021 hours

10 year

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 0.00 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.02 | 0.01 | 0.01 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.04 | 0.01 | 0.01 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.06 | 0.02 | 0.02 | 0.0001 | 169.27 | 0.00 | 0.00 |
| 0.08 | 0.03 | 0.03 | 0.0001 | 169.28 | 0.00 | 0.00 |
| 0.10 | 0.04 | 0.04 | 0.0002 | 169.30 | 0.00 | 0.00 |
| 0.12 | 0.04 | 0.04 | 0.0002 | 169.32 | 0.00 | 0.00 |
| 0.15 | 0.05 | 0.05 | 0.0003 | 169.35 | 0.00 | 0.00 |
| 0.17 | 0.05 | 0.05 | 0.0004 | 169.38 | 0.00 | 0.00 |
| 0.19 | 0.07 | 0.07 | 0.0005 | 169.41 | 0.00 | 0.00 |
| 0.21 | 0.09 | 0.09 | 0.0006 | 169.46 | 0.00 | 0.00 |
| 0.23 | 0.11 | 0.11 | 0.0008 | 169.52 | 0.00 | 0.00 |
| 0.25 | 0.13 | 0.13 | 0.0010 | 169.59 | 0.00 | 0.00 |
| 0.27 | 0.12 | 0.12 | 0.0012 | 169.66 | 0.00 | 0.00 |
| 0.29 | 0.10 | 0.10 | 0.0014 | 169.72 | 0.00 | 0.00 |
| 0.31 | 0.09 | 0.09 | 0.0016 | 169.77 | 0.00 | 0.00 |
| 0.33 | 0.08 | 0.08 | 0.0017 | 169.82 | 0.00 | 0.00 |
| 0.35 | 0.07 | 0.07 | 0.0019 | 169.86 | 0.00 | 0.00 |
| 0.37 | 0.06 | 0.06 | 0.0020 | 169.90 | 0.00 | 0.00 |
| 0.40 | 0.05 | 0.05 | 0.0021 | 169.93 | 0.00 | 0.00 |
| 0.42 | 0.04 | 0.04 | 0.0022 | 169.95 | 0.00 | 0.00 |
| 0.44 | 0.04 | 0.04 | 0.0022 | 169.98 | 0.00 | 0.00 |
| 0.46 | 0.04 | 0.04 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 0.48 | 0.04 | 0.04 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 0.50 | 0.04 | 0.04 | 0.0024 | 170.04 | 0.00 | 0.00 |
| 0.52 | 0.03 | 0.03 | 0.0025 | 170.06 | 0.00 | 0.00 |
| 0.54 | 0.03 | 0.03 | 0.0025 | 170.08 | 0.00 | 0.00 |
| 0.56 | 0.03 | 0.03 | 0.0026 | 170.10 | 0.00 | 0.00 |
| 0.58 | 0.03 | 0.03 | 0.0026 | 170.11 | 0.00 | 0.00 |
| 0.60 | 0.02 | 0.02 | 0.0027 | 170.13 | 0.00 | 0.00 |
| 0.62 | 0.02 | 0.02 | 0.0027 | 170.14 | 0.00 | 0.00 |
| 0.65 | 0.02 | 0.02 | 0.0028 | 170.15 | 0.00 | 0.00 |
| 0.67 | 0.02 | 0.02 | 0.0028 | 170.17 | 0.00 | 0.00 |
| 0.69 | 0.02 | 0.02 | 0.0028 | 170.18 | 0.00 | 0.00 |
| 0.71 | 0.02 | 0.02 | 0.0029 | 170.19 | 0.00 | 0.00 |
| 0.73 | 0.02 | 0.02 | 0.0029 | 170.20 | 0.00 | 0.00 |
| 0.75 | 0.02 | 0.02 | 0.0029 | 170.21 | 0.00 | 0.00 |
| 0.77 | 0.02 | 0.02 | 0.0030 | 170.23 | 0.00 | 0.00 |
| 0.79 | 0.02 | 0.02 | 0.0030 | 170.24 | 0.00 | 0.00 |
| 0.81 | 0.02 | 0.02 | 0.0030 | 170.25 | 0.00 | 0.00 |
| 0.83 | 0.02 | 0.02 | 0.0031 | 170.26 | 0.00 | 0.00 |
| 0.85 | 0.02 | 0.02 | 0.0031 | 170.27 | 0.00 | 0.00 |
| 0.87 | 0.02 | 0.02 | 0.0031 | 170.28 | 0.00 | 0.00 |
| 0.90 | 0.02 | 0.02 | 0.0032 | 170.29 | 0.00 | 0.00 |
| 0.92 | 0.02 | 0.02 | 0.0032 | 170.30 | 0.00 | 0.00 |
| 0.94 | 0.02 | 0.02 | 0.0032 | 170.30 | 0.00 | 0.00 |
| 0.96 | 0.02 | 0.02 | 0.0032 | 170.31 | 0.00 | 0.00 |
| 0.98 | 0.01 | 0.01 | 0.0033 | 170.32 | 0.00 | 0.00 |
| 1.00 | 0.01 | 0.01 | 0.0033 | 170.33 | 0.00 | 0.00 |
| 1.02 | 0.01 | 0.01 | 0.0033 | 170.34 | 0.00 | 0.00 |

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|---------------------------|--------------------------------|---------------------------|-------------------------------|-----------------------------------|----------------------------|----------------------------|
| 1.04 | 0.01 | 0.01 | 0.0033 | 170.35 | 0.00 | 0.00 |
| 1.06 | 0.01 | 0.01 | 0.0034 | 170.35 | 0.00 | 0.00 |
| 1.08 | 0.01 | 0.01 | 0.0034 | 170.36 | 0.00 | 0.00 |
| 1.10 | 0.01 | 0.01 | 0.0034 | 170.37 | 0.00 | 0.00 |
| 1.12 | 0.01 | 0.01 | 0.0034 | 170.38 | 0.00 | 0.00 |
| 1.15 | 0.01 | 0.01 | 0.0035 | 170.39 | 0.00 | 0.00 |
| 1.17 | 0.01 | 0.01 | 0.0035 | 170.39 | 0.00 | 0.00 |
| 1.19 | 0.01 | 0.01 | 0.0035 | 170.40 | 0.00 | 0.00 |
| 1.21 | 0.01 | 0.01 | 0.0035 | 170.41 | 0.00 | 0.00 |
| 1.23 | 0.01 | 0.01 | 0.0035 | 170.42 | 0.00 | 0.00 |
| 1.25 | 0.01 | 0.01 | 0.0036 | 170.42 | 0.00 | 0.00 |
| 1.27 | 0.01 | 0.01 | 0.0036 | 170.43 | 0.00 | 0.00 |
| 1.29 | 0.01 | 0.01 | 0.0036 | 170.44 | 0.00 | 0.00 |
| 1.31 | 0.01 | 0.01 | 0.0036 | 170.44 | 0.00 | 0.00 |
| 1.33 | 0.01 | 0.01 | 0.0036 | 170.45 | 0.00 | 0.00 |
| 1.35 | 0.01 | 0.01 | 0.0037 | 170.46 | 0.00 | 0.00 |
| 1.37 | 0.01 | 0.01 | 0.0037 | 170.46 | 0.00 | 0.00 |
| 1.40 | 0.01 | 0.01 | 0.0037 | 170.47 | 0.00 | 0.00 |
| 1.42 | 0.01 | 0.01 | 0.0037 | 170.48 | 0.00 | 0.00 |
| 1.44 | 0.01 | 0.01 | 0.0037 | 170.48 | 0.00 | 0.00 |
| 1.46 | 0.01 | 0.01 | 0.0038 | 170.49 | 0.00 | 0.00 |
| 1.48 | 0.01 | 0.01 | 0.0038 | 170.49 | 0.00 | 0.00 |
| 1.50 | 0.01 | 0.01 | 0.0038 | 170.50 | 0.00 | 0.00 |
| 1.52 | 0.01 | 0.01 | 0.0038 | 170.51 | 0.00 | 0.00 |
| 1.54 | 0.01 | 0.01 | 0.0038 | 170.51 | 0.00 | 0.00 |
| 1.56 | 0.01 | 0.01 | 0.0039 | 170.52 | 0.00 | 0.00 |
| 1.58 | 0.01 | 0.01 | 0.0039 | 170.52 | 0.00 | 0.00 |
| 1.60 | 0.01 | 0.01 | 0.0039 | 170.53 | 0.00 | 0.00 |
| 1.62 | 0.01 | 0.01 | 0.0039 | 170.54 | 0.00 | 0.00 |
| 1.65 | 0.01 | 0.01 | 0.0039 | 170.54 | 0.00 | 0.00 |
| 1.67 | 0.01 | 0.01 | 0.0039 | 170.55 | 0.00 | 0.00 |
| 1.69 | 0.01 | 0.01 | 0.0040 | 170.55 | 0.00 | 0.00 |
| 1.71 | 0.01 | 0.01 | 0.0040 | 170.56 | 0.00 | 0.00 |
| 1.73 | 0.01 | 0.01 | 0.0040 | 170.56 | 0.00 | 0.00 |
| 1.75 | 0.01 | 0.01 | 0.0040 | 170.57 | 0.00 | 0.00 |
| 1.77 | 0.01 | 0.01 | 0.0040 | 170.57 | 0.00 | 0.00 |
| 1.79 | 0.01 | 0.01 | 0.0040 | 170.58 | 0.00 | 0.00 |
| 1.81 | 0.01 | 0.01 | 0.0041 | 170.59 | 0.00 | 0.00 |
| 1.83 | 0.01 | 0.01 | 0.0041 | 170.59 | 0.00 | 0.00 |
| 1.85 | 0.01 | 0.01 | 0.0041 | 170.60 | 0.00 | 0.00 |
| 1.87 | 0.01 | 0.01 | 0.0041 | 170.60 | 0.00 | 0.00 |
| 1.90 | 0.01 | 0.01 | 0.0041 | 170.61 | 0.00 | 0.00 |
| 1.92 | 0.01 | 0.01 | 0.0041 | 170.61 | 0.00 | 0.00 |
| 1.94 | 0.01 | 0.01 | 0.0041 | 170.62 | 0.00 | 0.00 |
| 1.96 | 0.01 | 0.01 | 0.0042 | 170.62 | 0.00 | 0.00 |
| 1.98 | 0.01 | 0.01 | 0.0042 | 170.63 | 0.00 | 0.00 |
| 2.00 | 0.01 | 0.01 | 0.0042 | 170.63 | 0.00 | 0.00 |
| 2.02 | 0.01 | 0.01 | 0.0042 | 170.64 | 0.00 | 0.00 |
| 2.04 | 0.01 | 0.01 | 0.0042 | 170.64 | 0.00 | 0.00 |
| 2.06 | 0.01 | 0.01 | 0.0042 | 170.65 | 0.00 | 0.00 |
| 2.08 | 0.01 | 0.01 | 0.0043 | 170.65 | 0.00 | 0.00 |

Modified Puls Routing

Inflow Hydrograph: C:\Users\Andrew\Desktop\Jobs\21004\SWMHydrographs\Post\A1C\25.HYD
 Storage/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM\1.ES

25 year

Basin Bypass Capacity = 0.00 cfs
 Starting Pool Elevation = 169.25 feet
 Time Interval = 0.021 hours

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 0.00 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.02 | 0.01 | 0.01 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.04 | 0.02 | 0.02 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.06 | 0.03 | 0.03 | 0.0001 | 169.27 | 0.00 | 0.00 |
| 0.08 | 0.03 | 0.03 | 0.0001 | 169.29 | 0.00 | 0.00 |
| 0.10 | 0.04 | 0.04 | 0.0002 | 169.31 | 0.00 | 0.00 |
| 0.12 | 0.05 | 0.05 | 0.0003 | 169.34 | 0.00 | 0.00 |
| 0.15 | 0.06 | 0.06 | 0.0004 | 169.37 | 0.00 | 0.00 |
| 0.17 | 0.07 | 0.07 | 0.0005 | 169.40 | 0.00 | 0.00 |
| 0.19 | 0.09 | 0.09 | 0.0006 | 169.44 | 0.00 | 0.00 |
| 0.21 | 0.11 | 0.11 | 0.0008 | 169.50 | 0.00 | 0.00 |
| 0.23 | 0.13 | 0.13 | 0.0010 | 169.56 | 0.00 | 0.00 |
| 0.25 | 0.15 | 0.15 | 0.0012 | 169.64 | 0.00 | 0.00 |
| 0.27 | 0.13 | 0.13 | 0.0014 | 169.72 | 0.00 | 0.00 |
| 0.29 | 0.12 | 0.12 | 0.0016 | 169.79 | 0.00 | 0.00 |
| 0.31 | 0.10 | 0.10 | 0.0018 | 169.85 | 0.00 | 0.00 |
| 0.33 | 0.09 | 0.09 | 0.0020 | 169.90 | 0.00 | 0.00 |
| 0.35 | 0.08 | 0.08 | 0.0022 | 169.95 | 0.00 | 0.00 |
| 0.37 | 0.07 | 0.07 | 0.0023 | 169.99 | 0.00 | 0.00 |
| 0.40 | 0.06 | 0.06 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 0.42 | 0.05 | 0.05 | 0.0025 | 170.06 | 0.00 | 0.00 |
| 0.44 | 0.05 | 0.05 | 0.0026 | 170.09 | 0.00 | 0.00 |
| 0.46 | 0.05 | 0.05 | 0.0027 | 170.12 | 0.00 | 0.00 |
| 0.48 | 0.04 | 0.04 | 0.0027 | 170.15 | 0.00 | 0.00 |
| 0.50 | 0.04 | 0.04 | 0.0028 | 170.17 | 0.00 | 0.00 |
| 0.52 | 0.04 | 0.04 | 0.0029 | 170.19 | 0.00 | 0.00 |
| 0.54 | 0.04 | 0.04 | 0.0029 | 170.21 | 0.00 | 0.00 |
| 0.56 | 0.03 | 0.03 | 0.0030 | 170.23 | 0.00 | 0.00 |
| 0.58 | 0.03 | 0.03 | 0.0031 | 170.25 | 0.00 | 0.00 |
| 0.60 | 0.03 | 0.03 | 0.0031 | 170.27 | 0.00 | 0.00 |
| 0.62 | 0.03 | 0.03 | 0.0032 | 170.29 | 0.00 | 0.00 |
| 0.65 | 0.03 | 0.03 | 0.0032 | 170.30 | 0.00 | 0.00 |
| 0.67 | 0.03 | 0.03 | 0.0033 | 170.32 | 0.00 | 0.00 |
| 0.69 | 0.03 | 0.03 | 0.0033 | 170.33 | 0.00 | 0.00 |
| 0.71 | 0.02 | 0.02 | 0.0033 | 170.35 | 0.00 | 0.00 |
| 0.73 | 0.02 | 0.02 | 0.0034 | 170.36 | 0.00 | 0.00 |
| 0.75 | 0.02 | 0.02 | 0.0034 | 170.37 | 0.00 | 0.00 |
| 0.77 | 0.02 | 0.02 | 0.0035 | 170.39 | 0.00 | 0.00 |
| 0.79 | 0.02 | 0.02 | 0.0035 | 170.40 | 0.00 | 0.00 |
| 0.81 | 0.02 | 0.02 | 0.0035 | 170.41 | 0.00 | 0.00 |
| 0.83 | 0.02 | 0.02 | 0.0036 | 170.42 | 0.00 | 0.00 |
| 0.85 | 0.02 | 0.02 | 0.0036 | 170.43 | 0.00 | 0.00 |
| 0.87 | 0.02 | 0.02 | 0.0036 | 170.45 | 0.00 | 0.00 |
| 0.90 | 0.02 | 0.02 | 0.0037 | 170.46 | 0.00 | 0.00 |
| 0.92 | 0.02 | 0.02 | 0.0037 | 170.47 | 0.00 | 0.00 |
| 0.94 | 0.02 | 0.02 | 0.0037 | 170.48 | 0.00 | 0.00 |
| 0.96 | 0.02 | 0.02 | 0.0038 | 170.49 | 0.00 | 0.00 |
| 0.98 | 0.02 | 0.02 | 0.0038 | 170.50 | 0.00 | 0.00 |
| 1.00 | 0.02 | 0.02 | 0.0038 | 170.51 | 0.00 | 0.00 |
| 1.02 | 0.02 | 0.02 | 0.0039 | 170.52 | 0.00 | 0.00 |

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 1.04 | 0.02 | 0.02 | 0.0039 | 170.53 | 0.00 | 0.00 |
| 1.06 | 0.02 | 0.02 | 0.0039 | 170.54 | 0.00 | 0.00 |
| 1.08 | 0.01 | 0.01 | 0.0039 | 170.54 | 0.00 | 0.00 |
| 1.10 | 0.01 | 0.01 | 0.0040 | 170.55 | 0.00 | 0.00 |
| 1.12 | 0.01 | 0.01 | 0.0040 | 170.56 | 0.00 | 0.00 |
| 1.15 | 0.01 | 0.01 | 0.0040 | 170.57 | 0.00 | 0.00 |
| 1.17 | 0.01 | 0.01 | 0.0040 | 170.58 | 0.00 | 0.00 |
| 1.19 | 0.01 | 0.01 | 0.0041 | 170.59 | 0.00 | 0.00 |
| 1.21 | 0.01 | 0.01 | 0.0041 | 170.59 | 0.00 | 0.00 |
| 1.23 | 0.01 | 0.01 | 0.0041 | 170.60 | 0.00 | 0.00 |
| 1.25 | 0.01 | 0.01 | 0.0041 | 170.61 | 0.00 | 0.00 |
| 1.27 | 0.01 | 0.01 | 0.0042 | 170.62 | 0.00 | 0.00 |
| 1.29 | 0.01 | 0.01 | 0.0042 | 170.62 | 0.00 | 0.00 |
| 1.31 | 0.01 | 0.01 | 0.0042 | 170.63 | 0.00 | 0.00 |
| 1.33 | 0.01 | 0.01 | 0.0042 | 170.64 | 0.00 | 0.00 |
| 1.35 | 0.01 | 0.01 | 0.0042 | 170.65 | 0.00 | 0.00 |
| 1.37 | 0.01 | 0.01 | 0.0043 | 170.65 | 0.00 | 0.00 |
| 1.40 | 0.01 | 0.01 | 0.0043 | 170.66 | 0.00 | 0.00 |
| 1.42 | 0.01 | 0.01 | 0.0043 | 170.67 | 0.00 | 0.00 |
| 1.44 | 0.01 | 0.01 | 0.0043 | 170.68 | 0.00 | 0.00 |
| 1.46 | 0.01 | 0.01 | 0.0044 | 170.68 | 0.00 | 0.00 |
| 1.48 | 0.01 | 0.01 | 0.0044 | 170.69 | 0.00 | 0.00 |
| 1.50 | 0.01 | 0.01 | 0.0044 | 170.70 | 0.00 | 0.00 |
| 1.52 | 0.01 | 0.01 | 0.0044 | 170.70 | 0.00 | 0.00 |
| 1.54 | 0.01 | 0.01 | 0.0044 | 170.71 | 0.00 | 0.00 |
| 1.56 | 0.01 | 0.01 | 0.0045 | 170.72 | 0.00 | 0.00 |
| 1.58 | 0.01 | 0.01 | 0.0045 | 170.72 | 0.00 | 0.00 |
| 1.60 | 0.01 | 0.01 | 0.0045 | 170.73 | 0.00 | 0.00 |
| 1.62 | 0.01 | 0.01 | 0.0045 | 170.74 | 0.00 | 0.00 |
| 1.65 | 0.01 | 0.01 | 0.0045 | 170.74 | 0.00 | 0.00 |
| 1.67 | 0.01 | 0.01 | 0.0046 | 170.75 | 0.00 | 0.00 |
| 1.69 | 0.01 | 0.01 | 0.0046 | 170.76 | 0.00 | 0.00 |
| 1.71 | 0.01 | 0.01 | 0.0046 | 170.76 | 0.00 | 0.00 |
| 1.73 | 0.01 | 0.01 | 0.0046 | 170.77 | 0.00 | 0.00 |
| 1.75 | 0.01 | 0.01 | 0.0046 | 170.78 | 0.00 | 0.00 |
| 1.77 | 0.01 | 0.01 | 0.0046 | 170.78 | 0.00 | 0.00 |
| 1.79 | 0.01 | 0.01 | 0.0047 | 170.79 | 0.00 | 0.00 |
| 1.81 | 0.01 | 0.01 | 0.0047 | 170.79 | 0.00 | 0.00 |
| 1.83 | 0.01 | 0.01 | 0.0047 | 170.80 | 0.00 | 0.00 |
| 1.85 | 0.01 | 0.01 | 0.0047 | 170.81 | 0.00 | 0.00 |
| 1.87 | 0.01 | 0.01 | 0.0047 | 170.81 | 0.00 | 0.00 |
| 1.90 | 0.01 | 0.01 | 0.0048 | 170.82 | 0.00 | 0.00 |
| 1.92 | 0.01 | 0.01 | 0.0048 | 170.82 | 0.00 | 0.00 |
| 1.94 | 0.01 | 0.01 | 0.0048 | 170.83 | 0.00 | 0.00 |
| 1.96 | 0.01 | 0.01 | 0.0048 | 170.84 | 0.00 | 0.00 |
| 1.98 | 0.01 | 0.01 | 0.0048 | 170.84 | 0.00 | 0.00 |
| 2.00 | 0.01 | 0.01 | 0.0048 | 170.85 | 0.00 | 0.00 |
| 2.02 | 0.01 | 0.01 | 0.0049 | 170.85 | 0.00 | 0.00 |
| 2.04 | 0.01 | 0.01 | 0.0049 | 170.86 | 0.00 | 0.00 |
| 2.06 | 0.01 | 0.01 | 0.0049 | 170.86 | 0.00 | 0.00 |
| 2.08 | 0.01 | 0.01 | 0.0049 | 170.87 | 0.00 | 0.00 |

Modified Puls Routing

Inflow Hydrograph: C:\Users\Andrew\Desktop\Jobs\21004\SWM\Hydrographs\Post\A1C150.HYD
 Storage/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM\1.ES

Basin Bypass Capacity = 0.00 cfs
 Starting Pool Elevation = 169.25 feet
 Time Interval = 0.021 hours

50 year

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 0.00 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.02 | 0.01 | 0.01 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.04 | 0.02 | 0.02 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.06 | 0.03 | 0.03 | 0.0001 | 169.28 | 0.00 | 0.00 |
| 0.08 | 0.04 | 0.04 | 0.0002 | 169.30 | 0.00 | 0.00 |
| 0.10 | 0.05 | 0.05 | 0.0002 | 169.33 | 0.00 | 0.00 |
| 0.12 | 0.06 | 0.06 | 0.0003 | 169.36 | 0.00 | 0.00 |
| 0.15 | 0.07 | 0.07 | 0.0004 | 169.40 | 0.00 | 0.00 |
| 0.17 | 0.08 | 0.08 | 0.0006 | 169.44 | 0.00 | 0.00 |
| 0.19 | 0.10 | 0.10 | 0.0007 | 169.49 | 0.00 | 0.00 |
| 0.21 | 0.12 | 0.12 | 0.0009 | 169.55 | 0.00 | 0.00 |
| 0.23 | 0.14 | 0.14 | 0.0012 | 169.63 | 0.00 | 0.00 |
| 0.25 | 0.16 | 0.16 | 0.0014 | 169.71 | 0.00 | 0.00 |
| 0.27 | 0.15 | 0.15 | 0.0017 | 169.80 | 0.00 | 0.00 |
| 0.29 | 0.14 | 0.14 | 0.0019 | 169.88 | 0.00 | 0.00 |
| 0.31 | 0.12 | 0.12 | 0.0022 | 169.96 | 0.00 | 0.00 |
| 0.33 | 0.11 | 0.11 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 0.35 | 0.10 | 0.10 | 0.0025 | 170.08 | 0.00 | 0.00 |
| 0.37 | 0.09 | 0.09 | 0.0027 | 170.13 | 0.00 | 0.00 |
| 0.40 | 0.08 | 0.08 | 0.0028 | 170.18 | 0.00 | 0.00 |
| 0.42 | 0.06 | 0.06 | 0.0030 | 170.22 | 0.00 | 0.00 |
| 0.44 | 0.06 | 0.06 | 0.0031 | 170.26 | 0.00 | 0.00 |
| 0.46 | 0.06 | 0.06 | 0.0032 | 170.29 | 0.00 | 0.00 |
| 0.48 | 0.05 | 0.05 | 0.0033 | 170.32 | 0.00 | 0.00 |
| 0.50 | 0.05 | 0.05 | 0.0034 | 170.35 | 0.00 | 0.00 |
| 0.52 | 0.05 | 0.05 | 0.0034 | 170.38 | 0.00 | 0.00 |
| 0.54 | 0.04 | 0.04 | 0.0035 | 170.41 | 0.00 | 0.00 |
| 0.56 | 0.04 | 0.04 | 0.0036 | 170.43 | 0.00 | 0.00 |
| 0.58 | 0.04 | 0.04 | 0.0037 | 170.46 | 0.00 | 0.00 |
| 0.60 | 0.04 | 0.04 | 0.0037 | 170.48 | 0.00 | 0.00 |
| 0.62 | 0.04 | 0.04 | 0.0038 | 170.50 | 0.00 | 0.00 |
| 0.65 | 0.03 | 0.03 | 0.0039 | 170.52 | 0.00 | 0.00 |
| 0.67 | 0.03 | 0.03 | 0.0039 | 170.54 | 0.00 | 0.00 |
| 0.69 | 0.03 | 0.03 | 0.0040 | 170.56 | 0.00 | 0.00 |
| 0.71 | 0.03 | 0.03 | 0.0040 | 170.57 | 0.00 | 0.00 |
| 0.73 | 0.03 | 0.03 | 0.0041 | 170.59 | 0.00 | 0.00 |
| 0.75 | 0.03 | 0.03 | 0.0041 | 170.61 | 0.00 | 0.00 |
| 0.77 | 0.03 | 0.03 | 0.0042 | 170.62 | 0.00 | 0.00 |
| 0.79 | 0.03 | 0.03 | 0.0042 | 170.64 | 0.00 | 0.00 |
| 0.81 | 0.03 | 0.03 | 0.0043 | 170.65 | 0.00 | 0.00 |
| 0.83 | 0.03 | 0.03 | 0.0043 | 170.67 | 0.00 | 0.00 |
| 0.85 | 0.02 | 0.02 | 0.0044 | 170.68 | 0.00 | 0.00 |
| 0.87 | 0.02 | 0.02 | 0.0044 | 170.70 | 0.00 | 0.00 |
| 0.90 | 0.02 | 0.02 | 0.0044 | 170.71 | 0.00 | 0.00 |
| 0.92 | 0.02 | 0.02 | 0.0045 | 170.73 | 0.00 | 0.00 |
| 0.94 | 0.02 | 0.02 | 0.0045 | 170.74 | 0.00 | 0.00 |
| 0.96 | 0.02 | 0.02 | 0.0046 | 170.75 | 0.00 | 0.00 |
| 0.98 | 0.02 | 0.02 | 0.0046 | 170.76 | 0.00 | 0.00 |
| 1.00 | 0.02 | 0.02 | 0.0046 | 170.78 | 0.00 | 0.00 |
| 1.02 | 0.02 | 0.02 | 0.0047 | 170.79 | 0.00 | 0.00 |

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|---------------------------|--------------------------------|---------------------------|-------------------------------|-----------------------------------|----------------------------|----------------------------|
| 1.04 | 0.02 | 0.02 | 0.0047 | 170.80 | 0.00 | 0.00 |
| 1.06 | 0.02 | 0.02 | 0.0047 | 170.81 | 0.00 | 0.00 |
| 1.08 | 0.02 | 0.02 | 0.0048 | 170.82 | 0.00 | 0.00 |
| 1.10 | 0.02 | 0.02 | 0.0048 | 170.83 | 0.00 | 0.00 |
| 1.12 | 0.02 | 0.02 | 0.0048 | 170.84 | 0.00 | 0.00 |
| 1.15 | 0.02 | 0.02 | 0.0049 | 170.85 | 0.00 | 0.00 |
| 1.17 | 0.02 | 0.02 | 0.0049 | 170.86 | 0.00 | 0.00 |
| 1.19 | 0.02 | 0.02 | 0.0049 | 170.87 | 0.00 | 0.00 |
| 1.21 | 0.02 | 0.02 | 0.0049 | 170.88 | 0.00 | 0.00 |
| 1.23 | 0.02 | 0.02 | 0.0050 | 170.89 | 0.00 | 0.00 |
| 1.25 | 0.02 | 0.02 | 0.0050 | 170.90 | 0.00 | 0.00 |
| 1.27 | 0.02 | 0.02 | 0.0050 | 170.91 | 0.00 | 0.00 |
| 1.29 | 0.02 | 0.02 | 0.0050 | 170.92 | 0.00 | 0.00 |
| 1.31 | 0.02 | 0.02 | 0.0051 | 170.93 | 0.00 | 0.00 |
| 1.33 | 0.02 | 0.02 | 0.0051 | 170.93 | 0.00 | 0.00 |
| 1.35 | 0.02 | 0.02 | 0.0051 | 170.94 | 0.00 | 0.00 |
| 1.37 | 0.01 | 0.01 | 0.0052 | 170.95 | 0.00 | 0.00 |
| 1.40 | 0.01 | 0.01 | 0.0052 | 170.96 | 0.00 | 0.00 |
| 1.42 | 0.01 | 0.01 | 0.0052 | 170.97 | 0.00 | 0.00 |
| 1.44 | 0.01 | 0.01 | 0.0052 | 170.98 | 0.00 | 0.00 |
| 1.46 | 0.01 | 0.01 | 0.0053 | 170.99 | 0.00 | 0.00 |
| 1.48 | 0.01 | 0.01 | 0.0053 | 170.99 | 0.00 | 0.00 |
| 1.50 | 0.01 | 0.01 | 0.0053 | 171.00 | 0.00 | 0.00 |
| 1.52 | 0.01 | 0.01 | 0.0053 | 171.01 | 0.00 | 0.00 |
| 1.54 | 0.01 | 0.01 | 0.0054 | 171.02 | 0.00 | 0.00 |
| 1.56 | 0.01 | 0.01 | 0.0054 | 171.03 | 0.00 | 0.00 |
| 1.58 | 0.01 | 0.01 | 0.0054 | 171.03 | 0.00 | 0.00 |
| 1.60 | 0.01 | 0.01 | 0.0054 | 171.04 | 0.00 | 0.00 |
| 1.62 | 0.01 | 0.01 | 0.0054 | 171.05 | 0.00 | 0.00 |
| 1.65 | 0.01 | 0.01 | 0.0055 | 171.06 | 0.00 | 0.00 |
| 1.67 | 0.01 | 0.01 | 0.0055 | 171.06 | 0.00 | 0.00 |
| 1.69 | 0.01 | 0.01 | 0.0055 | 171.07 | 0.00 | 0.00 |
| 1.71 | 0.01 | 0.01 | 0.0055 | 171.08 | 0.00 | 0.00 |
| 1.73 | 0.01 | 0.01 | 0.0056 | 171.09 | 0.00 | 0.00 |
| 1.75 | 0.01 | 0.01 | 0.0056 | 171.09 | 0.00 | 0.00 |
| 1.77 | 0.01 | 0.01 | 0.0056 | 171.10 | 0.00 | 0.00 |
| 1.79 | 0.01 | 0.01 | 0.0056 | 171.11 | 0.00 | 0.00 |
| 1.81 | 0.01 | 0.01 | 0.0056 | 171.12 | 0.00 | 0.00 |
| 1.83 | 0.01 | 0.01 | 0.0057 | 171.12 | 0.00 | 0.00 |
| 1.85 | 0.01 | 0.01 | 0.0057 | 171.13 | 0.00 | 0.00 |
| 1.87 | 0.01 | 0.01 | 0.0057 | 171.14 | 0.00 | 0.00 |
| 1.90 | 0.01 | 0.01 | 0.0057 | 171.14 | 0.00 | 0.00 |
| 1.92 | 0.01 | 0.01 | 0.0057 | 171.15 | 0.00 | 0.00 |
| 1.94 | 0.01 | 0.01 | 0.0058 | 171.16 | 0.00 | 0.00 |
| 1.96 | 0.01 | 0.01 | 0.0058 | 171.16 | 0.00 | 0.00 |
| 1.98 | 0.01 | 0.01 | 0.0058 | 171.17 | 0.00 | 0.00 |
| 2.00 | 0.01 | 0.01 | 0.0058 | 171.18 | 0.00 | 0.00 |
| 2.02 | 0.01 | 0.01 | 0.0059 | 171.18 | 0.00 | 0.00 |
| 2.04 | 0.01 | 0.01 | 0.0059 | 171.19 | 0.00 | 0.00 |
| 2.06 | 0.01 | 0.01 | 0.0059 | 171.20 | 0.00 | 0.00 |
| 2.08 | 0.01 | 0.01 | 0.0059 | 171.20 | 0.00 | 0.00 |

Modified Puls Routing

Inflow Hydrograph: C:\Users\Andrew\Desktop\Jobs\21004\SWM\Hydrographs\Post\A1C\100.HYD
 Storage/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM\1.ES

100 year

Basin Bypass Capacity = 0.00 cfs
 Starting Pool Elevation = 169.25 feet
 Time Interval = 0.021 hours

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 0.00 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.02 | 0.01 | 0.01 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.04 | 0.03 | 0.03 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.06 | 0.04 | 0.04 | 0.0001 | 169.28 | 0.00 | 0.00 |
| 0.08 | 0.05 | 0.05 | 0.0002 | 169.31 | 0.00 | 0.00 |
| 0.10 | 0.06 | 0.06 | 0.0003 | 169.34 | 0.00 | 0.00 |
| 0.12 | 0.07 | 0.07 | 0.0004 | 169.38 | 0.00 | 0.00 |
| 0.15 | 0.08 | 0.08 | 0.0005 | 169.42 | 0.00 | 0.00 |
| 0.17 | 0.09 | 0.09 | 0.0007 | 169.47 | 0.00 | 0.00 |
| 0.19 | 0.11 | 0.11 | 0.0008 | 169.53 | 0.00 | 0.00 |
| 0.21 | 0.14 | 0.14 | 0.0011 | 169.60 | 0.00 | 0.00 |
| 0.23 | 0.16 | 0.16 | 0.0013 | 169.68 | 0.00 | 0.00 |
| 0.25 | 0.18 | 0.18 | 0.0016 | 169.77 | 0.00 | 0.00 |
| 0.27 | 0.16 | 0.16 | 0.0019 | 169.87 | 0.00 | 0.00 |
| 0.29 | 0.15 | 0.15 | 0.0022 | 169.96 | 0.00 | 0.00 |
| 0.31 | 0.14 | 0.14 | 0.0024 | 170.04 | 0.00 | 0.00 |
| 0.33 | 0.12 | 0.12 | 0.0026 | 170.11 | 0.00 | 0.00 |
| 0.35 | 0.11 | 0.11 | 0.0028 | 170.18 | 0.00 | 0.00 |
| 0.37 | 0.10 | 0.10 | 0.0030 | 170.24 | 0.00 | 0.00 |
| 0.40 | 0.09 | 0.09 | 0.0032 | 170.29 | 0.00 | 0.00 |
| 0.42 | 0.07 | 0.07 | 0.0033 | 170.34 | 0.00 | 0.00 |
| 0.44 | 0.07 | 0.07 | 0.0034 | 170.38 | 0.00 | 0.00 |
| 0.46 | 0.07 | 0.07 | 0.0036 | 170.42 | 0.00 | 0.00 |
| 0.48 | 0.06 | 0.06 | 0.0037 | 170.46 | 0.00 | 0.00 |
| 0.50 | 0.06 | 0.06 | 0.0038 | 170.49 | 0.00 | 0.00 |
| 0.52 | 0.06 | 0.06 | 0.0039 | 170.53 | 0.00 | 0.00 |
| 0.54 | 0.05 | 0.05 | 0.0040 | 170.56 | 0.00 | 0.00 |
| 0.56 | 0.05 | 0.05 | 0.0041 | 170.59 | 0.00 | 0.00 |
| 0.58 | 0.04 | 0.04 | 0.0041 | 170.61 | 0.00 | 0.00 |
| 0.60 | 0.04 | 0.04 | 0.0042 | 170.64 | 0.00 | 0.00 |
| 0.62 | 0.04 | 0.04 | 0.0043 | 170.66 | 0.00 | 0.00 |
| 0.65 | 0.04 | 0.04 | 0.0044 | 170.69 | 0.00 | 0.00 |
| 0.67 | 0.04 | 0.04 | 0.0044 | 170.71 | 0.00 | 0.00 |
| 0.69 | 0.04 | 0.04 | 0.0045 | 170.73 | 0.00 | 0.00 |
| 0.71 | 0.04 | 0.04 | 0.0046 | 170.75 | 0.00 | 0.00 |
| 0.73 | 0.04 | 0.04 | 0.0046 | 170.77 | 0.00 | 0.00 |
| 0.75 | 0.03 | 0.03 | 0.0047 | 170.79 | 0.00 | 0.00 |
| 0.77 | 0.03 | 0.03 | 0.0047 | 170.81 | 0.00 | 0.00 |
| 0.79 | 0.03 | 0.03 | 0.0048 | 170.83 | 0.00 | 0.00 |
| 0.81 | 0.03 | 0.03 | 0.0049 | 170.85 | 0.00 | 0.00 |
| 0.83 | 0.03 | 0.03 | 0.0049 | 170.87 | 0.00 | 0.00 |
| 0.85 | 0.03 | 0.03 | 0.0050 | 170.89 | 0.00 | 0.00 |
| 0.87 | 0.03 | 0.03 | 0.0050 | 170.90 | 0.00 | 0.00 |
| 0.90 | 0.03 | 0.03 | 0.0051 | 170.92 | 0.00 | 0.00 |
| 0.92 | 0.03 | 0.03 | 0.0051 | 170.94 | 0.00 | 0.00 |
| 0.94 | 0.03 | 0.03 | 0.0052 | 170.95 | 0.00 | 0.00 |
| 0.96 | 0.03 | 0.03 | 0.0052 | 170.97 | 0.00 | 0.00 |
| 0.98 | 0.03 | 0.03 | 0.0052 | 170.98 | 0.00 | 0.00 |
| 1.00 | 0.03 | 0.03 | 0.0053 | 171.00 | 0.00 | 0.00 |
| 1.02 | 0.02 | 0.02 | 0.0053 | 171.01 | 0.00 | 0.00 |

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 1.04 | 0.02 | 0.02 | 0.0054 | 171.03 | 0.00 | 0.00 |
| 1.06 | 0.02 | 0.02 | 0.0054 | 171.04 | 0.00 | 0.00 |
| 1.08 | 0.02 | 0.02 | 0.0055 | 171.05 | 0.00 | 0.00 |
| 1.10 | 0.02 | 0.02 | 0.0055 | 171.07 | 0.00 | 0.00 |
| 1.12 | 0.02 | 0.02 | 0.0055 | 171.08 | 0.00 | 0.00 |
| 1.15 | 0.02 | 0.02 | 0.0056 | 171.09 | 0.00 | 0.00 |
| 1.17 | 0.02 | 0.02 | 0.0056 | 171.10 | 0.00 | 0.00 |
| 1.19 | 0.02 | 0.02 | 0.0056 | 171.11 | 0.00 | 0.00 |
| 1.21 | 0.02 | 0.02 | 0.0057 | 171.12 | 0.00 | 0.00 |
| 1.23 | 0.02 | 0.02 | 0.0057 | 171.14 | 0.00 | 0.00 |
| 1.25 | 0.02 | 0.02 | 0.0057 | 171.15 | 0.00 | 0.00 |
| 1.27 | 0.02 | 0.02 | 0.0058 | 171.16 | 0.00 | 0.00 |
| 1.29 | 0.02 | 0.02 | 0.0058 | 171.17 | 0.00 | 0.00 |
| 1.31 | 0.02 | 0.02 | 0.0058 | 171.18 | 0.00 | 0.00 |
| 1.33 | 0.02 | 0.02 | 0.0059 | 171.19 | 0.00 | 0.00 |
| 1.35 | 0.02 | 0.02 | 0.0059 | 171.20 | 0.00 | 0.00 |
| 1.37 | 0.02 | 0.02 | 0.0059 | 171.21 | 0.00 | 0.00 |
| 1.40 | 0.02 | 0.02 | 0.0060 | 171.22 | 0.00 | 0.00 |
| 1.42 | 0.02 | 0.02 | 0.0060 | 171.23 | 0.00 | 0.00 |
| 1.44 | 0.02 | 0.02 | 0.0060 | 171.24 | 0.00 | 0.00 |
| 1.46 | 0.02 | 0.02 | 0.0061 | 171.25 | 0.00 | 0.00 |
| 1.48 | 0.02 | 0.02 | 0.0061 | 171.26 | 0.00 | 0.00 |
| 1.50 | 0.02 | 0.02 | 0.0061 | 171.27 | 0.00 | 0.00 |
| 1.52 | 0.02 | 0.02 | 0.0061 | 171.28 | 0.00 | 0.00 |
| 1.54 | 0.02 | 0.02 | 0.0062 | 171.29 | 0.00 | 0.00 |
| 1.56 | 0.02 | 0.02 | 0.0062 | 171.30 | 0.00 | 0.00 |
| 1.58 | 0.02 | 0.02 | 0.0062 | 171.31 | 0.00 | 0.00 |
| 1.60 | 0.02 | 0.02 | 0.0063 | 171.32 | 0.00 | 0.00 |
| 1.62 | 0.02 | 0.02 | 0.0063 | 171.33 | 0.00 | 0.00 |
| 1.65 | 0.02 | 0.02 | 0.0063 | 171.34 | 0.00 | 0.00 |
| 1.67 | 0.02 | 0.02 | 0.0063 | 171.35 | 0.00 | 0.00 |
| 1.69 | 0.02 | 0.02 | 0.0064 | 171.36 | 0.00 | 0.00 |
| 1.71 | 0.02 | 0.02 | 0.0064 | 171.37 | 0.00 | 0.00 |
| 1.73 | 0.02 | 0.02 | 0.0064 | 171.37 | 0.00 | 0.00 |
| 1.75 | 0.02 | 0.02 | 0.0064 | 171.38 | 0.00 | 0.00 |
| 1.77 | 0.02 | 0.02 | 0.0065 | 171.39 | 0.00 | 0.00 |
| 1.79 | 0.02 | 0.02 | 0.0065 | 171.40 | 0.00 | 0.00 |
| 1.81 | 0.01 | 0.01 | 0.0065 | 171.41 | 0.00 | 0.00 |
| 1.83 | 0.01 | 0.01 | 0.0066 | 171.42 | 0.00 | 0.00 |
| 1.85 | 0.01 | 0.01 | 0.0066 | 171.43 | 0.00 | 0.00 |
| 1.87 | 0.01 | 0.01 | 0.0066 | 171.43 | 0.00 | 0.00 |
| 1.90 | 0.01 | 0.01 | 0.0066 | 171.44 | 0.00 | 0.00 |
| 1.92 | 0.01 | 0.01 | 0.0067 | 171.45 | 0.00 | 0.00 |
| 1.94 | 0.01 | 0.01 | 0.0067 | 171.46 | 0.00 | 0.00 |
| 1.96 | 0.01 | 0.01 | 0.0067 | 171.47 | 0.00 | 0.00 |
| 1.98 | 0.01 | 0.01 | 0.0067 | 171.48 | 0.00 | 0.00 |
| 2.00 | 0.01 | 0.01 | 0.0067 | 171.48 | 0.00 | 0.00 |
| 2.02 | 0.01 | 0.01 | 0.0068 | 171.49 | 0.00 | 0.00 |
| 2.04 | 0.01 | 0.01 | 0.0068 | 171.50 | 0.00 | 0.00 |
| 2.06 | 0.01 | 0.01 | 0.0068 | 171.82 | 0.00 | 0.00 |
| 2.08 | 0.01 | 0.01 | 0.0068 | 172.18 | 0.00 | 0.00 |

Basin Storage/Elevation Input

| Elevation (ft) | Storage (acre-ft) |
|---------------------------|------------------------------|
| 169.25 | 0.0000 |
| 170.00 | 0.0023 |
| 170.50 | 0.0038 |
| 171.00 | 0.0053 |
| 171.50 | 0.0068 |
| 173.05 | 0.0069 |
| 174.00 | 0.0070 |

Project Files:

Outlet Structure Configuration: C:\Users\Andrew\Desktop\Jobs\21004\SWM1.OSC

Discharge/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM1.EO

Outlet Structure Configuration

Stage 1: Riser Pipe

Crest Elevation = 173.05 feet

Effective Perimeter = 6.28 feet

Effective Flow Area = 3.14 square feet

Discharge Coefficient = 3.1

Basin Rating Curve

| Basin Water Elevation | Basin Outflow (cfs) | Riser Box Water Elevation | Tailwater Elevation (ft) | Outfall Culvert Control | Outfall Culvert Override? |
|--------------------------------------|------------------------------------|--|---|--|--|
| 169.25 | 0.00 | N/A | N/A | N/A | N/A |
| 169.50 | 0.00 | N/A | N/A | N/A | N/A |
| 169.75 | 0.00 | N/A | N/A | N/A | N/A |
| 170.00 | 0.00 | N/A | N/A | N/A | N/A |
| 170.25 | 0.00 | N/A | N/A | N/A | N/A |
| 170.50 | 0.00 | N/A | N/A | N/A | N/A |
| 170.75 | 0.00 | N/A | N/A | N/A | N/A |
| 171.00 | 0.00 | N/A | N/A | N/A | N/A |
| 171.25 | 0.00 | N/A | N/A | N/A | N/A |
| 171.50 | 0.00 | N/A | N/A | N/A | N/A |
| 171.75 | 0.00 | N/A | N/A | N/A | N/A |
| 172.00 | 0.00 | N/A | N/A | N/A | N/A |
| 172.25 | 0.00 | N/A | N/A | N/A | N/A |
| 172.50 | 0.00 | N/A | N/A | N/A | N/A |
| 172.75 | 0.00 | N/A | N/A | N/A | N/A |
| 173.00 | 0.00 | N/A | N/A | N/A | N/A |
| 173.25 | 1.74 | N/A | N/A | N/A | N/A |
| 173.50 | 5.88 | N/A | N/A | N/A | N/A |
| 173.75 | 11.40 | N/A | N/A | N/A | N/A |
| 174.00 | 18.03 | N/A | N/A | N/A | N/A |

Modified Puls Routing

Inflow Hydrograph: C:\Users\Andrew\Desktop\Jobs\21004\SWM\Hydrographs\Post\A2C11.HYD
 Storage/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM\1.ES

1 year

Basin Bypass Capacity = 0.00 cfs
 Starting Pool Elevation = 169.25 feet
 Time Interval = 0.021 hours

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 0.00 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.02 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.04 | 0.01 | 0.01 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.06 | 0.01 | 0.01 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.08 | 0.02 | 0.02 | 0.0001 | 169.27 | 0.00 | 0.00 |
| 0.10 | 0.02 | 0.02 | 0.0001 | 169.28 | 0.00 | 0.00 |
| 0.12 | 0.02 | 0.02 | 0.0001 | 169.29 | 0.00 | 0.00 |
| 0.15 | 0.03 | 0.03 | 0.0002 | 169.31 | 0.00 | 0.00 |
| 0.17 | 0.03 | 0.03 | 0.0002 | 169.32 | 0.00 | 0.00 |
| 0.19 | 0.05 | 0.05 | 0.0003 | 169.35 | 0.00 | 0.00 |
| 0.21 | 0.06 | 0.06 | 0.0004 | 169.38 | 0.00 | 0.00 |
| 0.23 | 0.07 | 0.07 | 0.0005 | 169.41 | 0.00 | 0.00 |
| 0.25 | 0.09 | 0.09 | 0.0006 | 169.46 | 0.00 | 0.00 |
| 0.27 | 0.08 | 0.08 | 0.0008 | 169.50 | 0.00 | 0.00 |
| 0.29 | 0.07 | 0.07 | 0.0009 | 169.54 | 0.00 | 0.00 |
| 0.31 | 0.06 | 0.06 | 0.0010 | 169.58 | 0.00 | 0.00 |
| 0.33 | 0.05 | 0.05 | 0.0011 | 169.61 | 0.00 | 0.00 |
| 0.35 | 0.04 | 0.04 | 0.0012 | 169.63 | 0.00 | 0.00 |
| 0.37 | 0.04 | 0.04 | 0.0012 | 169.66 | 0.00 | 0.00 |
| 0.40 | 0.03 | 0.03 | 0.0013 | 169.67 | 0.00 | 0.00 |
| 0.42 | 0.02 | 0.02 | 0.0013 | 169.69 | 0.00 | 0.00 |
| 0.44 | 0.02 | 0.02 | 0.0014 | 169.70 | 0.00 | 0.00 |
| 0.46 | 0.02 | 0.02 | 0.0014 | 169.72 | 0.00 | 0.00 |
| 0.48 | 0.02 | 0.02 | 0.0015 | 169.73 | 0.00 | 0.00 |
| 0.50 | 0.02 | 0.02 | 0.0015 | 169.74 | 0.00 | 0.00 |
| 0.52 | 0.02 | 0.02 | 0.0015 | 169.75 | 0.00 | 0.00 |
| 0.54 | 0.02 | 0.02 | 0.0016 | 169.76 | 0.00 | 0.00 |
| 0.56 | 0.02 | 0.02 | 0.0016 | 169.77 | 0.00 | 0.00 |
| 0.58 | 0.01 | 0.01 | 0.0016 | 169.78 | 0.00 | 0.00 |
| 0.60 | 0.01 | 0.01 | 0.0016 | 169.79 | 0.00 | 0.00 |
| 0.62 | 0.01 | 0.01 | 0.0017 | 169.79 | 0.00 | 0.00 |
| 0.65 | 0.01 | 0.01 | 0.0017 | 169.80 | 0.00 | 0.00 |
| 0.67 | 0.01 | 0.01 | 0.0017 | 169.81 | 0.00 | 0.00 |
| 0.69 | 0.01 | 0.01 | 0.0017 | 169.81 | 0.00 | 0.00 |
| 0.71 | 0.01 | 0.01 | 0.0017 | 169.82 | 0.00 | 0.00 |
| 0.73 | 0.01 | 0.01 | 0.0018 | 169.83 | 0.00 | 0.00 |
| 0.75 | 0.01 | 0.01 | 0.0018 | 169.83 | 0.00 | 0.00 |
| 0.77 | 0.01 | 0.01 | 0.0018 | 169.84 | 0.00 | 0.00 |
| 0.79 | 0.01 | 0.01 | 0.0018 | 169.84 | 0.00 | 0.00 |
| 0.81 | 0.01 | 0.01 | 0.0018 | 169.85 | 0.00 | 0.00 |
| 0.83 | 0.01 | 0.01 | 0.0018 | 169.85 | 0.00 | 0.00 |
| 0.85 | 0.01 | 0.01 | 0.0019 | 169.86 | 0.00 | 0.00 |
| 0.87 | 0.01 | 0.01 | 0.0019 | 169.86 | 0.00 | 0.00 |
| 0.90 | 0.01 | 0.01 | 0.0019 | 169.87 | 0.00 | 0.00 |
| 0.92 | 0.01 | 0.01 | 0.0019 | 169.87 | 0.00 | 0.00 |
| 0.94 | 0.01 | 0.01 | 0.0019 | 169.88 | 0.00 | 0.00 |
| 0.96 | 0.01 | 0.01 | 0.0019 | 169.88 | 0.00 | 0.00 |
| 0.98 | 0.01 | 0.01 | 0.0019 | 169.89 | 0.00 | 0.00 |
| 1.00 | 0.01 | 0.01 | 0.0020 | 169.89 | 0.00 | 0.00 |
| 1.02 | 0.01 | 0.01 | 0.0020 | 169.89 | 0.00 | 0.00 |

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 1.04 | 0.01 | 0.01 | 0.0020 | 169.90 | 0.00 | 0.00 |
| 1.06 | 0.01 | 0.01 | 0.0020 | 169.90 | 0.00 | 0.00 |
| 1.08 | 0.01 | 0.01 | 0.0020 | 169.91 | 0.00 | 0.00 |
| 1.10 | 0.01 | 0.01 | 0.0020 | 169.91 | 0.00 | 0.00 |
| 1.12 | 0.01 | 0.01 | 0.0020 | 169.91 | 0.00 | 0.00 |
| 1.15 | 0.01 | 0.01 | 0.0020 | 169.92 | 0.00 | 0.00 |
| 1.17 | 0.01 | 0.01 | 0.0021 | 169.92 | 0.00 | 0.00 |
| 1.19 | 0.01 | 0.01 | 0.0021 | 169.92 | 0.00 | 0.00 |
| 1.21 | 0.01 | 0.01 | 0.0021 | 169.93 | 0.00 | 0.00 |
| 1.23 | 0.01 | 0.01 | 0.0021 | 169.93 | 0.00 | 0.00 |
| 1.25 | 0.01 | 0.01 | 0.0021 | 169.93 | 0.00 | 0.00 |
| 1.27 | 0.01 | 0.01 | 0.0021 | 169.94 | 0.00 | 0.00 |
| 1.29 | 0.01 | 0.01 | 0.0021 | 169.94 | 0.00 | 0.00 |
| 1.31 | 0.01 | 0.01 | 0.0021 | 169.94 | 0.00 | 0.00 |
| 1.33 | 0.01 | 0.01 | 0.0021 | 169.95 | 0.00 | 0.00 |
| 1.35 | 0.01 | 0.01 | 0.0021 | 169.95 | 0.00 | 0.00 |
| 1.37 | 0.01 | 0.01 | 0.0022 | 169.95 | 0.00 | 0.00 |
| 1.40 | 0.01 | 0.01 | 0.0022 | 169.95 | 0.00 | 0.00 |
| 1.42 | 0.01 | 0.01 | 0.0022 | 169.96 | 0.00 | 0.00 |
| 1.44 | 0.01 | 0.01 | 0.0022 | 169.96 | 0.00 | 0.00 |
| 1.46 | 0.01 | 0.01 | 0.0022 | 169.96 | 0.00 | 0.00 |
| 1.48 | 0.01 | 0.01 | 0.0022 | 169.97 | 0.00 | 0.00 |
| 1.50 | 0.01 | 0.01 | 0.0022 | 169.97 | 0.00 | 0.00 |
| 1.52 | 0.01 | 0.01 | 0.0022 | 169.97 | 0.00 | 0.00 |
| 1.54 | 0.01 | 0.01 | 0.0022 | 169.98 | 0.00 | 0.00 |
| 1.56 | 0.00 | 0.00 | 0.0022 | 169.98 | 0.00 | 0.00 |
| 1.58 | 0.00 | 0.00 | 0.0022 | 169.98 | 0.00 | 0.00 |
| 1.60 | 0.00 | 0.00 | 0.0022 | 169.98 | 0.00 | 0.00 |
| 1.62 | 0.00 | 0.00 | 0.0023 | 169.99 | 0.00 | 0.00 |
| 1.65 | 0.00 | 0.00 | 0.0023 | 169.99 | 0.00 | 0.00 |
| 1.67 | 0.00 | 0.00 | 0.0023 | 169.99 | 0.00 | 0.00 |
| 1.69 | 0.00 | 0.00 | 0.0023 | 169.99 | 0.00 | 0.00 |
| 1.71 | 0.00 | 0.00 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 1.73 | 0.00 | 0.00 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 1.75 | 0.00 | 0.00 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 1.77 | 0.00 | 0.00 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 1.79 | 0.00 | 0.00 | 0.0023 | 170.01 | 0.00 | 0.00 |
| 1.81 | 0.00 | 0.00 | 0.0023 | 170.01 | 0.00 | 0.00 |
| 1.83 | 0.00 | 0.00 | 0.0023 | 170.01 | 0.00 | 0.00 |
| 1.85 | 0.00 | 0.00 | 0.0023 | 170.02 | 0.00 | 0.00 |
| 1.87 | 0.00 | 0.00 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 1.90 | 0.00 | 0.00 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 1.92 | 0.00 | 0.00 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 1.94 | 0.00 | 0.00 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 1.96 | 0.00 | 0.00 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 1.98 | 0.00 | 0.00 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0.00 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 2.02 | 0.00 | 0.00 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 2.04 | 0.00 | 0.00 | 0.0024 | 170.04 | 0.00 | 0.00 |
| 2.06 | 0.00 | 0.00 | 0.0024 | 170.04 | 0.00 | 0.00 |
| 2.08 | 0.00 | 0.00 | 0.0024 | 170.04 | 0.00 | 0.00 |

Modified Puls Routing

Inflow Hydrograph: C:\Users\Andrew\Desktop\Jobs\21004\SWM\Hydrographs\Post\A2C12.HYD
 Storage/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM1.ES

2 year

Basin Bypass Capacity = 0.00 cfs
 Starting Pool Elevation = 169.25 feet
 Time Interval = 0.021 hours

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 0.00 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.02 | 0.01 | 0.01 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.04 | 0.01 | 0.01 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.06 | 0.02 | 0.02 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.08 | 0.02 | 0.02 | 0.0001 | 169.27 | 0.00 | 0.00 |
| 0.10 | 0.03 | 0.03 | 0.0001 | 169.29 | 0.00 | 0.00 |
| 0.12 | 0.03 | 0.03 | 0.0002 | 169.30 | 0.00 | 0.00 |
| 0.15 | 0.04 | 0.04 | 0.0002 | 169.32 | 0.00 | 0.00 |
| 0.17 | 0.04 | 0.04 | 0.0003 | 169.34 | 0.00 | 0.00 |
| 0.19 | 0.06 | 0.06 | 0.0004 | 169.37 | 0.00 | 0.00 |
| 0.21 | 0.07 | 0.07 | 0.0005 | 169.40 | 0.00 | 0.00 |
| 0.23 | 0.09 | 0.09 | 0.0006 | 169.45 | 0.00 | 0.00 |
| 0.25 | 0.10 | 0.10 | 0.0008 | 169.50 | 0.00 | 0.00 |
| 0.27 | 0.09 | 0.09 | 0.0009 | 169.55 | 0.00 | 0.00 |
| 0.29 | 0.08 | 0.08 | 0.0011 | 169.60 | 0.00 | 0.00 |
| 0.31 | 0.07 | 0.07 | 0.0012 | 169.64 | 0.00 | 0.00 |
| 0.33 | 0.06 | 0.06 | 0.0013 | 169.68 | 0.00 | 0.00 |
| 0.35 | 0.05 | 0.05 | 0.0014 | 169.71 | 0.00 | 0.00 |
| 0.37 | 0.04 | 0.04 | 0.0015 | 169.73 | 0.00 | 0.00 |
| 0.40 | 0.04 | 0.04 | 0.0015 | 169.75 | 0.00 | 0.00 |
| 0.42 | 0.03 | 0.03 | 0.0016 | 169.77 | 0.00 | 0.00 |
| 0.44 | 0.03 | 0.03 | 0.0017 | 169.79 | 0.00 | 0.00 |
| 0.46 | 0.03 | 0.03 | 0.0017 | 169.81 | 0.00 | 0.00 |
| 0.48 | 0.03 | 0.03 | 0.0018 | 169.82 | 0.00 | 0.00 |
| 0.50 | 0.03 | 0.03 | 0.0018 | 169.84 | 0.00 | 0.00 |
| 0.52 | 0.02 | 0.02 | 0.0018 | 169.85 | 0.00 | 0.00 |
| 0.54 | 0.02 | 0.02 | 0.0019 | 169.86 | 0.00 | 0.00 |
| 0.56 | 0.02 | 0.02 | 0.0019 | 169.87 | 0.00 | 0.00 |
| 0.58 | 0.02 | 0.02 | 0.0019 | 169.88 | 0.00 | 0.00 |
| 0.60 | 0.02 | 0.02 | 0.0020 | 169.89 | 0.00 | 0.00 |
| 0.62 | 0.02 | 0.02 | 0.0020 | 169.90 | 0.00 | 0.00 |
| 0.65 | 0.02 | 0.02 | 0.0020 | 169.91 | 0.00 | 0.00 |
| 0.67 | 0.02 | 0.02 | 0.0021 | 169.92 | 0.00 | 0.00 |
| 0.69 | 0.02 | 0.02 | 0.0021 | 169.93 | 0.00 | 0.00 |
| 0.71 | 0.01 | 0.01 | 0.0021 | 169.94 | 0.00 | 0.00 |
| 0.73 | 0.01 | 0.01 | 0.0021 | 169.95 | 0.00 | 0.00 |
| 0.75 | 0.01 | 0.01 | 0.0022 | 169.96 | 0.00 | 0.00 |
| 0.77 | 0.01 | 0.01 | 0.0022 | 169.96 | 0.00 | 0.00 |
| 0.79 | 0.01 | 0.01 | 0.0022 | 169.97 | 0.00 | 0.00 |
| 0.81 | 0.01 | 0.01 | 0.0022 | 169.98 | 0.00 | 0.00 |
| 0.83 | 0.01 | 0.01 | 0.0023 | 169.98 | 0.00 | 0.00 |
| 0.85 | 0.01 | 0.01 | 0.0023 | 169.99 | 0.00 | 0.00 |
| 0.87 | 0.01 | 0.01 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 0.90 | 0.01 | 0.01 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 0.92 | 0.01 | 0.01 | 0.0023 | 170.01 | 0.00 | 0.00 |
| 0.94 | 0.01 | 0.01 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 0.96 | 0.01 | 0.01 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 0.98 | 0.01 | 0.01 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 1.00 | 0.01 | 0.01 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 1.02 | 0.01 | 0.01 | 0.0024 | 170.04 | 0.00 | 0.00 |

08

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 1.04 | 0.01 | 0.01 | 0.0024 | 170.05 | 0.00 | 0.00 |
| 1.06 | 0.01 | 0.01 | 0.0025 | 170.05 | 0.00 | 0.00 |
| 1.08 | 0.01 | 0.01 | 0.0025 | 170.06 | 0.00 | 0.00 |
| 1.10 | 0.01 | 0.01 | 0.0025 | 170.06 | 0.00 | 0.00 |
| 1.12 | 0.01 | 0.01 | 0.0025 | 170.07 | 0.00 | 0.00 |
| 1.15 | 0.01 | 0.01 | 0.0025 | 170.07 | 0.00 | 0.00 |
| 1.17 | 0.01 | 0.01 | 0.0025 | 170.08 | 0.00 | 0.00 |
| 1.19 | 0.01 | 0.01 | 0.0025 | 170.08 | 0.00 | 0.00 |
| 1.21 | 0.01 | 0.01 | 0.0026 | 170.08 | 0.00 | 0.00 |
| 1.23 | 0.01 | 0.01 | 0.0026 | 170.09 | 0.00 | 0.00 |
| 1.25 | 0.01 | 0.01 | 0.0026 | 170.09 | 0.00 | 0.00 |
| 1.27 | 0.01 | 0.01 | 0.0026 | 170.10 | 0.00 | 0.00 |
| 1.29 | 0.01 | 0.01 | 0.0026 | 170.10 | 0.00 | 0.00 |
| 1.31 | 0.01 | 0.01 | 0.0026 | 170.11 | 0.00 | 0.00 |
| 1.33 | 0.01 | 0.01 | 0.0026 | 170.11 | 0.00 | 0.00 |
| 1.35 | 0.01 | 0.01 | 0.0026 | 170.12 | 0.00 | 0.00 |
| 1.37 | 0.01 | 0.01 | 0.0027 | 170.12 | 0.00 | 0.00 |
| 1.40 | 0.01 | 0.01 | 0.0027 | 170.12 | 0.00 | 0.00 |
| 1.42 | 0.01 | 0.01 | 0.0027 | 170.13 | 0.00 | 0.00 |
| 1.44 | 0.01 | 0.01 | 0.0027 | 170.13 | 0.00 | 0.00 |
| 1.46 | 0.01 | 0.01 | 0.0027 | 170.14 | 0.00 | 0.00 |
| 1.48 | 0.01 | 0.01 | 0.0027 | 170.14 | 0.00 | 0.00 |
| 1.50 | 0.01 | 0.01 | 0.0027 | 170.14 | 0.00 | 0.00 |
| 1.52 | 0.01 | 0.01 | 0.0027 | 170.15 | 0.00 | 0.00 |
| 1.54 | 0.01 | 0.01 | 0.0028 | 170.15 | 0.00 | 0.00 |
| 1.56 | 0.01 | 0.01 | 0.0028 | 170.15 | 0.00 | 0.00 |
| 1.58 | 0.01 | 0.01 | 0.0028 | 170.16 | 0.00 | 0.00 |
| 1.60 | 0.01 | 0.01 | 0.0028 | 170.16 | 0.00 | 0.00 |
| 1.62 | 0.01 | 0.01 | 0.0028 | 170.17 | 0.00 | 0.00 |
| 1.65 | 0.01 | 0.01 | 0.0028 | 170.17 | 0.00 | 0.00 |
| 1.67 | 0.01 | 0.01 | 0.0028 | 170.17 | 0.00 | 0.00 |
| 1.69 | 0.01 | 0.01 | 0.0028 | 170.18 | 0.00 | 0.00 |
| 1.71 | 0.01 | 0.01 | 0.0028 | 170.18 | 0.00 | 0.00 |
| 1.73 | 0.01 | 0.01 | 0.0029 | 170.18 | 0.00 | 0.00 |
| 1.75 | 0.01 | 0.01 | 0.0029 | 170.19 | 0.00 | 0.00 |
| 1.77 | 0.01 | 0.01 | 0.0029 | 170.19 | 0.00 | 0.00 |
| 1.79 | 0.01 | 0.01 | 0.0029 | 170.19 | 0.00 | 0.00 |
| 1.81 | 0.01 | 0.01 | 0.0029 | 170.20 | 0.00 | 0.00 |
| 1.83 | 0.01 | 0.01 | 0.0029 | 170.20 | 0.00 | 0.00 |
| 1.85 | 0.01 | 0.01 | 0.0029 | 170.20 | 0.00 | 0.00 |
| 1.87 | 0.01 | 0.01 | 0.0029 | 170.21 | 0.00 | 0.00 |
| 1.90 | 0.01 | 0.01 | 0.0029 | 170.21 | 0.00 | 0.00 |
| 1.92 | 0.01 | 0.01 | 0.0029 | 170.21 | 0.00 | 0.00 |
| 1.94 | 0.01 | 0.01 | 0.0029 | 170.22 | 0.00 | 0.00 |
| 1.96 | 0.01 | 0.01 | 0.0030 | 170.22 | 0.00 | 0.00 |
| 1.98 | 0.01 | 0.01 | 0.0030 | 170.22 | 0.00 | 0.00 |
| 2.00 | 0.01 | 0.01 | 0.0030 | 170.23 | 0.00 | 0.00 |
| 2.02 | 0.01 | 0.01 | 0.0030 | 170.23 | 0.00 | 0.00 |
| 2.04 | 0.01 | 0.01 | 0.0030 | 170.23 | 0.00 | 0.00 |
| 2.06 | 0.01 | 0.01 | 0.0030 | 170.24 | 0.00 | 0.00 |
| 2.08 | 0.01 | 0.01 | 0.0030 | 170.24 | 0.00 | 0.00 |

Modified Puls Routing

Inflow Hydrograph: C:\Users\Andrew\Desktop\Jobs\21004\SWMHydrographs\Post\A2C15.HYD
 Storage/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM1.ES

5 year

Basin Bypass Capacity = 0.00 cfs
 Starting Pool Elevation = 169.25 feet
 Time Interval = 0.021 hours

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 0.00 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.02 | 0.01 | 0.01 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.04 | 0.01 | 0.01 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.06 | 0.02 | 0.02 | 0.0000 | 169.27 | 0.00 | 0.00 |
| 0.08 | 0.02 | 0.02 | 0.0001 | 169.28 | 0.00 | 0.00 |
| 0.10 | 0.03 | 0.03 | 0.0001 | 169.29 | 0.00 | 0.00 |
| 0.12 | 0.04 | 0.04 | 0.0002 | 169.31 | 0.00 | 0.00 |
| 0.15 | 0.04 | 0.04 | 0.0003 | 169.33 | 0.00 | 0.00 |
| 0.17 | 0.05 | 0.05 | 0.0003 | 169.36 | 0.00 | 0.00 |
| 0.19 | 0.07 | 0.07 | 0.0004 | 169.39 | 0.00 | 0.00 |
| 0.21 | 0.08 | 0.08 | 0.0006 | 169.43 | 0.00 | 0.00 |
| 0.23 | 0.10 | 0.10 | 0.0007 | 169.49 | 0.00 | 0.00 |
| 0.25 | 0.12 | 0.12 | 0.0009 | 169.55 | 0.00 | 0.00 |
| 0.27 | 0.11 | 0.11 | 0.0011 | 169.61 | 0.00 | 0.00 |
| 0.29 | 0.09 | 0.09 | 0.0013 | 169.67 | 0.00 | 0.00 |
| 0.31 | 0.08 | 0.08 | 0.0014 | 169.72 | 0.00 | 0.00 |
| 0.33 | 0.07 | 0.07 | 0.0016 | 169.76 | 0.00 | 0.00 |
| 0.35 | 0.06 | 0.06 | 0.0017 | 169.79 | 0.00 | 0.00 |
| 0.37 | 0.05 | 0.05 | 0.0018 | 169.83 | 0.00 | 0.00 |
| 0.40 | 0.05 | 0.05 | 0.0019 | 169.85 | 0.00 | 0.00 |
| 0.42 | 0.04 | 0.04 | 0.0019 | 169.88 | 0.00 | 0.00 |
| 0.44 | 0.04 | 0.04 | 0.0020 | 169.90 | 0.00 | 0.00 |
| 0.46 | 0.03 | 0.03 | 0.0020 | 169.92 | 0.00 | 0.00 |
| 0.48 | 0.03 | 0.03 | 0.0021 | 169.94 | 0.00 | 0.00 |
| 0.50 | 0.03 | 0.03 | 0.0022 | 169.95 | 0.00 | 0.00 |
| 0.52 | 0.03 | 0.03 | 0.0022 | 169.97 | 0.00 | 0.00 |
| 0.54 | 0.03 | 0.03 | 0.0023 | 169.98 | 0.00 | 0.00 |
| 0.56 | 0.02 | 0.02 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 0.58 | 0.02 | 0.02 | 0.0023 | 170.01 | 0.00 | 0.00 |
| 0.60 | 0.02 | 0.02 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 0.62 | 0.02 | 0.02 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 0.65 | 0.02 | 0.02 | 0.0024 | 170.04 | 0.00 | 0.00 |
| 0.67 | 0.02 | 0.02 | 0.0025 | 170.06 | 0.00 | 0.00 |
| 0.69 | 0.02 | 0.02 | 0.0025 | 170.07 | 0.00 | 0.00 |
| 0.71 | 0.02 | 0.02 | 0.0025 | 170.08 | 0.00 | 0.00 |
| 0.73 | 0.02 | 0.02 | 0.0026 | 170.08 | 0.00 | 0.00 |
| 0.75 | 0.02 | 0.02 | 0.0026 | 170.09 | 0.00 | 0.00 |
| 0.77 | 0.02 | 0.02 | 0.0026 | 170.10 | 0.00 | 0.00 |
| 0.79 | 0.01 | 0.01 | 0.0026 | 170.11 | 0.00 | 0.00 |
| 0.81 | 0.01 | 0.01 | 0.0027 | 170.12 | 0.00 | 0.00 |
| 0.83 | 0.01 | 0.01 | 0.0027 | 170.13 | 0.00 | 0.00 |
| 0.85 | 0.01 | 0.01 | 0.0027 | 170.14 | 0.00 | 0.00 |
| 0.87 | 0.01 | 0.01 | 0.0027 | 170.14 | 0.00 | 0.00 |
| 0.90 | 0.01 | 0.01 | 0.0028 | 170.15 | 0.00 | 0.00 |
| 0.92 | 0.01 | 0.01 | 0.0028 | 170.16 | 0.00 | 0.00 |
| 0.94 | 0.01 | 0.01 | 0.0028 | 170.16 | 0.00 | 0.00 |
| 0.96 | 0.01 | 0.01 | 0.0028 | 170.17 | 0.00 | 0.00 |
| 0.98 | 0.01 | 0.01 | 0.0028 | 170.18 | 0.00 | 0.00 |
| 1.00 | 0.01 | 0.01 | 0.0029 | 170.18 | 0.00 | 0.00 |
| 1.02 | 0.01 | 0.01 | 0.0029 | 170.19 | 0.00 | 0.00 |

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 1.04 | 0.01 | 0.01 | 0.0029 | 170.20 | 0.00 | 0.00 |
| 1.06 | 0.01 | 0.01 | 0.0029 | 170.20 | 0.00 | 0.00 |
| 1.08 | 0.01 | 0.01 | 0.0029 | 170.21 | 0.00 | 0.00 |
| 1.10 | 0.01 | 0.01 | 0.0029 | 170.22 | 0.00 | 0.00 |
| 1.12 | 0.01 | 0.01 | 0.0030 | 170.22 | 0.00 | 0.00 |
| 1.15 | 0.01 | 0.01 | 0.0030 | 170.23 | 0.00 | 0.00 |
| 1.17 | 0.01 | 0.01 | 0.0030 | 170.23 | 0.00 | 0.00 |
| 1.19 | 0.01 | 0.01 | 0.0030 | 170.24 | 0.00 | 0.00 |
| 1.21 | 0.01 | 0.01 | 0.0030 | 170.25 | 0.00 | 0.00 |
| 1.23 | 0.01 | 0.01 | 0.0031 | 170.25 | 0.00 | 0.00 |
| 1.25 | 0.01 | 0.01 | 0.0031 | 170.26 | 0.00 | 0.00 |
| 1.27 | 0.01 | 0.01 | 0.0031 | 170.26 | 0.00 | 0.00 |
| 1.29 | 0.01 | 0.01 | 0.0031 | 170.27 | 0.00 | 0.00 |
| 1.31 | 0.01 | 0.01 | 0.0031 | 170.28 | 0.00 | 0.00 |
| 1.33 | 0.01 | 0.01 | 0.0031 | 170.28 | 0.00 | 0.00 |
| 1.35 | 0.01 | 0.01 | 0.0032 | 170.29 | 0.00 | 0.00 |
| 1.37 | 0.01 | 0.01 | 0.0032 | 170.29 | 0.00 | 0.00 |
| 1.40 | 0.01 | 0.01 | 0.0032 | 170.30 | 0.00 | 0.00 |
| 1.42 | 0.01 | 0.01 | 0.0032 | 170.30 | 0.00 | 0.00 |
| 1.44 | 0.01 | 0.01 | 0.0032 | 170.31 | 0.00 | 0.00 |
| 1.46 | 0.01 | 0.01 | 0.0032 | 170.31 | 0.00 | 0.00 |
| 1.48 | 0.01 | 0.01 | 0.0033 | 170.32 | 0.00 | 0.00 |
| 1.50 | 0.01 | 0.01 | 0.0033 | 170.32 | 0.00 | 0.00 |
| 1.52 | 0.01 | 0.01 | 0.0033 | 170.33 | 0.00 | 0.00 |
| 1.54 | 0.01 | 0.01 | 0.0033 | 170.33 | 0.00 | 0.00 |
| 1.56 | 0.01 | 0.01 | 0.0033 | 170.34 | 0.00 | 0.00 |
| 1.58 | 0.01 | 0.01 | 0.0033 | 170.34 | 0.00 | 0.00 |
| 1.60 | 0.01 | 0.01 | 0.0033 | 170.35 | 0.00 | 0.00 |
| 1.62 | 0.01 | 0.01 | 0.0034 | 170.35 | 0.00 | 0.00 |
| 1.65 | 0.01 | 0.01 | 0.0034 | 170.36 | 0.00 | 0.00 |
| 1.67 | 0.01 | 0.01 | 0.0034 | 170.36 | 0.00 | 0.00 |
| 1.69 | 0.01 | 0.01 | 0.0034 | 170.37 | 0.00 | 0.00 |
| 1.71 | 0.01 | 0.01 | 0.0034 | 170.37 | 0.00 | 0.00 |
| 1.73 | 0.01 | 0.01 | 0.0034 | 170.38 | 0.00 | 0.00 |
| 1.75 | 0.01 | 0.01 | 0.0034 | 170.38 | 0.00 | 0.00 |
| 1.77 | 0.01 | 0.01 | 0.0035 | 170.39 | 0.00 | 0.00 |
| 1.79 | 0.01 | 0.01 | 0.0035 | 170.39 | 0.00 | 0.00 |
| 1.81 | 0.01 | 0.01 | 0.0035 | 170.39 | 0.00 | 0.00 |
| 1.83 | 0.01 | 0.01 | 0.0035 | 170.40 | 0.00 | 0.00 |
| 1.85 | 0.01 | 0.01 | 0.0035 | 170.40 | 0.00 | 0.00 |
| 1.87 | 0.01 | 0.01 | 0.0035 | 170.41 | 0.00 | 0.00 |
| 1.90 | 0.01 | 0.01 | 0.0035 | 170.41 | 0.00 | 0.00 |
| 1.92 | 0.01 | 0.01 | 0.0035 | 170.42 | 0.00 | 0.00 |
| 1.94 | 0.01 | 0.01 | 0.0036 | 170.42 | 0.00 | 0.00 |
| 1.96 | 0.01 | 0.01 | 0.0036 | 170.42 | 0.00 | 0.00 |
| 1.98 | 0.01 | 0.01 | 0.0036 | 170.43 | 0.00 | 0.00 |
| 2.00 | 0.01 | 0.01 | 0.0036 | 170.43 | 0.00 | 0.00 |
| 2.02 | 0.01 | 0.01 | 0.0036 | 170.44 | 0.00 | 0.00 |
| 2.04 | 0.01 | 0.01 | 0.0036 | 170.44 | 0.00 | 0.00 |
| 2.06 | 0.01 | 0.01 | 0.0036 | 170.44 | 0.00 | 0.00 |
| 2.08 | 0.01 | 0.01 | 0.0036 | 170.45 | 0.00 | 0.00 |

Modified Puls Routing

Inflow Hydrograph: C:\Users\Andrew\Desktop\Jobs\21004\SWM\Hydrographs\Post\A2C\10.HYD
 Storage/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM\1.ES

10 year

Basin Bypass Capacity = 0.00 cfs
 Starting Pool Elevation = 169.25 feet
 Time Interval = 0.021 hours

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 0.00 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.02 | 0.01 | 0.01 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.04 | 0.01 | 0.01 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.06 | 0.02 | 0.02 | 0.0001 | 169.27 | 0.00 | 0.00 |
| 0.08 | 0.03 | 0.03 | 0.0001 | 169.28 | 0.00 | 0.00 |
| 0.10 | 0.04 | 0.04 | 0.0002 | 169.30 | 0.00 | 0.00 |
| 0.12 | 0.04 | 0.04 | 0.0002 | 169.32 | 0.00 | 0.00 |
| 0.15 | 0.05 | 0.05 | 0.0003 | 169.35 | 0.00 | 0.00 |
| 0.17 | 0.05 | 0.05 | 0.0004 | 169.38 | 0.00 | 0.00 |
| 0.19 | 0.07 | 0.07 | 0.0005 | 169.41 | 0.00 | 0.00 |
| 0.21 | 0.09 | 0.09 | 0.0006 | 169.46 | 0.00 | 0.00 |
| 0.23 | 0.11 | 0.11 | 0.0008 | 169.52 | 0.00 | 0.00 |
| 0.25 | 0.13 | 0.13 | 0.0010 | 169.59 | 0.00 | 0.00 |
| 0.27 | 0.12 | 0.12 | 0.0012 | 169.66 | 0.00 | 0.00 |
| 0.29 | 0.10 | 0.10 | 0.0014 | 169.72 | 0.00 | 0.00 |
| 0.31 | 0.09 | 0.09 | 0.0016 | 169.77 | 0.00 | 0.00 |
| 0.33 | 0.08 | 0.08 | 0.0017 | 169.82 | 0.00 | 0.00 |
| 0.35 | 0.07 | 0.07 | 0.0019 | 169.86 | 0.00 | 0.00 |
| 0.37 | 0.06 | 0.06 | 0.0020 | 169.90 | 0.00 | 0.00 |
| 0.40 | 0.05 | 0.05 | 0.0021 | 169.93 | 0.00 | 0.00 |
| 0.42 | 0.04 | 0.04 | 0.0022 | 169.95 | 0.00 | 0.00 |
| 0.44 | 0.04 | 0.04 | 0.0022 | 169.98 | 0.00 | 0.00 |
| 0.46 | 0.04 | 0.04 | 0.0023 | 170.00 | 0.00 | 0.00 |
| 0.48 | 0.04 | 0.04 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 0.50 | 0.04 | 0.04 | 0.0024 | 170.04 | 0.00 | 0.00 |
| 0.52 | 0.03 | 0.03 | 0.0025 | 170.06 | 0.00 | 0.00 |
| 0.54 | 0.03 | 0.03 | 0.0025 | 170.08 | 0.00 | 0.00 |
| 0.56 | 0.03 | 0.03 | 0.0026 | 170.10 | 0.00 | 0.00 |
| 0.58 | 0.03 | 0.03 | 0.0026 | 170.11 | 0.00 | 0.00 |
| 0.60 | 0.02 | 0.02 | 0.0027 | 170.13 | 0.00 | 0.00 |
| 0.62 | 0.02 | 0.02 | 0.0027 | 170.14 | 0.00 | 0.00 |
| 0.65 | 0.02 | 0.02 | 0.0028 | 170.15 | 0.00 | 0.00 |
| 0.67 | 0.02 | 0.02 | 0.0028 | 170.17 | 0.00 | 0.00 |
| 0.69 | 0.02 | 0.02 | 0.0028 | 170.18 | 0.00 | 0.00 |
| 0.71 | 0.02 | 0.02 | 0.0029 | 170.19 | 0.00 | 0.00 |
| 0.73 | 0.02 | 0.02 | 0.0029 | 170.20 | 0.00 | 0.00 |
| 0.75 | 0.02 | 0.02 | 0.0029 | 170.21 | 0.00 | 0.00 |
| 0.77 | 0.02 | 0.02 | 0.0030 | 170.23 | 0.00 | 0.00 |
| 0.79 | 0.02 | 0.02 | 0.0030 | 170.24 | 0.00 | 0.00 |
| 0.81 | 0.02 | 0.02 | 0.0030 | 170.25 | 0.00 | 0.00 |
| 0.83 | 0.02 | 0.02 | 0.0031 | 170.26 | 0.00 | 0.00 |
| 0.85 | 0.02 | 0.02 | 0.0031 | 170.27 | 0.00 | 0.00 |
| 0.87 | 0.02 | 0.02 | 0.0031 | 170.28 | 0.00 | 0.00 |
| 0.90 | 0.02 | 0.02 | 0.0032 | 170.29 | 0.00 | 0.00 |
| 0.92 | 0.02 | 0.02 | 0.0032 | 170.30 | 0.00 | 0.00 |
| 0.94 | 0.02 | 0.02 | 0.0032 | 170.30 | 0.00 | 0.00 |
| 0.96 | 0.02 | 0.02 | 0.0032 | 170.31 | 0.00 | 0.00 |
| 0.98 | 0.01 | 0.01 | 0.0033 | 170.32 | 0.00 | 0.00 |
| 1.00 | 0.01 | 0.01 | 0.0033 | 170.33 | 0.00 | 0.00 |
| 1.02 | 0.01 | 0.01 | 0.0033 | 170.34 | 0.00 | 0.00 |

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 1.04 | 0.01 | 0.01 | 0.0033 | 170.35 | 0.00 | 0.00 |
| 1.06 | 0.01 | 0.01 | 0.0034 | 170.35 | 0.00 | 0.00 |
| 1.08 | 0.01 | 0.01 | 0.0034 | 170.36 | 0.00 | 0.00 |
| 1.10 | 0.01 | 0.01 | 0.0034 | 170.37 | 0.00 | 0.00 |
| 1.12 | 0.01 | 0.01 | 0.0034 | 170.38 | 0.00 | 0.00 |
| 1.15 | 0.01 | 0.01 | 0.0035 | 170.39 | 0.00 | 0.00 |
| 1.17 | 0.01 | 0.01 | 0.0035 | 170.39 | 0.00 | 0.00 |
| 1.19 | 0.01 | 0.01 | 0.0035 | 170.40 | 0.00 | 0.00 |
| 1.21 | 0.01 | 0.01 | 0.0035 | 170.41 | 0.00 | 0.00 |
| 1.23 | 0.01 | 0.01 | 0.0035 | 170.42 | 0.00 | 0.00 |
| 1.25 | 0.01 | 0.01 | 0.0036 | 170.42 | 0.00 | 0.00 |
| 1.27 | 0.01 | 0.01 | 0.0036 | 170.43 | 0.00 | 0.00 |
| 1.29 | 0.01 | 0.01 | 0.0036 | 170.44 | 0.00 | 0.00 |
| 1.31 | 0.01 | 0.01 | 0.0036 | 170.44 | 0.00 | 0.00 |
| 1.33 | 0.01 | 0.01 | 0.0036 | 170.45 | 0.00 | 0.00 |
| 1.35 | 0.01 | 0.01 | 0.0037 | 170.46 | 0.00 | 0.00 |
| 1.37 | 0.01 | 0.01 | 0.0037 | 170.46 | 0.00 | 0.00 |
| 1.40 | 0.01 | 0.01 | 0.0037 | 170.47 | 0.00 | 0.00 |
| 1.42 | 0.01 | 0.01 | 0.0037 | 170.48 | 0.00 | 0.00 |
| 1.44 | 0.01 | 0.01 | 0.0037 | 170.48 | 0.00 | 0.00 |
| 1.46 | 0.01 | 0.01 | 0.0038 | 170.49 | 0.00 | 0.00 |
| 1.48 | 0.01 | 0.01 | 0.0038 | 170.49 | 0.00 | 0.00 |
| 1.50 | 0.01 | 0.01 | 0.0038 | 170.50 | 0.00 | 0.00 |
| 1.52 | 0.01 | 0.01 | 0.0038 | 170.51 | 0.00 | 0.00 |
| 1.54 | 0.01 | 0.01 | 0.0038 | 170.51 | 0.00 | 0.00 |
| 1.56 | 0.01 | 0.01 | 0.0039 | 170.52 | 0.00 | 0.00 |
| 1.58 | 0.01 | 0.01 | 0.0039 | 170.52 | 0.00 | 0.00 |
| 1.60 | 0.01 | 0.01 | 0.0039 | 170.53 | 0.00 | 0.00 |
| 1.62 | 0.01 | 0.01 | 0.0039 | 170.54 | 0.00 | 0.00 |
| 1.65 | 0.01 | 0.01 | 0.0039 | 170.54 | 0.00 | 0.00 |
| 1.67 | 0.01 | 0.01 | 0.0039 | 170.55 | 0.00 | 0.00 |
| 1.69 | 0.01 | 0.01 | 0.0040 | 170.55 | 0.00 | 0.00 |
| 1.71 | 0.01 | 0.01 | 0.0040 | 170.56 | 0.00 | 0.00 |
| 1.73 | 0.01 | 0.01 | 0.0040 | 170.56 | 0.00 | 0.00 |
| 1.75 | 0.01 | 0.01 | 0.0040 | 170.57 | 0.00 | 0.00 |
| 1.77 | 0.01 | 0.01 | 0.0040 | 170.57 | 0.00 | 0.00 |
| 1.79 | 0.01 | 0.01 | 0.0040 | 170.58 | 0.00 | 0.00 |
| 1.81 | 0.01 | 0.01 | 0.0041 | 170.59 | 0.00 | 0.00 |
| 1.83 | 0.01 | 0.01 | 0.0041 | 170.59 | 0.00 | 0.00 |
| 1.85 | 0.01 | 0.01 | 0.0041 | 170.60 | 0.00 | 0.00 |
| 1.87 | 0.01 | 0.01 | 0.0041 | 170.60 | 0.00 | 0.00 |
| 1.90 | 0.01 | 0.01 | 0.0041 | 170.61 | 0.00 | 0.00 |
| 1.92 | 0.01 | 0.01 | 0.0041 | 170.61 | 0.00 | 0.00 |
| 1.94 | 0.01 | 0.01 | 0.0041 | 170.62 | 0.00 | 0.00 |
| 1.96 | 0.01 | 0.01 | 0.0042 | 170.62 | 0.00 | 0.00 |
| 1.98 | 0.01 | 0.01 | 0.0042 | 170.63 | 0.00 | 0.00 |
| 2.00 | 0.01 | 0.01 | 0.0042 | 170.63 | 0.00 | 0.00 |
| 2.02 | 0.01 | 0.01 | 0.0042 | 170.64 | 0.00 | 0.00 |
| 2.04 | 0.01 | 0.01 | 0.0042 | 170.64 | 0.00 | 0.00 |
| 2.06 | 0.01 | 0.01 | 0.0042 | 170.65 | 0.00 | 0.00 |
| 2.08 | 0.01 | 0.01 | 0.0043 | 170.65 | 0.00 | 0.00 |

Modified Puls Routing

Inflow Hydrograph: C:\Users\Andrew\Desktop\Jobs\21004\SWMHydrographs\Post\A2C\25.HYD
 Storage/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM\1.ES

25 year

Basin Bypass Capacity = 0.00 cfs
 Starting Pool Elevation = 169.25 feet
 Time Interval = 0.021 hours

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 0.00 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.02 | 0.01 | 0.01 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.04 | 0.02 | 0.02 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.06 | 0.03 | 0.03 | 0.0001 | 169.27 | 0.00 | 0.00 |
| 0.08 | 0.03 | 0.03 | 0.0001 | 169.29 | 0.00 | 0.00 |
| 0.10 | 0.04 | 0.04 | 0.0002 | 169.31 | 0.00 | 0.00 |
| 0.12 | 0.05 | 0.05 | 0.0003 | 169.34 | 0.00 | 0.00 |
| 0.15 | 0.06 | 0.06 | 0.0004 | 169.37 | 0.00 | 0.00 |
| 0.17 | 0.07 | 0.07 | 0.0005 | 169.40 | 0.00 | 0.00 |
| 0.19 | 0.09 | 0.09 | 0.0006 | 169.44 | 0.00 | 0.00 |
| 0.21 | 0.11 | 0.11 | 0.0008 | 169.50 | 0.00 | 0.00 |
| 0.23 | 0.13 | 0.13 | 0.0010 | 169.56 | 0.00 | 0.00 |
| 0.25 | 0.15 | 0.15 | 0.0012 | 169.64 | 0.00 | 0.00 |
| 0.27 | 0.13 | 0.13 | 0.0014 | 169.72 | 0.00 | 0.00 |
| 0.29 | 0.12 | 0.12 | 0.0016 | 169.79 | 0.00 | 0.00 |
| 0.31 | 0.10 | 0.10 | 0.0018 | 169.85 | 0.00 | 0.00 |
| 0.33 | 0.09 | 0.09 | 0.0020 | 169.90 | 0.00 | 0.00 |
| 0.35 | 0.08 | 0.08 | 0.0022 | 169.95 | 0.00 | 0.00 |
| 0.37 | 0.07 | 0.07 | 0.0023 | 169.99 | 0.00 | 0.00 |
| 0.40 | 0.06 | 0.06 | 0.0024 | 170.03 | 0.00 | 0.00 |
| 0.42 | 0.05 | 0.05 | 0.0025 | 170.06 | 0.00 | 0.00 |
| 0.44 | 0.05 | 0.05 | 0.0026 | 170.09 | 0.00 | 0.00 |
| 0.46 | 0.05 | 0.05 | 0.0027 | 170.12 | 0.00 | 0.00 |
| 0.48 | 0.04 | 0.04 | 0.0027 | 170.15 | 0.00 | 0.00 |
| 0.50 | 0.04 | 0.04 | 0.0028 | 170.17 | 0.00 | 0.00 |
| 0.52 | 0.04 | 0.04 | 0.0029 | 170.19 | 0.00 | 0.00 |
| 0.54 | 0.04 | 0.04 | 0.0029 | 170.21 | 0.00 | 0.00 |
| 0.56 | 0.03 | 0.03 | 0.0030 | 170.23 | 0.00 | 0.00 |
| 0.58 | 0.03 | 0.03 | 0.0031 | 170.25 | 0.00 | 0.00 |
| 0.60 | 0.03 | 0.03 | 0.0031 | 170.27 | 0.00 | 0.00 |
| 0.62 | 0.03 | 0.03 | 0.0032 | 170.29 | 0.00 | 0.00 |
| 0.65 | 0.03 | 0.03 | 0.0032 | 170.30 | 0.00 | 0.00 |
| 0.67 | 0.03 | 0.03 | 0.0033 | 170.32 | 0.00 | 0.00 |
| 0.69 | 0.03 | 0.03 | 0.0033 | 170.33 | 0.00 | 0.00 |
| 0.71 | 0.02 | 0.02 | 0.0033 | 170.35 | 0.00 | 0.00 |
| 0.73 | 0.02 | 0.02 | 0.0034 | 170.36 | 0.00 | 0.00 |
| 0.75 | 0.02 | 0.02 | 0.0034 | 170.37 | 0.00 | 0.00 |
| 0.77 | 0.02 | 0.02 | 0.0035 | 170.39 | 0.00 | 0.00 |
| 0.79 | 0.02 | 0.02 | 0.0035 | 170.40 | 0.00 | 0.00 |
| 0.81 | 0.02 | 0.02 | 0.0035 | 170.41 | 0.00 | 0.00 |
| 0.83 | 0.02 | 0.02 | 0.0036 | 170.42 | 0.00 | 0.00 |
| 0.85 | 0.02 | 0.02 | 0.0036 | 170.43 | 0.00 | 0.00 |
| 0.87 | 0.02 | 0.02 | 0.0036 | 170.45 | 0.00 | 0.00 |
| 0.90 | 0.02 | 0.02 | 0.0037 | 170.46 | 0.00 | 0.00 |
| 0.92 | 0.02 | 0.02 | 0.0037 | 170.47 | 0.00 | 0.00 |
| 0.94 | 0.02 | 0.02 | 0.0037 | 170.48 | 0.00 | 0.00 |
| 0.96 | 0.02 | 0.02 | 0.0038 | 170.49 | 0.00 | 0.00 |
| 0.98 | 0.02 | 0.02 | 0.0038 | 170.50 | 0.00 | 0.00 |
| 1.00 | 0.02 | 0.02 | 0.0038 | 170.51 | 0.00 | 0.00 |
| 1.02 | 0.02 | 0.02 | 0.0039 | 170.52 | 0.00 | 0.00 |

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 1.04 | 0.02 | 0.02 | 0.0039 | 170.53 | 0.00 | 0.00 |
| 1.06 | 0.02 | 0.02 | 0.0039 | 170.54 | 0.00 | 0.00 |
| 1.08 | 0.01 | 0.01 | 0.0039 | 170.54 | 0.00 | 0.00 |
| 1.10 | 0.01 | 0.01 | 0.0040 | 170.55 | 0.00 | 0.00 |
| 1.12 | 0.01 | 0.01 | 0.0040 | 170.56 | 0.00 | 0.00 |
| 1.15 | 0.01 | 0.01 | 0.0040 | 170.57 | 0.00 | 0.00 |
| 1.17 | 0.01 | 0.01 | 0.0040 | 170.58 | 0.00 | 0.00 |
| 1.19 | 0.01 | 0.01 | 0.0041 | 170.59 | 0.00 | 0.00 |
| 1.21 | 0.01 | 0.01 | 0.0041 | 170.59 | 0.00 | 0.00 |
| 1.23 | 0.01 | 0.01 | 0.0041 | 170.60 | 0.00 | 0.00 |
| 1.25 | 0.01 | 0.01 | 0.0041 | 170.61 | 0.00 | 0.00 |
| 1.27 | 0.01 | 0.01 | 0.0042 | 170.62 | 0.00 | 0.00 |
| 1.29 | 0.01 | 0.01 | 0.0042 | 170.62 | 0.00 | 0.00 |
| 1.31 | 0.01 | 0.01 | 0.0042 | 170.63 | 0.00 | 0.00 |
| 1.33 | 0.01 | 0.01 | 0.0042 | 170.64 | 0.00 | 0.00 |
| 1.35 | 0.01 | 0.01 | 0.0042 | 170.65 | 0.00 | 0.00 |
| 1.37 | 0.01 | 0.01 | 0.0043 | 170.65 | 0.00 | 0.00 |
| 1.40 | 0.01 | 0.01 | 0.0043 | 170.66 | 0.00 | 0.00 |
| 1.42 | 0.01 | 0.01 | 0.0043 | 170.67 | 0.00 | 0.00 |
| 1.44 | 0.01 | 0.01 | 0.0043 | 170.68 | 0.00 | 0.00 |
| 1.46 | 0.01 | 0.01 | 0.0044 | 170.68 | 0.00 | 0.00 |
| 1.48 | 0.01 | 0.01 | 0.0044 | 170.69 | 0.00 | 0.00 |
| 1.50 | 0.01 | 0.01 | 0.0044 | 170.70 | 0.00 | 0.00 |
| 1.52 | 0.01 | 0.01 | 0.0044 | 170.70 | 0.00 | 0.00 |
| 1.54 | 0.01 | 0.01 | 0.0044 | 170.71 | 0.00 | 0.00 |
| 1.56 | 0.01 | 0.01 | 0.0045 | 170.72 | 0.00 | 0.00 |
| 1.58 | 0.01 | 0.01 | 0.0045 | 170.72 | 0.00 | 0.00 |
| 1.60 | 0.01 | 0.01 | 0.0045 | 170.73 | 0.00 | 0.00 |
| 1.62 | 0.01 | 0.01 | 0.0045 | 170.74 | 0.00 | 0.00 |
| 1.65 | 0.01 | 0.01 | 0.0045 | 170.74 | 0.00 | 0.00 |
| 1.67 | 0.01 | 0.01 | 0.0046 | 170.75 | 0.00 | 0.00 |
| 1.69 | 0.01 | 0.01 | 0.0046 | 170.76 | 0.00 | 0.00 |
| 1.71 | 0.01 | 0.01 | 0.0046 | 170.76 | 0.00 | 0.00 |
| 1.73 | 0.01 | 0.01 | 0.0046 | 170.77 | 0.00 | 0.00 |
| 1.75 | 0.01 | 0.01 | 0.0046 | 170.78 | 0.00 | 0.00 |
| 1.77 | 0.01 | 0.01 | 0.0046 | 170.78 | 0.00 | 0.00 |
| 1.79 | 0.01 | 0.01 | 0.0047 | 170.79 | 0.00 | 0.00 |
| 1.81 | 0.01 | 0.01 | 0.0047 | 170.79 | 0.00 | 0.00 |
| 1.83 | 0.01 | 0.01 | 0.0047 | 170.80 | 0.00 | 0.00 |
| 1.85 | 0.01 | 0.01 | 0.0047 | 170.81 | 0.00 | 0.00 |
| 1.87 | 0.01 | 0.01 | 0.0047 | 170.81 | 0.00 | 0.00 |
| 1.90 | 0.01 | 0.01 | 0.0048 | 170.82 | 0.00 | 0.00 |
| 1.92 | 0.01 | 0.01 | 0.0048 | 170.82 | 0.00 | 0.00 |
| 1.94 | 0.01 | 0.01 | 0.0048 | 170.83 | 0.00 | 0.00 |
| 1.96 | 0.01 | 0.01 | 0.0048 | 170.84 | 0.00 | 0.00 |
| 1.98 | 0.01 | 0.01 | 0.0048 | 170.84 | 0.00 | 0.00 |
| 2.00 | 0.01 | 0.01 | 0.0048 | 170.85 | 0.00 | 0.00 |
| 2.02 | 0.01 | 0.01 | 0.0049 | 170.85 | 0.00 | 0.00 |
| 2.04 | 0.01 | 0.01 | 0.0049 | 170.86 | 0.00 | 0.00 |
| 2.06 | 0.01 | 0.01 | 0.0049 | 170.86 | 0.00 | 0.00 |
| 2.08 | 0.01 | 0.01 | 0.0049 | 170.87 | 0.00 | 0.00 |

Modified Puls Routing

Inflow Hydrograph: C:\Users\Andrew\Desktop\Jobs\21004\SWMHydrographs\Post\A2C150.HYD
 Storage/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM\1.ES

50 year

Basin Bypass Capacity = 0.00 cfs
 Starting Pool Elevation = 169.25 feet
 Time Interval = 0.021 hours

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 0.00 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.02 | 0.01 | 0.01 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.04 | 0.02 | 0.02 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.06 | 0.03 | 0.03 | 0.0001 | 169.28 | 0.00 | 0.00 |
| 0.08 | 0.04 | 0.04 | 0.0002 | 169.30 | 0.00 | 0.00 |
| 0.10 | 0.05 | 0.05 | 0.0002 | 169.33 | 0.00 | 0.00 |
| 0.12 | 0.06 | 0.06 | 0.0003 | 169.36 | 0.00 | 0.00 |
| 0.15 | 0.07 | 0.07 | 0.0004 | 169.40 | 0.00 | 0.00 |
| 0.17 | 0.08 | 0.08 | 0.0006 | 169.44 | 0.00 | 0.00 |
| 0.19 | 0.10 | 0.10 | 0.0007 | 169.49 | 0.00 | 0.00 |
| 0.21 | 0.12 | 0.12 | 0.0009 | 169.55 | 0.00 | 0.00 |
| 0.23 | 0.14 | 0.14 | 0.0012 | 169.63 | 0.00 | 0.00 |
| 0.25 | 0.16 | 0.16 | 0.0014 | 169.71 | 0.00 | 0.00 |
| 0.27 | 0.15 | 0.15 | 0.0017 | 169.80 | 0.00 | 0.00 |
| 0.29 | 0.14 | 0.14 | 0.0019 | 169.88 | 0.00 | 0.00 |
| 0.31 | 0.12 | 0.12 | 0.0022 | 169.96 | 0.00 | 0.00 |
| 0.33 | 0.11 | 0.11 | 0.0024 | 170.02 | 0.00 | 0.00 |
| 0.35 | 0.10 | 0.10 | 0.0025 | 170.08 | 0.00 | 0.00 |
| 0.37 | 0.09 | 0.09 | 0.0027 | 170.13 | 0.00 | 0.00 |
| 0.40 | 0.08 | 0.08 | 0.0028 | 170.18 | 0.00 | 0.00 |
| 0.42 | 0.06 | 0.06 | 0.0030 | 170.22 | 0.00 | 0.00 |
| 0.44 | 0.06 | 0.06 | 0.0031 | 170.26 | 0.00 | 0.00 |
| 0.46 | 0.06 | 0.06 | 0.0032 | 170.29 | 0.00 | 0.00 |
| 0.48 | 0.05 | 0.05 | 0.0033 | 170.32 | 0.00 | 0.00 |
| 0.50 | 0.05 | 0.05 | 0.0034 | 170.35 | 0.00 | 0.00 |
| 0.52 | 0.05 | 0.05 | 0.0034 | 170.38 | 0.00 | 0.00 |
| 0.54 | 0.04 | 0.04 | 0.0035 | 170.41 | 0.00 | 0.00 |
| 0.56 | 0.04 | 0.04 | 0.0036 | 170.43 | 0.00 | 0.00 |
| 0.58 | 0.04 | 0.04 | 0.0037 | 170.46 | 0.00 | 0.00 |
| 0.60 | 0.04 | 0.04 | 0.0037 | 170.48 | 0.00 | 0.00 |
| 0.62 | 0.04 | 0.04 | 0.0038 | 170.50 | 0.00 | 0.00 |
| 0.65 | 0.03 | 0.03 | 0.0039 | 170.52 | 0.00 | 0.00 |
| 0.67 | 0.03 | 0.03 | 0.0039 | 170.54 | 0.00 | 0.00 |
| 0.69 | 0.03 | 0.03 | 0.0040 | 170.56 | 0.00 | 0.00 |
| 0.71 | 0.03 | 0.03 | 0.0040 | 170.57 | 0.00 | 0.00 |
| 0.73 | 0.03 | 0.03 | 0.0041 | 170.59 | 0.00 | 0.00 |
| 0.75 | 0.03 | 0.03 | 0.0041 | 170.61 | 0.00 | 0.00 |
| 0.77 | 0.03 | 0.03 | 0.0042 | 170.62 | 0.00 | 0.00 |
| 0.79 | 0.03 | 0.03 | 0.0042 | 170.64 | 0.00 | 0.00 |
| 0.81 | 0.03 | 0.03 | 0.0043 | 170.65 | 0.00 | 0.00 |
| 0.83 | 0.03 | 0.03 | 0.0043 | 170.67 | 0.00 | 0.00 |
| 0.85 | 0.02 | 0.02 | 0.0044 | 170.68 | 0.00 | 0.00 |
| 0.87 | 0.02 | 0.02 | 0.0044 | 170.70 | 0.00 | 0.00 |
| 0.90 | 0.02 | 0.02 | 0.0044 | 170.71 | 0.00 | 0.00 |
| 0.92 | 0.02 | 0.02 | 0.0045 | 170.73 | 0.00 | 0.00 |
| 0.94 | 0.02 | 0.02 | 0.0045 | 170.74 | 0.00 | 0.00 |
| 0.96 | 0.02 | 0.02 | 0.0046 | 170.75 | 0.00 | 0.00 |
| 0.98 | 0.02 | 0.02 | 0.0046 | 170.76 | 0.00 | 0.00 |
| 1.00 | 0.02 | 0.02 | 0.0046 | 170.78 | 0.00 | 0.00 |
| 1.02 | 0.02 | 0.02 | 0.0047 | 170.79 | 0.00 | 0.00 |

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 1.04 | 0.02 | 0.02 | 0.0047 | 170.80 | 0.00 | 0.00 |
| 1.06 | 0.02 | 0.02 | 0.0047 | 170.81 | 0.00 | 0.00 |
| 1.08 | 0.02 | 0.02 | 0.0048 | 170.82 | 0.00 | 0.00 |
| 1.10 | 0.02 | 0.02 | 0.0048 | 170.83 | 0.00 | 0.00 |
| 1.12 | 0.02 | 0.02 | 0.0048 | 170.84 | 0.00 | 0.00 |
| 1.15 | 0.02 | 0.02 | 0.0049 | 170.85 | 0.00 | 0.00 |
| 1.17 | 0.02 | 0.02 | 0.0049 | 170.86 | 0.00 | 0.00 |
| 1.19 | 0.02 | 0.02 | 0.0049 | 170.87 | 0.00 | 0.00 |
| 1.21 | 0.02 | 0.02 | 0.0049 | 170.88 | 0.00 | 0.00 |
| 1.23 | 0.02 | 0.02 | 0.0050 | 170.89 | 0.00 | 0.00 |
| 1.25 | 0.02 | 0.02 | 0.0050 | 170.90 | 0.00 | 0.00 |
| 1.27 | 0.02 | 0.02 | 0.0050 | 170.91 | 0.00 | 0.00 |
| 1.29 | 0.02 | 0.02 | 0.0050 | 170.92 | 0.00 | 0.00 |
| 1.31 | 0.02 | 0.02 | 0.0051 | 170.93 | 0.00 | 0.00 |
| 1.33 | 0.02 | 0.02 | 0.0051 | 170.93 | 0.00 | 0.00 |
| 1.35 | 0.02 | 0.02 | 0.0051 | 170.94 | 0.00 | 0.00 |
| 1.37 | 0.01 | 0.01 | 0.0052 | 170.95 | 0.00 | 0.00 |
| 1.40 | 0.01 | 0.01 | 0.0052 | 170.96 | 0.00 | 0.00 |
| 1.42 | 0.01 | 0.01 | 0.0052 | 170.97 | 0.00 | 0.00 |
| 1.44 | 0.01 | 0.01 | 0.0052 | 170.98 | 0.00 | 0.00 |
| 1.46 | 0.01 | 0.01 | 0.0053 | 170.99 | 0.00 | 0.00 |
| 1.48 | 0.01 | 0.01 | 0.0053 | 170.99 | 0.00 | 0.00 |
| 1.50 | 0.01 | 0.01 | 0.0053 | 171.00 | 0.00 | 0.00 |
| 1.52 | 0.01 | 0.01 | 0.0053 | 171.01 | 0.00 | 0.00 |
| 1.54 | 0.01 | 0.01 | 0.0054 | 171.02 | 0.00 | 0.00 |
| 1.56 | 0.01 | 0.01 | 0.0054 | 171.03 | 0.00 | 0.00 |
| 1.58 | 0.01 | 0.01 | 0.0054 | 171.03 | 0.00 | 0.00 |
| 1.60 | 0.01 | 0.01 | 0.0054 | 171.04 | 0.00 | 0.00 |
| 1.62 | 0.01 | 0.01 | 0.0054 | 171.05 | 0.00 | 0.00 |
| 1.65 | 0.01 | 0.01 | 0.0055 | 171.06 | 0.00 | 0.00 |
| 1.67 | 0.01 | 0.01 | 0.0055 | 171.06 | 0.00 | 0.00 |
| 1.69 | 0.01 | 0.01 | 0.0055 | 171.07 | 0.00 | 0.00 |
| 1.71 | 0.01 | 0.01 | 0.0055 | 171.08 | 0.00 | 0.00 |
| 1.73 | 0.01 | 0.01 | 0.0056 | 171.09 | 0.00 | 0.00 |
| 1.75 | 0.01 | 0.01 | 0.0056 | 171.09 | 0.00 | 0.00 |
| 1.77 | 0.01 | 0.01 | 0.0056 | 171.10 | 0.00 | 0.00 |
| 1.79 | 0.01 | 0.01 | 0.0056 | 171.11 | 0.00 | 0.00 |
| 1.81 | 0.01 | 0.01 | 0.0056 | 171.12 | 0.00 | 0.00 |
| 1.83 | 0.01 | 0.01 | 0.0057 | 171.12 | 0.00 | 0.00 |
| 1.85 | 0.01 | 0.01 | 0.0057 | 171.13 | 0.00 | 0.00 |
| 1.87 | 0.01 | 0.01 | 0.0057 | 171.14 | 0.00 | 0.00 |
| 1.90 | 0.01 | 0.01 | 0.0057 | 171.14 | 0.00 | 0.00 |
| 1.92 | 0.01 | 0.01 | 0.0057 | 171.15 | 0.00 | 0.00 |
| 1.94 | 0.01 | 0.01 | 0.0058 | 171.16 | 0.00 | 0.00 |
| 1.96 | 0.01 | 0.01 | 0.0058 | 171.16 | 0.00 | 0.00 |
| 1.98 | 0.01 | 0.01 | 0.0058 | 171.17 | 0.00 | 0.00 |
| 2.00 | 0.01 | 0.01 | 0.0058 | 171.18 | 0.00 | 0.00 |
| 2.02 | 0.01 | 0.01 | 0.0059 | 171.18 | 0.00 | 0.00 |
| 2.04 | 0.01 | 0.01 | 0.0059 | 171.19 | 0.00 | 0.00 |
| 2.06 | 0.01 | 0.01 | 0.0059 | 171.20 | 0.00 | 0.00 |
| 2.08 | 0.01 | 0.01 | 0.0059 | 171.20 | 0.00 | 0.00 |

Modified Puls Routing

Inflow Hydrograph: C:\Users\Andrew\Desktop\Jobs\21004\SWMHydrographs\PostA2C\100.HYD
 Storage/Elevation Curve: C:\Users\Andrew\Desktop\Jobs\21004\SWM\1.ES

100 year

Basin Bypass Capacity = 0.00 cfs
 Starting Pool Elevation = 169.25 feet
 Time Interval = 0.021 hours

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 0.00 | 0.00 | 0.00 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.02 | 0.01 | 0.01 | 0.0000 | 169.25 | 0.00 | 0.00 |
| 0.04 | 0.03 | 0.03 | 0.0000 | 169.26 | 0.00 | 0.00 |
| 0.06 | 0.04 | 0.04 | 0.0001 | 169.28 | 0.00 | 0.00 |
| 0.08 | 0.05 | 0.05 | 0.0002 | 169.31 | 0.00 | 0.00 |
| 0.10 | 0.06 | 0.06 | 0.0003 | 169.34 | 0.00 | 0.00 |
| 0.12 | 0.07 | 0.07 | 0.0004 | 169.38 | 0.00 | 0.00 |
| 0.15 | 0.08 | 0.08 | 0.0005 | 169.42 | 0.00 | 0.00 |
| 0.17 | 0.09 | 0.09 | 0.0007 | 169.47 | 0.00 | 0.00 |
| 0.19 | 0.11 | 0.11 | 0.0008 | 169.53 | 0.00 | 0.00 |
| 0.21 | 0.14 | 0.14 | 0.0011 | 169.60 | 0.00 | 0.00 |
| 0.23 | 0.16 | 0.16 | 0.0013 | 169.68 | 0.00 | 0.00 |
| 0.25 | 0.18 | 0.18 | 0.0016 | 169.77 | 0.00 | 0.00 |
| 0.27 | 0.16 | 0.16 | 0.0019 | 169.87 | 0.00 | 0.00 |
| 0.29 | 0.15 | 0.15 | 0.0022 | 169.96 | 0.00 | 0.00 |
| 0.31 | 0.14 | 0.14 | 0.0024 | 170.04 | 0.00 | 0.00 |
| 0.33 | 0.12 | 0.12 | 0.0026 | 170.11 | 0.00 | 0.00 |
| 0.35 | 0.11 | 0.11 | 0.0028 | 170.18 | 0.00 | 0.00 |
| 0.37 | 0.10 | 0.10 | 0.0030 | 170.24 | 0.00 | 0.00 |
| 0.40 | 0.09 | 0.09 | 0.0032 | 170.29 | 0.00 | 0.00 |
| 0.42 | 0.07 | 0.07 | 0.0033 | 170.34 | 0.00 | 0.00 |
| 0.44 | 0.07 | 0.07 | 0.0034 | 170.38 | 0.00 | 0.00 |
| 0.46 | 0.07 | 0.07 | 0.0036 | 170.42 | 0.00 | 0.00 |
| 0.48 | 0.06 | 0.06 | 0.0037 | 170.46 | 0.00 | 0.00 |
| 0.50 | 0.06 | 0.06 | 0.0038 | 170.49 | 0.00 | 0.00 |
| 0.52 | 0.06 | 0.06 | 0.0039 | 170.53 | 0.00 | 0.00 |
| 0.54 | 0.05 | 0.05 | 0.0040 | 170.56 | 0.00 | 0.00 |
| 0.56 | 0.05 | 0.05 | 0.0041 | 170.59 | 0.00 | 0.00 |
| 0.58 | 0.04 | 0.04 | 0.0041 | 170.61 | 0.00 | 0.00 |
| 0.60 | 0.04 | 0.04 | 0.0042 | 170.64 | 0.00 | 0.00 |
| 0.62 | 0.04 | 0.04 | 0.0043 | 170.66 | 0.00 | 0.00 |
| 0.65 | 0.04 | 0.04 | 0.0044 | 170.69 | 0.00 | 0.00 |
| 0.67 | 0.04 | 0.04 | 0.0044 | 170.71 | 0.00 | 0.00 |
| 0.69 | 0.04 | 0.04 | 0.0045 | 170.73 | 0.00 | 0.00 |
| 0.71 | 0.04 | 0.04 | 0.0046 | 170.75 | 0.00 | 0.00 |
| 0.73 | 0.04 | 0.04 | 0.0046 | 170.77 | 0.00 | 0.00 |
| 0.75 | 0.03 | 0.03 | 0.0047 | 170.79 | 0.00 | 0.00 |
| 0.77 | 0.03 | 0.03 | 0.0047 | 170.81 | 0.00 | 0.00 |
| 0.79 | 0.03 | 0.03 | 0.0048 | 170.83 | 0.00 | 0.00 |
| 0.81 | 0.03 | 0.03 | 0.0049 | 170.85 | 0.00 | 0.00 |
| 0.83 | 0.03 | 0.03 | 0.0049 | 170.87 | 0.00 | 0.00 |
| 0.85 | 0.03 | 0.03 | 0.0050 | 170.89 | 0.00 | 0.00 |
| 0.87 | 0.03 | 0.03 | 0.0050 | 170.90 | 0.00 | 0.00 |
| 0.90 | 0.03 | 0.03 | 0.0051 | 170.92 | 0.00 | 0.00 |
| 0.92 | 0.03 | 0.03 | 0.0051 | 170.94 | 0.00 | 0.00 |
| 0.94 | 0.03 | 0.03 | 0.0052 | 170.95 | 0.00 | 0.00 |
| 0.96 | 0.03 | 0.03 | 0.0052 | 170.97 | 0.00 | 0.00 |
| 0.98 | 0.03 | 0.03 | 0.0052 | 170.98 | 0.00 | 0.00 |
| 1.00 | 0.03 | 0.03 | 0.0053 | 171.00 | 0.00 | 0.00 |
| 1.02 | 0.02 | 0.02 | 0.0053 | 171.01 | 0.00 | 0.00 |

| Event Time (hours) | Hydrograph Inflow (cfs) | Basin Inflow (cfs) | Storage Used (acre-ft) | Elevation Above MSL (feet) | Basin Outflow (cfs) | Outflow Total (cfs) |
|--------------------|-------------------------|--------------------|------------------------|----------------------------|---------------------|---------------------|
| 1.04 | 0.02 | 0.02 | 0.0054 | 171.03 | 0.00 | 0.00 |
| 1.06 | 0.02 | 0.02 | 0.0054 | 171.04 | 0.00 | 0.00 |
| 1.08 | 0.02 | 0.02 | 0.0055 | 171.05 | 0.00 | 0.00 |
| 1.10 | 0.02 | 0.02 | 0.0055 | 171.07 | 0.00 | 0.00 |
| 1.12 | 0.02 | 0.02 | 0.0055 | 171.08 | 0.00 | 0.00 |
| 1.15 | 0.02 | 0.02 | 0.0056 | 171.09 | 0.00 | 0.00 |
| 1.17 | 0.02 | 0.02 | 0.0056 | 171.10 | 0.00 | 0.00 |
| 1.19 | 0.02 | 0.02 | 0.0056 | 171.11 | 0.00 | 0.00 |
| 1.21 | 0.02 | 0.02 | 0.0057 | 171.12 | 0.00 | 0.00 |
| 1.23 | 0.02 | 0.02 | 0.0057 | 171.14 | 0.00 | 0.00 |
| 1.25 | 0.02 | 0.02 | 0.0057 | 171.15 | 0.00 | 0.00 |
| 1.27 | 0.02 | 0.02 | 0.0058 | 171.16 | 0.00 | 0.00 |
| 1.29 | 0.02 | 0.02 | 0.0058 | 171.17 | 0.00 | 0.00 |
| 1.31 | 0.02 | 0.02 | 0.0058 | 171.18 | 0.00 | 0.00 |
| 1.33 | 0.02 | 0.02 | 0.0059 | 171.19 | 0.00 | 0.00 |
| 1.35 | 0.02 | 0.02 | 0.0059 | 171.20 | 0.00 | 0.00 |
| 1.37 | 0.02 | 0.02 | 0.0059 | 171.21 | 0.00 | 0.00 |
| 1.40 | 0.02 | 0.02 | 0.0060 | 171.22 | 0.00 | 0.00 |
| 1.42 | 0.02 | 0.02 | 0.0060 | 171.23 | 0.00 | 0.00 |
| 1.44 | 0.02 | 0.02 | 0.0060 | 171.24 | 0.00 | 0.00 |
| 1.46 | 0.02 | 0.02 | 0.0061 | 171.25 | 0.00 | 0.00 |
| 1.48 | 0.02 | 0.02 | 0.0061 | 171.26 | 0.00 | 0.00 |
| 1.50 | 0.02 | 0.02 | 0.0061 | 171.27 | 0.00 | 0.00 |
| 1.52 | 0.02 | 0.02 | 0.0061 | 171.28 | 0.00 | 0.00 |
| 1.54 | 0.02 | 0.02 | 0.0062 | 171.29 | 0.00 | 0.00 |
| 1.56 | 0.02 | 0.02 | 0.0062 | 171.30 | 0.00 | 0.00 |
| 1.58 | 0.02 | 0.02 | 0.0062 | 171.31 | 0.00 | 0.00 |
| 1.60 | 0.02 | 0.02 | 0.0063 | 171.32 | 0.00 | 0.00 |
| 1.62 | 0.02 | 0.02 | 0.0063 | 171.33 | 0.00 | 0.00 |
| 1.65 | 0.02 | 0.02 | 0.0063 | 171.34 | 0.00 | 0.00 |
| 1.67 | 0.02 | 0.02 | 0.0063 | 171.35 | 0.00 | 0.00 |
| 1.69 | 0.02 | 0.02 | 0.0064 | 171.36 | 0.00 | 0.00 |
| 1.71 | 0.02 | 0.02 | 0.0064 | 171.37 | 0.00 | 0.00 |
| 1.73 | 0.02 | 0.02 | 0.0064 | 171.37 | 0.00 | 0.00 |
| 1.75 | 0.02 | 0.02 | 0.0064 | 171.38 | 0.00 | 0.00 |
| 1.77 | 0.02 | 0.02 | 0.0065 | 171.39 | 0.00 | 0.00 |
| 1.79 | 0.02 | 0.02 | 0.0065 | 171.40 | 0.00 | 0.00 |
| 1.81 | 0.01 | 0.01 | 0.0065 | 171.41 | 0.00 | 0.00 |
| 1.83 | 0.01 | 0.01 | 0.0066 | 171.42 | 0.00 | 0.00 |
| 1.85 | 0.01 | 0.01 | 0.0066 | 171.43 | 0.00 | 0.00 |
| 1.87 | 0.01 | 0.01 | 0.0066 | 171.43 | 0.00 | 0.00 |
| 1.90 | 0.01 | 0.01 | 0.0066 | 171.44 | 0.00 | 0.00 |
| 1.92 | 0.01 | 0.01 | 0.0067 | 171.45 | 0.00 | 0.00 |
| 1.94 | 0.01 | 0.01 | 0.0067 | 171.46 | 0.00 | 0.00 |
| 1.96 | 0.01 | 0.01 | 0.0067 | 171.47 | 0.00 | 0.00 |
| 1.98 | 0.01 | 0.01 | 0.0067 | 171.48 | 0.00 | 0.00 |
| 2.00 | 0.01 | 0.01 | 0.0067 | 171.48 | 0.00 | 0.00 |
| 2.02 | 0.01 | 0.01 | 0.0068 | 171.49 | 0.00 | 0.00 |
| 2.04 | 0.01 | 0.01 | 0.0068 | 171.50 | 0.00 | 0.00 |
| 2.06 | 0.01 | 0.01 | 0.0068 | 171.82 | 0.00 | 0.00 |
| 2.08 | 0.01 | 0.01 | 0.0068 | 172.18 | 0.00 | 0.00 |

SUMMARY OF PEAK FLOW RATES

SUMMARY OF PEAK FLOW RATES - Watershed - "A"

| FREQ | PRE-DVMT FLOW | POST-DEV FLOW | | | POST-DEV ROUTED OUTFLOWS | | POST-DEV BYPASS FLOW | TOTAL POST-DEV FLOW | DECREASE | RELEASE RATE |
|--------|---------------|---------------|-----------|-----------|--------------------------|-------|----------------------|---------------------|----------|--------------|
| | | Lot No. 1 | Lot No. 2 | Lot No. 1 | Lot No. 2 | | | | | |
| (year) | (cfs) | (cfs) | (cfs) | (cfs) | (cfs) | (cfs) | (cfs) | (cfs) | (cfs) | (%) |
| 1 | 0.28 | 0.00 | 0.00 | 0.09 | 0.09 | 0.09 | 0.29 | 0.47 | -0.19 | 168 |
| 2 | 0.33 | 0.00 | 0.00 | 0.10 | 0.10 | 0.10 | 0.33 | 0.53 | -0.20 | 161 |
| 5 | 0.38 | 0.00 | 0.00 | 0.12 | 0.12 | 0.12 | 0.39 | 0.63 | -0.25 | 166 |
| 10 | 0.43 | 0.00 | 0.00 | 0.13 | 0.13 | 0.13 | 0.43 | 0.69 | -0.26 | 160 |
| 25 | 0.48 | 0.00 | 0.00 | 0.15 | 0.15 | 0.15 | 0.48 | 0.78 | -0.30 | 163 |
| 50 | 0.53 | 0.00 | 0.00 | 0.16 | 0.16 | 0.16 | 0.54 | 0.86 | -0.33 | 162 |
| 100 | 0.58 | 0.00 | 0.00 | 0.18 | 0.18 | 0.18 | 0.59 | 0.95 | -0.37 | 164 |

SUMMARY OF PEAK FLOW RATES - Watershed - "B"

| FREQ | PRE-DVMT FLOW | POST-DEV FLOW | DECREASE | RELEASE RATE |
|--------|---------------|---------------|----------|--------------|
| | | | | |
| (year) | (cfs) | (cfs) | (cfs) | (%) |
| 1 | 0.19 | 0.11 | 0.08 | 58 |
| 2 | 0.22 | 0.13 | 0.09 | 59 |
| 5 | 0.26 | 0.15 | 0.11 | 58 |
| 10 | 0.29 | 0.17 | 0.12 | 59 |
| 25 | 0.32 | 0.19 | 0.13 | 59 |
| 50 | 0.36 | 0.21 | 0.15 | 58 |
| 100 | 0.39 | 0.23 | 0.16 | 59 |

Mannings Equation

| | | |
|----|-----------------------|-------|
| n | Manning's coefficient | 0.011 |
| s | slope (ft/ft) | 0.020 |
| d | diameter (inches) | 4 |
| A | area (sf) | 0.087 |
| WP | wetted perimeter (ft) | 1.047 |
| Q | flow (cfs) | 0.318 |
| V | velocity (fps) | 3.645 |

See Note 5, Sheet 5,

$$P_{\text{swelling}} = 20' \times 50' = 1000 \text{ SF} = 0.023 \text{ ac}$$

$$Q_{\text{DN}} = CIA = 0.95 \times 3.19 \times 0.023 = 0.18 \text{ cfs} \quad 100 \text{ yr}$$

§ 22-40.4.L(1)(c) Additional Storage for Sediment Storage

$$\text{Storage Required} = 0.06 \text{ ac-inch} = 218 \text{ cf} \quad \text{- required}$$

$$\begin{aligned} \text{Storage Provided} \Rightarrow \#1 &= 15' \times 22' \times 0.83 = 274 \text{ cf} \quad \text{- stone} \\ \#2 &= 15' \times 22' \times 0.83 = 274 \text{ cf} \quad \text{"} \end{aligned}$$

$$\begin{aligned} & 548 \text{ cf stone} \\ & \times 0.4 \text{ Void ratio} \\ & \hline & 219 \text{ cf - provided} \end{aligned}$$

(see Sheet 7 - Details)

INFILTRATION REPORT



INFILTRATION TEST REPORT FOR ON-LOT DISPOSAL OF STORMWATER

Applicant/Client: **Walls/JME** Date of Test: **6/29/2020**

Site Address/Location.: **331 W. 7th Ave.** Municipality: **Conshohocken Boro.**

Person Conducting Test: **Mark A. Bryan** County: **Montgomery**

Weather Conditions: **Sunny**
40°+
Dry last 24 Hours Location: **SW1/SW2**

Test Method: Double-Ring Infiltrometer

Profile Descriptions:

Horizon Depth (in.) Description

SW1

A 0-15 Dark Brown silt loam, weak granular, very friable, clear boundary
B 15-42 Brown silt loam, moderate/weak granular, very friable, wavy boundary
C 42-90 Grey/brown channery silt loam/fine sandy loam, weak granular, very friable, 10-20% coarse frag.

Rock Limiting Zone encountered @90"

SW2

A 0-12 Dark Brown silt loam, weak granular, very friable, clear boundary
B 12-40 Brown silt loam, moderate/weak granular, very friable, wavy boundary
C 40-84 Grey/brown channery silt loam/fine sandy loam, weak granular, very friable, 10-20% coarse frag.

Rock Limiting Zone encountered @84"

| Hole No. | Test Depth (in.) | Start Depth (in.) | Drop (in.) | | | | | | | |
|----------|------------------|-------------------|------------|-----|-------|-------|-------|-------|---|---|
| | | | PS1 | PS2 | 1 | 2 | 3 | 4 | 5 | 6 |
| SW1A | 66 | 12 | 6+ | 5 | 1 3/4 | 1 3/4 | 1 3/4 | 1 3/4 | | |
| Time: | | | :30 | :30 | :10 | :10 | :10 | :10 | | |
| SW1B | 66 | 12 | 6+ | 4 | 1 3/8 | 1 3/8 | 1 3/8 | 1 3/8 | | |
| Time: | | | :30 | :30 | :10 | :10 | :10 | :10 | | |
| SW2A | 60 | 12 | 2 3/8 | 2 | 5/8 | 5/8 | 5/8 | 5/8 | | |
| Time: | | | :30 | :30 | :10 | :10 | :10 | :10 | | |
| SW2B | 60 | 12 | 2 1/8 | 2 | 5/8 | 5/8 | 5/8 | 5/8 | | |
| Time: | | | :30 | :30 | :10 | :10 | :10 | :10 | | |

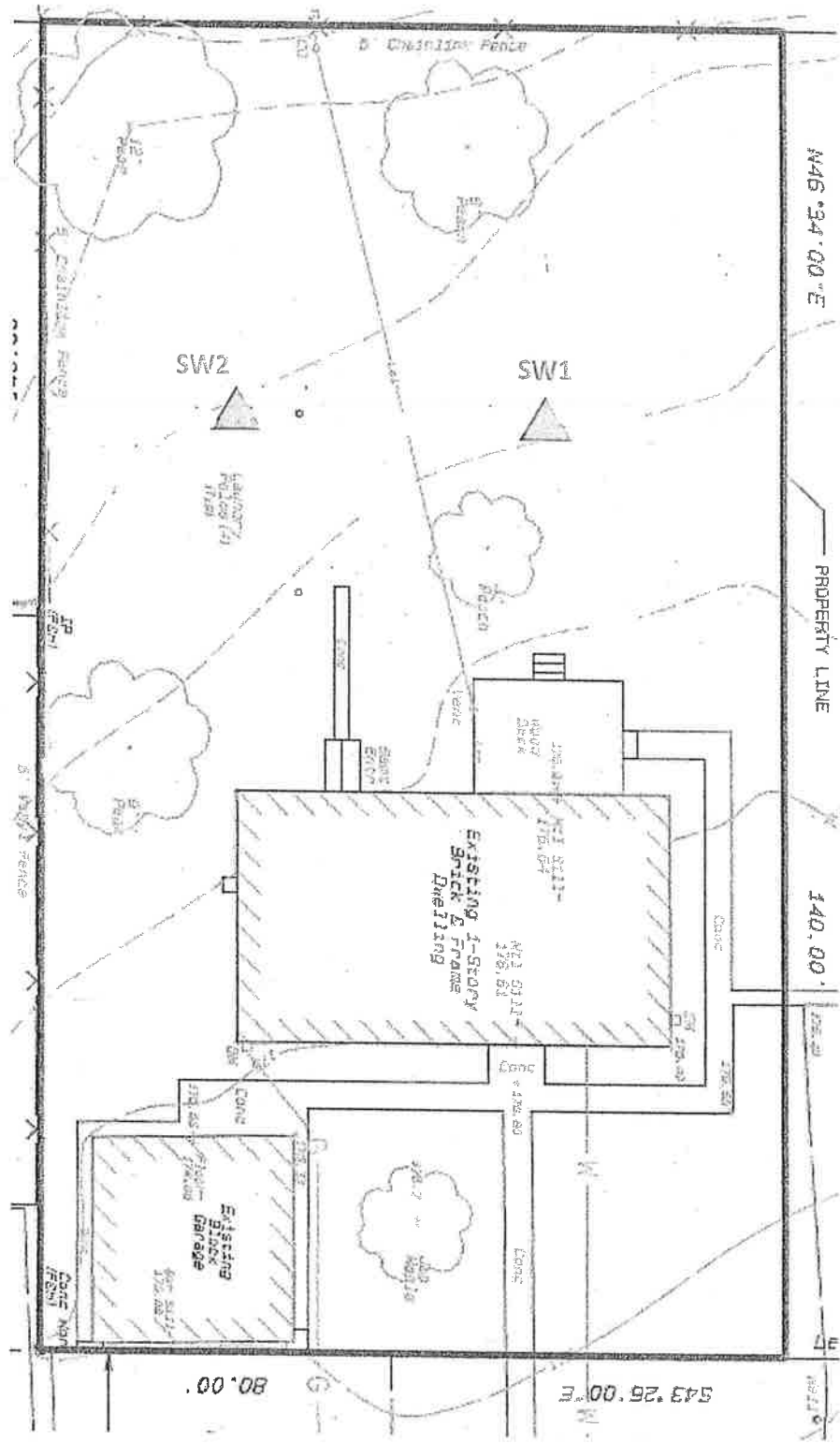
Calculation of Infiltration Rate:

| Hole No. | Drop in Final Per. | Reading Interval | Minutes/Inch | Inches/Hour |
|----------|--------------------|------------------|--------------|-------------|
| SW1A | 1 3/4 | 10 | 5.71 | 10.50 |
| SW1B | 1 3/8 | 10 | 7.27 | 8.25 |
| SW2A | 5/8 | 10 | 16.00 | 3.75 |
| SW2B | 5/8 | 10 | 16.00 | 3.75 |

| |
|-----------------|
| Avg. In./Hr. |
|-----------------|

| | |
|-----|------|
| SW1 | 9.38 |
|-----|------|

| | |
|-----|------|
| SW2 | 3.75 |
|-----|------|



331 W 7th AVE. SW TEST LOCATION SKETCH

| DRAIN TIME CALCULATION - SEEPAGE BED #1 & #2 | | | |
|---|---|-----------|-----------------------|
| Infiltration Rate Per Testing | = | 9.38 | inches per hour * |
| Infiltration Rate Conversion | = | 0.000217 | feet per second |
| Bed Size/Shape | = | 15' x 22' | feet |
| Bed Surface Area | = | 330 | square feet |
| Infiltration Flow Rate | = | 0.071653 | cubic feet per second |
| Infiltration Volume (0.4 x 330 x 3.08) | = | 407 | cubic feet |
| Drain Time - Actual | = | 1.6 | hours |
| Factor of Safety | = | 2 | |
| Drain Time - Design | = | 3.2 | hours |
| * Based upon SW#1 Infiltration Rate of 9.38 in/hr | | | |



June 30, 2021

File No. 21-05092

Stephanie Cecco, Borough Manager
Borough of Conshohocken
400 Fayette Street, Suite 200
Conshohocken, PA 19428

Reference: 333 West 7th Avenue – LD 2021-04
TMP #05-00-08280-10-3
Minor Subdivision and Land Development

Dear Ms. Cecco:

Pursuant to the Borough's request, Gilmore & Associates, Inc. has reviewed the Minor Subdivision and Land Development submission for the above-referenced project. Upon review we offer the following comments for consideration by the Conshohocken Borough Council:

I. Submission

- A. Plans, consisting of sheets 1 through 8 of 8, dated May 5, 2021, as prepared by Joseph M. Estock for 333 West 7th Avenue
- B. Post-Construction Stormwater Management Written Narrative, dated May 5, 2021, as prepared by Joseph M. Estock for 333 West 7th Avenue

II. Project Description

The subject property, Tax Map Parcel number 05-00-08280-10-3, is situated in the BR-1 Borough Residential One Zoning District on the southern side of West 7th Avenue between Wood Street and Freedley Street. The site is 8,260 square feet and currently contains a 1,067 square foot footprint residential dwelling with a 152 square foot shed, driveway, and walkways. All existing features are to be demolished as part of this land development.

The Applicant is proposing to subdivide the property into two lots containing 4,130 square feet each. Each lot is proposed to be improved with an 860 square foot footprint single-family semi-detached dwelling, 240 square foot rear deck, a 140 square foot front porch, and rear parking area to accommodate two parking spaces with access to the rear alley. To address stormwater management, each lot will contain a seepage bed. Public improvements include concrete curbing, sidewalk, and road widening along the property frontage of West 7th Avenue. No improvements are proposed within the rear alley. Both lots will be serviced by public water and sewer.

III. Review Comments

A. Zoning Ordinance

We defer all comments with respect to the Conshohocken Borough Zoning Ordinance to the Borough's Zoning Officer.

B. Subdivision and Land Development Ordinance

We offer the following comments with respect to Borough of Conshohocken Subdivision and Land Development Ordinance:

1. §22-305.B(1)(b) – The plans shall be revised to dimension the existing and proposed cartway widths of West 7th Avenue.
2. §22-405.1.A – The proposed sidewalk shall be extended to the northern property line to provide sidewalk along the entire property frontage or waiver would be required.
3. §22-405.2 – The proposed curb along the West 7th Avenue frontage shall be extended to remove the curb taper south of the existing driveway to provide full height curbing along the property frontage.
4. §22-409 – We offer the following comments with respect to the grading proposed on the Post-Construction Stormwater Management Plan, Sheet 5:
 - a. The proposed grading would alter the grades at the existing stone wall associated with the adjacent property west of the site, 335 West 7th Avenue. A note shall be added to the Record Plan, Sheet 1, indicating that the Applicant will coordinate with the Borough and adjacent property owner to address any construction activities that negatively impact the structural stability of the existing wall.
 - b. Additional spot elevations shall be added to the sidewalk proposed along West 7th Avenue to confirm maximum two percent cross slopes are provided.
 - c. A note shall be added to the Record Plan, Sheet 1, indicating the limits of removal and replacement for sidewalk south of the site will be as necessary to provide a maximum 5 percent longitudinal slope and 2 percent cross slope.
 - d. The proposed 172 foot contour along West 7th Avenue shall be revised to account of the proposed 6 inch reveal curb.
 - e. The eastern-most proposed bottom of curb elevation, 172.65 feet, is labeled at the existing 173 foot contour. Additional grading information shall be provided to confirm how the proposed grading will tie in to the existing elevations.
 - f. Based on the proposed difference in elevation of 172.00 feet to 172.61 feet where the driveways meet the rear walkway, it appears a step is proposed. This shall be clarified and any step identified on the plans. Also, the grading proposed between the two rear walkways by the driveway shall be clarified since a 60% slope is proposed based on the provided spot elevations; the maximum permitted slope of lawn areas intended to be mowed is 3:1 (~33%).
5. §22-409.2 – The Applicant is requesting a waiver to permit proposed grading within the alley and roadway right-of-way and within 3 feet of the exterior property lines, which we support to permit connection into existing grades.
6. §22-410 – We offer the following comments with respect to the Post-Construction Stormwater Management Written Narrative:
 - a. The Project Description section on page 3 shall be revised to indicate the property is 8,260 square feet.
 - b. The During Construction Controls section on page 4 shall be revised to indicate the individual property owners will be responsible for the permanent facilities after construction.
7. §22-410.1.F – The Summary of Peak Flow Rates for Watershed A on page 92 shows the post-development flows are greater than the pre-development flows. The stormwater management design shall be revised to ensure the post-development peak discharge is no greater than peak discharge prior to development.
8. §22-410.4.K – Pipe calculations shall be provided to confirm the roof drain system can handle the flows from the 100-year design storm.
9. §22-410.4.L – The stormwater management design utilizes infiltration testing data from the adjacent property east of the site, 331 West 7th Avenue. We have no objection to the Applicant using this data conditioned upon a note being added to the Post Construction Stormwater Management Plan, Sheet 5, indicating that, in the event limiting zones and/or poor infiltration is encountered during construction, the Applicant will be required to perform on-site infiltration testing and submit a revised stormwater management design to our office for review and approval.

10. §22-410.6 - The deeds for the proposed lots shall incorporate a stormwater facility description and maintenance requirements in a form acceptable to the Borough Solicitor's office.
11. §22-421.4 – The Applicant is requesting a partial waiver from the requirements of this section to propose street trees to be located within the West 7th Avenue right-of-way, where a minimum distance of 5 feet inside the lot lines is required, contingent upon the condition that the property owners agree to maintain the trees.
12. §22-804 – The Applicant is requesting a partial waiver to permit a fee in lieu of dedicating 10% of the total site area to the Borough for park and recreational use. Based on the limited site area, we recommend the Applicant coordinate with the Borough Solicitor regarding a fee in lieu of providing park and recreational facilities.

C. General Comments

We offer the following general comments:

1. The Applicant shall obtain all required approvals, permits, etc. (e.g. Fire Marshal, Conshohocken Borough Sewer Authority, MCPC, MCCD, PADEP, Aqua, etc.). Copies of these approvals and permits shall be submitted to the Borough of Conshohocken and our office.
2. Legal descriptions for the proposed lots shall be provided to our office for review.

If you have any questions regarding the above, please contact this office.

Sincerely,



Karen M. MacNair, P.E.
Borough Engineer
Gilmore & Associates, Inc.

KMM/ve/

cc: Brittany Rogers, Executive Assistant
Ray Sokolowski, Executive Director of Operations and Building Code Official
Michael E. Peters, Esq., Borough Solicitor



BOROUGH OF CONSHOHOCKEN

Fire Marshal

MAYOR
Yaniv Aronson

BOROUGH COUNCIL
Colleen Leonard, President
Tina Sokolowski, Vice-President
Robert Stokley, Senior Member
Anita Barton, Member
James Griffin, Member
Jane Flanagan, Member
Karen Tutino, Member

Stephanie Cecco
Borough Manager

Date: June 10, 2021

To: Stephanie Cecco, Borough Manager

From: Timothy Gunning, Fire Marshal
Chris Small, Residential Building Inspector

Re: Fire Marshal Review
333 West 7th Avenue
Preliminary/Final Minor Subdivision and Land Development

As requested, the following materials submitted for the above referenced land development proposal were reviewed:

- Preliminary/Final Minor Subdivision and Land Development Plans, consisting of sheets 1 through 8 of 8, dated May 5, 2021, as prepared by Joseph M. Estock for 333 West 7th Avenue

Upon review of the submitted plan, we have no comments.

**MONTGOMERY COUNTY
BOARD OF COMMISSIONERS**

VALERIE A. ARKOOSH, MD, MPH, CHAIR
KENNETH E. LAWRENCE, JR., VICE CHAIR
JOSEPH C. GALE, COMMISSIONER



**MONTGOMERY COUNTY
PLANNING COMMISSION**

MONTGOMERY COUNTY COURTHOUSE • PO Box 311
NORRISTOWN, PA 19404-0311
610-278-3722
FAX: 610-278-3941 • TDD: 610-631-1211
WWW.MONTCOPA.ORG

SCOTT FRANCE, AICP
EXECUTIVE DIRECTOR

June 16, 2021

Stephanie Cecco, Borough Manager
Borough of Conshohocken
400 Fayette Street, Suite 200
Conshohocken, Pennsylvania 19428

Re: MCPC #21-0158-001
Plan Name: 333 West 7th Avenue
(2 lots/ 2 dwelling units/ comprising 0.19 acres)
Situate: 333 West 7th Avenue (south)/Wood Street (west)
Borough of Conshohocken

Dear Ms. Cecco:

We have reviewed the above-referenced subdivision and land development plan in accordance with Section 502 of Act 247, "The Pennsylvania Municipalities Planning Code," in as requested by documentation submitted by the borough on May 21, 2021. We forward this letter as a report of our review.

BACKGROUND

The applicant, DJB Properties has submitted a subdivision and land development plan that proposes the construction of two semi-detached single dwellings (twins) on two new lots. The development tract consists of an 8,260 sq. ft. parcel that will be subdivided to create two 4,130 sq. ft. lots. An existing brick, one-story single-family residence constructed in 1988 will be demolished along with an outbuilding located adjacent to the alley.

The development tract is Tax Parcel 05-00-082801-03 and is located in the borough's BR-1- Borough Residential District One. The plan shows that access to the residences will be taken from Hallowell Street. The BR-1 District requires a minimum lot area of 4,000 square feet and a minimum lot width of 40 feet. The plan addresses these dimensional requirements and other related dimensional requirements. The site plan notes indicate that 3 waivers are requested from the borough's Subdivision and Land Development Ordinance.

CONSISTENCY WITH THE COUNTY & TOWNSHIP COMPREHENSIVE PLANS

The subdivision and development of this tract is generally consistent with the goals and intent of *MONTCO 2040: A Shared Vision*, the Montgomery County Comprehensive Plan, 2015. The Future Land Use Map designates this developed area of the borough as "Village-Residential". The development of small lot, single-family residential homes advances the future land use vision. The development plan appears generally consistent with the Conshohocken Borough Comprehensive Plan Update, 2018. It supports residential infill development in the community provided the new residential units respect the existing character of the neighborhood.

RECOMMENDATION & COMMENT

The Montgomery County Planning Commission (MCPC) generally supports the applicant's development proposal. We have not identified any significant land use, transportation, design, or other issues that should be addressed in the subdivision and land development of this parcel as presented by the preliminary plan. Therefore, we have no substantive comments.

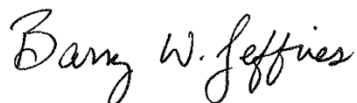
CONCLUSION

The Montgomery County Planning Commission generally supports the plan as submitted. Please note that any recommendations 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 #21-0158-001 has been set aside for the applicant's 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.

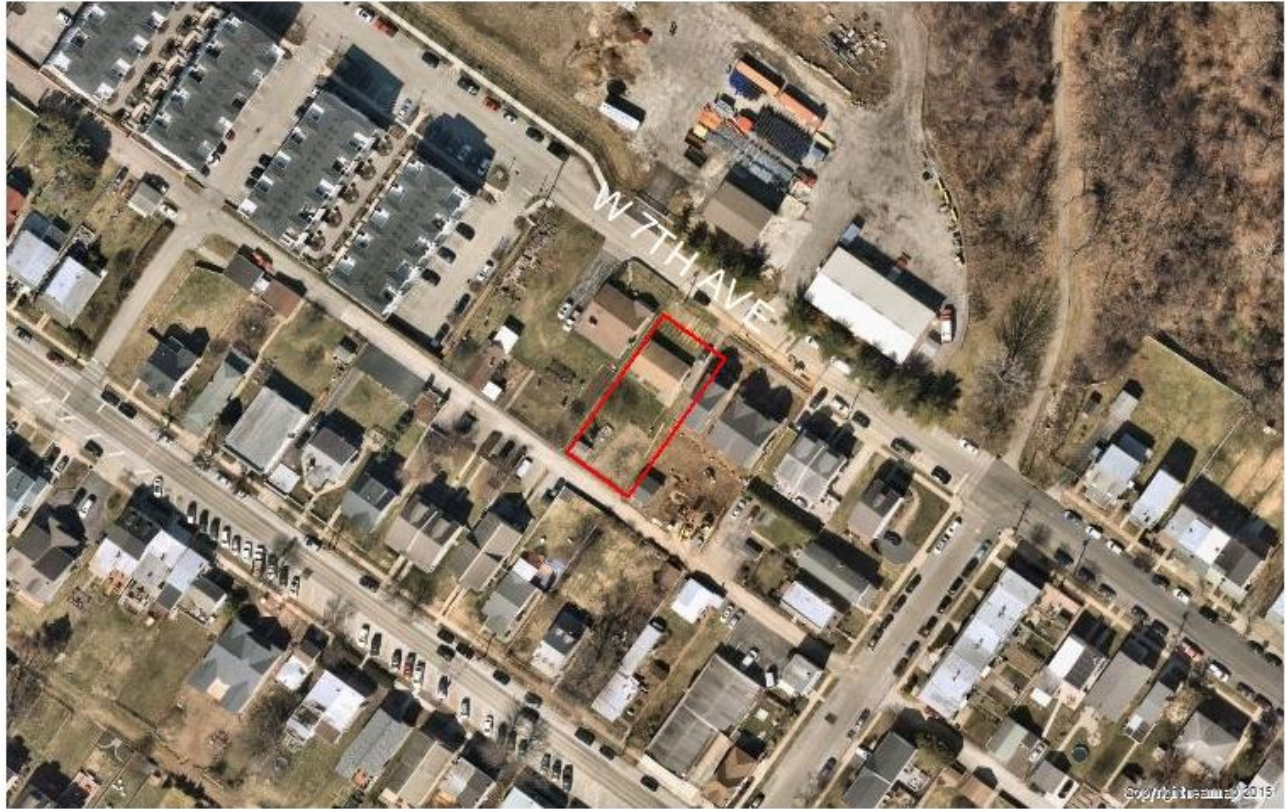
Should the governing body approve a final plat of this proposal, the applicant must present the plan to our office for seal and signature prior to recording with the Recorder of Deeds office. A paper copy bearing the municipal seal and signature of approval must be supplied for our files.

Sincerely,



Barry W Jeffries, ASLA, Senior Design Planner
bjeffrie@montcopa.org - 610-278-3444

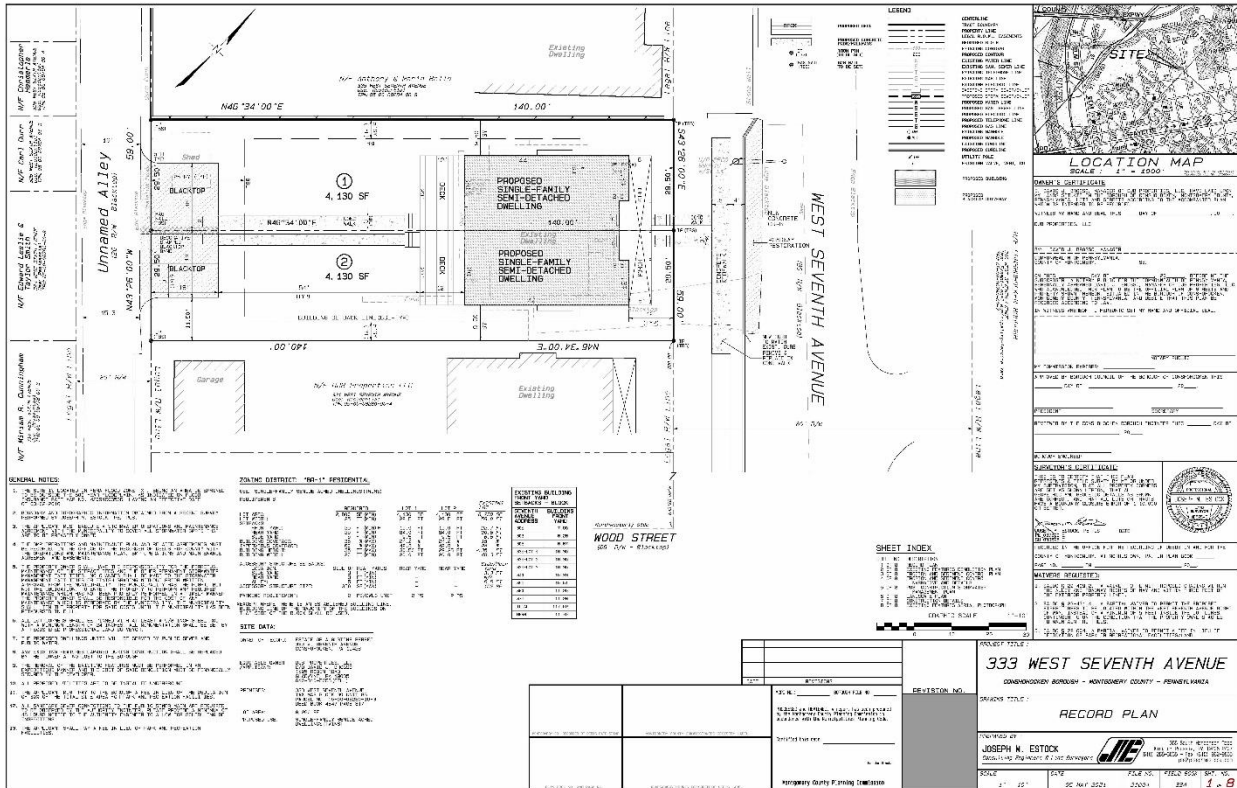
c: Chrm., Township Planning Commission
Karen MacNair, Township Engineer
Michael Peters, Township Solicitor



333 West 7th Avenue
MCPC #210158001

Montgomery
County
Planning
Commission
Montgomery County Courthouse - Planning Commission
P.O. Box 311 • Harrisburg PA 17104-0311
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www.montcopa.org/planning
Aerial photography provided by Viewmap.







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BCON21017

June 30, 2021

Stephanie Cecco
Borough Manager
Borough of Conshohocken
400 Fayette Street, Suite 200
Conshohocken, PA 19428

**RE: Traffic Engineering Review
333 W. 7th Avenue Residential**

Dear Ms. Cecco:

We have completed our review of the material submitted for the above referenced land development proposal. The submission consisted of a Preliminary/Final Minor Subdivision and Land Development Plan, prepared by Joseph M. Estock Consulting Engineers & Land Surveyors, dated May 5, 2021. We offer the following comments for your consideration:

1. SLDO 27-824 - Traffic Impact Study – This section of the code requires a Traffic Impact Study (TIS) for all subdivisions of 30 or more dwelling units. A TIS is not required for this development.

If you have any questions or require additional information, please do not hesitate to contact me.

Very truly yours,

PENNONI ASSOCIATES INC.

Brian R. Keaveney, PE, PTOE
Transportation Division

cc: Ray Sokolowski, Executive Director of Operations
George Metz, Chief of Police
Timothy Gunning, Fire Chief and Fire Marshal
Karen MacNair, PE, Borough Engineer
Michael Peters, Esq., Borough Solicitor
Brittany Rogers, Executive Assistant to the Borough Manager

June 30, 2021

BCONS 21011

Stephanie Cecco, Borough Manager
Conshohocken Borough
400 Fayette Street, Suite 200
Conshohocken, PA 19428

RE: Zoning Review
333 West 7th Avenue – Preliminary/Final Land Development Application

Dear Ms. Cecco:

As requested, we reviewed the following in connection with the referenced project:

- *“Preliminary/Final Minor Subdivision and Land Development Plans,”* (8 sheets) prepared by Joseph M. Estock Consulting Engineers & Land Surveyors, dated May 5, 2021.
- *“Architectural Plans,”* (8 sheets) prepared by J.R. Betts & Associates, dated May 13, 2021.

The applicant, DJB Properties, LLC, proposes to demolish the existing single-family detached dwelling on the subject property located in the BR-1 – *Borough Residential 1 Zoning District*. The 8,260 square-foot (SF) parcel will be subdivided into two (2) 4,130 SF lots. The applicant proposes to construct a set of single-family semi-detached dwellings on the new lots; along with curbing, sidewalk, patios/decks, driveways, parking pads, landscaping, and stormwater management. The property is served by public water and sanitary sewer.

We offer the following comments:

1. The front yard setback shall be 25 feet, measured from the ultimate right-of-way line; except where there is an established building line, then the building line of the majority of the buildings on that side of the block shall be used. (§27-1005.C) The plans indicate the mean building setback for the majority of the dwellings on the block is 11.70 feet and is proposing a front yard setback of 12 feet for the new dwellings. During the land development of the abutting 331 W. 7th Ave property, the front yard setback was established as 10.5 feet; however, these dwellings appear to have been constructed with a 16.35-foot setback. The applicant should clarify if they intend to construct the new dwellings with a setback that differs from the plans.
2. No lighting of private property shall cause a hazard or nuisance to abutting roads and properties. (§27-821) The applicant is to clarify if any exterior lighting is proposed as part of this project; and if so, a lighting plan provided to confirm conformance with §27-821.E.
3. The provided site plan indicates a deck to the rear of each proposed dwelling; however, the architectural renderings indicate a patio of a different size. Please clarify.

If you have any questions or concerns, please feel free to contact the undersigned.

Sincerely,



Eric P. Johnson, PE
Zoning Officer
PENNONI ASSOCIATES INC.

EPJ/