HATFIELD BOROUGH

PLANNING COMMISSION

November 18, 2024

KENNETH V. FARRALL, CHAIR

LAWRENCE G. STEVENS, VICE CHAIR

LARRY BURNS, MEMBER

JOHN KROESSER, MEMBER

MICHELLE KROESSER, MEMBER

JAIME E. SNYDER, BOROUGH MANAGER

Borough of Hatfield

Montgomery County, Pennsylvania

PLANNING COMMISSION
November 18, 2024 6:00PM
AGENDA

Call to Order / Roll Call

Kenneth Farrall Lawrence Stevens Larry Burns
John Kroesser Michelle Kroesser

1. Motion to Approve the November 18, 2024 Agenda

2. Motion to Approve the September 23, 2024 Meeting Minutes

3. Hatfield Walk, 23 N. Main Street, Land Development Presentation

4. Old Business:
   A. Bennetts Court Update
   B. Didden Greenhouses Update
   C. 43 Roosevelt Avenue Update

5. New Business:

6. Action Items:
   A. Motion to Consider Granting Preliminary / Final Approval for Hatfield Walk, 23 N. Main Street, Development.

7. The Next Planning Commission Meeting is Scheduled for Monday, December 16, 2024 at 6:00PM in Council Chambers

8. Motion to Adjourn

401 S. Main Street
P.O. Box 190
Hatfield, PA 19440

Phone:
215-855-0781

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215-855-2075

Email:
admin@
hatfieldborough.com

Website:
www.hatfieldborough.com

2. Motion to Approve the September 23, 2024 Meeting Minutes

PLANNING COMMISSION

September 23, 2024 6:00PM
Meeting Minutes
This Meeting was Recorded

ROLL CALL

(X) Kenneth V. Farrall, Chair
(X) Lawrence G. Stevens, Vice Chair
(X) Larry Burns
(X) John Kroesser -left at 6:40PM
(X) Michelle Kroesser -left at 6:50PM

The record shows that five members of the Planning Commission were present along with Borough Manager Jaime E. Snyder, Chad Camburn; Borough Engineer and Public Information Coordinator; Lindsay Hellmann.

1. APPROVAL OF THE AGENDA:

Motion to Approve the September 23, 2024 Planning Commission Meeting Agenda

Motion: A motion was made by Larry Burns to Approve the the September 23, 2024 Planning Commission Meeting Agenda. The motion was seconded by Michelle Kroesser and unanimously approved with a vote of 5-0.

2. APPROVAL OF THE MINUTES:

Motion to Approve the Minutes of the March 25, 2024 Planning Commission Meeting with the corrections noted by Larry Burns.

Motion: A motion was made by Larry Burns to Approve the March 25, 2024 Meeting Minutes. The motion was seconded by Michelle Kroesser and unanimously approved with a vote of 5-0.

3. Hatfield Walk, 23 N. Main Street, Land Development Presentation

Ben Goldthorp from Pennington Property Group introduced himself to the Planning Commission and stated that he was present tonight to discuss the plan for Hatfield Walk at the location of 23 North Main Street. This plan did receive relief from the Zoning Hearing Board and part of the requirements was for this project to conform to the R-4 Zoning standards which is shown today with 8 townhomes. This project is about an acre of disturbance, the access is along North Main Street. There will be a Homeowners Association that will maintain the property. Mr. Goldthorp stated that they did receive the review letters from the Borough Engineer and Borough Traffic Consultant, most comments from the professional consultant reviews they will comply with. Ken Farrall asked about the open space that was discussed during the Zoning Hearing and if that was

still part of the plan for Hatfield Walk. Mr. Goldthorp replied that this is something that he is willing to discuss the details of the open space with Council.

Douglass Renner from 25 North Main wanted to express his concerns about the traffic due to this development.

After some discussion about the proposed plan for Hatfield Walk at 23 North Main, the Planning Commission stated that they will table this plan until they present new plans and ideas for the open space and are looking to be on the agenda for the October Planning Commission Meeting and the November Borough Council Meeting.

Motion: A motion was made by Larry Burns to table Hatfield Walk until the October 28, 2024 Planning Commission Meeting. The motion was seconded by Larry Stevens and unanimously approved with a vote of 3-0.

4. Old Business:

A. Bennetts Court Update

Manager Snyder reported that the construction is coming to completion and the contractor is working on punch list items. They should be submitting some escrow releases to Borough Council soon.

B. Diddens Greenhouses Update

Manager Snyder stated that there is no update since the last Planning Commission Meeting update.

C. 43 Roosevelt Avenue Update

Manager Snyder reported that they are currently working on the developer's agreement and posting financial security.

5. New Business:

A. ZHB Meeting for 350 W. Broad Street, Schiano Properties LLC, is scheduled for Thursday, September 26, 2024 at 7:00PM in Council Chambers

Ken Farrall explained that Vinny's is putting in a storage area and they have to go for zoning relief since the square footage of the area is over 5% of the total building. The addition is for 536 square foot storage area. Borough Council has authorized Manager Snyder to write a letter addressing the crosswalk issue. The Zoning Hearing Board reached out to Vinny's asking why they never completed the crosswalk which was part of their original Zoning Hearing Board order and the reason that they didn't complete it is because it is a Hatfield Borough project which grant funds were received for it.

Motion: A motion was made by Ken Farrall to make a recommendation to approve the Zoning Hering Board

application for Vinnys Pizza at 350 W Broad Street. The motion was seconded by Larry Stevens and unanimously approved with a vote of 3-0.

6. Action Items:

7. Next Meeting Monday, October 28, 2024, 6:00PM

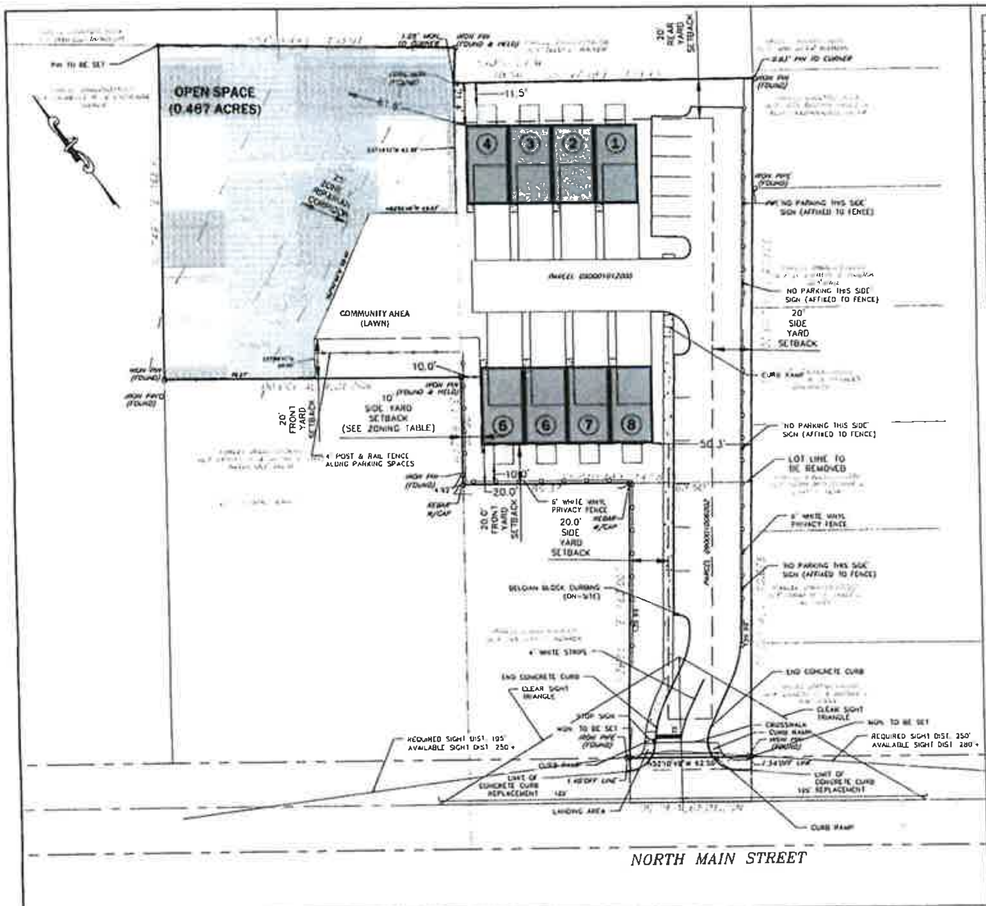
8. Motion to Adjourn

Motion: A motion was made by Larry Stevens to adjourn the September 23, 2024 Planning Commission Meeting. The Motion was seconded by Larry Burns and unanimously approved with a vote of 3-0.

Respectfully Submitted,
Kathryn Vlahos
Assistant Manager

3. Hatfield Walk, 23 N. Main Street, Land Development Presentation

23 North Main Hatfield
Walk Land Development
Plans and
Turning Template



ZONING DATA TABLE

Zoning District - CC: Core Commercial District

ITEM	REQUIRED/PERMITTED	PROPOSED	SECTION
Land Use:	Townhouse (V)		27-2100
Townhouse Requirements:			
Maximum Density	6 DU/ Acre	5.36 DU/ Acre	Table 27-15-3
Min. Lot Area	2,500 SF / Unit	8,133 SF / Unit	Table 27-15-3
Min. Lot Width	20 FT/ 25FT (End Units)	22FT / 27FT (End Units)	Zoning Decision
Max. Building Coverage	40%	12.0%	Table 27-15-3
Max. Impervious Surface	75%	42.5%	Table 27-15-3
Min. Front Yard Setback	20 FT	21.4 ft	Zoning Decision
Min. Side Yard Setback	20 FT*	20 FT*	Zoning Decision
Min. Rear Yard Setback	20 FT	20 FT	Zoning Decision
Max. Building Height	40 FT / 4 ST	<40 FT/ 3 ST	27-2108.1.E
Min. Patio/ Deck Setback	10 FT	10 FT	27-811.1.C
Min. Off-Street Parking	2 Garage Spaces and 2 Driveway Spaces per Unit and 12 Overflow Spaces		Zoning Decision
Min. Riparian Corridor Width	25 FT**	25 FT	27-2302.1.A

(V) Use Variance Granted. Specific Dimensional requirements area noted below.

* the minimum side yard shall be 20 Feet except adjacent to parcel 09-00-01015-00-2 the setback shall be 10 feet minimum

** The riparian corridor is required to be 25 feet as the stream is an intermittent stream with a drainage area less than 75 acres

SITE LOCATION MAP SCALE 1"=500'

REFERENCE: BING MAPS

Lot Area Calcs.

	S.F.	Acres
Area in Parcel No. 09-00-01006-00-2	10,185	0.234
Land Within R.O.W.	1,430	0.033
Area in Parcel No. 09-00-01012-005	56,321	1.293
Land within R.O.W.	0	0.000
Combined Lot Area (Gross)	66,458	1.527
Combined Lot Area (Net)	65,068	1.494

IMPERVIOUS COVERAGE CALCULATIONS

Existing Impervious Area	S.F.	Acres
Existing Dwelling & Garage	1,247	0.029
Existing Patio & Walkways	675	0.015
Existing Driveway	1,169	0.027
Total Existing Impervious	3,091	0.071
Existing Building Coverage	3.0%	
Existing Impervious Coverage	4.8%	
Proposed Impervious Area		
Proposed Building & Deck	7,840	0.180
Proposed Driveway & Parking	17,582	0.404
Proposed Sidewalk	2,485	0.057
Total Proposed Impervious	27,907	0.641
Proposed Building Coverage	12.0%	
Proposed Impervious Coverage	42.5%	
Change in Impervious Area	24,816	

LEGEND

PROPERTY LINE	
R.O.W. LINE	
BUILDING SETBACK	
PROPOSED MONUMENT	
PROPOSED IRON PIN	
PROP. CURB	
PROP. FENCE	
PROP. BUILDING	
PROP. DECK	
PROP. OPEN SPACE	
PROP. CONCRETE	
PROP. TRAFFIC SIGN	

CORPORATE ACKNOWLEDGMENT

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF ____________

ON THE ________ DAY OF ______________, 20___ BEFORE ME THE SUBSCRIBER, A NOTARY PUBLIC OF THE COMMONWEALTH OF PENNSYLVANIA, PERSONALLY APPEARED BENJAMIN GOLDTHORP, MANAGING MEMBER OF PENNINGTON PROPERTY GROUP LLC, WHO ACKNOWLEDGED THIS PLAN TO BE THE OFFICIAL PLAN OF LOTS AND PROPERTY SHOWN THERETO SITUATED IN THE HATFIELD BOROUGH, COUNTY OF MONTGOMERY, COMMONWEALTH OF PENNSYLVANIA, AND DESIRED THAT THIS PLAN BE RECORDED ACCORDING TO LAW.

WITNESS MY HAND AND NOTARIAL SEAL THIS ________ DAY OF ____________ 20____

____________________ NOTARY PUBLIC (SEAL)

____________ HAS LAID OUT UPON ITS LAND, SITUATE IN THE BOROUGH OF HATFIELD, COUNTY OF MONTGOMERY, COMMONWEALTH OF PENNSYLVANIA, CERTAIN LOT LINE ADJUSTMENT ACCORDING TO THE ACCOMPANYING PLAN WHICH IS INTENDED TO BE RECORDED

WITNESS MY HAND AND SEAL THIS ______________ DAY OF ______________ 20_____

____

APPROVAL OF BOROUGH

APPROVED BY THE BOROUGH COUNCIL OF THE BOROUGH OF HATFIELD, COUNTY OF MONTGOMERY, COMMONWEALTH OF PENNSYLVANIA, ON THE _____ DAY OF ____________, 20__

____________________ SECRETARY

____________________ PRESIDENT

REVIEWED BY HATFIELD BOROUGH ENGINEER

DATE ____________________ ____________________ BOROUGH ENGINEER

RECORDER OF DEEDS

RECORDED IN THE OFFICE FOR THE RECORDING OF DEEDS IN AND FOR THE COUNTY OF MONTGOMERY, AT NORRISTOWN, PA, IN PLAN BOOK NO. ________ PAGE NO. ________ ON ______________ 20__

____________________ RECORDER

SURVEYOR'S CERTIFICATION

THIS IS TO CERTIFY THAT THIS PLAN REPRESENTS A FIELD SURVEY MADE BY ME OR UNDER MY SUPERVISION, THAT ALL PROPERTY CORNERS ARE SET AS SHOWN HEREON, THAT ALL GEOMETRIC DETAILS AS SHOWN ARE CORRECT, AND THAT ALL LOTS OR TRACTS HAVE A BOUNDARY CLOSURE ERROR OF 1:10,000 OR BETTER

DATE ____________ ____________ PATRICK CAVANAUGH, PA P.L.S. ____________ (SEAL)

MCPC NO. ____________

PROCESSED AND REVIEWED. A REPORT HAS BEEN PREPARED BY THE MONTGOMERY COUNTY PLANNING COMMISSION IN ACCORDANCE WITH THE MUNICIPALITIES PLANNING CODE.

CERTIFIED THIS DATE ____________

____________ FOR THE DIRECTOR
MONTGOMERY COUNTY PLANNING COMMISSION

APPLICANT'S STORMWATER ACKNOWLEDGEMENT

I, ____________ ACKNOWLEDGE THAT ANY REVISION TO THE APPROVED SWM SITE PLAN MUST BE APPROVED BY THE MUNICIPALITY AND THAT A REVISED E&S PLAN MUST BE SUBMITTED TO THE CONSERVATION DISTRICT

____________ ____________

OWNER/ APPLICANT
PENNINGTON PROPERTY GROUP LLC
P.O. BOX
CHALFONT, PA 18914
(267) 767-0876

DESIGN ENGINEER CERTIFICATION
I, ROBERT CUNNINGHAM, ON THIS DATE ________, HEREBY CERTIFIES THAT THE STORMWATER MANAGEMENT PLAN MEETS ALL DESIGN STANDARDS AND CRITERIA OF THE HATFIELD BOROUGH

ROBERT T. CUNNINGHAM, P.E.
PA LICENSE # PE076424

DRAWING LIST

SHEET NUMBER	DRAWING NUMBER	DRAWING TITLE	LAST REVISED DATE
1*	C1.0	RECORD PLAN	10/11/2024
2	C1.1	EXISTING FEATURES PLAN	10/11/2024
3	C1.2	AERIAL PHOTO PLAN	10/11/2024
4*	C2.0	SITE IMPROVEMENT PLAN	10/11/2024
5	C2.1	CONSTRUCTION DETAILS	10/11/2024
6*	C3.0	GRADING AND DRAINAGE PLAN	10/11/2024
7*	C3.1	PCSM DETAILS	10/11/2024
8	C4.0	UTILITY PLAN	10/11/2024
9	C4.1	WATER DETAILS	10/11/2024
10	C4.2	SANITARY SEWER DETAILS	10/11/2024
11	C5.0	EROSION AND SEDIMENT CONTROL PLAN	10/11/2024
12	C5.1	EROSION AND SEDIMENT CONTROL DETAILS	10/11/2024
13	C6.0	LANDSCAPE PLAN	10/11/2024
14	C6.1	LANDSCAPE DETAILS	10/11/2024
15	C7.0	PROFILES	10/11/2024

* PLAN TO BE RECORDED

ZONING HEARING DECISION

ON APRIL 24, 2024, ARBOR GROVE DEVELOPMENT COMPANY, LLC WAS GRANTED THE FOLLOWING VARIANCES FROM THE HATFIELD BOROUGH ZONING ORDINANCE (THE "ZONING ORDINANCE") FROM SECTIONS 27-1202, 27-1204, 27-2101, 27-2108.1.G, AND 27-2108.1.H OF THE ZONING ORDINANCE TO PERMIT THE CONSOLIDATION OF TWO LOTS AND THE DEVELOPMENT OF THE SAME AS A NINE UNIT TOWNHOUSE COMMUNITY

THE VARIANCES WERE GRANTED SUBJECT TO THE FOLLOWING CONDITIONS:

1. A HOMEOWNERS' ASSOCIATION (HOA) SHALL BE ESTABLISHED TO THE SATISFACTION OF THE BOROUGH DURING THE LAND DEVELOPMENT PROCESS AND SHALL INCLUDE PROVISIONS FOR THE FOLLOWING:
   - 1.a. THE HOA SHALL BE RESPONSIBLE FOR, AT A MINIMUM, FOR ROADS, PARKING AREAS, STORMWATER, SIDEWALKS, TRAILS, OPEN SPACE, COMMUNITY AREA, LANDSCAPING AND SNOW PLOWING.
   - 1.b. THE TWO LOTS MAKING UP THE SUBJECT PROPERTY SHALL BE MERGED AND DEVELOPED AS A UNITED PROJECT/PROPERTY, AND
   - 1.c. OPEN SPACE SHALL BE RESTRICTED FROM FURTHER DEVELOPMENT AND SHALL BE OFFERED TO THE BOROUGH FOR DEDICATION.
2. LANDSCAPING AND BUFFERING SHALL BE DESIGNED TO THE SATISFACTION OF THE BOROUGH DURING THE LAND DEVELOPMENT PROCESS AND SHALL BE PROVIDED BETWEEN THE SUBJECT PROPERTY AND ALL ADJOINING RESIDENTIALLY USED TRACTS.
3. THERE SHALL BE A MAXIMUM OF NINE (9) TOWNHOME UNITS.
4. ALL TOWNHOMES SHALL BE A MINIMUM OF TWENTY FEET (20') FROM ALL PROPERTY LINES WITH THE EXCEPTIONS THAT:
   - 4.a. PATIOS AND DECKS MAY BE A MINIMUM OF TEN FEET (10') FROM ANY PROPERTY LINE, AND
   - 4.b. THE TOWNHOUSE UNIT NEXT TO THE POST OFFICE PROPERTY (PARCEL NO. 09-00-01015-00-2) SHALL HAVE A MINIMUM SIDE YARD SETBACK OF TEN (10) FEET.
5. THERE SHALL BE A MINIMUM OF TWELVE (12) SHARED PARKING SPACES AS SHOWN ON THE PLANS.
6. ANY STORMWATER BASIN SHALL BE A MINIMUM OF FIFTEEN FEET (15') FROM ANY BUILDING.
7. ALL TOWNHOUSE UNITS SHALL HAVE A MINIMUM OF TWO GARAGE PARKING SPACES AND TWO SURFACE DRIVEWAY PARKING SPACES.
8. THE FINAL DESIGN OF THE PROJECT SHALL BE APPROVED BY THE BOROUGH FIRE MARSHAL PRIOR TO THE FINAL LAND DEVELOPMENT APPROVAL OF THE PROJECT.
9. THE SITE ACCESS SHALL BE DESIGNED TO THE SATISFACTION OF THE BOROUGH AND PENNDOT, IF NECESSARY.
10. THE PROJECT SHALL CONFORM TO THE DENSITY AND DIMENSIONAL STANDARDS OF THE R-4 ZONING DISTRICT AS SET FORTH IN THE TABLE 27-15-3 OF THE ZONING ORDINANCE, WITH THE FOLLOWING EXCEPTIONS:
    - 10.a. MINIMUM REAR YARD SHALL BE REDUCED TO 20 FEET (DECKS/PATIOS MAY BE TEN (10) FEET AS SET FORTH ABOVE).
    - 10.b. THE MINIMUM LOT WIDTH FOR ANY END UNIT SHALL BE 25 FEET.
11. REFUSE COLLECTION FACILITIES MUST BE PROVIDED AS SET FORTH IN THE BOROUGH'S CODE.
12. THE PROJECT SHALL CONFORM TO THE REGULATIONS OF THE FLOOD PLAIN CONSERVATION DISTRICT INCLUDING ANY RIPARIAN BUFFER REQUIREMENTS. CLEARING OF EXISTING VEGETATION, PARKING LOTS AND STORMWATER MANAGEMENT FACILITIES, AMONG OTHER IMPROVEMENTS, ARE PROHIBITED IN THE RIPARIAN CORRIDOR DISTRICT.
13. LIGHTING LEVELS AND FIXTURES SHALL NOT CREATE A NUISANCE ON ADJACENT PROPERTIES.
14. A PRIVACY FENCE SHALL BE INSTALLED ALONG THE REINER PROPERTY (PARCEL NO. 09-00-01009-00-8) AND ALONG THE ENTIRE SOUTHERN PROPERTY LINE TO SHIELD ADJACENT RESIDENTIALLY USED PROPERTIES FROM VEHICLES.
15. THE PROPOSED SIDEWALK ALONG THE REINER PROPERTY (PARCEL NO. 09-00-01009-00-8) SHALL BE LOCATED ADJACENT TO THE PROPOSED CURBING FOR THE ACCESS DRIVE TO THE FULLEST EXTENT PRACTICAL.
16. ALL CONDITIONS OF APPROVAL SHALL BE COMPLIED WITH PRIOR TO THE FINAL LAND DEVELOPMENT AND/OR SUBDIVISION APPROVAL BY THE BOROUGH, AND
17. THE DEVELOPMENT AND THE USE OF THE SUBJECT PROPERTY SHALL BE SUBSTANTIALLY CONSISTENT WITH THE TESTIMONY AND EXHIBITS PRESENTED AT THE HEARING ON THE APPLICATION.

SITE PLAN NOTES

1. BOUNDARY AND TOPOGRAPHIC INFORMATION TAKEN FROM A PLAN TITLED "EXISTING FEATURES" SURVEY PREPARED BY CAVANAUGH'S SURVEYING SERVICE DATED 08-10-2023.
2. ELEVATIONS ON THE PLANS ARE BASED ON PA STATE PLANE COORDINATE SYSTEM (SOUTH ZONE) HORIZONTAL DATUM NAD-83 (1992 ADJUSTMENT) AND VERTICAL DATUM NAVD-88, BASED ON A FIELD SURVEY SERVICES ON JULY 22, 2022.
3. SUBJECT PROPERTY CONSISTS OF TAX PARCEL NO. 09-00-01012-005 AND TAX PARCEL NO. 09-00-01006-002.
4. OPEN SPACE PROVIDED SHALL BE RESTRICTED FROM FURTHER SUBDIVISION. THE OPEN SPACE SHALL BE OFFERED TO THE BOROUGH FOR DEDICATION.
5. ALL UTILITIES SERVICING THE PROPOSED SITE ARE TO BE PLACED UNDERGROUND.
6. ALL TRAFFIC SIGNS SHALL MEET THE REQUIREMENTS OF TITLE 67 OF THE PA CODE, CHAPTER 201, "TRAFFIC AND ENGINEERING STUDIES."
7. PROPOSED FACILITIES TO BE SERVICED BY PUBLIC WATER PROVIDED BY NORTH PENN WATER AUTHORITY AND PUBLIC SEWER PROVIDED BY THE HATFIELD BOROUGH MUNICIPAL AUTHORITY.
8. THE PROPOSED ON-SITE ROADS HAVE BEEN DESIGNED AND WILL BE CONSTRUCTED IN ACCORDANCE WITH HATFIELD BOROUGH CONSTRUCTION STANDARDS. THE ON-SITE ROADS WILL BE PRIVATELY OWNED AND MAINTAINED.
9. BUILDINGS, DRIVEWAYS, GRADING, AND OTHER PROPOSED FEATURES ON PROPOSED LOTS SUBJECT TO CHANGE UPON BUILDING DEPARTMENT PERMIT APPLICATION THAT WILL ILLUSTRATE DETAILED LOT LAYOUTS, ARCHITECTURAL PLANS, AND GRADING.
10. TRASH COLLECTION WILL OCCUR VIA CURBSIDE PICKUP ONSITE AT EACH DRIVEWAY. THERE SHALL BE NO COMMUNITY DUMPSTER.
11. THE CONTRACTOR MUST CONTACT THE UTILITY PROVIDERS ONE-WEEK PRIOR TO UTILITY CONSTRUCTION, AND 72 HOURS PRIOR TO EXCAVATION NEAR AND CONNECTING INTO THE EXISTING UTILITIES.
12. HATFIELD BOROUGH SHALL HAVE THE RIGHT TO ENTER PRIVATE PROPERTY TO INSPECT AND REPAIR, IF NECESSARY, ANY STORMWATER MANAGEMENT FACILITY. A BLANKET EASEMENT IS PROPOSED FOR INSPECTION AND MAINTENANCE OF THE PROPOSED STORMWATER FACILITIES FOR ACCESS BY HATFIELD BOROUGH.
14. NO PERSON SHALL MODIFY, REMOVE, FILL, LANDSCAPE, OR ALTER ANY STORMWATER MANAGEMENT (SWM) BEST MANAGEMENT PRACTICES (BMPS), FACILITIES, AREAS, OR STRUCTURES UNLESS IT IS PART OF AN APPROVED MAINTENANCE PROGRAM AND WRITTEN APPROVAL OF THE BOROUGH HAS BEEN OBTAINED.
15. NO PERSON SHALL PLACE ANY STRUCTURE, FILL, LANDSCAPING, OR VEGETATION INTO A STORMWATER FACILITY OR BMP OR WITHIN A DRAINAGE EASEMENT WHICH WOULD LIMIT OR ALTER THE FUNCTIONING OF THE STORMWATER FACILITY OR BMP WITHOUT THE WRITTEN APPROVAL OF THE BOROUGH.
16. ALL DISTURBED TOPSOIL ON SITE IS TO BE REDISTRIBUTED ON SITE IN AREAS NOT COVERED BY IMPERVIOUS SURFACES. NO REMOVAL OF TOPSOIL FROM A SITE IS ALLOWED UNLESS APPROVED BY HATFIELD BOROUGH.
17. THE COMMUNITY ASSOCIATION IS RESPONSIBLE FOR THE OWNERSHIP AND MAINTENANCE OF THE STORMWATER FACILITIES. REFER TO THE POST CONSTRUCTION MANAGEMENT PLANS AND DETAILS, AS WELL AS, THE APPROVED O&M MANUAL FOR MAINTENANCE PROCEDURES.
18. THE SANITARY SEWER AND GRINDER PUMPS WILL BE A PRIVATE SYSTEM OWNED AND MAINTAINED BY THE COMMUNITY ASSOCIATION.
19. NO PLANTINGS OR STRUCTURES SHALL BE LOCATED WITHIN THE SANITARY SEWER EASEMENTS OR WITHIN 10 FEET OF THE PROPOSED SEWER OR LATERALS.
20. SHEET [illegible] OF 14 ARE THE ONLY PLANS INTENDED TO BE RECORDED.

Holmes Cunningham LLC
350 E. Butler Ave., Ste 106
New Britain, PA 18901
(215) 586-3330
www.hcengineering.net

REVISIONS

Date	Description
10/11/2024	REVISED PER BORO. TRAFFIC & FIRE CMTS

HATFIELD WALK

TMP # 090001012005 & 090001006002

HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

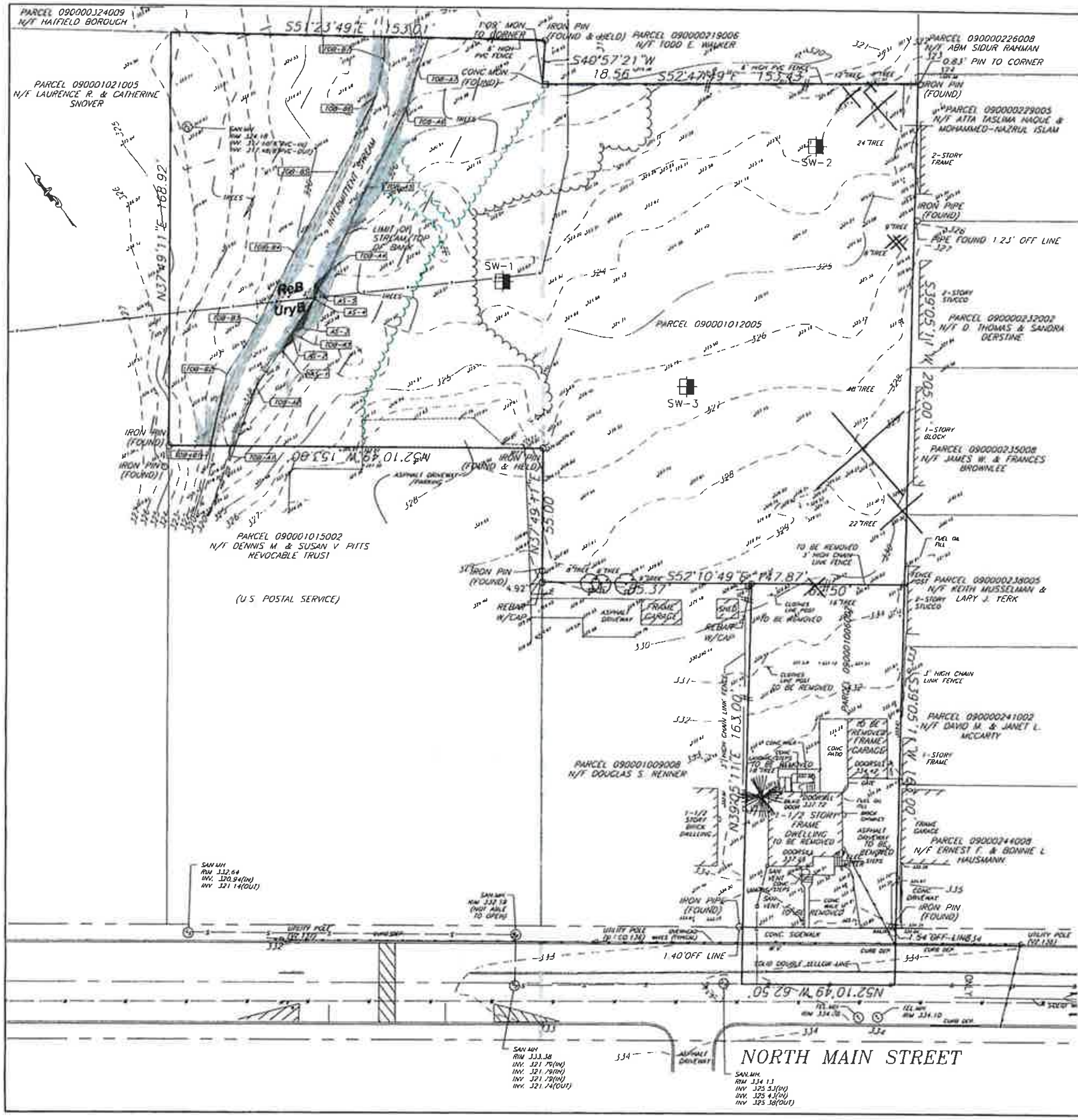
RECORD PLAN

File No. 1727_C1.0_Record.dwg

HCE Job	1727
Date	08/07/2024
Scale	1"=30
Designed	RC
Sheet	1 of 15

Drawing No.

C1.0



SITE LOCATION MAP

SCALE: 1"=500'

LEGEND

- PROPERTY LINE
- R.O.W. LINE
- WETLAND SETBACK
- PROPOSED MONUMENT
- PROPOSED IRON PIN
- EX. CONTOUR
- EX. BUILDING
- EX. TREE
- EX. TREE TO BE REMOVED
- EX. TREE LINE
- LIMIT OF TREE CLEARING
- SOILS LINE
- INFILTRATION TEST PIT LOCATION (SW-1)
- STEEP SLOPES 25%+

NOTES

1. BOUNDARY AND TOPOGRAPHIC INFORMATION TAKEN FROM A PLAN TITLED "EXISTING FEATURES" SURVEY PREPARED BY CAVANAUGH'S SURVEYING SERVICE DATED 08-10-2023
2. ELEVATIONS ON THE PLANS ARE BASED ON PA STATE PLANE COORDINATE SYSTEM (SOUTH ZONE) HORIZONTAL DATUM NAD-83 (1992 ADJUSTMENT) AND VERTICAL DATUM NAVD-88 BASED ON A FIELD SURVEY SERVICES ON JULY 22, 2022.
3. SUBJECT PROPERTY CONSISTS OF TAX PARCEL NO 09-00-01012-005
4. INFILTRATION TESTING HAS BEEN PERFORMED BY VW CONSULTANTS, LLC ON JULY 1, 2024

Holmes Cunningham LLC
350 E. Butler Ave., Ste 106
New Britain, PA 18901
(215) 586-3330
www.hcengineering.net

REVISIONS

Date	Description
10/11/2024	REVISED PER BORO. TRAFFIC & FIRE CMTS.

HATFIELD WALK

TMP # 090001012005 & 090001006002

HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

EXISTING FEATURES PLAN

Robert Cunningham, P.E. PA Lic. No. PE076424

File No. 1727_C1.0_Record.dwg

HCE Job	1727
Date	06/07/2024
Scale	1"=20'
Designed	RC
Sheet	2 of 15

Drawing No.
C1.1

HCE Job	1727
Date	08/07/2024
Scale	1"=40'
Designed	RC
Sheet	3 of 15

Drawing No. C1.2

File No. 1727-CLD_Record.dwg

Robert Cunningham, P.E.
PA Lic. No. PA076424

HATFIELD WALK

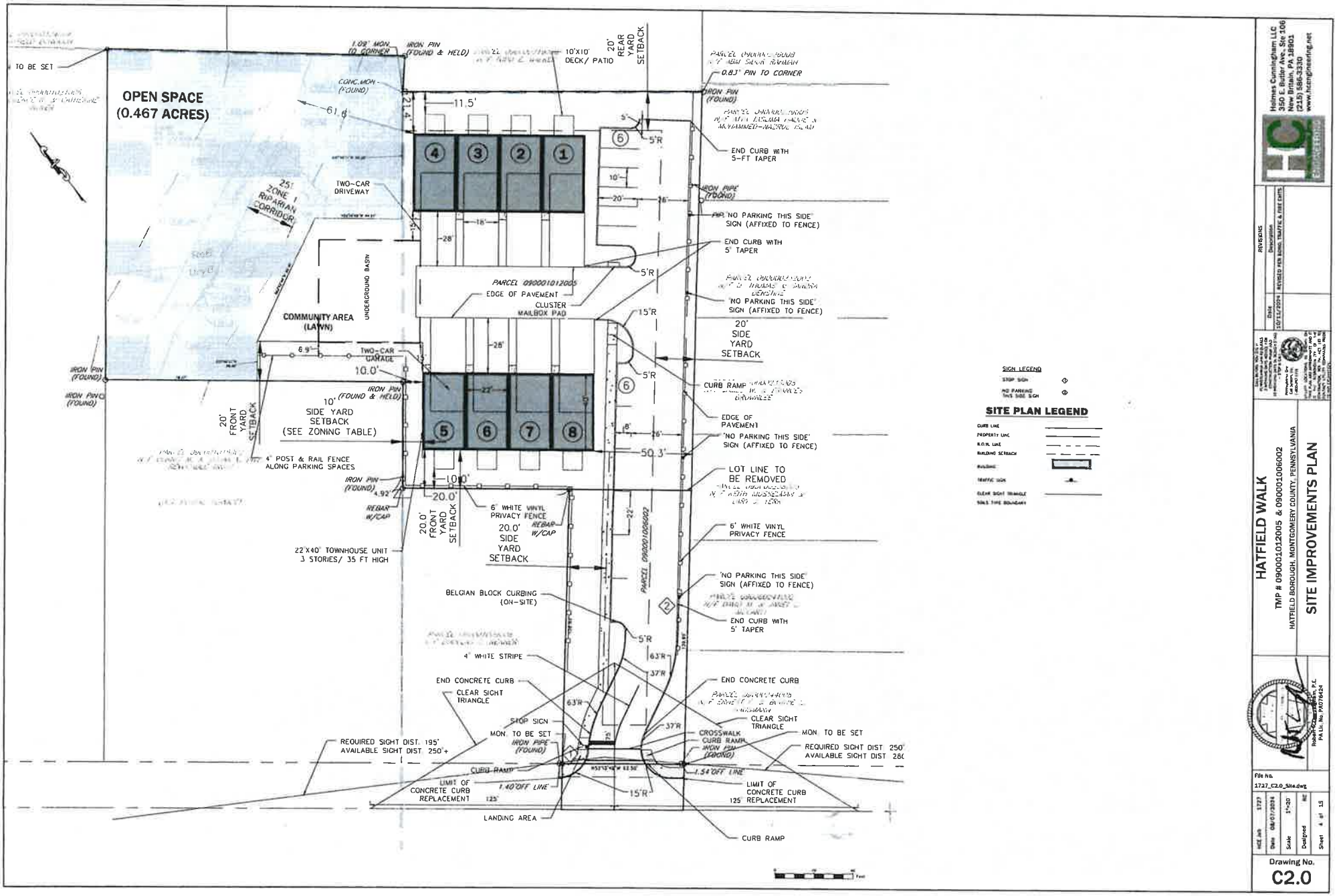
TMP # 090001012005 & 090001006002

HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

AERIAL PHOTO PLAN

REVISIONS	
Date	Description
10/11/2024	REVISED PER BORO. TRAFFIC & FIRE CMTS

Holmes Cunningham LLC
350 E. Butler Ave., Ste 106
New Britain, PA 18901
(215) 586-3330
www.hcengineering.net



Holmes Cunningham LLC
350 E. Butler Ave., Ste 106
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(215) 586-3330
www.hcengineering.net

REVISIONS
Description
Date
10/11/2024 REVISED PER BSRC, TRAFFIC & FIRE EXITS

HATFIELD WALK

TMP # 09000101200S & 09000100600Z

HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

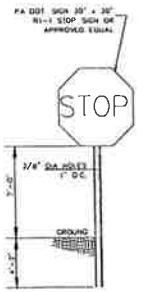
SITE IMPROVEMENTS PLAN

Robert Cunningham, P.E.
PA Lic. No. PA078424

File No.
1727_C2.0_Site.dwg

HCE Job	1727
Date	08/07/2024
Scale	1"=20'
Designed	RC
Sheet	4 of 15

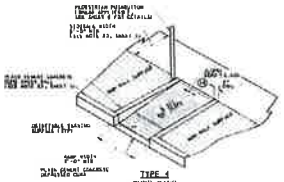
Drawing No.
C2.0



NOTES

1. ALL POSTS SHALL BE OF ADEQUATE LENGTH TO MEET THE REQUIREMENTS FOR ERECTION AS STATED IN THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS"
2. ALL POSTS SHALL BE EMBEDDED 4'-2" MINIMUM BELOW GRADE
3. ALL STEEL POSTS AND BRACKETS SHALL BE CUT, BENT, AND HOLES PUNCHED AND DRILLED BEFORE GALVANIZING. GALVANIZING SHALL BE IN CONFORMANCE WITH CURRENT A.S.T.M SPECIFICATION A123-78 (OR LATEST REVISED)
4. POSTS MAY BE STEEL, ALUMINUM, OR TWO-PIECE U-POST
5. SIGN PANEL SIZES SHALL DETERMINE POST TYPE AND NUMBERS AS SHOWN ON THIS DETAIL AND DIRECTIONAL SIGN SHEET
6. BOLTS SHALL NOT PROTRUDE MORE THAN 3/4" BEYOND THE NUT WHEN TIGHT BUT SHALL ENGAGE ALL THREADS IN THE NUT
7. ALL TRAFFIC AND PEDESTRIAN SIGNAGE AND LOCATION SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND ALL CURRENT AMENDMENTS.
8. SIGNS SHOULD BE INSTALLED ON PENNDOT APPROVED BREAKAWAY POSTS

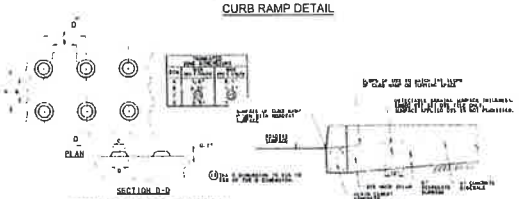
STOP SIGN



TYPE 4
CURB RAMP
(PERPENDICULAR)

NOTES
1. DETECTABLE WARNING SURFACES SHALL BE INSTALLED AT ALL CURB RAMPS AND CROSSINGS
2. CURB RAMPS SHALL BE INSTALLED IN ACCORDANCE WITH PENNDOT PUBLICATION 72M, MOST RECENT EDITION

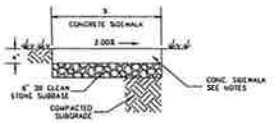
CURB RAMP DETAIL



DETECTABLE WARNING SURFACE (DWS)
TRUNCATED DOME DETAILS

NOTES
1. DETECTABLE WARNING SURFACES SHALL BE INSTALLED AT ALL CURB RAMPS AND CROSSINGS

DETECTABLE WARNING SURFACE DETAIL



SIDEWALK SECTION

NOTES:

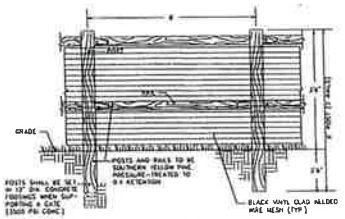
1. SIDEWALK IS TO BE PROVIDED, PLACED, CURED AND FINISHED TO PENNDOT SPECIFICATIONS PUB 408(CURRENT EDITION), SECTIONS 704 AND 1001 TYPE A CONCRETE (3,300 PSI, TWENTY-EIGHT-DAY STRENGTH) SHALL BE USED
2. CONTRACTION JOINTS, SPACED AT EQUAL INTERVALS BETWEEN EXPANSION JOINTS, NOT TO EXCEED 5 FEET FOR SIDEWALKS TO BE FORMED BY DIVISION PLATES OR CUTTING GROOVE INTO CONCRETE SURFACE NOT LESS THAN 1/3 ENTIRE DEPTH OF SLAB
3. SIDEWALK THICKNESS 6 INCHES AT RESIDENTIAL DRIVEWAYS, FINISHED WITH WOOD FLOAT, ROUGHEN FINISH FOR SLOPES IN EXCESS OF 4%. THE CONCRETE SIDEWALK SHALL BE PLACED UPON A SIX-INCH-THICK COMPACTED STONE BASE, CONSISTING OF TYPE 2A STONE
4. DRAINAGE SLOPE TO BE MAINTAINED AT 1/4 TOWARDS CURB
5. EXPANSION JOINTS TO BE ONE-HALF-INCH PRECLUDED, BITUMINOUS, EXPANSION JOINT MATERIAL AT THIRTY-FOOT INTERVALS, NEXT TO BUILDINGS, POLES, STRUCTURES AND CURBS; AROUND INTERSECTIONS OF TWO WALKS; DRIVEWAY APRON JOINT TO WALL, CURB OR SIDEWALK, AND AT ENDS OF ALL WALKS AND CURBS INCLUDING RADIUS CURBS
6. MINIMUM NO. 6 SIX BY SIX MESH TO BE USED IN CONCRETE DRIVEWAY CONSTRUCTION
7. CONTRACTION JOINTS ARE TO BE PLACED EVERY 5' AND EXPANSION JOINTS TO ARE TO BE PLACED EVERY 20'
8. SIDEWALK BEDDING SHALL BE 4" OF 2B CLEAN STONE
9. CLASS A AIR ENTRAINED CONCRETE MIX IS TO BE USED FOR SIDEWALK CONSTRUCTION
10. SIDEWALK IN BOROUGH RIGHT-OF-WAY SHALL BE CURED WITH AQUAON 2000 OR APPROVED EQUAL

SIDEWALK DETAIL

R8-3 NO PARKING SIGN OR APPROVED EQUAL (12" x 18")

NOTES:
1. ALL POSTS SHALL BE OF ADEQUATE LENGTH TO MEET THE REQUIREMENTS FOR ERECTION AS STATED IN THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" WITH LATEST REVISIONS
2. ALL POSTS SHALL BE EMBEDDED 2'-6" MINIMUM BELOW GRADE
3. ALL STEEL POSTS AND BRACKETS SHALL BE CUT, BENT, AND HOLES PUNCHED AND DRILLED BEFORE GALVANIZING. GALVANIZING SHALL BE IN CONFORMANCE WITH CURRENT A.S.T.M SPECIFICATION A123-78 (OR LATEST REVISED)
4. POSTS MAY BE STEEL, ALUMINUM, OR TWO-PIECE U-POST
5. SIGN PANEL SIZES SHALL DETERMINE POST TYPE AND NUMBERS AS SHOWN ON THIS DETAIL AND DIRECTIONAL SIGN SHEET
6. BOLTS SHALL NOT PROTRUDE MORE THAN 3/4" BEYOND THE NUT WHEN TIGHT BUT SHALL ENGAGE ALL THREADS IN THE NUT
7. ALL TRAFFIC AND PEDESTRIAN SIGNAGE AND LOCATION SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES CURRENT EDITION WITH LATEST REVISIONS.

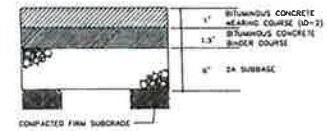
SIGNS DETAIL



** POSTS AND RAILS TO BE SOUTHERN YELLOW PINE (#300) OR SUITABLE EQUIVALENT MATERIAL
** POSTS AND RAILS TO BE PRESSURE TREATED TO 0.4 RETENTION

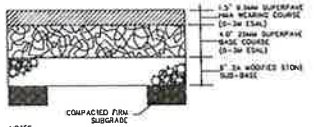
HEIGHT	3'6"	HEIGHT OF POST OUT OF GROUND
DEPTH	2'6"	DEPTH SET INTO GROUND
LENGTH	8'	POST SPACING CENTER TO CENTER
RAILS	3-1/4" x 5" x 18'	2 EACH, 0.11 MIN. THICKNESS
SPACE	7-11/16"	BETWEEN RAILS
STEEL REINFORCEMENT	NO	
POST SIZE	5" SQUARE	0.16 MIN. THICKNESS

POST AND RAIL FENCE



NOTES
1) ALL DRIVEWAYS MUST HAVE A 1.5" CURB REVEAL.
2) CURB DEPRESSIONS SHALL BE 4" WIDER THAN THE DRIVEWAY

INDIVIDUAL UNIT DRIVEWAY PAVEMENT SECTION

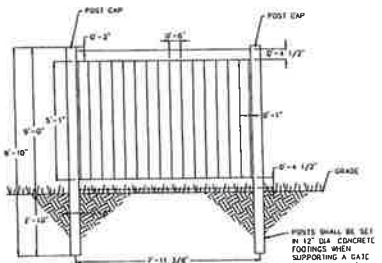


NOTES
1) ALL COURSES SHALL CONFORM TO PADOT 408 REQUIREMENTS
2) PAVEMENT SECTION TO BE USED FOR ALL ROADS
3) PAVING MATERIAL SHALL BE 0.0 TO 0.3 mESAL DESIGN

SHARED DRIVEWAY PAVEMENT SECTION

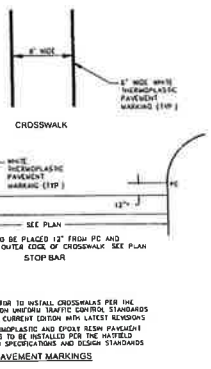
NOTES:
1. ON TRANSITIONS FROM AND TO PROPOSED CURB, USE ONE LARGE BLOCK SLOPED AND CUT TO FIT
2. CURB IMMEDIATELY ADJACENT TO INLET CASTING MUST HAVE PREFORMED EXPANSION MATERIAL
3. CONCRETE JOINTS USE MORTAR WITH COMPOSITION – 3 SAND 1 CEMENT, JOINTS TO BE 1/2" WIDE
4. 6" BELGIAN BLOCK CURB TO BE USED FOR ALL ON-SITE RESIDENTIAL ROADS AND RETAIL ROADS
5. CONCRETE CURB TO BE USED IN LEGAL RIGHT-OF-WAY

BELGIAN BLOCK CURB



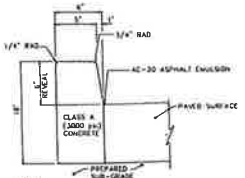
NOTES
1. ALL FENCE POSTS ARE TO BE SET IN CONCRETE FOOTINGS
2. FOR ADDITIONAL INFORMATION REFER TO MANUFACTURERS SPECIFICATIONS

SOLID VINYL PRIVACY FENCE



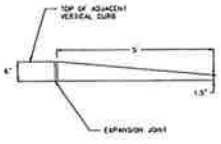
NOTES:
1. CONTRACTOR TO INSTALL CROSSWALKS PER THE MANUAL ON UNIFORM TRAFFIC CONTROL STANDARDS (MUTCD), CURRENT EDITION WITH LATEST REVISIONS
2. ALL THERMOPLASTIC AND EPOXY RESIN PAVEMENT MARKINGS TO BE INSTALLED PER THE HATFIELD BOROUGH SPECIFICATIONS AND DESIGN STANDARDS

PAVEMENT MARKINGS



NOTE:
1. ALL CURBING TO BE CONSTRUCTED IN 10 FT. SECTIONS W/ STEEL PLATE SEPARATIONS. STEEL PLATES TO BE REMOVED AFTER CONCRETE SETS UP. EXPANSION JOINTS OF 1/2" BITUMINOUS IMPREGNATED FELT TO BE INSTALLED EVERY 20 FT.
2. CONTRACTION JOINTS TO BE 2" DEEP & 3/16" WIDE, TOOL-EDGED TO A 1/4" RADIUS.

CONCRETE CURB



CURB TAPER DETAIL

Holmes Cunningham LLC
350 E. Butler Ave., Ste 106
New Britain, PA 18901
(215) 586-3330
www.hcengineering.net

REVISIONS

Description	Date
REVISED PER BORO, TRAFFIC & FIRE CMTS	12/13/2024

HATFIELD WALK
TMP # 09000101200S & 090001006002
HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

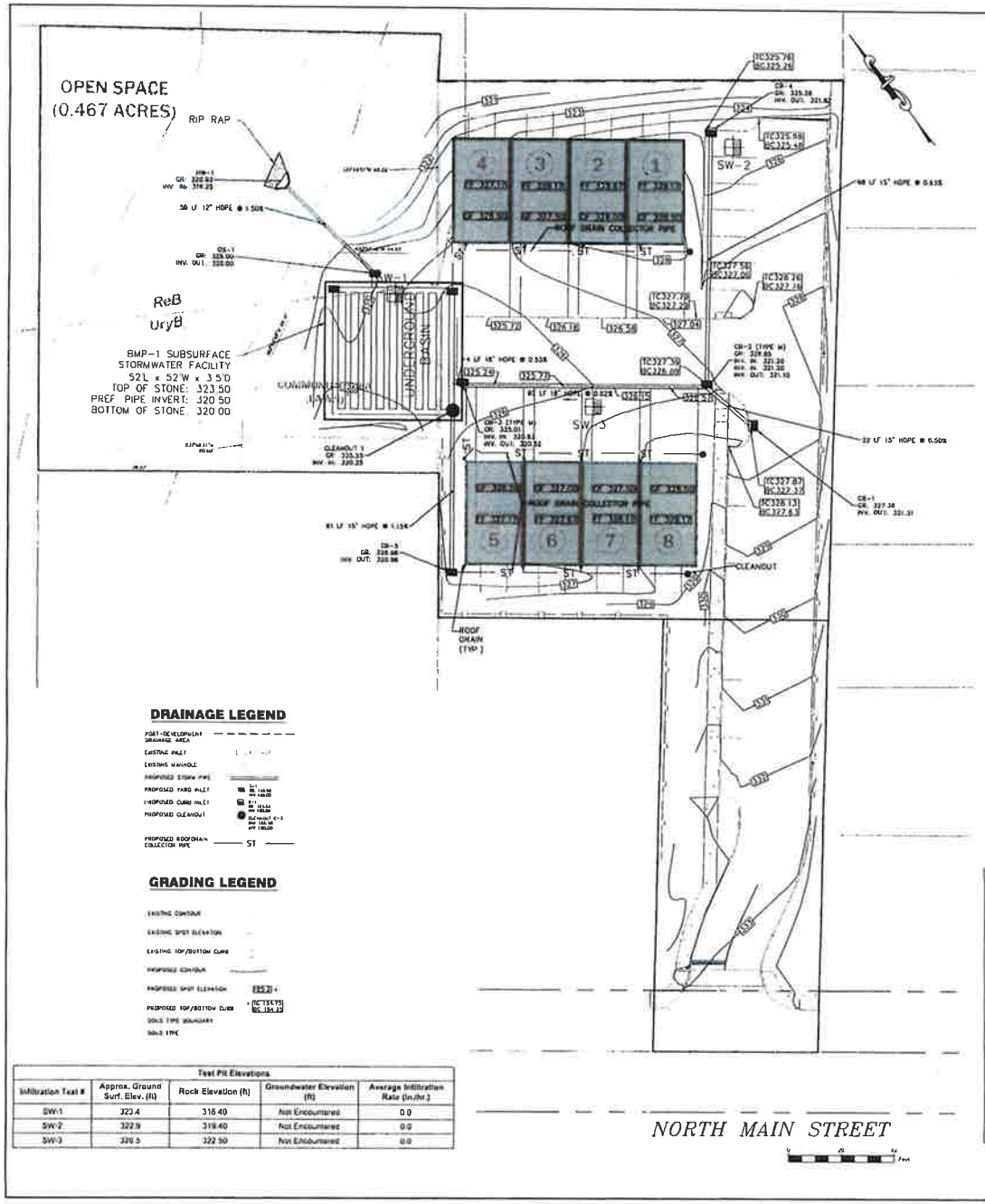
CONSTRUCTION DETAILS

Robert A. Cunningham, P.E.
PA Lic. No. PA078424

File No. 3727_C2.0_Site.dwg

HCE Job	3727
Date	08/07/2024
Scale	N.T.S
Designed	RC
Sheet	5 of 15

Drawing No.
C2.1



DRAINAGE LEGEND

POST-DEVELOPMENT DRAINAGE AREA
EXISTING INLET
EXISTING MANHOLE
PROPOSED STORM PIPE
PROPOSED YARD INLET
PROPOSED CURB INLET
PROPOSED CLEANOUT
PROPOSED ROOFDRAIN COLLECTOR PIPE — ST —

GRADING LEGEND

EXISTING CONTOUR
EXISTING SPOT ELEVATION
EXISTING TOP/BOTTOM CURB
PROPOSED CONTOUR
PROPOSED SPOT ELEVATION
PROPOSED TOP/BOTTOM CURB
SOILS TYPE BOUNDARY
SOILS TYPE

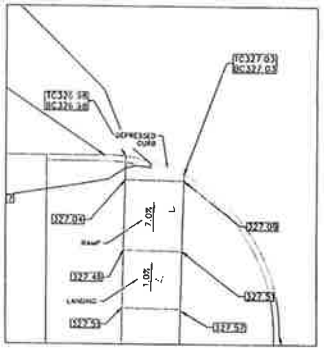
Test Pit Elevations				
Infiltration Test #	Approx. Ground Surf. Elev. (ft)	Rock Elevation (ft)	Groundwater Elevation (ft)	Average Infiltration Rate (in./hr.)
SW-1	323.4	318.40	Not Encountered	0.0
SW-2	322.9	319.40	Not Encountered	0.0
SW-3	326.5	322.50	Not Encountered	0.0

DESIGN ENGINEER CERTIFICATION

I, ROBERT CUNNINGHAM, ON THIS DATE ____, HEREBY CERTIFIES THAT THE STORMWATER MANAGEMENT SITE PLAN MEETS ALL DESIGN STANDARDS AND CRITERIA OF THE NESHAMINY CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT ORDINANCE OR PLAN

ROBERT T. CUNNINGHAM, P.E.

PA LICENSE # PE078424



CURB RAMP DETAIL #1

SCALE 1"=5'

DRAINAGE NOTES

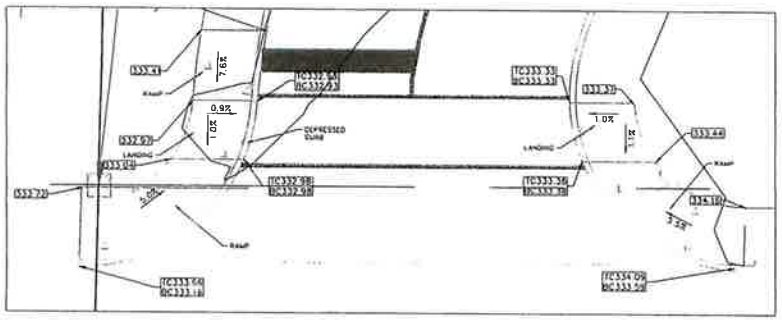
1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE EXISTING LOCATION AND/OR ELEVATION OF FEATURES AS SHOWN ON THESE PLANS IS BASED ON A SURVEY PREPARED BY CAVANAUGH'S SURVEYING SERVICE. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
2. ALL STORM SEWERS AND STRUCTURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH MUNICIPAL STANDARDS.
3. THE CONTRACTOR SHALL REVIEW THE STORM DRAINAGE CONNECTIONS TO INLETS, MANHOLES, ETC. AND PROVIDE THE APPROPRIATE BOX SIZE, MANHOLE SIZE, ETC. AS NECESSARY TO ACCOMMODATE THE PROPOSED INLET AND OUTLET PIPES.
4. CATCH BASIN GRATE ELEVATIONS WITHIN THE CARTWAY OF THE PROPOSED ROADS SHALL BE SLOPED 2-INCHES FROM THE PROPOSED ROAD ELEVATION AT THE GUTTER LINE. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE OWNER'S ENGINEER IN WRITING PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR REVIEW AND APPROVAL BY THE OWNER FOR BASIN PIPES, CONNECTIONS, INLET STRUCTURES, CATCH BASINS, MANHOLES AND OTHER STORM STRUCTURES.
6. DOWNSPOUTS AND SUMP PUMPS SHALL NOT DISCHARGE STORMWATER DIRECTLY ONTO A SIDEWALK OR STREET.
7. ALL STORMWATER AND DRAINAGE FACILITIES ARE A PERMANENT PART OF THE DEVELOPMENT AND SHALL NOT BE REMOVED, ALTERED, OR MODIFIED WITHOUT PRIOR APPROVAL FROM THE MUNICIPALITY.
8. THE MUNICIPALITY SHALL HAVE THE RIGHT TO ENTER PRIVATE PROPERTY TO INSPECT AND REPAIR, IF NECESSARY, ANY STORMWATER MANAGEMENT OR DRAINAGE FACILITY.
9. THE STORMWATER MANAGEMENT BASIN WILL BE OWNED AND MAINTAINED BY THE HOMEOWNER'S ASSOCIATION.
10. HDPE PIPE IS TO BE BEDDED WITH 2B CLEAN STONE (FROM 4" UNDERNEATH TO THE TOP OF PIPE)
11. ALL INLETS IN AREA TO BE PAVED ARE TO BE BACKFILLED WITH 2A MATERIAL.

GRADING NOTES

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS IN A MANNER WHICH WILL NOT NEGATIVELY AFFECT ANY EXISTING USERS OF THESE UTILITIES.
2. COMPACTION CRITERIA FOR FILL PLACEMENT IN THE FOLLOWING AREAS SHALL MEET OR EXCEED THE FOLLOWING MINIMUM PERCENTAGE OF THE MAXIMUM MODIFIED PROCTOR DRY DENSITY AS DETERMINED BY ASTM D-1557 USED ON REPRESENTATIVE SOIL SAMPLES, UNLESS MORE STRINGENT CRITERIA IS GIVEN ELSEWHERE.

FILL AREA	% OF MAX. DENSITY
BUILDING FOOTPRINT	95%
PAVEMENT AND ROADWAYS	95%
SIDEWALKS	95%
LANDSCAPE AREAS	90%
TRENCH BACKFILL	SAME AS SURROUNDING AREA

3. PROTECT SUBGRADE FROM EXCESSIVE WHEEL LOADING DURING CONSTRUCTION INCLUDING CONCRETE TRUCKS AND DUMP TRUCKS
4. REMOVE AREAS OF FINISHED SUBGRADE FOUND TO HAVE INSUFFICIENT COMPACTION DENSITY TO DEPTH NECESSARY AND REPLACE IN A MANNER THAT WILL COMPLY WITH THE COMPACTION REQUIREMENTS BY USE OF MATERIAL EQUAL TO OR BETTER THAN BEST SUBGRADE MATERIAL ON SITE. SURFACE OF SUBGRADE AFTER COMPACTION SHALL BE HARD, UNIFORM, SMOOTH, STABLE AND TRUE TO GRADE AND CROSS SECTION.
5. ALL STRIPPED TOPSOIL SHOULD BE REUSED ON SITE TO THE GREATEST EXTENT POSSIBLE. HOWEVER, PRIOR TO REMOVAL OF TOPSOIL FROM THE SITE, PERMISSION SHOULD BE OBTAINED FROM THE BOROUGH.
6. THE MAXIMUM SLOPE IS THREE HORIZONTAL TO ONE VERTICAL (3H:1V). THE MINIMUM PERMITTED SLOPE IN LAWN AREAS IS 2% (50H:1V).
7. THE MAXIMUM DRIVEWAY SLOPE FOR DRIVEWAYS IS EIGHT PERCENT (8%). THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH THESE REQUIREMENTS



CURB RAMP DETAIL #2

SCALE 1"=5'

Holmes Cunningham LLC
350 E. Butler Ave., Ste 106
New Britain, PA 18901
(215) 580-3330
www.hcengineering.net

REVISIONS

Date	Description
DEC 23/2024	REVISED PER BORO TRAFFIC & FIRE COMM.

HATFIELD WALK

TMP # 09000101200S & 090001006002

HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

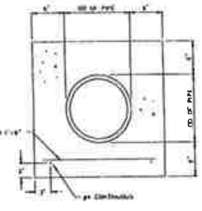
GRADING AND DRAINAGE PLAN

ROBERT T. CUNNINGHAM, P.E.
PA Lic. No. PA078424

File No. 1727_C3.0_Storm.dwg

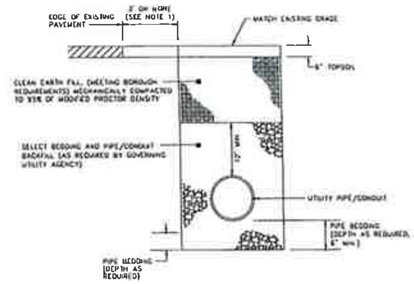
HCE Job	1727
Date	08/07/2024
Scale	1" = 20'
Designed	RC
Sheet	6 of 13

Drawing No.
C3.0



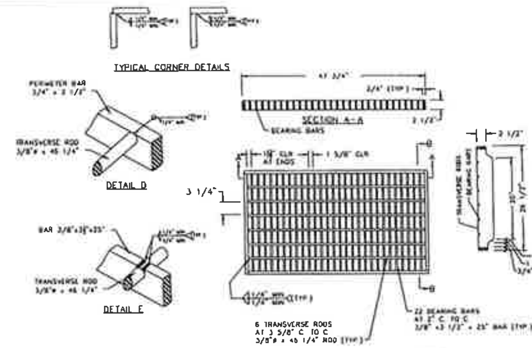
NOTE: PROVIDE REINFORCEMENT AT UTILITY CROSSINGS OR AS DIRECTED BY THE AUTHORITY'S ENGINEER

CONCRETE ENCASEMENT DETAIL



NOTES:
1. TRENCH OPENINGS LESS THAN 3' FROM THE EDGE OF AN EXISTING PAVED SURFACE SHALL BE BACKFILLED WITH A 2A COARSE AGGREGATE MECHANICALLY TAMPED IN 6" LAYERS

TRENCH RESTORATION IN UNPAVED AREA



STRUCTURAL STEEL BICYCLE SAFE INLET GRATE DETAIL

CONSTRUCTION SEQUENCE FOR PCSM BMPS

SITE SPECIFIC CONSTRUCTION SEQUENCE
1. REFER TO THIS SHEET C3.0 FOR CONSTRUCTION SEQUENCE.
2. ONCE ALL UPSTREAM MEASURES FOR THE BMP HAVE BEEN STABILIZED, THE INDIVIDUAL BMP MAY BE CONSTRUCTED PER THE SEQUENCES IDENTIFIED BELOW.

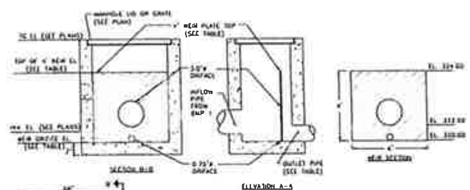
SUBSURFACE INFILTRATION BED:
1. PROTECT THE AREA FROM COMPACTION PRIOR TO INSTALLATION USING ORANGE CONSTRUCTION FENCE AROUND THE PERIMETER OF THE AREA.
2. IF POSSIBLE, INSTALL DRY WELLS/OBSERVATION PORTS/CLEANOUTS DURING LATER PHASES OF SITE CONSTRUCTION TO PREVENT SEDIMENTATION AND/OR DAMAGE FROM CONSTRUCTION ACTIVITY.
3. INSTALL AND MAINTAIN PROPER EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION AS PER THE PENNSYLVANIA EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL (MARCH 2000, OR LATEST EDITION). PRIOR TO EXCAVATION OF THE BED, INSTALL COMPOST FILTER SOCK UPSLOPE OF THE PROPOSED BED TO PREVENT SEDIMENTATION OF THE BED BOTTOM.
4. EXCAVATE BOTTOM FOOTPRINT TO A UNIFORM, LEVEL UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT SUBGRADE. TO THE GREATEST EXTENT POSSIBLE, EXCAVATION SHOULD BE PERFORMED WITH THE LIGHTEST PRACTICAL EQUIPMENT. EXCAVATION EQUIPMENT SHOULD BE PLACED OUTSIDE THE LIMITS OF THE FACILITY BED.
5. PRIOR TO INSTALLATION OF STORMWATER BMP MATERIAL, STONE AND SYSTEM COMPONENTS, A MINIMUM OF TWO (2) INFILTRATION TESTS SHALL BE PERFORMED ON THE SUBGRADE SOILS. THE TESTING AND RESULTS SHALL BE COORDINATED WITH AND SUBMITTED TO THE MONROE COUNTY CONSERVATION DISTRICT.
6. COMPLETELY WRAP BOTTOM AND SIDES WITH GEOTEXTILE LINER (IF SEDIMENT AND/OR DEBRIS HAVE ACCUMULATED IN BED BOTTOM, REMOVE PRIOR TO GEOTEXTILE PLACEMENT.) LINER ROLLS SHOULD OVERLAP BY A MINIMUM OF 24 INCHES. FOLD BACK AND SECURE EXCESS GEOTEXTILE DURING STONE PLACEMENT.
7. PLACE FIRST LIFT OF CLEAN STONE AGGREGATE AND LEVEL BEFORE PLACEMENT OF PERFORATED PIPE.
8. INSTALL CONTINUOUSLY PERFORATED PIPE, OBSERVATION WELLS, CLEANOUTS, OUTLETS, HEADERS, AND ALL OTHER STRUCTURES. CONNECT CULVERTS AND PIPES TO STRUCTURES AS INDICATED ON PLANS.
9. PLACE UNIFORMLY GRADED, CLEAN-WASHED AGGREGATE IN 6-INCH LIFTS, LIGHTLY COMPACTING BETWEEN LIFTS.
10. FOLD AND SECURE NONWOVEN GEOTEXTILE OVER TRENCH, WITH MINIMUM OVERLAP OF 12-INCHES.
11. PLACE LIFT OF SURFACE BASE OVER CLOSED GEOTEXTILE ENVELOPE, AS INDICATED ON PLANS.
12. SEED AND STABILIZE TOPSOIL, IF VEGETATED SURFACE IS PROPOSED.
13. DO NOT REMOVE EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.

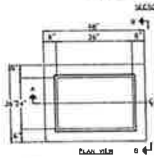
BMP MAINTENANCE PLAN
NOTE: AN ANNUAL REPORT SHALL BE PREPARED AND RETAINED BY THE RESPONSIBLE PARTY STATING THE FOLLOWING MAINTENANCE HAS BEEN PERFORMED.

THE OWNER IS RESPONSIBLE FOR MAINTENANCE OF THE STORMWATER CONVEYANCE SYSTEM, SUBSURFACE INFILTRATION AREA, WATER QUALITY INSERTS, AND ALL OTHER PROPOSED BMPS.

STORMWATER CONVEYANCE SYSTEM
- CATCH BASINS, MANHOLES, HEADWALLS, TRASH RACKS, AND PIPES TO BE INSPECTED FOR CLOGGING AND EXCESSIVE DEBRIS AND SEDIMENT ACCUMULATION AT LEAST ANNUALLY AS WELL AS AFTER EVERY STORM EXCEEDING 1-INCH OF RAINFALL. DEBRIS SHALL BE REMOVED FROM THE TOP AND/OR INTERIOR OF THE STRUCTURE.
- ALL STRUCTURAL COMPONENTS MUST BE INSPECTED FOR CRACKING, SUBSIDENCE, BREACHING, HEAVING, AND DETERIORATION AT LEAST ANNUALLY.
- SUMPS IN INLET AND MANHOLE STRUCTURES SHALL BE INSPECTED FOR DEBRIS FOLLOWING THE SCHEDULE ABOVE. IF PRESENT, ANY DEBRIS SHALL BE REMOVED FROM THE BOTTOM OF THE STRUCTURE.
- TRASH RACKS AT HEADWALLS SHALL BE INSPECTED FOR CLOGGING AND/OR DEBRIS FOLLOWING THE SCHEDULE ABOVE. IF PRESENT, ANY DEBRIS SHALL BE REMOVED FROM THE TRASH RACK.

SUBSURFACE INFILTRATION BED
- INSPECT SUBSURFACE BED AT LEAST FOUR TIMES A YEAR, AS WELL AS AFTER EVERY STORM EXCEEDING 0.8 INCH.
- ENSURE THAT RUNOFF DRAINS DOWN TO THE LOWEST OUTFALL ELEVATION WITHIN AT LEAST 72 HOURS. IF DRAIN-DOWN TIMES ARE EXCEEDING THE MAXIMUM, DRAIN THE FACILITY VIA PUMPING AND CLEAN OUT PERFORATED PIPING.
- AT LEAST TWO TIMES PER YEAR, INSPECT FOR ACCUMULATION OF SEDIMENT AND/OR DEBRIS. DISPOSE OF SEDIMENT, DEBRIS/TRASH, AND ANY OTHER WASTE MATERIAL REMOVED FROM A DRY WELL AT SUITABLE DISPOSAL/RECYCLING SITES AND IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL WASTE REGULATIONS.
- AS NEEDED, REMOVE ACCUMULATED SEDIMENT BY FLUSHING AND/OR VACUUMING BED PIPE SYSTEM USING STRUCTURES AND/OR CLEANOUTS AT THE CORNERS OF THE SYSTEM, IN ORDER TO MAINTAIN FLOW THROUGH THE BED AND TO MAINTAIN WATER QUALITY FUNCTIONALITY.
- REGULARLY CLEAN OUT GUTTERS AND ENSURE PROPER CONNECTIONS TO FACILITATE THE EFFECTIVENESS OF THE FACILITY.
- REPLACE FILTER SCREEN THAT INTERCEPTS ROOF RUNOFF AS NECESSARY.
- IF AN INTERMEDIATE SUMP BOX EXISTS, CLEAN IT OUT AT LEAST ONCE PER YEAR.
- NO STRUCTURES OR LANDSCAPING SHALL BE INSTALLED OVER ANY SUBSURFACE BMP FACILITY AREA.
- ALL BMP COMPONENTS SHOULD BE MAINTAINED AS INDICATED IN THE PADEP STORMWATER BMP MANUAL.

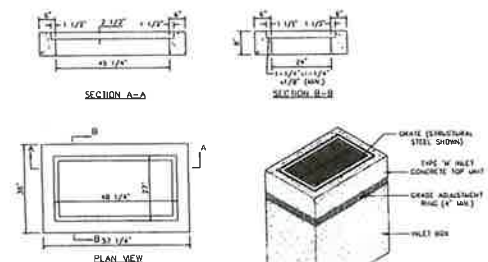




BMP	TOP OF GRATE ELEV	INFLOW PIPE DIA	INFLOW PIPE INV ELEV	OUTFALL PIPE DIA	OUTFALL PIPE INV ELEV	0.75"Ø WEIR ORIFICE ELEV	3.0"Ø WEIR ORIFICE ELEV	WEIR CREST ELEV
#	--	INCHES	--	INCHES	--	--		--
1	325.04	24	320.50	12	320.00	320.00	322.50	323.20

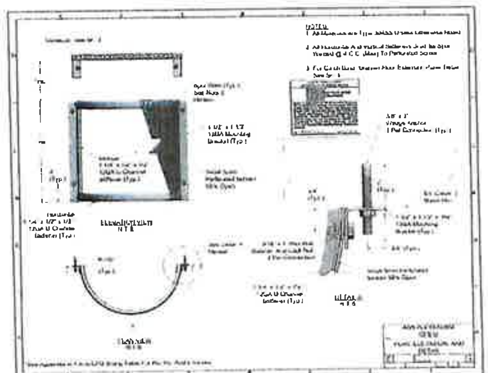
NOTES:
1. OUTLET STRUCTURES SHALL BE AS DETAILED IN PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION, CURRENT EDITION (PDT PUB #72M) RC-34M, "INLETS, CONCRETE TOP UNITS CAST-IN-PLACE AND PRECAST"
2. STEPS SHALL BE PROVIDED WHENEVER STRUCTURE EXCEEDS 4 FEET IN DEPTH
3. THE CONTRACTOR SHALL PROVIDE CUT SHEETS TO ENGINEER TO REVIEW PRIOR TO CONSTRUCTION
4. REFER TO THE SUBSURFACE BASIN DETAIL FOR ADDITIONAL CONNECTION INFORMATION

SUBSURFACE STORMWATER FACILITY OUTFALL STRUCTURE DETAIL

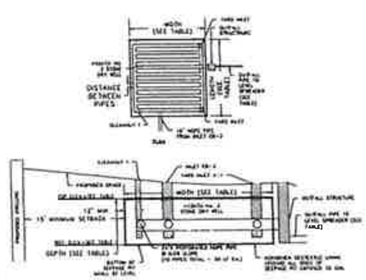


NOTE:
1. REFER TO "COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION, BUREAU OF HIGHWAY DESIGN, STANDARDS FOR ROADWAY CONSTRUCTION", PAGE RC-34, SHEETS 1 and 2 of 9, LATEST ISSUE, FOR NOTES AND SPECIFICATIONS REGARDING PRECAST INLET CONSTRUCTION
2. ALL INLET TOP SHALL BE THE ENVIRONMENTAL TYPE
3. ALL INLET IN AREAS TO BE PAVED ARE TO BE BACKFILLED WITH 2A MATERIAL

TYPE M INLET DETAIL



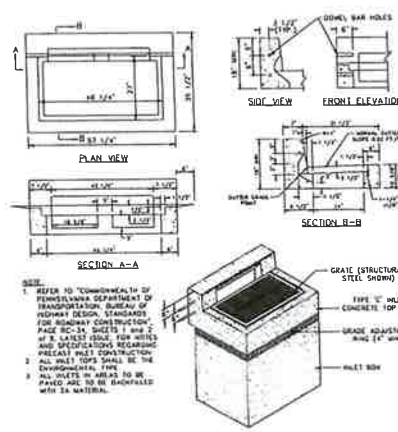
ORIFICE SCREEN DETAIL



BMP	DEPTH	WIDTH	LENGTH	TOP OF STONE ELEV	BOTTOM OF STONE ELEV	24"Ø PERFORATED PIPE INVERT ELEV	OUTFALL PIPE TO LEVEL SPREADER ELEV	NUMBER OF PERFORATED PIPES
#	FT	FT	FT	--	--			
1	3.50	52	52.0	323.50	320.00	320.50	328.00	10.00

NOTES:
1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]

SUBSURFACE BASIN DETAIL



NOTE:
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2. ALL INLET TOPS SHALL BE THE ENVIRONMENTAL TYPE
3. ALL INLETS IN AREAS TO BE PAVED ARE TO BE BACKFILLED WITH 2A MATERIAL

TYPE C INLET DETAIL

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REVISIONS

Date	Description
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HATFIELD WALK

TMP # 090001012005 & 090001006002

HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

PCSM DETAILS

Robert [illegible], P.E.
PA Lic. No. PA078424

File No.
1727_C3.0_Storm.dwg

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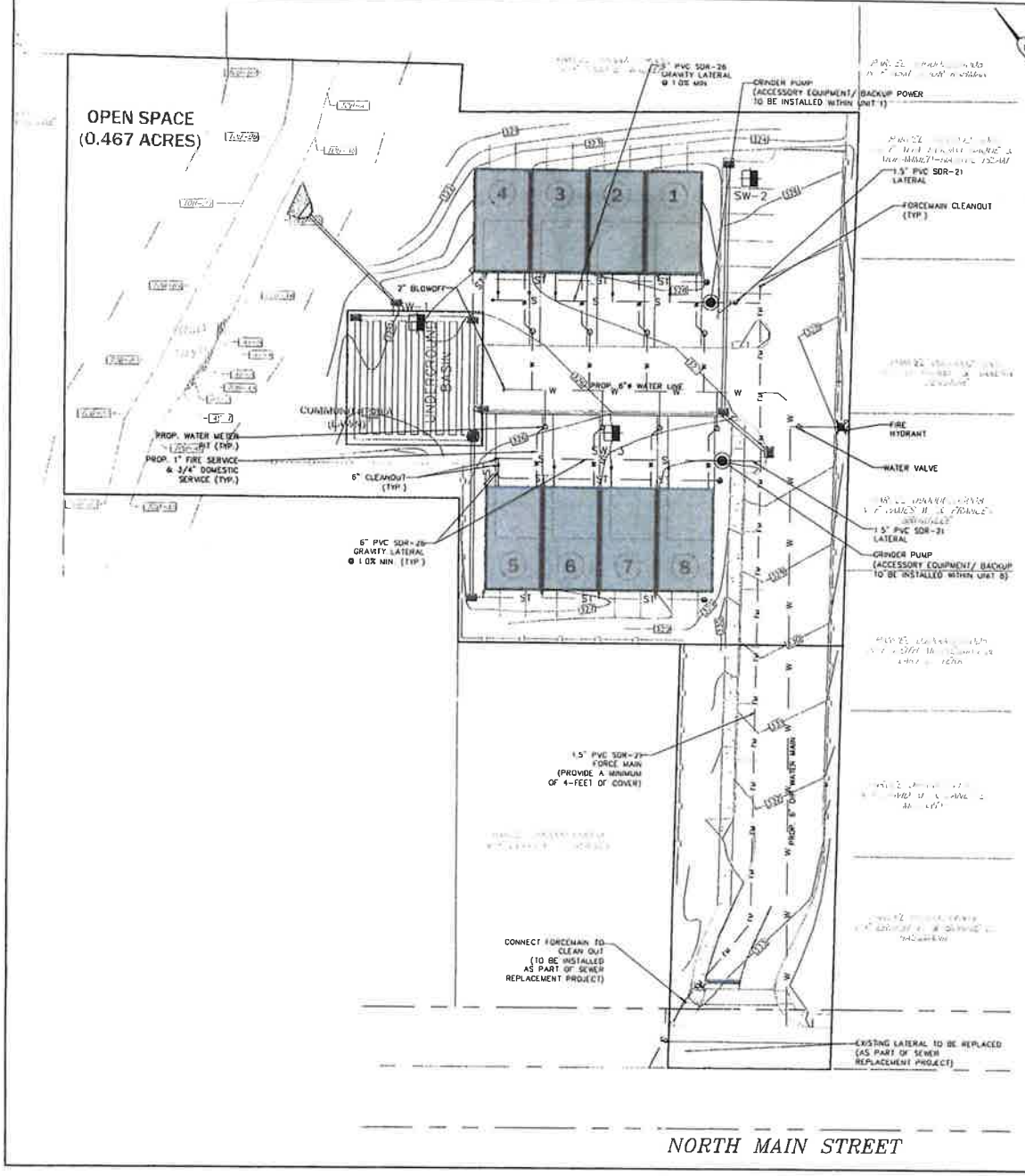
Date	08/07/2024
Scale	N.T.S
Designed	HC
Sheet	7 of 15

Drawing No.
C3.1



UTILITY NOTES

1. THE CONTRACTOR IS SPECIFICALLY ENJOINED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS IN A MANNER WHICH WILL NOT NEGATIVELY AFFECT ANY EXISTING USERS OF THESE UTILITIES.
2. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS AND SPECIFICATIONS FOR ACTUAL LOCATIONS OF ALL UTILITY ENTRANCES TO INCLUDE SANITARY SEWER LATERALS, DOMESTIC AND FIRE PROTECTION WATER SERVICE, ELECTRICAL, TELEPHONE AND GAS SERVICE. CONTRACTOR SHALL COORDINATE INSTALLATION OF UTILITIES IN SUCH A MANNER AS TO AVOID CONFLICTS AND ASSURE PROPER DEPTHS ARE ACHIEVED AS WELL AS COORDINATING WITH THE REGULATORY AGENCY AS TO LOCATION AND SIZING OF CONNECTIONS TO THEIR FACILITIES.
3. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING THE EXISTING UTILITY SERVICE (WATER, SEWER, GAS AND ELECTRIC) TO THE PROPERTY AND ENSURE THAT THEY ARE PROPERLY DISCONNECTED FROM THE EXISTING UTILITIES AND RECONNECTED TO THE NEW SERVICES PROVIDED.
4. ALL GAS WORK AND OTHER ASSOCIATED APPURTENANCES WILL BE IN CONFORMANCE WITH APPLICABLE LOCAL COUNTY, STATE AND FEDERAL GUIDELINES AND REQUIREMENTS.
5. ALL ELECTRICAL WORK, TRANSFORMER PADS, AND ASSOCIATED APPURTENANCES WILL BE IN CONFORMANCE WITH APPLICABLE LOCAL, COUNTY, STATE AND FEDERAL GUIDELINES AND REQUIREMENTS WITH DEPTH OF COVER OVER ELECTRIC, GAS, AND CABLE SHALL BE 2 FT.
6. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS, UTILITY LOCATIONS, CATHODIC PROTECTION AND INVERTS PRIOR TO CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ANY DISRUPTIONS TO EXISTING UTILITIES SERVICES. ANY CONDITIONS FOUND TO DIFFER FROM THOSE SHOWN BY THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
7. THE CONTRACTOR SHALL COORDINATE THE WATER WORK WITH NORTH PENN WATER AUTHORITY.
8. THE CONTRACTOR SHALL COORDINATE THE SANITARY SEWER WORK WITH HATFIELD BOROUGH MUNICIPAL AUTHORITY.
9. A MINIMUM TEN (10) FOOT HORIZONTAL AND EIGHTEEN (18) INCHES VERTICAL CLEARANCE MUST BE MAINTAINED BETWEEN WATER MAIN AND STORM SEWER.
10. EIGHTEEN (18) INCHES VERTICAL CLEARANCE SHOULD BE PROVIDED AT ALL UTILITY CROSSINGS. WHERE THIS CLEARANCE CANNOT BE MAINTAINED, THE WATER MAIN MUST BE ENCASED IN CONCRETE TO FEET EACH SIDE OF THE CROSSING. IN CASES WHERE THE UTILITY IS A SANITARY OR STORM SEWER MAIN OR A LATERAL AND THE CLEARANCE CANNOT BE MAINTAINED, THEN THE SEWER AND/OR STORM SHALL ALSO BE ENCASED IN CONCRETE.
11. ALL SANITARY SEWER FACILITIES SHOULD BE CONSTRUCTED IN ACCORDANCE WITH THE HATFIELD BOROUGH MUNICIPAL AUTHORITY SPECIFICATIONS.
12. NO PLANTINGS OR STRUCTURES SHALL BE LOCATED WITHIN SANITARY SEWER EASEMENTS OR WITHIN 10 FEET OF THE SEWER OR LATERALS.
13. A MINIMUM COVER OF FOUR FEET SHOULD BE MAINTAINED.
14. ALL NEW FIRE HYDRANTS SHALL BE PAINTED IN ACCORDANCE WITH THE NFPA REQUIREMENTS AND SHALL BE PROVIDED WITH APPROVED SNOW MARKERS.
15. WATER MAINS AND FIRE HYDRANTS SHALL BE INSTALLED AND OPERATIONAL PRIOR TO THE START OF CONSTRUCTION ON ANY BUILDING.
16. THE DEVELOPER AND THEIR CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLATION OF THE SEWER WITH UNIFORM SLOPE BETWEEN MANHOLES AND WILL BE RESPONSIBLE FOR CORRECTING ANY DEVIATIONS FROM UNIFORM SLOPES THAT ARE DETECTED DURING THE POST-CONSTRUCTION SURVEY AND TV INSPECTION.
17. THE SANITARY SEWER SYSTEM IN NORTH MAIN STREET IS IN THE PROCESS OF BEING REPLACED BY HATFIELD BOROUGH DURING THE DESIGN OF THESE PLANS. THE CONFIGURATION OF THE SANITARY LATERAL CONNECTION MAY BE DIFFERENT FROM WHAT IS ILLUSTRATED ON THESE PLANS BY THE TIME THE SITE IS BEING DEVELOPED.

UTILITY LEGEND

- EXISTING SANITARY SEWER MAIN
- EXISTING SANITARY SEWER MANHOLE
- EXISTING WATER MAIN AND VALVE
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- PROPOSED SANITARY MANHOLE
- PROPOSED SANITARY SERVICE LATERAL
- PROPOSED SANITARY SERVICE FORCEMAIN
- PROPOSED WATER SERVICE LINE
- PROPOSED WATER SERVICE LATERAL

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REVISIONS

Description	Date
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HATFIELD WALK

TMP # 09000102005 & 09000106002

HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

UTILITY PLAN

Robert Cunningham, P.E.
PA Lic. No. PA078424

File No.
1727_C4.0_Utilities.dwg

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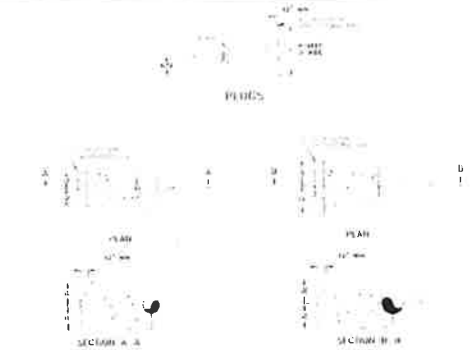
Date	06/07/2024
Scale	1"=20'
Designed	RC
Sheet	8 of 15

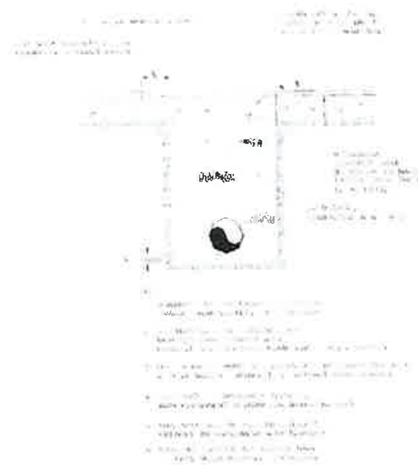
Drawing No.
C4.0



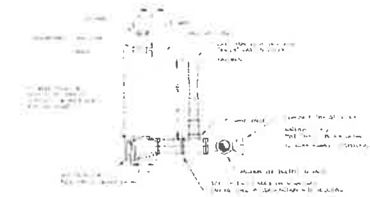
HORIZONTAL & VERTICAL UPWARD BENDS

TEE

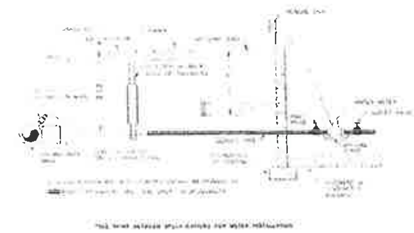
THRUST BLOCK DETAIL



TYPICAL ROADWAY RESTORATION

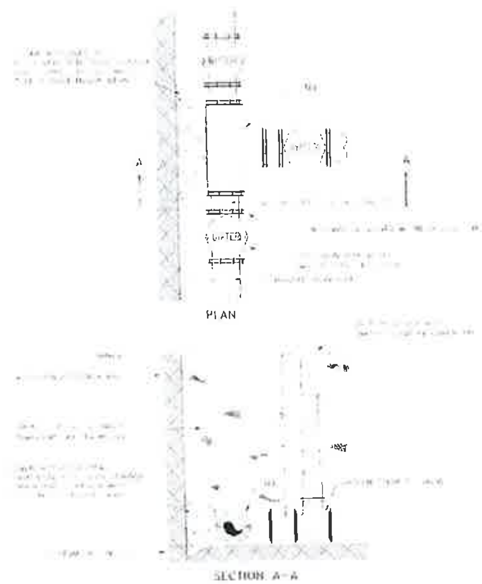


FIRE HYDRANT CONNECTION/LOCATION DETAIL



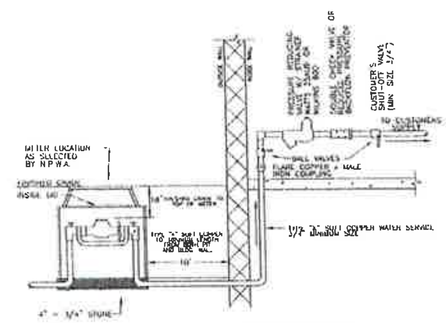
DOMESTIC SERVICE CONNECTION/LOCATION DETAIL

TYPICAL SUBDIVISION ROADWAY



TYPICAL INTERSECTION INSTALLATION

STATE HIGHWAY PERMANENT RESTORATION



NOTES

1.) CUSTOMER TO PLACE STAKE MARKED "WATER" IN YARD AT DESIRED LOCATION FOR SERVICE LINE
2.) NO SOLDER JOINTS ALLOWED UNDERGROUND OR AHEAD OF FIRST BALL VALVE
3.) METER TO BE FURNISHED AND INSTALLED BY NORTH PENN WATER AUTHORITY
4.) WATER METER WILL NOT BE SET IF PIPING DOES NOT CONFORM TO SPECIFICATIONS
5.) THE USE OF LEAD-FREE SOLDER, FLUX AND OTHER PLUMBING MATERIALS IS REQUIRED BY FEDERAL LAW. SOLDER AND FLUX MAY NOT BE GREATER THAN 0.2% LEAD. PIPE AND FITTINGS MAY NOT BE GREATER THAN 8% LEAD
6.) ANY SERVICE LINE OVER 200' MAY USE PVC 165 PSI TO WITHIN 10' OF THE STRUCTURE AND THE PIT BEFORE BEING CONNECTED TO TYPE "K" SOFT COPPER
7.) BACKFLOW PREVENTION DEVICES ARE REQUIRED ON ALL NPWA WATER SERVICE LINES. THEREFORE, A THERMAL EXPANSION TANK MUST BE INSTALLED ON THE SUPPLY SIDE OF THE HOT WATER SYSTEM, AS DIRECTED BY THE "UNIFORM PLUMBING CODE" (UPC)

SPECIFICATIONS

1.) SERVICE LINE - COPPER TYPE K SOFT W/FLARED FITTINGS
2.) ALL SERVICE LINE FITTINGS TO BE COPPER OR BRASS
3.) BALL VALVE - 200 PSI, BRASS
4.) PRESSURE REDUCING VALVE - WATTS 25AUB, WILKINS 600 OR APPROVED EQUAL BY N.P.W.A.
5.) CHECK VALVE - SPRING LOADED DOUBLE CHECK
3/4" - WATTS NO. 7U, 7U-22, WILKINS 700 OR APPROVED EQUAL BY N.P.W.A.
1" - WATTS NO. 720 OR WILKINS 700 OR APPROVED EQUAL BY N.P.W.A.

TYPICAL 3/4" AND 1" METER DETAIL
(OUTSIDE METER)

NORTH PENN WATER AUTHORITY STANDARD NOTES

GENERAL NOTES

SURVEYORS ARE REQUIRED TO PLACE 5' OFFSET STAKES FROM FACE OF CURB OR EDGE OF ROADWAY AT 50' INTERVALS SHOWING THE FACE OF CURB AND TOP OF CURB GRADE.

[illegible]

CHLORINE DOSAGES

[illegible]

TRAFFIC CONTROL

[illegible]

ROADWAY AND RIGHT OF WAY

[illegible]

TAPS

[illegible]

FIELD NOTES & FIELD DIMENSIONS

[illegible]

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HATFIELD WALK

TMP # 090001012005 & 090001006002

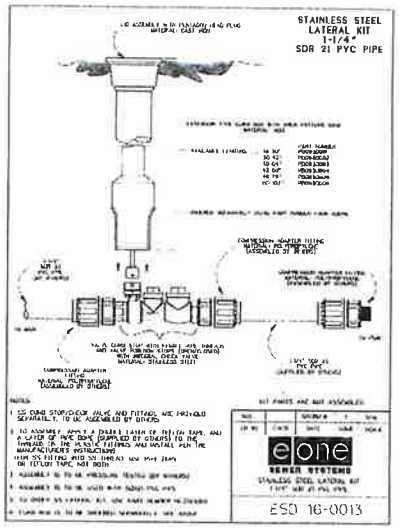
HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

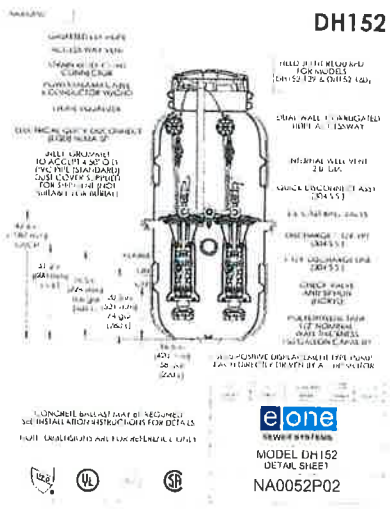
WATER DETAILS

HCE Job	1727
Date	08/07/2024
Scale	N.T.S.
Designed	RC
Sheet	9 of 15

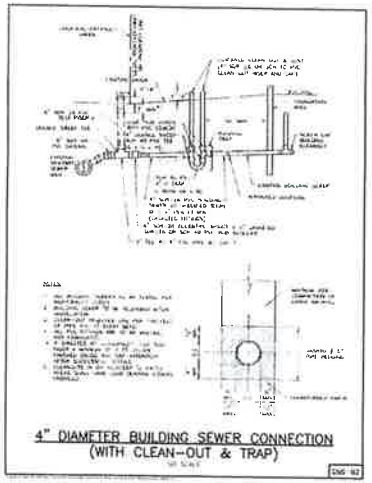
File No. 1727_C4.0_Utilities.dwg

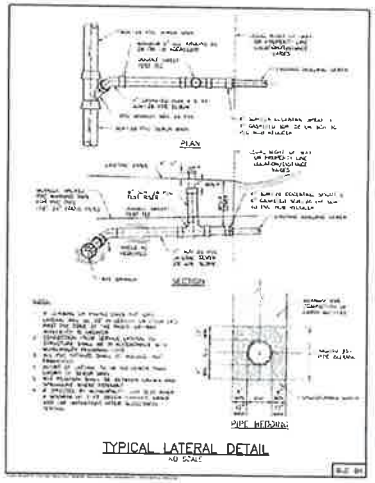
Drawing No. C4.1

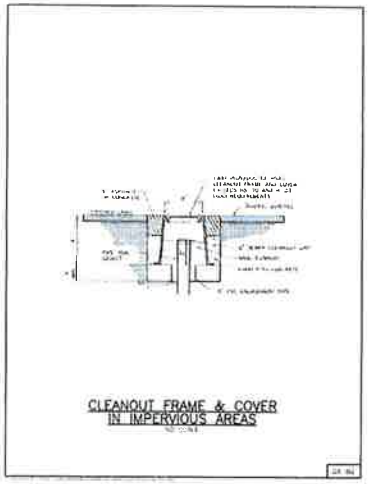


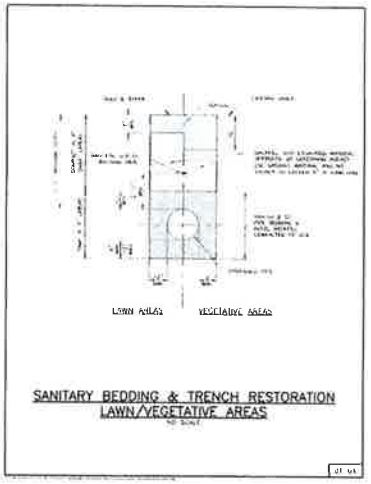


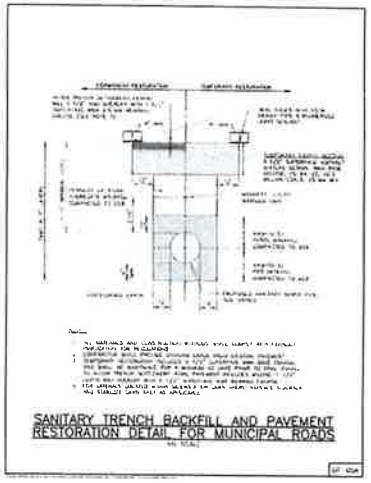
GRINDER PUMP DETAILS

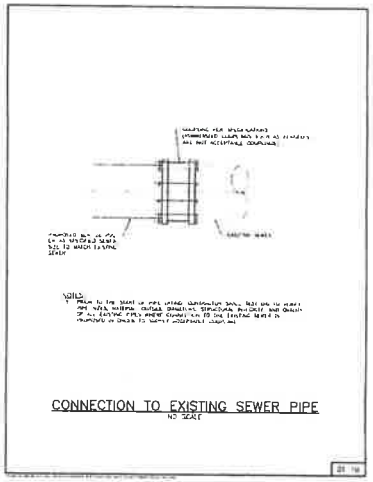












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HATFIELD WALK

TMP # 09000101200S & 09000100600S2

HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

SANITARY SEWER DETAILS

File No.
1727_C4.0_Utilities.dwg

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Date	08/01/2024
Scale	N.T.S.
Designed	RC
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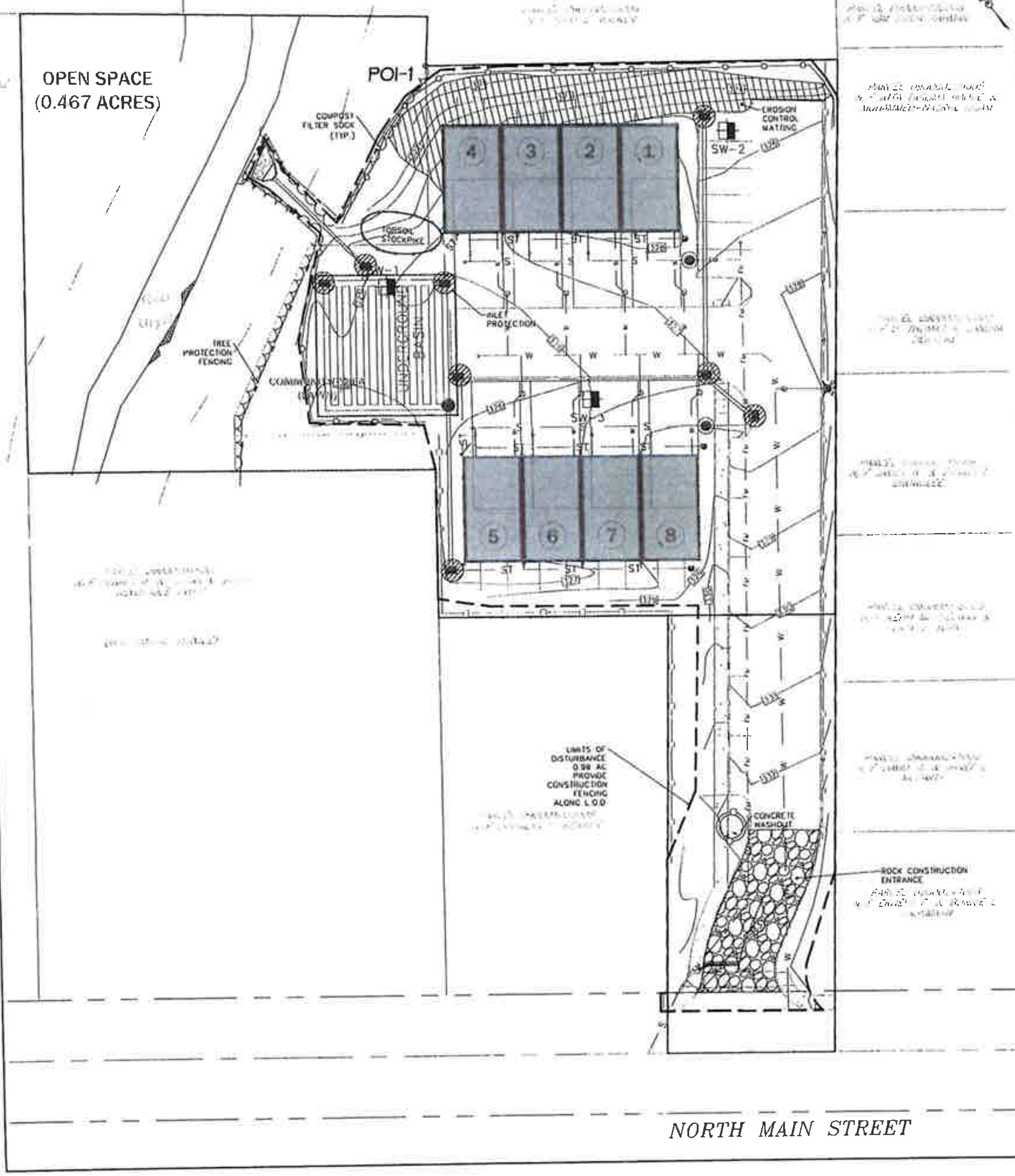
Drawing No.
C4.2



LIMIT OF DISTURBANCE = 0.99 ACRES
NOTE TO CONTRACTOR: NPDES PERMIT WILL BE REQUIRED IF ACTUAL DISTURBANCE EXCEEDS 1.0 ACRES

SOILS TYPES

[illegible]	Name	Hydric (Y/N)	Depth to Bedrock (in)	Depth to Water Table	HSG
[illegible]	Readington silt loam, 3 to 8% slopes	N	40-60	16-36	C
UrlB	Urban land-Readington complex, 0 to 8% slopes	N	40-[illegible]	16-36	C

SOIL LIMITATIONS AND RESOLUTION

THE SOILS FOUND WITHIN THE PROJECT LIMITS HAVE POSSIBLE LIMITATIONS DUE TO SHALLOW DEPTH TO GROUNDWATER AND/OR POSSIBLE SHALLOW DEPTH TO BEDROCK. IN ORDER TO RESOLVE THIS ISSUE, ANY STANDING WATER SHOULD BE PUMPED THROUGH A SEDIMENT FILTER BAG DURING CONSTRUCTION AND THE CONTRACTOR SHALL ENSURE THAT THE DWELLINGS ARE PROPERLY WATERPROOFED TO AVOID GROUNDWATER ISSUES POST-CONSTRUCTION. FOR AREAS WHERE SHALLOW BEDROCK IS A LIMITATION, CONTRACTOR SHALL DETERMINE WHETHER ROCK IS RIPPABLE. IF ROCK IS NOT RIPPABLE, BLASTING MAY BE REQUIRED. ALL BLASTING SHALL MEET LOCAL, COUNTY, STATE AND FEDERAL REGULATIONS.

ACT 187 AS AMENDED

UTILITY LOCATIONS AS SHOWN ON THIS PLAN ARE APPROXIMATE AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR PER PA. ACT 187 TO CONTACT THE UTILITY COMPANIES FOR MORE ACCURATE LOCATION PRIOR TO ANY EXCAVATION.

TO OBTAIN ADDITIONAL UTILITY INFORMATION OR TO ARRANGE FOR FIELD LOCATION OF EXISTING UTILITIES BEFORE EXCAVATION, CALL THE PENNSYLVANIA ONE CALL SYSTEM AT 1-800-242-1776. THE UTILITY COMPANIES SHOWN MAY OR MAY NOT HAVE UTILITY LINES IN THE AREA.

CALL BEFORE YOU DIG !!
PENNSYLVANIA LAW REQUIRES
(3) WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND
(10) WORKING DAYS IN DESIGN STAGE
-- STOP & CALL --

CRITICAL STAGES OF PCSM PLAN IMPLEMENTATION

THE INSTALLATION OF THE SUBSURFACE INFILTRATION BED SHALL BE OVERSEEN BY A LICENSED PROFESSIONAL ENGINEER OR THEIR DESIGNEE. A WRITTEN REPORT AND PHOTOGRAPHS SHALL BE PREPARED DOCUMENTING THE CRITICAL STAGE INSPECTION. THE REPORT AND PHOTOGRAPHS SHALL BE PROVIDED IF REQUESTED.

NON-STRUCTURAL BMPS

RE-VEGETATE DISTURBED AREAS. ALL DISTURBED AREAS WILL BE PERMANENTLY SEEDED OR LANDSCAPED. ADDITIONALLY, NEW TREES WILL BE PLANTED THROUGH THE SITE TO REDUCE THE THERMAL IMPACTS OF IMPERVIOUS SURFACES AND REDUCE RUNOFF VOLUME THROUGH TRANSPIRATION.

STRUCTURAL BMPS

SUBSURFACE INFILTRATION BED. THE SUBSURFACE INFILTRATION BED IS DESIGNED TO REDUCE BOTH THE RATE AND THE VOLUME OF STORMWATER DISCHARGE FROM THE SITE. THE BMP WILL INFILTRATE RUNOFF AND USE AN OUTLET STRUCTURE TO SLOWLY INFILTRATE AND/OR RELEASE CAPTURED RUNOFF.

RECYCLING/ DISPOSAL OF MATERIALS

THE CONSTRUCTION WASTES ANTICIPATED INCLUDE DEMOLITION MATERIALS FROM SITE DEMOLITION AND EXCESS BUILDING MATERIAL SUCH AS CONCRETE, WOOD, ETC.

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

SEQUENCE OF CONSTRUCTION

NOTE

SITE DEVELOPMENT OPERATIONS SHOULD BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING GENERAL SEQUENCE OF OPERATIONS. THE CONTRACTOR MAY DEVIATE FROM THE STAGING OF PERMANENT SITE IMPROVEMENT CONSTRUCTION ITEMS, WITH APPROVAL OF THE CONSERVATION DISTRICT INSPECTOR. DEVIATION FROM THE RELATIVE ORDER OF EROSION AND SEDIMENT CONTROL MEASURES SHOULD NOT OCCUR WITHOUT APPROVAL OF THE SITE ENGINEER. CESSATION OF ACTIVITY FOR AT LEAST 4 DAYS REQUIRES TEMPORARY STABILIZATION. SEE TEMPORARY STABILIZATION NOTES ON THIS SHEET.

1. CONTACT HATFIELD BOROUGH AND BOROUGH ENGINEER AT LEAST THREE (3) WORKING DAYS PRIOR TO SITE DISTURBANCE. THE BOROUGH SHALL BE NOTIFIED 7 DAYS IN ADVANCE OF THE PRE-CONSTRUCTION MEETING.
2. EACH STAGE OF THE SEQUENCE OF CONSTRUCTION MUST BE COMPLETED PRIOR TO INITIATION OF THE NEXT STAGE OF THE SEQUENCE OF CONSTRUCTION. CONSTRUCTION MAY OVERLAP INTO A SUBSEQUENT PHASE AS LONG AS ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED IN THE PREVIOUS PHASE.
3. INSTALL CONSTRUCTION FENCE, CONSTRUCTION ENTRANCE, AND COMPOST FILTER SOCK WHERE SHOWN ON THE PLAN.
4. NO EARTH DISTURBANCE SHALL COMMENCE UNTIL HATFIELD BOROUGH INSPECTS THE E&S CONTROLS AND AUTHORIZES EARTH DISTURBANCE ACTIVITIES TO BEGIN. THE E&S CONTROLS SHALL NOT BE REMOVED UNTIL AUTHORIZATION IS GIVEN BY THE BOROUGH.
5. COMMENCE DEMOLITION OF EXISTING FEATURES/STRUCTURES TO BE REMOVED. REMOVE EXISTING ASPHALT AND CONCRETE SURFACES. DEMOLITION DEBRIS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE LOCAL, COUNTY, STATE AND FEDERAL REGULATIONS.
6. STRIP TOPSOIL AND STOCKPILE WHERE SHOWN ON PLAN. ALL STRIPPED TOPSOIL STOCKPILES SHALL HAVE TEMPORARY SEEDING INSTALLED. ROUGH GRADE SITE, PARKING/DRIVEWAY AREAS, AND BUILDING PADS.
7. EXCAVATE FOR BUILDING FOUNDATIONS AND CONSTRUCT BUILDINGS.
8. HAUL EXCESS FILL OFF SITE (IF NECESSARY) IN ACCORDANCE WITH ALL APPLICABLE LOCAL, COUNTY, STATE AND FEDERAL REGULATIONS.
9. INSTALL WATER, SANITARY SEWER, AND STORM SEWER SYSTEM STARTING AT THE DOWNSTREAM ENDS AND WORKING UPSTREAM. ALL TRENCHES SHALL BE BACKFILLED AT THE END OF EACH DAY. INLET PROTECTION BAGS SHALL BE INSTALLED IN STORM SEWER INLETS IMMEDIATELY UPON PLACEMENT AT GRADE.
10. INSTALL PROPOSED SUBSURFACE BMP AND OUTLET STRUCTURE ONLY AFTER COMPOST FILTER SOCK IS INSTALLED UPHILL TO PREVENT SEDIMENTATION OF THE BMP. UPHILL COMPOST FILTER SOCK MAY NOT BE REMOVED UNTIL COMPOSTED SUBSURFACE AREA IS FULLY COVERED BY GEOTEXTILE AND SUBBASE/BASE COURSE IS PLACED.
11. COMPLETE FINAL GRADING AFTER THE BUILDING IS COMPLETED AND APPLY PERMANENT SEEDING MIXTURE AND INSTALL ALL REQUIRED PLANTINGS.
12. FLUSH ALL AFFECTED STORM DRAINAGE PIPES OF ACCUMULATED SILT.
13. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED AND HATFIELD BOROUGH HAS AUTHORIZED REMOVAL OF E&S CONTROLS, ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS MUST BE REMOVED IN THE FOLLOWING MANNER. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM OF 70% UNIFORM PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING OR OTHER MOVEMENTS.
    A. REMOVE ALL REMAINING SEDIMENT FROM COMPOST FILTER SOCKS, AND STOCKPILE FOR USE IN LANDSCAPE AREAS.
    B. ANY UNSUITABLE SOIL AND / OR FILL WILL BE REMOVED OFF-SITE AND DISPOSED OF LEGALLY. IF STOCKPILES ARE TO REMAIN, APPLY PERMANENT SEEDING AND MULCHING.
    C. REMOVE TEMPORARY COMPOST FILTER SOCK, ETC. WHEN THE ENTIRE SITE IS COMPLETELY STABILIZED.
    D. AREAS DISTURBED DURING THE REMOVAL OF THE TEMPORARY CONTROLS MUST BE STABILIZED IMMEDIATELY.
16. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENTATION CONTROLS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENTATION CONTROLS AFTER EACH STORM EVENT OR ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN-OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND RENETTING MUST BE PERFORMED IMMEDIATELY.

SITE LOCATION MAP

REFERENCE: TELFORD U.S.G.S. QUADRANGLE MAP — SCALE: 1"=2,000'

OWNER/ APPLICANT
PENNINGTON PROPERTY GROUP LLC
P.O. BOX
CHALFONT, PA 18914
(267) 767-0876

SESC LEGEND

- LIMIT OF DISTURBANCE
- LOT LINE
- COMPOST FILTER SOCK
- ROCK CONSTRUCTION ENTRANCE
- SOIL TYPE BOUNDARY
- SOIL TYPE
- POI-1 — DISCHARGE POINT
- FILTER BAG INLET PROTECTION
- PROPOSED CONTOUR
- EROSION CONTROL MATTING
- TREE PROTECTION FENCING
- PROPOSED TREELINE
- EXISTING TREELINE

EROSION / SEDIMENT CONTROL PLAN STANDARD NOTES

STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET; STOCKPILE SLOPES MUST NOT EXCEED 2H:1V.

THE OPERATOR/RESPONSIBLE PERSON (O/RP) ON SITE SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED.

IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE O/RP SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES (BMPS) TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.

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

ALL PUMPING OF SEDIMENT-LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP SUCH AS A PUMPED WATER FILTER BAG DISCHARGING OVER UNDISTURBED AREAS.

A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN MUST BE AVAILABLE ON THE PROJECT SITE AT ALL TIMES.

EROSION AND SEDIMENT BMPS MUST BE CONSTRUCTED, STABILIZED AND FUNCTIONAL BEFORE SITE DISTURBANCE BEGINS WITHIN THE TRIBUTARY AREAS OF THOSE BMPS.

AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMP CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING THE REMOVAL OF THE BMPS MUST BE STABILIZED IMMEDIATELY.

AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, THE O/RP SHALL INVITE ALL CONTRACTORS INVOLVED IN THAT ACTIVITY, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, & THE EROSION AND SEDIMENT CONTROL PLAN DESIGNER TO A PRE-CONSTRUCTION MEETING. ALSO, AT LEAST THREE DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITY, ALL CONTRACTORS INVOLVED IN THAT ACTIVITY SHALL NOTIFY THE PENNSYLVANIA ONE-CALL SYSTEM INC. AT 1-800-242-1776 TO DETERMINE ANY UNDERGROUND UTILITIES LOCATIONS.

IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITY CEASES, THE O/RP SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITY. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT SPECIFIED RATES. DISTURBED AREAS THAT ARE NOT AT FINISHED GRADE AND WHICH WILL BE RE-DISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS.

DISTURBED AREAS THAT ARE AT FINISHED GRADE OR WHICH WILL NOT BE RE-DISTURBED WITHIN ONE YEAR MUST BE STABILIZED IN ACCORDANCE WITH PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.

AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% (PERCENT) VEGETATIVE OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.

UPON THE INSTALLATION OF TEMPORARY SEDIMENT BASIN RISER(S), A QUALIFIED SITE REPRESENTATIVE SHALL CONDUCT AN IMMEDIATE INSPECTION OF THE RISER(S) WHEREUPON THE BOROUGH SHALL BE NOTIFIED IN WRITING THAT THE RISER IS SEALED (WATERTIGHT).

AT STREAM CROSSINGS, A 50-FOOT BUFFER SHALL BE MAINTAINED. IN BUFFERS, CLEARING, SOD DISTURBANCES, AND EXCAVATIONS, EQUIPMENT TRAFFIC SHOULD BE MINIMIZED. ACTIVITY SUCH AS STACKING LOGS, BURNING CLEARED BRUSH, DISCHARGING RAINWATER FROM TRENCHES, WELDING PIPE SECTIONS, REFUELING AND MAINTAINING EQUIPMENT SHOULD BE AVOIDED WITHIN BUFFER ZONES.

UNTIL A SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION CONTROL BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEANOUT, REPAIR, REPLACEMENT, RE-GRADING, RE-SEEDING, RE-MULCHING AND RE-NETTING MUST BE PERFORMED IMMEDIATELY. IF EROSION AND SEDIMENT CONTROL BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED, WILL BE REQUIRED.

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

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

Holmes Cunningham LLC
350 E. Butler Ave., Ste 106
New Britain, PA 18901
(215) 586-3330
www.hcengineering.net

REVISIONS

Date	Description
10/11/2024	REVISED PER BORO. TRAFFIC & FIRE CMTS

HATFIELD WALK

TMP # 09000101 2005 & 090001006002

HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

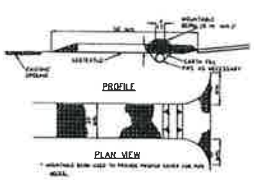
EROSION AND SEDIMENT CONTROL PLAN

Robert [illegible], P.E.
PA Lic. No. PE[illegible]

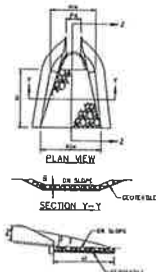
File No. 1727_C5.0_Erosion.dwg

HCE Job	1727
Date	08/07/2024
Scale	1"=20'
Designed	RC
Sheet	11 of 15

Drawing No.
C5.0



STANDARD CONSTRUCTION DETAIL #3-1
ROCK CONSTRUCTION ENTRANCE



OUTLET NO.	PIPE DIA Pd (IN)	RIPRAP SIZE R-_	RIPRAP THICK. Rt (IN)	APRON LENGTH (FT)	APRON INITIAL WIDTH (FT)	APRON TERMINAL WIDTH (FT)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

NOTES:

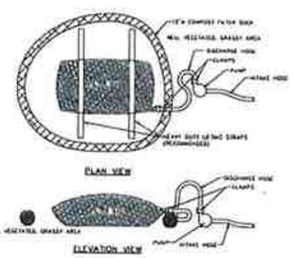
ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.

ALL APRONS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT. DISPLACED RIPRAP WITHIN THE APRON SHALL BE REPLACED IMMEDIATELY.

STANDARD CONSTRUCTION DETAIL #9-1
RIPRAP APRON AT PIPE OUTLET
WITH FLARED END SECTION OR ENDWALL

UTILITY TRENCHING GUIDELINES

1. CONSTRUCTION REQUIREMENTS –
   A. LIMIT ADVANCE CLEARING AND GRUBBING OPERATIONS TO A DISTANCE EQUAL TO TWO TIMES THE LENGTH OF PIPE INSTALLATION THAT CAN BE COMPLETED IN ONE DAY.
   B. WORK CREWS AND EQUIPMENT FOR TRENCHING, PLACEMENT OF PIPE, PLUG CONSTRUCTION AND BACKFILLING WILL BE SELF CONTAINED AND SEPARATE FROM CLEARING AND GRUBBING AND SITE RESTORATION AND STABILIZATION OPERATIONS.
   C. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT, PLUG INSTALLATION AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY.
   D. WATER WHICH ACCUMULATES IN THE OPEN TRENCH WILL BE COMPLETELY REMOVED BY PUMPING AS REQUIRED, TO A FACILITY FOR REMOVAL OF SEDIMENTS IN ACCORDANCE WITH PADEP GUIDELINES.
   E. ON THE DAY FOLLOWING PIPE PLACEMENT AND TRENCH BACKFILLING, THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS AND APPROPRIATE TEMPORARY EROSION AND SEDIMENT POLLUTION CONTROL MEASURES/FACILITIES WILL BE INSTALLED. SEEDING AND MULCHING OF ALL DISTURBED AREAS WILL BE DONE AT THE END OF EACH WEEK.
2. EXCEPTIONS – IN CERTAIN CASES TRENCHES CANNOT BE BACKFILLED UNTIL THE PIPE IS HYDROSTATICALLY TESTED, OR ANCHORS AND OTHER PERMANENT FEATURES ARE INSTALLED. IN THESE CASES, ALL OF THE REQUIREMENTS LISTED UNDER ITEM 1 WILL REMAIN IN EFFECT WITH THE FOLLOWING EXCEPTIONS.
   A. DAILY BACKFILLING OF THE TRENCH MAY BE DELAYED FOR SIX DAYS. ALL PRESSURE TESTING AND THE COMPLETE BACKFILLING OF THE OPEN TRENCH MUST BE COMPLETED BY THE SEVENTH WORKING DAY.
   B. IF DAILY BACKFILLING IS DELAYED, THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS, APPROPRIATE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES/FACILITIES WILL BE INSTALLED, AND THE AREAS SEEDED AND MULCHED WITHIN THE NEXT TWO CALENDAR DAYS.



NOTES:

[illegible]

PROPERTY	TEST METHOD	MINIMUM STANDARD
[illegible]	[illegible]	[illegible]

[illegible]

STANDARD CONSTRUCTION DETAIL #3-16
PUMPED WATER FILTER BAG

CLEAN FILL NOTE

IF THE SITE WILL NEED TO HAVE FILL IMPORTED FROM AN OFF SITE LOCATION, THE RESPONSIBILITY FOR PERFORMING ENVIRONMENTAL DUE DILIGENCE AND THE DETERMINATION OF CLEAN FILL WILL RESIDE WITH THE OPERATOR.

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

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

BMP MAINTENANCE

THE CONTRACTOR WILL BE RESPONSIBLE FOR THE PROPER CONSTRUCTION, STABILIZATION, AND MAINTENANCE OF ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES AND RELATED ITEMS INCLUDED WITHIN THIS PLAN. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR THE PROPER CONSTRUCTION AND STABILIZATION OF PERMANENT CONTROL MEASURES AND RELATED ITEMS INCLUDED WITHIN THIS PLAN.

DURING CONSTRUCTION THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING INSPECTIONS OF THE BMPS AFTER EACH RUNOFF EVENT AS WELL AS ON A WEEKLY BASIS. THE CONTRACTOR SHALL KEEP A WRITTEN LOG OF ALL INSPECTIONS AND MAINTENANCE PERFORMED ON THE BMPS.

THE OWNER WILL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL PERMANENT CONTROL MEASURES.

SOIL SEDIMENT REMOVED FROM ANY TEMPORARY CONTROL MEASURE DURING REGULAR MAINTENANCE WILL BE INCORPORATED BACK INTO THE EARTHWORK AS FILL ON THE SITE. SOIL SEDIMENT MATERIAL SHALL BE DISTRIBUTED ON-SITE WITHOUT CHANGING DRAINAGE PATTERNS DURING A SPECIFIC CONSTRUCTION STAGE.

COMPOST FILTER SOCKS WILL BE INSPECTED ONCE A WEEK OR AFTER EVERY STORM EVENT, WHICHEVER COMES FIRST. ANY NECESSARY REPAIRS WILL BE MADE IMMEDIATELY. ACCUMULATED SEDIMENTS WILL BE REMOVED AS REQUIRED TO KEEP THE SOCK FUNCTIONAL. DEPOSITS WILL BE REMOVED WHERE ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE SOCK. UNDERCUTTING OR EROSION OF THE TOE ANCHOR OF THE SILT FENCE WILL BE REPLACED IMMEDIATELY WITH ROCK FILTER OUTLETS. ANY MANUFACTURER'S RECOMMENDATIONS WILL BE ADHERED TO FOR REPLACING SILT FENCE DUE TO WEATHERING.

THE CONSTRUCTION ENTRANCE WILL BE INSPECTED AT THE END OF EACH WORK DAY. THE THICKNESS WILL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSION BY ADDING ROCK. A STOCKPILE OF ROCK MATERIAL WILL BE MAINTAINED ON THE SITE FOR THIS PURPOSE.

AT THE END OF EACH CONSTRUCTION DAY, ANY SEDIMENT DEPOSITED ON PUBLIC ROADWAYS, WILL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE. WASHING OF THE ROADWAY WITH WATER WILL NOT BE PERMITTED.

SEEDING NOTES

TEMPORARY SEEDING:

1. TEMPORARY SEEDING SHALL BE DONE IN AREAS WHERE NO ACTIVITY WORK WILL BE PERFORMED. ANY DISTURBED AREA ON WHICH ACTIVITY HAS CEASED MUST BE SEEDED AND MULCHED IMMEDIATELY.
2. DURING NON-GERMINATING PERIODS, ONLY MULCH MUST BE APPLIED AT THE RECOMMENDED RATES. AREAS MULCHED DURING THE NON-GERMINATING PERIODS, MUST BE LIMED, FERTILIZED, SEEDED, AND MULCHED IMMEDIATELY FOLLOWING THE END OF THE NON-GERMINATING PERIODS.
3. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN ONE (1) YEAR MAY BE SEEDED AND MULCHED WITH A QUICK GROWING TEMPORARY SEED MIXTURE.
4. DISTURBED AREAS WHICH ARE AT EITHER FINISHED GRADE OR WILL NOT BE DISTURBED AGAIN WITHIN ONE (1) YEAR MUST BE SEEDED WITH A PERMANENT SEED MIXTURE AND MULCHED.
5. TEMPORARY SEEDING STEPS:
   A. APPLY AGRICULTURAL LIMESTONE AT A RATE OF ONE (1) TON PER ACRE. (X POUNDS PER 1000 SQUARE FEET)
   B. APPLY FERTILIZER AT THE RATE OF 50-50-50 PER ACRE.
   C. WORK THE LIMESTONE AND FERTILIZER INTO THE SOIL.
   D. UTILIZING THE FOLLOWING SEEDING TYPES, RATES AND TIME SCHEDULE:

TEMPORARY SEEDING

SEASON	RATE	TYPE
MARCH 1 TO JUNE 15	1 LB./1000 SF	ANNUAL RYEGRASS
MAY 15 TO SEPT 15	1 LB./1000 SF	SUDAN GRASS
SEPT 15 TO OCT 15	100 LB./AC	WINTER RYE

   E. APPLY HAY OR STRAW MULCH (IN ACCORDANCE WITH SECTION NO. 4) AT A RATE OF THREE (3) TONS PER ACRE.
6. ALL SEED SHALL BE LABELED, DATED AND QUALITY CONSISTENT WITH SECTION NO. 2.

PERMANENT SEEDING:

1. DISTURBED AREAS WHICH ARE EITHER AT FINISHED GRADE OR WILL NOT BE DISTURBED AGAIN WITHIN ONE (1) YEAR MUST BE SEEDED WITH A PERMANENT SEED MIXTURE AND MULCHED.
2. SEEDING SHALL BE DONE DURING PERIODS FROM APRIL 15TH TO OCTOBER 1ST, UNLESS OTHERWISE DIRECTED. IF SEEDING IS DONE AFTER OCTOBER 1ST, DORMANT SEED MUST BE USED AND DISTURBED AREAS MUST BE MULCHED.
3. DISTURBED FINAL GRADED AREAS AND DRAINAGE SWALES WILL BE PERMANENTLY SEEDED AS FOLLOWS:
   A. MINIMUM OF 4" OF TOPSOIL SHALL BE SPREAD OVER ALL AREAS TO BE SEEDED. TOPSOIL SHALL BE FREE OF STONES, STICKS, WASTE MATERIAL AND SIMILAR DEBRIS. FROZEN GROUND SHALL NOT BE SPREAD AS TOPSOIL AND TOPSOIL SHALL NOT BE SPREAD OVER FROZEN GROUND.
   B. A SOIL ANALYSIS IS RECOMMENDED, HOWEVER, IN LIEU OF AN ANALYSIS APPLY AGRICULTURAL LIMESTONE AND FERTILIZER AT RATES RECOMMENDED BELOW (OR AS SUGGESTED BY THE SOIL TEST RESULTS (ONE (1) TEST PER [illegible] ACRES)).
   C. THE LIMESTONE AND FERTILIZER SHALL BE WORKED INTO THE SOIL TO DEPTHS OF 3 TO 4 INCHES.
   D. GRASS SHALL NOT BE PLANTED AFTER HEAVY RAIN OR WATERING.
   E. ALL SEED USED SHALL BE LABELED IN ACCORDANCE WITH THE U.S. DEPARTMENT OF AGRICULTURE RULES AND REGULATIONS UNDER THE FEDERAL SEED ACT IN EFFECT AT THE TIME OF PURCHASE. [illegible] SHALL NOT EXCEED 15% AND BLUE TAG CERTIFIED SEED SHALL BE SUPPLIED WHENEVER POSSIBLE.
   F. SMOOTH AND FIRM SEED BED WITH CULTIPACKER OR SIMILAR EQUIPMENT PRIOR TO SEEDING. APPLY SEED UNIFORMLY BY BROADCASTING, DRILLING OR HYDRO SEEDING. COVER SEEDS WITH 1/2" OF SOIL WITH SUITABLE EQUIPMENT.
   G. APPLY HAY OR STRAW MULCH (IN ACCORDANCE WITH SECTION NO. 4) AT A RATE OF THREE (3) TONS PER ACRE.

PERMANENT SEEDING FOR NORMAL MOWED LAWN AREAS

SEASON	RATE	TYPE
MARCH 1 TO JUNE 1 & AUG 15 TO OCT 1	3 LBS./1000 SF	67% TALL FESCUE AND RED TOP 33%
OCT 1 TO MARCH 1 & JUNE 1 TO AUG 1	3 LBS./1000 SF	RED TOP*

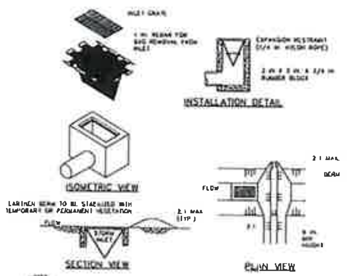
(*) USE DORMANT SEED, UNIFORMLY APPLIED, WORKING INTO A DEPTH OF 1/4 INCH. THE USE OF MULCH IS REQUIRED. THE USE OF NETTING OR EROSION CONTROL MATS MAY BE REQUIRED.

PERMANENT SEEDING FOR SPECIAL AREAS (SWALES, POND EMBANKMENTS, LEVEES, DIVERSION CHANNELS, ETC)

SEASON	RATE	TYPE
MARCH 1 TO JUNE 1 & AUG 15 TO OCT 1	3 LBS./1000 SF	67% TALL FESCUE [illegible] & RYEGRASS [illegible]

NOTE: SEEDING PERIODS AND SPECIFICATIONS MAY VARY DUE TO SITE CONDITIONS AND VARIANCES FROM THE TIME THIS REPORT IS WRITTEN AND APPROVED. IT MAY BE NECESSARY TO ADAPT SEED SPECIFICATION, VARIETIES, AND QUALITIES. FOR SPECIAL CONDITIONS CONSULT "GUIDELINE FOR RECLAMATION OF SEVERELY DISTURBED AREAS", PENNSYLVANIA STATE UNIVERSITY.

4. FERTILIZER: A SOIL ANALYSIS IS RECOMMENDED BUT IN LIEU OF AN ANALYSIS APPLY AGRICULTURAL LIMESTONE AT A RATE OF FOUR (4) TONS/ACRE AND 10-20-20 FERTILIZER AT A RATE OF 50 LBS. PER 1000 SF. THESE MATERIALS WILL BE UNIFORMLY APPLIED AND WORKED INTO THE TOPSOIL TO A DEPTH OF 3 TO 4 INCHES. IMMEDIATELY BEFORE SEEDING, A 10-10-10 FERTILIZER WILL BE WORKED INTO THE SURFACE AT A RATE OF 10 LBS. PER 1000 SF.
5. HYDRO SEEDING: LIME AND SEED SHALL BE AS SPECIFIED ABOVE, AND FERTILIZER SHALL BE APPLIED AT A RATE OF [illegible]. CROWN VETCH SHALL BE INOCULATED AT FOUR TIMES THE MANUFACTURER'S RATE. SHOULD FERTILIZER BE APPLIED WITH THE INOCULANT, THE MIXTURE SHALL NOT REMAIN IN A SLURRY FOR MORE THAN ONE HOUR. WOOD CELLULOSE FIBER, APPLIED AT A RATE OF 35 LBS. PER 1000 SF, MAY BE APPLIED AS PART OF THE SLURRY IN LIEU OF MULCHING. SYNTHETIC MULCH BINDER, SUCH AS CURASOL, DCA-70, TERRA-TACK OR AN APPROVED EQUAL SHALL BE USED PER THE MANUFACTURER'S INSTRUCTIONS TO ANCHOR THE MULCH.
6. MULCHING: MULCHING SHALL BE APPLIED AS FOLLOWS:
   A. STRAW – SHALL BE ALL DRIED AND FREE FROM UNDESIRABLE SEEDS AND COARSE MATERIAL. APPLY AT A RATE OF 115 TO 150 LBS. PER 1000 SF OR 3 TONS PER ACRE. MULCHED AREAS SHALL BE CHECKED PERIODICALLY AND IMMEDIATELY AFTER STORMS AND WIND. DAMAGED OR MISSING MULCH SHALL BE REPLACED. A TACKIFIER APPLIED AFTER STRAW IS RECOMMENDED. TACKIFIER MAY BE ASPHALT OR POLYMER SPRAY. APPLY AT A RATE RECOMMENDED BY THE MANUFACTURER WITH SUITABLE EQUIPMENT. IN LIEU OF MANUFACTURERS RECOMMENDATIONS APPLY AT A RATE OF .04 TO .06 GALLONS PER SQUARE YARD.
   B. NETTING / EROSION CONTROL BLANKETS – THE USE AND INSTALLATION OF EROSION CONTROL BLANKETS OR NETTING SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION AND SHALL BE SELECTED FOR THE PROPER APPLICATION AND CONDITIONS.



NOTES:

MAXIMUM DRAINAGE AREA = 1/2 ACRE

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

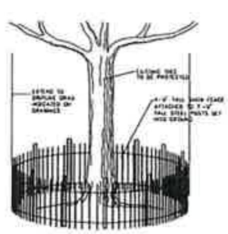
ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAIN PERMANENTLY.

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

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

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

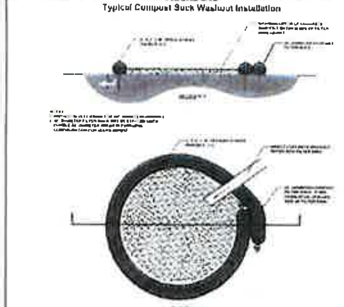
STANDARD CONSTRUCTION DETAIL #4-16
FILTER BAG INLET PROTECTION - TYPE M INLET



NOTES:
1) FENCE TO BE INSTALLED BEFORE WORK BEGINS. FENCE MUST REMAIN AND BE MAINTAINED THROUGH DURATION OF CONSTRUCTION.
2) ORANGE CONSTRUCTION FENCE MAY BE SUBSTITUTED FOR SNOW FENCE.

TREE PROTECTION FENCING DETAIL

FIGURE 3.16
Typical Compost Sock Washout Installation

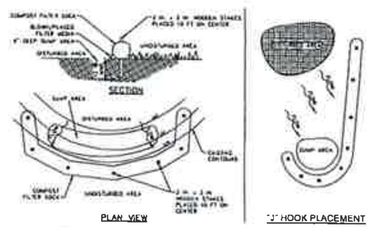


A suitable impervious geomembrane shall be placed at the location of the washout prior to installing the socks.
Adapted from Filtrexx

NOTE:

CONCRETE WASHOUT SHALL BE PLACED IN A FLAT, WELL-VEGETATED AREA NOT ADJACENT TO ANY STORMWATER INLETS OR SURFACE WATERS.

CONCRETE WASHOUT DETAIL



NOTES:

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

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

TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

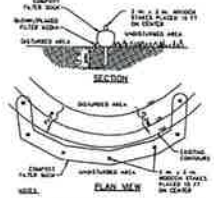
ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

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

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

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

STANDARD CONSTRUCTION DETAIL #4-1
COMPOST FILTER SOCK WITH J-HOOK
NOT TO SCALE



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

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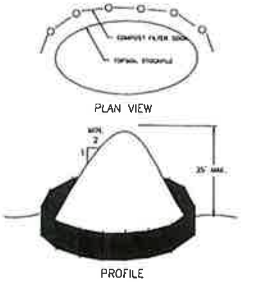
STANDARD CONSTRUCTION DETAIL #4-1
COMPOST FILTER SOCK
NOT TO SCALE



COMPOST FILTER SOCK MUST BE PLACED DOWNSLOPE OF ALL STOCKPILES. IMMEDIATELY APPLY TEMPORARY SEEDING TO ALL STOCKPILES WHICH WILL REMAIN IN PLACE 20 DAYS OR MORE.

STOCKPILE AREA DETAIL

Holmes Cunningham LLC
350 E. Butler Ave., Ste 106
New Britain, PA 18901
(215) 586-3330
www.hcengineering.net

REVISIONS	
Date	Description
10/11/2024	REVISED PER BORO. TRAFFIC & FIRE CMTS

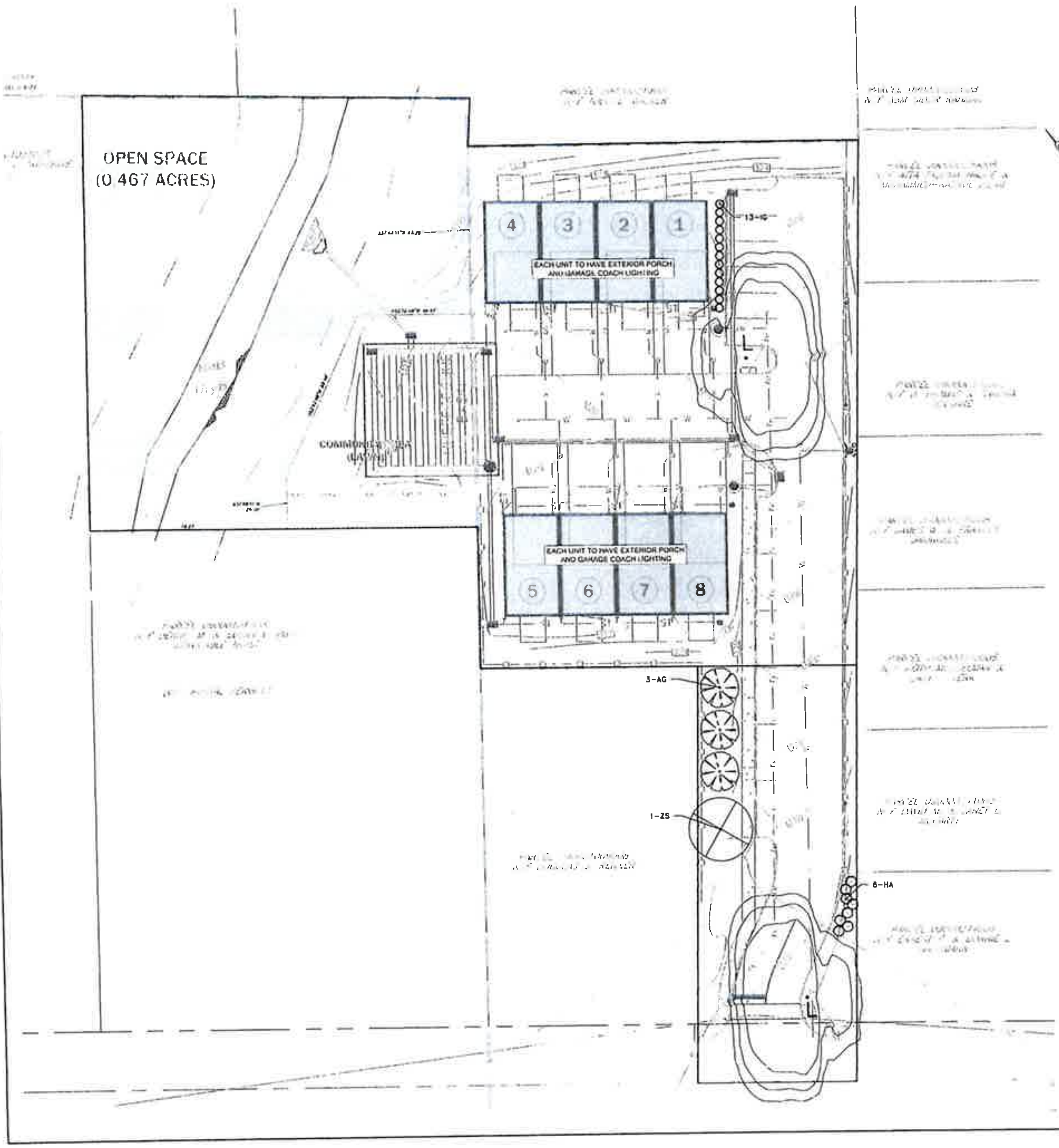
HATFIELD WALK
TMP # 090001012005 & 090001006002
HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

EROSION AND SEDIMENT CONTROL DETAILS

HCE Job	1727
Date	08/07/2024
Scale	N.T.S
Designed	RC
Sheet	12 of 15

File No. 1727_C5.0_Erosion.dwg

Drawing No.
C5.1



PLANT SCHEDULE

Mark Symbol	Quantity	Botanical Name	Common Name	Min. Planting Caliper	Min. Planting Spread	Min. Planting Height	Remarks	Comments
Trees								
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
Shrubs **								
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]

** [illegible]

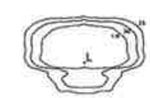
LANDSCAPE REQUIREMENTS CHART - BOROUGH OF HATFIELD

Ordinance Item	Requirement	Plan Proposed
S.O. 22-420.1.B Street trees	[illegible] N. Main St - 42.5' - 11' (driveway opening) = 31 32/50 = 1 Street tree	1 Shade tree
S.O. 22-420.1 C (2) Buffer & Screen Planting	[illegible] essentially the same type, but of significantly different intensities, the [illegible] Bordering residential "Renner" parcel: 248 (248/100) x 2 = 5 shade trees; Eastern property line: 345 (345/100) x 2 = 7 shade trees	3 Ornamental trees [W] [illegible]; 4 Shrubs [W] [illegible]
	parking screening for side of unit [illegible]	13 Shrubs
	Total Landscape Proposed	1 Shade tree; 3 Ornamental trees; 21 Shrubs

LUMINAIRE SCHEDULE - AMERICAN ELECTRIC LIGHTING - American Revolution Deluxe LED

Symbol	Label	Qty	Catalog Number	Description	File	Lumens per Lamp	LLF	Watts	Mounting Ht
■		2	247DL P45 AS 3K R3	247DL American Revolution Deluxe LED Full cutoff with 70LED 3K with R3 distribution	247DL_P45FDF70_XXXX_3K_R3.ies	Absolute	1	46	12

LIGHTING TEMPLATE



LANDSCAPE LEGEND

- ⊗ Street Tree
- Buffer landscape
- ∘ Parking screening

NOTES:
1. NO STRUCTURES, GRADING OR PLANTING HIGHER THAN TWO FEET SHALL BE LOCATED WITHIN THE SIGHT TRIANGLES.
2. NO PLANTINGS OR STRUCTURES SHALL BE LOCATED WITHIN THE SANITARY SEWER EASEMENTS OR WITHIN 10 FEET OF THE PROPOSED SEWER OR LATERALS.

RACHEL S. VAHEY, RLA
PA LIC. NO LA001672

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(215) 586-3330
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REVISIONS

Date	Description
10/11/2024	REVISED PER BORO. TRAFFIC & FIRE CMTS

HATFIELD WALK

TMP # 090001012005 & 090001006002
HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

LANDSCAPE PLAN

PA LIC. No. PE074424

File No. 1727_C6.0_Landscape.dwg

HCE Job	1727
Date	08/07/2024
Scale	1"=30'
Designed	RC
Sheet	13 of 15

Drawing No.
C6.0

GENERAL LANDSCAPE PLANTING NOTES:

PLANTING MATERIALS

1 NAMES OF PLANTS AS DESCRIBED ON THIS PLAN CONFORM TO THOSE GIVEN IN "STANDARDIZED PLANT NAMES", 1942 EDITION PREPARED BY THE AMERICAN JOINT COMMITTEE ON HORTICULTURAL NOMENCLATURE. NAMES OF PLANT VARIETIES NOT INCLUDED THEREIN CONFORM TO NAMES GENERALLY ACCEPTED IN NURSERY TRADE

2 STANDARDS FOR TYPE, SPREAD, HEIGHT, ROOT BALL AND QUALITY OF NEW PLANT MATERIAL SHALL BE IN ACCORDANCE WITH GUIDELINES AS SET FORTH IN THE "AMERICAN STANDARD FOR NURSERY STOCK", PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN. PLANT MATERIAL SHALL HAVE NORMAL HABIT OF GROWTH AND BE HEALTHY, VIGOROUS, AND FREE FROM DISEASES AND INSECT INFESTATION

3 NEW PLANT MATERIAL SHALL BE NURSERY GROWN UNLESS SPECIFIED OTHERWISE. ALL PLANTS SHALL BE SET PLUMB AND SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS THE PLANT'S ORIGINAL GRADE BEFORE DIGGING. PLANT MATERIAL OF THE SAME SPECIES AND SPECIFIED AS THE SAME SIZE SHOULD BE SIMILAR IN SHAPE, COLOR AND HABIT. THE LANDSCAPE ARCHITECT HAS THE RIGHT TO REJECT PLANT MATERIAL THAT DOES NOT CONFORM TO THE TYPICAL OR SPECIFIED HABIT OF THAT SPECIES

4 THE CONTRACTOR SHALL NOT MAKE SUBSTITUTIONS. IF THE SPECIFIED LANDSCAPE MATERIAL IS NOT OBTAINABLE, THE CONTRACTOR SHALL SUBMIT PROOF OF NON-AVAILABILITY TO THE LANDSCAPE ARCHITECT AND OWNER TOGETHER WITH A WRITTEN PROPOSAL FOR USE OF AN EQUIVALENT MATERIAL

5 THE LANDSCAPE ARCHITECT MAY REVIEW PLANT MATERIALS AT THE SITE, BEFORE PLANTING, FOR COMPLIANCE WITH REQUIREMENTS FOR GENUS, SPECIES, VARIETY, SIZE, AND QUALITY. THE LANDSCAPE ARCHITECT RETAINS THE RIGHT TO FURTHER REVIEW PLANT MATERIALS FOR SIZE AND CONDITION OF BALLS AND ROOT SYSTEM, INSECTS, INJURIES, AND LATENT DEFECTS, AND TO REJECT UNSATISFACTORY OR DEFECTIVE MATERIAL AT ANY TIME DURING PROGRESS OF WORK. THE CONTRACTOR SHALL REMOVE REJECTED PLANT MATERIALS IMMEDIATELY FROM PROJECT SITE AS DIRECTED BY THE LANDSCAPE ARCHITECT OR OWNER

PLANTING SOILS

1 REUSE SURFACE SOILS STOCKPILED ON SITE, VERIFYING COMPLIANCE WITH PLANTING SOIL AND TOPSOIL CRITERIA IN THIS SPECIFICATION THROUGH TESTING. CLEAN SURFACE SOIL OF ALL ROOTS, PLANTS, SOD, AND GRAVEL OVER 1" IN DIAMETER AND DELETERIOUS MATERIALS. IF ON-SITE SOILS ARE TO BE USED FOR PROPOSED PLANTING, THE CONTRACTOR SHALL DEMONSTRATE, THROUGH SOIL TESTING, THAT ON-SITE SOILS MEET THE SAME CRITERIA AS INDICATED IN NOTES PLANS AND SPECIFICATIONS

2 SUPPLEMENT WITH IMPORTED OR MANUFACTURED TOPSOIL FROM OFF SITE SOURCES WHEN TOPSOIL AND PLANTING SOIL QUANTITIES ARE INSUFFICIENT. OBTAIN SOIL DISPLACED FROM NATURALLY WELL-DRAINED SITES WHERE TOPSOIL OCCURS AT LEAST 4" DEEP. DO NOT OBTAIN FROM AGRICULTURAL LAND, BOGS, MARSHES OR CONTAMINATED SITES

3 IF DEPTH OF PLANTING SOILS AND TOPSOIL IS NOT INDICATED IN PLANS OR DETAILS, A MINIMUM 18" DEPTH SHALL BE PROVIDED FOR ALL TREES AND LARGE SHRUBS, MINIMUM 12" DEPTH SHALL BE PROVIDED FOR GROUNDCOVERS, HERBACEOUS AND MEADOW OR ORNAMENTAL GRASS AREAS AND A MINIMUM 6" LAYER SHALL BE INSTALLED IN ALL LAWN AREAS. TOPSOIL AND PLANTING SOIL DEPTH INDICATED ON PLANS AND PLANTING DETAILS AND NARRATIVE SPECIFICATIONS SHALL GOVERN DEPTH WHEN PROVIDED

4 WHERE PLANTING AREAS ARE PROPOSED FOR FORMER PAVED OR GRAVEL AREAS, BEDS SHALL BE EXCAVATED TO A MINIMUM 30" DEPTH AND, AT A MINIMUM, BE BACKFILLED WITH BOTTOM LAYER OF SANDY LOAM (ORGANIC CONTENT LESS THAN 2%) OVER WHICH TOPSOIL AND PLANTING SOILS WILL BE PLACED AT DEPTHS INDICATED IN PLANS, DETAILS AND NOTES

5 IF THE QUANTITY OF SOILS FROM THE SITE IS NOT ADEQUATE TO FILL PLANTING AREAS TO THE DEPTH INDICATED IN THE PLANS AND DETAILS, CONTRACTOR SHALL FURNISH PLANTING SOILS THAT ARE FREE OF BROKEN GLASS, PAINT CHIPS, PLASTIC, DELETERIOUS MATERIALS, ROOTS, WEEDS, BOULDERS, COBBLES AND GRAVEL OVER 1" IN DIAMETER AND COMPLY WITH THE FOLLOWING CRITERIA
- SOILS SHALL MEET ALL APPLICABLE SOIL REMEDIATION STANDARDS
- ORGANIC CONTENT: 2-5% IN NATIVE SOILS, UP TO 10% IN AMENDED SOILS
- SOLUBLE SALTS: LESS THAN 0.5 MM HOS/CM
- SOIL PH: 4.5-7% TO BE AMENDED PER SOIL TEST RESULTS
- PHYSICAL (SIEVE) ANALYSIS/ SOIL TEXTURE
SAND 40-60% SILT 25-40% CLAY 5-20%
- NOT MORE THAN 1% OF MATERIAL SHALL BE RETAINED BY A #4 SIEVE

6 ALL PLANTING SOILS SHALL BE SUBMITTED FOR TESTING TO THE STATE COOPERATIVE EXTENSION SERVICE, OR APPROVED EQUAL, PRIOR TO DELIVERY TO THE SITE. CONTRACTOR SHALL FURNISH SOIL SAMPLES AND SOIL TEST RESULTS TO LANDSCAPE ARCHITECT OR OWNER AT A RATE OF ONE SAMPLE PER 500 CUBIC YARDS TO ENSURE CONSISTENCY ACROSS THE TOTAL VOLUME OF PLANTING SOIL REQUIRED. TEST RESULTS SHALL EVALUATE FOR ALL CRITERIA LISTED IN THIS SPECIFICATION. IF TESTING AGENCY DETERMINES THAT THE SOILS ARE DEFICIENT IN ANY MANNER AND MAY BE CORRECTED BY ADDING AMENDMENTS, THE CONTRACTOR SHALL FOLLOW STATED RECOMMENDATIONS FOR SOIL IMPROVEMENT AND FURNISH SUBMITTALS FOR ALL AMENDMENTS PRIOR TO DELIVERY OF SOIL TO THE PROJECT SITE

7 IF SOIL ORGANIC CONTENT IS INADEQUATE, SOIL SHALL BE AMENDED WITH COMPOST OR ACCEPTABLE, WEED FREE, ORGANIC MATTER. ORGANIC AMENDMENT SHALL BE WELL COMPOSTED, PH RANGE OF [illegible], MOISTURE CONTENT [illegible] BY WEIGHT, [illegible] PASSING THROUGH 1" SIEVE, SOLUBLE SALT CONTENT LESS THAN 0.5 MM HOS/CM, MEETING ALL APPLICABLE ENVIRONMENTAL CRITERIA FOR CLEAN FILL, FREE OF BROKEN GLASS, PAINT CHIPS, PLASTIC, DELETERIOUS MATERIALS, ROOTS, WEEDS, BOULDERS, COBBLES AND GRAVEL OVER 1" IN DIAMETER

8 SCARIFY AND/OR TILL ALL COMPACTED SUBSOILS PRIOR TO ADDING PLANTING SOIL OR TOPSOIL. PLANTING SOILS AND TOPSOIL SHALL BE PLACED IN 12-18" LIFTS THAT ARE LOOSELY COMPACTED. NO SOILS SHALL BE PLACED IN A FROZEN OR MUDDY CONDITION

DELIVERY, STORAGE, AND HANDLING

1 PACKAGED MATERIALS: PACKAGED MATERIALS SHALL BE DELIVERED IN CONTAINERS SHOWING WEIGHT, ANALYSIS, AND NAME OF MANUFACTURER. MATERIALS SHALL BE PROTECTED FROM DETERIORATION DURING DELIVERY, AND WHILE STORED AT SITE

2 TREES AND SHRUBS: THE CONTRACTOR SHALL PROVIDE TREES AND SHRUBS DUG FOR THE GROWING SEASON FOR WHICH THEY WILL BE PLANTED. DO NOT PRUNE PRIOR TO DELIVERY UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE ARCHITECT. DO NOT BEND OR BIND-TIE TREES OR SHRUBS IN SUCH A MANNER AS TO DAMAGE BARK, BREAK BRANCHES, OR DESTROY NATURAL SHAPE. PROVIDE PROTECTIVE COVERING DURING TRANSIT. DO NOT DROP OR BREAK BALLED STOCK DURING DELIVERY OR HANDLING

3 ALL PLANTS SHALL BE BALLED AND BURLAPPED OR CONTAINER GROWN AS SPECIFIED. NO CONTAINER GROWN STOCK WILL BE ACCEPTED IF IT IS ROOT BOUND. ALL ROOT BALL WRAPPING AND BINDING MATERIAL MADE OF SYNTHETICS OR PLASTICS SHALL BE REMOVED FROM THE TOP OF THE BALL AT THE TIME OF PLANTING. IF THE PLANT IS SHIPPED WITH A WIRE BASKET AROUND THE ROOT BALL, THE WIRE BASKET SHALL BE CUT AND FOLDED DOWN 8" INTO THE PLANTING HOLE. WITH CONTAINER-GROWN STOCK, THE CONTAINER SHALL BE REMOVED AND THE ROOT BALL SHALL BE CUT THROUGH THE SURFACE IN TWO LOCATIONS

4 THE CONTRACTOR SHALL HAVE TREES AND SHRUBS DELIVERED TO SITE AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED AND PLANT IMMEDIATELY. IF PLANTING IS DELAYED MORE THAN 6 HOURS AFTER DELIVERY, THE CONTRACTOR SHALL SET TREES AND SHRUBS IN SHADE, PROTECT FROM WEATHER AND MECHANICAL DAMAGE AND KEEP ROOTS MOIST BY COVERING WITH MULCH, BURLAP OR OTHER ACCEPTABLE MEANS OF RETAINING MOISTURE

INSTALLATION

1 THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UNDERGROUND UTILITY AND SEWER LINES PRIOR TO THE START OF EXCAVATION ACTIVITIES. NOTIFY THE PROJECT ENGINEER AND OWNER IMMEDIATELY OF ANY CONFLICTS WITH PROPOSED PLANTING LOCATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE.

2 THE CONTRACTOR TO STAKE OUT PLANTING LOCATIONS, FOR REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT AND/OR OWNER BEFORE PLANTING WORK BEGINS. THE LANDSCAPE ARCHITECT AND/OR OWNER SHALL DIRECT THE CONTRACTOR IN THE FINAL PLACEMENT OF ALL PLANT MATERIAL AND LOCATION OF PLANTING BEDS TO ENSURE COMPLIANCE WITH DESIGN INTENT UNLESS OTHERWISE INSTRUCTED

3 NO PLANT SHALL BE PUT INTO THE GROUND BEFORE FINISHED GRADING HAS BEEN COMPLETED AND APPROVED BY THE PROJECT LANDSCAPE ARCHITECT OR PROJECT ENGINEER

4 NO PLANTINGS OR STRUCTURES SHALL BE LOCATED WITHIN THE SANITARY SEWER EASEMENTS OR WITHIN 10 FEET OF THE PROPOSED SEWER OR LATERALS

5 ALL LANDSCAPED AREAS TO BE CLEARED OF ROCKS, STUMPS, TRASH AND OTHER UNSIGHTLY DEBRIS. ALL FINE GRADED AREAS SHOULD BE HAND RAKED SMOOTH ELIMINATING ANY CLUMPS AND UNEVEN SURFACES PRIOR TO PLANTING OR MULCHING

6 ALL PLANT MATERIAL SHALL BE INSTALLED AS PER DETAILS, NOTES AND CONTRACT SPECIFICATIONS. THE LANDSCAPE ARCHITECT MAY REVIEW INSTALLATION AND MAINTENANCE PROCEDURES

7 THE CONTRACTOR SHALL KEEP AREA CLEAN DURING DELIVERY AND INSTALLATION OF PLANT MATERIALS. REMOVE AND DISPOSE OF OFF-SITE ANY ACCUMULATED DEBRIS OR UNUSED MATERIALS. REPAIR DAMAGE TO ADJACENT AREAS CAUSED BY LANDSCAPE INSTALLATION OPERATIONS.

8 AFTER PLANT IS PLACED IN TREE PIT LOCATION, ALL TWINE HOLDING ROOT BALL TOGETHER SHOULD BE COMPLETELY REMOVED AND THE BURLAP SHOULD BE PULLED DOWN SO 1/3 OF THE ROOT BALL IS EXPOSED. SYNTHETIC BURLAP SHOULD BE COMPLETELY REMOVED AFTER INSTALLATION

9 MULCH SHOULD NOT BE PILED UP AROUND THE TRUNK OF ANY PLANT MATERIAL. NO MULCH OR TOPSOIL SHOULD BE TOUCHING THE BASE OF THE TRUNK ABOVE THE ROOT COLLAR.

10 ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL THEN BE WATERED WEEKLY OR AS REQUIRED BY SITE AND WEATHER CONDITIONS TO MAINTAIN VIGOROUS AND HEALTHY PLANT GROWTH

11 AFTER COMPLETION OF A PROJECT, ALL EXPOSED GROUND SURFACES THAT ARE NOT PAVED WITHIN THE CONTRACT LIMIT LINE, AND THAT ARE NOT COVERED BY LANDSCAPE PLANTING OR SEEDING AS SPECIFIED, SHALL BE COVERED BY A SHREDDED HARDWOOD BARK OR APPROVED EQUAL MULCH THAT WILL PREVENT SOIL EROSION AND THE EMANATION OF DUST

GUARANTEE

1 NEW PLANT MATERIAL SHALL BE GUARANTEED TO BE ALIVE AND IN VIGOROUS GROWING CONDITION FOR A PERIOD OF 18 MONTHS FOLLOWING ACCEPTANCE BY THE OWNER. PLANT MATERIAL FOUND TO BE UNHEALTHY, DYING OR DEAD DURING THIS PERIOD, SHALL BE REMOVED AND REPLACED IN KIND BY THE CONTRACTOR AT NO EXPENSE TO THE OWNER

GENERAL LIGHTING NOTES

1 PROVIDE A CONCRETE BASE FOR EACH LIGHT POLE AT THE LOCATIONS INDICATED ON THE CONSTRUCTION DRAWINGS AND IN ACCORDANCE WITH PROJECT PLANS AND SPECIFICATIONS RELATING DIRECTLY TO CAST-IN-PLACE CONCRETE

2 CONTRACTOR TO COORDINATE INSTALLATION OF UNDERGROUND FEEDER CABLE FOR EXTERIOR LIGHTING WITH EXISTING AND PROPOSED UTILITIES, SITE DRAINAGE SYSTEMS, AND PAVING. CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER'S REPRESENTATIVE SHOULD ANY UTILITIES, NOT SHOWN ON THE PLANS, BE FOUND DURING EXCAVATIONS.

3 CONTRACTOR TO OPERATE EACH LUMINAIRE AFTER INSTALLATION AND CONNECTION. INSPECT FOR IMPROPER CONNECTIONS AND OPERATION

4 AIM AND ADJUST ALL LUMINAIRES TO PROVIDE ILLUMINATION LEVELS AND DISTRIBUTION AS INDICATED ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE LANDSCAPE ARCHITECT AND/OR OWNER

5 INSTALLATION OF ALL LIGHTING FIXTURES, POLES, FOOTINGS, AND FEEDER CABLE TO BE COORDINATED WITH ALL SITE WORK TRADES TO AVOID CONFLICT WITH FINISHED AND PROPOSED WORK

6 ALL SITE LIGHTING RELATED WORK AND MATERIALS SHALL COMPLY WITH CITY, COUNTY, AND OTHER APPLICABLE GOVERNING AUTHORITY REQUIREMENTS

7 SITE ELECTRICAL CONTRACTOR TO COORDINATE LOCATION OF EASEMENTS, UNDERGROUND UTILITIES AND DRAINAGE BEFORE DRILLING POLE BASES

8 SITE ELECTRICAL CONTRACTOR TO COORDINATE POWER SOURCE WITH LIGHT FIXTURES TO INSURE ALL SITE LIGHTING IS OPERATING EFFECTIVELY, EFFICIENTLY AND SAFELY

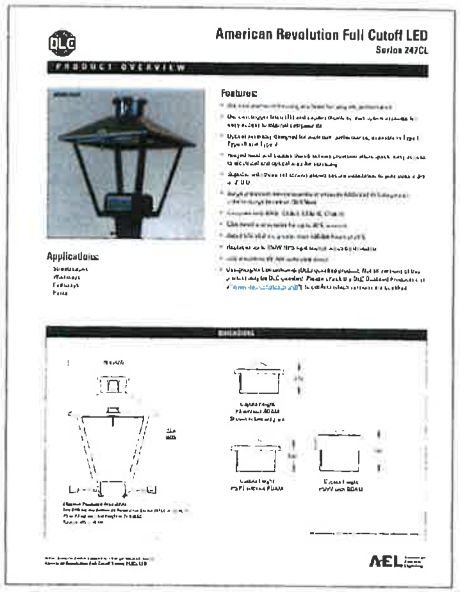
9 SITE ELECTRICAL CONTRACTOR SHALL CONFIRM THAT LIGHT FIXTURES MATCH SPECIFICATIONS ON THE PLANS

10 REFER TO ELECTRIFICATION PLAN BY OTHERS FOR PROVIDING ADEQUATE POWER FOR SITE LIGHTING.

11 SITE ELECTRICAL CONTRACTOR SHALL EXAMINE AND VERIFY THAT SOIL CONDITIONS ARE SUITABLE TO SUPPORT LOADS EXERTED UPON THE FOUNDATIONS DURING EXCAVATION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY UNSATISFACTORY CONDITIONS.

12 POLE FOUNDATIONS SHALL NOT BE POURED IF FREE STANDING WATER IS PRESENT IN EXCAVATED AREA

13 ELECTRICIAN AND INSTALLATION OF WALL MOUNTED FIXTURES SHALL BE COORDINATED WITH THE ARCHITECTURAL, STRUCTURAL, AND SITE DRAWINGS FOR SAFETY AND TO PREVENT EXPOSED WIRING



LAWN SEED NOTES:

1 PRIOR TO SEEDING, AREA IS TO BE TOPSOILED, FINE GRADED, AND RAKED OF ALL DEBRIS LARGER THAN 2" DIAMETER

2 THE FOLLOWING SEED MIX SHALL BE SOWN AT THE RATES AS DEPICTED:

RED FESCUE	1 1/2 LBS./1,000 SF
PERENNIAL RYEGRASS	1 LBS./1,000 SF
KENTUCKY BLUEGRASS	1 1/2 LBS./1,000 SF
SPREADING FESCUE	1 LBS./1,000 SF

3 SEED MIX SHALL BE MULCHED WITH SALT HAY OR UNROTTED SMALL GRAIN STRAW AT A RATE OF 2 TONS/AC OR 90 LBS/1,000 SF

4 SEEDING DATES FOR THIS MIXTURE SHALL BE AS FOLLOWS:

SPRING: APRIL 1 - MAY 31
FALL: AUGUST 16 - OCTOBER 31

5 GERMINATION RATES WILL VARY AS TO TIME OF YEAR FOR SOWING. CONTRACTOR TO IRRIGATE SEEDED AREA UNTIL AN ACCEPTABLE STAND OF COVER IS ESTABLISHED BY OWNER

TREE PROTECTION NOTES:

1 ALL EXISTING SHADE TREES WITHIN THE LIMITS OF TREE PROTECTION FENCING AND AS DIRECTED BY THE LANDSCAPE ARCHITECT SHALL BE PROTECTED THROUGHOUT THE DURATION OF WORK

2 DEMOLITION AND GRADING WORK ADJACENT TO PROTECTED TREES SHALL BE PERFORMED BY A QUALIFIED PERSON WITH A MINIMUM OF FIVE (5) YEARS EXPERIENCE IN WORKING WITH EXCAVATION EQUIPMENT. CONTRACTOR TO PROTECT ROOT MASS AGAINST DAMAGE DURING EXCAVATION. ANY TREE ROOTS THAT ARE DISTURBED, BROKEN OR CUT SHALL BE PRUNED BACK WITH CLEAN SHARP TOOLS

3 TO MINIMIZE DISTURBANCE OF VEGETATION TO REMAIN, ALL TREE STUMPS TO BE REMOVED WITHIN 10' OF TREE PROTECTION FENCE SHALL BE REMILLED USING A STUMP GRINDER

4 ALL EXPOSED TREE ROOTS SHALL BE THOROUGHLY IRRIGATED ON A DAILY BASIS UNTIL BACKFILLING CAN OCCUR AS DIRECTED BY THE PROJECT LANDSCAPE ARCHITECT

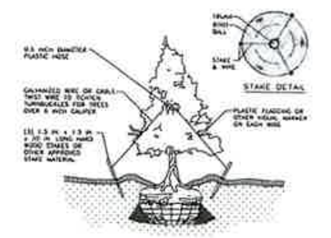
5 ALL WORK TO BE PERFORMED UNDER THE DIRECT SUPERVISION OF EITHER THE OWNER'S REPRESENTATIVE OR PROJECT LANDSCAPE ARCHITECT. NOTIFY OWNER A MINIMUM OF 48 HOURS PRIOR TO ANY EARTHWORK / EXCAVATION WORK.

PLAN NOTES:

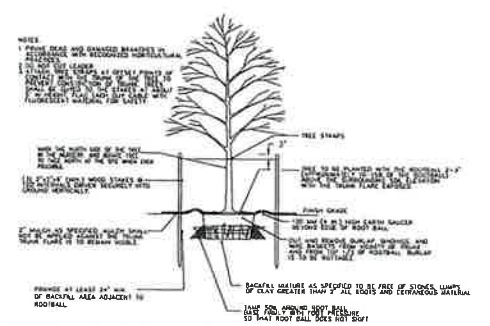
1 TREE REPLACEMENT CALCULATIONS ARE BASED OF A FIELD VISIT ON MARCH 5, 2019 AND ARE NOT BASED OFF THE SURVEYED TREES SHOWN ON DRAWING C0.1

2 NO STRUCTURE, GRADING OR PLANTING HIGHER THAN TWO FEET SHALL BE LOCATED WITHIN SIGHT TRIANGLES

3 THE LOCATIONS OF PROPOSED ON-LOT REQUIRED PLANTINGS MAY BE ADJUSTED WITHIN EACH LOT FROM THE LOCATIONS INDICATED ON THE LANDSCAPING PLAN, AND AS APPROVED BY THE TOWNSHIP LANDSCAPE ARCHITECT.



EVERGREEN TREE STAKING DETAIL



ORNAMENTAL AND SHADE TREE PLANTING/ STAKING DETAIL

RACHEL S. VAHEY, RLA
PA LIC. NO LA001672

Holmes Cunningham LLC
350 E. Butler Ave., Ste 106
New Britain, PA 18901
(215) 586-3330
www.hcengineering.net

REVISIONS

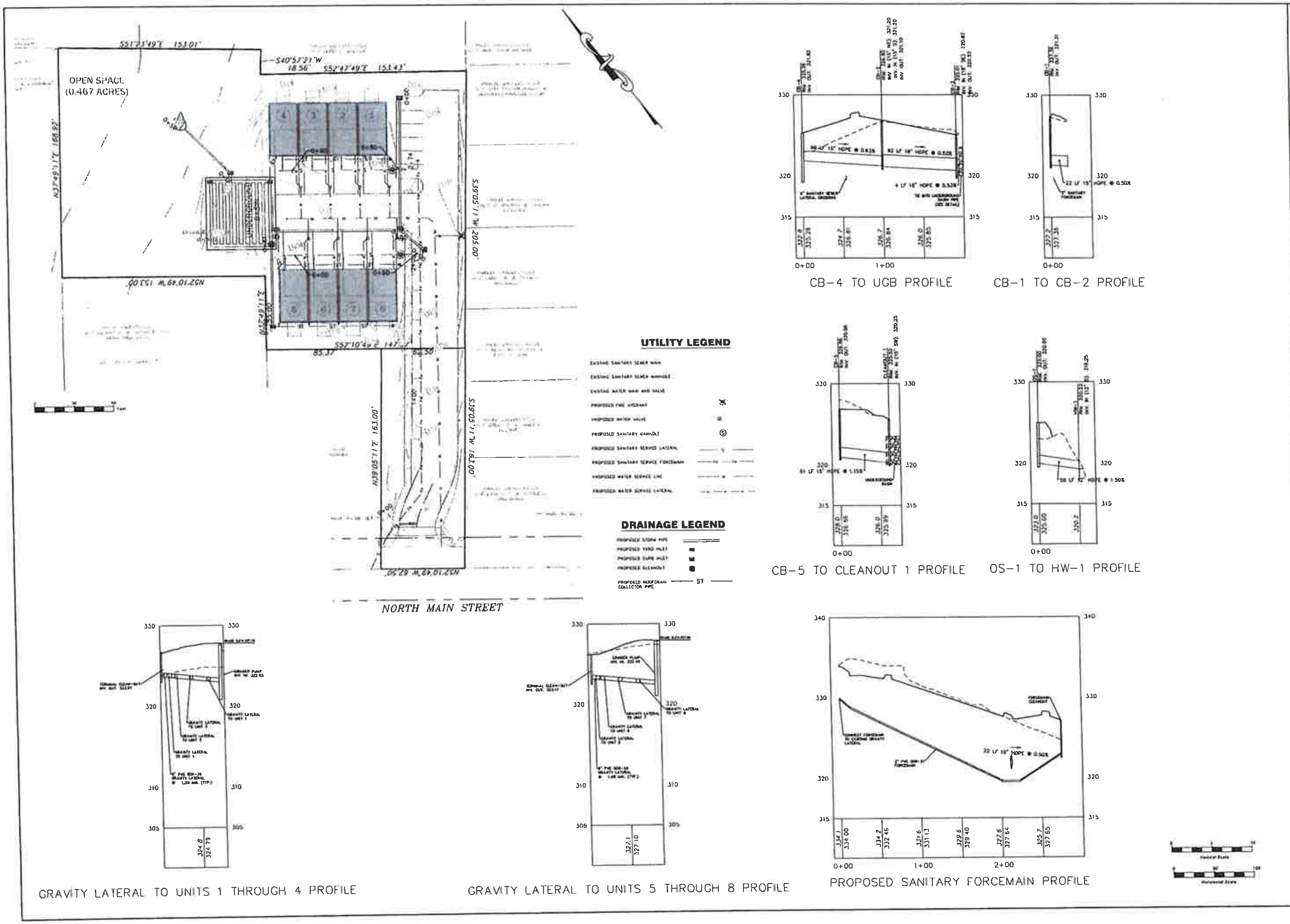
Date	Description
10/11/2024	REVISED PER BORO. TRAFFIC & FIRE CMTS

HATFIELD WALK
TMP # 090001012005 & 090001006002
HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA
LANDSCAPE DETAILS

File No. 1727_C6.0_Landscape.dwg

HCE Job	1727
Date	08/07/2024
Scale	N.T.S.
Designed	RC
Sheet	14 of 15

Drawing No.
C6.1



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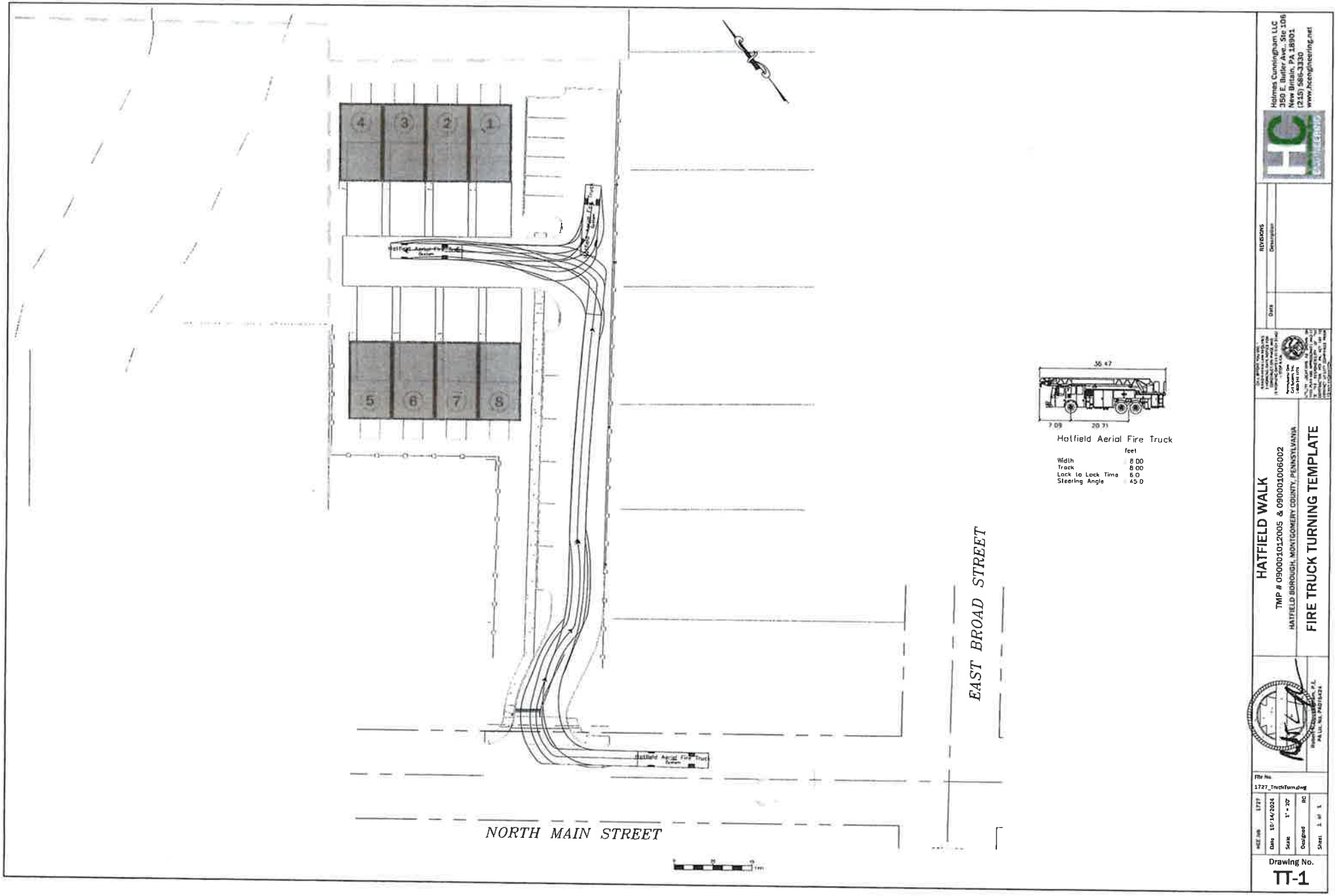
HATFIELD WALK
TMP # 09000I012005 & 09000I006002
HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

PROFILES

File No. 1727_C7.0_Profiles.dwg

Drawing No. C7.0



Hatfield Aerial Fire Truck

	feet
Width	8 00
Track	8 00
Lock to Lock Time	6 0
Steering Angle	45 0

Holmes Cunningham LLC
350 Eisenhower Pkwy., Ste 105
New Britain, PA 18901
(215) 586-3330
www.hcengineering.net

REVISIONS

Description	Date

HATFIELD WALK

TMP # 09000101200S & 09000100600Z

HATFIELD BOROUGH, MONTGOMERY COUNTY, PENNSYLVANIA

FIRE TRUCK TURNING TEMPLATE

File No.
1727_TruckTurn.dwg

HCE Job	1727
Date	10/14/2024
Scale	1" = 20'
Designed	RC
Sheet	1 of 1

Drawing No.
TT-1

Updated Traffic Study
10.18.2024

October 18, 2024
TPD# PNPG.00002

Info@TPDinc.com

PROPOSED HATFIELD HOMES RESIDENTIAL

Transportation Impact Assessment

Hatfield Borough, Montgomery County, PA

For Submission To:

Hatfield Borough

PROPOSED HATFIELD HOMES RESIDENTIAL TRANSPORTATION IMPACT ASSESSMENT

FOR SUBMISSION TO:

Hatfield Borough, Montgomery County, PA

Prepared For:
Pennington Property Group
Ben Golthorp
P.O. Box 35
Chalfont, PA 18914

Phone: (267) 767-0876

October 18, 2024

TPD # PNPG.00002

Prepared By:
Traffic Planning and Design, Inc.
1720 Spillman Drive, Suite 260
Bethlehem, Pennsylvania 18015

Phone: (610) 625-4242
E-mail: TPD@TPDinc.com
Website: www.TPDinc.com

Matthew I. Hammond, P.E.
Executive Vice President
Pennsylvania License Number 071037

October 18, 2024
TPD# PNPG.00002

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Hatfield Borough, Montgomery County, PA

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Moving *Forward* **Together**®

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Matthew I. Hammond, P.E.
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EXECUTIVE SUMMARY

The purpose of this study is to examine the potential traffic impact associated with the proposed residential development in Hatfield Borough, Montgomery County, PA. Based on this evaluation, the following conclusions were reached:

1. The study area intersections included in this Transportation Impact Assessment (TIA) are listed below:
   - » Main Street (N/S) & Broad Street (E/W).
   - » N. Main Street & Proposed Site Driveway.
2. The project site is currently undeveloped and is located on the eastern (northbound) side of N. Main Street, approximately 200-feet north of the intersection of Main Street (N/S) & Broad Street (E/W). The proposed site will consist of eight (8) townhomes.
3. Access to the site will be served by one (1) full-access driveway to N. Main Street.
4. Traffic volumes for the study area intersections were determined based on a previous turning movement count conducted by TPD at the intersection of Main Street (N/S) & Broad Street (E/W) on Tuesday, March 29, 2022. Furthermore, TPD balanced the traffic volumes along N. Main Street at the proposed site driveway utilizing the count information.
5. A growth factor of 1.0042 (0.21% per year, compounded for two (2) years) was applied to the 2022 traffic volumes to produce 2024 existing condition traffic volumes.
6. The 2024 existing traffic volumes where then grown by applying a growth factor of 1.0042 (0.21% per year, compounded for two (2) years) to produce 2026 base condition traffic volumes.
7. Upon full build-out of the site, the proposed development is expected to generate approximately **4 new trips** during the weekday A.M. peak hour and **5 new trips** during the weekday P.M. peak hour.
8. The new trips generated by the proposed development where then added to the 2026 base condition traffic volumes to development 2026 projected (build) conditions traffic volumes.
9. Turn lane warrants <u>are not met</u> for a left-turn or right-turn lane on N. Main Street at the Proposed Site Driveway under 2026 projected conditions.
10. Traffic Planning and Design, Inc. (TPD) recommends the following roadway improvements as outlined at the study area intersections:

N. Main Street & Proposed Site Driveway

- » Provide a stop sign (PennDOT designation R1-1) on the site driveway approach to control exiting traffic.
- » Provide proper pavement markings and signage at the site driveway to facilitate safe and efficient ingress and egress movements to/from the proposed site.

11. Levels of Service (LOS) for the study area intersections have been summarized in matrix form. **Table I** details the overall intersection LOS for each study area intersection.

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LEVEL OF SERVICE (SECONDS) SUMMARY

Intersection	Movement (Existing / Proposed)	Weekday A.M. Peak Hour			Weekday P.M. Peak Hour		
		Existing Condition	Opening Year 2026		Existing Condition	Opening Year 2026	
			Base	Projected		Base	Projected
Main Street (N/S) & Broad Street (E/W)	EB L	B (15.7)	B (15.7)	B (15.8)	B (13.8)	B (13.9)	B (13.9)
	EB TR	C (24.6)	C (24.8)	C (24.9)	C (23.3)	C (23.5)	C (23.5)
	WB L	B (15.8)	B (15.9)	B (16.0)	B (14.3)	B (14.4)	B (14.4)
	WB TR	C (22.4)	C (22.5)	C (22.6)	B (19.6)	B (19.7)	B (19.8)
	NB L	B (17.4)	B (17.4)	B (17.5)	B (17.8)	B (17.8)	B (17.8)
	NB TR	B (18.9)	B (18.8)	B (18.8)	C (33.2)	C (33.4)	C (33.4)
	SB L	B (14.2)	B (14.2)	B (14.2)	B (18.4)	B (18.4)	B (18.4)
	SB TR	D (35.3)	D (35.5)	D (35.9)	C (29.4)	C (29.5)	C (29.5)
	ILOS	**C (25.8)**	**C (26.0)**	**C (26.1)**	**C (25.5)**	**C (25.7)**	**C (25.7)**
N. Main Street & Proposed Site Driveway	-- / WB LR	--	--	B (11.1)	--	--	B (12.8)
	-- / SB LT	--	--	A (0.0)	--	--	A (9.7)
	ILOS	--	--	**A (0.0)**	--	--	**A (0.0)**

Base = No-Build scenario *Projected = Build scenario*
ILOS = Overall Intersection Level of Service; Unsignalized ILOS calculated in accordance with Figure 5 of Policies and Procedures for Transportation Impact Studies.

12. 95th percentile queue lengths for the study area intersection have been summarized in matrix form. **Table II** details the 95th percentile queue lengths at the study area intersection.

TABLE II
95TH PERCENTILE QUEUE ANALYSIS (FEET)

Intersection	Movement (Existing/ Proposed)	Storage (Existing/ Proposed)	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
			Opening Year 2026		Opening Year 2026	
			Base	Projected	Base	Projected
Main Street (N/S) & Broad Street (E/W)	EB L	280	<25	<25	25	25
	EB TR	--	205	205	233	235
	WB L	100	28	28	33	33
	WB TR	--	168	168	168	168
	NB L	100	25	25	43	43
	NB TR	--	163	163	328	330
	SB L	--	<25	<25	35	35
	SB TR	265	403	408	288	288
N. Main Street & Proposed Site Driveway	-- / WB LR	--	--	--	<25	--	<25
	-- / SB LT	--	--	--	<25	--	<25

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INTRODUCTION

Traffic Planning and Design, Inc. (TPD) has completed a Transportation Impact Assessment (TIA) for the proposed Hatfield Homes residential development in Hatfield Borough, Montgomery County, Pennsylvania. The project site is currently undeveloped and is located on the eastern (northbound) side of N. Main Street, approximately 200-feet north of the intersection of Main Street (N/S) & Broad Street (E/W), as shown in **Figure 1**. As shown in **Figure 2**, the proposed site will consist of eight (8) townhomes. All relevant correspondence pertaining to this project has been included in **Appendix A**.

Site Access Location

Access to the site will be served by one (1) full-access driveway to N. Main Street.

EXISTING ROADWAY NETWORK

A field review of the existing roadway system in the study area was conducted. The existing roadway characteristics within the study area are summarized in **Table 1**.

TABLE 1
ROADWAY CHARACTERISTICS WITHIN STUDY AREA

Roadway	Ownership	Functional Classification/ Roadway Type	Predominant Directional Orientation	Average Daily Traffic[1]	Posted Speed Limit
S. Main Street (S.R. 0463)[2]	State	Minor Arterial	North-South	12,828	25 mph
N. Main Street[3]	Local	Major Collector	North-South	11,050	25 mph
E. Broad Street (S.R. 1003)[4]	State	Minor Arterial	East-West	8,784	25 mph
W. Broad Street (S.R. 0463)[5]	State	Minor Arterial	East-West	7,469	25 mph

1 = AADT Data from PennDOT Traffic Information Repository (TIRe) website (Accessed October 2024)
2 = South of Broad Street
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Land Use Context

In Section 1.1 of the Design Manual, Part 2, Contextual Roadway Design, there is guidance pertaining to defining the land use context(s) for a given area. Based upon review of this information, the land uses surrounding the proposed site best fits the Suburban designation, as described below:

***Suburban**, areas with low to medium density (where single-family structures predominate, along with some multi-family and multistory commercial structures); mixed residential neighborhood and commercial clusters (including town centers, commercial corridors, big box commercial, and light industrial); and varied setbacks with some sidewalks and mostly off-street parking.*

Roadway Type

In Section 1.2.1 of the Design Manual, Part 2, Contextual Roadway Design, there is guidance pertaining to defining the transportation context(s) for a given area. Comparing the existing condition roadway characteristics to the various options presented in Table 1.2, the study area roadways best fit the following categories, as described below:

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» S. Main Street (S.R. 0463) – south of Broad Street.
» E. Broad Street (S.R. 1003) – east of Main Street.
» W. Broad Street (S.R. 0463) – west of Main Street.

Collector, roadways of lower community importance providing connections between arterials and local roads.

» N. Main Street – north of Broad Street.

EXISTING TRAFFIC CONDITIONS

Intersection Turning Movement Counts

TPD conducted a turning movement count at the intersection of Main Street & Broad Street within the last three (3) years. Traffic counts at the signalized intersection were conducted on 15-minute intervals during the weekday morning (7:00 to 9:00 A.M.) and weekday evening (4:00 to 6:00 P.M.) peak periods. Peak hours and the count date for the signalized intersection are identified in **Table 2**.

TABLE 2
TRAFFIC COUNT INFORMATION

Intersection	Date of Traffic Counts	Time Period	Intersection Peak Hour[1]
Main Street (N/S) & Broad Street (E/W)	Tuesday, March 29, 2022	Weekday A.M.	7:30 to 8:30 A.M.
		Weekday P.M.	4:30 to 5:30 P.M.

1 = Peak Hour consists of the four consecutive 15-minute intervals where the highest traffic volumes occur.

In order to determine the through traffic volumes along N. Main Street in the vicinity of the proposed driveway, TPD balanced the traffic volumes along N. Main Street utilizing the above count information. **Table 3** provides a summary of the 2022 existing condition (raw) traffic volumes.

TABLE 3
EXISTING COUNT INFORMATION

Time Period	2022 Raw Existing Traffic Volumes		
	NB volume	SB volume	Total
Weekday A.M. Peak Hour	277	498	775
Weekday P.M. Peak Hour	492	456	948

Figure 3 shows the 2022 existing condition (raw) traffic volumes. Growth factors for August 2023 to July 2024 were obtained from the PennDOT Bureau of Planning and Research (BPR). The PennDOT BPR suggests using a background growth trend factor of 1.0042 (0.21% per year, compounded for two (2) years).

It should be noted that PennDOT BPR growth factors have recently been published for August 2024 to July 2025. The PennDOT BPR suggests using a background growth trend factor of 1.0034 (0.17% per year, compounded for two (2) years). As such, the growth factor for August 2023 to July 2024 was utilized to provide a more conservative analysis of background traffic growth. Therefore, TPD applied the 1.0042 growth trend factor to the 2022 raw traffic volumes to produce 2024 existing condition traffic volumes.

The 2024 existing condition traffic volumes for the weekday A.M. and weekday P.M. peak hours are shown in **Figure 4**. The turning movement traffic count is included in **Appendix B**.

BASE (NO-BUILD) CONDITIONS

Annual Background Growth

A background growth factor for the roadways in the study area was developed based on growth factors for August 2023 to July 2024 obtained from the PennDOT Bureau of Planning and Research (BPR). The PennDOT BPR suggests using a background growth trend factor of 0.21% per year in Montgomery County for urban non-interstate roadways.

It should be noted that PennDOT BPR growth factors have recently been published for August 2024 to July 2025. The PennDOT BPR suggests using a background growth trend factor of 1.0034 (0.17% per year, compounded for two (2) years). As such, the growth factor for August 2023 to July 2024 was utilized to provide a more conservative analysis of background traffic growth. The background growth factor was applied annually to yield overall growth percentages of 0.42% (0.21% per year, compounded over two (2) years) for the 2026 opening year.

Base (No-Build) Conditions Volume Development

The additional traffic volumes due to background growth were added to produce 2026 base (no-build) condition traffic volumes. The 2026 base condition traffic volumes for the weekday A.M. and weekday P.M. peak hours are illustrated in **Figure 5**.

PROPOSED SITE ACCESS

Access to the site will be served by one (1) full-access driveway to N. Main Street.

Sight Distance Analysis

A sight distance analysis was prepared for the proposed site driveway. In general, recommended safe sight distances depend upon the posted speed limit and roadway grades. The existing sight distances at the proposed driveways were measured in accordance with PennDOT Publication 282 Highway Occupancy Permit Operations Manual and compared to PennDOT's desirable sight distance standard, which is identified in 67 PA Code Chapter 441.8(h), "Access to and Occupancy of Highways by Driveways and Local Roads." In addition, measured sight distances at the proposed driveways were compared to PennDOT's safe stopping sight distance standard, which is calculated by the following equation:

$$SSSD = 1.47VT + V^2/[30(f \pm g)]$$

SSSD = safe stopping sight distance (acceptable sight distance)
V = Vehicle Speed
T = Perception Reaction Time of Driver (2.5 seconds)
f = Coefficient of Friction for Wet Pavements
g = Percent of Roadway Grade Divided by 100

Table 4 shows the measured, desirable, acceptable (SSSD), and required sight distances at the site driveway for vehicles entering and exiting the site.

» S. Main Street (S.R. 0463) – south of Broad Street.
» E. Broad Street (S.R. 1003) – east of Main Street.
» W. Broad Street (S.R. 0463) – west of Main Street.

Collector, roadways of lower community importance providing connections between arterials and local roads.

» N. Main Street – north of Broad Street.

EXISTING TRAFFIC CONDITIONS

Intersection Turning Movement Counts

TPD conducted a turning movement count at the intersection of Main Street & Broad Street within the last three (3) years. Traffic counts at the signalized intersection were conducted on 15-minute intervals during the weekday morning (7:00 to 9:00 A.M.) and weekday evening (4:00 to 6:00 P.M.) peak periods. Peak hours and the count date for the signalized intersection are identified in **Table 2**.

TABLE 2
TRAFFIC COUNT INFORMATION

Intersection	Date of Traffic Counts	Time Period	Intersection Peak Hour[1]
Main Street (N/S) & Broad Street (E/W)	Tuesday, March 29, 2022	Weekday A.M.	7:30 to 8:30 A.M.
		Weekday P.M.	4:30 to 5:30 P.M.

1 = Peak Hour consists of the four consecutive 15-minute intervals where the highest traffic volumes occur.

In order to determine the through traffic volumes along N. Main Street in the vicinity of the proposed driveway, TPD balanced the traffic volumes along N. Main Street utilizing the above count information. **Table 3** provides a summary of the 2022 existing condition (raw) traffic volumes.

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EXISTING COUNT INFORMATION

Time Period	2022 Raw Existing Traffic Volumes		
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Weekday A.M. Peak Hour	277	498	775
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$$\mathbf{SSSD = 1.47VT + V^2/[30(f \pm g)]}$$

SSSD = safe stopping sight distance (acceptable sight distance)
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T = Perception Reaction Time of Driver (2.5 seconds)
f = Coefficient of Friction for Wet Pavements
g = Percent of Roadway Grade Divided by 100

Table 4 shows the measured, desirable, acceptable (SSSD), and required sight distances at the site driveway for vehicles entering and exiting the site.

TABLE 4
SIGHT DISTANCE ANALYSIS
SITE DRIVEWAY TO N. MAIN STREET

	Direction	Speed	Grade[1]	Sight Distances (feet)		
				DES	SSSD	EXIST
Exiting Movements	To the left	25 mph	-1%	250	148	**385**
	To the right	25 mph	+1%	195	145	**750+**
Entering Left Turns	Approaching same direction	25 mph	+1%	--	145	**800+**
	Approaching opposite direction	25 mph	-1%	190	148	**700+**

DES = PennDOT Desirable Sight Distance
SSSD = PennDOT Acceptable Sight Distance
EXIST = Existing (measured) Sight
1 = Roadway Grade Approaching Driveway

As shown in **Table 4** above, the measured sight distances at the site driveway exceed PennDOT's desirable sight distance requirements.

TRIP GENERATION

The trip generation rates for the proposed development were obtained from the *Trip Generation Manual*, Eleventh Edition, 2021, an Institute of Transportation Engineers (ITE) Informational Report. The data are categorized by Land Use Codes, with total vehicular trips for a given land use estimated using an independent variable and statistically generated rates or equations.

For the proposed residential development, Land Use Code 215 (Single-Family Attached Housing) from Trip Generation was used to calculate the number of vehicular trips the development will generate during the following time periods: (1) average weekday; (2) weekday A.M. peak hour; and (3) weekday P.M. peak hour. **Table 5** shows the rates/equations and directional percentages for the analyzed time periods.

TABLE 5
ITE TRIP GENERATION DATA – 8 TOWNHOMES

Land Use	ITE #	Time Period	Equations/Rates	Entering %	Exiting %
Single-Family Attached Housing	215	Weekday	T = 7.20*(X)	50%	50%
		Weekday A.M. Peak Hour	T = 0.48*(X)	25%	75%
		Weekday P.M. Peak Hour	T = 0.57*(X)	59%	41%

T = number of site-generated vehicular trips;
X = Independent Variable (Dwelling Units)

The calculated trip generation for the proposed development for the opening year is shown in **Table 6**.

TABLE 6
TRIP GENERATION

Time Period	Residential Development – 8 Single Family Homes		
	Total	Enter	Exit
Average Weekday	58	29	29
Weekday A.M. Peak Hour	4	1	3
Weekday P.M. Peak Hour	5	3	2

Based on the trip generation analysis summarized in **Table 6**, the proposed development will generate approximately **4 new trips** during the weekday A.M. peak hour and **5 new trips** during the weekday P.M. peak hour.

TRIP DISTRIBUTION

The distribution of trips generated by the proposed development was based on the local road network, the existing traffic patterns, the proposed use of the site, and the site driveway location. The new trips for the proposed development were distributed to the local roadway network based on the percentages shown in **Table 7**.

TABLE 7
TRIP DISTRIBUTION PERCENTAGES

Direction - To/From	Assignment (To/From)	Distribution Percentage
North	via N. Main Street	29%
South	via S. Main Street (S.R. 0463)	29%
East	via E. Broad Street (S.R. 1003)	20%
West	via W. Broad Street (S.R. 0463)	22%

The assignment of site-generated trips for the proposed development during the weekday A.M. and weekday P.M. peak hours are shown in **Figure 6**.

PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES

The site-generated trips for the proposed residential development were added to the 2026 base (no-build) condition traffic volumes to develop 2026 projected (build) condition traffic volumes.

Projected condition traffic volumes for the opening year of 2026 for the weekday A.M. and weekday P.M. peak hours are shown in **Figure 7**. Traffic volume development worksheets are contained in **Appendix C**.

LEVELS OF SERVICE FOR AN INTERSECTION

For analysis of intersections, level of service is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. LOS criteria is stated in terms of control delay per vehicle for a one-hour analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The criteria are shown in **Table 8**. Delay, as it relates to level of service, is a complex measure and is dependent upon a number of variables. For signalized intersections, these variables include the quality of vehicle progression, the cycle length, the green time ratio, and the volume/capacity ratio for the lane group in question. For unsignalized intersections, delay is related to the availability of gaps in the flow of traffic on the major street and the driver's discretion in selecting an appropriate gap for a particular movement from the minor street (straight across, left or right turn).

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TABLE 8
LEVEL OF SERVICE CRITERIA
UNSIGNALIZED AND SIGNALIZED INTERSECTIONS[1]

Level of Service	Control Delay Per Vehicle (Seconds)	
	Signalized	Unsignalized
A	< 10	< 10
B	> 10 and < 20	> 10 and < 15
C	> 20 and < 35	> 15 and < 25
D	> 35 and < 55	> 25 and < 35
E	> 55 and < 80	> 35 and < 50
F	> 80 or v/c > 1.0	> 50 or v/c > 1.0

[1] *Obtained from Exhibits 19-8 and 20-2 of the Transportation Research Board's Highway Capacity Manual 6th Edition*

CAPACITY ANALYSIS METHODOLOGY

Capacity analyses were conducted for the weekday A.M. and weekday P.M. peak hours at the study area intersections. These analyses were conducted according to the methodologies contained in the *Highway Capacity Manual 6th Edition* (HCM) using *Synchro 11* software, a Trafficware product.

The following conditions were analyzed, as applicable:

- Existing conditions;
- 2026 Base conditions (Build-out year without development);
- 2026 Projected conditions (Build-out year with development).

The following items should be noted with respect to the capacity analyses:

- The Pennsylvania default values for two-way stop-controlled intersections in a suburban land use context contained in Chapter 10 of PennDOT's Publication 46 were utilized for the base critical headway and base follow-up headways. The critical and follow-up headway calculation worksheet is included in **Appendix D**.
- Per PennDOT standards, a peak hour factor of 0.90 was utilized for the intersection of N. Main Street & Proposed Site Driveway.
- Per PennDOT standards, a heavy vehicle percentage of 2% was utilized for all turning movements to/from the proposed site driveway.

The capacity analysis worksheets are included in **Appendix E**. The PennDOT-approved existing signal plan is included in **Appendix F**.

PennDOT Standards

The capacity analyses were conducted in accordance with the below noted standards contained in Appendix A - Policies and Procedures for Transportation Impact Studies Related to Highway Occupancy Permits of PennDOT *Publication 282*, dated February 2024:

- Page 32 of the Guidelines state that if evaluation of the With Development Horizon Year Scenario to the Without Development Horizon Year Scenario indicates that the overall intersection level of service has dropped, the applicant will be required to mitigate the level of service if the increase in overall intersection delay is greater than 10-seconds. If the overall intersection delay increase is less than or equal to 10-seconds, mitigation of the intersection will not be required. If the intersection level of service meets the level of service requirements, applicants may still be required

to provide mitigation to address critical lanes or approaches. For locations where the level of service of the design horizon year without the development is LOS F and with development, the delay increases more than 10 seconds, the remedies shall provide an estimated delay which will be no worse than the delay for the design year without the development.

- Page 33 of the Guidelines state that for mitigation scenarios, applicants are expected to mitigate the overall intersection LOS to the original Without Development LOS; the 10-second delay variance is not applied to mitigation scenarios. Applicants may be required to address available storage and queue lengths at critical movements or approaches even if the overall LOS requirements are met.
- Page 34 of the Guidelines state that if signalization is the preferred alternative for mitigation, overall intersection LOS C in rural areas and LOS D in urban areas is acceptable.
- Page 35 of the Guidelines states new signalized or unsignalized intersections established to serve as access to the development shall be designed to operate at minimum LOS C for rural areas, and minimum LOS D for urban areas.

LEVELS OF SERVICE IN THE STUDY AREA

Level of service (LOS) matrices for the study area intersections are shown in **Table 9** for the weekday A.M. and weekday P.M. peak hours.

TABLE 9
LEVEL OF SERVICE (SECONDS) SUMMARY

Intersection	Movement (Existing / Proposed)	Weekday A.M. Peak Hour			Weekday P.M. Peak Hour		
		Existing Condition	Opening Year 2026		Existing Condition	Opening Year 2026	
			Base	Projected		Base	Projected
Main Street (N/S) & Broad Street (E/W)	EB L	B (15.7)	B (15.7)	B (15.8)	B (13.8)	B (13.9)	B (13.9)
	EB TR	C (24.6)	C (24.8)	C (24.9)	C (23.3)	C (23.5)	C (23.5)
	WB L	B (15.8)	B (15.9)	B (16.0)	B (14.3)	B (14.4)	B (14.4)
	WB TR	C (22.4)	C (22.5)	C (22.6)	B (19.6)	B (19.7)	B (19.8)
	NB L	B (17.4)	B (17.4)	B (17.5)	B (17.8)	B (17.8)	B (17.8)
	NB TR	B (18.9)	B (18.8)	B (18.8)	C (33.2)	C (33.4)	C (33.4)
	SB L	B (14.2)	B (14.2)	B (14.2)	B (18.4)	B (18.4)	B (18.4)
	SB TR	D (35.3)	D (35.5)	D (35.9)	C (29.4)	C (29.5)	C (29.5)
	ILOS	**C (25.8)**	**C (26.0)**	**C (26.1)**	**C (25.5)**	**C (25.7)**	**C (25.7)**
N. Main Street & Proposed Site Driveway	-- / WB LR	--	--	B (11.1)	--	--	B (12.8)
	-- / SB LT	--	--	A (0.0)	--	--	A (9.7)
	ILOS	--	--	**A (0.0)**	--	--	**A (0.0)**

Base = No Build scenario Projected = Build scenario
ILOS = Overall Intersection Level of Service; Unsignalized ILOS calculated in accordance with Figure 5 of Policies and Procedures for Transportation Impact Studies.

QUEUE ANALYSIS

Queue analyses were conducted at the study area intersections using *Synchro 11* software. The queue analysis results are summarized in **Table 10** for the analyzed peak hours.

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LEVEL OF SERVICE CRITERIA
UNSIGNALIZED AND SIGNALIZED INTERSECTIONS[1]

Level of Service	Control Delay Per Vehicle (Seconds)	
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A	< 10	< 10
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		Existing Condition	Opening Year 2026		Existing Condition	Opening Year 2026	
			Base	Projected		Base	Projected
Main Street (N/S) & Broad Street (E/W)	EB L	B (15.7)	B (15.7)	B (15.8)	B (13.8)	B (13.9)	B (13.9)
	EB TR	C (24.6)	C (24.8)	C (24.9)	C (23.3)	C (23.5)	C (23.5)
	WB L	B (15.8)	B (15.9)	B (16.0)	B (14.3)	B (14.4)	B (14.4)
	WB TR	C (22.4)	C (22.5)	C (22.6)	B (19.6)	B (19.7)	B (19.8)
	NB L	B (17.4)	B (17.4)	B (17.5)	B (17.8)	B (17.8)	B (17.8)
	NB TR	B (18.9)	B (18.8)	B (18.8)	C (33.2)	C (33.4)	C (33.4)
	SB L	B (14.2)	B (14.2)	B (14.2)	B (18.4)	B (18.4)	B (18.4)
	SB TR	D (35.3)	D (35.5)	D (35.9)	C (29.4)	C (29.5)	C (29.5)
	ILOS	**C (25.8)**	**C (26.0)**	**C (26.1)**	**C (25.5)**	**C (25.7)**	**C (25.7)**
N. Main Street & Proposed Site Driveway	-- / WB LR	--	--	B (11.1)	--	--	B (12.8)
	-- / SB LT	--	--	A (0.0)	--	--	A (9.7)
	ILOS	--	--	**A (0.0)**	--	--	**A (0.0)**

Base = No-Build scenario *Projected = Build scenario*
ILOS = Overall intersection Level of Service; Unsignalized ILOS calculated in accordance with Figure 5 of Policies and Procedures for Transportation Impact Studies.

QUEUE ANALYSIS

Queue analyses were conducted at the study area intersections using *Synchro 11* software. The queue analysis results are summarized in **Table 10** for the analyzed peak hours.

TABLE 10
95TH PERCENTILE QUEUE ANALYSIS (FEET)

Intersection	Movement (Existing / Proposed)	Storage (Existing/ Proposed)	Weekday A.M. Peak Hour Opening Year 2026		Weekday P.M. Peak Hour Opening Year 2026	
			Base	Projected	Base	Projected
Main Street (N/S) & Broad Street (E/W)	EB L	280	<25	<25	25	25
	EB TR	--	205	205	233	235
	WB L	100	28	28	33	33
	WB TR	--	168	168	168	168
	NB L	100	25	25	43	43
	NB TR	--	163	163	328	330
	SB L	--	<25	<25	35	35
	SB TR	265	403	408	288	288
N. Main Street & Proposed Site Driveway	-- / WB LR	--	--	<25	--	<25
	-- / SB LT	--	--	<25	--	<25

Base = No-Build scenario *Projected = Build scenario*

Queue analysis worksheets are included with the capacity analysis worksheets provided in **Appendix E**.

GAP ANALYSIS

As requested by Hatfield Borough, TPD performed a Gap Study at the proposed site driveway location on N. Main Street. The number and duration of gaps available for these movements were documented. The duration of gaps in traffic directly relates to the capacity (number of vehicles) that can make the identified movements. In order for a vehicle to make the identified movements at these locations, a large enough gap in traffic must be present for those movements to occur. TPD determined the necessary Critical Gap and Follow-Up Gap needed for the evaluated movements based on *HCM 6th Edition* Methodology and the PA Default Value Adjustments. Based on this, the following peak hours and gaps were utilized:

Minor Left-Turn from Proposed Full-Access Driveway (Westbound) to Southbound N. Main Street:

- Weekday A.M.: 7:30-8:30 A.M. - Critical Gap of 6.4 seconds and Follow-Up Gap of 3.0 seconds.
- Weekday P.M.: 4:30-5:30 P.M. - Critical Gap of 6.4 seconds and Follow-Up Gap of 3.0 seconds.

The number and time duration of gaps counted during the weekday A.M. and weekday P.M. peak hours were compared to the standards outlined above, in order to determine the total number of vehicles that can be served during the peak hours.

TPD compared the total capacity calculated based on the field gap counts to the projected vehicle demand. **Table 11** shows this comparison.

TABLE 11
GAP ANALYSIS

Intersection	Movement	Peak Hour	Available Capacity for Turns	Projected 2026 Turning Vehicle Demand
N. Main Street & Full-Access Driveway	WB L	Weekday A.M.	375	2
		Weekday P.M.	312	1

As shown in **Table 11**, the available capacity for minor left-turn vehicles (gaps) from the proposed Full-Access Driveway (westbound) to southbound N. Main Street exceeds the anticipated number of minor left-turn vehicles. Therefore, sufficient capacity is available for left turns onto southbound N. Main Street from the proposed Full-Access Driveway (westbound) under future conditions.

Gap analysis worksheets are contained in **Appendix G**.

AUXILIARY TURN LANE ANALYSIS

Methodology

TPD evaluated auxiliary turn lane warrants at the site access intersections. The warrant analysis methodology contained within Chapter 11 of PennDOT's *Publication 46*, Section 11.17 and Strike-Off Letter 470-08-07 was utilized for this evaluation.

Findings

Table 12 summarizes the results of the auxiliary turn lane analysis at the site access intersection.

TABLE 12
AUXILIARY TURN LANE ANALYSIS SUMMARY

Intersection	Auxiliary Lane	Warrant Satisfied?		Required Lane Length	Proposed Lane Length
		A.M.	P.M.		
N. Main Street & Proposed Site Driveway	SB Left-Turn Lane	No	No	--	--
	NB Right-Turn Lane	No	No	--	--

As shown in **Table 12**, based on the criteria outlined above, under 2026 projected conditions, left-turn and right-turn lane warrants are not satisfied on N. Main Street at the proposed site driveway.

Auxiliary turn lane warrant analysis worksheets are included in **Appendix H**.

RECOMMENDATIONS AND CONCLUSIONS

The recommendations and conclusions of this Transportation Impact Assessment are identified in the Executive Summary.

TABLE 10
95TH PERCENTILE QUEUE ANALYSIS (FEET)

Intersection	Movement (Existing / Proposed)	Storage (Existing/ Proposed)	Weekday A.M. Peak Hour Opening Year 2026		Weekday P.M. Peak Hour Opening Year 2026	
			Base	Projected	Base	Projected
Main Street (N/S) & Broad Street (E/W)	EB L	280	<25	<25	25	25
	EB TR	--	205	205	233	235
	WB L	100	28	28	33	33
	WB TR	--	168	168	168	168
	NB L	100	25	25	43	43
	NB TR	--	163	163	328	330
	SB L	--	<25	<25	35	35
	SB TR	265	403	408	288	288
N. Main Street & Proposed Site Driveway	-- / WB LR	--	--	<25	--	<25
	-- / SB LT	--	--	<25	--	<25

Base = No-Build scenario *Projected = Build scenario*

Queue analysis worksheets are included with the capacity analysis worksheets provided in **Appendix E**.

GAP ANALYSIS

As requested by Hatfield Borough, TPD performed a Gap Study at the proposed site driveway location on N. Main Street. The number and duration of gaps available for these movements were documented. The duration of gaps in traffic directly relates to the capacity (number of vehicles) that can make the identified movements. In order for a vehicle to make the identified movements at these locations, a large enough gap in traffic must be present for those movements to occur. TPD determined the necessary Critical Gap and Follow-Up Gap needed for the evaluated movements based on *HCM 6th Edition* Methodology and the PA Default Value Adjustments. Based on this, the following peak hours and gaps were utilized:

Minor Left-Turn from Proposed Full-Access Driveway (Westbound) to Southbound N. Main Street:

- Weekday A.M.: 7:30-8:30 A.M. - Critical Gap of 6.4 seconds and Follow-Up Gap of 3.0 seconds.
- Weekday P.M.: 4:30-5:30 P.M. - Critical Gap of 6.4 seconds and Follow-Up Gap of 3.0 seconds.

The number and time duration of gaps counted during the weekday A.M. and weekday P.M. peak hours were compared to the standards outlined above, in order to determine the total number of vehicles that can be served during the peak hours.

TPD compared the total capacity calculated based on the field gap counts to the projected vehicle demand. **Table 11** shows this comparison.

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GAP ANALYSIS

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N. Main Street & Full-Access Driveway	WB L	Weekday A.M.	375	2
		Weekday P.M.	312	1

As shown in **Table 11**, the available capacity for minor left-turn vehicles (gaps) from the proposed Full-Access Driveway (westbound) to southbound N. Main Street exceeds the anticipated number of minor left-turn vehicles. Therefore, sufficient capacity is available for left turns onto southbound N. Main Street from the proposed Full-Access Driveway (westbound) under future conditions.

Gap analysis worksheets are contained in **Appendix G**.

AUXILIARY TURN LANE ANALYSIS

Methodology

TPD evaluated auxiliary turn lane warrants at the site access intersections. The warrant analysis methodology contained within Chapter 11 of PennDOT's *Publication 46*, Section 11.17 and Strike-Off Letter 470-08-07 was utilized for this evaluation.

Findings

Table 12 summarizes the results of the auxiliary turn lane analysis at the site access intersection.

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		A.M.	P.M.		
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	NB Right-Turn Lane	No	No	--	--

As shown in **Table 12**, based on the criteria outlined above, under 2026 projected conditions, left-turn and right-turn lane warrants are not satisfied on N. Main Street at the proposed site driveway.

Auxiliary turn lane warrant analysis worksheets are included in **Appendix H**.

RECOMMENDATIONS AND CONCLUSIONS

The recommendations and conclusions of this Transportation Impact Assessment are identified in the Executive Summary.

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FIGURE 1

SITE LOCATION

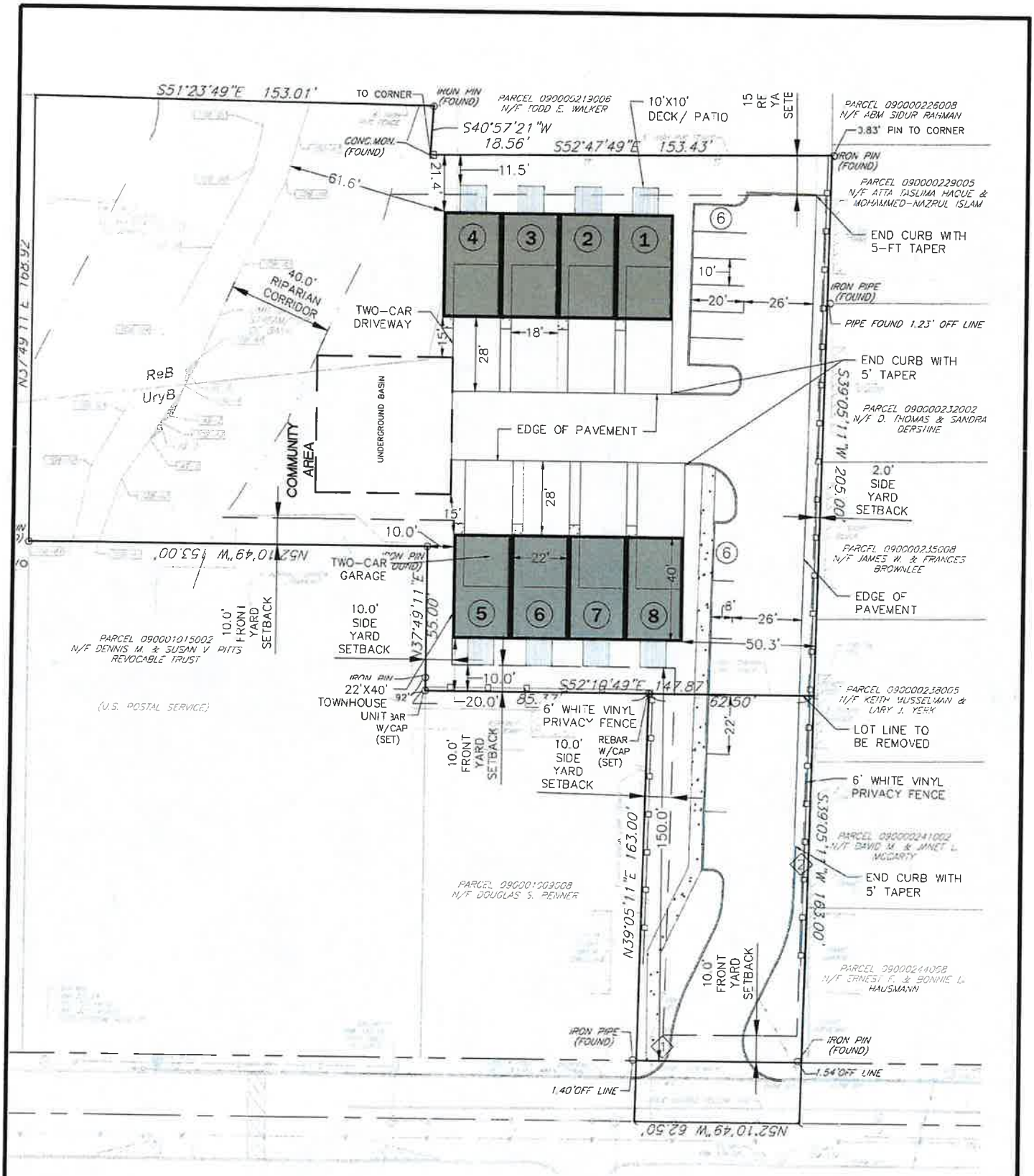
S51°23'49"E 153.01'
TO CORNER
IRON PIN (FOUND)
PARCEL 090000213006
N/F TODD E. WALKER
10'X10' DECK/ PATIO
15' REAR YARD SETBACK
PARCEL 090000226008
N/F ABM SIDUR RAHMAN
3.83' PIN TO CORNER
S40°57'21"W 18.56'
S52°47'49"E 153.43'
CONC. MON. (FOUND)
IRON PIN (FOUND)
21.4'
11.5'
61.6'
PARCEL 090000229005
N/F ATTA TASLIMA HAQUE & MOHAMMED-NAZRUL ISLAM
END CURB WITH 5-FT TAPER
N37°49'11"E 168.92'
40.0' RIPARIAN CORRIDOR
TWO-CAR DRIVEWAY
10'
20'
26'
IRON PIPE (FOUND)
PIPE FOUND 1.23' OFF LINE
18'
28'
15'
RoB
UryB
END CURB WITH 5' TAPER
S39°05'11"W 205.00'
PARCEL 090000232002
N/F D. THOMAS & SANDRA DEPSTINE
UNDERGROUND BASIN
COMMUNITY AREA
EDGE OF PAVEMENT
2.0' SIDE YARD SETBACK
10.0'
IRON PIN (FOUND)
TWO-CAR GARAGE
22'
40'
PARCEL 090000235008
N/F JAMES W. & FRANCES BROWNLEE
N52°10'49"W 153.00'
10.0' FRONT YARD SETBACK
10.0' SIDE YARD SETBACK
N37°49'11"E 55.00'
5
6
7
8
8'
26'
50.3'
EDGE OF PAVEMENT
PARCEL 090001015002
N/F DENNIS M. & SUSAN V PITTS REVOCABLE TRUST
IRON PIN (FOUND)
22'X40' TOWNHOUSE UNIT
92'
10.0'
S52°10'49"E 147.87'
PARCEL 090000238005
N/F KEITH MUSSELMAN & LARY J. YERK
(U.S. POSTAL SERVICE)
20.0'
85.27'
62.50'
22'
6' WHITE VINYL PRIVACY FENCE
LOT LINE TO BE REMOVED
BAR W/CAP (SET)
10.0' FRONT YARD SETBACK
10.0' SIDE YARD SETBACK
REBAR W/CAP (SET)
6' WHITE VINYL PRIVACY FENCE
N39°05'11"E 163.00'
150.0'
PARCEL 090000241002
N/F DAVID M. & JANET L. MCCARTY
S39°05'11"W 163.00'
END CURB WITH 5' TAPER
PARCEL 090000309008
N/F DOUGLAS S. PENNER
10.0' FRONT YARD SETBACK
PARCEL 090002440GB
N/F ERNEST F. & BONNIE L. HAUSMANN
IRON PIPE (FOUND)
IRON PIN (FOUND)
1.40'OFF LINE
1.54'OFF LINE
N52°10'49"W 62.50'
N
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FIGURE 2
SITE PLAN
KEY:
SCHEMATIC DRAWING:NOT TO SCALE

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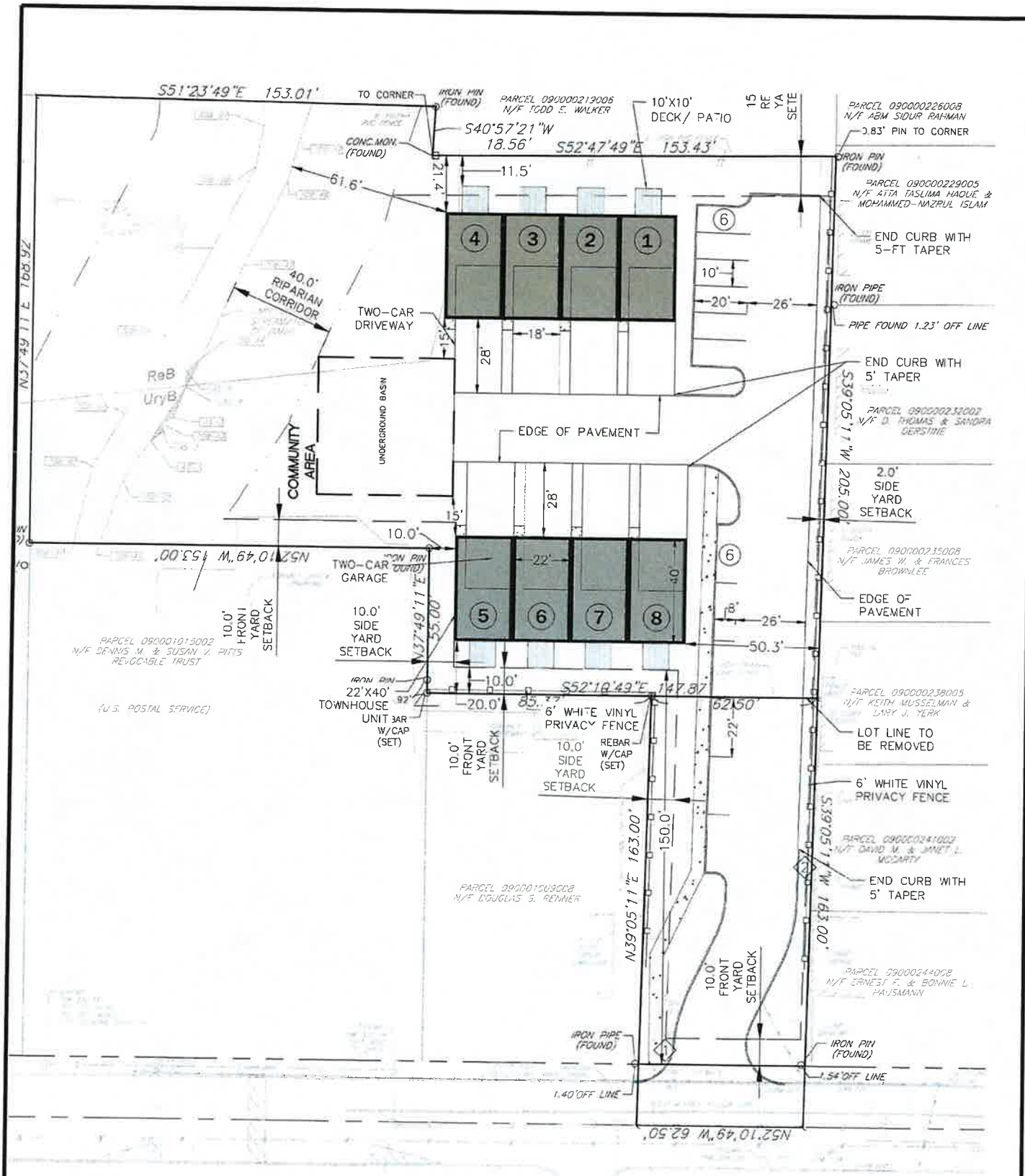
FIGURE 1

SITE LOCATION


S51°23'49"E 153.01'
TO CORNER
IRON PIN (FOUND)
PARCEL 090000219006
N/F TODD E. WALKER
S40°57'21"W 18.56'
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CONC. MON. (FOUND)
10'X10' DECK/ PATIO
15 RE YA SETE
PARCEL 090000226008
N/F ABM SIDUR RAHMAN
0.83' PIN TO CORNER
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PARCEL 090000229005
N/F ATTA TASLIMA HAQUE & MOHAMMED-NAZRUL ISLAM
END CURB WITH 5-FT TAPER
61.6'
11.5'
21.4'
40.0' RIPARIAN CORRIDOR
TWO-CAR DRIVEWAY
15'
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26'
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PIPE FOUND 1.23' OFF LINE
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ReB
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COMMUNITY AREA
EDGE OF PAVEMENT
PARCEL 090000232002
N/F D. THOMAS & SANDRA GERSTINE
S39°05'11"W 205.00'
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10.0' SIDE YARD SETBACK
N37°49'11"E 55.00'
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N/F DENNIS M. & SUSAN V. PITTS REVOCABLE TRUST
8'
26'
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IRON PIN
22'X40' TOWNHOUSE UNIT 3AR W/CAP (SET)
92
10.0'
S52°10'49"E 147.87'
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62.50'
PARCEL 090000238005
N/F KEITH MUSSELMAN & LARY J. YERK
U.S. POSTAL SERVICE
6' WHITE VINYL PRIVACY FENCE
REBAR W/CAP (SET)
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LOT LINE TO BE REMOVED
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N39°05'11"E 163.00'
150.0'
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PARCEL 090001009008
N/F DOUGLAS S. RENNIE
PARCEL 090002410002
N/F DAVID M. & JANET L. MCCARTY
END CURB WITH 5' TAPER
10.0' FRONT YARD SETBACK
PARCEL 090002440008
N/F ERNEST F. & BONNIE L. PAUSMANN
IRON PIPE (FOUND)
IRON PIN (FOUND)
1.54' OFF LINE
1.40' OFF LINE
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N
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FIGURE 2
SITE PLAN
KEY:
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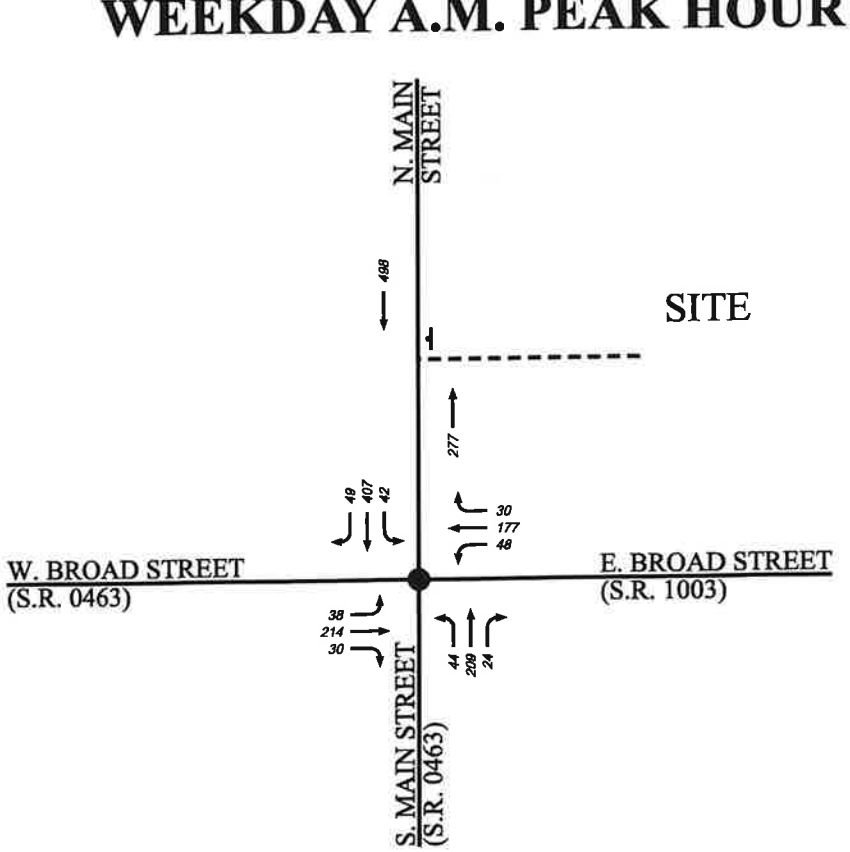
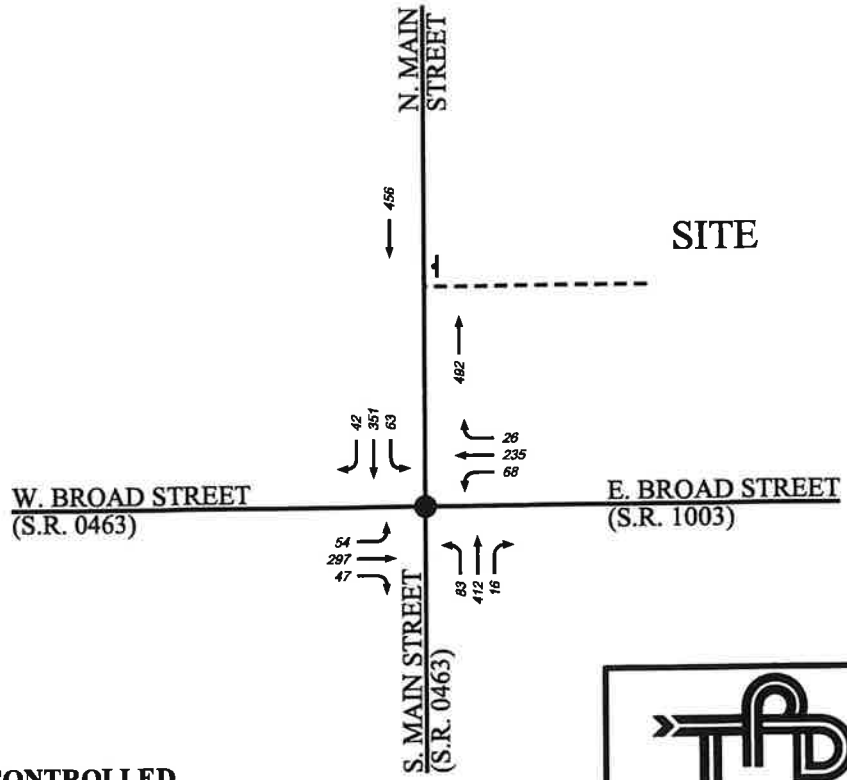
WEEKDAY A.M. PEAK HOUR



WEEKDAY P.M. PEAK HOUR



KEY:

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- **SIGNALIZED INTERSECTION**
- **PROPOSED DRIVEWAY**

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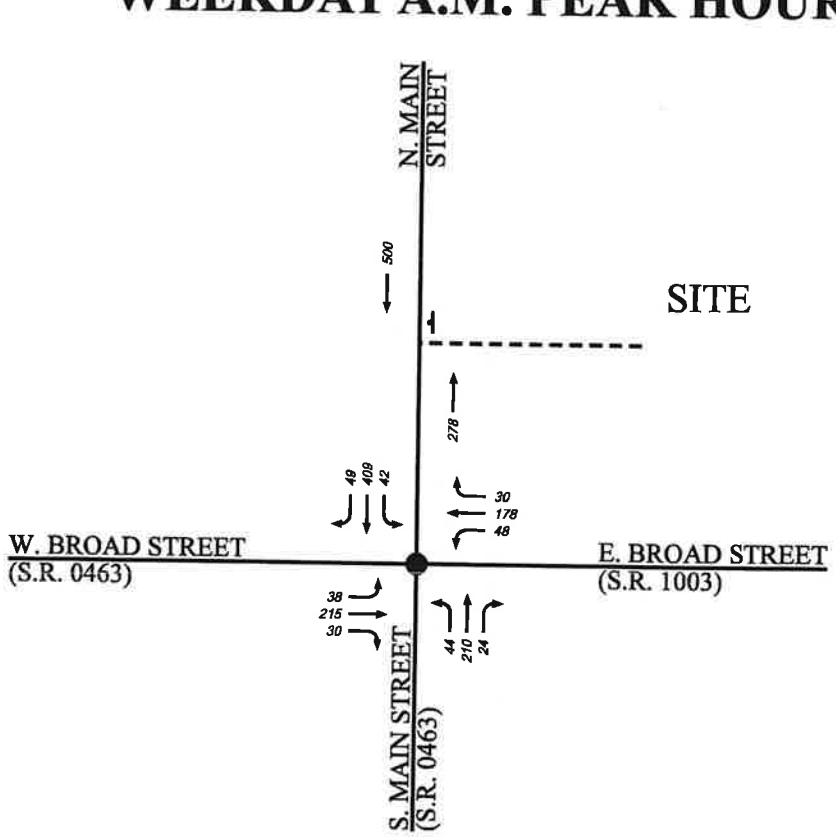
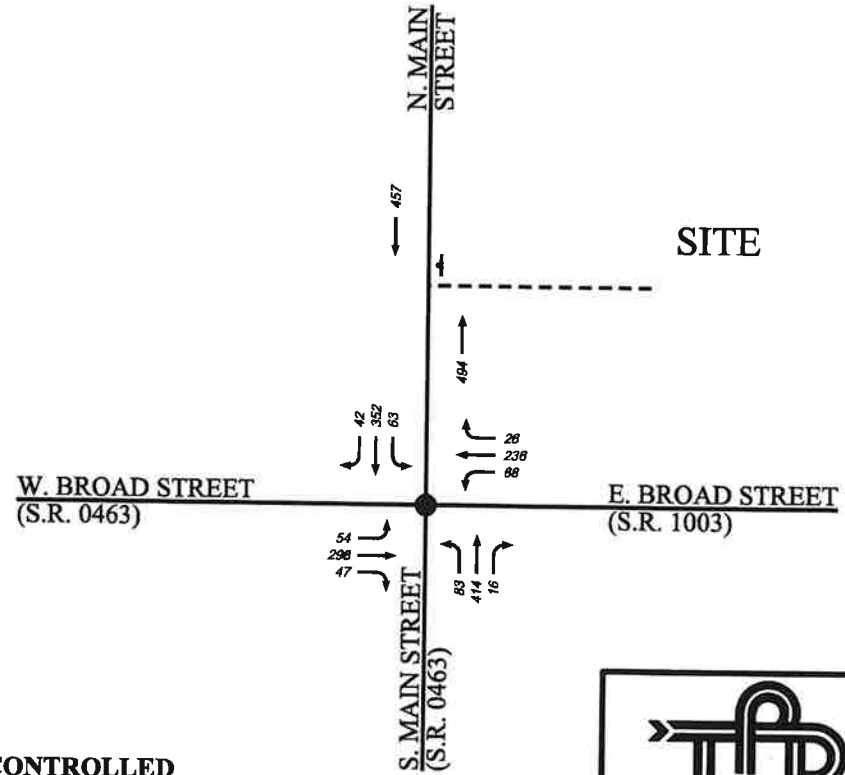
FIGURE 3

2022 EXISTING CONDITIONS (RAW VOLUMES)
PEAK HOUR
TRAFFIC VOLUMES

WEEKDAY A.M. PEAK HOUR



WEEKDAY P.M. PEAK HOUR



KEY:

- **STOP CONTROLLED**
- **SIGNALIZED INTERSECTION**
- **PROPOSED DRIVEWAY**

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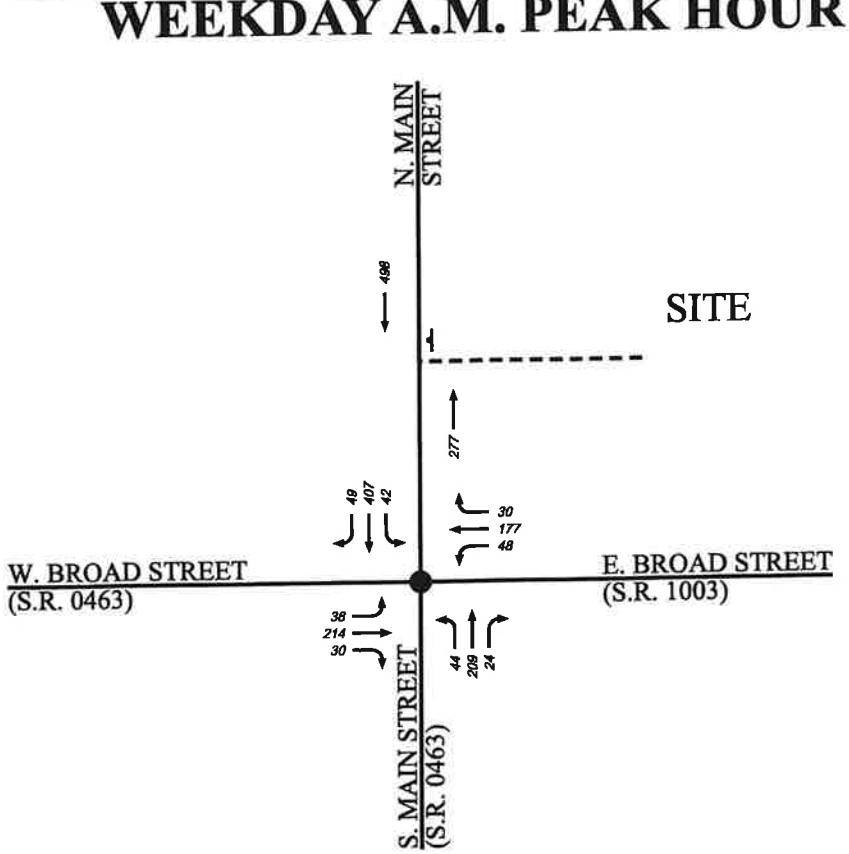
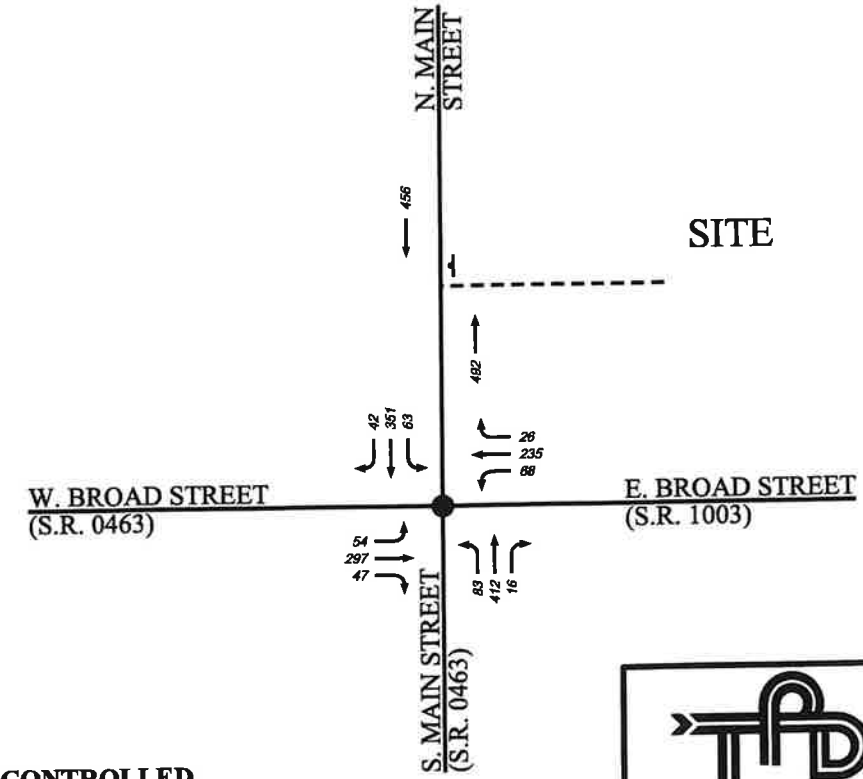
FIGURE 4

2024 EXISTING CONDITIONS
PEAK HOUR
TRAFFIC VOLUMES

WEEKDAY A.M. PEAK HOUR



WEEKDAY P.M. PEAK HOUR



KEY:

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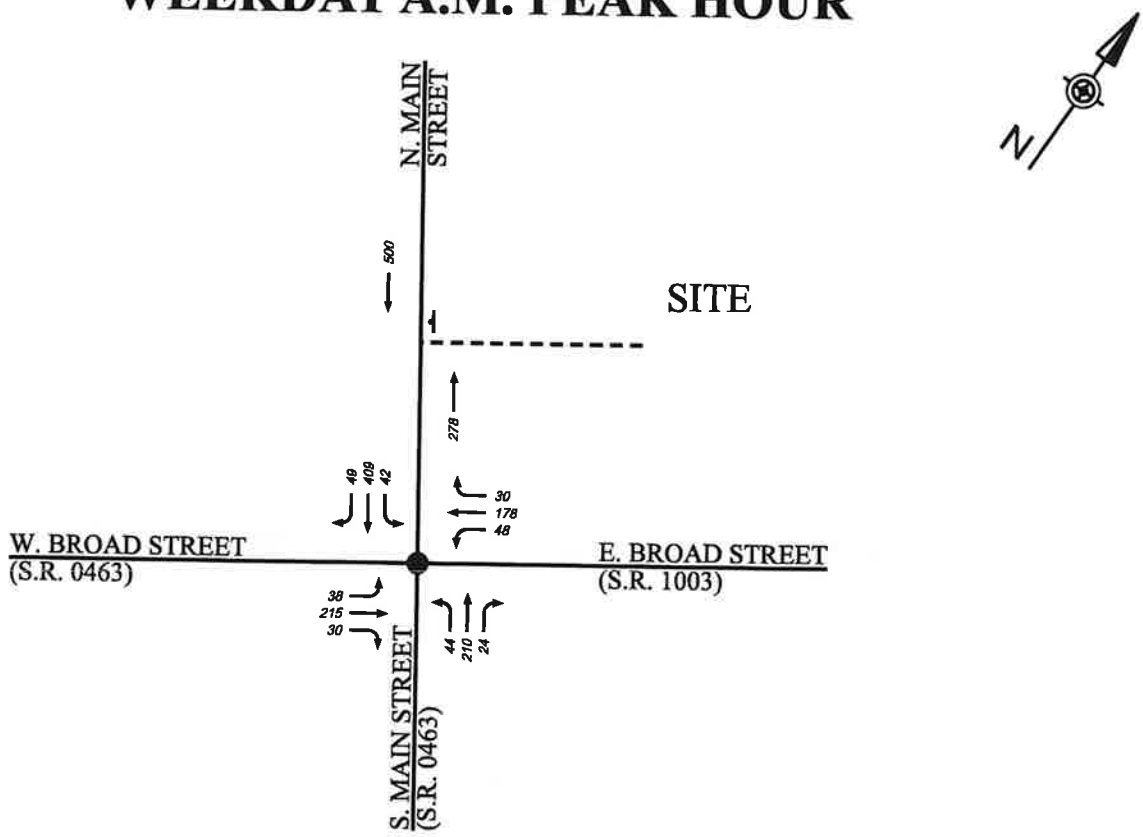
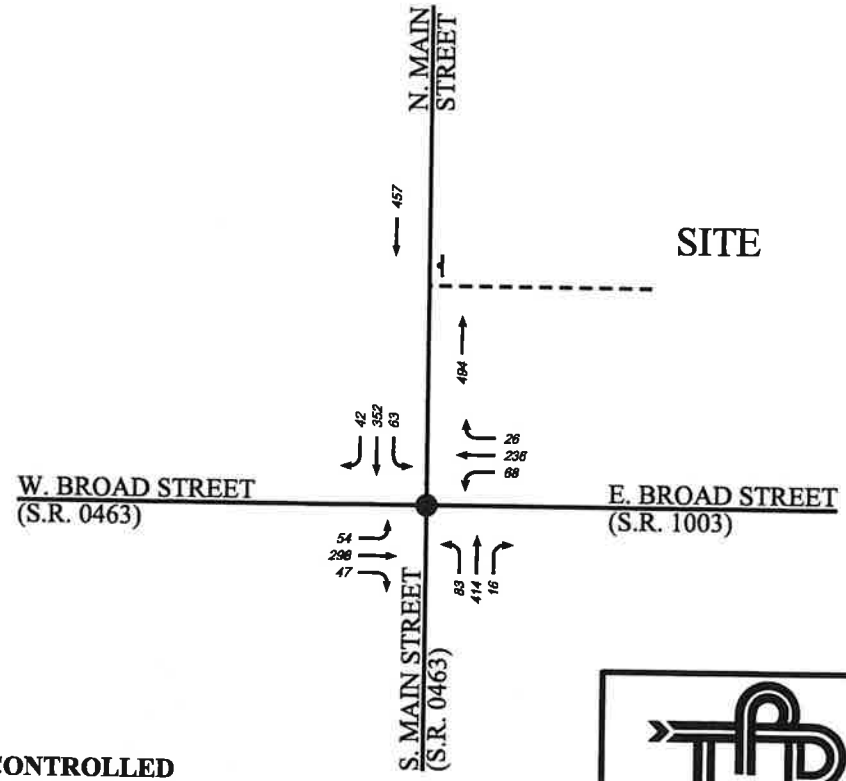
FIGURE 3

2022 EXISTING CONDITIONS (RAW VOLUMES)
PEAK HOUR
TRAFFIC VOLUMES

WEEKDAY A.M. PEAK HOUR



WEEKDAY P.M. PEAK HOUR



KEY:

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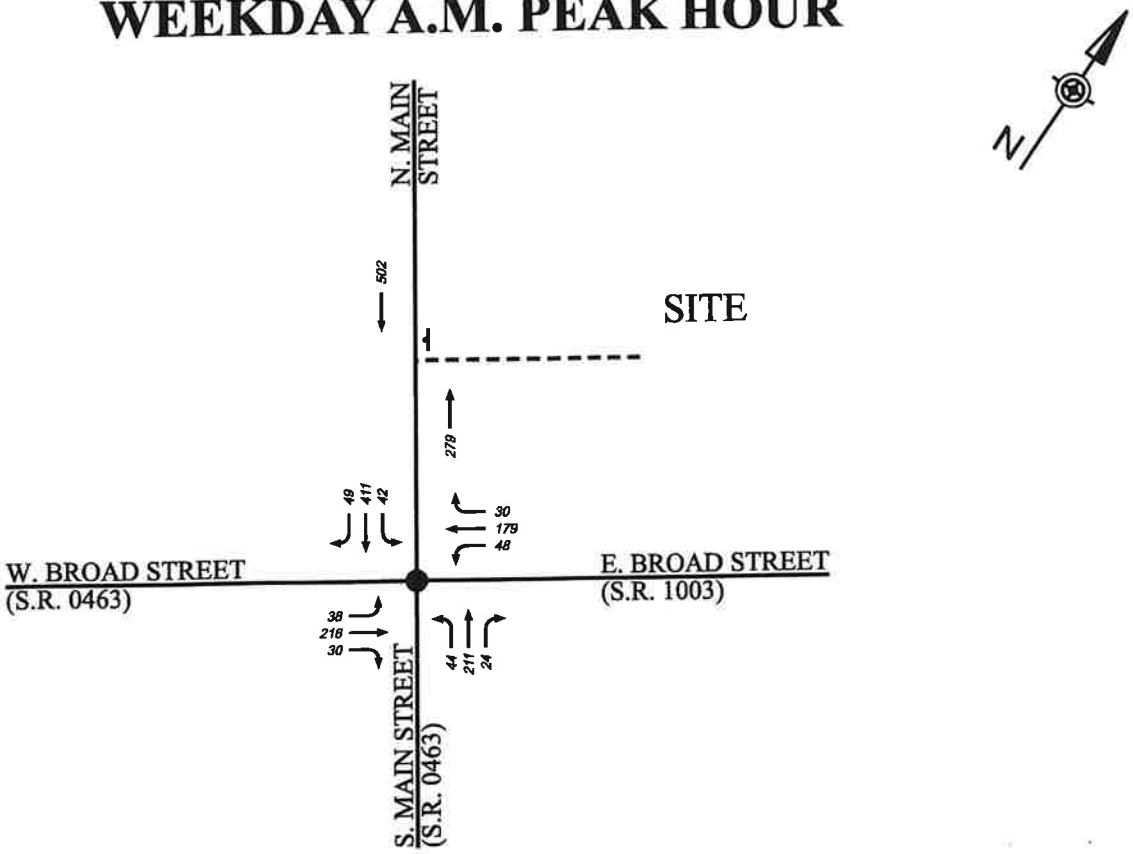
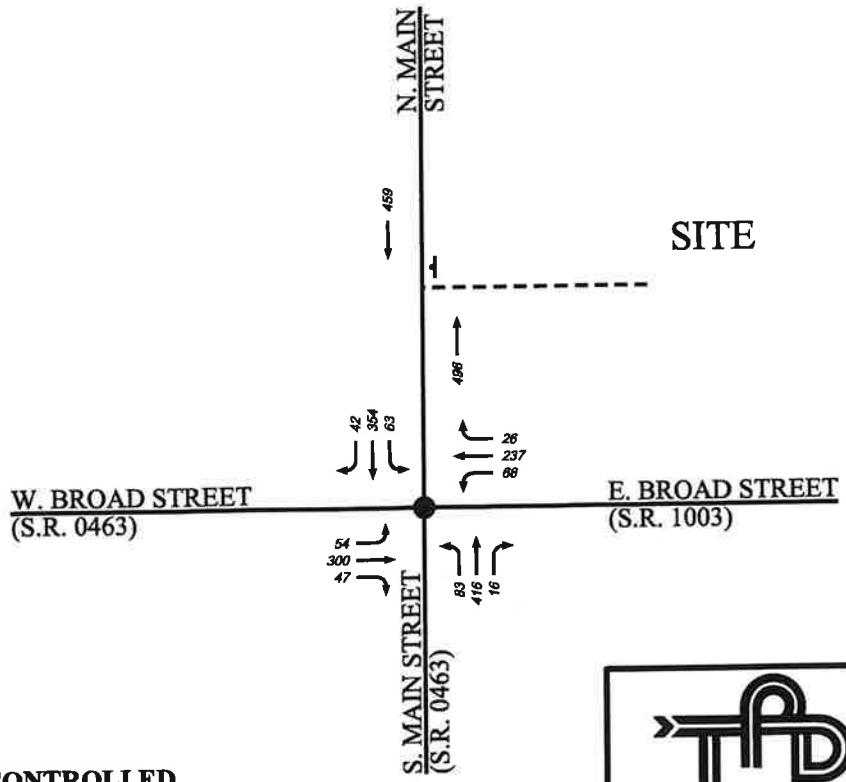
TRAFFIC VOLUMES

WEEKDAY A.M. PEAK HOUR



WEEKDAY P.M. PEAK HOUR



KEY:

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- **SIGNALIZED INTERSECTION**
- **PROPOSED DRIVEWAY**

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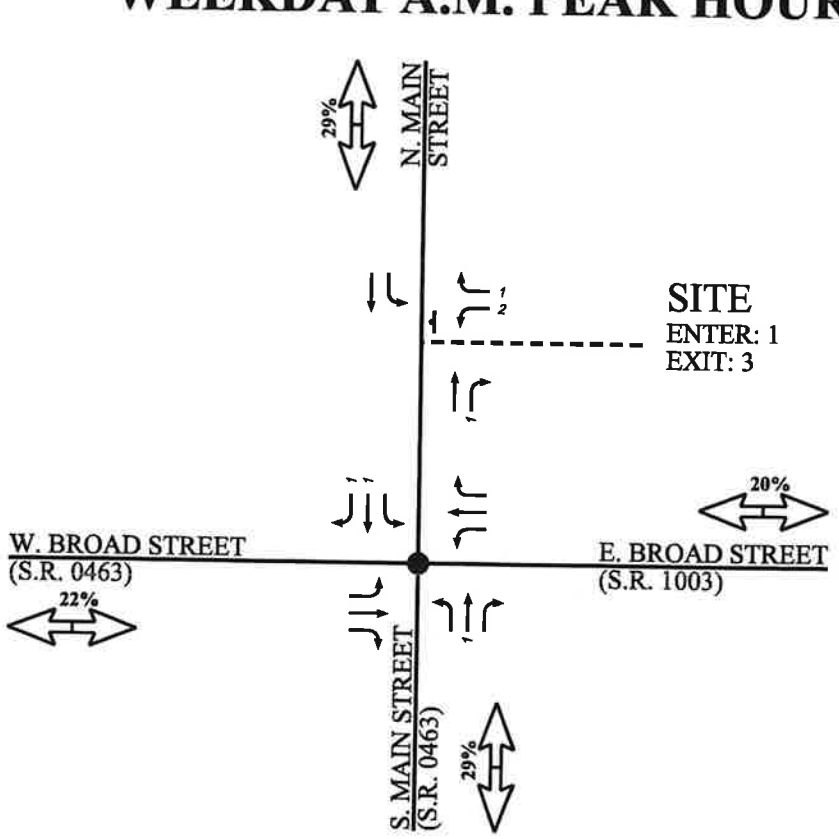
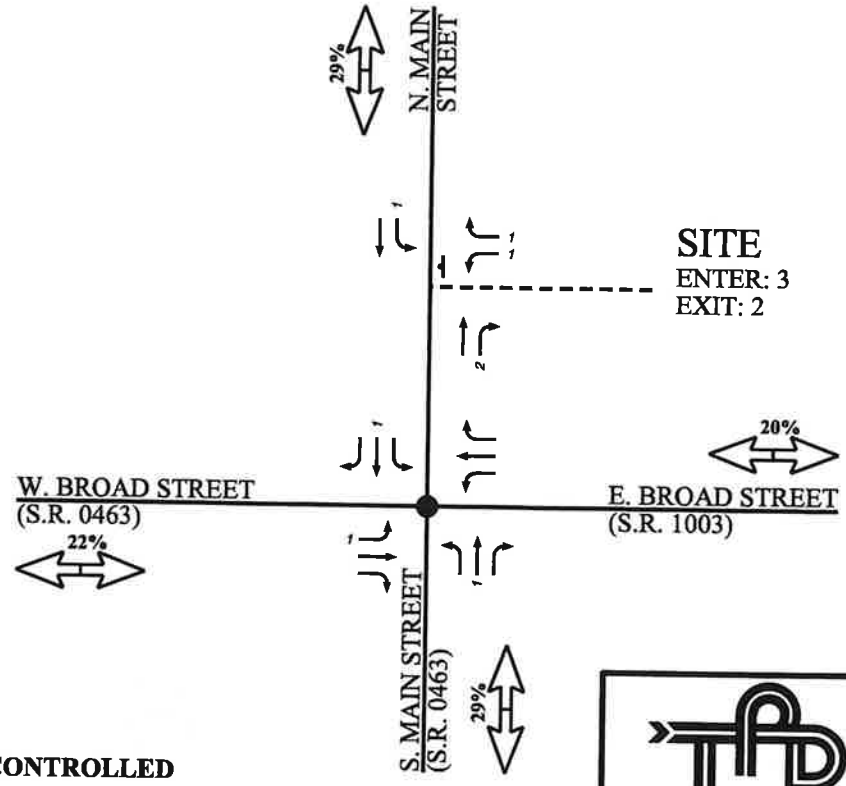
FIGURE 5

2026 BASE (NO-BUILD) CONDITIONS
PEAK HOUR
TRAFFIC VOLUMES

WEEKDAY A.M. PEAK HOUR



WEEKDAY P.M. PEAK HOUR



KEY:

- **STOP CONTROLLED**
- **SIGNALIZED INTERSECTION**
- **PROPOSED DRIVEWAY**

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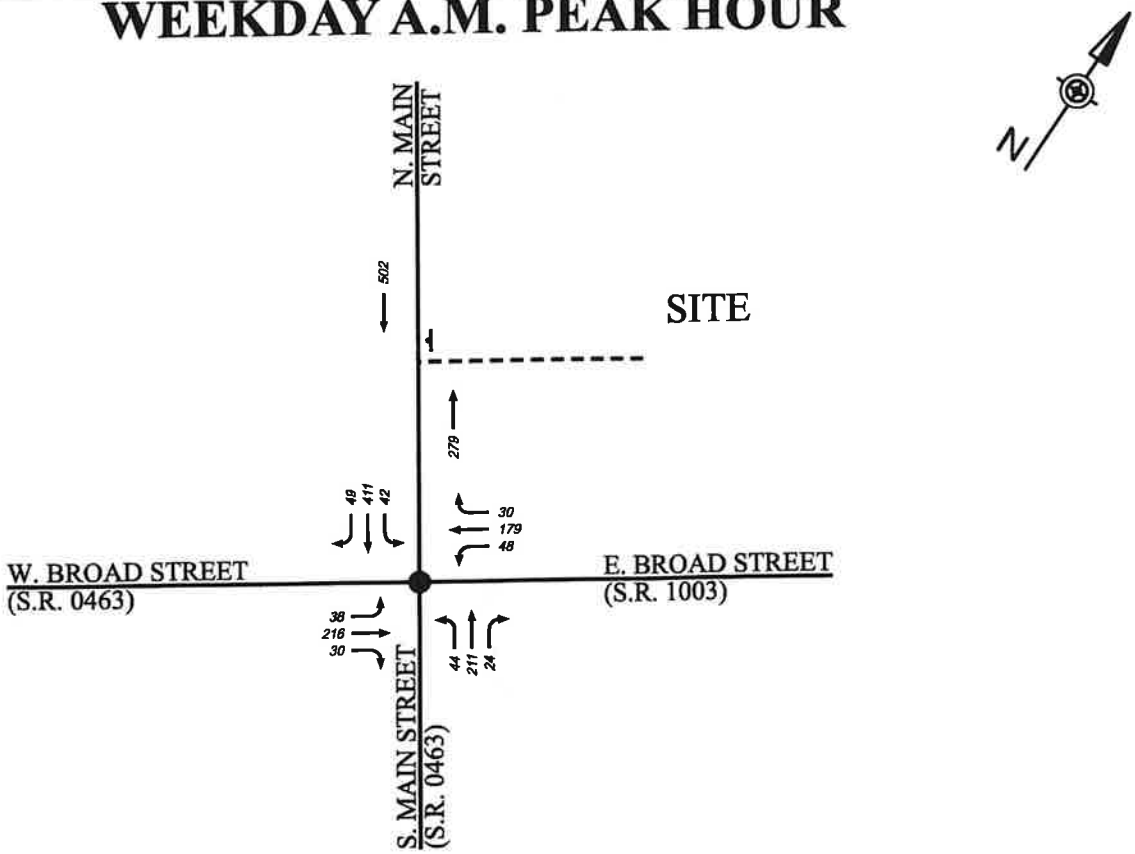
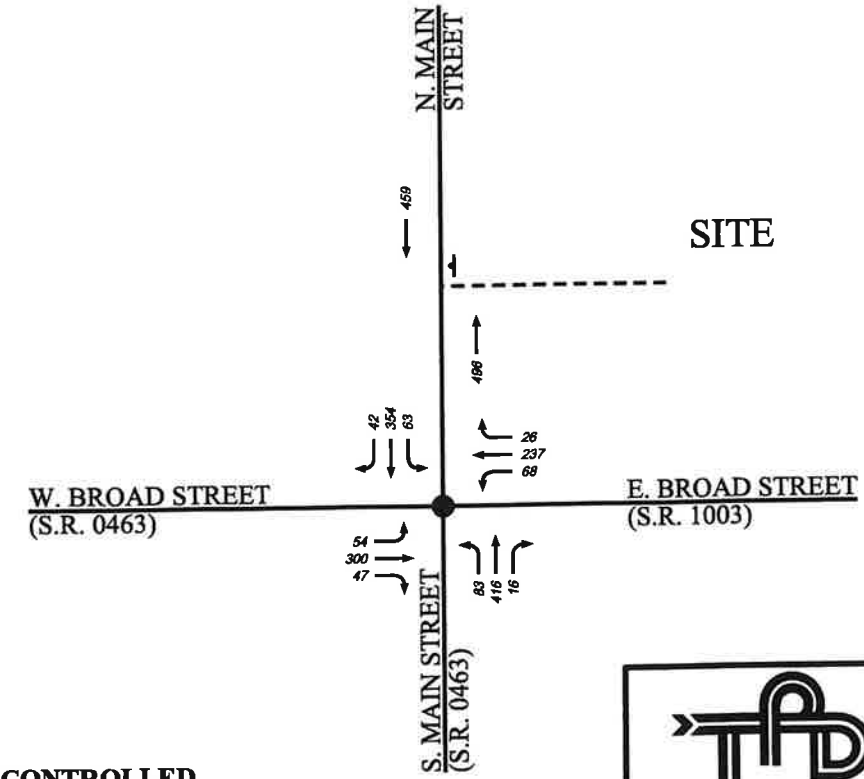
FIGURE 6

TRIP DISTRIBUTION
PEAK HOUR
SITE TRIPS

WEEKDAY A.M. PEAK HOUR



WEEKDAY P.M. PEAK HOUR



KEY:

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- **SIGNALIZED INTERSECTION**
- **PROPOSED DRIVEWAY**

SCHEMATIC DRAWING:NOT TO SCALE

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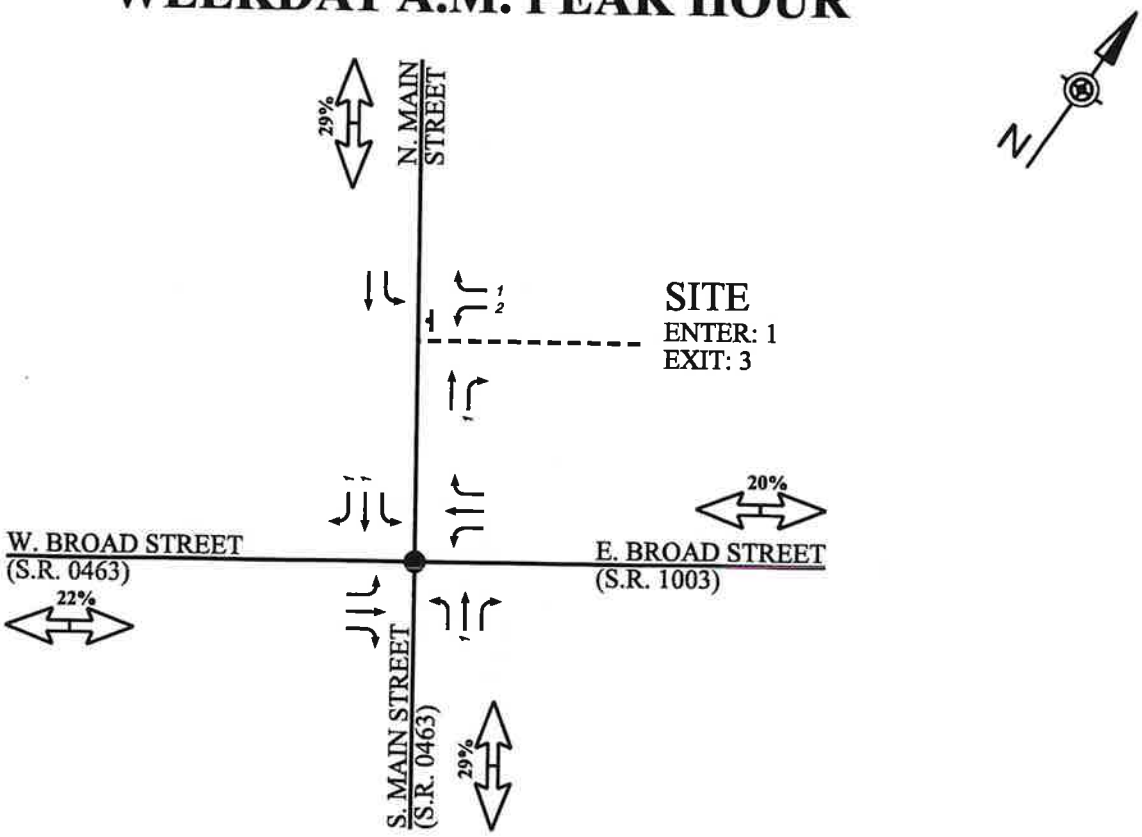
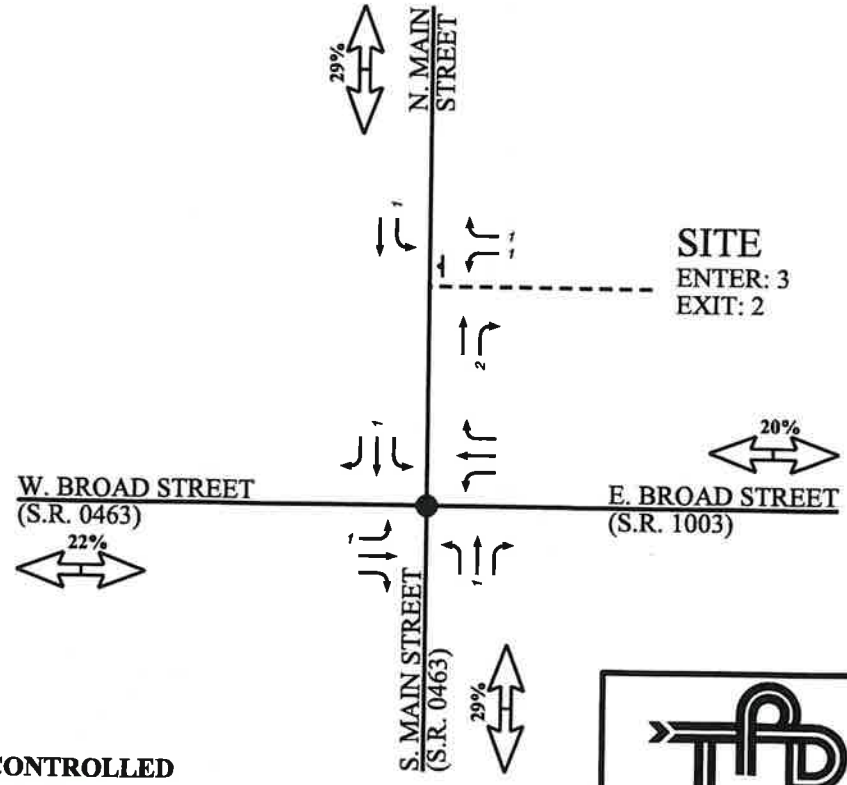
FIGURE 5

2026 BASE (NO-BUILD) CONDITIONS
PEAK HOUR
TRAFFIC VOLUMES

WEEKDAY A.M. PEAK HOUR



WEEKDAY P.M. PEAK HOUR



KEY:

- **STOP CONTROLLED**
- **SIGNALIZED INTERSECTION**
- **PROPOSED DRIVEWAY**

SCHEMATIC DRAWING:NOT TO SCALE

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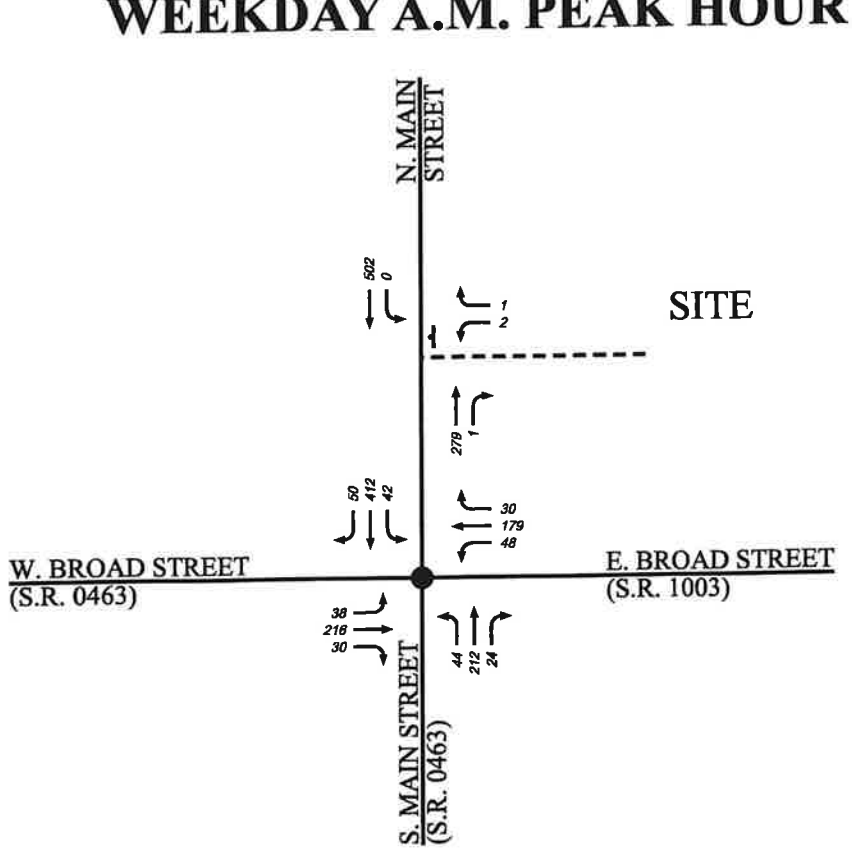
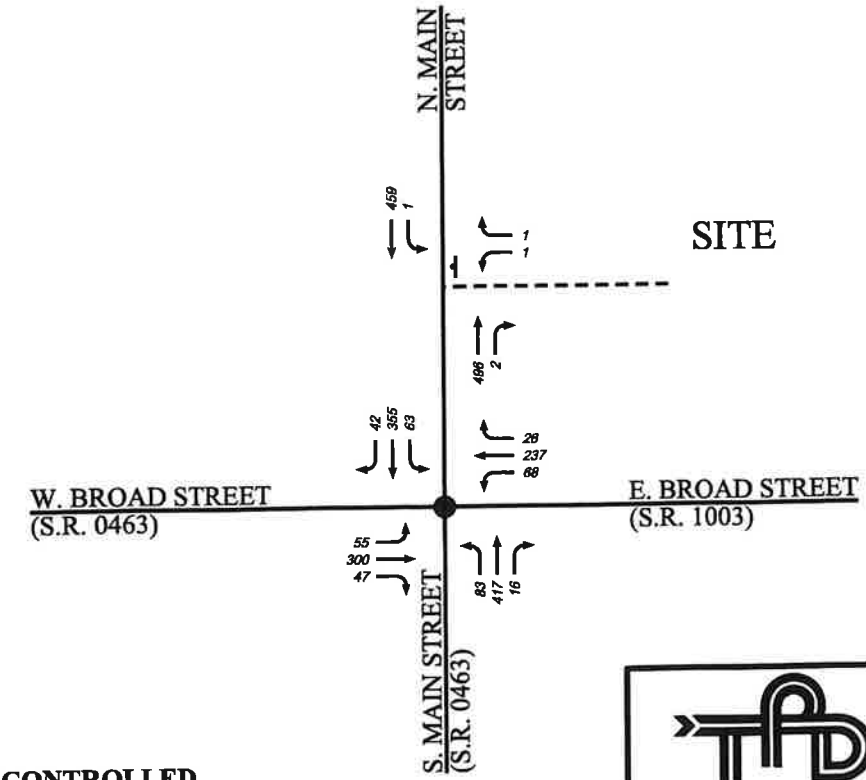
FIGURE 6

TRIP DISTRIBUTION
PEAK HOUR
SITE TRIPS

WEEKDAY A.M. PEAK HOUR



WEEKDAY P.M. PEAK HOUR



KEY:

- **STOP CONTROLLED**
- **SIGNALIZED INTERSECTION**
- **PROPOSED DRIVEWAY**

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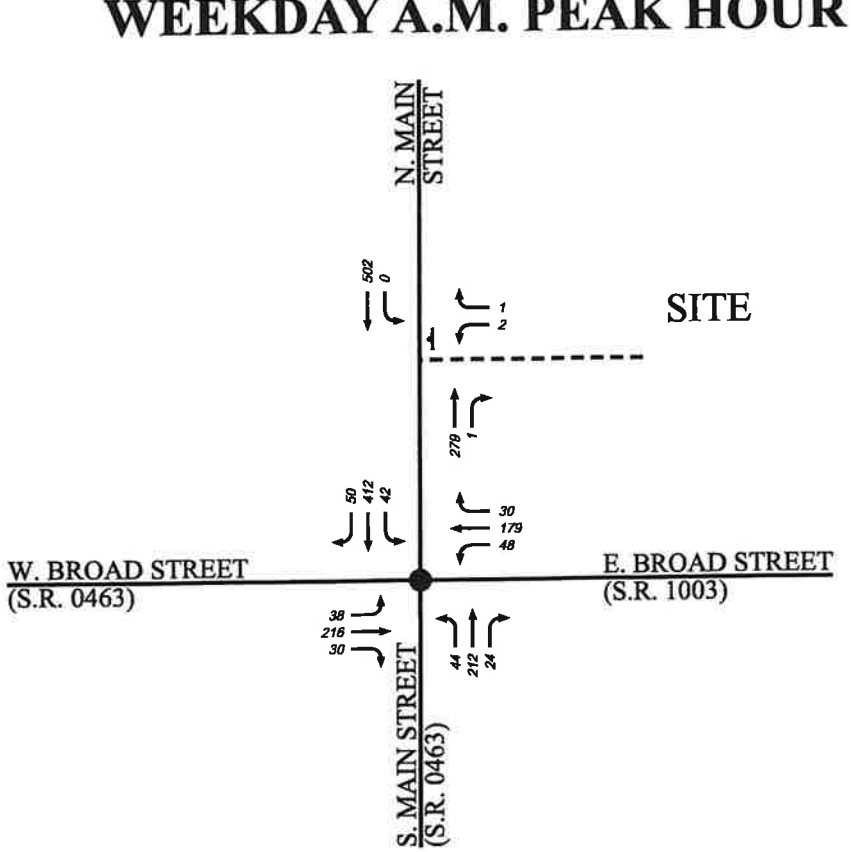
FIGURE 7

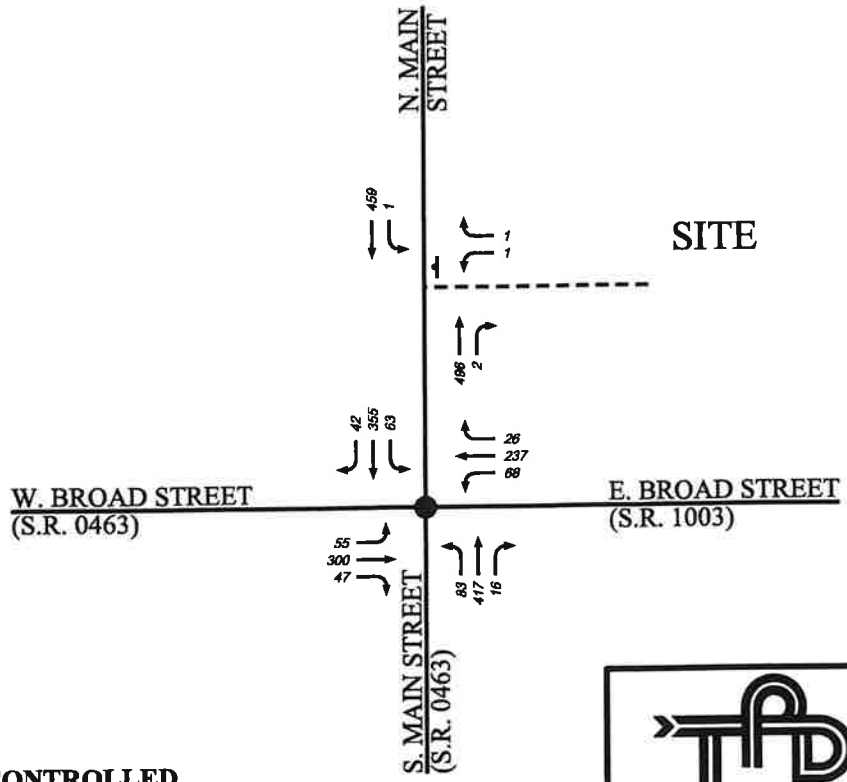
2026 PROJECTED (BUILD) CONDITIONS
PEAK HOUR
TRAFFIC VOLUMES

APPENDIX A:
Project Correspondence

WEEKDAY A.M. PEAK HOUR



WEEKDAY P.M. PEAK HOUR



KEY:

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- **SIGNALIZED INTERSECTION**
- **PROPOSED DRIVEWAY**

SCHEMATIC DRAWING:NOT TO SCALE

www.TPDinc.com
1.877.873.9739
info@TPDinc.com

FIGURE 7

2026 PROJECTED (BUILD) CONDITIONS
PEAK HOUR
TRAFFIC VOLUMES

APPENDIX A:
Project Correspondence

Bowman

September 20, 2024

Ms. Jaime E. Snyder
Borough of Hatfield
401 South Main Street
P.O. Box 190
Hatfield, PA 19440

RE: Traffic Engineering Review #3
Proposed Residential Development – Hatfield Walk
23 North Main Street
Hatfield, PA 19440
Project No. 311304-01-001

Dear Jaime:

Per your request, Bowman Consulting Group (Bowman) has completed a traffic engineering review of the proposed residential development to be located at 23 North Main Street in the Borough of Hatfield, Montgomery County, PA. It is our understanding that the proposed development will consist of the development of eight (8) townhomes. Access to the proposed development will be provided via a full-movement driveway along North Main Street.

The following documents were reviewed and/or referenced in preparation of our comments:

- Site Access Study – Proposed Hatfield Homes Residential, prepared by Traffic Planning and Design, Inc., dated August 21, 2024.
- Preliminary/Final Land Development Plans – Hatfield Walk, prepared by Homes Cunningham, LLC, dated August 7, 2024.

Based on our review of the submitted documents noted above, Bowman offers the following comments for consideration by the Borough and action by the applicant.

General

1. A response letter must be provided with the resubmission detailing how each comment below has been addressed, and where each can be found in the resubmission materials (i.e., page number(s)) to assist in the re-review process. Additional comments may follow upon review of any resubmitted and more detailed pans during the land development process.

Site Access Study

2. The site access study should be revised to include a traffic analysis of the intersection of intersection of Main Street and Broad Street. The intersection currently experiences delay during the commuter peak hours and the queuing along Main Street may impact the operation of the site driveway during the commuter peak hours. A gap study along North Main Street at the proposed site driveway location should be conducted if necessary to confirm that there are an adequate number of gaps in the North Main Street traffic stream for vehicles to safely enter and exit the site.

425 Commerce Drive Suite 200, Fort Washington, PA 19034
P: 215.283.9444
bowman.com

3. The site access study should be updated to include capacity/levels-of-service analysis for the intersection of North Main Street and the site driveway for the weekday morning and weekday afternoon peak hours under 2029 future with-development conditions.

4. The study should be revised so that the entering and exiting site trips for the weekday morning peak hour shown in Table 6 and on Figure 6 match the distribution percentages shown in Table 5. In addition, the turn lane warrant analysis shown in Appendix C should be revised accordingly.

Preliminary/Final Land Development Plans

1. The pavement markings along Main Street at the site access should be reviewed. Modifications to the pavement markings may be required to properly manage the movements to \from the site, the left turn lane at the signalized intersection, and the existing pedestrian crossing and parking at the post office. It should be noted that the Borough has identified traffic calming\pedestrian improvements along North Main Street at the existing pedestrian crossing for the post office.

2. Sight distance measurements must be shown on the plans for the intersection of North Main Street and the site driveway as required by **Section 22-405.1** of the **Subdivision and Land Development Ordinance.**

3. Turning templates should be provided with future plan submissions demonstrating the ability of a trash truck, emergency vehicle, and the largest expected delivery truck to maneuver into and out of the driveway along North Main Street and entirely through the site. The Borough Fire Marshal should review the emergency vehicle turning template for accessibility and circulation needs of emergency apparatus.

4. A "Stop" sign and stop bar should be shown on the plans on the site driveway approach to North Main Street. "No Parking" signs should be shown on the plans along the eastern side of the site driveway from North Main Street to the northern end of the site driveway.

5. ADA ramps must be provided at the driveway along Main Street for the existing sidewalk. An ADA ramp should also be shown on the plans on the northern end of the sidewalk located on the western side of the site driveway at its intersection with the drive aisle leading to/from the townhomes.

6. A back-up area should be provided on the western end of the drive aisle leading to/from the townhomes so that vehicles backing out of the driveways for lots 4 and 5 have adequate space to complete this maneuver.

Bowman

September 20, 2024

Ms. Jaime E. Snyder
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401 South Main Street
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We trust that this review letter responds to your request, and satisfactorily addresses the traffic issues related to the proposed development at this time. If the Borough has any questions, or requires further clarification, please contact me.

Sincerely,

Anton Kuhner

Anton Kuhner, P.E.
Senior Project Manager

AKK/BMJ

cc: Chad Camburn, P.E., Bursich Associates, Inc
Catherine M. Harper, Borough Solicitor
Bob Heil, Borough of Hatfield
Rob Cunningham, P.E., Holmes Cunningham, LLC (Applicant's Engineer)
Matt Hammond, P.E., Traffic Planning and Design, Inc. (Applicant's Traffic Engineer)

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APPENDIX B:
Traffic Count Printouts

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Sincerely,

Anton Kuhner

Anton Kuhner, P.E.
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Q:\PA-FTWA-MC\MCM\eng\HATFIBO1\822C85 - 23 N Main St\Correspondence\Out\2024-08-30 Review Letter #3 - 23 North Main Street.docx

APPENDIX B:
Traffic Count Printouts

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: Main Street & W
Broad Street (S.R. 0463)
Site Code:
Start Date: 03/29/2022
Page No: 1

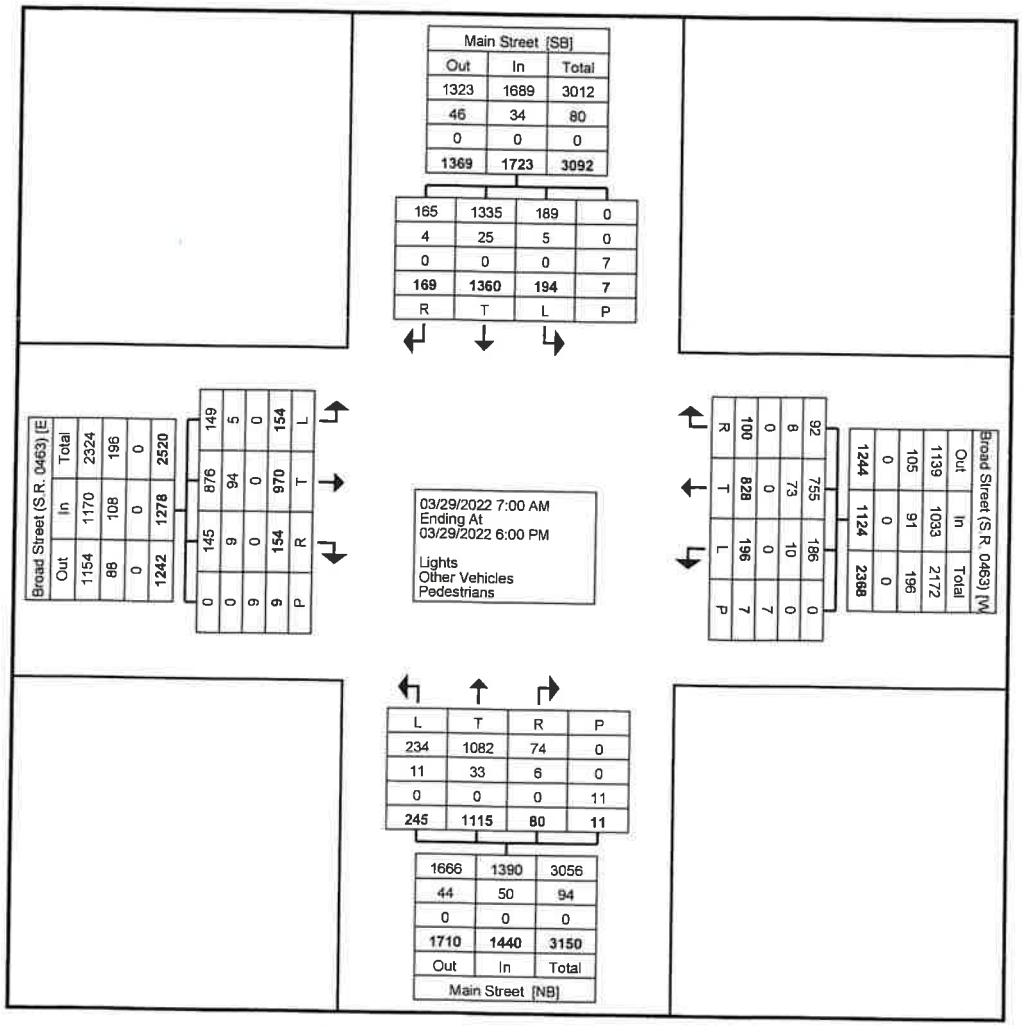
Turning Movement Data

Start Time	Broad Street (S.R. 0463) Eastbound						Broad Street (S.R. 0463) Westbound						Main Street Northbound						Main Street Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
7:00 AM	2	55	7	0	0	64	6	45	2	0	0	53	16	35	4	0	0	55	3	85	9	0	0	97	269
7:15 AM	2	54	2	0	0	58	4	46	4	0	0	54	12	37	0	0	0	49	12	97	7	0	0	116	277
7:30 AM	2	50	2	0	2	54	16	48	9	0	2	73	9	40	6	0	[illegible]	55	6	96	14	0	[illegible]	116	298
7:45 AM	10	66	6	0	0	82	12	59	6	0	2	77	15	66	5	0	0	86	17	111	16	0	[illegible]	144	389
Hourly Total	16	225	17	0	2	258	38	198	21	0	4	257	52	178	15	0	[illegible]	245	38	389	46	0	2	473	1233
8:00 AM	9	55	11	0	1	75	12	36	8	0	0	56	13	51	6	0	2	70	14	109	10	0	[illegible]	133	334
8:15 AM	17	43	11	0	0	71	8	34	7	0	0	49	7	52	5	2	0	66	5	91	9	0	0	105	291
8:30 AM	9	61	6	0	2	76	11	42	1	0	0	54	7	42	5	0	2	54	11	76	11	0	0	98	282
8:45 AM	7	43	5	0	2	55	5	37	18	0	0	60	13	49	4	0	2	66	10	88	14	0	0	112	293
Hourly Total	42	202	33	0	5	277	36	149	34	0	0	219	40	194	20	2	6	256	40	364	44	0	1	448	1200
*** BREAK ***	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-
4:00 PM	10	63	16	0	1	89	15	68	5	0	[illegible]	88	13	78	6	0	0	97	18	71	14	0	[illegible]	103	377
4:15 PM	12	70	12	0	0	94	15	61	11	0	0	87	24	100	8	0	0	132	17	74	4	0	0	95	408
4:30 PM	14	77	14	0	0	105	15	61	7	0	0	83	21	91	1	0	0	113	22	102	15	0	0	139	440
4:45 PM	11	57	8	0	0	76	15	65	7	0	0	87	26	98	2	0	[illegible]	126	17	80	13	0	0	110	399
Hourly Total	47	267	50	0	1	364	60	255	30	0	[illegible]	345	84	367	17	0	1	468	74	327	46	0	1	447	1624
5:00 PM	15	90	9	0	0	114	22	59	7	0	[illegible]	88	12	103	8	0	0	123	13	93	3	0	[illegible]	109	434
5:15 PM	14	73	16	0	0	103	16	50	5	0	[illegible]	71	24	120	5	0	2	149	11	76	11	0	2	98	421
5:30 PM	12	64	12	0	[illegible]	88	12	66	1	0	0	79	18	72	7	0	[illegible]	97	12	61	8	0	0	81	345
5:45 PM	8	49	17	0	0	74	12	51	2	0	0	65	15	81	6	0	0	102	6	50	10	1	0	67	308
Hourly Total	49	276	54	0	1	379	62	226	15	0	[illegible]	303	69	376	26	0	3	471	42	280	32	1	[illegible]	355	1508
Grand Total	154	970	154	0	9	1278	196	828	100	0	7	1124	245	1115	78	2	11	1440	194	1360	168	1	7	1723	5565
Approach %	12.1	75.9	12.1	0.0	-	-	17.4	73.7	8.9	0.0	-	-	17.0	77.4	5.4	0.1	-	-	11.3	78.9	9.8	0.1	-	-	-
Total %	2.8	17.4	2.8	0.0		23.0	3.5	14.9	1.8	0.0		20.2	4.4	20.0	1.4	0.0		25.9	3.5	24.4	3.0	0.0	-	31.0	-
Lights	149	876	145	0		1170	186	755	92	0		1033	234	1082	72	2		1390	189	1335	164	1		1689	5282
% Lights	96.8	90.3	94.2	-	-	91.5	94.9	91.2	92.0	-	-	91.9	95.5	97.0	92.3	100.0	-	96.5	97.4	98.2	97.6	100.0	-	98.0	94.9
Other Vehicles	5	94	9	0		108	10	73	8	0		91	11	33	6	0		50	5	25	4	0	-	34	283
% Other Vehicles	3.2	9.7	5.8	-		8.5	5.1	8.8	8.0	-		8.1	4.5	3.0	7.7	0.0		3.5	2.6	1.8	2.4	0.0		2.0	5.1
Pedestrians	-	-	-	-	[illegible]	-	-	-	-	-	[illegible]	-	-	-	-	-	[illegible]	-	-	-	-	-	[illegible]	-	-
% Pedestrians	-	-	-	-	[illegible]	-	-	-	-	-	[illegible]	-	-	-	-	-	[illegible]	-	-	-	-	-	[illegible]	-	-

Counter: MIO:
Set up By JH:;

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: Main Street & W. Broad Street (S.R. 0463)
Site Code:
Start Date: 03/29/2022
Page No: 2



Turning Movement Data Plot

Counter: MIO:
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Count Name: Main Street & W. Broad Street (S.R. 0463)
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Page No: 1

Turning Movement Data

Start Time	Broad Street (S.R. 0463) Eastbound						Broad Street (S.R. 0463) Westbound						Main Street Northbound						Main Street Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
7:00 AM	2	55	7	0	0	64	6	45	2	0	0	53	16	35	4	0	0	55	3	85	9	0	0	97	269
7:15 AM	2	54	2	0	0	58	4	46	4	0	0	54	12	37	0	0	0	49	12	97	7	0	0	116	277
7:30 AM	2	50	2	0	0	54	16	48	9	0	2	73	9	40	6	0	1	55	6	96	14	0	1	116	298
7:45 AM	10	66	6	0	0	82	12	59	6	0	2	77	15	66	5	0	0	86	17	111	16	0	1	144	389
Hourly Total	16	225	17	0	2	258	38	198	21	0	4	257	52	178	15	0	1	245	38	389	46	0	2	473	1233
8:00 AM	9	55	11	0	1	75	12	36	8	0	0	56	13	51	6	0	2	70	14	109	10	0	0	133	334
8:15 AM	17	43	11	0	0	71	8	34	7	0	0	49	7	52	5	2	0	66	5	91	9	0	0	105	291
8:30 AM	9	61	6	0	0	76	11	42	1	0	0	54	7	42	5	0	0	54	11	76	11	0	0	98	282
8:45 AM	7	43	5	0	2	55	5	37	18	0	0	60	13	49	4	0	2	66	10	88	14	0	0	112	293
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*** BREAK ***	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-
4:00 PM	10	63	16	0	1	89	15	68	5	0	0	88	13	78	6	0	0	97	18	71	14	0	0	103	377
4:15 PM	12	70	12	0	0	94	15	61	11	0	0	87	24	100	8	0	0	132	17	74	4	0	0	95	408
4:30 PM	14	77	14	0	0	105	15	61	7	0	0	83	21	91	1	0	0	113	22	102	15	0	0	139	440
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5:00 PM	15	90	9	0	0	114	22	59	7	0	0	88	12	103	8	0	0	123	13	93	3	0	0	109	434
5:15 PM	14	73	16	0	0	103	16	50	5	0	0	71	24	120	5	0	2	149	11	76	11	0	0	98	421
5:30 PM	12	64	12	0	0	88	12	66	1	0	0	79	18	72	7	0	0	97	12	61	8	0	0	81	345
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Total %	2.8	17.4	2.8	0.0		23.0	3.5	14.9	1.8	0.0		20.2	4.4	20.0	1.4	0.0		25.9	3.5	24.4	3.0	0.0		31.0	-
Lights	149	876	145	0		1170	186	755	92	0		1033	234	1082	72	2		1390	189	1335	164	1		1689	5282
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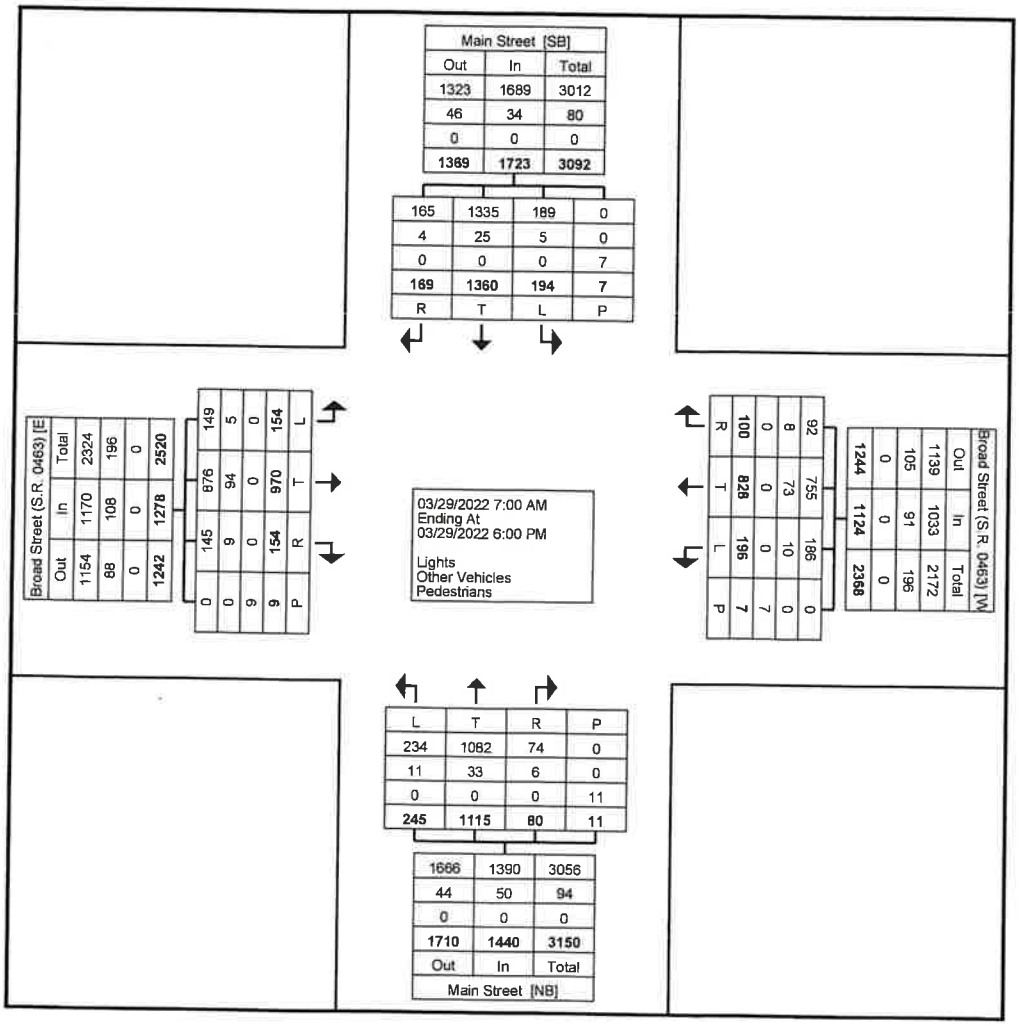
Other Vehicles	5	94	9	0		108	10	73	8	0		91	11	33	6	0		50	5	25	4	0		34	283
% Other Vehicles	3.2	9.7	5.8	-		8.5	5.1	8.8	8.0	-		8.1	4.5	3.0	7.7	0.0		3.5	2.6	1.8	2.4	0.0		2.0	5.1
Pedestrians	-	-	-	-	9	-	-	-	-	-	7	-	-	-	-	-	11	-	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: Main Street & W. Broad Street (S.R. 0463)
Site Code:
Start Date: 03/29/2022



Turning Movement Data Plot

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: Main Street & W. Broad Street (S.R. 0463)
Site Code:
Start Date: 03/29/2022

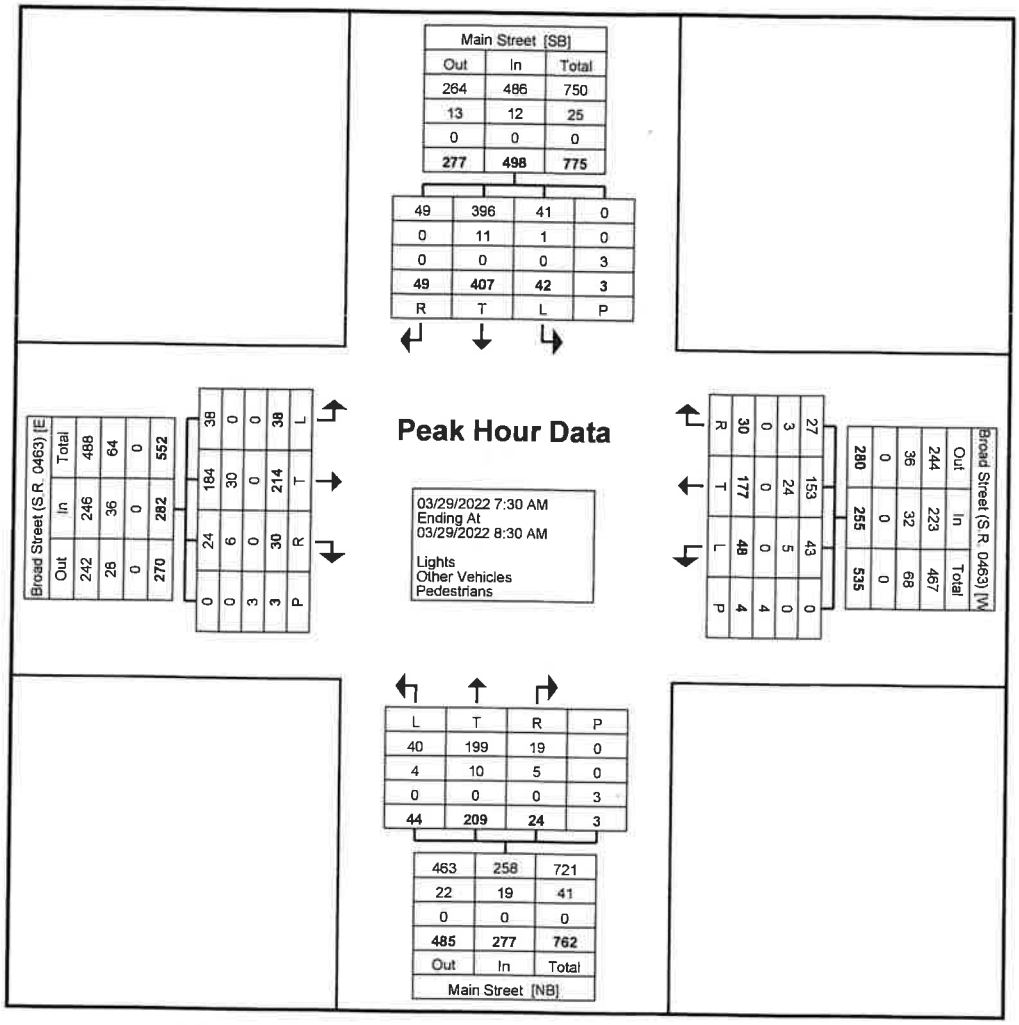
Turning Movement Peak Hour Data (7:30 AM)

Start Time	Broad Street (S.R. 0463) Eastbound						Broad Street (S.R. 0463) Westbound						Main Street Northbound						Main Street Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
7:30 AM	2	50	2	0	2	54	16	48	9	0	2	73	9	40	6	0	1	55	6	96	14	0	1	116	298
7:45 AM	10	66	6	0	0	82	12	59	6	0	2	77	15	66	5	0	0	86	17	111	16	0	1	144	389
8:00 AM	9	55	11	0	1	75	12	36	8	0	0	56	13	51	6	0	2	70	14	109	10	0	1	133	334
8:15 AM	17	43	11	0	0	71	8	34	7	0	0	49	7	52	5	2	0	66	5	91	9	0	0	105	291
Total	38	214	30	0	3	282	48	177	30	0	4	255	44	209	22	2	3	277	42	407	49	0	3	498	1312
Approach %	13.5	75.9	10.6	0.0	-	-	18.8	69.4	11.8	0.0	-	-	15.9	75.5	7.9	0.7	-	-	8.4	81.7	9.8	0.0	-	-	-
Total %	2.9	16.3	2.3	0.0		21.5	3.7	13.5	2.3	0.0		19.4	3.4	15.9	1.7	0.2		21.1	3.2	31.0	3.7	0.0		38.0	-
PHF	0.559	0.811	0.682	0.000		0.860	0.750	0.750	0.833	0.000		0.828	0.733	0.792	0.917	0.250		0.805	0.618	0.917	0.766	0.000		0.865	0.843
Lights	38	184	24	0	-	246	43	153	27	0	-	223	40	199	17	2	-	258	41	396	49	0	-	486	1213
% Lights	100.0	86.0	80.0	-	-	87.2	89.6	86.4	90.0	-	-	87.5	90.9	95.2	77.3	100.0	-	93.1	97.6	97.3	100.0	-	-	97.6	92.5
Other Vehicles	0	30	6	0	-	36	5	24	3	0	-	32	4	10	5	0	-	19	1	11	0	0	-	12	99
% Other Vehicles	0.0	14.0	20.0	-		12.8	10.4	13.6	10.0	-		12.5	9.1	4.8	22.7	0.0		6.9	2.4	2.7	0.0	-		2.4	7.5
Pedestrians	-	-	-	-	3	-	-	-	-	-	4	-	-	-	-	-	3	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Counter: MIO:
Set up By JH.:

Count Name: Main Street & W. Broad Street (S.R. 0463)
Site Code:
Start Date: 03/29/2022



Turning Movement Peak Hour Data Plot (7:30 AM)

Counter: MIO:
Set up By JH.:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: Main Street & W. Broad Street (S.R. 0463)
Site Code:
Start Date: 03/29/2022

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Broad Street (S.R. 0463) Eastbound						Broad Street (S.R. 0463) Westbound						Main Street Northbound						Main Street Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
7:30 AM	2	50	2	0	2	54	16	48	9	0	2	73	9	40	6	0	1	55	6	96	14	0	1	116	298
7:45 AM	10	66	6	0	0	82	12	59	6	0	2	77	15	66	5	0	0	86	17	111	16	0	1	144	389
8:00 AM	9	55	11	0	1	75	12	36	8	0	0	56	13	51	6	0	2	70	14	109	10	0	1	133	334
8:15 AM	17	43	11	0	0	71	8	34	7	0	0	49	7	52	5	2	0	66	5	91	9	0	0	105	291
Total	38	214	30	0	3	282	48	177	30	0	4	255	44	209	22	2	3	277	42	407	49	0	3	498	1312
Approach %	13.5	75.9	10.6	0.0	-	-	18.8	69.4	11.8	0.0	-	-	15.9	75.5	7.9	0.7	-	-	8.4	81.7	9.8	0.0	-	-	-
Total %	2.9	16.3	2.3	0.0	-	21.5	3.7	13.5	2.3	0.0	-	19.4	3.4	15.9	1.7	0.2	-	21.1	3.2	31.0	3.7	0.0	-	38.0	-
PHF	0.559	0.811	0.682	0.000	-	0.860	0.750	0.750	0.833	0.000	-	0.828	0.733	0.792	0.917	0.250	-	0.805	0.618	0.917	0.766	0.000	-	0.865	0.843
Lights	38	184	24	0	-	246	43	153	27	0	-	223	40	199	17	2	-	258	41	396	49	0	-	486	1213
% Lights	100.0	86.0	80.0	-	-	87.2	89.6	86.4	90.0	-	-	87.5	90.9	95.2	77.3	100.0	-	93.1	97.6	97.3	100.0	-	-	97.6	92.5
Other Vehicles	0	30	6	0	-	36	5	24	3	0	-	32	4	10	5	0	-	19	1	11	0	0	-	12	99
% Other Vehicles	0.0	14.0	20.0	-	-	12.8	10.4	13.6	10.0	-	-	12.5	9.1	4.8	22.7	0.0	-	6.9	2.4	2.7	0.0	-	-	2.4	7.5
Pedestrians	-	-	-	-	3	-	-	-	-	-	4	-	-	-	-	-	3	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
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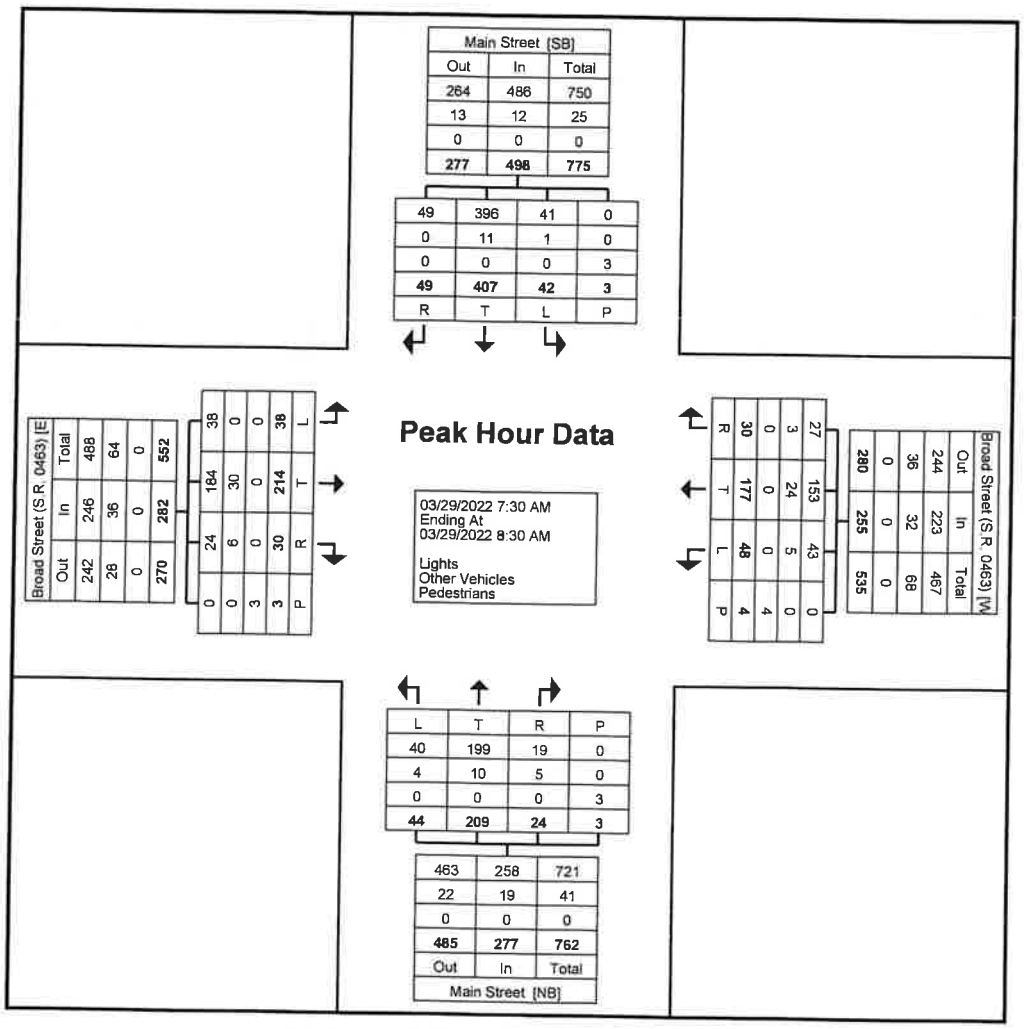
610.326.3100

Count Name: Main Street & W. Broad Street (S.R. 0463)
Site Code:
Start Date: 03/29/2022



Turning Movement Peak Hour Data Plot (7:30 AM)

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: Main Street & W. Broad Street (S.R. 0463)
Site Code:
Start Date: 03/29/2022

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Broad Street (S.R. 0463) Eastbound						Broad Street (S.R. 0463) Westbound						Main Street Northbound						Main Street Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
4:30 PM	14	77	14	0	0	105	15	61	7	0	0	83	21	91	1	0	0	113	22	102	15	0	0	139	440
4:45 PM	11	57	8	0	0	76	15	65	7	0	0	87	26	98	2	0	1	126	17	80	13	0	0	110	399
5:00 PM	15	90	9	0	0	114	22	59	7	0	1	88	12	103	8	0	0	123	13	93	3	0	1	109	434
5:15 PM	14	73	16	0	0	103	16	50	5	0	1	71	24	120	5	0	2	149	11	76	11	0	2	98	421
Total	54	297	47	0	0	398	68	235	26	0	2	329	83	412	16	0	3	511	63	351	42	0	3	456	1694
Approach %	13.6	74.6	11.8	0.0	-	-	20.7	71.4	7.9	0.0	-	-	16.2	80.6	3.1	0.0	-	-	13.8	77.0	9.2	0.0	-	-	-
Total %	3.2	17.5	2.8	0.0	-	23.5	4.0	13.9	1.5	0.0	-	19.4	4.9	24.3	0.9	0.0	-	30.2	3.7	20.7	2.5	0.0	-	26.9	-
PHF	0.900	0.825	0.734	0.000	-	0.873	0.773	0.904	0.929	0.000	-	0.935	0.798	0.858	0.500	0.000	-	0.857	0.716	0.860	0.700	0.000	-	0.820	0.963
Lights	54	272	47	0	-	373	68	225	25	0	-	318	82	406	16	0	-	504	61	347	41	0	-	449	1644
% Lights	100.0	91.6	100.0	-	-	93.7	100.0	95.7	96.2	-	-	96.7	98.8	98.5	100.0	-	-	98.6	96.8	98.9	97.6	-	-	98.5	97.0
Other Vehicles	0	25	0	0	-	25	0	10	1	0	-	11	1	6	0	0	-	7	2	4	1	0	-	7	50
% Other Vehicles	0.0	8.4	0.0	-	-	6.3	0.0	4.3	3.8	-	-	3.3	1.2	1.5	0.0	-	-	1.4	3.2	1.1	2.4	-	-	1.5	3.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Counter: MIO:
Set up By JH::

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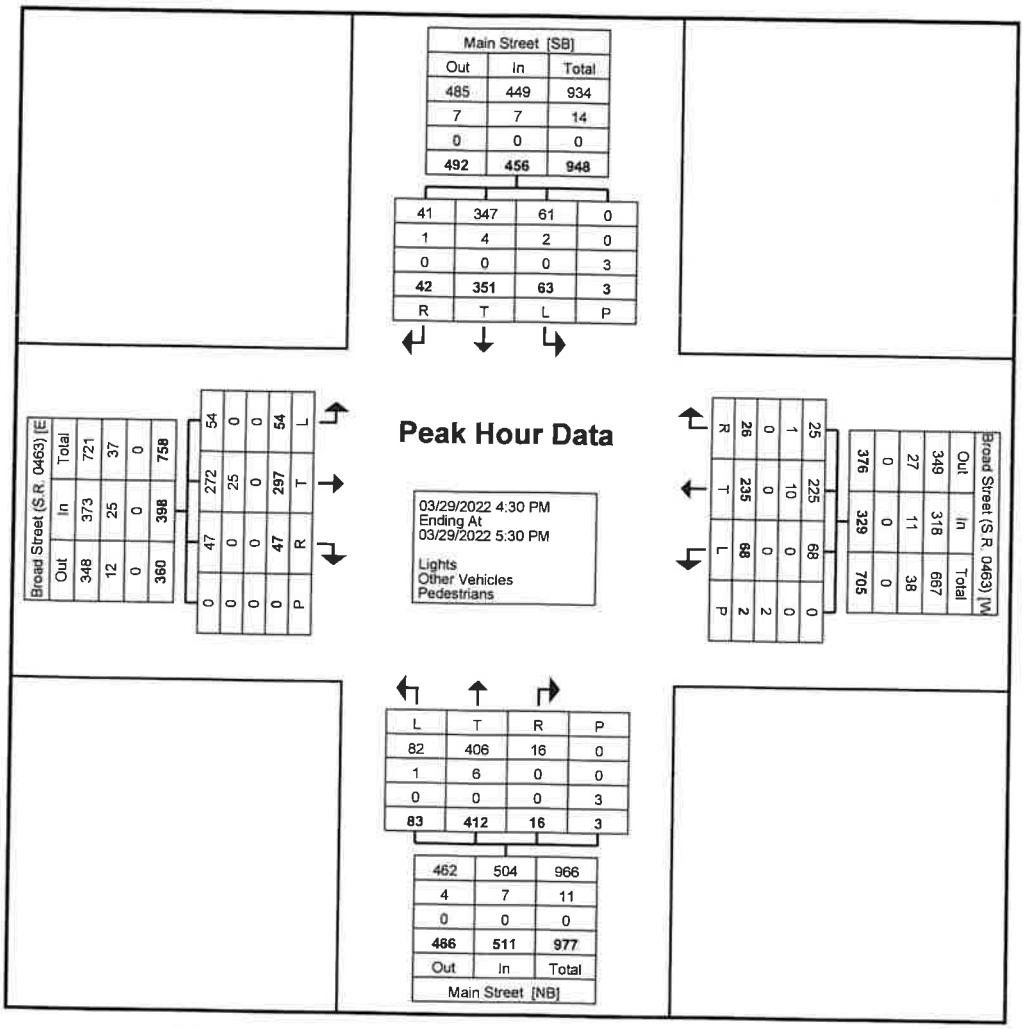
Count Name: Main Street & W. Broad Street (S.R. 0463)
Site Code:
Start Date: 03/29/2022
Page No: 6



Turning Movement Peak Hour Data Plot (4:30 PM)

Counter: MIO:
Set up By JH::

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100

Count Name: Main Street & W. Broad Street (S.R. 0463)
Site Code:
Start Date: 03/29/2022

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Broad Street (S.R. 0463) Eastbound						Broad Street (S.R. 0463) Westbound						Main Street Northbound						Main Street Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
4:30 PM	14	77	14	0	0	105	15	61	7	0	0	83	21	91	1	0	0	113	22	102	15	0	0	139	440
4:45 PM	11	57	8	0	0	76	15	65	7	0	0	87	26	98	2	0	1	126	17	80	13	0	0	110	399
5:00 PM	15	90	9	0	0	114	22	59	7	0	1	88	12	103	8	0	0	123	13	93	3	0	1	109	434
5:15 PM	14	73	16	0	0	103	16	50	5	0	1	71	24	120	5	0	2	149	11	76	11	0	2	98	421
Total	54	297	47	0	0	398	68	235	26	0	2	329	83	412	16	0	3	511	63	351	42	0	3	456	1694
Approach %	13.6	74.6	11.8	0.0	-	-	20.7	71.4	7.9	0.0	-	-	16.2	80.6	3.1	0.0	-	-	13.8	77.0	9.2	0.0	-	-	-
Total %	3.2	17.5	2.8	0.0	-	23.5	4.0	13.9	1.5	0.0	-	19.4	4.9	24.3	0.9	0.0	-	30.2	3.7	20.7	2.5	0.0	-	26.9	-
PHF	0.900	0.825	0.734	0.000	-	0.873	0.773	0.904	0.929	0.000	-	0.935	0.798	0.858	0.500	0.000	-	0.857	0.716	0.860	0.700	0.000	-	0.820	0.963
Lights	54	272	47	0	-	373	68	225	25	0	-	318	82	406	16	0	-	504	61	347	41	0	-	449	1644
% Lights	100.0	91.6	100.0	-	-	93.7	100.0	95.7	96.2	-	-	96.7	98.8	98.5	100.0	-	-	98.6	96.8	98.9	97.6	-	-	98.5	97.0
Other Vehicles	0	25	0	0	-	25	0	10	1	0	-	11	1	6	0	0	-	7	2	4	1	0	-	7	50
% Other Vehicles	0.0	8.4	0.0	-	-	6.3	0.0	4.3	3.8	-	-	3.3	1.2	1.5	0.0	-	-	1.4	3.2	1.1	2.4	-	-	1.5	3.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
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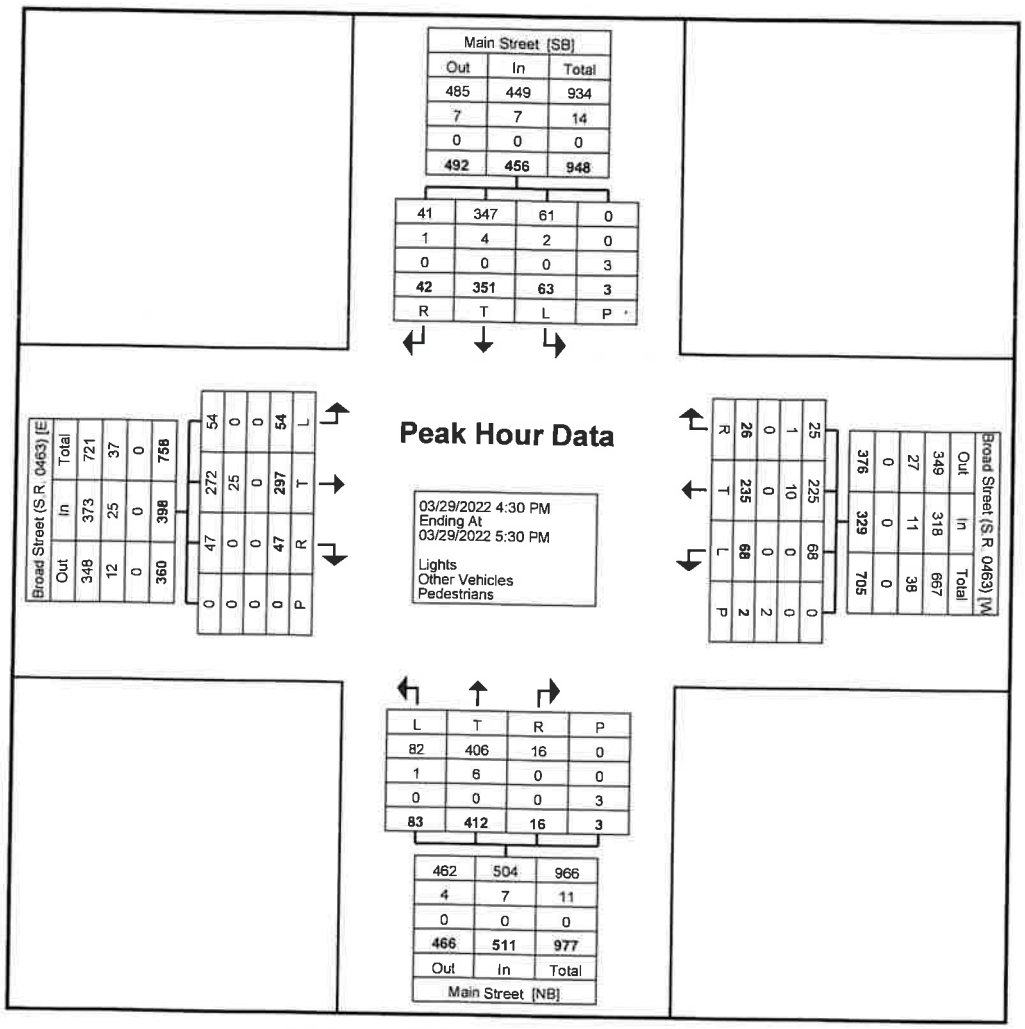
Counter: MIO:
Set up By JH::

Count Name: Main Street & W. Broad Street (S.R. 0463)
Site Code:
Start Date: 03/29/2022
Page No: 6



Turning Movement Peak Hour Data Plot (4:30 PM)

APPENDIX C:
Traffic Volume Development Data

Trip Distribution Data

APPENDIX C:
Traffic Volume Development Data

Trip Distribution Data

Trip Distribution (To/From)	AM				PM				OVERALL		
	IN	OUT	TOTAL		IN	OUT	TOTAL		TOTAL		USE
N. Main Street (to/from the north)	500	278	778	29.5%	457	494	951	28.0%	1729	28.7%	29%
S. Main Street (to/from the south)	278	487	765	29.0%	513	467	980	28.8%	1745	28.9%	29%
W. Broad Street (to/from the west)	283	271	554	21.0%	399	361	760	22.4%	1314	21.8%	22%
E. Broad Street (to/from the east)	256	281	537	20.4%	330	377	707	20.8%	1244	20.6%	20%
Total:	1317	1317	2634	100%	1699	1699	3398	100%	6032	100%	100%

Volume Development Worksheets

Trip Distribution (To/From)	AM				PM				OVERALL		
	IN	OUT	TOTAL		IN	OUT	TOTAL		TOTAL		USE
N. Main Street (to/from the north)	500	278	778	29.5%	457	494	951	28.0%	1729	28.7%	29%
S. Main Street (to/from the south)	278	487	765	29.0%	513	467	980	28.8%	1745	28.9%	29%
W. Broad Street (to/from the west)	283	271	554	21.0%	399	361	760	22.4%	1314	21.8%	22%
E. Broad Street (to/from the east)	256	281	537	20.4%	330	377	707	20.8%	1244	20.6%	20%
Total:	1317	1317	2634	100%	1699	1699	3398	100%	6032	100%	100%

Volume Development Worksheets

TPD# PNPG.00002
10/17/2024
Traffic Volumes Worksheet
Intersection: Main Street (N/S) & Broad Street (E/W)
Synchro Node:

1 Adjacent Intersections: West 0 East 0 North 0 South 0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing (Raw) Counts	**38**	**214**	**30**	**48**	**177**	**30**	**44**	**209**	**24**	**42**	**407**	**49**	**1312**
Base growth (0.21% compounded for 2 yrs)	0	1	0	0	1	0	0	1	0	0	2	0	5
2024 Existing Volumes (Balanced)	**38**	**215**	**30**	**48**	**178**	**30**	**44**	**210**	**24**	**42**	**409**	**49**	**1317**
Base growth (0.21% compounded for 2 yrs)	0	1	0	0	1	0	0	1	0	0	2	0	5
2026 Base Volumes	**38**	**216**	**30**	**48**	**179**	**30**	**44**	**211**	**24**	**42**	**411**	**49**	**1322**

Site Trips

	New
Enter =	1
Exit =	3

Site Trip Assignment % - Enter	22%					21%		29%					
Site Trip Assignment % - Exit										21%	29%	22%	
Total Site Trips	0	0	0	0	0	0	0	1	0	0	1	1	
2026 Projected Volumes	**38**	**216**	**30**	**48**	**179**	**30**	**44**	**212**	**24**	**42**	**412**	**50**	**1325**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing (Raw) Counts	**54**	**297**	**47**	**68**	**235**	**26**	**83**	**412**	**16**	**63**	**351**	**42**	**1694**
Base growth (0.21% compounded for 2 yrs)	0	1	0	0	1	0	0	2	0	0	1	0	5
2024 Existing Volumes (Balanced)	**54**	**298**	**47**	**68**	**236**	**26**	**83**	**414**	**16**	**63**	**352**	**42**	**1699**
Base growth (0.21% compounded for 2 yrs)	0	2	0	0	1	0	0	2	0	0	2	0	7
2026 Base Volumes	**54**	**300**	**47**	**68**	**237**	**26**	**83**	**416**	**16**	**63**	**354**	**42**	**1706**

Site Trips

	New
Enter =	3
Exit =	2

Site Trip Assignment % - Enter	22%					21%		29%					
Site Trip Assignment % - Exit										21%	29%	22%	
Total Site Trips	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	
2026 Projected Volumes	**55**	**300**	**47**	**68**	**237**	**26**	**83**	**417**	**16**	**63**	**355**	**42**	**1709**

TPD# PNPG.00002
10/17/2024
Traffic Volumes Worksheet
Intersection: N. Main Street & Proposed Site Driveway
Synchro Node:

2 Adjacent Intersections: West 0 East 0 North 0 South 0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing (Raw) Counts								277			498		775
Base growth (0.21% compounded for 2 yrs)								1			2		3
2024 Existing Volumes (Balanced)	0	0	0	0	0	0	0	278	0	0	500	0	778
Base growth (0.21% compounded for 2 yrs)								1			2		3
2026 Base Volumes	0	0	0	0	0	0	0	279	0	0	502	0	781

Site Trips
New
Enter = 1
Exit = 3

Site Trip Assignment % - Enter									71%	29%			
Site Trip Assignment % - Exit				71%		29%							
Total Site Trips	0	0	0	2	0	1	0	0	1	0	0	0	
2026 Projected Volumes	0	0	0	2	0	1	0	279	1	0	502	0	785

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing (Raw) Counts								492			456		948
Base growth (0.21% compounded for 2 yrs)								2			1		3
2024 Existing Volumes (Balanced)	0	0	0	0	0	0	0	494	0	0	457	0	951
Base growth (0.21% compounded for 2 yrs)								2			2		4
2026 Base Volumes	0	0	0	0	0	0	0	496	0	0	459	0	955

Site Trips
New
Enter = 3
Exit = 2

Site Trip Assignment % - Enter									71%	29%			
Site Trip Assignment % - Exit				71%		29%							
Total Site Trips	0	0	0	1	0	1	0	0	2	1	0	0	
2026 Projected Volumes	0	0	0	1	0	1	0	496	2	1	459	0	960

TPD# PNPG.00002
10/17/2024
Traffic Volumes Worksheet
Intersection: Main Street (N/S) & Broad Street (E/W)
Synchro Node:

1 Adjacent intersections: West 0 East 0 North 0 South 0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing (Raw) Counts	**38**	**214**	**30**	**48**	**177**	**30**	**44**	**209**	**24**	**42**	**407**	**49**	**1312**
Base growth (0.21% compounded for 2 yrs)	0	1	0	0	1	0	0	1	0	0	2	0	5
2024 Existing Volumes (Balanced)	**38**	**215**	**30**	**48**	**178**	**30**	**44**	**210**	**24**	**42**	**409**	**49**	**1317**
Base growth (0.21% compounded for 2 yrs)	0	1	0	0	1	0	0	1	0	0	2	0	5
2026 Base Volumes	**38**	**216**	**30**	**48**	**179**	**30**	**44**	**211**	**24**	**42**	**411**	**49**	**1322**

Site Trips

	New
Enter =	1
Exit =	3

Site Trip Assignment % - Enter	22%					21%		29%					
Site Trip Assignment % - Exit										21%	29%	22%	
Total Site Trips	0	0	0	0	0	0	0	1	0	0	1	1	
2026 Projected Volumes	**38**	**216**	**30**	**48**	**179**	**30**	**44**	**212**	**24**	**42**	**412**	**50**	**1325**

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing (Raw) Counts	**54**	**297**	**47**	**68**	**235**	**26**	**83**	**412**	**16**	**63**	**351**	**42**	**1694**
Base growth (0.21% compounded for 2 yrs)	0	1	0	0	1	0	0	2	0	0	1	0	5
2024 Existing Volumes (Balanced)	**54**	**298**	**47**	**68**	**236**	**26**	**83**	**414**	**16**	**63**	**352**	**42**	**1699**
Base growth (0.21% compounded for 2 yrs)	0	2	0	0	1	0	0	2	0	0	2	0	7
2026 Base Volumes	**54**	**300**	**47**	**68**	**237**	**26**	**83**	**416**	**16**	**63**	**354**	**42**	**1706**

Site Trips

	New
Enter =	3
Exit =	2

Site Trip Assignment % - Enter	22%					21%		29%					
Site Trip Assignment % - Exit										21%	29%	22%	
Total Site Trips	1	0	0	0	0	0	0	1	0	0	1	0	
2026 Projected Volumes	**55**	**300**	**47**	**68**	**237**	**26**	**83**	**417**	**16**	**63**	**355**	**42**	**1709**

TPD# PNPG.00002
10/17/2024
Traffic Volumes Worksheet
Intersection: N. Main Street & Proposed Site Driveway
Synchro Node: 2 Adjacent Intersections: West 0 East 0 North 0 South 0

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing (Raw) Counts								277			498		775
Base growth (0.21% compounded for 2 yrs)								1			2		3
2024 Existing Volumes (Balanced)	0	0	0	0	0	0	0	278	0	0	500	0	778
Base growth (0.21% compounded for 2 yrs)								1			2		3
2026 Base Volumes	0	0	0	0	0	0	0	279	0	0	502	0	781

Site Trips

	New
Enter =	1
Exit =	3

Site Trip Assignment % - Enter									71%	29%			
Site Trip Assignment % - Exit				71%		29%							
Total Site Trips	0	0	0	2	0	1	0	0	1	0	0	0	
2026 Projected Volumes	0	0	0	2	0	1	0	279	1	0	502	0	785

Time Period: Weekday P.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2022 Existing (Raw) Counts								492			456		948
Base growth (0.21% compounded for 2 yrs)								2			1		3
2024 Existing Volumes (Balanced)	0	0	0	0	0	0	0	494	0	0	457	0	951
Base growth (0.21% compounded for 2 yrs)								2			2		4
2026 Base Volumes	0	0	0	0	0	0	0	496	0	0	459	0	955

Site Trips

	New
Enter =	3
Exit =	2

Site Trip Assignment % - Enter									71%	29%			
Site Trip Assignment % - Exit				71%		29%							
Total Site Trips	0	0	0	1	0	1	0	0	2	1	0	0	
2026 Projected Volumes	0	0	0	1	0	1	0	496	2	1	459	0	960

APPENDIX D:
Critical and Follow-up Headway Calculations

PNPG.00002
N. Main Street & Site Driveway

Crititcal Headway

			tc base	tc hv	phv	t cg	G	t 3lt	**Base Crit**
major left	AM	SB L	4.3	1	2%	0	1	0	**4.3**
	PM	SB L	4.3	1	2%	0	1	0	**4.3**
minor right	AM	WB R	6.2	1	2%	0.1	0	0	**6.2**
	PM	WB R	6.2	1	2%	0.1	0	0	**6.2**
minor left	AM	WB L	7.1	1	2%	0.2	0	0.7	**6.4**
	PM	WB L	7.1	1	2%	0.2	0	0.7	**6.4**

Follow-up headway

			t fbase	t fhv	phv	**Follow-up**
major left	AM	SB L	3	0.9	2%	**3.0**
	PM	SB L	3	0.9	2%	**3.0**
minor right	AM	WB R	3.1	0.9	2%	**3.1**
	PM	WB R	3.1	0.9	2%	**3.1**
minor left	AM	WB L	3	0.9	2%	**3.0**
	PM	WB L	3	0.9	2%	**3.0**

APPENDIX D:
Critical and Follow-up Headway Calculations

PNPG.00002
N. Main Street & Site Driveway

Crititcal Headway

			tc base	tc hv	phv	t cg	G	t 3lt	**Base Crit**
major left	AM	SB L	4.3	1	2%	0	1	0	**4.3**
	PM	SB L	4.3	1	2%	0	1	0	**4.3**
minor right	AM	WB R	6.2	1	2%	0.1	0	0	**6.2**
	PM	WB R	6.2	1	2%	0.1	0	0	**6.2**
minor left	AM	WB L	7.1	1	2%	0.2	0	0.7	**6.4**
	PM	WB L	7.1	1	2%	0.2	0	0.7	**6.4**

Follow-up headway

			t fbase	t fhv	phv	**Follow-up**
major left	AM	SB L	3	0.9	2%	**3.0**
	PM	SB L	3	0.9	2%	**3.0**
minor right	AM	WB R	3.1	0.9	2%	**3.1**
	PM	WB R	3.1	0.9	2%	**3.1**
minor left	AM	WB L	3	0.9	2%	**3.0**
	PM	WB L	3	0.9	2%	**3.0**

APPENDIX E:
Capacity Analysis Worksheets

Supporting Calculations

APPENDIX E:
Capacity Analysis Worksheets

Supporting Calculations

Heavy Vehicle Calculations for N. Main Street at the Proposed Site Driveway

Weekday A.M. Peak Hour							
N. Main Street & Site Driveway - Northbound Through Movement				N. Main Street & Site Driveway - Southbound Through Movement			
Percentage of Heavy Vehicles traveling from Main Street (N/W) & Broad Street (E/W) Intersection				Percentage of Heavy Vehicles traveling to Main Street (N/W) & Broad Street (E/W) Intersection			
Movement	Total Vehicles	Heavy Vehicles	HV %	Movement	Total Vehicles	Heavy Vehicles	HV %
NB T	277	13		SB T	498	12	
Combined	277	13	**5%**	Combined	498	12	**2%**

Weekday P.M. Peak Hour							
N. Main Street & Site Driveway - Northbound Through Movement				N. Main Street & Site Driveway - Southbound Through Movement			
Percentage of Heavy Vehicles traveling from Main Street (N/W) & Broad Street (E/W) Intersection				Percentage of Heavy Vehicles traveling to Main Street (N/W) & Broad Street (E/W) Intersection			
Movement	Total Vehicles	Heavy Vehicles	HV %	Movement	Total Vehicles	Heavy Vehicles	HV %
NB T	492	7		SB T	457	7	
Combined	492	7	**1%**	Combined	457	7	**2%**

Notes:
(1) HV % = Heavy Vehicle Percentage
(2) Vehicle count information obtained from the 3/29/2022 Turning Movement Counts
(3) NB T = EB L + WB R + NB T movements at the Main Street (N/S) & Broad Street (E/W) Intersection
(4) SB T = SB L + SB T + SB R movements at the Main Street (N/S) & Broad Street (E/W) Intersection

Existing Conditions

Heavy Vehicle Calculations for N. Main Street at the Proposed Site Driveway

Weekday A.M. Peak Hour							
N. Main Street & Site Driveway - Northbound Through Movement				N. Main Street & Site Driveway - Southbound Through Movement			
Percentage of Heavy Vehicles traveling from Main Street (N/W) & Broad Street (E/W) Intersection				Percentage of Heavy Vehicles traveling to Main Street (N/W) & Broad Street (E/W) Intersection			
Movement	Total Vehicles	Heavy Vehicles	HV %	Movement	Total Vehicles	Heavy Vehicles	HV %
NB T	277	13		SB T	498	12	
Combined	277	13	**5%**	Combined	498	12	**2%**

Weekday P.M. Peak Hour							
N. Main Street & Site Driveway - Northbound Through Movement				N. Main Street & Site Driveway - Southbound Through Movement			
Percentage of Heavy Vehicles traveling from Main Street (N/W) & Broad Street (E/W) Intersection				Percentage of Heavy Vehicles traveling to Main Street (N/W) & Broad Street (E/W) Intersection			
Movement	Total Vehicles	Heavy Vehicles	HV %	Movement	Total Vehicles	Heavy Vehicles	HV %
NB T	492	7		SB T	457	7	
Combined	492	7	**1%**	Combined	457	7	**2%**

Notes:

(1) HV % = Heavy Vehicle Percentage

(2) Vehicle count information obtained from the 3/29/2022 Turning Movement Counts

(3) NB T = EB L + WB R + NB T movements at the Main Street (N/S) & Broad Street (E/W) Intersection

(4) SB T = SB L + SB T + SB R movements at the Main Street (N/S) & Broad Street (E/W) Intersection

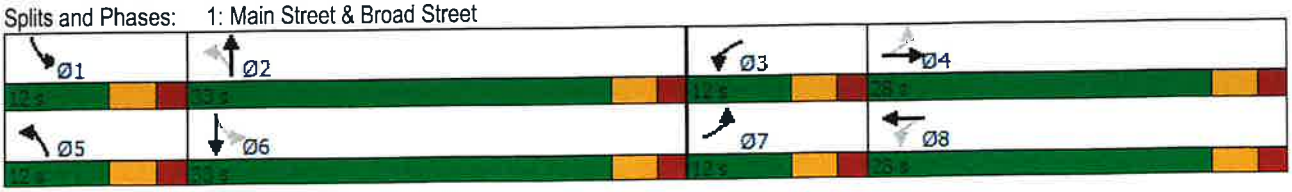
Existing Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	215	30	48	178	30	44	210	24	42	409	49
Future Volume (vph)	38	215	30	48	178	30	44	210	24	42	409	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	11	11	10	12	12	10	11	11
Grade (%)		-2%			-1%			3%			1%	
Storage Length (ft)	280		0	100		0	100		0	0		265
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		581			338			365			982	
Travel Time (s)		15.8			9.2			10.0			26.8	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	14%	20%	10%	14%	10%	9%	5%	21%	2%	3%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	11.0		3.0	11.0		3.0	10.0		3.0	10.0	
Minimum Split (s)	8.0	16.0		8.0	16.0		8.0	15.0		8.0	15.0	
Total Split (s)	12.0	28.0		12.0	28.0		12.0	33.0		12.0	33.0	
Total Split (%)	14.1%	32.9%		14.1%	32.9%		14.1%	38.8%		14.1%	38.8%	
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		-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		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		None	Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 74.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Main Street & Broad Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	215	30	48	178	30	44	210	24	42	409	49
Future Volume (veh/h)	38	215	30	48	178	30	44	210	24	42	409	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1875	1675	1590	1695	1638	1695	1623	1680	1455	1766	1752	1794
Adj Flow Rate, veh/h	45	256	36	57	212	36	52	250	27	50	487	58
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	14	20	10	14	10	9	5	21	2	3	0
Cap, veh/h	422	466	66	364	455	77	223	536	58	423	549	65
Arrive On Green	0.04	0.32	0.31	0.05	0.33	0.32	0.05	0.36	0.35	0.05	0.36	0.34
Sat Flow, veh/h	1785	1437	202	1614	1365	232	1546	1490	161	1682	1536	183
Grp Volume(v), veh/h	45	0	292	57	0	248	52	0	277	50	0	545
Grp Sat Flow(s),veh/h/ln	1785	0	1639	1614	0	1596	1546	0	1651	1682	0	1719
Q Serve(g_s), s	1.2	0.0	10.8	1.7	0.0	9.1	1.5	0.0	9.6	1.4	0.0	22.1
Cycle Q Clear(g_c), s	1.2	0.0	10.8	1.7	0.0	9.1	1.5	0.0	9.6	1.4	0.0	22.1
Prop In Lane	1.00		0.12	1.00		0.15	1.00		0.10	1.00		0.11
Lane Grp Cap(c), veh/h	422	0	532	364	0	532	223	0	593	423	0	614
V/C Ratio(X)	0.11	0.00	0.55	0.16	0.00	0.47	0.23	0.00	0.47	0.12	0.00	0.89
Avail Cap(c_a), veh/h	537	0	532	454	0	532	313	0	647	526	0	674
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	20.6	15.6	0.0	19.5	16.9	0.0	18.3	14.1	0.0	22.4
Incr Delay (d2), s/veh	0.1	0.0	4.0	0.2	0.0	2.9	0.5	0.0	0.6	0.1	0.0	12.9
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	0.9	0.0	8.1	1.1	0.0	6.6	1.0	0.0	6.5	0.9	0.0	16.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	0.0	24.6	15.8	0.0	22.4	17.4	0.0	18.9	14.2	0.0	35.3
LnGrp LOS	B	A	C	B	A	C	B	A	B	B	A	D
Approach Vol, veh/h		337			305			329			595	
Approach Delay, s/veh		23.4			21.2			18.6			33.6	
Approach LOS		C			C			B			C	

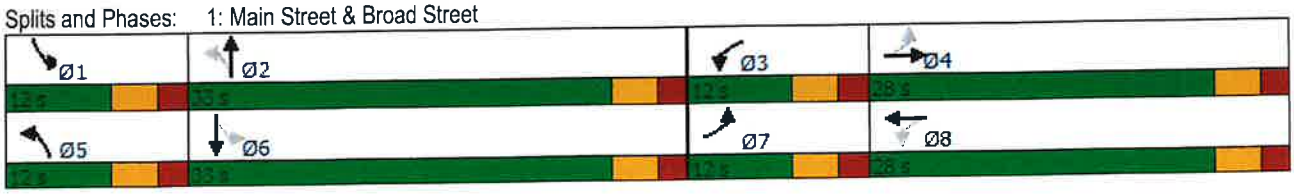
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	30.6	7.9	28.0	7.7	30.4	7.2	28.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	7.0	28.0	7.0	23.0	7.0	28.0	7.0	23.0
Max Q Clear Time (g_c+I1), s	3.9	11.6	4.2	12.8	4.0	24.1	3.7	11.1
Green Ext Time (p_c), s	0.0	1.5	0.0	1.3	0.0	1.3	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	25.8
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	215	30	48	178	30	44	210	24	42	409	49
Future Volume (vph)	38	215	30	48	178	30	44	210	24	42	409	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	11	11	10	12	12	10	11	11
Grade (%)		-2%			-1%			3%			1%	
Storage Length (ft)	280		0	100		0	100		0	0		265
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		581			338			365			982	
Travel Time (s)		15.8			9.2			10.0			26.8	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	14%	20%	10%	14%	10%	9%	5%	21%	2%	3%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	11.0		3.0	11.0		3.0	10.0		3.0	10.0	
Minimum Split (s)	8.0	16.0		8.0	16.0		8.0	15.0		8.0	15.0	
Total Split (s)	12.0	28.0		12.0	28.0		12.0	33.0		12.0	33.0	
Total Split (%)	14.1%	32.9%		14.1%	32.9%		14.1%	38.8%		14.1%	38.8%	
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		-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		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		None	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 74.2	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: Main Street & Broad Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	215	30	48	178	30	44	210	24	42	409	49
Future Volume (veh/h)	38	215	30	48	178	30	44	210	24	42	409	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1875	1675	1590	1695	1638	1695	1623	1680	1455	1766	1752	1794
Adj Flow Rate, veh/h	45	256	36	57	212	36	52	250	27	50	487	58
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	14	20	10	14	10	9	5	21	2	3	0
Cap, veh/h	422	466	66	364	455	77	223	536	58	423	549	65
Arrive On Green	0.04	0.32	0.31	0.05	0.33	0.32	0.05	0.36	0.35	0.05	0.36	0.34
Sat Flow, veh/h	1785	1437	202	1614	1365	232	1546	1490	161	1682	1536	183
Grp Volume(v), veh/h	45	0	292	57	0	248	52	0	277	50	0	545
Grp Sat Flow(s),veh/h/ln	1785	0	1639	1614	0	1596	1546	0	1651	1682	0	1719
Q Serve(g_s), s	1.2	0.0	10.8	1.7	0.0	9.1	1.5	0.0	9.6	1.4	0.0	22.1
Cycle Q Clear(g_c), s	1.2	0.0	10.8	1.7	0.0	9.1	1.5	0.0	9.6	1.4	0.0	22.1
Prop In Lane	1.00		0.12	1.00		0.15	1.00		0.10	1.00		0.11
Lane Grp Cap(c), veh/h	422	0	532	364	0	532	223	0	593	423	0	614
V/C Ratio(X)	0.11	0.00	0.55	0.16	0.00	0.47	0.23	0.00	0.47	0.12	0.00	0.89
Avail Cap(c_a), veh/h	537	0	532	454	0	532	313	0	647	526	0	674
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	20.6	15.6	0.0	19.5	16.9	0.0	18.3	14.1	0.0	22.4
Incr Delay (d2), s/veh	0.1	0.0	4.0	0.2	0.0	2.9	0.5	0.0	0.6	0.1	0.0	12.9
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	0.9	0.0	8.1	1.1	0.0	6.6	1.0	0.0	6.5	0.9	0.0	16.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	0.0	24.6	15.8	0.0	22.4	17.4	0.0	18.9	14.2	0.0	35.3
LnGrp LOS	B	A	C	B	A	C	B	A	B	B	A	D
Approach Vol, veh/h		337			305			329			595	
Approach Delay, s/veh		23.4			21.2			18.6			33.6	
Approach LOS		C			C			B			C	

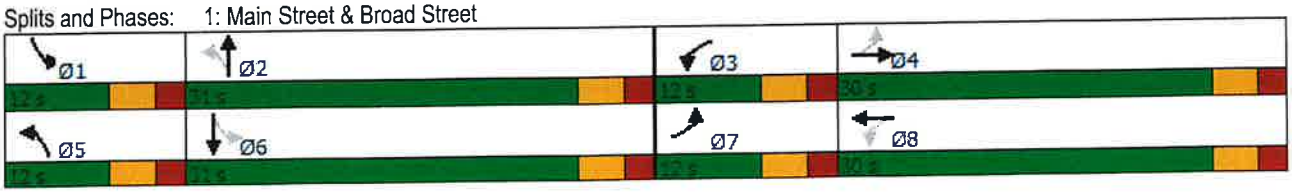
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	30.6	7.9	28.0	7.7	30.4	7.2	28.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	7.0	28.0	7.0	23.0	7.0	28.0	7.0	23.0
Max Q Clear Time (g_c+I1), s	3.9	11.6	4.2	12.8	4.0	24.1	3.7	11.1
Green Ext Time (p_c), s	0.0	1.5	0.0	1.3	0.0	1.3	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	25.8
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	298	47	68	236	26	83	414	16	63	352	42
Future Volume (vph)	54	298	47	68	236	26	83	414	16	63	352	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	11	11	10	12	12	10	11	11
Grade (%)		-2%			-1%			3%			1%	
Storage Length (ft)	280		0	100		0	100		0	0		265
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		581			338			365			982	
Travel Time (s)		15.8			9.2			10.0			26.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	8%	0%	0%	4%	4%	1%	2%	0%	3%	1%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	11.0		3.0	11.0		3.0	10.0		3.0	10.0	
Minimum Split (s)	8.0	16.0		8.0	16.0		8.0	15.0		8.0	15.0	
Total Split (s)	12.0	30.0		12.0	30.0		12.0	31.0		12.0	31.0	
Total Split (%)	14.1%	35.3%		14.1%	35.3%		14.1%	36.5%		14.1%	36.5%	
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		-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		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		None	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 77	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: Main Street & Broad Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	298	47	68	236	26	83	414	16	63	352	42
Future Volume (veh/h)	54	298	47	68	236	26	83	414	16	63	352	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1875	1761	1875	1837	1780	1780	1736	1722	1750	1752	1780	1766
Adj Flow Rate, veh/h	56	310	49	71	246	27	86	431	17	66	367	44
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	8	0	0	4	4	1	2	0	3	1	2
Cap, veh/h	470	528	83	395	575	63	293	505	20	257	460	55
Arrive On Green	0.05	0.36	0.34	0.06	0.36	0.35	0.07	0.31	0.29	0.06	0.30	0.28
Sat Flow, veh/h	1785	1484	235	1750	1576	173	1653	1645	65	1669	1560	187
Grp Volume(v), veh/h	56	0	359	71	0	273	86	0	448	66	0	411
Grp Sat Flow(s),veh/h/ln	1785	0	1719	1750	0	1749	1653	0	1710	1669	0	1747
Q Serve(g_s), s	1.4	0.0	12.4	1.8	0.0	8.6	2.5	0.0	18.0	1.9	0.0	15.9
Cycle Q Clear(g_c), s	1.4	0.0	12.4	1.8	0.0	8.6	2.5	0.0	18.0	1.9	0.0	15.9
Prop In Lane	1.00		0.14	1.00		0.10	1.00		0.04	1.00		0.11
Lane Grp Cap(c), veh/h	470	0	612	395	0	638	293	0	525	257	0	515
V/C Ratio(X)	0.12	0.00	0.59	0.18	0.00	0.43	0.29	0.00	0.85	0.26	0.00	0.80
Avail Cap(c_a), veh/h	576	0	612	483	0	638	356	0	632	341	0	646
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.7	0.0	19.2	14.1	0.0	17.5	17.3	0.0	23.8	17.9	0.0	23.8
Incr Delay (d2), s/veh	0.1	0.0	4.1	0.2	0.0	2.1	0.6	0.0	9.4	0.5	0.0	5.6
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	1.0	0.0	9.3	1.3	0.0	6.6	1.7	0.0	13.0	1.4	0.0	11.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.8	0.0	23.3	14.3	0.0	19.6	17.8	0.0	33.2	18.4	0.0	29.4
LnGrp LOS	B	A	C	B	A	B	B	A	C	B	A	C
Approach Vol, veh/h		415			344			534			477	
Approach Delay, s/veh		22.0			18.5			30.7			27.8	
Approach LOS		C			B			C			C	

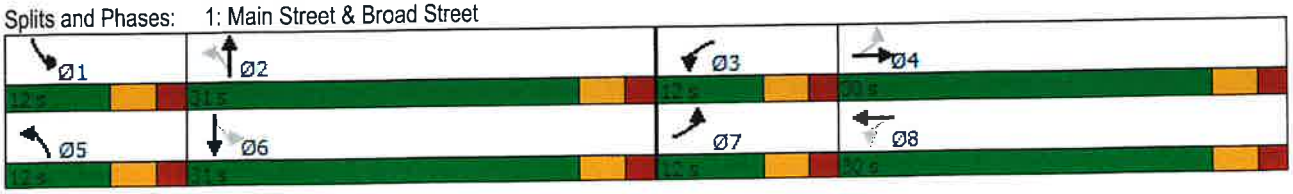
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	26.4	8.3	30.0	9.2	25.6	7.7	30.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	7.0	26.0	7.0	25.0	7.0	26.0	7.0	25.0
Max Q Clear Time (g_c+I1), s	4.4	20.0	4.3	14.4	5.0	17.9	3.9	10.6
Green Ext Time (p_c), s	0.0	1.5	0.0	1.7	0.0	1.7	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	25.5
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	298	47	68	236	26	83	414	16	63	352	42
Future Volume (vph)	54	298	47	68	236	26	83	414	16	63	352	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	11	11	10	12	12	10	11	11
Grade (%)		-2%			-1%			3%			1%	
Storage Length (ft)	280		0	100		0	100		0	0		265
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		581			338			365			982	
Travel Time (s)		15.8			9.2			10.0			26.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	8%	0%	0%	4%	4%	1%	2%	0%	3%	1%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	11.0		3.0	11.0		3.0	10.0		3.0	10.0	
Minimum Split (s)	8.0	16.0		8.0	16.0		8.0	15.0		8.0	15.0	
Total Split (s)	12.0	30.0		12.0	30.0		12.0	31.0		12.0	31.0	
Total Split (%)	14.1%	35.3%		14.1%	35.3%		14.1%	36.5%		14.1%	36.5%	
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		-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		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		None	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 77	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: Main Street & Broad Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	298	47	68	236	26	83	414	16	63	352	42
Future Volume (veh/h)	54	298	47	68	236	26	83	414	16	63	352	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1875	1761	1875	1837	1780	1780	1736	1722	1750	1752	1780	1766
Adj Flow Rate, veh/h	56	310	49	71	246	27	86	431	17	66	367	44
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	8	0	0	4	4	1	2	0	3	1	2
Cap, veh/h	470	528	83	395	575	63	293	505	20	257	460	55
Arrive On Green	0.05	0.36	0.34	0.06	0.36	0.35	0.07	0.31	0.29	0.06	0.30	0.28
Sat Flow, veh/h	1785	1484	235	1750	1576	173	1653	1645	65	1669	1560	187
Grp Volume(v), veh/h	56	0	359	71	0	273	86	0	448	66	0	411
Grp Sat Flow(s),veh/h/ln	1785	0	1719	1750	0	1749	1653	0	1710	1669	0	1747
Q Serve(g_s), s	1.4	0.0	12.4	1.8	0.0	8.6	2.5	0.0	18.0	1.9	0.0	15.9
Cycle Q Clear(g_c), s	1.4	0.0	12.4	1.8	0.0	8.6	2.5	0.0	18.0	1.9	0.0	15.9
Prop In Lane	1.00		0.14	1.00		0.10	1.00		0.04	1.00		0.11
Lane Grp Cap(c), veh/h	470	0	612	395	0	638	293	0	525	257	0	515
V/C Ratio(X)	0.12	0.00	0.59	0.18	0.00	0.43	0.29	0.00	0.85	0.26	0.00	0.80
Avail Cap(c_a), veh/h	576	0	612	483	0	638	356	0	632	341	0	646
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.7	0.0	19.2	14.1	0.0	17.5	17.3	0.0	23.8	17.9	0.0	23.8
Incr Delay (d2), s/veh	0.1	0.0	4.1	0.2	0.0	2.1	0.6	0.0	9.4	0.5	0.0	5.6
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	1.0	0.0	9.3	1.3	0.0	6.6	1.7	0.0	13.0	1.4	0.0	11.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.8	0.0	23.3	14.3	0.0	19.6	17.8	0.0	33.2	18.4	0.0	29.4
LnGrp LOS	B	A	C	B	A	B	B	A	C	B	A	C
Approach Vol, veh/h		415			344			534			477	
Approach Delay, s/veh		22.0			18.5			30.7			27.8	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	26.4	8.3	30.0	9.2	25.6	7.7	30.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	7.0	26.0	7.0	25.0	7.0	26.0	7.0	25.0
Max Q Clear Time (g_c+I1), s	4.4	20.0	4.3	14.4	5.0	17.9	3.9	10.6
Green Ext Time (p_c), s	0.0	1.5	0.0	1.7	0.0	1.7	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	25.5
HCM 6th LOS	C

2026 Base (No-Build) Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	216	30	48	179	30	44	211	24	42	411	49
Future Volume (vph)	38	216	30	48	179	30	44	211	24	42	411	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	11	11	10	12	12	10	11	11
Grade (%)		-2%			-1%			3%			1%	
Storage Length (ft)	280		0	100		0	100		0	0		265
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		581			338			365			982	
Travel Time (s)		15.8			9.2			10.0			26.8	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	14%	20%	10%	14%	10%	9%	5%	21%	2%	3%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	11.0		3.0	11.0		3.0	10.0		3.0	10.0	
Minimum Split (s)	8.0	16.0		8.0	16.0		8.0	15.0		8.0	15.0	
Total Split (s)	12.0	28.0		12.0	28.0		12.0	33.0		12.0	33.0	
Total Split (%)	14.1%	32.9%		14.1%	32.9%		14.1%	38.8%		14.1%	38.8%	
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		-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		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		None	Max		None	None		None	None	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 74.3
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

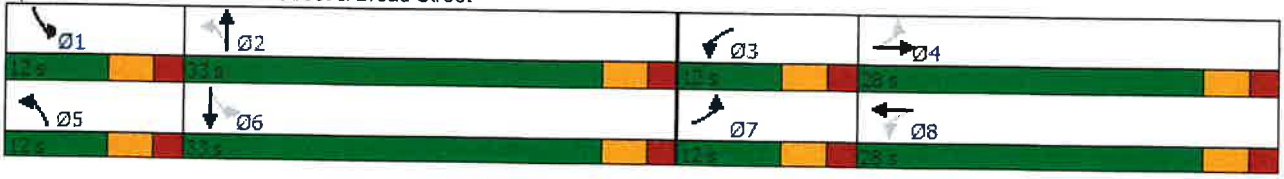
Splits and Phases: 1: Main Street & Broad Street

2026 Base (No-Build) Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	216	30	48	179	30	44	211	24	42	411	49
Future Volume (vph)	38	216	30	48	179	30	44	211	24	42	411	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	11	11	10	12	12	10	11	11
Grade (%)		-2%			-1%			3%			1%	
Storage Length (ft)	280		0	100		0	100		0	0		265
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		581			338			365			982	
Travel Time (s)		15.8			9.2			10.0			26.8	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	14%	20%	10%	14%	10%	9%	5%	21%	2%	3%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	11.0		3.0	11.0		3.0	10.0		3.0	10.0	
Minimum Split (s)	8.0	16.0		8.0	16.0		8.0	15.0		8.0	15.0	
Total Split (s)	12.0	28.0		12.0	28.0		12.0	33.0		12.0	33.0	
Total Split (%)	14.1%	32.9%		14.1%	32.9%		14.1%	38.8%		14.1%	38.8%	
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		-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		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		None	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 74.3	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: Main Street & Broad Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	216	30	48	179	30	44	211	24	42	411	49
Future Volume (veh/h)	38	216	30	48	179	30	44	211	24	42	411	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1875	1675	1590	1695	1638	1695	1623	1680	1455	1766	1752	1794
Adj Flow Rate, veh/h	45	257	36	57	213	36	52	251	27	50	489	58
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	14	20	10	14	10	9	5	21	2	3	0
Cap, veh/h	420	466	65	363	455	77	222	537	58	423	550	65
Arrive On Green	0.04	0.32	0.31	0.05	0.33	0.32	0.05	0.36	0.35	0.05	0.36	0.34
Sat Flow, veh/h	1785	1438	201	1614	1366	231	1546	1490	160	1682	1537	182
Grp Volume(v), veh/h	45	0	293	57	0	249	52	0	278	50	0	547
Grp Sat Flow(s),veh/h/ln	1785	0	1639	1614	0	1597	1546	0	1651	1682	0	1719
Q Serve(g_s), s	1.2	0.0	10.9	1.7	0.0	9.1	1.5	0.0	9.6	1.4	0.0	22.2
Cycle Q Clear(g_c), s	1.2	0.0	10.9	1.7	0.0	9.1	1.5	0.0	9.6	1.4	0.0	22.2
Prop In Lane	1.00		0.12	1.00		0.14	1.00		0.10	1.00		0.11
Lane Grp Cap(c), veh/h	420	0	531	363	0	531	222	0	595	423	0	615
V/C Ratio(X)	0.11	0.00	0.55	0.16	0.00	0.47	0.23	0.00	0.47	0.12	0.00	0.89
Avail Cap(c_a), veh/h	535	0	531	452	0	531	313	0	646	526	0	673
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	20.7	15.7	0.0	19.6	16.9	0.0	18.3	14.1	0.0	22.4
Incr Delay (d2), s/veh	0.1	0.0	4.1	0.2	0.0	2.9	0.5	0.0	0.6	0.1	0.0	13.1
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	0.9	0.0	8.2	1.1	0.0	6.7	1.0	0.0	6.5	0.9	0.0	16.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	0.0	24.8	15.9	0.0	22.5	17.4	0.0	18.8	14.2	0.0	35.5
LnGrp LOS	B	A	C	B	A	C	B	A	B	B	A	D
Approach Vol, veh/h		338			306			330			597	
Approach Delay, s/veh		23.6			21.3			18.6			33.8	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	30.7	7.9	28.0	7.7	30.5	7.3	28.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	7.0	28.0	7.0	23.0	7.0	28.0	7.0	23.0
Max Q Clear Time (g_c+I1), s	3.9	11.6	4.2	12.9	4.0	24.2	3.7	11.1
Green Ext Time (p_c), s	0.0	1.5	0.0	1.3	0.0	1.3	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	26.0
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	300	47	68	237	26	83	416	16	63	354	42
Future Volume (vph)	54	300	47	68	237	26	83	416	16	63	354	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	11	11	10	12	12	10	11	11
Grade (%)		-2%			-1%			3%			1%	
Storage Length (ft)	280		0	100		0	100		0	0		265
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		581			338			365			982	
Travel Time (s)		15.8			9.2			10.0			26.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	8%	0%	0%	4%	4%	1%	2%	0%	3%	1%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	11.0		3.0	11.0		3.0	10.0		3.0	10.0	
Minimum Split (s)	8.0	16.0		8.0	16.0		8.0	15.0		8.0	15.0	
Total Split (s)	12.0	30.0		12.0	30.0		12.0	31.0		12.0	31.0	
Total Split (%)	14.1%	35.3%		14.1%	35.3%		14.1%	36.5%		14.1%	36.5%	
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		-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		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		None	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 77.1	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: Main Street & Broad Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	216	30	48	179	30	44	211	24	42	411	49
Future Volume (veh/h)	38	216	30	48	179	30	44	211	24	42	411	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1875	1675	1590	1695	1638	1695	1623	1680	1455	1766	1752	1794
Adj Flow Rate, veh/h	45	257	36	57	213	36	52	251	27	50	489	58
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	14	20	10	14	10	9	5	21	2	3	0
Cap, veh/h	420	466	65	363	455	77	222	537	58	423	550	65
Arrive On Green	0.04	0.32	0.31	0.05	0.33	0.32	0.05	0.36	0.35	0.05	0.36	0.34
Sat Flow, veh/h	1785	1438	201	1614	1366	231	1546	1490	160	1682	1537	182
Grp Volume(v), veh/h	45	0	293	57	0	249	52	0	278	50	0	547
Grp Sat Flow(s),veh/h/ln	1785	0	1639	1614	0	1597	1546	0	1651	1682	0	1719
Q Serve(g_s), s	1.2	0.0	10.9	1.7	0.0	9.1	1.5	0.0	9.6	1.4	0.0	22.2
Cycle Q Clear(g_c), s	1.2	0.0	10.9	1.7	0.0	9.1	1.5	0.0	9.6	1.4	0.0	22.2
Prop In Lane	1.00		0.12	1.00		0.14	1.00		0.10	1.00		0.11
Lane Grp Cap(c), veh/h	420	0	531	363	0	531	222	0	595	423	0	615
V/C Ratio(X)	0.11	0.00	0.55	0.16	0.00	0.47	0.23	0.00	0.47	0.12	0.00	0.89
Avail Cap(c_a), veh/h	535	0	531	452	0	531	313	0	646	526	0	673
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.6	0.0	20.7	15.7	0.0	19.6	16.9	0.0	18.3	14.1	0.0	22.4
Incr Delay (d2), s/veh	0.1	0.0	4.1	0.2	0.0	2.9	0.5	0.0	0.6	0.1	0.0	13.1
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	0.9	0.0	8.2	1.1	0.0	6.7	1.0	0.0	6.5	0.9	0.0	16.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	0.0	24.8	15.9	0.0	22.5	17.4	0.0	18.8	14.2	0.0	35.5
LnGrp LOS	B	A	C	B	A	C	B	A	B	B	A	D
Approach Vol, veh/h		338			306			330			597	
Approach Delay, s/veh		23.6			21.3			18.6			33.8	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	30.7	7.9	28.0	7.7	30.5	7.3	28.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	7.0	28.0	7.0	23.0	7.0	28.0	7.0	23.0
Max Q Clear Time (g_c+I1), s	3.9	11.6	4.2	12.9	4.0	24.2	3.7	11.1
Green Ext Time (p_c), s	0.0	1.5	0.0	1.3	0.0	1.3	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	26.0
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	300	47	68	237	26	83	416	16	63	354	42
Future Volume (vph)	54	300	47	68	237	26	83	416	16	63	354	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	11	11	10	12	12	10	11	11
Grade (%)		-2%			-1%			3%			1%	
Storage Length (ft)	280		0	100		0	100		0	0		265
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		581			338			365			982	
Travel Time (s)		15.8			9.2			10.0			26.8	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	8%	0%	0%	4%	4%	1%	2%	0%	3%	1%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	11.0		3.0	11.0		3.0	10.0		3.0	10.0	
Minimum Split (s)	8.0	16.0		8.0	16.0		8.0	15.0		8.0	15.0	
Total Split (s)	12.0	30.0		12.0	30.0		12.0	31.0		12.0	31.0	
Total Split (%)	14.1%	35.3%		14.1%	35.3%		14.1%	36.5%		14.1%	36.5%	
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		-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		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		None	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 77.1	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: Main Street & Broad Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	300	47	68	237	26	83	416	16	63	354	42
Future Volume (veh/h)	54	300	47	68	237	26	83	416	16	63	354	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1875	1761	1875	1837	1780	1780	1736	1722	1750	1752	1780	1766
Adj Flow Rate, veh/h	56	312	49	71	247	27	86	433	17	66	369	44
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	8	0	0	4	4	1	2	0	3	1	2
Cap, veh/h	468	528	83	393	574	63	292	507	20	256	462	55
Arrive On Green	0.05	0.36	0.34	0.06	0.36	0.35	0.07	0.31	0.29	0.06	0.30	0.28
Sat Flow, veh/h	1785	1485	233	1750	1577	172	1653	1645	65	1669	1561	186
Grp Volume(v), veh/h	56	0	361	71	0	274	86	0	450	66	0	413
Grp Sat Flow(s),veh/h/ln	1785	0	1719	1750	0	1749	1653	0	1710	1669	0	1747
Q Serve(g_s), s	1.4	0.0	12.6	1.8	0.0	8.7	2.5	0.0	18.1	1.9	0.0	16.0
Cycle Q Clear(g_c), s	1.4	0.0	12.6	1.8	0.0	8.7	2.5	0.0	18.1	1.9	0.0	16.0
Prop In Lane	1.00		0.14	1.00		0.10	1.00		0.04	1.00		0.11
Lane Grp Cap(c), veh/h	468	0	611	393	0	637	292	0	527	256	0	517
V/C Ratio(X)	0.12	0.00	0.59	0.18	0.00	0.43	0.29	0.00	0.85	0.26	0.00	0.80
Avail Cap(c_a), veh/h	574	0	611	481	0	637	356	0	631	341	0	645
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.8	0.0	19.3	14.1	0.0	17.6	17.3	0.0	23.8	17.9	0.0	23.8
Incr Delay (d2), s/veh	0.1	0.0	4.2	0.2	0.0	2.1	0.6	0.0	9.6	0.5	0.0	5.7
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	1.0	0.0	9.3	1.3	0.0	6.7	1.7	0.0	13.1	1.4	0.0	11.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.9	0.0	23.5	14.4	0.0	19.7	17.8	0.0	33.4	18.4	0.0	29.5
LnGrp LOS	B	A	C	B	A	B	B	A	C	B	A	C
Approach Vol, veh/h		417			345			536			479	
Approach Delay, s/veh		22.2			18.6			30.9			27.9	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	26.5	8.3	30.0	9.2	25.7	7.7	30.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	7.0	26.0	7.0	25.0	7.0	26.0	7.0	25.0
Max Q Clear Time (g_c+I1), s	4.4	20.1	4.3	14.6	5.0	18.0	3.9	10.7
Green Ext Time (p_c), s	0.0	1.5	0.0	1.7	0.0	1.7	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	25.7
HCM 6th LOS	C

2026 Projected (Build) Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	300	47	68	237	26	83	416	16	63	354	42
Future Volume (veh/h)	54	300	47	68	237	26	83	416	16	63	354	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1875	1761	1875	1837	1780	1780	1736	1722	1750	1752	1780	1766
Adj Flow Rate, veh/h	56	312	49	71	247	27	86	433	17	66	369	44
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	8	0	0	4	4	1	2	0	3	1	2
Cap, veh/h	468	528	83	393	574	63	292	507	20	256	462	55
Arrive On Green	0.05	0.36	0.34	0.06	0.36	0.35	0.07	0.31	0.29	0.06	0.30	0.28
Sat Flow, veh/h	1785	1485	233	1750	1577	172	1653	1645	65	1669	1561	186
Grp Volume(v), veh/h	56	0	361	71	0	274	86	0	450	66	0	413
Grp Sat Flow(s),veh/h/ln	1785	0	1719	1750	0	1749	1653	0	1710	1669	0	1747
Q Serve(g_s), s	1.4	0.0	12.6	1.8	0.0	8.7	2.5	0.0	18.1	1.9	0.0	16.0
Cycle Q Clear(g_c), s	1.4	0.0	12.6	1.8	0.0	8.7	2.5	0.0	18.1	1.9	0.0	16.0
Prop In Lane	1.00		0.14	1.00		0.10	1.00		0.04	1.00	-	0.11
Lane Grp Cap(c), veh/h	468	0	611	393	0	637	292	0	527	256	0	517
V/C Ratio(X)	0.12	0.00	0.59	0.18	0.00	0.43	0.29	0.00	0.85	0.26	0.00	0.80
Avail Cap(c_a), veh/h	574	0	611	481	0	637	356	0	631	341	0	645
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.8	0.0	19.3	14.1	0.0	17.6	17.3	0.0	23.8	17.9	0.0	23.8
Incr Delay (d2), s/veh	0.1	0.0	4.2	0.2	0.0	2.1	0.6	0.0	9.6	0.5	0.0	5.7
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	1.0	0.0	9.3	1.3	0.0	6.7	1.7	0.0	13.1	1.4	0.0	11.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.9	0.0	23.5	14.4	0.0	19.7	17.8	0.0	33.4	18.4	0.0	29.5
LnGrp LOS	B	A	C	B	A	B	B	A	C	B	A	C
Approach Vol, veh/h		417			345			536			479	
Approach Delay, s/veh		22.2			18.6			30.9			27.9	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	26.5	8.3	30.0	9.2	25.7	7.7	30.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	7.0	26.0	7.0	25.0	7.0	26.0	7.0	25.0
Max Q Clear Time (g_c+I1), s	4.4	20.1	4.3	14.6	5.0	18.0	3.9	10.7
Green Ext Time (p_c), s	0.0	1.5	0.0	1.7	0.0	1.7	0.0	1.4

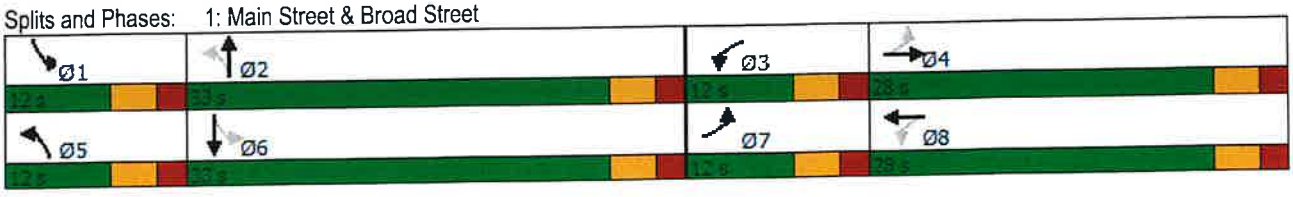
Intersection Summary	
HCM 6th Ctrl Delay	25.7
HCM 6th LOS	C

2026 Projected (Build) Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	216	30	48	179	30	44	212	24	42	412	50
Future Volume (vph)	38	216	30	48	179	30	44	212	24	42	412	50
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	11	11	10	12	12	10	11	11
Grade (%)		-2%			-1%			3%			1%	
Storage Length (ft)	280		0	100		0	100		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		581			338			365			187	
Travel Time (s)		15.8			9.2			10.0			5.1	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	14%	20%	10%	14%	10%	9%	5%	21%	2%	3%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	11.0		3.0	11.0		3.0	10.0		3.0	10.0	
Minimum Split (s)	8.0	16.0		8.0	16.0		8.0	15.0		8.0	15.0	
Total Split (s)	12.0	28.0		12.0	28.0		12.0	33.0		12.0	33.0	
Total Split (%)	14.1%	32.9%		14.1%	32.9%		14.1%	38.8%		14.1%	38.8%	
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		-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		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		None	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 74.5	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: Main Street & Broad Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	216	30	48	179	30	44	212	24	42	412	50
Future Volume (veh/h)	38	216	30	48	179	30	44	212	24	42	412	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1875	1675	1590	1695	1638	1695	1623	1680	1455	1766	1752	1794
Adj Flow Rate, veh/h	45	257	36	57	213	36	52	252	27	50	490	60
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	14	20	10	14	10	9	5	21	2	3	0
Cap, veh/h	419	465	65	362	454	77	221	539	58	424	550	67
Arrive On Green	0.04	0.32	0.31	0.05	0.33	0.32	0.05	0.36	0.35	0.05	0.36	0.35
Sat Flow, veh/h	1785	1438	201	1614	1366	231	1546	1491	160	1682	1531	187
Grp Volume(v), veh/h	45	0	293	57	0	249	52	0	279	50	0	550
Grp Sat Flow(s),veh/h/ln	1785	0	1639	1614	0	1597	1546	0	1651	1682	0	1719
Q Serve(g_s), s	1.2	0.0	10.9	1.7	0.0	9.2	1.5	0.0	9.7	1.4	0.0	22.4
Cycle Q Clear(g_c), s	1.2	0.0	10.9	1.7	0.0	9.2	1.5	0.0	9.7	1.4	0.0	22.4
Prop In Lane	1.00		0.12	1.00		0.14	1.00		0.10	1.00		0.11
Lane Grp Cap(c), veh/h	419	0	530	362	0	530	221	0	597	424	0	617
V/C Ratio(X)	0.11	0.00	0.55	0.16	0.00	0.47	0.24	0.00	0.47	0.12	0.00	0.89
Avail Cap(c_a), veh/h	533	0	530	451	0	530	311	0	645	526	0	671
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	20.8	15.8	0.0	19.7	16.9	0.0	18.3	14.1	0.0	22.5
Incr Delay (d2), s/veh	0.1	0.0	4.1	0.2	0.0	3.0	0.5	0.0	0.6	0.1	0.0	13.4
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	0.9	0.0	8.2	1.1	0.0	6.7	1.0	0.0	6.5	0.9	0.0	16.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.8	0.0	24.9	16.0	0.0	22.6	17.5	0.0	18.8	14.2	0.0	35.9
LnGrp LOS	B	A	C	B	A	C	B	A	B	B	A	D
Approach Vol, veh/h		338			306			331			600	
Approach Delay, s/veh		23.7			21.4			18.6			34.1	
Approach LOS		C			C			B			C	

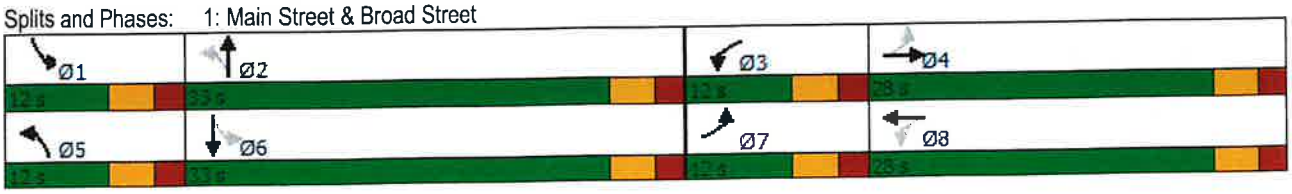
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	30.8	7.9	28.0	7.7	30.7	7.3	28.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	7.0	28.0	7.0	23.0	7.0	28.0	7.0	23.0
Max Q Clear Time (g_c+I1), s	3.9	11.7	4.2	12.9	4.0	24.4	3.7	11.2
Green Ext Time (p_c), s	0.0	1.5	0.0	1.3	0.0	1.3	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	26.1
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	216	30	48	179	30	44	212	24	42	412	50
Future Volume (vph)	38	216	30	48	179	30	44	212	24	42	412	50
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	11	11	10	12	12	10	11	11
Grade (%)		-2%			-1%			3%			1%	
Storage Length (ft)	280		0	100		0	100		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		581			338			365			187	
Travel Time (s)		15.8			9.2			10.0			5.1	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	14%	20%	10%	14%	10%	9%	5%	21%	2%	3%	0%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	11.0		3.0	11.0		3.0	10.0		3.0	10.0	
Minimum Split (s)	8.0	16.0		8.0	16.0		8.0	15.0		8.0	15.0	
Total Split (s)	12.0	28.0		12.0	28.0		12.0	33.0		12.0	33.0	
Total Split (%)	14.1%	32.9%		14.1%	32.9%		14.1%	38.8%		14.1%	38.8%	
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		-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		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		None	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 74.5	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: Main Street & Broad Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	216	30	48	179	30	44	212	24	42	412	50
Future Volume (veh/h)	38	216	30	48	179	30	44	212	24	42	412	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1875	1675	1590	1695	1638	1695	1623	1680	1455	1766	1752	1794
Adj Flow Rate, veh/h	45	257	36	57	213	36	52	252	27	50	490	60
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	0	14	20	10	14	10	9	5	21	2	3	0
Cap, veh/h	419	465	65	362	454	77	221	539	58	424	550	67
Arrive On Green	0.04	0.32	0.31	0.05	0.33	0.32	0.05	0.36	0.35	0.05	0.36	0.35
Sat Flow, veh/h	1785	1438	201	1614	1366	231	1546	1491	160	1682	1531	187
Grp Volume(v), veh/h	45	0	293	57	0	249	52	0	279	50	0	550
Grp Sat Flow(s),veh/h/ln	1785	0	1639	1614	0	1597	1546	0	1651	1682	0	1719
Q Serve(g_s), s	1.2	0.0	10.9	1.7	0.0	9.2	1.5	0.0	9.7	1.4	0.0	22.4
Cycle Q Clear(g_c), s	1.2	0.0	10.9	1.7	0.0	9.2	1.5	0.0	9.7	1.4	0.0	22.4
Prop In Lane	1.00		0.12	1.00		0.14	1.00		0.10	1.00		0.11
Lane Grp Cap(c), veh/h	419	0	530	362	0	530	221	0	597	424	0	617
V/C Ratio(X)	0.11	0.00	0.55	0.16	0.00	0.47	0.24	0.00	0.47	0.12	0.00	0.89
Avail Cap(c_a), veh/h	533	0	530	451	0	530	311	0	645	526	0	671
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	20.8	15.8	0.0	19.7	16.9	0.0	18.3	14.1	0.0	22.5
Incr Delay (d2), s/veh	0.1	0.0	4.1	0.2	0.0	3.0	0.5	0.0	0.6	0.1	0.0	13.4
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	0.9	0.0	8.2	1.1	0.0	6.7	1.0	0.0	6.5	0.9	0.0	16.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.8	0.0	24.9	16.0	0.0	22.6	17.5	0.0	18.8	14.2	0.0	35.9
LnGrp LOS	B	A	C	B	A	C	B	A	B	B	A	D
Approach Vol, veh/h		338			306			331			600	
Approach Delay, s/veh		23.7			21.4			18.6			34.1	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	30.8	7.9	28.0	7.7	30.7	7.3	28.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	7.0	28.0	7.0	23.0	7.0	28.0	7.0	23.0
Max Q Clear Time (g_c+I1), s	3.9	11.7	4.2	12.9	4.0	24.4	3.7	11.2
Green Ext Time (p_c), s	0.0	1.5	0.0	1.3	0.0	1.3	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	26.1
HCM 6th LOS	C

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	1	279	1	0	502
Future Volume (vph)	2	1	279	1	0	502
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	10	11
Grade (%)	0%		-1%			1%
Link Speed (mph)	25		25			25
Link Distance (ft)	200		187			130
Travel Time (s)	5.5		5.1			3.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	1	279	1	0	502
Future Vol, veh/h	2	1	279	1	0	502
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-1	-	-	1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	5	2	2	2
Mvmt Flow	2	1	310	1	0	558

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	590	311	0	0	311	0
Stage 1	311	-	-	-	-	-
Stage 2	279	-	-	-	-	-
Critical Hdwy	6.4	6.23	-	-	4.3	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	532	773	-	-	940	-
Stage 1	852	-	-	-	-	-
Stage 2	856	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	532	773	-	-	940	-
Mov Cap-2 Maneuver	532	-	-	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	856	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	594	940	-
HCM Lane V/C Ratio	-	-	0.006	-	-
HCM Control Delay (s)	-	-	11.1	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	1	279	1	0	502
Future Volume (vph)	2	1	279	1	0	502
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	10	11
Grade (%)	0%		-1%			1%
Link Speed (mph)	25		25			25
Link Distance (ft)	200		187			130
Travel Time (s)	5.5		5.1			3.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	1	279	1	0	502
Future Vol, veh/h	2	1	279	1	0	502
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-1	-	-	1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	5	2	2	2
Mvmt Flow	2	1	310	1	0	558

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	590	311	0	0	311	0
Stage 1	311	-	-	-	-	-
Stage 2	279	-	-	-	-	-
Critical Hdwy	6.4	6.23	-	-	4.3	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	532	773	-	-	940	-
Stage 1	852	-	-	-	-	-
Stage 2	856	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	532	773	-	-	940	-
Mov Cap-2 Maneuver	532	-	-	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	856	-	-	-	-	-

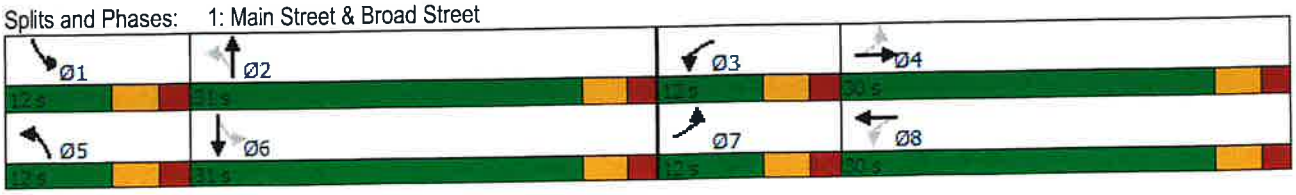
Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	594	940	-
HCM Lane V/C Ratio	-	-	0.006	-	-
HCM Control Delay (s)	-	-	11.1	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	300	47	68	237	26	83	417	16	63	355	42
Future Volume (vph)	55	300	47	68	237	26	83	417	16	63	355	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	11	11	10	12	12	10	11	11
Grade (%)		-2%			-1%			3%			1%	
Storage Length (ft)	280		0	100		0	100		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		581			338			365			187	
Travel Time (s)		15.8			9.2			10.0			5.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	8%	0%	0%	4%	4%	1%	2%	0%	3%	1%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	11.0		3.0	11.0		3.0	10.0		3.0	10.0	
Minimum Split (s)	8.0	16.0		8.0	16.0		8.0	15.0		8.0	15.0	
Total Split (s)	12.0	30.0		12.0	30.0		12.0	31.0		12.0	31.0	
Total Split (%)	14.1%	35.3%		14.1%	35.3%		14.1%	36.5%		14.1%	36.5%	
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		-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		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		None	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 77.1	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: Main Street & Broad Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	300	47	68	237	26	83	417	16	63	355	42
Future Volume (veh/h)	55	300	47	68	237	26	83	417	16	63	355	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1875	1761	1875	1837	1780	1780	1736	1722	1750	1752	1780	1766
Adj Flow Rate, veh/h	57	312	49	71	247	27	86	434	17	66	370	44
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	8	0	0	4	4	1	2	0	3	1	2
Cap, veh/h	468	528	83	392	573	63	292	508	20	256	463	55
Arrive On Green	0.05	0.36	0.34	0.06	0.36	0.35	0.07	0.31	0.29	0.06	0.30	0.28
Sat Flow, veh/h	1785	1485	233	1750	1577	172	1653	1646	64	1669	1561	186
Grp Volume(v), veh/h	57	0	361	71	0	274	86	0	451	66	0	414
Grp Sat Flow(s),veh/h/ln	1785	0	1719	1750	0	1749	1653	0	1710	1669	0	1747
Q Serve(g_s), s	1.4	0.0	12.6	1.8	0.0	8.7	2.5	0.0	18.1	1.9	0.0	16.0
Cycle Q Clear(g_c), s	1.4	0.0	12.6	1.8	0.0	8.7	2.5	0.0	18.1	1.9	0.0	16.0
Prop In Lane	1.00		0.14	1.00		0.10	1.00		0.04	1.00		0.11
Lane Grp Cap(c), veh/h	468	0	610	392	0	636	292	0	528	256	0	518
V/C Ratio(X)	0.12	0.00	0.59	0.18	0.00	0.43	0.29	0.00	0.85	0.26	0.00	0.80
Avail Cap(c_a), veh/h	572	0	610	480	0	636	355	0	631	340	0	644
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.8	0.0	19.3	14.2	0.0	17.6	17.3	0.0	23.8	17.9	0.0	23.8
Incr Delay (d2), s/veh	0.1	0.0	4.2	0.2	0.0	2.1	0.6	0.0	9.7	0.5	0.0	5.7
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	1.0	0.0	9.4	1.3	0.0	6.7	1.7	0.0	13.2	1.4	0.0	11.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.9	0.0	23.5	14.4	0.0	19.8	17.8	0.0	33.4	18.4	0.0	29.5
LnGrp LOS	B	A	C	B	A	B	B	A	C	B	A	C
Approach Vol, veh/h		418			345			537			480	
Approach Delay, s/veh		22.2			18.7			30.9			28.0	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	26.6	8.3	30.0	9.2	25.7	7.7	30.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	7.0	26.0	7.0	25.0	7.0	26.0	7.0	25.0
Max Q Clear Time (g_c+I1), s	4.4	20.1	4.3	14.6	5.0	18.0	3.9	10.7
Green Ext Time (p_c), s	0.0	1.5	0.0	1.7	0.0	1.6	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	25.7
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	300	47	68	237	26	83	417	16	63	355	42
Future Volume (vph)	55	300	47	68	237	26	83	417	16	63	355	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	12	12	10	11	11	10	12	12	10	11	11
Grade (%)		-2%			-1%			3%			1%	
Storage Length (ft)	280		0	100		0	100		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			No			No			No
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		581			338			365			187	
Travel Time (s)		15.8			9.2			10.0			5.1	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	8%	0%	0%	4%	4%	1%	2%	0%	3%	1%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	11.0		3.0	11.0		3.0	10.0		3.0	10.0	
Minimum Split (s)	8.0	16.0		8.0	16.0		8.0	15.0		8.0	15.0	
Total Split (s)	12.0	30.0		12.0	30.0		12.0	31.0		12.0	31.0	
Total Split (%)	14.1%	35.3%		14.1%	35.3%		14.1%	36.5%		14.1%	36.5%	
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		-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		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Max		None	Max		None	None		None	None	

Intersection Summary	
Area Type:	Other
Cycle Length: 85	
Actuated Cycle Length: 77.1	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: Main Street & Broad Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	300	47	68	237	26	83	417	16	63	355	42
Future Volume (veh/h)	55	300	47	68	237	26	83	417	16	63	355	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1875	1761	1875	1837	1780	1780	1736	1722	1750	1752	1780	1766
Adj Flow Rate, veh/h	57	312	49	71	247	27	86	434	17	66	370	44
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	8	0	0	4	4	1	2	0	3	1	2
Cap, veh/h	468	528	83	392	573	63	292	508	20	256	463	55
Arrive On Green	0.05	0.36	0.34	0.06	0.36	0.35	0.07	0.31	0.29	0.06	0.30	0.28
Sat Flow, veh/h	1785	1485	233	1750	1577	172	1653	1646	64	1669	1561	186
Grp Volume(v), veh/h	57	0	361	71	0	274	86	0	451	66	0	414
Grp Sat Flow(s),veh/h/ln	1785	0	1719	1750	0	1749	1653	0	1710	1669	0	1747
Q Serve(g_s), s	1.4	0.0	12.6	1.8	0.0	8.7	2.5	0.0	18.1	1.9	0.0	16.0
Cycle Q Clear(g_c), s	1.4	0.0	12.6	1.8	0.0	8.7	2.5	0.0	18.1	1.9	0.0	16.0
Prop In Lane	1.00		0.14	1.00		0.10	1.00		0.04	1.00		0.11
Lane Grp Cap(c), veh/h	468	0	610	392	0	636	292	0	528	256	0	518
V/C Ratio(X)	0.12	0.00	0.59	0.18	0.00	0.43	0.29	0.00	0.85	0.26	0.00	0.80
Avail Cap(c_a), veh/h	572	0	610	480	0	636	355	0	631	340	0	644
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.8	0.0	19.3	14.2	0.0	17.6	17.3	0.0	23.8	17.9	0.0	23.8
Incr Delay (d2), s/veh	0.1	0.0	4.2	0.2	0.0	2.1	0.6	0.0	9.7	0.5	0.0	5.7
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	1.0	0.0	9.4	1.3	0.0	6.7	1.7	0.0	13.2	1.4	0.0	11.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.9	0.0	23.5	14.4	0.0	19.8	17.8	0.0	33.4	18.4	0.0	29.5
LnGrp LOS	B	A	C	B	A	B	B	A	C	B	A	C
Approach Vol, veh/h		418			345			537			480	
Approach Delay, s/veh		22.2			18.7			30.9			28.0	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	26.6	8.3	30.0	9.2	25.7	7.7	30.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	7.0	26.0	7.0	25.0	7.0	26.0	7.0	25.0
Max Q Clear Time (g_c+I1), s	4.4	20.1	4.3	14.6	5.0	18.0	3.9	10.7
Green Ext Time (p_c), s	0.0	1.5	0.0	1.7	0.0	1.6	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	25.7
HCM 6th LOS	C

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	1	496	2	1	459
Future Volume (vph)	1	1	496	2	1	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	10	11
Grade (%)	0%		-1%			1%
Link Speed (mph)	25		25			25
Link Distance (ft)	200		187			130
Travel Time (s)	5.5		5.1			3.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	496	2	1	459
Future Vol, veh/h	1	1	496	2	1	459
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-1	-	-	1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	1	2	2	2
Mvmt Flow	1	1	551	2	1	510

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	809	552	0	0	553	0
Stage 1	552	-	-	-	-	-
Stage 2	257	-	-	-	-	-
Critical Hdwy	6.4	6.23	-	-	4.3	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
Pot Cap-1 Maneuver	392	561	-	-	774	-
Stage 1	651	-	-	-	-	-
Stage 2	879	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	391	561	-	-	774	-
Mov Cap-2 Maneuver	391	-	-	-	-	-
Stage 1	651	-	-	-	-	-
Stage 2	877	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	461	774	-
HCM Lane V/C Ratio	-	-	0.005	0.001	-
HCM Control Delay (s)	-	-	12.8	9.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	1	496	2	1	459
Future Volume (vph)	1	1	496	2	1	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	10	10	11
Grade (%)	0%		-1%			1%
Link Speed (mph)	25		25			25
Link Distance (ft)	200		187			130
Travel Time (s)	5.5		5.1			3.5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	1%	2%	2%	2%
Shared Lane Traffic (%)						
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	496	2	1	459
Future Vol, veh/h	1	1	496	2	1	459
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-1	-	-	1
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	1	2	2	2
Mvmt Flow	1	1	551	2	1	510

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	809	552	0	0	553	0
Stage 1	552	-	-	-	-	-
Stage 2	257	-	-	-	-	-
Critical Hdwy	6.4	6.23	-	-	4.3	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3	3.1	-	-	3	-
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Stage 1	651	-	-	-	-	-
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Platoon blocked, %			-	-		-
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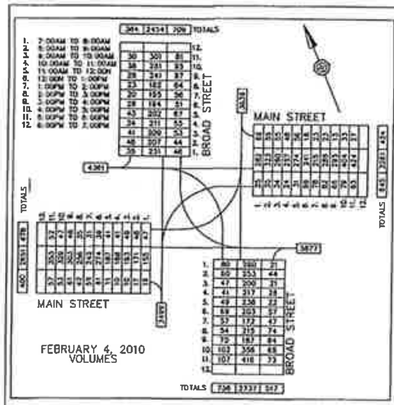
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

APPENDIX F:
PennDOT-Approved Signal Plan



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  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.

  LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.
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SIGN TABULATION

PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
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(D)	R10-3B(L)	9X12	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON←
(E)	R10-3B(R)	9X12	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON→
(F)	R10-6AL	24X30	STOP HERE ON RED
(G)	R10-6-1	24X18	LEFT LANE

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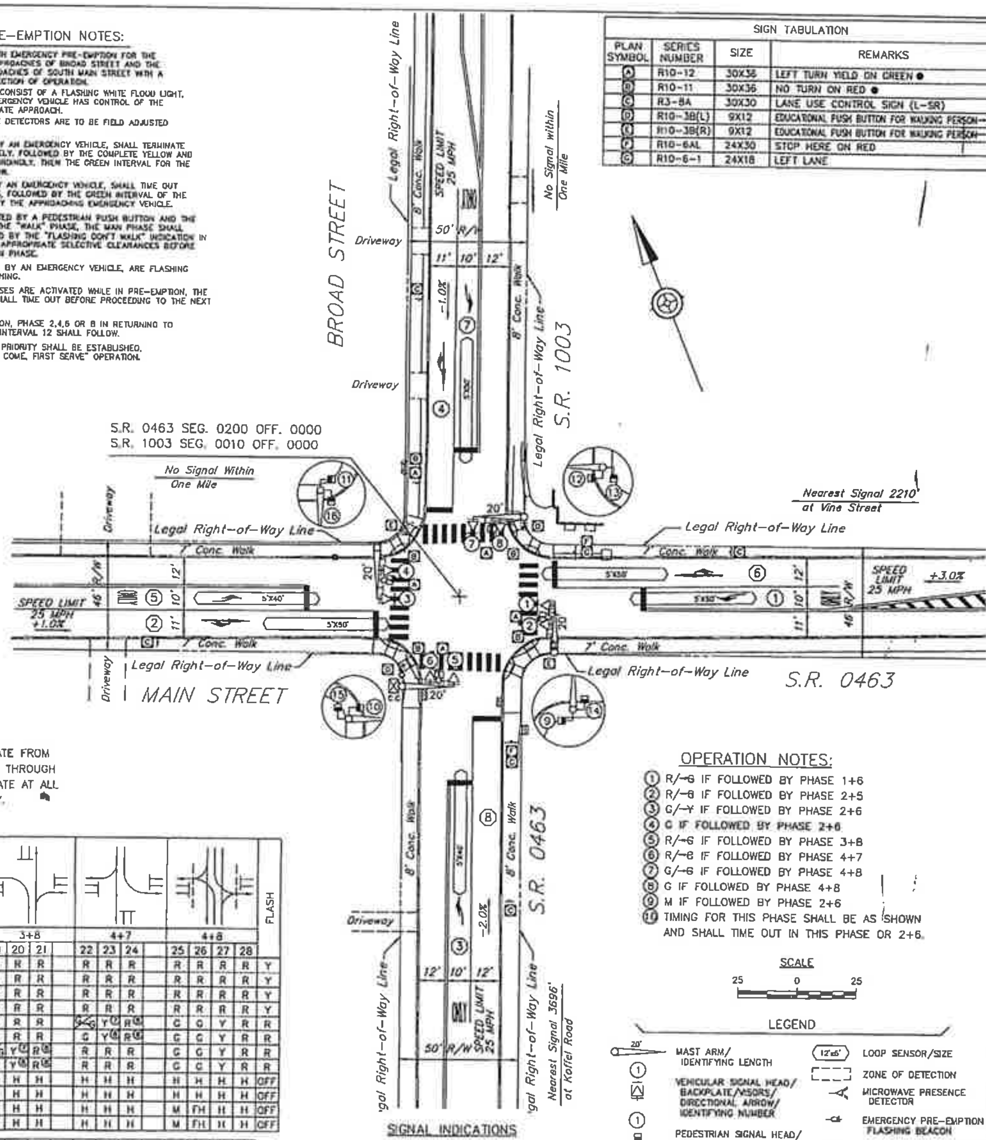


EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2			4			6			8		
SIGNALS \ INTERVAL	29	30	31	32	33	34	35	36	37	38	39	40
1	G/→ (a)	Y	R	R	R	R	R	R	R	R	R	R
2	G	Y	R	R	R	R	R	R	R	R	R	R
3	R	R	R	R	R	R	G/→ (a)	Y	R	R	R	R
4	R	R	R	R	R	R	G	Y	R	R	R	R
5	R	R	R	G/→ (a)	Y (a)	R (a)	R	R	R	R	R	R
6	R	R	R	G	Y (b)	R (b)	R	R	R	R	R	R
7	R	R	R	R	R	R	R	R	R	G/→ (a)	Y (a)	R (a)
8	R	R	R	R	R	R	R	R	R	G	Y (b)	R (b)
9,10	H	H	H	H	H	H	H	H	H	H	H	H
11,12	H	H	H	H	H	H	H	H	H	H	H	H
13,14	H	H	H	H	H	H	H	H	H	H	H	H
15,16	H	H	H	H	H	H	H	H	H	H	H	H
FIXED	**	3	2	**	3	2	**	3	2	**	3	2

** FOR DURATION OF PRE-EMPTION

NOTE:
IF 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 PRE-EMPTION.

(a) G/→ WHEN RETURNING TO NORMAL OPERATION
(b) G WHEN RETURNING TO NORMAL OPERATION

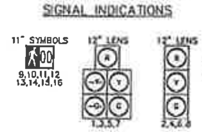
** MAX II TIMINGS TO OPERATE FROM 14:00 TO 19:00, MONDAY THROUGH FRIDAY. MAX I TO OPERATE AT ALL OTHER TIMES OF THE DAY.

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	1+5			2+5				1+6				2+6				3+7			3+8			4+7			4+8				FLASH
SIGNALS \ INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
1	G/→ (a)	Y (a)	R (a)	G/→ (a)	G/→ (a)	Y (a)	R (a)	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
2	R	R	R	G	G	Y (b)	R (b)	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
3	G/→ (a)	Y (a)	R (a)	R	R	R	R	G/→ (a)	G/→ (a)	Y (a)	R (a)	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
4	R	R	R	R	R	R	R	G	G	Y (b)	R (b)	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
5	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G/→ (a)	Y (a)	R (a)	R	R	R	G/→ (a)	Y (a)	R (a)	G	G	Y	R	R
6	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y (b)	R (b)	G	G	Y	R	R
7	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G/→ (a)	Y (a)	R (a)	G/→ (a)	Y (a)	R (a)	R	R	R	G	G	Y	R	R
8	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y (b)	R (b)	R	R	R	G	G	Y	R	R
9,10	H	H	H	M	FH (b)	H (b)	H (b)	H	H	H	H	M	FH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	OFF
11,12	H	H	H	H	H	H	H	M	FH (b)	H (b)	H (b)	M	FH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	OFF
13,14*	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH	H	H	OFF
15,16*	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH	H	H	OFF
FIXED		3	2			3	2			3	2			3	2		3	2		3	2		3	2		11	3	2	
MINIMUM	3			3				3				10				3			3			3							
PASSAGE	3			3				3				3				3			3			3							
MAX I	7			7				7				28				7			7			7			12				
MAX II	7			7				7				26				7			7			7			14				
PEDESTRIAN				(10)				(10)				7*	11*																
MEMORY	NL			NL				NL				NL				NL			NL			NL			MX				

*UPON PEDESTRIAN ACTUATION ONLY. OTHERWISE HAND SYMBOL AT ALL TIMES.

SIGNAL INDICATIONS



OPERATION NOTES:

1. R/→G IF FOLLOWED BY PHASE 1+6
2. R/→G IF FOLLOWED BY PHASE 2+5
3. G/→Y IF FOLLOWED BY PHASE 2+6
4. G IF FOLLOWED BY PHASE 2+6
5. R/→G IF FOLLOWED BY PHASE 3+8
6. R/→G IF FOLLOWED BY PHASE 4+7
7. G/→G IF FOLLOWED BY PHASE 4+8
8. G IF FOLLOWED BY PHASE 4+8
9. M IF FOLLOWED BY PHASE 2+6
10. TIMING FOR THIS PHASE SHALL BE AS SHOWN AND SHALL TIME OUT IN THIS PHASE OR 2+6.

SCALE

25 0 25

LEGEND

- MAST ARM/ IDENTIFYING LENGTH
- VEHICULAR SIGNAL HEAD/ BACKPLATE/VISORS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER
- PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- PEDESTRIAN PUSHBUTTON/ SIGN
- SIGN/IDENTIFYING LETTER
- VIDEO DETECTOR
- C.C. CONTROLLER CABINET
- 12'x6' LOOP SENSOR/SIZE
- ZONE OF DETECTION
- MICROWAVE PRESENCE DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- EMERGENCY PRE-EMPTION DEVICE
- CURB RAMP
- UTILITY POLE
- PHASE NUMBER
- INLET
- WAVETRONIX RADAR DETECTOR

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: HATFIELD BOROUGH
INTERSECTION: MAIN STREET (S.R. 0463) AND BROAD STREET (S.R. 0463/1003)

REVIEWED:

DATE

MUNICIPAL OFFICIAL DATE

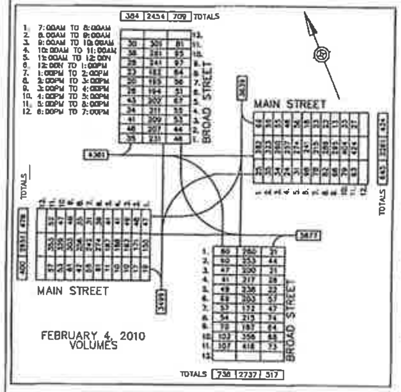
RECOMMENDED:

DOUGLAS MAY 4/2/96
DISTRICT TRAFFIC ENGINEER DATE

NO.	REASON	DES./REVW.	DATE	REVW.	DATE	RECOMM.	DATE
1	ADD LEFT TURN SIGNALS, PHASING CHANGE						
2	ADD WH/HD SIGNALS AND TIMING CHANGE			MLK	5/13/97	DWM	5/14/97
3	CHNGED "D" & "E" TO MATCH WH/HD SIGS			MLK	7/14/97	DWM	7/16/97
4	ADD EMER PRE-EMPTION ALL APPROACHES	JPS	3/17/00	MLK	3/18/00	WJE	3/20/00
5	TIMING CHANGE	MCW	5/20/07	MLK	5/28/07	LRB	6/1/07
6	TIMING CHANGE, NEW COUNTS	MCW		DLA	4/21/10	ABP	5/3/10
7	ADD COUNTDOWN WH SIGNALS	JGP	8/14/13	DLA	8/1/13	ABP	8/4/13
8	ADD RAMPS UNDER 57-83, RELOCATE PED BUTTONS, REVISE PED TIME	MCW	5/8/18				

SHEET 2 OF 2 PERMIT # 64-0934 FILE # 0934

APPENDIX F:
PennDOT-Approved Signal Plan



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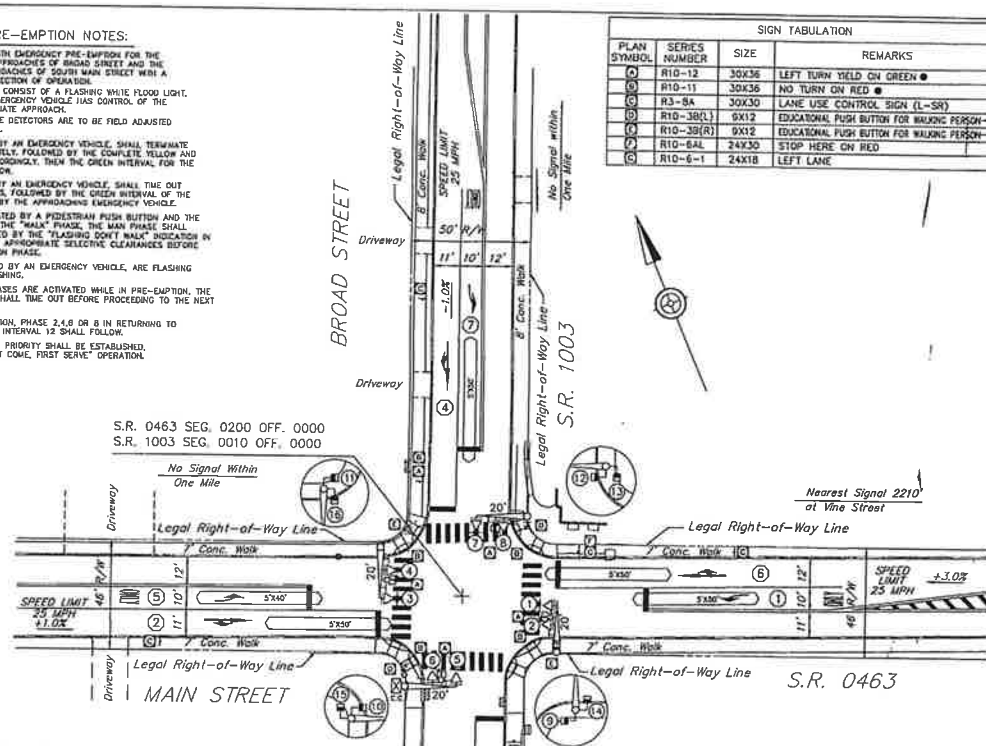
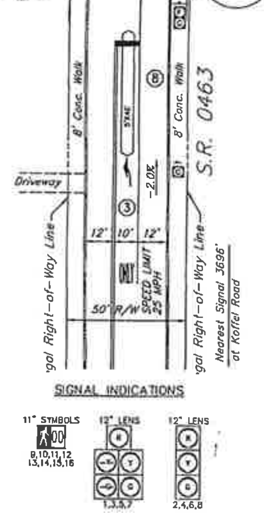
S.R. 0463 SEG. 0200 OFF. 0000
S.R. 1003 SEG. 0010 OFF. 0000





EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	2			4			6			8		
SIGNALS \ INTERVAL	29	30	31	32	33	34	35	36	37	38	39	40
1	R/G(a)	Y	R	R	R	R	R	R	R	R	R	R
2	G	Y	R	R	R	R	R	R	R	R	R	R
3	R	R	R	R	R	R	R/G(a)	Y	R	R	R	R
4	R	R	R	R	R	R	G	Y	R	R	R	R
5	R	R	R	R/G(a)	Y(b)	R(b)	R	R	R	R	R	R
6	R	R	R	G	Y(b)	R(b)	R	R	R	R	R	R
7	R	R	R	R	R	R	R	R	R	R/G(a)	Y(b)	R(b)
8	R	R	R	R	R	R	R	R	R	G	Y(b)	R(b)
9,10	H	H	H	H	H	H	H	H	H	H	H	H
11,12	H	H	H	H	H	H	H	H	H	H	H	H
13,14	H	H	H	H	H	H	H	H	H	H	H	H
15,16	H	H	H	H	H	H	H	H	H	H	H	H
FIXED	**	3	2	**	3	2	**	3	2	**	3	2

** FOR DURATION OF PRE-EMPTION

NOTE:
IF 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 PRE-EMPTION.

(a) G/Y WHEN RETURNING TO NORMAL OPERATION
(b) G WHEN RETURNING TO NORMAL OPERATION

** MAX II TIMINGS TO OPERATE FROM 14:00 TO 19:00, MONDAY THROUGH FRIDAY. MAX I TO OPERATE AT ALL OTHER TIMES OF THE DAY.

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	1+5			2+5				1+6				2+6				3+7			3+8			4+7			4+8				FLASH
SIGNALS \ INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
1	R/G(1)	Y(1)	R(1)	R/G(2)	R/G(2)	Y(2)	R(2)	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
2	R	R	R	G	G	Y(2)	R(2)	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
3	R/G(1)	Y(1)	R(1)	R	R	R	R	G/Y(3)	G/Y(3)	Y(3)	R(3)	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
4	R	R	R	R	R	R	R	G	G	Y(3)	R(3)	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
5	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R/G(5)	Y(5)	R(5)	R	R	R	R/G(6)	Y(6)	R(6)	G	G	Y	R	R
6	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y(8)	R(8)	G	G	Y	R	R
7	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R/G(5)	Y(5)	R(5)	G/G(7)	Y(7)	R(7)	R	R	R	G	G	Y	R	R
8	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	Y(8)	R(8)	R	R	R	G	G	Y	R	R
9,10	H	H	H	M	FH(9)	H(9)	H(9)	H	H	H	H	M	FH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	OFF
11,12	H	H	H	H	H	H	H	M	FH(9)	H(9)	H(9)	M	FH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	OFF
13,14*	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH	H	H	OFF
15,16*	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH	H	H	OFF

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
FIXED		3	2			3	2			3	2			3	2		3	2		3	2		3	2		11	3	2
MINIMUM	3			3				3				10				3			3			3						
PASSAGE	3			3				3				3				3			3			3						
MAX I	7			7				7				28				7			7			7			12			
MAX II	7			7				7				26				7			7			7			14			
PEDESTRIAN				(10)				(10)				7*	11*															
MEMORY	NL			NL				NL				NL				NL			NL			NL			MX			

*UPON PEDESTRIAN ACTUATION ONLY. OTHERWISE HAND SYMBOL AT ALL TIMES.

OPERATION NOTES:

(1) R/→G IF FOLLOWED BY PHASE 1+6
(2) R/→G IF FOLLOWED BY PHASE 2+5
(3) G/→Y IF FOLLOWED BY PHASE 2+6
(4) G IF FOLLOWED BY PHASE 2+6
(5) R/→G IF FOLLOWED BY PHASE 3+8
(6) R/→G IF FOLLOWED BY PHASE 4+7
(7) G/→G IF FOLLOWED BY PHASE 4+8
(8) G IF FOLLOWED BY PHASE 4+8
(9) M IF FOLLOWED BY PHASE 2+6
(10) TIMING FOR THIS PHASE SHALL BE AS SHOWN AND SHALL TIME OUT IN THIS PHASE OR 2+6.

SCALE
25 0 25

LEGEND

- MAST ARM/ IDENTIFYING LENGTH
- VEHICULAR SIGNAL HEAD/ BACKPLATE/VISORS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER
- PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- PEDESTRIAN PUSHBUTTON/ SIGN
- SIGN/IDENTIFYING LETTER
- VIDEO DETECTOR
- CONTROLLER CABINET
- LOOP SENSOR/SIZE
- ZONE OF DETECTION
- MICROWAVE PRESENCE DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- EMERGENCY PRE-EMPTION DEVICE
- CURB RAMP
- UTILITY POLE
- PHASE NUMBER
- INLET
- WAVETRONIX RADAR DETECTOR

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: HATFIELD BOROUGH
INTERSECTION: MAIN STREET (S.R. 0463) AND BROAD STREET (S.R. 0463/1003)

REVIEWED: ________ DATE

MUNICIPAL OFFICIAL ________ DATE

RECOMMENDED:

DOUGLAS MAY 4/2/96
DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	ADD LEFT TURN SIGNALS, PHASING CHANGE						
2	ADD WH/HD SIGNALS AND TIMING CHANGE			MLK	5/13/97	DWM	5/14/97
3	CHNGED "D" & "E" TO MATCH WH/HD SIGS			MLK	7/14/97	DWM	7/19/97
4	ADD EMER PRE-EMPTION ALL APPROACHES	JPS	3/17/00	MLK	3/18/00	WJE	3/20/00
5	TIMING CHANGE	MCM	5/20/07	MLK	5/28/07	LRB	6/11/07
6	TIMING CHANGE, NEW COUNTS	MCM		DLA	1/21/10	ABP	5/3/10
7	ADD COUNTDOWN MH SIGNALS	JGP	8/14/13	DLA	9/4/13	ABP	9/4/13
8	ADD RAMPS UNDER ST-83, RELOCATE PED BUTTONS, REVISE PED TIME		3/3/16				

SHEET 2 OF 2 PERMIT # 64-0934 FILE # 0934

APPENDIX G:
Gap Analysis

Gap Calculation for Unsignalized Intersection
Left Turn from Minor Road to 2-Lane Major Road

Intersection: **Major St.** **N. Main Street**
Minor St. **Full-Access Driveway**

Time Studied: **Weekday A.M. Peak Hour**
Date of Study: **10/8/2024**

Critical Gap: 6.4
Follow-Up Time: 3

Length of Gap (seconds)	Vehicles Accomodated	Number of Gaps Observed	Total Vehicles
0 - 6.4	0		0
6.4 - 9.4	1	51	51
9.4 - 12.4	2	24	48
12.4 - 15.4	3	16	48
15.4 - 18.4	4	12	48
18.4 - 21.4	5	7	35
21.4 - 24.4	6	6	36
24.4 - 27.4	7	3	21
27.4+	8	11	88
Total Vehicles Accomodated			**375**

Minimum Gap	Number of Cars
0	0
6.4	1
9.4	2
12.4	3
15.4	4
18.4	5
21.4	6
24.4	7
27.4	8

APPENDIX G:
Gap Analysis

Gap Calculation for Unsignalized Intersection
Left Turn from Minor Road to 2-Lane Major Road

Intersection: **Major St.** N. Main Street
Minor St. Full-Access Driveway

Time Studied: Weekday A.M. Peak Hour
Date of Study: 10/8/2024

Critical Gap: 6.4
Follow-Up Time: 3

Length of Gap (seconds)	Vehicles Accomodated	Number of Gaps Observed	Total Vehicles
0 - 6.4	0		0
6.4 - 9.4	1	51	51
9.4 - 12.4	2	24	48
12.4 - 15.4	3	16	48
15.4 - 18.4	4	12	48
18.4 - 21.4	5	7	35
21.4 - 24.4	6	6	36
24.4 - 27.4	7	3	21
27.4+	8	11	88
Total Vehicles Accomodated			**375**

Minimum Gap	Number of Cars
0	0
6.4	1
9.4	2
12.4	3
15.4	4
18.4	5
21.4	6
24.4	7
27.4	8

A.M. Minor Left-Turn GAP Analysis

Start/End Time	Seconds	
7:30:00 AM		
7:30:03 AM	03	3
7:30:04 AM		
7:30:17 AM	13	13
7:30:17 AM		
7:30:34 AM	17	17
7:30:34 AM		
7:30:47 AM	13	13
7:30:48 AM		
7:30:50 AM	02	2
7:30:51 AM		
7:30:53 AM	02	2
7:30:54 AM		
7:31:08 AM	14	14
7:31:08 AM		
7:31:29 AM	21	21
7:31:30 AM		
7:31:32 AM	02	2
7:31:33 AM		
7:31:56 AM	23	23
7:31:57 AM		
7:32:05 AM	08	8
7:32:05 AM		
7:32:09 AM	04	4
7:32:11 AM		
7:32:18 AM	07	7
7:32:20 AM		
7:32:21 AM	01	1
7:32:46 AM		
7:32:49 AM	03	3
7:32:50 AM		
7:32:52 AM	02	2
7:32:57 AM		
7:33:04 AM	07	7
7:33:05 AM		
7:33:11 AM	06	6
7:33:12 AM		
7:33:38 AM	26	26
7:33:39 AM		
7:33:57 AM	18	18
7:33:58 AM		
7:34:00 AM	02	2
7:34:11 AM		
7:34:18 AM	07	7
7:34:19 AM		
7:34:26 AM	07	7
7:34:27 AM		
7:34:31 AM	04	4
7:34:31 AM		
7:34:33 AM	02	2
7:34:36 AM		
7:35:20 AM	44	44
7:35:21 AM		
7:35:24 AM	03	3
7:35:25 AM		
7:35:26 AM	01	1
7:35:27 AM		
7:35:39 AM	12	12
7:35:40 AM		
7:35:44 AM	04	4
7:35:54 AM		
7:35:56 AM	02	2
7:35:57 AM		
7:35:58 AM	01	1
7:35:58 AM		
7:36:04 AM	06	6
7:36:04 AM		
7:36:06 AM	02	2
7:36:07 AM		
7:36:22 AM	15	15
7:36:23 AM		
7:36:24 AM	01	1
7:36:25 AM		
7:36:27 AM	02	2
7:36:28 AM		
7:36:31 AM	03	3
7:36:33 AM		
7:36:44 AM	11	11
7:37:10 AM		
7:37:22 AM	12	12
7:37:23 AM		
7:37:25 AM	02	2
7:37:26 AM		
7:37:31 AM	05	5
7:37:32 AM		
7:37:36 AM	04	4
7:37:37 AM		
7:37:39 AM	02	2
7:37:40 AM		
7:37:44 AM	04	4
7:37:44 AM		
7:37:48 AM	04	4
7:37:49 AM		
7:38:17 AM	28	28

Critical: 6.4
Follow-up: 3.0

Gaps:				gaps	cars
1 sec	1	38			
2 sec	2	82			
3 sec	3	51			
4 sec	4	35			
5 sec	5	20			
6 sec	6	13			
7 sec	7	20	1 car:	51	51
8 sec	8	19			
9 sec	9	12			
10 sec	10	5	2 cars:	24	48
11 sec	11	7			
12 sec	12	12			
13 sec	13	8	3 cars:	16	48
14 sec	14	9			
15 sec	15	5			
16 sec	16	5	4 cars:	12	48
17 sec	17	4			
18 sec	18	3			
19 sec	19	5	5 cars:	7	35
20 sec	20	0			
21 sec	21	2			
22 sec	22	2	6 cars:	6	36
23 sec	23	2			
24 sec	24	2			
25 sec	25	2	7 cars:	3	21
26 sec	26	1			
27 sec	27	0			
28 sec	28	1	8 cars:	11	88
29 sec	29	0			
30 sec	30	1	Total Cars:		375
31 sec	31	1			
32 sec	32	1			
33 sec	33	0			
34 sec	34	1			
35 sec	35	0			
36 sec	36	0			
37 sec	37	0			
38 sec	38	0			
39 sec	39	0			
40 sec	40	0			
41 sec	41	1			
42 sec	42	0			
43 sec	43	0			
44 sec	44	1			
45 sec	45	0			
46 sec	46	1			
47 sec	47	1			
48 sec	48	0			
49 sec	49	0			
50 sec	50	0			
51 sec	51	0			
52 sec	52	0			
53 sec	53	0			
54 sec	54	0			
55 sec	55	0			
56 sec	56	0			
57 sec	57	0			
58 sec	58	0			
59 sec	59	0			
60 sec	60	0			
>1 min	61	0			

7:38:18 AM 7:38:20 AM	02	2
7:38:21 AM 7:38:25 AM	04	4
7:38:26 AM 7:38:28 AM	02	2
7:38:30 AM 7:38:36 AM	06	6
7:38:55 AM 7:39:11 AM	16	16
7:39:12 AM 7:39:14 AM	02	2
7:39:15 AM 7:39:16 AM	01	1
7:39:17 AM 7:39:24 AM	07	7
7:39:25 AM 7:39:36 AM	11	11
7:39:36 AM 7:39:46 AM	10	10
7:39:47 AM 7:39:50 AM	03	3
7:39:52 AM 7:39:57 AM	05	5
7:39:57 AM 7:40:06 AM	09	9
7:40:15 AM 7:40:18 AM	03	3
7:40:23 AM 7:40:26 AM	03	3
7:40:26 AM 7:40:30 AM	04	4
7:40:40 AM 7:40:42 AM	02	2
7:40:43 AM 7:40:47 AM	04	4
7:40:48 AM 7:40:49 AM	01	1
7:40:50 AM 7:40:57 AM	07	7
7:40:58 AM 7:41:03 AM	05	5
7:41:04 AM 7:41:08 AM	04	4
7:41:09 AM 7:41:18 AM	09	9
7:41:21 AM 7:41:24 AM	03	3
7:41:27 AM 7:41:33 AM	05	5
7:41:36 AM 7:41:42 AM	06	6
7:41:42 AM 7:41:43 AM	01	1
7:41:52 AM 7:41:54 AM	02	2
7:41:55 AM 7:41:56 AM	01	1
7:41:59 AM 7:42:04 AM	05	5
7:42:07 AM 7:42:10 AM	03	3
7:42:15 AM 7:42:33 AM	18	18
7:42:33 AM 7:42:39 AM	04	4
7:42:41 AM 7:42:48 AM	07	7
7:42:49 AM 7:42:59 AM	10	10
7:43:00 AM 7:43:02 AM	02	2
7:43:02 AM 7:43:06 AM	04	4
7:43:10 AM 7:43:12 AM	02	2
7:43:27 AM 7:43:29 AM	02	2
7:43:31 AM 7:43:34 AM	03	3
7:43:35 AM 7:44:07 AM	32	32
7:44:08 AM 7:44:09 AM	01	1
7:44:10 AM 7:44:12 AM	02	2
7:44:14 AM 7:44:30 AM	16	16
7:44:31 AM 7:44:34 AM	03	3
7:44:35 AM 7:44:36 AM	01	1
7:44:49 AM 7:44:52 AM	03	3
7:44:53 AM		

A.M. Minor Left-Turn GAP Analysis

Critical: 6.4
Follow-up: 3.0

Start/End Time	Seconds		Gaps:					gaps	cars
7:30:00 AM			1 sec	1	38				
7:30:03 AM	03	3	2 sec	2	82				
			3 sec	3	51				
7:30:04 AM			4 sec	4	35				
7:30:17 AM	13	13	5 sec	5	20				
			6 sec	6	13				
7:30:17 AM			7 sec	7	20	1 car:		51	51
7:30:34 AM	17	17	8 sec	8	19				
			9 sec	9	12				
7:30:34 AM			10 sec	10	5	2 cars:		34	68
7:30:47 AM	13	13	11 sec	11	7				
			12 sec	12	11				
7:30:48 AM			13 sec	13	8	3 cars:		16	48
7:30:50 AM	02	2	14 sec	14	5				
			15 sec	15	5				
7:30:51 AM			16 sec	16	5	4 cars:		17	68
7:30:53 AM	02	2	17 sec	17	4				
			18 sec	18	3				
7:30:54 AM			19 sec	19	3	5 cars:		7	35
7:31:08 AM	14	14	20 sec	20	0				
			21 sec	21	2				
7:31:08 AM			22 sec	22	2	6 cars:		4	36
7:31:29 AM	21	21	23 sec	23	2				
			24 sec	24	2				
7:31:30 AM			25 sec	25	3	7 cars:		3	21
7:31:32 AM	02	2	26 sec	26	1				
			27 sec	27	0				
7:31:33 AM			28 sec	28	3	8 cars:		11	88
7:31:56 AM	23	23	29 sec	29	0				
			30 sec	30	1		Total Cars:		375
7:31:57 AM			31 sec	31	1				
7:32:05 AM	08	8	32 sec	32	1				
			33 sec	33	0				
7:32:05 AM			34 sec	34	1				
7:32:09 AM	04	4	35 sec	35	0				
			36 sec	36	0				
7:32:11 AM			37 sec	37	0				
7:32:18 AM	07	7	38 sec	38	0				
			39 sec	39	0				
7:32:20 AM			40 sec	40	0				
7:32:21 AM	01	1	41 sec	41	1				
			42 sec	42	0				
7:32:46 AM			43 sec	43	0				
7:32:49 AM	03	3	44 sec	44	1				
			45 sec	45	0				
7:32:50 AM			46 sec	46	1				
7:32:52 AM	02	2	47 sec	47	1				
			48 sec	48	0				
7:32:57 AM			49 sec	49	0				
7:33:04 AM	07	7	50 sec	50	0				
			51 sec	51	0				
7:33:05 AM			52 sec	52	0				
7:33:11 AM	06	6	53 sec	53	0				
			54 sec	54	0				
7:33:12 AM			55 sec	55	0				
7:33:38 AM	26	26	56 sec	56	0				
			57 sec	57	0				
7:33:39 AM			58 sec	58	0				
7:33:57 AM	18	18	59 sec	59	0				
			60 sec	60	0				
7:33:58 AM			>1 min	61	0				
7:34:00 AM	02	2							
7:34:11 AM									
7:34:18 AM	07	7							
7:34:19 AM									
7:34:26 AM	07	7							
7:34:27 AM									
7:34:31 AM	04	4							
7:34:31 AM									
7:34:33 AM	02	2							
7:34:36 AM									
7:35:20 AM	44	44							
7:35:21 AM									
7:35:24 AM	03	3							
7:35:25 AM									
7:35:26 AM	01	1							
7:35:27 AM									
7:35:39 AM	12	12							
7:35:40 AM									
7:35:44 AM	04	4							
7:35:54 AM									
7:35:56 AM	02	2							
7:35:57 AM									
7:35:58 AM	01	1							
7:35:58 AM									
7:36:04 AM	06	6							
7:36:04 AM									
7:36:06 AM	02	2							
7:36:07 AM									
7:36:22 AM	15	15							
7:36:23 AM									
7:36:24 AM	01	1							
7:36:25 AM									
7:36:27 AM	02	2							
7:36:28 AM									
7:36:31 AM	03	3							
7:36:33 AM									
7:36:44 AM	11	11							
7:37:10 AM									
7:37:22 AM	12	12							
7:37:23 AM									
7:37:25 AM	02	2							
7:37:26 AM									
7:37:31 AM	05	5							
7:37:32 AM									
7:37:36 AM	04	4							
7:37:37 AM									
7:37:39 AM	02	2							
7:37:40 AM									
7:37:44 AM	04	4							
7:37:44 AM									
7:37:48 AM	04	4							
7:37:49 AM									
7:38:17 AM	28	28							

7:38:18 AM 7:38:20 AM	02	2
7:38:21 AM 7:38:25 AM	04	4
7:38:26 AM 7:38:28 AM	02	2
7:38:30 AM 7:38:36 AM	06	6
7:38:55 AM 7:39:11 AM	16	16
7:39:12 AM 7:39:14 AM	02	2
7:39:15 AM 7:39:16 AM	01	1
7:39:17 AM 7:39:24 AM	07	7
7:39:25 AM 7:39:36 AM	11	11
7:39:36 AM 7:39:46 AM	10	10
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8:22:00 AM 8:22:01 AM	01	1
8:22:06 AM 8:22:14 AM	08	8
8:22:15 AM 8:22:15 AM	00	0
8:22:21 AM 8:22:29 AM	08	8
8:22:31 AM 8:22:39 AM	08	8
8:22:40 AM 8:22:45 AM	05	5
8:22:46 AM 8:22:57 AM	11	11
8:22:58 AM 8:23:02 AM	04	4
8:23:03 AM 8:23:15 AM	12	12
8:23:22 AM 8:23:24 AM	02	2
8:23:25 AM 8:23:27 AM	02	2
8:23:30 AM 8:23:34 AM	04	4
8:23:35 AM 8:23:38 AM	03	3
8:23:39 AM 8:23:42 AM	03	3
8:23:42 AM 8:23:48 AM	06	6
8:23:53 AM 8:23:55 AM	02	2
8:23:58 AM 8:24:11 AM	13	13

8:24:12 AM 8:24:26 AM	14	14
8:24:27 AM 8:24:31 AM	04	4
8:24:33 AM 8:24:45 AM	12	12
8:24:46 AM 8:24:47 AM	01	1
8:24:54 AM 8:25:02 AM	08	8
8:25:03 AM 8:25:06 AM	03	3
8:25:06 AM 8:25:10 AM	04	4
8:25:11 AM 8:25:12 AM	01	1
8:25:13 AM 8:25:14 AM	01	1
8:25:16 AM 8:25:17 AM	01	1
8:25:23 AM 8:25:27 AM	04	4
8:25:28 AM 8:25:30 AM	02	2
8:25:31 AM 8:26:12 AM	41	41
8:26:13 AM 8:26:20 AM	07	7
8:26:21 AM 8:26:23 AM	02	2
8:26:24 AM 8:26:25 AM	01	1
8:26:31 AM 8:26:33 AM	02	2
8:26:34 AM 8:26:42 AM	08	8
8:26:45 AM 8:26:49 AM	04	4
8:26:50 AM 8:26:52 AM	02	2
8:26:58 AM 8:27:09 AM	11	11
8:27:10 AM 8:27:14 AM	04	4
8:27:16 AM 8:27:28 AM	12	12
8:27:29 AM 8:27:31 AM	02	2
8:27:32 AM 8:27:48 AM	16	16
8:27:52 AM 8:28:01 AM	09	9
8:28:01 AM 8:28:13 AM	12	12
8:28:14 AM 8:28:17 AM	03	3
8:28:18 AM 8:28:21 AM	03	3
8:28:23 AM 8:28:25 AM	02	2
8:28:26 AM 8:28:28 AM	02	2
8:28:33 AM 8:29:45 AM	13	13
8:29:47 AM 8:29:10 AM	23	23
8:29:12 AM 8:29:19 AM	07	7
8:29:23 AM 8:29:38 AM	15	15
8:29:39 AM 8:29:41 AM	02	2
8:29:42 AM 8:29:45 AM	03	3
8:29:45 AM 8:29:49 AM	04	4

8:17:22 AM 8:17:25 AM	03	3
8:17:27 AM 8:17:34 AM	07	7
8:17:35 AM 8:17:37 AM	02	2
8:17:38 AM 8:17:45 AM	07	7
8:17:45 AM 8:17:47 AM	02	2
8:17:48 AM 8:17:49 AM	01	1
8:17:52 AM 8:18:00 AM	08	8
8:18:01 AM 8:18:03 AM	02	2
8:18:04 AM 8:18:51 AM	47	47
8:18:52 AM 8:18:57 AM	05	5
8:18:57 AM 8:19:09 AM	12	12
8:19:10 AM 8:19:13 AM	03	3
8:19:14 AM 8:19:16 AM	02	2
8:19:21 AM 8:19:23 AM	02	2
8:19:24 AM 8:19:28 AM	04	4
8:19:29 AM 8:19:30 AM	01	1
8:19:31 AM 8:19:33 AM	02	2
8:19:34 AM 8:19:44 AM	10	10
8:19:44 AM 8:19:51 AM	07	7
8:19:52 AM 8:20:14 AM	22	22
8:20:15 AM 8:20:22 AM	07	7
8:20:24 AM 8:20:32 AM	08	8
8:20:33 AM 8:20:34 AM	01	1
8:20:36 AM 8:20:45 AM	09	9
8:20:46 AM 8:20:47 AM	01	1
8:20:50 AM 8:20:55 AM	05	5
8:20:55 AM 8:20:58 AM	02	2
8:21:01 AM 8:21:32 AM	31	31
8:21:33 AM 8:21:36 AM	03	3
8:21:38 AM 8:21:45 AM	07	7
8:21:51 AM 8:21:59 AM	08	8
8:22:00 AM 8:22:01 AM	01	1
8:22:06 AM 8:22:14 AM	08	8
8:22:15 AM 8:22:15 AM	00	0
8:22:21 AM 8:22:29 AM	08	8
8:22:31 AM 8:22:39 AM	08	8
8:22:40 AM 8:22:45 AM	05	5
8:22:46 AM 8:22:57 AM	11	11
8:22:58 AM 8:23:02 AM	04	4
8:23:03 AM 8:23:15 AM	12	12
8:23:22 AM 8:23:24 AM	02	2
8:23:25 AM 8:23:27 AM	02	2
8:23:30 AM 8:23:34 AM	04	4
8:23:35 AM 8:23:38 AM	03	3
8:23:39 AM 8:23:42 AM	03	3
8:23:42 AM 8:23:48 AM	06	6
8:23:53 AM 8:23:55 AM	02	2
8:23:58 AM 8:24:11 AM	13	13

8:24:12 AM 8:24:25 AM	14	14
8:24:27 AM 8:24:31 AM	04	4
8:24:33 AM 8:24:45 AM	12	12
8:24:46 AM 8:24:47 AM	01	1
8:24:54 AM 8:25:02 AM	08	8
8:25:03 AM 8:25:06 AM	03	3
8:25:06 AM 8:25:10 AM	04	4
8:25:11 AM 8:25:12 AM	01	1
8:25:13 AM 8:25:14 AM	01	1
8:25:15 AM 8:25:17 AM	01	1
8:25:23 AM 8:25:27 AM	04	4
8:25:28 AM 8:25:30 AM	02	2
8:25:31 AM 8:26:12 AM	41	41
8:26:13 AM 8:26:20 AM	07	7
8:26:21 AM 8:26:23 AM	02	2
8:26:24 AM 8:26:25 AM	01	1
8:26:31 AM 8:26:33 AM	02	2
8:26:34 AM 8:26:42 AM	08	8
8:26:45 AM 8:26:49 AM	04	4
8:26:50 AM 8:26:52 AM	02	2
8:26:58 AM 8:27:09 AM	11	11
8:27:10 AM 8:27:14 AM	04	4
8:27:16 AM 8:27:28 AM	12	12
8:27:29 AM 8:27:31 AM	02	2
8:27:32 AM 8:27:48 AM	16	16
8:27:52 AM 8:28:01 AM	09	9
8:28:01 AM 8:28:13 AM	12	12
8:28:14 AM 8:28:17 AM	03	3
8:28:18 AM 8:28:21 AM	03	3
8:28:23 AM 8:28:25 AM	02	2
8:28:26 AM 8:28:28 AM	02	2
8:28:33 AM 8:28:46 AM	13	13
8:28:47 AM 8:29:10 AM	23	23
8:29:12 AM 8:29:19 AM	07	7
8:29:23 AM 8:29:38 AM	15	15
8:29:39 AM 8:29:41 AM	02	2
8:29:42 AM 8:29:45 AM	03	3
8:29:45 AM 8:29:49 AM	04	4

Gap Calculation for Unsignalized Intersection
Left Turn from Minor Road to 2-Lane Major Road

Intersection: **Major St.** N. Main Street
Minor St. Full-Access Driveway

Time Studied: Weekday P.M. Peak Hour
Date of Study: 10/8/2024

Critical Gap: 6.4
Follow-Up Time: 3

Length of Gap (seconds)	Vehicles Accomodated	Number of Gaps Observed	Total Vehicles
0 - 6.4	0		0
6.4 - 9.4	1	45	45
9.4 - 12.4	2	24	48
12.4 - 15.4	3	20	60
15.4 - 18.4	4	9	36
18.4 - 21.4	5	8	40
21.4 - 24.4	6	5	30
24.4 - 27.4	7	3	21
27.4+	8	4	32
Total Vehicles Accomodated			**312**

Minimum Gap	Number of Cars
0	0
6.4	1
9.4	2
12.4	3
15.4	4
18.4	5
21.4	6
24.4	7
27.4	8

P.M. Minor Left-Turn GAP Analysis

Start/End Time	Seconds	
4:30:00 PM		
4:30:04 PM	04	4
4:30:04 PM		
4:30:06 PM	02	2
4:30:08 PM		
4:30:13 PM	05	5
4:30:14 PM		
4:30:18 PM	04	4
4:30:18 PM		
4:30:22 PM	04	4
4:30:23 PM		
4:30:25 PM	02	2
4:30:27 PM		
4:30:37 PM	10	10
4:30:38 PM		
4:30:41 PM	03	3
4:30:42 PM		
4:30:44 PM	02	2
4:30:46 PM		
4:30:52 PM	06	6
4:30:53 PM		
4:31:28 PM	35	35
4:31:30 PM		
4:31:32 PM	02	2
4:31:33 PM		
4:31:34 PM	01	1
4:31:41 PM		
4:31:47 PM	06	6
4:31:48 PM		
4:32:09 PM	21	21
4:32:10 PM		
4:32:15 PM	05	5
4:32:16 PM		
4:32:30 PM	14	14
4:32:31 PM		
4:32:33 PM	02	2
4:32:33 PM		
4:32:48 PM	15	15
4:32:49 PM		
4:32:52 PM	03	3
4:32:53 PM		
4:32:54 PM	01	1
4:33:03 PM		
4:33:05 PM	02	2
4:33:06 PM		
4:33:08 PM	02	2
4:33:08 PM		
4:33:12 PM	04	4
4:33:18 PM		
4:33:25 PM	07	7
4:33:26 PM		
4:33:34 PM	08	8
4:33:40 PM		
4:33:58 PM	18	18
4:33:59 PM		
4:34:10 PM	11	11
4:34:15 PM		
4:34:17 PM	02	2
4:34:21 PM		
4:34:23 PM	02	2
4:34:27 PM		
4:34:29 PM	02	2
4:34:30 PM		
4:34:38 PM	08	8
4:34:39 PM		
4:34:41 PM	02	2
4:34:41 PM		
4:34:50 PM	09	9
4:34:53 PM		
4:34:59 PM	06	6
4:35:00 PM		
4:35:08 PM	08	8
4:35:09 PM		
4:35:18 PM	09	9
4:35:20 PM		
4:35:22 PM	02	2
4:35:23 PM		
4:35:26 PM	03	3
4:35:29 PM		
4:35:34 PM	05	5
4:35:37 PM		
4:35:41 PM	04	4
4:35:42 PM		
4:35:45 PM	03	3
4:35:48 PM		
4:35:49 PM	01	1
4:35:55 PM		
4:35:57 PM	02	2
4:36:01 PM		
4:36:05 PM	04	4
4:36:07 PM		
4:36:12 PM	05	5
4:36:14 PM		
4:36:15 PM	01	1

Critical: 6.4
Follow-up: 3.0

Gaps:						
1 sec	1	44		gaps	cars
2 sec	2	72			
3 sec	3	49			
4 sec	4	38			
5 sec	5	26			
6 sec	6	18			
7 sec	7	16	1 cars:	45	45
8 sec	8	17			
9 sec	9	12			
10 sec	10	10	2 cars:	24	48
11 sec	11	5			
12 sec	12	8			
13 sec	13	8	3 cars:	20	60
14 sec	14	7			
15 sec	15	5			
16 sec	16	1	4 cars:	9	36
17 sec	17	8			
18 sec	18	5			
19 sec	19	4	5 cars:	8	40
20 sec	20	2			
21 sec	21	2			
22 sec	22	2	6 cars:	5	30
23 sec	23	2			
24 sec	24	1			
25 sec	25	1	7 cars:	3	21
26 sec	26	2			
27 sec	27	0			
28 sec	28	0	8 cars:	4	32
29 sec	29	1			
30 sec	30	0		Total Cars:	312
31 sec	31	0			
32 sec	32	0			
33 sec	33	0			
34 sec	34	0			
35 sec	35	1			
36 sec	36	0			
37 sec	37	1			
38 sec	38	0			
39 sec	39	0			
40 sec	40	0			
41 sec	41	1			
42 sec	42	0			
43 sec	43	0			
44 sec	44	0			
45 sec	45	0			
46 sec	46	0			
47 sec	47	0			
48 sec	48	0			
49 sec	49	0			
50 sec	50	0			
51 sec	51	0			
52 sec	52	0			
53 sec	53	0			
54 sec	54	0			
55 sec	55	0			
56 sec	56	0			
57 sec	57	0			
58 sec	58	0			
59 sec	59	0			
60 sec	60	0			
>1 min	61	0			

Gap Calculation for Unsignalized Intersection
Left Turn from Minor Road to 2-Lane Major Road

Intersection: Major St. N. Main Street
Minor St. Full-Access Driveway

Time Studied: Weekday P.M. Peak Hour
Date of Study: 10/8/2024

Critical Gap: 6.4
Follow-Up Time: 3

Length of Gap (seconds)	Vehicles Accomodated	Number of Gaps Observed	Total Vehicles
0 - 6.4	0		0
6.4 - 9.4	1	45	45
9.4 - 12.4	2	24	48
12.4 - 15.4	3	20	60
15.4 - 18.4	4	9	36
18.4 - 21.4	5	8	40
21.4 - 24.4	6	5	30
24.4 - 27.4	7	3	21
27.4+	8	4	32
Total Vehicles Accomodated			**312**

Minimum Gap	Number of Cars
0	0
6.4	1
9.4	2
12.4	3
15.4	4
18.4	5
21.4	6
24.4	7
27.4	8

P.M. Minor Left-Turn GAP Analysis

Start/End Time	Seconds	
4:30:00 PM		
4:30:04 PM	04	4
4:30:06 PM		
4:30:06 PM	02	2
4:30:08 PM		
4:30:13 PM	05	5
4:30:14 PM		
4:30:18 PM	04	4
4:30:18 PM		
4:30:22 PM	04	4
4:30:23 PM		
4:30:25 PM	02	2
4:30:27 PM		
4:30:37 PM	10	10
4:30:38 PM		
4:30:41 PM	03	3
4:30:42 PM		
4:30:44 PM	02	2
4:30:46 PM		
4:30:52 PM	06	6
4:30:53 PM		
4:31:28 PM	35	35
4:31:30 PM		
4:31:32 PM	02	2
4:31:33 PM		
4:31:34 PM	01	1
4:31:41 PM		
4:31:47 PM	06	6
4:31:48 PM		
4:32:09 PM	21	21
4:32:10 PM		
4:32:15 PM	05	5
4:32:16 PM		
4:32:30 PM	14	14
4:32:31 PM		
4:32:33 PM	02	2
4:32:33 PM		
4:32:48 PM	15	15
4:32:49 PM		
4:32:52 PM	03	3
4:32:53 PM		
4:32:54 PM	01	1
4:33:03 PM		
4:33:05 PM	02	2
4:33:06 PM		
4:33:08 PM	02	2
4:33:08 PM		
4:33:12 PM	04	4
4:33:18 PM		
4:33:25 PM	07	7
4:33:26 PM		
4:33:34 PM	08	8
4:33:40 PM		
4:33:58 PM	18	18
4:33:59 PM		
4:34:10 PM	11	11
4:34:15 PM		
4:34:17 PM	02	2
4:34:21 PM		
4:34:23 PM	02	2
4:34:27 PM		
4:34:29 PM	02	2
4:34:30 PM		
4:34:38 PM	08	8
4:34:39 PM		
4:34:41 PM	02	2
4:34:41 PM		
4:34:50 PM	09	9
4:34:53 PM		
4:34:59 PM	06	6
4:35:00 PM		
4:35:08 PM	08	8
4:35:09 PM		
4:35:18 PM	09	9
4:35:20 PM		
4:35:22 PM	02	2
4:35:23 PM		
4:35:26 PM	03	3
4:35:29 PM		
4:35:34 PM	05	5
4:35:37 PM		
4:35:41 PM	04	4
4:35:42 PM		
4:35:45 PM	03	3
4:35:48 PM		
4:35:49 PM	01	1
4:35:55 PM		
4:35:57 PM	02	2
4:36:01 PM		
4:36:05 PM	04	4
4:36:07 PM		
4:36:12 PM	05	5
4:36:14 PM		
4:36:15 PM	01	1

Critical: 6.4
Follow-up: 3.0

Gaps:				gaps	cars
1 sec	1	44			
2 sec	2	72			
3 sec	3	49			
4 sec	4	38			
5 sec	5	26			
6 sec	6	18			
7 sec	7	15	1 car:	45	45
8 sec	8	17			
9 sec	9	12			
10 sec	10	10	2 cars:	24	48
11 sec	11	9			
12 sec	12	9			
13 sec	13	8	3 cars:	20	60
14 sec	14	7			
15 sec	15	5			
16 sec	16	1	4 cars:	9	36
17 sec	17	3			
18 sec	18	5			
19 sec	19	4	5 cars:	8	40
20 sec	20	2			
21 sec	21	2			
22 sec	22	2	6 cars:	5	30
23 sec	23	2			
24 sec	24	1			
25 sec	25	1	7 cars:	3	21
26 sec	26	2			
27 sec	27	0			
28 sec	28	0	8 cars:	4	32
29 sec	29	1			
30 sec	30	0		Total Cars:	312
31 sec	31	0			
32 sec	32	0			
33 sec	33	0			
34 sec	34	0			
35 sec	35	1			
36 sec	36	0			
37 sec	37	1			
38 sec	38	0			
39 sec	39	0			
40 sec	40	0			
41 sec	41	1			
42 sec	42	0			
43 sec	43	0			
44 sec	44	0			
45 sec	45	0			
46 sec	46	0			
47 sec	47	0			
48 sec	48	0			
49 sec	49	0			
50 sec	50	0			
51 sec	51	0			
52 sec	52	0			
53 sec	53	0			
54 sec	54	0			
55 sec	55	0			
56 sec	56	0			
57 sec	57	0			
58 sec	58	0			
59 sec	59	0			
60 sec	60	0			
>1 min	61	0			

4:36:16 PM 4:36:18 PM	02	2
4:36:27 PM 4:36:34 PM	07	7
4:36:39 PM 4:36:46 PM	07	7
4:36:51 PM 4:36:55 PM	04	4
4:36:56 PM 4:37:00 PM	04	4
4:37:01 PM 4:37:09 PM	08	8
4:37:40 PM 4:37:42 PM	02	2
4:37:43 PM 4:37:44 PM	01	1
4:37:46 PM 4:37:47 PM	01	1
4:37:49 PM 4:37:51 PM	02	2
4:37:52 PM 4:37:57 PM	05	5
4:38:00 PM 4:38:14 PM	14	14
4:38:16 PM 4:38:19 PM	03	3
4:38:19 PM 4:38:22 PM	03	3
4:39:13 PM 4:39:16 PM	03	3
4:38:17 PM 4:39:19 PM	02	2
4:39:23 PM 4:39:24 PM	01	1
4:39:27 PM 4:39:31 PM	04	4
4:39:32 PM 4:39:35 PM	03	3
4:40:43 PM 4:40:46 PM	03	3
4:40:53 PM 4:40:55 PM	02	2
4:40:55 PM 4:41:04 PM	09	9
4:41:05 PM 4:41:07 PM	02	2
4:41:08 PM 4:41:10 PM	02	2
4:41:34 PM 4:42:03 PM	29	29
4:42:08 PM 4:42:09 PM	01	1
4:42:10 PM 4:42:12 PM	01	1
4:42:13 PM 4:42:14 PM	01	1
4:42:30 PM 4:42:34 PM	04	4
4:42:34 PM 4:42:38 PM	04	4
4:42:41 PM 4:42:59 PM	18	18
4:43:02 PM 4:43:20 PM	18	18
4:43:20 PM 4:43:22 PM	02	2
4:43:25 PM 4:43:30 PM	05	5
4:43:31 PM 4:43:32 PM	01	1
4:43:40 PM 4:43:53 PM	13	13
4:43:53 PM 4:44:06 PM	13	13
4:44:07 PM 4:44:30 PM	23	23
4:44:31 PM 4:44:32 PM	01	1
4:44:33 PM 4:44:38 PM	05	5
4:44:39 PM 4:44:49 PM	10	10
4:44:50 PM 4:44:54 PM	04	4
4:44:54 PM 4:44:56 PM	02	2
4:44:56 PM 4:45:00 PM	04	4
4:45:00 PM 4:45:03 PM	03	3
4:45:04 PM 4:45:06 PM	02	2
4:45:06 PM 4:45:12 PM	06	6
4:45:14 PM		

4:45:16 PM	02	2
4:45:30 PM 4:45:40 PM	10	10
4:45:41 PM 4:45:42 PM	01	1
4:45:43 PM 4:45:55 PM	12	12
4:45:56 PM 4:45:57 PM	01	1
4:45:58 PM 4:46:00 PM	02	2
4:46:01 PM 4:46:18 PM	17	17
4:46:19 PM 4:46:22 PM	03	3
4:46:22 PM 4:46:36 PM	14	14
4:46:37 PM 4:46:42 PM	05	5
4:46:45 PM 4:46:47 PM	02	2
4:46:47 PM 4:46:56 PM	09	9
4:46:57 PM 4:46:58 PM	01	1
4:46:59 PM 4:46:59 PM	00	0
4:47:01 PM 4:47:06 PM	05	5
4:47:10 PM 4:47:35 PM	25	25
4:47:37 PM 4:47:42 PM	05	5
4:47:43 PM 4:47:44 PM	01	1
4:47:45 PM 4:47:47 PM	02	2
4:47:47 PM 4:47:50 PM	03	3
4:47:50 PM 4:47:51 PM	01	1
4:47:52 PM 4:47:54 PM	02	2
4:48:04 PM 4:48:11 PM	07	7
4:48:12 PM 4:48:25 PM	13	13
4:48:25 PM 4:48:37 PM	12	12
4:48:40 PM 4:48:52 PM	12	12
4:48:53 PM 4:48:56 PM	03	3
4:49:25 PM 4:49:28 PM	03	3
4:49:33 PM 4:49:35 PM	02	2
4:49:37 PM 4:49:47 PM	10	10
4:49:47 PM 4:49:50 PM	03	3
4:49:51 PM 4:49:56 PM	05	5
4:49:57 PM 4:50:07 PM	10	10
4:50:10 PM 4:50:22 PM	12	12
4:50:23 PM 4:50:40 PM	17	17
4:50:40 PM 4:50:43 PM	03	3
4:50:50 PM 4:50:52 PM	02	2
4:51:08 PM 4:51:10 PM	02	2
4:51:11 PM 4:51:21 PM	10	10
4:51:21 PM 4:51:26 PM	05	5
4:51:27 PM 4:51:28 PM	01	1
4:51:29 PM 4:51:35 PM	06	6
4:51:38 PM 4:51:44 PM	06	6
4:51:47 PM 4:52:10 PM	23	23
4:52:11 PM 4:52:13 PM	02	2
4:52:14 PM 4:52:15 PM	01	1
4:52:19 PM 4:52:23 PM	04	4
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4:36:56 PM 4:37:00 PM	04	4
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4:37:40 PM 4:37:42 PM	02	2
4:37:43 PM 4:37:44 PM	01	1
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5:18:53 PM 5:18:57 PM	04	4
5:18:58 PM 5:18:59 PM	01	1
5:18:59 PM 5:19:07 PM	08	8
5:19:07 PM 5:19:48 PM	41	41
5:19:49 PM 5:19:53 PM	04	4
5:19:55 PM 5:19:57 PM	02	2
5:19:57 PM 5:20:01 PM	04	4
5:20:01 PM 5:20:04 PM	03	3
5:20:05 PM 5:20:10 PM	05	5
5:20:11 PM 5:20:15 PM	04	4
5:20:17 PM 5:20:18 PM	01	1
5:20:19 PM 5:20:36 PM	17	17
5:20:40 PM 5:20:47 PM	07	7
5:21:00 PM 5:21:02 PM	02	2
5:21:11 PM 5:21:13 PM	02	2
5:21:14 PM 5:21:17 PM	03	3
5:21:18 PM 5:21:21 PM	03	3
5:21:23 PM 5:21:25 PM	02	2
5:21:25 PM 5:21:34 PM	09	9
5:21:38 PM 5:21:45 PM	07	7
5:22:08 PM 5:22:11 PM	03	3
5:22:19 PM 5:22:26 PM	07	7
5:22:27 PM 5:22:30 PM	03	3
5:22:31 PM 5:22:31 PM	00	0
5:22:36 PM 5:22:37 PM	01	1
5:22:38 PM 5:22:41 PM	03	3
5:22:42 PM 5:22:56 PM	14	14
5:22:57 PM 5:23:04 PM	07	7

5:23:07 PM 5:23:31 PM	24	24
5:23:32 PM 5:23:48 PM	16	16
5:24:03 PM 5:24:06 PM	03	3
5:24:07 PM 5:24:10 PM	03	3
5:24:11 PM 5:24:12 PM	01	1
5:24:14 PM 5:24:21 PM	07	7
5:24:22 PM 5:24:59 PM	37	37
5:25:00 PM 5:25:07 PM	07	7
5:25:10 PM 5:25:11 PM	01	1
5:25:12 PM 5:25:13 PM	01	1
5:25:14 PM 5:25:15 PM	01	1
5:25:20 PM 5:25:25 PM	05	5
5:25:26 PM 5:25:31 PM	05	5
5:25:39 PM 5:25:41 PM	02	2
5:25:41 PM 5:25:52 PM	11	11
5:25:52 PM 5:25:55 PM	03	3
5:25:56 PM 5:26:09 PM	13	13
5:26:09 PM 5:26:24 PM	15	15
5:26:25 PM 5:26:34 PM	09	9
5:26:35 PM 5:26:38 PM	03	3
5:26:39 PM 5:26:45 PM	06	6
5:26:47 PM 5:26:49 PM	02	2
5:27:02 PM 5:27:11 PM	09	9
5:27:12 PM 5:27:13 PM	01	1
5:27:15 PM 5:27:23 PM	08	8
5:27:27 PM 5:27:36 PM	09	9
5:27:37 PM 5:27:39 PM	02	2
5:27:40 PM 5:27:46 PM	06	6
5:28:10 PM 5:28:12 PM	02	2
5:28:14 PM 5:28:33 PM	19	19
5:28:34 PM 5:28:35 PM	01	1
5:28:43 PM 5:28:51 PM	08	8
5:28:52 PM 5:29:18 PM	26	26
5:29:19 PM 5:29:24 PM	05	5
5:29:25 PM 5:29:27 PM	02	2

APPENDIX H:
Auxiliary Turn Lane Warrant Analyses

5:23:07 PM 5:23:31 PM	24	24
5:23:32 PM 5:23:48 PM	16	16
5:24:03 PM 5:24:06 PM	03	3
5:24:07 PM 5:24:10 PM	03	3
5:24:11 PM 5:24:12 PM	01	1
5:24:14 PM 5:24:21 PM	07	7
5:24:22 PM 5:24:59 PM	37	37
5:25:00 PM 5:25:07 PM	07	7
5:25:10 PM 5:25:11 PM	01	1
5:25:12 PM 5:25:13 PM	01	1
5:25:14 PM 5:25:15 PM	01	1
5:25:20 PM 5:25:25 PM	05	5
5:25:26 PM 5:25:31 PM	05	5
5:25:39 PM 5:25:41 PM	02	2
5:25:41 PM 5:25:52 PM	11	11
5:25:52 PM 5:25:55 PM	03	3
5:25:56 PM 5:26:09 PM	13	13
5:26:09 PM 5:26:24 PM	15	15
5:26:25 PM 5:26:34 PM	09	9
5:26:35 PM 5:26:38 PM	03	3
5:26:39 PM 5:26:45 PM	06	6
5:26:47 PM 5:26:49 PM	02	2
5:27:02 PM 5:27:11 PM	09	9
5:27:12 PM 5:27:13 PM	01	1
5:27:15 PM 5:27:23 PM	08	8
5:27:27 PM 5:27:36 PM	09	9
5:27:37 PM 5:27:39 PM	02	2
5:27:40 PM 5:27:46 PM	06	6
5:28:10 PM 5:28:12 PM	02	2
5:28:14 PM 5:28:33 PM	19	19
5:28:34 PM 5:28:35 PM	01	1
5:28:43 PM 5:28:51 PM	08	8
5:28:52 PM 5:29:18 PM	26	26
5:29:19 PM 5:29:24 PM	05	5
5:29:25 PM 5:29:27 PM	02	2

APPENDIX H:
Auxiliary Turn Lane Warrant Analyses

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Hatfield Borough	Analysis Date:	10/17/2024
County:	Montgomery County	Conducted By:	MF
PennDOT Engineering District:	6	Checked By:	PHS
		Agency/Company Name:	Traffic Planning and Design, Inc.

Intersection & Approach Description: N. Main Street & Proposed Site Driveway

Analysis Period:	2026 Projected Conditions	Number of Approach Lanes:	1
Design Hour:	Weekday A.M. Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25	Type of Analysis	
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	2.0%	0
	Through	-	502	2.0%	508
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	279	5.0%	286
	Right	Yes	1	2.0%	2

Advancing Volume:	508
Opposing Volume:	288
Left Turn Volume:	0
% Left Turns in Advancing Volume:	0.00%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-	279	5.0%	N/A
	Right	-	1	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 1**

Warrant Met?: **#DIV/0!**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	0
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	60

Average # of Vehicles/Cycle: #DIV/0!

PennDOT Publication 46, Exhibit 11-6

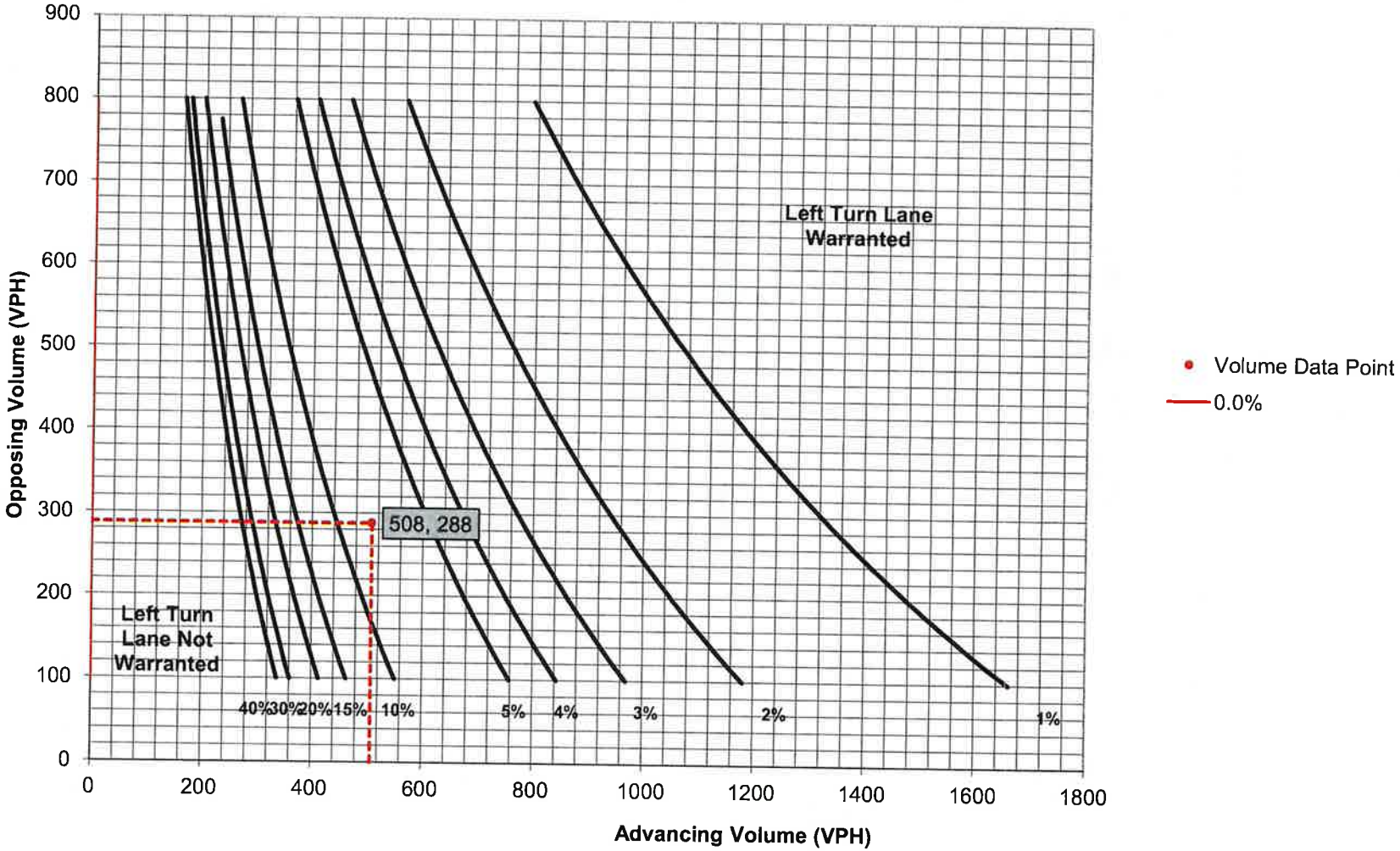
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	#DIV/0!	Feet
Condition B:	#DIV/0!	Feet
Condition C:	#DIV/0!	Feet
Required Left Turn Lane Storage Length:	#DIV/0!	Feet

Additional Findings: #DIV/0!

Additional Comments / Justifications:

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:	Hatfield Borough
County:	Montgomery County
PennDOT Engineering District:	6
Analysis Date:	10/17/2024
Conducted By:	MF
Checked By:	PHS
Agency/Company Name:	Traffic Planning and Design, Inc.
Intersection & Approach Description:	N. Main Street & Proposed Site Driveway
Analysis Period:	2026 Projected Conditions
Design Hour:	Weekday A.M. Peak Hour
Intersection Control:	Unsignalized
Posted Speed Limit (MPH):	25
Type of Terrain:	Level
Number of Approach Lanes:	1
Undivided or Divided Highway:	Undivided
Type of Analysis	
Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	2.0%	0
	Through	-	502	2.0%	508
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	279	5.0%	286
	Right	Yes	1	2.0%	2

Advancing Volume:	508
Opposing Volume:	288
Left Turn Volume:	0
% Left Turns in Advancing Volume:	0.00%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-	279	5.0%	N/A
	Right	-	1	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	Figure 1
Warrant Met?:	#DIV/0!

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	N/A
Warrant Met?:	N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	0
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	60
Average # of Vehicles/Cycle:	#DIV/0!

PennDOT Publication 46, Exhibit 11-6

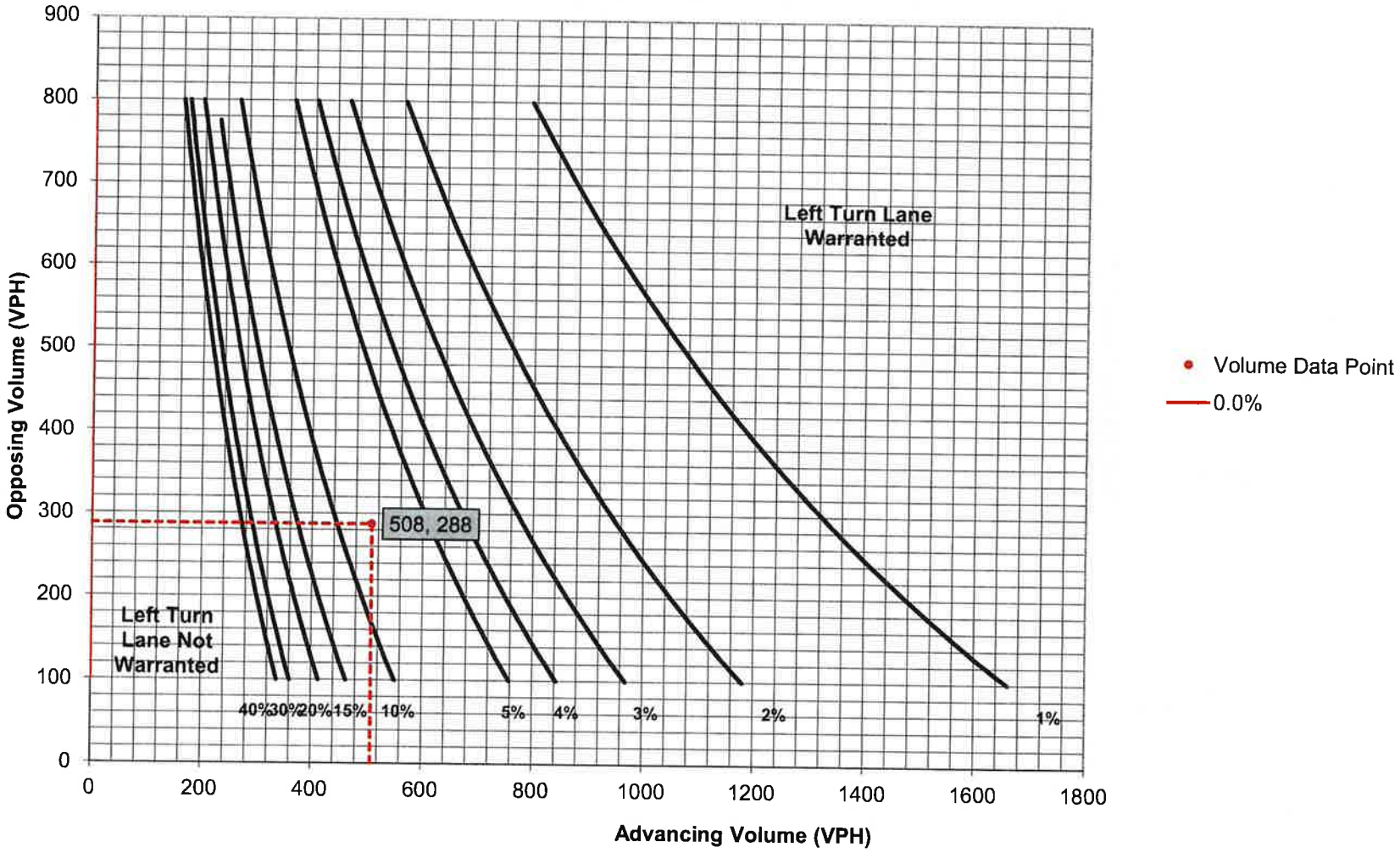
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	#DIV/0!	Feet
Condition B:	#DIV/0!	Feet
Condition C:	#DIV/0!	Feet
Required Left Turn Lane Storage Length:	#DIV/0!	Feet

Additional Findings: #DIV/0!

Additional Comments / Justifications:

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:	Hatfield Borough	Analysis Date:	10/17/2024
County:	Montgomery County	Conducted By:	MF
PennDOT Engineering District:	6	Checked By:	PHS
		Agency/Company Name:	Traffic Planning and Design, Inc.

Intersection & Approach Description: N. Main Street & Proposed Site Driveway

Analysis Period:	2026 Projected Conditions	Number of Approach Lanes:	1
Design Hour:	Weekday A.M. Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	25	Type of Analysis	
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	2.0%	N/A
	Through	-	502	2.0%	N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	279	5.0%	N/A
	Right	Yes	1	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-	279	5.0%	286
	Right	-	1	2.0%	2

Advancing Volume:	288
Right Turn Volume:	2

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 9**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	2
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	60

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

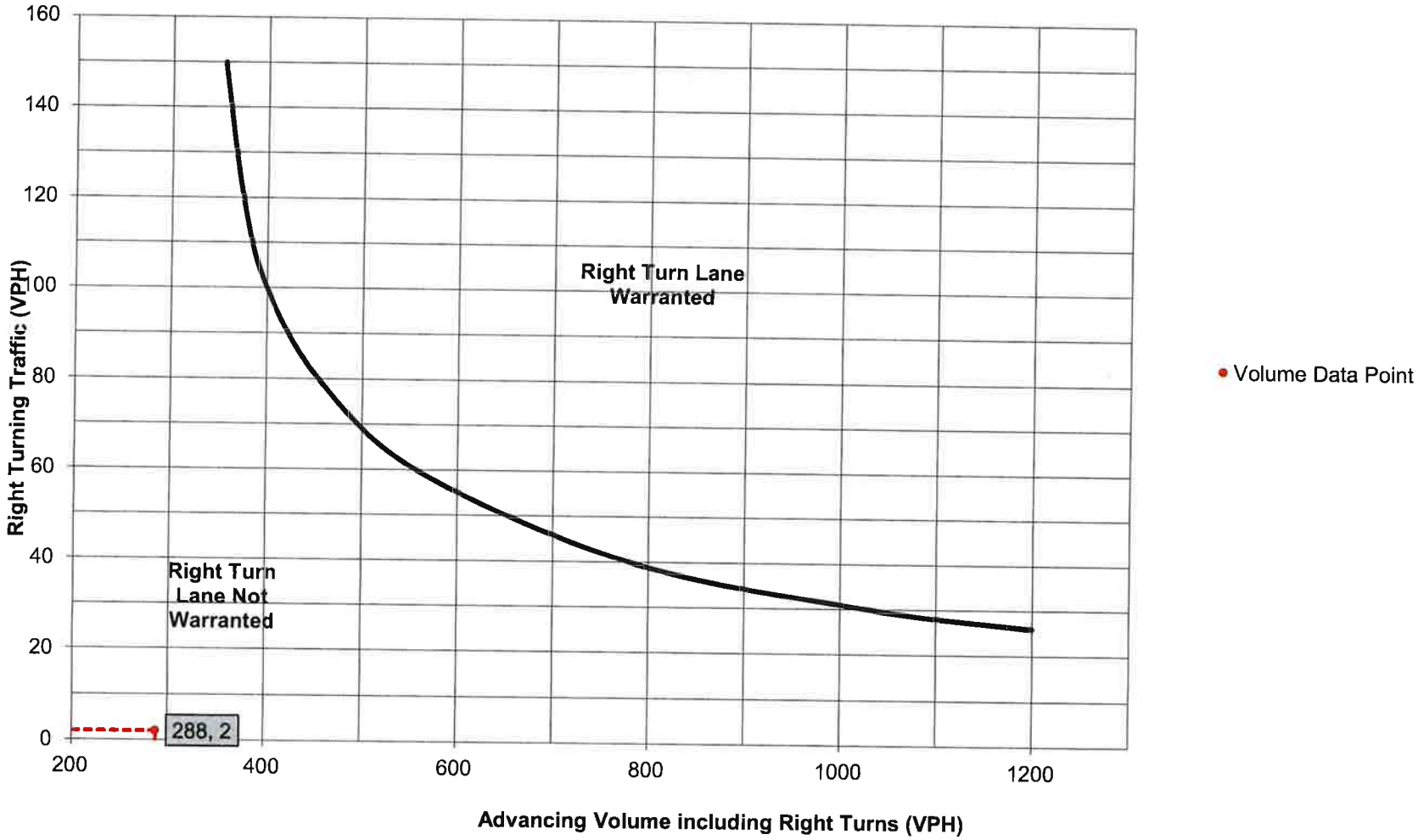
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:

Figure 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:	Hatfield Borough
County:	Montgomery County
PennDOT Engineering District:	6
Analysis Date:	10/17/2024
Conducted By:	MF
Checked By:	PHS
Agency/Company Name:	Traffic Planning and Design, Inc.
Intersection & Approach Description:	N. Main Street & Proposed Site Driveway
Analysis Period:	2026 Projected Conditions
Design Hour:	Weekday A.M. Peak Hour
Intersection Control:	Unsignalized
Posted Speed Limit (MPH):	25
Type of Terrain:	Level
Number of Approach Lanes:	1
Undivided or Divided Highway:	Undivided
Type of Analysis	
Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	2.0%	N/A
	Through	-	502	2.0%	N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	279	5.0%	N/A
	Right	Yes	1	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-	279	5.0%	286
	Right	-	1	2.0%	2

Advancing Volume:	288
Right Turn Volume:	2

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	N/A
Warrant Met?:	N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	Figure 9
Warrant Met?:	No

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	2
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	60
Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

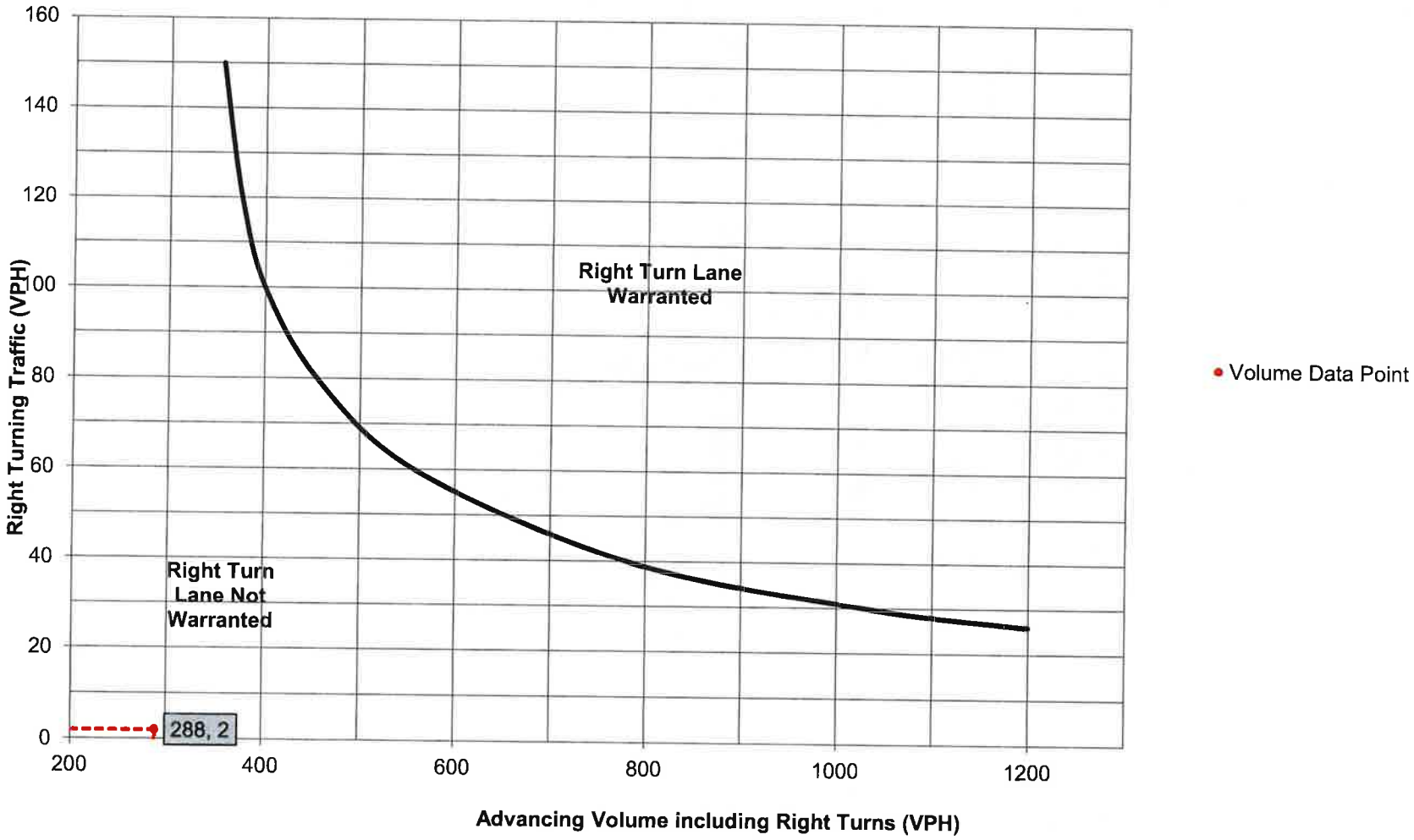
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:
N/A

Additional Comments / Justifications:

Figure 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

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Analysis Period:	2026 Projected Conditions
Design Hour:	Weekday P.M. Peak Hour
Intersection Control:	Unsignalized
Posted Speed Limit (MPH):	25
Type of Terrain:	Level
Number of Approach Lanes:	1
Undivided or Divided Highway:	Undivided
Type of Analysis	
Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	1	2.0%	2
	Through	-	459	2.0%	464
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	496	1.0%	499
	Right	Yes	2	2.0%	3

Advancing Volume:	466
Opposing Volume:	502
Left Turn Volume:	2
% Left Turns in Advancing Volume:	0.43%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-	496	1.0%	N/A
	Right	-	2	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	Figure 1
Warrant Met?:	No

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	N/A
Warrant Met?:	N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	2
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	60
Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

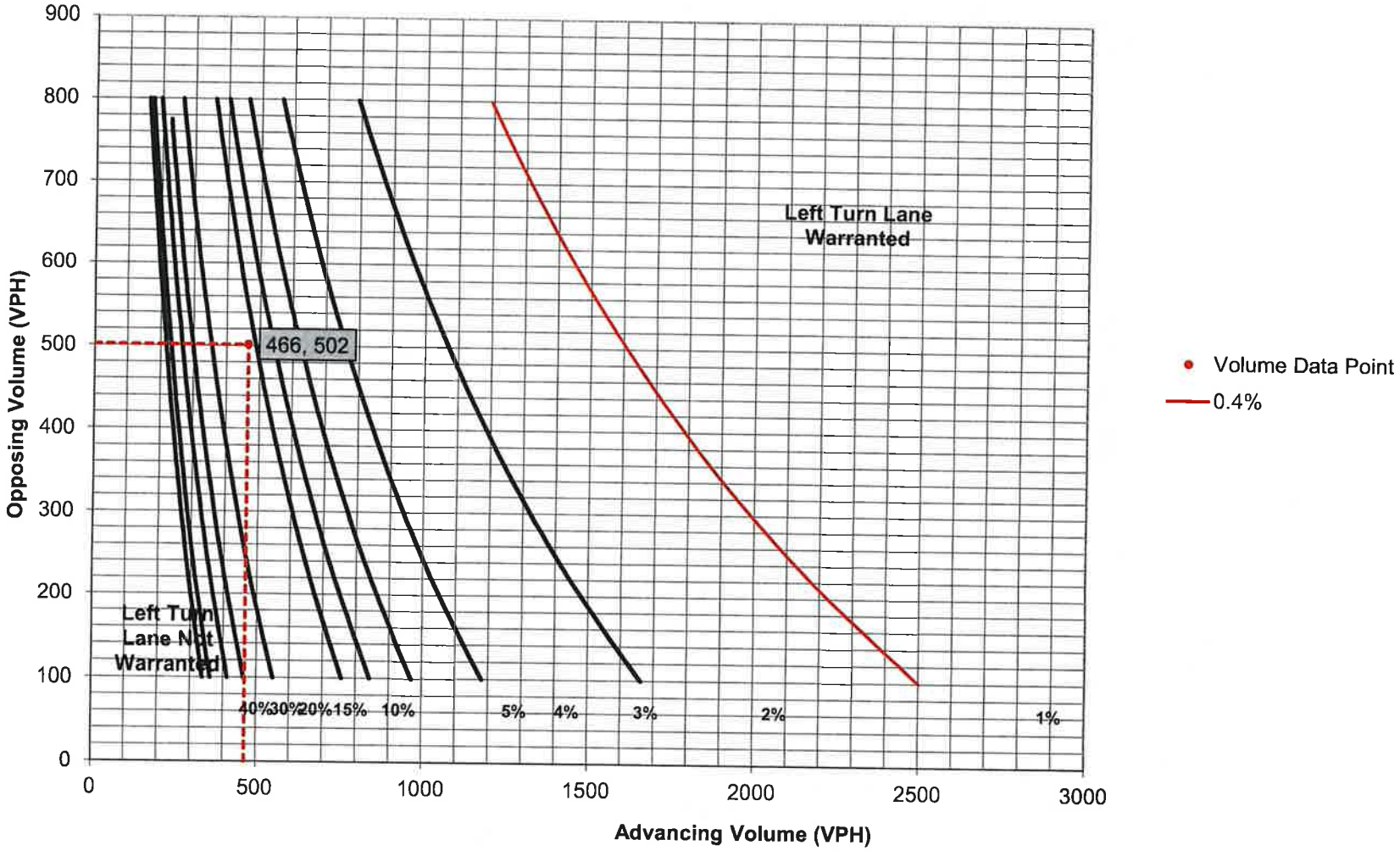
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:

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

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Intersection & Approach Description:	N. Main Street & Proposed Site Driveway
Analysis Period:	2026 Projected Conditions
Design Hour:	Weekday P.M. Peak Hour
Intersection Control:	Unsignalized
Posted Speed Limit (MPH):	25
Type of Terrain:	Level
Number of Approach Lanes:	1
Undivided or Divided Highway:	Undivided
Type of Analysis	
Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	1	2.0%	2
	Through	-	459	2.0%	464
	Right	No			N/A
Opposing	Left	No			N/A
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Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-	496	1.0%	N/A
	Right	-	2	2.0%	N/A

Advancing Volume:	N/A
Right Turn Volume:	N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure:	Figure 1
Warrant Met?:	No

Right Turn Lane Warrant Findings

Applicable Warrant Figure:	N/A
Warrant Met?:	N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	2
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	60
Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

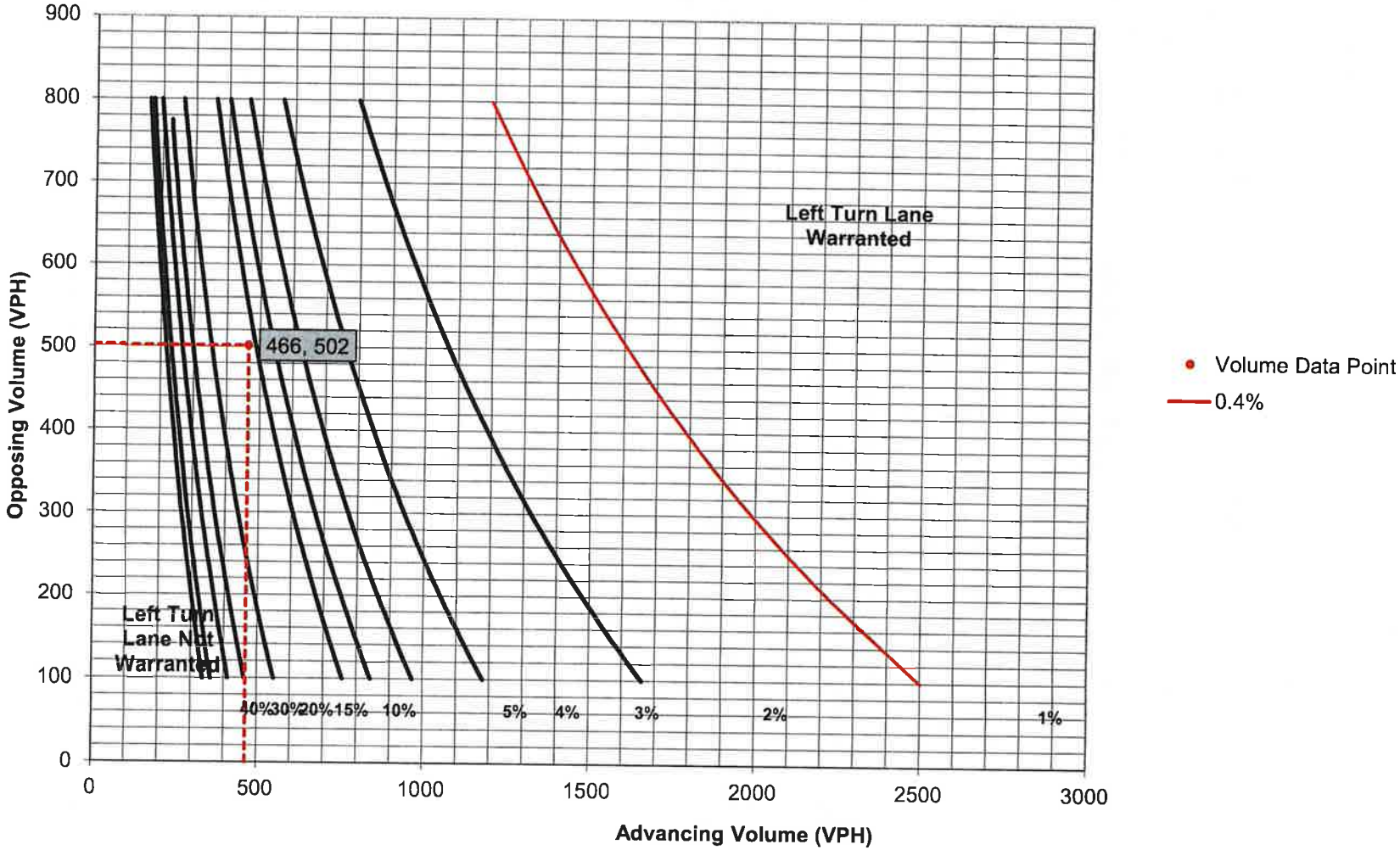
Left Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

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

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County:	Montgomery County
PennDOT Engineering District:	6
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Conducted By:	MF
Checked By:	PHS
Agency/Company Name:	Traffic Planning and Design, Inc.

Intersection & Approach Description: N. Main Street & Proposed Site Driveway

Analysis Period:	2026 Projected Conditions
Design Hour:	Weekday P.M. Peak Hour
Intersection Control:	Unsignalized
Posted Speed Limit (MPH):	25
Type of Terrain:	Level
Number of Approach Lanes:	1
Undivided or Divided Highway:	Undivided
Type of Analysis	
Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	1	2.0%	N/A
	Through	-	459	2.0%	N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	496	1.0%	N/A
	Right	Yes	2	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-	496	1.0%	499
	Right	-	2	2.0%	3

Advancing Volume:	502
Right Turn Volume:	3

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 9**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	3
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	60
Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

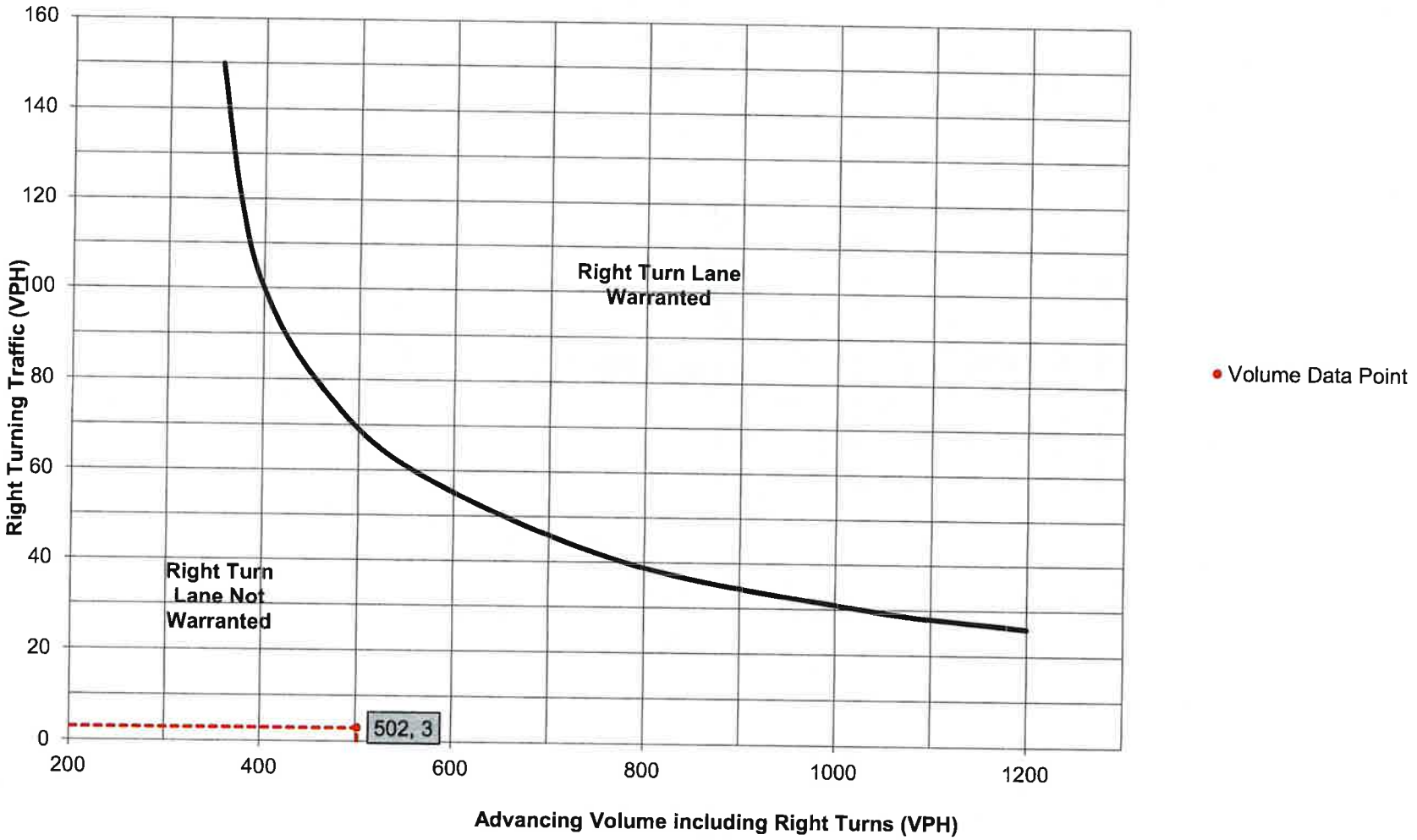
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:

Figure 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:	Hatfield Borough
County:	Montgomery County
PennDOT Engineering District:	6
Analysis Date:	10/17/2024
Conducted By:	MF
Checked By:	PHS
Agency/Company Name:	Traffic Planning and Design, Inc.

Intersection & Approach Description: N. Main Street & Proposed Site Driveway

Analysis Period:	2026 Projected Conditions
Design Hour:	Weekday P.M. Peak Hour
Intersection Control:	Unsignalized
Posted Speed Limit (MPH):	25
Type of Terrain:	Level
Number of Approach Lanes:	1
Undivided or Divided Highway:	Undivided
Type of Analysis	
Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	1	2.0%	N/A
	Through	-	459	2.0%	N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-	496	1.0%	N/A
	Right	Yes	2	2.0%	N/A

Advancing Volume:	N/A
Opposing Volume:	N/A
Left Turn Volume:	N/A
% Left Turns in Advancing Volume:	N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-	496	1.0%	499
	Right	-	2	2.0%	3

Advancing Volume:	502
Right Turn Volume:	3

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 9**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	3
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	60
Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

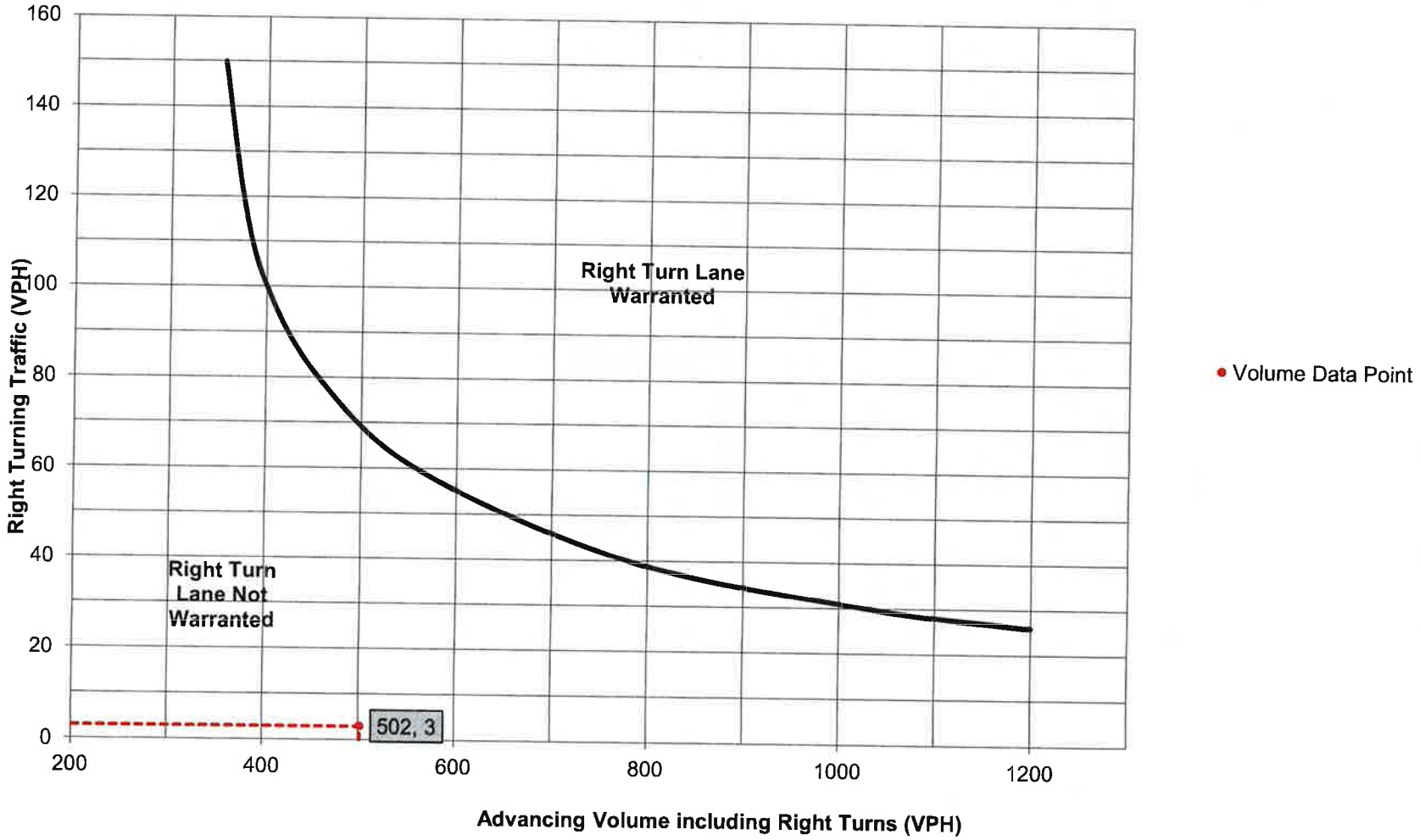
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings: N/A

Additional Comments / Justifications:

Figure 9. Warrant for right turn lanes on two-lane roadways (40 mph or lower speeds, unsignalized and signalized intersections)



Response Letter to Review Letter from Bursich 9.18.24

Kristin Holmes, P.E., LEED AP
Robert Cunningham, P.E., LEED AP

October 14, 2024

Jaime E. Snyder
Borough Manager
Hatfield Borough
401 South Main Street
P.O. Box 190
Hatfield, PA 19440

RE: 23 N. Main Street – Hatfield Walk
Hatfield Borough, Montgomery County, PA
HCE Project No.: 1727

Dear Jaime:

We are in receipt of several review letters for the above-referenced project. Below please find responses to each of the comments contained in those letters.

Review Letter from Bursich Associates dated September 18, 2024.

Zoning Ordinance Comments

1. The following items must be revised to comply with the Zoning Decision:

   A. The R-4 Zoning District standards shall be added to the record plan. The standards that are superseded by the Conditions of the Zoning Hearing Decision shall be noted. The proposed conditions must be related to the R-4 standards.
   Response: R-4 District Standards have been added to the table.

   B. The plans shall show 20-foot building setbacks rather than 10-foot and 2-foot setbacks, except along the northwestern line adjacent to the post office property.
   Response: The setbacks have been revised.

   C. The proposed sidewalk along the Renner Property shall be located adjacent to the proposed curbing for the access drive.
   Response: The sidewalk has been adjusted.

   D. The privacy fences along the driveway should extend to the faces of the buildings on the Renner and Hausmann properties unless the fences would conflict with the required sight triangle. The sight triangle shall be shown on the plan.
   Response: The fence has been revised and the sight triangle has been shown on the plan

   E. The existing Zoning District boundaries and labels for the affected and adjacent properties shall be added to the Record Plan.
   Response: Zoning District boundaries have been added and the property owners have been provided.

   F. Condition 1.c stipulates that Open Space shall be restricted form further development and shall be offered to the Borough for dedication. The Record Plan

shall label the proposed Open Space and provide metes and bounds of the boundary.
Response: The open space area has been delineated and a note has have been added to the record plan.

2. §27-816.1.B.(3) – The Borough Council shall evaluate all applications relating to common driveways as to the location, placement, and alignment of such common driveways based upon the ease of accessibility to, and efficient maneuverability through, for protective services of fire and police.
Response: Acknowledged.

3. §27-2302.1 – The classification of the onsite stream shall be indicated on the plans. The source of the limit of the Riparian Corridor shown on the plans shall be clarified. Additionally, the Limit of Stream/Top of Bank along the southern side of the stream shall be clarified as it does not appear to match the topography between labels TOB-A6 and TOB-A4 on the Existing Features Plan.
Response: The stream classification and riparian buffer have been noted on the plan.

4. §27-2302.2 – Steep slopes shall be identified on the plans, and the Riparian Corridor boundary shall be updated if applicable.
Response: The steep slopes have been added to the Existing Features Plan.

Subdivision and Land Development Ordinance

1. §22-305 & §22-307 – The plans shall be revised to include or clarify the following information:

   A. The parcels subject to the application shall be labeled on the Record Plan, and the Lot Line to be Removed shall be more clearly labeled. Site Plan Note 3 on sheet 1 shall include both parcels.
   Response: On C1.0, a label has been added to each property containing the relevant Parcel ID numbers. The label regarding the Lot Line to be Removed has been moved into a more prominent position. Site Plan Notes No. 3 has been edited to include both Parcel ID numbers.

   B. The street right-of-way line along the property frontage shall match the legend.
   Response: The plan and legend line type has been edited to match each other.

   C. The Owner's Certification on the Record Plan must include all property owners party to the subdivision and land development.
   Response: On Sheet C1.0, the Owner's Certification has been updated to include the relevant property owners and parties.

   D. The Existing Features (and Demolition) Plan shall label all features to be removed. The limit of tree clearing must be shown on the Existing Features and Grading and Drainage Plans.
   Response: On Sheet C1.1, additional labels reading "TO BE REMOVED" have been added to the existing features plan to better show the features and trees

being removed. The proposed tree line/Limits of Tree Removal has been added to C1.1, C3.0 and C5.0.

E. The bounds of the new site shall be labeled to the right-of-way line.
Response: Boundary information to the right-of-way line has been added.

F. The Combined Lot Area in the Lot Area Calcs. Table on sheet 1 shall indicate "Net".
Response: The table has been revised.

G. Dimensions shall be provided for the backup / turnaround area at the end of the parking row, the radii for all curves, sidewalk width, Community Area, distance between post office parking lot and underground basin / Community Area, driveway to property line.
Response: Added dimension have been added to the plans.

H. The first-floor elevations shall be added to the plans. The ground outside the buildings must be at least 18-inches below finished floor, except at the garages.
Response: First floor elevations have been added to the plans. The proposed project will be slab on grade construction and a minimum of 8-inch to outside grade has been provided as required by building code.

I. ADA ramps shall be designed at the end of the internal sidewalk and both sides of the driveway.
Response: ADA ramps have been provided.

J. Sign symbols.
Response: On Plan Sheet C1.0 and C2.0, the proposed signs symbol has been added to the legend and sign labels have been added to the plans to clarify the proposed signs.

K. Lights.
Response: Lighting has been added.

L. The Location Map shall include the surrounding road names.
Response: On Plan Sheet C1.0 and C1.1, a location map showing the names of surrounding roads has been included.

M. The soils line shall be shown differently for clarity and be included in the legend.
Response: Across all plans, the Soils Boundary Line type has been changed, and the legend has been updated to clarify the Soils Boundary.

N. Existing features within 200 feet of the site are required to be included on the plans. Of particular importance are buildings, topography, vegetation, utilities, sidewalks, signs, etc. An aerial image may be appropriate.
Response: A plan sheet C1.2 has been added with an Aerial Image to show existing features within 200 feet of the site.

O. The proposed building heights and number of stories shall be added to the plans.

Response: On plan sheet C2.0, the building height and number of stories has been added.

P. The legend shall be more complete to clarify the lines and symbols on the plans, particularly on the Record Plan.
Response: Across all plan sheets, legends have been updated to clarify lines and symbols.

Q. The proposed grades shall be shown on the plan view on sheet 14.
Response: Grades have been added to the profile sheet.

2. §22-410.E – The clear sight triangle shall be labeled on the plans, and all existing and proposed features within the sight triangle shall be labeled.
Response: The clean sight triangle has been added to the plans.

3. §22-413 – Sidewalks and Curbs
   A. The curbing within the N. Main St. right-of-way shall be concrete unless a waiver is granted.
   Response: Curbing within the right of way will be concrete.

   B. A detail of the curb tapers shall be added to the plans.
   Response: On Plan Sheet C2.0, a Curb Taper Detail has been added.

4. §22-414.B(2) – Parking areas shall not be located closer than 20 feet from any tract boundary line. These setback areas shall be landscaped in accordance with the requirements of §22-420, General Planting Requirements. Per §22-414.1.A.(3), "Parking" includes the driveway which provides direct access to the parking spaces.
Response: A waiver from this section will be required since the proposed driveway is within 50 feet.

5. §22-420.D.(2) – A 100 percent performance bond shall be posted to ensure replacement of landscape material that is removed, destroyed, damaged, or in ill-health within 15 months of installation. We also recommend an agreement be recorded perpetually requiring the Homeowner's Association to replace any landscaping that dies at any point in the future.
Response: Acknowledged.

6. §22-426 – The Applicant shall present evidence that water will be supplied by a certified public utility.
Response: A water will serve letter will be provided.

7. §22-427 – The Applicant shall present evidence that sewer service will be supplied by a certified public utility.
Response: A sewer will serve letter will be provided.

8. §22-428 – Compliance with Engineering & Construction Standards:

   A. §108.3.A – A letter of endorsement shall be required from the suppliers of utility services wherein the applicant acknowledges that underground utilities are feasible.

Response: The letters of endorsement will be provided.

B. §108.3.D – Proposed lights shall be added to the plans along with footcandles showing safe lighting at the parking lots and along the sidewalks. The footcandles shall also illustrate that lighting will not spill across the tract lines. Details of the light fixtures and supporting bases shall be added to the plans.
Response: The plan has been revised to depict the lights to be provided.

C. §110 – Fire hydrants shall be located at accessible points in the development and shall be located according to the Fire Marshal and Water Authority.
Response: Fire hydrants have been coordinated with the Fire Marshal and Water Authority.

D. §112.1. – Concrete monuments shall be installed along the right-of-way lines where they meet adjoining properties. Property corner pins shall be installed. The pins and monuments shall be shown on the Record Plan. Existing monumentation shall be labeled as Found & Held where applicable.
Response: Boundary monumentation has been added to the plan.

9. §22-502.B – A cost estimate to establish financial security for the completion of the proposed improvements shall be provided.
Response: Acknowledged. A cost estimate will be provided once all plan items have been addressed.

Stormwater Comments

1. §26-132.2.B(3)(i) – The following signature block for the Design Engineer shall be added: "I, (Design Engineer), on this date (date of signature), hereby certify that the SWM Site Plan meets all design standards and criteria of The Neshaminy Creek Watershed Act 167 Stormwater Management Ordinance or Plan."
Response: On Plan Sheet C3.0, the Design Engineer Certification signature bock has been edited to include the above note.

2. §26-161 - For subdivisions and land developments, the applicant shall provide financial security acceptable to the Borough of Hatfield for the timely installation and proper construction of all stormwater management (SWM) facilities as specified in this section.
Response: Acknowledged.

3. §26-164 – A Stormwater Operation and Maintenance Agreement must be provided to the Borough Solicitor's satisfaction.
Response: Acknowledged.

4. The Pre-Development Drainage Area Map shall illustrate the off-site area that is in the calculations.
Response: On Figure 2, the EOS-1 "Existing Undisturbed" area is now shown.

5. The Post-Development Drainage Area Map shall clarify how much runoff from Units 1-4 roofs are proposed to reach the storm basin. The roofdrains / downspouts shall be illustrated on the design plans.

Response: On Plan Sheet C3.0, Roof Drains/downspouts and Roof Drain Collector Pipe has been added.

6. The drainage area to the underground basin on the Post-Development Drainage Area Map does not appear to be accurate. The overland flow north of the driveways and access drive would not enter the basin based on the topography.
Response: The grading has been revised to ensure the overland flow gets into the Underground Basin.

7. We recommend a roofdrain pipe be installed to tie the downspouts from Units 5-8 into inlet box CB-5. This would keep runoff from the downspouts away from the building foundation.
Response: On Plan Sheet C3.0, a Roof Drain Collector Pipe has been added, and it will connect directly into CB-5 to keep runoff away from the building foundation.

8. The Tc paths must be shown on the Drainage Plans.
Response: On Figures 2, 3 and 4, TC Paths are now shown.

9. The Dekalb method of stormwater calculations shall use 3/3 limb factors to better estimate the anticipated volume of runoff.
Response: The Stormwater Calculations have been revised to provided a 3/3 limb factor.

10. The plans shall include the level spreader that is shown on the Detail Sheet. The detail shall be updated to reflect the proposed discharge pipe condition.
Response: The application is no longer proposing a Level Spreader, and the detail has been removed.

11. The storm sewer design calculations must consider the tailwater elevation in the storm basin.
Response: The Storm Sewer Design Calculations have been revised to consider the tailwater elevation.

12. Stormwater runoff from the neighboring properties to the south currently drains to, and across, the subject property. The plans proposed to raise the grade along the southern property line by over one foot in some locations. Additional topographic detail shall be provided along this property line to confirm the drainage from the neighboring properties will not be blocked. In particular, the Haque / Islam property contains a garage approximately two feet from the property line where the grade will be raised.
Response: The grading has been revised to not trap runoff from many of the neighboring properties, however, in most cases the runoff will flow along the propert line parallel to Board Street. The flow from the Haque/ Islam and Derstine properties will be conveyed around the property to the Walker property in a manner consistent with the existing conditions.

Erosion and Sedimentation Control Comments

1. The proposed silt socks must be shown more clearly on sheet 10.
Response: On Plan Sheet C5.0, the filter socks are now shown more clearly.

2. Existing trees and Tree Protection Fencing must be added to the plan.

Response: On Plan Sheet C5.0, the existing tree line, the proposed tree line and tree protection fencing has been added.

3. Construction fencing shall be added along the limits of disturbance.
   Response: On Plan Sheet C5.0, a note has been added to the plans stating that construction fencing is to be added along the Limits of Disturbance and Sequence of Construction Note 3 has been edited to include Construction Fencing.

4. If the plans are not being reviewed by the MCCD, then references to that agency can be removed from the notes on sheet 10.
   Response: On Plan Sheet C5.0, references to MCCD have been removed from the notes.

5. The Sequence of Construction must indicate that no earth disturbance shall commence until Hatfield Borough inspects the E&S controls and authorizes earth disturbance activities to begin. The E&S controls shall not be removed until authorization is given by the Borough.
   Response: On Plan Sheet C5.0, the sequence of Construction Notes 4 and 13 has been edited to indicate that earth disturbance cannot commence, nor E&S controls can be removed, without authorization from Hatfield Borough.

6. A topsoil stockpile location shall be added to the plans.
   Response: On plan sheet C5.0, a topsoil stockpile has been added.

7. All lines and symbols representing E&S controls must match the Legend.
   Response: On plan sheet C5.0, lines and symbols have been updated to ensure plans and legends match.

Sanitary Sewer Comments

1. The sanitary sewer design should be discussed with our office. In particular, the following will need to be coordinated:

   A. Illustrate the sanitary modifications being made in North Main Street

   B. Internal sanitary layout and depth of force main

   C. Locations of the grinder pumps and accessory panels and backup power supply

   D. Pump design / hydraulic capacity pump curve

   Response: The additional information has been provided. The pump design information is included with this submission.

2. The following note shall be added to the Utility Plan:
   "The sanitary sewer system in North Main Street is in the process of being replaced by Hatfield Borough during the design of these plans. The configuration of the sanitary lateral connection may be different than what is illustrated on these plans by the time the site is being developed."
   Response: On plan Sheet C4.0, a Utility Note 17 has been added.

3. The plans include a label "See General Note 7" at the existing sanitary sewer manholes in North Main Street. General Note 7 is not applicable to sanitary sewer.
   Response: The label has been removed.

4. PADEP Sewage Facilities Planning shall be addressed.
   Response: A copy of the planning module mailer is included.

General Comments

1. The existing asphalt parking area for the Post Office encroaches approximately 12 feet onto the subject property. The Applicant shall indicate whether a parking easement exists on the property and illustrate the easement on the plans. If no easement exists, then one will need to be established, or the parking area will need to be removed.
   Response: The existing parking easement/ lease area has been provided on the plans.

2. The existing pull-in parking spaces for the Post Office are located approximately 8 feet from the proposed Community Area and underground storm basin. A barrier should be installed to stop vehicles from driving into this area.
   Response: A post and rail fence has been added to the plans.

3. The intention of the Community Area and any amenities shall be clarified.
   Response: The community area is to be kept as lawn. A label has been added to the plans.

4. The Belgian Block Curb detail indicates a curb reveal of 7-inches, and the spot grades indicate a 6-inch reveal. The curb reveal shall be clarified.
   Response: The Belgian block curb detail has been revised.

5. Some of the neighboring properties to the south contain two-story garages / potential living areas within one foot of the property line. The Applicant and Borough should consider the impact on these property owners to access the rear of their buildings when the privacy fence is installed along the property line.
   Response: The fence has been adjusted closer to the proposed driveway to provide additional space.

6. The proposed six-space pull-in parking is proposed to be located approximately 6 feet from the wall of Unit 1. We recommend a barrier, bumper blocks, and/or landscaping be provided to protect the building. Additionally, headlights and exhaust would likely be a nuisance to the occupants if windows are built on that wall.
   Response: Landscape buffering has been added to the plans.

7. The plans shall clarify if the site will contain community or individual mailboxes.
   Response: A community mailbox pad has been added to the plan.

8. Site Plan Note 20 on sheet 1 shall include sheets 1, 3, 6, and 7 to be recorded. These sheets shall also be noted to be recorded on the Drawing List.
   Response: The note has been revised.

9. Site Plan Note 9 on sheet 1 shall clarify that each unit will be responsible for trash pickup at their driveways rather than a community dumpster.
   Response: The note has been revised.

10. We recommend a backup / turn-around area be provided in the access driveway for Unit 4 to back out of their driveway.
    Response: Additional backup area has been provided.

11. Turning templates shall be provided for internal site movements.
    Response: A copy of the fire truck turning template has been provided in a separate plan included with this submission.

12. Detail Sheet:
    A. The intent of the Street Sign shall be clarified since no sign is proposed on the plans.
       Response: The street sign has been removed.

    B. Details shall be provided for concrete curb, ADA ramps at the intersection and lights.
       Response: The details have been added.

13. Detailed design of the ADA ramps shall be provided prior to plan recording.
    Response: The additional ramp information has been provided on sheet #6.

14. The proposed crosswalk and stop bar on the Detail Sheet shall be illustrated on the plans.
    Response: The crosswalk and stop bar have been added to the plans.

15. Grading Note 6 on sheet 5 shall be revised to resolve the conflict in the horizontal to vertical slopes.
    Response: The note has been revised.

16. The proposed Japanese Zelkova tree at the intersection of the driveway and N. Main St. shall be removed to avoid conflicts with sight distance, overhead utilities, neighboring driveway, and sidewalk. The three proposed Japanese Zelkova trees along the Renner property shall be replaced with trees that will not impact the Renner's property and the proposed sidewalk.
    Response: The landscaping has been revised.

17. We recommend the privacy fence be extended along the property line between Unit 5 and the Post Office parking lot, at a minimum, for safety, security, and privacy.
    Response: The privacy fence has been extended.

18. Homeowner's Association documents shall be provided to the satisfaction of the Borough Solicitor.
    Response: Acknowledged.

19. Legal descriptions shall be provided for the overall tract, any defined easements, and areas to be offered for dedication to Hatfield Borough.
    Response: The legal descriptions will be provided once all engineering items have been satisfied.

20. Reviews, approvals, permits required include, but are not limited to, the following:

    A. PaDEP Sewage Facilities Planning
    B. Montgomery County Planning Commission
    C. Borough Traffic Engineer
    D. Borough Fire Marshal
    E. Borough Electric Consultant
    F. Emergency Service providers
    G. NPWA – for service adequacy and design approval
    H. HTMA – for sewage treatment capacity

    Response: Acknowledged.

21. Additional comments may be generated from subsequent submissions as a result of the plan and design revisions and additional information to be provided.
    Response: Acknowledged.

Traffic Review Letter from Bowman dated September 20, 2024.

Site Access Study

1. The site access study should be revised to include a traffic analysis of the intersection of intersection of Main Street and Broad Street. The intersection currently experiences delay during the commuter peak hours and the queuing along Main Street may impact the operation of the site driveway during the commuter peak hours. A gap study along North Main Street at the proposed site driveway location should be conducted if necessary to confirm that there are an adequate number of gaps in the North Main Street traffic stream for vehicles to safely enter and exit the site.
   Response: As requested, the Main Street and Broad Street intersection has been included in the traffic analysis. Additionally, a gap study has been completed at the site driveway and is included in the revised traffic analysis.

2. The site access study should be updated to include capacity/levels-of-service analysis for the intersection of North Main Street and the site driveway for the weekday morning and weekday afternoon peak hours under 2029 future with-development conditions.
   Response: As requested, capacity analysis has been included in the revised traffic analysis.

3. The study should be revised so that the entering and exiting site trips for the weekday morning peak hour shown in Table 6 and on Figure 6 match the distribution percentages shown in Table 5. In addition, the turn lane warrant analysis shown in Appendix C should be revised accordingly.
   Response: As requested, the traffic analysis has been revised to address the above comment.

Preliminary/Final Land Development Plans

1. The pavement markings along Main Street at the site access should be reviewed. Modifications to the pavement markings may be required to properly manage the

movements to \from the site, the left turn lane at the signalized intersection, and the existing pedestrian crossing and parking at the post office. It should be noted that the Borough has identified traffic calming\pedestrian improvements along North Main Street at the existing pedestrian crossing for the post office.
Response: Acknowledged.

2. Sight distance measurements must be shown on the plans for the intersection of North Main Street and the site driveway as required by Section 22-405.1 of the Subdivision and Land Development Ordinance.
Response: Sight distances have been added to the plans.

3. Turning templates should be provided with future plan submissions demonstrating the ability of a trash truck, emergency vehicle, and the largest expected delivery truck to maneuver into and out of the driveway along North Main Street and entirely through the site. The Borough Fire Marshal should review the emergency vehicle turning template for accessibility and circulation needs of emergency apparatus.
Response: The fire truck turning template has been provided.

4. A "Stop" sign and stop bar should be shown on the plans on the site driveway approach to North Main Street. "No Parking" signs should be shown on the plans along the eastern side of the site driveway from North Main Street to the northern end of the site driveway.
Response: The additional signage has been provided.

5. ADA ramps must be provided at the driveway along Main Street for the existing sidewalk. An ADA ramp should also be shown on the plans on the northern end of the sidewalk located on the western side of the site driveway at its intersection with the drive aisle leading to/from the townhomes.
Response: Ramp information has been added to the plans.

6. A back-up area should be provided on the western end of the drive aisle leading to/from the townhomes so that vehicles backing out of the driveways for lots 4 and 5 have adequate space to complete this maneuver.
Response: Additional backup area has been provided

Fire Review Letter from Code Inspections, Inc. dated September 10, 2024

1. Due to the length of the proposed dead end fire lane a fire apparatus access road turnaround must be provided.
    a. For approval a fire apparatus turning model shall be provided using the attached specifications for the Hatfield Fire Company Ladder Truck. The turning radius of the street and the apparatus turnaround shall be designed to accommodate the requirements for this apparatus.

    b. The purpose of this model is to confirm that the fire apparatus will be able to enter and exit the property including using the provided fire apparatus access road without leaving the paved surface with minimal backing of apparatus.
    Response: The turning template has been provided on a supplemental plan sheet.

If you have any questions or require additional information, please do not hesitate to contact us at 215-586-3330 or rob@hcengineering.net

Very truly yours,
Holmes Cunningham Engineering

Rob Cunningham, P.E., LEED AP
Partner

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Engineer Review Letter

Bursich Associates
A DIVISION OF VAN CLEEF ENGINEERING

2129 East High Street
Pottstown, PA 19464

November 11, 2024

Jaime E. Snyder
Borough Manager
Hatfield Borough
401 South Main Street
P.O. Box 190
Hatfield PA 19440

RE: **Hatfield Walk Townhomes (23 N. Main St.)**
Land Development Review Letter 2
Bursich Project No: HAT-01 / 228290

Dear Jaime:

As requested, Van Cleef Engineering has reviewed the revised Preliminary / Final Land Development Plan submission for the Hatfield Walk Townhouse project. The submission consisted of the following information prepared by Holmes Cunningham Engineering:

- Plans titled Hatfield Walk, consisting of sheets 1 through 15 of 15, dated August 7, 2024 with latest revision date of October 11, 2024
- Plan titled Hatfield Walk – Fire Truck Turning Template, sheet 1 of 1, dated October 14, 2024 with no revision date
- Post Construction Stormwater Management Plan Narrative, dated August 7, 2024 with latest revision date of October 14, 2024
- Letter dated October 14, 2024 in response to Borough consultant review letters
- Letter dated Oct 10, 2024 from Site Specific Design, Inc. with Pressure Sewer Design Analysis

The site consists of two parcels: one contains an existing dwelling, fronts N. Main Street, and is located entirely in the CC – Core Commercial Zoning District; while the other is unimproved, is landlocked behind the first property and the Post Office property, and is split between the CC District and R-1 Residential District. The plan proposes eight townhouse units in two buildings, each with four units, separated by a paved access aisle. Each unit is proposed to include a two-car garage and driveway. Six parallel parking spaces are proposed along the access aisle, and a separate six-space lot is also proposed, for a total of twelve shared parking spaces. The existing dwelling on the N. Main Street parcel is to be demolished to construct the driveway, which will gain access from N. Main Street. The applicant intends to remove the common property line and join the properties into a common deed.

We offer the following for your consideration:

www.vancleefengineering.com

OFFICE LOCATIONS

Hillsborough, NJ 908-359-8291
Hamilton, NJ 609-689-1100
Mt. Arlington, NJ 862-284-1100
Toms River, NJ 732-573-0490
Phillipsburg, NJ 908-454-3080
Freehold, NJ 732-303-8700
Doylestown, PA 215-345-1876
Bethlehem, PA 610-332-1772
Pottstown, PA 610-323-4040

VARIANCES GRANTED

At a Hearing on April 24, 2024, the Hatfield Borough Zoning Hearing Board granted the following variances from the Borough's Zoning Ordinance, subject to seventeen conditions:

1. A variance from Section §27-1202 to allow townhouses in the R-1 Residential Zoning District.

2. A variance from Section §27-1204 to permit alternate dimensional standards in the R-1 Residential Zoning District.

3. A variance from Section §27-2101 to allow townhouses in the CC Core Commercial Zoning District.

4. A variance from Section §27-2108.1.G to permit alternate rear yard dimensional standards in the CC Core Commercial Zoning District.

5. A variance from Section §27-2108.1.H to permit alternate front yard dimensional standards in the CC Core Commercial Zoning District.

WAIVERS REQUESTED

The following waivers have been requested. The Requested Waivers shall be listed on the Record Plan and in a letter to the Borough.

1. §22-414.B(2) – Parking areas shall not be located closer than 20 feet from any tract boundary line. These setback areas shall be landscaped in accordance with the requirements of §22-420, General Planting Requirements. Per §22-414.1.A.(3), "Parking" includes the driveway which provides direct access to the parking spaces. The driveway parking / driveway is proposed to be 5.5 feet from the eastern property line, 14 feet from the northern line, and 13 feet from the western line.

2. §22-420.1.C.(2) - A waiver to allow a six-foot high privacy fence along the Renner property rather than the required five shade trees, and a six-foot high privacy fence and shrubs along the southeastern property boundary rather than the required seven shade trees. There is not sufficient space for shade trees along these property lines.

ZONING ORDINANCE COMMENTS

1. The following items must be revised to comply with the Zoning Decision:

    A. We recommend the privacy fence along the driveway should extend to the face of the dwelling on the Renner property.

B. Condition 1.c stipulates that Open Space shall be restricted form further development and shall be offered to the Borough for dedication.

The Record Plan includes a 0.467-acre area labeled "Open Space". The metes and bounds of the boundary shall be shown in larger vertical text for clarity and to indicate it is proposed rather than existing. A fee-simple dedication of this area would create a subdivision with a new lot (property), which would impact the proposed area and dimensional information as they apply to meeting Zoning requirements. The Borough should also consider its intent with this Open Space area. If the intent is to create access from N. Main Street to Centennial Park, then additional planning and easement agreements will be necessary for public access through the private townhouse property to the Borough-owned park property. The Borough should also consider if they wish the walkway to be ADA-compliant.

2. §27-816.1.B.(3) – The Borough Council shall evaluate all applications relating to common driveways as to the location, placement, and alignment of such common driveways based upon the ease of accessibility to, and efficient maneuverability through, for protective services of fire and police.

3. The following revisions shall be made to the Zoning Data Table on Sheet 1:

A. The Required / Permitted Max. Building Coverage is 35%.
B. The Proposed Front Yard and Rear Yard setbacks appear to have been switched.

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

1. §22-305 & §22-307 – The plans shall be revised to include or clarify the following information:

A. The Owner's Certification on the Record Plan indicates Pennington Property Group, LLC. is the owner of the properties, while the submitted deed indicates Kaler/Moyer is the owner. The legal owners of both properties must be represented on the plans.
B. The proposed bounds of the eastern property line must be for the combined property.
C. The northern adjoiner property line between the Hatfield Borough and Walker properties shall be made more clear.
D. Dimensions shall be provided for the backup / turnaround area between units 4 and 5, sidewalk width, distance between the buildings and sidewalks/curbs, driveway and fences to all property lines, fence lengths along the eastern property line including the gap for the fire hydrant.
E. Proposed spot elevations shall be provided at all corners of the buildings and along the sides of Units 5 and 8.
F. The limits of the curbing within the site shall be labeled.
G. A note shall be added to sheet 6 stating that an As-built Plan of the ADA ramps shall be submitted to Hatfield Borough after construction to confirm ADA compliance.
H. Lighting shall be provided for all parking spaces and walkways.

2. §22-420.D.(2) – A 100 percent performance bond shall be posted to ensure replacement of landscape material that is removed, destroyed, damaged, or in ill-health within 15 months of installation. We also recommend an agreement be recorded perpetually requiring the Homeowner's Association to replace any landscaping that dies at any point in the future.

3. §22-426 – The Applicant shall present evidence that water will be supplied by a certified public utility.

4. §22-427 – The Applicant shall present evidence that sewer service will be supplied by a certified public utility.

5. §22-428 – Compliance with Engineering & Construction Standards:

   A. §108.3.A – A letter of endorsement shall be required from the suppliers of utility services wherein the applicant acknowledges that underground utilities are feasible.
   B. §108.3.D – A detail of the light fixture bases shall be added to the plans.
   C. §110 – The Fire Marshal should review the proximity of the proposed fences to the fire hydrant.
   D. §112.1. –Existing monumentation shall be labeled as Found & Held where applicable.

6. §22-502.B – A cost estimate to establish financial security for the completion of the proposed improvements shall be provided.

STORMWATER COMMENTS

1. §26-161 - For subdivisions and land developments, the applicant shall provide financial security acceptable to the Borough of Hatfield for the timely installation and proper construction of all stormwater management (SWM) facilities as specified in this section.

2. §26-164 – A Stormwater Operation and Maintenance Agreement must be provided to the Borough Solicitor's satisfaction.

3. The grading along the eastern corner of the property may block stormwater from adjoining properties. Additional topographic detail shall be provided. Stormwater drainage facilities may be necessary to provide positive drainage away from the property line and existing buildings.

4. The elevation of the weir on the detail on sheet 7 shall be revised to 323.30 to match the design calculations. The references to a level spreader shall be removed from the details.

5. The storm inlet labels shall be added to the plan view on sheet 15. The sanitary force main crossing shall be removed from the CB-1 to CB-2 Profile, as the crossing will be eliminated by shifting the force main.

6. The proposed grading behind and along the sides of units 5 to 8 appears to be too flat. The grate elevation of Inlet CB-5 also appears to be higher than the ground around it.

7. The flow summary tables on page 6 of the stormwater report do not appear to be accurate. While the design calculations appear to be satisfactory, the summary tables shall be updated.

EROSION AND SEDIMENTATION CONTROL COMMENTS

1. Tree protection fencing shall be shown around the trees next to and behind the Renner property.

2. A minimum rock size for the riprap apron should be R-4.

3. The proposed post and rail fence along the post office parking lease area appears as compost filter sock on sheet 11.

SANITARY SEWER COMMENTS

1. The proposed force main shall be shifted to the south to avoid the crossing with the storm pipe leaving inlet CB-1. The force main profile shall be revised to eliminate the dip. The water line should be shifted accordingly to maintain a 10-foot spacing from the force main.

2. The accessory equipment and backup power for the grinder pumps is proposed to be installed within dwelling units 1 and 8. The community sanitary equipment must be installed in an accessible location.

3. Utility Note 8 on sheet 8 must be revised to eliminate "Municipal Authority" after Hatfield Borough.

4. PaDEP Sewage Facilities Planning shall be addressed.

GENERAL COMMENTS

1. The plans illustrate a Parking Lease Area on the site for use by the Post Office. The metes and bounds of the lease area shall be added to the Record Plan, a copy of the lease agreement shall be provided, and a note shall be added to the plan referencing the agreement.

2. A barrier should be installed to stop vehicles from driving into the Community Area / Underground Basin area.

3. The plans now show the fence to be installed approximately four feet from the eastern property line. A dimension shall be added to the plans.

4. Site Plan Note 20 on sheet 1 shall be revised to replace sheet 3 with sheet 4 to be recorded.

5. We recommend a larger backup / turn-around area in the access driveway for vehicles in Unit 4 to back out of their driveway. A dimension shall be added to the plans.

6. The proposed grading at the eastern corner of the property between the curb and Walker property does not appear to be shown correctly based on the top of curb elevations.

7. The Fire Marshal should review the Fire Truck Turning Template plan for maneuverability.

8. The Applicant and Borough should consider if a "street" name sign should be installed for the driveway.

9. The details shall be revised to specify 4,000 psi for all curbs, sidewalks, and ramps.

10. The proposed crosswalk on the plans and Detail Sheet shall match the Borough's standard crosswalk pattern, which can be seen at the intersection of Broad St. and Main St.

11. Homeowner's Association documents shall be provided to the satisfaction of the Borough Solicitor.

12. Legal descriptions shall be provided for the overall tract, any defined easements, and areas to be offered for dedication to Hatfield Borough.

13. Reviews, approvals, permits required include, but are not limited to, the following:

    A. PaDEP Sewage Facilities Planning
    B. Montgomery County Planning Commission
    C. Borough Traffic Engineer
    D. Borough Fire Marshal
    E. Borough Electric Consultant
    F. Emergency Service providers
    G. NPWA – for service adequacy and design approval
    H. HTMA – for sewage treatment capacity

14. Additional comments may be generated from subsequent submissions as a result of the plan and design revisions and additional information to be provided.

The comments are made with the understanding that all existing features and topography are accurately represented on the plans, and that all designs, calculations and surveys are accurate and have been prepared in accordance with current laws, regulations, and currently accepted Professional Land Surveying and Engineering practices.

Should you have any questions or need further information, please feel free to contact me at 484-941-0418 or ccamburn@vancleefengineering.com.

Very Truly Yours,
Van Cleef Engineering Associates, LLC

Chad E. Camburn, P.E.
Senior Technical Manager

Pc: Katie Vlahos, Assistant to the Borough Manager *(via email)*
Kate Harper, Borough Solicitor *(via email)*
Bob Heil, Hatfield Borough Zoning Officer *(via email)*
Ben Goldthorp, Pennington Property Group, LLC., Applicant *(via email; ben@penningtonpropertygroup.com)*
Rob Cunningham, P.E., Holmes Cunningham LLC, Applicant's Engineer *(via email; rob@hcengineering.net)*

Traffic Engineer Review Letter

Bowman

November 7, 2024

Ms. Jaime E. Snyder
Borough of Hatfield
401 South Main Street
P.O. Box 190
Hatfield, PA 19440

RE: Traffic Engineering Review #4
Proposed Residential Development – Hatfield Walk
23 North Main Street
Hatfield, PA 19440
Project No. 311304-01-001

Dear Jaime:

Per your request, Bowman Consulting Group (Bowman) has completed a traffic engineering review of the proposed residential development to be located at 23 North Main Street in the Borough of Hatfield, Montgomery County, PA. It is our understanding that the proposed development will consist of the development of eight (8) townhomes. Access to the proposed development will be provided via a full-movement driveway along North Main Street.

The following documents were reviewed and/or referenced in preparation of our comments:

- Transportation Impact Assessment – Proposed Hatfield Homes Residential, prepared by TPD, Inc., dated October 18, 2024.
- Preliminary/Final Land Development Plans – Hatfield Walk, prepared by Holmes Cunningham Engineering, last revised October 11, 2024.

Bowman continues to offer the following comments pertaining to the land development plans for consideration by the Borough and action by the applicant.

1. Bowman finds that all outstanding traffic-related technical comments associated with the transportation impact assessment (TIA) have been satisfactorily addressed and we have no additional comments pertaining to the TIA at this time. It should be noted that based on information provided in Table 10 of the study, the queues along North Main Street, from its intersection with Broad Street, will extend past the site access during both peak hours. Driveway and traffic signal operations should be monitored after the development is open and operating at full occupancy.

2. It should be evaluated to revise the pavement markings along North Main Street at the site access to provide a painted\gored taper for the existing southbound left-turn lane at Broad Street. Also, a painted median\center turn lane area should be provided along North Main Street encompassing the site driveway and the church driveway. The median\center turn lane should taper to the existing conditions at the pedestrian crossing for the post office.

425 Commerce Drive Suite 200, Fort Washington, PA 19034
P: 215.283.9444
bowman.com

3. Turning templates should be provided with future plan submissions demonstrating the ability of a trash truck, emergency vehicle, and the largest expected delivery truck to maneuver into and out of the driveway along North Main Street and entirely through the site. The Borough Fire Marshal should review the emergency vehicle turning template for accessibility and circulation needs of emergency apparatus.

4. A back-up area should be provided on the western end of the drive aisle leading to/from the townhomes so that vehicles backing out of the driveways for lots 4 and 5 have adequate space to complete this maneuver.

5. The white stripe pavement marking shown on the plans on the center of the driveway at its intersection with North Main Street should be replaced with a double yellow line pavement marking.

6. The plans should include details for the proposed ADA ramps on both sides of the site access along North Main Street.

7. Review of the on-site ADA ramps has not been completed by our office, but these ramps must be designed by the applicant's engineers to comply with Federal/PennDOT design standards for ADA facilities.

8. A response letter must be provided with the resubmission detailing how each comment below has been addressed, and where each can be found in the resubmission materials (i.e., page number(s)) to assist in the re-review process. Additional comments may follow upon review of any resubmitted and more detailed pans during the land development process.

We trust that this review letter responds to your request, and satisfactorily addresses the traffic issues related to the proposed development at this time. If the Borough has any questions, or requires further clarification, please contact me.

Sincerely,

Anton Kuhner

Anton Kuhner, P.E.
Regional Service Lead - Signals

AKK/BMJ

cc: Chad Camburn, P.E., Bursich Associates, Inc
Catherine M. Harper, Borough Solicitor
Bob Heil, Borough of Hatfield
Rob Cunningham, P.E., Holmes Cunningham Engineering (Applicant's Engineer)
Matt Hammond, P.E., TPD, Inc. (Applicant's Traffic Engineer)

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Fire Marshal Review Letter

Code Inspections, Inc.

603 Horsham Road
Horsham, PA 19044

A Full Service Agency Providing
Professional Inspection Services

Phone: 215-672-9400
Fax: 215-672-9736

November 11, 2024

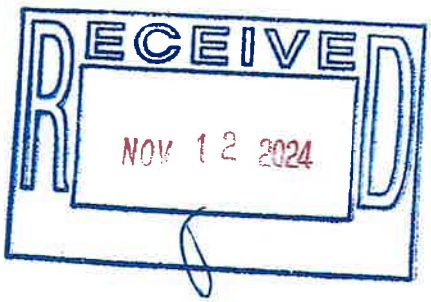
Re: Preliminary and Final Land Development Review for Hatfield Walk proposed at 23 North Main Street

To Whom It May Concern:

The review of the plan referenced above for compliance with the 2018 International Building Code and the 2018 International Fire Code as adopted by the Pennsylvania Uniform Construction Code as well as the 2012 International Fire Code as amended and adopted by the Borough of Hatfield. The review has been completed and items in the previous submittal review letter have been addressed and approved.

Yours in safety,

Daniel Azeff
Fire Marshal
Borough of Hatfield



Montgomery County Planning Commission Review Letter

MONTGOMERY COUNTY
BOARD OF COMMISSIONERS

JAMILA H. WINDER, CHAIR
NEIL K. MAKHIJA, VICE CHAIR
THOMAS DIBELLO, COMMISSIONER

WWW.MONTGOMERYCOUNTYPA.GOV

MONTGOMERY COUNTY
PLANNING COMMISSION

MONTGOMERY COUNTY • PO BOX 311
NORRISTOWN, PA 19404-0311

610-278-3722
PLANNING@MONTGOMERYCOUNTYPA.GOV

SCOTT FRANCE, AICP
EXECUTIVE DIRECTOR

October 2, 2024

Ms. Jaime Snyder, Borough Manager
Hatfield Borough
401 S. Main Street
Hatfield, PA 19440

Re: MCPC #24-0003-002
Plan Name: Hatfield Walk
(8 du/1 lot on approximately 1.5 acres)
Situate: Main Street (N); northwest of Broad Street
Hatfield Borough

Dear Ms. Snyder:

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 on August 21, 2024. We forward this letter as a report of our review.

BACKGROUND

The applicant, Pennington Property Group, has submitted a preliminary land development plan dated August 7, 2024 showing the construction of 8 new townhomes. In addition to garages and driveways for each townhome unit, 12 surface parking spaces are shown. The planned development also involves the construction of stormwater management facilities, a community area, and sidewalks. The proposal shows the consolidation of two properties and the removal of an existing home on the parcel fronting North Main Street. This property is located in the borough's Core Commercial zoning district. Public water and sewer serve the site.

The Montgomery County Planning Commission (MCPC) previously reviewed both a sketch plan on August 7, 2023 (MCPC # 23-0133-001), and a conceptual plan with a zoning text amendment on February 7, 2024 (MCPC # 24-0003-001) for the subject tract.

According to Sheet 1 of the Record Plan provided to MCPC on August 21, 2024, the applicant has received the following variances from the Hatfield Borough's zoning ordinance.

- From §27-1202 *Permitted Uses*
- From §27-1204 *Dimensional Standards*
- From §27-2101 *Statement of Intent*
- From §27-2108.1.G *Minimum Rear Setback*
- From §27-2108.1.H *Front Yard Depth*

CONSISTENCY WITH COMPREHENSIVE PLANS

The proposed plan is generally consistent with the Montgomery County Comprehensive Plan, *Montco 2040: A Shared Vision*, and, in particular, its objectives to support growth and development in appropriate areas with existing infrastructure. The applicant's site lies within a "designated growth area" per the Growth and Preservation component of the county comprehensive plan. Furthermore, our Future Land Use Map categorizes the subject tract as a "Town Residential Area". The Plan advises that these areas are oriented towards pedestrians more than automobiles. A primary use in these areas are townhouses, though Town Residential Areas can have a variety of housing types mingled within blocks or small neighborhoods.

RECOMMENDATION

The Montgomery County Planning Commission (MCPC) generally supports the applicant's proposal, however, in the course of our review we have identified the following issues that the applicant and borough may wish to consider prior to final plan approval. Our review comments are as follows:

REVIEW COMMENTS

CIRCULATION

A. Pedestrian Facilities. The Walk Score® (https://www.walkscore.com/score/23-n-main-st-hatfield-pa-19440) of the development site is rated 50 (out of 100). For the provision of new sidewalks, which shall link this residential development to North Main Street, the borough may wish to consider if additional measures can be taken to facilitate walking to and from local destinations, such as Hatfield Elementary School and the central business district. We recommend that the large driveway curb cut have ADA curb ramps and a marked crosswalk.

B. Dead-End Street. The access driveway delineated on the plan may be deemed a dead end street. It is uncertain how cars will adequately maneuver within the area at the end of the access drive. There appears to be a lack of backup space for Unit 4 in particular. We defer to the Borough Engineer to determine if the layout, as proposed, meets applicable municipal standards. A turnaround area may need to be considered. We recommend that future plan submissions include a truck turning template showing how trash trucks or emergency vehicles could enter/exit the site.

LANDSCAPING

The proposed plan removes two existing trees, while adding four new trees and eight shrubs. Section 22-420.1.C(3)(a) of the Subdivision and Land Development Ordinance (SALDO) requires a ratio of at least two trees for each 100 feet of property line. While the applicant has requested a waiver of the tree requirements, we recommend additional trees to provide appropriate shade and aesthetic where feasible. All shade trees should be from the list provided in § 22-421 of the SALDO. Native trees can be planted within the Riparian Corridor Conservation Overlay District in accordance with § 22-433 of the SALDO.

STORMWATER MANAGEMENT

We recommend that the developer provide some guidance for maintenance of the underground stormwater basin, as the HOA will likely be responsible.

PROPOSED COMMUNITY AREA

A "community area" is delineated on the plan in the rear portion of the development parcel. It is unclear how this open space area will function. We suggest that this open space could be furnished with various amenities, including enhanced landscaping, and, possibly, an area for sitting or passive recreation.

MISCELLANEOUS

A. Highway Occupancy Permit
As shown on the submitted plan, the applicant proposes a point of ingress/egress along Main Street (SR 0463), which is a state road maintained by the Pennsylvania Department of Transportation (PennDOT). We defer to the borough and applicant to coordinate with PennDOT concerning any issues regarding a highway occupancy permit, if applicable.

B. Building Better Townhouse Communities
The Montgomery County Planning Commission has published a report titled Building Better Townhouse Communities, which offers suggestions, recommendations and best practices related to townhouse developments. We invite municipal officials and the applicant to download this document from our website (https://www.montgomerycountypa.gov/1459/Publications) to gain insight on County land development policies regarding this development type.

Of particular importance are the sections related to Townhouse Design Elements and Best Practices and open space (pg. 11), garage design standards (pg. 29), parking standards (pg. 30), and garage design options (pg. 33).

CONCLUSION

We wish to reiterate that MCPC generally supports the applicant's proposal but we believe that our suggested revisions will better achieve the borough's planning objectives for residential development.

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 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.

Please print the assigned MCPC number (24-0003-002) on any plans submitted for final recording.

Sincerely,

Adam Schantz, Community Planner II
adam.schantz@montgomerycountypa.gov – 610-278-3722

cc: Pennington Property Group, Applicant
Katie Vlahos, Assistant Borough Manager
Scott Burton, PennDOT
Paul Lutz, PennDOT
Fran Hanney, PennDOT

Attachment A: Aerial Image of Site
Attachment B: Reduced Copy of Applicant's Proposed Site Plan

Jaime Snyder, Borough Manager

Attachment A

October 2, 2024

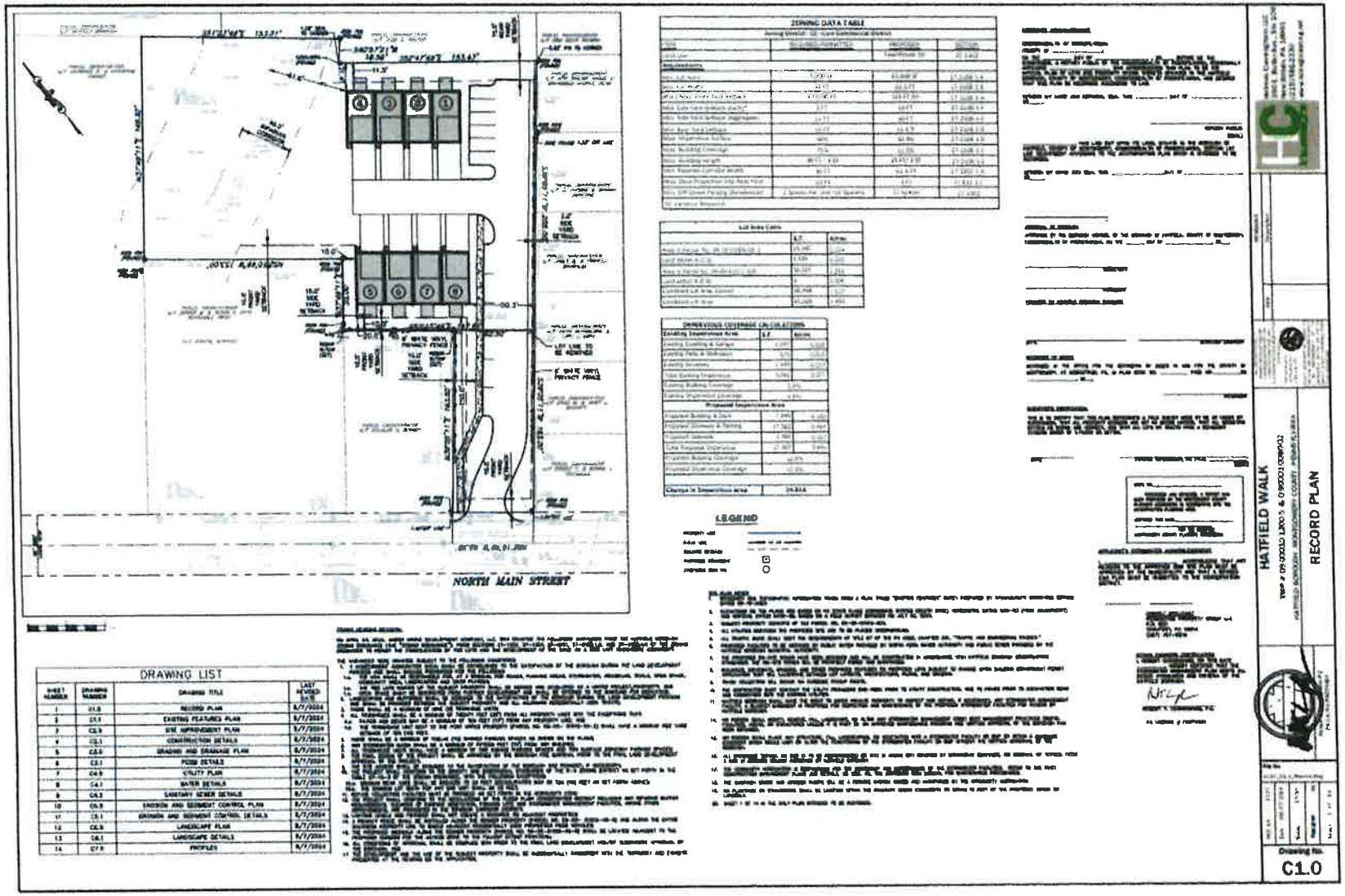
Hatfield Walk
MCPC#240003002

Montgomery
County
Planning
Commission

0 50 100 200 Feet

N

Montgomery County Courthouse - Planning Commission
PO Box 311 Norristown PA 19404-0311
(p) 610 278-3722 (f) 610 278-3941
www.montcopa.org/plancom
Aerial photography provided by Nearmap


NORTH MAIN STREET
ZONING DATA TABLE
LEGEND
DRAWING LIST
HATFIELD WALK
RECORD PLAN
Drawing No.
C1.0

ZHB Decision

BEFORE THE ZONING HEARING BOARD OF HATFIELD BOROUGH

IN RE: THE APPLICATION OF ARBOR GROVE DEVELOPMENT COMPANY, LLC

DECISION AND ORDER

FINDINGS OF FACT

1. On or about February 15, 2024, Arbor Grove Development Company, LLC (the "Applicant") submitted an Appeal (the "Application") to the Hatfield Borough Zoning Hearing Board (the "Board") requesting Variances to Sections 27-1202, 27-1204, 27-2102, 27-2108.1.G and 27-2108.1.H of the Borough's Zoning Ordinance ("Zoning Ordinance") proposing the consolidation of two separate parcels into one parcel for the development of a nine unit townhouse community.[1]

2. The properties which are the subject of the Application (collectively the "Subject Property") are owned by Robert L. Kaler, III and Joanne E. Moyer (Parcel No. 09-00-01012-00-5) and Barry V. Moyer and Joanne E. Moyer (Parcel No. 09-00-01006-00-2) located at N. Main Street and 23 N. Main Street.

3. The Subject Property is split zoned with a portion being in the Borough's CC-Core Commercial Zoning District and the remainder in the R-1 Residential Zoning District. The Board was unsure whether the zoning line followed the existing property lines.

4. The Applicant was authorized by the owners of the Subject Property to submit the Application and request the relief set forth therein as evidenced by the Owners' signature on the Application.

5. The Subject Property consists of two parcels. Parcel No. 09-00-01012-00-5 is a vacant landlocked lot identified as N. Main Street consisting of 55,067 square feet. Parcel No. 09-00-01006-00-2 is identified as 23 N. Main Street consisting of approximately 10,000 square feet (+/-) and is improved with a house.

---

[1] The Application, as submitted, stated the Zoning Districts as Core Commercial and R2. Applicant revised its Application to amend and correct the Zoning Districts to Core Commercial and R1. This amendment was completed prior to advertising the hearing.

6. The Subject Property is surrounded by single family homes, the post office, a borough park, and a commercial business. See Exhibit A-2.

7. A hearing on the Application (the "Hearing") occurred before the Board on March 27, 2024. At the Hearing, Board members James Rudolph, Chairman, John Pedrazzani, and Paul Mullin, Esquire were present. Dan Ruch, Alternate Member, was also present. The Board was represented by its Solicitor, Eric C. Frey, Esquire, of the law firm of Dischell, Bartle & Dooley, P.C. The Borough Manager, Jaime Snyder and Zoning Officer, Robert Heil, were also present.

8. At the Hearing, the Applicant provided testimony in support of the Application. The Applicant presented the testimony of:

(a) Michael Amoroso, Managing Member, of Applicant; and
(b) Robert Cunningham, P.E., Applicant's Engineer.

The Applicant was represented by Michael Meginniss, Esquire of Begley, Carlin & Mandio, LLP.

9. Two members of the public entered their appearance, without objection, as parties to the Application, as follows:

(a) Douglas S. Renner, 25 N. Main Street; and
(b) Janet L. McCarthy, 13 E. Broad Street.

While various other members of the public asked questions related to the Application, no other person or property owner requested party status before the Board.

10. The following documents were entered into the record as Board Exhibits:

Exhibit B-1	-	Revised Application Package;
Exhibit B-2	-	Legal Notice;
Exhibit B-3	-	Proof of Publication (published in The Reporter on March 5 and March 12, 2024); and
Exhibit B-4	-	Affidavit of Zoning Officer.

11. The following documents were entered into the record as Applicant Exhibits:

Exhibit A-1	-	Color Plan of Subject Property; and
Exhibit A-2	-	colored Aerial,

12. Nether the Borough nor the other parties offered any exhibits.

13. As set forth in the Application, the Applicant desires to consolidate the two Subject Parcels into one parcel to permit the development of a nine-unit townhouse community as shown on the plan ("Plan") marked as part of Exhibit B-1 during the Hearing.

14. All or a majority of the proposed development of the Subject Property is within the portion zoned CC-Core Commercial.

15. The Subject Property, as a combined tract, will have 62 feet of frontage on North Main Street with the largest portion of the Subject Property being a land locked tract behind the Post Office.

16. The northwest portion of the Subject Property is not developable as it contains an intermittent stream and associated floodplains and/or wetlands.

17. Prior to the current Application, the Applicant proposed multiple other proposals to the Borough, as follows:

(a) mixed use apartments and commercial with 6,800 square feet of office with 22 apartments;

(b) twins consisting of more than 9 units; and

(c) Townhomes with 10 units.

18. The commercial development of the Subject Property is not practical due to the fact that there is limited road frontage.

19. The limited frontage and access would impair visibility and access for a commercial use. Further, the frontage and shape of the Subject Property presented issues for fire safety.

20. The current proposal is for a residential development consisting of nine townhomes with associated access parking and stormwater improvements ("Project")

21. The Project has proper access for fire safety and emergency vehicles.

22. The current proposal has 12 overflow parking spaces as shown on the Plan.

23. Each townhome, as shown on Exhibit A-1, would meet the following:

(a) be 20 feet wide by 40 feet deep;

(b) have a two car garage;

(c) have 2 surface parking spaces in a dedicated driveway;

(d) be 3 stories high;
(e) contain three bedrooms; and

(f) offer a 10 feet by 10 feet second story deck.

24. While not finally determined, it is anticipated that the proposed townhomes will sell for over $500,000 each.

25. Each townhome is proposed to be 20 feet from rear of the townhome to a property line, with decks being 10 feet from a property line.

26. The closest townhome (townhome no. 6 on Exhibit A-1) will be 10 feet from the side of a townhome to a property line.

27. As shown on the Plan, the development of the Subject Property will include an underground detention basin and a community area.

28. The detention basin and community area are not fully designed but would be designed as required by the Borough during the Borough's subdivision and land development approval process.

29. A homeowners' association will be created to manage the roadway, parking areas, stormwater controls and other common areas as shown on the Plan.

30. The emergency access for the Project will be approved by the Fire Marshal.

31. The Applicant will not develop the area of the Subject Property next to the Borough Park and will offer the same for dedication to the Borough during the Borough's review and approval of the subdivision and land development plans for the Subject Property.

32. The access has not been approved by the Borough but will be reviewed and approved by the Borough during the Borough's review and approval of the subdivision and land development plans for the Subject Property.

33. The proposed townhomes will have less traffic impact than many if not most of the uses permitted by the Zoning Ordinance in the CC District.

34. A cul-de-sac with individual lot singles will not work on the Subject Property as the bulb would need to be 100 feet wide which would take up most of the developable area.

35. Applicant will comply with the Borough's landscaping requirements and will supplement the same to the satisfaction of the Borough as determined during the

Borough's review and approval of the subdivision and land development plans for the Subject Property.

36. The proposed townhomes are more in line than the uses permitted in the CC Zoning District and will have less impacts on the neighborhood than the permitted uses.

37. Provided the conditions set forth in the below Order are strictly enforced, the improvement and use of the Subject Property as requested will be in no way detrimental to the public health, safety, and welfare.

DISCUSSION

Applicant has requested Variances from Section 27-1202, 27-1204, 27-2101, 27-2108.1.G. and 27-2108.1.H of the Zoning Ordinance to permit the consolidation of two lots and the development of the same as a nine unit townhouse community.

In order to qualify for the grant of a variance, Applicant is required to show that they have met the criteria set forth in Section 910.2 of the Pennsylvania Municipalities Planning Code ("**MPC**"), as follows:

(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 particular property, and that the unnecessary hardship is due to such conditions, and not the circumstances or conditions generally created by the provisions of the Zoning 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 Zoning Ordinance and that the authorization of a variance is therefore necessary to enable the reasonable use of the property;

(3) That such unnecessary hardship has not been created by Applicant;

(4) That the variance, if authorized, will not alter the essential character of the neighborhood or district in which the property is located, nor substantially or permanently impair the appropriate use or development of adjacent property, nor be detrimental to the public welfare; and

(5) That the variance, if authorized, will represent the minimum variance that will afford relief and will represent the least modification possible of the regulation in issue.

Applicant has established that the Subject Property possesses certain unique physical characteristics. Specifically, the Applicant identified the following hardships: (a) landlocked parcel; (b) split zoned parcel; (c) odd shape; (d) environmental conditions; (e) limited frontage. Because of the hardships, presented, the Board determined that the Subject Property cannot be

used or developed in strict conformity with the Zoning Ordinance. The Board is satisfied that the unnecessary hardship facing the use of the Subject Property, as set forth above, was not created by Applicant.

The Board has determined that the Applicant's requested variance relief 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 adjacent property. The Board finds that the townhomes are more in line with the existing residential uses than the uses permitted in the CC Zoning District. So long as the conditions set forth in the Order below are met, the Board is satisfied that the grant of the variance relief requested will not be detrimental to the public health, safety, or welfare. The impacts of the proposed relief are mitigated by the conditions set forth in the Order.

Further, The Board has determined that Applicant has requested the minimum relief from the Zoning Ordinance necessary to effectuate a reasonable use of the Subject Property.

CONCLUSIONS OF LAW

1. Pursuant to Section 909.1 of the Pennsylvania Municipalities Planning Code, the Board has exclusive jurisdiction to hear and render a final adjudication relative to the Application.
2. As set forth in the Application, Applicant has standing to request the variance relief related to the Subject Property.
3. The requirements for a variance in Pennsylvania are clear and are specifically stated in Section 910.2 of the MPC. Given the testimony presented at the Hearing, a careful review of the record evidence offered in support of the requested variance relief, and with no substantive proof offered to the contrary, the Board finds that Applicant has established an entitlement to Applicant's requested variance relief so long as the conditions set forth in the Order below are met.
4. Particularly noteworthy, this Board concludes that Applicant's requested variance relief is consistent with and will not be adverse to the public health, safety, or welfare and that Applicant's requested variance relief is the minimum relief necessary so long as the conditions set forth in the Order below are met.
5. Accordingly, this Board issues the following Order.

{ ORDER ON NEXT PAGE }

ORDER

AND NOW, this 24th day of April, 2024, the Application of Arbor Grove Development Company, LLC is hereby **GRANTED** subject to the stated conditions below. The Board **GRANTS** Variances from Sections 27-1202, 27-1204, 27-2101, 27-2108.1.G. and 27-2108.1.H of the Zoning Ordinance to permit the consolidation of two lots and the development of the same as a nine unit townhouse community as shown in the Application (Exhibit B-1) and the Plan (Exhibit A-1).

The relief is granted in accordance with the Application and plans submitted and subject to the following conditions:

1. A Homeowners' Association (HOA) shall be established to the satisfaction of the Borough during the land development process and shall include provisions for the following:

    a. The HOA shall be responsible for, at a minimum, for roads, parking areas, stormwater, sidewalks, trails, open space, community area, landscaping and snow plowing;

    b. The two lots making up the Subject Property shall be merged and developed as a united Project/property; and

    c. Open Space shall be restricted from further development and shall be offered to the Borough for dedication.

2. Landscaping and buffering shall be designed to the satisfaction of the Borough during the land development process and shall be provided between the Subject Property and all adjoining residentially used tracts;

3. There shall be a maximum of nine (9) townhome units;

4. All townhomes shall be a minimum of twenty feet (20') from all property lines with the exceptions that:

    a. patios and decks may be a minimum of ten feet (10') from any property line; and

    b. the townhouse unit next to the post office property (Parcel No. 09-00-01015-00-2) shall have a minimum side yard setback of ten (10) feet.

5. There shall be a minimum of twelve (12) shared parking spaces as shown on the plans;

6. Any stormwater basin shall be a minimum of fifteen feet (15') from any building;

7. All townhouse units shall have a minimum of two garage parking spaces and two surface driveway parking spaces;

8. The final design of the Project shall be approved by the Borough Fire Marshal prior to the final land development approval of the Project;

9. The site access shall be designed to the satisfaction of the Borough and PennDOT, if necessary;

10. The Project shall conform to the density and dimensional standards of the R-4 Zoning District as set forth in the Table 27-15-3 of the Zoning Ordinance, with the following exceptions:

    a. Minimum rear yard shall be reduced to 20 feet (decks/patios may be ten (10) feet as set forth above);

    b. The minimum lot width for any end unit shall be 25 feet;

11. Refuse collection facilities must be provided as set forth in the Borough's Code;

12. The Project shall conform to the regulations of the Flood Plain Conservation District including any riparian buffer requirements. Clearing of existing vegetation, parking lots and stormwater management facilities, among other improvements, are prohibited in the Riparian Corridor District;

13. Lighting levels and fixtures shall not create a nuisance on adjacent properties;

14. A privacy fence shall be installed along the Renner Property (Parcel No. 09-00-01009-00-8) and along the entire southern property line to shield adjacent residentially used properties from vehicles;

15. The proposed sidewalk along the Renner Property (Parcel No. 09-00-01009-00-8) shall be located adjacent to the proposed curbing for the access drive to the fullest extent practical;

16. All conditions of approval shall be complied with prior to the final Land Development and/or Subdivision approval by the Borough; and

17. The Development and the use of the Subject Property shall be substantially consistent with the testimony and exhibits presented at the Hearing on the Application.

The Foregoing Findings of Facts, Discussion, Conclusions of Law and Order, are hereby approved as the Decision and Order of the Board.

ZONING HEARING BOARD OF
HATFIELD BOROUGH

James Rudolph, Chairman

John Pedrazzani, Secretary

Paul Mullin, Esquire, Member

Written Decision mailed: 4-25-2024

NOTE TO APPLICANT

There is a thirty (30) day period after the date of a decision for an aggrieved person to file an appeal in the Court of Common Pleas of Montgomery County to contest an approval or denial by the Zoning Hearing Board. If the Application has been granted by the Zoning Hearing Board, the Applicant may act on said approval during this thirty (30) day appeal period; however, the Applicant will do so at his/her own risk. If the Applicant received Zoning Hearing Board approval, the Applicant must still secure all necessary and applicable permits from Hatfield Borough within twelve (12) months of the date of the approval of the Zoning Hearing Board.

4. Old Business:

A. Bennetts Court Update
B. Didden Greenhouses Update
C. 43 Roosevelt Avenue Update

5. New Business:

6. Action Items:

A. Motion to Consider Granting Preliminary / Final Approval for Hatfield Walk, 23 N. Main Street, Development.

7. The Next Planning Commission Meeting is Scheduled for Monday, December 16, 2024 at 6:00PM in Council Chambers

8. Motion to Adjourn