Planning and Zoning Department
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Subdivision and Land Development
Cover Page for SLD # 07-23

Project Name: 1001 Washington Street (Preliminary Plan)

Address: 1001 Washington Street
Conshohocken, PA 19428

Date: 11/19/2024

Status: UNDER REVIEW

Updates:
Please note that this is a packet of REVISED Preliminary Plans & all relevant documents. Documents that were submitted previously that are still relevant are included at the end of the packet and noted on this cover letter in *italics*.

- Revised Preliminary Plan Set- 3.28.25
- Traffic Impact Report- 4.29.25
- Architectural Rendering, Floor Plan, Elevations- 5.2.25
- Zoning Ordinance Compliance Review Letter- 5.19.25
- Fire Marshal Review- 5.21.25
- Township Engineer Review- 5.30.25
- Revised Waiver Letter- 6.3.25
- Arborist Review Letter- 6.17.25
- Revised Traffic Impact Study – 6.27.25
- Revised Plans – 6.26.25
- Revised Landscape Plan & Checklist – 7.5.25
- STC Meeting Memo- 7.18.25
- FEMA Letter of Map Revision Letter – 7.21.25
- Architectural and View Exhibits- 7.23.25
- Revised Landscape Plans & Checklist – 7.29.25
- Revised Waiver Letter- 7.29.25
- Arborist Review #2- 7.29.25
- Zoning Ordinance Compliance Review Letter #2- 8.5.25
- Township Engineer Review Letter #4- 8.7.25
- Shade Tree Commission Meeting Memo- 8.7.25
- Revised Waiver Letter- 8.8.25
- Fire Marshal Review Memo- 8.8.25
- Emergency Action Plan Review Memo- 8.8.25
- LOMR Decision- 8.8.25
- *Application Documents*
- *Emergency Action Plan Review Response from Fire Marshal- 5.7.24*
- *Emergency Action Plan Review Response from Chief of Police- 1.3.25*
- *Montgomery County Planning Commission Review Letter- 1.23.25*
- *LOMR Determination Cover Letter & Documents- 4.5.25*

Revised Preliminary Plans and all Relevant Documents

Section A: New Documents

Section B: Previous Documents that are Still Relevant

Section A: New Documents

March 27, 2025

VIA HAND-DELIVERY

Charles L. Guttenplan, AICP
Director of Planning and Zoning / Zoning Officer
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

Reference: ***1001 Washington Street***
Preliminary Land Development Plan - Resubmission
Whitemarsh Township, Montgomery County, PA
Nave Newell No. 2024-001.02

Dear Mr. Guttenplan

On behalf of our client, HT 1001 Washington, LLC, please find enclosed the following items for a Preliminary Plan submission for the above-referenced project located in Whitemarsh Township, Montgomery County, PA (quantities enclosed are listed after each items):

1. Preliminary Land Development Plans prepared by Nave Newell, Inc., last revised March 27, 2025 (3 copies);
2. Updated Waiver/Modification Request Letter (3 copies);
3. Reciprocal Easement Agreement (3 copies);
4. Whitemarsh Township Authority "Will Serve" Letter (3 copies);
5. Completed Whitemarsh Shade Tree Commission Checklist;
6. Typical Architectural Elevations (3 copies); and
7. An electronic version of full application.

We are in receipt of Whitemarsh Township's Zoning Ordinance Compliance review letter dated December 20, 2024 and offer the following responses to the comments in corresponding order.

Relief Granted by the ZHB

In case ZHB #2024-12, the Zoning Hearing Board granted the following relief to a plan showing a substantially similar layout (which included 3 additional townhouses for a total of 49), by vote on May 8, 2024:

1. Variance from Section 116-165., so as to permit structures in the Floodplain Conservation District that are not permitted by right or by Special Exception under' Sections 116-166.B.(2) and (3).
2. Special Exception under Section 116-166.A.(1), so as to permit a small portion of the kayak boat ramp and boardwalk in the floodway within the Floodplain Conservation District.
3. Special Exceptions under Sections 116-166.B.(2) and (3), so as to permit utilities and other

necessary facilities in the floodway fringe within the Floodplain Conservation District.

4. Variance from Section 116-280.H., so as to permit residential use in the RDD District-1 without a minimum of 2% non-residential use.
5. Variance from Section 116-281.A.(3)(a), so as to permit a minimum setback of less than 10' and average of 20' from the Ultimate Right-of-Way of Washington Street.
6. Variance from Section 116-281.A.(3)(b), so as to permit a setback front other unattached buildings of 28 feet, rather than the 40 feet required.
7. Variance from Section 116-281.A.(3)(c), so as to permit a setback from a public trail of 8.5 feet, rather than the 10 feet required.
8. Variance from Section 116-281.A.(7)(a), so as to permit single-family structures with building heights greater' than 3 habitable stories above the floodplain.
9. Variance from Section 116-281.A.(9), so as to include the riverfront open space area in the total tract area calculation.
10. Variance from Section 116-283.A.(4), so as to permit a building greater than 100 feet in length without 20% architectural features.
11. Variance from Section 116-283.C.(1), so as to permit curb and sidewalk alignment along Washington Street without street trees and the required 5 foot verge/strip, both as required in cross-referenced Section 105-48 of the Subdivision and Land Development Ordinance.
12. Variance from Section 116-283.D.(1)(e), so as to permit curb and sidewalk without a planting strip.
13. Variances from Sections 116-284.A.(1) and E.(3), so as to permit a boardwalk trail, rather than macadam, which is less than 10' wide.
14. Variances from Sections 116-284.A. **through** C. so as to permit a reduction in the riverfront area as shown on the Zoning Plan, but not less than 20'.

The above relief was granted with certain conditions. One of those conditions is that the approval is specifically conditioned and contingent upon the Applicant obtaining approval from FEMA of a Letter of Map Revision (LOMR) such that the floodway line shall be exactly as shown to the ZHB on the plan used for approval. That floodway line is the same as shown on the submitted preliminary land development plan; therefore any deviation from that line will render the ZHB approval of no force or effect and any land development plan based upon any other floodway line, invalid and not approvable.

Additional Zoning Compliance Comments

The following are the Zoning Ordinance compliance issues noted concerning the Preliminary Plan. If compliance cannot be shown for any of these provisions, a modification to the plan must be made or a additional relief from the Zoning Hearing Board would have to be secured.

Section	Issue/Comment
1. §116-28.A.(2)	We note that within the Sewer and Water Feasibility Report, there is a letter from Aqua indicating the availability and supply of water for the proposed project, as required by this section. **Response: No response necessary.**
2. §116-29.	We note that within the Sewer and Water Feasibility Report, there is documentation concerning the potential availability of sewer service and capacity from the Whitemarsh Township Authority; a confirming letter must be provided prior to final plan approval. **Response: We have included the Will Serve letter Whitemarsh Township Authority with this submission.**
3. §116-33.2. §116-258.D. §116-279.	In those areas of Whitemarsh Township where an overlay district applies, should the use of an underlying district be utilized, underlying requirements shall apply. For overlay uses, the requirements of the overlay district shall apply, and in the event of a conflict, the overlay district requirements take precedence over those of the underlying zoning district(s). In the case of multiple overlay districts, unless otherwise stated, the most restrictive overlay district requirements apply. In those areas of Whitemarsh Township where the RDD applies, the requirements of the RDD shall be additive to the requirements of the underlying zoning district(s) and in the event of a conflict, take precedence over the underlying zoning district(s). Where a conflict between the Riverfront Development District regulations, Riparian Corridor Conservation District regulations, and the Floodplain Conservation District regulations (Article XXII), the stricter regulation shall apply. Also, please see related Comment #14. For the purposes of this review, it was assumed that the requirements of the Riverfront Development District (RDD-1), the more restrictive overlay district, were applicable, as well as the Floodplain and Riparian Corridor Conservation Districts. Please note: The RDD district has been replaced by new zoning districts, adopted by the Board of Supervisors on November l4, 2024. However, we have determined that this project was submitted while the RDD district was still in force and therefore is the governing district for use and other requirements. **Response: Noted. No response necessary.**

4. §116-161.A. While the 100-year floodplain boundary is shown on Sheet CO.2 (Sheet 3 of 17), a note must also be added to the plans which indicates that the entire property is located within the Floodplain Conservation Overlay District.
Response: We have added General Note #2 to the Site Plan (Sheet C3.0).

5. §116-164.C. In the Floodplain Conservation District, no development shall be permitted except where the effect of such development on flood heights is fully offset by accompanying improvements which have been approved by all appropriate local, state and federal authorities as required. Additionally, compliance is required with Chapter 101 of the Whitemarsh Township Code, Floodplain Management.
Response: Noted. No response necessary.

6. §116-165.A. This section allows dwellings in the floodway fringe, provided that they are in compliance with the provisions of the underlying district; they cause no increase in the elevation of the one-hundred-year-frequency recurrent interval flood by more than one food at any point; and are not prohibited by any other ordinances or regulations. The Plan shows dwellings within the floodway as currently delineated by FEMA. As noted earlier in this letter, a LOMR has been submitted to move the floodway line and this proposed plan would only be valid if that LOMR is approved.
Response: Noted. No response necessary.

7. §116-166.C. Any new construction, development or substantial improvements should be in full compliance with 44 CFR 60.3(a) through (d) of the National Flood Insurance Program regulations.
Response: The proposed improvements will comply the noted sections.

8.§116-169.B.(1) & (2) These sections include limitations on disturbance of slopes 15%-25% and over 25%. The proposed disturbance of these slope categories must be documented on the plans.
Response: We have added the steep slope disturbances to the Grading Plan (Sheet C4.0).

9. §116-184.A. The plan notes that there are two parking spaces in each garage, as well as one outside each garage. It would appear that the two garage spaces are in tandem, not side by side, given the width of what appears to be the driveways. A detail should be provided to illustrate how the parking is intended to be laid out.
Response: We have added a "Typical Townhome Footprint" to the Site Plan (Sheet C3.0) that includes the garage layout.

10. §116-184.F. All parking shall conform to the requirements of the Whitemarsh Township Fire Prevention Code as acted and amended. The applicant must obtain approval from the Whitemarsh Township Fire Marshal. (A separate review will be provided.)
Response: We are in the process of coordinating with the Fire Marshal.

11. §116-187. The applicant must provide documentation showing that space is not required for off-street loading, as no such areas are shown on the plans.
Response: Off-street loading is not required or proposed for this residential development.

12. §116-188.1.B. The plans shall include electric vehicle charging stations. The Township requires the installation of electric vehicle charging stations, as regulated in §116-188.3, within all new, expanded or reconstructed parking areas.
Response: §116-188.3.D states that "the required number of EV charging station is based on the total number of spaces *required*…". Since none of the public parking spaces shown in the layout are *required* (all required parking spaces are within the garages), no public EV charging stations are required. The Township Fire Marshal also noted in his review memo dated March 14, 2025 that "the township's Fire Marshal's Office is strongly recommending no electric vehicle charging stations in flood prone areas. Any electric vehicle charging stations that a resident wants to install in their home must go through the township permitting process."

13. §116-258. The plans shall indicate that the entire site is located within the Riparian Corridor Conservation District. As such, the Riparian Corridor Conservation District shall serve as a supplement to the underlying district provisions. Also, see related comment #14.
Response: Noted. No response necessary.

14. §116-259.
§116-260.
§116-279.B.(3) The proposed use(s) of the subject property are not permitted within the Riparian Corridor Conservation District as defined in these sections of the ordinance. For structures that are otherwise permitted by virtue of the requirements of the Riverfront Development District, relief from the Zoning Hearing Board from the provisions of Article XXXV—Riparian Corridor Conservation District shall not be required, provided approval is recommended to the Board of Supervisors by the Township Engineer. Note that on this site, the Riparian Corridor is coterminous with the 100—year Floodplain boundary.
Response: Noted. No response necessary.

15. §116-264.A. Reestablishment of forest cover and woodland habitat within the Riparian Corridor shall be required consistent with the requirements of the landscape regulation within the Township Subdivision and Land Development Ordinance. Also, see related Comment #14.
Response: We will coordinate with the Shade Tree Commission to comply with the requirements of the landscape regulations.

16. §116-282. The plans must comply with this section; architectural plans which demonstrate that suitable architectural treatment will be provided, shall be submitted.
Response: A Typical Architectural Elevations has been included with this submission.

17. §116-282.F. Parking may be permitted in the Floodplain Conservation District and Riparian Corridor Conservation District in the Riverfront Development District without relief from the Zoning Hearing Board provided that a parking evacuation plan is provided by the Applicant and is approved by the Board of Supervisors. We note that an Emergency Action Plan was submitted; that Plan is being reviewed by the Township's Emergency Management Coordinator and the Chief of Police.
Response: We will address the Township's Emergency Management Coordinator and Chief of Police comments on the Emergency Action Plan when they are received.

18. §116-283. The applicant must submit architectural plans including elevation views for all proposed buildings in order to demonstrate compliance with the requirements of this section of the ordinance.
Response: A Typical Architectural Elevations has been included with this submission.

19. §116—283.B. Any public amenities provided must be in accordance with the requirements of this section of the ordinance. We note a kayak launch (boat launch) is proposed along the eastern end of the river frontage.
Response: The proposed kayak launch will be built to the specification of the PA. Fish and Boat Commission. Tandem parking spaces are not required for this proposed launch because kayaks are stored on roof racks, not on trailers.

20. §116-233.C. The plans appear to demonstrate compliance with the landscaping and screening requirements described iii this section of the ordinance.

However, the Shade Tree Commission will undertake a more detailed review of the landscape plan and any required replacement plantings. The applicant will be required to submit detailed landscape drawings for review at a public Shade Tree Commission meeting.
Response: Noted. No response necessary.

21. §116-283.D.(1)

For all developments iii the RDD district, the following elements shall be included to create a pedestrian oriented development:

(a) Lighting along all street frontages with lighting fixtures to be of a style as approved by the Board of Supervisors. (Lighting locations are noted.)
Response: The proposed street lighting is shown on the Lighting Plan (Sheet C7.1) and a detail of the proposed fixtures is shown on the Landscape and Lighting Detail Sheet (Sheet C7.2). These fixtures will be discussed with the Planning Commission and the Board of Supervisors.

(b) Benches, trash receptacles, bicycle racks and other street furniture in a style approved by the Board of Supervisors.
Response: We have added benches, trash receptacles, and bicycle racks to the Site Plan (Sheet C3.0).

(c) Wide sidewalks and other pedestrian amenities, landscaping, shade trees.
Response: We received zoning relief for the width of the sidewalks and river trail. The landscaping and shade trees are shown on the Landscape Plan (Sheet C7.0).

(d) A variety of pavement materials for street surfaces and sidewalks.
Response: The proposed sidewalks will be concrete and the proposed paving will be asphalt. Details are shown on the the Construction Detail Sheet (Sheet C10.1).

(e) Planting strips, located between the curb and sidewalk. [Note: As indicated earlier in this letter, a variance was granted to eliminate this specific requirement.]
Response: As noted, we have received a variance from this requirement.

22. §116-284.A.
§116-284.B.
§116-284.C.

Theses sections state that an area parallel to the river, meeting the requirements of Sections 118—284(A), (B), or (C), whichever is applicable, measured from the mean water elevation of the Rivers of the United States/Pennsylvania, shall be provided along the length of the river. While

a variance (noted previously) was granted for the width of this area, the minimum width of 26.4' is measured from approximate edge of the river bank; the aforementioned mean water elevation is not identified. Further, the Site/Zoning Data Table lists the minimum riverfront area as 32' This discrepancy must be resolved.

Response: We have noted the Mean Water Elevation on the Site Plan (Sheet C3.0) and the Grading Plan (Sheet C4.0).
We have revised the Zoning Data Table on the Site Plan (Sheet C3.0) to match the minimum riverfront area of 26.4', as shown on the plan.

This area along the river shall be offered for dedication to the Township. If the area is not accepted for dedication, an easement for public use must be provided along with maintenance agreements acceptable to the Township. This area shall include:

(1) A red shale macadam trail of at least 10 feet in width, the length of the river, to connect to adjoining property trails. [As noted earlier, a variance was granted to allow a boardwalk less than 10 wide.]
Response: As noted, a variance was received from this section of the code. The proposed trail and its dimensions are shown on the Site Plan (Sheet C3.0).

(2) A red shale macadam trail of at least 10 feet in width, the length of the river, to connect to adjoining property trails. [As noted earlier, a variance was granted to allow a boardwalk less than 10 wide.]
Response: As noted, a variance was received from this section of the code. The proposed trail and its dimensions are shown on the Site Plan (Sheet C3.0).

(3) Seating areas at intervals of not more than 300 feet.
Response: We have added seating areas along the trail. See the Site Plan (Sheet C3.0).

(4) Landscaping to enhance the trail, which at a minimum shall include trees in a naturalized setting at the rate of one tree per every 50 feet of trail. Other' landscape treatments may be utilized if approved by the Township. This requirement appears to be met; further review of the landscape plan will be conducted by the Shade Tree Commission.
Response: The proposed landscaping along the trail is shown on the Landscape Plan (Sheet C7.0) and will be reviewed by the Shade Tree Commission.

(5) Appropriate lighting fixtures shall be of a style as approved by the

Board of Supervisor's. We note light fixtures are shown in this area.
Response: The proposed trail lighting is shown on the Lighting Plan (Sheet C7.1) and a detail of the proposed fixtures is shown on the Landscape and Lighting Detail Sheet (Sheet C7.2). These fixtures will be discussed with the Planning Commission and the Board of Supervisors.

(6) Street furniture located in the floodway shall be anchored in accordance with the requirements of Article II, Floodplain Regulations, § 42-7 of the Building Construction Code.
Response: We have added the required anchoring to the bench and trash receptacle details on the Construction Detail Sheet (Sheet C10.1).

23. §116-284.D

Public Waterfront Access is required in accordance with Chapter 105, Subdivision and Land Development, Section 105-47(K).
Response: We have requested a waiver from 105-47(K)(1) and (3) to construct the riverfront pathway in accordance with the zoning relief that was granted.

24. §116-286.

Proposed signage shall be included on any future preliminary plan and shall be consistent with this section of the ordinance, unless the applicant intends to do this through separate permit applications subsequent to plan approval.
Response: We have added the proposed signage to the Site Plan (Sheet C3.0).

25. §116-287.B.(2)

The applicant must submit architectural plans for any proposed buildings in adequate detail to indicate building setback, footprint dimensions, building heights, and building mass and to indicate how proposed buildings will affect views to the river and across the river to the hills and ridges. Architectural drawings must also be provided showing concepts for facades, roof design and materials for buildings, structured parking facilities, signs as well as proposed lighting, street furniture and sidewalk design.

In addition to physical access to the river, visual access to the river is important as cited in our planning for the Spring Mill Area, including our most recent (2022) *Spring Mill Multi-Modal and Land Use Study* (adopted as an amendment to the Township's Comprehensive Plan.) A views analysis shall be submitted to demonstrate visual access to the river.

Response: A Typical Architectural Elevations has been included with this submission.

26. §116—287.B.(5) A transportation impact study (TIS) is required for all applications in the RDD-1 District.
Response: A Transportation Impact Statement is being prepared and will be submitted under separate cover when it is finalized.

Additional Comments

27. As indicated in the introduction to this review, the plans implement an Official Map roadway improvement, extending Washington Street to Lee Street; the plan further extends it to intersect with Station Avenue as well, to complete a roadway para11e1 to the river and provide improved access, including to the Spring Mill SEPTA rail station. However, the plan does not depict how Washington Street will intersect with Lee Street and Station Avenue. These intersections need to be engineered and provided on the plans. (Additional comment on this issue is anticipated in the Township Engineer's review).
Response: We have added additional detail of the intersections of Lee Street and Station Avenue.

28. There is no indication on the plans showing how trash containers will be stored an/or if dumpsters are anticipated. This detail is extremely important in a townhouse development where storage areas are very limited. Details for trash removal/container' storage must be provided.
Response: No dumpsters are proposed on the site. Trash container storage will be the responsibility of the individual owners and details will be provided prior to final approval.

We are also in receipt of Gilmore & Associates, Inc.'s review letter dated January 21, 2025 and offer the following responses to the comments in corresponding order.

	Section	Description
1.	105-21(B)(1)(n)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the plans to show existing principal buildings (and their respective uses), and driveways on the adjacent peripheral strip: sewers lines, storm drains, culverts, bridges, utility easements, quarries, railroads, and other significant man-made features within 500 feet of and within the site, including properties across streets. The granting of any relief should be conditioned that an aerial photo be included in the plan set which shows the required features. **Response: No response necessary.**

2. 105-21(B)(2) The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the inclusion of a Soil Map, showing Soil types, Contour lines, Datum to which contour lines refer, Floodplain areas, Base flood elevation data, Floodplain soil areas, Steep slopes, and Limestone areas. The waiver is being requested to allow the required features to be shown on various sheets throughout the plan set, instead of on one single Plan Sheet.
Response: No response necessary.

3. 105-21(B)(15) The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the submission of a "Preliminary Resource Impact and Conservation Plan" (the "Preliminary Impact Plan") to categorize the impacts of the proposed activities and physical alterations on those resources shown on the Existing resources and site analysis plan (ERSAP). The waiver is being requested to allow the required features to be shown on various sheets throughout the plan set, instead of on one single Plan Sheet.
Response: No response necessary.

4. 105-30(A) The applicant is requesting a waiver from the requirements of this section of the ordinance. As defined by Section 105-29(C) and 105-30(A), streets adjacent to the site are subject to the following requirements:

Street Name	Classification	Required Ultimate R.O.W	Required Cartway Width	Curbs	Sidewalks	Tree Zone
Washington Street	Local Street	56 feet	36 feet	Required	Required	Required
Lee Street	Local Street	56 feet	36 feet	Required	Required	Required
Station Avenue	Local Street	56 feet	36 feet	Required	Required	Required
Courts A-D	Court	50 feet	30 feet	Required	Required	Required

The waiver is requested to allow the right of way width of proposed Washington Street to be 28-feet, and the cartway width to be below 36-feet.

For Washington Street, the plans appear to show a proposed Right-of-way width of 28 feet and a proposed cartway width of 28± feet, which must be revised. At a minimum, the proposed ultimate right-of-way, cartway edge, centerline, curbing and sidewalk must align with those on the adjacent property (901 Washington Street). For reference, the widths approved on the adjacent property were 46-feet for the Ultimate Right-of-way, and 24-feet for the cartway.

The plans must also be revised for Lee Street, Station Avenue and Courts A-D in order to demonstrate compliance with the requirements of this section of the ordinance, or additional waivers will be required.

Response: We have revised the Waiver Request to include cartway widths of less than 30' for the Courts.

5. 105-30(C) The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that short extensions of existing streets with lesser right-of-way and/or cartway widths than prescribed above may be permitted; provided, however, that no section of new right-of-way be less than 40 feet in width and such extensions shall be less than 100 feet in length, in order to allow the Right-of-Way of Washington Street to measure 30-feet wide for a distance of 960-feet along the property frontage.
Response: No response necessary.

6. 105-38(F) The applicant is requesting a waiver from the requirements of this section of the ordinance, in order to allow Angle or perpendicular parking along Washington Street.
Response: No response necessary.

7. 105-38(H) The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires that all parking areas shall be set back from the right-of- way line and all property lines at least 15 feet in order to allow the proposed 10-space parking area and at least 2 existing parking spaces along the Western property line to be located within the required setback.
Response: No response necessary.

8. 105-38(L) The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that, in no case shall parking areas for three or more vehicles be designed to require or encourage cars to back into a public street in order to leave the lot, in order to allow the proposed 10-space parking area to be located along Washington Street.
Response: No response necessary.

9. 105-38(O) The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that Parking areas shall be located at least 10 feet from any building or structure. Units 1-6 appear to be located within the required setback. The granting of any waiver should be conditioned on the applicant obtaining the approval of the Fire Marshal.
Response: No response necessary.

10. 105-47(K)(1) The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the provision of a right-of-way of at least 25 feet in width to be offered for dedication to the Township for the public riverfront access, perpendicular to the river. The waiver is being requested to allow the provision of an easement for public access. Since no easement appears to be shown, it is assumed that the applicant is proposing to provide a blanket access across the entire site common areas. Whether an easement or right-of-way, maintenance agreements must be provided in a form acceptable to the Township.
Response: We have added a "Public Access Easement" to the sidewalk from Washington Street to the trail on the Site Plan (Sheet C3.0).

11. 105-47(K)(3) The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the public riverfront access, perpendicular to the river, to be a red shale macadam pathway with a minimum of 10 feet in width, to allow the path to be 7-feet wide. The plans appear to show the perpendicular riverfront access as being 10-feet wide, and therefore this waiver may not be required.
Response: We are no longer requesting this waiver.

12. 105-48(E) The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires that street trees shall be planted within a tree planting zone of lawn area or other material approved by the Shade Tree Commission, situated between the sidewalk and curb and measuring a minimum of 5 feet in width from the planting edge of the curb to the planting edge of the sidewalk. The plans show proposed sidewalk directly adjacent to curbing, with no planting strip. Additionally, there are no planting strips or street trees between the curb, sidewalk and/or dwelling units.
Response: A waiver is requested from this section. A Variance was granted from Section 116-283.C.(1), so as to permit curb and sidewalk alignment along Washington Street without street trees and the required 5 foot/verge strip, both as required in cross-referenced section 105-48 of the Subdivision and Land Development Ordinance.

13. 105-53(D)(1)(c) The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that no more than 25% of the minimum land area required for park and recreation land may consist of floodplain or riparian corridor buffer areas, wetlands or areas with slopes in excess of 8%. The entire property is located within the floodplain and riparian corridor.
Response: No response necessary.

14. 58-28(D)(11) The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that edges of slopes shall be a minimum of five feet from property lines or right-of-way lines in order to permit the normal rounding of the edge without encroaching on the abutting property. The waiver is being requested to allow for connection to offsite features such as trails, walks and streets.
Response: No response necessary.

15. 58-29(E) The applicant is requesting relief from the requirements of this section of the ordinance, which states that fills shall not encroach on natural watercourses, floodways, floodway fringes, constructed channels, or on wetlands unless permitted by the Army Corps of Engineers, Pennsylvania Department of Environmental Protection (PADEP) and approved by the Township. We do not recommend the granting of this relief.
Response: A waiver is requested from this section because the whole property is located within the floodplain. We have submitted a Letter of Map Revision (LOMR) request to FEMA to revise the floodway so the existing structures and proposed improvements are removed from the floodway.

16.	58-34(B)(7)(d)	The applicant is requesting relief from the requirements of this section of the ordinance, which requires that all storm pipes shall be reinforced concrete pipe (RCP). The waiver is requested in order to allow on-site pipes to be constructed of High Density Polyethylene Pipe (HDPE). Proposed storm pipes within the public Right-of-way will be concrete. We have no objection to the granting of this waiver. **Response: No response necessary.**
17.	55-4(B)	The applicant is requesting relief from the requirements of this section of the ordinance, which states that the removal of more than 33% of Trees, having a DBH of six inches or greater, on any Lot, shall not be permitted. The plan shows four existing trees, all of which are to be removed. **Response: Additional tree survey has been provided for the vegetation along the riverbank. The applicant requests a waiver to remove more than 33% of trees.**
18.	55-4(D)(6)(A), 55-4(F)	The applicant is requesting relief from the requirements of these sections of the ordinance, which states that every living and healthy tree with a DBH of six inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new canopy trees, of a type and species approved by the Shade Tree Commission or its designee, with a trunk diameter of not less than three inches in caliper. The total caliper of replacement trees, measured at six inches above the ground line, shall equal or exceed the DBH of the removed trees. The waiver is being requested to allow a maximum of 40% of the replacement trees to be replaced with ornamental trees, in accordance with Section 55-4(F). **Response: The applicant requests a waiver to utilize ornamental trees for the replacement criteria.**

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

	Section	Description
19.	105-19(E), 105-45	The Surveyors' Notes on the Existing Features Plan describe several easements, rights and/or restrictions that require additional information to resolve and/or show correctly, which must be resolved. **Response: We will resolve these items prior to Preliminary approval.**
20.	105-21(B)(1)(d)[1]	The plans must be revised to show the boundaries of the Heavy Industrial (HVY), Riverfront Development Overlay District (RDD-1), and Recreational Overlay Districts. **Response: The entire site is within the Heavy Industrial (HVY) and Riverfront Development Overlay (RDD-1) Districts. We have added the limits of the Recreational Overlay District to the Site Plan (Sheet C3.0).**
21.	105-21(B)(1)(d)[5]	The list of Zoning Relief granted on Sheet C0.0 must be revised to reference Zoning Hearing Board Decision #2024-12. **Response: We have revised the wording on the Title Sheet (Sheet C0.0) to reference "zoning relief granted by Zoning Hearing Board Decision #2024-12".**

22. 105-21(B)(1)(j) Additional survey is required, extending further off site along Washington Street, Lee Street, and Station Avenue to ensure continuity between existing and proposed streets.
Response: We are proposing to meet the existing conditions of hjtese intersections at the northern edge of Washington Street.

23. 105-21(B)(1)(k) The plans must be revised to show the location of all existing property monumentation.
Response: We have added the property monumentation to the Existing Features plan (Sheet C1.0) and the Site Plan (Sheet C3.0).

24. 105-21(B)(1)(o) The plans must be revised to address the treatment of existing features (monument sign, parking spaces, asphalt/fire lane) within the existing easement over the SEPTA property.
Response: We have revised the Demolition Plan (Sheet C2.0) to note that the decorative wall is to be removed. Other existing improvements in this area are within the SEPTA right-of-way and are not part of this project.

25. 105-21(B)(1)(o) The plans show an existing parking area along the Western property line, that spans the subject property and the adjacent property at 901 Washington Street. Sheet 7 notes that, "Final Design and grading to be coordinated with 901 Washington Street and Whitemarsh Township prior to final submission". The following, at a minimum, must be addressed:

- Existing Signage and Striping currently appears to be shown encroaching into Washington Street.
  Response: We have revised the plans to show these existing improvements being revised. We will coordinate that work with the 901 Washington Street development prior to final approval.

- Existing/proposed grading must be shown
  Response: We have revised the Grading Plan (Sheet C4.0) to show the grading in this area

- Clarification must be provided regarding ownership and maintenance of the area. Easements must be established, as required.
  Response: A Reciprocal Easement Agreement is already in place between these two properties. A copy of that easement has been included with this submission.

26. 105-21(B)(1)(o)[1] The plans must be revised to provide detailed design illustrating the connection of the proposed Washington Street extension and Lee Street, Station Avenue and Washington Street. The proposed ultimate right-of-way, cartway edge, curbing and sidewalk must align with those on the existing streets. Detailed intersection plans must be provided.
Response: We have added the widths of the right-of-way, cartways, and lanes to the Site Plan (Sheet C3.0).

27.	105-21(B)(1)(o)[3]	This section of the ordinance encourages the provision of building elevations and perspective sketches of proposed buildings. **Response: A Typical Architectural Elevations has been included with this submission.**
28.	105-21(B)(1)(o)[4]	The plans must be revised to show any proposed open space areas, and indication as to whether offered for dedication. **Response: We have added the proposed open space area to the Site Plan (Sheet C3.0).**
29.	105-21(B)(1)(o)[6]	The plans show an existing endwall at the Schuylkill River, within an "existing 25' Drainage Easement". The associated stormwater piping must also be shown. **Response: The existing storm pipes will be surveyed and added to the plans after the existing building is demolished.**
30.	105-21(B)(1)(o)[7]	The plans must be revised to show how the proposed 7-foot wide trail along the River will connect to the 10-foot wide trail along the River on the adjacent property at 901 Washington Street. **Response: We have revised the grading in this area on the Grading Plan (Sheet C4.0).**
31.	105-21(B)(3), 105-21(B)(7)	The plans must be revised to show all existing forest areas, large trees over six inches caliper standing alone, and any other significant vegetation, including those along the River's edge. **Response: We have performed a tree survey in the proejct area and have revised the Existing Features Plan (Sheet C1.0) and the Landscape Plan (Sheet C7.0) to show the existing trees.**
32.	105-21(B)(6)(a)	Sheet C5.0 indicates that the "Detailed design [is] still in progress", for the proposed Sanitary Sewer Pumping Station and that the exact location and depth of the proposed sanitary sewer force main is to be field verified by the contractor prior to start of construction. Sanitary sewerage facilities must be fully engineered and shown in their final location on the plans. **Response: This design is still in process and will be added to the plans when complete.**
33.	105-21(B)(6)(b)	Sheet C5.0 indicates that the location of the proposed water main is to be coordinated with AQUA. Water supply lines must be fully engineered and shown in their final location on the plans. **Response: This design is still in process and will be added to the plans when complete.**
34.	105-21(B)(8)	The plans must be revised to include a center-line profile for the extension of Washington Street. **Response: This design is still in process and will be added to the plans when complete.**

35.	105-21(B)(9)(c)[1], 105-21(B)(9)(c)[2]	A transportation impact study must be prepared for the proposed development in accordance with the requirements contained in this section of the ordinance. **Response: The Transportation Impact Study is in process and will be forwarded to the Township by the Traffic Engineer when complete.**
36.	105-21(B)(9)(d)[2][a]	The transportation impact study must contain discussion of the impact to the existing external transportation system, including the potential for cut through traffic to and from Lee Street, Washington Street and Station Avenue, and the impact to operations at the multi-modal junction of Station Avenue, Schuylkill River Trail, and the Rail Line. **Response: Will comply.**
37.	105-21(B)(10)(a), 105-78	The applicant shall submit a letter from the appropriate municipal authority indicating the availability of public sanitary sewer facilities. **Response: Will comply.**
38.	105-21(B)(17)	This section of the ordinance requires the submission of a Community association document, for all subdivision and land development applications which propose lands and/or facilities to be used or owned in common by all the residents of that subdivision or land development and not deeded to the Township. **Response: We have included the Will Serve letter Whitemarsh Township Authority with this submission.**
39.	105-21(B)(18)	This section of the ordinance states that a Preliminary common open space ownership and management plan is required as part of any Preliminary Plan submission. **Response: We have added the proposed open space area to the Site Plan (Sheet C3.0).**
40.	105-21.1(K)(2)	Within the South Transportation Service Area an impact fee in the amount of Two Thousand Five Hundred and Twenty-Nine Dollars ($2,529.00) per anticipated peak hour trip must be provided by the applicant. **Response: Noted. Will comply.**
41.	105-26(E)	The applicant must provide evidence in sufficient detail to demonstrate that there are no environmental concerns related to previous uses of the site. **Response: Noted. Will comply.**
42.	105-27, 105-84	Where a proposed park, playground, school or other public use shown in the Comprehensive Plan is located in whole or in part in a subdivision or land development, the Board of Supervisors may require the dedication or reservation of such area within the subdivision or land development, in those cases in which the Board of Supervisors deems such requirements to be necessary. Please note that both the Comprehensive Plan and the 'Spring Mill Area Study'1 call for amenities along the River in this location such as restrooms, fishing piers, non-motorized boat launches, and facilities for bike and boat rentals. **Response: We show a proposed public kayak launch on the Site Plan (Sheet C3.0).**

43.	105-28(A)	The plans should be revised to provide a roadway cross section consistent with the recommendations on Page 49 of the 'Spring Mill Area Study'.1 **Response: We have added lane striping and dimensions to the Site Plan (Sheet C3.0).**
44.	105-32	This section of the ordinance states that no more than eight lots may be permitted to front on a private street. A waiver must be obtained in order to allow more than eight lots to front on the private courts. **Response: §105-32 only applies in the AAAA and AAA Districts. The subject property is in neither of those Districts so this section does no apply.**
45.	105-33(A), 105-33(B)	Whenever local street lines are deflected in excess of 5°, connection shall be made by horizontal curves. Minimum center-line radii for horizontal curves shall be 150 feet. The alignment of Washington Street must be revised accordingly and additional detail must be provided at the connection points to Lee Street and Station Avenue. **Response: We have added horizontal curves to Washington Street, near the intersection of Court D. We request a waiver from 105.33(B) in order to allow horizontal radii of 28' on Washington Street.**
46.	105-33(E)	The plans must be revised to provide additional detail at the connection points to Lee Street and Station Avenue. The approaches to an intersection shall follow a straight course for at least 50 feet for local streets and courts. **Response: We are not proposing any revisions to the existing alignments of Lee Street or Station Avenue. The proposed Washington Street improvements will meet the existing grades and conditions at those connection points.**
47.	105-34(C)	The Court profiles on Sheet C6.0 must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, which states that vertical curves shall be used at changes of grade exceeding 1%. The directional arrows indicating 5.0% in plan view must be reversed. **Response: §105.34.C requires vertical curves where a road profile exceeds 1%. This section does not apply at the stop-controlled intersections of the Courts and Washington Streets.**
48.	105-35(A)	The plans must be revised to demonstrate that Lee Street and Station Avenue will intersect with Washington Street as nearly as possible at right angles. **Response: We are not proposing any revisions to the existing alignments of Lee Street or Station Avenue.**
49.	105-36(C)	Court B must be revised in order to be located not less than 40 feet from the intersection of Washington Street and Lee Street. **Response: We have added a dimension to the Site Plan (Sheet C3.0) showing that Court B is 61' from the intersection of Washington Street and lee Street.**
50.	105-37	The plans must be revised to demonstrate compliance with the sight distance requirements of this section of the ordinance and/or the required sight distances contained in the most current revision of Pennsylvania Code Title 67 Chapter 441, whichever is more restrictive. Available sight distance at intersections must be indicated. **Response: We have added the sight distance triangles to the Landscape Plan (Sheet C7.0). We have added stop signs and stop bars at the intersection of Washington**

Street and Court D to eliminate sight distance issues.

51.	105-38	The plans must be revised to provide additional detail with regard to the connection of Washington Street with the existing driveway for the SEPTA parking lot. The plans must address the existing fencing across the driveway opening, and necessary transitions between existing and proposed curbing and pavement. **Response: We are not proposing any revisions within the SEPTA right-of-way. The proposed Washington Street grading and alignment will match the existing conditions along the edge of paving.**
52.	105-38(C)	The applicant must obtain the approval of the Fire Marshal with regard to access for fire protection equipment. **Response: Will comply. We have met with the Fire Marshal and are coordinating with him about the site layout.**
53.	105-38(C)	This section of the ordinance requires curves/turns in entrance and exit drives and all internal parking lot aisles necessary for providing access for fire protection equipment to have a minimum inside turning radius of 25 feet and a minimum outside turning radius of 50 feet. The applicant shall submit plans using truck turning templates showing the required turning radii are provided for access to each building. **Response: This section requires a 25' radius along curves in drive aisles and does not apply at the intersections of Washington Street and the Courts. We have added a Vehicle Turning Exhibit (Sheet C11.0) showing a Whitemarsh fire truck making the turns onto the Courts.**
54.	105-38(F)	The 11-space parking area at the Western side of the site must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, which states that all parking areas shall be confined by curbing. **Response: We have added curbing along the parking spaces as the western side of the site.**
55.	105-38(M), 105-50(E)(1)	Entrances and exits to and from off-street parking areas shall be located so as to minimize interference with street traffic and driveways shall enter public streets at safe locations. The intersection of Washington Street, Court D and the SEPTA parking lot must be provided with appropriate signage and paving markings. Available sight distance at the intersection must be indicated, particularly for Eastbound vehicles approaching Court D. **Response: We have added stop signs and stop bars at the intersection of Washington Street and Court D.**
56.	105-38(R)	The plans must be revised to provide adequate space for vehicles to back out of the end unit driveways. **Response: We have Vehicle Turning Exhibit (See Sheet C11.0) to the plans showing a car backing out of these driveways without hitting the curb.**
57.	105-38(U)	The proposed light at the 11 space parking area along the Western side of the site must be revised in order to demonstrate compliance with the requirements off this section of the ordinance, which states all lights shall be located on raised parking islands, not on the parking surface. **Response: The proposed light adjacent to the parking spaces on the western side of**

the site has been revised.

58. 105-38(W), Where semiattached, attached or multiple dwellings are proposed and where private garages or driveways are proposed to meet the off street parking requirements, additional overflow off-street parking shall be provided in accordance with the following:

Access Drive or Cartway Width (feet)	Overflow Spaces Required
36 or greater	1 for each 4 dwelling units
Less than 36	4 for each 4 dwelling units

Section 116-282(E) of the Zoning Ordinance states that residential uses shall not be subject to the overflow parking requirements of Chapter 105, Subdivision and Land Development § 105-38W.
Response: No response necessary.

59. 105-39(A) This section of the ordinance requires that all parking areas shall have at least one tree of three inches minimum caliper for every two parking spaces provided. The Landscape Requirements Table on Sheet C7.0 calculates the required number of trees based on 11 parking spaces, however, the plans show 21 parking spaces. This discrepancy must be resolved.
Response: 10 of the 21 parking spaces are an existing condition. The proposed 11 spaces are being accounted for with at least one tree for every two parking spaces.

60. 105-40(A) Required off street loading facilities, must be designed so that each space shall be no less than 14 feet wide, 50 feet long, and 17 feet high, exclusive of drives and maneuvering space and located entirely on the lot being served. The plans must be revised to demonstrate compliance with this section of the ordinance.
Response: No off-street loading facilities are proposed as part of this residential development.

61. 105-40(A) The plans must be revised in order to demonstrate that there will be adequate maneuvering space for required off street loading facilities, such as moving trucks and package deliveries.
Response: No off street loading facilities are proposed as part of this residential development.

62. 105-46 Curbs shall be provided in all subdivisions and land developments in accordance with Sections 105-30, and 105-74. The plans do not appear to show curbing along the Northern side of Washington Street. The plans should also be revised to clarify the pavement edge treatment of the Courts.
Response: We have added curbing to the north side of Washington Street.

63. 105-47, 105-49 — The plans must be revised provide sidewalks, pedestrian paths and crosswalks to provide safe access. All crosswalks shall be marked. The plans must be revised to address how pedestrians will be able to safely cross:

- Court D between ADA ramps
  Response: We have revised the curb ramp layout at Court D and added a crosswalk.
- Washington Street to access the SEPTA station
  Response: We have added a crosswalk to the train station.
- The intersections of Lee Street and Washington Street
  Response: There are no existing pedestrian facilities along Lee Street that cross the SEPTA tracks to connect to, so we are not proposing any in this area.
- The intersections of Station Avenue and Washington Street
  Response: We have added a crosswalk in this location.
- The SEPTA rail line for access to the Schuylkill River Trail
  Response: This area is outside of the subject property and within the SEPTA right-of-way. No improvements are proposed in that location.

64. 105-47(A) — Sidewalks shall be provided along Washington Street in accordance with sections 105-30, 105-47 and 105-73 of the Whitemarsh Township Code.
Response: Will comply.

65. 105-47(B) — The minimum width of all sidewalks and pedestrian paths shall be five feet; in areas of higher pedestrian density, the minimum width of all sidewalks shall be eight feet.
Response: We are proposing a 5.5'-wide sidewalk along Washington Street, a 7'-wide public trail along the river, and a 12'-wide public access path to the river trail.

66. 105-47(D) — The plans must be revised to include construction details and detailed designs at a scale of 1"=5' for all ADA Curb Ramps.
Response: we will provide an inset of ADA details prior to final approval.

67. 105-47(H) — The grading plan must be revised to demonstrate that grade of the pedestrian path along the River, will not exceed a grade of 7% at the following locations:

- At the point of connection with the central perpendicular trail
  Response: The design of the proposed trail and boardwalk is still in process. Detailed grading will be provided with the next submission.
- Along the River trail, next to Unit 23
  Response: The design of the proposed trail and boardwalk is still in process. Detailed grading will be provided with the next submission.

68. 105-47(J) The plans must be revised in accordance with the requirements of this section of the ordinance, which states that sidewalks adjacent to angle parking areas shall be set back a minimum of five feet to prevent car overhang from restricting pedestrian movement along the sidewalk.
Response: We have revised the sidewalk at the 10 parking spaces near on the eastern side of the site to be 5' away from the curb.

69. 105-47(K) In areas zoned Riverfront Development District, in the RDD-1 subdistrict, public riverfront access, perpendicular to the river, is required for all properties that have access to the river, and shall be subject to the following:

1) A right-of-way of at least 25 feet in width shall be offered for dedication to the Township. If the area is not accepted for dedication, an easement for public use must be provided along with maintenance agreements acceptable to the Township.
Response: We are requesting a waiver from this requirement to allow the public access to the riverfront trail to be located in an easement and not a dedicated right-of-way.

2) There must be at least one access to the river. Access points must be located no more than 500 feet apart.
Response: Will comply.

3) A red shale macadam pathway with a minimum of 10 feet in width shall be provided and separated from any vehicular traffic.
Response: We received zoning relief to provide a 7'-wide trail that is not red shale macadam.

4) At least one seating area shall be provided along each access.
Response: We have added a bench along the public access trail.

5) Lighting fixtures shall be installed along the pathway and shall be of a style as approved by the Board of Supervisors.
Response: We have added lighting fixtures along the public access trail.

6) The access shall contain appropriate signage to direct pedestrians to the river in accordance with Chapter 116, Zoning, § 116-286(B)(5).
Response: We have added trail directional signage along Washington Street, at the intersection with the public access trail.

70. 105-48 This section of the ordinance requires the installation of street trees along all streets where suitable trees do not exist. Large street trees shall be planted at intervals of not more than 45 feet, and/or small street trees at intervals of not more than 30 feet along one or both sides of any existing street within the proposed land development. The plans must be revised to include a table detailing the number of street trees required and provided.
Response: A variance was granted from Section 116-283.C.(1), so as to permit curb and sidewalk alignment along Washington Street without street trees and the required 5 foot/verge strip, both as required in cross-referenced section 105-48 of the Subdivision and Land Development Ordinance..

71. 105-50(B)(1) The applicant must provide plans and/or elevations in order to demonstrate that attached dwelling types will incorporate varied designs, architectural modes and setbacks.
Response: A Typical Architectural Elevations has been included with this submission.

72. 105-50(C)(1), 105-50(C)(3) While the plans show 21 overflow parking spaces, they do not appear to be convenient for the use by visitors of units 9-44. Access to the dwellings and circulation between buildings and other important project facilities for vehicular and pedestrian traffic shall be comfortable and convenient for the occupants. Walking distance from the main entrance of a building or single-family dwelling unit to a parking area shall be less than 100 feet. In no case shall the distance exceed 250
feet.
Response: The proposed overflow parking spaces are not required by code and are being provided as an extra amenity. They are not anticipated to be used by homeowners.

73. 105-50(C)(2) The plans must be revised to indicate adequate access for fire-fighting and other emergency equipment, moving vans, fuel trucks, garbage collection, deliveries and snow removal. A truck turning/circulation plan must be submitted for review.
Response: We have Vehicle Turning Exhibit to the plans (See Sheet C11.0).

74. 105-50(F) Outdoor collection stations shall be provided for garbage and trash removal when indoor collection is not provided. Collection stations shall be screened from view and landscaped. The plans must be revised to indicate the location of all outdoor collection stations, and adequate screening must be provided.
Response: No outdoor collection stations are proposed on the site. Trash container storage will be the responsibility of the individual owners and details will be provided prior to final approval.

75.	105-52	The plans must be revised to provide a buffer between Washington Street and the SEPTA train tracks. Consideration must be given to restricting pedestrian access to the tracks by means of plantings, fencing, low walls or other safety measures. We recommend coordination with SEPTA with regard to safety along the tracks. **Response: We have added a chain-link fence behind the back of curb to separate to separate pedestrian and vehicular traffic from the SEPTA tracks.**
76.	105-52, 105-83	All landscaping plans are subject to the review and recommendation of the Shade Tree Commission. **Response: Noted. No response necessary.**
77.	105-52(B)(2)	This section of the ordinance requires that all buffers shall have a minimum width of 50 feet. The Board of Supervisors may permit an alternative planting option which shall have a screening capability equal to or greater than any of the available options. The applicant should provide evidence in sufficient detail to the Board of Supervisors in order to demonstrate that sufficient screening will be provided. **Response: We are requesting a waiver from this section of the code.**
78.	105-53(D)	This section of the ordinance requires the dedication of land in the amount of 10% of the total Site Area for Park and/or Recreational use. The applicant has the option of offering a fee in lieu of dedicating actual land area and can also provide a combination of a fee in lieu and dedication of land. All offers of land and/or fees in lieu of dedication must meet the requirements of this section of the ordinance. **Response: This will be coordinated prior to final approval.**
79.	105-56(A)(1)(a)	The plans show Courts A, B, C and D having a proposed width of 24 feet, which must be revised in accordance with the requirements of this section of the ordinance which states that, where a street is designed so that all units face on local streets or courts and where on-street parking is not anticipated and no safety hazard will be created, the cartway width may be reduced. This reduction is limited to 26 feet on private streets and courts. **Response: We are requesting a waiver from this requirement to allow 24' wide Courts.**
80.	105-56(A)(1)(b)	Cartways fewer than 30 feet shall be restricted to prohibit parking on both sides. The plans must be revised to provide appropriate regulatory signage. **Response: We are coordinating with the Fire Marshal about the locations of the "No Parking" signs.**

81. 105-69(A) The 'Storm Pipe Trench' detail on Sheet C9.1 must be revised to provide compacted 2A stone 6" below, 12" adjacent to and above stormwater piping up to pavement base course. All backfill to be compacted to 95% of the maximum dry density as determined by ASTM- D-1557 Modified Proctor test results for PennDOT 2A Stone.
Response: We have revised the detail as requested.

82. 105-69(C) Along the existing street on which a subdivision or land development abuts, improvements shall be made to the street. The improvements to the boundary street shall be determined by the width of the required cartway and built to the specifications established by the Township.
Response: We are proposing improvements to Washington Street. The cartway will be aligned with the adjacent development and have the same width.

83. 105-70 The plans must be revised to show street name, warning and regulatory signs, as required.
Response: We have added stop signs and parking regulatory signs. Street name signs will provided prior to final approval.

84. 105-72(A) Monuments must be provided at all property line corners. Monuments shall be placed at each change in direction of a boundary along the street line; two to be placed at each street intersection and one on each side of any street at angle points and at the beginning and end of curves.
Response: Will comply.

85. 105-73 This section of the ordinance requires sidewalks to be constructed as required by 105-30 and 105-47. The plans must be revised to indicate the installation of sidewalks where required.
Response: We are providing sidewalk along Washington Street. Co sidewalk is proposed along the individual Courts.

86. 105-76 The applicant must obtain a letter of approval from the Township Fire Marshal in order to ensure that adequate fire protection is provided.
Response: Will comply. We are in the process of coordinating with the Fire Marshal.

87. 105-78 The applicant must obtain the approval of the Whitemarsh Township Authority with regard to proposed sanitary sewerage facilities.
Response: Will comply. We have included a Will Serve letter with this submission. Final design of the sanitary system will be reviewed by the Authority.

88. 105-79 All preliminary plan submissions shall include a completed sewage facilities planning module (the planning module) for land development provided by DEP.
Response: The Planning Module is in process and will be forwarded to the Township

when received.

89. 105-81 All electric, telephone and communication service facilities, both main and service lines, shall be provided by underground cables, installed in accordance with the prevailing standards and practices of the utility and other companies providing such service. Final plans shall show locations of all utilities and shall be coordinated with landscaping.
Response: Will comply.

90. 105-89 The developer shall enter into a written agreement with the Township in the manner and form approved by the Solicitor wherein the developer shall agree, to construct or cause to be constructed at his own expense all proposed improvements shown on the approved land development plan, all in strict accordance with the standards and specifications of the Township and within the time specified in said agreement, and to deposit with the Township financial security in an amount sufficient to cover the cost of all subdivision or land development improvements, including both public and private improvements.
Response: Will comply.

FLOODPLAIN MANAGEMENT

	Section	Description
91.	101-9(C)(3)	The plans must be revised to include a note stating that the base flood elevation, as designated by FEMA Flood Insurance Maps and Surveys, is at an elevation of 58.5, and the lowest floor elevation and/or the elevation to which the structure would be floodproofed. **Response: We have added Note 2 to the Grading Plan (Sheet C4.0).**
92.	101-9(B)(2), 101-23(C)	The plans must be revised in order to demonstrate that all utilities and facilities, such as sewer, gas, electrical and water systems are located and constructed to minimize or eliminate flood damage. **Response: Will comply. Utility design will be finalized prior to final approval.**
93.	101-9(C)(4)(e)	The applicant must provide documentation, certified by a registered professional engineer, to show that the cumulative effect of any proposed development, when combined with all other existing and anticipated development, will not increase the base flood elevation at any point within the community. **Response: Will comply. We are in the process of working through the FEMA approvals that will demonstrate this. That will be forwarded to the Township when received.**

94. 101-9(C)(4)(f), 101-22(B), 101-22(C) The applicant must provide a document, certified by a registered professional engineer or architect, which states that the proposed construction or development has been adequately designed to withstand the pressures, velocities, impact and uplift forces associated with the base flood. Such statement shall include a description of the type and extent of flood proofing measures which have been incorporated into the design of the structure and/or the development.
Response: Will comply. This will be provided prior to final approval.

95. 101-9(C)(4)(g) The applicant must indicate whether any materials or substances referred to in § 101- 23F and §101-24 are intended to be used, produced, stored or otherwise maintained on site.
Response: Will comply. The storage of dangerous or hazardous materials is not proposed.

96. 101-17(A)(1) The plans show several proposed townhomes and appurtenant features within the floodway. This section of the ordinance states that no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted within the floodway area unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.
Response: Will comply. We are in the process of revising the floodway with FEMA. The revised plans show the new floodway location.

97. 101-17(A)(1) In the Floodplain Conservation District, no development shall be permitted except where the effect of such development on flood heights is fully offset by accompanying improvements which have been approved by all appropriate local, state, and federal authorities as required. The applicant must provide evidence in sufficient detail to demonstrate compliance with the requirements of this section of the ordinance, such as the inclusion of a cut/fill analysis plan demonstrating there will be no net fill.
Response: Will comply. We are in the process of working through the FEMA approvals that will demonstrate this. That will be forwarded to the Township when received.

98. 101-17(A)(2) The plans show several proposed townhomes and other features within the floodway. This section of the ordinance states that no new construction or development shall be allowed within the floodway area unless the appropriate approvals are obtained from the Army Corps of Engineers, Federal Emergency Management Agency, Pennsylvania Department of Environmental Protection and approved by the Township.
Response: Will comply. We are in the process of revising the floodway with FEMA. The revised plans show the new floodway location. General Permits will be obtained from the PA DEP for the stormwater discharges to the Schuylkill Rover.

99. 101-23(H) The plans must be revised to demonstrate that any structures, including fencing and trash enclosures, shall be adequately anchored to prevent flotation, collapse, or lateral movement.
Response: Will comply. Any necessary buoyancy calculations will be provided prior to final approval.

CHAPTER 55 - TREE PROTECTION STANDARDS

	Section	Description
100.	55-4(A)	A Tree Survey Plan prepared in accordance with the requirements contained in this section of the ordinance must be submitted to the Township. The tree survey plan shall be reviewed by the Shade Tree Commission in a public meeting. **Response: Acknowledged.**
101.	55-4(A)(6)	Any tree lost or destroyed within the past five years must be shown on the Tree Survey Plan as a "Removed Tree" and must be replaced as part of the proposed project. **Response: Acknowledged.**
102.	55-4(B)(1)	The plans must be revised to include provisions for tree protection to preserve healthy trees and shrubs on site in accordance with this section of the ordinance. A note must be added to the plans requiring protective fencing to be placed around trees on the property prior to construction. Protective fencing must be shown on the plans in the areas where it will be required. **Response: Tree protection measures have been provided.**
103.	55-4(B)(2)	A note must be added to the plans requiring a pre-construction conference with the Township Shade Tree Commission prior to start of construction. **Response: A note has been added to the Landscape Plan. See Sheet C7.0.**
104.	55-4(A)(7)	Heritage trees and boundary trees shall be individually noted on the tree survey plan. **Response: Additional trees have been located and shown on the Existing Features Plan with corresponding tree index. See Sheets C1.0 and C1.1.**
105.	55-4(D)(1)(a)	Detail 8 on Sheet C7.2 must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, which states that the protective fencing shall be at least six feet tall with two-inch mesh chain link fabric. Two-inch posts shall be tied with six-gauge aluminum wires at 24 inches on center. Posts shall be a minimum of two feet in the ground and space of 10 feet on center. Plastic zip ties may not be used in place of required six-gauge aluminum wire. **Response: Detail 8 has been revised to comply with requirements.**

GRADING, EROSION CONTROL, STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES ORDINANCE:

	Section	Description
106.	58-17(A)(2)(k)	The proposed grading of Rain Garden 1 must be revised to clearly show the berm at contour lines representing elevations 54 and 53. **Response: Will comply. The stormwater and grading revisions will be included in the next submission.**
107.	58-17(A)(2)(o)	Construction Details must be provided for the proposed stairs, including railings and fall protection. Adequate fall protection must also be provided along retaining walls. **Response: Will comply. The required details will added prior to final approval.**
108.	58-17(A)(2)(p)	The plan must be revised to show the size, location and construction details of all existing and proposed storm drainage facilities. At a minimum, both existing and proposed pipe sizes, lengths, slopes and materials should be shown. **Response: Will comply. The required details will added prior to final approval.**
109.	58-17(A)(2)(q)	The Construction Sequence must be revised to call for the installation of tree protection fencing as part of Item #3 and a pre-construction conference with the Township Shade Tree Commission's designee prior to start of construction. **Response: We have expanded the Sequence of Construction #3 on the E&S Plan (Sheet C8.0) to include the requested notes.**
110.	58-17(A)(7)	The plans must be revised to include profile drawings of all stormwater management BMPs, including drainage structures, pipes, open channels, and swales. **Response: Will comply. The required details will added prior to final approval.**
111.	58-17(A)(18)	The stormwater management reports must be revised to indicate the numerical weighted curve number, instead of “WQ”. **Response: Will comply. The PCSM Report will be revised for the next submission.**
112.	58-17(A)(9) 58-35(A)	The stormwater management site plan shall include an O&M plan for all existing and proposed physical stormwater management facilities. This plan shall address long- term ownership and responsibilities for O&M as well as schedules and costs for O&M activities. **Response: There is a Structural BMP Maintenance Schedule on the PCSM Plan (Sheet C9.0) that addresses O&M responsibilities.**
113.	58-18(2)	Since the limit of disturbance appears to be greater than one acre, the applicant must obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Pennsylvania Department of Environmental Protection. Once obtained, a copy must be submitted to the Township. **Response: Will comply.**
114.	58-23(A)	An as-built survey of all stormwater BMPs must be submitted to the Township in paper and digital (dwg) formats. A note must be added to the plans stating an as-built survey will be completed and submitted in both formats to the Township. **Response: Will comply.**

115. 58-24(K)(2) Stormwater facilities shall be accessible to permit periodic maintenance and an access easement shall be provided to permit such access. The following blanket stormwater easement note, must be added to the plan:

'Stormwater facilities shall be owned and maintained by the property owner in perpetuity. The property owner shall provide a blanket stormwater access easement to the Township for the purpose of access to the stormwater facilities. If, in the judgment of the Township Engineer, the owner has failed to maintain the stormwater facilities in such a manner as to ensure their proper functioning, the Township after providing a written notice, shall have the right to enter upon the lands of the owner and to make any repairs as may be necessary to the stormwater facilities to ensure that such facilities function and perform in accordance with the design specifications. Any and all costs incurred by the Township for such repairs and/or maintenance shall be paid in full by the owner. A lien or liens may be placed against the property if the owner fails to remit payment within sixty (60) days.'
Response: We have added the requested Stormwater Easement Note to the PCSM Plan (Sheet C9.0)

116. 58-28(D)(16) The plans must be revised to provide a tire cleaning area at each point of access to the project site.
Response: Construction traffic is expected to enter the site from Lee Street, where the rock construction entrance is located.

117. 58-29(A) No excavation shall be made with a cut face steeper than 3:1 unless a concrete, masonry, or other approved retaining wall designed by a Registered Professional Engineer experienced in structural engineering, and constructed in accordance with approved standards, is provided to support the face of the excavation. The following areas appear to create slopes exceeding 3:1, and must be revised:

- The area adjacent to a retaining wall, at the end of Court D
  Response: Will comply. This grading will be revised for the next submission.
- In front of units 11 & 12
  Response: Will comply. This grading will be revised for the next submission.
- The rear corner of Unit 45
  Response: Will comply. This grading will be revised for the next submission.

118. 58-29(A) Detailed plans and calculations, including all factors of safety, for all of the proposed retaining walls that are prepared, signed and sealed by a professional engineer licensed in the Commonwealth of Pennsylvania must be submitted to the Township for review. Constructible details and elevation views of all proposed retaining walls as well as the top and bottom of wall elevations must be added to the plans.
Response: Will comply. Retaining wall design and calculations will be provided prior to final approval.

119. 58-30(A)(8) If in the course of reviewing the stormwater management plan, the Township Engineer determines that off-site improvements are necessary to satisfactorily control the stormwater from the site, the applicant shall be responsible for such off-site improvements.

Response: Noted. No response necessary.

120.	58-31(A)(16)	The applicant must submit legal descriptions for any proposed rights-of-way, easements, or lands to be offered for dedication. **Response: Will comply. The required descriptions will be provided prior to final approval.**
121.	58-32(C)	Pipes shall be sized by the use of inlet/outlet control calculations. The applicant must submit inlet/outlet control calculations in order to demonstrate compliance with the requirements of this section of the ordinance. **Response: Will comply. The PCSM Report will be revised for the next submission.**
122.	58-35(C)(3)(e)	Based on our review of the infiltration report the tested rates provided for design (38.53 inches per hour) exceed DEP Appendix C guidance for infiltration BMPs. The provided rates are not approved for use in the design. The design engineer shall clearly indicate how the data complies with the DEP guidance for infiltration rates and meets the appropriate standards for water quality protection. **Response: Will comply. The PCSM Plan will be revised for the next submission to address this.**

We are also in receipt of Rockwell Associates' review letter dated January 2, 2025 and offer the following responses to the comments in corresponding order.

Tree Survey Plan

Plan identifying the size, species and location of all existing trees having a diameter at breast height (DBH) of six inches or greater and denoting each tree to be saved or removed. All removed trees shall be identified if removed in the past five years.

Not compliant. The plan only shows the subject four trees (total trees on property) to be removed with an X. Species and size are not shown in inventory form. The subject trees along the river corridor are not within potential impact of the said improvements, therefore no boundary trees are of concern.
Response: Additional trees have been located and shown on the Existing Features Plan with corresponding tree index. See Sheets C1.0 and C1.1.

Tree Removal

Maximum tree removal.

The removal of more than 33% of trees, having a DBH of six inches or greater, on any lot, shall not be permitted.

A waiver will be required as they are removing the four trees (100%) onsite with a total of 48" in diameter.

Response: Additional tree survey has been provided for vegetation along the riverbank. Due to the implementation of trail, a waiver is required to permit removal of more than 33% of the trees.

Tree Protection

Denote location and species of each preserved tree and all boundary trees, and the location of tree protection fences, encompassing the dimensions of each root protection zone as established by one of the following two means, whichever is greater:

[1] Calculated at 1.25 feet (radius) per one inch of (DBH) diameter breast height.
[2] A circle with a radius extending from a tree's trunk to a point no less than the furthest crown dripline.

No tree protection is required as the applicant is removing the four trees onsite.
Response: Additional tree protection has been provided for trees along the riverbank.

Replacement tree requirement.

Every living and healthy tree with a DBH of six inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new canopy trees, of a type and species approved by the Shade Tree Commission or its designee, with a trunk diameter of not less than three inches in caliper. The total caliper of replacement trees, measured at six inches above the ground line, shall equal or exceed the DBH of the removed trees.

A total of 48" of replacement trees is required. I verified this in the field. The applicant is proposing to utilize 30" of canopy trees. This is not compliant. The applicant is proposing 18" of understory trees to meet the required inches. This will meet our required inches, and I support the alternate plan due to designated planting restraints. The subject table block on the plan sheet does not match the required checklist as it pertains to the planting compensation. This can be discussed at the meeting for clarification.
Response: Additional information provided for trees located along the riverbank.

General Notes.

I. I have reviewed the site and have confirmed that no trees within this project scope are defined as heritage trees.
Response: Additional information provided for trees located along the riverbank.

II. Due to the site being mostly infrastructure, the amount of disturbance within the LOD is minimal as it relates to the environmental impact. I suggest that the understory trees be planted as close to the river corridor for added stabilization and protection.
Response: Understory trees have been shifted to provided added stabilization.

III. I would suggest that the species palate be diversified so that no more than 10% of one species is being utilized in the landscape to reduce exposure to insect/disease epidemics.

Response: Additional species have been provided to diversify the planting scheme.

We are also in receipt of Fire Marshal/Emergency Management Coordinator of Whitemarsh Township, 's, review memorandum dated March 14, 2025 and offer the following responses to the comments in corresponding order.

1. The plan shall be in accordance with the International Fire Code in section 507.5. Fire hydrant systems. Fire hydrant systems shall comply with Sections 507.5.1 through 507.5.6 and Whitemarsh Township Ordinance 1012.

    a. At the meeting on 2/20 we discussed moving the proposed fire hydrant to align with Lee Street, the current proposed placement puts it very close to an already installed fire hydrant from the 901 Washington Project.
    Response: We have relocated the fire hydrant to be closer to Lee Street, between units 24 and 30.

2. During the meeting on 2/20 we discussed installing a FDC at Lee St. this would be installing a hard piped dry waterway underneath the train tracks to assist with getting water during fire suppression operations to either side of the train tracks without interrupting rail traffic. This will also make this rail crossing uniformed with the other crossing in Conshohocken Borough. The cost of materials for this would be approximately $8,000 to $10,000. The contact from SEPTA that would help with this project is John Townsend 215-580-6078 or JTownsend@septa.org
Response: Wil comply. This FDC connection will be shown prior to final approval.

3. What is the exact width of the trail/boardwalk area?
Response: The trail/boardwalk is 7' wide, which is consistent with the relief that was granted by the Zoning Decision.

4. Is the proposed access at Lee St. drivable access for the fire department?
    a. If yes can this access road/pathway be made 12 foot wide for fire apparatus.
    Response: The sidewalk from Washington Street to the trail is a sidewalk to allow public access to the trail. We have increased the width of this sidewalk to 12', as requested.

    b. If yes will there be gates or vehicular protection to prevent someone from accidentally driving down the path and onto the trail or into the river?
    Response: The sidewalk will be on top of a full-reveal curb, so vehicular traffic is not anticipated.

5. Will there be flood gates installed to block off known flooding areas of the complex, specifically around the kayak launch/public area.
Response: As requested during our meeting on February 20, 2025, we have added flood gates to the close the flood prone areas on the eastern side of the site.

6. The townhouses will need to be equipped with a sprinkler system and fire alarm system in compliance with NFPA and the International Fire Code 2018 edition.
   Response: Will comply.

7. No parking by order of Fire Marshal or No Parking Fire Lane signage will need to be installed in the complex and in areas needed by the directive of the Fire Marshal.
   Response: Will comply. We are in the process of coordinating the location of these signs with the Fire Marshal.

8. The plan shall be in accordance with Whitemarsh Township Ordinance 1012 accepted on April 14, 2022 Section 503.2.1 Dimensions and International Fire Code Section 5031.1 Buildings and facilities. Court A the closest to the River Place development must provide some form of acceptable turnaround for fire apparatus due to it being over 150 feet.

   a. a. Dimensions. Fire Apparatus access roads shall have an unobstructed width of 24 feet, exclusive of shoulders, except for *approved* security gates in accordance with Section 503.6, and an unobstructed vertical clearance of 14 feet. No access driveway shall be located closer than five feet to a structure.
      Response: Will comply. The proposed courts are 24' wide and there will be no obstructions below 14'.

   b. b. 503.1.1 Buildings and facilities. *Approved* fire apparatus access roads shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access road shall comply with the requirements of this section and shall extend to within 150 feet (45 720 mm) of all portions of the facility and all portions of the *exterior walls* of the first story of the building as measured by an *approved* route around the exterior of the building or facility.
      Response: Will comply. There are no portions of any proposed buildings that are located more than 150' from Washington Street or one of the Courts.

   c. D103.4 Dead ends. Dead-end fire apparatus access roads in excess of 150 feet (45 720 mm) shall be provided with width and turnaround provisions in accordance with Table D103.4.
      Response: We have revised the layout of Court A so that it is less than 150', so all of the Courts are now less than 150'.

9. The townships Fire Marshals Office is strongly recommending no electric vehicle charging stations in flood prone areas. Any electric vehicle charging stations that a resident wants to install in their home must go through the township permitting process.
   Response: Noted.

If you have any questions or need additional information. Please contact me at (610) 265-8323 or via email at jbannon@navenewell.net.

Sincerely,

James P. Bannon, Jr., PE

JPB/BTK

Enclosure

cc (via email): David Landskroner / Ryan Lohbauer – Hightop Development
Craig R. Lewis, Esq. – Kaplin Stewart

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PRELIMINARY LAND DEVELOPMENT PLANS
FOR

1001 WASHINGTON STREET

SITUATED IN
WHITEMARSH TOWNSHIP,
MONTGOMERY COUNTY, PENNSYLVANIA

PLAN INDEX				
DRAWING NUMBER	SHEET TITLE	SHEET NUMBER	SHEET DATE	SHEET REVISION DATE
C0 0	TITLE SHEET	1	11/15/24	3/27/2025
C0.1	SITE CONTEXT MAP	2	11/15/24	3/27/2025
C0 2	EXISTING RESOURCES AND SITE ANALYSIS PLAN	3	11/15/24	3/27/2025
C1 0	EXISTING FEATURES PLAN	4	11/15/24	3/27/2025
C1.1	TREE INVENTORY	5	3/27/2025	3/27/2025
C2 0	DEMOLITION PLAN	6	11/15/24	3/27/2025
C3 0	SITE PLAN	7	11/15/24	3/27/2025
C4 0	GRADING PLAN	8	11/15/24	3/27/2025
C5 0	UTILITY PLAN	9	11/15/24	3/27/2025
C6 0	ROAD PLAN AND PROFILE SHEET	10	11/15/24	3/27/2025
C7 0	LANDSCAPE PLAN	11	11/15/24	3/27/2025
C7.1	LIGHTING PLAN	12	11/15/24	3/27/2025
C7 2	LANDSCAPE AND LIGHTING DETAIL SHEET	13	11/15/24	3/27/2025
C8 0	EROSION AND SEDIMENTATION PLAN	14	11/15/24	3/27/2025
C8.1	EROSION AND SEDIMENTATION DETAIL SHEET	15	11/15/24	3/27/2025
C9 0	POST CONSTRUCTION STORMWATER MANAGEMENT PLAN	16	11/15/24	3/27/2025
C9.1	POST CONSTRUCTION STORMWATER MANAGEMENT DETAIL SHEET	17	11/15/24	3/27/2025
C10.0	CONSTRUCTION DETAIL SHEET	18	11/15/24	3/27/2025
C10.1	CONSTRUCTION DETAIL SHEET	19	3/27/2025	3/27/2025
C11.0	VEHICLE TURNING EXHIBIT	20	3/27/2025	3/27/2025

WAIVERS AND/OR MODIFICATIONS REQUESTED:

1. **105-21.B.(1)(N) - SHOW EXISTING FEATURES WITHIN 500 FEET OF THE SITE.** A MODIFICATION IS REQUESTED TO ALLOW AERIAL IMAGERY TO DEPICT THE REQUIRED FEATURES.
2. **105-21.B(2) - SOIL MAP.** WAIVER REQUESTED TO PROVIDE SOIL MAP AS A SINGLE PLAN SHEET AS THE REQUIRED FEATURES ARE SHOWN ON VARIOUS SHEETS THROUGHOUT THE PLAN SET.
3. **105-21.B(15) - PRELIMINARY RESOURCE IMPACT AND CONSERVATION PLAN.** WAIVER REQUESTED FROM THE REQUIREMENT TO PROVIDE A PRELIMINARY RESOURCE IMPACT AND CONSERVATION PLAN AS A SINGLE PLAN SHEET AS THE REQUIRED FEATURES ARE SHOWN ON VARIOUS SHEETS THROUGHOUT THE PLAN SET. SITE IS ALSO A REDEVELOPMENT OF AN URBAN SITE AND NO AREAS WITHIN THE LIMIT OF DISTURBANCE WERE LEFT UNDISTURBED.
4. **105-30(A) - STREET STANDARDS.** MODIFICATION REQUESTED FROM THE REQUIREMENT THAT THE ULTIMATE RIGHT-OF-WAY MEASURE 56' AND THE CARTWAY WIDTH MEASURE 36', DUE TO THE EXISTING SITE CONSTRAINTS THE PROPOSED ULTIMATE RIGHT-OF-WAY MEASURES 28' AND THE CARTWAY WIDTH MEASURES BELOW 36'.
5. **105-30(C) - STREET STANDARDS.** WAIVER REQUEST FROM THE REQUIREMENT OF SHORT EXTENSIONS OF EXISTING STREETS WITH LESSER RIGHT-OF-WAY AND/OR CARTWAY WIDTHS THAN PRESCRIBED ABOVE MAY BE PERMITTED PROVIDED HOWEVER THAT NO SECTION OF NEW RIGHT-OF-WAY BE LESS THAN 40 FEET IN WIDTH AND SUCH EXTENSIONS SHALL BE LESS THAN 100 FEET IN LENGTH TO ALLOW THE RIGHT-OF-WAY WIDTH OF WASHINGTON STREET MEASURE 30 FEET FOR A DISTANCE OF 960' ALONG THE PROPERTY FRONTAGE.
6. **105-33(B) - STREET ALIGNMENT.** WAIVER REQUEST FROM THE REQUIREMENT OF LOCAL STREETS HAVING HORIZONTAL CURVES OF 150'. DUE TO THE EXISTING SITE CONSTRAINTS AND ITS CURRENT ALIGNMENT WE ARE PROPOSING HORIZONTAL CURVE RADII OF 28' ON WASHINGTON STREET.
7. **105-38(F) - ANGLE OR PERPENDICULAR PARKING SHALL NOT BE PERMITTED ALONG PUBLIC OR PRIVATE STREETS.** WAIVER REQUESTED FROM THE REQUIREMENT AS CARTWAY WIDTH MEASURES ABOUT 31'. BACKING OUT FROM THE PERPENDICULAR PARKING WILL NOT POSE A SAFETY RISK GIVEN THE LOW VOLUMES OF TRAFFIC. THE SPACES ARE PROVIDED FOR EXTRA GUEST PARKING AND PUBLIC USE. THE CARTWAY WIDTH MEETS THE MINIMUM REQUIREMENT OF 105-56(A)(1)(B).
8. **105-38H - EXCEPT AT ENTRANCE AND EXIT DRIVES, ALL PARKING AREAS SHALL BE SET BACK FROM THE RIGHT-OF-WAY LINE AND ALL PROPERTY LINES AT LEAST 15 FEET, OR AS REQUIRED BY THE APPLICABLE SECTIONS OF THE ZONING ORDINANCE, THE GREATER PROVISION TO PREVAIL. THE DISTANCE BETWEEN THIS REQUIRED SETBACK AND THE CARTWAY SHALL BE MAINTAINED AS A PLANTING STRIP OR PLANTING STRIP AND SIDEWALK.** A WAIVER IS REQUESTED FROM THIS SECTION FOR THE PROPOSED PARKING ALONG WASHINGTON STREET AND THE EXISTING PARKING SPACES THAT ARE ADJACENT TO THE DAVID'S BRIDAL FACILITY TODAY.
9. **105-38(I) - IN NO CASE SHALL PARKING AREAS FOR THREE OR MORE VEHICLES BE DESIGNED TO REQUIRE OR ENCOURAGE CARTS TO BACK INTO A PUBLIC STREET.** A WAIVER IS REQUESTED FROM THIS SECTION FOR THE 10 PARKING SPACES ADJACENT TO WASHINGTON STREET.
10. **105-38(O) - PARKING AREAS SHALL BE LOCATED AT LEAST 10 FEET FROM ANY BUILDING OR STRUCTURE.** A WAIVER IS REQUESTED FROM THIS SECTION TO ALLOW THE EXISTING PARKING SPACES ALONG THE 901 AND 1001 PROPERTY LINE TO BE LOCATED LESS THAN 5' FROM THE ADJACENT DECKS. WE HAVE PROVIDED PARKING BLOCKS IN THESE SPACES.
11. **105-47(K)(1) - IN THE RDD-1 SUBDISTRICT, 25' RIGHT-OF-WAY BE OFFERED FOR DEDICATION TO THE TOWNSHIP.** A MODIFICATION IS REQUESTED TO THIS REQUIREMENT TO OFFER AN EASEMENT FOR PUBLIC ACCESS AND USE RATHER THAN RIGHT-OF-WAY DEDICATION.
12. **105-48(E) - STREET TREES SHALL BE PLANTED WITHIN A TREE PLANTING ZONE OF LAWN AREA OR OTHER MATERIAL APPROVED BY THE SHADE TREE COMMISSION, SITUATED BETWEEN THE SIDEWALK AND CURB AND MEASURING A MINIMUM OF FIVE FEET IN WIDTH FROM THE PLANTING EDGE OF THE CURB TO THE PLANTING EDGE OF THE SIDEWALK.** A WAIVER IS REQUESTED FROM THIS SECTION. A VARIANCE WAS GRANTED FROM SECTION 116-283.C.(1) SO AS TO PERMIT CURB AND SIDEWALK ALIGNMENT ALONG WASHINGTON STREET WITHOUT STREET TREES AND THE REQUIRED 5 FOOT/VERGE STRIP BOTH AS REQUIRED IN CROSS-REFERENCED SECTION 105-48 OF THE SUBDIVISION AND LAND DEVELOPMENT ORDINANCE.
13. **105-52(B)(2) - BUFFERS SHALL HAVE A MINIMUM WIDTH OF 50 -** A WAIVER IS REQUESTED FROM THIS SECTION TO ALLOW THE BUFFERS AS SHOWN ON THE PLAN DUE TO THE SITES UNUSUAL SIZE AND SHAPE.
14. **105-53(D)(1)(C) - NO MORE THAN 25% OF THE MINIMUM LAND AREA REQUIRED FOR PARK AND RECREATION LAND MAY CONSIST OF FLOODPLAIN OR RIPARIAN CORRIDOR AREAS.** A WAIVER IS REQUESTED FROM THIS SECTION DUE TO THE ENTIRE PROPERTY BEING LOCATED WITHIN THE FLOODPLAIN.
15. **105-54(A)(1)(a) - PRIVATE STREETS AND COURTS SHALL BE 26' WIDE.** A WAIVER IS REQUESTED FROM THIS SECTION TO ALLOW THE COURTS TO BE 24'. THIS MATCHES THE ADJACENT DEVELOPMENT AND IS CONSISTENT WITH THE CHARACTER OF THE AREA.
16. **58-28(D)(11) - EDGE OF SLOPES SHALL BE A MINIMUM OF FIVE FEET FROM PROPERTY LINES OR RIGHT-OF-WAY LINES.** A WAIVER IS REQUESTED OF THIS REQUIREMENT TO ALLOW SUCH GRADING TO OCCUR CLOSER THAN 5' FROM PROPERTY AND RIGHT-OF-WAY LINES. THE PROPOSED GRADING ABUTS THE ULTIMATE RIGHT-OF-WAY OF WASHINGTON STREET. PROPOSED GRADING NEEDS TO BE LESS THAN 5' FROM PROPERTY AND RIGHT-OF-WAY LINES TO TIE BACK INTO EXISTING CONDITIONS.
17. **58-29E - FILLS SHALL NOT ENCROACH ON NATURAL WATERCOURSES, FLOODWAYS, FLOODWAY FRINGES, CONSTRUCTED CHANNELS, OR WETLANDS.** A WAIVER IS REQUESTED FROM THIS SECTION AS MAJORITY OF THE PROPERTY IS LOCATED WITHIN THE FLOODWAY AND THE WHOLE PROPERTY IS LOCATED WITHIN THE FLOODPLAIN.
18. **58-34(B)(7) - ALL STORM PIPE SHALL BE REINFORCED CONCRETE PIPE.** A WAIVER IS REQUESTED TO ALLOW THE PROPOSED STORM PIPES ON THE SITE TO BE HDPE IN-LIEU OF REINFORCED CONCRETE PIPE. PROPOSED STORM PIPES WITHIN THE PUBLIC RIGHT-OF-WAY WILL BE CONCRETE.
19. **55-4B - MAXIMUM TREE REMOVAL. THE REMOVAL OF MORE THAN 33% OF TREES, HAVING A DBH OF SIX INCHES OR GREATER, ON ANY LOT, SHALL NOT BE PERMITTED.** A WAIVER IS REQUESTED TO PERMIT THE REMOVAL OF GREATER THEN 33%.
20. **55-4D(6)(A) AND 55-4F - EVERY LIVING AND HEALTHY TREE WITH A DBH OF SIX INCHES OR GREATER AND WHICH IS DESIGNATED TO BE REMOVED OR WHICH IS DESTROYED, SHALL BE REPLACED WITH ONE OR MORE NEW CANOPY TREES, OF A TYPE AND SPECIES APPROVED BY THE SHADE TREE COMMISSION OR ITS DESIGNEE, WITH A TRUNK DIAMETER OF NOT LESS THAN THREE INCHES IN CALIPER. THE TOTAL CALIPER OF REPLACEMENT TREES, MEASURED AT SIX INCHES ABOVE THE GROUND LINE, SHALL EQUAL OR EXCEED THE DBH OF THE REMOVED TREES. UPON REQUEST FOR WAIVER BY THE APPLICANT, AS SPECIFIED WITHIN THIS CHAPTER UNDER "EXCEPTION TO LITERAL ENFORCEMENT STANDARDS," AND SUBJECT TO APPROVAL BY THE SHADE TREE COMMISSION, A PORTION OF REPLACEMENT TREES MAY BE SUBSTITUTED AS FOLLOWS. THE COMBINED TOTAL OF SUBSTITUTIONS SHALL NOT EXCEED 40% OF THE REPLACEMENT TREE REQUIREMENT.** A WAIVER IS REQUESTED FROM THE REQUIREMENT THAT A MAXIMUM OF 40% OF THE REPLACEMENT TREES MAY BE REPLACED WITH ORNAMENTAL TREES AND TO ALLOW THE REPLACEMENT TREES SHOWN ON THE PLAN.

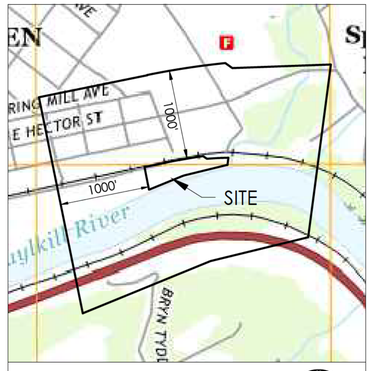

IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'

OWNER/APPLICANT:

HT 1001 WASHINGTON LLC
1331 S. JUNIPER STREET
PHILADELPHIA PA 19147
PHONE: (215) 246-0606
ATTN: DAVID LANDSKRONER

CIVIL ENGINEER

NAVE NEWELL INC.
900 WEST VALLEY ROAD SUITE 1100
WAYNE PA 19087
PHONE: (610) 265-8323
ATTN: JAMES P. BANNON P.E.

LANDSCAPE ARCHITECT:

NAVE NEWELL INC.
900 WEST VALLEY ROAD
SUITE 1100
PHONE: 610-265-8323
ATTN: PAUL E. LEPARD JR. RLA

GENERAL NOTES:

1. THIS PLAN IS BASED ON A SURVEY CONDUCTED IN THE FIELD BY RUGGIERO PLANTE LAND DESIGN COMPLETED ON NOVEMBER 9 2023 AND ADDITIONAL FIELD SURVEY PERFORMED BY NAVE NEWELL ON JULY 29 2024.
2. THIS SURVEY REPRESENTS CONDITIONS AS OF THE DATE OF THE SURVEY EXCEPT SUCH IMPROVEMENTS OR EASEMENTS IF ANY THAT MAY BE LOCATED BELOW THE SURFACE OF THE LAND ON THE SURFACE OF THE LANDS OR ABOVE THE SURFACE OF THE LANDSAND NOT VISIBLE.
3. TITLE TO THE SUBJECT PROPERTY IS FILED IN THE MONTGOMERY COUNTY COURT HOUSE IN DEED BOOK 6334 PAGE 01619 IN THE WHITEMARSH TOWNSHIP COUNTY OF MONTGOMERY PENNSYLVANIA.
4. BEARING BASIS FOR THE SURVEY IS THE RECORD DEED AS REFERENCED IN NOTE 3 ABOVE.
5. LOCATIONS OF EXISTING UTILITIES AS SHOWN HEREIN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS PLANS BY OTHERS AND/OR ABOVE GROUND EXAMINATION OF SITE. THE COMPLETENESS OR ACCURACIES OF THE LOCATIONS ARE NOT GUARANTEED. SHOULD ANY NEW CONSTRUCTION BE PROPOSED THE CONTRACTOR MUST VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES BEFORE START OF WORK.
6. PURSUANT TO ACT 287 "PENNSYLVANIA ONE CALL INC." WAS PLACED. INFORMATION THEREBY OBTAINED WAS USED TO ILLUSTRATE EXISTING UTILITIES.
7. NO REVIEW OF THE PROPERTY REGARDING THE PRESENCE OF WETLANDS WAS ACCOMPLISHED AS A PART OF THIS SURVEY.
8. UNIT AND BLOCK NUMBERS REFER TO THE OFFICIAL TAX MAPS OF WHITEMARSH TOWNSHIP MONTGOMERY COUNTY PENNSYLVANIA.
9. THE ELEVATIONS FOR THIS PLAN ARE BASED ON NAVD88. THE SITE BENCHMARK IS A MAG NAIL SET IN THE DRIVE LOCATED AT THE NORTHEAST CORNER OF THE PROPERTY HAVING AN ELEVATION OF 49.23' AS SHOWN HEREON.
10. IF CONTRACTOR DEVIATES FROM THE PLANS AND/OR SPECIFICATIONS WITHOUT FIRST OBTAINING THE WRITTEN AUTHORIZATION OF THE OWNER NAVE NEWELL INC. AND THE JURISDICTIONAL AUTHORITY(IES) THE CONTRACTOR SHALL BE LIABLE AND RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK DONE WHICH DEVIATES FROM THE PLANS AND/OR SPECIFICATIONS ALL FINES AND/OR PENALTIES ASSESSED AND ALL COMPENSATORY CONSEQUENTIAL AND/OR PUNITIVE DAMAGES RESULTING THEREFROM. THE CONTRACTOR IS ON NOTICE THAT BY DEVIATING FROM SUCH PLANS AND/OR SPECIFICATIONS THE CONTRACTOR IS ASSUMING THE RISK OF ALL SUCH DAMAGES AND CONTRACTOR WILL BE SUBJECT TO INDEMNITY CONTRIBUTION AND/OR HOLD HARMLESS CLAIMS FROM THE OWNER AND/OR NAVE NEWELL INC. FOR ALL SUCH LIABILITIES.

PROJECT SERIAL NO. 20233050644
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Pennsylvania One Call System, Inc.
1-800-242-1776

WHITEMARSH BOARD OF SUPERVISORS:

THIS PLAN WAS APPROVED BY THE BOARD OF SUPERVISORS OF WHITEMARSH TOWNSHIP AT A MEETING HELD ON THE _____ DAY OF _____ 20___.

_____ CHAIRMAN

_____ SECRETARY

WHITEMARSH TOWNSHIP ENGINEER:

_____ ENGINEER

_____ DATE

MONTGOMERY COUNTY PLANNING COMMISSION CERTIFICATION:

THIS PLAN WAS REVIEWED BY THE MONTGOMERY COUNTY PLANNING COMMISSION ON _____

MCPC FILE NUMBER _____

_____ DIRECTOR

CERTIFICATE OF OWNERSHIP AND ACKNOWLEDGEMENT OF PLAN

ON THIS THE _____ DAY OF _____ 20____ BEFORE ME THE UNDERSIGNED OFFICER

PERSONALLY APPEARED _____

_____ NAME OF OWNER

WHO BEING DULY SWORN ACCORDING TO LAW DEPOSES AND SAYS THAT HE IS THE _____ OF _____ THE OWNER OF THE PROPERTY SHOWN ON THIS PLAN AND THAT HE ACKNOWLEDGES THE SAME TO BE HIS ACT AND PLAN AND DESIRES THE SAME BE RECORDED AS SUCH ACCORDING TO LAW.
WITNESS MY HAND AND SEAL THE DAY AND DATE ABOVE WRITTEN.
MY COMMISSION EXPIRES:

_____ _____ NOTARY PUBLIC OR OTHER OFFICER

I _____ CERTIFY THAT I AM THE _____ OF _____ THE OWNER OF THE LAND HEREIN SUBDIVIDED (OR DEVELOPED) AND THAT I DO HEREBY ADOPT THIS PLAN AND DESIRE THE SAME TO BE RECORDED.

_____ OWNER

ZONING RELIEF GRANTED BY ZONING HEARING BOARD DECISION #2024-12

1. A Variance from Section 116-165, so as to permit structures in the Floodplain Conservation District that are not permitted by right or by Special Exception under Sections 116-166.B.(2) and (3).
2. A Special Exception under Section 116-166.A.(1), so as to permit a small portion of the kayak boat ramp and boardwalk in the floodway within the Floodplain Conservation District.
3. Special Exceptions under Sections 116-166.B.(2) and (3), so as to permit utilities and other necessary facilities in the floodway fringe within the Floodplain Conservation District.
4. A Variance from Section 116-280.H, so as to permit residential use in the RDD District-1 without a minimum of 2% non-residential use.
5. A Variance from Section 116-281.A.(3)(a), so as to permit a minimum setback of less than 10' and average of 20' from the Ultimate Right-of-Way of Washington Street.
6. A Variance from Section 116-281.A.(3)(b), so as to permit a setback from other unattached buildings of 28 feet, rather than the 40 feet required.
7. A Variance from Section 116-281.A.(3)(c), so as to permit a setback from a public trail of 8.5 feet, rather than the 10 feet required.
8. A Variance from Section 116-281.A.(7)(a), so as to permit single-family structures with building heights greater than 3 habitable stories above the floodplain.
9. A Variance from Section 116-281.A.(9), so as to include the riverfront open space area in the total tract area calculation.
10. A Variance from Section 116-283.A.(4), so as to permit a building greater than 100 feet in length without 20% architectural features.
11. A Variance from Section 116-283.C.(1), so as to permit curb and sidewalk alignment along Washington Street without street trees and the required 5 foot verge/strip, both as required in cross-referenced Section 105-48 of the Subdivision and Land Development Ordinance.
12. A Variance from Section 116-283.D.(1)(e), so as to permit curb and sidewalk without a planting strip.
13. Variances from Sections 116-284.A.(1) and E.(3), so as to permit a boardwalk trail, rather than macadam, which is less than 10' wide.
14. Variances from Sections 116-284.A. through C., so as to permit a reduction in the riverfront area as shown on the Zoning Plan, but not less than 20'.

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WAYNE PA 19087-1830
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WWW.NAVENEWELL.COM

REVISIONS				
date:	no	description	ck'd	by
3/27/2025	1.	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	JGE	JT

SEAL:
JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE 082157

DRAWING NAME: TITLE SHEET
LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA
1001 WASHINGTON STREET

project no: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: N.T.S.	approv by: JPB
sheet no	

C0.0

1 of 20

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PROJECT SERIAL NO. 20233050644

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200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft

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REVISIONS

date	no	description	by	chk'd
3/27/2025	1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	JT	JGE

SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082157

DRAWING NAME: SITE CONTEXT MAP

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1" = 200'	approv by: JPB

sheet no

C0.1

2 of 20

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SOILS LEGEND:

SOILS INFORMATION OBTAINED FROM THE USDA-NRCS WEB SOIL SURVEY VERSION 10. SURVEY PERFORMED ON 7/24/2024.

UgB - URBAN LAND 0-8 PERCENT SLOPES

SOIL LIMITATIONS AND RESOLUTIONS		
APPLICABILITY TO PROJECT	SOIL LIMITATION	RESOLUTION(S)
YES	DEPTH TO SATURATED ZONE / SEASONAL HIGH WATER TABLE	SOILS SHOULD BE EVALUATED FOR WETNESS PRIOR TO USE IN SITE WORK. IF GEOTECHNICAL ENGINEER DEEMS SOILS TOO WET FOR SITE WORK THEN SOILS SHALL BE AMENDED OR DRIED PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
YES	FROST ACTION	SOILS SHOULD BE FREE OF FROZEN OR MUCKY MATERIALS. FILL SHOULD NOT BE PLACED ON SATURATED OR FROZEN SURFACES. EARTHWORK INVOLVING THESE SOILS SHOULD BE LIMITED TO THE WARMER MONTHS WHEN PRACTICAL.

GEOLOGIC CONDITIONS NOTE:

SITE IS UNDERLAIN BY THE CONESTOGA FORMATION COMPOSED OF ORDOVICIAN AND CAMBRIAN BASED ON PADEP'S EMAPPA PROGRAM.

SITE/ZONING DATA TABLE

TAX PARCEL NUMBER:	*65-00-12673-00-6*
ADDRESS:	*1001 WASHINGTON STREET CONSHOHOCKEN, PA 19428*
GROSS LOT AREA:	*3.7 ACRES / 160,973 SF*
LOT AREA:	*2.96 ACRES / 128,879 SF*
CLASSIFICATION:	*HVY HEAVY INDUSTRIAL DISTRICT* *RCCD RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT* *FLOODPLAIN CONSERVATION OVERLAY DISTRICT* *STEEP SLOPE OVERLAY DISTRICT* *RDD-1 RIVERFRONT DEVELOPMENT OVERLAY DISTRICT* *RECREATIONAL OVERLAY DISTRICT*
PROPOSED USE:	*SINGLE FAMILY ATTACHED*

CRITERIA: RDD-1	*REQUIRED*	*EXISTING*
MIN LOT AREA	3 ACRES	3.7 ACRES
MIN LOT WIDTH	200 FT	*880 FT*
BUILDING SETBACK		
FROM PROPERTY LINE	20 FT	4.33 FT
FROM UNATTACHED BUILDINGS	40 FT	30.1 FT
FROM RIGHT OF WAY	10 FT MIN/ 20 FT AVE	N/A
FROM PUBLIC TRAIL	10 FT	N/A
PARKING SETBACK		
FROM PROPERTY LINE	15 FT	0 FT
FROM BUILDING	10 FT	0 FT
MAX BUILDING HEIGHT	3 STORIES ABOVE FLOODPLAIN	40 FT
MAX BUILDING COVERAGE	40%	53.1%
MAX IMPERVIOUS COVERAGE	75%	84%
MIN RIVERFRONT AREA	150 FT	28.25 FT
MAX ACCESSORY USES IN REAR YARD	30%	0%

** IMPROVED NON-CONFORMITY

PROJECT SERIAL NO: 20233050644

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100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft

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REVISIONS					
no	des	diption	date	chk'd	by
1.	---	---	3/27/2025	JGE	JT
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REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025

SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: EXISTING RESOURCES AND SITE ANALYSIS PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1" = 100'	approv by: JPB

sheet no

C0.2

3 of 20

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USER: ----

BELOW NOTES ARE FROM "ALTA/NSPS LAND TITLE SURVEY" PREPARED BY RUGGIERO PLANTE LAND DESIGN DATED NOVEMBER 13, 2023, LAST REVSIED DECEMBER 12, 2023.

SURVEYOR'S NOTES

This survey is prepared with reference to a Commitment for Title Insurance by Commonwealth Title Insurance Company, Commitment Number PACLT23-4305 M/K, having a commitment date of October 24, 2023, where the following exceptions listed in Schedule B Section II are addressed to the limits of the signing Pennsylvania Land Surveyor.

9. Premises is bisected by a 25 feet wide strip of land leading from the former Lee Tire premises to the river. - **LEE TIRE AND RUBBER CO DRAINAGE EASEMENT SHOWN**
10. Easement of Railroad Siding which extends into premises and rights of use of same by adjoining owners. **NO RAILROAD SIDINGS OBSERVED ON THE PROPERTY AT THE TIME OF THE SURVEY**
11. Rights of others in and to Spring Mill Creek crossing premises. **NEED FURTHER INFORMATION FROM TITLE COMPANY TO DETERMINE LOCATION**
12. Easement of Towpath on Schuylkill Canal. **NEED FURTHER INFORMATION FROM TITLE COMPANY TO DETERMINE LOCATION**
13. Subject to the rights of Ingress and regress over premises as in Deed Book 280 page 66. - **DOCUMENT NOT LEGIBLE**
14. The 25 feet wide strip leading from Lee Tire to the river is subject to the provision of Deed Book 619 page 261, concerning sewers and railroad sidings. - **LEE TIRE AND RUBBER CO DRAINAGE EASEMENT SHOWN**
15. Water, Ferry and Passage Rights as in Deed Book 10 page 413.- **DOCUMENT NOT LEGIBLE**
16. Water, Ferry and Passage Rights as in Deed Book 34 page 434. - **DOCUMENT NOT LEGIBLE**
17. Water, Ferry and Passage Rights as in Deed Book 395 page 41. - **DOCUMENT NOT LEGIBLE**
18. Premises is located within the 100 year flood plan of the Schuylkill River. - **FEMA FLOODWAY AND ZONE AE FLOOD ZONE SHOWN**
19. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 52 page 88. - **DOCUMENT NOT LEGIBLE**
20. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 55 page 438. - **DOCUMENT NOT LEGIBLE**
21. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 72 page 552. - **DOCUMENT NOT LEGIBLE**
22. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 153 page 47. - **DOCUMENT NOT LEGIBLE**
23. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 182 page 315. - **DOCUMENT NOT LEGIBLE**
24. Right of way granted to the Philadelphia Electric Company as in Deed Book 4762 page 1035. - **NOT PLOTTABLE, PLANS NOT PROVIDED**

SURVEYOR'S NOTES CONTINUED

25. Subject to conditions as shown on a Plan of Subdivision recorded in Plan Book A-43 page 87. - **DRAINAGE EASEMENT AND ROW LINES SHOWN - APPLICABLE NOTES, CONDITIONS, ITEMS ETC. HAVE BEEN CARRIED OVER TO THE PLAN**
26. Rights reserved in Deed Book 4671 page 263 for use of water, wells, pumps, piping and roof storage tank. - **AREA SHOWN ON PLAN**
27. Right of way granted to The Bell Telephone Company of Pennsylvania as in Deed Book 4877 page 1032. - **SHOWN APPROXIMATELY**
28. Memorandum of Improvement Agreement as in Deed Book 5021 page 2030. - **BLANKET IN NATURE**
29. Subject to conditions as shown on a Land Site Plan recorded in Land Site Plan Book L-2 page 151. - **PARKING DECK SHOWN - APPLICABLE NOTES, CONDITIONS, ITEMS ETC. HAVE BEEN CARRIED OVER TO THE PLAN**
30. Possible rights of the United States of America, the Commonwealth of Pennsylvania, the Public and other riparian owners between the high and low water marks of the Schuylkill River. - **SCHUYLKILL RIVER SHOWN**
31. Subject to the laws and authority of the Federal and State Governments, their political subdivisions and agencies, to regulate commerce and navigation over part of the premises extending beyond the high water mark of the Schuylkill River; and to exert governmental title and ownership in the area lying beyond the original low water mark. - **SCHUYLKILL RIVER SHOWN**
32. Reciprocal Easement Agreement set forth in Deed Book 5967 page 411. - **EASEMENT SHOWN**

GENERAL NOTES:

1. THIS PLAN IS BASED ON A SURVEY CONDUCTED IN THE FIELD BY RUGGIERO PLANTE LAND DESIGN COMPLETED ON NOVEMBER 9 2023 AND ADDITIONAL FIELD SURVEY PERFORMED BY NAVE NEWELL ON JULY 29 2024.
2. THIS SURVEY REPRESENTS CONDITIONS AS OF THE DATE OF THE SURVEY EXCEPT SUCH IMPROVEMENTS OR EASEMENTS IF ANY THAT MAY BE LOCATED BELOW THE SURFACE OF THE LAND ON THE SURFACE OF THE LANDS OR ABOVE THE SURFACE OF THE LANDSAND NOT VISIBLE.
3. TITLE TO THE SUBJECT PROPERTY IS FILED IN THE MONTGOMERY COUNTY COURT HOUSE IN DEED BOOK 6334 PAGE 01619 IN THE WHITEMARSH TOWNSHIP COUNTY OF MONTGOMERY PENNSYLVANIA.
4. BEARING BASIS FOR THE SURVEY IS THE RECORD DEED AS REFERENCED IN NOTE 3 ABOVE.
5. LOCATIONS OF EXISTING UTILITIES AS SHOWN HEREIN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS PLANS BY OTHERS AND/OR ABOVE GROUND EXAMINATION OF SITE. THE COMPLETENESS OR ACCURACIES OF THE LOCATIONS ARE NOT GUARANTEED. SHOULD ANY NEW CONSTRUCTION BE PROPOSED THE CONTRACTOR MUST VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES BEFORE START OF WORK.
6. PURSUANT TO ACT 287 "PENNSYLVANIA ONE CALL INC." WAS PLACED. INFORMATION THEREBY OBTAINED WAS USED TO ILLUSTRATE EXISTING UTILITIES.
7. NO REVIEW OF THE PROPERTY REGARDING THE PRESENCE OF WETLANDS WAS ACCOMPLISHED AS A PART OF THIS SURVEY.
8. UNIT AND BLOCK NUMBERS REFER TO THE OFFICIAL TAX MAPS OF WHITEMARSH TOWNSHIP MONTGOMERY COUNTY PENNSYLVANIA.
9. THE ELEVATIONS FOR THIS PLAN ARE BASED ON NAVD88. THE SITE BENCHMARK IS A MAG NAIL SET IN THE DRIVE LOCATED AT THE NORTHEAST CORNER OF THE PROPERTY HAVING AN ELEVATION OF 49 23' AS SHOWN HEREON.
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REFERENCE PLANS

1. ALTA/NSPS LAND TITLE SURVEY PREPARED BY RUGGIERO PLANTE LAND DESIGN DATED NOVEMBER 15 2023 LAST REVISED DECEMBER 12 2023.

UTILITY OWNERS

DATE CONTACTED: November 1, 2023

SERIAL NUMBER: 20233050644

COMPANY: WHITEMARSH TOWNSHIP AUTHORITY
ADDRESS: 2015 JASHUA RD, BLDG 100 LAFAYETTE HILL, PA 19444
CONTACT: TOM BONJO
EMAIL: tbonjo@whitmarshauthority.org
PHONE: 610-825-1412

COMPANY: COMCAST CABLEVISION
ADDRESS: 1250 HADDONFIELD-BERLIN RD CHERRY HILL, NJ 08034
CONTACT: WYATT PARISH
EMAIL: Wyatt_Parrish@comcast.com
PHONE: 484-368-4391

COMPANY: AQUA OENNSYLVANIA
ADDRESS: 762 LANCASTER AVE BRYN MAWR, PA 19010
CONTACT: THOMAS WADDY
EMAIL: twaddy@aquaamerica.com
PHONE: 610-525-1400 X52105

COMPANY: PECO AN EXELON COMPANY C/O USIC
ADDRESS: 450 S HENDERSON RD, SUITE B KING OF PRUSSIA , PA 19406
CONTACT: NIKKIA SIMPKINS
EMAIL: nikkiasimpkins@usicinc.com
PHONE: 484-681-5720

COMPANY: LUMEN FORMERLY LEVEL 3
ADDRESS: 1025 ELDORADO BLVD BROOMFIELD, CO 80021
CONTACT: LUMEN OPERATOR PERSONNEL
EMAIL: relocations@lumen.com
PHONE: 877-366-8344 X 3

COMPANY: VERIZON BUSINESS FORMERLY MCI
ADDRESS: 7000 WESTON PKWY CARY, NC 27513
CONTACT: VICTOR WOOD
EMAIL: victor.s.wood@verizon.com
PHONE: 919-414-2782

COMPANY: WHITEMARSH TOWNSHIP PUBLIC WORKS
ADDRESS: 616 GEMANTOWN PIKE LAFAYETTE HILLS, PA 19444
CONTACT: JOHN FIELDS
EMAIL: jfields@whitmarshtwp.org
PHONE: 215-783-1617

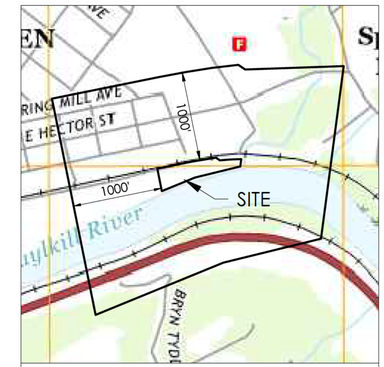
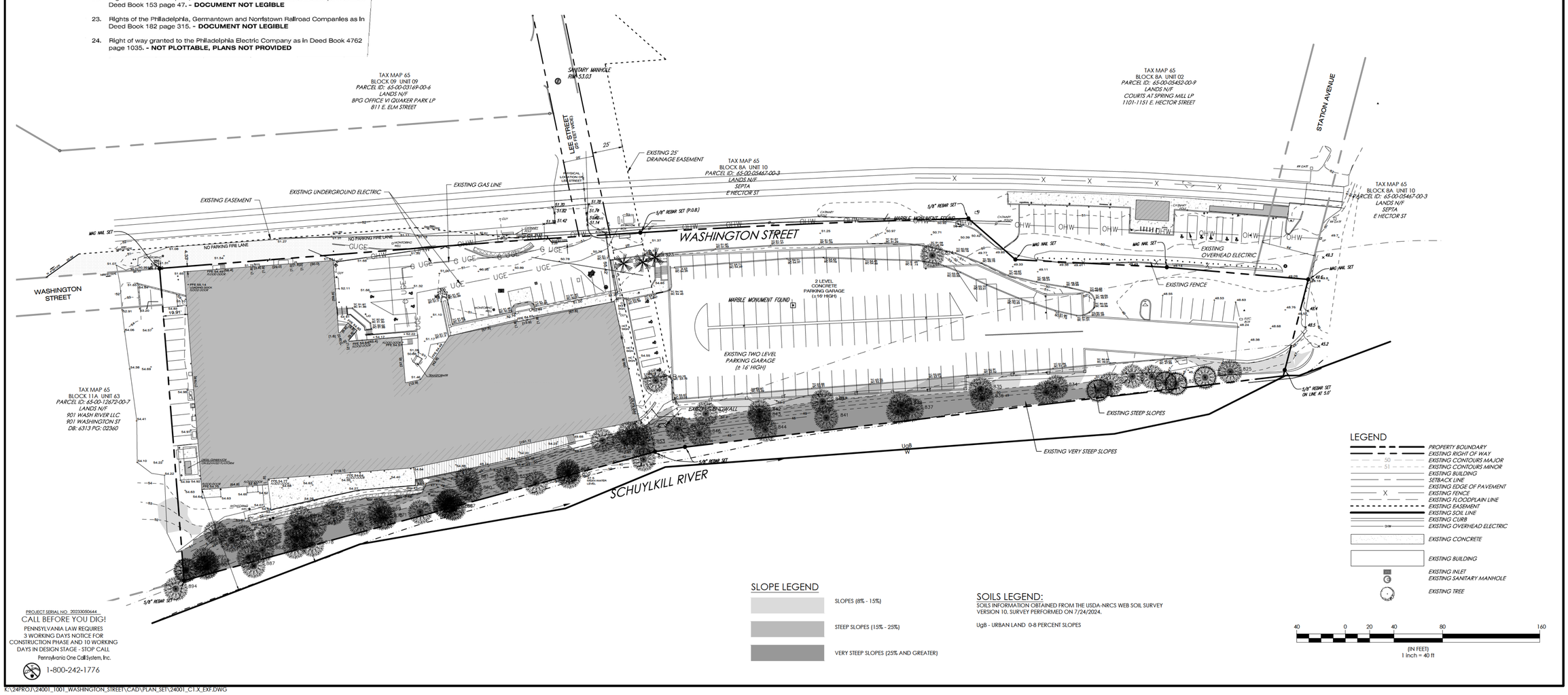


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'



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SLOPE LEGEND

- SLOPES (8% - 15%)
- STEEP SLOPES (15% - 25%)
- VERY STEEP SLOPES (25% AND GREATER)

SOILS LEGEND:

SOILS INFORMATION OBTAINED FROM THE USDA-NRCS WEB SOIL SURVEY VERSION 10. SURVEY PERFORMED ON 7/24/2024.

UgB - URBAN LAND 0-8 PERCENT SLOPES

LEGEND

- PROPERTY BOUNDARY
- EXISTING RIGHT OF WAY
- EXISTING CONTOURS MAJOR
- EXISTING CONTOURS MINOR
- EXISTING BUILDING
- SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING FENCE
- EXISTING FLOODPLAIN LINE
- EXISTING EASEMENT
- EXISTING SOIL LINE
- EXISTING CURB
- EXISTING OVERHEAD ELECTRIC
- EXISTING CONCRETE
- EXISTING BUILDING
- EXISTING INLET
- EXISTING SANITARY MANHOLE
- EXISTING TREE

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

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REVISIONS				
date	no	description	by	chk'd
3/27/2025	1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	JT	JGE

SEAL:
JAMES P. BANNON
Professional Engineer
PennsylvaniaLicense No. PE082137

DRAWING NAME: EXISTING FEATURES PLAN
LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

1001 WASHINGTON STREET

project no: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1" = 40'	approv by: JPB

sheet no
C1.0
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1001 Washington Street					
Date of Inventory: 2/28/2025				Person: Brian Kelly	
Tree ID #	DBH (")	Multi	Common Name	Botanical Name	Condition Notes
821	10		Norway Spruce	Picea abies	
822	10		Norway Spruce	Picea abies	
823	10		Eastern Hemlock	Tsuga canadensis	Compromised/major decline
824	13		Little-leaf Linden	Tilia cordata	
825	6		Boxelder Maple	Acer negundo	
826	24		American Sycamore	Platanus occidentalis	
827	24		Red Elm	Ulmus rubra	
828	24		American Sycamore	Platanus occidentalis	
829	10		Boxelder Maple	Acer negundo	Compromised/major decline
830	30	x	Boxelder Maple	Acer negundo	
831	30		American Sycamore	Platanus occidentalis	
832	24		American Sycamore	Platanus occidentalis	Compromised, major vine damage
833	36		American Sycamore	Platanus occidentalis	
834	7				Dead
835	8		Empress Tree	Paulownia tomentosa	
836	12		American Sycamore	Platanus occidentalis	
837	18		Red Elm	Ulmus rubra	
838	20		Red Elm	Ulmus rubra	
839	18		American Sycamore	Platanus occidentalis	
840	7		Red Maple	Acer rubrum	
841	16		Red Elm	Ulmus rubra	
842	12		Boxelder Maple	Acer negundo	
843	6		White Ash	Fraxinus americana	
844	12		Boxelder Maple	Acer negundo	
845	9		White Ash	Fraxinus americana	
846	24		Red Maple	Acer rubrum	
847	18		Boxelder Maple	Acer negundo	
848	10		Bradford Pear	Pryus calleryana	
849	16		Boxelder Maple	Acer negundo	Compromised/decay
850	18		Boxelder Maple	Acer negundo	
851	24		Red Maple	Acer rubrum	
852	18		Red Maple	Acer rubrum	Compromised
853	18		Boxelder Maple	Acer negundo	
854	18		White Ash	Fraxinus americana	
855	6				
856	24		American Sycamore	Platanus occidentalis	
857	18		Red Maple	Acer rubrum	
858	18		Red Maple	Acer rubrum	
859	18		Red Maple	Acer rubrum	
860	10		Boxelder Maple	Acer negundo	Compromised/major decline
861	18		Boxelder Maple	Acer negundo	Compromised/major decline
862	10		Boxelder Maple	Acer negundo	
863	14		Red Maple	Acer rubrum	
864	20		Red Maple	Acer rubrum	
865	20		Red Maple	Acer rubrum	
866	8		Red Maple	Acer rubrum	
867	6		Red Maple	Acer rubrum	
868	14		Red Elm	Ulmus rubrua	
869	24		American Sycamore	Platanus occidentalis	
870	10		Boxelder Maple	Acer negundo	
871	24		American Sycamore	Platanus occidentalis	
872	17		Boxelder Maple	Acer negundo	
873	16		Boxelder Maple	Acer negundo	Decay/decline
874	24		Boxelder Maple	Acer negundo	
875	15		Boxelder Maple	Acer negundo	
876	12		Boxelder Maple	Acer negundo	
877	12		Boxelder Maple	Acer negundo	
878	12		Boxelder Maple	Acer negundo	
879	18		Boxelder Maple	Acer negundo	Compromised/major damage
880	24		Boxelder Maple	Acer negundo	
881	18x7	x	Boxelder Maple	Acer negundo	
882	12		Boxelder Maple	Acer negundo	Vine damage
883	8		Red Maple	Acer rubrum	Vine damage
884	12		Boxelder Maple	Acer negundo	Vine damage
885	24		American Elm	Ulmus americana	
886	30	x	Boxelder Maple	Acer negundo	
887	15		Boxelder Maple	Acer negundo	Compromised
888	25	x	American Elm	Ulmus americana	Dead
889	10		Red Maple	Acer rubrum	
890	20		Red Maple	Acer rubrum	
891	12		Red Maple	Acer rubrum	
892	14		Red Maple	Acer rubrum	
893	16		Boxelder Maple	Acer negundo	Compromised/major damage
894	8		Boxelder Maple	Acer negundo	

PROJECT SERIAL NO. 20233050644

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REVISIONS

date:	no	description	chk'd	by
---	---	---	---	---

SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: TREE INVENTORY

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no	drawn by:
2024-001.02	GSS
date: 3/27/2025	chk'd by: BTK
scale: N.T.S.	approv by: PEL

sheet no

C1.1

5 of 20

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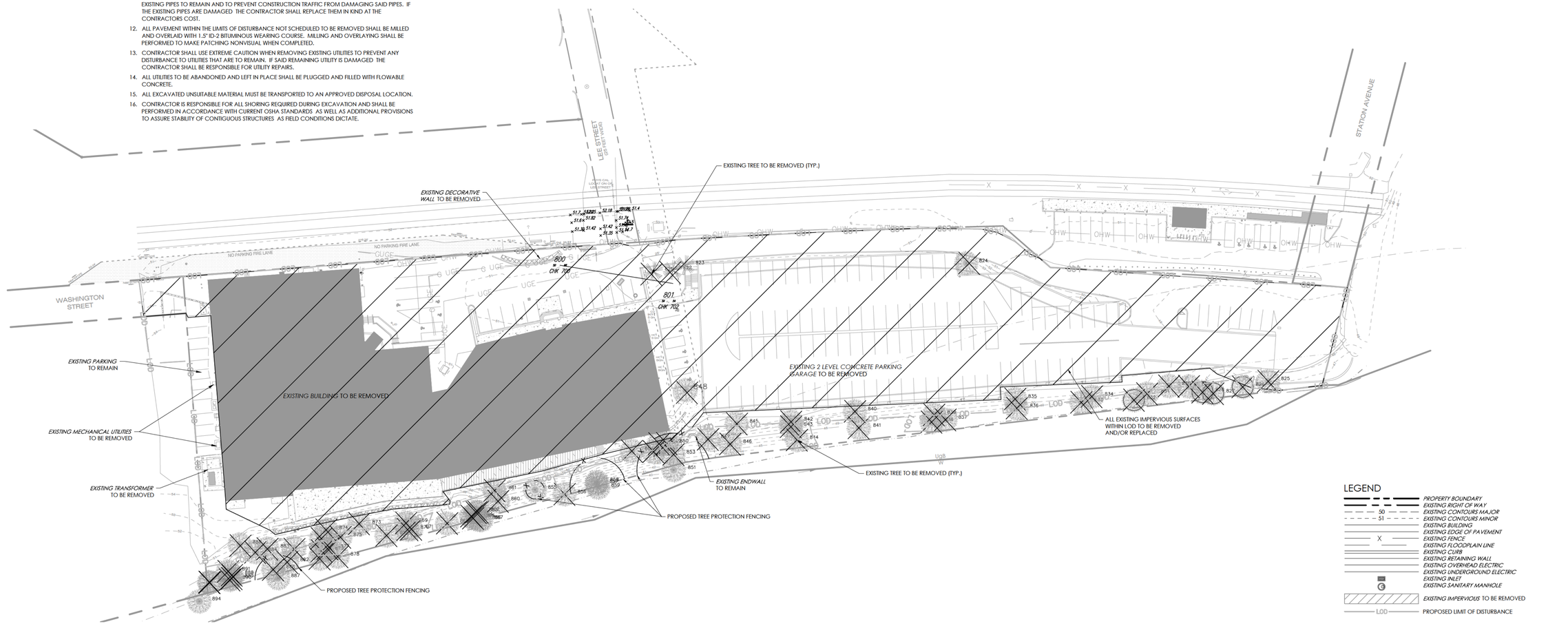
DEMOLITION NOTES:

1. LOCATIONS OF EXISTING UTILITIES AS SHOWN HEREIN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS PLANS BY OTHERS ABOVE GROUND EXAMINATION OF THE SITE AND/OR PRIVATE UTILITY LOCATION COMPANY. THE COMPLETENESS OR ACCURACY OF THE LOCATIONS ARE NOT GUARANTEED. THE CONTRACTOR MUST VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES BEFORE START OF WORK.
2. PRIOR TO STARTING CONSTRUCTION ALL UTILITY SERVICES IN THE AREA ARE TO BE LOCATED THE USER NOTIFIED AND MEASURES TAKEN TO PROTECT THE LINES IN ACCORDANCE WITH PA ACT 287 AS AMENDED. CONTRACTORS ARE TO IMMEDIATELY NOTIFY THE ENGINEER OF ANY DEVIATIONS FROM THE PLAN INFORMATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT PA "ONE-CALL" AT LEAST 72 HOURS TO ANY EXCAVATION OR DEMOLITION ON-SITE.
3. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO THE START OF DEMOLITION.
4. THE EXISTING ASPHALT TO BE RESURFACED SHALL BE PATCHED FILLED AND/OR REPAIRED AS NECESSARY PRIOR TO THE APPLICATION OF THE WEARING COURSE.
5. IN ALL AREAS WHERE FINISHED PAVING IS TO BE PROVIDED THE CONTRACTOR IS TO BREAK APART EXISTING ASPHALT TO EXISTING SUBBASE STONE. FOLLOWING MILLING THE EXPOSED SUBGRADE SHALL BE INSPECTED FOR ITS SUITABILITY AS PAVEMENT SUBBASE. IN AREAS WHERE EXISTING ASPHALT WILL BE CONVERTED TO GREEN SPACE OR BUILDING THE CONTRACTOR IS TO MILL OUT THE EXISTING ASPHALT FOR ITS REUSE ON-SITE AS SUBBASE IN PROPOSED ASPHALT PAVEMENT AREAS. ALL FILL MEASURES TO BE COMPACTED IN ACCORDANCE WITH THE GEOTECHNICAL SPECIFICATIONS.
6. WHERE IMPROVEMENTS ARE PROPOSED TO TIE INTO EXISTING FEATURES THE EXISTING FEATURES SHALL BE FIELD VERIFIED FOR ELEVATION AND LOCATION. IF FIELD LOCATED DATA IS DIFFERENT THAN THE DATA CONTAINED WITH THE CONSTRUCTION DOCUMENTS THE CONTRACTOR SHALL NOTIFY NAVE NEWELL INC., PRIOR TO ANY DESIGN CHANGES.
7. THE PAVEMENT SECTION AREA DELINEATED ON THE PLANS TO BE MODIFIED SHALL BE USED AS GUIDANCE. EXPAND OR CONTRACT THIS AREA AT THE TIE IN LOCATION TO EXISTING PAVEMENT SIDEWALK DRIVEWAY APRONS AND LOADING AREAS AS THE FIELD CONDITIONS WARRANT. ALL PAVEMENT SEAMS SHALL BE SEALED.
8. SITE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE DISCONNECTION ABANDONMENT RELOCATION AND/OR REMOVAL OF ALL APPLICABLE ON-SITE UTILITIES IN ACCORDANCE WITH ALL APPLICABLE LOCAL STATE AND FEDERAL REGULATIONS AS WELL AS ANY REQUIREMENTS FROM THE RELEVANT UTILITY COMPANY.
9. ALL DEMOLITION SHALL BE PERFORMED BY A QUALIFIED LICENSED CONTRACTOR IN ACCORDANCE WITH ALL APPLICABLE LOCAL STATE AND FEDERAL REGULATIONS.
10. THIS PLAN IS NOT INTENDED TO DEPICT ALL FACETS AND ITEMS TO BE ADDRESSED DURING THE COURSE OF DEMOLITION ACTIVITIES. THIS PLAN IS INTENDED TO REPRESENT ONLY THE READILY VISIBLE EXISTING IMPROVEMENTS ON-SITE. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE SITE CONDITION PRIOR TO FINALIZING HIS BID AND PROVIDE ALL NECESSARY DEMOLITION SERVICES REQUIRED TO COMPLETE THE SCOPE OF WORK OUTLINED ON THESE DRAWINGS. UPON INITIATION OF DEMOLITION CONTRACTOR SHALL ADVISE THE ENGINEER OF RECORD IMMEDIATELY SHOULD CONFLICTS ARISE IN THE FIELD.
11. CONTRACTOR IS TO EXERCISE CARE WHEN REMOVING PAVEMENT OVER EXISTING PIPES TO REMAIN. DURING CONSTRUCTION CONTRACTOR SHALL TAKE STEPS TO MAINTAIN ADEQUATE COVER OVER ALL EXISTING PIPES TO REMAIN AND TO PREVENT CONSTRUCTION TRAFFIC FROM DAMAGING SAID PIPES. IF THE EXISTING PIPES ARE DAMAGED THE CONTRACTOR SHALL REPLACE THEM IN KIND AT THE CONTRACTORS COST.
12. ALL PAVEMENT WITHIN THE LIMITS OF DISTURBANCE NOT SCHEDULED TO BE REMOVED SHALL BE MILLED AND OVERLAID WITH 1.5" ID-2 BITUMINOUS WEARING COURSE. MILLING AND OVERLAYING SHALL BE PERFORMED TO MAKE PATCHING NONVISUAL WHEN COMPLETED.
13. CONTRACTOR SHALL USE EXTREME CAUTION WHEN REMOVING EXISTING UTILITIES TO PREVENT ANY DISTURBANCE TO UTILITIES THAT ARE TO REMAIN. IF SAID REMAINING UTILITY IS DAMAGED THE CONTRACTOR SHALL BE RESPONSIBLE FOR UTILITY REPAIRS.
14. ALL UTILITIES TO BE ABANDONED AND LEFT IN PLACE SHALL BE PLUGGED AND FILLED WITH FLOWABLE CONCRETE.
15. ALL EXCAVATED UNSUITABLE MATERIAL MUST BE TRANSPORTED TO AN APPROVED DISPOSAL LOCATION.
16. CONTRACTOR IS RESPONSIBLE FOR ALL SHORING REQUIRED DURING EXCAVATION AND SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS AS WELL AS ADDITIONAL PROVISIONS TO ASSURE STABILITY OF CONTIGUOUS STRUCTURES AS FIELD CONDITIONS DICTATE.



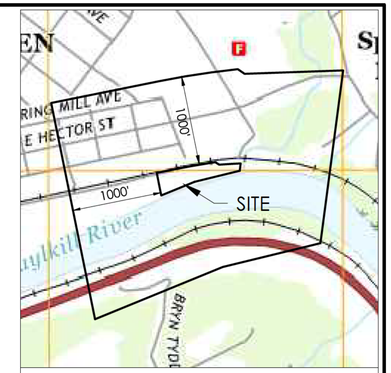


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'

LEGEND

- PROPERTY BOUNDARY
- EXISTING RIGHT OF WAY
- 50 EXISTING CONTOURS MAJOR
- 51 EXISTING CONTOURS MINOR
- EXISTING BUILDING
- EXISTING EDGE OF PAVEMENT
- X EXISTING FENCE
- EXISTING FLOODPLAIN LINE
- EXISTING CURB
- EXISTING RETAINING WALL
- EXISTING OVERHEAD ELECTRIC
- EXISTING UNDERGROUND ELECTRIC
- EXISTING INLET
- EXISTING SANITARY MANHOLE
- EXISTING IMPERVIOUS TO BE REMOVED
- LOD PROPOSED LIMIT OF DISTURBANCE

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

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USER: ----

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no	description	date	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	BTK

REVISIONS

SEAL:
JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082157

DRAWING NAME: DEMOLITION PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP , MONTGOMERY COUNTY, PA

project no: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1"=40'	approv by: JPB

sheet no
C2.0
6 of 20

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SITE/ZONING DATA TABLE

TAX PARCEL NUMBER:	*65-00-12673-00-6*
ADDRESS:	*1001 WASHINGTON STREET*
	CONSHOHOCKEN, PA 19428
GROSS LOT AREA:	*3.7 ACRES / 160,973 SF*
LOT AREA:	*2.96 ACRES / 128,879 SF*
CLASSIFICATION:	*HVY HEAVY INDUSTRIAL DISTRICT*
	RCCD RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT
	FLOODPLAIN CONSERVATION OVERLAY DISTRICT
	STEEP SLOPE OVERLAY DISTRICT
	RDD-1 RIVERFRONT DEVELOPMENT OVERLAY DISTRICT
	RECREATIONAL OVERLAY DISTRICT
PROPOSED USE:	*SINGLE FAMILY ATTACHED*

CRITERIA: RDD-1	REQUIRED	EXISTING	PROPOSED
MIN LOT AREA	3 ACRES	3.7 ACRES	2.96 ACRES †
MIN LOT WIDTH	200 FT	*880 FT*	*880 FT*
BUILDING SETBACK			
FROM PROPERTY LINE	20 FT	4.33 FT	20 FT
FROM UNATTACHED BUILDINGS	40 FT	30.1 FT	28 FT †
FROM RIGHT OF WAY	10 FT MIN/ 20 FT AVE	N/A	5.5 FT †
FROM PUBLIC TRAIL	10 FT	N/A	8.5 FT †
PARKING SETBACK			
FROM PROPERTY LINE	15 FT	0 FT	0 FT
FROM BUILDING	10 FT	0 FT	14 FT
MAX BUILDING HEIGHT	3 STORIES ABOVE FLOODPLAIN	40 FT	4 HABITABLE STORIES †
MAX BUILDING COVERAGE	40%	53.1%	28.9%
MAX IMPERVIOUS COVERAGE	75%	84%	59.8%
MIN RIVERFRONT AREA	150 FT	28.25 FT	26.4 FT †
MAX ACCESSORY USES IN REAR YARD	30%	0%	21.6% (RIVER WALK)

** IMPROVED NON-CONFORMITY
† VARIANCE GRANTED MAY 15 2024

PARKING DATA TABLE

2 PARKING SPACES REQUIRED PER DWELLING UNIT (TOWNHOUSE)
46 UNITS = 92 PARKING SPACES REQUIRED

21 PUBLIC PARKING SPACES PROVIDED
92 GARAGE SPACES PROVIDED
46 DRIVEWAY/APRON SPACES PROVIDED
159 TOTAL PARKING SPACES PROVIDED

RESIDENTIAL DENSITY

REQUIREMENT:
RESIDENTIAL DENSITY SHALL NOT EXCEED 30 DWELLING UNITS PER GROSS ACRE.

PERMITTED	PROPOSED
3.7 X 30 = 111 UNITS	46 UNITS

STEEP SLOPE RATIO CALCULATION

AREA OF STEEP & VERY STEEP SLOPES: 0.44 ACRES
0.44 ACRES / 2.96 ACRES = 14.9 STEEP SLOPE RATIO

SITE NOTES:

1. SEE ARCHITECTURAL DRAWINGS FOR DETAILED BUILDING STRUCTURAL ELECTRICAL LIGHTING ELEVATORS STAIRWELLS AND SIDEWALK INFORMATION AND DETAILS INCLUDING PAVEMENT FINISHES SHOWN AS ANYTHING OTHER THAN ASPHALT.
2. CONTRACTOR IS TO ENSURE THAT ALL ACCESSIBLE FACILITIES SHALL BE CONSTRUCTED IN CONFORMANCE WITH CURRENT ADA REQUIREMENTS.
3. ALL INTERNAL CURB IS TO BE 6" REVEAL REFER TO DETAIL SHEET.
4. ALL INTERNAL CURB RADII IS TO BE 5' UNLESS OTHERWISE NOTED.
5. REFER TO THE CONSTRUCTION NOTES PROVIDED ON THE GRADING PLAN FOR ADDITIONAL NOTES. IN CASE OF DISCREPANCIES BETWEEN PLANS THE SITE PLAN WILL SUPERSEDE IN ALL CASES. NOTIFY ENGINEER OF RECORD OF ANY CONFLICT IN WRITING.
6. CONTRACTOR TO MATCH EXISTING PAVEMENT CURB AND SIDEWALK ELEVATIONS/LOCATIONS WHERE THE PROPOSED IMPROVEMENTS TIE INTO EXISTING FEATURES.

OWNER/APPLICANT:

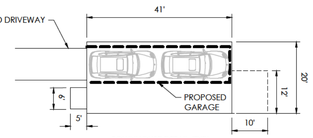
HT 1001 WASHINGTON LLC
1331 S. JUNIPER STREET
PHILADELPHIA PA 19147
PHONE: (215) 246-0606
ATTN: DAVID LANDSKRONER

CIVIL ENGINEER

NAVE NEWELL INC.
900 WEST VALLEY ROAD SUITE 1100
WAYNE PA 19087
PHONE: (610) 265-8323
ATTN: JAMES P. BANNON P.E.

LANDSCAPE ARCHITECT:

NAVE NEWELL INC.
900 WEST VALLEY ROAD
SUITE 1100
PHONE: 610-265-8323
ATTN: PAUL E. LEPARD JR. RLA



TOWNHOUSE DETAIL (TYP)

GENERAL NOTES:

1. THIS PLAN IS BASED ON SURVEYS CONDUCTED IN THE FIELD BY NAVE NEWELL INC. COMPLETED ON DECEMBER 4 2009 MAY 28 2019 AND JULY 23 2019.
2. PROPERTY AS SHOWN IS IN ZONE "AE" (BASE FLOOD ELEVATIONS DETERMINED) AS DEPICTED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FIRM FLOOD INSURANCE RATE MAP COMMUNITY PANEL #42091C0358 G PANEL 358 OF 451. BASE ELEVATION = 58.7 NAVD 1988 DATUM. PLAN DATUM IS NGVD 1929, BASE FLOOD ELEVATION CONVERTED TO NGVD 1929 DATUM = ELEVATION ±60. A PORTION OF THE PROPERTY FALLS IN THE FLOODWAY.
3. NO REVIEW OF THE PROPERTY REGARDING THE PRESENCE OF WETLANDS WAS ACCOMPLISHED AS A PART OF THIS SURVEY.
4. THE ENTIRE PROPERTY IS WITHIN THE FLOODPLAIN CONSERVATION DISTRICT. THE BOUNDARY LINE OF ZONE 2 FALLS OUTSIDE OF THE SITE BOUNDARY. THE ENTIRE PROPERTY IS WITHIN THE RIPARIAN CORRIDOR CONSERVATION DISTRICT.
5. THIS PROJECT WILL REQUIRE PUBLIC WATER SEWER AND STORMWATER MANAGEMENT CONTROLS.
6. THIS PLAN PROPOSES A 43' WIDE RIGHT OF WAY EXTENSION OF WASHINGTON STREET.
7. ACCESS EASEMENTS BETWEEN 901 WASHINGTON STREET AND DAVID'S BRIDAL WILL BE PROVIDED.
8. THE PERMANENT REMOVAL OF TOPSOIL FROM THE TOWNSHIP IS PROHIBITED.
9. OFFER OF DEDICATION OF WASHINGTON STREET IS SUBJECT TO ACCEPTANCE BY THE TOWNSHIP BOARD OF SUPERVISORS.
10. THE PROPOSED DEVELOPMENT WILL BE SERVICED BY PUBLIC WATER AND SANITARY SEWER.
11. THE SANITARY SEWER DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE WHITEMARSH TOWNSHIP AUTHORITY STANDARDS.
12. PROPOSED STORMWATER MANAGEMENT FACILITIES WILL BE DESIGNED TO MEET ALL APPLICABLE STATE COUNTY AND TOWNSHIP REQUIREMENTS. AN INDIVIDUAL NPDES PERMIT OR AMENDMENT TO THE EXISTING NPDES PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES WILL BE REQUIRED.
13. UNITS 1-46 ARE SHOWN AS "FRONT/BACK" UNITS (2 SEPARATE UNITS ABOVE 2 SEPARATE TWO-CAR GARAGES) FOR DENSITY CALCULATION PURPOSES.
14. UNIT NUMBERS ARE SUBJECT TO CHANGE WITH FUTURE ADDRESS PLAN.
15. ALL COMMON OPEN SPACE AREAS ON THE SUBJECT PROPERTY INCLUDING OPEN SPACE OPEN TO PUBLIC USE ARE TO BE OWNED AND MAINTAINED BY A HOME OWNER'S ASSOCIATION.
16. A WAIVER IS GRANTED FROM SECTION 105-28(K) OF THE MUNICIPAL CODE WHICH STATES STRUCTURES INCLUDING BUT NOT LIMITED TO MAILBOXES FENCES AND POLES SHALL NOT BE ERECTED WITHIN STREET RIGHTS-OF-WAY THAT WILL ALLOW AN ELECTRONIC GATE TO BE PLACED IN WASHINGTON STREET NEAR THE WESTERN PROPERTY BOUNDARY. THE GATE WILL BE REMOVED SHOULD WASHINGTON STREET BE EXTENDED IN THE FUTURE.
17. IN THE EVENT THAT THE PROPERTY OWNER SHALL REFUSE OR NEGLECT TO COMPLY WITH THE PROVISIONS OF CHAPTER 58 OR THE REQUIREMENTS OF THE TOWNSHIP ENGINEER AND THE NONCOMPLIANCE IS CREATING A DANGER TO THE HEALTH SAFETY AND WELFARE OF THE COMMUNITY THE BOARD OF SUPERVISORS MAY TAKE APPROPRIATE MEASURES TO CORRECT THE VIOLATION AND ASSESS ALL EXPENSES OF SUCH MEASURES AGAINST THE PERSON. THE BOARD OF SUPERVISORS MAY SEEK REIMBURSEMENT BY ANY MEANS PERMITTED BY LAW.
18. TRASH COLLECTION WILL BE PICKED UP AT INDIVIDUAL RESIDENT DRIVEWAYS CONSISTENT WITH HOMEOWNER EXPECTATIONS. THERE IS NO COMMUNAL TRASH RECEPTACLE PROPOSED.
19. A REPORT INDICATING SUITABILITY OF THE SUBJECT SITE FOR DEVELOPMENT ADDRESSING THE POTENTIAL FOR SUBSIDENCE AND MEASURES TO ADDRESS SAME TOPOGRAPHICAL SUITABILITY AND GENERAL PRESERVATION OF HEALTH LIFE AND PROPERTY SHALL BE PREPARED BY REGISTERED PROFESSIONAL ENGINEER EXPERIENCED IN GEOTECHNICAL ENGINEERING.
20. DETAILED DESIGN PLANS AND CALCULATIONS FOR ALL PROPOSED RETAINING WALLS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE COMMONWEALTH OF PENNSYLVANIA SHALL BE SUBMITTED TO THE TOWNSHIP PRIOR TO FINAL PLAN APPROVAL.
21. ALL PUBLIC UTILITIES AND FACILITIES SUCH AS SEWER GAS ELECTRICAL AND WATER SYSTEMS SHALL BE LOCATED AND CONSTRUCTED TO MINIMIZE OR ELIMINATE FLOOD DAMAGE IN ACCORDANCE WITH 44 CFR 60 3 (a)(4) THROUGH 44 CFR 60.3 (a)(6).
22. ALL CONSTRUCTION SHALL BE IN FULL COMPLIANCE WITH 44 CFR 60 3(a) THROUGH (d) OF THE NATIONAL FLOOD INSURANCE PROGRAM REGULATIONS.
23. SERVICE WALKS TO UNITS MAY CHANGE IN THE FIELD TO REFLECT FINAL BUILDING CONFIGURATIONS.
24. ALL PAVEMENT MARKINGS MUST BE THERMOPLASTIC AND CONSISTENT WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
25. THE OPEN SPACE ON THE PROPERTY SHALL BE SUBJECT TO A CONSERVATION EASEMENT PROHIBITING FURTHER DEVELOPMENT OF THE OPEN SPACE WHICH CONSERVATION EASEMENT SHALL BE PREPARED BY THE APPLICANT AND APPROVED BY THE TOWNSHIP SOLICITOR. THE HOMEOWNERS ASSOCIATION SHALL BE SOLELY RESPONSIBLE FOR MAINTAINING THE OPEN SPACE.

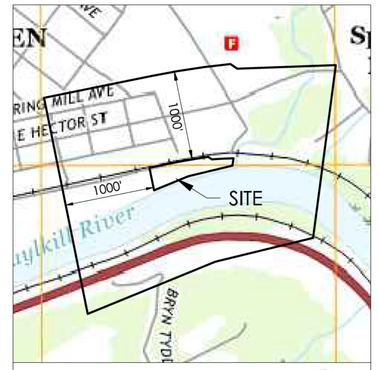
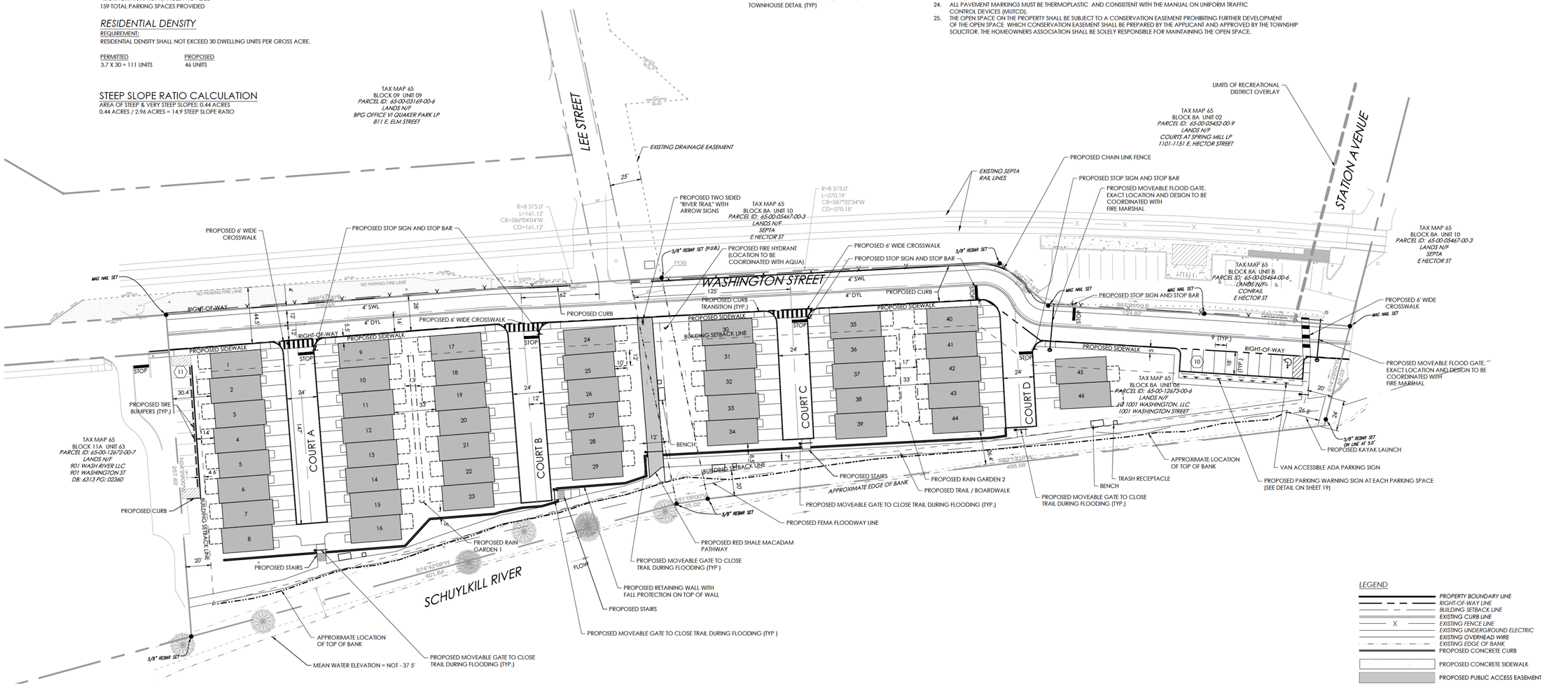


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'



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1-800-242-1776

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REVISIONS					
date:	no	description	chk'd	by
3/27/2025	1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	JGE	JT

SEAL:
COMMONWEALTH OF PENNSYLVANIA — JAMES P. BANNON — ENGINEER — No. 083313 — REGISTERED PROFESSIONAL
JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE083313

DRAWING NAME: SITE PLAN
LOCATION: WHITEMARSH TOWNSHIP , MONTGOMERY COUNTY, PA

1001 WASHINGTON STREET

project no: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1"=40'	approv by: JPB

sheet no
C3.0
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RETAINING WALL NOTE:

RETAINING WALL TO BE DESIGNED BY STRUCTURAL ENGINEER. PLANS WILL BE PROVIDED TO THE TOWNSHIP FOR REVIEW PRIOR TO ISSUANCE OF BUILDING PERMITS.

CONSTRUCTION NOTES:

1. THE ELEVATIONS FOR THIS PLAN ARE BASED ON NAVD88. THE SITE BENCHMARK IS A MAG NAIL SET IN THE DRIVE LOCATION AT THE NORTHEAST CORNER OF THE PROPERTY HAVING AN ELEVATION OF 49.23'. THIS ELEVATION AND BENCHMARK NOT TAKEN FROM ALTA/NSPS LAND TITLE SURVEY PLAN PREPARED BY RUGGIERO PLANTE LAND DESIGN DATED NOVEMBER 15 2023 LAST REVISED DECEMBER 12 2023.
2. PROPERTY AS SHOWN IS IN ZONE "AE" (BASE FLOOD ELEVATIONS DETERMINED) AS DEPICTED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FIRM FLOOD INSURANCE RATE MAP COMMUNITY PANEL #42091C0358 G PANEL 358 OF 451. BASE ELEVATION = 59 NAVD 1988 DATUM.
3. PLAN DATUM IS NGVD 1929. BASE FLOOD ELEVATION CONVERTED TO NGVD 1929 DATUM = ELEVATION ±60.
4. INSTALLATION OF ALL UTILITIES SHALL BE IN ACCORDANCE WITH THE ENGINEERING STANDARDS AND SPECIFICATIONS OF THE WHITEMARSH TOWNSHIP MONTGOMERY COUNTY OR OTHER PUBLIC UTILITY CONCERNS.
5. ALL BUILDINGS AND ASSOCIATED UTILITY CONNECTIONS AS SHOWN HAVE BEEN PLACED CONCEPTUALLY. CONTRACTOR SHALL REFER TO ARCHITECTS FINAL PLANS FOR EXACT BUILDING DIMENSIONS UTILITY CONNECTION LOCATIONS AND UTILITY SERVICE SIZING AND MATERIAL.
6. SITE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE DISCONNECTION ABANDONMENT RELOCATION AND/OR REMOVAL OF ALL APPLICABLE ON-SITE UTILITIES IN ACCORDANCE WITH ALL APPLICABLE LOCAL STATE AND FEDERAL REGULATIONS AS WELL AS ANY REQUIREMENTS FROM THE RELEVANT UTILITY COMPANY.
7. ALL UTILITIES AND STRUCTURES WITHIN THE PUBLIC RIGHT-OF-WAY OR EASEMENTS SHALL REMAIN UNLESS OTHERWISE NOTED.
8. ANY UTILITIES TO REMAIN THAT ARE DAMAGED DURING DEMOLITION AND/OR CONSTRUCTION SHALL BE REPAIRED AND/OR REPLACED IN KIND BY THE CONTRACTOR AT THEIR OWN EXPENSE.
9. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION AND UTILITY INVERT ELEVATIONS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. ANY DISCREPANCIES THAT MAY AFFECT PUBLIC SAFETY AND/OR PROJECT COST MUST BE IDENTIFIED IMMEDIATELY TO THE ENGINEER OF RECORD IN WRITING. PROCEEDING WITH CONSTRUCTION WITH DESIGN DISCREPANCIES IS DONE AT THE CONTRACTOR'S OWN RISK.
10. IF THE CONTRACTOR DEVIATES FROM THE PLANS AND SPECIFICATIONS WITHOUT FIRST OBTAINING THE WRITTEN AUTHORIZATION OF THE OWNER AND NAVE NEWELL INC. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK DONE WHICH DEVIATES FROM THE PLANS ALL FINES AND/OR PENALTIES ASSESSED AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE OWNER AND NAVE NEWELL INC. HARMLESS FROM ALL SUCH COSTS RELATED TO SAME.
11. CONSTRUCTION OF PROPOSED UTILITIES SHALL COMMENCE AT THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND INSTALLATIONS SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
12. CLEANOUTS AND CURB BOXES WITHIN PAVED AREAS MUST HAVE TRAFFIC LOADING FRAMES AND COVERS.
13. EXISTING STORM STRUCTURES AND PIPES TO BE INSPECTED BY CONTRACTOR PRIOR TO CONSTRUCTION AND ANY DEFICIENCIES FOUND SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
14. ALL UTILITY CONNECTIONS SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY.
15. ALL WET UTILITIES SHALL HAVE WATERPROOF JOINTS.
16. ANY STRUCTURE INFRASTRUCTURE UTILITIES SEWAGE DISPOSAL SYSTEMS OR OTHER PROPOSED LAND DISTURBANCE INDICATED ON THE APPROVED FINAL PLAN SHALL ONLY OCCUR AT THE LOCATIONS SHOWN ON THE PLAN. CHANGES TO SUCH LOCATIONS SHALL BE SUBJECT TO ADDITIONAL REVIEW AND RE-APPROVAL IN ACCORDANCE WITH THE PROVISIONS OF THE WHITEMARSH TOWNSHIP.
17. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING ALL SOFT YIELDING OR UNSUITABLE MATERIALS AND REPLACING WITH SUITABLE MATERIALS. ALL EXCAVATED OR FILLED AREAS SHALL BE COMPACTED TO 95% OF MODIFIED PROCTOR MAXIMUM DENSITY PER A.S.T.M. TEST D-1557. MOISTURE CONTENT AT THE TIME OF PLACEMENT SHALL BE NO MORE THAN 2% ABOVE OR 3% BELOW OPTIMUM. CONTRACTOR SHALL SUBMIT A COMPACTION REPORT PREPARED BY A QUALIFIED SOILS ENGINEER REGISTERED WITH THE STATE WHERE THE WORK IS PERFORMED VERIFYING THAT ALL FILLED AREAS AND SUBGRADE AREAS WITHIN THE BUILDING PAD AREA AND AREAS TO BE PAVED HAVE BEEN COMPACTED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.
18. SUBBASE MATERIAL FOR SIDEWALKS OR ASPHALT SHALL BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. SHOULD SUBBASE BE DEEMED UNSUITABLE SUBBASE IS TO BE REMOVED AND FILLED WITH APPROVED FILL MATERIAL AND COMPACTED TO 95% OPTIMUM DENSITY (AS DETERMINED BY MODIFIED PROCTOR METHOD).
19. PRIOR TO STARTING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE TO MAKE SURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION AND/OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS BY ALL OF THE PERMITTING AUTHORITIES
20. SITE CLEARING SHALL INCLUDE THE LOCATION AND REMOVAL OF ALL UNDERGROUND TANKS PIPES VALVES ETC.
21. ALL EXCAVATED UNSUITABLE MATERIAL MUST BE TRANSPORTED TO AN APPROVED DISPOSAL LOCATION.
22. CONTRACTOR IS RESPONSIBLE FOR ALL SHORING REQUIRED DURING EXCAVATION AND SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS AS WELL AS ADDITIONAL PROVISIONS TO ASSURE STABILITY OF CONTIGUOUS STRUCTURES AS FIELD CONDITIONS DICTATE.
23. CROSS SLOPES OF ALL PEDESTRIAN ROUTES SHALL NOT EXCEED 2.08%. THIS INCLUDES CURB RAMPS SIDEWALKS ASSOCIATED GUTTERS AND CROSSWALKS.
24. LONGITUDINAL SLOPES ALONG PEDESTRIAN ROUTES SHALL NOT EXCEED 5.00% (EXCEPT ON CURB RAMPS AND RAMPS SEE BELOW).
25. LONGITUDINAL SLOPES OF CURB RAMPS AND RAMPS SHALL NOT EXCEED 8.33%.
26. GAPS OR OPENINGS ALONG AN PEDESTRIAN ROUTE MUST BE NO MORE THAN 1/2 INCH WIDE.
27. CONTRACTOR TO MATCH EXISTING PAVEMENT CURB AND SIDEWALK ELEVATIONS/LOCATIONS WHERE THE PROPOSED IMPROVEMENTS TIE INTO EXISTING FEATURES.
28. ALL GRADING SHALL BE A MAXIMUM OF 3H : 1V SLOPE.
29. CONTRACTOR TO ENSURE COMPLIANCE WITH ADA REGULATIONS.
30. UNTIL ALL FINAL GOVERNMENTAL APPROVALS (INCLUDING BUT NOT LIMITED TO APPROVALS AND THIRD PARTY PERMITTING REQUIRED UNDER ORDINANCES STATUTES AND REGULATIONS GOVERNING ZONING SUBDIVISION LAND DEVELOPMENT AND STORMWATER MANAGEMENT) HAVE BEEN GRANTED THE PLANS PREPARED BY NAVE NEWELL INC. ARE SUBJECT TO CHANGE TO COMPLY WITH GOVERNMENTAL REVIEWS AND REQUIREMENTS. AS A RESULT NAVE NEWELL INC. SHALL NOT BE RESPONSIBLE FOR ANY COSTS INCURRED BY CLIENT IF THE CLIENT BIDS THE PROJECT AWARDS CONTRACTS AND/OR ADVANCES CONSTRUCTION PRIOR TO THE DEVELOPMENT AND ISSUANCE OF FINAL PLANS FROM NAVE NEWELL INC. TO CLIENT AND FINAL GOVERNMENTAL APPROVALS HAVE BEEN ISSUED BASED ON THOSE FINAL PLANS.

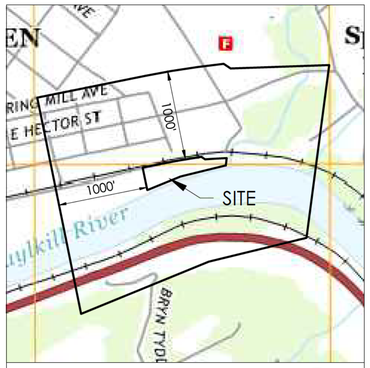
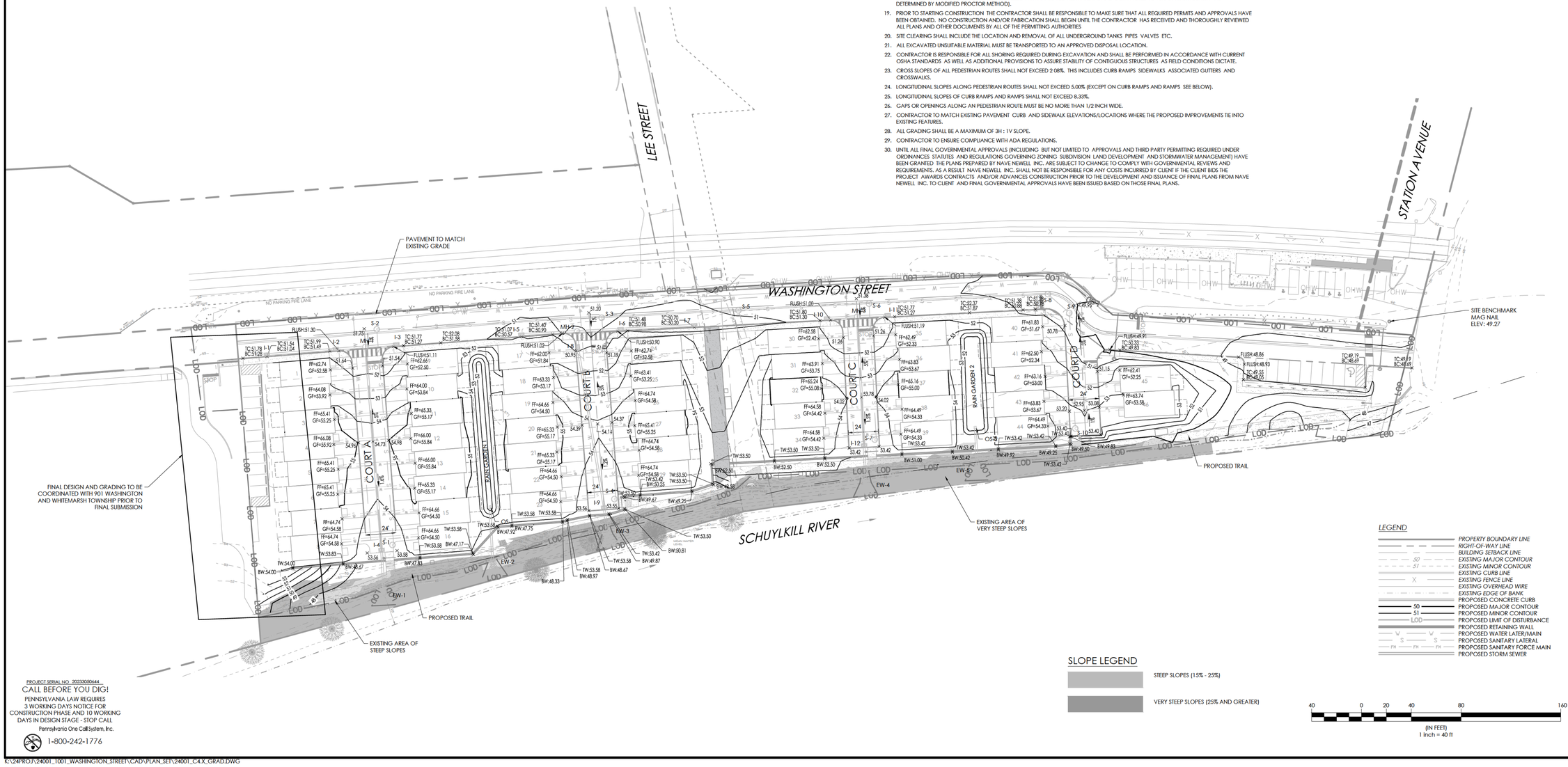


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'



PROJECT SERIAL NO. 20233050644

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USER: ----

SLOPE LEGEND

- STEEP SLOPES (15% - 25%)
- VERY STEEP SLOPES (25% AND GREATER)

LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT-OF-WAY LINE
- BUILDING SETBACK LINE
- 50 EXISTING MAJOR CONTOUR
- 51 EXISTING MINOR CONTOUR
- EXISTING CURB LINE
- X EXISTING FENCE LINE
- EXISTING OVERHEAD WIRE
- EXISTING EDGE OF BANK
- PROPOSED CONCRETE CURB
- 50 PROPOSED MAJOR CONTOUR
- 51 PROPOSED MINOR CONTOUR
- LOD PROPOSED LIMIT OF DISTURBANCE
- PROPOSED RETAINING WALL
- W W PROPOSED WATER LATER/MAIN
- S S PROPOSED SANITARY LATERAL
- FM FM FM PROPOSED SANITARY FORCE MAIN
- PROPOSED STORM SEWER

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

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REVISIONS					
date	no	description	drawn by	chk'd by	
3/27/2025	1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	JGE	JT	

SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082157

DRAWING NAME: GRADING PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1"=40'	approv by: JPB

sheet no

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8 of 20

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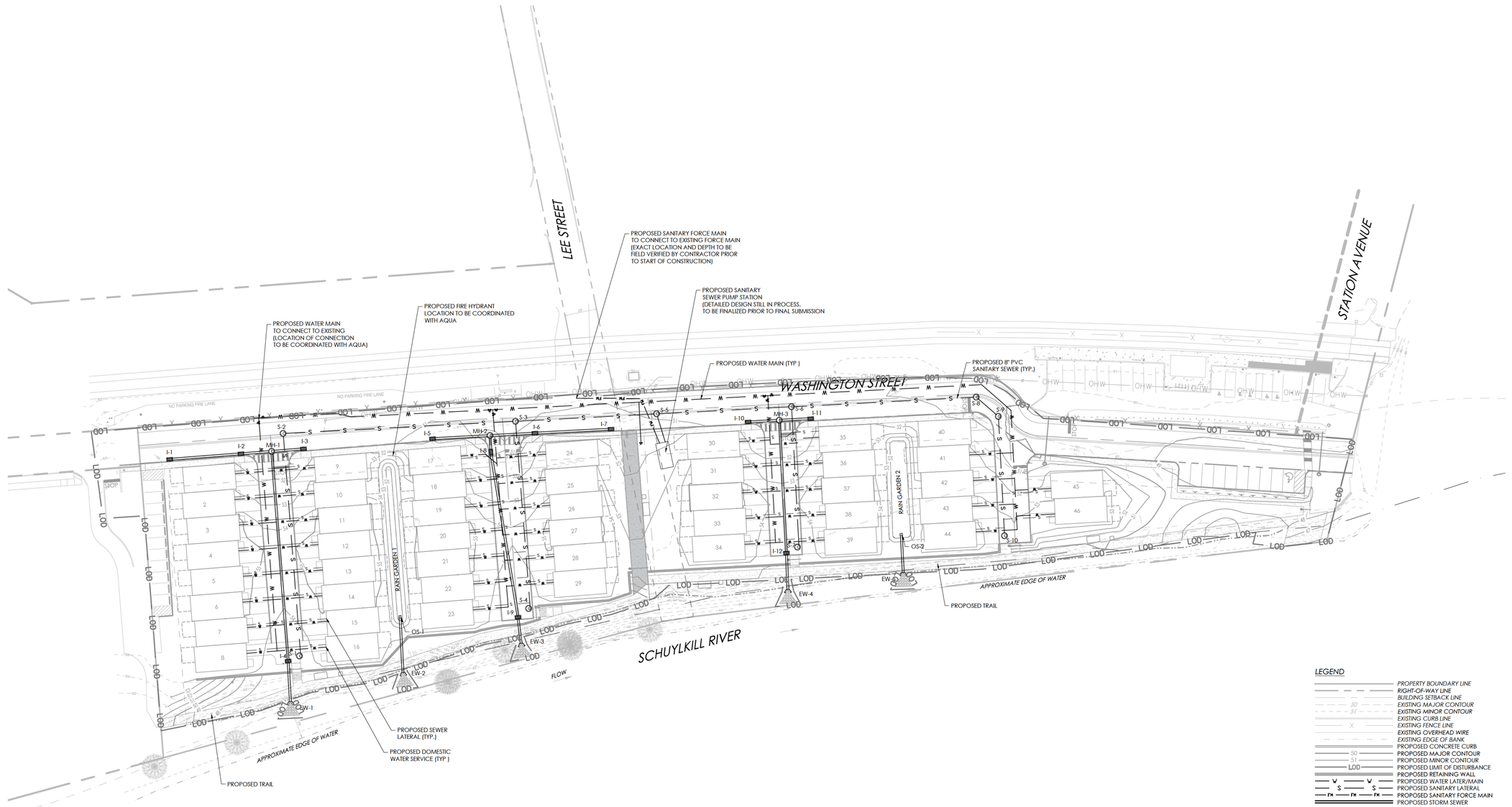

LEGEND

- PROPERTY BOUNDARY LINE
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- BUILDING SETBACK LINE
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- 51 PROPOSED MINOR CONTOUR
- LOD PROPOSED LIMIT OF DISTURBANCE
- PROPOSED RETAINING WALL
- W PROPOSED WATER LATER/MAIN
- S PROPOSED SANITARY LATERAL
- FM PROPOSED SANITARY FORCE MAIN
- PROPOSED STORM SEWER

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

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date	no	des	ription		chk'd	by
3/27/2025	1.		REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025		JGE	JT
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SEAL:
JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE 082137

DRAWING NAME: UTILITY PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP , MONTGOMERY COUNTY, PA

project no	drawn by:
2024-001.02	JT
date:	chk'd by:
11/15/24	JGE
scale:	approv by:
1"=40'	JPB

sheet no

C5.0

9 of 20

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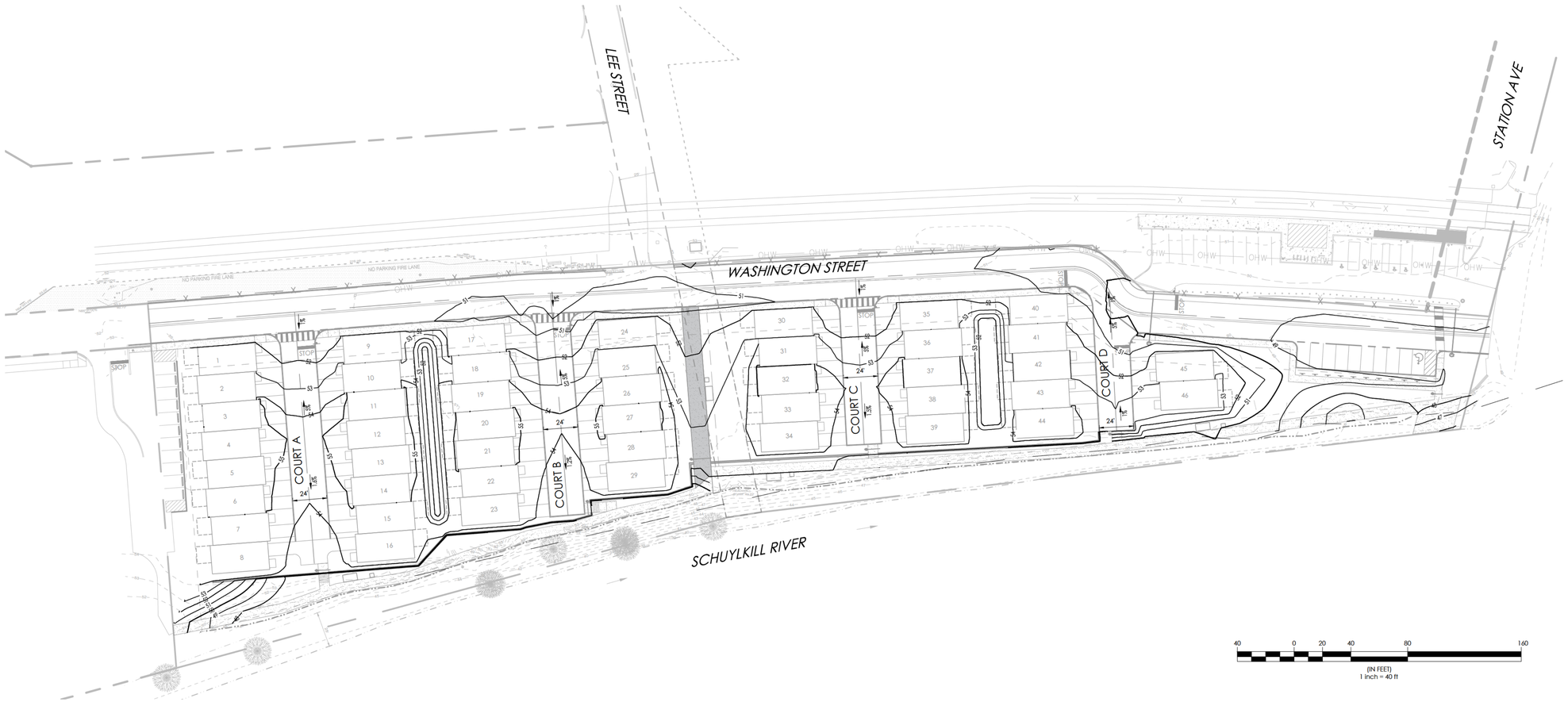

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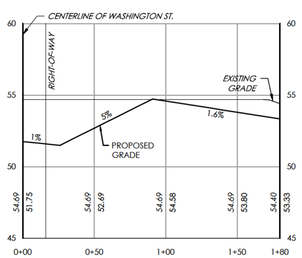
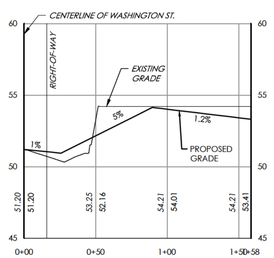
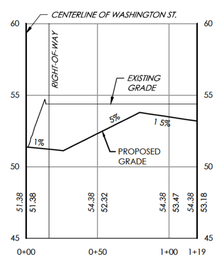
(IN FEET)
1 inch = 40 ft



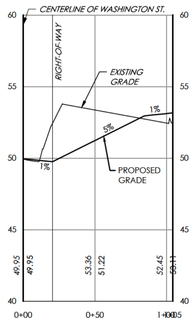
COURT A PROFILE
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'



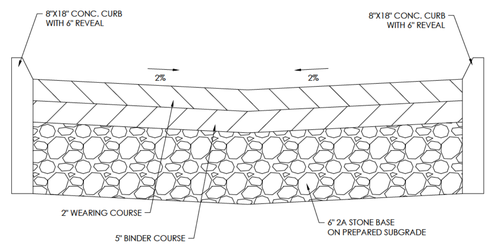
COURT B PROFILE
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'



COURT C PROFILE
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'



COURT D PROFILE
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'



TYPICAL COURT CROSS SECTION
N.T.S.

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3/27/2025	1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	JGE	JT

SEAL:
REGISTERED PROFESSIONAL ENGINEER
JAMES P. BANNON
No. PE082137

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: ROAD PLAN AND PROFILE SHEET

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1"=40'	approv by: JPB
sheet no	

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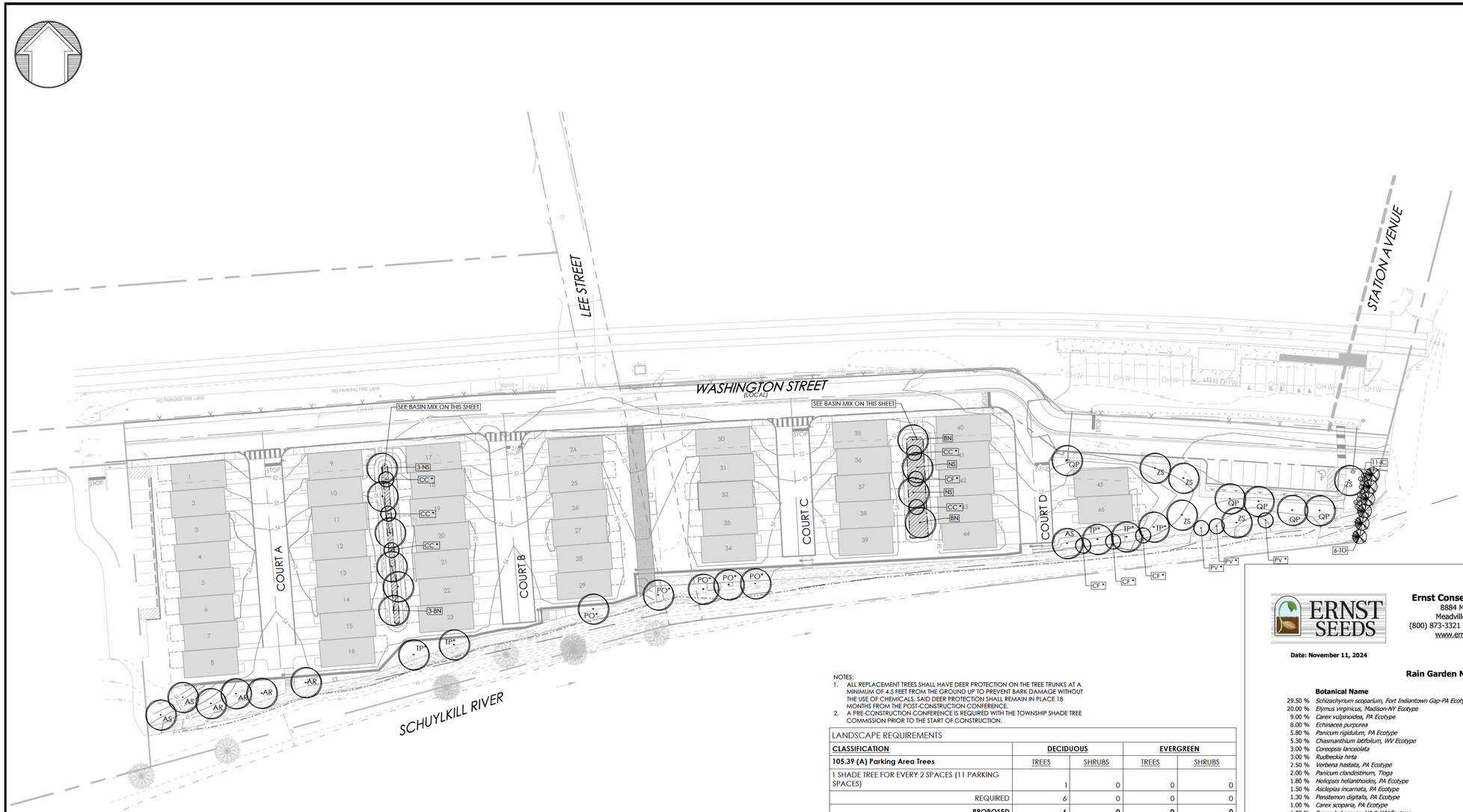

NOTES:
1. ALL REPLACEMENT TREES SHALL HAVE DEER PROTECTION ON THE TREE TRUNKS AT A MINIMUM OF 4.5 FEET FROM THE GROUND UP TO PREVENT BARK DAMAGE WITHOUT THE USE OF CHEMICALS. SAID DEER PROTECTION SHALL REMAIN IN PLACE 18 MONTHS FROM THE POST-CONSTRUCTION CONFERENCE.
2. A PRE-CONSTRUCTION CONFERENCE IS REQUIRED WITH THE TOWNSHIP SHADE TREE COMMISSION PRIOR TO THE START OF CONSTRUCTION.

LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT-OF-WAY LINE
- BUILDING SETBACK LINE
- 50 EXISTING MAJOR CONTOUR
- 51 EXISTING MINOR CONTOUR
- EXISTING CURB LINE
- X EXISTING FENCE LINE
- EXISTING EDGE OF BANK
- PROPOSED CONCRETE CURB
- 50 PROPOSED MAJOR CONTOUR
- 51 PROPOSED MINOR CONTOUR
- PROPOSED RETAINING WALL
- PROPOSED LANDSCAPING

LANDSCAPE SCHEDULE

Count	SYMBOL	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	CALIPER	ROOT	NOTES	
4	AR	ACER RUBRUM	RED MAPLE	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
3	AS	ACER SACCHARUM	SUGAR MAPLE	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
5	BN	BETULA NIGRA	RIVER BIRCH	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
5	CC	CERCIS CANADENSIS	EASTERN REDBUD	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
4	CF	CORNUS FLORIDA	FLOWERING DOGWOOD	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
5	NS	NYSSA SYLVATICA	BLACKGUM	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
5	PO	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
3	PV	PRUNUS VIRGINIANA	CHOKECHERRY	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
5	QP	QUERCUS PHELLOS	WILLOW OAK	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
5	TP	LIRIODENDRON TULIPIFERA	TULIP POPLAR	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
5	ZS	ZELKVOA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	CANOPY

***** **DENOTES QUANTIFYING FOR TREE REPLACEMENT CRITERIA PER CHAPTER 55**

EVERGREEN TREES

Count	SYMBOL	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	CALIPER	ROOT	NOTES
6	TO	THUJA OCCIDENTALIS	AMERICAN ARBORVITAE	6' MIN.			B&B	UNIFORM SIZE AND SPREAD

EVERGREEN SHRUBS

Count	SYMBOL	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	CALIPER	ROOT	NOTES
11	IC	ILEX CRENATA	JAPANESE HOLLY	24"-36" MIN.	24"-36" MIN.		#5 CONT.	UNIFORM SIZE AND SPREAD

LANDSCAPE REQUIREMENTS				
CLASSIFICATION	**DECIDUOUS**		**EVERGREEN**	
105.39 (A) Parking Area Trees	TREES	SHRUBS	TREES	SHRUBS
1 SHADE TREE FOR EVERY 2 SPACES (11 PARKING SPACES)	1	0	0	0
REQUIRED	6	0	0	0
PROPOSED	**6**	**0**	**0**	**0**
105.52 (A) Buffer Trees	TREES	SHRUBS	TREES	SHRUBS
1 EVERGREEN TREE PER 15 LF 1 EVERGREEN SHRUB PER 8 LF. (1 299.2 LF.)	0	0	1	1
REQUIRED	0	0	6	11
PROPOSED	**0**	**0**	**6**	**11**
116.284 (A).3 Trail Landscaping	TREES	SHRUBS	TREES	SHRUBS
1 TREE PER 50 LINEAR FEET (1 045.2 LF)	1	0	0	0
REQUIRED	21	0	0	0
PROPOSED	**21**	**0**	**0**	**0**
CH 55: SECTION 55-1.6.A	TREES	SHRUBS	TREES	SHRUBS
PER REMOVED TREE W/ DBH OF 6" OR GREATER (63 TREES REMOVED). TOTAL CALIPER OF REPLACEMENT TREES MUST EQUAL/EXCEED TOTAL DBH REMOVED (1 154"). 1 (3") or 1 (2")	10 Canopy (3") and 12 Understory (2")	0	0	0
REQUIRED	22	0	0	0
PROPOSED	**22**	**0**	**0**	**0**
	DECIDUOUS		**EVERGREEN**	
TOTAL LANDSCAPING	TREES	SHRUBS	TREES	SHRUBS
REQUIRED	49	0	6	11
PROPOSED	**49**	-	**6**	**11**

NOTE:
WHITEMARSH TOWNSHIP ZONING HEARING BOARD GRANTED THE FOLLOWING RELIEF BY DECISION DATED MAY 15 2024:
1. VARIANCE PURSUANT TO SECTION 116.283.C.(1) SO AS TO PERMIT CURB AND SIDEWALK ALIGNMENT ALONG WASHINGTON STREET WITHOUT STREET TREES AND THE REQUIRED 5 FOOT VERGE/STRIP BOTH AS REQUIRED IN CROSS-REFERENCED SECTION 105-48 OF THE SUBDIVISION AND LAND DEVELOPMENT ORDINANCE.
2. VARIANCE PURSUANT TO SECTION 116.283.D.(1)(a) SO AS TO PERMIT CURB AND SIDEWALK WITHOUT A PLANTING STRIP.

ERNST SEEDS

Ernst Conservation Seeds
8884 Mercer Pike
Meadville, PA 16335
(800) 873-3321 Fax (814) 336-5191
www.ernstseed.com

Date: November 11, 2024

Rain Garden Mix - ERNMX-180

	Botanical Name	Common Name	Price/Lb
29.50 %	*Schizachyrium scoparium, Fort Indiantown Gap-PA Ecotype*	Little Bluestem, Fort Indiantown Gap-PA Ecotype	12.99
20.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	10.46
9.00 %	*Carex vulpinoidea, PA Ecotype*	Fox Sedge, PA Ecotype	28.80
8.00 %	*Echinacea purpurea*	Purple Coneflower	43.20
5.80 %	*Panicum rigidulum, PA Ecotype*	Redtop Panicgrass, PA Ecotype	57.60
5.30 %	*Chasmanthium latifolium, WV Ecotype*	River Oats, WV Ecotype	96.00
3.00 %	*Coreopsis lanceolata*	Lanceleaf Coreopsis	28.80
3.00 %	*Rudbeckia hirta*	Blackeyed Susan	31.20
2.50 %	*Verbena hastata, PA Ecotype*	Blue Vervain, PA Ecotype	38.40
2.00 %	*Panicum clandestinum, Tioga*	Deertongue, Tioga	22.26
1.80 %	*Heliopsis helianthoides, PA Ecotype*	Oxeye Sunflower, PA Ecotype	33.60
1.50 %	*Asclepias incarnata, PA Ecotype*	Swamp Milkweed, PA Ecotype	177.60
1.30 %	*Penstemon digitalis, PA Ecotype*	Tall White Beardtongue, PA Ecotype	168.00
1.00 %	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype	81.60
1.00 %	*Senna hebecarpa, VA & WV Ecotype*	Wild Senna, VA & WV Ecotype	28.80
1.00 %	*Zizia aurea, PA Ecotype*	Golden Alexanders, PA Ecotype	72.00
0.50 %	*Baptisia australis, Southern WV Ecotype*	Blue False Indigo, Southern WV Ecotype	96.00
0.50 %	*Juncus effusus*	Soft Rush	48.00
0.50 %	*Juncus tenuis, PA Ecotype*	Path Rush, PA Ecotype	48.00
0.50 %	*Pycnanthemum tenuifolium*	Narrowleaf Mountainmint	240.00
0.50 %	*Vernonia noveboracensis, PA Ecotype*	New York Ironweed, PA Ecotype	264.00
0.40 %	*Aster novae-angliae*	New England Aster	336.00
0.40 %	*Monarda fistulosa, Fort Indiantown Gap-PA Ecotype*	Wild Bergamot, Fort Indiantown Gap-PA Ecotype	96.00
0.20 %	*Aster lateriflorus*	Calico Aster	336.00
0.20 %	*Aster prenanthoides, PA Ecotype*	Zigzag Aster, PA Ecotype	432.00
0.10 %	*Aster pilosus, PA Ecotype*	Heath Aster, PA Ecotype	264.00
0.10 %	*Eupatorium perfoliatum, PA Ecotype*	Boneset, PA Ecotype	192.00
0.10 %	*Mimulus ringens, PA Ecotype*	Square Stemmed Monkeyflower, PA Ecotype	216.00
0.10 %	*Solidago juncea, PA Ecotype*	Early Goldenrod, PA Ecotype	336.00
0.10 %	*Solidago nemoralis, PA Ecotype*	Gray Goldenrod, PA Ecotype	264.00
0.10 %	*Solidago rugosa, PA Ecotype*	Wrinkleleaf Goldenrod, PA Ecotype	264.00
100.00 %		**Mix Price/Lb Bulk:**	**$39.16**

Seeding Rate: 20 lb per acre with a cover crop. For sites that drain within 24 hours of a rain event use one of the following cover crops:Oats (1 Jan to 31 Jul; 30 lbs/acre). Japanese Millet (1 May to 31 Aug; 10 lbs/acre), or grain rye (1 Aug to 31 Dec; 30 lbs/acre).

Grasses & Grass-like Species - Herbaceous Perennial; Herbaceous Flowering Species - Herbaceous Perennial; Stormwater Management; Uplands & Meadows

The native perennial forbs and grasses provide food and cover for rain garden biodiversity. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

Price quotes guaranteed for 30 days.
All prices are FOB Meadville, PA.
Please check our web site at www.ernstseed.com
for current pricing when placing orders.

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

PROJECT SERIAL NO. 20233050644
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1-800-242-1776

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3/27/2025 4:38 PM
USER: ----

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WWW.NAVENEWELL.COM

no	date	REVISIONS des ription	chk'd by
1	3/27/2025	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	BTK GSS

SEAL:
PAUL E. BRANDT JR.
Registered Landscape Architect
Pennsylvania License No. LA001224

DRAWING NAME: LANDSCAPE PLAN
LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

1001 WASHINGTON STREET

project no	drawn by:
2024-001.02	GSS
date: 11/15/24	chk'd by: BTK
scale: 1"=40'	approv by: PEL

sheet no
C7.0
11 of 20

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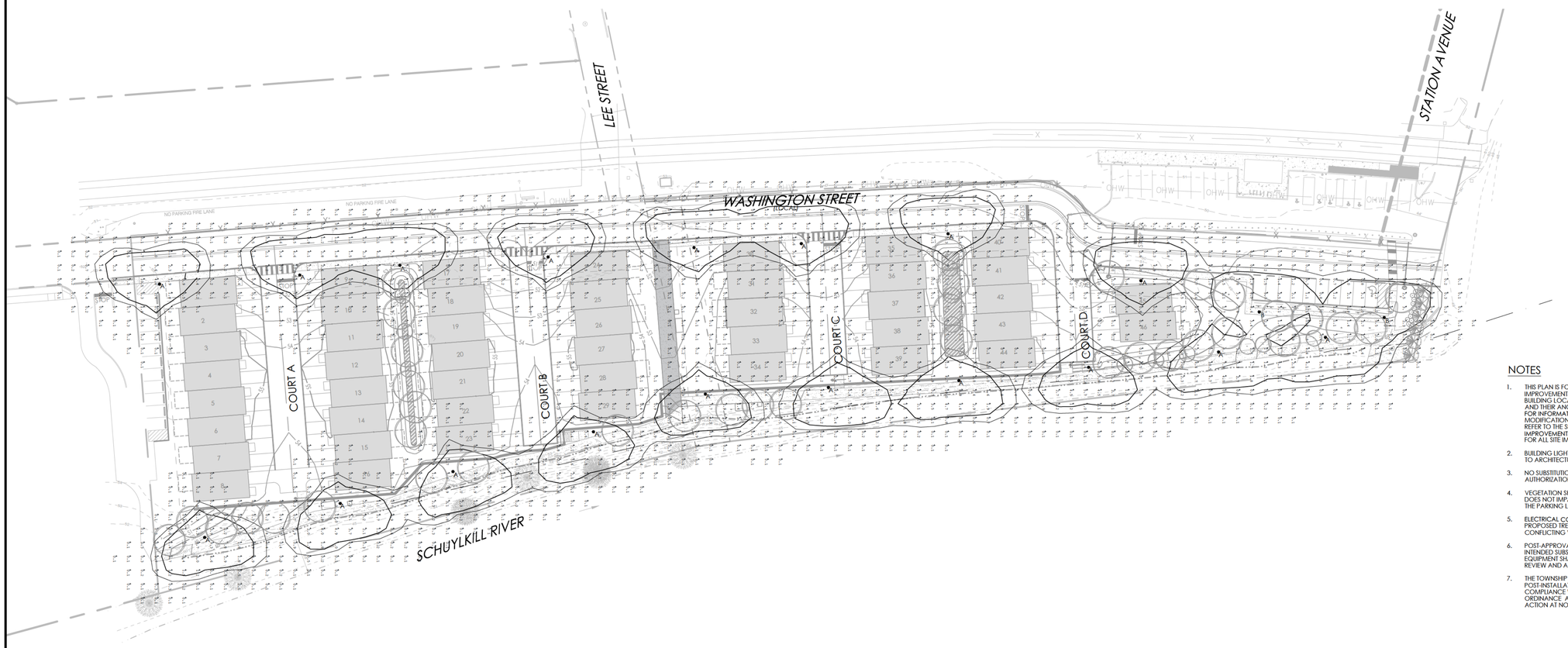
Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Description	Tag	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
A	18	PPT-P-A05-730-BLC	Single	PPT-P-A05-730-T3M	BLC	1 000	8585	53 9	808 5
B	2	PPT-P-A05-730-T3M	Single	PPT-P-A05-730-T3M	T3	1 000	8585	53 9	107 8



NOTES

1. THIS PLAN IS FOR LIGHTING PURPOSES ONLY. ALL SITE IMPROVEMENTS INCLUDING BUT NOT LIMITED TO BUILDING LOCATIONS CURBING SIDEWALK UTILITIES AND THEIR ANCILLARY APPURTENANCES ARE SHOWN FOR INFORMATION PURPOSES ONLY AND ARE SUBJECT TO MODIFICATION AND REVISION. CONTRACTOR SHALL REFER TO THE SITE PLAN AND CONSTRUCTION IMPROVEMENTS PLAN, AND THEIR RELATED DETAIL SHEETS, FOR ALL SITE IMPROVEMENTS OTHER THAN LIGHTING.
2. BUILDING LIGHTING IS NOT SHOWN ON THIS PLAN REFER TO ARCHITECTURAL PLANS.
3. NO SUBSTITUTIONS SHALL BE PERMITTED WITHOUT WRITTEN AUTHORIZATION FROM NAVE NEWELL.
4. VEGETATION SHALL BE MAINTAINED TO ENSURE GROWTH DOES NOT IMPACT THE PROPOSED LIGHTING LEVELS IN THE PARKING LOTS AND DRIVE AISLES.
5. ELECTRICAL CONDUIT SHALL BE ROUTED AROUND PROPOSED TREE LOCATIONS PLANTING ISLANDS AND CONFLICTING VEGETATION AREAS.
6. POST-APPROVAL ALTERATIONS TO LIGHTING PLANS OR INTENDED SUBSTITUTIONS FOR APPROVED LIGHTING EQUIPMENT SHALL BE SUBMITTED TO THE TOWNSHIP FOR REVIEW AND APPROVAL.
7. THE TOWNSHIP RESERVES THE RIGHT TO CONDUCT A POST-INSTALLATION NIGHTTIME INSPECTION TO VERIFY COMPLIANCE WITH THE REQUIREMENTS OF THIS ORDINANCE AND IF APPROPRIATE TO REQUIRE REMEDIAL ACTION AT NO EXPENSE TO THE MUNICIPALITY.

LEGEND

- *PROPERTY BOUNDARY LINE*
- *RIGHT-OF-WAY LINE*
- *BUILDING SETBACK LINE*
- *50 EXISTING MAJOR CONTOUR*
- *51 EXISTING MINOR CONTOUR*
- *EXISTING CURB LINE*
- *X EXISTING FENCE LINE*
- *EXISTING EDGE OF BANK*
- PROPOSED CONCRETE CURB
- 50 PROPOSED MAJOR CONTOUR
- 51 PROPOSED MINOR CONTOUR
- PROPOSED RETAINING WALL
- PROPOSED LIGHT POLE
- 4.8 PROPOSED FOOTCANDLE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft

PROJECT SERIAL NO. 20233050644
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Pennsylvania One Call System, Inc.
1-800-242-1776

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3/27/2025 4:38 PM
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REVISIONS					
date	no	description	by	chk'd	by
3/27/2025	1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	GSS	BTK	---
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SEAL:
PAUL E. LEONARD, JR.
Registered Landscape Architect
Pennsylvania License No. LA001224

DRAWING NAME: LIGHTING PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no: 2024-001.02	drawn by: GSS
date: 11/15/24	chk'd by: BTK
scale: 1"=40'	approv by: PEL

sheet no

C7.1

12 of 20

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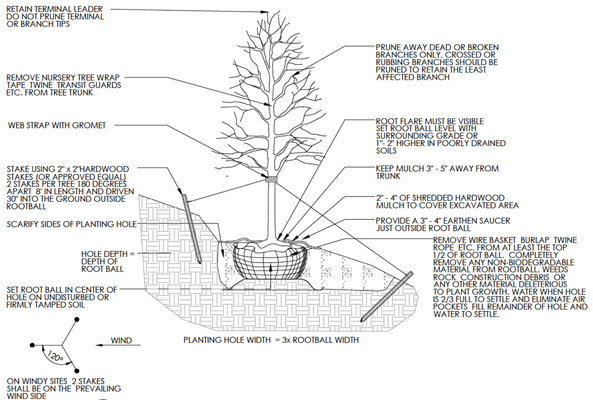
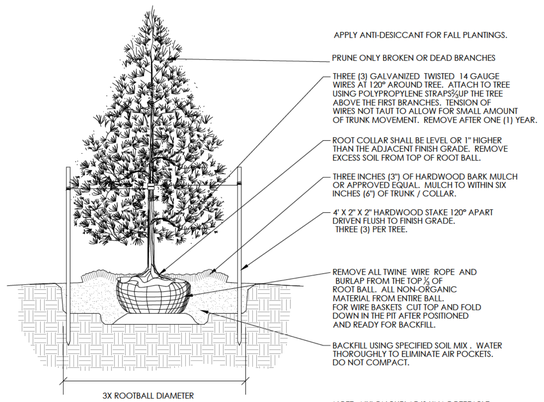
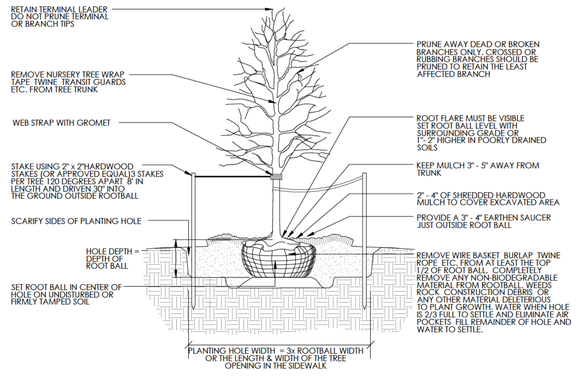


1 TREE PLANTED ON SLOPE DETAIL
N.T.S.

NOTES:
FASTEN STAKES TO TREE USING 3/4" - 2" WIDE, FLAT, WOVEN POLYPROPYLENE MATERIAL SUCH AS ARBOR TIE (TM) OR USE 3" WIDE WEBBING STRAPS SECURED TO STAKES WITH HEAVY GAUGE WIRE. DO NOT USE WIRE RUN THROUGH HOSE. ATTACH TREE LOOSELY TO ALLOW FLEXING. REMOVE STAKING MATERIAL AFTER ONE YEAR.

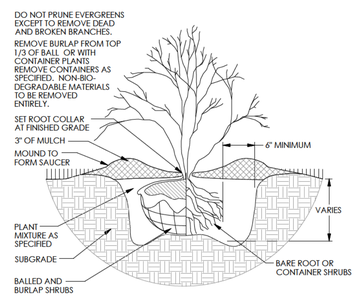


2 EVERGREEN PLANTING DETAIL
N.T.S.

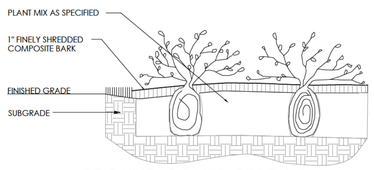


3 DECIDUOUS TREE PLANTINGS
N.T.S.

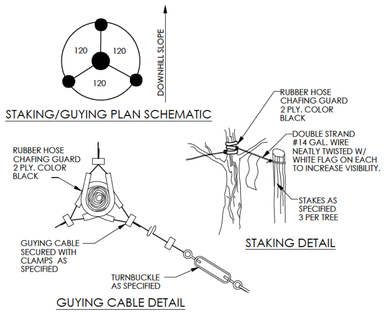
NOTES:
FASTEN STAKES TO TREE USING 3/4" - 2" WIDE, FLAT, WOVEN POLYPROPYLENE MATERIAL SUCH AS ARBOR TIE (TM) OR USE 3" WIDE WEBBING STRAPS, SECURED TO STAKES WITH HEAVY GAUGE WIRE. DO NOT USE WIRE RUN THROUGH HOSE. ATTACH TREE LOOSELY TO ALLOW FLEXING. REMOVE STAKING MATERIAL AFTER ONE YEAR.



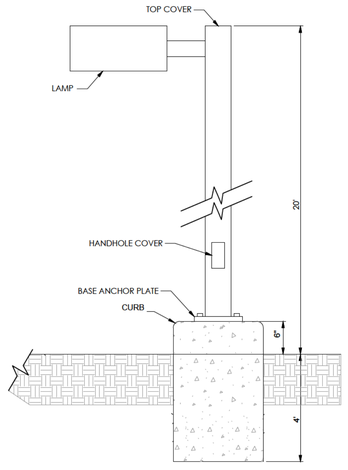
4 SHRUB PLANTING DETAIL
N.T.S.



5 GROUND COVER/PERENNIAL PLANTING DETAIL
N.T.S.

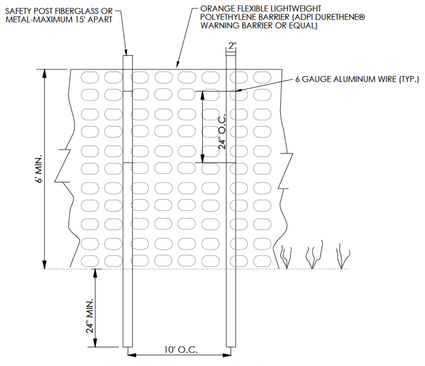


6 TREE STAKING AND GUYING DETAIL
N.T.S.



7 LIGHT POLE DETAIL
N.T.S.

NOTE: LIGHT POLE FOUNDATION TO BE DESIGNED BY OTHERS. A SHOP DRAWING PREPARED BY A PA REGISTERED STRUCTURAL ENGINEER SHALL BE PROVIDED TO THE TOWNSHIP FOR THEIR REVIEW AND APPROVAL PRIOR TO INSTALLATION.



8 TREE PROTECTION FENCE DETAIL
N.T.S.

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GARDCO

Site & Area
PureForm
PPT PureForm LED post top



Gardco PureForm LED post top features a sleek, low profile design and is available with two light engines. ComfortEdge optics provide a unique and lower glare lighting solution designed to enhance visual comfort for pedestrian applications, while precision optics maximize efficiency and spacing. PureForm post top is available with multiple optical distributions with output up to 17,000 lumens. A full range of control options provides additional energy savings. Optional integral emergency battery backup is available for path-of-egress illumination.

Project:
Location:
Cat.No:
Type:
Lamps: Qty:
Notes:

Ordering guide Example: PPT-P-A09-840-T5M-T3-120-DALI-CS30-PCB-BZ

Prefix	Catalog Code	Lumens Selection				CCT/CRI		Distribution		Shielding	Mounting		Voltage	
PPT														
PPT PureForm post top, comfort optics	P Precision optics	A01[1] 2500	A02[1] 3500	A03[1] 5000	A04 7000	A05 9000	A06 11000	A07 13500	A08 16000	A09 17000	730 70CRI, 3000K	740 70CRI, 4000K	750 70CRI, 5000K	T2M Area optic type 2	T3M Area optic type 3	T4M Area optic type 4	T5M Area optic type 5	BLC Back light control	None –	HS[2] Internal house side shield (slip-on)	T3 Mounts to a 3"x4" tenon (standard)	T2 Post top tenon adapter for 2-3/8" x 4" (ships separately)	120 120V	208 208V	240 240V	277 277V	UNV 120-277V	347 347V	480 480V	HVU 374-480V
											830 80CRI, 3000K	840 80CRI, 4000K	850 80CRI, 5000K															
											827[1] 80CRI, 2700K (ETO+)																		
	C Comfort optics	A01[1] 2000	A02 3500	A03 5000	A04 7000	A05 9000	A06 11000	A07[4] 13500	A08[4] 16000	A09[4] 17000	830 80CRI, 3000K	840 80CRI, 4000K	827[1] 80CRI, 2700K (ETO+)	T2M Comfort optic type 2M	T3M Comfort optic type 3M	T4M Comfort optic type 4M	T5M Comfort optic type 5M		None –	(comfort shielding must be ordered as separately as accessory PPT-EHS-BK)								
											835[1] 80CRI, 3500K (ETO+)																		
											760[1] 70CRI, 5000K (ETO+)																		

Driver type	Dimming Controls (only one may be selected)		Lighting controls[10] (only one may be selected)		Emergency		Finish	
0-10V					None –		Standard textured finish	
0|10V 0-10V	None –		None –		EM[5,6,9] Emergency battery backup (0°C to +40°C/32°F to +104°F)		BK Black	
	DLEA Dimming leads externally accessible (controls by others)		PCB[5,10,11] Photocontrol button				WH White	
	FAWS Field adjustable wattage selector		TLR5 5-pin twist lock w/ 0-10v driver (non-D4)		EMC+[5,6,9,14] Emergency battery pack, cold rated (20°C to +40°C/-4°F to +104°F)		BZ Bronze	
	BL50L3[7] PIR motion response dim to 50% L2 lens		TLR7 7-pin twist lock w/ 0-10v driver (non-D4)				DG Dark grey	
	BL50L3[7] PIR motion response dim to 50% L3 lens		TLRPC[5,10] 7-pin twist lock w/ 0-10v driver (non-D4) & on/off photocell				MG Medium grey	
	BL30MW[8] Microwave motion sensor factory set at 50% dimming							
DALI					Fusing		Customer specified	
DALI SR/ DALI	None –		None –		None –		OC Optional color (specify optional color or RAL, contact factory)	
	CS50[5,6] Security 50 % dimming, 7 hours		PCB[5,10] Photocontrol button		F1[12] Single Fuse (120V, 277V, or 347V)			
	CM50[5,6] Median 50 % dimming, 8 hours		TR5[5,6,13] 5-pin twist lock SR/DALI driver		F2[12] Double Fuse (208V, 240V, or 480V)		SC Special color (must supply color chip, requires factory quote)	
	CS30[5,6] Security 30 % dimming, 7 hours		TR7[5,6,13] 7-pin twist lock SR/DALI driver (D4)		F3[12] Double Fuse Canadian double pole (208V, 240V, or 480V)			
	CM30[5,6] Median 30 % dimming, 8 hours		TLP[5,6,13] 7-pin twist lock SR/DALI driver (D4) & on/off photocell		Surge Protection			
	SRDR[5,6] SR driver connected to Zhaga socket (D4)				None SP1 Surge Protector 10kV / 10kA (standard)			
	WIAPLW[5,6] Wireless Interact outdoor low mounting (7-16'), white housing				SP2 Surge Protector 20kV/ 10kA (option)			
	WIAPLB[5,6] Wireless Interact outdoor low mounting (7-16'), black housing							
	WIAPHW[5,6] Wireless Interact outdoor low mounting (16-40'), white housing							
	WIAPHB[5,6] Wireless Interact outdoor low mounting (16-40'), black housing							

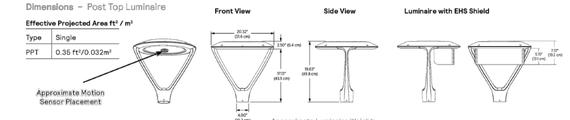
1. Extended lead times apply. Contact factory for details.
2. Available with A-xx optics only. Not allowed with Comfort optics.
3. Available with Comfort optics only at 120-347V. Not allowed with Area optics.
4. Not available at 347-480V(HVU).
5. Not available at 347-480V(HVU) for Pixelated (P-Axx) optic lumen packages. A01-A02 and Comfort (C-Axx) optic lumen packages A01-A09.
6. Not available at 120-277V(UNV) for Pixelated (P-Axx) optic lumen packages A01-A02 and Comfort (C-Axx) optic lumen packages A01-A02.
7. EMC only compatible with DLEA and Dynadimmer (CSXX, CMXX) Dimming control options.
8. Not available with Microwave Motion Sensor BL50MW.
9. Not available with Comfort (C-Axx) optic lumen packages A07-A09.
10. If selected with Dimming control, DIM leads from receptacle will not be connected to driver.
11. Available only with Comfort optics.
12. Must specify input voltage.
13. BL50MW options and Twistlock photocell options (TLR5, TLR7, TLRPC, PCB) are not compatible due to mechanical conflict.
14. Not available with emergency options.
15. EMC limited to 25°C max ambient with shielding and A09. All other configurations listed to 40°C ambient.
16. For comfort PPT, emergency cold-pack conflicts with BL50xx & PCB/TLRx & Zhaga & FAWS.

PPT PureForm LED post top

Dimensions – Post Top Luminaire

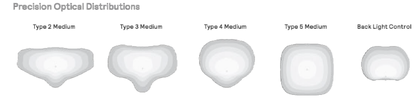
Effective Projected Area ft² / m²

Type	Single
PPT	0.35 ft²/0.032m²



Approximate Luminaire Weight:
Standard: 20 lbs (9.1 kg)
With battery pack: 26 lbs (11.8 kg)

Precision Optical Distributions



Comfort Optical Distributions

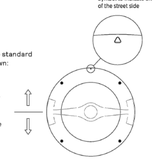


Asymmetric Optical Orientation Information

Standard Optic Position

Aimed Between The Yoke Supports

Luminaires ordered with asymmetric optical systems in the standard optic position will have the optical system oriented as shown:



9 PROPOSED POST TOP LIGHTING - GARDCO
N.T.S.

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A NEWELL COMPANY
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900 WEST VALLEY ROAD SUITE 1100
WAYNE, PA 19087 1830
P: 610.265.8323 F: 610 265.4299
WWW.NAVENEWELL.COM

no	description	date:	ck'd	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	BTK	GSS

REVISIONS

SEAL:
PAUL E. BRANDT, JR.
Registered Landscape Architect
Pennsylvania License No. LA001224

DRAWING NAME: LANDSCAPE AND LIGHTING DETAIL SHEET

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no	drawn by:
2024-001.02	GSS
date: 11/15/24	chk'd by: BTK
scale: AS NOTED	approv by: PEL

sheet no
C7.2
13 of 20

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SEQUENCE OF CONSTRUCTION

CRITICAL STAGES OF INSPECTION WHEN A LICENSED PROFESSIONAL IS TO BE PRESENT ON SITE ARE INDICATED WITH AN ASTERISK (*) IN THE FOLLOWING CONSTRUCTION SEQUENCES.

1. AT LEAST 7 DAYS BEFORE ANY EARTH DISTURBANCE ACTIVITIES THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES THE LANDOWNER ALL APPROPRIATE MUNICIPAL OFFICIALS THE EROSION AND SEDIMENT CONTROL PLAN PREPARER THE DESIGNATED LICENSED PROFESSIONAL AND MONTGOMERY COUNTY CONSERVATION DISTRICT TO AN ON-SITE PRE-CONSTRUCTION MEETING. ALSO AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED THE PENNSYLVANIA ONE CALL SYSTEM SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.
2. STABILIZATION NOTE. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY THAT WILL EXCEED 4 DAYS OR ANY STAGE THEREOF THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION. HAY OR STRAW MULCH MUST BE APPLIED AT 3 0 TONS PER ACRE. HYDROSEED IS NOT CONSIDERED STABILIZATION UNTIL IT GERMINATES. IN NO CASE SHOULD AN AREA EXCEEDING 15 000 SQUARE FEET WHICH IS TO BE STABILIZED BY VEGETATION REACH FINAL GRADE WITHOUT BEING SEEDED AND MULCHED.
3. THE LIMITS OF DISTURBANCE MUST BE DELINEATED WITH ORANGE CONSTRUCTION FENCE OR APPROVED EQUAL PRIOR TO EARTH-MOVING ACTIVITIES. ANY CESSATION OF ACTIVITIES FOR MORE THAN FOUR DAYS OR LONGER REQUIRES TEMPORARY STABILIZATION.
4. INSTALL STABILIZED CONSTRUCTION ENTRANCES AND WATER BARS AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLANS AT WASHINGTON STREET. CONTRACTOR TO UTILIZE ACCEPTABLE STANDARDS AND PRACTICES TO ENSURE SEDIMENT IS NOT TRACKED OFF THE PROPERTY AND ONTO PUBLIC RIGHTS-OF-WAY. STABILIZE ANY RESULTING DISTURBANCE IMMEDIATELY AS APPROPRIATE.
5. ***PLACE PERIMETER EROSION AND SEDIMENT CONTROLS AS SHOWN ON EROSION AND SEDIMENT CONTROL PLAN THAT INCLUDE: COMPOST FILTER SOCK, AND LOCATIONS FOR TEMPORARY TOPSOIL STOCKPILE AREAS. STABILIZE ANY RESULTANT DISTURBANCE IMMEDIATELY, AS APPROPRIATE.**
6. CLEAR AND GRUB TREES AND VEGETATION THROUGHOUT THE DISTURBANCE AREA AS INDICATED ON THE EXISTING FEATURES AND DEMOLITION PLAN. STABILIZE ANY RESULTING DISTURBANCE IMMEDIATELY AS APPROPRIATE.
7. REMOVE EXISTING BUILDING AND PARKING GARAGE.
8. REMOVE AND/OR RELOCATE EXISTING UTILITIES AS NEEDED.
9. INSTALL TRAIL ALONG RIVER AND RETAINING WALL.
10. CONDUCT BULK GRADING OPERATIONS ADJUST THE EROSION AND SEDIMENT CONTROLS AS APPROPRIATE.
11. INSTALL STORM DRAINS FROM EW-1 TO I-4 EW-2 TO OS-1 EW-3 TO I-9 EW-4 TO I-12 EW-5 TO OS-2.
12. INSTALL REMAINING STORM DRAINS AND STRUCTURES.
13. INSTALL REMAINING UTILITIES.
14. PERFORM FINAL GRADING AND ROUGH GRADING FOR BUILDING PADS.
15. INSTALL LIGHT STANDARDS.
16. INSTALL SUBBASE FOR PAVEMENT SIDEWALK CURBS AND CURB RAMPS.
17. INSTALL CURBS.
18. INSTALL BINDER COURSE.
19. ***BEGIN CONSTRUCTION OF RAIN GARDEN 1 AND RAIN GARDEN 2. CONTRACTOR SHALL TAKE GREAT CARE DURING CONSTRUCTION TO KEEP FOREIGN DEBRIS AND SEDIMENT OUT OF THE SYSTEM DURING CONSTRUCTION.**
20. ***INSTALL PROPOSED LANDSCAPE MATERIAL AND PERFORM FINAL STABILIZATION OF DISTURBED AREAS.**
21. ONCE CONSTRUCTION SITE TRAFFIC IS COMPLETE APPLY WEARING COURSE ASPHALT. AFTER SITE FINAL STABILIZATION HAS OCCURRED AN ON-SITE INSPECTION SHALL BE SCHEDULED WITH THE MONTGOMERY COUNTY CONSERVATION DISTRICT. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE THE OPERATOR SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITIES. DURING NON-GERMINATING PERIODS MULCH MUST BE APPLIED AT THE SPECIFIED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS. DISTURBED AREAS WHICH ARE AT FINISHED GRADE OR WHICH WILL NOT BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
22. ***AFTER AN ON-SITE INSPECTION AND APPROVAL BY THE DESIGNATED LICENSED PROFESSIONAL, REMOVE ALL PERIMETER EROSION AND SEDIMENT CONTROL MEASURES. STABILIZE ANY RESULTING DISTURBANCE IMMEDIATELY.**
23. UPON COMPLETION OF PERMITTED IMPROVEMENTS PERMITTEE SHALL SUBMIT THE REQUIRED NOTICE OF TERMINATION.

RAIN GARDEN - SEQUENCE OF CONSTRUCTION

CRITICAL STAGES OF INSPECTION WHEN A LICENSED PROFESSIONAL IS TO BE PRESENT ON SITE ARE INDICATED WITH AN ASTERISK (*) IN THE FOLLOWING CONSTRUCTION SEQUENCES.

1. DELINEATE AREA OF PROPOSED STORMWATER SYSTEM PRIOR TO START OF CONSTRUCTION.
2. RUNOFF TO BE DIVERTED AROUND THE PROPOSED SYSTEM UNTIL DRAINAGE AREAS ARE COMPLETELY STABILIZED.
3. GRADE TO FINAL CONFIGURATION. PLACE EROSION CONTROL BLANKET ON ALL SIDE SLOPES OF 3H:1V SLOPES OR GREATER. APPLY PERMANENT VEGETATIVE COVER TO SIDE SLOPES.
4. ***EXCAVATE TO SUBGRADE ELEVATION AND PREPARE SUBGRADE SURFACE *(ENSURE SURFACE IS DRY).**
5. ***PLACE GEOTEXTILE FABRIC ALONG BOTTOM AND SIDES OF EXCAVATION. ENSURE NO FOREIGN MATERIAL (SEDIMENT OR OTHER) REMAINS IN THE EXCAVATION UPON PLACEMENT OF THE LINING.**
6. PLACE STONE MEDIA AND SOIL MEDIA AT SYSTEM BOTTOM.
7. INSTALL PERMANENT PLANTINGS AND SEEDING IN THE SYSTEM.
8. UPON COMPLETE STABILIZATION OF UPSTREAM DRAINAGE AREA, INSPECT TO ENSURE PRE-TREATMENT DEVICES INLETS AND STORM DRAINS ARE FREE OF ANY DEBRIS AND SEDIMENT.

WATER QUALITY STRUCTURE CONSTRUCTION SEQUENCE (CRITICAL STAGE)

CRITICAL STAGES OF INSPECTION WHEN A LICENSED PROFESSIONAL IS TO BE PRESENT ON SITE ARE INDICATED WITH AN ASTERISK (*) IN THE FOLLOWING CONSTRUCTION SEQUENCES.

1. STABILIZE ALL CONTRIBUTING AREAS BEFORE INSTALLING WATER QUALITY INSERTS.
2. ***INSTALL INSERTS ON THE STORMWATER STRUCTURES AS NOTED ON THE PCSM PLANS. FOLLOW THE MANUFACTURER'S GUIDELINES FOR INSTALLATION.**

SOILS LEGEND:

SOILS INFORMATION OBTAINED FROM THE USDA-NRCS WEB SOIL SURVEY VERSION 10. SURVEY PERFORMED ON 7/24/2024.

UgB - URBAN LAND 0-8 PERCENT SLOPES

SOIL LIMITATIONS AND RESOLUTIONS		
APPLICABILITY TO PROJECT	SOIL LIMITATION	RESOLUTION(S)
YES	DEPTH TO SATURATED ZONE / SEASONAL HIGH WATER TABLE	SOILS SHOULD BE EVALUATED FOR WETNESS PRIOR TO USE IN SITE WORK. IF GEOTECHNICAL ENGINEER DEEMS SOILS TOO WET FOR SITE WORK THEN SOILS SHALL BE AMENDED OR DRIED PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
YES	FROST ACTION	SOILS SHOULD BE FREE OF FROZEN OR MUCKY MATERIALS. FILL SHOULD NOT BE PLACED ON SATURATED OR FROZEN SURFACES. EARTHWORK INVOLVING THESE SOILS SHOULD BE LIMITED TO THE WARMER MONTHS WHEN PRACTICAL.

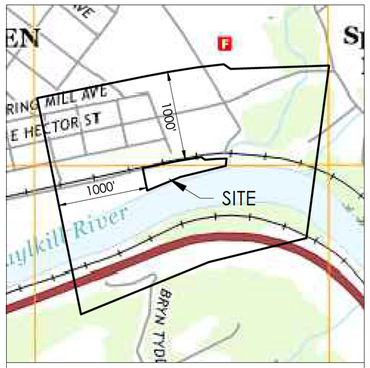
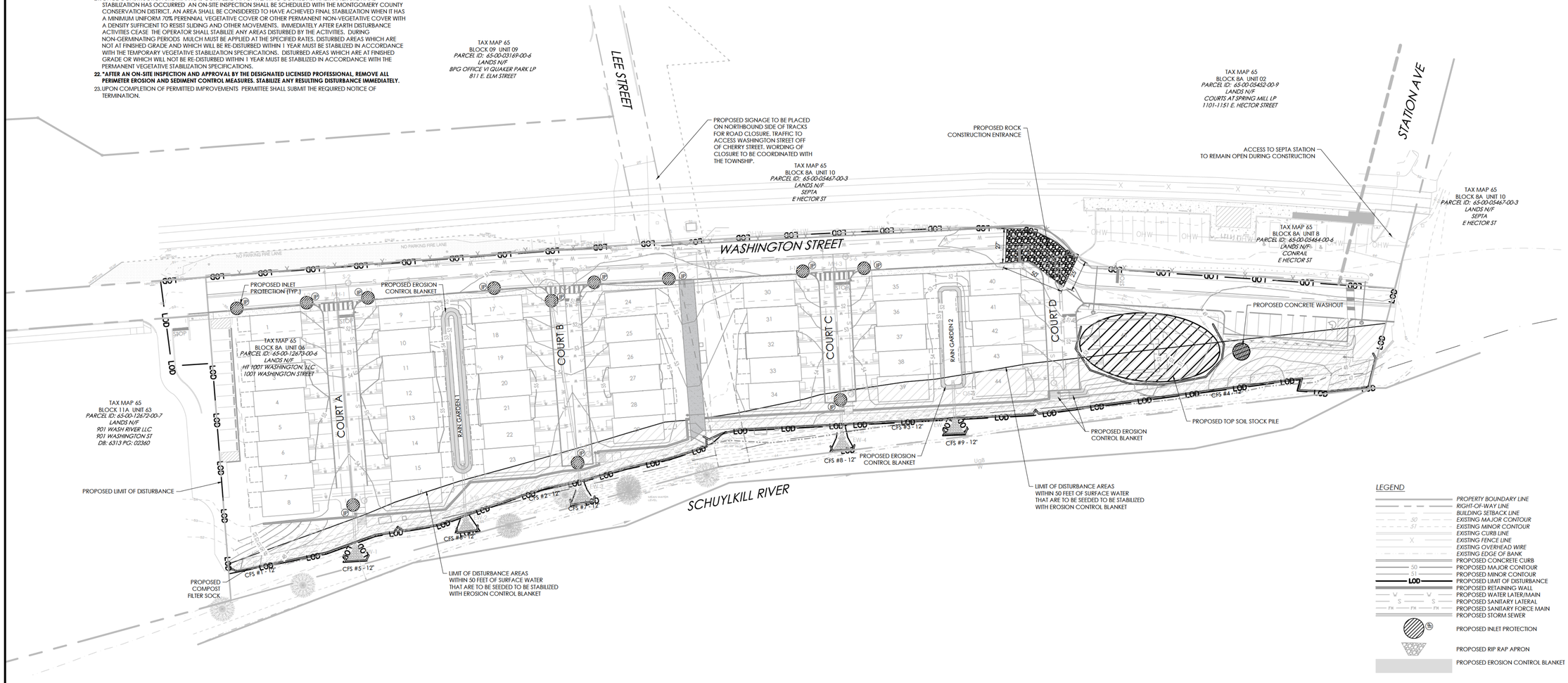


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'



LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT-OF-WAY LINE
- BUILDING SETBACK LINE
- 50 EXISTING MAJOR CONTOUR
- 51 EXISTING MINOR CONTOUR
- EXISTING CURB LINE
- X EXISTING FENCE LINE
- EXISTING OVERHEAD WIRE
- EXISTING EDGE OF BANK
- PROPOSED CONCRETE CURB
- 50 PROPOSED MAJOR CONTOUR
- 51 PROPOSED MINOR CONTOUR
- LOD PROPOSED LIMIT OF DISTURBANCE
- PROPOSED RETAINING WALL
- V PROPOSED WATER LATER/MAIN
- S PROPOSED SANITARY LATERAL
- FM PROPOSED SANITARY FORCE MAIN
- PROPOSED STORM SEWER
- PROPOSED INLET PROTECTION
- PROPOSED RIP RAP APRON
- PROPOSED EROSION CONTROL BLANKET

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

LIMIT OF DISTURBANCE = 149,466 SF (3.43 ACRES)

PLAN FOR EROSION AND SEDIMENTATION CONTROL PURPOSES ONLY

PROJECT SERIAL NO. 20233050644
CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE - STOP CALL
Pennsylvania One Call System, Inc.
1-800-242-1776

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3/27/2025 4:37 PM
USER: ----

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REVISIONS

no	date	description	by
1	3/27/2025	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	JT

SEAL:
JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

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DRAWING NAME: EROSION AND SEDIMENTATION PLAN

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

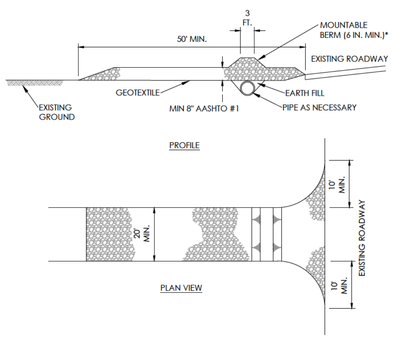
1001 WASHINGTON STREET

project no: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1"=40'	approv by: JPB

sheet no

C8.0

14 of 20



* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

NOTES:

REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.

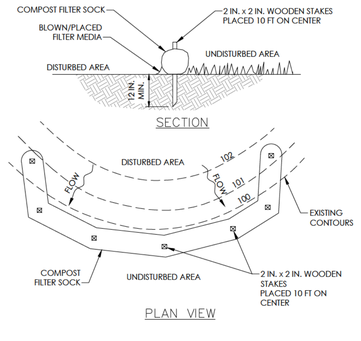
RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.

MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.

MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES SEWERS CULVERTS OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

STANDARD CONSTRUCTION DETAIL #3-1
ROCK CONSTRUCTION ENTRANCE

NOT TO SCALE



NOTES:

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

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

TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

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

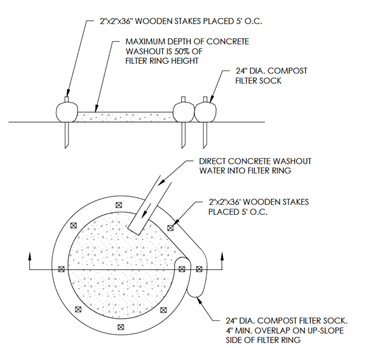
COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

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

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

STANDARD CONSTRUCTION DETAIL #4-1
COMPOST FILTER SOCK

NOT TO SCALE

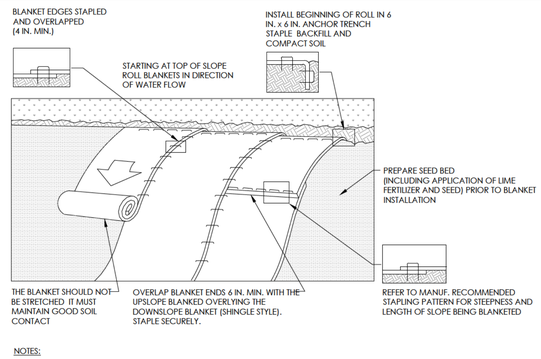


NOTES:

1. A SUITABLE IMPERVIOUS GEO-MEMBRANE SHALL BE PLACED AT THE LOCATION OF THE WASHOUT PRIOR TO INSTALLING THE SOCKS.
2. INSTALL ON FLAT GRADE FOR OPTIMUM PERFORMANCE.
3. 18" DIAMETER FILTER SOCKS MAY BE STACKED ONTO DOUBLE 24" DIAMETER SOCKS IN PYRAMIDAL CONFIGURATION FOR ADDED HEIGHT.
4. ALL CONCRETE WASHOUT FACILITIES SHOULD BE INSPECTED DAILY. DAMAGED OR LEAKING WASHOUTS SHOULD BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY.

CONTROLLED NON-DISCHARGE
CONCRETE WASH OUT

NOT TO SCALE



NOTES:

SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.

PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.

SLOPE SURFACE SHALL BE FREE OF ROCKS CLODS STICKS AND GRASS.

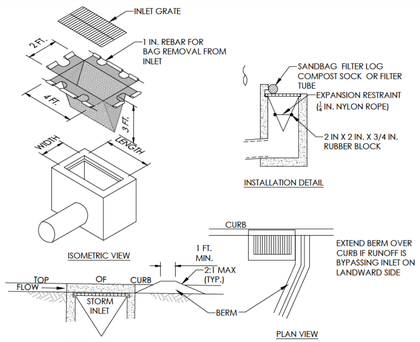
BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.

THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

STANDARD CONSTRUCTION DETAIL #11-1
EROSION CONTROL BLANKET INSTALLATION

NOT TO SCALE



NOTES:

MAXIMUM DRAINAGE AREA = 1/2 ACRE.

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

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

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

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

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

NOT TO SCALE

GENERAL CONSERVATION NOTES AND SPECIFICATIONS

INTENT OF CONSERVATION PROGRAM: THE INTENT OF THIS PROGRAM IS TO PREVENT ACCELERATED EROSION OF THE EXPOSED SITE SOILS DURING THE CONSTRUCTION AND PERMANENT LIFE PERIODS OF THE DEVELOPMENT. THE PROGRAM REQUIRES RETENTION OF ALL SEDIMENTS ON THE CONSTRUCTION SITE TO MINIMIZE THE IMPACT OF DEVELOPMENT ON EXISTING STREAMS AND ADJACENT PROPERTY OWNERS. THESE OBJECTIVES WILL BE ACHIEVED BY MINIMIZING THE EXPOSURE TIME OF POTENTIALLY EROSIVE SOILS TO RUNOFF AND INSTALLATION OF THE TEMPORARY CONSTRUCTION. THE INTENT OF THIS PROGRAM SHOULD BE UNDERSTOOD AND IMPLEMENTED THROUGHOUT THE ENTIRE DEVELOPMENT. THE VARIOUS CONSTRUCTION TRADES SHOULD BE APPRAISED OF THIS PROGRAM AND DIRECTED TO PREVENT UNDUE DISTURBANCE OF PREPARED AND PROTECTED SURFACES.

SURFACE STABILIZATION CRITERIA: ALL DENUDED SOIL SURFACES INCLUDING SOIL STOCKPILES ARE SUBJECT TO EROSION AND SHALL BE STABILIZED EITHER TEMPORARILY OR PERMANENTLY IMMEDIATELY DURING NON-GERMINATION PERIODS MULCH MUST BE APPLIED AT RECOMMENDED RATES. CRUSHED STONE ON PAVEMENT SUBGRADES IS CONSIDERED ADEQUATE PROTECTION. ALL DISTURBED ZONES AND VEGETATED REGIONS SHALL BE STABILIZED PREFERABLY WITH A PERMANENT TREATMENT AS FOLLOWS:

SEEDING & MULCHING SPECIFICATIONS

TEMPORARY: SEEDING SHALL BE COMMON RYE GRASS APPLIED AT 45 LBS. PER ACRE. LIMING TO BE APPLIED AT 1 TON/ACRE. 50-50-50 FERTILIZER TO BE APPLIED AT 1000 LBS/ACRE. HAY OR STRAW MULCH TO BE APPLIED AT 3 TONS/ACRE.

PERMANENT: SEEDING SHALL BE 15% KENTUCKY BLUEGRASS 35% KENTUCKY 31 FESCUE 25% CHEWINGS FESCUE 15% PERENNIAL RYE GRASS AND 10% RECLEANED REDTOP AT A RATE OF 60 LBS. PER ACRE. LIMING TO BE APPLIED AT 3 TONS/ACRE. 10-20-20 FERTILIZER TO BE APPLIED AT 1000 LBS/ACRE. HAY OR STRAW MULCH TO BE APPLIED AT 3 TONS/ACRE.THE NON-GERMINATING PERIODS ARE BETWEEN 6/15 THROUGH 8/15 AND 9/30 THROUGH 4/15. AREAS DISTURBED DURING THESE PERIODS MUST BE LIMED FERTILIZED SEEDED AND MULCHED IMMEDIATELY FOLLOWING THE END OF THOSE PERIODS. TOPSOIL TAKEN FROM CONSTRUCTION AREAS SHALL BE SEEDED WITH VEGETATIVE COVER AND STOCKPILES FOR RE-USE IN FINISH GRADING. THERE IS TO BE NO EARTH DISTURBANCE OR VEGETATIVE CLEARING IN AREAS OUTSIDE OF THE DELINEATED AREAS TO BE DISTURBED.

SEDIMENT DISPOSAL:

SILT REMOVED FROM TEMPORARY SEDIMENT CONTROL STRUCTURES SHALL BE DISPOSED ON-SITE IN LANDSCAPED AREAS LOCATED OUTSIDE OF FLOOD PLAINS WETLANDS STEEP SLOPES AND DRAINAGE SWALES. AREAS OF SEDIMENT DISPOSAL SHALL BE CONSIDERED C.V.A..

DUST CONTROL:

DUST AND OTHER PARTICULATES SHALL BE KEPT WITHIN TOLERABLE LIMITS BY USING WATER. APPLICATION SHALL BE AS NEEDED OR AS DIRECTED BY THE TOWNSHIP ENGINEER OR THE CONSERVATION DISTRICT.

CRITICAL VEGETATION AREAS (C.V.A.):

CRITICAL VEGETATION AREAS ARE TO BE GRADED HYDROSEEDED AND MULCHED WITHIN 10 DAYS OF THE BEGINNING OF EXCAVATION. IN GENERAL CRITICAL VEGETATION AREAS ARE DEFINED AS CUT SLOPES STEEPER THAN 3H:1V ALL FILL SLOPES STEEPER THAN 4H:1V AND IN ALL DRAINAGE SWALES.

GENERAL NOTES FOR UTILITY CONSTRUCTION

1. EXCAVATED MATERIAL SHOULD BE STAGED ON THE UPSTREAM SIDE OF A TRENCH.
2. THE DAILY EXTENT OF TRENCHING SHOULD NOT EXCEED WHAT CAN BE BACK FILLED AND STABILIZED IN ONE WORKING DAY.
3. LIMIT ADVANCED CLEARING AND GRUBBING OPERATIONS TO A DISTANCE EQUAL TO TWO TIMES THE LENGTH OF PIPE INSTALLATION THAT CAN BE COMPLETED IN ONE DAY.
4. WORK CREWS AND EQUIPMENT FROM TRENCHING PLACEMENT OF PIPE AND BACKFILLING WILL BE SELF CONTAINED AND SEPARATE FROM CLEARING AND GRUBBING AND SITE RESTORATION AND STABILIZATION OPERATIONS.
5. WATER WHICH ACCUMULATES IN THE OPEN TRENCH WILL BE COMPLETEY REMOVED BY PUMPING BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS. WATER REMOVED FROM THE TRENCH SHALL BE PUMPED THROUGH A FILTRATION DEVICE.
6. ON THE DAY FOLLOWING PIPE PLACEMENT AND TRENCH BACKFILLING THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS AND IMMEDIATELY STABILIZED.
7. SOILS EXCAVATED FROM EXISTING SURFACE LAYER SHOULD BE STOCKPILED SEPARATELY AND RETURNED AS FINAL SURFACE LAYER FOLLOWING TRENCH BACKFILLING.

MAINTENANCE SCHEDULE FOR TEMPORARY SEDIMENTATION CONTROL STRUCTURES

INSPECTION AND MAINTENANCE OF ALL FACILITIES SHALL BE MADE AFTER EACH RAIN STORM EVENT AND ON A WEEKLY BASIS. MAINTENANCE OF ALL TEMPORARY SEDIMENTATION CONTROL STRUCTURES SHALL BE IN ACCORDANCE WITH THESE PLANS AND THE EROSION AND SEDIMENT CONTROL NARRATIVE.

MAINTENANCE OF TEMPORARY SEDIMENTATION CONTROL STRUCTURES

MAINTENANCE OF ALL TEMPORARY SEDIMENTATION CONTROL STRUCTURES SHALL BE IN ACCORDANCE WITH THESE PLANS AND THE EROSION AND SEDIMENT CONTROL NARRATIVE. INSPECTION AND MAINTENANCE OF ALL FACILITIES SHALL BE MADE AFTER EACH RAIN STORM EVENT AND ON A WEEKLY BASIS. INSPECTIONS SHALL BE LOGGED ONTO DEP FORM 3800-FM-BCW0271D DATED 1/2019 AND KEPT ON SITE AT ALL TIMES.

MAINTENANCE PROGRAM FOR TEMPORARY SEDIMENTATION CONTROLS STRUCTURES

MAINTENANCE OF ALL TEMPORARY SEDIMENTATION CONTROL STRUCTURES SHALL BE THE RESPONSIBILITY OF THE DEVELOPER AND AS STATED BELOW:

1. ROCK CONSTRUCTION ENTRANCE - MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES SEWERS CULVERTS OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH ONE-HALF THE ABOVE-GROUND HEIGHT OF SILT FENCING.
2. EROSION CONTROL BLANKET (ECB) - BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.
3. PUMPED WATER FILTER BAGS - FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.
4. COMPOST FILTER SOCK - 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.
5. INLET PROTECTION - 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.
6. ROCK FILTER OUTLET - SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET. ADD ADDITIONAL ROCK AS NEEDED.
7. CONTROLLED NON-DISCHARGE CONCRETE WASHOUT - ALL CONCRETE WASHOUT FACILITIES SHOULD BE INSPECTED DAILY. DAMAGED OR LEAKING WASHOUTS SHOULD BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY. WHEN WASHOUT MATERIAL REACHES 50% CAPACITY OF FILTERING HEIGHT STOP USAGE OF THAT RING. WHEN STABLE BREAK UP CONCRETE WASHOUT MATERIAL AND DISPOSE OF APPROPRIATELY.
8. SEDIMENT BASIN/TRAP MAINTENANCE. PROVIDE ACCESS FOR SEDIMENT REMOVAL AND OTHER MAINTENANCE REMOVAL REQUIRED MAINTENANCE ACTIVITIES. A CLEAN OUT STAKE SHALL BE PLACED NEAR THE CENTER OF EACH BASIN. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED THE CLEANOUT ELEVATION ON THE STAKE AND THE BASIN RESTORED TO ITS ORIGINAL DIMENSIONS. BASIN EMBANKMENTS SPILLWAYS AND OUTLETS SHALL BE INSPECTED FOR EROSION PIPING AND SETTLEMENT. DISPLACED RIPRAP WITHIN THE OUTLET ENERGY DISSIPATER SHALL BE REPLACED IMMEDIATELY. ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISTURBED AREAS SHALL BE STABILIZED INSIDE THE BASIN BEFORE CONVERSION TO A STORMWATER MANAGEMENT FACILITY.

POTENTIAL THERMAL IMPACTS

THERMAL IMPACTS DURING CONSTRUCTION ACTIVITIES WILL BE MINIMIZED THROUGH AVOIDING DIRECT DISCHARGE INTO SURFACE WATERS LIMITING THE EXTENT AND DURATION OF EARTH DISTURBANCE AND THE USE OF COMPOST FILTER SOCK WHICH IS THE PRIMARY PERIMETER CONTROL. RUNOFF WILL BE TREATED BY THE COMPOST FILTER SOCK AND THEN DISCHARGED TO STABILIZED VEGETATIVE COVER. AS THE DISCHARGE FLOWS BELOW THE CANOPY OF EXISTING VEGETATION (LAWN TREES ETC) THE DISCHARGE WILL BE AFFORDED TIME TO COOL PRIOR TO REACHING THE RECEIVING WATERWAYS.

GEOLOGIC FORMATIONS/SOIL CONDITIONS/POLLUTANT PREVENTION

THE PROPOSED SITE IS UNDERLAIN BY CONESTOGA FORMATION COMPOSED OF LIMESTONE AND SHALE BASED ON CHESTER COUNTY GEOLOGY SURVEY (JUNE 1973). GEOTECHNICAL INVESTIGATIONS SHOWED NO EVIDENCE OF KARST FEATURES ON SITE OR SOIL CONDITIONS ARE KNOWN TO BE PRESENT THAT WOULD REQUIRE SPECIFIC BMP'S TO MINIMIZE POLLUTION EFFECTS ASSOCIATED WITH SAID FEATURES. BASED ON THE INFORMATION OBTAINED AT THE BORING LOCATION THE GEOTECHNICAL REPORT CONCLUDES THAT THE SITE SOILS WILL PROVIDE ADEQUATE INFILTRATION AT THE DEPTHS TESTED IT IS NOT ANTICIPATED THAT BEDROCK WILL BE ENCOUNTERED WITHIN THE EXCAVATION AREA OF THE PROPOSED INFILTRATION FACILITIES AND GROUNDWATER IS NOT ANTICIPATED TO BE ENCOUNTERED WITHIN THE LIMITS OF EXCAVATION FOR THE PROPOSED INFILTRATION FACILITIES. IF ISSUES ARISE ON SITE DURING CONSTRUCTION THE GEOTECHNICAL ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

ANTICIPATED E&S BMP RELATED CONSTRUCTION WASTES AND DISPOSAL PROCEDURES

SEDIMENT: SILT REMOVED FROM TEMPORARY SEDIMENT CONTROL STRUCTURES SHALL BE DISPOSED OF ON-SITE IN LANDSCAPED AREAS LOCATED OUTSIDE FLOODPLAINS WETLANDS STEEP SLOPES AND DRAINAGE SWALES. SILT AND SEDIMENT CATEGORIZED AS CONTAMINATED SHALL BE DISPOSED OF PER THE SOIL MANAGEMENT NOTES.

TRASH & LITTER: TRASH AND LITTER SHALL BE REMOVED FROM EROSION AND SEDIMENTATION CONTROL BMPS AND DISPOSED OF IN APPROPRIATE TRASH RECEPTABLE.

CONCRETE WASHWATER: CONCRETE WASHWATER SHALL BE DISPOSED OF IN THE LOCATION SHOWN ON-SITE. ONCE WASHWATER SOLIDIFIES THE HARDENED CONCRETE SHALL BE DISPOSED OF OFF-SITE IN AN APPROVED MANNER.

NOTE:ANY APPLICABLE MATERIAL SHALL BE RECYCLED IN ACCORDANCE TO THE APPROPRIATE REGULATIONS.

SOIL EROSION AND SEDIMENTATION CONTROL NOTES:

1. ALL EARTH DISTURBANCES INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.
2. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES INCLUDING CLEARING AND GRUBBING THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS THE LANDOWNER APPROPRIATE MUNICIPAL OFFICIALS THE E&S PLAN PREPARER THE PCSM PLAN PREPARER THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRE-CONSTRUCTION MEETING.
3. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
4. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.
5. AREAS TO BE FILLED ARE TO BE CLEARED GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES VEGETATION ROOTS AND OTHER OBJECTIONABLE MATERIAL.
6. CLEARING GRUBBING AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.
7. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
8. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAPS(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER.
9. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT.
10. ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ. 271.1 AND 287.1 ET. SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED BURIED DUMPED OR DISCHARGED AT THE SITE.
11. ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED.
12. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.
13. ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN OVER UNDISTURBED VEGETATED AREAS.
14. UNTIL THE SITE IS STABILIZED ALL EROSION AND SEDIMENT BMPS SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK INCLUDING CLEAN OUT REPAIR REPLACEMENT REGRADING RE-SEEDING RE-MULCHING AND RE-NETTING MUST BE PERFORMED IMMEDIATELY. IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED REPLACEMENT BMPS OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.
15. A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.
16. SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY OR AS NEEDED OR AS DIRECTED BY THE LOCAL CONSERVATION DISTRICT OR THE MUNICIPALITY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED SHOVELED OR SWEPT INTO ANY ROAD SIDE DITCH STORM SEWER OR SURFACE WATER.
17. ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS.
18. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES – 6 TO 12 INCHES ON COMPACTED SOILS – PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILL OUTLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.
19. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION SLIPPAGE SETTLEMENT SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS STRUCTURES AND CONDUITS ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR COD

STRUCTURAL BMP MAINTENANCE SCHEDULE			
BMP	PROCEDURE	FAILURE / CORRECTIVE ACTION	RESPONSIBILITY
BMP 6.4.5 - RAIN GARDEN / BIOFILTRATION (BMP 1)	ANY TRASH/DEBRIS AND SEDIMENT BUILDUP ARE TO BE REMOVED FROM THE RAIN GARDEN AND STRUCTURES TO MAINTAIN THAT THE BMP FUNCTIONS AS DESIGNED. SEDIMENT MUST BE DISPOSED OF AT AN APPROVED LOCATION. STRUCTURAL REPAIRS ARE TO BE PERFORMED AS SOON AS ISSUES ARE KNOWN. SEDIMENT REGRADED ON SITE IN LANDSCAPE AREA OR DISPOSED OFFSITE IN ACCORDANCE WITH DEP REGULATIONS.	FAILURE: INLET CLOGGED OR RUNOFF IS NO LONGER ABSORBED BY THE AMENDED SOILS IN THE RAIN GARDEN. CORRECTIVE ACTION: UNCLOG THE INLET REPLACE AMENDED SOILS IN THE RAIN GARDEN AS NEEDED.	PROPERTY OWNER
STORMWATER CONVEYANCE SYSTEMS (BMP 2)	CATCH BASINS MANHOLES AND INLETS SHOULD BE INSPECTED AT LEAST TWO TIMES PER YEAR AND AFTER RUNOFF EVENTS	FAILURE: CONVEYANCE SYSTEM DOES NOT FUNCTION PROPERTY. CORRECTIVE ACTION: REPLACE/REPAIR CONVEYANCE SYSTEMS AS REQUIRED.	PROPERTY OWNER
BMP 6.6.4 - WATER QUALITY STRUCTURES (BMP 3)	CATCH BASINS MANHOLES AND INLETS SHOULD BE INSPECTED AT LEAST TWO TIMES PER YEAR AND AFTER LARGE STORMS (2 INCHES IN 24 HOURS)	FAILURE: INLET BECOMES CLOGGED WITH DEBRIS. CORRECTIVE ACTION: REMOVE DEBRIS AND INSPECT STRUCTURE MORE FREQUENTLY.	PROPERTY OWNER

*MAINTENANCE OF PERMANENT BMPS DURING CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
**STRUCTURAL BMPS SHALL BE INSPECTED FOR ACCUMULATION OF SEDIMENT DAMAGE TO THE OUTLET STRUCTURES SIGNS OF CONTAMINATION AND/OR BERM STABILITY.

LANDOWNER ACKNOWLEDGEMENT

STORMWATER BMPS ARE FIXTURES THAT CAN BE ALTERED OR REMOVED ONLY AFTER APPROVAL BY THE TOWNSHIP.

LANDOWNER _____ DATE _____

ENGINEER'S CERTIFICATION

I _____ ON THIS DATE _____ HAS REVIEWED AND HEREBY CERTIFIES THAT THE STORMWATER AMNAGEMENT SITE PLAN MEETS ALL DESIGN STANDARDS AND CRITERIA OF CHAPTER 58 "GRADING EROSION CONTROL STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES".

POST-CONSTRUCTION STORMWATER MANAGEMENT NOTES:

1. PRESERVATION OF EXISTING STREAM CHANNELS AS WELL AS THE PROTECTION OF THE PHYSICAL BIOLOGICAL AND CHEMICAL QUALITIES OF THE RECEIVING STREAM WILL BE ACHIEVED THROUGH THE IMPLEMENTATION OF APPROVED STORMWATER BMPS THAT WILL REDUCE THE RATE AND RUNOFF VOLUME IN THE POST-DEVELOPMENT CONDITION. WATER QUALITY BMPS ARE ALSO PROPOSED TO MITIGATE POLLUTION IMPACTS.
2. POST-CONSTRUCTION RUNOFF RATES WILL BE REDUCED TO LESS THAN PRE-CONSTRUCTION RUNOFF RATES FOR THE OVERALL SITE THROUGH THE USE OF RAIN GARDENS.
3. THE POST-DEVELOPMENT RUNOFF VOLUME WILL BE REDUCED TO LESS THAN THE PRE-DEVELOPMENT RUNOFF VOLUME THROUGH THE USE OF RAIN GARDENS.
4. PRE-DEVELOPMENT DRAINAGE PATTERNS WERE MAINTAINED IN THE POST-DEVELOPMENT CONDITION TO THE EXTENT PRACTICAL. ALL OF THE SITE DISCHARGE DRAINS TO THE SCHUYLKILL RIVER) WHICH HAS A CHAPTER 93 CLASSIFICATION OF WWF/MF.
5. THE INTRODUCTION OF ADDITIONAL IMPERVIOUS SURFACES WAS MINIMIZED TO THE EXTENT PRACTICAL.
6. THE LIMIT OF EARTH DISTURBANCE (INCLUDING GRADING AND LAND CLEARING) IS MINIMIZED AND THE PRESERVATION OF EXISTING VEGETATION IS MAXIMIZED TO THE EXTENT PRACTICAL.
7. NO ADDITIONAL DISCHARGES TO THE WATERCOURSES ARE PROPOSED AS PART OF THIS PROJECT. THE BMPS PROPOSED TO DP001 WILL DISCHARGE TO THE WATERCOURSES VIA EXISTING DRAINAGE FACILITIES. THE BMPS PROPOSED TO DP001) WILL DISCHARGE TO THE WATERCOURSES VIA EXISTING DRAINAGE FACILITIES.
8. SOIL COMPACTION SHALL BE MINIMIZED TO THE EXTENT PRACTICAL PARTICULARLY IN THE AREAS TO BE PERVIOUS IN THE POST-DEVELOPMENT CONDITION.
9. CHANGES TO THE SITE'S RUNOFF WILL BE MINIMIZED THROUGH THE USE OF RAIN GARDENS.
10. THE PERMITTEE SHALL PROVIDE ENGINEERING CONSTRUCTION OVERSIGHT FOR THE PROPOSED STORMWATER BMPS. A LICENSED PROFESSIONAL ENGINEER KNOWLEDGEABLE IN THE DESIGN AND CONSTRUCTION OF STORMWATER BMPS PREFERABLY THE DESIGN ENGINEER SHALL CONDUCT THE OVERSIGHT.
11. AS-BUILT PLANS OF THE STORMWATER BMPS SHALL BE PROVIDED WITHIN SIX MONTHS FOLLOWING THE COMPLETION OF THE BMP CONSTRUCTION. THE AS-BUILT PLANS SHALL BE SIGNED AND SEALED BY A PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER.
12. A NOTICE OF TERMINATION (NOT) WILL BE REQUIRED TO BE SUBMITTED FOLLOWING APPROVAL OF THE FINAL AS-BUILT PLANS. PRIOR TO ACCEPTING THE NOT THE DEPARTMENT AND/OR CONSERVATION DISTRICT STAFF WILL PERFORM A FINAL INSPECTION TO ENSURE SITE STABILIZATION AND VERIFY ADEQUATE INSTALLATION AND FUNCTION OF THE STORMWATER BMPS.
13. NO UNTREATED RUNOFF SHALL ENTER ANY BMPS UNTIL FINAL SITE STABILIZATION IS ACHIEVED IN THE TRIBUTARY DRAINAGE AREA. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.
14. ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ. 271.1 AND 287.1 ET. SEG. NO BUILDING MATERIALS SHALL BE BURNED BURIED DUMPED OR DISCHARGED AT THE SITE.
15. THE PROJECT AREA IS NOT LOCATED IN AN HQ - HIGH QUALITY OR EV - EXCEPTIONAL VALUE WATERSHED.
16. A WRITTEN REPORT DOCUMENTING EACH INSPECTION AND ALL BMP REPAIR AND MAINTENANCE ACTIVITIES MUST BE PROVIDED AS PART OF THE LONG-TERM OPERATION AND MAINTENANCE PROGRAM.
17. THE PCSM PLAN INSPECTION REPORTS AND MONITORING RECORDS SHALL BE KEPT ON SITE AND AVAILABLE FOR REVIEW AND INSPECTION BY THE DEPARTMENT AND CONSERVATION DISTRICT.
18. THE POTENTIAL FOR THERMAL IMPACTS IS MINIMIZED THROUGH THE USE OF RAIN GARDENS WHICH WILL PROVIDE TIME FOR RUNOFF TO COOL.
19. THE STORMWATER MANAGEMENT FACILITIES ARE A PERMANENT PART OF THE DEVELOPMENT AND SHALL NOT BE REMOVED ALTERED OR MODIFIED.

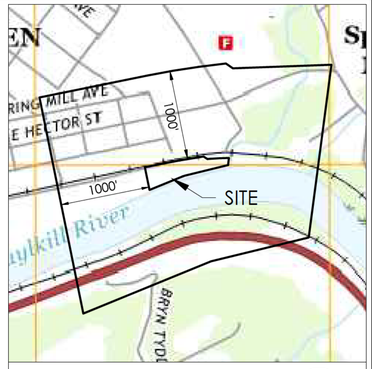
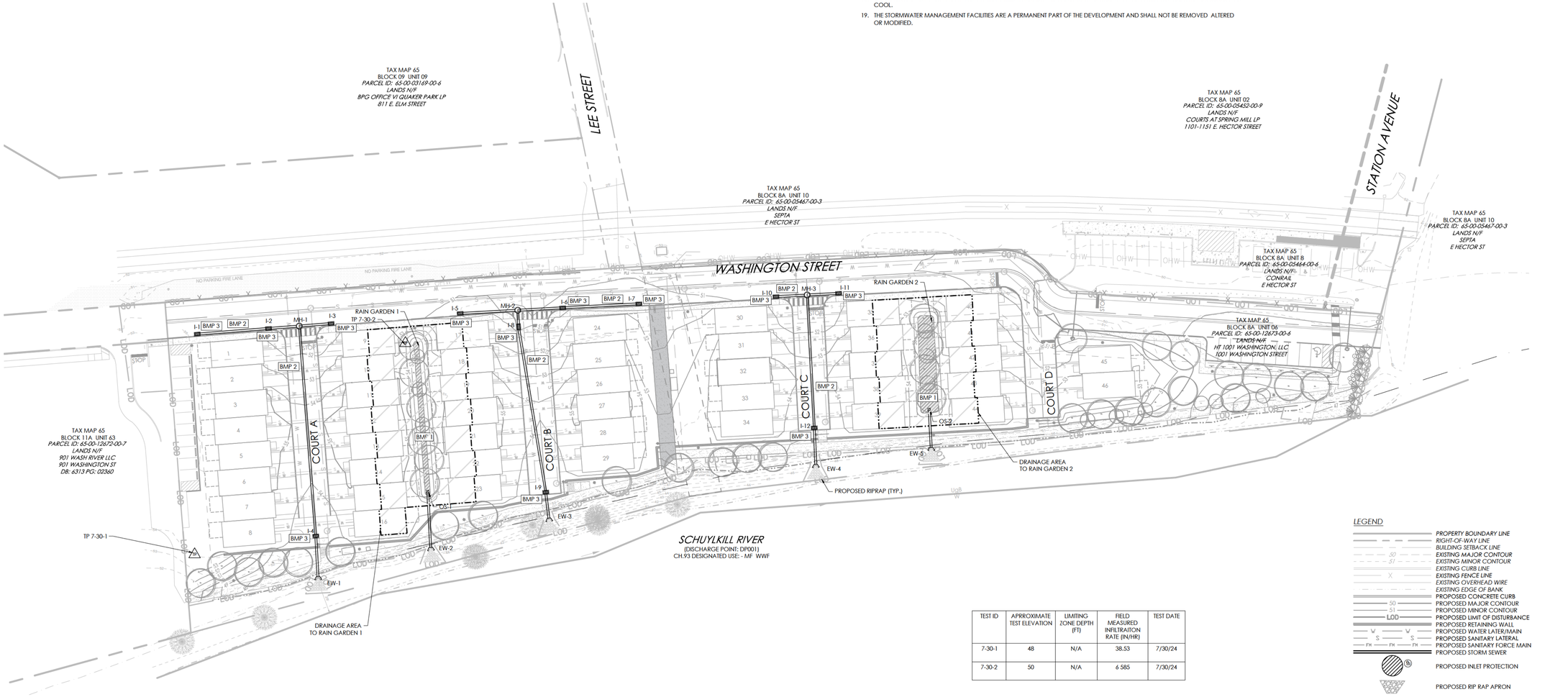


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'



TEST ID	APPROXIMATE TEST ELEVATION	LIMITING ZONE DEPTH (FT)	FIELD MEASURED INFILTRAITON RATE (IN/HR)	TEST DATE
7-30-1	48	N/A	38.53	7/30/24
7-30-2	50	N/A	6 585	7/30/24

LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT-OF-WAY LINE
- BUILDING SETBACK LINE
- 50 EXISTING MAJOR CONTOUR
- 51 EXISTING MINOR CONTOUR
- EXISTING CURB LINE
- X EXISTING FENCE LINE
- EXISTING OVERHEAD WIRE
- EXISTING EDGE OF BANK
- PROPOSED CONCRETE CURB
- 50 PROPOSED MAJOR CONTOUR
- 51 PROPOSED MINOR CONTOUR
- LOD PROPOSED LIMIT OF DISTURBANCE
- PROPOSED RETAINING WALL
- W W PROPOSED WATER LATER/MAIN
- S S PROPOSED SANITARY LATERAL
- FM FM FM PROPOSED SANITARY FORCE MAIN
- PROPOSED STORM SEWER
- PROPOSED INLET PROTECTION
- PROPOSED RIP RAP APRON

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

PROJECT SERIAL NO 20233050644
CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE - STOP CALL
Pennsylvania One Call System, Inc.
1-800-242-1776

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3/27/2025 4:37 PM
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REVISIONS				
date	no	description	chk'd	by
3/27/2025	1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	JGE	JT

SEAL:
JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082157

DRAWING NAME: POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1"=40'	approv by: JPB

sheet no
C9.0
16 of 20

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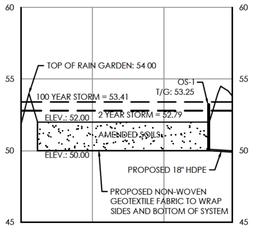
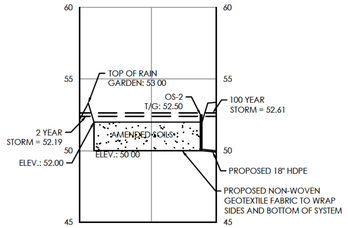
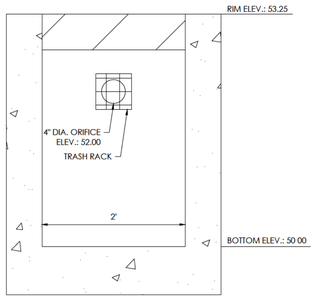


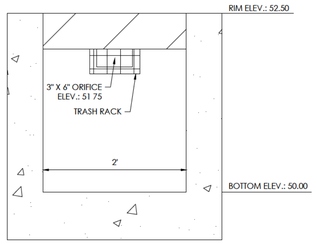
RAIN GARDEN 1
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'



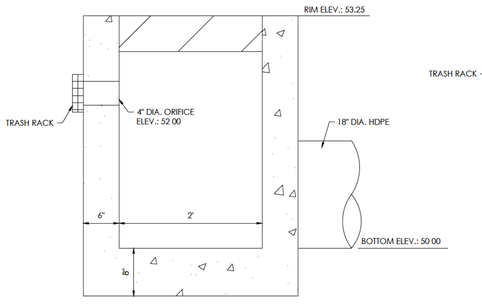
RAIN GARDEN 2
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'



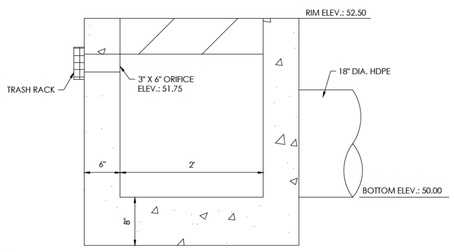
SECTION
WEIR WALL



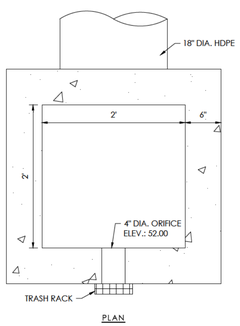
SECTION
WEIR WALL



SIDE VIEW



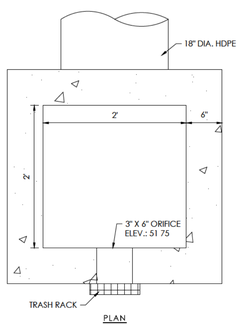
SIDE VIEW



PLAN

(OS-1) OUTLET CONTROL STRUCTURE (2' x 2' BOX)

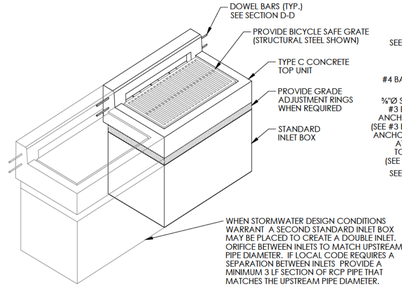
N.T.S.
ALL HDPE PIPE SHALL BE WATER TIGHT.
ALL RCP SHALL BE O-RING PIPE WITH WATER TIGHT JOINTS.
ALL JOINTS SHALL BE PROVIDED WITH WATERTIGHT SEALS.
OUTLET STRUCTURE SHALL BE OLD CASTLE 2'X2' CONCRETE AREA DRAIN OR EQUIVALENT



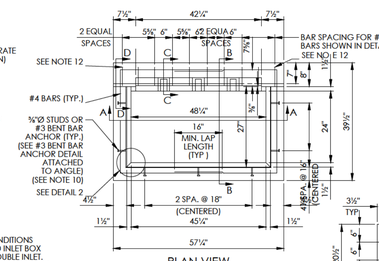
PLAN

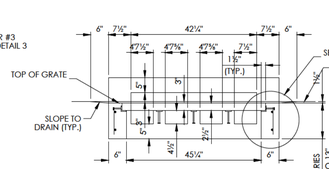
(OS-2) OUTLET CONTROL STRUCTURE (2' x 2' BOX)

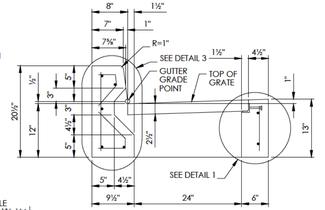
N.T.S.
ALL HDPE PIPE SHALL BE WATER TIGHT.
ALL RCP SHALL BE O-RING PIPE WITH WATER TIGHT JOINTS.
ALL JOINTS SHALL BE PROVIDED WITH WATERTIGHT SEALS.
OUTLET STRUCTURE SHALL BE OLD CASTLE 2'X2' CONCRETE AREA DRAIN OR EQUIVALENT

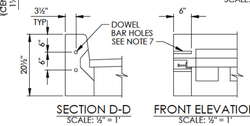


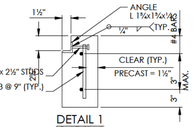
ISOMETRIC VIEW
N.T.S.

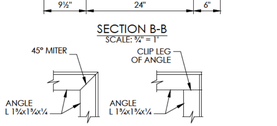


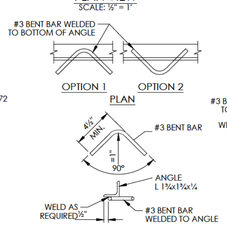


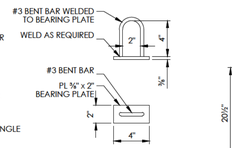


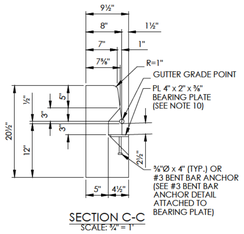


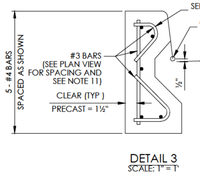












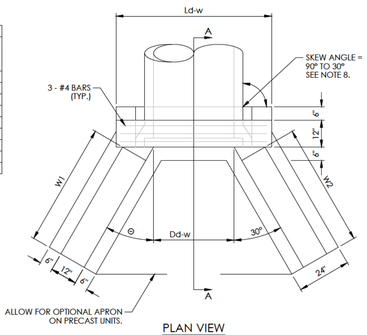
TYPE 'C' INLET / CONCRETE TOP UNIT

(PER PENNDOT PUBLICATION 72 RC-45M)
SCALE: AS NOTED

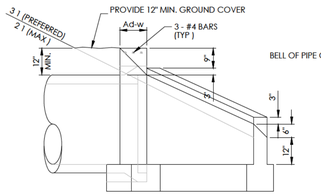
TYPE 'C' INLET / CONCRETE TOP UNIT GENERAL NOTES:
1. CONSTRUCT CONCRETE TOP UNITS IN ACCORDANCE WITH THE REQUIREMENTS OF PENNDOT PUBLICATION 72 RC45M AND PUBLICATION 408 SECTION 605 AND 714.
2. PROVIDE PRECAST CONCRETE TOP UNITS SUPPLIED BY A MANUFACTURER LISTED IN PENNDOT BULLETIN 15.
3. PROVIDE WELDED INLET ANGLE ASSEMBLIES SUPPLIED BY A MANUFACTURER LISTED IN PENNDOT BULLETIN 15.
4. PROVIDE A TOP SLAB TO SUPPORT THE INLET TOP UNITS IF A STANDARD INLET BOX IS NOT SPECIFIED.
5. MINIMUM CONCRETE STRENGTH 4000 PSI @ 28 DAYS (PENNDOT CLASS AA).
6. STEEL REINFORCEMENT OR WELDED WIRE FABRIC (WWF) SHALL BE PROVIDED IN ACCORDANCE WITH THE REQUIREMENTS OF PENNDOT PUBLICATION 72 RC-45M.
7. PLACEMENT OF TYPE C CONCRETE TOP UNIT: DOWEL THE TOP UNIT INTO THE ADJACENT CURB SECTIONS WITH 2-#8 x 1'-0" DOWEL BARS. PLACE ¾" WIDE PRE-MOLDED EXPANSION JOINT FILLER BETWEEN THE TOP UNIT AND ADJACENT CURB.
8. SET THE PRECAST CONCRETE TOP UNIT ON A NON-SHRINK GROUT PAD TO PROVIDE FULL BEARING ON THE SUPPORTING SURFACE. NON-SHRINK GROUT IS ALSO PERMITTED FOR CROSS SLOPE AND LONGITUDINAL GRADE ADJUSTMENTS.
   - PROVIDE NON-SHRINK GROUT IN ACCORDANCE WITH PUBLICATION 408 SECTION 1001 2(d).
   - MINIMUM GROUT DEPTH = ½"
   - MAXIMUM GROUT DEPTH = 1"
9. PROVIDE A PRECAST CONCRETE GRADE ADJUSTMENT RING/RISER AS NECESSARY. BRICK OR BRICK AND MORTAR ARE NOT ALLOWED FOR GRADE ADJUSTMENTS FOR NEW OR REHABILITATION PROJECTS.
10. A MAXIMUM OF TWO HOLES ARE PERMITTED IN THE PLATE TO POSITION AND HOLD THE PLATE IN PLACE DURING FABRICATION. HOLES ARE NOT PERMITTED TO BE GREATER THAN ¼" DIAMETER.
11. FABRICATOR TO DETERMINE NUMBER OF BARS REQUIRED TO MATCH SHAPE INDICATED. PROVIDE ONE TWO OR THREE BARS AS REQUIRED.
12. BEND OUTSIDE STIRRUP TO ACCOMMODATE DOWEL BARS AND STILL MAINTAIN CLEARANCE REQUIREMENTS.

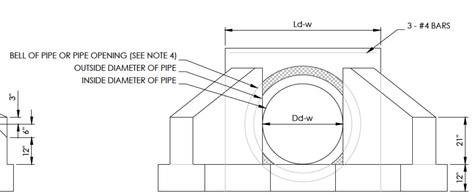
TYPE D-W ENDWALL SIZING CHART (SEE NOTE 8)						
PIPE DIAMETER (Dd-w)	HEAD WALL LENGTH (Ld-w)	HEAD WALL THICKNESS (Ad-w)	WINGWALL LENGTH (W1) (3:1 SLOPES)	WINGWALL LENGTH (W2) (3:1 SLOPES)	WINGWALL LENGTH (W1) (2:1 SLOPES)	WINGWALL LENGTH (W2) (2:1 SLOPES)
18"	4'0"	12"	2.3'	2.3'	1.2'	1'2"
24"	4'6"	12"	4.1'	4.1'	2.3'	2.3'
30"	5'2"	12"	5.8'	5.8'	3.5'	3.5'
36"	5'8"	12"	7.5'	7.5'	4.6'	4.6'
42"	6'3"	12"	9'2"	9'2"	5.8'	5.8'
48"	6'9"	12"	11.0'	11.0'	6.9'	6.9'
54"	7.5'	12"	12.7'	12.7'	8.0'	8.0'
60"	8.1'	15"	14.4'	14.4'	9.2'	9.2'
72"	9'2"	15"	17.9'	17.9'	11.5'	11.5'

NOTES:
1. PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH THE REQUIREMENTS OF PENNDOT PUBLICATION 408 SECTION 714.
2. PRECAST TYPE D-W ENDWALLS TO BE SUPPLIED BY A MANUFACTURER LISTED IN PENNDOT BULLETIN 15.
3. USE CLASS A CONCRETE OR BETTER & CHAMFER EXPOSED EDGES AT 1".
4. PROVIDE PIPE OPENING IN PRECAST UNITS AT LEAST 2" BUT NOT MORE THAN 4" LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE.
5. PROVIDE SUITABLE LIFTING DEVICES FOR HANDLING AND INSTALLATION OF PRECAST ENDWALLS. GALVANIZE METAL DEVICES AS SPECIFIED IN PENNDOT PUBLICATION 408 SECTION 1105.
6. PROVIDE MORTAR BED OF 1" PLACED ON TOP OF THE SUBBASE MATERIAL FOR LEVELING PURPOSES WHEN REQUIRED.
7. PROVIDE REINFORCEMENT 0.12 SQ. IN. / LN. FT. IN ACCORDANCE WITH PENNDOT PUBLICATION 408 SECTION 709. SEE PENNDOT RC-31M FOR FURTHER REINFORCEMENT DETAILS.
8. D-W ENDWALL SIZING DIMENSIONS PROVIDED N THE CHART ARE BASED ON STORMWATER PIPES THAT CONNECT TO THE D-W ENDWALL WITH A SKEW ANGLE FALLING BETWEEN 90° TO 60° WITH WINGWALL ANGLE (Θ) EQUALING 30°. IF THE SKEW ANGLE CONNECTION BETWEEN PIPE AND ENDWALL IS LESS THAN 60° REFER TO PENNDOT PUBLICATION 72 RC-31M FOR PROPER D-W ENDWALL SIZING SPECIFICATIONS.



PLAN VIEW





TYPE D-W ENDWALL DETAIL

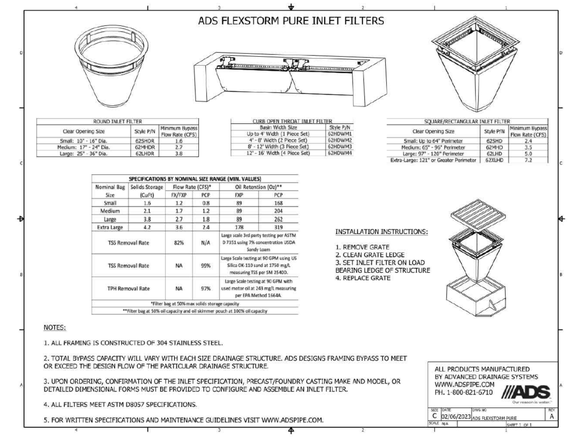
(PER PENNDOT PUBLICATION 72 RC-31M)
SCALE: ¾" = 1'



NOTES:
1. ALL STONE GRADATIONS ARE AASHTO CLASSIFICATION.
2. DETAIL FOR PIPE 4" AND LARGER.

STORM PIPE TRENCH DETAIL

N.T.S.



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REVISIONS					
date	no	description	by	ck'd	chr
3/27/2025	1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	JT	JGE	JT

SEAL:
JAMES P. BANNON
Professional Engineer
PennsylvaniaLicense No. PE082137

DRAWING NAME: POST CONSTRUCTION STORMWATER MANAGEMENT DETAIL SHEET
LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

1001 WASHINGTON STREET

project no	drawn by:
2024-001.02	JT
date:	chk'd by:
11/15/24	JGE
scale:	approv by:
AS NOTED	JPB
sheet no	
C9.1	
17 of 20	

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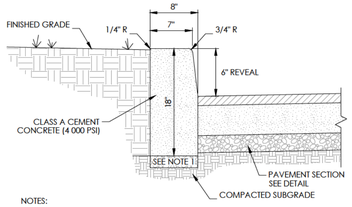
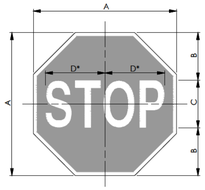


NOTES:

1. ANY EXCAVATION BELOW DESIRED GRADE DUE TO OVER EXCAVATION OR WET SOIL CONDITIONS SHALL BE BACKFILLED WITH ¾" CLEAN CRUSHED STONE. ALL SUBGRADES SHALL BE APPROVED BY THE TOWNSHIP ENGINEER PRIOR TO POURING.
2. EXPANSION JOINTS SHALL BE PROVIDED AT EQUAL DISTANCES OF NOT MORE THAN 20' AND AT ALL STORM SEWER INLETS. JOINTS SHALL BE FILLED WITH PREFORMED EXPANSION JOINT FILLER ½" THICK CONFORMING TO PENNSYLVANIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. CONTRACTION JOINTS SHALL BE PROVIDED EVERY 10'. THE JOINT SHALL BE RECESSED ¼" FROM THE TOP AND FRONT OF THE CONCRETE CURB.
3. CURB SHALL BE TEMPORARILY BACKFILLED TO FINISHED GRADE WITH SOIL BEHIND AND STONE ON THE ROAD SIDE AS SOON AS IT HAS ATTAINED SUFFICIENT SUPPORTING STRENGTH OR WITHIN 24 HOURS OF POURING (WHICHEVER IS LESS).
4. WHEN NEW CURB IS INSTALLED ALONG AN EXISTING PAVED AREA THE EXISTING PAVEMENT SHALL BE CUT 2 FEET IN FRONT OF THE NEW CURB FACE IN A STRAIGHT LINE AT A 45 DEGREE ANGLE WITH A CUTTING WHEEL OR PNEUMATIC HAMMER. THE NEW PAVEMENT SHALL BE TACKED AND BUTTED TO THE EXISTING PAVEMENT.
5. THE GENERAL CONTRACTOR OR OWNER IS RESPONSIBLE FOR MAINTAINING ALL CURB UNTIL FORMALLY ACCEPTED BY THE TOWNSHIP. ALL CURB THAT IS BROKEN CRACKED OR OUT OF ALIGNMENT SHALL BE REPLACED PRIOR TO FINAL PAVING AND/OR ACCEPTANCE. CURB REPLACEMENT SHALL BE FROM EXPANSION JOINT TO EXPANSION JOINT ONLY.

PROPOSED CURB

N.T.S.



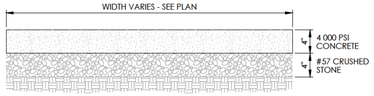
COLOR: LEGEND AND BORDER - WHITE (RETROREFLECTORIZED)
BACKGROUND - RED (RETROREFLECTORIZED)

SIGN SIZE	DIMENSIONS			BOR	BLANK
A x A	B	C	D	DER	STD
30" x 30"	10"	10CC"	10"	0.8	B1-30

* Reduce spacing 40%

STOP SIGN (R1-1)

N.T.S. (REFER TO PENNDOT PUB. 236)

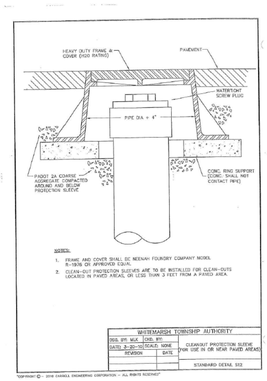


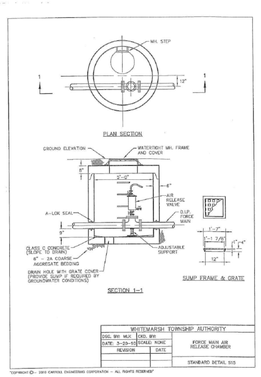
NOTES:

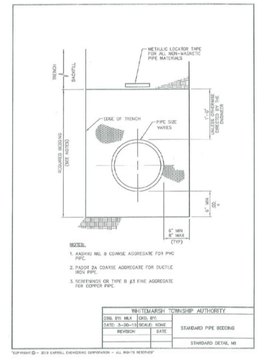
1. SIDEWALKS SHALL BE CONSTRUCTED WITH A GRADE NOT LESS THAN ONE-QUARTER (1/4) INCH TO ONE INCH SLOPED TOWARD THE STREET. THE FINISHED GRADE BETWEEN THE OUTSIDE OF THE SIDEWALK TO THE CURBLINE (EDGE OF THE CARTWAY) SHALL NEVER EXCEED A TOTAL VERTICAL ELEVATION CHANGE OF ONE FOOT.
2. CONCRETE USED IN SIDEWALK WORK SHALL BE FOUR THOUSAND (4 000) PSI AIR ENTRAINED AT TWENTY-EIGHT (28) DAYS WITH CERTIFICATION OF THE MIX FURNISHED TO THE TOWNSHIP ENGINEER. CONCRETE SHALL BE PLACED IN FORMS THAT ARE STRAIGHT AND SECURELY BRACED. CARE SHALL BE TAKEN TO CONTROL THE WATER CONTENT TO PREVENT SEPARATION OF THE AGGREGATES. THE CONCRETE SHALL HAVE A BROOM FINISH AND THE EDGES SHALL BE FINISHED WITH AN APPROVED EDGING TOOL.
3. ALL CONCRETE SIDEWALKS SHALL BE CONSTRUCTED ON A FOUR-INCH CRUSHED STONE OR GRAVEL BASE TO INSURE PROPER DRAINAGE. THE CONCRETE SHALL BE PLACED SO THAT THERE IS A SEPARATE JOINT EVERY FIVE (5) FEET AND SHALL BE SO CONSTRUCTED SO THAT THE FIVE FOOT SECTIONS ARE COMPLETELY SEPARATED FROM ADJACENT SECTIONS. ONE-HALF-INCH PREMOLDED EXPANSION JOINTS SHALL BE PLACED EVERY TWENTY (20) FEET AND BETWEEN ALL POINTS WHERE THE CONCRETE SIDEWALK ABUTS A CONCRETE CURB.
4. ALL CONCRETE SIDEWALKS SHALL HAVE A MINIMUM THICKNESS OF FOUR (4) INCHES.

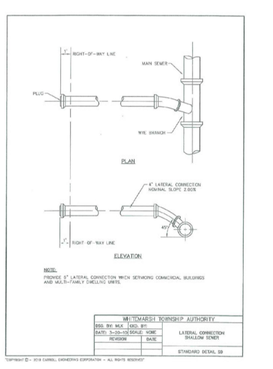
CONCRETE SIDEWALK

N.T.S.



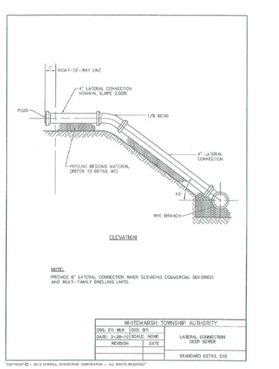






NOTES:

1. THE DEPTH OF THE INVERT CHANNEL SHALL BE EQUAL TO 3/4 OF THE DIAMETER OF THE SEWER.
2. THE SHELF SHALL SLOPE TOWARD THE INVERT CHANNEL AT A RATE OF 1" PER FOOT.
3. TYPE "B" MANHOLES (SHALLOW TYPE) TO BE PROVIDED WHERE REQUIRED BY DEPTH CONDITIONS. ALL OTHER MANHOLES TO BE TYPE "A".
4. FOR MANHOLES HAVING 8' DIA. AND 8' DIA. BASE, REDUCTION IN DIAMETER TO 4' SHALL START AT THE FIRST JOINT ABOVE THE APPROPRIATE PIPE CONNECTION TO WALL WHERE DEPTH IS SUFFICIENT.
5. ALL MANHOLE FRAMES SHALL BE SOLIDLY TO THE CONE SECTION OR CONCRETE SLAB WITH (4) - 3/4" DIA. BOLTS WITH ANCHORS AND NUTS. BOLTS TO BE AT 90° ON THE BOLT CIRCLE.
6. SEE THE SPECIFICATIONS FOR LENGTH OF PIPE CONNECTIONS TO MANHOLES.
7. ALL CONCRETE SHALL BE 4000 PSI MINIMUM.
8. ENTIRE OUTSIDE SURFACE OF MANHOLE SHALL RECEIVE ONE COAT OF BITUMINOUS COATING.
9. HOOKS, DOUBLE RING OF PLASTIC PREFORMED JOINT SEALANT BETWEEN ALL SECTIONS AND UNDER FRAME.
10. MANHOLE CONSTRUCTION SHALL BE IN ACCORDANCE WITH ASTM C478.
11. MANHOLE INSERTS FOR PREVENTION OF STORM WATER INFLOW SHALL BE PROVIDED.
12. PROVIDE A RESILIENT PIPE CONNECTION GASKET CAST INTEGRALLY IN MANHOLE WALL AT ALL PIPE CONNECTIONS TO MANHOLES OR CONCRETE SLAB WITH (4) - 3/4" DIA. BOLTS WITH ANCHORS AND NUTS. BOLTS TO BE AT 90° ON THE BOLT CIRCLE.
13. SEE THE SPECIFICATIONS FOR LENGTH OF PIPE CONNECTIONS TO MANHOLES.
14. ALL CONCRETE SHALL BE 4000 PSI MINIMUM.



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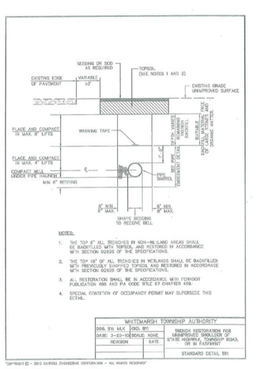
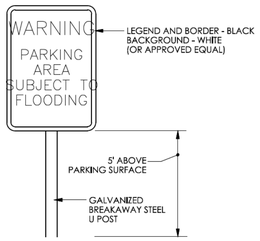
5. ALL MANHOLE FRAMES SHALL BE SOLIDLY TO THE CONE SECTION OR CONCRETE SLAB WITH (4) - 3/4" DIA. BOLTS WITH ANCHORS AND NUTS. BOLTS TO BE AT 90° ON THE BOLT CIRCLE.
6. SEE THE SPECIFICATIONS FOR LENGTH OF PIPE CONNECTIONS TO MANHOLES.
7. ALL CONCRETE SHALL BE 4000 PSI MINIMUM.
8. ENTIRE OUTSIDE SURFACE OF MANHOLE SHALL RECEIVE ONE COAT OF BITUMINOUS COATING.
9. INSTALL DOUBLE RING OF PLASTIC PREFORMED JOINT SEALANT BETWEEN ALL SECTIONS AND UNDER FRAME.
10. MANHOLE CONSTRUCTION SHALL BE IN ACCORDANCE WITH ASTM C478.
11. MANHOLE INSERTS FOR PREVENTION OF STORM WATER INFLOW SHALL BE PROVIDED.
12. PROVIDE A RESILIENT PIPE CONNECTION GASKET CAST INTEGRALLY IN MANHOLE WALL AT ALL PIPE CONNECTIONS TO MANHOLES OR CONCRETE SLAB WITH (4) - 3/4" DIA. BOLTS WITH ANCHORS AND NUTS. BOLTS TO BE AT 90° ON THE BOLT CIRCLE.
13. SEE THE SPECIFICATIONS FOR LENGTH OF PIPE CONNECTIONS TO MANHOLES.
14. ALL CONCRETE SHALL BE 4000 PSI MINIMUM.


SEDIMENT TRAP
SEDIMENT TRAP
SEDIMENT TRAP

PARKING WARNING SIGN KEY

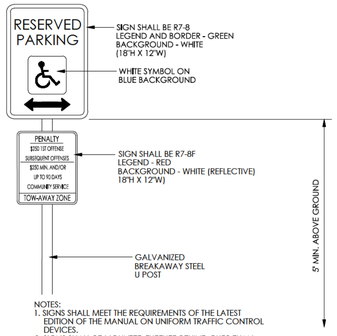
① PROPOSED 'WARNING- PARKING AREA SUBJECT TO FLOODING' SIGN- SIGN ON ONE SIDE

② PROPOSED 'WARNING- PARKING AREA SUBJECT TO FLOODING' SIGN- SIGN ON BOTH SIDES



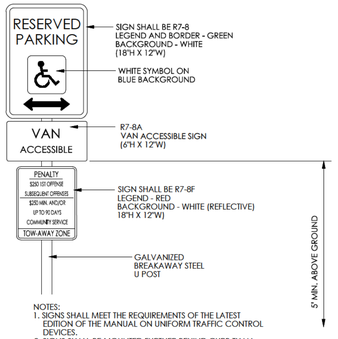
NOTES:
1. SIGNS SHALL BE 12" WIDE X 18" HIGH.
2. USE "ACORN NUTS" OR OTHER METHOD TO AVOID EXPOSED BOLTS.

PARKING WARNING SIGN
N.T.S.



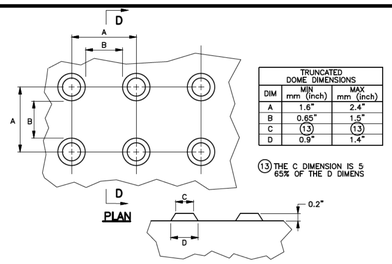
NOTES:
1. SIGNS SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. SIGNS SHALL BE MOUNTED FURTHER BEHIND CURB THAN BOLLARDS TO PREVENT CARS FROM HITTING THEM.
3. USE "ACORN NUTS" OR OTHER METHOD TO AVOID EXPOSED BOLTS.

ACCESSIBLE PARKING SIGN
N.T.S.



NOTES:
1. SIGNS SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. SIGNS SHALL BE MOUNTED FURTHER BEHIND CURB THAN BOLLARDS TO PREVENT CARS FROM HITTING THEM.
3. USE "ACORN NUTS" OR OTHER METHOD TO AVOID EXPOSED BOLTS.

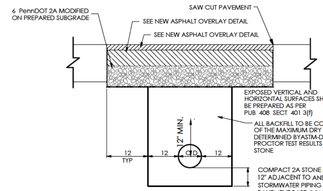
VAN ACCESSIBLE PARKING SIGN
N.T.S.



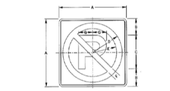
TRUNCATED DOME DIMENSIONS		
DIM	MIN mm (inch)	MAX mm (inch)
A	1.6"	2.4"
B	0.65"	1.5"
C	(13)	(13)
D	0.9"	1.4"

(13) THE C DIMENSION IS 65% OF THE D DIMENS

DETECTABLE WARNING SURFACE (DWS) TRUNCATED DOME DETAILS



UTILITY TRENCH PAVEMENT RESTORATION
N.T.S.



RB-3
NO PARKING SYMBOL SIGN

(a) Justification. The No Parking Symbol Sign (RB-3) shall be authorized for use to prohibit parking along a designated area. The restriction applies to the entire area bounded by the outermost edges of the symbol(s) on the sign. The limits of the restriction, authorized in conjunction with RB-3, may be noted by Zone Plaques (RB-3(P-Z), No Parking Zone Plaque (RB-3(P-ZZ), Two-Way Zone Sign (W1-2(P)) and By Parking Dir Pavement Arrow (RB-3(P-A)). Where the restriction is limited to a specific time period, the applicable supplemental message and the no parking symbol may be incorporated into a single sign.

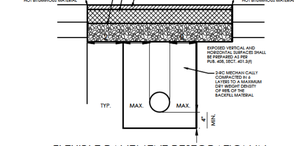
(b) Size. The standard size RB-3 sign shall be 12" x 12" in business, residential, or park zones and 24" x 24" in rural areas. The standard size for supplemental sign is 18" x 30", and on freeways shall be 48" x 60".

(c) Placement. Signs should be set at an angle of not less than 45° with a line parallel to the curb or shoulder so as to be visible to approaching traffic. Care should be taken to ensure that supplemental signs are not obscured by trees or other objects. Signs should be placed at the beginning of and at reasonable intervals throughout the restriction.

DIMENSIONS – IN								
SIGN SIZE A x B	C	D	E	F	G	MAR GIN	BOR DER	BLANK STD.
12" x 12"	3	4SW	4.8	3.0	1	0.4	0.4	RB-3
24" x 24"	6	10SW	26.5	8.5	2	4.8	0.8	RB-24
30" x 30"	7	14SW	35.0	10.0	3	7.2	0.8	RB-30
48" x 48"	12	24SW	78	17	4	9.6	1.2	RB-48

COLOR:
SYMBOL AND BORDER: BLACK (NON-REFLECTORIZED)
CIRCLE AND DIAGONAL: RED (REFLECTORIZED)
BACKGROUND: WHITE (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION
By: [signature] Date: 10-09-12
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations



FLEXIBLE PAVEMENT RESTORATION IN WASHINGTON STREET R/W
N.T.S.

D3-1
STREET NAME SIGN

The Street Name Sign (D3-1) shall be authorized for use as a post-mounted sign to identify names of streets for motorists and pedestrians. The D3-1 sign, or other inferior type of street name sign, should be placed at all street intersections regardless of other route marking that may be present.

Where the D3-1 signs are used in business districts, they should be placed at least on the diagonally opposite corners so that they will be on the far right-hand side of the intersection for traffic on the more important highway. In residential districts, D3-1 signs should be mounted on the corner nearest to traffic approaching from the streets that name, as close to the corner as practicable with the nearest point of the each sign not less than 1', and preferably 2', back from both curb lines.

In residential districts, D3-1 signs should be mounted as in business districts, but a single location at each intersection and ordinarily suffice on all but the most important thoroughfares.

Lettering on post-mounted D3-1 signs should be composed of 6" (EXC) letters. On multi-lane streets with a median strip, the D3-1 sign should be 8" (EXC) letters. Lettering should be in a combination of 4" (EXC) letters for lettering, composed of 3" (UCLC) letters. For roads functionally classified as local with speed limits of 25 MPH or less, the lettering may be 4" (EXC) letters.

A pictograph may be used on a D3-1 sign. If a pictograph is used, the height and width of the pictograph shall not exceed the upper-case letter height of the principal legend of the sign.

The street name sign should be reflectorized or illuminated and should have a white legend on a green background, white legend on a brown background, white legend on a blue background, or black legend on a white background (borders are not required). The same background used for D3-1 signs should be applied to all signs on roadways under the jurisdiction of a particular highway agency.



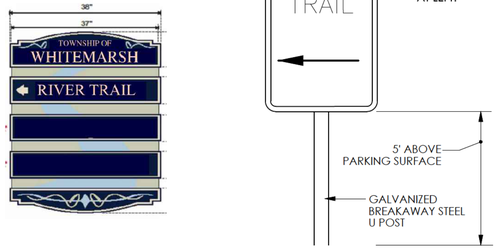
DIMENSIONS – IN						
SIGN SIZE A x B	C	D	E	F	G	
VAR. x 6"	4"	1	3*	2	1	
VAR. x 9"	6"	1.5	4.5*	3	1.4	
VAR. x 12"	8"	2	6*	4	2	

* CHOOSE UPPER / LOWER CASE CLEARANCE/ FONT FOR BEST FIT

INDEX:
MAIN: DESCENDING LOWER-CASE LEGEND
TAB: 2" (4.5 MIN.) UPPER-CASE LEGEND FOR 2 LINE/MIXED CASE SIGN. BLANK THE HEIGHT OF THE BLANK SHOULD BE INCREASED TO ACCOMMODATE THESE LETTERS.

COLOR:
LEGEND: WHITE (REFLECTORIZED)
BACKGROUND: GREEN (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION
By: [signature] Date: 13-07-18
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations



NOTES:
1. WAY FINDING SIGN FOR THE RIVER TRAIL SHALL BE CONSISTENT WITH WITH SIGN AS DETAILED ABOVE PER "SPRING MILL MULTI-MODAL AND LAND USE STUDY".

RIVER TRAIL SIGN

R2-1
SPEED LIMIT SIGN

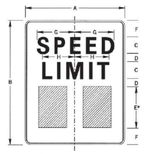
The Speed Limit Sign (R2-1) shall be authorized for use to display the maximum legal speed limit on a highway. When used as a variable speed limit sign, speed display module(s) may be attached to the sign or inserted through slot-outs in the sign substrate.

The R2-1 Sign shall be placed at intervals as specified in Department regulations. The standard size signs shall be as follows:

(1) 24" x 30". All single lane conventional highways having any speed limit.

(2) 30" x 36". Multi-lane conventional highways regardless of speed limit.

(3) 48" x 60". Expressways and freeways.



DIMENSIONS – IN								
SIGN SIZE A x B	C	D	E	F	G	H	MAR GIN	BOR DER	BLANK STD.
24" x 30"	4E	2	10E	4	9.6	7.3	0.4	0.6	RS-3024
30" x 36"	5E	2	12E	5	12	9.1	0.6	0.8	RS-3630
48" x 60"	8E	6	20E	6	19.1	14.6	0.8	1.2	RS-4848

* OPTICALLY SPACE NUMERALS ABOUT VERTICAL ℄

COLOR:
LEGEND AND BORDER: BLACK (NON-REFLECTORIZED)
BACKGROUND: WHITE (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION
By: [signature] Date: 02-29-12
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations

R1-3P
ALL WAY PLAQUE

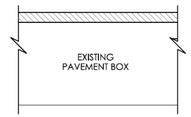
(a) Justification. The All Way Plaque (R1-3P) shall be used below the Stop Sign (R1-1) at multiway stop intersections to indicate that all approaches are required to stop.

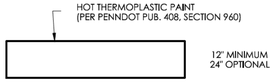


DIMENSIONS – IN								
SIGN SIZE A x B	C	D	E	F	G	H	BOR DER	BLANK STD.
24" x 6"	1.5	3C	1.5	7.3	0.4	0.4	RS-1806	

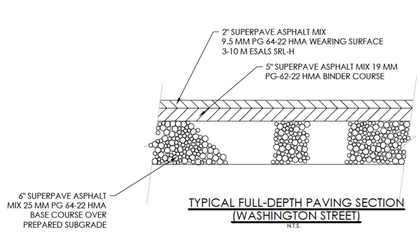
COLOR:
LEGEND AND BORDER: WHITE (REFLECTORIZED)
BACKGROUND: RED (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION
By: [signature] Date: 02-29-12
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations

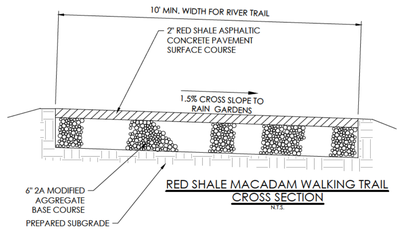




STOP BAR
N.T.S.

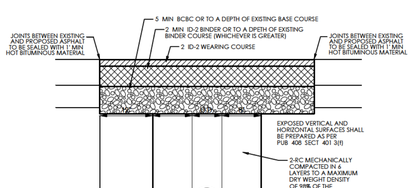


TYPICAL FULL-DEPTH PAVING SECTION (WASHINGTON STREET)
N.T.S.



RED SHALE MACADAM WALKING TRAIL CROSS SECTION
N.T.S.

MILL & OVERLAY PAVING SECTION
N.T.S.



FLEXIBLE PAVEMENT RESTORATION
N.T.S.

PROJECT SERIAL NO. 20233050644
CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE - STOP CALL
Pennsylvania One Call System, Inc.
1-800-242-1776

K:\24PROJ\24001_1001_WASHINGTON_STREET\CAD\PLAN_SET\24001_C10.X_CONDET.DWG
3/27/2025 4:38 PM
USER: ---

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900 WEST VALLEY ROAD SUITE 1100
WAYNE, PA 19087-1830
P: 610.265.8323 F: 610 265.4299
WWW.NAVENEWELL.COM

REVISIONS				
no	description	date:	chk'd	by
1.	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	JCE	JT

SEAL:
JAMES P. BANNON
ENGINEER
PA-080564
Professional Engineer
Pennsylvania License No. PE080737

DRAWING NAME: CONSTRUCTION DETAIL SHEET
LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

1001 WASHINGTON STREET

project no 2024-001.02	drawn by: CC
date: 3/27/2025	chk'd by: JPB
scale: N.T.S.	approv by: JPB

sheet no
C10.1
19 of 20

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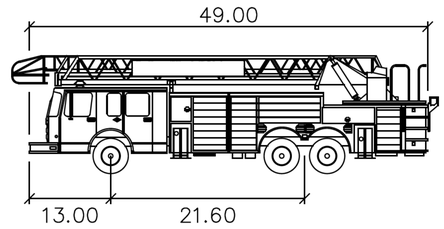
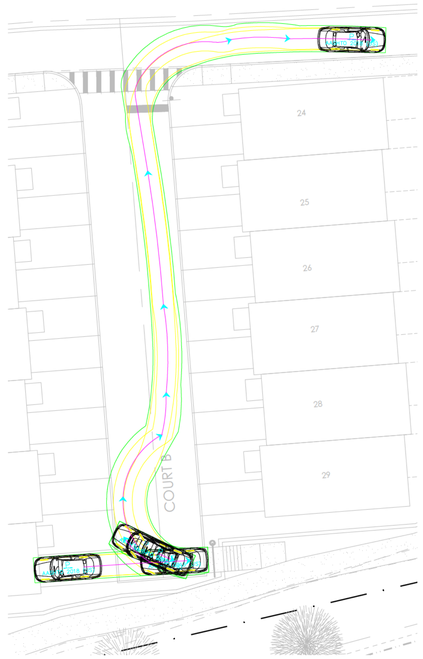
FIRE TRUCK TURN EXHIBIT
1" = 20'

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft



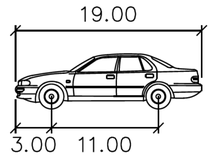
Whitemarsh Fire Truck

	feet
Width	: 8.67
Track	: 8.67
Lock to Lock Time	: 5.0
Steering Angle	: 27.0



PASSENGER VEHICLE
TURN EXHIBIT
1" = 20'

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft



PASSENGER VEHICLE

	feet
Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.6

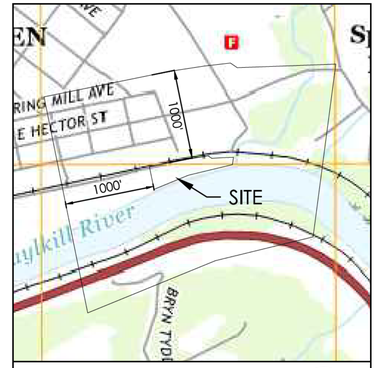


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'

PROJECT SERIAL NO. 20233050644
CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES
3 WORKING DAYS NOTICE FOR
CONSTRUCTION PHASE AND 10 WORKING
DAYS IN DESIGN STAGE - STOP CALL
Pennsylvania One Call System, Inc.
1-800-242-1776

K:\24PROJ\24001_1001_WASHINGTON_STREET\CAD\PLAN_SET\24001_C11_X_TRUCK.DWG
3/27/2025 4:37 PM
USER: ----

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WWW.NAVENEWELL.COM

REVISIONS

no	description	date	chk'd	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	JCE	JT

SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE 082137

DRAWING NAME: VEHICLE TURNING EXHIBIT

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no: 2024-001.02	drawn by: CC
date: 3/27/2025	chk'd by: JPB
scale: AS NOTED	approv. by: JPB

sheet no
C11.0
20 of 20

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NAVE NEWELL
ENGINEERING • SURVEYING • LAND PLANNING
A HOWELL COMPANY

March 27, 2025

VIA Hand Delivery

Charles L. Guttenplan, AICP
Director of Planning and Zoning / Zoning Officer
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

Reference: ***1001 Washington Street***
Updated Waiver / Modification Requests
Whitemarsh Township, Montgomery County, PA
Nave Newell No. 2024-001.02

Dear Mr. Guttenplan

On behalf of our client, HT 1001 Washington, LLC, and in accordance with the Whitemarsh Township Subdivision and Land Development Ordinance. The Applicant respectfully requests the following waivers and/or modifications for the cited provisions of the ordinance.

105-21.B.(1)(n) – Show existing features within 500 feet of the site
A modification is requested to allow aerial imagery to depict the required features.

105-21.B(2) – Soil Map
Waiver requested to provide Soil Map as a single plan sheet as the required features are shown on various sheets throughout the plan set.

105-21.B(15) – Preliminary Resource Impact and Conservation Plan
Waiver requested from the requirement to provide a Preliminary Resource Impact and Conservation Plan as a single plan sheet as the required features are shown on various sheets throughout the plan set. Site is also a redevelopment of an urban site and no areas within the limit of disturbance were left undisturbed.

105-30(A) – Street Standards
Modification requested from the requirement that the ultimate right-of-way measure 56’ and the cartway width measure 36’. Due to the existing site constraints the proposed ultimate right-of-way measures 28’, and the cartway width measures below 36’. Also, the proposed Courts will have cartway widths below 30’.

105-30(C) – Street Standards
Waiver request from the requirement of short extensions of existing streets with lesser right-of-way and/or cartway widths than prescribed above may be permitted; provided, however, that no section of new right-of-way be less than 40 feet in width and such extensions shall be less than 100 feet in length to allow the right-of-way width of Washington Street measure 30 feet for a distance of 960’ along the property frontage.

105-33(B) – Street Alignment
Waiver request from the requirement of local streets having horizontal curves of 150’. Due to the existing site constraints and its current alignment, we are proposing horizontal curve radii of 28’ on Washington Street

900 W Valley Rd #1100, Wayne, PA 19087 | PHONE 610 265 8323 | FAX 610 265 4299

105-38(F) – Angle or perpendicular parking shall not be permitted along public or private streets
Waiver requested from the requirement as cartway width measures about 31'. Backing out from the perpendicular parking should not pose a safety risk given the low volumes of traffic. The spaces are provided for extra guest parking and public use. The cartway width meets the minimum requirement of 105-56(A)(1)(b).
105-38H – Except at entrance and exit drives, all parking areas shall be set back from the right-of-way line and all property lines at least 15 feet, or as required by the applicable sections of the Zoning Ordinance, the greater provision to prevail. The distance between this required setback and the cartway shall be maintained as a planting strip or planting strip and sidewalk.
A waiver is requested from this section for the proposed parking along Washington Street and the existing parking spaces that are adjacent to the David's Bridal Facility today.

105-38(L) – In no case shall parking areas for three or more vehicles be designed to require or encourage carts to back into a public street.
A waiver is requested from this section for the 10 parking spaces adjacent to Washington Street. Backing out from the perpendicular parking should not pose a safety risk given the low volumes of traffic. The spaces are provided for extra guest parking and public use.

105-38(O) – Parking areas shall be located at least 10 feet from any building or structure.
A waiver is requested from this section to allow the existing parking spaces along the 901 and 1001 property line to be located less than 5' from the adjacent decks. We have provided parking blocks in these spaces.

105-47(K)(1) – In the RDD-1 subdistrict, 25' right-of-way be offered for dedication to the Township
A modification is requested to this requirement to offer an easement for public access and use rather than right-of-way dedication.

105-48(E) – Street trees shall be planted within a tree planting zone of lawn area or other material approved by the Shade Tree Commission, situated between the sidewalk and curb and measuring a minimum of five feet in width from the planting edge of the curb to the planting edge of the sidewalk.
A waiver is requested from this section. A Variance was granted from Section 116-283.C.(1), so as to permit curb and sidewalk alignment along Washington Street without street trees and the required 5 foot/verge strip, both as required in cross-referenced section 105-48 of the Subdivision and Land Development Ordinance.

105-52(B)(2) – Buffers shall have a minimum width of 50'.
A waiver is requested from this section to allow the buffers as shown on the plan, due to the sites unusual sized and shape.

105-53(D)(1)(c) – No more than 25% of the minimum land area required for park and recreation land may consist of floodplain or riparian corridor areas.
A waiver is requested from this section due to the entire property being located within the floodplain.

105-56(A)(1)(a) – Private streets and courts shall be 26' wide..
A waiver is requested from this section to allow the courts to be 24'. This matches the adjacent development and is consistent with the character of the area..

58-28(D)(11) – Edge of slopes shall be a minimum of five feet from property lines or right-of-way lines
A waiver is requested of this requirement to allow such grading to occur closer than 5' from property and right-of-way lines. The proposed grading abuts the ultimate right-of-way of Washington Street. Proposed grading needs to be less than 5' from property and right-of-way lines to tie back into existing conditions.

58-29E – Fills shall not encroach on natural watercourses, floodways, floodway fringes, constructed channels, or wetlands
A waiver is requested from this section because the whole property is located within the floodplain. We have submitted a Letter of Map Revision (LOMR) request to FEMA to revise the floodway so the existing structures and proposed improvements are removed from the floodway.

58-34(B)(7) – All storm pipe shall be reinforced concrete pipe
A waiver is requested to allow the proposed storm pipes on the site to be HDPE in-lieu of reinforced concrete pipe. Proposed storm pipes within the public right-of-way will be concrete.

55-4B – Maximum tree removal. The removal of more than 33% of trees, having a DBH of six inches or greater, on any lot, shall not be permitted.
A waiver is requested to permit the removal of greater then 33%.

55-4(D)(6)(A), 55-4(F)- Tree Replacement Substitution. living and healthy tree with a DBH of six inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new canopy trees, of a type and species approved by the Shade Tree Commission or its designee, with a trunk diameter of not less than three inches in caliper. The total caliper of replacement trees, measured at six inches above the ground line, shall equal or exceed the DBH of the removed trees. The waiver is being requested to allow a maximum of 40% of the replacement trees to be replaced with ornamental trees, in accordance with Section 55-4(F).
A waiver is requested to allow a maximum of 40% of the replacement trees to be replaced with ornamental trees.

If you have any questions or need additional information. Please contact me at (610) 265-8323 or via email at jbannon@navenewell.net.

Sincerely,

James P. Bannon, Jr., PE

JGE/

Enclosure

cc (via email): David Landskroner & Jennifer Rosenberg – Hightop Development
Craig R. Lewis, Esq. – Kaplin Stewart

K:\24proj\24001_1001_Washington_Street\RevResp\Township\Guttenplan_Waiver_ltr_25-03-27.docx

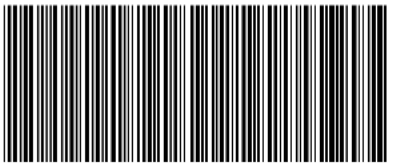




RECORDER OF DEEDS
MONTGOMERY COUNTY
Nancy J. Becker

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

DEED BK 5967 PG 00411 to 00424.2
INSTRUMENT # : 2015062933
RECORDED DATE: 08/20/2015 01:41:10 PM



3240740-0014I

MONTGOMERY COUNTY ROD

OFFICIAL RECORDING COVER PAGE

Document Type:	Easement	**Transaction #:**	[redacted]
Document Date:	07/29/2015	**Document Page Count:**	13
Reference Info:		**Operator Id:**	estaglia

RETURN TO: (Simplifile)
Kaplin Stewart
910 Harvest Drive Post Office Box 3037
Blue Bell, PA 19422
(610) 941-2523

PAID BY:
KAPLIN STEWART

*** PROPERTY DATA:**

Parcel ID #:	65-00-12673-00-6	65-00-12672-00-7
Address:	1001 WASHINGTON ST CONSHOHOCKEN PA 19428	901 WASHINGTON ST PA
Municipality:	Whitemarsh Township (100%)	Whitemarsh Township (0%)
School District:	Colonial	Colonial

*** ASSOCIATED DOCUMENT(S):**

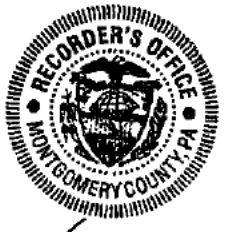
CONSIDERATION/SECURED AMT: [redacted]
TAXABLE AMOUNT:

FEES / TAXES:
Recording Fee:Easement
Additional Pages Fee
Affidavit Fee
Additional Parcels Fee
Affordable Housing Pages
Affordable Housing Parcels

Total:

DEED BK 5967 PG 00411 to 00424.2
Recorded Date: 08/20/2015 01:41:10 PM

I hereby CERTIFY that this document is recorded in the Recorder of Deeds Office in Montgomery County, Pennsylvania.



Nancy J. Becker
Recorder of Deeds

PLEASE DO NOT DETACH

THIS PAGE IS NOW PART OF THIS LEGAL DOCUMENT

NOTE: If document data differs from cover sheet, document data always supersedes.
***COVER PAGE DOES NOT INCLUDE ALL DATA, PLEASE SEE INDEX AND DOCUMENT FOR ANY ADDITIONAL INFORMATION.**

MONTGOMERY COUNTY COMMISSIONERS REGISTRY
65-00-12673-00-6 WHITEMARSH TOWNSHIP
1001 WASHINGTON ST
1001 WASHINGTON ST INC
B 008A L 2 U 006 3348 08/20/2015

[redacted]

Prepared By:
Kaplin Stewart Meloff Reiter & Stein, P.C.
910 Harvest Drive
P.O. Box 3037
Blue Bell, PA 19422-0765
Attn.: Jeffrey L. Silberman, Esquire

Tax Parcel Nos.: 65-00-12673-00-6 and 65-00-12672-00-7

RECIPROCAL EASEMENT AGREEMENT

THIS RECIPROCAL EASEMENT AGREEMENT (the "**Agreement**") is made this 29th day of July, 2015, to be made effective as of the 31st day of July, 2015, by and between **901 WASHINGTON PARTNERS, L.P.**, a Pennsylvania limited partnership ("**901 Washington**") and **DAVID'S BRIDAL, INC**, a Florida corporation ("**David's Bridal**").

Background

A. 901 Washington is the owner of that certain parcel (the "**901 Washington Parcel**") of land located in Whitemarsh Township, Montgomery County Pennsylvania, as described on Exhibit "A" attached hereto. David's Bridal is the owner of that certain parcel (the "**David's Bridal Parcel**") adjacent to the 901 Washington Parcel, as described on Exhibit "B" attached hereto. The 901 Washington Parcel and the David's Bridal Parcel are hereinafter referred to as "**Parcels**".

B. 901 Washington and David's Bridal wish to establish certain easements to facilitate: (i) the ability of David's Bridal to access the rear portion and certain parking spaces located on the David's Bridal Parcel, which rear portion and parking spaces are identified on the plan (the "**Plan**") attached hereto as Exhibit "C" and (ii) the ability of 901 Washington to access Lee Street.

NOW, THEREFORE, in consideration of the covenants and conditions set forth herein, the parties hereto, intending to be legally bound, hereby agree as follows:

1. **GRANT OF EASEMENTS**.

a. 901 Washington hereby grants and conveys to David's Bridal, its successors and assigns, a perpetual, non-exclusive right and easement to enter upon and utilize drive-aisles, entrances, exits and curb-cuts now or hereafter located on the 901 Washington Parcel for the purpose of having vehicular access, ingress and egress to and from the fourteen (14) parking spaces on the David's Bridal Parcel cross-hatched on the Plan (the "**Parking Spaces**"). In no event shall the easement granted hereby confer any right upon David's Bridal or any of its successors or assigns to park vehicles in any of the parking spaces located on the 901 Washington Parcel.

MONTGOMERY COUNTY COMMISSIONERS REGISTRY
65-00-12672-00-7 WHITEMARSH TOWNSHIP
901 WASHINGTON ST
901 WASHINGTON PARTNERS LP
B 011 L 1 U 039 3341 08/20/2015

[redacted]

JU

b. David's Bridal hereby grants and conveys to 901 Washington, its successors and assigns, a perpetual, non-exclusive right and easement to enter upon and utilize the drive aisles, entrances, exits and curb-cuts now or hereafter located on the David's Bridal Parcel for the purpose of (i) having vehicular (excluding heavy construction trucks and equipment, as well as tractor trailers) access, ingress and egress to and from Lee Street and (ii) having pedestrian (including bicycle) access, ingress and egress to and from the Spring Mill train station. In no event shall the easement granted hereby confer any right upon 901 Washington or any of its successors or assigns to park vehicles in any of the parking spaces located on the David's Bridal Parcel.

2. **MAINTENANCE RESPONSIBILITIES**.

a. Each of 901 Washington and David's Bridal shall be responsible, at its sole cost and expense and without reimbursement from the other for maintaining their respective Parcels, except to the extent any repairs and/or maintenance is required on either Parcel as the result of a violation of this Agreement by, or the gross negligence or willful misconduct of, the owner of the other Parcel.

b. 901 Washington shall not construct or install any fences, barriers or other obstructions that would completely obstruct all access to the Parking Spaces, as permitted in Section 1.a. above; provided, however, that 901 Washington shall have the right, from time to time in its sole discretion, to relocate, reduce, close, reconfigure or otherwise alter or modify any point or points of access to and from, and/or curb cuts located on, the 901 Washington Parcel, so long as David's Bridal shall at all times have access to the Parking Spaces. In addition, 901 Washington shall have the right, at its expense, to (i) install a gate or similar device on the 901 Washington Parcel to prevent public use of the 901 Washington Parcel so long as David's Bridal is provided access through such gate or similar device for access to the Parking Spaces, if necessary, and (ii) install or paint signs for pedestrian and vehicular safety, including "share the road" signs and speed limit notices.

c. David's Bridal shall not construct or install any fences, barriers or other obstructions that would completely obstruct all access to and from the 901 Washington Parcel and Lee Street, as permitted in Section 1.b. above; provided, however, that David's Bridal shall have the right, from time to time in its sole discretion, at its expense, to relocate, reduce, close, reconfigure or otherwise alter or modify any point or points of access to and from, and/or curb cuts located on, the David's Bridal Parcel, so long as 901 Washington shall at all times have access to Lee Street. In addition, David's Bridal shall have the right to install a gate or similar device on the David's Bridal Parcel to prevent public use of the David's Bridal Parcel so long as 901 Washington is provided access through such gate or similar device for access to the Lee Street, if necessary.

3. **COVENANTS AND RESTRICTIONS**. This Agreement shall not serve to restrict or prohibit the use or development of the 901 Washington Parcel or the David's Bridal Parcel by its respective owner in any way, subject only to compliance with Section 2.

4. **INDEMNITY**. 901 Washington and David's Bridal (each respectively as applicable, the "Indemnifying Party") shall indemnify, defend, and hold the other party, and anyone claiming through such other party (each respectively as applicable, the "Indemnified Party"), harmless (except for loss or damage resulting from the gross negligence or willful misconduct of the Indemnified Party) from and against any damages, loss, liability, actions, demands, claims, costs and expenses (including without limitation, reasonable attorneys' fees and costs) in connection with the loss of life, personal injury and/or damage to property arising from or out of any occurrence in or upon the Indemnified Party's Parcel by reason of or arising out of the use of such rights and easements under this Agreement, or occasioned wholly or in part by any wrongful act or omission of the Indemnifying Party, its tenants, agents, contractors, employees, licensees, customers or invitees.

5. **EFFECT OF INSTRUMENT**.

a. **Mortgage Subordination**. Any mortgage or deed of trust recorded after the date hereof and affecting any portion of the 901 Washington Parcel or the David's Bridal Parcel shall at all times be subject and subordinate to the terms of this Agreement. Any party foreclosing any mortgage or deed of trust, or acquiring title by deed in lieu of foreclosure or trustee's sale shall acquire title subject to all of the terms and provisions of this Agreement.

b. **Non-Dedication**. Nothing contained in this Agreement shall be deemed to be a gift or dedication of any portion of the 901 Washington Parcel or the David's Bridal Parcel to the general public or for any public use or purpose whatsoever, it being the intention of 901 Washington and David's Bridal and their successors and assigns that nothing in this Agreement, expressed or implied, shall confer upon any person, other than the parties hereto and their successors and assigns, any rights or remedies under or by reason of this Agreement.

c. **Modification**. This Agreement shall be recorded by 901 Washington and David's Bridal and shall not be amended, modified, or terminated at any time without the prior written consent of the parties hereto or their successors and assigns.

d. **Running with the Land**. The rights, easements and covenants established for the benefit of a Parcel shall run with, and be appurtenant to, title to the Parcel and shall be a burden upon each Parcel and shall run with the title to each Parcel.

6. **MISCELLANEOUS**.

a. If any provision of this Agreement, or portion thereof, shall be held invalid, inoperative or unenforceable, the remainder of this Agreement, or the application of such provision or portion thereof to any other persons or circumstances, shall not be affected thereby.

b. This Agreement shall be construed in accordance with the laws of the Commonwealth of Pennsylvania without regard to conflict of laws provisions.

c. The section headings in this Agreement are for convenience only, shall in no way define or limit the scope or content of this Agreement, and shall not be considered in any construction or interpretation of this Agreement or any part hereof.

d. Nothing in this Agreement shall be construed to make 901 Washington and David's Bridal partners or joint venturers.

e. Neither 901 Washington nor David's Bridal, nor any partner, member, officer, director or shareholder of 901 Washington or David's Bridal, nor any disclosed or undisclosed principal of 901 Washington or David's Bridal, nor their successors and assigns, shall have any personal liability with respect to any of the provisions of this Agreement; and if any party is in breach or default with respect to any of the provisions of this Agreement, the other party shall look solely to the interest of the defaulting party in its Parcel.

f. Neither 901 Washington nor David's Bridal are representing and/or warranting to the other that their respective Parcels are free and clear of all liens, encumbrances, and/or easements. They are conveying non-exclusive easements to each other herein subject to all existing rights, title, and interest of third parties.

g. This Agreement represents the entire understanding of the parties with respect to the subject matter hereof, and no other agreement, written or oral, express or implied, exists with respect to the subject matter hereof, And shall be binding upon and enforceable between and among the parties hereto, their successors and assigns, upon the execution hereof.

-SIGNATURE PAGE TO FOLLOW-

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed and sealed as of the day and year first above written.

Witness: _____

901 WASHINGTON PARTNERS, L.P., a Pennsylvania limited partnership

By: 901 Washington General, LLC, its sole general partner

By: _____
Eli A. Kahn, Member

Witness: _____

DAVID'S BRIDAL, INC., a Florida corporation

By: _____
Name/Title: Joan Hilson, EVP / CFO

APPROVED
7/27/15

COMMONWEALTH OF PENNSYLVANIA :
: ss.
COUNTY OF Chester :

On the 31st day of July, 2015, before me, the subscriber, a Notary Public in and for the State and County aforesaid, personally appeared Eli A. Kahn, who acknowledged himself to be a Member of 901 Washington General, LLC, the sole general partner of 901 WASHINGTON PARTNERS, L.P., and that he, being authorized to do so, executed the foregoing instrument for the purposes therein contained.
WITNESS my hand and seal the day and year aforesaid.

[NOTARIAL SEAL]

Notary Public

My Commission Expires:

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Anne M. Conrow, Notary Public
Spring Twp., Berks County
My Commission Expires April 21, 2019
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

COMMONWEALTH OF PENNSYLVANIA :
: ss.
COUNTY OF Montgomery :

On the 29th day of July, 2015, before me, the subscriber, a Notary Public in and for the State and County aforesaid, personally appeared Joan Hilson, who acknowledged herself to be the EVP / CFO of DAVID'S BRIDAL, INC., and that she, being authorized to do so, executed the foregoing instrument for the purposes therein contained.
WITNESS my hand and seal the day and year aforesaid.

[NOTARIAL SEAL]

Agnes Jefferson
Notary Public

My Commission Expires:

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
AGNES JEFFERSON, Notary Public
Whitemarsh Twp., Montgomery County
My Commission Expires January 26, 2016

Exhibit "A"

Legal Description of 901 Washington Parcel

Exhibit "A"

ALL THAT CERTAIN lot or piece of ground with the buildings and improvements thereon erected SITUATE in Whitemarsh Township, Montgomery County, Pennsylvania, bounded and described according to a Sub-Division Plan Prepared for Spring Mill Corporation made by Howard S. Wishengrad, Registered Surveyor and Professional Engineer dated 6-15-1981 and Recorded in Plan Book A43 Page 87 as follows to wit:

BEGINNING at a point a corner of lands now or late of Reilly Whiteman and Walton Co., thence from said point of beginning and along aforesaid lands North 04 degrees 29 minutes 00 seconds West and crossing a certain 30.00 feet wide right of way to Sandy Street and chain link fence a distance of 382.83 feet to a point, thence extending from said point North 85 degrees 31 minutes 00 seconds East and partly along a road marked permanently leased from SEPTA a distance of 655.30 feet to a point a corner of Lot 2 as shown on above plan, thence along said lot South 04 degrees 29 minutes 00 seconds, passing partly through Schuylkill River 257.628 feet; thence extending from said point South 74 degrees 42 minutes 00 seconds West re-crossing the aforesaid river 667.154 feet to the first mentioned point and place of beginning.

CONTAINING in area 4.817 acres more or less.

BEING Lot 1 as shown on above plan.

BEING Tax Parcel #65-00-12672-00-7.

BEING PART OF the same premises which Schuylkill Valley Properties, Inc., by Deed dated 4/13/1965 and recorded 4/14/1965 in Montgomery County in Deed Book 3352 page 357 conveyed unto Spring Mill Corporation, in fee.

Exhibit "B"

Legal Description of David's Bridal Parcel

LEGAL DESCRIPTION

ALL THAT CERTAIN lot or piece of ground situate in Whitemarsh Township, Montgomery County Pennsylvania, as shown on a survey made for Spring Mill Partners dated June 7, 1987 last revised June 18, 1987 prepared by Hopkins & Scott, Inc., Registered Surveyors, Kimberton, Pennsylvania, said property being more fully described as follows, to wit:

BEGINNING at an iron pin (found) on the southerly line of the SEPTA Railroad and the easterly line of an easement or right of way line leading from Hector Street to the Schuylkill River, said point being measured the five (5) following courses and distances from the intersection of the center line of Hector Street extending to the easterly right of way line of Lee Street (or End Street):

1) North 85 degrees 46 minutes East 25.21 feet to a point on the easterly side of said easement.
2) Along said easement South 11 degrees 46 minutes East 322.38 feet to a point.
3) South 48 degrees 30 minutes East 82.91 feet to a point.
4) South 85 degrees 42 minutes West 50.00 feet to a point.
5) South 11 degrees 46 minutes East 142.13 feet to the point of beginning; thence along the SEPTA property the four (4) following courses and distances:

    1. On a line curving to the right with a radius of 8375.00 feet to the arc distance of 270.19 feet to a spike
    2. South 48 degrees 52 minutes 18 seconds east 51.30 feet to a spike
    3. South 87 degrees 05 minutes East 124.82 feet to a spike
    4. South 85 degrees 05 minutes East 116.66 feet to a spike; thence South 14 degrees 28 minutes West 82.03 feet to a point on or near the edge of the Schuylkill River; thence along the same three (3) following courses and distances:

        1. South 83 degrees 13 minutes 10 seconds West 495.68 feet to a point on the easterly side of a 25' wide easement or right of way extending through this property
        2. Crossing the terminus of said easement, South 81 degrees 06 minutes West 25.02 feet to a point.
        3. South 74 degrees 42 minutes 08 seconds West 401.64 feet to a point, a corner of Montgomery County Industrial Development Authority (Sprint Mill Corp.); thence along the same, North 4 degrees 29 minutes West 257.63 feet to a point on the Southerly line of the SEPTA Railroad property; thence along the same, the two (2) following courses and distances:

            1. North 85 degrees 31 minutes East 235.48 feet to a point of curve
            2. On a line curving to the right with a radius of 8375.00 feet the arc distance of 161.12 feet to the point and place of BEGINNING, having crossed the terminus of Lee Street (End Street) and the 25 foot wide easement or right of way through this property.

CONTAINING 3.695 acres.

UNDER AND SUBJECT to the rights of other parties, as tenants in common, in and to the following lot or piece of ground, SITUATE in the Township of Whitemarsh, County of Montgomery, Commonwealth of Pennsylvania, described in accordance with a Plan of

Survey of property of Spring Mill Partners dated June 7, 1987, prepared by Hopkins & Scott, Inc., Registered surveyors, Kimberton, Pennsylvania, as follows:

BEGINNING to a point on the shoreline of Schuylkill River, a corner of a parking area as shown on said Plan; thence extending from said point of beginning along said shoreline, South 81 degrees 6 minutes West 25.02 feet to a point; thence extending North 11 degrees 46 minutes West 182.64 feet to a point in line of lands now or late of Reading Co.; thence extending along said lands crossing the head of End Street, on the arc of a circle curving to the right, having a radius of 8,375 feet, the arc distance of 25.25 feet to a point, a corner of parking area; thence extending along said parking area, South 11 degrees 46 minutes East 180.25 feet to the point and place of beginning.

FURTHER UNDER AND SUBJECT to all existing covenants, agreements, conditions, easements, restrictions, reservations and rights of record, to extent valid and enforceable and still applicable to the above described premises.

BEING Tax Parcel No. 65-00-12673-00-6.

BEING the same premises which Spring Mill Partners, a Pennsylvania General. Partnership by Deed dated 1/5/2000 and recorded 1/18/2000 in the County of Montgomery in Deed Book 55003 page 2431, conveyed unto 1001 Washington Street, Inc., a Pennsylvania Corporation, in fee.

AND the said 1001 Washington Street, Inc., as Pennsylvania Corporation, has since merged with and into David's Bridal, Inc., a Florida Corporation, by virtue of Articles of Merger/Consolidation filed 10/25/2000 in the Office of the Secretary of State of Pennsylvania.

Exhibit "C"

Plan

08/20/2015 01:41:10 PM DEED BK 5967 PG 00424 MONTCO

NOTES:

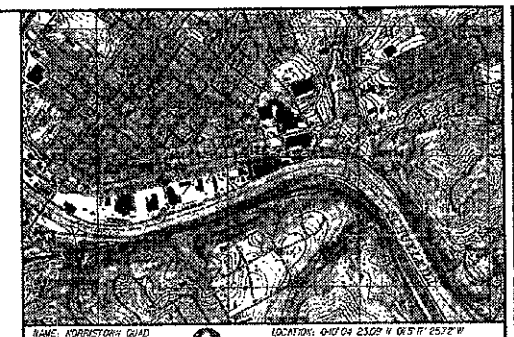
1. THIS PLAN IS BASED ON A SURVEY CONDUCTED BY THE FIELD BY NAVE NEWELL, INC. COMPLETED ON DECEMBER 4, 2009.
2. THIS SURVEY REPRESENTS CONDITIONS AS OF THE DATE OF THE SURVEY EXCEPT SUCH IMPROVEMENTS OR EASEMENTS, IF ANY, THAT MAY BE LOCATED BELOW THE SURFACE OF THE LANDS, ON THE SURFACE OF THE LANDS OR ABOVE THE SURFACE OF THE LANDS AND NOT VISIBLE.
3. BEARING BASIS FOR THE SURVEY IS THE RECORD DEED AS RECORDED IN DEED BOOK 3352, PAGE 307
4. VERTICAL DATUM IS NAVD 1988, PROJECT BENCHMARK IS BM 348 (ELEV. SHOWN) AS NAIL/SHINER IN CURB LOCATED AT CROSSING OF RAILROAD AND CHERRY STREET, SET IN TOP OF NORTHWEST CORNER OF CONCRETE FOUNDATION OF MIDDLE ONE OF THREE CATENARY POLES NUMBER 65/23.
5. PROPERTY AS SHOWN IS IN ZONE "AE" (BASE FLOOD ELEVATIONS DETERMINED) AS DEPICTED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FIRM FLOOD INSURANCE RATE MAP COMMUNITY PANEL #42091C0058 E, PANEL 358 OF 451, BASE ELEVATION - 60, NAVD 1929 DATUM. A PORTION OF THE PROPERTY FALLS IN THE FLOODWAY.
7. LOCATIONS OF EXISTING UTILITIES AS SHOWN HEREIN, HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS, PLANS BY OTHERS AND/OR ABOVE GROUND EXAMINATION OF SITE. THE COMPLETENESS OR ACCURACIES OF THE LOCATIONS ARE NOT GUARANTEED. SHOULD ANY NEW CONSTRUCTION BE PROPOSED, THE CONTRACTOR MUST VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES BEFORE START OF WORK.
8. PURSUANT TO ACT 199 "PENNSYLVANIA ONE CALL ACT", WAS PLACED ON NOVEMBER 30, 2009 AND ASSIGNED SERIAL NO. 20093340672. INFORMATION THEREBY OBTAINED WAS USED TO ILLUSTRATE EXISTING UTILITIES.
9. NO REVIEW OF THE PROPERTY REGARDING THE PRESENCE OF WETLANDS WAS ACCOMPLISHED AS A PART OF THIS SURVEY.
10. NO REVIEW OF THE PROPERTY REGARDING THE PRESENCE OF HAZARDOUS MATERIAL WAS ACCOMPLISHED AS A PART OF THIS SURVEY.

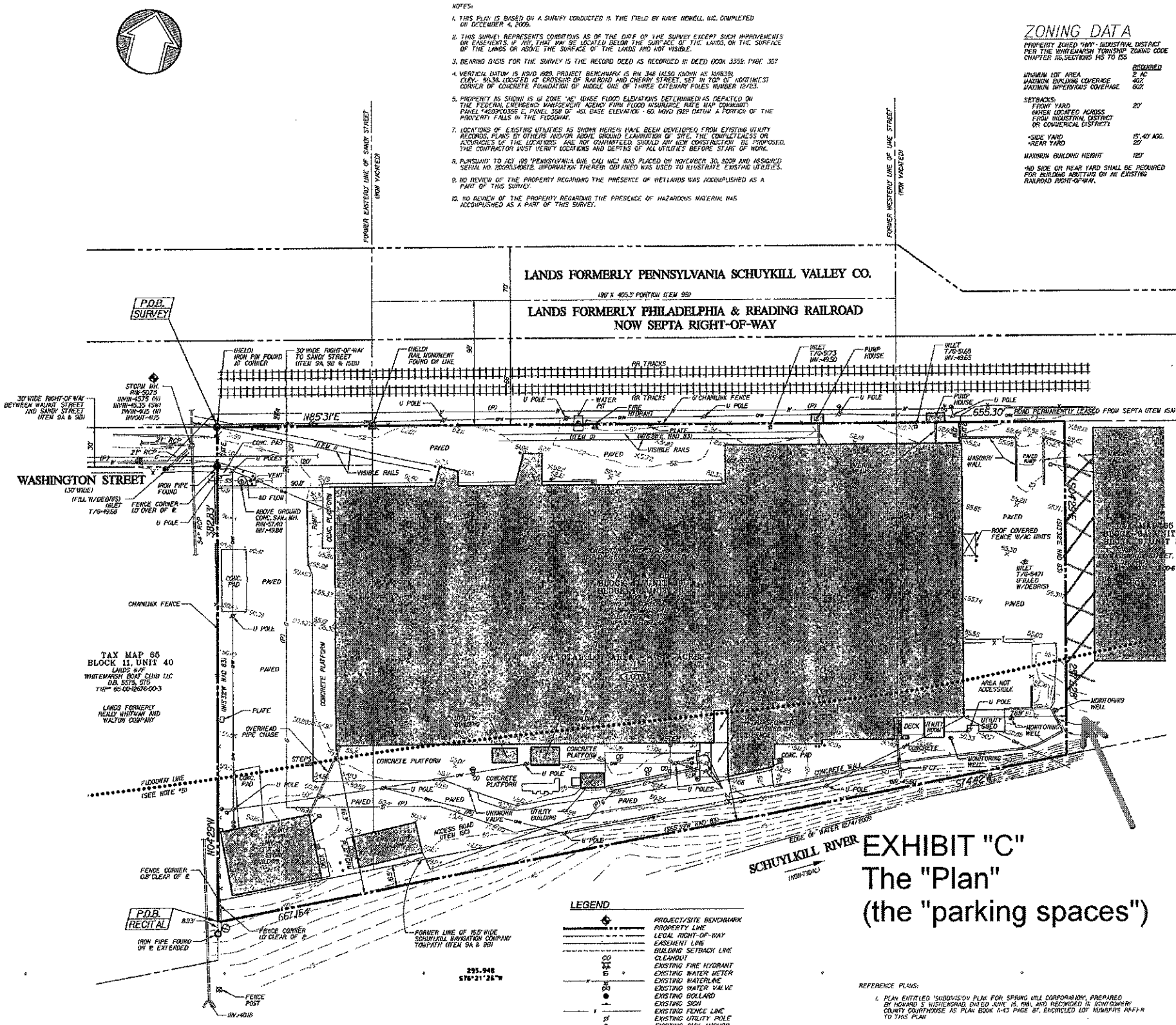
ZONING DATA

PROPERTY ZONED "IMP" - INDUSTRIAL DISTRICT PER THE WHITEMARSH TOWNSHIP ZONING CODE CHAPTER 116, SECTIONS 145 TO 155

	REQUIRED
MINIMUM LOT AREA	2 AC
MAXIMUM BUILDING COVERAGE	40%
MAXIMUM IMPERVIOUS COVERAGE	60%
SETBACKS:	
FRONT YARD	20'
WHEN LOCATED ACROSS FROM INDUSTRIAL DISTRICT OR COMMERCIAL DISTRICT	
*SIDE YARD	15', 40' AGG.
*REAR YARD	25'
MAXIMUM BUILDING HEIGHT	120'

*NO SIDE OR REAR YARD SHALL BE REQUIRED FOR BUILDING ABUTTING ON AN EXISTING RAILROAD RIGHT-OF-WAY.




FORMER EASTERLY LINE OF SANDY STREET (NOW VACATED)
FORMER WESTERLY LINE OF LIME STREET (NOW VACATED)
LANDS FORMERLY PENNSYLVANIA SCHUYKILL VALLEY CO.
196' X 405.3' PONTRAIL ITEM 99
LANDS FORMERLY PHILADELPHIA & READING RAILROAD
NOW SEPTA RIGHT-OF-WAY
P.O.B. SURVEY
WELD'D IRON PIN FOUND AT CORNER
30' WIDE RIGHT-OF-WAY TO SANDY STREET ITEM 9A, 9B & 10B
WELD'D RAIL MONUMENT FOUND ON LINE
30' WIDE RIGHT-OF-WAY BETWEEN WALNUT STREET AND SANDY STREET ITEM 9A & 9B
STORM DR. INV#-30.27
INV#-43.76 (IN)
INV#-43.55 (OUT)
INV#-41.15 (IN)
INV#-41.40 (OUT)
N85°31'E
RR TRACKS
CHANNELIZATION FENCE
U POLE
WATER FIT
FIRE HYDRANT
PUMP HOUSE
INLET T/G=57.73 INV.=49.50
INLET T/G=51.68 INV.=49.65
655.30'
LEASED FROM SEPTA ITEM 99
PAVED
VISIBLE RAILS
WASHINGTON STREET
(30' WIDE)
(FULL W/DEBRIS)
INLET T/G=49.58
IRON PIPE FOUND
FENCE CORNER 1.0' OVER @ E.
ABOVE GROUND CONC. SUN, MH. RIM=57.80 INV.=49.88
CONC. PAD
CONC. PLATFORM
TAX MAP 65 BLOCK 11, UNIT 40
LANDS N/F WHITEMARSH BOAT CLUB LLC D.B. 5579, 376 TMP# 65-00-12676-00-3
LANDS FORMERLY NEILLY WHITMAN AND WALTON COMPANY
CHANNELIZATION FENCE
OVERHEAD PIPE CHASE
FLOODWAY LINE (SEE NOTE #5)
CONCRETE PLATFORM
STEPS
UTILITY BUILDING
UNKNOWN VALVE
ACCESS ROAD ITEM 15D
CONCRETE WALL
EDGE OF WATER (APPROX.)
SCHUYLKILL RIVER
(NAVIGABLE)
FENCE CORNER OR CLEAR OF E
P.O.B. RECITAL
S33°
667.16'
FENCE CORNER 1.0' CLEAR OF E.
IRON PIPE FOUND ON E EXTENDED
FORMER LINE OF 165' WIDE SCHUYLKILL NAVIGATION COMPANY TOWPATH ITEM 9A & 9B1
295.94' S76°21'26"W
FENCE POST
INV.=40.18
DECK
FRUIT TREE
MONITORING WELL
AREA NOT ACCESSIBLE
ROOF COVERED FENCE W/AC UNITS
INLET T/G=49.71 (FILLED W/DEBRIS)
CONC. PAD
CONC. WALL
MASONRY WALL
WOOD FENCE
BUILDING #1 UNIT 6 BUILDING #2 UNIT 25
CONDOMINIUM PLAN, INC.
T/C=57.45
T/C=57.45
T/C=57.45

REV-183 EX (2-15)

pennsylvania
DEPARTMENT OF REVENUE
Bureau of Individual Taxes
PO BOX 280603
Harrisburg, PA 17128-0603

REALTY TRANSFER TAX STATEMENT OF VALUE

See reverse for instructions.

RECORDER'S USE ONLY

State Tax Paid	$0.00
Book Number	5967
Page Number	00411
Date Recorded	08/20/2015 01:41:10 PM
	Addendum {0} of {1}

Complete each section and file in duplicate with Recorder of Deeds when (1) the full value/consideration is not set forth in the deed, (2) the deed is without consideration or by gift, or (3) a tax exemption is claimed. If more space is needed, please attach additional sheets. A Statement of Value (SOV) is not required if the transfer is wholly exempt from tax based on family relationship or public utility easement. However, it is recommended that a SOV accompany all documents filed for recording.

A. CORRESPONDENT – All inquiries may be directed to the following person:

Name	Telephone Number:
Julie McAllister, Paralegal	(610) 941-2475

Mailing Address	City	State	ZIP Code
Kaplin Stewart, 910 Harvest Drive	Blue Bell	PA	19422

B. TRANSFER DATA

Date of Acceptance of Document 07 / 29 / 2015

Grantor(s)/Lessor(s)	Telephone Number:	Grantee(s)/Lessee(s)	Telephone Number:
See attached		See attached	

Mailing Address	Mailing Address
See attached	See attached

City	State	ZIP Code	City	State	ZIP Code

C. REAL ESTATE LOCATION

Street Address	City, Township, Borough
901 and 1001 Washington Street	Whitemarsh Township

County	School District	Tax Parcel Number
Montgomery	Colonial	See attached

D. VALUATION DATA

Was transaction part of an assignment or relocation? ☐ Y ☒ N

1. Actual Cash Consideration	2. Other Consideration	3. Total Consideration
[redacted]	[redacted]	= [redacted]

4. County Assessed Value	5. Common Level Ratio Factor	6. Computed Value
N/A - Easement	X N/A - Easement	= N/A - Easement

E. EXEMPTION DATA - Refer to instructions for exemption status.

1a. Amount of Exemption Claimed	1b. Percentage of Grantor's Interest in Real Estate	1c. Percentage of Grantor's Interest Conveyed
$ [redacted]	N/A %	N/A %

2. Check Appropriate Box Below for Exemption Claimed.

☐ Will or intestate succession. _____ (Name of Decedent) _____ (Estate File Number)

☐ Transfer to a trust. (Attach complete copy of trust agreement identifying all beneficiaries.)

☐ Transfer from a trust. Date of transfer into the trust _____
If trust was amended attach a copy of original and amended trust.

☐ Transfer between principal and agent/straw party. (Attach complete copy of agency/straw party agreement.)

☐ Transfers to the commonwealth, the U.S. and instrumentalities by gift, dedication, condemnation or in lieu of condemnation. (If condemnation or in lieu of condemnation, attach copy of resolution.)

☐ Transfer from mortgagor to a holder of a mortgage in default. (Attach copy of mortgage and note/assignment.)

☐ Corrective or confirmatory deed. (Attach complete copy of the deed to be corrected or confirmed.)

☐ Statutory corporate consolidation, merger or division. (Attach copy of articles.)

☒ Other (Please explain exemption claimed.) Reciprocal Easement Agreement made between the parties for nominal consideration. Exempt under 61 Pa. Code Section 91.193(b)(21).

Under penalties of law, I declare that I have examined this statement, including accompanying information, and to the best of my knowledge and belief, it is true, correct and complete.

Signature of Correspondent or Responsible Party	Date
Julie McAllister	8/20/15

FAILURE TO COMPLETE THIS FORM PROPERLY OR ATTACH REQUESTED DOCUMENTATION MAY RESULT IN THE RECORDER'S REFUSAL TO RECORD THE DEED.

Attachment to Realty Transfer Tax Statement of Value

Grantors:
901 Washington Partners, L.P., a Pennsylvania limited partnership
55 Country Club Drive, Suite 200
Downingtown, PA 19335
(610) 873-5585

David's Bridal, Inc., a Florida corporation
1001 Washington Street
Conshohocken, PA 19428

Grantees:
901 Washington Partners, L.P., a Pennsylvania limited partnership
55 Country Club Drive, Suite 200
Downingtown, PA 19335
(610) 873-5585

David's Bridal, Inc., a Florida corporation
1001 Washington Street
Conshohocken, PA 19428

Tax Parcel Numbers:
65-00-12673-00-6 (1001 Washington Street; owned by David's Bridal, Inc., as successor in interest by merger with 1001 Washington Street, Inc.)

65-00-12672-00-7 (910 Washington Street; owned by 910 Washington Partners, L.P.)

Applicant Name: _____

Development Name: _____

Location of Property: _____

Date: _____

PROJECT COVER SHEET – *Approved at June 6, 2023 Shade Tree Commission Meeting*

To verify fulfillment of Chapter 55 Ordinance requirements for:

1. *Maximum Tree Removal – 55-4B*
2. *Tree Replacement – 55-4D(6)(a)*
3. *Substitutions for Replacements – 55-4F*
4. *Replacement Tree Species – 55-4E*
5. *Tree and Shrub requirements for Chapters other than Chapter 55*

Complete the following tables, filling in data for each lettered item, and resolving each Compliance Test. In accordance with 55-4C(4)(e), provide this completed Cover Sheet together with the Landscape Plan.

Citations to Sections of Chapter 55 are provided for the convenience of the Applicant. Other Chapters of the Whitemarsh Township Code and other sections of Chapter 55, such as 55-2 Definitions, may be relevant. In the event of an inconsistency between this Cover Sheet and any provision of the Code, the language of the Code shall be controlling.

1) <u>Calculation of Requirement for Maximum Tree Removal – 55-4B</u>:

A.	***Total of all existing Trees on the lot with DBH of 6" or greater**, per 55-4C(3)(a).*	
B.	*33% of line (A) =* ***maximum existing Trees which may be Removed.***	
C.	*Provide* ***number of existing Trees proposed to be Removed by the Applicant,** per 55-4C(3)(a).*	
	***COMPLIANCE TEST:** If Line (C) is greater than Line (B), the Applicant's proposal is not in compliance with the requirement that no more than 33% of trees having a DBH of six inches or greater may be removed.*	

2) *Calculation of Replacement Requirement for Removed Trees having a DBH of Six Inches or Greater 55-4D(6)(a):*

D.	***Total DBH of all existing Living and Healthy Trees*** *(as determined per 55-4A) having a DBH of 6" or greater* ***that are proposed to be Removed****, per 55-4C(3)(a).*	
E.	***Total DBH of all Living and Healthy Trees*** *(as determined per 55-4A) having a DBH of 6" or greater,* ***removed within five years prior to the submission of application****, per 55-4C(3)(b).*	
F.	*Sum of line (D) and line (E) =* ***Total DBH that must be replaced for all Removed Living and Healthy Trees.***	
G.	***Total Caliper inches of Canopy Replacement Trees proposed to be planted*** *by the Applicant (as shown on the Landscape Plan) per 55-4D(6)(a). Each Canopy Replacement Tree shall have a minimum Caliper of three inches.*	
	COMPLIANCE TEST: *If Line (G) is less than Line (F), the Applicant's proposal is not in compliance with the minimum Canopy Tree Replacement Requirement.* *To comply with this requirement, the Applicant may request a waiver from the Shade Tree Commission to permit limited substitutions per 55-4F. If so, proceed to Substitution calculation (3) below.*	

3) *Calculation of maximum Proposed Substitutions for Replacement Canopy Trees – 554F, subject to certain limitations and approval by the Shade Tree Commission.*

H.	*40% of line (F) (round fractions down to a whole number) =* ***maximum Caliper of required Replacement Canopy Trees that may be substituted*** *with Understory Trees and/or FIL, upon STC approval, per 55-4F.*	
I.	*Line (F) less Line (G) =* ***Shortfall in DBH compliance with the minimum Canopy Tree Replacement Requirement,*** *per 55-4D(6)(a).*	
	COMPLIANCE TEST: *If line (H) is less than line (I), the deficit of minimum Canopy Tree Replacement requirement, per 55-4D(6) cannot be fully compensated with Substitutions, per 55-4F.*	

J.	*Line (I) divided by 3" (round fractions <u>up</u> to a whole number) =* ***Shortfall in the <u>number</u> of required 3" Canopy Replacement Trees.***	
K.	*Provide the* ***total number of substitution Understory Trees proposed to be planted*** *by the Applicant, per 55-4F(1).*	
L.	*Line (K) divided by two =* ***Number of required 3"-cal. Replacement Canopy Trees being substituted with Understory Trees*** *per 55-4F(1).*	
M.	*Line (J) less Line (L) =* ***Number of required 3"-cal. Replacement Canopy Trees proposed by the Applicant to be substituted with payment of in-lieu fees****, per 55-4F(2).* ***NOTE:*** *Review proposed Landscape Plan to ensure that the use of Replacement Understory Tree substitutes has been maximized prior to calculating the number of substitutes via in-lieu fees, per 55-4F(4).*	
N.	*Sum of Line (L) and Line (M) =* ***Total proposed number of Replacement Canopy Trees being substituted per 55-4F.***	
O.	*Line (N) multiplied by 3" =* ***Total shortfall of DBH to be fulfilled with substitutions*** *as proposed by this Landscape Plan.*	
	COMPLIANCE TEST: *If (O) is greater than (H), the Applicant's proposal has exceeded the 40% maximum eligible for consideration for Replacement substitutions, per 55-4F, and is not in compliance.*	
P.	*Sum of Line (O) and (G) =* ***Total Caliper compensation for Removed Trees*** *as provided by this proposed Landscape Plan.*	
	COMPLIANCE TEST: *If (P) is less than (F), the Applicant's proposal is not in compliance with the Tree Replacement Requirement.*	

4) <u>Compliance with Species Requirement of Replacement Trees – 55-4E</u>:

Q.	***Total number of proposed Canopy Replacement Trees,*** *per 55-4C(4)(c).*	

R.	*75% of line (Q) (round fractions up to the next whole number) =* ***Minimum required number of Native Species Replacement Canopy Trees****, per 55-4E.*	
S.	*Provide the* ***number of proposed Native Species Canopy Replacement Trees,*** *per 55-4C(4)(c).*	
	COMPLIANCE TEST: *If Line (S) is less than Line (R), the Applicant's proposal is not in compliance with the 75% Native Species requirement for Replacement Canopy Trees, per 55-4E.*	
T.	*Provide the* ***number of proposed Native Species Understory Trees****.*	
	COMPLIANCE TEST: *If Line (T) is less than line (K), he Applicant's proposal is not in compliance with the 100% Native Species requirement for Replacement Understory Trees.*	

5) Compliance with Landscaping Requirements of Other Code Chapters. Complete the following Tables for each applicable requirement.

REQUIRED TREES:

A	B	C	D*	E	F**
Full Code Citation: Chapter; sub-chapter, etc.	Subject matter as indicated in Code caption	Required # of Trees	Credits for Preserved Trees per 55-4D(5)	Proposed # of Trees	Column (C) less Columns (D) and (E)

NOTE: Column (D) Credits are strictly limited to calculating Chapter 105-52 Buffer yards, in accordance with 55-4D(5).
****NOTE: When the result in Column (F) is greater than zero, the Applicant's proposal is not in compliance with the applicable Code requirement.***

REQUIRED SHRUBS:

A	B	C	D	E*
Full Code Citation: Chapter; sub-chapter, etc.	Subject matter as indicated in Code caption	Required # of Shrubs	Proposed # of Shrubs	Column (C) less Column (D)

NOTE: When the result in Column (E) is greater than zero, the Applicant's proposal is not in compliance with the applicable Code requirement.

Docusign Envelope ID: F8CBC111-0249-4A1A-8472-B51A2E72F700

CONTRACT FOR PROFESSIONAL SERVICES

THIS AGREEMENT, made this 20th day of November, 2024, by and between the **WHITEMARSH TOWNSHIP AUTHORITY**, a municipal authority organized by and under the laws of the Commonwealth of Pennsylvania, located at 2015 Joshua Road, Lafayette Hill, Montgomery County, Pennsylvania 19444 (hereinafter referred to as "Authority")and **HT 1001 Washington, LLC**, whose mailing address is 300 Yorktown Plaza, Elkins Park, Pennsylvania 19027(hereinafter referred to as "Owner").

W I T N E S S E T H

WHEREAS, the Owner owns certain property, having a tax parcel number of 65-00-12673-00-6 in Whitemarsh Township, Montgomery County, Pennsylvania, whereon Owner desires to submit preliminary plans to Authority for the receipt of sewer services for the above-described premises so that Owner will be able to perform additional improvements; and

WHEREAS, the Authority owns and is engaged in the operation of a sewer system in Montgomery County, Pennsylvania; and

WHEREAS, Owner has requested the Authority to provide sewer service; and

WHEREAS, the Authority is willing to provide sewer service (hereinafter called "Service"), conditioned that same may be provided consistent with the overall plan of the Authority for

Docusign Envelope ID: F8CBC111-0249-4A1A-8472-B51A2E72F700

sewer service in Montgomery County, and in accordance with the requirements, standards and specifications of the Authority.

NOW, THEREFORE, the parties hereto agree as follows:

1. The Owner and the Authority hereby authorize and direct the Authority's Consulting Engineer (hereinafter referred to as "Engineer") and any other professionals that Authority deems necessary to review the Owner site and preliminary plans and make recommendations on the design and specifications and to make any and all engineering surveys and field inspections as are required pursuant to its rules, regulations and proper engineering standards in order to insure that final plans to be submitted by Owner to Authority will reflect proper engineering practices and comply with all Authority rules and regulations.

2. The Owner shall pay: (a) the Engineer's charges and fees for the review and/or preparation of said plans; (b)the Engineer's charges and fees for inspection to existing building sewers and the installation of the facilities that are to be dedicated to the Authority including sewer mains, pump stations, lower pressure systems, grease traps, etc.; (c) reasonable legal fees for legal review and drafting of necessary documents; and (d) administrative costs and expenses which the Authority may incur by reason of this Contract. All charges and fees shall be paid by the Owner as required by the Authority in accordance with Paragraph Owner (3) hereof.

Docusign Envelope ID: F8CBC111-0249-4A1A-8472-B51A2E72F700

3. The Developer hereby agrees to deposit with the Authority the sum of Five Thousand Dollars ($5,000.00) as security for the payment of all costs and expenses, charges and fees as set forth in Paragraph Two (2) hereof, upon date of execution of this Agreement. It is agreed and understood by the parties that neither the Authority, its Solicitor, nor the Engineer shall commence processing this application until said security deposit has been deposited with the Authority.

4. In the event that the Authority shall expend and/or become liable for administrative costs and expense, and/or legal and/or engineering fees in an amount in excess of the deposit referred to in Paragraph Three (3) hereof, the Developer agrees to promptly deposit such additional sum with the Authority after receiving a detailed statement of account, with respect thereto, from the Authority.

5. The Developer and the Authority acknowledge that this Contract represents their full understanding and bargain.

[INTENTIONALLY LEFT BLANK, SIGNATURES ON NEXT PAGE]

IN WITNESS WHEREOF, the parties hereto, intending to be legally bound hereby, set their hands and seals the date and year first above written.

Docusign Envelope ID: F8CBC111-0249-4A1A-8472-B51A2E72F700

WITNESS:

WHITEMARSH TOWNSHIP AUTHORITY

By: _____
Timothy B. Ferris, Chair

WITNESS:

By: _____
~~Michael P. Clarke~~, Solicitor
RUDOLPH CLARKE, LLC
Alexander M. Glassman

WITNESS:

By: _____
DocuSigned by:
David Landskroner
2BAE2D09E8CF45D...
Name: Managing Member
Title:
HT 1001 WASHINGTON LLC



May 1, 2025

VIA HAND-DELIVERY

Charles L. Guttenplan, AICP
Director of Planning and Zoning / Zoning Officer
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

Reference: ***1001 Washington Street***
Preliminary Land Development Plan – Traffic Impact Study
Whitemarsh Township, Montgomery County, PA
Nave Newell No. 2024-001.02

Dear Mr. Guttenplan

On behalf of our client, HT 1001 Washington, LLC, please find enclosed the following items for a Preliminary Plan submission for the above-referenced project located in Whitemarsh Township, Montgomery County, PA (quantities enclosed are listed after each items):

1. Traffic Impact Study prepared by TPD, dated April 29, 2025 (3 copies);

We are submitting this Traffic Impact Study to supplement the Preliminary Land Development submission that was made on March 28, 2025.

If you have any questions or need additional information. Please contact me at (610) 265-8323 or via email at jbannon@navenewell.net.

Sincerely,

James P. Bannon, Jr., PE

JPB/BTK

Enclosure

cc (via email): David Landskroner / Ryan Lohbauer – Hightop Development
Craig R. Lewis, Esq. – Kaplin Stewart

K:\24proj\24001_1001_Washington_Street\RevResp\Township\Guttenplan_Ltr_25-05-01.docx

900 W Valley Rd #1100, Wayne, PA 19087 | PHONE 610 265 8323 | FAX 610 265 4299

April 29, 2025
TPD# HTOP.00002





1001 Washington Street – Multi-family Townhomes

Transportation Impact Study

Whitemarsh Township, Montgomery County, PA

For Submission To:
Whitemarsh Township

2500 East High Street, Suite 650, Pottstown PA 19464 | 610.326.3100 | Info@TPDinc.com

1001 WASHINGTON STREET – MULTI-FAMILY TOWNHOMES
TRANSPORTATION IMPACT STUDY

FOR SUBMISSION TO:

Whitemarsh Township, Montgomery County, PA

Prepared For:
HT 1001 Washington
1331 S. Juniper Street
Philadelphia, PA 19147

April 29, 2025

TPD # HTOP.00002



Prepared By:
TPD
2500 East High Street, Suite 650
Pottstown, Pennsylvania 19464

Phone: (610) 326-3100
Fax: (610) 326-9410
E-mail: TPD@TPDinc.com
Website: www.TPDinc.com

Robert G. Richardson, P.E.
Executive Vice President
Pennsylvania License Number 044727-E

Table of Contents

EXECUTIVE SUMMARY i
INTRODUCTION 1
EXISTING ROADWAY NETWORK 1
EXISTING TRAFFIC CONDITIONS 4
BASE (NO-BUILD) CONDITIONS 5
SCHEDULED ROADWAY IMPROVEMENTS 5
PROPOSED SITE ACCESS 6
TRIP GENERATION 6
TRIP DISTRIBUTION 7
PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES 8
LEVELS OF SERVICE FOR AN INTERSECTION 8
CAPACITY ANALYSIS METHODOLOGY 8
LEVELS OF SERVICE IN THE STUDY AREA 9
95TH PERCENTILE QUEUE ANALYSIS 10
RECOMMENDATIONS AND CONCLUSIONS 11

FIGURES 1 – 8

TECHNICAL APPENDICES

Appendix A: Project Correspondence
Appendix B: Study Area Photographs
Appendix C: Manual Traffic Count Printouts
Appendix D: Nearby Development Information
Appendix E: Traffic Volume Development Worksheets
Appendix F: Capacity Analysis Worksheets
Appendix G: Traffic Signal Plans

EXECUTIVE SUMMARY

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

1. The project site is located on the southern side of Washington Street, opposite Lee Street. The proposed site will consist of a Multi-Family Housing residential development consisting of 46 townhomes.
2. The study area intersections included in this TIS are as follows:
   - Hector Street (S.R. 3059) and North Lane (S.R. 3015)/Station Avenue;
   - Hector Street (S.R. 3059) and Lee Street;
   - Hector Street (S.R. 3059) and Cedar Grove Lane/Barren Hill Road(S.R. 3011) ;
   - Cedar Grove Lane (S.R. 3011) and Joshua Road (S.R. 3014) and;
   - Washington Street and Lee Street.
3. Access to the proposed site will be provided by four (4) full-access driveways to the Washington Street extension.
4. Upon full build-out, the proposed development is expected to generate **13 new vehicle trips** during the weekday A.M. peak hour and **18 new vehicle trips** during the weekday P.M. peak hour.
5. All overall intersection levels of service (ILOS) will operate at an acceptable **ILOS C** or better during 2031 Projected Conditions. Furthermore, under 2031 Projected Conditions all study area intersections will operate at the same overall intersection level of service (ILOS) as 2031 Base Conditions. Therefore, all levels of service at the study area intersections comply with the requirements outlined in PennDOT's TIS Guidelines.
6. Traffic Planning and Design Inc. (TPD) recommends the following roadway improvements as outlined at the study area intersections and site driveway locations:
   - Coordinate with Township Staff regarding the proposed traffic control of Washington Street and its intersections with Lee Street and Station Avenue, respectively.
   - Provide STOP signs (PennDOT designation R1-1) to control exiting traffic
   - Where applicable, provide sidewalk and ADA curb ramps to facilitate pedestrian access.
   - Ensure that adequate sight distance is provided at all site driveway locations.
   - Due to the limited driver's sight distance created by the horizontal curve and proposed Lot 40 townhouse, provide a multi-way stop intersection control for Court D and Washington Street. This intersection control will also serve as a traffic calming measure for Washington Street.
7. Intersection Levels of Service (ILOS) for the study area intersections have been summarized in matrix form. **Table I** details the overall intersection LOS (ILOS) for each study area intersection.
8. With the implementation of the site-related recommendations, it is TPD's opinion that the construction of the proposed development will not adversely affect the health, safety, and welfare of the community from a traffic engineering perspective.

TABLE I
OVERALL INTERSECTION LEVEL OF SERVICE SUMMARY

Intersection	Peak Hour	Existing	Design Year 2031		Meets LOS Requirements?
			Base	Projected	
Hector Street (S.R. 3059) and Lee Street	A.M. Peak Hour	A (1.6)	A (2.2)	A (2.2)	**YES**
	P.M. Peak Hour	A (5.0)	A (6.1)	A (6.2)	
Hector Street (S.R. 3059) and North Lane (S.R. 3015)/Station Avenue[1]	A.M. Peak Hour	C (32.9)	C (22.5)	C (22.5)	**YES**
	P.M. Peak Hour	C (23.8)	C (23.8)	C (24.1)	
Hector Street (S.R. 3059) and Barren Hill Road/Cedar Grove Lane (S.R. 3011)	A.M. Peak Hour	C (33.1)	C (33.7)	C (33.8)	**YES**
	P.M. Peak Hour	D (51.6)	D (54.5)	D (54.5)	
Cedar Grove Lane (S.R. 3011) and Joshua Road (S.R. 3014)	A.M. Peak Hour	B (11.1)	B (11.2)	B (11.2)	**YES**
	P.M. Peak Hour	B (10.8)	B (11.0)	B (11.0)	
Washington Street and Lee Street	A.M. Peak Hour	A (6.9)	A (3.3)	A (3.2)	**YES**
	P.M. Peak Hour	A (5.3)	A (4.1)	A (4.0)	

Base = No-Build scenario -
Projected = Build scenario
Unsignalized ILOS calculated in accordance with Figure 5 of Policies and Procedures for Transportation Impact Studies.
[1]= Due to the all-pedestrian phase, LOS results were obtained from Synchro due to limitations in HCM 6th Edition.

INTRODUCTION

Traffic Planning and Design, Inc. (TPD) has completed a Transportation Impact Study (TIS) for the proposed Multi-Family Housing residential development in Whitemarsh Township, Montgomery County, Pennsylvania. The project site is located on the southern side of Washington Street, opposite Lee Street and east of Station Avenue, as shown in **Figure 1**. As shown in **Figure 2**, the proposed site will consist of a Multi-Family Housing residential development consisting of **46 townhomes**. It should be noted that the residential development is in close proximity to the SEPTA Spring Mill Train Station. It is anticipated that some tenants of the proposed residential development will utilize SEPTA to commute to/from work. The first townhouse is anticipated to be sold and occupied in 2026; TPD assumed an analysis year of 2031.

This report has been prepared in accordance with PennDOT's *Policies and Procedures for Transportation Impact Studies*, found in PennDOT's Publication 282, Appendix A, dated February 2024 and in accordance with the Whitemarsh Township Zoning Ordinance. The project scope and the extent of the study area were confirmed with representatives of Whitemarsh Staff through email correspondence. All relevant correspondence with the Township pertaining to this project has been included in **Appendix A**.

Site Access Locations

Access to the proposed site will be provided by four (4) full-access driveways to Washington 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**. Photographs of the study area intersections are included in **Appendix B**.

TABLE 1
ROADWAY CHARACTERISTICS WITHIN STUDY AREA

Roadway	Ownership	Functional Classification/ Roadway Type	Predominant Directional Orientation	Average Daily Traffic[1]	Posted Speed Limit
Hector Street	State (S.R. 3059)	Urban Minor Arterial	East-West	10,153	25 mph/ 35 mph
Lee Street	Township	Local Road	North-South	--	35 mph
North Lane	State (S.R. 3015)	Urban Collector	North-South	3,796	35 mph
Station Avenue	Township	Local Road	North-South	--	Not Posted
Barren Hill Road/ Cedar Grove Lane	State (S.R. 3011)	Urban Collector	North-South	5,051	35 mph
Joshua Road	State (S.R. 3014)	Urban Minor Arterial	East-West	6,146	35 mph
Washington Street	Township	Local Road	East-West	--	25 mph

1= Average Daily Traffic Volumes taken from PennDOT's Traffic Information Repository (TIRe) in April 2025

Land Use Context

In Chapter 4 of the *Smart Transportation Guidebook*, dated March 2008, 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 Town/Village Neighborhood designation, as described below:

> ***Town/Village Neighborhood***, *"Predominantly residential neighborhoods, sometimes mixed with retail, restaurants and offices. In urban places, residential buildings tend to be close to the street. . . .Block sizes are regular and often small in comparison to suburban neighborhood blocks. Even where streets are narrow, on-street parking is common and typically well used. The large majority of neighborhoods have sidewalks."*

Roadway Type

In Chapter 5 of the Smart Transportation Guidebook, 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 5.1 of the *Smart Transportation Guidebook*, the study area roadways best fit the following categories, as described below:

> ***Community Collector***, traffic volumes of 5,000 to 15,000 vehicles per day, intersection spacing of 300 to 660 feet, a desired operating speed of 25-55 mph, and a description as follows: "*often similar in appearance to a community arterial. Typically classified as Major Collector.*"
>
> - Hector Street (S.R. 3059);
> - Barren Hill (S.R. 3011).
>
> ***Neighborhood Collector***, traffic volumes of <6,000 vehicles per day, intersection spacing of 300 to 660 feet, a desired operating speed of 25-35 mph, and a description as follows: "*similar in appearance to local*

roadways. Typically classified as Minor Collector."

- North Lane (S.R. 3015);
- Joshua Road (S.R. 3014);
- Cedar Grove Lane (S.R. 3011).

Local Road, traffic volumes of <3,000 vehicles per day, intersection spacing of 000 to 660 feet, a desired operating speed of 20-30 mph.

- Station Avenue;
- Lee Street;
- Washington Street

Bicycle and Pedestrian Facilities

Based on observations during field visits, sidewalks are currently present on both sides of Hector Street, the west side of Lee Street, the west side of Station Avenue, and both sides of North Lane. Sidewalks are also present on the east side of Station Avenue south of the SEPTA park and ride. At the unsignalized intersection of Hector Street and Lee Street, crosswalks are present on the eastbound, northbound and southbound approaches. The signalized intersection of Hector Street & North Lane has crosswalks on all four approaches and includes a pedestrian-only phase where vehicular traffic on all approaches stops to allow pedestrian crossing.

The Schuylkill River Trail passes along the northern side of the proposed site, north of the railroad tracks. The trail accommodates bicycles and pedestrians and continues west to Valley Forge and east to Philadelphia.

Mass Transit Facilities

The Whitemarsh/Conshohocken area is provided with public transportation by the SEPTA Manayunk/ Norristown Line. Access to the Manayunk/Norristown Line is available in the vicinity of the proposed site via the Spring Mill Station, located directly east of the site on Station Avenue. Additionally, SEPTA Bus Route 97 serves the study area via stops on Hector Street. The route provides services to the Norristown Transportation Center and to Barren Hill.

Crash Data Investigation

Crash data were obtained from PennDOT for the study area intersections. PennDOT defines a reportable crash as follows, "A reportable (crash) is one in which an injury or fatality occurs or if at least one of the vehicles involved requires towing from the scene." Reportable crashes were tabulated for the five-year time period beginning 1/1/2019 and ending 12/31/2023. For a given intersection, PennDOT considers a crash occurrence of 5 reportable, correctable crashes over a continuous twelve-month period during the past five years to be a threshold value, above which the intersection design should be reviewed to examine if corrective measures can be taken to enhance safety. The number of reportable crashes at the study area intersections is shown in **Table 2.**

TABLE 2
PENNDOT REPORTABLE CRASH DATA

Study Area Intersection	Number of Reportable Crashes				
	2019	2020	2021	2022	2023
Hector Street (S.R. 3059) and Lee Street	2	0	0	0	0
Hector Street (S.R. 3059) and North Lane (S.R. 3015)/Station Avenue	1	1	0	0	0
Hector Street (S.R. 3059) and Barren Hill Road/Cedar Grove Lane (S.R. 3011)	1	0	0	1	0
Cedar Grove Lane (S.R. 3011) and Joshua Road (S.R. 3014)	0	1	0	2	0
Washington Street and Lee Street	0	0	0	0	0

Based on a review of the crash data, there were no continuous twelve-month periods during the past five years where 5 or more crashes occurred that were deemed correctable.

EXISTING TRAFFIC CONDITIONS

Manual Turning Movement Counts

Manual traffic counts 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. Data pertaining to heavy vehicles, pedestrians and transit vehicles were observed during the manual counts. Peak hours and count dates for the study area intersections are identified in **Table 3**.

TABLE 3
MANUAL TRAFFIC COUNT INFORMATION

Intersection	Date of Traffic Counts	Time Period	Intersection Peak Hour[1]
Hector Street (S.R. 3059) and Lee Street	Thursday, March 6, 2025	Weekday A.M.	7:45 to 8:45 A.M.
		Weekday P.M.	4:45 to 5:45 P.M.
Hector Street (S.R. 3059) and North Lane (S.R. 3015)/Station Avenue	Thursday, March 6, 2025	Weekday A.M.	7:45 to 8:45 A.M.
		Weekday P.M.	4:45 to 5:45 P.M.
Hector Street (S.R. 3059) and Barren Hill Road/Cedar Grove Lane (S.R. 3011)	Thursday, March 6, 2025	Weekday A.M.	7:30 to 8:30 A.M.
		Weekday P.M.	4:30 to 5:30 P.M.
Cedar Grove Lane (S.R. 3011) and Joshua Road (S.R. 3014)	Thursday, March 6, 2025	Weekday A.M.	7:45 to 8:45 A.M.
		Weekday P.M.	4:45 to 5:45 P.M.
Washington Street and Lee Street	Thursday, March 6, 2025	Weekday A.M.	8:00 to 9:00 A.M.
		Weekday P.M.	4:15 to 5:15 P.M.

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

Existing condition traffic volumes for the weekday A.M., weekday P.M. peak hours are illustrated in **Figure 3**. Manual traffic count data sheets are provided in **Appendix C.**

BASE (NO-BUILD) CONDITIONS

Annual Background Growth

A background growth factor for the roadways in the study area was developed based on growth factors for August 2024 to July 2025 obtained from the PennDOT Bureau of Planning and Research (BPR). The PennDOT BPR suggests using a background growth trend factor of 0.17% per year in Montgomery County for urban non-interstate roadways. As such, the background growth factor was applied annually to yield overall growth percentages of 1.02% (0.17% per year, compounded over 6 years) for the 2031 design year.

Nearby Proposed Developments

Base (no-build) traffic conditions were calculated to include traffic volumes from proposed developments, which, though not operating under existing conditions, may be operating by the design year (2031) of the proposed development. Based on correspondence/discussions with Whitemarsh Township staff, the following nearby planned developments were specifically brought to TPD's attention to be included if necessary in this study:

901 Washington Street is a proposed residential development consisting of 62 multi-family homes located along Washington Street. TPD ran trip distributions for the development. At the time of the manual traffic counts, approximately 35% of the units have been built. As a conservative measure, the total trips associated with this development **are included** in this traffic impact study and distributed throughout the study area roadways. Information about this development is provided in **Appendix D**.

The additional traffic volumes due to background growth and background developments were added to the existing traffic data to produce 2031 base (no-build) condition traffic volumes. The trip distributions for the near-by development is provided in **Figure 4**. Base condition volumes for the weekday A.M. and weekday P.M. peak hours are illustrated in **Figure 6** for the 2031 conditions.

SCHEDULED ROADWAY IMPROVEMENTS

Programmed Improvements

Based upon a review of the PennDOT 12-Year Plan and DVRPC Transportation Improvement Plan (TIP), there are no planned roadway improvements that will affect the intersections within the study area. However, based upon a review of the Whitemarsh Township Transportation Capital Improvement Plan (TCIP), the following improvements have been identified at the following intersections:

Non Site-Related Improvements

A number of roadway improvements are scheduled or planned within the study area by Whitemarsh Township and/or private developers, as discussed below.

Whitemarsh Township Improvements

Based upon a review of the Whitemarsh Township Transportation Capital Improvement Plan (TCIP), the following improvements have been identified at the following intersections:

Hector Street and North Lane/Station Avenue

- 2010 Pass-Through Condition – Install right-turn lane on southbound North Lane;
- 2010 New Development Condition – Install additional through lane on eastbound Hector St;

» 2010 Pass-Through and New Development Conditions – Optimize signal timings at the intersection.

Cedar Grove Road and Joshua Road

» 2010 Pass-Through Condition – Install Traffic Signal;

» 2010 New Development Condition – Widen Cedar Grove Road to install WB right-turn lane, and traffic signal modifications.

It should be that these roadway improvements presented above are part of the Township Capital Improvement Plan (TCIP) and were not included in the synchro analysis as

PROPOSED SITE ACCESS

Access to the proposed site will be provided by four (4) full-access driveways to Washington Street.

TRIP GENERATION

The trip generation rates for the proposed development were obtained from the manual *Trip Generation*, Tenth Edition, 2017, an Institute of Transportation Engineers (ITE) Informational Report. The statistics in *Trip Generation* are empirical data based on more than 4,800 trip generation studies. 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 development, data for Land Use Code 220 (Multi-family 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 4** shows the rates/equations and directional percentages for the analyzed time periods.

TABLE 4
ITE TRIP GENERATION DATA

Land Use	ITE #	Time Period	Equations/Rates	Entering %	Exiting %
Single-Family Attached Housing (46 units)	215	Weekday A.M. Peak Hour	T = 0.52(X) - 5.70	25%	75%
		Weekday P.M. Peak Hour	T = 0.60(X) - 3.93	59%	41%
		Weekday	T = 7.62(X) - 50.48	50%	50%

T = number of site-generated vehicular trips
X = independent variable (dwelling units)

It should be noted that the proposed development is in close proximity to the SEPTA Train Station. It should be noted that the residential development is in close proximity to the SEPTA Train Station. It is anticipated that some tenants of the proposed residential development will utilize SEPTA to commute to/from work. Based on the location of the proposed residential development and the close proximately of the existing transit amenities, **TPD assumed a 25% trip reduction during the weekday A.M. and weekday P.M. peak hours, to be consistent with Table B.3 in the Institute of Transportation Engineers (ITE) Handbook.**

The calculated trip generation for the proposed development is shown in **Table 5**. For the purposes of this study, TPD assumed full build-out of the development by 2031.

TABLE 5
TRIP GENERATION SUMMARY

Time Period	901 Washington Street Development				
	Total Trips	TOD Reduction[1]	Total Trips[2]	Enter (Vehicle Trips)	Exit (Vehicle Trips)
Weekday	300	-75	**225**	170	170
A.M. Peak Hour	18	-5	**13**	3	10
P.M. Peak Hour	24	-6	**18**	11	7

1 = Includes 25% trip reduction due to TOD reductions (residents utilizing SEPTA to/from work)
2 = Total Trips Minus the 25% TOD reduction

Based on the trip generation analysis summarized in **Table 5**, the proposed development will generate approximately **13 new vehicle trips** during the weekday A.M. peak hour and **18 new vehicle trips** during the weekday P.M. peak hour at full build out.

TRIP DISTRIBUTION

Existing Trip Redistribution

As part of the 1001 Washington Street development, Washington Street is proposed to connect to Station Avenue. This connection is anticipated to redistribute traffic from Hector Street onto Washington Street. TPD assumed **15%** of all traffic on Hector Street would instead use Washington Street. Existing trip redistributions are shown in **Figure 5.**

New Trips

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 locations. The new trips for the proposed development were distributed to the local roadway network based on the percentages shown in **Table 6**.

TABLE 6
TRIP DISTRIBUTION PERCENTAGES – New Trips

Direction - To/From	Assignment (To/From)	Distribution Percentage
East	via Barren Hill Road	20%
	via Joshua Road	10%
West	via Washington Street Extension	50%[1]
North	via North Lane	10%
	via Cedar Grove Road	10%

1 = Washington Street Extension to be built. Assumed 50% of traffic will exit Washington Street to the west.

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 7**.

PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES

The site-generated trips for the proposed development were added to the 2022 base (no-build) condition traffic volumes to develop 2022 projected (build) condition traffic volumes. Projected condition traffic volumes for the opening year of 2022 for the weekday A.M. and weekday P.M. peak hours are shown in **Figure 8**. Traffic volume development worksheets are contained in **Appendix E**.

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 7**. Delay, as it relates to level of service, is a complex measure and is dependent upon a number of variables. For signalized intersections, these variables include the quality of vehicle progression, the cycle length, the green time ratio, and the volume/capacity ratio for the lane group in question. For unsignalized intersections, delay is related to the availability of gaps in the flow of traffic on the major street and the driver's discretion in selecting an appropriate gap for a particular movement from the minor street (straight across, left or right turn).

TABLE 7
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* (HCM) using *Synchro 12* software, a Trafficware product.

The following conditions were analyzed, as applicable:

- Existing conditions;
- 2031 Base conditions (Build-out year without development);
- 2031 Projected conditions (Build-out year with development).

It should be noted that based on methodologies contained in Chapter 10 of PennDOT's Publication 46, TPD adjusted the following HCM 6th edition default values in the *Synchro 12* capacity analysis. These adjustments

were made at the signalized intersections within the study area for all time periods based on the study area location being classified as Suburban:

- Base saturation flow rates for signalized intersections. The saturation flow rate was changed from the default value of 1900 to 1800 based on Exhibit 10-9.
- Start-up lost time and extension of effective green time for signalized intersections. The startup lost time was changed from the default value of 2.0 seconds to 2.5 seconds. Based on the total clearance time (yellow plus all-red time) being greater than 5 seconds, the extension of green time was changed from the default value of 2 seconds to 3.5 seconds. These adjusted values were based on Exhibit 10-10.

Please note that the HCM 6th edition can only analyze intersections where all approaches have speed limits between 25 and 55 mph. To use the HCM methodology for the study area intersections, any roadway speed limits below 25 mph were adjusted to 25 mph.

The capacity analysis worksheets are included in **Appendix F.** The PennDOT-approved signal plans are included in **Appendix G.**

PennDOT's Transportation Impact Study Guidelines outlined in PennDOT's *Policies and Procedures for Transportation Impact Studies*, found in PennDOT's Publication 282, Appendix A, dated February 2024 contain the following criteria regarding levels of service:

- 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.
- 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.
- If signalization is the preferred alternative for mitigation, overall intersection LOS C in rural areas and LOS D in urban areas is acceptable.
- New signalized or unsignalized intersection established to serve as access to the development shall be designed to operate at minimum LOS C for rural areas, and minimum LOS D for urban areas.

LEVELS OF SERVICE IN THE STUDY AREA

Level of service (LOS) matrices for the study area intersections are shown in **Table 8** for the weekday A.M. and weekday P.M. peak hours. Per PennDOT standards, the signal timings at the signalized study area intersections have been optimized under base conditions and projected conditions.

TABLE 8
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY

Movement	Weekday A.M. Peak Hour			Weekday P.M. Peak Hour		
	Existing Conditions	2031 Design Year		Existing Conditions	2031 Design Year	
		Base	Projected		Base	Projected
Hector Street (S.R. 3059) and Lee Street						
EB LTR	B	A	A	A	A	A
WB LTR	A	A	A	A	B	B
NB LTR	B	B	B	C	C	C
SB LTR	C	C	C	E	E	E
ILOS	**A (1.6)**	**A (2.2)**	**A (2.2)**	**A (5.0)**	**A (6.1)**	**A (6.2)**
Hector Street (S.R. 3059) and North Lane (S.R. 3015)/ Station Ave[1]						
EB L	B	B	B	B	B	B
EB TR	B	B	B	C	C	C
WB L	B	B	B	B	C	C
WB TR	D	C	C	C	C	C
NB LTR	C	C	C	C	C	C
SB LTR	D	D	D	C	C	C
ILOS	**C (32.9)**	**C (22.5)**	**C (22.5)**	**C (23.8)**	**C (23.8)**	**C (24.1)**
Hector Street (S.R. 3059) and Barren Hill Road/ Cedar Grove Lane (S.R. 3011)						
EB LT	C	C	C	F (123.2)	F (132.6)	F (134.0)
EB R	B	B	B	F (v/c >1)	F (v/c >1)	F (v/c >1)
WB LTR	C	C	C	C	C	C
NB L	D	D	D	D	D	D
NB TR	C	C	C	C	C	C
SB LTR	D	D	D	C	C	C
ILOS	**C (33.1)**	**C (33.7)**	**C (33.8)**	**D (51.6)**	**D (54.5)**	**D (54.5)**
Cedar Grove Lane (S.R. 3011) and Joshua Road (S.R. 3014)						
WB LR	B	B	B	B	B	B
NB TR	A	A	A	B	B	B
SB LT	B	B	B	B	B	B
ILOS	**B (11.1)**	**B (11.2)**	**B (11.2)**	**B (10.8)**	**B (11.0)**	**B (11.0)**
Washington Street and Lee Street						
EB L	A	A	A	A	A	A
SB LR	A	A	A	A	B	B
ILOS	**A (6.9)**	**A (3.3)**	**A (3.2)**	**A (5.3)**	**A (4.1)**	**A (4.0)**

Base = No-Build scenario
Projected = Build scenario
[1] = Due to the all-ped phase, LOS results were obtained from Synchro due to limitations in HCM 6th Edition.

As shown in **Table 8** under the 2031 projected conditions with the development of the proposed site, the study area intersections will operate at the **same overall intersection level of service (ILOS) as under 2031 Base Conditions**, during the weekday A.M. and weekday P.M. peak hours.

95TH PERCENTILE QUEUE ANALYSIS

Queue analyses were conducted at the study area intersections using *Synchro 12* software. For this analysis, the 95th percentile queue is defined as the queue length that is exceeded in 5% of the signal cycles. As an example, for a signal with a 90-second cycle, this means that the 95th percentile queue length will be exceeded

during 2 of the 40 signal cycles that occur during the peak hour. The queue analysis results are summarized in **Table 9** for the analyzed peak hours.

TABLE 9
95TH PERCENTILE QUEUE ANALYSIS

Movement	Available Storage	Weekday A.M. Peak Hour			Weekday P.M. Peak Hour		
		Existing Conditions	2031 Design Year		Existing Conditions	2031 Design Year	
			Base	Projected		Base	Projected
Hector Street (S.R. 3059) and Lee Street							
EB LTR	--	<25	<25	<25	<25	<25	<25
WB LTR	---	<25	<25	<25	<25	<25	<25
NB LTR	--	<25	<25	<25	<25	25	25
SB LTR	--	<25	<25	<25	83	85	85
Hector Street (S.R. 3059) and North Lane (S.R. 3015)/ Station Ave[1]							
EB L	180'	78	59	59	66	64	64
EB TR	--	171	162	163	565	513	516
WB L	100'	<25	29	29	<25	29	34
WB TR	--	712	566	564	380	368	370
NB LTR	--	45	85	89	46	95	98
SB LTR	--	140	143	143	151	154	155
Hector Street (S.R. 3059) and Barren Hill Road/ Cedar Grove Lane (S.R. 3011)							
EB LT	--	103	108	110	355	383	385
EB R	80'	303	310	310	575	608	605
WB LTR	--	<25	<25	<25	<25	<25	<25
NB L	130'	433	440	443	220	225	228
NB TR	--	50	53	50	48	48	48
SB LTR	--	330	345	345	178	188	190
Cedar Grove Lane (S.R. 3011) and Joshua Road (S.R. 3014)							
WB LR	--	65	65	68	40	40	43
NB TR	--	28	28	28	55	55	58
SB LT	--	30	30	30	38	38	38
Washington Street and Lee Street							
EB L	--	<25	<25	<25	<25	<25	<25
SB LR	--	<25	<25	<25	<25	<25	<25

Base = No-Build scenario
Projected = Build scenario
[1] = Due to the all-ped phase, LOS results were obtained from Synchro due to limitations in HCM 6th Edition.

As shown in **Table 9**, all of the Projected Condition queues will be accommodated within the proposed storage length, or if the Projected Condition queue cannot be accommodated with the proposed storage length, it will be less than or comparable to the base ("no-build") queue (within 1 vehicle length).

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

RECOMMENDATIONS AND CONCLUSIONS

The recommendations and conclusions for this Transportation Impact Study are identified in the Executive Summary.



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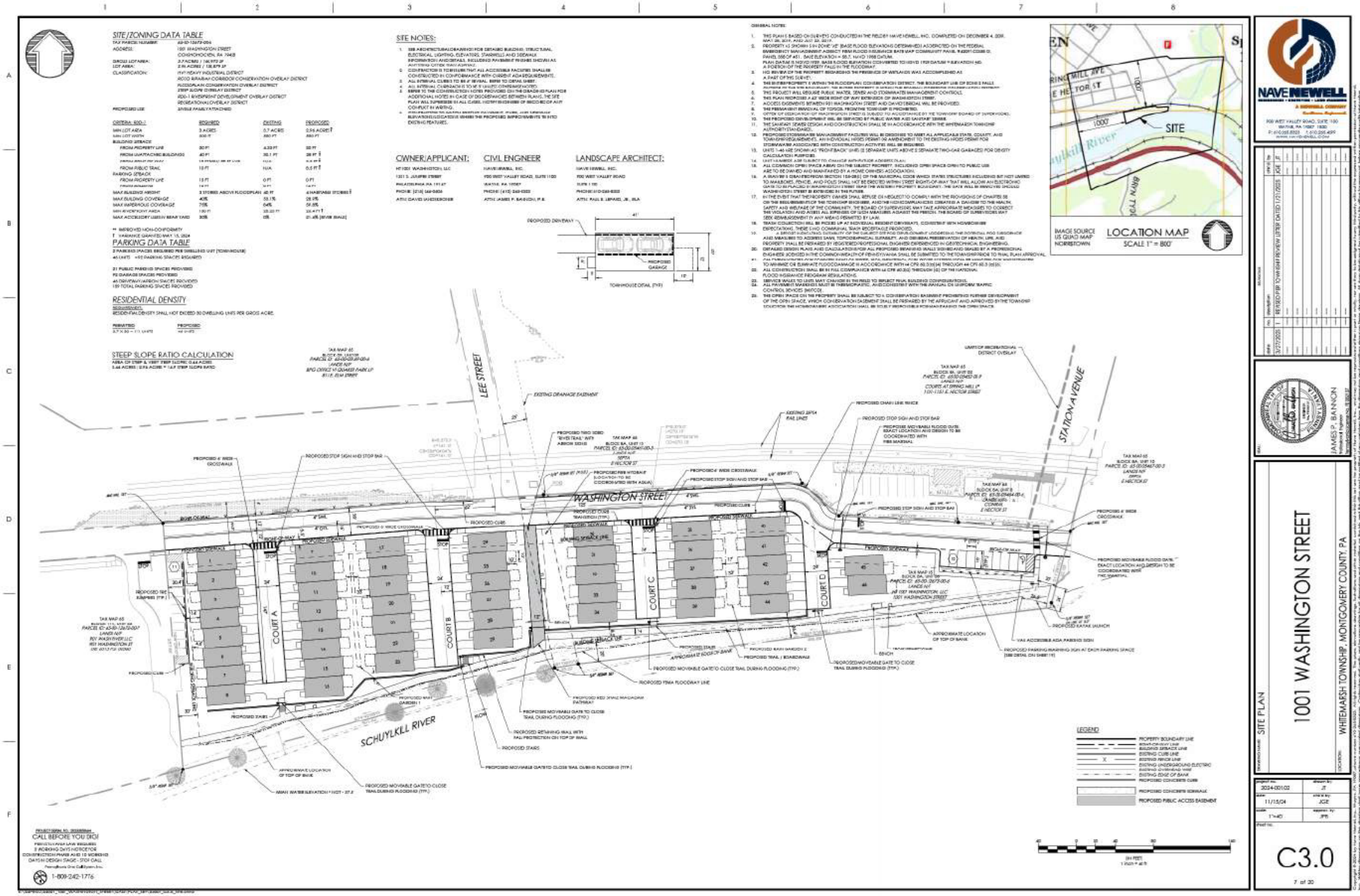
FIGURE 1

PROJECT LOCATION



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no.	description	date	drawn by
1	RESUBMIT PB TOWNSHIP REVIEW LETTER DATED 12/7/2023	3/27/2025	JCE

JAMES P. BANNON
Licensed Engineer
Commonwealth of Pennsylvania
No. 084437

project no.	2024-00102
drawn by	JT
date	11/15/24
checked by	JCE
scale	1"=40'
approved by	JPB

sheet no.
C3.0
7 of 20

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FIGURE 2

SITE PLAN

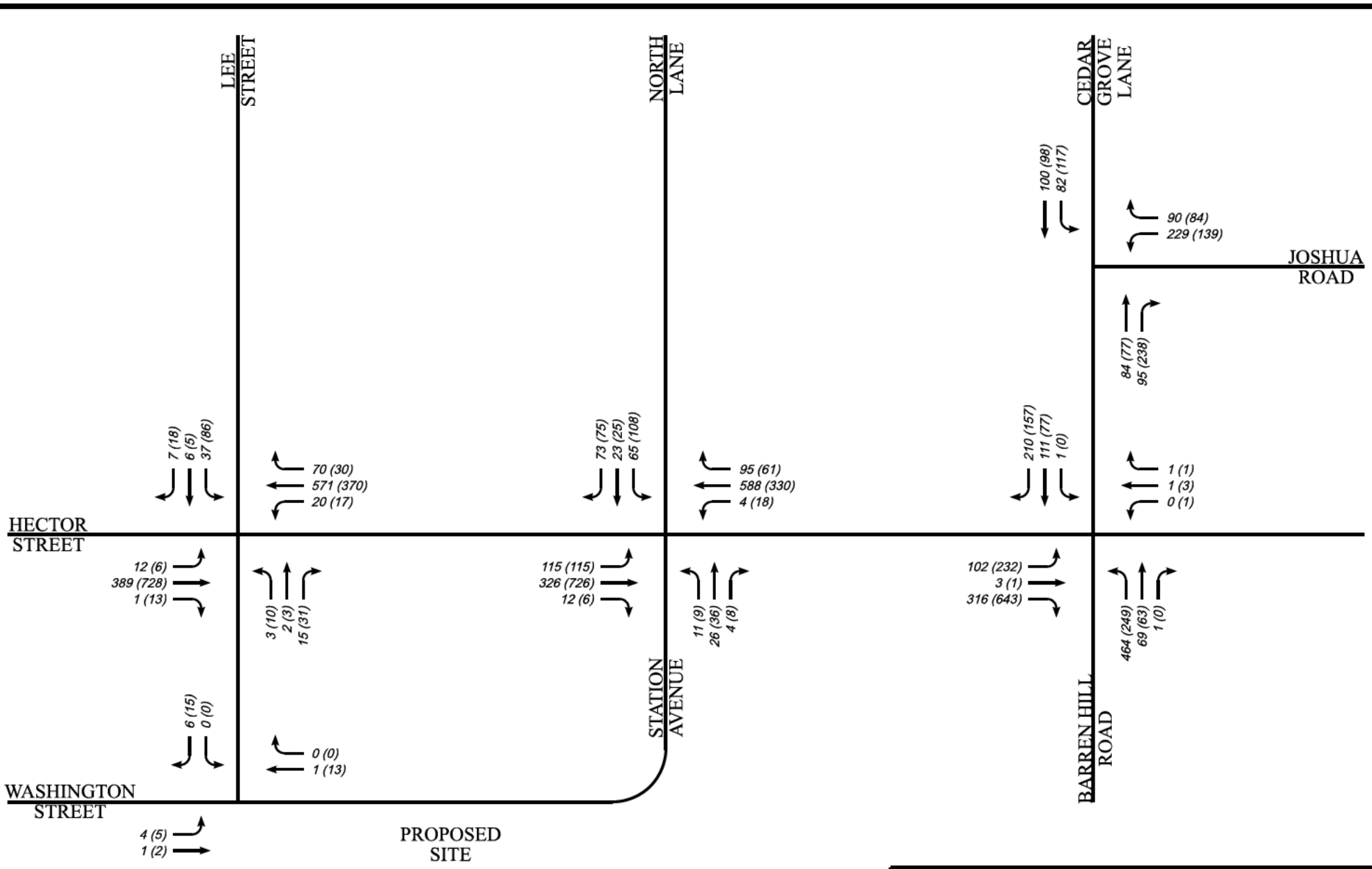

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FIGURE 3

2025 EXISTING CONDITIONS
A.M. PEAK HOUR (P.M. PEAK HOUR)
VEHICULAR TRAFFIC VOLUMES

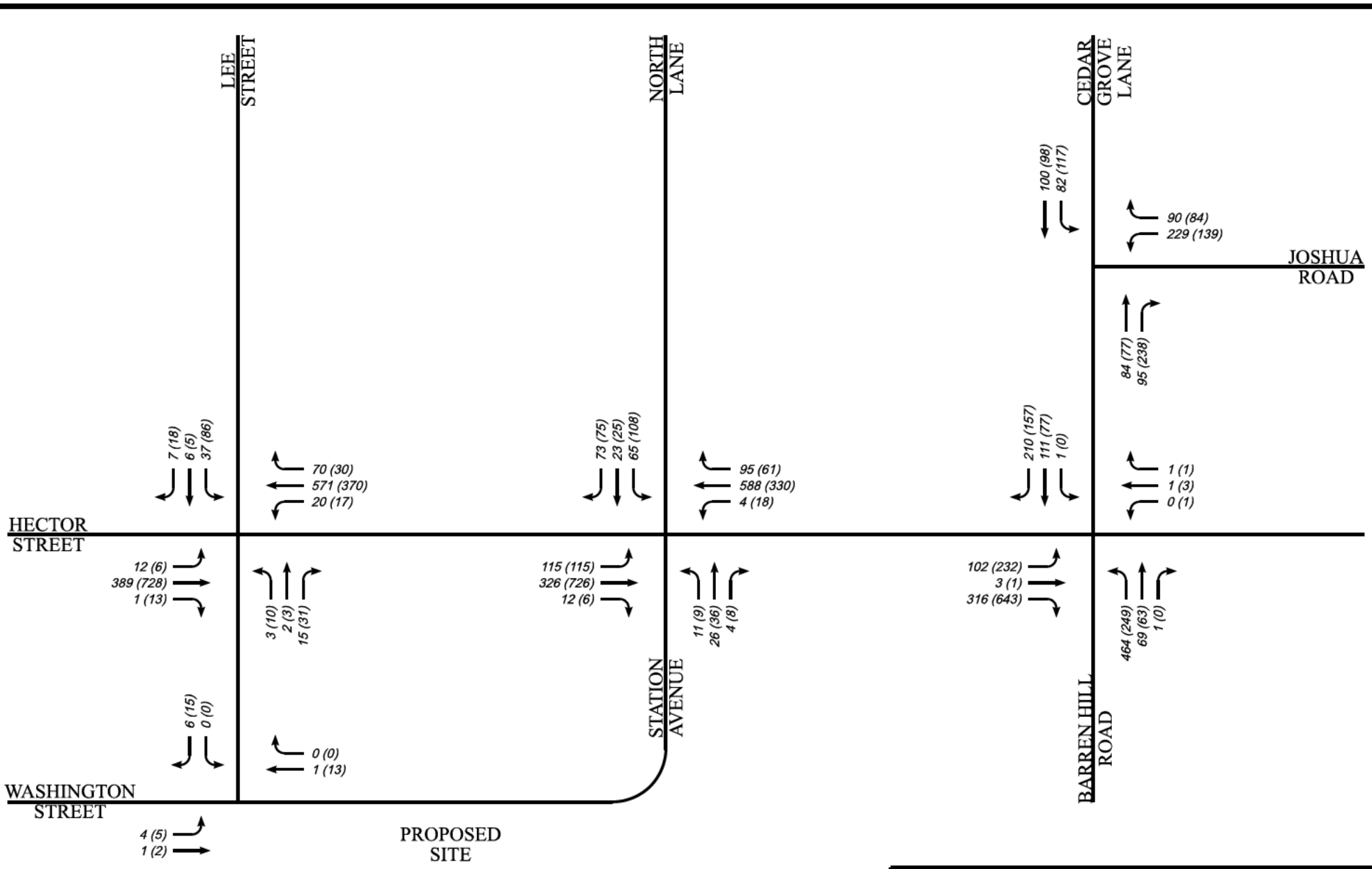

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FIGURE 4

NEARBY DEVELOPMENT
901 WASHINGTON STREET
A.M. PEAK HOUR (P.M. PEAK HOUR)
VEHICULAR TRAFFIC VOLUMES

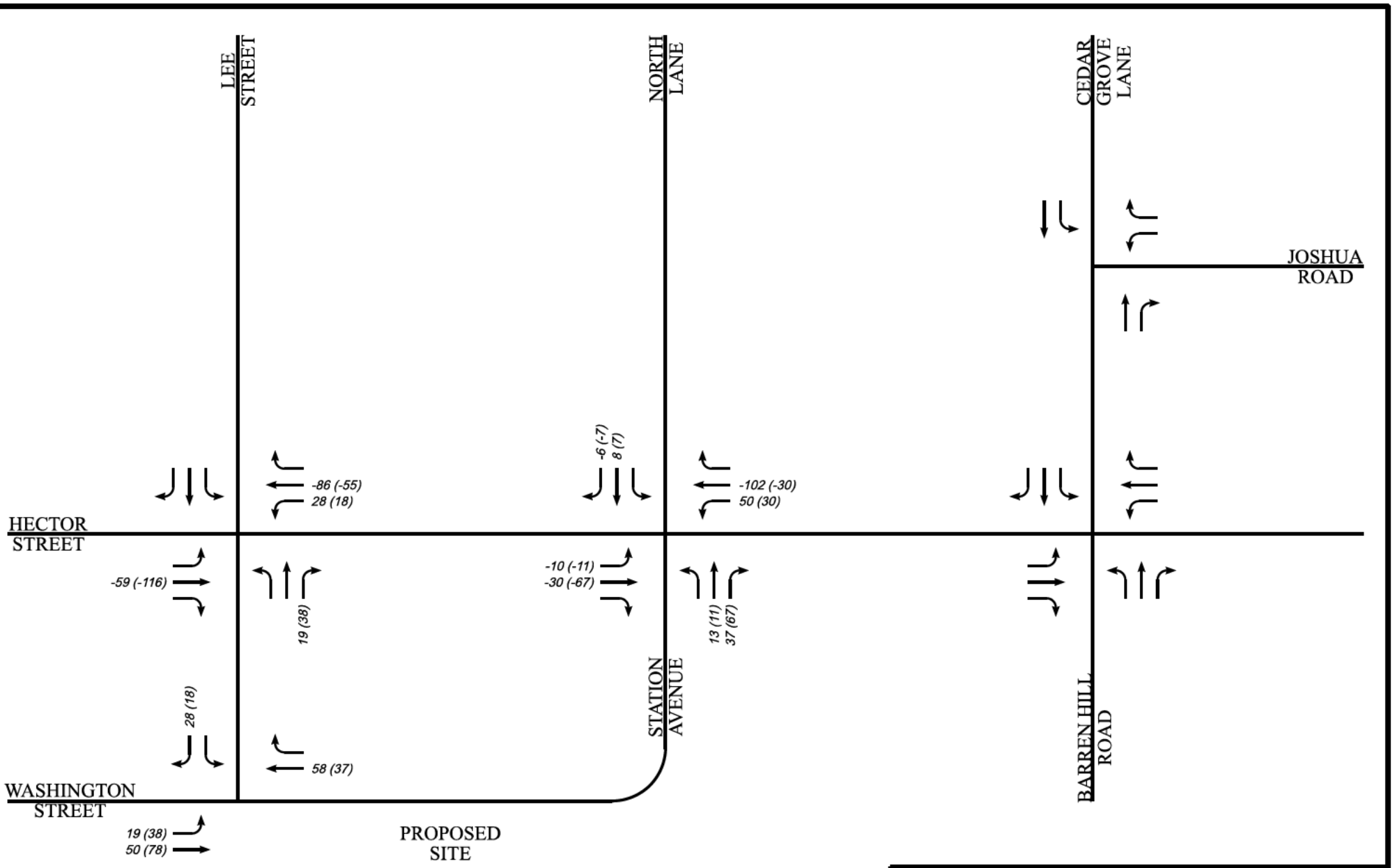
LEE STREET
NORTH LANE
CEDAR GROVE LANE
JOSHUA ROAD
HECTOR STREET
-86 (-55)
28 (18)
-6 (-7)
8 (7)
-102 (-30)
50 (30)
-59 (-116)
19 (38)
-10 (-11)
-30 (-67)
13 (11)
37 (67)
28 (18)
58 (37)
STATION AVENUE
BARREN HILL ROAD
WASHINGTON STREET
19 (38)
50 (78)
PROPOSED SITE
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FIGURE 5
EXISTING TRAFFIC REDISTRIBUTION
A.M. PEAK HOUR (P.M. PEAK HOUR)
KEY:
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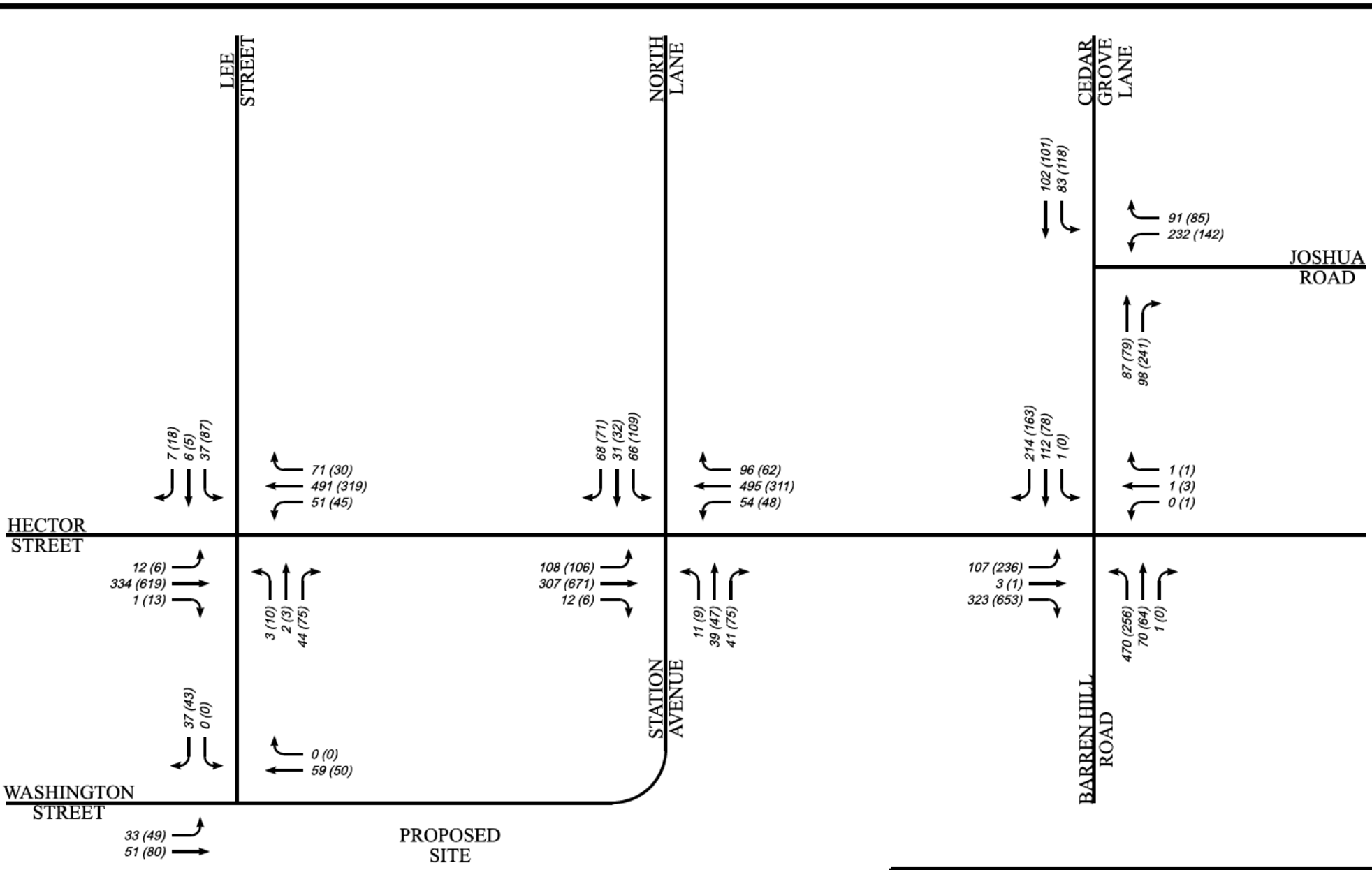

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FIGURE 6

2031 BASE (NO-BUILD) CONDITIONS
A.M. PEAK HOUR (P.M. PEAK HOUR)
VEHICULAR TRAFFIC VOLUMES

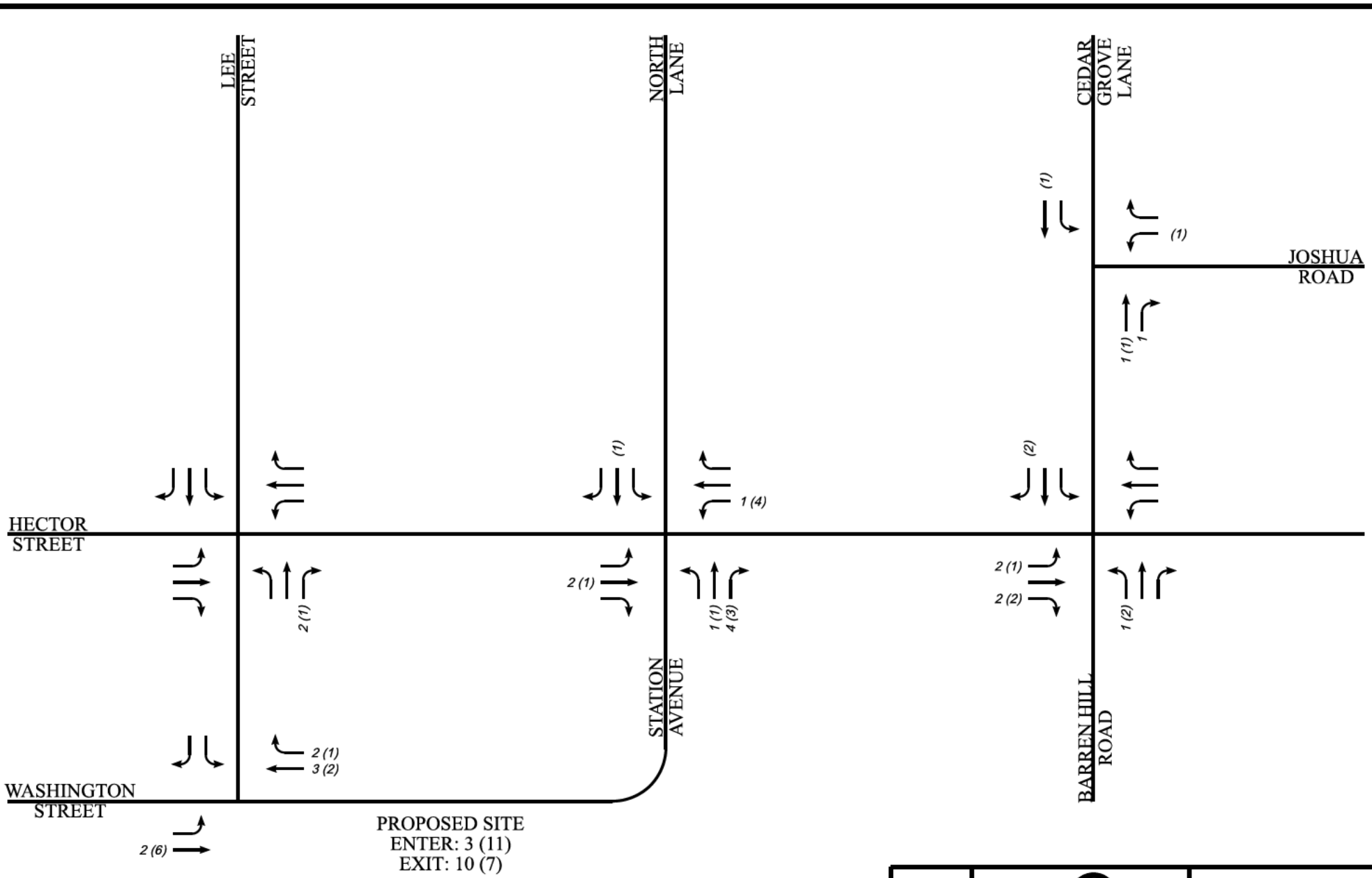

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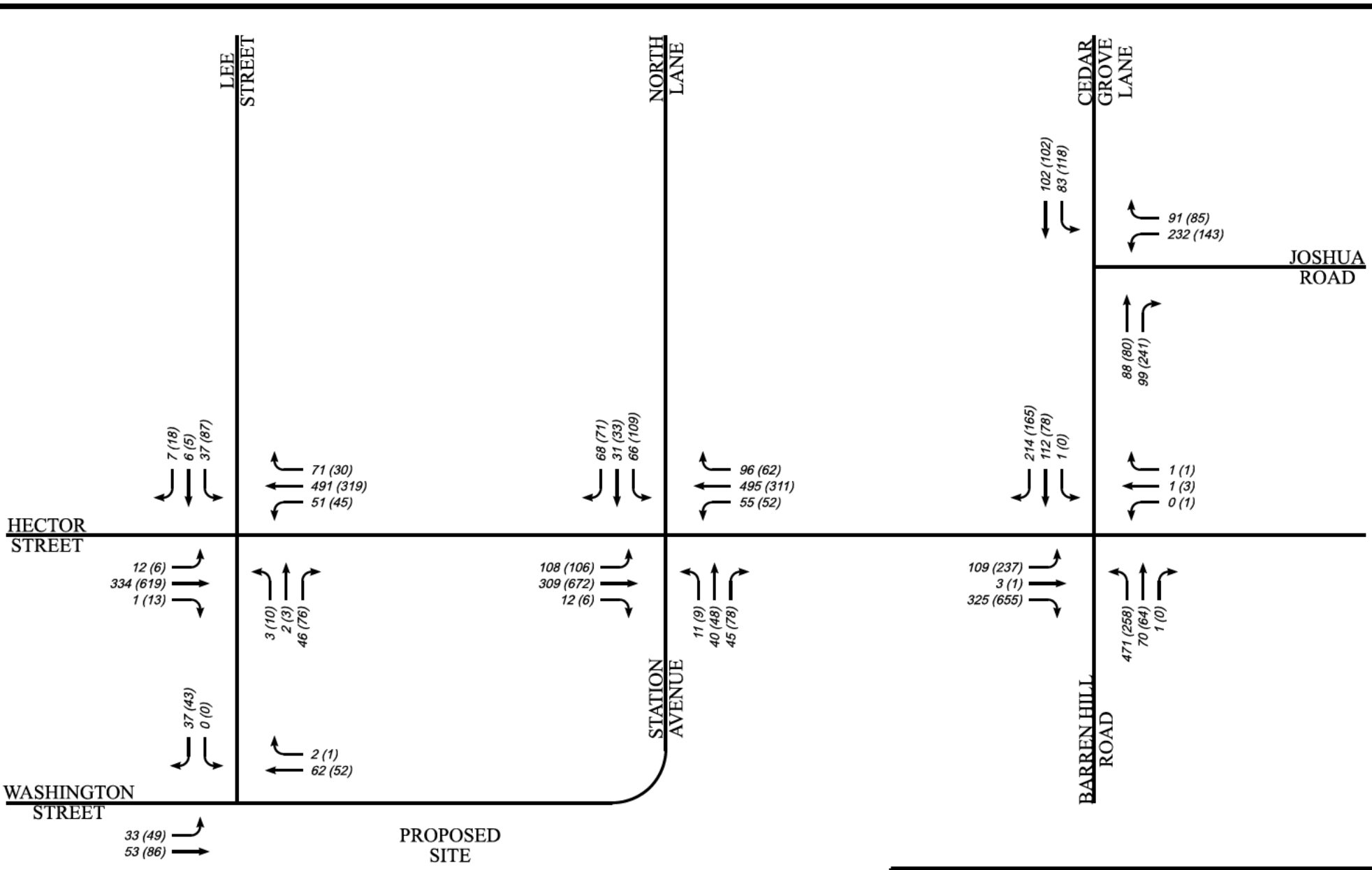
FIGURE 7

SITE TRIPS
A.M. PEAK HOUR (P.M. PEAK HOUR)



KEY:

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FIGURE 8

2031 PROJECTED (BUILD) CONDITIONS
A.M. PEAK HOUR (P.M. PEAK HOUR)
VEHICULAR TRAFFIC VOLUMES

APPENDIX A:
Project Correspondence

1001 Washington Street Townhomes Traffic and Site Plan Discussion

April 16, 2025

Participants:

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Damon Drummond, Gilmore
Kristin Norwood, Gilmore
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Jim Bannon, Nave Newell
Paige Glassman, TPD

Notes:

- Traffic counts were completed. TPD is intends to submit the traffic study to Township soon. The traffic study was conducted to be consistent with the 901 Washington Street study. Intersections included are as follows:
    - Hector Street and Lee Street
    - Hector Street and Station Avenue/North Lane
    - Hector Street and Barren Hill Road/Cedar Grove Lane
    - Cedar Grove Lane and Washington Street
    - Washington Street and Lee Street
- 901 Washington Street: 23 of the approved 62 townhomes constructed as of traffic counts. The development was included in the traffic study as background development.
- Washington Street is planned to be from the property's western boundary to Station Avenue.
    - Based on the counts that were conducted, existing traffic along Washington Street is low
    - The TPD traffic study assumes a redistribution of traffic from Hector Street to account for the Washington Street extension.
        - Based on other past studies completed by TPD, 10-15% of the traffic could potentially be diverted. Therefore, TPD redistributed 15% of Hector Street traffic onto Washington Street. Gilmore will review the projections and opine as to the reasonableness of the assumption.
    - Gilmore stated that the intersections of Hector Street/Cherry Street and Washington Street/Cherry Street may need to be included in the traffic study scope. Upon a formal review of the submitted traffic study, Gilmore will make a final determination whether these intersections should be included in a future submission.

- Based on its proximity to the SEPTA station, this development will be defined as a TOD. Consistent with the 901 Washington Street traffic study, TPD assumed a trip reduction (25%) for this multi-modal aspect.
- Due to the close proximity of the SEPTA train tracks and trail to Washington Street, a discussion was undertaken regarding the proposed traffic control its intersection with Lee Street intersection.
- TPD will consider revisiting the site-related traffic that is proposed to utilize Lee Street, specifically left turns from Lee Street to Washington Street
- Site Plan
    - The proposed parking indicated on the plan, on the south side of Washington Street, is the development's use only. The existing parking on the north side of Washington Street is for the SEPTA station. Additional SEPTA parking is provided further north on Station Avenue.
    - The David's Bridal parking garage will be eliminated.
    - A horizontal curve exists along Washington Street, which impacts the Court D driveway. Due to limited sight distance looking to the left, the plans have been designed to assume a three-way stop.
    - There are two (2) garage parking spaces proposed for each townhome. One additional car can be accommodated on each driveway. Overflow parking is provided on the south side of Washington Street across from the SEPTA parking, and on the west side of the site, which can be accessed via the 901 Washington Street access. An access easement exists between the 901 Washington Street development and David's Bridal.
- Station Avenue
    - Gilmore stated that the Township has existing concerns regarding high pedestrian/bike traffic in the area of the SEPTA station.
    - The existing Station Avenue "cul-de-sac" has high pedestrian and bike traffic. Adding vehicular traffic to the extension could create a safety issue.
    - A discussion was undertaken to consider limiting vehicular traffic along Station Avenue, or converting Washington Street to one-way between Lee Street and Station Avenue. Township staff to discuss further.
    - A fence is present along Washington Street next to Station Avenue.
        - The fence is on SEPTA property. The last 10 feet of the fence appear to be in the public ROW
    - The roadway that crosses the SEPTA tracks is most likely Station Avenue, owned by the Township. However, some research will be undertaken by the Township to determine if this section of roadway can be utilized by the public.

    - Gilmore questioned whether the applicant has coordinated with SEPTA to make them aware of the project. TPD/Nave were unsure of discussions to date.
    - TPD expressed concerns regarding the width of the connection between Station Avenue and the extended Washington Street. The presence of the SEPTA fence/David's Bridal privacy gates coupled with the narrow pavement width should be considered during the Township's Station Avenue/Washington Street usage/configuration discussion.
- Washington Street
    - Sidewalk is proposed by the applicant on the south side of Washington Street.
    - Gilmore questioned the future status of the paved trapezoidal area between Washington Street and the rail. This area was proposed by the 901 Washington Street project to provide vehicular and access around the David's Bridal building. Nave stated it would no longer be needed and removal of the pavement should be considered.
    - Washington Street is planned to have a 28 foot wide cartway, with two (2) 12 foot lanes and a 2 foot shoulders. This is consistent with the 901 Washington Street development.

APPENDIX B:
Study Area Photographs

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 1 Lee St & Hector St



Direction / Road: **NB Lee St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **NB Lee St**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 1 Lee St & Hector St



Direction / Road: **SB Lee St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **SB Lee St**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 1 Lee St & Hector St



Direction / Road: **EB Hector St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **EB Hector St**
Approach / Departure: Approach
Distance: 150 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 1 Lee St & Hector St



Direction / Road: WB Hector St
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: WB Hector St
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 2 North Lane-Station Ave & Hector St



Direction / Road: **NB North Lane**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **NB North Lane**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 2 North Lane-Station Ave & Hector St



Direction / Road: **SB Station Ave**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **SB Station Ave**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 2 North Lane-Station Ave & Hector St



Direction / Road: **EB Hector St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **EB Hector St**
Approach / Departure: Approach
Distance: 150 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 2 North Lane-Station Ave & Hector St



Direction / Road:	**WB Hector St**
Approach / Departure:	Approach
Distance:	50 feet



Direction / Road:	**WB Hector St**
Approach / Departure:	Approach
Distance:	200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 3 Barren Hill Rs-Cedar Grove Ln & Hector St



Direction / Road: **NB Barren Hill RD**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **NB Barren Hill RD**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 3 Barren Hill Rs-Cedar Grove Ln & Hector St



Direction / Road: **SB Cedar Grove Lane**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **SB Cedar Grove Lane**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 3 Barren Hill Rs-Cedar Grove Ln & Hector St



Direction / Road: **EB Hector St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **EB Hector St**
Approach / Departure: Approach
Distance: 150 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 4 Cedar Gove Ln & Joshua Rd



Direction / Road: **NB Cedar Grove Lane**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **NB Cedar Grove Lane**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 4 Cedar Gove Ln & Joshua Rd



Direction / Road: **SB Cedar Grove Lane**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **SB Cedar Grove Lane**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 4 Cedar Gove Ln & Joshua Rd



Direction / Road: **WB Joshua Rd**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **WB Joshua Rd**
Approach / Departure: Approach
Distance: 150 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 5 Lee St & Washington St



Direction / Road: **SB Lee St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **SB Lee St**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 5 Lee St & Washington St



Direction / Road: **EB Washington St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **EB Washington St**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 5 Lee St & Washington St



Direction / Road: **WB Washington St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **WB Washington St**
Approach / Departure: Approach
Distance: 150 Feet

APPENDIX C:
Manual Traffic Count Printouts

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Count Name: 1 Lee St & Hector St
Site Code:
Start Date: 03/06/2025

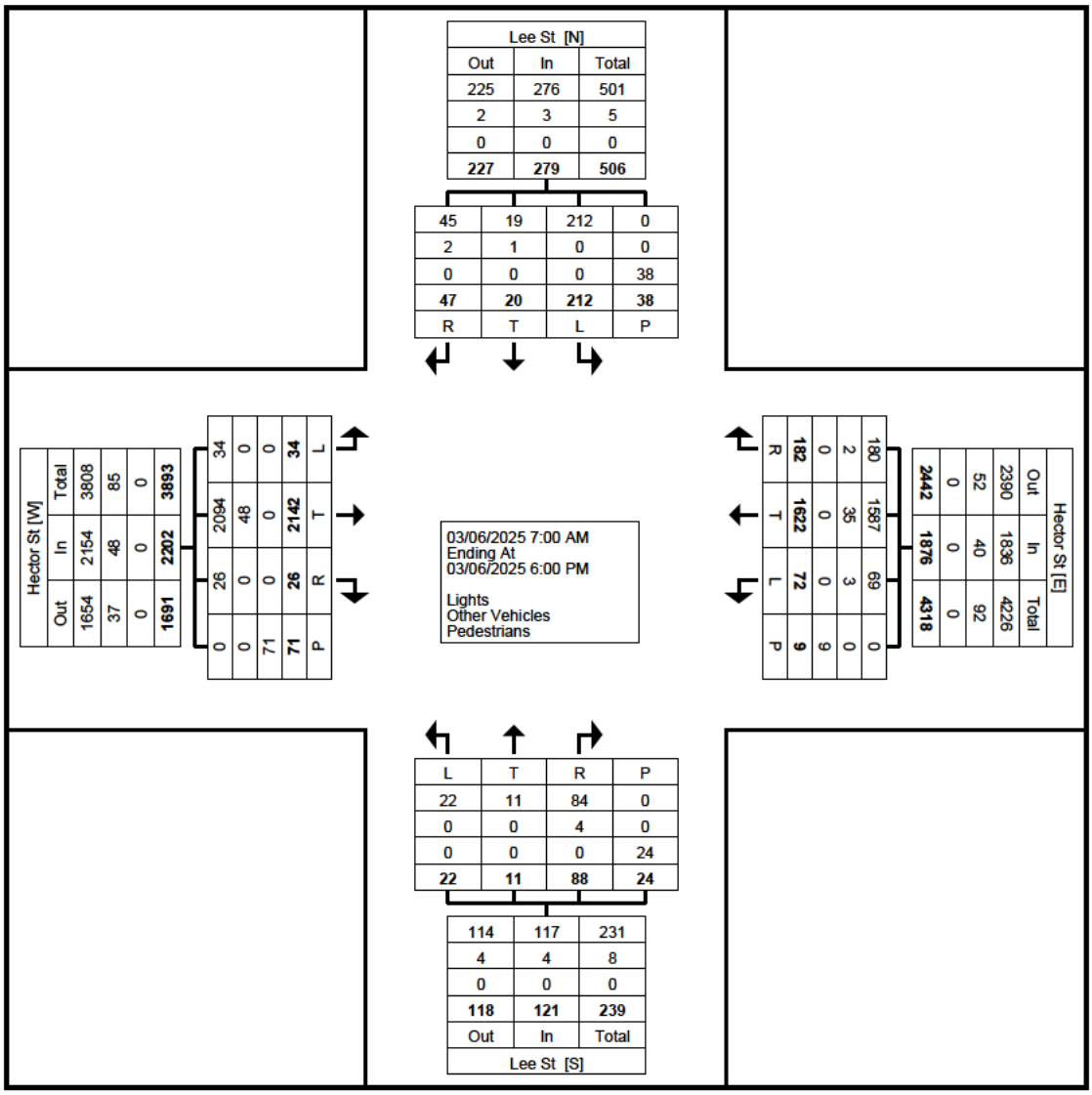
Turning Movement Data

Start Time	Hector St Eastbound					Hector St Westbound					Lee St Northbound					Lee St Southbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
7:00 AM	5	118	1	0	124	1	65	15	0	81	1	0	3	1	4	11	2	1	0	14	223
7:15 AM	1	74	1	2	76	3	97	10	0	110	1	0	1	0	2	8	1	1	2	10	198
7:30 AM	0	90	1	2	91	4	99	9	2	112	0	2	2	1	4	6	1	2	1	9	216
7:45 AM	2	113	0	0	115	3	141	7	0	151	0	2	5	0	7	7	2	2	0	11	284
Hourly Total	8	395	3	4	406	11	402	41	2	454	2	4	11	2	17	32	6	6	3	44	921
8:00 AM	4	116	0	1	120	4	138	19	1	161	0	0	1	3	1	12	0	1	0	13	295
8:15 AM	2	86	0	7	88	7	149	21	0	177	1	0	3	3	4	7	2	0	2	9	278
8:30 AM	4	74	1	1	79	6	143	23	0	172	2	0	6	1	8	11	2	4	0	17	276
8:45 AM	2	78	1	4	81	6	105	27	2	138	2	1	4	1	7	11	0	1	1	12	238
Hourly Total	12	354	2	13	368	23	535	90	3	648	5	1	14	8	20	41	4	6	3	51	1087
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	1	154	3	8	158	4	89	2	0	95	2	0	11	0	13	16	0	8	6	24	290
4:15 PM	6	191	1	1	198	4	76	4	0	84	1	0	4	1	5	15	1	2	1	18	305
4:30 PM	0	189	3	3	192	8	77	7	0	92	2	0	4	0	6	12	2	4	1	18	308
4:45 PM	0	185	2	4	187	3	84	6	2	93	2	2	3	4	7	18	1	3	4	22	309
Hourly Total	7	719	9	16	735	19	326	19	2	364	7	2	22	5	31	61	4	17	12	82	1212
5:00 PM	2	170	1	12	173	4	103	7	0	114	2	0	12	6	14	34	2	5	5	41	342
5:15 PM	3	190	5	13	198	3	102	5	0	110	3	0	4	0	7	21	2	8	8	31	346
5:30 PM	1	183	5	9	189	7	81	12	1	100	3	1	12	2	16	13	0	2	6	15	320
5:45 PM	1	131	1	4	133	5	73	8	1	86	0	3	13	1	16	10	2	3	1	15	250
Hourly Total	7	674	12	38	693	19	359	32	2	410	8	4	41	9	53	78	6	18	20	102	1258
Grand Total	34	2142	26	71	2202	72	1622	182	9	1876	22	11	88	24	121	212	20	47	38	279	4478
Approach %	1.5	97.3	1.2	-	-	3.8	86.5	9.7	-	-	18.2	9.1	72.7	-	-	76.0	7.2	16.8	-	-	-
Total %	0.8	47.8	0.6	-	49.2	1.6	36.2	4.1	-	41.9	0.5	0.2	2.0	-	2.7	4.7	0.4	1.0	-	6.2	-
Lights	34	2094	26	-	2154	69	1587	180	-	1836	22	11	84	-	117	212	19	45	-	276	4383
% Lights	100.0	97.8	100.0	-	97.8	95.8	97.8	98.9	-	97.9	100.0	100.0	95.5	-	96.7	100.0	95.0	95.7	-	98.9	97.9
Other Vehicles	0	48	0	-	48	3	35	2	-	40	0	0	4	-	4	0	1	2	-	3	95
% Other Vehicles	0.0	2.2	0.0	-	2.2	4.2	2.2	1.1	-	2.1	0.0	0.0	4.5	-	3.3	0.0	5.0	4.3	-	1.1	2.1
Pedestrians	-	-	-	71	-	-	-	-	9	-	-	-	-	24	-	-	-	-	38	-	-
% 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 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 1 Lee St & Hector St
Site Code:
Start Date: 03/06/2025



Turning Movement Data Plot

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Count Name: 1 Lee St & Hector St
Site Code:
Start Date: 03/06/2025

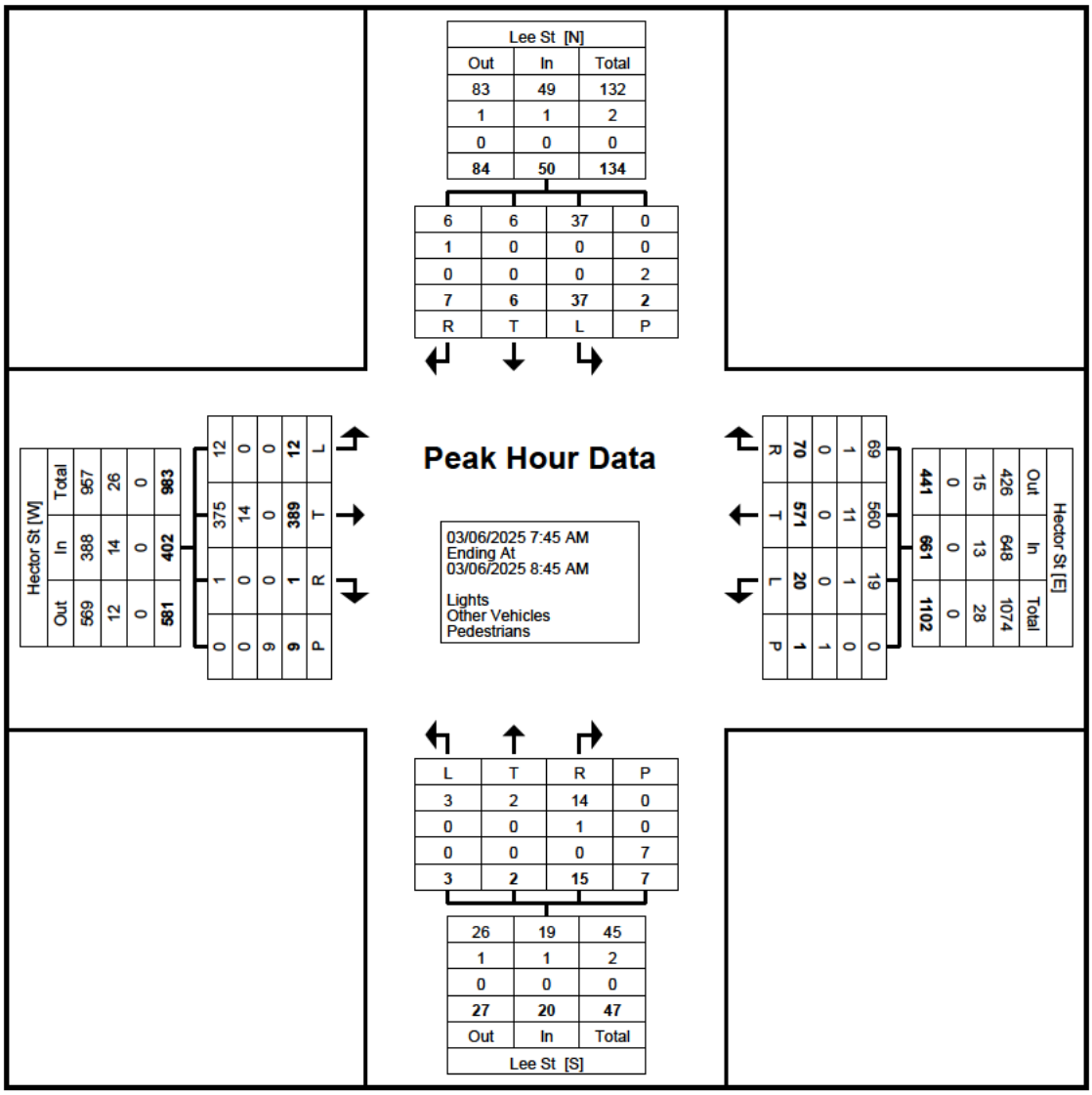
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Hector St Eastbound					Hector St Westbound					Lee St Northbound					Lee St Southbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
7:45 AM	2	113	0	0	115	3	141	7	0	151	0	2	5	0	7	7	2	2	0	11	284
8:00 AM	4	116	0	1	120	4	138	19	1	161	0	0	1	3	1	12	0	1	0	13	295
8:15 AM	2	86	0	7	88	7	149	21	0	177	1	0	3	3	4	7	2	0	2	9	278
8:30 AM	4	74	1	1	79	6	143	23	0	172	2	0	6	1	8	11	2	4	0	17	276
Total	12	389	1	9	402	20	571	70	1	661	3	2	15	7	20	37	6	7	2	50	1133
Approach %	3.0	96.8	0.2	-	-	3.0	86.4	10.6	-	-	15.0	10.0	75.0	-	-	74.0	12.0	14.0	-	-	-
Total %	1.1	34.3	0.1	-	35.5	1.8	50.4	6.2	-	58.3	0.3	0.2	1.3	-	1.8	3.3	0.5	0.6	-	4.4	-
PHF	0.750	0.838	0.250	-	0.838	0.714	0.958	0.761	-	0.934	0.375	0.250	0.625	-	0.625	0.771	0.750	0.438	-	0.735	0.960
Lights	12	375	1	-	388	19	560	69	-	648	3	2	14	-	19	37	6	6	-	49	1104
% Lights	100.0	96.4	100.0	-	96.5	95.0	98.1	98.6	-	98.0	100.0	100.0	93.3	-	95.0	100.0	100.0	85.7	-	98.0	97.4
Other Vehicles	0	14	0	-	14	1	11	1	-	13	0	0	1	-	1	0	0	1	-	1	29
% Other Vehicles	0.0	3.6	0.0	-	3.5	5.0	1.9	1.4	-	2.0	0.0	0.0	6.7	-	5.0	0.0	0.0	14.3	-	2.0	2.6
Pedestrians	-	-	-	9	-	-	-	-	1	-	-	-	-	7	-	-	-	-	2	-	-
% 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 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 1 Lee St & Hector St
Site Code:
Start Date: 03/06/2025



Turning Movement Peak Hour Data Plot (7:45 AM)

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Count Name: 1 Lee St & Hector St
Site Code:
Start Date: 03/06/2025

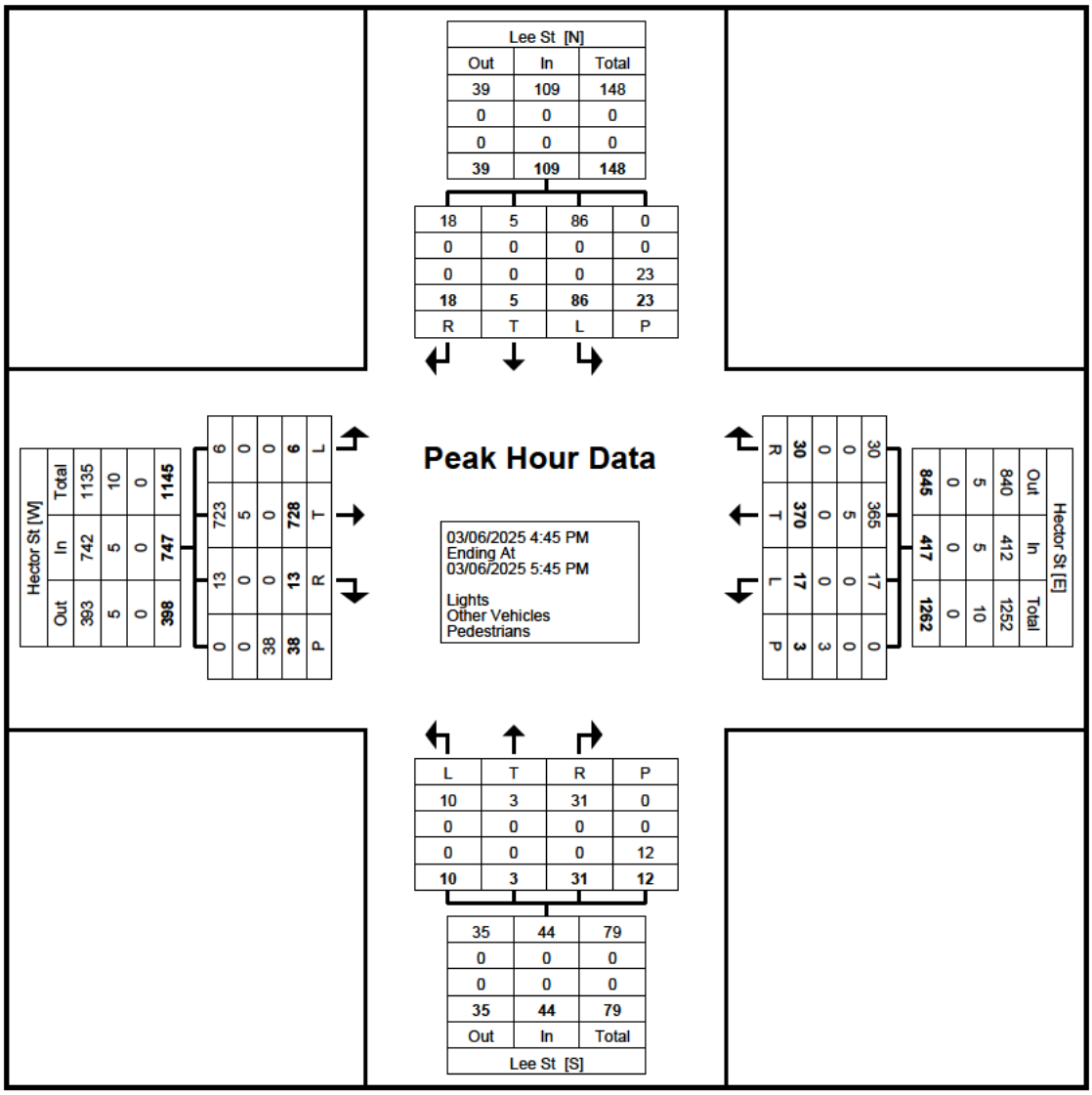
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Hector St Eastbound					Hector St Westbound					Lee St Northbound					Lee St Southbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
4:45 PM	0	185	2	4	187	3	84	6	2	93	2	2	3	4	7	18	1	3	4	22	309
5:00 PM	2	170	1	12	173	4	103	7	0	114	2	0	12	6	14	34	2	5	5	41	342
5:15 PM	3	190	5	13	198	3	102	5	0	110	3	0	4	0	7	21	2	8	8	31	346
5:30 PM	1	183	5	9	189	7	81	12	1	100	3	1	12	2	16	13	0	2	6	15	320
Total	6	728	13	38	747	17	370	30	3	417	10	3	31	12	44	86	5	18	23	109	1317
Approach %	0.8	97.5	1.7	-	-	4.1	88.7	7.2	-	-	22.7	6.8	70.5	-	-	78.9	4.6	16.5	-	-	-
Total %	0.5	55.3	1.0	-	56.7	1.3	28.1	2.3	-	31.7	0.8	0.2	2.4	-	3.3	6.5	0.4	1.4	-	8.3	-
PHF	0.500	0.958	0.650	-	0.943	0.607	0.898	0.625	-	0.914	0.833	0.375	0.646	-	0.688	0.632	0.625	0.563	-	0.665	0.952
Lights	6	723	13	-	742	17	365	30	-	412	10	3	31	-	44	86	5	18	-	109	1307
% Lights	100.0	99.3	100.0	-	99.3	100.0	98.6	100.0	-	98.8	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	-	100.0	99.2
Other Vehicles	0	5	0	-	5	0	5	0	-	5	0	0	0	-	0	0	0	0	-	0	10
% Other Vehicles	0.0	0.7	0.0	-	0.7	0.0	1.4	0.0	-	1.2	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.8
Pedestrians	-	-	-	38	-	-	-	-	3	-	-	-	-	12	-	-	-	-	23	-	-
% 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 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 1 Lee St & Hector St
Site Code:
Start Date: 03/06/2025



Turning Movement Peak Hour Data Plot (4:45 PM)

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Count Name: 2 North Lane - Station Ave & Hector St
Site Code:
Start Date: 03/06/2025

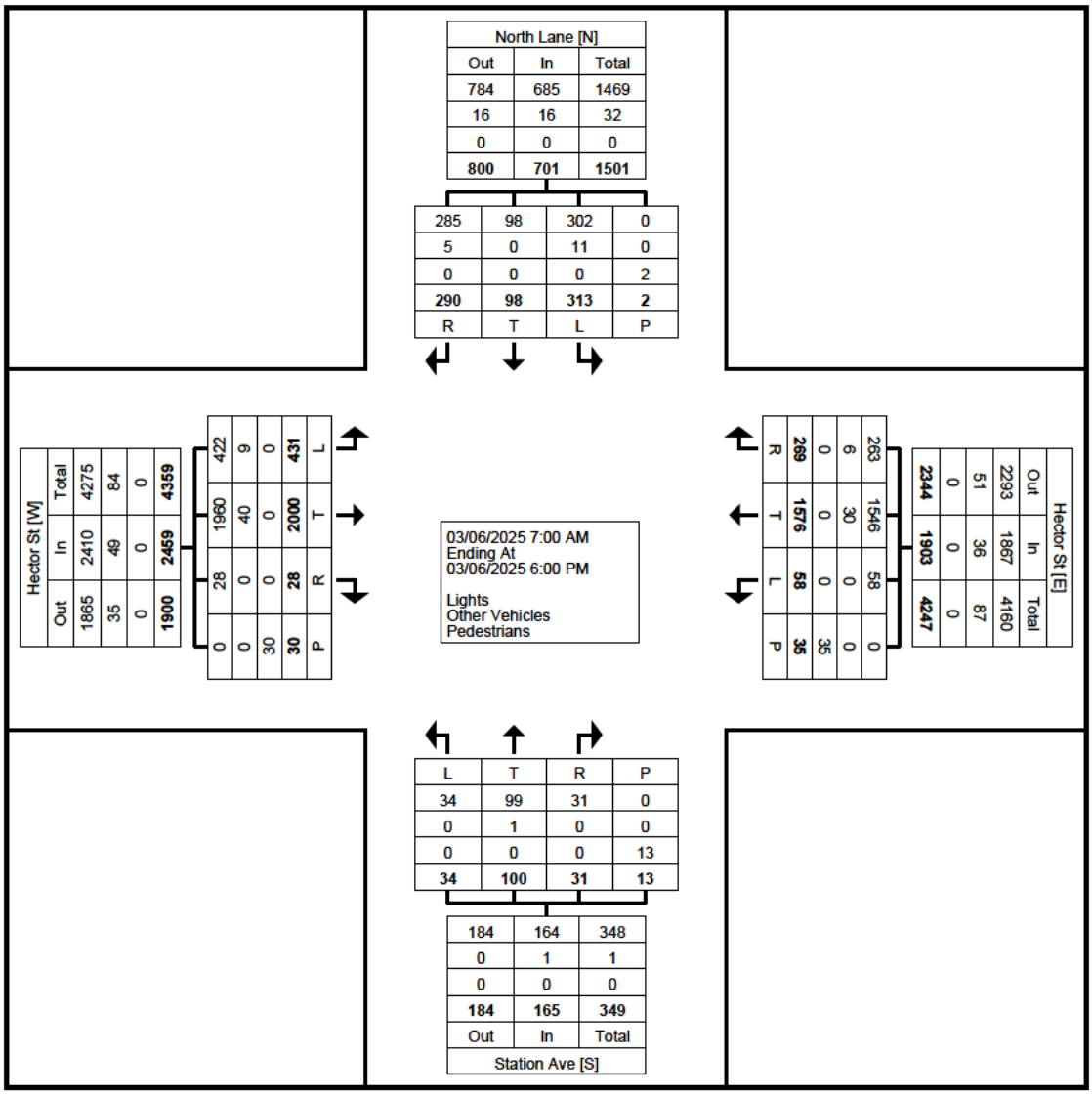
Turning Movement Data

Start Time	Hector St Eastbound						Hector St Westbound						Station Ave Northbound						North Lane 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	33	95	3	0	0	131	3	70	8	0	1	81	0	3	0	0	0	3	12	9	13	1	1	35	250
7:15 AM	27	63	0	0	2	90	2	96	15	0	2	113	4	4	5	0	1	13	13	7	10	0	1	30	246
7:30 AM	21	77	2	0	3	100	1	99	16	1	1	117	1	3	0	0	0	4	27	5	11	3	0	46	267
7:45 AM	31	90	2	0	5	123	1	146	17	0	0	164	2	10	2	1	2	15	19	9	15	0	0	43	345
Hourly Total	112	325	7	0	10	444	7	411	56	1	4	475	7	20	7	1	3	35	71	30	49	4	2	154	1108
8:00 AM	31	98	3	0	0	132	2	142	34	0	4	178	3	7	0	0	2	10	14	4	17	0	0	35	355
8:15 AM	27	75	4	0	2	106	1	147	20	2	0	170	3	5	1	0	0	9	19	2	23	2	0	46	331
8:30 AM	26	63	3	0	2	92	0	153	22	0	3	175	3	4	0	0	3	7	13	8	16	0	0	37	311
8:45 AM	25	66	1	0	1	92	2	119	15	1	0	137	3	2	1	0	0	6	9	2	23	0	0	34	269
Hourly Total	109	302	11	0	5	422	5	561	91	3	7	660	12	18	2	0	5	32	55	16	79	2	0	152	1266
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	23	158	2	0	2	183	3	77	14	0	4	94	0	8	3	1	1	12	15	4	18	1	0	38	327
4:15 PM	26	183	1	0	1	210	7	67	14	0	0	88	2	2	1	0	0	5	22	8	17	4	0	51	354
4:30 PM	17	183	0	0	4	200	12	75	24	0	4	111	1	13	6	0	2	20	20	7	10	4	0	41	372
4:45 PM	27	186	0	0	6	213	9	75	18	0	0	102	0	4	0	0	0	4	20	7	11	2	0	40	359
Hourly Total	93	710	3	0	13	806	31	294	70	0	8	395	3	27	10	1	3	41	77	26	56	11	0	170	1412
5:00 PM	25	175	2	0	2	202	3	77	18	0	11	98	2	9	4	0	1	15	33	5	24	3	0	65	380
5:15 PM	32	193	1	0	0	226	5	102	10	0	2	117	1	5	2	0	0	8	28	7	14	0	0	49	400
5:30 PM	31	172	3	0	0	206	1	76	15	0	2	92	6	18	2	0	0	26	27	6	21	0	0	54	378
5:45 PM	29	123	1	0	0	153	6	55	5	0	1	66	3	3	2	0	1	8	22	8	26	1	0	57	284
Hourly Total	117	663	7	0	2	787	15	310	48	0	16	373	12	35	10	0	2	57	110	26	85	4	0	225	1442
Grand Total	431	2000	28	0	30	2459	58	1576	265	4	35	1903	34	100	29	2	13	165	313	98	269	21	2	701	5228
Approach %	17.5	81.3	1.1	0.0	-	-	3.0	82.8	13.9	0.2	-	-	20.6	60.6	17.6	1.2	-	-	44.7	14.0	38.4	3.0	-	-	-
Total %	8.2	38.3	0.5	0.0	-	47.0	1.1	30.1	5.1	0.1	-	36.4	0.7	1.9	0.6	0.0	-	3.2	6.0	1.9	5.1	0.4	-	13.4	-
Lights	422	1960	28	0	-	2410	58	1546	259	4	-	1867	34	99	29	2	-	164	302	98	264	21	-	685	5126
% Lights	97.9	98.0	100.0	-	-	98.0	100.0	98.1	97.7	100.0	-	98.1	100.0	99.0	100.0	100.0	-	99.4	96.5	100.0	98.1	100.0	-	97.7	98.0
Other Vehicles	9	40	0	0	-	49	0	30	6	0	-	36	0	1	0	0	-	1	11	0	5	0	-	16	102
% Other Vehicles	2.1	2.0	0.0	-	-	2.0	0.0	1.9	2.3	0.0	-	1.9	0.0	1.0	0.0	0.0	-	0.6	3.5	0.0	1.9	0.0	-	2.3	2.0
Pedestrians	-	-	-	-	30	-	-	-	-	-	35	-	-	-	-	-	13	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Count Name: 2 North Lane - Station Ave & Hector St
Site Code:
Start Date: 03/06/2025



Turning Movement Data Plot

Counted By: Mio:
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Weather:Clear:

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Suite 650
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610.326.3100 jhudak@trafficpd.com

Count Name: 2 North Lane - Station Ave & Hector St
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Hector St Eastbound						Hector St Westbound						Station Ave Northbound						North Lane 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	
7:45 AM	31	90	2	0	5	123	1	146	17	0	0	164	2	10	2	1	2	15	19	9	15	0	0	43	345
8:00 AM	31	98	3	0	0	132	2	142	34	0	4	178	3	7	0	0	2	10	14	4	17	0	0	35	355
8:15 AM	27	75	4	0	2	106	1	147	20	2	0	170	3	5	1	0	0	9	19	2	23	2	0	46	331
8:30 AM	26	63	3	0	2	92	0	153	22	0	3	175	3	4	0	0	3	7	13	8	16	0	0	37	311
Total	115	326	12	0	9	453	4	588	93	2	7	687	11	26	3	1	7	41	65	23	71	2	0	161	1342
Approach %	25.4	72.0	2.6	0.0	-	-	0.6	85.6	13.5	0.3	-	-	26.8	63.4	7.3	2.4	-	-	40.4	14.3	44.1	1.2	-	-	-
Total %	8.6	24.3	0.9	0.0	-	33.8	0.3	43.8	6.9	0.1	-	51.2	0.8	1.9	0.2	0.1	-	3.1	4.8	1.7	5.3	0.1	-	12.0	-
PHF	0.927	0.832	0.750	0.000	-	0.858	0.500	0.961	0.684	0.250	-	0.965	0.917	0.650	0.375	0.250	-	0.683	0.855	0.639	0.772	0.250	-	0.875	0.945
Lights	114	312	12	0	-	438	4	577	92	2	-	675	11	25	3	1	-	40	59	23	70	2	-	154	1307
% Lights	99.1	95.7	100.0	-	-	96.7	100.0	98.1	98.9	100.0	-	98.3	100.0	96.2	100.0	100.0	-	97.6	90.8	100.0	98.6	100.0	-	95.7	97.4
Other Vehicles	1	14	0	0	-	15	0	11	1	0	-	12	0	1	0	0	-	1	6	0	1	0	-	7	35
% Other Vehicles	0.9	4.3	0.0	-	-	3.3	0.0	1.9	1.1	0.0	-	1.7	0.0	3.8	0.0	0.0	-	2.4	9.2	0.0	1.4	0.0	-	4.3	2.6
Pedestrians	-	-	-	-	9	-	-	-	-	-	7	-	-	-	-	-	7	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

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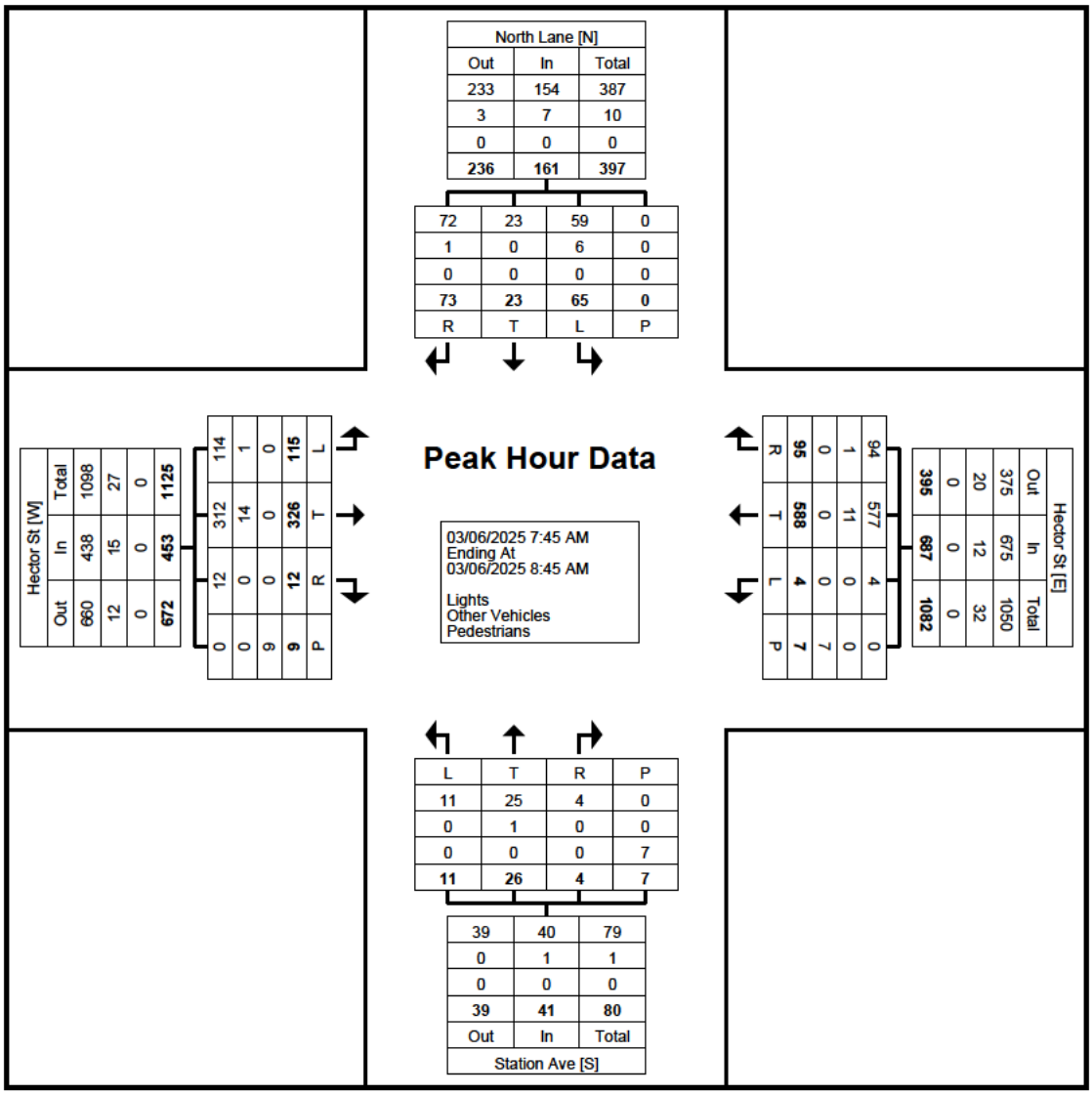
Count Name: 2 North Lane - Station Ave & Hector St
Site Code:
Start Date: 03/06/2025



Turning Movement Peak Hour Data Plot (7:45 AM)

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Counted By: Mio:
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Weather:Clear:

Count Name: 2 North Lane - Station Ave & Hector St
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Hector St Eastbound						Hector St Westbound						Station Ave Northbound						North Lane Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
4:45 PM	27	186	0	0	6	213	9	75	18	0	0	102	0	4	0	0	0	4	20	7	11	2	0	40	359
5:00 PM	25	175	2	0	2	202	3	77	18	0	11	98	2	9	4	0	1	15	33	5	24	3	0	65	380
5:15 PM	32	193	1	0	0	226	5	102	10	0	2	117	1	5	2	0	0	8	28	7	14	0	0	49	400
5:30 PM	31	172	3	0	0	206	1	76	15	0	2	92	6	18	2	0	0	26	27	6	21	0	0	54	378
Total	115	726	6	0	8	847	18	330	61	0	15	409	9	36	8	0	1	53	108	25	70	5	0	208	1517
Approach %	13.6	85.7	0.7	0.0	-	-	4.4	80.7	14.9	0.0	-	-	17.0	67.9	15.1	0.0	-	-	51.9	12.0	33.7	2.4	-	-	-
Total %	7.6	47.9	0.4	0.0	-	55.8	1.2	21.8	4.0	0.0	-	27.0	0.6	2.4	0.5	0.0	-	3.5	7.1	1.6	4.6	0.3	-	13.7	-
PHF	0.898	0.940	0.500	0.000	-	0.937	0.500	0.809	0.847	0.000	-	0.874	0.375	0.500	0.500	0.000	-	0.510	0.818	0.893	0.729	0.417	-	0.800	0.948
Lights	114	722	6	0	-	842	18	325	60	0	-	403	9	36	8	0	-	53	108	25	70	5	-	208	1506
% Lights	99.1	99.4	100.0	-	-	99.4	100.0	98.5	98.4	-	-	98.5	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	100.0	-	100.0	99.3
Other Vehicles	1	4	0	0	-	5	0	5	1	0	-	6	0	0	0	0	-	0	0	0	0	0	-	0	11
% Other Vehicles	0.9	0.6	0.0	-	-	0.6	0.0	1.5	1.6	-	-	1.5	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.7
Pedestrians	-	-	-	-	8	-	-	-	-	-	15	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

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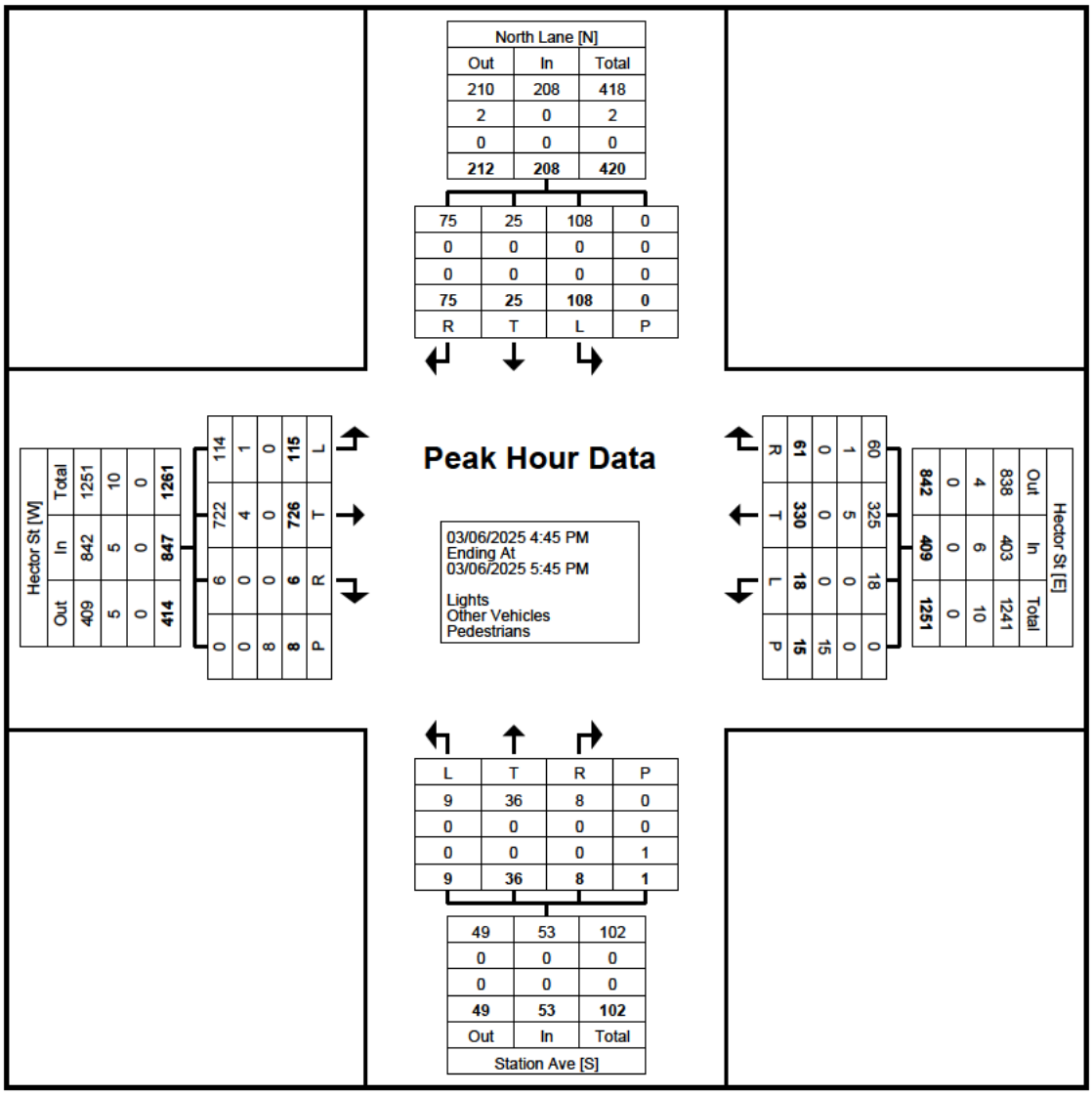
Start Date: 03/06/2025



Turning Movement Peak Hour Data Plot (4:45 PM)

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Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 3 Baren Hill Rd-Cedar Grove Ln & Hector St
Site Code:
Start Date: 03/06/2025

Turning Movement Data

Start Time	Hector St Eastbound						Westbound Approach Westbound						Barren hill Road Northbound						Cedar Grove Ln 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	33	0	34	36	0	103	0	0	0	0	0	0	67	7	0	0	0	74	0	20	23	4	0	47	224
7:15 AM	32	0	26	23	2	81	0	0	0	0	0	0	72	14	0	0	0	86	0	16	24	7	0	47	214
7:30 AM	23	2	40	41	0	106	0	0	0	0	0	0	83	10	0	0	0	93	0	29	40	2	0	71	270
7:45 AM	22	1	44	47	0	114	0	0	0	0	0	0	113	21	0	0	0	134	0	33	63	0	0	96	344
Hourly Total	110	3	144	147	2	404	0	0	0	0	0	0	335	52	0	0	0	387	0	98	150	13	0	261	1052
8:00 AM	28	0	29	49	0	106	0	0	0	0	0	0	135	16	0	1	0	152	1	29	52	11	0	93	351
8:15 AM	29	0	34	32	0	95	0	1	0	1	1	2	133	22	0	0	0	155	0	20	39	3	1	62	314
8:30 AM	24	0	20	28	0	72	0	0	0	0	0	0	106	16	0	0	0	122	0	10	52	11	0	73	267
8:45 AM	26	0	26	30	0	82	0	1	0	0	0	1	93	12	0	0	0	105	0	13	36	7	0	56	244
Hourly Total	107	0	109	139	0	355	0	2	0	1	1	3	467	66	0	1	0	534	1	72	179	32	1	284	1176
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	59	0	62	60	0	181	0	0	1	0	0	1	50	19	0	0	0	69	0	16	26	8	0	50	301
4:15 PM	62	0	65	87	0	214	0	0	0	0	0	0	48	10	0	0	0	58	0	11	36	7	0	54	326
4:30 PM	46	1	58	106	0	211	0	3	0	0	1	3	62	21	0	0	0	83	0	12	30	8	1	50	347
4:45 PM	56	0	73	87	0	216	1	0	1	0	2	2	62	9	0	0	0	71	0	17	26	5	2	48	337
Hourly Total	223	1	258	340	0	822	1	3	2	0	3	6	222	59	0	0	0	281	0	56	118	28	3	202	1311
5:00 PM	64	0	124	29	0	217	0	0	0	0	0	0	58	19	0	0	0	77	0	30	42	2	0	74	368
5:15 PM	66	0	116	50	0	232	0	0	0	0	0	0	67	14	0	0	0	81	0	18	40	4	0	62	375
5:30 PM	67	0	90	50	0	207	0	0	0	0	0	0	49	20	0	0	0	69	0	17	38	0	0	55	331
5:45 PM	50	0	65	35	0	150	0	0	0	0	0	0	37	14	0	0	0	51	0	13	22	12	0	47	248
Hourly Total	247	0	395	164	0	806	0	0	0	0	0	0	211	67	0	0	0	278	0	78	142	18	0	238	1322
Grand Total	687	4	906	790	2	2387	1	5	2	1	4	9	1235	244	0	1	0	1480	1	304	589	91	4	985	4861
Approach %	28.8	0.2	38.0	33.1	-	-	11.1	55.6	22.2	11.1	-	-	83.4	16.5	0.0	0.1	-	-	0.1	30.9	59.8	9.2	-	-	-
Total %	14.1	0.1	18.6	16.3	-	49.1	0.0	0.1	0.0	0.0	-	0.2	25.4	5.0	0.0	0.0	-	30.4	0.0	6.3	12.1	1.9	-	20.3	-
Lights	673	4	893	771	-	2341	1	5	2	1	-	9	1211	234	0	1	-	1446	1	296	580	89	-	966	4762
% Lights	98.0	100.0	98.6	97.6	-	98.1	100.0	100.0	100.0	100.0	-	100.0	98.1	95.9	-	100.0	-	97.7	100.0	97.4	98.5	97.8	-	98.1	98.0
Other Vehicles	14	0	13	19	-	46	0	0	0	0	-	0	24	10	0	0	-	34	0	8	9	2	-	19	99
% Other Vehicles	2.0	0.0	1.4	2.4	-	1.9	0.0	0.0	0.0	0.0	-	0.0	1.9	4.1	-	0.0	-	2.3	0.0	2.6	1.5	2.2	-	1.9	2.0
Pedestrians	-	-	-	-	2	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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Counted By: Mio:
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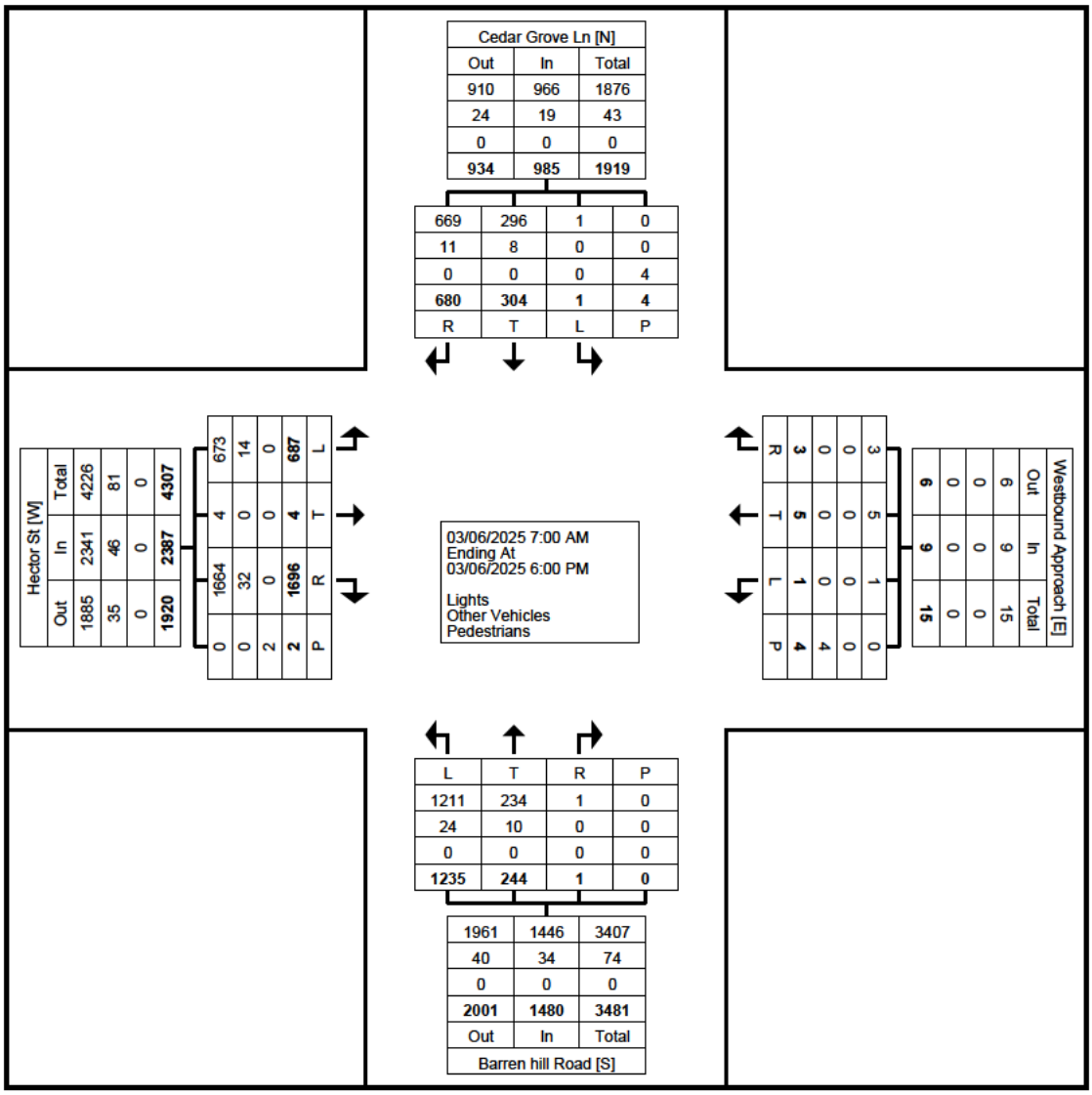
Weather:Clear:

Count Name: 3 Baren Hill Rd-Cedar Grove Ln & Hector St
Site Code:
Start Date: 03/06/2025



Turning Movement Data Plot

Counted By: Mio:
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Weather:Clear:

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Count Name: 3 Baren Hill Rd-Cedar Grove Ln & Hector St
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Hector St Eastbound						Westbound Approach Westbound						Barren hill Road Northbound						Cedar Grove Ln 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	23	2	40	41	0	106	0	0	0	0	0	0	83	10	0	0	0	93	0	29	40	2	0	71	270
7:45 AM	22	1	44	47	0	114	0	0	0	0	0	0	113	21	0	0	0	134	0	33	63	0	0	96	344
8:00 AM	28	0	29	49	0	106	0	0	0	0	0	0	135	16	0	1	0	152	1	29	52	11	0	93	351
8:15 AM	29	0	34	32	0	95	0	1	0	1	1	2	133	22	0	0	0	155	0	20	39	3	1	62	314
Total	102	3	147	169	0	421	0	1	0	1	1	2	464	69	0	1	0	534	1	111	194	16	1	322	1279
Approach %	24.2	0.7	34.9	40.1	-	-	0.0	50.0	0.0	50.0	-	-	86.9	12.9	0.0	0.2	-	-	0.3	34.5	60.2	5.0	-	-	-
Total %	8.0	0.2	11.5	13.2	-	32.9	0.0	0.1	0.0	0.1	-	0.2	36.3	5.4	0.0	0.1	-	41.8	0.1	8.7	15.2	1.3	-	25.2	-
PHF	0.879	0.375	0.835	0.862	-	0.923	0.000	0.250	0.000	0.250	-	0.250	0.859	0.784	0.000	0.250	-	0.861	0.250	0.841	0.770	0.364	-	0.839	0.911
Lights	98	3	142	161	-	404	0	1	0	1	-	2	456	65	0	1	-	522	1	105	190	15	-	311	1239
% Lights	96.1	100.0	96.6	95.3	-	96.0	-	100.0	-	100.0	-	100.0	98.3	94.2	-	100.0	-	97.8	100.0	94.6	97.9	93.8	-	96.6	96.9
Other Vehicles	4	0	5	8	-	17	0	0	0	0	-	0	8	4	0	0	-	12	0	6	4	1	-	11	40
% Other Vehicles	3.9	0.0	3.4	4.7	-	4.0	-	0.0	-	0.0	-	0.0	1.7	5.8	-	0.0	-	2.2	0.0	5.4	2.1	6.3	-	3.4	3.1
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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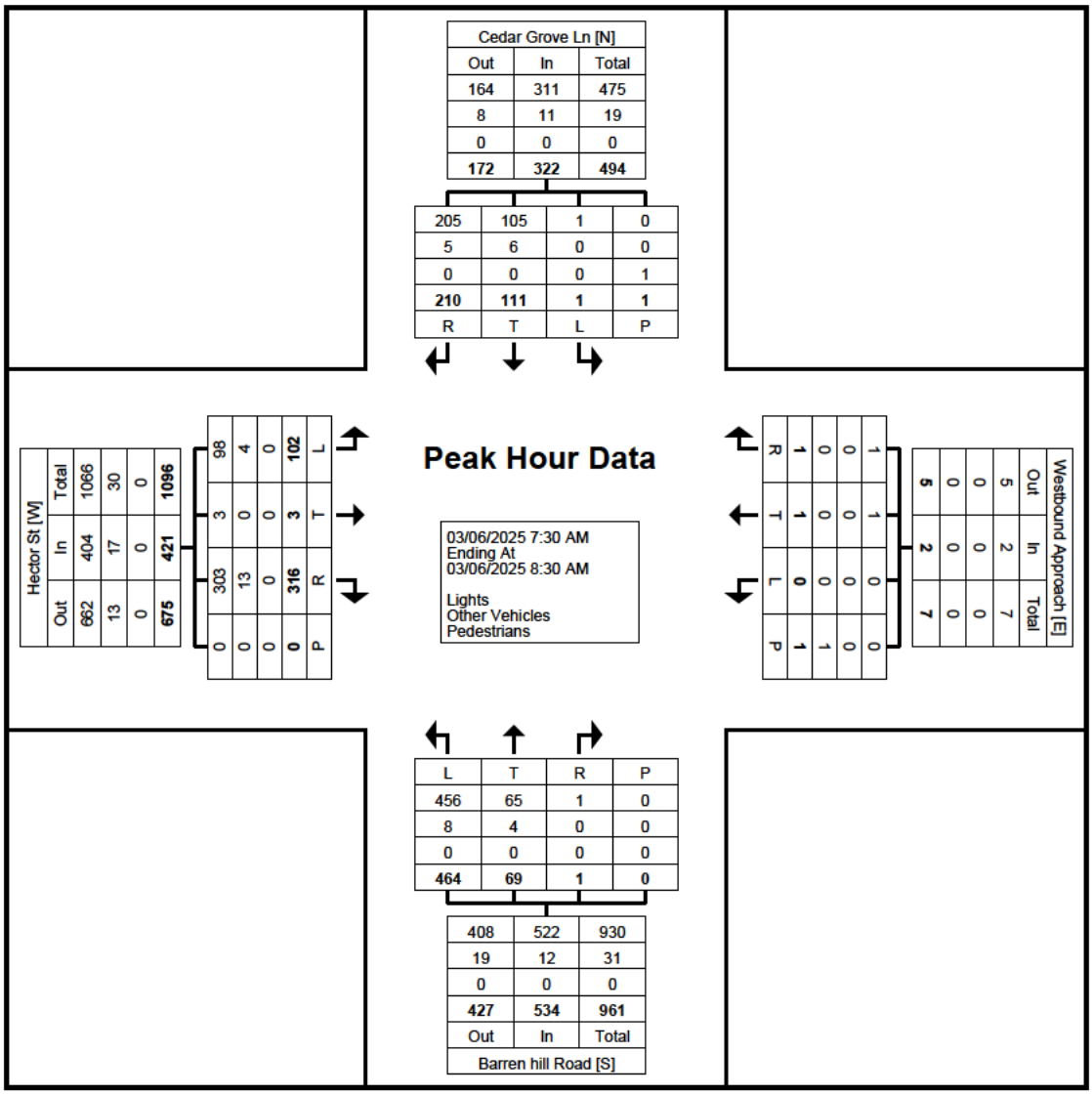
Site Code:
Start Date: 03/06/2025



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

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 3 Baren Hill Rd-Cedar Grove Ln & Hector St
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Hector St Eastbound						Westbound Approach Westbound						Barren hill Road Northbound						Cedar Grove Ln 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	46	1	58	106	0	211	0	3	0	0	1	3	62	21	0	0	0	83	0	12	30	8	1	50	347
4:45 PM	56	0	73	87	0	216	1	0	1	0	2	2	62	9	0	0	0	71	0	17	26	5	2	48	337
5:00 PM	64	0	124	29	0	217	0	0	0	0	0	0	58	19	0	0	0	77	0	30	42	2	0	74	368
5:15 PM	66	0	116	50	0	232	0	0	0	0	0	0	67	14	0	0	0	81	0	18	40	4	0	62	375
Total	232	1	371	272	0	876	1	3	1	0	3	5	249	63	0	0	0	312	0	77	138	19	3	234	1427
Approach %	26.5	0.1	42.4	31.1	-	-	20.0	60.0	20.0	0.0	-	-	79.8	20.2	0.0	0.0	-	-	0.0	32.9	59.0	8.1	-	-	-
Total %	16.3	0.1	26.0	19.1	-	61.4	0.1	0.2	0.1	0.0	-	0.4	17.4	4.4	0.0	0.0	-	21.9	0.0	5.4	9.7	1.3	-	16.4	-
PHF	0.879	0.250	0.748	0.642	-	0.944	0.250	0.250	0.250	0.000	-	0.417	0.929	0.750	0.000	0.000	-	0.940	0.000	0.642	0.821	0.594	-	0.791	0.951
Lights	231	1	370	271	-	873	1	3	1	0	-	5	242	63	0	0	-	305	0	76	137	19	-	232	1415
% Lights	99.6	100.0	99.7	99.6	-	99.7	100.0	100.0	100.0	-	-	100.0	97.2	100.0	-	-	-	97.8	-	98.7	99.3	100.0	-	99.1	99.2
Other Vehicles	1	0	1	1	-	3	0	0	0	0	-	0	7	0	0	0	-	7	0	1	1	0	-	2	12
% Other Vehicles	0.4	0.0	0.3	0.4	-	0.3	0.0	0.0	0.0	-	-	0.0	2.8	0.0	-	-	-	2.2	-	1.3	0.7	0.0	-	0.9	0.8
Pedestrians	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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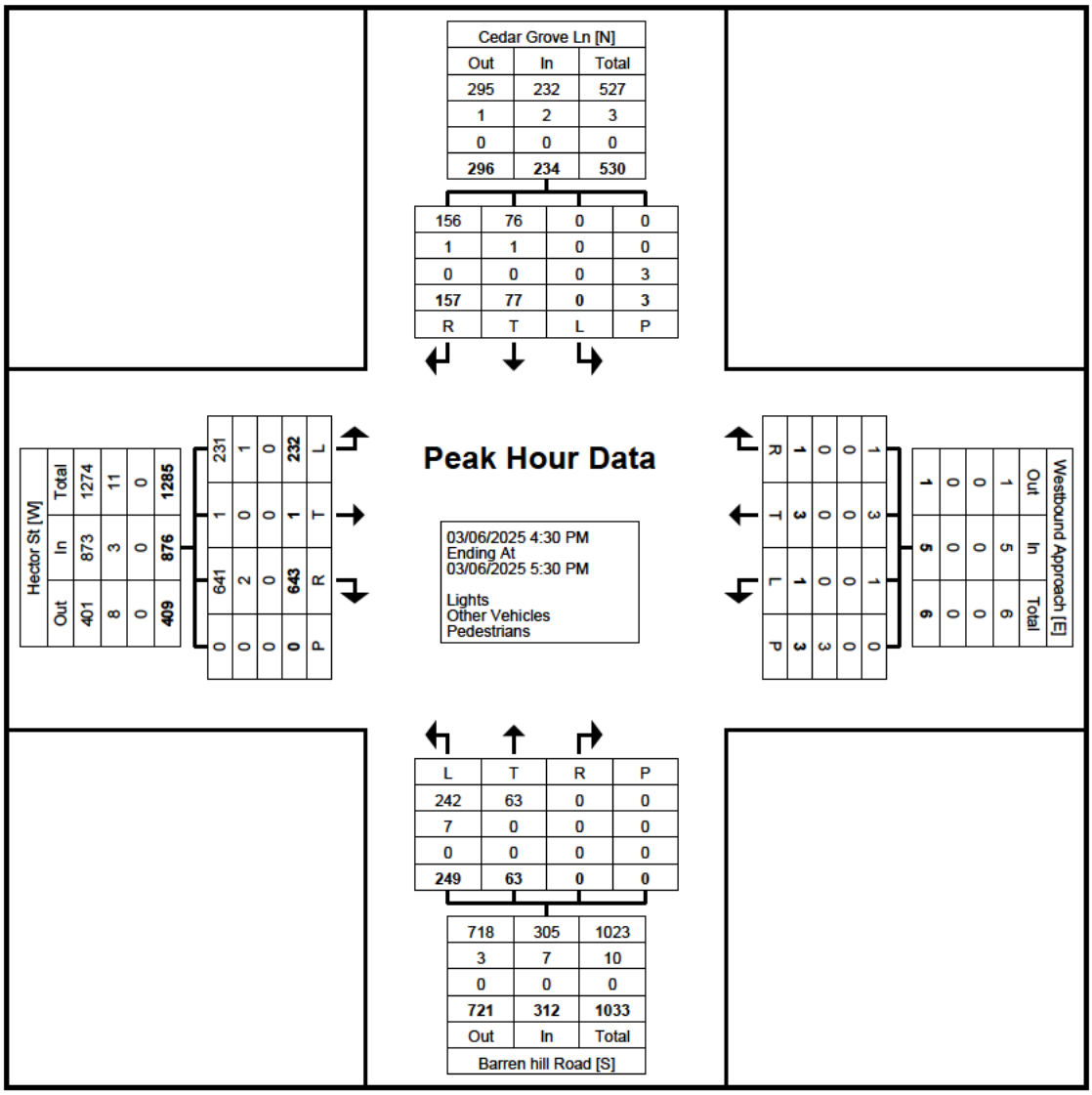
Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 3 Baren Hill Rd-Cedar Grove Ln & Hector St
Site Code:
Start Date: 03/06/2025



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

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Count Name: 4 Cedar Grove Ln & Joshua Rd
Site Code:
Start Date: 03/06/2025

Turning Movement Data

Start Time	Joshua Rd Westbound				Cedar Grove Ln Northbound				Cedar Grove Ln Southbound				
	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
7:00 AM	31	10	0	41	14	26	0	40	19	20	0	39	120
7:15 AM	37	22	0	59	15	31	0	46	9	18	0	27	132
7:30 AM	40	26	0	66	8	26	0	34	17	32	0	49	149
7:45 AM	68	13	0	81	20	23	0	43	30	32	0	62	186
Hourly Total	176	71	0	247	57	106	0	163	75	102	0	177	587
8:00 AM	60	29	0	89	15	23	0	38	12	31	0	43	170
8:15 AM	48	20	0	68	35	25	0	60	20	17	0	37	165
8:30 AM	53	28	0	81	14	24	0	38	20	20	0	40	159
8:45 AM	40	17	0	57	11	31	0	42	27	19	0	46	145
Hourly Total	201	94	0	295	75	103	0	178	79	87	0	166	639
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	34	21	0	55	20	54	0	74	15	17	0	32	161
4:15 PM	38	20	0	58	18	57	0	75	23	15	0	38	171
4:30 PM	37	22	0	59	21	53	0	74	24	15	0	39	172
4:45 PM	35	22	0	57	12	47	0	59	23	20	0	43	159
Hourly Total	144	85	0	229	71	211	0	282	85	67	0	152	663
5:00 PM	33	24	0	57	25	60	0	85	33	34	0	67	209
5:15 PM	35	20	0	55	16	66	0	82	28	27	0	55	192
5:30 PM	36	18	0	54	24	65	0	89	33	17	0	50	193
5:45 PM	28	22	0	50	20	36	0	56	21	21	0	42	148
Hourly Total	132	84	0	216	85	227	0	312	115	99	0	214	742
Grand Total	653	334	0	987	288	647	0	935	354	355	0	709	2631
Approach %	66.2	33.8	-	-	30.8	69.2	-	-	49.9	50.1	-	-	-
Total %	24.8	12.7	-	37.5	10.9	24.6	-	35.5	13.5	13.5	-	26.9	-
Lights	638	325	-	963	280	629	-	909	349	349	-	698	2570
% Lights	97.7	97.3	-	97.6	97.2	97.2	-	97.2	98.6	98.3	-	98.4	97.7
Other Vehicles	15	9	-	24	8	18	-	26	5	6	-	11	61
% Other Vehicles	2.3	2.7	-	2.4	2.8	2.8	-	2.8	1.4	1.7	-	1.6	2.3
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

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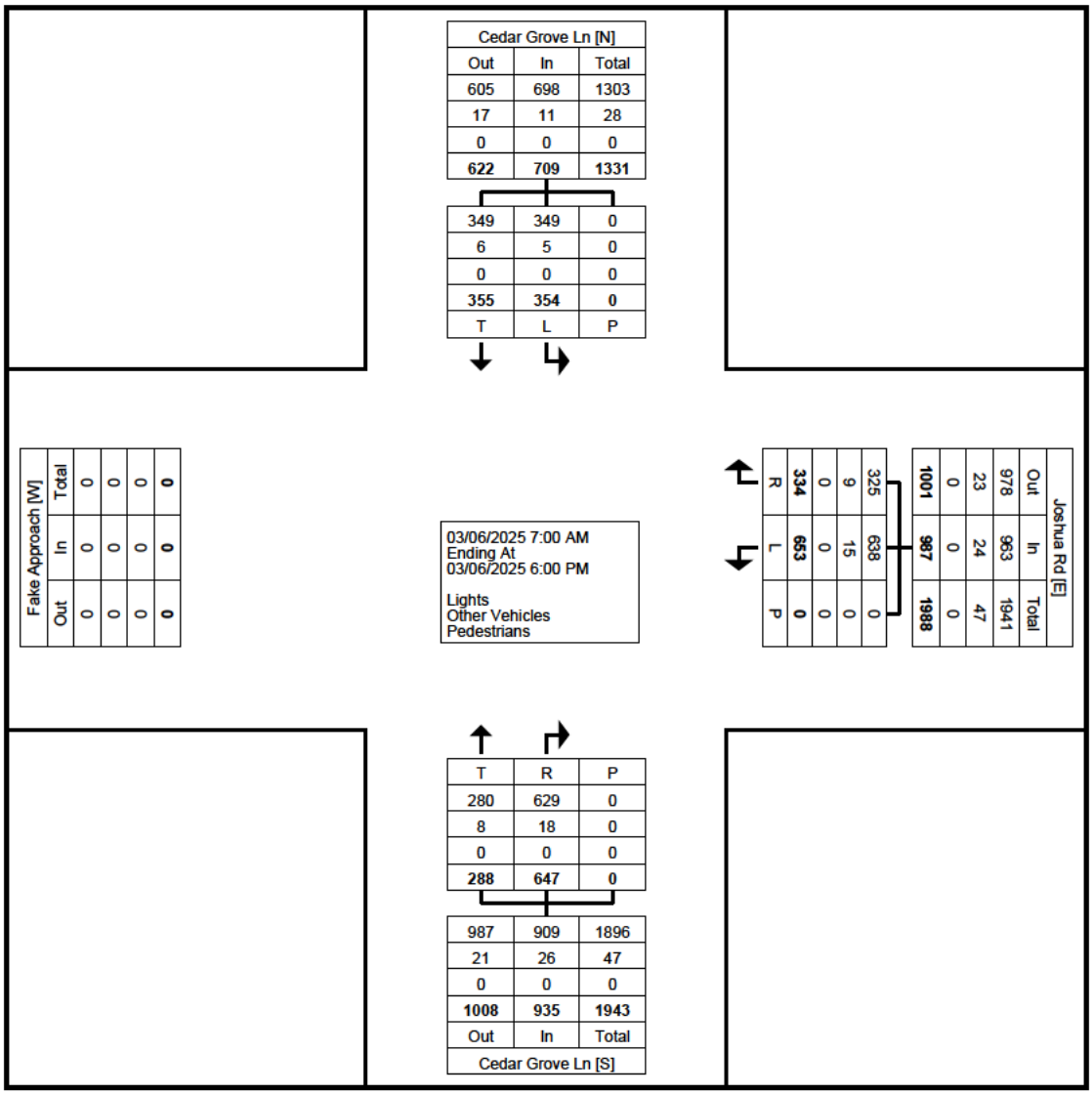
Count Name: 4 Cedar Grove Ln & Joshua Rd
Site Code:
Start Date: 03/06/2025



Turning Movement Data Plot

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2500 East High Street
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610.326.3100 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 4 Cedar Grove Ln & Joshua Rd
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Joshua Rd Westbound				Cedar Grove Ln Northbound				Cedar Grove Ln Southbound				
	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
7:45 AM	68	13	0	81	20	23	0	43	30	32	0	62	186
8:00 AM	60	29	0	89	15	23	0	38	12	31	0	43	170
8:15 AM	48	20	0	68	35	25	0	60	20	17	0	37	165
8:30 AM	53	28	0	81	14	24	0	38	20	20	0	40	159
Total	229	90	0	319	84	95	0	179	82	100	0	182	680
Approach %	71.8	28.2	-	-	46.9	53.1	-	-	45.1	54.9	-	-	-
Total %	33.7	13.2	-	46.9	12.4	14.0	-	26.3	12.1	14.7	-	26.8	-
PHF	0.842	0.776	-	0.896	0.600	0.950	-	0.746	0.683	0.781	-	0.734	0.914
Lights	224	87	-	311	79	88	-	167	78	99	-	177	655
% Lights	97.8	96.7	-	97.5	94.0	92.6	-	93.3	95.1	99.0	-	97.3	96.3
Other Vehicles	5	3	-	8	5	7	-	12	4	1	-	5	25
% Other Vehicles	2.2	3.3	-	2.5	6.0	7.4	-	6.7	4.9	1.0	-	2.7	3.7
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

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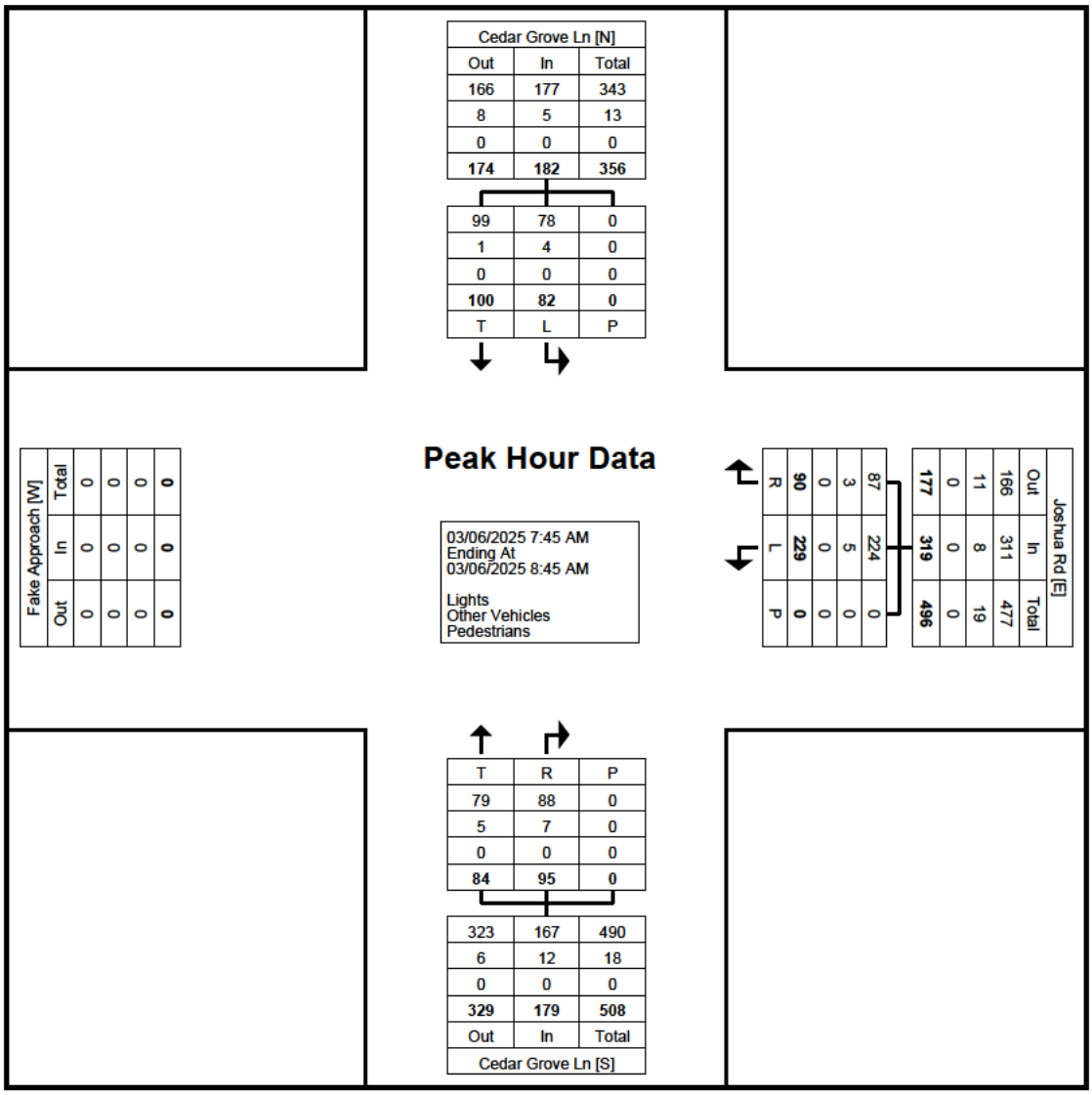
Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 4 Cedar Grove Ln & Joshua Rd
Site Code:
Start Date: 03/06/2025
Page No: 4



Turning Movement Peak Hour Data Plot (7:45 AM)

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Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 4 Cedar Grove Ln & Joshua Rd
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Joshua Rd Westbound				Cedar Grove Ln Northbound				Cedar Grove Ln Southbound				
	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
4:45 PM	35	22	0	57	12	47	0	59	23	20	0	43	159
5:00 PM	33	24	0	57	25	60	0	85	33	34	0	67	209
5:15 PM	35	20	0	55	16	66	0	82	28	27	0	55	192
5:30 PM	36	18	0	54	24	65	0	89	33	17	0	50	193
Total	139	84	0	223	77	238	0	315	117	98	0	215	753
Approach %	62.3	37.7	-	-	24.4	75.6	-	-	54.4	45.6	-	-	-
Total %	18.5	11.2	-	29.6	10.2	31.6	-	41.8	15.5	13.0	-	28.6	-
PHF	0.965	0.875	-	0.978	0.770	0.902	-	0.885	0.886	0.721	-	0.802	0.901
Lights	138	83	-	221	77	237	-	314	117	98	-	215	750
% Lights	99.3	98.8	-	99.1	100.0	99.6	-	99.7	100.0	100.0	-	100.0	99.6
Other Vehicles	1	1	-	2	0	1	-	1	0	0	-	0	3
% Other Vehicles	0.7	1.2	-	0.9	0.0	0.4	-	0.3	0.0	0.0	-	0.0	0.4
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

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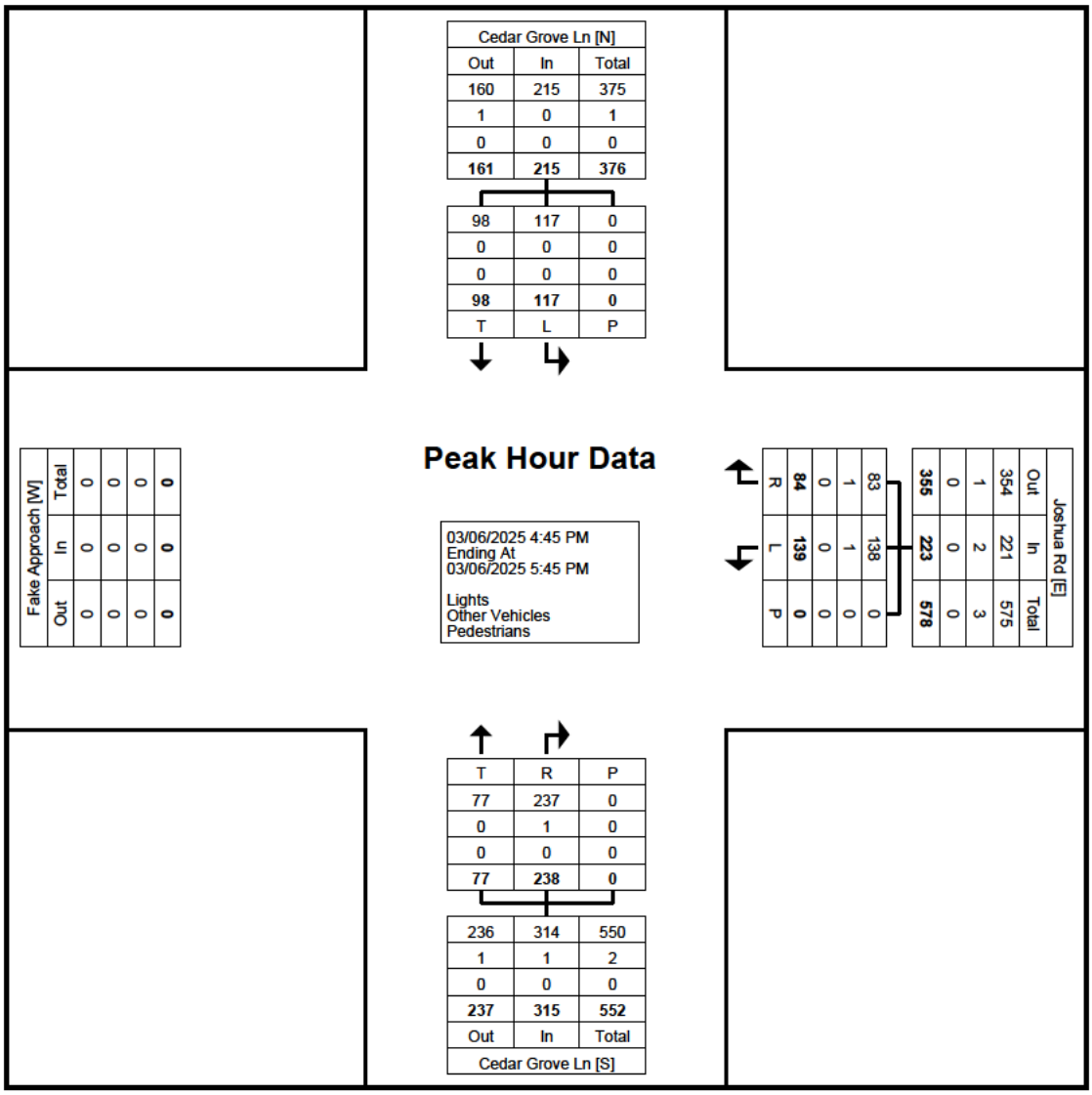
Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 4 Cedar Grove Ln & Joshua Rd
Site Code:
Start Date: 03/06/2025
Page No: 6



Turning Movement Peak Hour Data Plot (4:45 PM)

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Count Name: 5 Lee St & Washington St
Site Code:
Start Date: 03/06/2025

Turning Movement Data

Start Time	Washington St Eastbound				Washington St Westbound					Lee St Southbound				
	Left	Thru	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
7:00 AM	1	0	0	1	0	0	0	0	0	1	0	8	1	2
7:15 AM	0	1	0	1	0	1	0	0	1	1	1	10	2	4
7:30 AM	1	0	0	1	0	1	0	0	1	0	0	9	0	2
7:45 AM	1	1	0	2	0	0	0	0	0	0	0	4	0	2
Hourly Total	3	2	0	5	0	2	0	0	2	2	1	31	3	10
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	2	1	1
8:15 AM	1	1	0	2	0	0	0	0	0	0	1	3	1	3
8:30 AM	2	0	0	2	0	0	0	0	0	0	2	7	2	4
8:45 AM	1	0	0	1	0	1	0	0	1	0	2	5	2	4
Hourly Total	4	1	0	5	0	1	0	0	1	0	6	17	6	12
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	1	0	0	1	0	1	0	0	1	0	2	15	2	4
4:15 PM	0	0	0	0	0	1	0	0	1	0	4	31	4	5
4:30 PM	1	0	0	1	0	9	0	0	9	0	8	24	8	18
4:45 PM	1	1	0	2	0	3	0	0	3	0	1	42	1	6
Hourly Total	3	1	0	4	0	14	0	0	14	0	15	112	15	33
5:00 PM	3	1	0	4	1	0	0	0	1	0	2	13	2	7
5:15 PM	1	0	0	1	0	2	0	0	2	1	0	15	1	4
5:30 PM	0	0	0	0	0	1	1	0	2	1	2	15	3	5
5:45 PM	5	1	0	6	0	1	0	0	1	0	0	19	0	7
Hourly Total	9	2	0	11	1	4	1	0	6	2	4	62	6	23
Grand Total	19	6	0	25	1	21	1	0	23	4	26	222	30	78
Approach %	76.0	24.0	-	-	4.3	91.3	4.3	-	-	13.3	86.7	-	-	-
Total %	24.4	7.7	-	32.1	1.3	26.9	1.3	-	29.5	5.1	33.3	-	38.5	-
Lights	19	6	-	25	1	21	1	-	23	4	26	-	30	78
% Lights	100.0	100.0	-	100.0	100.0	100.0	100.0	-	100.0	100.0	100.0	-	100.0	100.0
Other Vehicles	0	0	-	0	0	0	0	-	0	0	0	-	0	0
% Other Vehicles	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	0	-	-	-	-	0	-	-	-	222	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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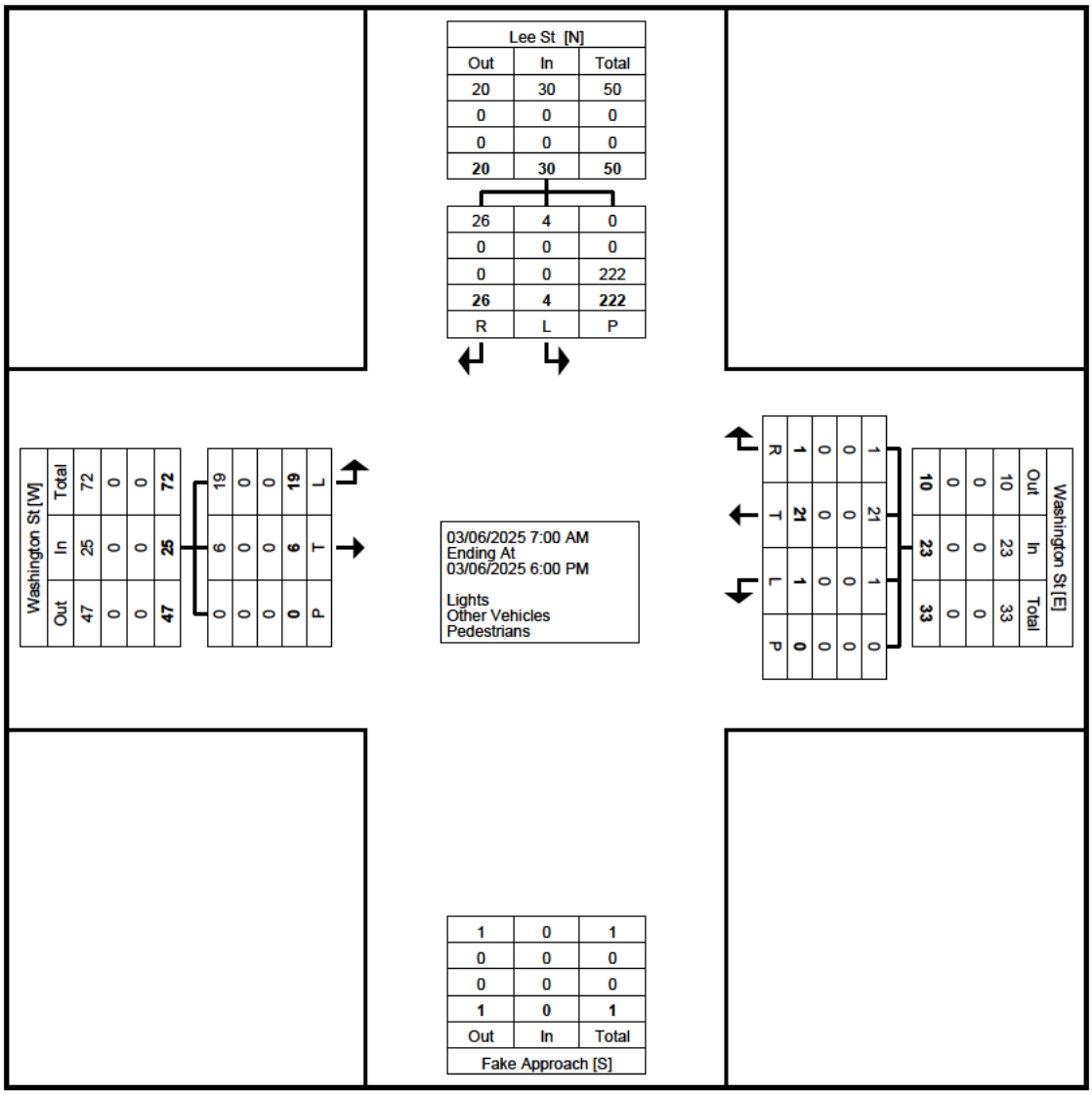
Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 5 Lee St & Washington St
Site Code:
Start Date: 03/06/2025



Turning Movement Data Plot

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

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610.326.3100 jhudak@trafficpd.com

Count Name: 5 Lee St & Washington St
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Washington St Eastbound				Washington St Westbound					Lee St Southbound				
	Left	Thru	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	2	1	1
8:15 AM	1	1	0	2	0	0	0	0	0	0	1	3	1	3
8:30 AM	2	0	0	2	0	0	0	0	0	0	2	7	2	4
8:45 AM	1	0	0	1	0	1	0	0	1	0	2	5	2	4
Total	4	1	0	5	0	1	0	0	1	0	6	17	6	12
Approach %	80.0	20.0	-	-	0.0	100.0	0.0	-	-	0.0	100.0	-	-	-
Total %	33.3	8.3	-	41.7	0.0	8.3	0.0	-	8.3	0.0	50.0	-	50.0	-
PHF	0.500	0.250	-	0.625	0.000	0.250	0.000	-	0.250	0.000	0.750	-	0.750	0.750
Lights	4	1	-	5	0	1	0	-	1	0	6	-	6	12
% Lights	100.0	100.0	-	100.0	-	100.0	-	-	100.0	-	100.0	-	100.0	100.0
Other Vehicles	0	0	-	0	0	0	0	-	0	0	0	-	0	0
% Other Vehicles	0.0	0.0	-	0.0	-	0.0	-	-	0.0	-	0.0	-	0.0	0.0
Pedestrians	-	-	0	-	-	-	-	0	-	-	-	17	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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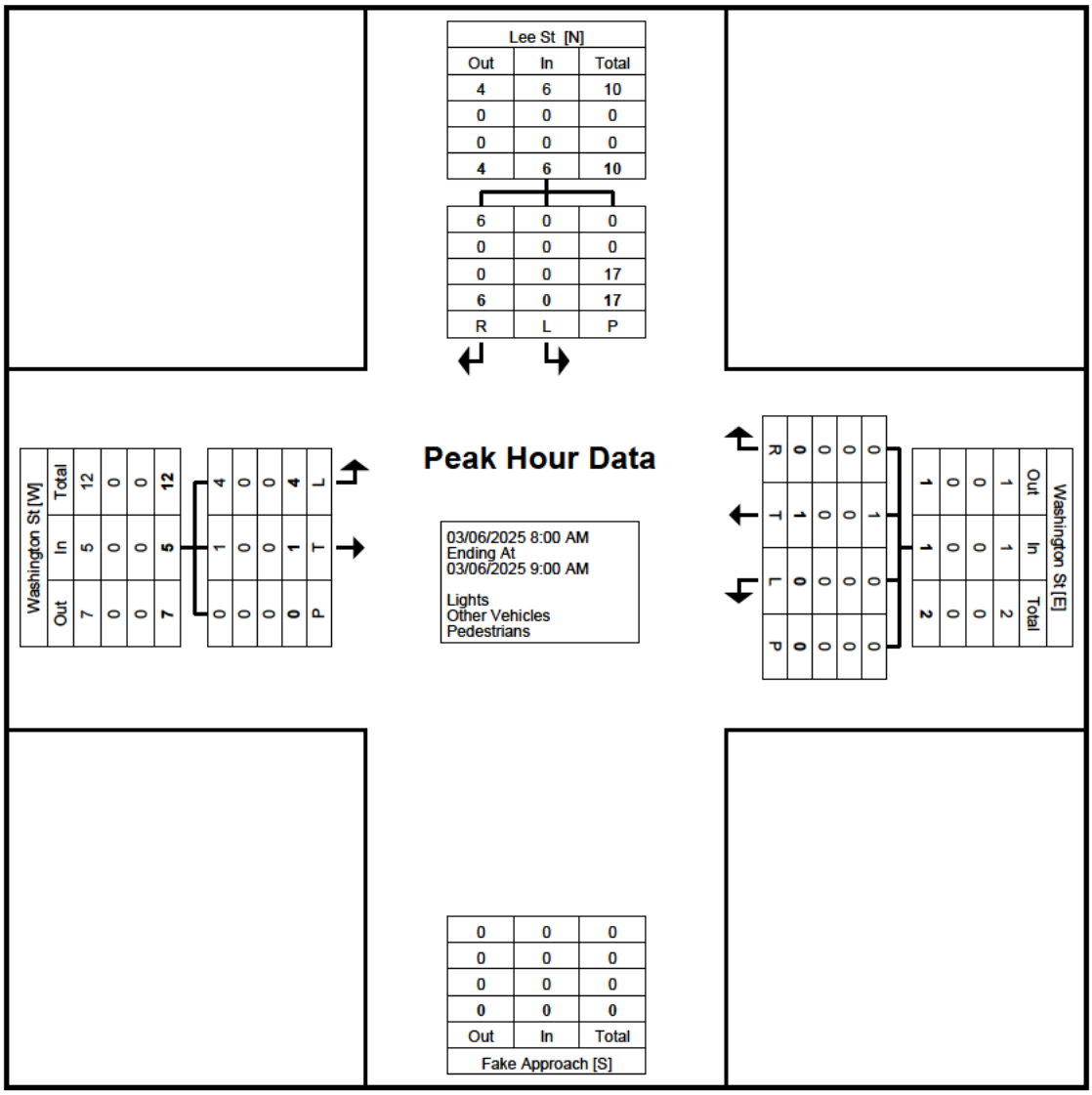
Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 5 Lee St & Washington St
Site Code:
Start Date: 03/06/2025



Turning Movement Peak Hour Data Plot (8:00 AM)

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

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610.326.3100 jhudak@trafficpd.com

Count Name: 5 Lee St & Washington St
Site Code:
Start Date: 03/06/2025

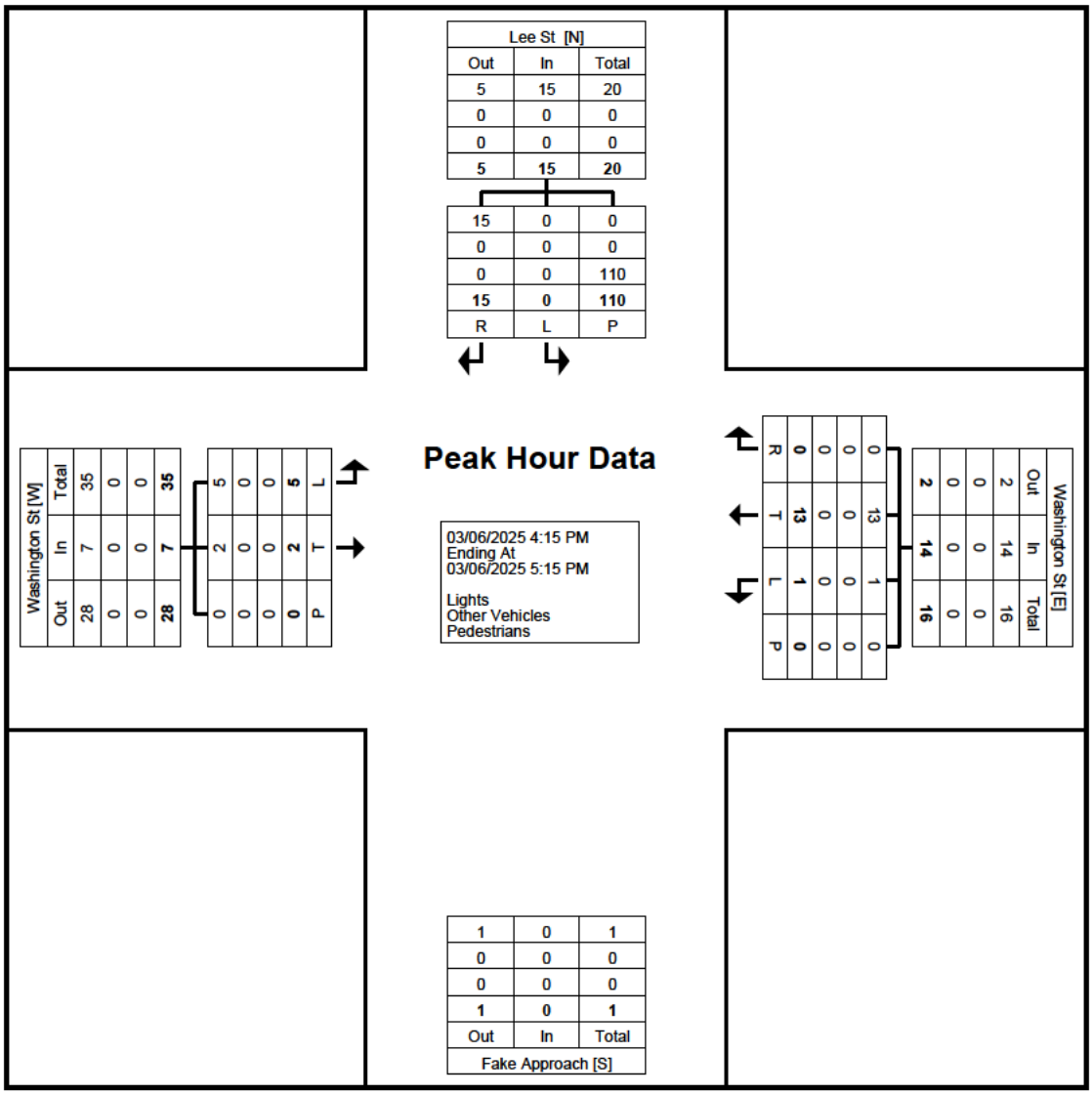
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Washington St Eastbound				Washington St Westbound					Lee St Southbound				
	Left	Thru	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
4:15 PM	0	0	0	0	0	1	0	0	1	0	4	31	4	5
4:30 PM	1	0	0	1	0	9	0	0	9	0	8	24	8	18
4:45 PM	1	1	0	2	0	3	0	0	3	0	1	42	1	6
5:00 PM	3	1	0	4	1	0	0	0	1	0	2	13	2	7
Total	5	2	0	7	1	13	0	0	14	0	15	110	15	36
Approach %	71.4	28.6	-	-	7.1	92.9	0.0	-	-	0.0	100.0	-	-	-
Total %	13.9	5.6	-	19.4	2.8	36.1	0.0	-	38.9	0.0	41.7	-	41.7	-
PHF	0.417	0.500	-	0.438	0.250	0.361	0.000	-	0.389	0.000	0.469	-	0.469	0.500
Lights	5	2	-	7	1	13	0	-	14	0	15	-	15	36
% Lights	100.0	100.0	-	100.0	100.0	100.0	-	-	100.0	-	100.0	-	100.0	100.0
Other Vehicles	0	0	-	0	0	0	0	-	0	0	0	-	0	0
% Other Vehicles	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	-	0.0	-	0.0	0.0
Pedestrians	-	-	0	-	-	-	-	0	-	-	-	110	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 5 Lee St & Washington St
Site Code:
Start Date: 03/06/2025
Page No: 6



Turning Movement Peak Hour Data Plot (4:15 PM)

APPENDIX D:
Nearby Development Information

October 17, 2019

TPD# EKAN.000001

Est. 1989

TRAFFIC PLANNING AND DESIGN, INC.





901 Washington Street Townhomes

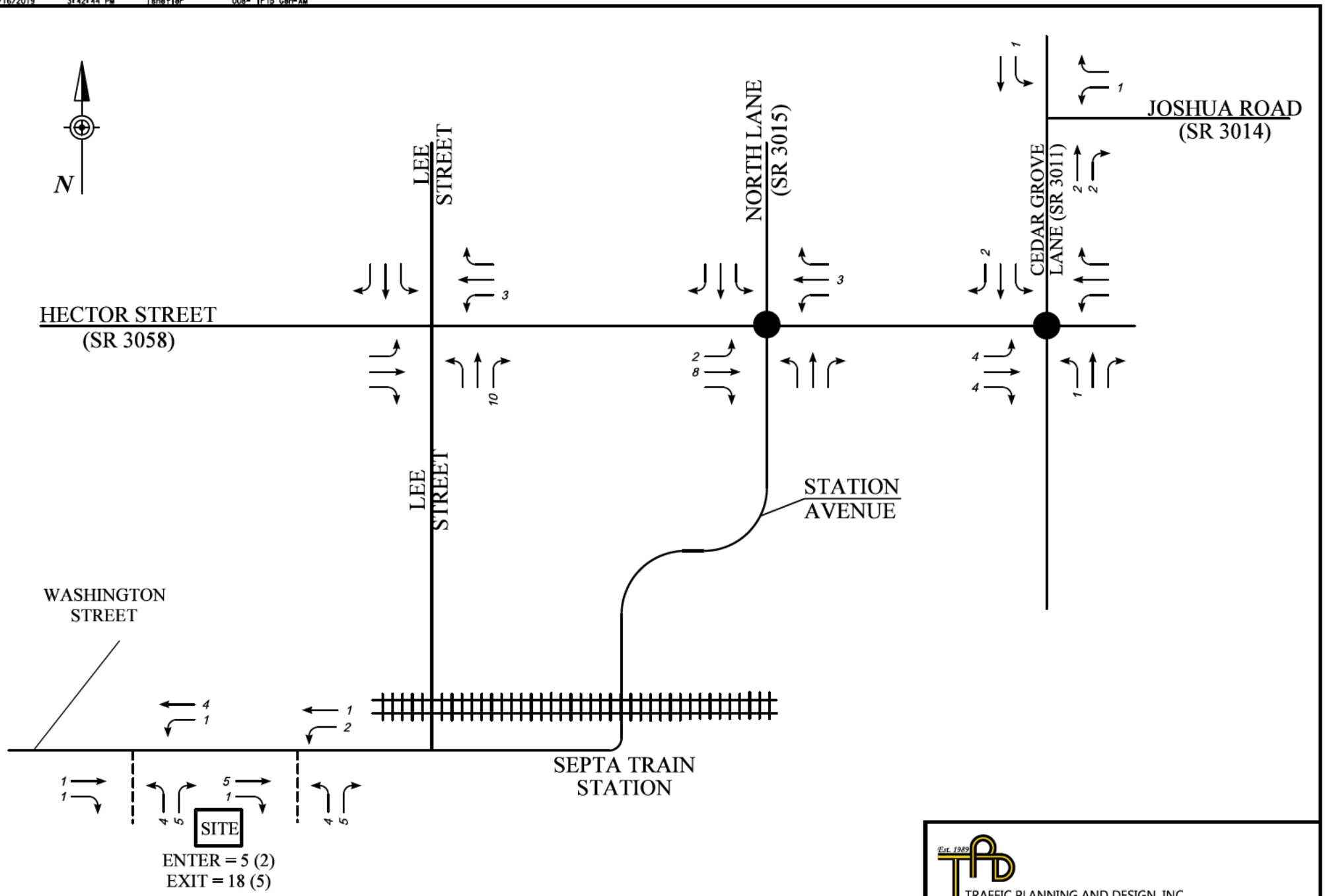
Transportation Impact Study

Whitemarsh Township, Montgomery County, PA

For Submission to:

Whitemarsh Township, PA

\\PTO-FS\Engineering\0-Planning\EKAN\00001 (901 Washington St)\Excel\2019-10-04 (25% TOD) Revised Traffic Impact Study\Figures (x)\2019-10-16, TIS Figures.dgn
10/16/2019 3:42:44 PM lshetler 008- Trip Gen-AM



KEY:

● **SIGNALIZED INTERSECTION**

PROPOSED DRIVEWAY

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FIGURE 8

TRIP DISTRIBUTIONS
WEEKDAY AM PEAK HOUR
TRAFFIC VOLUMES

\\PTO-FS\Engineering\0-Planning\EKAN\00001 (901 Washington St)\Excel\2019-10-04 (25% TOD) Revised Traffic Impact Study\Figures (x)\2019-10-16, TIS Figures.dgn
10/16/2019 3:42:45 PM lshetler 009- Trip Gen-PM

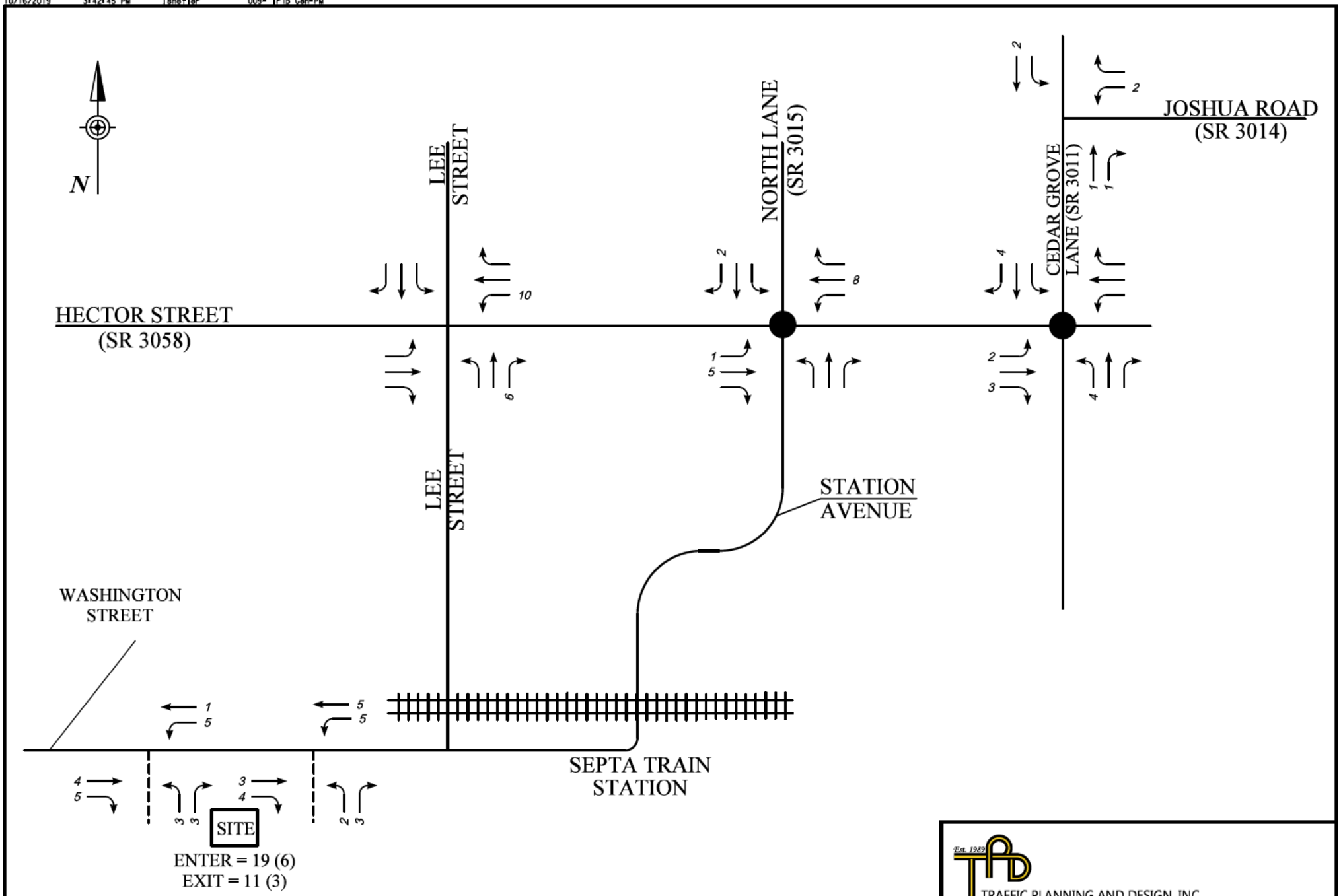

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FIGURE 9

TRIP DISTRIBUTIONS
WEEKDAY PM PEAK HOUR
TRAFFIC VOLUMES

APPENDIX E:
Traffic Volume Development Worksheets

4/17/2025

Traffic Volumes Worksheet

Intersection:	**Lee Street & Hector Street**								
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
2025 Existing Counts	**12**	**389**	**1**	**20**	**571**	**70**	**3**	**2**	**15**	**37**	**6**	**7**	**1133**
Balancing													0
2025 Existing Volumes (Balanced)	**12**	**389**	**1**	**20**	**571**	**70**	**3**	**2**	**15**	**37**	**6**	**7**	**1133**
Base growth (0.17% compounded for 6 yrs)	0	4	0	0	6	1	0	0	0	0	0	0	11
													0
901 Washington Street				3					10				13
Existing Site Redistribution		-59		28	-86				19				-98
2031 Base (No-Build) Volumes	**12**	**334**	**1**	**51**	**491**	**71**	**3**	**2**	**44**	**37**	**6**	**7**	**1059**
New Trips									2				2
													0
Total Trip Distribution	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**2**
2031 Projected (Build) Volumes	**12**	**334**	**1**	**51**	**491**	**71**	**3**	**2**	**46**	**37**	**6**	**7**	**1061**

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
2025 Existing Counts	**6**	**728**	**13**	**17**	**370**	**30**	**10**	**3**	**31**	**86**	**5**	**18**	**1317**
Balancing													0
2025 Existing Volumes (Balanced)	**6**	**728**	**13**	**17**	**370**	**30**	**10**	**3**	**31**	**86**	**5**	**18**	**1317**
Base growth (0.17% compounded for 6 yrs)	0	7	0	0	4	0	0	0	0	1	0	0	12
0													0
901 Washington Street				10					6				16
Existing Site Redistribution		-116		18	-55				38				-115
2031 Base (No-Build) Volumes	**6**	**619**	**13**	**45**	**319**	**30**	**10**	**3**	**75**	**87**	**5**	**18**	**1230**
New Trips									1				1
0													0
Total Trip Distribution	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**
2031 Projected (Build) Volumes	**6**	**619**	**13**	**45**	**319**	**30**	**10**	**3**	**76**	**87**	**5**	**18**	**1231**

4/17/2025

Traffic Volumes Worksheet

Intersection: **Hector Street & Station Avenue/North Lane**

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
2025 Existing Counts	**115**	**326**	**12**	**4**	**588**	**95**	**11**	**26**	**4**	**65**	**23**	**73**	**1342**
Balancing													0
2025 Existing Volumes (Balanced)	**115**	**326**	**12**	**4**	**588**	**95**	**11**	**26**	**4**	**65**	**23**	**73**	**1342**
Base growth (0.17% compounded for 6 yrs)	1	3	0	0	6	1	0	0	0	1	0	1	13
													0
901 Washington Street	2	8			3								13
Existing Site Redistribution	-10	-30		50	-102			13	37		8	-6	-40
2031 Base (No-Build) Volumes	**108**	**307**	**12**	**54**	**495**	**96**	**11**	**39**	**41**	**66**	**31**	**68**	**1328**
New Trips		2		1				1	4				8
													0
Total Trip Distribution	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**1**	**4**	**0**	**0**	**0**	**8**
2031 Projected (Build) Volumes	**108**	**309**	**12**	**55**	**495**	**96**	**11**	**40**	**45**	**66**	**31**	**68**	**1336**

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
2025 Existing Counts	**115**	**726**	**6**	**18**	**330**	**61**	**9**	**36**	**8**	**108**	**25**	**75**	**1517**
Balancing													0
2025 Existing Volumes (Balanced)	**115**	**726**	**6**	**18**	**330**	**61**	**9**	**36**	**8**	**108**	**25**	**75**	**1517**
Base growth (0.17% compounded for 6 yrs)	1	7	0	0	3	1	0	0	0	1	0	1	14
0													0
901 Washington Street	1	5			8							2	16
Existing Site Redistribution	-11	-67		30	-30			11	67		7	-7	0
2031 Base (No-Build) Volumes	**106**	**671**	**6**	**48**	**311**	**62**	**9**	**47**	**75**	**109**	**32**	**71**	**1547**
New Trips		1		4				1	3		1		10
0													0
Total Trip Distribution	**0**	**1**	**0**	**4**	**0**	**0**	**0**	**1**	**3**	**0**	**1**	**0**	**10**
2031 Projected (Build) Volumes	**106**	**672**	**6**	**52**	**311**	**62**	**9**	**48**	**78**	**109**	**33**	**71**	**1557**

4/17/2025

Traffic Volumes Worksheet

Intersection:	**Hector Street & Barren Hill Road/Cedar Grove Lane**									
Synchro Node:	**3**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**South**	**0**

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2025 Existing Counts	**102**	**3**	**316**	**0**	**1**	**1**	**464**	**69**	**1**	**1**	**111**	**210**	**1279**
Balancing													0
2025 Existing Volumes (Balanced)	**102**	**3**	**316**	**0**	**1**	**1**	**464**	**69**	**1**	**1**	**111**	**210**	**1279**
Base growth (0.17% compounded for 6 yrs)	1	0	3	0	0	0	5	1	0	0	1	2	13
													0
901 Washington Street	4		4				1					2	11
Existing Site Redistribution													0
2031 Base (No-Build) Volumes	**107**	**3**	**323**	**0**	**1**	**1**	**470**	**70**	**1**	**1**	**112**	**214**	**1303**
New Trips	2		2				1						5
													0
Total Trip Distribution	**2**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**5**
2031 Projected (Build) Volumes	**109**	**3**	**325**	**0**	**1**	**1**	**471**	**70**	**1**	**1**	**112**	**214**	**1308**

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
2025 Existing Counts	**232**	**1**	**643**	**1**	**3**	**1**	**249**	**63**	**0**	**0**	**77**	**157**	**1427**
Balancing													0
2025 Existing Volumes (Balanced)	**232**	**1**	**643**	**1**	**3**	**1**	**249**	**63**	**0**	**0**	**77**	**157**	**1427**
Base growth (0.17% compounded for 6 yrs)	2	0	7	0	0	0	3	1	0	0	1	2	16
0													0
901 Washington Street	2		3				4					4	13
Existing Site Redistribution													0
2031 Base (No-Build) Volumes	**236**	**1**	**653**	**1**	**3**	**1**	**256**	**64**	**0**	**0**	**78**	**163**	**1456**
New Trips	1		2				2					2	7
0													0
Total Trip Distribution	**1**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**7**
2031 Projected (Build) Volumes	**237**	**1**	**655**	**1**	**3**	**1**	**258**	**64**	**0**	**0**	**78**	**165**	**1463**

4/17/2025

Traffic Volumes Worksheet

Intersection:	**Cedar Grove Lane and Joshua Road**									
Synchro Node:	**4**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**South**	**0**

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2025 Existing Counts	**0**	**0**	**0**	**229**	**0**	**90**	**0**	**84**	**95**	**82**	**100**	**0**	**680**
Balancing													0
2025 Existing Volumes (Balanced)	**0**	**0**	**0**	**229**	**0**	**90**	**0**	**84**	**95**	**82**	**100**	**0**	**680**
Base growth (0.17% compounded for 6 yrs)	0	0	0	2	0	1	0	1	1	1	1	0	7
													0
901 Washington Street				1				2	2		1		6
Existing Site Redistribution													0
2031 Base (No-Build) Volumes	**0**	**0**	**0**	**232**	**0**	**91**	**0**	**87**	**98**	**83**	**102**	**0**	**693**
New Trips								1	1				2
													0
Total Trip Distribution	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**2**
2031 Projected (Build) Volumes	**0**	**0**	**0**	**232**	**0**	**91**	**0**	**88**	**99**	**83**	**102**	**0**	**695**

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
2025 Existing Counts	**0**	**0**	**0**	**139**	**0**	**84**	**0**	**77**	**238**	**117**	**98**	**0**	**753**
Balancing													0
2025 Existing Volumes (Balanced)	**0**	**0**	**0**	**139**	**0**	**84**	**0**	**77**	**238**	**117**	**98**	**0**	**753**
Base growth (0.17% compounded for 6 yrs)	0	0	0	1	0	1	0	1	2	1	1	0	7
0													0
901 Washington Street				2				1	1		2		6
Existing Site Redistribution													0
2031 Base (No-Build) Volumes	**0**	**0**	**0**	**142**	**0**	**85**	**0**	**79**	**241**	**118**	**101**	**0**	**766**
New Trips				1				1			1		3
0													0
Total Trip Distribution	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**3**
2031 Projected (Build) Volumes	**0**	**0**	**0**	**143**	**0**	**85**	**0**	**80**	**241**	**118**	**102**	**0**	**769**

4/17/2025

Traffic Volumes Worksheet

Intersection:	**Washington Street & Lee Street**								
Synchro Node:	**5**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**South**	**0**

Time Period: Weekday A.M. Peak Hour

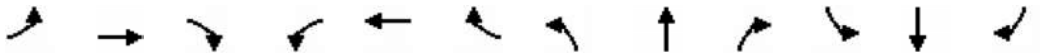
	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2025 Existing Counts	**4**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**12**
Balancing													0
2025 Existing Volumes (Balanced)	**4**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**12**
Base growth (0.17% compounded for 6 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
													0
901 Washington Street	10											3	13
Existing Site Redistribution	19	50			58							28	155
2031 Base (No-Build) Volumes	**33**	**51**	**0**	**0**	**59**	**0**	**0**	**0**	**0**	**0**	**0**	**37**	**180**
New Trips		2			3	2							7
													0
Total Trip Distribution	**0**	**2**	**0**	**0**	**3**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**7**
2031 Projected (Build) Volumes	**33**	**53**	**0**	**0**	**62**	**2**	**0**	**0**	**0**	**0**	**0**	**37**	**187**

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
2025 Existing Counts	**5**	**2**	**0**	**0**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**35**
Balancing													0
2025 Existing Volumes (Balanced)	**5**	**2**	**0**	**0**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**35**
Base growth (0.17% compounded for 6 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
0													0
901 Washington Street	6											10	16
Existing Site Redistribution	38	78			37							18	171
2031 Base (No-Build) Volumes	**49**	**80**	**0**	**0**	**50**	**0**	**0**	**0**	**0**	**0**	**0**	**43**	**222**
New Trips		6			2	1							9
0													0
Total Trip Distribution	**0**	**6**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**9**
2031 Projected (Build) Volumes	**49**	**86**	**0**	**0**	**52**	**1**	**0**	**0**	**0**	**0**	**0**	**43**	**231**

APPENDIX F:
Capacity Analysis Worksheets

Existing Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	389	1	20	571	70	3	2	15	37	6	7
Future Volume (vph)	12	389	1	20	571	70	3	2	15	37	6	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	11	11	11	11	11	11
Grade (%)		2%			-2%			0%			-3%	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		403			769			463			326	
Travel Time (s)		11.0			21.0			12.6			8.9	
Confl. Peds. (#/hr)	2		7	7		2	9		1	1		9
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%	4%	0%	5%	2%	1%	0%	0%	7%	0%	0%	14%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

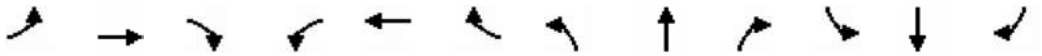
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	389	1	20	571	70	3	2	15	37	6	7
Future Vol, veh/h	12	389	1	20	571	70	3	2	15	37	6	7
Conflicting Peds, #/hr	2	0	7	7	0	2	9	0	1	1	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	0	-	-	-3	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	4	0	5	2	1	0	0	7	0	0	14
Mvmt Flow	13	405	1	21	595	73	3	2	16	39	6	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	670	0	0	413	0	0	1128	1151	414	1118	1115	643
Stage 1	-	-	-	-	-	-	439	439	-	676	676	-
Stage 2	-	-	-	-	-	-	689	712	-	442	439	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	6.5	6.27	6.5	5.9	6.04
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.2	3	4	3.2
Pot Cap-1 Maneuver	703	-	-	866	-	-	200	200	654	245	252	502
Stage 1	-	-	-	-	-	-	681	582	-	559	510	-
Stage 2	-	-	-	-	-	-	491	439	-	730	626	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	702	-	-	861	-	-	181	186	649	225	234	496
Mov Cap-2 Maneuver	-	-	-	-	-	-	181	186	-	225	234	-
Stage 1	-	-	-	-	-	-	661	565	-	544	489	-
Stage 2	-	-	-	-	-	-	454	421	-	692	607	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.3	0.3	14.6	23.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	397	702	-	-	861	-	-	245
HCM Lane V/C Ratio	0.052	0.018	-	-	0.024	-	-	0.213
HCM Control Delay (s/veh)	14.6	10.2	0	-	9.3	0	-	23.6
HCM Lane LOS	B	B	A	-	A	A	-	C
HCM 95th %tile Q (veh)	0.2	0.1	-	-	0.1	-	-	0.8



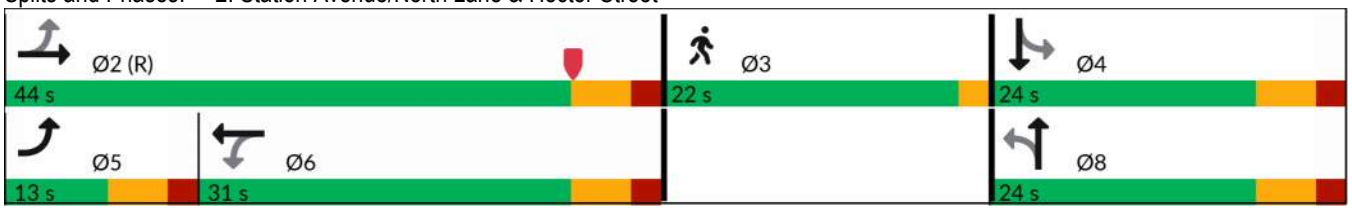
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	326	12	4	588	95	11	26	4	65	23	73
Future Volume (vph)	115	326	12	4	588	95	11	26	4	65	23	73
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	13	13	12	12	12	16	16	16
Grade (%)		-1%			4%			6%			-5%	
Storage Length (ft)	180		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	75			40			25			25		
Satd. Flow (prot)	1588	1847	0	1564	1752	0	0	1652	0	0	1812	0
Flt Permitted	0.092			0.548				0.913			0.850	
Satd. Flow (perm)	154	1847	0	896	1752	0	0	1524	0	0	1562	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			35	
Link Distance (ft)		769			1291			301			1034	
Travel Time (s)		15.0			25.1			8.2			20.1	
Confl. Peds. (#/hr)			7	7			9		7	7		9
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	4%	0%	0%	2%	1%	0%	4%	0%	9%	0%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	121	356	0	4	719	0	0	43	0	0	169	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	44.0		31.0	31.0		24.0	24.0		24.0	24.0	
Total Split (%)	14.4%	48.9%		34.4%	34.4%		26.7%	26.7%		26.7%	26.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		Min	Min		Min	Min		Min	Min	
Act Effct Green (s)	53.3	53.3		38.5	38.5			17.7			17.7	
Actuated g/C Ratio	0.59	0.59		0.43	0.43			0.20			0.20	
v/c Ratio	0.48	0.32		0.01	0.95			0.14			0.55	
Control Delay (s/veh)	18.6	11.0		10.2	45.0			29.1			38.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	18.6	11.0		10.2	45.0			29.1			38.8	
LOS	B	B		B	D			C			D	
Approach Delay (s/veh)		13.0			44.9			29.1			38.8	
Approach LOS		B			D			C			D	
Queue Length 50th (ft)	28	94		1	428			20			87	
Queue Length 95th (ft)	78	171		m2	m#712			45			140	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	19.0
Total Split (s)	22.0
Total Split (%)	24%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			1211			221			954	
Turn Bay Length (ft)	180			100								
Base Capacity (vph)	250	1094		383	749			339			347	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.48	0.33		0.01	0.96			0.13			0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 26 (29%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay (s/veh): 32.9		Intersection LOS: C	
Intersection Capacity Utilization 74.0%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Station Avenue/North Lane & Hector Street



Lane Group	Ø3
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

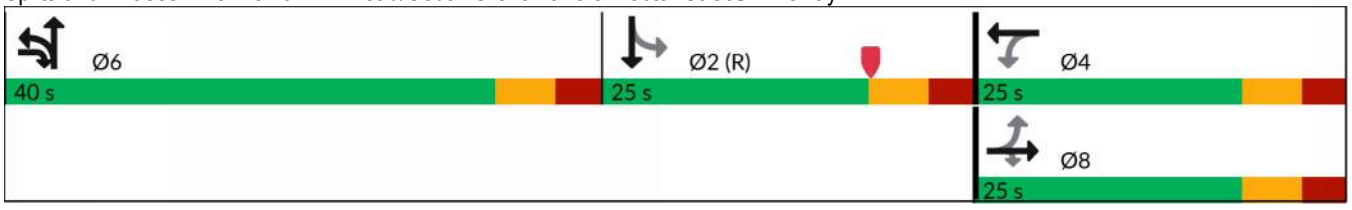
Intersection Summary

3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway

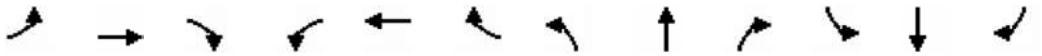
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	3	316	0	1	1	464	69	1	1	111	210
Future Volume (vph)	102	3	316	0	1	1	464	69	1	1	111	210
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	11	11	16	16	16
Grade (%)		2%			-4%			-3%			2%	
Storage Length (ft)	0		80	0		0	130		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			100			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1291			310			527			657	
Travel Time (s)		25.1			8.5			10.3			12.8	
Confl. Peds. (#/hr)	1					1			1	1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	0%	4%	0%	0%	0%	2%	6%	0%	0%	5%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov		NA		Split	NA		Perm	NA	
Protected Phases		8	6		4		6	6			2	
Permitted Phases	8		8	4						2		
Detector Phase	8	8	6	4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	25.0	25.0	40.0	25.0	25.0		40.0	40.0		25.0	25.0	
Total Split (%)	27.8%	27.8%	44.4%	27.8%	27.8%		44.4%	44.4%		27.8%	27.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0			6.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		C-Max	C-Max	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway



3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	3	316	0	1	1	464	69	1	1	111	210
Future Volume (veh/h)	102	3	316	0	1	1	464	69	1	1	111	210
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	1722	1778	1722	1949	1949	1949	1883	1826	1912	1849	1776	1820
Adj Flow Rate, veh/h	112	3	347	0	1	1	510	76	1	1	122	231
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	0	4	0	0	0	2	6	0	0	5	2
Cap, veh/h	327	8	753	0	174	174	578	580	8	1	155	293
Arrive On Green	0.18	0.19	0.19	0.00	0.19	0.18	0.32	0.32	0.31	0.27	0.28	0.27
Sat Flow, veh/h	1275	40	1455	0	893	893	1794	1798	24	4	547	1036
Grp Volume(v), veh/h	115	0	347	0	0	2	510	0	77	354	0	0
Grp Sat Flow(s),veh/h/ln	1315	0	1455	0	0	1785	1794	0	1822	1587	0	0
Q Serve(g_s), s	6.8	0.0	13.6	0.0	0.0	0.1	24.2	0.0	2.7	18.6	0.0	0.0
Cycle Q Clear(g_c), s	7.3	0.0	13.6	0.0	0.0	0.1	24.2	0.0	2.7	18.6	0.0	0.0
Prop In Lane	0.97		1.00	0.00		0.50	1.00		0.01	0.00		0.65
Lane Grp Cap(c), veh/h	320	0	753	0	0	347	578	0	587	449	0	0
V/C Ratio(X)	0.36	0.00	0.46	0.00	0.00	0.01	0.88	0.00	0.13	0.79	0.00	0.00
Avail Cap(c_a), veh/h	342	0	777	0	0	377	678	0	688	449	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.00	0.96	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.8	0.0	13.8	0.0	0.0	29.4	28.9	0.0	21.6	30.1	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.4	0.0	0.0	0.0	11.7	0.0	0.1	13.1	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	7.7	0.0	0.0	0.0	11.7	0.0	1.1	8.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.4	0.0	14.2	0.0	0.0	29.4	40.6	0.0	21.7	43.1	0.0	0.0
LnGrp LOS	C		B			C	D		C	D		
Approach Vol, veh/h		462			2			587			354	
Approach Delay, s/veh		19.0			29.4			38.1			43.1	
Approach LOS		B			C			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.5		23.5		35.0		23.5				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		18.0		18.0		33.0		18.0				
Max Q Clear Time (g_c+I1), s		20.6		2.5		26.7		16.1				
Green Ext Time (p_c), s		0.0		0.0		1.3		0.4				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			33.1									
HCM 6th LOS			C									



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	229	90	84	95	82	100
Future Volume (vph)	229	90	84	95	82	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	14	14	15	15
Grade (%)	-7%		3%			6%
Link Speed (mph)	35		35			35
Link Distance (ft)	1154		657			602
Travel Time (s)	22.5		12.8			11.7
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	3%	6%	7%	5%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	11.1
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	229	90	84	95	82	100
Future Vol, veh/h	229	90	84	95	82	100
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	3	6	7	5	1
Mvmt Flow	252	99	92	104	90	110
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	12.3	9.7	10.4
HCM LOS	B	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	72%	45%
Vol Thru, %	47%	0%	55%
Vol Right, %	53%	28%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	179	319	182
LT Vol	0	229	82
Through Vol	84	0	100
RT Vol	95	90	0
Lane Flow Rate	197	351	200
Geometry Grp	1	1	1
Degree of Util (X)	0.264	0.474	0.289
Departure Headway (Hd)	4.837	4.867	5.206
Convergence, Y/N	Yes	Yes	Yes
Cap	736	736	684
Service Time	2.915	2.936	3.285
HCM Lane V/C Ratio	0.268	0.477	0.292
HCM Control Delay, s/veh	9.7	12.3	10.4
HCM Lane LOS	A	B	B
HCM 95th-tile Q	1.1	2.6	1.2

5: Washington Street & Lee Street



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	1	1	0	0	6
Future Volume (vph)	4	1	1	0	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	16	16
Grade (%)		-1%	1%		-1%	
Link Speed (mph)		25	25		25	
Link Distance (ft)		946	682		463	
Travel Time (s)		25.8	18.6		12.6	
Confl. Peds. (#/hr)	17			17		
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	1	1	0	0	6
Future Vol, veh/h	4	1	1	0	0	6
Conflicting Peds, #/hr	17	0	0	17	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	-1	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	5	1	1	0	0	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	18	0	-	0	29	18
Stage 1	-	-	-	-	18	-
Stage 2	-	-	-	-	11	-
Critical Hdwy	4.3	-	-	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1183	-	-	-	1155	1135
Stage 1	-	-	-	-	1178	-
Stage 2	-	-	-	-	1187	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1157	-	-	-	1101	1110
Mov Cap-2 Maneuver	-	-	-	-	1101	-
Stage 1	-	-	-	-	1147	-
Stage 2	-	-	-	-	1161	-

Approach	EB	WB	SB
HCM Control Delay, s/v	6.5	0	8.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1157	-	-	-	1110
HCM Lane V/C Ratio	0.005	-	-	-	0.007
HCM Control Delay (s/veh)	8.1	0	-	-	8.3
HCM Lane LOS	A	A	-	-	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)	6	728	13	17	370	30	10	3	31	86	5	18
Future Volume (vph)	6	728	13	17	370	30	10	3	31	86	5	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	11	11	11	11	11	11
Grade (%)		2%			-2%			0%			-3%	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		403			769			463			326	
Travel Time (s)		11.0			21.0			12.6			8.9	
Confl. Peds. (#/hr)	23		12	12		23	38		3	3		38
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	728	13	17	370	30	10	3	31	86	5	18
Future Vol, veh/h	6	728	13	17	370	30	10	3	31	86	5	18
Conflicting Peds, #/hr	23	0	12	12	0	23	38	0	3	3	0	38
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	0	-	-	-3	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	6	766	14	18	389	32	11	3	33	91	5	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	444	0	0	792	0	0	1288	1277	788	1270	1268	466
Stage 1	-	-	-	-	-	-	797	797	-	464	464	-
Stage 2	-	-	-	-	-	-	491	480	-	806	804	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	6.5	6.2	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	845	-	-	637	-	-	154	168	412	196	210	657
Stage 1	-	-	-	-	-	-	426	401	-	712	613	-
Stage 2	-	-	-	-	-	-	636	558	-	481	456	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	828	-	-	630	-	-	133	155	406	167	194	615
Mov Cap-2 Maneuver	-	-	-	-	-	-	133	155	-	167	194	-
Stage 1	-	-	-	-	-	-	416	392	-	689	579	-
Stage 2	-	-	-	-	-	-	562	527	-	432	446	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.1	0.4	22.1	48.8
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	257	828	-	-	630	-	-	191
HCM Lane V/C Ratio	0.18	0.008	-	-	0.028	-	-	0.601
HCM Control Delay (s/veh)	22.1	9.4	0	-	10.9	0	-	48.8
HCM Lane LOS	C	A	A	-	B	A	-	E
HCM 95th %tile Q (veh)	0.6	0	-	-	0.1	-	-	3.3

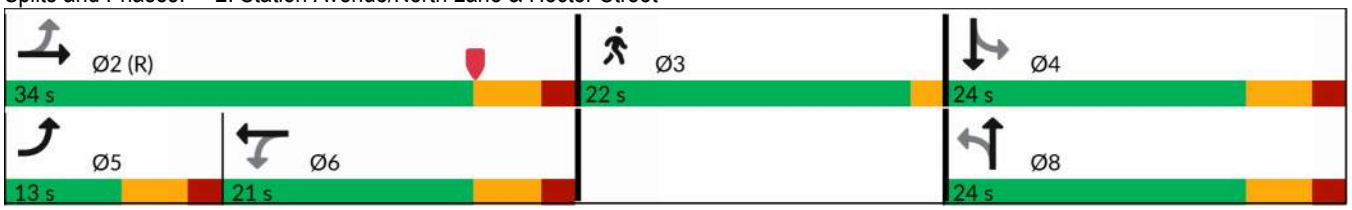
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	726	6	18	330	61	9	36	8	108	25	75
Future Volume (vph)	115	726	6	18	330	61	9	36	8	108	25	75
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	13	13	12	12	12	16	16	16
Grade (%)		-1%			4%			6%			-5%	
Storage Length (ft)	180		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	75			40			25			25		
Satd. Flow (prot)	1588	1908	0	1564	1746	0	0	1685	0	0	1913	0
Flt Permitted	0.282			0.246				0.939			0.807	
Satd. Flow (perm)	471	1908	0	405	1746	0	0	1592	0	0	1560	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			35	
Link Distance (ft)		769			1291			301			1034	
Travel Time (s)		15.0			25.1			8.2			20.1	
Confl. Peds. (#/hr)			1	1			8		15	15		8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	0%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	121	770	0	19	411	0	0	55	0	0	219	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	34.0		21.0	21.0		24.0	24.0		24.0	24.0	
Total Split (%)	16.3%	42.5%		26.3%	26.3%		30.0%	30.0%		30.0%	30.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		Min	Min		Min	Min		Min	Min	
Act Effct Green (s)	42.0	42.0		29.5	29.5			19.0			19.0	
Actuated g/C Ratio	0.53	0.53		0.37	0.37			0.24			0.24	
v/c Ratio	0.31	0.76		0.12	0.63			0.14			0.59	
Control Delay (s/veh)	13.4	23.4		19.1	22.9			23.1			33.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	13.4	23.4		19.1	22.9			23.1			33.1	
LOS	B	C		B	C			C			C	
Approach Delay (s/veh)		22.1			22.8			23.1			33.2	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	29	288		4	80			22			97	
Queue Length 95th (ft)	66	#565		m9	#380			46			151	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	19.0
Total Split (s)	22.0
Total Split (%)	28%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			1211			221			954	
Turn Bay Length (ft)	180			100								
Base Capacity (vph)	389	1002		149	643			411			402	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.31	0.77		0.13	0.64			0.13			0.54	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 76 (95%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 23.8		Intersection LOS: C	
Intersection Capacity Utilization 85.2%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Station Avenue/North Lane & Hector Street



Lane Group	Ø3
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

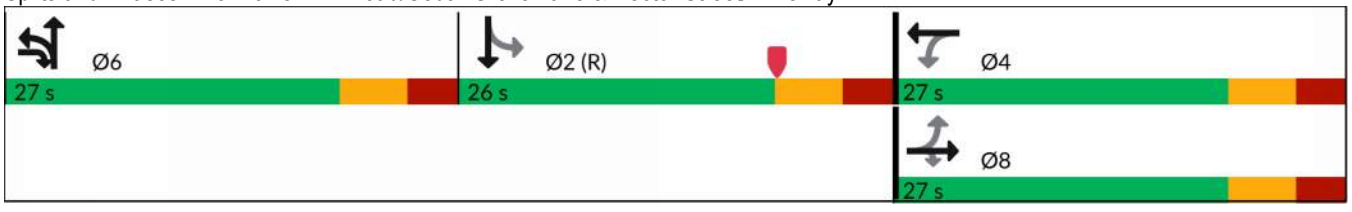
Intersection Summary

3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	232	1	643	1	3	1	249	63	0	0	77	157
Future Volume (vph)	232	1	643	1	3	1	249	63	0	0	77	157
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	11	11	16	16	16
Grade (%)		2%			-4%			-3%			2%	
Storage Length (ft)	0		80	0		0	130		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			100			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1291			310			527			657	
Travel Time (s)		25.1			8.5			10.3			12.8	
Confl. Peds. (#/hr)	3					3			3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	3%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA			NA	
Protected Phases		8	6		4		6	6			2	
Permitted Phases	8		8	4						2		
Detector Phase	8	8	6	4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	27.0	27.0	27.0	27.0	27.0		27.0	27.0		26.0	26.0	
Total Split (%)	33.8%	33.8%	33.8%	33.8%	33.8%		33.8%	33.8%		32.5%	32.5%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0			6.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		C-Max	C-Max	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway



3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	1	643	1	3	1	249	63	0	0	77	157
Future Volume (veh/h)	232	1	643	1	3	1	249	63	0	0	77	157
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1764	1778	1764	1949	1949	1949	1869	1912	1912	1849	1834	1834
Adj Flow Rate, veh/h	244	1	677	1	3	1	262	66	0	0	81	165
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	1	0	0	0	3	0	0	0	1	1
Cap, veh/h	221	1	675	54	141	35	340	365	0	0	173	352
Arrive On Green	0.25	0.26	0.26	0.25	0.26	0.25	0.19	0.19	0.00	0.00	0.32	0.31
Sat Flow, veh/h	498	2	1486	0	537	134	1780	1912	0	0	537	1094
Grp Volume(v), veh/h	245	0	677	5	0	0	262	66	0	0	0	246
Grp Sat Flow(s),veh/h/ln	500	0	1486	671	0	0	1780	1912	0	0	0	1631
Q Serve(g_s), s	0.0	0.0	21.0	0.0	0.0	0.0	11.2	2.3	0.0	0.0	0.0	9.7
Cycle Q Clear(g_c), s	20.0	0.0	21.0	20.0	0.0	0.0	11.2	2.3	0.0	0.0	0.0	9.7
Prop In Lane	1.00		1.00	0.20		0.20	1.00		0.00	0.00		0.67
Lane Grp Cap(c), veh/h	215	0	675	222	0	0	340	365	0	0	0	525
V/C Ratio(X)	1.14	0.00	1.00	0.02	0.00	0.00	0.77	0.18	0.00	0.00	0.00	0.47
Avail Cap(c_a), veh/h	215	0	675	222	0	0	467	502	0	0	0	525
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.55	0.00	0.55	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	33.8	0.0	17.7	23.0	0.0	0.0	30.7	27.1	0.0	0.0	0.0	22.0
Incr Delay (d2), s/veh	89.4	0.0	26.3	0.0	0.0	0.0	5.3	0.2	0.0	0.0	0.0	3.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	0.0	17.8	0.1	0.0	0.0	5.1	1.0	0.0	0.0	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	123.2	0.0	44.0	23.1	0.0	0.0	36.0	27.4	0.0	0.0	0.0	25.0
LnGrp LOS	F		F	C			D	C				C
Approach Vol, veh/h		922			5			328			246	
Approach Delay, s/veh		65.1			23.1			34.3			25.0	
Approach LOS		E			C			C			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	31.7	27.0	21.3	27.0
Change Period (Y+Rc), s	7.0	7.0	7.0	7.0
Max Green Setting (Gmax), s	19.0	20.0	20.0	20.0
Max Q Clear Time (g_c+I1), s	11.7	22.0	13.7	23.5
Green Ext Time (p_c), s	0.5	0.0	0.6	0.0

Intersection Summary	
HCM 6th Ctrl Delay, s/veh	51.6
HCM 6th LOS	D



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	139	84	77	238	117	98
Future Volume (vph)	139	84	77	238	117	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	14	14	15	15
Grade (%)	-7%		3%			6%
Link Speed (mph)	35		35			35
Link Distance (ft)	1154		657			602
Travel Time (s)	22.5		12.8			11.7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	1%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	139	84	77	238	117	98
Future Vol, veh/h	139	84	77	238	117	98
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	1	1	0	1	0	0
Mvmt Flow	154	93	86	264	130	109
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	11	10.8	10.7
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	62%	54%
Vol Thru, %	24%	0%	46%
Vol Right, %	76%	38%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	315	223	215
LT Vol	0	139	117
Through Vol	77	0	98
RT Vol	238	84	0
Lane Flow Rate	350	248	239
Geometry Grp	1	1	1
Degree of Util (X)	0.428	0.352	0.335
Departure Headway (Hd)	4.399	5.116	5.046
Convergence, Y/N	Yes	Yes	Yes
Cap	812	696	707
Service Time	2.465	3.207	3.125
HCM Lane V/C Ratio	0.431	0.356	0.338
HCM Control Delay, s/veh	10.8	11	10.7
HCM Lane LOS	B	B	B
HCM 95th-tile Q	2.2	1.6	1.5

5: Washington Street & Lee Street



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	2	13	0	0	15
Future Volume (vph)	5	2	13	0	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	16	16
Grade (%)		-1%	1%		-1%	
Link Speed (mph)		25	25		25	
Link Distance (ft)		946	682		463	
Travel Time (s)		25.8	18.6		12.6	
Confl. Peds. (#/hr)	110			110		
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	5.3

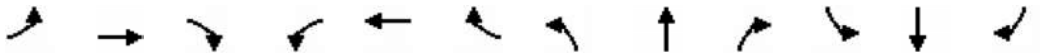
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	2	13	0	0	15
Future Vol, veh/h	5	2	13	0	0	15
Conflicting Peds, #/hr	110	0	0	110	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	-1	-
Peak Hour Factor	50	50	50	50	50	50
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	10	4	26	0	0	30

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	136	0	-	0	160	136
Stage 1	-	-	-	-	136	-
Stage 2	-	-	-	-	24	-
Critical Hdwy	4.3	-	-	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1079	-	-	-	973	977
Stage 1	-	-	-	-	1043	-
Stage 2	-	-	-	-	1171	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	928	-	-	-	711	841
Mov Cap-2 Maneuver	-	-	-	-	711	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	1007	-

Approach	EB	WB	SB
HCM Control Delay, s/v	6.4	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	928	-	-	-	841
HCM Lane V/C Ratio	0.011	-	-	-	0.036
HCM Control Delay (s/veh)	8.9	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	0.1

2031 Base (No-Build) Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	334	1	51	491	71	3	2	44	37	6	7
Future Volume (vph)	12	334	1	51	491	71	3	2	44	37	6	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	11	11	11	11	11	11
Grade (%)		2%			-2%			0%			-3%	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		403			769			463			326	
Travel Time (s)		11.0			21.0			12.6			8.9	
Confl. Peds. (#/hr)	2		7	7		2	9		1	1		9
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%	4%	0%	5%	2%	1%	0%	0%	7%	0%	0%	14%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	334	1	51	491	71	3	2	44	37	6	7
Future Vol, veh/h	12	334	1	51	491	71	3	2	44	37	6	7
Conflicting Peds, #/hr	2	0	7	7	0	2	9	0	1	1	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	0	-	-	-3	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	4	0	5	2	1	0	0	7	0	0	14
Mvmt Flow	13	348	1	53	511	74	3	2	46	39	6	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	587	0	0	356	0	0	1052	1075	357	1056	1038	559
Stage 1	-	-	-	-	-	-	382	382	-	656	656	-
Stage 2	-	-	-	-	-	-	670	693	-	400	382	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	6.5	6.27	6.5	5.9	6.04
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.2	3	4	3.2
Pot Cap-1 Maneuver	753	-	-	906	-	-	226	221	705	268	277	559
Stage 1	-	-	-	-	-	-	733	616	-	572	519	-
Stage 2	-	-	-	-	-	-	503	448	-	766	657	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	752	-	-	900	-	-	198	196	700	228	245	552
Mov Cap-2 Maneuver	-	-	-	-	-	-	198	196	-	228	245	-
Stage 1	-	-	-	-	-	-	713	599	-	559	472	-
Stage 2	-	-	-	-	-	-	442	408	-	698	639	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.3	0.8	12.1	23.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	555	752	-	-	900	-	-	251
HCM Lane V/C Ratio	0.092	0.017	-	-	0.059	-	-	0.208
HCM Control Delay (s/veh)	12.1	9.9	0	-	9.3	0	-	23.1
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q (veh)	0.3	0.1	-	-	0.2	-	-	0.8

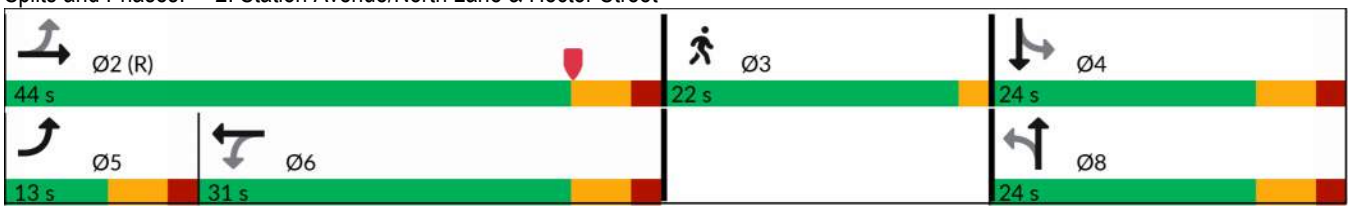
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	307	12	54	495	96	11	39	41	66	31	68
Future Volume (vph)	108	307	12	54	495	96	11	39	41	66	31	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	13	13	12	12	12	16	16	16
Grade (%)		-1%			4%			6%			-5%	
Storage Length (ft)	180		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	75			40			25			25		
Satd. Flow (prot)	1588	1845	0	1564	1747	0	0	1578	0	0	1831	0
Flt Permitted	0.174			0.558				0.957			0.839	
Satd. Flow (perm)	291	1845	0	912	1747	0	0	1517	0	0	1557	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			35	
Link Distance (ft)		769			1291			301			1034	
Travel Time (s)		15.0			25.1			8.2			20.1	
Confl. Peds. (#/hr)			7	7			9		7	7		9
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	4%	0%	0%	2%	1%	0%	4%	0%	9%	0%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	336	0	57	622	0	0	96	0	0	174	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	44.0		31.0	31.0		24.0	24.0		24.0	24.0	
Total Split (%)	14.4%	48.9%		34.4%	34.4%		26.7%	26.7%		26.7%	26.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		Min	Min		Min	Min		Min	Min	
Act Effct Green (s)	53.1	53.1		40.9	40.9			17.9			17.9	
Actuated g/C Ratio	0.59	0.59		0.45	0.45			0.20			0.20	
v/c Ratio	0.36	0.30		0.13	0.78			0.31			0.56	
Control Delay (s/veh)	12.7	11.0		11.6	25.2			32.3			38.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	12.7	11.0		11.6	25.2			32.3			38.9	
LOS	B	B		B	C			C			D	
Approach Delay (s/veh)		11.5			24.1			32.4			38.9	
Approach LOS		B			C			C			D	
Queue Length 50th (ft)	26	89		20	293			47			90	
Queue Length 95th (ft)	59	162		m29	m#566			85			143	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	19.0
Total Split (s)	22.0
Total Split (%)	24%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			1211			221			954	
Turn Bay Length (ft)	180			100								
Base Capacity (vph)	313	1088		413	793			340			348	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.36	0.31		0.14	0.78			0.28			0.50	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 26 (29%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay (s/veh): 22.5		Intersection LOS: C	
Intersection Capacity Utilization 69.5%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Station Avenue/North Lane & Hector Street



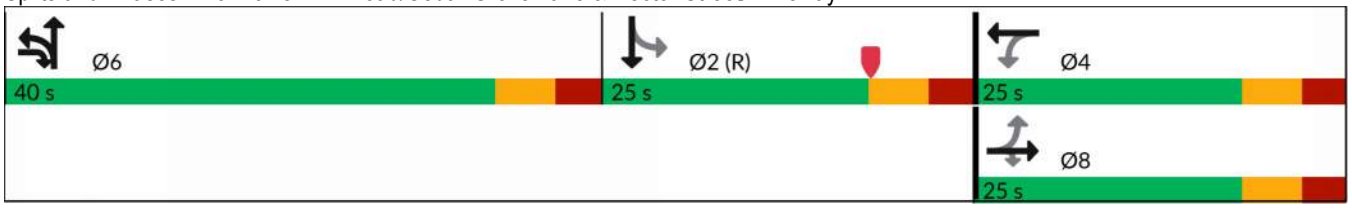
Lane Group	Ø3
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	3	323	0	1	1	470	70	1	1	112	214
Future Volume (vph)	107	3	323	0	1	1	470	70	1	1	112	214
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	11	11	16	16	16
Grade (%)		2%			-4%			-3%			2%	
Storage Length (ft)	0		80	0		0	130		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			100			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1291			310			527			657	
Travel Time (s)		25.1			8.5			10.3			12.8	
Confl. Peds. (#/hr)	1					1			1	1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	0%	4%	0%	0%	0%	2%	6%	0%	0%	5%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov		NA		Split	NA		Perm	NA	
Protected Phases		8	6		4		6	6			2	
Permitted Phases	8		8	4						2		
Detector Phase	8	8	6	4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	25.0	25.0	40.0	25.0	25.0		40.0	40.0		25.0	25.0	
Total Split (%)	27.8%	27.8%	44.4%	27.8%	27.8%		44.4%	44.4%		27.8%	27.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0			6.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		C-Max	C-Max	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	3	323	0	1	1	470	70	1	1	112	214
Future Volume (veh/h)	107	3	323	0	1	1	470	70	1	1	112	214
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	1722	1778	1722	1949	1949	1949	1883	1826	1912	1849	1776	1820
Adj Flow Rate, veh/h	118	3	355	0	1	1	516	77	1	1	123	235
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	0	4	0	0	0	2	6	0	0	5	2
Cap, veh/h	330	7	761	0	176	176	583	585	8	1	151	288
Arrive On Green	0.19	0.20	0.20	0.00	0.20	0.19	0.33	0.33	0.31	0.27	0.28	0.27
Sat Flow, veh/h	1277	38	1455	0	893	893	1794	1799	23	4	544	1038
Grp Volume(v), veh/h	121	0	355	0	0	2	516	0	78	359	0	0
Grp Sat Flow(s),veh/h/ln	1315	0	1455	0	0	1786	1794	0	1822	1586	0	0
Q Serve(g_s), s	7.2	0.0	13.9	0.0	0.0	0.1	24.5	0.0	2.7	19.1	0.0	0.0
Cycle Q Clear(g_c), s	7.7	0.0	13.9	0.0	0.0	0.1	24.5	0.0	2.7	19.1	0.0	0.0
Prop In Lane	0.98		1.00	0.00		0.50	1.00		0.01	0.00		0.65
Lane Grp Cap(c), veh/h	323	0	761	0	0	352	583	0	593	441	0	0
V/C Ratio(X)	0.37	0.00	0.47	0.00	0.00	0.01	0.88	0.00	0.13	0.81	0.00	0.00
Avail Cap(c_a), veh/h	342	0	782	0	0	377	678	0	688	441	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.00	0.96	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.7	0.0	13.6	0.0	0.0	29.3	28.8	0.0	21.4	30.7	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.4	0.0	0.0	0.0	12.0	0.0	0.1	15.2	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	7.9	0.0	0.0	0.0	11.9	0.0	1.1	8.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.4	0.0	14.0	0.0	0.0	29.3	40.8	0.0	21.5	45.9	0.0	0.0
LnGrp LOS	C		B			C	D		C	D		
Approach Vol, veh/h		476			2			594			359	
Approach Delay, s/veh		18.9			29.3			38.2			45.9	
Approach LOS		B			C			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.0		23.7		35.3		23.7				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		18.0		18.0		33.0		18.0				
Max Q Clear Time (g_c+I1), s		21.1		2.5		27.0		16.4				
Green Ext Time (p_c), s		0.0		0.0		1.3		0.4				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			33.7									
HCM 6th LOS			C									



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	232	91	87	98	83	102
Future Volume (vph)	232	91	87	98	83	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	14	14	15	15
Grade (%)	-7%		3%			6%
Link Speed (mph)	35		35			35
Link Distance (ft)	1154		657			602
Travel Time (s)	22.5		12.8			11.7
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	3%	6%	7%	5%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	232	91	87	98	83	102
Future Vol, veh/h	232	91	87	98	83	102
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	3	6	7	5	1
Mvmt Flow	255	100	96	108	91	112
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	12.5	9.8	10.5
HCM LOS	B	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	72%	45%
Vol Thru, %	47%	0%	55%
Vol Right, %	53%	28%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	185	323	185
LT Vol	0	232	83
Through Vol	87	0	102
RT Vol	98	91	0
Lane Flow Rate	203	355	203
Geometry Grp	1	1	1
Degree of Util (X)	0.274	0.482	0.295
Departure Headway (Hd)	4.857	4.892	5.23
Convergence, Y/N	Yes	Yes	Yes
Cap	732	731	681
Service Time	2.938	2.965	3.312
HCM Lane V/C Ratio	0.277	0.486	0.298
HCM Control Delay, s/veh	9.8	12.5	10.5
HCM Lane LOS	A	B	B
HCM 95th-tile Q	1.1	2.6	1.2



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	51	59	0	0	37
Future Volume (vph)	33	51	59	0	0	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	16	16
Grade (%)		-1%	1%		-1%	
Link Speed (mph)		25	25		25	
Link Distance (ft)		946	682		463	
Travel Time (s)		25.8	18.6		12.6	
Confl. Peds. (#/hr)	17			17		
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

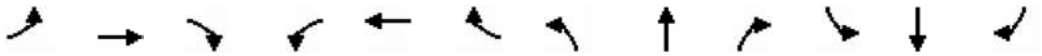
Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	51	59	0	0	37
Future Vol, veh/h	33	51	59	0	0	37
Conflicting Peds, #/hr	17	0	0	17	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	-1	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	44	68	79	0	0	49

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	96	0	-	0	252	96
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	156	-
Critical Hdwy	4.3	-	-	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1113	-	-	-	862	1028
Stage 1	-	-	-	-	1087	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1089	-	-	-	790	1006
Mov Cap-2 Maneuver	-	-	-	-	790	-
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	1000	-

Approach	EB	WB	SB
HCM Control Delay, s/v	3.3	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1089	-	-	-	1006
HCM Lane V/C Ratio	0.04	-	-	-	0.049
HCM Control Delay (s/veh)	8.4	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q (veh)	0.1	-	-	-	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	619	13	45	319	30	10	3	75	87	5	18
Future Volume (vph)	6	619	13	45	319	30	10	3	75	87	5	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	11	11	11	11	11	11
Grade (%)		2%			-2%			0%			-3%	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		403			769			463			326	
Travel Time (s)		11.0			21.0			12.6			8.9	
Confl. Peds. (#/hr)	23		12	12		23	38		3	3		38
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	619	13	45	319	30	10	3	75	87	5	18
Future Vol, veh/h	6	619	13	45	319	30	10	3	75	87	5	18
Conflicting Peds, #/hr	23	0	12	12	0	23	38	0	3	3	0	38
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	0	-	-	-3	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	6	652	14	47	336	32	11	3	79	92	5	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	391	0	0	678	0	0	1179	1168	674	1184	1159	413
Stage 1	-	-	-	-	-	-	683	683	-	469	469	-
Stage 2	-	-	-	-	-	-	496	485	-	715	690	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	6.5	6.2	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	881	-	-	699	-	-	184	195	479	223	240	701
Stage 1	-	-	-	-	-	-	495	452	-	708	610	-
Stage 2	-	-	-	-	-	-	632	555	-	534	504	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	863	-	-	692	-	-	153	171	472	166	210	656
Mov Cap-2 Maneuver	-	-	-	-	-	-	153	171	-	166	210	-
Stage 1	-	-	-	-	-	-	485	443	-	686	547	-
Stage 2	-	-	-	-	-	-	530	497	-	435	493	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.1	1.2	18.2	49.2
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	364	863	-	-	692	-	-	191
HCM Lane V/C Ratio	0.254	0.007	-	-	0.068	-	-	0.606
HCM Control Delay (s/veh)	18.2	9.2	0	-	10.6	0	-	49.2
HCM Lane LOS	C	A	A	-	B	A	-	E
HCM 95th %tile Q (veh)	1	0	-	-	0.2	-	-	3.4

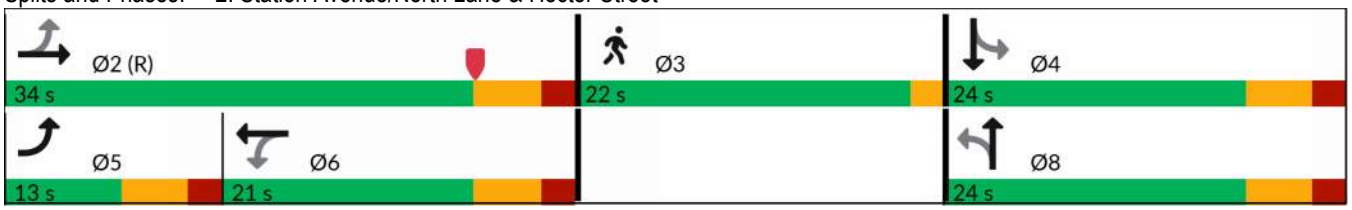
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	671	6	48	311	62	9	47	75	109	32	71
Future Volume (vph)	106	671	6	48	311	62	9	47	75	109	32	71
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	13	13	12	12	12	16	16	16
Grade (%)		-1%			4%			6%			-5%	
Storage Length (ft)	180		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	75			40			25			25		
Satd. Flow (prot)	1588	1908	0	1564	1742	0	0	1558	0	0	1923	0
Flt Permitted	0.294			0.296				0.974			0.760	
Satd. Flow (perm)	491	1908	0	487	1742	0	0	1521	0	0	1481	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			35	
Link Distance (ft)		769			1291			301			1034	
Travel Time (s)		15.0			25.1			8.2			20.1	
Confl. Peds. (#/hr)			1	1			8		15	15		8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	0%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	712	0	51	392	0	0	137	0	0	224	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	34.0		21.0	21.0		24.0	24.0		24.0	24.0	
Total Split (%)	16.3%	42.5%		26.3%	26.3%		30.0%	30.0%		30.0%	30.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		Min	Min		Min	Min		Min	Min	
Act Effct Green (s)	41.2	41.2		28.9	28.9			19.8			19.8	
Actuated g/C Ratio	0.52	0.52		0.36	0.36			0.25			0.25	
v/c Ratio	0.29	0.72		0.29	0.62			0.36			0.61	
Control Delay (s/veh)	13.6	22.1		23.2	23.2			26.4			33.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	13.6	22.1		23.2	23.2			26.4			33.3	
LOS	B	C		C	C			C			C	
Approach Delay (s/veh)		21.0			23.2			26.5			33.3	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	28	261		10	77			57			99	
Queue Length 95th (ft)	64	#513		m29	#368			95			154	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	19.0
Total Split (s)	22.0
Total Split (%)	28%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			1211			221			954	
Turn Bay Length (ft)	180			100								
Base Capacity (vph)	389	982		175	628			404			393	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.29	0.73		0.29	0.62			0.34			0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 76 (95%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay (s/veh): 23.8		Intersection LOS: C	
Intersection Capacity Utilization 88.7%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Station Avenue/North Lane & Hector Street



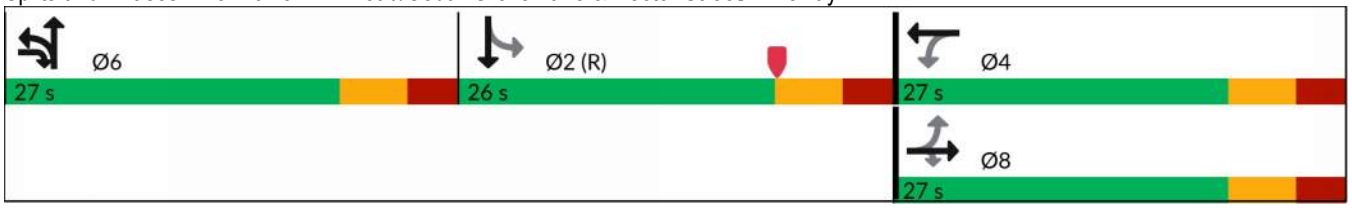
Lane Group	Ø3
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

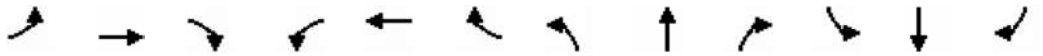
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	236	1	653	1	3	1	256	64	0	0	78	163
Future Volume (vph)	236	1	653	1	3	1	256	64	0	0	78	163
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	11	11	16	16	16
Grade (%)		2%			-4%			-3%			2%	
Storage Length (ft)	0		80	0		0	130		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			100			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1291			310			527			657	
Travel Time (s)		25.1			8.5			10.3			12.8	
Confl. Peds. (#/hr)	3					3			3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	3%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA			NA	
Protected Phases		8	6		4		6	6			2	
Permitted Phases	8		8	4						2		
Detector Phase	8	8	6	4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	27.0	27.0	27.0	27.0	27.0		27.0	27.0		26.0	26.0	
Total Split (%)	33.8%	33.8%	33.8%	33.8%	33.8%		33.8%	33.8%		32.5%	32.5%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0			6.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		C-Max	C-Max	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	236	1	653	1	3	1	256	64	0	0	78	163
Future Volume (veh/h)	236	1	653	1	3	1	256	64	0	0	78	163
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1764	1778	1764	1949	1949	1949	1869	1912	1912	1849	1834	1834
Adj Flow Rate, veh/h	248	1	687	1	3	1	269	67	0	0	82	172
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	1	0	0	0	3	0	0	0	1	1
Cap, veh/h	221	1	681	54	141	35	346	372	0	0	167	351
Arrive On Green	0.25	0.26	0.26	0.25	0.26	0.25	0.19	0.19	0.00	0.00	0.32	0.31
Sat Flow, veh/h	498	2	1486	0	537	134	1780	1912	0	0	526	1103
Grp Volume(v), veh/h	249	0	687	5	0	0	269	67	0	0	0	254
Grp Sat Flow(s),veh/h/ln	500	0	1486	671	0	0	1780	1912	0	0	0	1629
Q Serve(g_s), s	0.0	0.0	21.0	0.0	0.0	0.0	11.5	2.3	0.0	0.0	0.0	10.2
Cycle Q Clear(g_c), s	20.0	0.0	21.0	20.0	0.0	0.0	11.5	2.3	0.0	0.0	0.0	10.2
Prop In Lane	1.00		1.00	0.20		0.20	1.00		0.00	0.00		0.68
Lane Grp Cap(c), veh/h	215	0	681	222	0	0	346	372	0	0	0	518
V/C Ratio(X)	1.16	0.00	1.01	0.02	0.00	0.00	0.78	0.18	0.00	0.00	0.00	0.49
Avail Cap(c_a), veh/h	215	0	681	222	0	0	467	502	0	0	0	518
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.00	0.62	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	33.8	0.0	17.5	23.0	0.0	0.0	30.6	26.9	0.0	0.0	0.0	22.3
Incr Delay (d2), s/veh	98.8	0.0	29.4	0.0	0.0	0.0	5.7	0.2	0.0	0.0	0.0	3.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	0.0	18.6	0.1	0.0	0.0	5.2	1.1	0.0	0.0	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	132.6	0.0	46.9	23.1	0.0	0.0	36.3	27.1	0.0	0.0	0.0	25.6
LnGrp LOS	F		F	C			D	C				C
Approach Vol, veh/h		936			5			336			254	
Approach Delay, s/veh		69.7			23.1			34.5			25.6	
Approach LOS		E			C			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.4		27.0		21.6		27.0				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		19.0		20.0		20.0		20.0				
Max Q Clear Time (g_c+I1), s		12.2		22.0		14.0		23.5				
Green Ext Time (p_c), s		0.5		0.0		0.6		0.0				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			54.5									
HCM 6th LOS			D									



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	142	85	79	241	118	101
Future Volume (vph)	142	85	79	241	118	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	14	14	15	15
Grade (%)	-7%		3%			6%
Link Speed (mph)	35		35			35
Link Distance (ft)	1154		657			602
Travel Time (s)	22.5		12.8			11.7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	1%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	142	85	79	241	118	101
Future Vol, veh/h	142	85	79	241	118	101
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	1	1	0	1	0	0
Mvmt Flow	158	94	88	268	131	112
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	11.2	10.9	10.8
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	63%	54%
Vol Thru, %	25%	0%	46%
Vol Right, %	75%	37%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	320	227	219
LT Vol	0	142	118
Through Vol	79	0	101
RT Vol	241	85	0
Lane Flow Rate	356	252	243
Geometry Grp	1	1	1
Degree of Util (X)	0.437	0.36	0.343
Departure Headway (Hd)	4.422	5.144	5.068
Convergence, Y/N	Yes	Yes	Yes
Cap	807	691	703
Service Time	2.492	3.237	3.15
HCM Lane V/C Ratio	0.441	0.365	0.346
HCM Control Delay, s/veh	10.9	11.2	10.8
HCM Lane LOS	B	B	B
HCM 95th-tile Q	2.2	1.6	1.5



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	49	80	50	0	0	43
Future Volume (vph)	49	80	50	0	0	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	16	16
Grade (%)		-1%	1%		-1%	
Link Speed (mph)		25	25		25	
Link Distance (ft)		946	682		463	
Travel Time (s)		25.8	18.6		12.6	
Confl. Peds. (#/hr)	110			110		
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	4.1

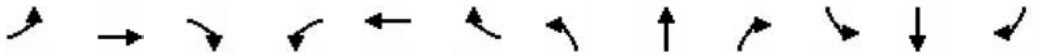
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	49	80	50	0	0	43
Future Vol, veh/h	49	80	50	0	0	43
Conflicting Peds, #/hr	110	0	0	110	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	-1	-
Peak Hour Factor	50	50	50	50	50	50
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	98	160	100	0	0	86

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	210	0	-	0	566	210
Stage 1	-	-	-	-	210	-
Stage 2	-	-	-	-	356	-
Critical Hdwy	4.3	-	-	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1018	-	-	-	568	889
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	829	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	876	-	-	-	369	765
Mov Cap-2 Maneuver	-	-	-	-	369	-
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	713	-

Approach	EB	WB	SB
HCM Control Delay, s/v	3.7	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	876	-	-	-	765
HCM Lane V/C Ratio	0.112	-	-	-	0.112
HCM Control Delay (s/veh)	9.6	0	-	-	10.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q (veh)	0.4	-	-	-	0.4

2031 Projected (Build) Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (vph)	12	334	1	51	491	71	3	2	46	37	6	7
Future Volume (vph)	12	334	1	51	491	71	3	2	46	37	6	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	11	11	11	11	11	11
Grade (%)		2%			-2%			0%			-3%	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		403			769			463			326	
Travel Time (s)		11.0			21.0			12.6			8.9	
Confl. Peds. (#/hr)	2		7	7		2	9		1	1		9
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%	4%	0%	5%	2%	1%	0%	0%	7%	0%	0%	14%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

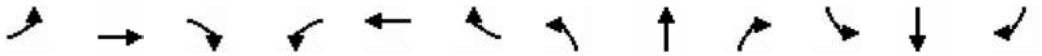
Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	334	1	51	491	71	3	2	46	37	6	7
Future Vol, veh/h	12	334	1	51	491	71	3	2	46	37	6	7
Conflicting Peds, #/hr	2	0	7	7	0	2	9	0	1	1	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	0	-	-	-3	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	4	0	5	2	1	0	0	7	0	0	14
Mvmt Flow	13	348	1	53	511	74	3	2	48	39	6	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	587	0	0	356	0	0	1052	1075	357	1057	1038	559
Stage 1	-	-	-	-	-	-	382	382	-	656	656	-
Stage 2	-	-	-	-	-	-	670	693	-	401	382	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	6.5	6.27	6.5	5.9	6.04
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.2	3	4	3.2
Pot Cap-1 Maneuver	753	-	-	906	-	-	226	221	705	268	277	559
Stage 1	-	-	-	-	-	-	733	616	-	572	519	-
Stage 2	-	-	-	-	-	-	503	448	-	765	657	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	752	-	-	900	-	-	198	196	700	227	245	552
Mov Cap-2 Maneuver	-	-	-	-	-	-	198	196	-	227	245	-
Stage 1	-	-	-	-	-	-	713	599	-	559	472	-
Stage 2	-	-	-	-	-	-	442	408	-	694	639	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.3	0.8	12.1	23.2
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	560	752	-	-	900	-	-	250
HCM Lane V/C Ratio	0.095	0.017	-	-	0.059	-	-	0.208
HCM Control Delay (s/veh)	12.1	9.9	0	-	9.3	0	-	23.2
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q (veh)	0.3	0.1	-	-	0.2	-	-	0.8



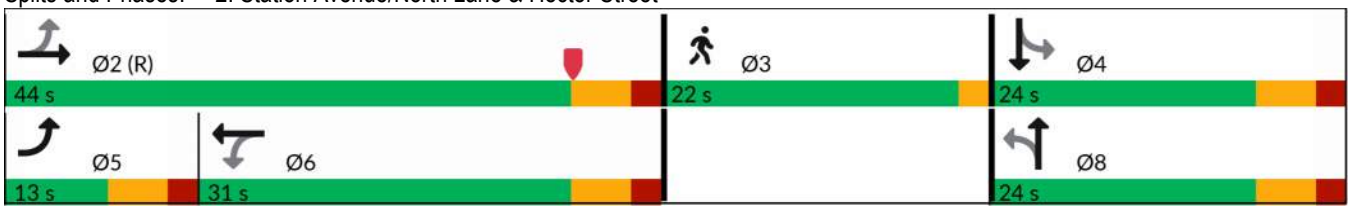
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	309	12	55	495	96	11	40	45	66	31	68
Future Volume (vph)	108	309	12	55	495	96	11	40	45	66	31	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	13	13	12	12	12	16	16	16
Grade (%)		-1%			4%			6%			-5%	
Storage Length (ft)	180		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	75			40			25			25		
Satd. Flow (prot)	1588	1845	0	1564	1747	0	0	1573	0	0	1831	0
Flt Permitted	0.173			0.557				0.959			0.833	
Satd. Flow (perm)	289	1845	0	910	1747	0	0	1515	0	0	1546	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			35	
Link Distance (ft)		769			1291			301			1034	
Travel Time (s)		15.0			25.1			8.2			20.1	
Confl. Peds. (#/hr)			7	7			9		7	7		9
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	4%	0%	0%	2%	1%	0%	4%	0%	9%	0%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	338	0	58	622	0	0	101	0	0	174	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	44.0		31.0	31.0		24.0	24.0		24.0	24.0	
Total Split (%)	14.4%	48.9%		34.4%	34.4%		26.7%	26.7%		26.7%	26.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		Min	Min		Min	Min		Min	Min	
Act Effct Green (s)	53.0	53.0		40.8	40.8			18.0			18.0	
Actuated g/C Ratio	0.59	0.59		0.45	0.45			0.20			0.20	
v/c Ratio	0.36	0.31		0.14	0.78			0.33			0.56	
Control Delay (s/veh)	12.7	11.0		11.6	25.2			32.6			39.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	12.7	11.0		11.6	25.2			32.6			39.0	
LOS	B	B		B	C			C			D	
Approach Delay (s/veh)		11.5			24.1			32.7			39.0	
Approach LOS		B			C			C			D	
Queue Length 50th (ft)	26	89		20	293			50			90	
Queue Length 95th (ft)	59	163		m29	m#564			89			143	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	19.0
Total Split (s)	22.0
Total Split (%)	24%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			1211			221			954	
Turn Bay Length (ft)	180			100								
Base Capacity (vph)	312	1087		412	792			339			347	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.37	0.31		0.14	0.79			0.30			0.50	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 26 (29%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay (s/veh): 22.5		Intersection LOS: C	
Intersection Capacity Utilization 69.5%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Station Avenue/North Lane & Hector Street



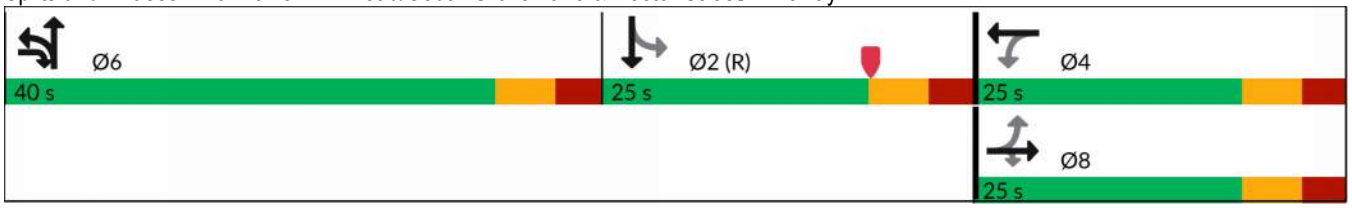
Lane Group	Ø3
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

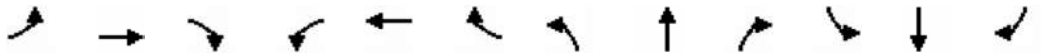
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	3	325	0	1	1	471	70	1	1	112	214
Future Volume (vph)	109	3	325	0	1	1	471	70	1	1	112	214
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	11	11	16	16	16
Grade (%)		2%			-4%			-3%			2%	
Storage Length (ft)	0		80	0		0	130		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			100			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1291			310			527			657	
Travel Time (s)		25.1			8.5			10.3			12.8	
Confl. Peds. (#/hr)	1					1			1	1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	0%	4%	0%	0%	0%	2%	6%	0%	0%	5%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov		NA		Split	NA		Perm	NA	
Protected Phases		8	6		4		6	6			2	
Permitted Phases	8		8	4						2		
Detector Phase	8	8	6	4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	25.0	25.0	40.0	25.0	25.0		40.0	40.0		25.0	25.0	
Total Split (%)	27.8%	27.8%	44.4%	27.8%	27.8%		44.4%	44.4%		27.8%	27.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0			6.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		C-Max	C-Max	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	3	325	0	1	1	471	70	1	1	112	214
Future Volume (veh/h)	109	3	325	0	1	1	471	70	1	1	112	214
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	1722	1778	1722	1949	1949	1949	1883	1826	1912	1849	1776	1820
Adj Flow Rate, veh/h	120	3	357	0	1	1	518	77	1	1	123	235
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	0	4	0	0	0	2	6	0	0	5	2
Cap, veh/h	331	7	763	0	176	176	585	587	8	1	150	287
Arrive On Green	0.19	0.20	0.20	0.00	0.20	0.19	0.33	0.33	0.32	0.27	0.28	0.27
Sat Flow, veh/h	1277	37	1455	0	893	893	1794	1799	23	4	544	1038
Grp Volume(v), veh/h	123	0	357	0	0	2	518	0	78	359	0	0
Grp Sat Flow(s),veh/h/ln	1314	0	1455	0	0	1786	1794	0	1822	1586	0	0
Q Serve(g_s), s	7.3	0.0	13.9	0.0	0.0	0.1	24.6	0.0	2.7	19.1	0.0	0.0
Cycle Q Clear(g_c), s	7.8	0.0	13.9	0.0	0.0	0.1	24.6	0.0	2.7	19.1	0.0	0.0
Prop In Lane	0.98		1.00	0.00		0.50	1.00		0.01	0.00		0.65
Lane Grp Cap(c), veh/h	324	0	763	0	0	353	585	0	595	438	0	0
V/C Ratio(X)	0.38	0.00	0.47	0.00	0.00	0.01	0.89	0.00	0.13	0.82	0.00	0.00
Avail Cap(c_a), veh/h	342	0	783	0	0	377	678	0	688	438	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.00	0.96	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.7	0.0	13.5	0.0	0.0	29.2	28.7	0.0	21.3	30.8	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.4	0.0	0.0	0.0	12.1	0.0	0.1	15.6	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	7.9	0.0	0.0	0.0	12.0	0.0	1.1	8.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.4	0.0	14.0	0.0	0.0	29.2	40.8	0.0	21.4	46.4	0.0	0.0
LnGrp LOS	C		B			C	D		C	D		
Approach Vol, veh/h		480			2			596			359	
Approach Delay, s/veh		18.9			29.2			38.3			46.4	
Approach LOS		B			C			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.9		23.8		35.4		23.8				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		18.0		18.0		33.0		18.0				
Max Q Clear Time (g_c+I1), s		21.1		2.5		27.1		16.4				
Green Ext Time (p_c), s		0.0		0.0		1.2		0.3				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			33.8									
HCM 6th LOS			C									



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	232	91	88	99	83	102
Future Volume (vph)	232	91	88	99	83	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	14	14	15	15
Grade (%)	-7%		3%			6%
Link Speed (mph)	35		35			35
Link Distance (ft)	1154		657			602
Travel Time (s)	22.5		12.8			11.7
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	3%	6%	7%	5%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	232	91	88	99	83	102
Future Vol, veh/h	232	91	88	99	83	102
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	3	6	7	5	1
Mvmt Flow	255	100	97	109	91	112
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	12.5	9.8	10.5
HCM LOS	B	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	72%	45%
Vol Thru, %	47%	0%	55%
Vol Right, %	53%	28%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	187	323	185
LT Vol	0	232	83
Through Vol	88	0	102
RT Vol	99	91	0
Lane Flow Rate	205	355	203
Geometry Grp	1	1	1
Degree of Util (X)	0.277	0.483	0.296
Departure Headway (Hd)	4.857	4.898	5.233
Convergence, Y/N	Yes	Yes	Yes
Cap	732	728	681
Service Time	2.942	2.972	3.317
HCM Lane V/C Ratio	0.28	0.488	0.298
HCM Control Delay, s/veh	9.8	12.5	10.5
HCM Lane LOS	A	B	B
HCM 95th-tile Q	1.1	2.7	1.2



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	53	62	2	0	37
Future Volume (vph)	33	53	62	2	0	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	16	16
Grade (%)		-1%	1%		-1%	
Link Speed (mph)		25	25		25	
Link Distance (ft)		946	682		463	
Travel Time (s)		25.8	18.6		12.6	
Confl. Peds. (#/hr)	17			17		
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

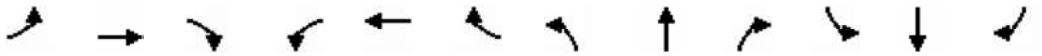
Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	53	62	2	0	37
Future Vol, veh/h	33	53	62	2	0	37
Conflicting Peds, #/hr	17	0	0	17	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	-1	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	44	71	83	3	0	49

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	103	0	-	0	261	102
Stage 1	-	-	-	-	102	-
Stage 2	-	-	-	-	159	-
Critical Hdwy	4.3	-	-	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1107	-	-	-	852	1021
Stage 1	-	-	-	-	1080	-
Stage 2	-	-	-	-	1018	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1083	-	-	-	780	999
Mov Cap-2 Maneuver	-	-	-	-	780	-
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	996	-

Approach	EB	WB	SB
HCM Control Delay, s/v	3.2	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1083	-	-	-	999
HCM Lane V/C Ratio	0.041	-	-	-	0.049
HCM Control Delay (s/veh)	8.5	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q (veh)	0.1	-	-	-	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	619	13	45	319	30	10	3	76	87	5	18
Future Volume (vph)	6	619	13	45	319	30	10	3	76	87	5	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	11	11	11	11	11	11
Grade (%)		2%			-2%			0%			-3%	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		403			769			463			326	
Travel Time (s)		11.0			21.0			12.6			8.9	
Confl. Peds. (#/hr)	23		12	12		23	38		3	3		38
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

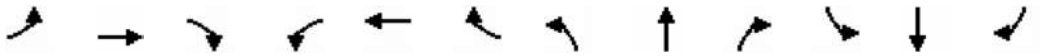
Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	619	13	45	319	30	10	3	76	87	5	18
Future Vol, veh/h	6	619	13	45	319	30	10	3	76	87	5	18
Conflicting Peds, #/hr	23	0	12	12	0	23	38	0	3	3	0	38
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	0	-	-	-3	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	6	652	14	47	336	32	11	3	80	92	5	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	391	0	0	678	0	0	1179	1168	674	1185	1159	413
Stage 1	-	-	-	-	-	-	683	683	-	469	469	-
Stage 2	-	-	-	-	-	-	496	485	-	716	690	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	6.5	6.2	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	881	-	-	699	-	-	184	195	479	222	240	701
Stage 1	-	-	-	-	-	-	495	452	-	708	610	-
Stage 2	-	-	-	-	-	-	632	555	-	534	504	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	863	-	-	692	-	-	153	171	472	165	210	656
Mov Cap-2 Maneuver	-	-	-	-	-	-	153	171	-	165	210	-
Stage 1	-	-	-	-	-	-	485	443	-	686	547	-
Stage 2	-	-	-	-	-	-	530	497	-	434	493	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.1	1.2	18.2	49.7
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	365	863	-	-	692	-	-	190
HCM Lane V/C Ratio	0.257	0.007	-	-	0.068	-	-	0.609
HCM Control Delay (s/veh)	18.2	9.2	0	-	10.6	0	-	49.7
HCM Lane LOS	C	A	A	-	B	A	-	E
HCM 95th %tile Q (veh)	1	0	-	-	0.2	-	-	3.4



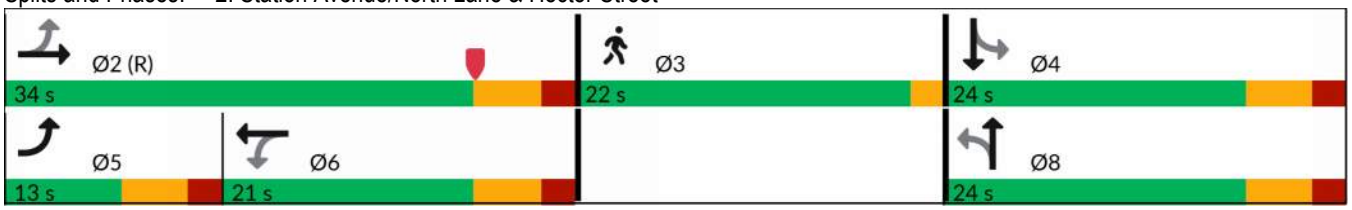
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	672	6	52	311	62	9	48	78	109	33	71
Future Volume (vph)	106	672	6	52	311	62	9	48	78	109	33	71
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	13	13	12	12	12	16	16	16
Grade (%)		-1%			4%			6%			-5%	
Storage Length (ft)	180		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	75			40			25			25		
Satd. Flow (prot)	1588	1908	0	1564	1742	0	0	1558	0	0	1923	0
Flt Permitted	0.291			0.294				0.975			0.754	
Satd. Flow (perm)	486	1908	0	484	1742	0	0	1522	0	0	1470	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			35	
Link Distance (ft)		769			1291			301			1034	
Travel Time (s)		15.0			25.1			8.2			20.1	
Confl. Peds. (#/hr)			1	1			8		15	15		8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	0%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	112	713	0	55	392	0	0	142	0	0	225	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	34.0		21.0	21.0		24.0	24.0		24.0	24.0	
Total Split (%)	16.3%	42.5%		26.3%	26.3%		30.0%	30.0%		30.0%	30.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		Min	Min		Min	Min		Min	Min	
Act Effct Green (s)	41.0	41.0		28.7	28.7			20.0			20.0	
Actuated g/C Ratio	0.51	0.51		0.36	0.36			0.25			0.25	
v/c Ratio	0.29	0.72		0.31	0.62			0.37			0.61	
Control Delay (s/veh)	13.8	22.4		24.8	23.5			26.5			33.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	13.8	22.4		24.8	23.5			26.5			33.3	
LOS	B	C		C	C			C			C	
Approach Delay (s/veh)		21.3			23.7			26.5			33.4	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	28	262		10	77			59			99	
Queue Length 95th (ft)	64	#516		m34	#370			98			155	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	19.0
Total Split (s)	22.0
Total Split (%)	28%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			1211			221			954	
Turn Bay Length (ft)	180			100								
Base Capacity (vph)	386	978		173	624			405			392	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.29	0.73		0.32	0.63			0.35			0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 76 (95%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay (s/veh): 24.1		Intersection LOS: C	
Intersection Capacity Utilization 89.1%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Station Avenue/North Lane & Hector Street



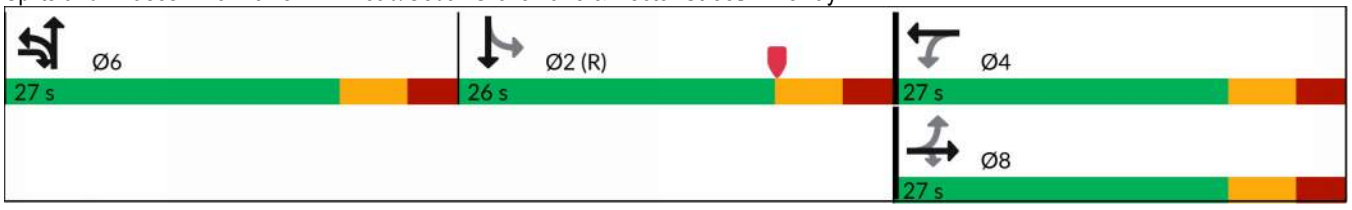
Lane Group	Ø3
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

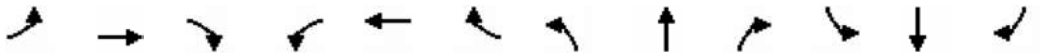
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	237	1	655	1	3	1	258	64	0	0	78	165
Future Volume (vph)	237	1	655	1	3	1	258	64	0	0	78	165
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	11	11	16	16	16
Grade (%)		2%			-4%			-3%			2%	
Storage Length (ft)	0		80	0		0	130		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			100			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1291			310			527			657	
Travel Time (s)		25.1			8.5			10.3			12.8	
Confl. Peds. (#/hr)	3					3			3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	3%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA			NA	
Protected Phases		8	6		4		6	6			2	
Permitted Phases	8		8	4						2		
Detector Phase	8	8	6	4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	27.0	27.0	27.0	27.0	27.0		27.0	27.0		26.0	26.0	
Total Split (%)	33.8%	33.8%	33.8%	33.8%	33.8%		33.8%	33.8%		32.5%	32.5%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0			6.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		C-Max	C-Max	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:SBTL, Start of Yellow	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	

Splits and Phases: 3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	237	1	655	1	3	1	258	64	0	0	78	165
Future Volume (veh/h)	237	1	655	1	3	1	258	64	0	0	78	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1764	1778	1764	1949	1949	1949	1869	1912	1912	1849	1834	1834
Adj Flow Rate, veh/h	249	1	689	1	3	1	272	67	0	0	82	174
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	1	0	0	0	3	0	0	0	1	1
Cap, veh/h	221	1	683	54	141	35	349	375	0	0	165	350
Arrive On Green	0.25	0.26	0.26	0.25	0.26	0.25	0.20	0.20	0.00	0.00	0.32	0.30
Sat Flow, veh/h	498	2	1486	0	537	134	1780	1912	0	0	522	1107
Grp Volume(v), veh/h	250	0	689	5	0	0	272	67	0	0	0	256
Grp Sat Flow(s),veh/h/ln	500	0	1486	671	0	0	1780	1912	0	0	0	1628
Q Serve(g_s), s	0.0	0.0	21.0	0.0	0.0	0.0	11.6	2.3	0.0	0.0	0.0	10.3
Cycle Q Clear(g_c), s	20.0	0.0	21.0	20.0	0.0	0.0	11.6	2.3	0.0	0.0	0.0	10.3
Prop In Lane	1.00		1.00	0.20		0.20	1.00		0.00	0.00		0.68
Lane Grp Cap(c), veh/h	215	0	683	222	0	0	349	375	0	0	0	515
V/C Ratio(X)	1.16	0.00	1.01	0.02	0.00	0.00	0.78	0.18	0.00	0.00	0.00	0.50
Avail Cap(c_a), veh/h	215	0	683	222	0	0	467	502	0	0	0	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.61	0.00	0.61	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	33.8	0.0	17.4	23.0	0.0	0.0	30.5	26.8	0.0	0.0	0.0	22.5
Incr Delay (d2), s/veh	100.2	0.0	29.0	0.0	0.0	0.0	5.9	0.2	0.0	0.0	0.0	3.4
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(50%),veh/ln	10.1	0.0	18.6	0.1	0.0	0.0	5.3	1.0	0.0	0.0	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	134.0	0.0	46.4	23.1	0.0	0.0	36.4	27.0	0.0	0.0	0.0	25.9
LnGrp LOS	F		F	C			D	C				C
Approach Vol, veh/h		939			5			339			256	
Approach Delay, s/veh		69.7			23.1			34.6			25.9	
Approach LOS		E			C			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.3		27.0		21.7		27.0				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		19.0		20.0		20.0		20.0				
Max Q Clear Time (g_c+I1), s		12.3		22.0		14.1		23.5				
Green Ext Time (p_c), s		0.5		0.0		0.6		0.0				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			54.5									
HCM 6th LOS			D									



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	143	85	80	241	118	102
Future Volume (vph)	143	85	80	241	118	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	14	14	15	15
Grade (%)	-7%		3%			6%
Link Speed (mph)	35		35			35
Link Distance (ft)	1154		657			602
Travel Time (s)	22.5		12.8			11.7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	1%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	143	85	80	241	118	102
Future Vol, veh/h	143	85	80	241	118	102
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	1	1	0	1	0	0
Mvmt Flow	159	94	89	268	131	113
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	11.2	11	10.8
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	63%	54%
Vol Thru, %	25%	0%	46%
Vol Right, %	75%	37%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	321	228	220
LT Vol	0	143	118
Through Vol	80	0	102
RT Vol	241	85	0
Lane Flow Rate	357	253	244
Geometry Grp	1	1	1
Degree of Util (X)	0.439	0.362	0.344
Departure Headway (Hd)	4.428	5.149	5.073
Convergence, Y/N	Yes	Yes	Yes
Cap	806	689	702
Service Time	2.498	3.244	3.156
HCM Lane V/C Ratio	0.443	0.367	0.348
HCM Control Delay, s/veh	11	11.2	10.8
HCM Lane LOS	B	B	B
HCM 95th-tile Q	2.3	1.7	1.5



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	49	86	52	1	0	43
Future Volume (vph)	49	86	52	1	0	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	16	16
Grade (%)		-1%	1%		-1%	
Link Speed (mph)		25	25		25	
Link Distance (ft)		946	682		463	
Travel Time (s)		25.8	18.6		12.6	
Confl. Peds. (#/hr)	110			110		
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	49	86	52	1	0	43
Future Vol, veh/h	49	86	52	1	0	43
Conflicting Peds, #/hr	110	0	0	110	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	-1	-
Peak Hour Factor	50	50	50	50	50	50
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	98	172	104	2	0	86

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	216	0	-	0	583	215
Stage 1	-	-	-	-	215	-
Stage 2	-	-	-	-	368	-
Critical Hdwy	4.3	-	-	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1013	-	-	-	555	884
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	819	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	872	-	-	-	360	761
Mov Cap-2 Maneuver	-	-	-	-	360	-
Stage 1	-	-	-	-	724	-
Stage 2	-	-	-	-	704	-

Approach	EB	WB	SB
HCM Control Delay, s/v	3.5	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	872	-	-	-	761
HCM Lane V/C Ratio	0.112	-	-	-	0.113
HCM Control Delay (s/veh)	9.7	0	-	-	10.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q (veh)	0.4	-	-	-	0.4

APPENDIX G:
Traffic Signal Plans

MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

PHASE	2+5			2+6			PED			4+8			FLASH
INTERVAL / SIGNAL	1	2	3	4	5	6	7	8	9	10	11	12	
1,2	R	R	R	G	Y	R	R	R	R	R	R	R	Y
3	G①	Y①	R⊘	G	Y	R	R	R	R	R	R	R	Y
4	G	Y⊘	R⊘	G	Y	R	R	R	R	R	R	R	Y
5,6	R	R	R	R	R	R	R	R	R	G	Y	R	R
7,8	R	R	R	R	R	R	R	R	R	G	Y	R	R
9,10	H	H	H	H	H	H	M	FH	H	H	H	H	OFF
11,12	H	H	H	H	H	H	M	FH	H	H	H	H	OFF
13,14,15,16	H	H	H	H	H	H	M	FH	H	H	H	H	OFF

FIXED		4	2		4	2					4	2
MINIMUM	3			15						3		
PASSAGE	3			**						5		
MAX 1	7			34						12		
PEDESTRIAN ✳							7	12	3			
MEMORY	NL			MN			L			L		

REFER TO SYSTEM PERMIT #I-0225 FOR PROGRAM TIMINGS AND WEEKLY PROGRAM CHART

OPERATION NOTES

① ⊘ IF FOLLOWED BY 2+6 ② G IF FOLLOWED BY 2+6

✳ UPON PEDESTRIAN ACTUATION, OTHERWISE HAND SYMBOL AT ALL TIMES

- CONTROLLER TO DWELL IN PHASE 2+6 UNTIL ACTUATED BY PHASE 4+8 OR THE PEDESTRIAN PHASE
- PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL.
- THIS SIGNAL TO BE EQUIPPED WITH ACCESSIBLE PEDESTRIAN SIGNAL ACTIVATED DURING THE PEDESTRIAN PHASE (INTERVAL 7) TO ASSIST SIGHT-IMPAIRED PEDESTRIANS

**DENSITY ZONE NOTES

- RANGE OF DETECTION: 0-100 FEET FROM STOP BAR
- SPEED BOUNDARY: 5-30 MPH

**ADVANCE DILEMMA ZONE NOTES

- ESTIMATED TIME OF ARRIVAL: MIN 2.5 - MAX 5.5 SEC.
- RANGE OF DETECTION: 0-450 FEET FROM STOP BAR
- SPEED BOUNDARY: 27-100 MPH

EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

PHASE	2			6			4			8		
INTERVAL / SIGNALS	13	14	15	16	17	18	19	20	21	22	23	24
1,2	R	R	R	G	Y	R	R	R	R	R	R	R
3	G⊘	Y⊘	R⊘	R	R	R	R	R	R	R	R	R
4	G	Y⊘	R⊘	R	R	R	R	R	R	R	R	R
5,6	R	R	R	R	R	R	R	R	R	G	Y	R
7,8	R	R	R	R	R	R	G	Y	R	R	R	R
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
13,14,15,16	H	H	H	H	H	H	H	H	H	H	H	H
FIXED	▲	4	2	▲	4	2	▲	4	2	▲	4	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.

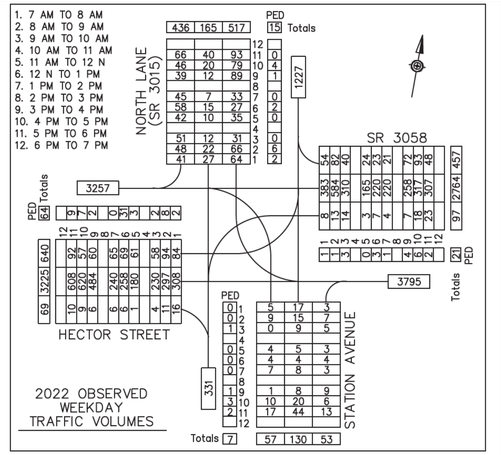
EMERGENCY PRE-EMPTION OPERATION NOTES

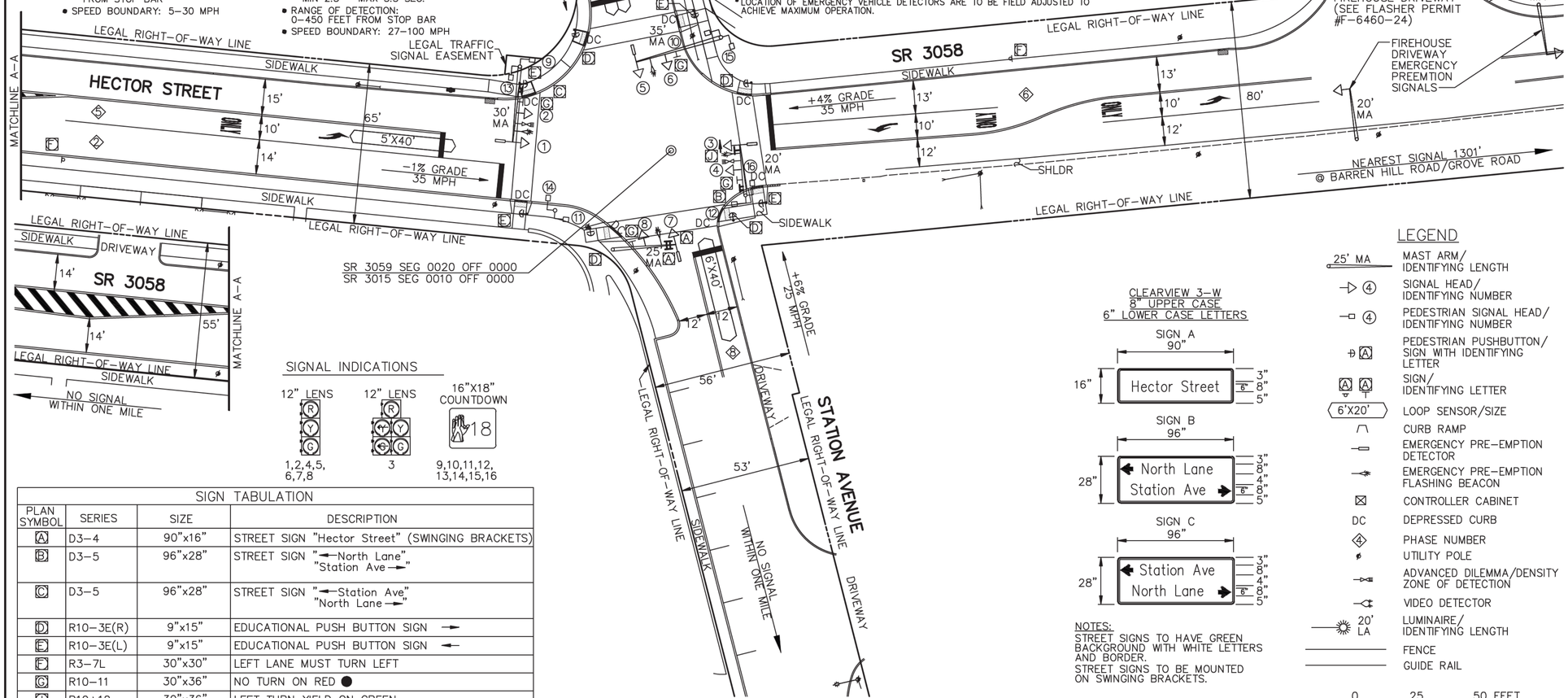
ⓐ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION

ⓑ SIGNAL TO INDICATE ⊘ WHEN RETURNING TO NORMAL OPERATION

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND APPROACH OF STATION AVENUE AND THE SOUTHBOUND APPROACH OF NORTH LANE (SR 3015) AND THE EASTBOUND AND WESTBOUND APPROACHES OF HECTOR STREET (SR 3058) WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED THE PED "WALK (MAN)" INTERVAL SHALL TERMINATE IMMEDIATELY AND THE PED "CLEAR (FLASHING HAND AND COUNTDOWN TIMER)" INTERVAL SHALL TIME OUT THIS INTERVAL FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PREEMPTION.
- IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- UPON COMPLETION OF PRE-EMPTION PHASE 2,4,6 OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 4 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.
- LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.





SIGNAL INDICATIONS

SIGN TABULATION

PLAN SYMBOL	SERIES	SIZE	DESCRIPTION
A	D3-4	90"x16"	STREET SIGN "Hector Street" (SWINGING BRACKETS)
B	D3-5	96"x28"	STREET SIGN "←North Lane" "Station Ave→"
C	D3-5	96"x28"	STREET SIGN "←Station Ave" "North Lane→"
D	R10-3E(R)	9"x15"	EDUCATIONAL PUSH BUTTON SIGN →
E	R10-3E(L)	9"x15"	EDUCATIONAL PUSH BUTTON SIGN ←
F	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
G	R10-11	30"x36"	NO TURN ON RED ●
J	R10+12	30"x36"	LEFT TURN YIELD ON GREEN

CLEARVIEW 3-W 8" UPPER CASE 6" LOWER CASE LETTERS

NOTES:
STREET SIGNS TO HAVE GREEN BACKGROUND WITH WHITE LETTERS AND BORDER.
STREET SIGNS TO BE MOUNTED ON SWINGING BRACKETS.

LEGEND

- 25' MA — MAST ARM/ IDENTIFYING LENGTH
- ④ — SIGNAL HEAD/ IDENTIFYING NUMBER
- ④ — PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- Ⓐ — PEDESTRIAN PUSHBUTTON/ SIGN WITH IDENTIFYING LETTER
- Ⓐ Ⓐ — SIGN/ IDENTIFYING LETTER
- 6'X20' — LOOP SENSOR/SIZE
- CURB RAMP
- EMERGENCY PRE-EMPTION DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- CONTROLLER CABINET
- DC — DEPRESSED CURB
- ④ — PHASE NUMBER
- UTILITY POLE
- ADVANCED DILEMMA/DENSITY ZONE OF DETECTION
- VIDEO DETECTOR
- 20' LA — LUMINAIRE/ IDENTIFYING LENGTH
- FENCE
- GUIDE RAIL

0 25 50 FEET

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SYSTEM PERMIT # I-0225

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: WHITEMARSH TOWNSHIP
INTERSECTION: HECTOR STREET (SR 3058) & NORTH LANE (SR 3015)/STATION AVE

REVIEWED: Richard L. Mellor, Jr. 06/13/2023
Richard L. Mellor, Jr. DATE 06/13/2023
MUNICIPAL OFFICIAL DATE

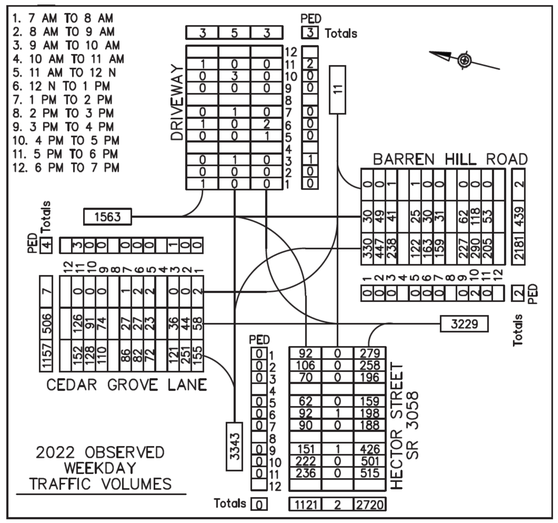
RECOMMENDED:
MARK L KRAY 05-28-91
DOUGLAS MAY 05-30-91
DISTRICT TRAFFIC ENGINEER DATE

NO	REVISION	DES/ REVW	DATE	REVW	DATE	RECOM	DATE
1	ADDED NO TURN ON RED 7 AM-7 PM	PAI	09-23-93	MLK	10-01-93	DWM	10-01-93
2	NEW DWG - ADDED PREEMPT	PAI/ CB	10-29-01	MLK	11-02-01	LRB	11-06-01
3	REVISE NW & SW CORNERS; ADD CURB RAMPS, WAVETRONIX, & DSNS; REVISE PRE-EMPTION NOTES; ADD Ø-5	IPD		DLA	11/28/11	ABP	11/28/11
4	AS-BUILT	KPL	02/13/15	DLA	3/4/15	ABP	3/5/15
5	TIMING ADJUSTMENTS, UPDATED SR INFO, REVISED TRAFFIC COUNTS	McM	11/18/22	MJS	Digitally signed by MJS Date: 2023.06.06 09:56:16 -04'00'	KPL	Digitally signed by KPL Date: 2023.06.07 09:40:57 -04'00'
6							
7							
8							

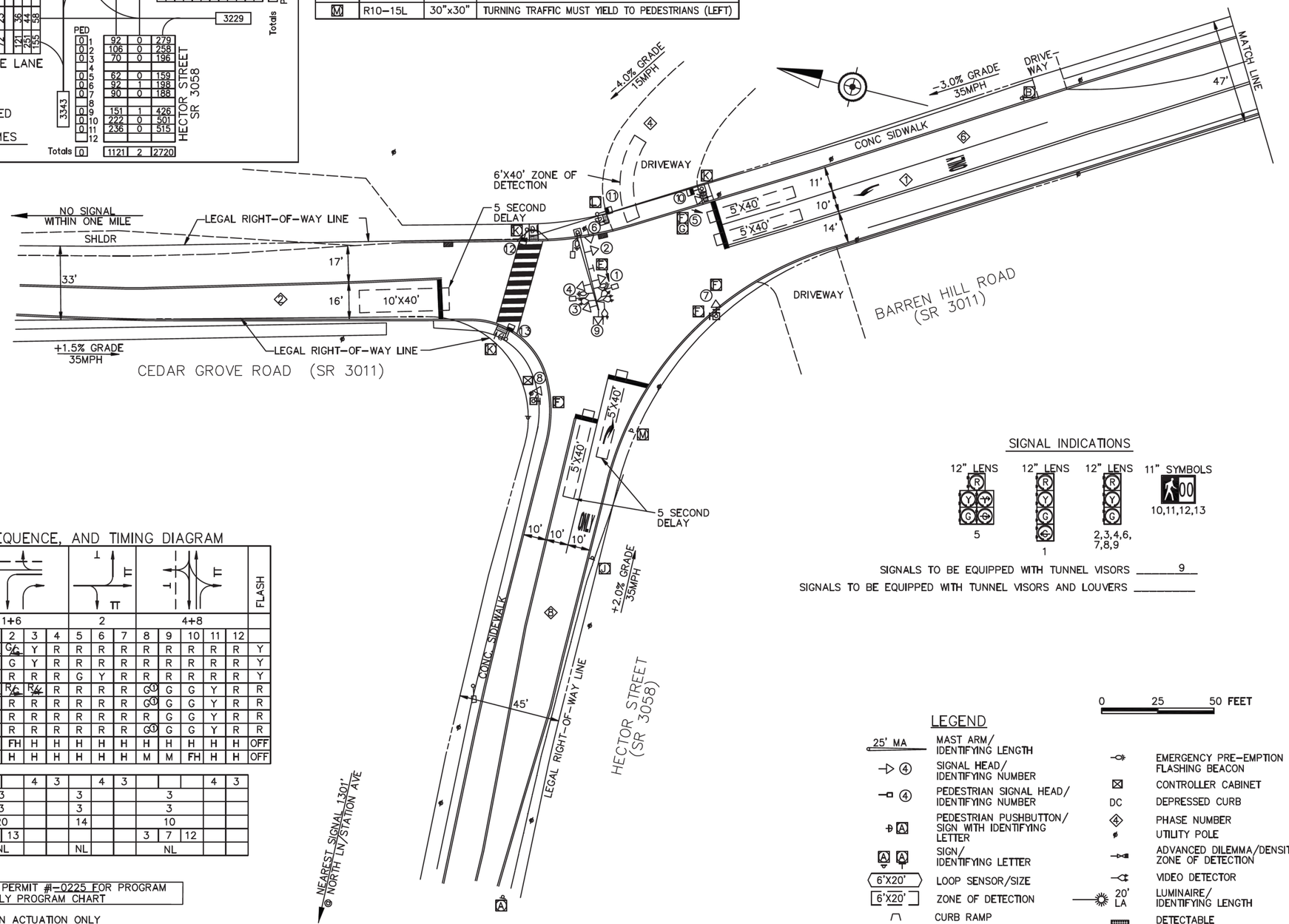
SHEET 2 OF 2 | PERMIT # 64-2732 | FILE # 2732

E:\eng\819210.34 - E04416 WO #4 Montgomery\Phase 008 - Hector-North-Station - Butler-Flourtown\dwg\CAD File #2732 Rev 5 Nov 2022.dwg, 11/18/2022 2:41:36 PM, DWG To PDF.pc3

1. 7 AM TO 8 AM
2. 8 AM TO 9 AM
3. 9 AM TO 10 AM
4. 10 AM TO 11 AM
5. 11 AM TO 12 N
6. 12 N TO 1 PM
7. 1 PM TO 2 PM
8. 2 PM TO 3 PM
9. 3 PM TO 4 PM
10. 4 PM TO 5 PM
11. 5 PM TO 6 PM
12. 6 PM TO 7 PM



SIGN TABULATION			
PLAN SYMBOL	SERIES	SIZE	DESCRIPTION
A	W3-3	36"x36"	SIGNAL AHEAD
B	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
C	R3-5L	30"x36"	LEFT TURN SIGN
D	R3-5A	30"x36"	STRAIGHT THROUGH SIGN
E	R10-12	30"x36"	LEFT TURN YIELD ON GREEN ●
F	R9-3	18"x18"	NO PEDESTRIAN CROSSING
G	R10-10R	24"x30"	RIGHT TURN SIGNAL
J	R3-7R	30"x30"	RIGHT LANE MUST TURN RIGHT
K	R10-3E(L)	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON WITH COUNTDOWN TIMER ⟵
L	R10-3E(R)	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON WITH COUNTDOWN TIMER ⟶
M	R10-15L	30"x30"	TURNING TRAFFIC MUST YIELD TO PEDESTRIANS (LEFT)



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SYSTEM PERMIT # I-0225

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: WHITEMARSH TOWNSHIP
INTERSECTION: BARREN HILL RD/CEDAR GROVE RD
(SR 3011) AND HECTOR ST (SR 3058)

REVIEWED:

RICHARD L. MELLOR — DATE 11/7/17
MUNICIPAL OFFICIAL — DATE

RECOMMENDED:
GRW — 03-12-86

WERNER J. EICHORN — 03-12-86
DISTRICT TRAFFIC ENGINEER — DATE

MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

PHASE	1+6				2			4+8					FLASH
INTERVAL / SIGNAL	1	2	3	4	5	6	7	8	9	10	11	12	
1	G	G	Y	R	R	R	R	R	R	R	R	R	Y
2	G	G	Y	R	R	R	R	R	R	R	R	R	Y
3,4	R	R	R	R	G	Y	R	R	R	R	R	R	Y
5	R	R	R	R	R	R	R	G①	G	G	Y	R	R
6	R	R	R	R	R	R	R	G①	G	G	Y	R	R
7,8	R	R	R	R	R	R	R	R	G	G	Y	R	R
9	R	R	R	R	R	R	R	G①	G	G	Y	R	R
10,11	M	FH	H	H	H	H	H	H	H	H	H	H	OFF
12,13	H	H	H	H	H	H	H	M	M	FH	H	H	OFF

FIXED			4	3		4	3				4	3
MINIMUM	3				3			3				
PASSAGE	3				3			3				
MAX 1	20				14			10				
PEDESTRIAN ✱	7	13						3	7	12		
MEMORY	NL				NL			NL				

REFER TO SYSTEM PERMIT #I-0225 FOR PROGRAM TIMINGS AND WEEKLY PROGRAM CHART

✱ UPON PEDESTRIAN ACTUATION ONLY
① R IF ACTUATED BY PEDESTRIAN

SIGNAL INDICATIONS

SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS 9
SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS AND LOUVERS

0 25 50 FEET

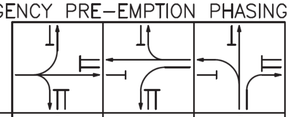
LEGEND

- 25' MA — MAST ARM/ IDENTIFYING LENGTH
- ④ — SIGNAL HEAD/ IDENTIFYING NUMBER
- ④ — PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- A — PEDESTRIAN PUSHBUTTON/ SIGN WITH IDENTIFYING LETTER
- A A — SIGN/ IDENTIFYING LETTER
- 6'X20' — LOOP SENSOR/SIZE
- 6'X20' — ZONE OF DETECTION
- CURB RAMP
- EMERGENCY PRE-EMPTION DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- CONTROLLER CABINET
- DC — DEPRESSED CURB
- PHASE NUMBER
- UTILITY POLE
- ADVANCED DILEMMA/DENSITY ZONE OF DETECTION
- VIDEO DETECTOR
- 20' LA — LUMINAIRE/ IDENTIFYING LENGTH
- DETECTABLE WARNING SURFACE

NO	REVISION	DES/ REVW	DATE	REVW	DATE	RECOM	DATE
1	PHASING CHANGES	TWW	8/25/86				
2	TIMING CHANGES	McM / BPP	10/4/06	MK	10/10/06	MK	10/13/06
3	INSTALL LOOPS FOR NB, SB, EB APPROACHES, INSTALL VIDEO DETECTION FOR WB APPROACH; RETIME.	TPD	11/11/11	DLA	11/28/11	ABP	11/28/11
4	RESTRIPE HECTOR STREET FOR A RIGHT TURN LANE ADD ADA CURB RAMPS	TPD	11/11/11	DLA	11/28/11	ABP	11/28/11
5	ADD COUNTDOWN PEDESTRIAN HEADS	KPL	2/10/17	DLA	3/29/17	ABP	4/3/17
6	TIMING CHANGES	KPL	1/9/18	KPL	1/24/18	DLA	1/24/18
7	ADDED EMERGENCY PRE-EMPTION	H&K	3/1/19	KPL	4/25/19	DLA	4/25/19
8	TIMING ADJUSTMENTS, UPDATED SR INFO, REVISED TRAFFIC COUNTS	McM	11/18/22	MJS	8/4/23	KPL	8/7/23
9	LPI, UPDATE CROSSWALK, COUNTDOWN WAND/MANS, PED SIGNAGE	G&A	7/22/24	MJS	Digitally signed by MJS Date: 2024.07.29 09:54:41 -04'00'	KPL	Digitally signed by KPL Date: 2024.07.29 09:54:51 -04'00'

SHEET 2 OF 3 | PERMIT # 64-2351 | FILE # 2351

EMERGENCY PRE-EMPTION PHASING



PHASE		2				6				8			
SIGNALS \ INTERVAL		13	14	15		16	17	18		19	20	21	
1	SELECTIVE CLEARANCES	R	R	R	SELECTIVE CLEARANCES	G/Y ⓐ	Y ⓐ	R ⓐ	SELECTIVE CLEARANCES	R	R	R	SELECTIVE CLEARANCES
2		R	R	R		G	Y ⓐ	R ⓐ		R	R	R	
3,4		G	Y	R		R	R	R		R	R	R	
5		R	R	R		R	R	R		G	Y	R	
6		R	R	R		R	R	R		G	Y	R	
7,8		R	R	R		R	R	R		R	R	R	
9		R	R	R		R	R	R		G	Y	R	
10,11		H	H	H		H	H	H		H	H	H	
12,13		H	H	H		H	H	H		H	H	H	
FIXED		**	4	3		**	4	3		**	4	3	

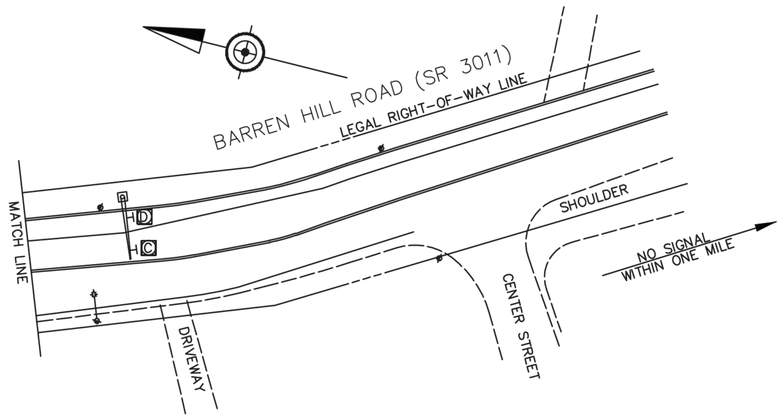
** FOR DURATION OF PRE-EMPTION

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.

ⓐ G/→Y WHEN RETURNING TO NORMAL OPERATION.
ⓑ G WHEN RETURNING TO NORMAL OPERATION.

EMERGENCY PRE-EMPTION NOTES

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND APPROACH OF BARREN HILL ROAD (SR 3011), THE SOUTHBOUND APPROACH OF CEDAR GROVE ROAD (SR 3011), AND THE EASTBOUND APPROACH OF HECTOR STREET (SR 3058), WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION.
- THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW. ONLY THOSE PHASES NOT POSING A YELLOW TRAP CONDITION MAY REMAIN GREEN (2 AND 1+6) WHEN GOVERNED BY AN APPROACHING EMERGENCY VEHICLE.
- THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF THE SIGNALS ARE FLASHING WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ALL SIGNALS SHALL REMAIN FLASHING.
- UPON COMPLETION OF PRE-EMPTION PHASE 2, 6 OR 8, IN RETURNING TO NORMAL OPERATION, PHASE 1+6 INTERVAL 1 SHALL FOLLOW.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.
- THE FIELD LOCATIONS OF THE PRE-EMPTION DETECTORS MAY DIFFER FROM THE LOCATIONS DEPICTED ON THE CONDITION DIAGRAM, AS THE DETECTORS MAY NEED TO BE RELOCATED AND/OR ADJUSTED TO PROVIDE ACCEPTABLE OPERATION AS DEEMED APPROPRIATE BY DEPARTMENT PERSONNEL.
- IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED, THE PED "WALK (MAN)" INTERVAL SHALL TERMINATE IMMEDIATELY AND THE PED "CLEAR (FLASHING HAND AND COUNTDOWN TIMER)" INTERVAL SHALL TIME OUT THIS INTERVAL, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PRE-EMPTION.



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SYSTEM PERMIT # I-0225

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: WHITEMARSH TOWNSHIP
INTERSECTION: BARREN HILL RD/CEDAR GROVE RD (SR 3011) AND HECTOR ST (SR 3058)

REVIEWED:

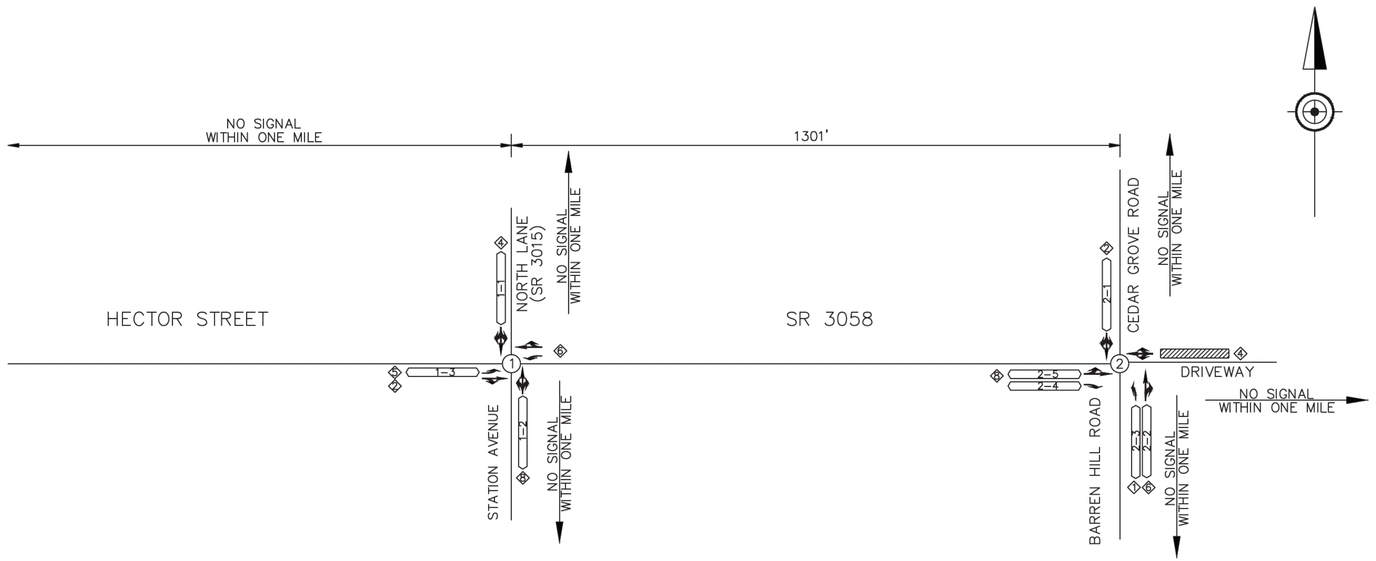
RICHARD L. MELLOR — DATE 11/7/17
MUNICIPAL OFFICIAL — DATE

RECOMMENDED:
GRW — 03-12-86

WERNER J. EICHORN — 03-12-86
DISTRICT TRAFFIC ENGINEER — DATE

NO	REVISION	DES/ REVW	DATE	REVW	DATE	RECOM	DATE
1	PHASING CHANGES	TWW	8/25/86				
2	TIMING CHANGES	McM / BPP	10/4/06	MK	10/10/06	MK	10/13/06
3	INSTALL LOOPS FOR NB, SB, EB APPROACHES, INSTALL VIDEO DETECTION FOR WB APPROACH; RETIME.	TPD	11/11/11	DLA	11/28/11	ABP	11/28/11
4	RESTRIPE HECTOR STREET FOR A RIGHT TURN LANE. ADD ADA CURB RAMPS	TPD	11/11/11	DLA	11/28/11	ABP	11/28/11
5	ADD COUNTDOWN PEDESTRIAN HEADS	KPL	2/10/17	DLA	3/29/17	ABP	4/3/17
6	TIMING CHANGES	KPL	1/9/18	KPL	1/24/18	DLA	1/24/18
7	ADDED EMERGENCY PRE-EMPTION	H&K	3/1/19	KPL	4/25/19	DLA	4/25/19
8	TIMING ADJUSTMENTS, UPDATED SR INFO, REVISED TRAFFIC COUNTS	McM	11/18/22	MJS	8/4/23	KPL	8/7/23
9	LPI, UPDATE CROSSWALK, COUNTDOWN HAND/MANS, PED SIGNAGE	G&A	7/22/24	MJS		KPL	Digitally signed by KPL Date: 2024.07.24 09:05:54 -04'00'

SHEET 3 OF 3 | PERMIT # 64-2351 | FILE # 2351



CYCLE / SPLIT / OFFSET

	PROGRAM 1=	PHASE										CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
	INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	PED				
11															
10															
9															
8															
7															
6															
5															
4															
3															
2	HECTOR ST & CEDAR GROVE RD/BARREN HILL RD	2351		25 (SPLIT)		25		40 (SPLIT)		25		90	0		
1	HECTOR ST & NORTH LN/STATION AVE	2732		44		24	13 (LEAD)	31		24	22	90	26		
	PROGRAM 2=	PHASE										CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
	INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	PED				
11															
10															
9															
8															
7															
6															
5															
4															
3															
2	HECTOR ST & CEDAR GROVE RD/BARREN HILL RD	2351		26 (SPLIT)		27		27 (SPLIT)		27		80	0		
1	HECTOR ST & NORTH LN/STATION AVE	2732		34		24	13 (LEAD)	21		24	22	80	76		
	PROGRAM 3=	PHASE										CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
	INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	PED				
11															
10															
9															
8															
7															
6															
5															
4															
3															
2															
1															
	PROGRAM 4=	PHASE										CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
	INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	PED				
11															
10															
9															
8															
7															
6															
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3															
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1															

Notes:
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
- REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX 2 AND CLEARANCE AND PED TIMES.

SYSTEM NOTES

1. THE SIGNALS ALONG HECTOR STREET AVENUE FROM NORTH LANE/STATION AVENUE TO CEDAR GROVE ROAD/BARREN HILL ROAD ARE TO BE COORDINATED.
2. PROGRAMS TO BE SELECTED BY CLOSED LOOP SYSTEM OR TBC BACKUP.
3. OFFSETS REFERENCES:
   -BEGINNING OF PHASE 2 (EB) YELLOW AT STATION AVE/NORTH LN.
   -BEGINNING OF PHASE 2 (SB) YELLOW AT BARREN HILL RD/CEDAR GROVE RD.
4. SYSTEM LIMITS:
   HECTOR STREET (SR 3059) – FROM NORTH LANE/STATION AVENUE TO CEDAR GROVE ROAD/BARREN HILL ROAD
5. PRIMARY COORDINATION: GPS TIMECLOCK
   SECONDARY COORDINATION: TIME BASED COORDINATION (DEFAULT TO BACKUP TBC PROGRAM CHART)
6. CYCLES, SPLITS & OFFSETS ARE IN SECONDS.
7. FIXED FORCE-OFFS USED AT INTERSECTION #1.

WEEKLY/BACKUP PROGRAM CHART				
EVENT	▲DAY	TIME	PROGRAM*	REMARKS
1	1–7	0000	MAXIMUM 1	FREE
2	1–5	0600	1	AM PEAK
3	1–5	1000	MAXIMUM 1	FREE
4	1–5	1500	2	PM PEAK
5	1–5	1900	MAXIMUM 1	FREE

▲DAY 1 = MONDAY
* MAX / FREE WHERE NOTED IN CYCLE / SPLIT / OFFSET MATRIX.

LEGEND

- (4) INTERSECTION ADDRESS
- (S#) SYSTEM LOOP/ IDENTIFYING NUMBER
- LOOP SENSOR / INTERSECTION X – LOOP NUMBER Y
- VIDEO DETECTION AREA
- PHASE NUMBER

NOT TO SCALE

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

REFER TO TRAFFIC SIGNAL PERMIT DRAWING FOR INDIVIDUAL INTERSECTION OPERATION, GEOMETRY, PHASING AND CRITICAL TIMES.

FOR CONSTRUCTION AND INSPECTION THE SYSTEM PERMIT SHOULD ALWAYS BE ACCOMPANIED WITH TRAFFIC SIGNAL PERMIT DRAWING.

TEST THE SYSTEM AT LOCAL INTERSECTION LEVEL, SUBSYSTEM LEVEL MASTER CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE DIAL UP LEVEL.

GATHER THE SYSTEM FAILURE CRITICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.

SET UP PENNDOT DISTRICT 6-0 COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SYSTEMS REVISIONS.

ASSIGN LOOP DETECTORS AND PROGRAM THE CONTROLLERS TO GATHER TRAFFIC VOLUMES IN 15 MINUTE INTERVAL, WHERE APPLICABLE.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

OBTAIN POLE ATTACHMENT PERMIT FOR AERIAL FIBER OPTIC INSTALLATION.

MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE DROPS.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: WHITEMARSH TOWNSHIP
INTERSECTION: HECTOR STREET (SR 3058) FROM CEDAR GROVE ROAD/BARREN HILL ROAD TO NORTH LANE (SR 3015)/STATION AVENUE

REVIEWED: Richard L. Mellor, Jr. 06/13/2023
Ricahrd L. Mellor, Jr. DATE 06/13/2023
MUNICIPAL OFFICIAL DATE

RECOMMENDED:
DAVID ADAMS 11/28/2011
ASHWIN PATEL 11/28/2011
DISTRICT TRAFFIC ENGINEER DATE

NO	REVISION	DES/ REVW	DATE	REVW	DATE	RECOM	DATE
1	TIMING ADJ	BURNS	6/29/15	KPL	1/24/18	DLA	1/24/18
2	TIMING ADJUSTMENTS, UPDATED SR INFO	McM	5/03/23	MJS	Digitally signed by MJS Date: 2023.08.04 09:19:03 -04'00'	KPL	Digitally signed by KPL Date: 2023.08.07 09:41:22 -04'00'
3							
4							
5							
6							
7							
8							

SYSTEM PERMIT # I-0225

I:\eng\81921\0.34 - E04416 WO #4 Montgomery\Phase 008 - Hector-North-Station - Butler-Flourtown\dwg\CAD File #I-0225 Rev 2 Nov 2022.dwg, 5/3/2023 4:47:27 PM, DWG To PDF.pc3

NAVE NEWELL
ENGINEERING • SURVEYING • LAND PLANNING
A HOWELL COMPANY

May 6, 2025

VIA HAND-DELIVERY

Charles L. Guttenplan, AICP
Director of Planning and Zoning / Zoning Officer
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

Reference: ***1001 Washington Street***
Preliminary Land Development Plan – Architectural Exhibits
Whitemarsh Township, Montgomery County, PA
Nave Newell No. 2024-001.02

Dear Mr. Guttenplan

On behalf of our client, HT 1001 Washington, LLC, please find enclosed the following items for a Preliminary Plan submission for the above-referenced project located in Whitemarsh Township, Montgomery County, PA (quantities enclosed are listed after each items):

1. Architectural Rendering, Typical Floor plans, and Elevations, dated May 2, 2025 (3 copies at 11x17); and
2. Thumb Drive with electronic version of enclosures.

We are submitting these to supplement the Preliminary Land Development submission that was made on March 28, 2025 and to discuss at the Planning Commission meeting.

If you have any questions or need additional information. Please contact me at (610) 265-8323 or via email at jbannon@navenewell.net.

Sincerely,

James P. Bannon, Jr., PE

JPB/

Enclosure

cc (via email): Krista Heinrich – Gilmore & Associates
David Landskroner / Ryan Lohbauer – Hightop Development

Craig R. Lewis, Esq. – Kaplin Stewart
Greg Richardson / Paige Glassman - TPD

K:\24proj\24001_1001_Washington_Street\RevResp\Township\Guttenplan_Ltr_25-05-06.docx



1

CONSHOHOCKEN TOWNHOMES

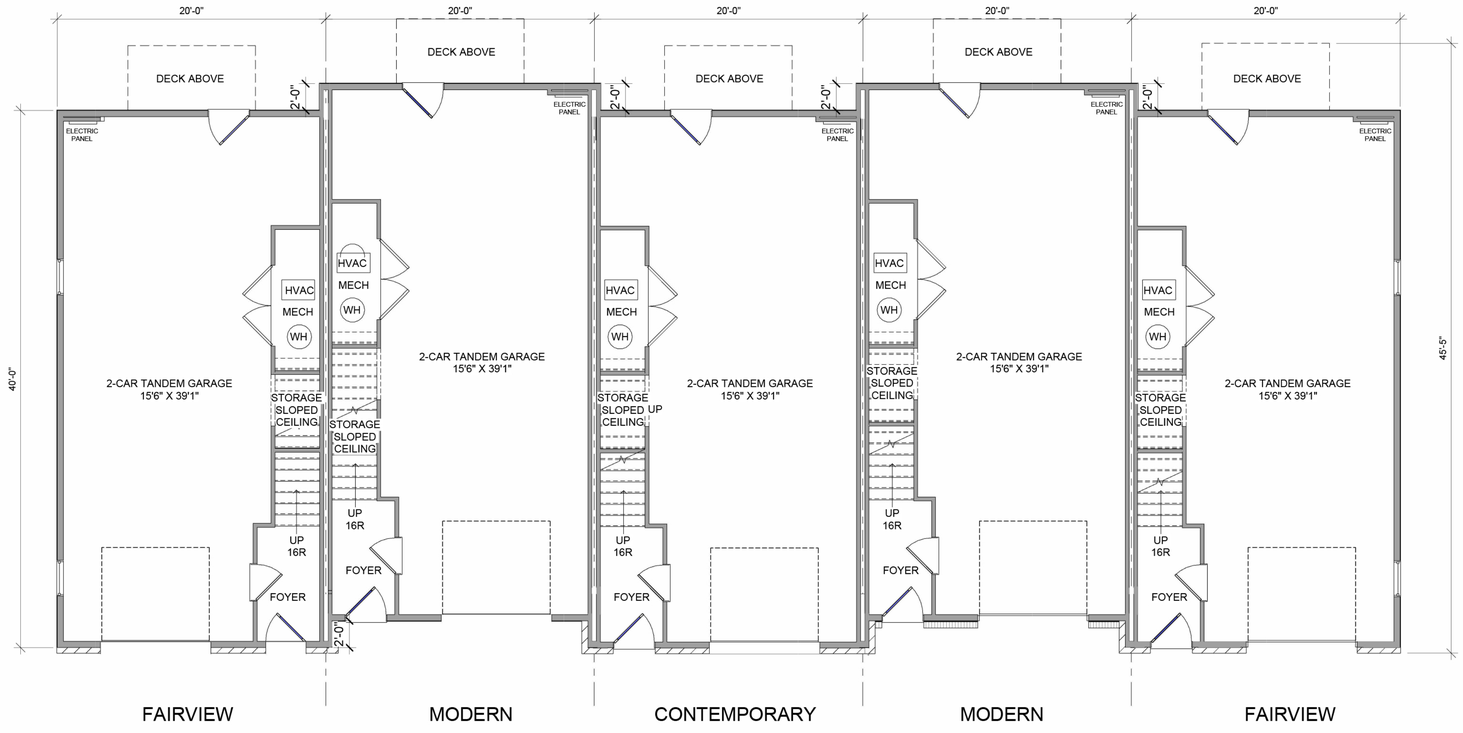
RENDERING

MAY 2, 2025

MONTGOMERY COUNTY, PA

SECOND FLOOR PLAN





FAIRVIEW | MODERN | CONTEMPORARY | MODERN | FAIRVIEW

2 FIRST FLOOR PLAN

CONSHOHOCKEN TOWNHOMES

TYPICAL BUILDING FLOOR PLANS

MAY 2, 2025

MONTGOMERY COUNTY, PA



FOURTH FLOOR PLAN



3 THIRD FLOOR PLAN

CONSHOHOCKEN TOWNHOMES

MONTGOMERY COUNTY, PA

TYPICAL BUILDING FLOOR PLANS

MAY 2, 2025



FAIRVIEW MODERN CONTEMPORARY MODERN FAIRVIEW



SIDE ELEVATION

MATERIAL CALCULATION

DOMINANT MATERIAL
(B&B/ SIDING) : 100%



FAIRVIEW FAIRVIEW



FAIRVIEW CONTEMPORARY MODERN CONTEMPORARY MODERN FAIRVIEW

4

CONSHOHOCKEN TOWNHOMES

MONTGOMERY COUNTY, PA

ELEVATIONS

MAY 2, 2025



FAIRVIEW MODERN CONTEMPORARY MODERN CONTEMPORARY MODERN FAIRVIEW



FAIRVIEW CONTEMPORARY MODERN CONTEMPORARY MODERN CONTEMPORARY MODERN FAIRVIEW

5

CONSHOHOCKEN TOWNHOMES

MONTGOMERY COUNTY, PA

ELEVATIONS

MAY 2, 2025



CONTEMPORARY

MATERIAL CALCULATIONS

DOMINANT MATERIAL (B&B/ BRICK) : 90%

PVC BLACK PANEL: 10%

MODERN

MATERIAL CALCULATIONS

DOMINANT MATERIAL (HORIZONTAL/ B&B) : 92%

BRICK: 8%

FAIRVIEW

MATERIAL CALCULATIONS

DOMINANT MATERIAL (B&B/ BRICK) : 73%

PVC BLACK PANEL: 27%

CONSHOHOCKEN TOWNHOMES

MONTGOMERY COUNTY, PA

MATERIALS

MAY 2, 2025

Whitemarsh TOWNSHIP
616 GERMANTOWN PIKE - LAFAYETTE HILL, PA 19444-1821
TEL: 610-825-3535 FAX: 610-825-9416
www.whitemarshtwp.org

BOARD of SUPERVISORS
Jacy Toll – Chair
Fran McCusker– Vice Chair
Vincent Manuele
Elizabeth Moy
Patrice Turenne

Craig T. McAnally
Township Manager

May 20, 2025

HT 1001 Washington, LLC
c/o David Landskroner
1331 S. Juniper Street
Philadelphia, PA 19147

RE: SLD #07-23: 1001 Washington Street - Washington Riverfront Development
Revised Preliminary Plan / Land Development for 46 Townhouses
Zoning Ordinance Compliance Review Letter

Dear Mr. Landskroner:

Please accept this as a review of the Zoning Ordinance Compliance issues for your above referenced Revised Land Development Preliminary Plan, based upon a 20-sheet plan set prepared by Nave Newell, Inc., for HT 1001 Washington, LLC, the first 18 sheets dated November 15, 2024, revised March 27,2025 and the last two sheets dated March 27, 2025 with no noted revisions. We have also referenced architectural renderings, elevations and floor plans dated May 2, 2025, transmitted to our office on May 6, 2025.

This site has most recently been the corporate headquarters of David's Bridal, Inc. We reviewed the original preliminary land development plan set in a letter dated December 20, 2024. The current plan includes the same number of traditional townhouses (46) as the initial preliminary plan. It is acknowledged that the Washington Street extension, as shown on the adopted Township's Official Map, is depicted on the plan. The Township sees this as a critical element of any redevelopment of this site. Please note that any offers of dedication are subject to acceptance by the Board of Supervisors.

Relief Granted by the ZHB

In case ZHB #2024-12, the Zoning Hearing Board granted the relief listed below to a plan showing a substantially similar layout (which included 3 additional townhouses for a total of 49), by decision issued on May 15, 2024. A request to extend the validity of that decision for 180 days was approved by the Zoning Hearing Board, on May 7, 2025.

1. **Variance from Section 116-165.**, to permit structures in the Floodplain Conservation District that are not permitted by right or by Special Exception under Sections 116-166.B.(2) and (3).
2. **Special Exception under Section 116-166.A.(1)**, to permit a small portion of the kayak boat ramp and boardwalk in the floodway within the Floodplain Conservation District.
3. **Special Exceptions under Sections 116-166.B.(2) and (3)**, so as to permit utilities and other necessary facilities in the floodway fringe within the Floodplain Conservation District.

4. **Variance from Section 116-280.H.**, so as to permit residential use in the RDD District-1 without a minimum of 2% non-residential use.
5. **Variance from Section 116-281.A.(3)(a)**, so as to permit a minimum setback of less than 10' and average of 20' from the Ultimate Right-of-Way of Washington Street.
6. **Variance from Section 116-281.A.(3)(b)**, so as to permit a setback from other unattached buildings of 28 feet, rather than the 40 feet required.
7. **Variance from Section 116-281.A.(3)(c)**, so as to permit a setback from a public trail of 8.5 feet, rather than the 10 feet required.
8. **Variance from Section 116-281.A.(7)(a)**, so as to permit single-family structures with building heights greater than 3 habitable stories above the floodplain.
9. **Variance from Section 116-281.A.(9)**, so as to include the riverfront open space area in the total tract area calculation.
10. **Variance from Section 116-283.A.(4)**, so as to permit a building greater than 100 feet in length without 20% architectural features.
11. **Variance from Section 116-283.C.(1)**, so as to permit curb and sidewalk alignment along Washington Street without street trees and the required 5 foot verge/strip, both as required in cross-referenced Section 105-48 of the Subdivision and Land Development Ordinance.
12. **Variance from Section 116-283.D.(1)(e)**, so as to permit curb and sidewalk without a planting strip.
13. **Variances from Sections 116-284.A.(1) and E.(3)**, so as to permit a boardwalk trail, rather than macadam, which is less than 10' wide.
14. **Variances from Sections 116-284.A. through C.**, so as to permit a reduction in the riverfront area as shown on the Zoning Plan, but not less than 20'.

The above relief was granted with certain conditions. One of those conditions is that the approval is specifically conditioned and contingent upon the Applicant obtaining approval from FEMA of a Letter of Map Revision (LOMR) such that the floodway line shall be exactly as shown to the ZHB on the plan used for approval. That floodway line is the same as shown on the submitted revised preliminary land development plan. We understand that the LOMR has received FEMA approval, subject to a 90-day appeal period beginning on April 23, 2025; should there be no successful appeal, the revised floodway line becomes effective August 21, 2025.

Additional Zoning Compliance Comments

We are in receipt of a letter from James Bannon, P.E. of Nave Newell dated March 27, 2025 in which he responded to various reviews of the original preliminary plan submission, including our zoning compliance review dated December 20, 2024. Below we have repeated the comments from our original letter along with the current status of each in bold. We have maintained the original comment number for easy reference.

	Section	Issue/Comment
3.	§116-33.2. §116-258.D. §116-279.	In those areas of Whitemarsh Township where an overlay district applies, should the use of an underlying district be utilized, underlying requirements shall apply. For overlay uses, the requirements of the overlay district shall apply, and in the event of a conflict, the overlay district requirements take precedence over those of the underlying zoning district(s). In the case of multiple overlay districts, unless otherwise stated, the most restrictive overlay district requirements apply. In those areas of Whitemarsh Township where the RDD applies, the requirements of the RDD shall be additive to the requirements of the underlying zoning district(s) and in the event of a conflict, take precedence over the underlying zoning district(s). Where a conflict between the Riverfront Development District regulations, Riparian Corridor Conservation District regulations, and the Floodplain Conservation District regulations (Article XXII), the stricter regulation shall apply. Also, please see related Comment #14. For the purposes of this review, it was assumed that the requirements of the Riverfront Development District (RDD-1), the more restrictive overlay district, were applicable, as well as the Floodplain and Riparian Corridor Conservation Districts. [**Please note**: The RDD district has been replaced by new zoning districts, adopted by the Board of Supervisors on November 14, 2024. However, we have determined that this project was submitted while the RDD district was still in force and therefore is the governing district for use and other requirements.] **Note: This comment is repeated for reference.**
4.	§116-161.A.	While the 100-year floodplain boundary is shown on Sheet CO.2 (Sheet 3 of 17), a note must also be added to the plans which indicates that the entire property is located within the Floodplain Conservation Overlay District. **Note: This comment is repeated for reference.**
5.	§116-164.C.	In the Floodplain Conservation District, no development shall be permitted except where the effect of such development on flood heights is fully offset by accompanying improvements which have been approved by all appropriate local, state and federal authorities as required. Additionally, compliance is required with Chapter 101 of the Whitemarsh Township Code, 'Floodplain Management'. **Note: This comment is repeated for reference.**
6.	§116-165.A.	This section allows dwellings in the floodway fringe, provided that they are in compliance with the provisions of the underlying district; they cause no increase in

the elevation of the one-hundred-year-frequency recurrent interval flood by more than one food at any point; and are not prohibited by any other ordinances or regulations. The Plan shows dwellings within the floodway as currently delineated by FEMA. As noted earlier in this letter, a LOMR has been submitted to move the floodway line and this proposed plan would only be valid if that LOMR is approved.

Note: Should the LOMR go into effect on August 21, 2025 as noted earlier in this letter, this comment will have been addressed.

7. §116-166.C. Any new construction, development or substantial improvements should be in full compliance with 44 CFR 60.3(a) through (d) of the National Flood Insurance Program regulations.

Note: This comment is repeated for reference.

8. §116-169.B.(1) & (2) These sections include limitations on disturbance of slopes 15%-25% and over 25%. The proposed disturbance of these slope categories must be documented on the plans.

Response to March 27th letter: While the letter indicates that the steep slope disturbances have been added to the Grading Plan, the percentage of disturbance of the two slope categories, is not shown. The area covered by the two slope categories is shown (as on the original preliminary plans).

10. §116-184.F. All parking shall conform to the requirements of the Whitemarsh Township Fire Prevention Code as acted and amended. The applicant must obtain approval from the Whitemarsh Township Fire Marshal. (A separate review will be provided.)

Response to March 27th letter: Understanding that the applicant is coordinating with the Fire Marshal, we will defer to his revised review.

11. §116-187. The applicant must provide documentation showing that space is not required for off-street loading, as no such areas are shown on the plans.

Response to March 27th letter: While the letter indicates that off-street loading is not required or proposed, no explanation is provided for how moving vans and delivery trucks will be accommodated.

13. §116-258. The plans shall indicate that the entire site is located within the Riparian Corridor Conservation District. As such, the Riparian Corridor Conservation District shall serve as a supplement to the underlying district provisions. Also, see related comment #14.

Note: This comment is repeated for reference.

14. §116-259. The proposed use(s) of the subject property are not permitted within the Riparian

§116-260.
§116-279.B.(3) Corridor Conservation District as defined in these sections of the ordinance. For structures that are otherwise permitted by virtue of the requirements of the Riverfront Development District, relief from the Zoning Hearing Board from the provisions of Article XXXV-Riparian Corridor Conservation District shall not be required, provided approval is recommended to the Board of Supervisors by the Township Engineer. Note that on this site, the Riparian Corridor is coterminous with the 100-year Floodplain boundary.
Note: This comment is repeated for reference.

15. §116-264.A. Reestablishment of forest cover and woodland habitat within the Riparian Corridor shall be required consistent with the requirements of the landscape regulation within the Township Subdivision and Land Development Ordinance. Also, see related Comment #14.
Response to March 27th letter: We will defer to the recommendations of the Shade Tree Commission with respect to these requirements and all other landscaping requirements for the project.

17. §116-282.F. Parking may be permitted in the Floodplain Conservation District and Riparian Corridor Conservation District in the Riverfront Development District without relief from the Zoning Hearing Board provided that a parking evacuation plan is provided by the Applicant and is approved by the Board of Supervisors. We note that an Emergency Action Plan was submitted; that Plan is being reviewed by the Township's Emergency Management Coordinator and the Chief of Police.
Response to March 27th letter: The Chief of Police found the Emergency Action Plan acceptable when submitted with the first version of the preliminary plan; we will defer to any comments from the Emergency Management Coordinator/Fire Marshal.

18. §116-283. The applicant must submit architectural plans including elevation views for all proposed buildings in order to demonstrate compliance with the requirements of this section of the ordinance.
Response to March 27th letter:
§116-283.A.(1): Please confirm how high the HVAC will be elevated above the garage floor. If any mechanical components are located outside, they must be detailed on the plan.

§116-283.A.(2): Exterior material calculations should be modified to show each material with their associated percentage separately. The dominant material shall be 60% or greater. Some materials appear to have been overlooked in the current calculations.

19. §116-283.B. Any public amenities provided must be in accordance with the requirements of this section of the ordinance. We note a kayak launch (boat launch) is proposed along the eastern end of the river frontage.
Response to March 27th letter: Please provide the specifications for

the kayak launch when provided by the PA Fish and Boat Commission.

20. §116-283.C. The plans appear to demonstrate compliance with the landscaping and screening requirements described in this section of the ordinance. However, the Shade Tree Commission will undertake a more detailed review of the landscape plan and any required replacement plantings. The applicant will be required to submit detailed landscape drawings for review at a public Shade Tree Commission meeting.

Response to March 27th letter: We will defer to the recommendations of the Shade Tree Commission with respect to all landscaping requirements for the project.

21. §116-283.D.(1) For all developments in the RDD district, the following elements shall be included to create a pedestrian oriented development:

(a) Lighting along all street frontages with lighting fixtures to be of a style as approved by the Board of Supervisors. (Lighting locations are noted.)
Note: This comment is repeated for reference.

(b) Benches, trash receptacles, bicycle racks and other street furniture in a style approved by the Board of Supervisors.
Response to March 27th letter: Bicycle racks should be incorporated into the plans. Given the activity in the area, consideration should be given to placing a trash receptacle and other amenities near the kayak launch. (See related comment #22.)

(c) Wide sidewalks and other pedestrian amenities, landscaping, shade trees.
Note: This comment is repeated for reference.

(d) A variety of pavement materials for street surfaces and sidewalks.
Note: This comment is repeated for reference.

(e) Planting strips, located between the curb and sidewalk. [Note: As indicated earlier in this letter, a variance was granted to eliminate this specific requirement.]
Note: This comment is repeated for reference.

22. §116-284.A. §116-284.B. §116-284.C. Theses sections state that an area parallel to the river, meeting the requirements of Sections 118-284(A), (B), or (C), whichever is applicable, measured from the mean water elevation of the Rivers of the United States/Pennsylvania, shall be provided along the length of the river. While a variance (noted previously) was granted for the width of this area, the minimum width of 26.4' is measured from approximate edge of the river bank; the aforementioned mean water elevation is not identified. Further, the Site/Zoning Data Table lists the minimum riverfront area as 32' This discrepancy must be resolved.

This area along the river shall be offered for dedication to the Township. If the

area is not accepted for dedication, an easement for public use must be provided along with maintenance agreements acceptable to the Township. This area shall include:

(1) A red shale macadam trail of at least 10 feet in width, the length of the river, to connect to adjoining property trails. [As noted earlier, a variance was granted to allow a boardwalk less than 10' wide.]
Response to March 27th letter: The detail on sheet C10.1 says the minimum width for the trail is 10' wide. This detail should be modified to match the Site Plan on C3.0. The plan shall also be modified to differentiate the areas that are going to be boardwalk from the red shale macadam. Additionally, a detail of the boardwalk must be provided.

(2) A red shale macadam trail of at least 10 feet in width, the length of the river, to connect to adjoining property trails. [As noted earlier, a variance was granted to allow a boardwalk less than 10' wide.]
Note: This comment is repeated for reference.

(3) Seating areas at intervals of not more than 300 feet.
Response to March 27th letter: While the seating areas are compliant, we suggest placing an additional seating area near the kayak launch.

(4) Landscaping to enhance the trail, which at a minimum shall include trees in a naturalized setting at the rate of one tree per every 50 feet of trail. Other landscape treatments may be utilized if approved by the Township. This requirement appears to be met; further review of the landscape plan will be conducted by the Shade Tree Commission.
Note: This comment is repeated for reference.

(5) Appropriate lighting fixtures shall be of a style as approved by the Board of Supervisors. We note light fixtures are shown in this area.
Note: This comment is repeated for reference.

(6) Street furniture located in the floodway shall be anchored in accordance with the requirements of Article II, Floodplain Regulations, § 42-7 of the Building Construction Code.
Note: This comment is repeated for reference.

23. §116-284.D. Public Waterfront Access is required in accordance with Chapter 105, Subdivision and Land Development, Section 105-47(K).
Note: This comment is repeated for reference.

24. §116-286. Proposed signage shall be included on any future preliminary plan and shall be consistent with this section of the ordinance, unless the applicant intends to do this through separate permit applications subsequent to plan approval.
Response to March 27th letter: We note the proposed river trail wayfinding sign provided. However, an additional sign is recommended indicating where the kayak launch is located.

25. §116-287.B.(2) The applicant must submit architectural plans for any proposed buildings in adequate detail to indicate building setback, footprint dimensions, building heights, and building mass and to indicate how proposed buildings will affect views to the river and across the river to the hills and ridges. Architectural drawings must also be provided showing concepts for facades, roof design and materials for buildings, structured parking facilities, signs as well as proposed lighting, street furniture and sidewalk design.

    In addition to physical access to the river, visual access to the river is important as cited in our planning for the Spring Mill Area, including our most recent (2022) *Spring Mill Multi-Modal and Land Use Study* (adopted as an amendment to the Township's Comprehensive Plan.) A views analysis shall be submitted to demonstrate visual access to the river.

    Response to March 27th letter: A views analysis should be included to indicate how the proposed buildings will affect views to and across the river.

26. §116-287.B.(5) A transportation impact study (TIS) is required for all applications in the RDD-1 District.

    Response to March 27th letter: The TIS was received by the Township on May 1, 2025 and is currently under review by the Township Engineer.

Additional Comments

27. As indicated in the introduction to this review, the plans implement an Official Map roadway improvement, extending Washington Street to Lee Street; the plan further extends it to intersect with Station Avenue as well, to complete a roadway parallel to the river and provide improved access, including to the Spring Mill SEPTA rail station. However, the plan does not depict how Washington Street will intersect with Lee Street and Station Avenue. These intersections need to be engineered and provided on the plans. (Additional comment on this issue is anticipated in the Township Engineer's review.)

    Response to March 27th letter: While these intersections still do not appear to be adequately detailed, we will defer to the recommendations of the Township Engineer.

28. There is no indication on the plans showing how trash containers will be stored and/or if dumpsters are anticipated. This detail is extremely important in a townhouse development where storage areas are very limited. Details for trash removal/container storage must to be provided.

    Response to March 27th letter: Acknowledged. We will seek out those details on the final plan submission.

Should you have any questions, please do not hesitate to contact me.

Very truly yours,

Charles L. Guttenplan, AICP
Director of Planning and Zoning/Zoning Officer

cc: Craig McAnally, Township Manager
Robert A. Sztubinski, B.C.O., Director of Building and Codes
Andrew Thomas, Fire Marshal
Sean P. Kilkenny, Esq., Township Solicitor
Krista Heinrich, P.E., Township Engineer
Craig R. Lewis, Esq., Applicant's Attorney
James P. Bannon, P.E., Applicant's Engineer

WHITEMARSH TOWNSHIP

To: Charlie L. Guttenplan, Director of Planning & Zoning/Zoning Officer.

From: **Andrew G. Thomas, Fire Marshal**

Subject: SLD#07-23 Washington Riverfront Development
1001 Washington Street
Conshohocken, PA 19428

Date: 05/21/2025

The preliminary plan submission delivered to the township on March 27, 2025 addresses and complies with all requests of the fire marshal's office.

Andrew G. Thomas
Fire Marshal, Emergency Management Coordinator
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2614
Email: athomas@whitemarshtwp.org

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

May 30, 2025

Mr. Craig T. McAnally - Township Manager
Whitemarsh Township Municipal Building
616 Germantown Pike
Lafayette Hill, PA 19444

RE: Preliminary Plan Review
1001 Washington Street
Whitemarsh Township, Montgomery County, PA
S/LD # 07-23
Our Project Number 2023-11054

Dear Mr. McAnally:

As requested, we have reviewed plans for the above referenced Preliminary Plan Submission consisting of a 20-Sheet Plan prepared by Nave Newell and dated November 15, 2024, and last revised March 27, 2025. The following comments are offered for your consideration:

The applicant is requesting or requires waivers and/or relief from the requirements of the following sections of the ordinance:

	Section	Description
1.	105-21(B)(1)(n)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the plans to show existing principal buildings (and their respective uses), and driveways on the adjacent peripheral strip: sewers lines, storm drains, culverts, bridges, utility easements, quarries, railroads, and other significant man-made features within 500 feet of and within the site, including properties across streets. The granting of any relief should be conditioned that an aerial photo be included in the plan set which shows the required features.
2.	105-21(B)(2)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the inclusion of a Soil Map, showing Soil types, Contour lines, Datum to which contour lines refer, Floodplain areas, Base flood elevation data, Floodplain soil areas, Steep slopes, and Limestone areas. The waiver is being requested to allow the required features to be shown on various sheets throughout the plan set, instead of on one single Plan Sheet.
3.	105-21(B)(15)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the submission of a “Preliminary Resource Impact and Conservation Plan” (the “Preliminary Impact Plan”) to categorize the impacts of the proposed activities and physical alterations on those resources shown on the Existing resources and site analysis plan (ERSAP). The waiver is being requested to allow the required features to be shown on various sheets throughout the plan set, instead of on one single Plan Sheet.

Section Description

4. 105-30(A) The applicant is requesting a waiver from the requirements of this section of the ordinance. As defined by Section 105-29(C) and 105-30(A), streets adjacent to the site are subject to the following requirements:

Street Name	Classification	Required Ultimate R.O.W	Required Cartway Width	Curbs	Sidewalks	Tree Zone
Washington Street	Local Street	56 feet	36 feet	Required	Required	Required
Lee Street	Local Street	56 feet	36 feet	Required	Required	Required
Station Avenue	Local Street	56 feet	36 feet	Required	Required	Required
Courts A-D	Court	50 feet	30 feet	Required	Required	Required

The waiver is requested to allow the Ultimate Right-of-Way width of proposed Washington Street to be 28-feet, and the cartway width to be below 36-feet and to allow the proposed Courts will have cartway widths below 30'. The following comments are offered for consideration:

- For Washington Street, the plans appear to show a proposed Right-of-way width of 28 feet and a proposed cartway width of 28± feet, which must be revised. At a minimum, the proposed ultimate right-of-way, cartway edge, centerline, curbing and sidewalk should align with those on the adjacent property (901 Washington Street). For reference, the widths approved on the adjacent property were 46-feet for the Ultimate Right-of-way, and 27.3-feet for the cartway.
- The plans must be revised to provide curbing on Washington Street along the SEPTA parking lot.
- The plans must be revised to provide a Tree Zone along Washington Street, or the waiver request must be amended to not require a Tree Zone.
- For Courts A-D, the plans show a proposed cartway width of 24± feet, and do not show an ultimate Right-of-Way, which is consistent with the adjacent property (901 Washington Street).
- The plans must be revised to provide a sidewalk and a Tree Zone along Courts A-D, or the waiver request must be amended to not require sidewalks and/or a Tree Zone.
- The plans must also be revised to show and dimension the cartway and ultimate Rights-of-Way for Lee Street and Station Avenue.

5. 105-30(C) The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that short extensions of existing streets with lesser right-of-way and/or cartway widths than prescribed above may be permitted; provided, however, that no section of new right-of-way be less than 40 feet in width and such extensions shall be less than 100 feet in length, in order to allow the Right-of-Way of Washington Street to measure 30-feet wide for a distance of 960-feet along the property frontage. The waiver request states that the Right-of-Way width would be 30 feet, where the plans show a width of 28 feet, and must be revised.

6. 105-33(B) The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that, whenever local street lines are deflected in excess of 5°, connection shall be made by horizontal curves. This section of the ordinance requires that the minimum center-line radii for horizontal curves shall be 150 feet, and plans show a horizontal curve radii of 28 feet at the intersection of Washington Street and Court D. We do not recommend the granting of this waiver. The applicant's engineer should review alternatives which can meet the requirement to the maximum extent feasible.

	Section	Description
7.	105-38(F)	The applicant is requesting a waiver from the requirements of this section of the ordinance, in order to allow Angle or perpendicular parking along Washington Street.
8.	105-38(H)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires that all parking areas shall be set back from the right-of-way line and all property lines at least 15 feet in order to allow the proposed 10-space parking area and 11 existing parking spaces along the Western property line to be located within the required setback.
9.	105-38(L)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that, in no case shall parking areas for three or more vehicles be designed to require or encourage cars to back into a public street in order to leave the lot, in order to allow the proposed 10-space parking area to be located along Washington Street.
10.	105-38(O)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that parking areas shall be located at least 10 feet from any building or structure. The existing 11-space parking area appears to be located 4.6-feet from Units 1-6. The granting of any waiver should be conditioned on the applicant obtaining the approval of the Fire Marshal.
11.	105-47(K)(1)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the provision of a right-of-way of at least 25 feet in width to be offered for dedication to the Township for the public riverfront access, perpendicular to the river. The waiver is being requested to allow the provision of an easement for public access. Since no easement appears to be shown, it is assumed that the applicant is proposing to provide a blanket access across the entire site common areas. Whether an easement or right-of-way, maintenance agreements must be provided in a form acceptable to the Township.
12.	105-48	The plans must be revised in order to demonstrate compliance with this section of the ordinance, which requires the installation of street trees along all streets where suitable trees do not exist, or a waiver must be obtained. The landscape requirements table on Sheet C7.0 does not appear to indicate that Street Trees are proposed.
13.	105-48(E)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires that street trees shall be planted within a tree planting zone of lawn area or other material approved by the Shade Tree Commission, situated between the sidewalk and curb and measuring a minimum of 5 feet in width from the planting edge of the curb to the planting edge of the sidewalk. The plans show proposed sidewalk directly adjacent to curbing, with no planting strip. Additionally, there are no planting strips or street trees between the curb, sidewalk and/or dwelling units. It is noted that the applicant was granted a variance from Section 116-283(C)(1) in order to permit the curb and sidewalk layout along Washington Street without street trees or the required 5-foot tree planting zone.
14.	105-52(B)(2)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires that all buffers shall have a minimum width of 50 feet. The Board of Supervisors may permit an alternative planting option which shall have a screening capability equal to or greater than any of the available options. The applicant should provide evidence in sufficient detail to the Board of Supervisors in order to demonstrate that sufficient screening will be provided.

	Section	Description
15.	105-53(D)(1)(c)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that no more than 25% of the minimum land area required for park and recreation land may consist of floodplain or riparian corridor buffer areas, wetlands or areas with slopes in excess of 8%. The entire property is located within the floodplain and riparian corridor.
16.	105-56(A)(1)(a)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that, where a street is designed so that all units face on local streets or courts and where on-street parking is not anticipated and no safety hazard will be created, the cartway width may be reduced. This reduction is limited to 26 feet on private streets and courts. The plans show Courts A, B, C and D having a proposed width of 24 feet.
17.	58-28(D)(11)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that edges of slopes shall be a minimum of five feet from property lines or right-of-way lines in order to permit the normal rounding of the edge without encroaching on the abutting property. The waiver is being requested to allow for connection to offsite features such as trails, walks and streets.
18.	58-29(E)	The applicant is requesting relief from the requirements of this section of the ordinance, which states that fills shall not encroach on natural watercourses, floodways, floodway fringes, constructed channels, or on wetlands unless permitted by the Army Corps of Engineers, Pennsylvania Department of Environmental Protection (PADEP) and approved by the Township. We do not recommend the granting of this relief. The applicant must obtain the required outside agency permits.
19.	58-34(B)(7)(d)	The applicant is requesting relief from the requirements of this section of the ordinance, which requires that all storm pipes shall be reinforced concrete pipe (RCP). The waiver is requested in order to allow on-site pipes to be constructed of High Density Polyethylene Pipe (HDPE). Proposed storm pipes within the public Right-of-way will be RCP. We have no objection to the granting of this waiver.
20.	55-4(B)	The applicant is requesting relief from the requirements of this section of the ordinance, which states that the removal of more than 33% of Trees, having a DBH of six inches or greater, on any Lot, shall not be permitted. The plans appear to show 85% of existing trees as proposed to be removed.
21.	55-4(D)(6)(A), 55-4(F)	The applicant is requesting relief from the requirements of these sections of the ordinance, which states that every living and healthy tree with a DBH of six inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new canopy trees, of a type and species approved by the Shade Tree Commission or its designee, with a trunk diameter of not less than three inches in caliper. The total caliper of replacement trees, measured at six inches above the ground line, shall equal or exceed the DBH of the removed trees. The waiver is being requested to allow a maximum of 40% of the replacement trees to be replaced with ornamental trees, in accordance with Section 55-4(F).

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

	Section	Description
22.	105-19(E), 105-45	The Surveyors' Notes on the Existing Features Plan describe several easements, rights and/or restrictions that require additional information to resolve and/or show correctly, which must be resolved.
23.	105-21(B)(1)	Notes 6,13, and 16 do not appear to be applicable to this site, and must be removed from Sheet 3.0. Note 1 must be revised in order to be consistent with Note 1 on Sheet C1.0.
24.	105-21(B)(1)(d)[1]	The plans must be revised to show the boundaries of the Heavy Industrial (HVY), Riverfront Development Overlay District (RDD-1), and Recreational Overlay Districts, consistent with the Township Zoning Map.
25.	105-21(B)(1)(j)	Additional survey is required, extending further off site along Washington Street, Lee Street, and Station Avenue to ensure continuity between existing and proposed streets.
26.	105-21(B)(1)(o)	The plans must be revised to address the treatment of existing features (monument sign, parking spaces, asphalt/fire lane) within the existing easement over the SEPTA property.
27.	105-21(B)(1)(o)	The plans must be revised to provide ADA accessible parking for the overflow lot west of Court A.
28.	105-21(B)(1)(o)	The plans show an existing parking area along the Western property line, that spans the subject property and the adjacent property at 901 Washington Street. Sheet C4.0 notes that, "Final Design and grading to be coordinated with 901 Washington Street and Whitemarsh Township prior to final submission". The following, at a minimum, must be addressed: • ADA Accessible curb ramps and crosswalks must be provided. • Existing/proposed grading must be shown. • Clarification must be provided regarding ownership and maintenance of the area. Easements must be established, as required.
29.	105-21(B)(1)(o)[1]	The plans must be revised to provide detailed design illustrating the connection of the proposed Washington Street extension and Lee Street, Station Avenue and Washington Street. The proposed ultimate right-of-way, cartway edge, curbing and sidewalk must align with those on the existing streets. Detailed intersection plans must be provided.
30.	105-21(B)(1)(o)[4]	The plans must be revised to show any proposed open space areas, and indication as to whether offered for dedication.
31.	105-21(B)(1)(o)[6]	The plans show an existing endwall at the Schuylkill River, within an "existing 25' Drainage Easement". The associated stormwater piping must also be shown.
32.	105-21(B)(1)(o)[7]	The plans must be revised to show how the proposed 7-foot wide trail along the River will connect to the 10-foot wide trail along the River on the adjacent property at 901 Washington Street.

	Section	Description
33.	105-21(B)(6)(a)	Sheet C5.0 indicates that the "Detailed design [is] still in progress", for the proposed Sanitary Sewer Pumping Station and that the exact location and depth of the proposed sanitary sewer force main is to be field verified by the contractor prior to start of construction. Sanitary sewerage facilities must be fully engineered and shown in their final location on the plans.
34.	105-21(B)(6)(b)	Sheet C5.0 indicates that the location of the proposed water main is to be coordinated with AQUA. Water supply lines must be fully engineered and shown in their final location on the plans.
35.	105-21(B)(8)	The plans must be revised to include a center-line profile for the extension of Washington Street.
36.	105-21(B)(9)	The following comments related to the Traffic Impact Study must be addressed:

1. As discussed previously, coordinate with the Township to determine the appropriate traffic control and circulation patterns along Washington Street and its intersections with Lee Street and Station Avenue. The analysis may need to be revised based on the outcome of those discussions.
2. §105-21.B(9)(d)[6][a] – Levels of service below LOS C are considered deficient. Improvements should be identified to mitigate the deficiency and indicate whether that improvement will be constructed in conjunction with the development.
3. Revise the last sentence within the "Whitemarsh Township Improvements" section (Page 6). It appears that the sentence is incomplete.
4. We note that the wrong edition of the *Trip Generation Manual* is referenced within the text of the document and should be revised to the latest edition (11th). However, the trip generation equations and values are correct.
5. The analysis assumes a 25% reduction in trips due to the proximity of existing transit options. The report references Table B.3 within the ITE Handbook, but that table discusses baseline vehicle occupancy. Update the reference and/or provide the table within the appendices that was used to determine the trip reduction.
6. Update the "Projected (Build) Condition Traffic Volumes" section to reference the correct years for each scenario mentioned. The report currently indicates 2022, which is incorrect.
7. Update Figure 4 to show the trip distribution for the near-by development. The current figure shows the existing volumes.
8. Review the traffic redistribution shown on Figure 5. There appears to be several inconsistencies:
    i. Eastbound Hector St at Lee St shows redistribution of 59 vehicles for the AM peak, but eastbound Washington Street shows 69 vehicles added to that movement.
    ii. Southbound North Lane at Hector St shows 6 vehicles redistributed for the AM peak, but 8 vehicles are added to the through movement.

Section	Description
105-21(B)(9) (con't)	iii. Westbound Hector St at North Ln shows 102 vehicles redistributed for the AM peak, but only 50 vehicles are added to the left turn movement. Additionally, the report notes a 15% redistribution of traffic on Hector St. The existing westbound through movement has 588 vehicles, so 15% would equate to 88 but the figure shows 102.
	iv. Westbound Hector St at Lee St shows 86 and 55 vehicles redistributed during the AM and PM peaks, but only 28 and 18 vehicles are added to the left turn movement, respectively.
	9. Provide additional narrative within the report to explain how the values were derived for the redistribution and list any assumptions made. Update the traffic volume development worksheets once the site redistribution values have been confirmed.
	10. Review the paths of the site trips shown on Figure 7. For example, assuming that Station Ave is open, the northbound right turning movements at Hector St/Lee St would likely use Station Ave. As mentioned above, discussions with the Township regarding the circulation within the study area could have an impact on the routes site trips can take and should be taken into account when updating this figure.
	11. Coordinate with SEPTA regarding the project, potential travel routes, parking, etc. and provide the correspondence in future submissions.
	12. Verify the westbound left turn lane length indicated in the analyses of Station Avenue/North Lane & Hector Street. The analysis indicates 100' but it measures closer to 80-85 feet. Update the queue analysis table accordingly.

37. 105-21(B)(17) This section of the ordinance requires the submission of a Community association document, for all subdivision and land development applications which propose lands and/or facilities to be used or owned in common by all the residents of that subdivision or land development and not deeded to the Township.

38. 105-21(B)(18) This section of the ordinance states that a Preliminary common open space ownership and management plan is required as part of any Preliminary Plan submission.

39. 105-21.1(K)(2) Within the South Transportation Service Area an impact fee in the amount of Two Thousand Five Hundred and Twenty-Nine Dollars ($2,529.00) per anticipated peak hour trip must be provided by the applicant. Based on data documented within the latest edition of the ITE Trip Generation Manual, the proposed development will generate 18 PM peak hour trips. Therefore, the traffic impact fee totals $45,522.00 ($2,529.00 x 18 peak hour trips).

40. 105-26(E) The applicant must provide evidence in sufficient detail to demonstrate that there are no environmental concerns related to previous uses of the site.

	Section	Description
41.	105-27, 105-84	Where a proposed park, playground, school or other public use shown in the Comprehensive Plan is located in whole or in part in a subdivision or land development, the Board of Supervisors may require the dedication or reservation of such area within the subdivision or land development, in those cases in which the Board of Supervisors deems such requirements to be necessary. Please note that both the Comprehensive Plan and the 'Spring Mill Area Study'[1] call for amenities along the River in this location such as restrooms, fishing piers, non-motorized boat launches, and facilities for bike and boat rentals.
42.	105-28(A)	The plans should be revised to provide a roadway cross section consistent with the recommendations on Page 49 of the 'Spring Mill Area Study'.[1]
43.	105-32(A)	This section of the ordinance states that no more than eight lots may be permitted to front on a private street. A waiver must be obtained in order to allow more than eight lots to front on the private courts.
44.	105-32(D)	Courts A-D shall be owned and maintained by all abutting property owners. A homeowner's association or other legal entity approved by the Board of Supervisors shall be formed in order to properly administer such maintenance responsibilities.
45.	105-33(E)	The plans must be revised to provide additional detail at the connection points to Lee Street and Station Avenue. The approaches to an intersection shall follow a straight course for at least 50 feet for local streets and courts.
46.	105-34(C)	The Court profiles on Sheet C6.0 must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, which states that vertical curves shall be used at changes of grade exceeding 1%.
47.	105-35(A)	The plans must be revised to demonstrate that Lee Street and Station Avenue will intersect with Washington Street as nearly as possible at right angles.
48.	105-37	The control of grades, curvature and obstructions at intersections is required to ensure adequate sight distance for safe and efficient vehicular operation. Consider elimination of the proposed obstruction (Lot 40). Depict required sight lines for the various intersections along Washington Street (Courts A-D, Lee Street, Supplemental Parking Shared Access, SEPTA Driveways) on both the Record Plan and Landscaping Plan.
49.	105-38	The plans must be revised to provide appropriate regulatory signage and striping. The following, at a minimum, must be addressed: • Provide intersection control for the SEPTA driveway and Washington Street at Station Avenue • All proposed signs must be labeled, and dimensions included on the construction details. • All stop bars are to be a minimum of 4 feet from a crosswalk.

[1] http://www.whitemarshtwp.org/DocumentCenter/View/3323/Whitemarsh-Spring-Mill-Multi-Modal-and-Land-Use-Study---Final-Report

	Section	Description
50.	105-38	The plans must be revised to provide additional detail with regard to the connection of Washington Street with the existing driveway for the SEPTA parking lot. The plans must address the existing fencing across the driveway opening, and necessary transitions between existing and proposed curbing and pavement.
51.	105-38(C)	The applicant must obtain the approval of the Fire Marshal with regard to access for fire protection equipment.
52.	105-38(C)	This section of the ordinance requires curves/turns in entrance and exit drives and all internal parking lot aisles necessary for providing access for fire protection equipment to have a minimum inside turning radius of 25 feet and a minimum outside turning radius of 50 feet. The applicant shall submit plans using truck turning templates showing the required turning radii are provided for access to each building.
53.	105-38(M), 105-50(E)(1)	Entrances and exits to and from off-street parking areas shall be located so as to minimize interference with street traffic and driveways shall enter public streets at safe locations. The intersection of Washington Street, Court D and the SEPTA parking lot must be provided with appropriate signage and paving markings. Available sight distance at the intersection must be indicated, particularly for Eastbound vehicles approaching Court D.
54.	105-38(Q)	The plans must be revised to label all curb radii in order to demonstrate compliance with the requirements of this section of the ordinance, which states that no less than a five-foot radius of curvature shall be permitted for all curblines in parking areas.
55.	105-38(R)	The plans must be revised to provide adequate space for vehicles to back out of the end unit driveways. The truck turning exhibit appears to show the vehicle tires cross the curb line.
56.	105-38(W),	Where semiattached, attached or multiple dwellings are proposed and where private garages or driveways are proposed to meet the off street parking requirements, additional overflow off-street parking shall be provided in accordance with the following:

Access Drive or Cartway Width (feet)	Overflow Spaces Required
36 or greater	1 for each 4 dwelling units
Less than 36	4 for each 4 dwelling units

Section 116-282(E) of the Zoning Ordinance states that residential uses shall not be subject to the overflow parking requirements of Chapter 105, Subdivision and Land Development § 105-38W.

57.	105-38(U)	All common parking areas shall be adequately lighted during after-dark operating hours. Additional lighting is required for the parking lot west of Court A.
58.	105-39(A)	This section of the ordinance requires that all parking areas shall have at least one tree of three inches minimum caliper for every two parking spaces provided. The Landscape Requirements Table on Sheet C7.0 calculates the required number of trees based on 11 parking spaces, however, the plans show 21 parking spaces. This discrepancy must be resolved.

	Section	Description
59.	105-40(A)	Required off street loading facilities, must be designed so that each space shall be no less than 14 feet wide, 50 feet long, and 17 feet high, exclusive of drives and maneuvering space and located entirely on the lot being served. The plans must be revised to demonstrate compliance with this section of the ordinance.
60.	105-40(A)	The plans must be revised in order to demonstrate that there will be adequate maneuvering space for required off street loading facilities, such as moving trucks and package deliveries.
61.	105-46	The plans must be revised to clarify the pavement edge treatment of the Courts. Additionally, the proposed curbing along Court A must be revised to extend around the entire paved area.
62.	105-47	The plans must be revised to provide for pedestrian movements along Courts A-D, including egress to and from building entrances.
63.	105-47	The plans show 'proposed two sided "River Trail" with arrow signs" as being located in the middle of the sidewalk and trail, which should be relocated so as not to obstruct the pedestrian routes.
64.	105-47, 105-49	The plans must be revised provide sidewalks, pedestrian paths and crosswalks to provide safe access. All crosswalks shall be marked. The plans must be revised to address how pedestrians will be able to safely cross: • Court D between ADA ramps • Washington Street to access the SEPTA station • The intersection of Lee Street and Washington Street • The intersection of Station Avenue and Washington Street • The SEPTA rail line for access to the Schuylkill River Trail
65.	105-47(A)	Sidewalks shall be provided along Washington Street in accordance with sections 105-30, 105-47 and 105-73 of the Whitemarsh Township Code.
66.	105-47(B)	The minimum width of all sidewalks and pedestrian paths shall be five feet; in areas of higher pedestrian density, the minimum width of all sidewalks shall be eight feet.
67.	105-47(D)	The plans must be revised to include construction details and detailed designs at a scale of 1"=5' for all ADA Curb Ramps.
68.	105-47(H)	The grading plan must be revised to demonstrate that grade of the pedestrian path along the River, will not exceed a grade of 7% at the following locations: • At the point of connection with the central perpendicular trail • Along the River trail, between Units 23 and 29
69.	105-47(K)	In areas zoned Riverfront Development District, in the RDD-1 subdistrict, public riverfront access, perpendicular to the river, is required for all properties that have access to the river, and shall be subject to the following. Lighting fixtures, site furniture, and signage shall be of a style as recommended by the Planning Commission and approved by the Board of Supervisors.

	Section	Description
70.	105-50(A)	Access and circulation for fire-fighting and other emergency equipment, moving vans, fuel trucks, garbage collection, deliveries and snow removal shall be planned for efficient operation and convenience. The applicant shall submit plans using truck turning templates for trash pickup.
71.	105-50(C)(1), 105-50(C)(3)	While the plans show 21 overflow parking spaces, they do not appear to be convenient for the use by visitors of units 9-44. Access to the dwellings and circulation between buildings and other important project facilities for vehicular and pedestrian traffic shall be comfortable and convenient for the occupants. Walking distance from the main entrance of a building or single-family dwelling unit to a parking area shall be less than 100 feet. In no case shall the distance exceed 250 feet.
72.	105-50(C)(2)	The plans must be revised to indicate adequate access for fire-fighting and other emergency equipment, moving vans, fuel trucks, garbage collection, deliveries and snow removal.
73.	105-52	The plans show 'proposed chain link fence' between Washington Street and the rail lines. Any proposed buffer shall be of a style as recommended by the Planning Commission and approved by the Board of Supervisors. We also recommend coordination with SEPTA with regard to safety along the tracks.
74.	105-52, 105-83	All landscaping plans are subject to the review and recommendation of the Shade Tree Commission.
75.	105-53(D)	This section of the ordinance requires the dedication of land in the amount of 10% of the total Site Area for Park and/or Recreational use. The applicant has the option of offering a fee in lieu of dedicating actual land area and can also provide a combination of a fee in lieu and dedication of land. All offers of land and/or fees in lieu of dedication must meet the requirements of this section of the ordinance.
76.	105-56(A)(1)(b)	Cartways fewer than 30 feet shall be restricted to prohibit parking on both sides. The plans must be revised to provide appropriate regulatory signage.
77.	105-69(A)	The 'Storm Pipe Trench' detail on Sheet C9.1 must be revised to provide compacted 2A stone above stormwater piping up to pavement base course.
78.	105-69(C)	Along the existing street on which a subdivision or land development abuts, improvements shall be made to the street. The improvements to the boundary street shall be determined by the width of the required cartway and built to the specifications established by the Township.
79.	105-70	The plans must be revised to show street name, warning and regulatory signs, as required.
80.	105-72(A)	Monuments must be provided at all property line corners. Monuments shall be placed at each change in direction of a boundary along the street line; two to be placed at each street intersection and one on each side of any street at angle points and at the beginning and end of curves.

	Section	Description
81.	105-73	This section of the ordinance requires sidewalks to be constructed as required by sections 105-30 and 105-47. The plans must be revised to indicate the installation of sidewalks where required.
82.	105-76	The applicant must obtain a letter of approval from the Township Fire Marshal in order to ensure that adequate fire protection is provided.
83.	105-78	The applicant must obtain the approval of the Whitemarsh Township Authority with regard to proposed sanitary sewerage facilities.
84.	105-79	All preliminary plan submissions shall include a completed sewage facilities planning module (the planning module) for land development provided by DEP.
85.	105-81	All electric, telephone and communication service facilities, both main and service lines, shall be provided by underground cables, installed in accordance with the prevailing standards and practices of the utility and other companies providing such service. Final plans shall show locations of all utilities and shall be coordinated with landscaping.
86.	105-89	The developer shall enter into a written agreement with the Township in the manner and form approved by the Solicitor wherein the developer shall agree, to construct or cause to be constructed at his own expense all proposed improvements shown on the approved land development plan, all in strict accordance with the standards and specifications of the Township and within the time specified in said agreement, and to deposit with the Township financial security in an amount sufficient to cover the cost of all subdivision or land development improvements, including both public and private improvements.

FLOODPLAIN MANAGEMENT

	Section	Description
87.	101-9(C)(3)	Note 2 on Sheet 3.0 must be revised to state that the base flood elevation, as designated by FEMA Flood Insurance Maps and Surveys, is at an elevation of 58.5, and the lowest floor elevation and/or the elevation to which the structure would be floodproofed must be indicated.
88.	101-9(B)(2), 101-23(C)	The plans must be revised in order to demonstrate that all utilities and facilities, such as sewer, gas, electrical and water systems are located and constructed to minimize or eliminate flood damage.
89.	101-9(C)(4)(e)	The applicant must provide documentation, certified by a registered professional engineer, to show that the cumulative effect of any proposed development, when combined with all other existing and anticipated development, will not increase the base flood elevation at any point within the community.

	Section	Description
90.	101-9(C)(4)(f), 101-22(B), 101-22(C)	The applicant must provide a document, certified by a registered professional engineer or architect, which states that the proposed construction or development has been adequately designed to withstand the pressures, velocities, impact and uplift forces associated with the base flood. Such statement shall include a description of the type and extent of flood proofing measures which have been incorporated into the design of the structure and/or the development.
91.	101-9(C)(4)(g)	The applicant must indicate whether any materials or substances referred to in § 101-23F and §101-24 are intended to be used, produced, stored or otherwise maintained on site.
92.	101-17(A)(1)	The plans show proposed features within the floodway. This section of the ordinance states that no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted within the floodway area unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.
93.	101-17(A)(1)	In the Floodplain Conservation District, no development shall be permitted except where the effect of such development on flood heights is fully offset by accompanying improvements which have been approved by all appropriate local, state, and federal authorities as required. The applicant must provide evidence in sufficient detail to demonstrate compliance with the requirements of this section of the ordinance, such as the inclusion of a cut/fill analysis plan demonstrating there will be no net fill.
94.	101-17(A)(2)	The plans show several proposed features within the floodway. This section of the ordinance states that no new construction or development shall be allowed within the floodway area unless the appropriate approvals are obtained from the Army Corps of Engineers, Federal Emergency Management Agency, Pennsylvania Department of Environmental Protection and approved by the Township.
95.	101-23(H)	The plans must be revised to demonstrate that any structures, including fencing, signage, mechanical equipment and trash enclosures, shall be adequately anchored to prevent flotation, collapse, or lateral movement.

CHAPTER 55 - TREE PROTECTION STANDARDS

	Section	Description
96.	55-4(C)	This section of the ordinance requires that a tree survey plan and a landscape plan shall be prepared and reviewed by the Shade Tree Commission in a public meeting.
97.	55-4(A)(6)	Any tree lost or destroyed within the past five years must be shown on the Tree Survey Plan as a “Removed Tree” and must be replaced as part of the proposed project.
98.	55-4(C)	This section of the ordinance requires that a tree survey plan and a landscape plan shall be prepared and reviewed by the Shade Tree Commission in a public meeting.

	Section	Description
99.	55-4(D)(6)(A), 55-4(F)	The applicant is requesting relief from the requirements of these sections of the ordinance, which states that every living and healthy tree with a DBH of six inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new canopy trees, of a type and species approved by the Shade Tree Commission or its designee, with a trunk diameter of not less than three inches in caliper. The total caliper of replacement trees, measured at six inches above the ground line, shall equal or exceed the DBH of the removed trees. The waiver is being requested to allow a maximum of 40% of the replacement trees to be replaced with ornamental trees, in accordance with Section 55-4(F).
100.	55-4(B)	The applicant is requesting relief from the requirements of this section of the ordinance, which states that the removal of more than 33% of Trees, having a DBH of six inches or greater, on any Lot, shall not be permitted. The plans appear to show 85% of existing trees as proposed to be removed.
101.	55-4(B)(1)	Item #3 in the construction sequence must be revised to state that protective fencing to be placed around trees on the property prior to proceeding with any other activity.
102.	55-4(C)(4)(b)	The plans must be revised to show the location of tree protection fences, encompassing the dimensions of each root protection zone as established by one of the following two means, whichever is greater: [1] Calculated at 1.25 feet (radius) per one inch of (DBH) diameter breast height. [2] A circle with a radius extending from a tree's trunk to a point no less than the furthest crown dripline.
103.	55-4(A)(7)	Heritage trees and boundary trees shall be individually noted on the tree survey plan.
104.	55-4(D)(1)(a)	Detail 8 on Sheet C7.2 must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, which states that the protective fencing shall be at least six feet tall with two-inch mesh chain link fabric. Two-inch posts shall be tied with six-gauge aluminum wires at 24 inches on center. Posts shall be a minimum of two feet in the ground and space of 10 feet on center. Plastic zip ties may not be used in place of required six-gauge aluminum wire.
105.	55-4(D)(2)	Item #3 in the construction sequence must be revised to note that a pre-construction conference with the Township Shade Tree Commission's designee prior to start of construction.

GRADING, EROSION CONTROL, STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES ORDINANCE:

	Section	Description
106.	58-17(A)(2)(k)	The proposed grading of Rain Garden 1 must be revised to clearly show the berm at contour lines representing elevations 54 and 53.
107.	58-17(A)(2)(o)	Construction Details must be provided for the proposed stairs, including railings and fall protection. Adequate fall protection must also be provided along retaining walls.

	Section	Description
108.	58-17(A)(2)(p)	The plan must be revised to show the size, location and construction details of all existing and proposed storm drainage facilities. At a minimum, both existing and proposed pipe sizes, lengths, slopes and materials should be shown.
109.	58-17(A)(7)	The plans must be revised to include profile drawings of all stormwater management BMPs, including drainage structures, pipes, open channels, and swales.
110.	58-17(A)(18)	The stormwater management reports must be revised to indicate the numerical weighted curve number, instead of "WQ".
111.	58-18(2)	Since the limit of disturbance appears to be greater than one acre, the applicant must obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Pennsylvania Department of Environmental Protection. Once obtained, a copy must be submitted to the Township.
112.	58-23(A)	An as-built survey of all stormwater BMPs must be submitted to the Township in paper and digital (dwg) formats. A note must be added to the plans stating an as-built survey will be completed and submitted in both formats to the Township.
113.	58-24(K)(2)	Stormwater facilities shall be accessible to permit periodic maintenance and an access easement shall be provided to permit such access. The following blanket stormwater easement note, must be added to the plan: *'Stormwater facilities shall be owned and maintained by the property owner in perpetuity. The property owner shall provide a blanket stormwater access easement to the Township for the purpose of access to the stormwater facilities. If, in the judgment of the Township Engineer, the owner has failed to maintain the stormwater facilities in such a manner as to ensure their proper functioning, the Township after providing a written notice, shall have the right to enter upon the lands of the owner and to make any repairs as may be necessary to the stormwater facilities to ensure that such facilities function and perform in accordance with the design specifications. Any and all costs incurred by the Township for such repairs and/or maintenance shall be paid in full by the owner. A lien or liens may be placed against the property if the owner fails to remit payment within sixty (60) days.'*
114.	58-28(D)(16)	The plans must be revised to provide a tire cleaning area at <u>each</u> point of access to the project site.
115.	58-29(A)	No excavation shall be made with a cut face steeper than 3:1 unless a concrete, masonry, or other approved retaining wall designed by a Registered Professional Engineer experienced in structural engineering, and constructed in accordance with approved standards, is provided to support the face of the excavation. The following areas appear to create slopes exceeding 3:1, and must be revised: • The area adjacent to a retaining wall, at the end of Court D • In front of units 11 & 12 • The rear corner of Unit 45
116.	58-29(A)	Detailed plans and calculations, including all factors of safety, for all of the proposed retaining walls that are prepared, signed and sealed by a professional engineer licensed in the Commonwealth of Pennsylvania must be submitted to the Township for review. Constructible details and elevation views of all proposed retaining walls as well as the top and bottom of wall elevations must be added to the plans.

NAVE NEWELL
ENGINEERING · SURVEYING · LAND PLANNING
A HOWELL COMPANY

June 3, 2025

VIA EMAIL

Charles L. Guttenplan, AICP
Director of Planning and Zoning / Zoning Officer
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

Reference: ***1001 Washington Street***
Updated Waiver / Modification Requests
Whitemarsh Township, Montgomery County, PA
Nave Newell No. 2024-001.02

Dear Mr. Guttenplan

On behalf of our client, HT 1001 Washington, LLC, and in accordance with the Whitemarsh Township Subdivision and Land Development Ordinance. The Applicant respectfully requests the following waivers and/or modifications for the cited provisions of the ordinance.

1. **105-21.B.(1)(n) – Show existing features within 500 feet of the site**
   A modification is requested to allow aerial imagery to depict the required features.

2. **105-21.B(2) – Soil Map**
   Waiver requested to provide Soil Map as a single plan sheet as the required features are shown on various sheets throughout the plan set.

3. **105-21.B(15) – Preliminary Resource Impact and Conservation Plan**
   A waiver is requested from the requirement to provide a Preliminary Resource Impact and Conservation Plan as a single plan sheet as the required features are shown on various sheets throughout the plan set. Site is also a redevelopment of an urban site and no areas within the limit of disturbance were left undisturbed.

4. **105-30(A) – Street Standards**
   A modification is requested from the requirement that the ultimate right-of-way measure 56’ and the cartway width measure 36’. Due to the existing site constraints the proposed ultimate right-of-way measures 28’, and the cartway width measures below 36’. Also, the proposed Courts will have cartway widths below 30’.

5. **105-30(A); 105-47(A), and 105-73 – Sidewalks**
   A modification is requested from the requirement of these sections to install sidewalks as shown on the Site Plan. Variance was granted from Section 116-283.C.(1), so as to permit curb and sidewalk alignment along Washington Street without street trees and the required 5 foot/verge strip.

6. **105-30(C) – Street Standards**
   A waiver is requested from the requirement of short extensions of existing streets with lesser right-of-way and/or cartway widths than prescribed above may be permitted; provided, however, that no section of new right-of-way be less than 40 feet in width and such extensions shall be less than 100 feet in length to allow the right-of-way width of Washington Street measure 28 feet for a distance of 960’ along the property frontage.

900 W Valley Rd #1100, Wayne, PA 19087 | PHONE 610 265 8323 | FAX 610 265 4299

7. **105-32(A) – Private Streets**
   A waiver is requested from the requirement of no more than eight lots being permitted to front on a private street to allow the Courts to be constructed as shown on the Site Plans. The Township Fire Marshal approved the site layout as shown in a letter dated May 21, 2025.

8. **105-33(B) – Street Alignment**
   A waiver is requested from the requirement of local streets having horizontal curves of 150'. Due to the existing site constraints and its current alignment, we are proposing horizontal curve radii of 28' on Washington Street

9. **105-37 – Sight Distances**
   A waiver is requested from the requirement of the sight distances listed in this section. The intersection of Court D and Washington Street is designed as a multi-stop intersection.

10. **105-38(C) – Entrance and Exit Drive Curves**
    A waiver is requested from the requirement of curves in entrance and exit drives that provide access to fire equipment to have a minimum turning radius of 25' to allow the entrances to the Courts along Washington Street to have 10' radius as shown on the plans. A Vehicle Turning Exhibit is included in the Preliminary Land Development Plans showing a Whitemarsh Township fire tuck turning onto the Courts and the Township Fire Marshal approved the site layout as shown in a letter dated May 21, 2025.

11. **105-38(F) – Angle or perpendicular parking shall not be permitted along public or private streets**
    A waiver is requested from the requirement as cartway width measures about 31'. Backing out from the perpendicular parking should not pose a safety risk given the low volumes of traffic. The spaces are provided for public use and extra guest parking. The cartway width meets the minimum requirement of 105-56(A)(1)(b).

12. **105-38H – Except at entrance and exit drives, all parking areas shall be set back from the right-of-way line and all property lines at least 15 feet, or as required by the applicable sections of the Zoning Ordinance, the greater provision to prevail. The distance between this required setback and the cartway shall be maintained as a planting strip or planting strip and sidewalk.**
    A waiver is requested from this section to keep the existing parking spaces that are adjacent to the David's Bridal Facility and for the proposed parking along Washington Street near the proposed kayak launch.

13. **105-38(L) – In no case shall parking areas for three or more vehicles be designed to require or encourage carts to back into a public street.**
    A waiver is requested from this section for the 10 parking spaces adjacent to Washington Street. Backing out from the perpendicular parking should not pose a safety risk given the low volumes of traffic. The spaces are provided for extra guest parking and public use.

14. **105-38(O) – Parking areas shall be located at least 10 feet from any building or structure.**
    A waiver is requested from this section to allow the existing parking spaces along the 901 and 1001 property line to be located less than 5' from the adjacent decks. We have provided parking blocks in these spaces.

15. **105-40(A) – Off-Street Loading Facilities**
    A waiver is requested from this section of the code. This section of the code refers to the design standards for off-street loading zones but does not state that they are required for the proposed use. If the Township determines that they are required, we request a waiver to not install loading areas as part of this residential development.

16. **105-47(K)(1) – In the RDD-1 subdistrict, 25' right-of-way be offered for dedication to the Township**

A modification is requested to this requirement to offer an easement for public access and use rather than right-of-way dedication.

17. **105-48 – Street trees.**
A waiver is requested from this section. A Variance was granted from Section 116-283.C.(1), so as to permit curb and sidewalk alignment along Washington Street without street trees and the required 5 foot/verge strip, both as required in cross-referenced section 105-48 of the Subdivision and Land Development Ordinance.

18. **105-48(E) – Street trees shall be planted within a tree planting zone of lawn area or other material approved by the Shade Tree Commission, situated between the sidewalk and curb and measuring a minimum of five feet in width from the planting edge of the curb to the planting edge of the sidewalk.**
A waiver is requested from this section. A Variance was granted from Section 116-283.C.(1), so as to permit curb and sidewalk alignment along Washington Street without street trees and the required 5 foot/verge strip, both as required in cross-referenced section 105-48 of the Subdivision and Land Development Ordinance.

19. **105-50(C)(1) and (3) – Walking distance from a single-family dwelling unit to a parking area shall be less than 100'. In no case shall the distance exceed 250'**
A waiver is requested from this section to allow the two off-street parking areas to be designed as shown on the Land Development Plans. The proposed off-street parking areas are not required by code and being provided for public use at the proposed kayak launch and as an extra amenity for residents.

20. **105-52(B)(2) – Buffers shall have a minimum width of 50'.**
A waiver is requested from this section to allow the buffers as shown on the plan, due to the sites unusual sized and shape.

21. **105-53(D)(1)(c) – No more than 25% of the minimum land area required for park and recreation land may consist of floodplain or riparian corridor areas.**
A waiver is requested from this section due to the entire property being located within the floodplain.

22. **105-56(A)(1)(a) – Private streets and courts shall be 26' wide.**
A waiver is requested from this section to allow the courts to be 24'. This matches the adjacent development and is consistent with the character of the area.

23. **58-28(D)(11) – Edge of slopes shall be a minimum of five feet from property lines or right-of-way lines**
A waiver is requested of this requirement to allow such grading to occur closer than 5' from property and right-of-way lines. The proposed grading abuts the ultimate right-of-way of Washington Street. Proposed grading needs to be less than 5' from property and right-of-way lines to tie back into existing conditions.

24. **58-29E – Fills shall not encroach on natural watercourses, floodways, floodway fringes, constructed channels, or wetlands**
A waiver is requested from this section because the whole property is located within the floodplain. We have submitted a Letter of Map Revision (LOMR) request to FEMA to revise the floodway so the existing structures and proposed improvements are removed from the floodway.

25. **58-34(B)(7)(d) – All storm pipe shall be reinforced concrete pipe**
A waiver is requested to allow the proposed storm pipes on the site to be HDPE in-lieu of reinforced concrete pipe. Proposed storm pipes within the public right-of-way will be concrete.

26. **55-4B – Maximum tree removal. The removal of more than 33% of trees, having a DBH of six inches or greater, on any lot, shall not be permitted.**
A waiver is requested to permit the removal of greater then 33%.

27. **55-4(D)(6)(A), 55-4(F)- Tree Replacement Substitution. living and healthy tree with a DBH of six inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new canopy trees, of a type and species approved by the Shade Tree Commission or its designee, with a trunk diameter of not less than three inches in caliper. The total caliper of replacement trees, measured at six inches above the ground line, shall equal or exceed the DBH of the removed trees. The waiver is being requested to allow a maximum of 40% of the replacement trees to be replaced with ornamental trees, in accordance with Section 55-4(F).**
A waiver is requested to permit greater than 40% of the replacement trees to be replaced by understory/ornamental trees and by a fee in-lieu payment.

If you have any questions or need additional information. Please contact me at (610) 265-8323 or via email at jbannon@navenewell.net.

Sincerely,

James P. Bannon, Jr., PE

JPB/

Enclosure

cc (via email): David Landskroner & Ryan Lohbauer – Hightop Development
Craig R. Lewis, Esq. – Kaplin Stewart

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	Section	Description
117.	58-30(A)(8)	If in the course of reviewing the stormwater management plan, the Township Engineer determines that off-site improvements are necessary to satisfactorily control the stormwater from the site, the applicant shall be responsible for such off-site improvements.
118.	58-31(A)(16)	The applicant must submit legal descriptions for any proposed rights-of-way, easements, or lands to be offered for dedication.
119.	58-32(C)	Pipes shall be sized by the use of inlet/outlet control calculations. The applicant must submit inlet/outlet control calculations in order to demonstrate compliance with the requirements of this section of the ordinance.
120.	58-35(C)(3)(e)	Based on our review of the infiltration report the tested rates provided for design (38.53 inches per hour) exceed DEP Appendix C guidance for infiltration BMPs. The provided rates are not approved for use in the design. The design engineer shall clearly indicate how the data complies with the DEP guidance for infiltration rates and meets the appropriate standards for water quality protection.

Any future submission of the design plans for this project must be accompanied by a letter, prepared by the applicant's engineer, which addresses each of the comments contained in this report. Should you have any questions regarding this matter, please do not hesitate to contact me at this office.

Sincerely,

Krista Heinrich, PE
Township Engineer

c: Charles L. Guttenplan, AICP – Director of Planning and Zoning
Sean Kilkenny, Esq.; The Law Offices of Sean Kilkenny, LLC – Township Solicitor
David Landskroner, HT 1001 Washington, LLC – Applicant
Craig R. Lewis, Esq.– Applicant's Attorney
Herb Schultz– Applicant's Architect
James P. Bannon, Jr., PE – Applicant's Engineer

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ROCKWELL ASSOCIATES

Urban Foresters - Natural Resource Consultants Planners - Forensic Arborists

1001 Washington Street

June 17, 2025

To: Samantha Zrillo
Whitemarsh Township - Planner
616 Germantown Pike Lafayette
Hill, PA 19444-1821
From: John Hosbach
Applicant: 1001 Washington Street

Dear Sam,

The said applicant is proposing the demolition of the former David's Bridal HQ. The site is currently being proposed for improvements including dwellings. It is my understanding that this plan was previously approved. However, a few items need to be addressed for the shade tree commission. Amendments/ revisions to the plan were previously provided. Date of revisions is March 27, 2025.

Tree survey plan

Plan identifying the size, species, and location of all existing trees having a diameter at breast height (DBH) of six inches or greater and denoting each tree to be saved or removed. All removed trees shall be identified if removed in the past five years.

As previously noted, the inventory of all trees 6" or greater was not completed. The current revision has captured the required inventory.

Tree Removal

Maximum tree removal.

The removal of more than 33% of trees, having a DBH of six inches or greater, on any lot, shall not be permitted.

A waiver will be required as they are removing greater than 33% of the existing trees onsite. However, numerous trees with the river buffer were reviewed as being risk or hazard related. I believe the applicant has denoted these trees for removal.

ROCKWELL ASSOCIATES

Urban Foresters - Natural Resource Consultants Planners - Forensic Arborists

Tree Protection

Denote location and species of each preserved tree and all boundary trees, and the location of tree protection fences, encompassing the dimensions of each root protection zone as established by one of the following two means, whichever is greater:

[1] Calculated at 1.25 feet (radius) per one inch of (DBH) diameter breast height.
[2] A circle with a radius extending from a tree's trunk to a point no less than the furthest crown dripline.

Tree protection is shown for the trees to remain. However, the TPF detail is incorrect. This shall be updated to reflect the correct materials and detail.

. Replacement tree requirement.

Every living and healthy tree with a DBH of six inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new canopy trees, of a type and species approved by the Shade Tree Commission or its designee, with a trunk diameter of not less than three inches in caliper. The total caliper of replacement trees, measured at six inches above the ground line, shall equal or exceed the DBH of the removed trees.

The waiver is being requested to allow a maximum of 40% of the replacement trees to be replaced with ornamental trees, in accordance with Section 55-4(F). A waiver is requested to permit greater than 40% of the replacement trees to be replaced by understory/ornamental trees and by a fee in-lieu payment. It would be prudent that the applicant adds more trees along the river riparian buffer if applicable.

General Notes.

I. **There is one heritage tree called out on the plan. 36" sycamore. It appears this tree is being removed. I would like to see if this tree can be saved and preserved.**
II. **Due to the site being mostly infrastructure, the amount of disturbance within the LOD is minimal as it relates to the environmental impact. I suggest that the understory trees be planted as close to the river corridor for added stabilization and protection.**
III. **The species list provides a diverse and suitable palate and is primarily a native schedule.**

John Rockwell Hosbach jr. CONSULTANT

WHITEMARSH TOWNSHIP

To: Craig McAnally, Township Manager

From: Samantha Zrillo, Township Planner

Subject: **SLD #7-23 HT 1001 Washington LLC-- 7.15.25 STC Meeting**

Date: July 18, 2025

cc: **Charlie Guttenplan, AICP, Township Director of Planning and Zoning**
Krista Heinrich, PE, Township Engineer, Gilmore Associates
John Hosbach Jr., RCA, ACF, CUCF, Township's Consulting Arborist
Craig Robert Lewis, Esq., Applicant's Attorney
Brian Kelly, RLA, Applicant's Landscape Architect
Jim Bannon, P.E., Applicant's Engineer

Plans Reviewed: *Nave Newell Engineering, dated 11.15.24, revised 6.26.25. Revised Landscape Plan dated 7.8.25.*

In attendance: Brian Kelly, RLA, and Jim Bannon, P.E., of Nave Newell Engineering

Mr. Kelly presented the landscape plan for the proposed development, discussing existing and proposed site plans and the various waivers being requested. Several trees within the corridor are dead, hazardous, or affected by disease, and efforts are being made to preserve key trees, including a Heritage Sycamore. The required trail was re-aligned to protect this tree, and a boardwalk is being proposed in place of pavement in certain areas to minimize soil disruption.

The project proposes 96 new trees and 150 shrubs. A total of 662 inches DBH are being removed, with 201 inches proposed for replacement, made up of a combination of canopy and understory trees and shrubs. Due to spatial constraints, the applicant is requesting a waiver to permit shrub substitution at a 5:1 ratio in place of canopy trees and to allow for a fee-in-lieu payment for trees that cannot be accommodated on site. The applicant is also requesting waivers for: removal of more than 33% of trees 6" DBH or greater; reduced tree protection fencing distances; exceeding the 40% ornamental/understory tree threshold; and relief from the 50-foot buffer requirement in Chapter 105.

Discussion followed regarding the tree protection fencing, potential for larger-caliper tree plantings (5" instead of 3"), and the use of the central drainage easement corridor for additional plantings.

Public comments included the opposition of using shrubs in place of trees and concerns about safety and a lack of compliance with the ordinance.

A member from the Commission expressed concern about the long-term implementation and compliance of the plan, referencing past developments that failed to follow through with proposed landscaping. Another member of the Commission expressed disappointment in the lack of street trees.

There was an agreement between the Applicant's representatives and the Shade Tree Commission to continue the discussion at the August meeting with revised plans. The plans should have the following revisions:

- **Updated landscape plan with any proposed plantings in the central drainage easement**
- **Updated landscape schedule (to include the easement plantings and 5" caliper trees)**
- **Tree protection fencing detail**
- **Relocated soil stockpile**
- **A formal request of all requested waivers**
- **Clarification of tree removal percentage**

Samantha Zrillo
Township Planner
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2608
Email: szrillo@whitemarshtwp.org

Last Revised June 26, 2025
TPD# HTOP.00002





1001 Washington Street – Multi-family Townhomes

Transportation Impact Study

Whitemarsh Township, Montgomery County, PA

For Submission To:
Whitemarsh Township

2500 East High Street, Suite 650, Pottstown PA 19464 | 610.326.3100 | Info@TPDinc.com

1001 WASHINGTON STREET – MULTI-FAMILY TOWNHOMES
TRANSPORTATION IMPACT STUDY

FOR SUBMISSION TO:

Whitemarsh Township, Montgomery County, PA

Prepared For:
HT 1001 Washington
1331 S. Juniper Street
Philadelphia, PA 19147

April 29, 2025
Last Revised June 26, 2025

TPD # HTOP.00002



Prepared By:
TPD
2500 East High Street, Suite 650
Pottstown, Pennsylvania 19464

Phone: (610) 326-3100
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E-mail: TPD@TPDinc.com
Website: www.TPDinc.com

Robert G. Richardson, P.E.
Executive Vice President
Pennsylvania License Number 044727-E

Table of Contents

EXECUTIVE SUMMARY i
INTRODUCTION 1
EXISTING ROADWAY NETWORK 1
EXISTING TRAFFIC CONDITIONS 4
BASE (NO-BUILD) CONDITIONS 5
SCHEDULED ROADWAY IMPROVEMENTS 5
PROPOSED SITE ACCESS 6
TRIP GENERATION 6
TRIP DISTRIBUTION 7
PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES 8
LEVELS OF SERVICE FOR AN INTERSECTION 8
CAPACITY ANALYSIS METHODOLOGY 9
LEVELS OF SERVICE IN THE STUDY AREA 10
95TH PERCENTILE QUEUE ANALYSIS 11
RECOMMENDATIONS AND CONCLUSIONS 13

FIGURES 1 – 8

TECHNICAL APPENDICES

Appendix A: Project Correspondence
Appendix B: Study Area Photographs
Appendix C: Manual Traffic Count Printouts
Appendix D: Nearby Development Information
Appendix E: Traffic Volume Development Worksheets
Appendix F: Capacity Analysis Worksheets
Appendix G: Traffic Signal Plans

EXECUTIVE SUMMARY

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

1. The project site is located on the southern side of Washington Street, opposite Lee Street. The proposed site will consist of a Multi-Family Housing residential development consisting of 46 townhomes.
2. The study area intersections included in this TIS are as follows:
   - Hector Street (S.R. 3059) and North Lane (S.R. 3015)/Station Avenue;
   - Hector Street (S.R. 3059) and Lee Street;
   - Hector Street (S.R. 3059) and Cedar Grove Lane/Barren Hill Road(S.R. 3011) ;
   - Cedar Grove Lane (S.R. 3011) and Joshua Road (S.R. 3014) and;
   - Washington Street and Lee Street.
3. Access to the proposed site will be provided by four (4) full-access driveways to the Washington Street extension.
4. Upon full build-out, the proposed development is expected to generate **13 new vehicle trips** during the weekday A.M. peak hour and **18 new vehicle trips** during the weekday P.M. peak hour.
5. All overall intersection levels of service (ILOS) will operate at an acceptable **ILOS C** or better during 2031 Projected Conditions. Furthermore, under 2031 Projected Conditions all study area intersections will operate at the same overall intersection level of service (ILOS) as 2031 Base Conditions. Therefore, all levels of service at the study area intersections comply with the requirements outlined in PennDOT's TIS Guidelines.
6. Traffic Planning and Design Inc. (TPD) recommends the following roadway improvements as outlined at the study area intersections and site driveway locations:
   - Coordinate with Township Staff regarding the proposed traffic control of Washington Street and its intersections with Lee Street and Station Avenue, respectively.
   - Provide STOP signs (PennDOT designation R1-1) to control exiting traffic
   - Where applicable, provide sidewalk and ADA curb ramps to facilitate pedestrian access.
   - Ensure that adequate sight distance is provided at all site driveway locations.
   - Due to the limited driver's sight distance created by the horizontal curve and proposed Lot 40 townhouse, provide a multi-way stop intersection control for Court D and Washington Street. This intersection control will also serve as a traffic calming measure for Washington Street.
7. Intersection Levels of Service (ILOS) for the study area intersections have been summarized in matrix form. **Table I** details the overall intersection LOS (ILOS) for each study area intersection.
8. With the implementation of the site-related recommendations, it is TPD's opinion that the construction of the proposed development will not adversely affect the health, safety, and welfare of the community from a traffic engineering perspective.

TABLE I
OVERALL INTERSECTION LEVEL OF SERVICE SUMMARY

Intersection	Peak Hour	Existing	Design Year 2031		Meets LOS Requirements?
			Base	Projected	
Hector Street (S.R. 3059) and Lee Street	A.M. Peak Hour	A (1.6)	A (1.7)	A (1.7)	**YES**
	P.M. Peak Hour	A (5.0)	A (5.9)	A (4.4)	
Hector Street (S.R. 3059) and North Lane (S.R. 3015)/Station Avenue[1]	A.M. Peak Hour	C (32.9)	C (33.5)	C (22.9)	**YES**
	P.M. Peak Hour	C (23.8)	C (24.6)	C (24.8)	
Hector Street (S.R. 3059) and Barren Hill Road/Cedar Grove Lane (S.R. 3011)	A.M. Peak Hour	C (33.1)	C (33.7)	C (33.8)	**YES**
	P.M. Peak Hour	D (51.6)	D (53.1)	D (54.7)	
Cedar Grove Lane (S.R. 3011) and Joshua Road (S.R. 3014)	A.M. Peak Hour	B (11.1)	B (11.2)	B (11.2)	**YES**
	P.M. Peak Hour	B (10.8)	B (11.0)	B (11.0)	
Washington Street and Lee Street	A.M. Peak Hour	A (6.9)	A (7.5)	A (9.2)	**YES**
	P.M. Peak Hour	A (5.3)	A (6.6)	A (9.6)	

Base = No-Build scenario -
Projected = Build scenario
Unsignalized ILOS calculated in accordance with Figure 5 of Policies and Procedures for Transportation Impact Studies.
[1] = Due to the all-pedestrian phase, LOS results were obtained from Synchro due to limitations in HCM 6th Edition.

INTRODUCTION

Traffic Planning and Design, Inc. (TPD) has completed a Transportation Impact Study (TIS) for the proposed Multi-Family Housing residential development in Whitemarsh Township, Montgomery County, Pennsylvania. The project site is located on the southern side of Washington Street, opposite Lee Street and east of Station Avenue, as shown in **Figure 1**. As shown in **Figure 2**, the proposed site will consist of a Multi-Family Housing residential development consisting of **46 townhomes**. It should be noted that the residential development is in close proximity to the SEPTA Spring Mill Train Station. It is anticipated that some tenants of the proposed residential development will utilize SEPTA to commute to/from work. The first townhouse is anticipated to be sold and occupied in 2026; TPD assumed an analysis year of 2031.

This report has been prepared in accordance with PennDOT's *Policies and Procedures for Transportation Impact Studies*, found in PennDOT's Publication 282, Appendix A, dated February 2024 and in accordance with the Whitemarsh Township Zoning Ordinance. The project scope and the extent of the study area were confirmed with representatives of Whitemarsh Staff through email correspondence. All relevant correspondence with the Township pertaining to this project has been included in **Appendix A**.

Site Access Locations

Access to the proposed site will be provided by four (4) full-access driveways to Washington 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**. Photographs of the study area intersections are included in **Appendix B**.

TABLE 1
ROADWAY CHARACTERISTICS WITHIN STUDY AREA

Roadway	Ownership	Functional Classification/ Roadway Type	Predominant Directional Orientation	Average Daily Traffic[1]	Posted Speed Limit
Hector Street	State (S.R. 3059)	Urban Minor Arterial	East-West	10,153	25 mph/ 35 mph
Lee Street	Township	Local Road	North-South	--	35 mph
North Lane	State (S.R. 3015)	Urban Collector	North-South	3,796	35 mph
Station Avenue	Township	Local Road	North-South	--	Not Posted
Barren Hill Road/ Cedar Grove Lane	State (S.R. 3011)	Urban Collector	North-South	5,051	35 mph
Joshua Road	State (S.R. 3014)	Urban Minor Arterial	East-West	6,146	35 mph
Washington Street	Township	Local Road	East-West	--	25 mph

1= Average Daily Traffic Volumes taken from PennDOT's Traffic Information Repository (TIRe) in April 2025

Land Use Context

In Chapter 4 of the *Smart Transportation Guidebook*, dated March 2008, 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 Town/Village Neighborhood designation, as described below:

> ***Town/Village Neighborhood***, *"Predominantly residential neighborhoods, sometimes mixed with retail, restaurants and offices. In urban places, residential buildings tend to be close to the street. . . .Block sizes are regular and often small in comparison to suburban neighborhood blocks. Even where streets are narrow, on-street parking is common and typically well used. The large majority of neighborhoods have sidewalks."*

Roadway Type

In Chapter 5 of the Smart Transportation Guidebook, 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 5.1 of the *Smart Transportation Guidebook*, the study area roadways best fit the following categories, as described below:

> ***Community Collector***, traffic volumes of 5,000 to 15,000 vehicles per day, intersection spacing of 300 to 660 feet, a desired operating speed of 25-55 mph, and a description as follows: "*often similar in appearance to a community arterial. Typically classified as Major Collector.*"
>
> - Hector Street (S.R. 3059);
> - Barren Hill (S.R. 3011).
>
> ***Neighborhood Collector***, traffic volumes of <6,000 vehicles per day, intersection spacing of 300 to 660 feet, a desired operating speed of 25-35 mph, and a description as follows: "*similar in appearance to local*

roadways. Typically classified as Minor Collector."

- North Lane (S.R. 3015);
- Joshua Road (S.R. 3014);
- Cedar Grove Lane (S.R. 3011).

Local Road, traffic volumes of <3,000 vehicles per day, intersection spacing of 000 to 660 feet, a desired operating speed of 20-30 mph.

- Station Avenue;
- Lee Street;
- Washington Street

Bicycle and Pedestrian Facilities

Based on observations during field visits, sidewalks are currently present on both sides of Hector Street, the west side of Lee Street, the west side of Station Avenue, and both sides of North Lane. Sidewalks are also present on the east side of Station Avenue south of the SEPTA park and ride. At the unsignalized intersection of Hector Street and Lee Street, crosswalks are present on the eastbound, northbound and southbound approaches. The signalized intersection of Hector Street & North Lane has crosswalks on all four approaches and includes a pedestrian-only phase where vehicular traffic on all approaches stops to allow pedestrian crossing.

The Schuylkill River Trail passes along the northern side of the proposed site, north of the railroad tracks. The trail accommodates bicycles and pedestrians and continues west to Valley Forge and east to Philadelphia.

Mass Transit Facilities

The Whitemarsh/Conshohocken area is provided with public transportation by the SEPTA Manayunk/ Norristown Line. Access to the Manayunk/Norristown Line is available in the vicinity of the proposed site via the Spring Mill Station, located directly east of the site on Station Avenue. Additionally, SEPTA Bus Route 97 serves the study area via stops on Hector Street. The route provides services to the Norristown Transportation Center and to Barren Hill.

Crash Data Investigation

Crash data were obtained from PennDOT for the study area intersections. PennDOT defines a reportable crash as follows, "A reportable (crash) is one in which an injury or fatality occurs or if at least one of the vehicles involved requires towing from the scene." Reportable crashes were tabulated for the five-year time period beginning 1/1/2019 and ending 12/31/2023. For a given intersection, PennDOT considers a crash occurrence of 5 reportable, correctable crashes over a continuous twelve-month period during the past five years to be a threshold value, above which the intersection design should be reviewed to examine if corrective measures can be taken to enhance safety. The number of reportable crashes at the study area intersections is shown in **Table 2.**

TABLE 2
PENNDOT REPORTABLE CRASH DATA

Study Area Intersection	Number of Reportable Crashes				
	2019	2020	2021	2022	2023
Hector Street (S.R. 3059) and Lee Street	2	0	0	0	0
Hector Street (S.R. 3059) and North Lane (S.R. 3015)/Station Avenue	1	1	0	0	0
Hector Street (S.R. 3059) and Barren Hill Road/Cedar Grove Lane (S.R. 3011)	1	0	0	1	0
Cedar Grove Lane (S.R. 3011) and Joshua Road (S.R. 3014)	0	1	0	2	0
Washington Street and Lee Street	0	0	0	0	0

Based on a review of the crash data, there were no continuous twelve-month periods during the past five years where 5 or more crashes occurred that were deemed correctable.

EXISTING TRAFFIC CONDITIONS

Manual Turning Movement Counts

Manual traffic counts 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. Data pertaining to heavy vehicles, pedestrians and transit vehicles were observed during the manual counts. Peak hours and count dates for the study area intersections are identified in **Table 3**.

TABLE 3
MANUAL TRAFFIC COUNT INFORMATION

Intersection	Date of Traffic Counts	Time Period	Intersection Peak Hour[1]
Hector Street (S.R. 3059) and Lee Street	Thursday, March 6, 2025	Weekday A.M.	7:45 to 8:45 A.M.
		Weekday P.M.	4:45 to 5:45 P.M.
Hector Street (S.R. 3059) and North Lane (S.R. 3015)/Station Avenue	Thursday, March 6, 2025	Weekday A.M.	7:45 to 8:45 A.M.
		Weekday P.M.	4:45 to 5:45 P.M.
Hector Street (S.R. 3059) and Barren Hill Road/Cedar Grove Lane (S.R. 3011)	Thursday, March 6, 2025	Weekday A.M.	7:30 to 8:30 A.M.
		Weekday P.M.	4:30 to 5:30 P.M.
Cedar Grove Lane (S.R. 3011) and Joshua Road (S.R. 3014)	Thursday, March 6, 2025	Weekday A.M.	7:45 to 8:45 A.M.
		Weekday P.M.	4:45 to 5:45 P.M.
Washington Street and Lee Street	Thursday, March 6, 2025	Weekday A.M.	8:00 to 9:00 A.M.
		Weekday P.M.	4:15 to 5:15 P.M.

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

Existing condition traffic volumes for the weekday A.M., weekday P.M. peak hours are illustrated in **Figure 3**. Manual traffic count data sheets are provided in **Appendix C.**

BASE (NO-BUILD) CONDITIONS

Annual Background Growth

A background growth factor for the roadways in the study area was developed based on growth factors for August 2024 to July 2025 obtained from the PennDOT Bureau of Planning and Research (BPR). The PennDOT BPR suggests using a background growth trend factor of 0.17% per year in Montgomery County for urban non-interstate roadways. As such, the background growth factor was applied annually to yield overall growth percentages of 1.02% (0.17% per year, compounded over 6 years) for the 2031 design year.

Nearby Proposed Developments

Base (no-build) traffic conditions were calculated to include traffic volumes from proposed developments, which, though not operating under existing conditions, may be operating by the design year (2031) of the proposed development. Based on correspondence/discussions with Whitemarsh Township staff, the following nearby planned developments were specifically brought to TPD's attention to be included if necessary in this study:

901 Washington Street is a proposed residential development consisting of 62 multi-family homes located along Washington Street. TPD ran trip distributions for the development. At the time of the manual traffic counts, approximately 35% of the units have been built. As a conservative measure, the total trips associated with this development **are included** in this traffic impact study and distributed throughout the study area roadways. Information about this development is provided in **Appendix D**.

The additional traffic volumes due to background growth and background developments were added to the existing traffic data to produce 2031 base (no-build) condition traffic volumes. The trip distributions for the near-by development is provided in **Figure 4**. Base condition volumes for the weekday A.M. and weekday P.M. peak hours are illustrated in **Figure 5** for the 2031 conditions.

SCHEDULED ROADWAY IMPROVEMENTS

Programmed Improvements

Based upon a review of the PennDOT 12-Year Plan and DVRPC Transportation Improvement Plan (TIP), there are no planned roadway improvements that will affect the intersections within the study area. However, based upon a review of the Whitemarsh Township Transportation Capital Improvement Plan (TCIP), the following improvements have been identified at the following intersections:

Non Site-Related Improvements

A number of roadway improvements are scheduled or planned within the study area by Whitemarsh Township and/or private developers, as discussed below.

Whitemarsh Township Improvements

Based upon a review of the Whitemarsh Township Transportation Capital Improvement Plan (TCIP), the following improvements have been identified at the following intersections:

Hector Street and North Lane/Station Avenue

- 2010 Pass-Through Condition – Install right-turn lane on southbound North Lane;
- 2010 New Development Condition – Install additional through lane on eastbound Hector St;
- 2010 Pass-Through and New Development Conditions – Optimize signal timings at the intersection.

Cedar Grove Road and Joshua Road

- 2010 Pass-Through Condition – Install Traffic Signal;
- 2010 New Development Condition – Widen Cedar Grove Road to install WB right-turn lane, and traffic signal modifications.

It should be that these roadway improvements presented above are part of the Township Capital Improvement Plan (TCIP) and were not included in the synchro analysis.

Site Related Improvements

As part of construction of the proposed site, the following intersection configurations are proposed:

Washington Street

- Extend Washington Street from Lee Street to Station Avenue

Washington Street and Lee Street

- Eastbound and Westbound Washington Street stop controlled
- Southbound Lee Street free flow
- Provide stop bars for rail gates
- Include painted area for rail crossing

Washington Street and Station Avenue

- Eastbound and Westbound Washington Street stop controlled
- Southbound Station Avenue free flow
- Provide stop bars for rail gates
- Include painted area for rail crossing

PROPOSED SITE ACCESS

Access to the proposed site will be provided by four (4) full-access driveways to Washington Street.

TRIP GENERATION

The trip generation rates for the proposed development were obtained from the manual *Trip Generation*, Eleventh Edition, 2021, an Institute of Transportation Engineers (ITE) Informational Report. The statistics in *Trip Generation* are empirical data based on more than 4,800 trip generation studies. 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 development, data for Land Use Code 220 (Multi-family 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 4** shows the rates/equations and directional percentages for the analyzed time periods.

TABLE 4
ITE TRIP GENERATION DATA

Land Use	ITE #	Time Period	Equations/Rates	Entering %	Exiting %
Single-Family Attached Housing (46 units)	215	Weekday A.M. Peak Hour	T = 0.52(X) - 5.70	25%	75%
		Weekday P.M. Peak Hour	T = 0.60(X) - 3.93	59%	41%
		Weekday	T = 7.62(X) - 50.48	50%	50%

T = number of site-generated vehicular trips
X = independent variable (dwelling units)

It should be noted that the proposed development is in close proximity to the SEPTA Train Station. It should be noted that the residential development is in close proximity to the SEPTA Train Station. It is anticipated that some tenants of the proposed residential development will utilize SEPTA to commute to/from work. Based on the location of the proposed residential development and the close proximately of the existing transit amenities, **TPD assumed a 25% trip reduction during the weekday A.M. and weekday P.M. peak hours, to be consistent with Table C.1 in the Institute of Transportation Engineers (ITE) Handbook.**

The calculated trip generation for the proposed development is shown in **Table 5**. For the purposes of this study, TPD assumed full build-out of the development by 2031.

TABLE 5
TRIP GENERATION SUMMARY

Time Period	901 Washington Street Development				
	Total Trips	TOD Reduction[1]	Total Trips[2]	Enter (Vehicle Trips)	Exit (Vehicle Trips)
Weekday	300	*-75*	**225**	170	170
A.M. Peak Hour	18	*-5*	**13**	3	10
P.M. Peak Hour	24	*-6*	**18**	11	7

1 = Includes 25% trip reduction due to TOD reductions (residents utilizing SEPTA to/from work)
2 = Total Trips Minus the 25% TOD reduction

Based on the trip generation analysis summarized in **Table 5**, the proposed development will generate approximately **13 new vehicle trips** during the weekday A.M. peak hour and **18 new vehicle trips** during the weekday P.M. peak hour at full build out.

TRIP DISTRIBUTION

Existing Trip Redistribution

As part of the 1001 Washington Street development, Washington Street is proposed to connect to Station Avenue. This connection is anticipated to redistribute traffic from Hector Street onto Washington Street. TPD assumed that **15%** of all through traffic on Hector Street would be diverted to Washington Street. Specifically, 15% of eastbound Hector Street traffic was projected to continue east on Washington Street to Station Avenue, while 15% of westbound traffic was expected to turn left at Station Avenue and proceed west on Washington Street. This 15% estimate is based on similar traffic studies conducted by TPD, as well as an analysis of the existing and proposed roadway network, nearby intersections, and current traffic patterns. Existing trip redistributions are shown in **Figure 6.**

New Trips

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 locations. The new trips for the proposed development were distributed to the local roadway network based on the percentages shown in **Table 6**.

TABLE 6
TRIP DISTRIBUTION PERCENTAGES – New Trips

Direction - To/From	Assignment (To/From)	Distribution Percentage
East	via Barren Hill Road	20%
	via Joshua Road	10%
West	via Washington Street Extension	50%[1]
North	via North Lane	10%
	via Cedar Grove Road	10%

1 = Washington Street Extension to be built. Assumed 50% of traffic will exit Washington Street to the west.

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 7**.

PROJECTED (BUILD) CONDITION TRAFFIC VOLUMES

The site-generated trips for the proposed development were added to the 2031 base (no-build) condition traffic volumes to develop 2031 projected (build) condition traffic volumes. Projected condition traffic volumes for the opening year of 2031 for the weekday A.M. and weekday P.M. peak hours are shown in **Figure 8**. Traffic volume development worksheets are contained in **Appendix E**.

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 7**. Delay, as it relates to level of service, is a complex measure and is dependent upon a number of variables. For signalized intersections, these variables include the quality of vehicle progression, the cycle length, the green time ratio, and the volume/capacity ratio for the lane group in question. For unsignalized intersections, delay is related to the availability of gaps in the flow of traffic on the major street and the driver's discretion in selecting an appropriate gap for a particular movement from the minor street (straight across, left or right turn).

TABLE 7
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* (HCM) using *Synchro 12* software, a Trafficware product.

The following conditions were analyzed, as applicable:

- Existing conditions;
- 2031 Base conditions (Build-out year without development);
- 2031 Projected conditions (Build-out year with development).

It should be noted that based on methodologies contained in Chapter 10 of PennDOT's Publication 46, TPD adjusted the following HCM 6th edition default values in the *Synchro 12* capacity analysis. These adjustments were made at the signalized intersections within the study area for all time periods based on the study area location being classified as Suburban:

- Base saturation flow rates for signalized intersections. The saturation flow rate was changed from the default value of 1900 to 1800 based on Exhibit 10-9.
- Start-up lost time and extension of effective green time for signalized intersections. The startup lost time was changed from the default value of 2.0 seconds to 2.5 seconds. Based on the total clearance time (yellow plus all-red time) being greater than 5 seconds, the extension of green time was changed from the default value of 2 seconds to 3.5 seconds. These adjusted values were based on Exhibit 10-10.

Please note that the HCM 6th edition can only analyze intersections where all approaches have speed limits between 25 and 55 mph. To use the HCM methodology for the study area intersections, any roadway speed limits below 25 mph were adjusted to 25 mph.

The capacity analysis worksheets are included in **Appendix F.** The PennDOT-approved signal plans are included in **Appendix G.**

PennDOT's Transportation Impact Study Guidelines outlined in PennDOT's *Policies and Procedures for Transportation Impact Studies*, found in PennDOT's Publication 282, Appendix A, dated February 2024 contain the following criteria regarding levels of service:

- 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.
- 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.
- If signalization is the preferred alternative for mitigation, overall intersection LOS C in rural areas and LOS D in urban areas is acceptable.
- New signalized or unsignalized intersection established to serve as access to the development shall be designed to operate at minimum LOS C for rural areas, and minimum LOS D for urban areas.

LEVELS OF SERVICE IN THE STUDY AREA

Level of service (LOS) matrices for the study area intersections are shown in **Table 8** for the weekday A.M. and weekday P.M. peak hours. Per PennDOT standards, the signal timings at the signalized study area intersections have been optimized under base conditions and projected conditions.

TABLE 8
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY

Movement	Weekday A.M. Peak Hour			Weekday P.M. Peak Hour		
	Existing Conditions	2031 Design Year		Existing Conditions	2031 Design Year	
		Base	Projected		Base	Projected
Hector Street (S.R. 3059) and Lee Street						
EB LTR	B	B	A	A	A	A
WB LTR	A	A	A	A	B	B
NB LTR	B	B	B	C	C	C
SB LTR	C	C	C	E (48.8)	F (57.9)	E (35.0)
ILOS	**A (1.6)**	**A (1.7)**	**A (1.7)**	**A (5.0)**	**A (5.9)**	**A (4.4)**
Hector Street (S.R. 3059) and North Lane (S.R. 3015)/ Station Ave[1]						
EB L	B	B	B	B	B	B
EB TR	B	B	B	C	C	C
WB L	B	B	B	B	B	C
WB TR	D	D	C	C	C	C
NB LTR	C	C	C	C	C	C
SB LTR	D	D	D	C	C	C
ILOS	**C (32.9)**	**C (33.5)**	**C (22.9)**	**C (23.8)**	**C (24.6)**	**C (24.8)**
Hector Street (S.R. 3059) and Barren Hill Road/ Cedar Grove Lane (S.R. 3011)						
EB LT	C	C	C	F (123.2)	F (129.4)	F (134.3)
EB R	B	B	B	F (v/c >1)	F (v/c >1)	F (v/c >1)
WB LTR	C	C	C	C	C	C
NB L	D	D	D	D	D	D
NB TR	C	C	C	C	C	C
SB LTR	D	D	D	C	C	C
ILOS	**C (33.1)**	**C (33.7)**	**C (33.8)**	**D (51.6)**	**D (53.1)**	**D (54.7)**
Cedar Grove Lane (S.R. 3011) and Joshua Road (S.R. 3014)						
WB LR	B	B	B	B	B	B
NB TR	A	A	A	B	B	B
SB LT	B	B	B	B	B	B
ILOS	**B (11.1)**	**B (11.2)**	**B (11.2)**	**B (10.8)**	**B (11.0)**	**B (11.0)**
Washington Street and Lee Street						
EB L	A	A	A	A	A	B
EB T	A	A		A	A	
WB TR	A	A	A	A	A	A
SB LR	A	A	A	A	B	B
ILOS	**A (6.9)**	**A (7.5)**	**A (9.2)**	**A (5.3)**	**A (6.6)**	**A (9.6)**

Base = No-Build scenario
Projected = Build scenario
[1] = Due to the all-ped phase, LOS results were obtained from Synchro due to limitations in HCM 6th Edition.

As shown in **Table 8** under the 2031 projected conditions with the development of the proposed site, the study area intersections will operate at the **same overall intersection level of service (ILOS) as under 2031 Base Conditions**, during the weekday A.M. and weekday P.M. peak hours.

95TH PERCENTILE QUEUE ANALYSIS

Queue analyses were conducted at the study area intersections using *Synchro 12* software. For this analysis, the 95th percentile queue is defined as the queue length that is exceeded in 5% of the signal cycles. As an

example, for a signal with a 90-second cycle, this means that the 95th percentile queue length will be exceeded during 2 of the 40 signal cycles that occur during the peak hour. The queue analysis results are summarized in **Table 9** for the analyzed peak hours.

TABLE 9
95TH PERCENTILE QUEUE ANALYSIS

Movement	Available Storage	Weekday A.M. Peak Hour			Weekday P.M. Peak Hour		
		Existing Conditions	2031 Design Year		Existing Conditions	2031 Design Year	
			Base	Projected		Base	Projected
Hector Street (S.R. 3059) and Lee Street							
EB LTR	--	<25	<25	<25	<25	<25	<25
WB LTR	---	<25	<25	<25	<25	<25	<25
NB LTR	--	<25	<25	<25	<25	<25	<25
SB LTR	--	<25	<25	<25	83	95	63
Hector Street (S.R. 3059) and North Lane (S.R. 3015)/ Station Ave[1]							
EB L	180′	78	80	56	66	68	64
EB TR	--	171	179	154	565	584	496
WB L	80′	<25	<25	55	<25	<25	80
WB TR	--	712	721	581	380	399	358
NB LTR	--	45	45	98	46	46	118
SB LTR	--	140	141	142	151	153	154
Hector Street (S.R. 3059) and Barren Hill Road/ Cedar Grove Lane (S.R. 3011)							
EB LT	--	103	108	110	355	370	388
EB R	80′	303	308	310	575	585	608
WB LTR	--	<25	<25	<25	<25	<25	<25
NB L	130′	433	440	443	220	225	228
NB TR	--	50	53	50	48	48	48
SB LTR	--	330	345	345	178	188	190
Cedar Grove Lane (S.R. 3011) and Joshua Road (S.R. 3014)							
WB LR	--	65	65	68	40	40	43
NB TR	--	28	28	28	55	55	58
SB LT	--	30	30	30	38	38	38
Washington Street and Lee Street							
EB L	--	<25	<25	<25	<25	<25	33
EB T	--	<25	<25		<25	<25	
WB TR	--	<25	<25	<25	<25	<25	<25
SB LR	--	<25	<25	<25	<25	<25	<25

Base = No-Build scenario
Projected = Build scenario
[1] = Due to the all-ped phase, LOS results were obtained from Synchro due to limitations in HCM 6th Edition.

As shown in **Table 9**, all of the Projected Condition queues will be accommodated within the proposed storage length, or if the Projected Condition queue cannot be accommodated with the proposed storage length, it will be less than or comparable to the base ("no-build") queue (within 1 vehicle length).

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

RECOMMENDATIONS AND CONCLUSIONS

The recommendations and conclusions for this Transportation Impact Study are identified in the Executive Summary.

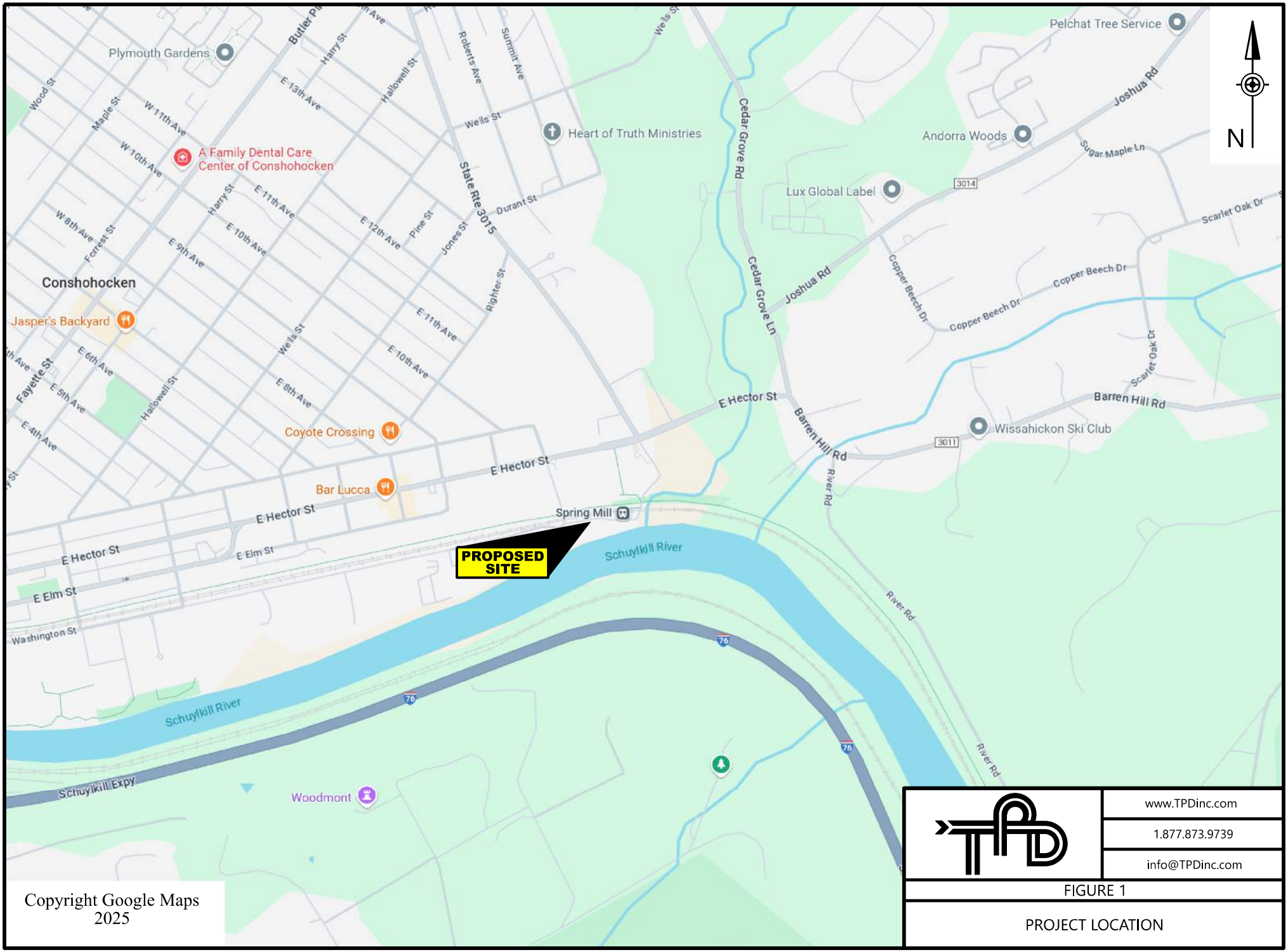

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FIGURE 1

PROJECT LOCATION

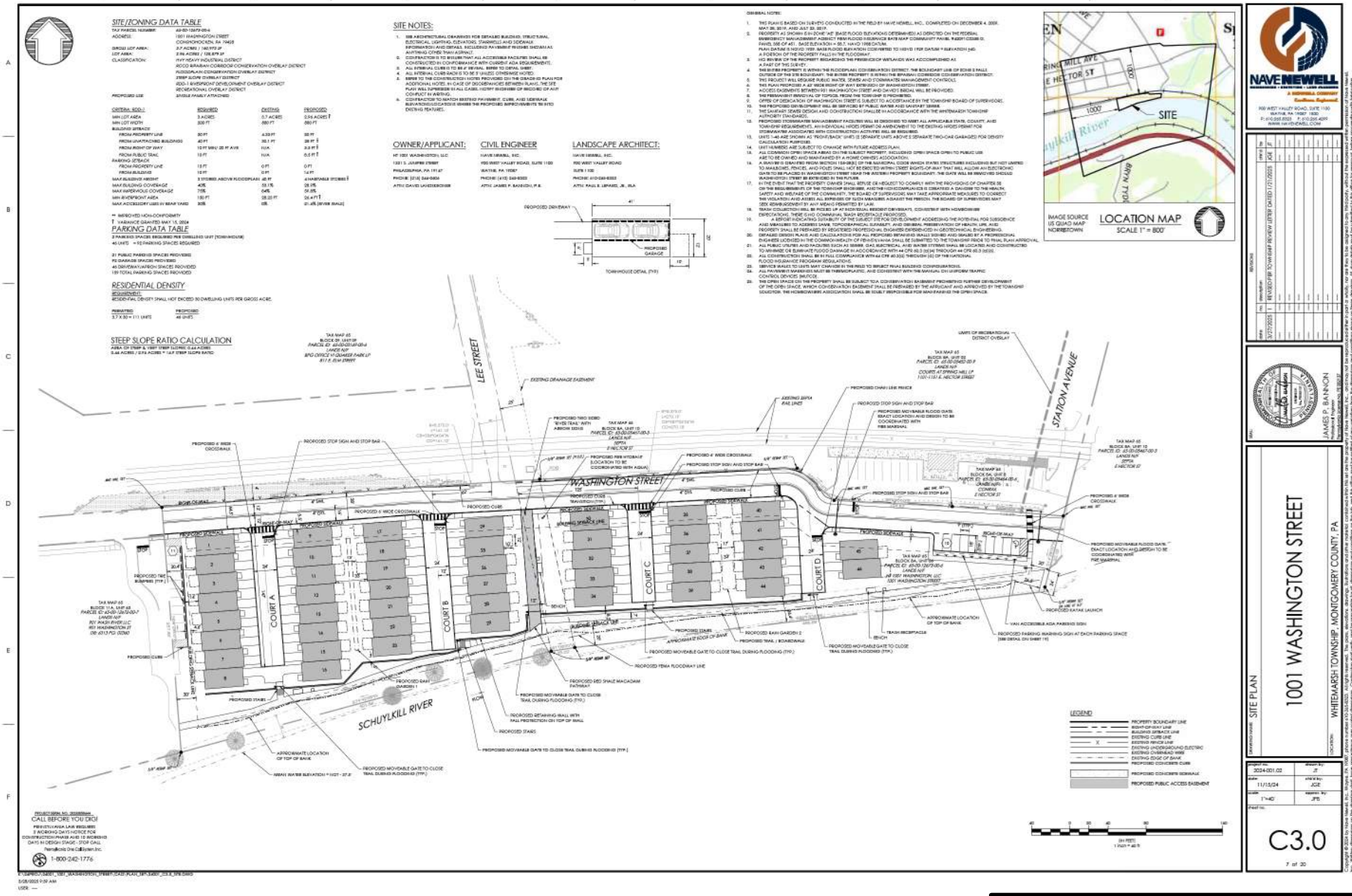

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FIGURE 2

SITE PLAN

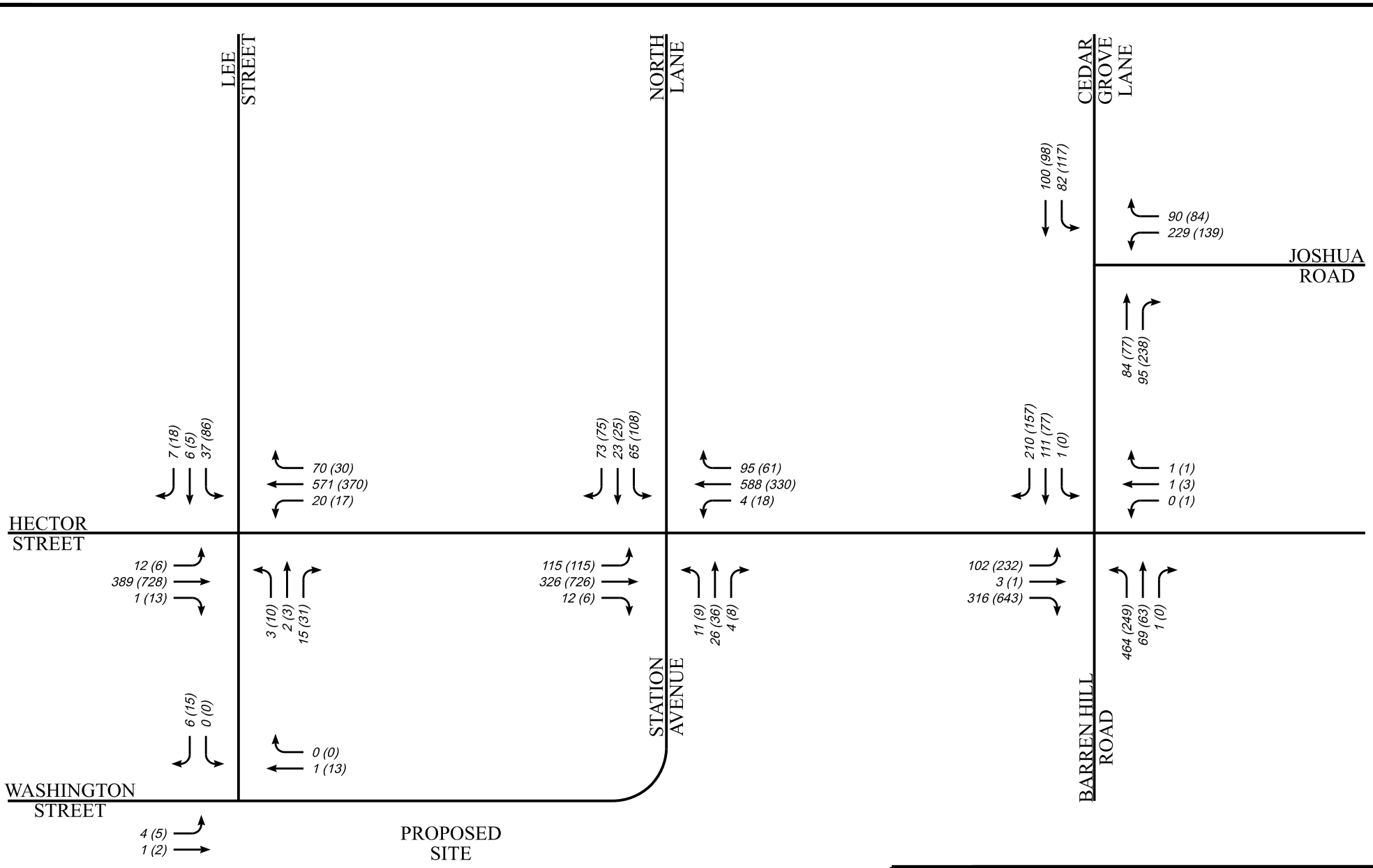

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FIGURE 3

2025 EXISTING CONDITIONS
A.M. PEAK HOUR (P.M. PEAK HOUR)
VEHICULAR TRAFFIC VOLUMES

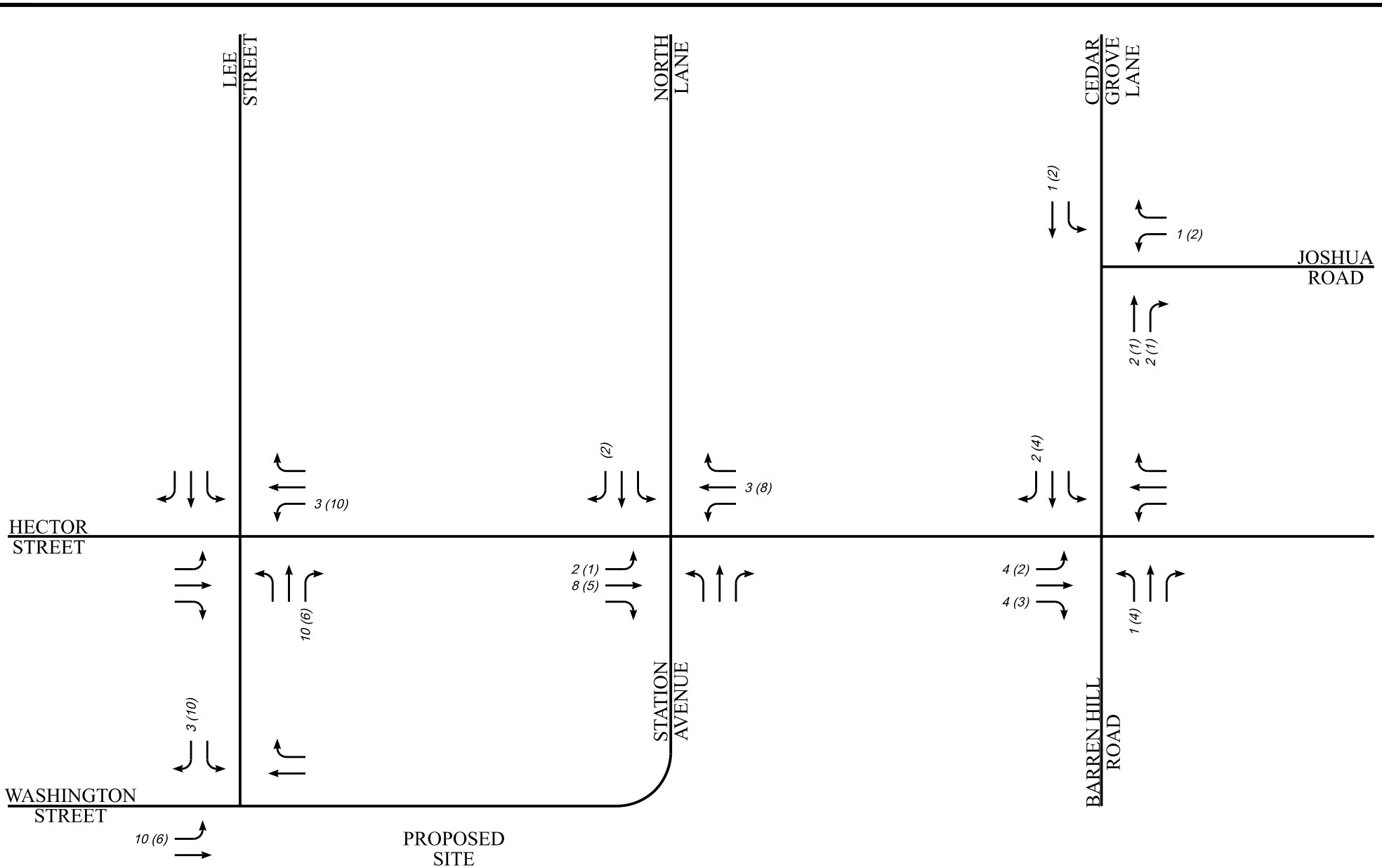

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FIGURE 4

NEARBY DEVELOPMENT
901 WASHINGTON STREET
A.M. PEAK HOUR (P.M. PEAK HOUR)
VEHICULAR TRAFFIC VOLUMES

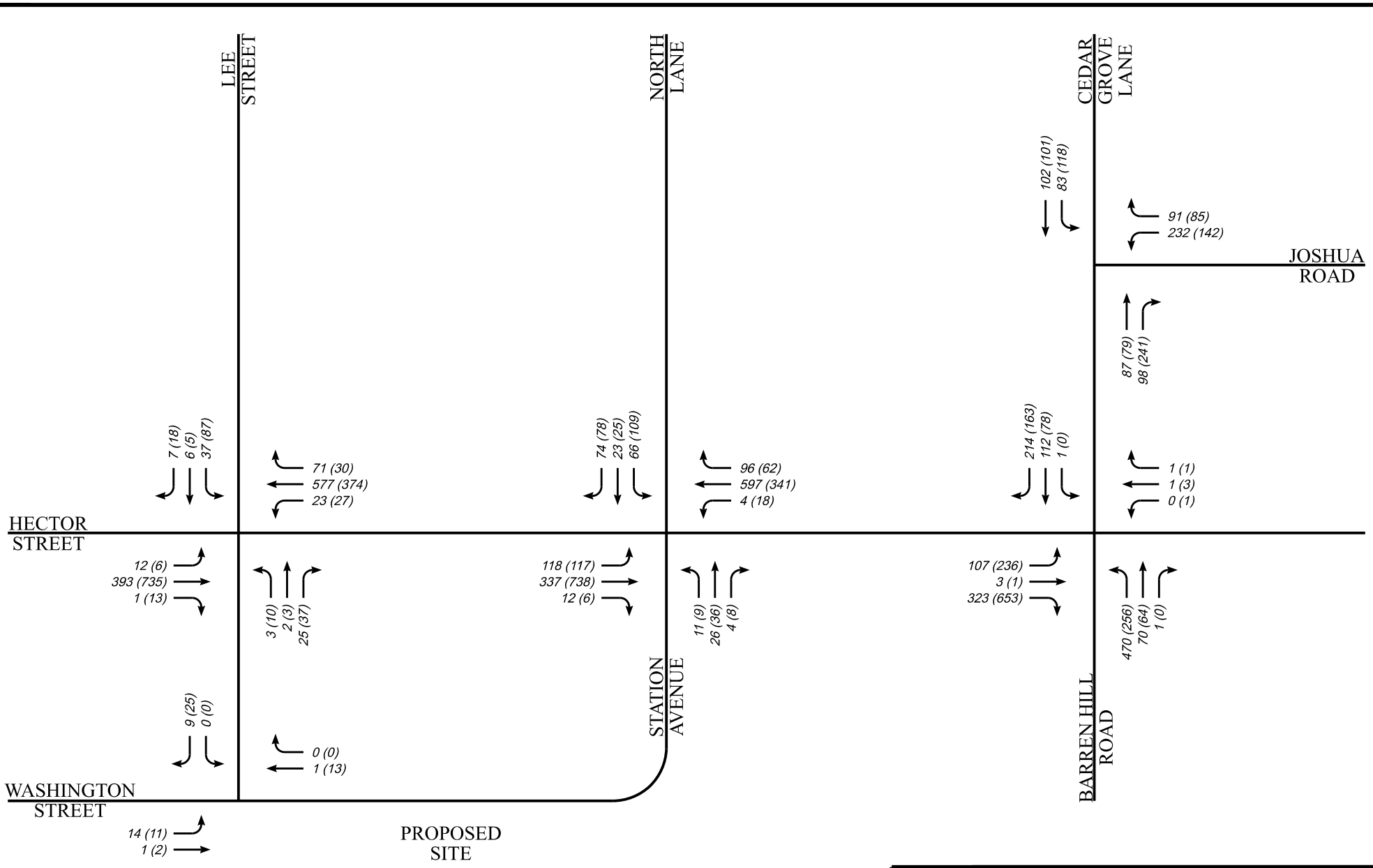

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FIGURE 5

2031 BASE (NO-BUILD) CONDITIONS
A.M. PEAK HOUR (P.M. PEAK HOUR)
VEHICULAR TRAFFIC VOLUMES

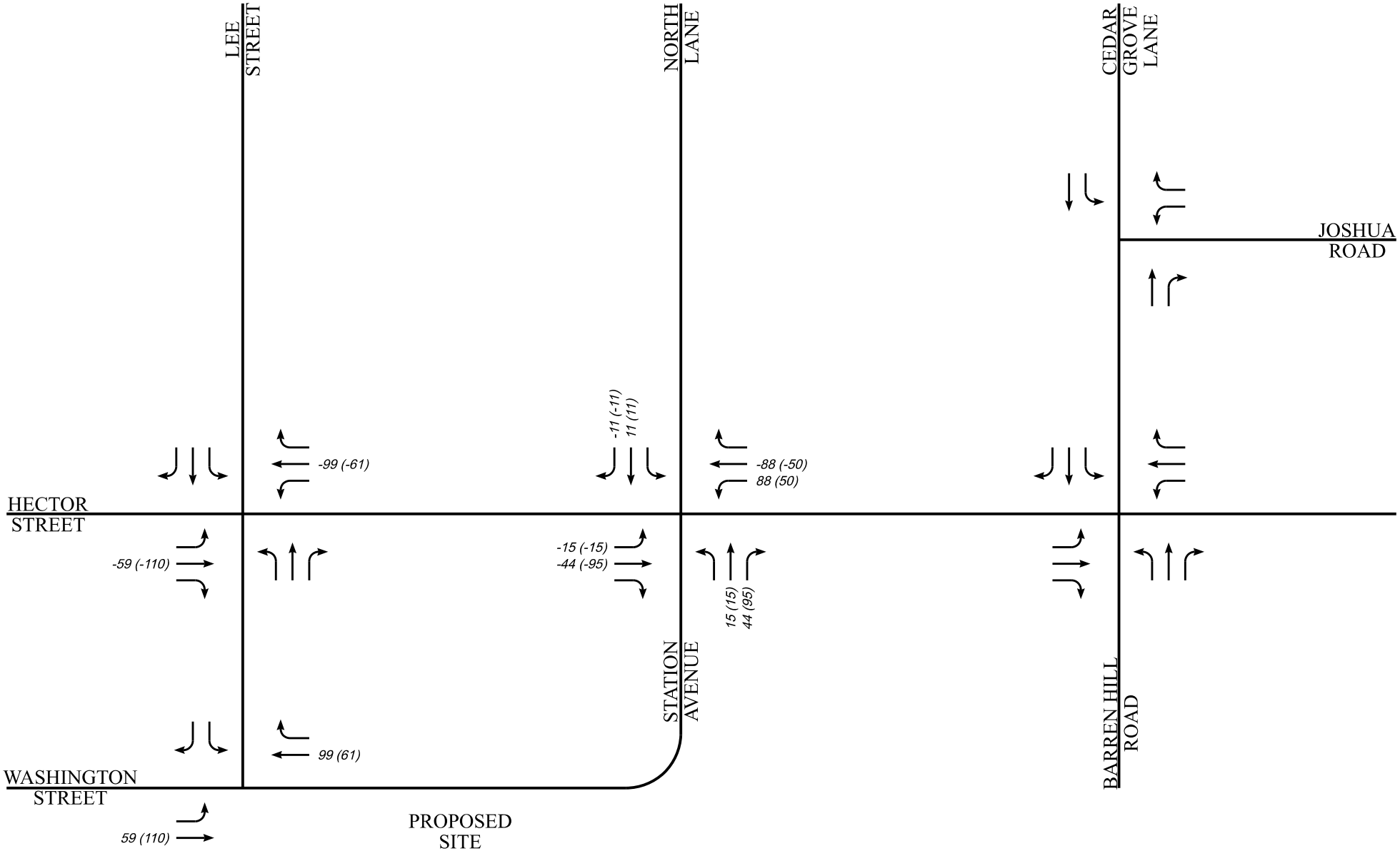

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FIGURE 6

EXISTING TRAFFIC REDISTRIBUTION
A.M. PEAK HOUR (P.M. PEAK HOUR)

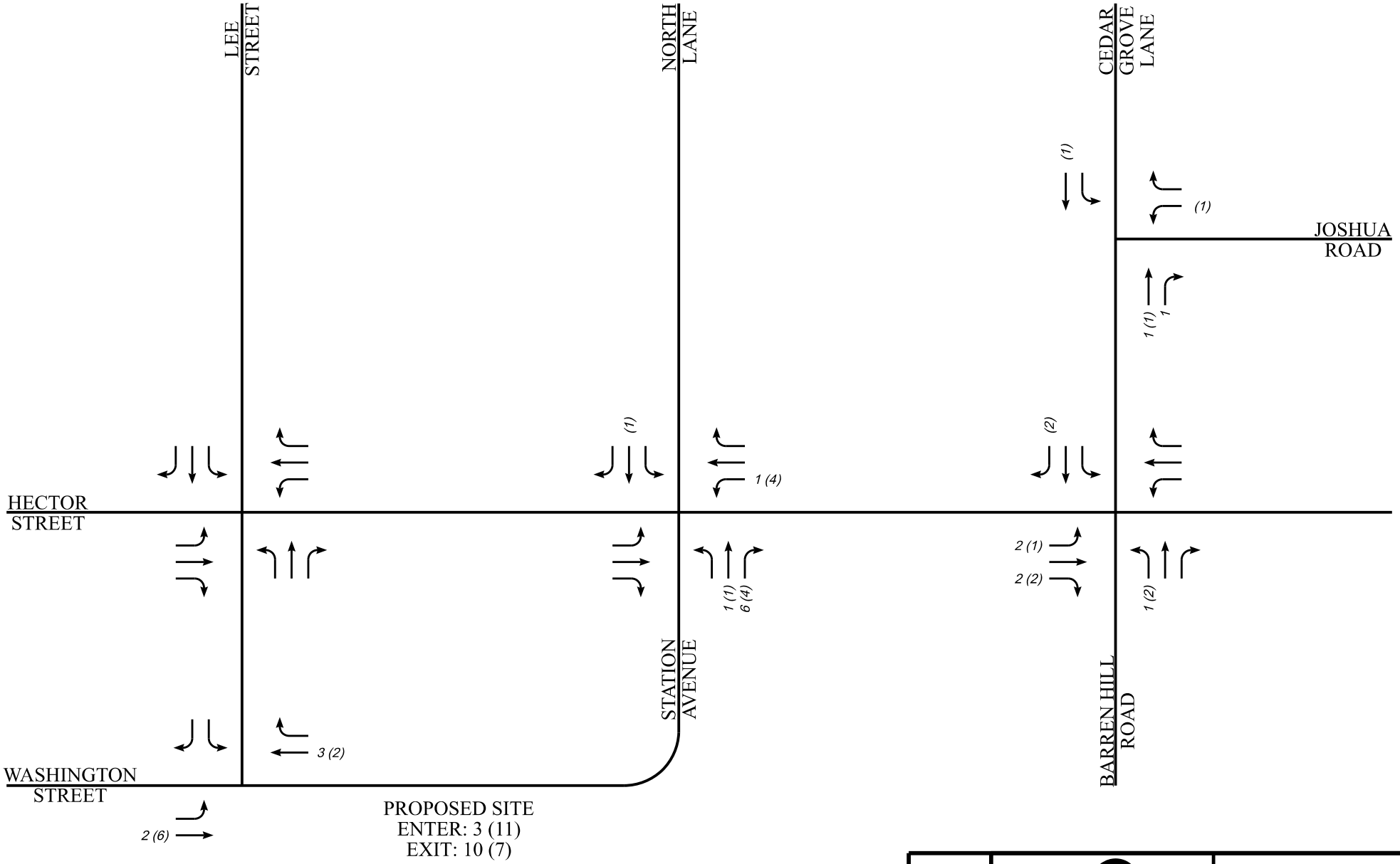

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FIGURE 7

SITE TRIPS
A.M. PEAK HOUR (P.M. PEAK HOUR)

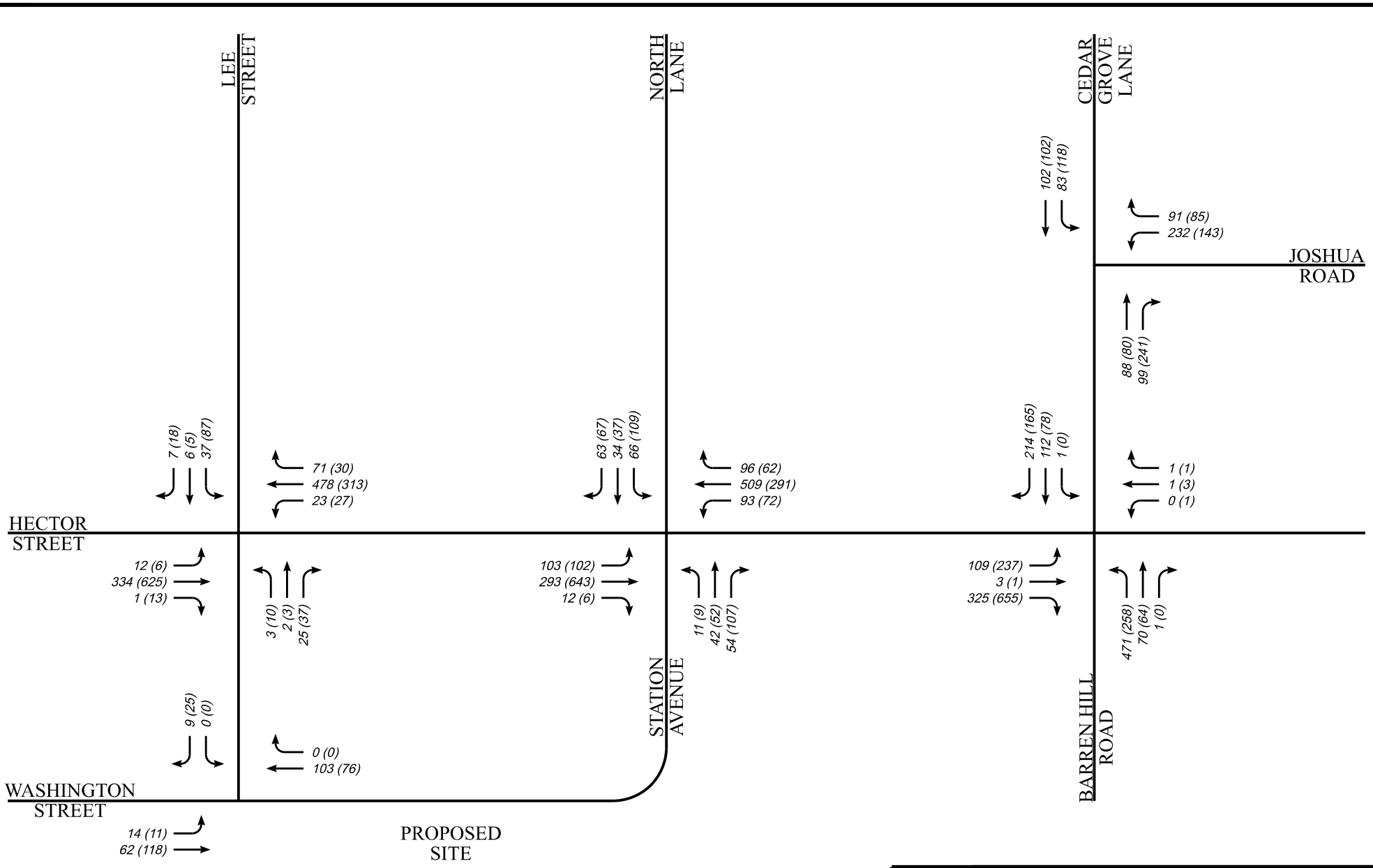

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FIGURE 8

2031 PROJECTED (BUILD) CONDITIONS
A.M. PEAK HOUR (P.M. PEAK HOUR)
VEHICULAR TRAFFIC VOLUMES

APPENDIX A:
Project Correspondence

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

May 30, 2025

Mr. Craig T. McAnally - Township Manager
Whitemarsh Township Municipal Building
616 Germantown Pike
Lafayette Hill, PA 19444

RE: Preliminary Plan Review
1001 Washington Street
Whitemarsh Township, Montgomery County, PA
S/LD # 07-23
Our Project Number 2023-11054

Dear Mr. McAnally:

As requested, we have reviewed plans for the above referenced Preliminary Plan Submission consisting of a 20-Sheet Plan prepared by Nave Newell and dated November 15, 2024, and last revised March 27, 2025. The following comments are offered for your consideration:

The applicant is requesting or requires waivers and/or relief from the requirements of the following sections of the ordinance:

	Section	Description
1.	105-21(B)(1)(n)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the plans to show existing principal buildings (and their respective uses), and driveways on the adjacent peripheral strip: sewers lines, storm drains, culverts, bridges, utility easements, quarries, railroads, and other significant man-made features within 500 feet of and within the site, including properties across streets. The granting of any relief should be conditioned that an aerial photo be included in the plan set which shows the required features.
2.	105-21(B)(2)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the inclusion of a Soil Map, showing Soil types, Contour lines, Datum to which contour lines refer, Floodplain areas, Base flood elevation data, Floodplain soil areas, Steep slopes, and Limestone areas. The waiver is being requested to allow the required features to be shown on various sheets throughout the plan set, instead of on one single Plan Sheet.
3.	105-21(B)(15)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the submission of a “Preliminary Resource Impact and Conservation Plan” (the “Preliminary Impact Plan”) to categorize the impacts of the proposed activities and physical alterations on those resources shown on the Existing resources and site analysis plan (ERSAP). The waiver is being requested to allow the required features to be shown on various sheets throughout the plan set, instead of on one single Plan Sheet.

Section Description

4. 105-30(A) The applicant is requesting a waiver from the requirements of this section of the ordinance. As defined by Section 105-29(C) and 105-30(A), streets adjacent to the site are subject to the following requirements:

Street Name	Classification	Required Ultimate R.O.W	Required Cartway Width	Curbs	Sidewalks	Tree Zone
Washington Street	Local Street	56 feet	36 feet	Required	Required	Required
Lee Street	Local Street	56 feet	36 feet	Required	Required	Required
Station Avenue	Local Street	56 feet	36 feet	Required	Required	Required
Courts A-D	Court	50 feet	30 feet	Required	Required	Required

The waiver is requested to allow the Ultimate Right-of-Way width of proposed Washington Street to be 28-feet, and the cartway width to be below 36-feet and to allow the proposed Courts will have cartway widths below 30'. The following comments are offered for consideration:

- For Washington Street, the plans appear to show a proposed Right-of-way width of 28 feet and a proposed cartway width of 28± feet, which must be revised. At a minimum, the proposed ultimate right-of-way, cartway edge, centerline, curbing and sidewalk should align with those on the adjacent property (901 Washington Street). For reference, the widths approved on the adjacent property were 46-feet for the Ultimate Right-of-way, and 27.3-feet for the cartway.
- The plans must be revised to provide curbing on Washington Street along the SEPTA parking lot.
- The plans must be revised to provide a Tree Zone along Washington Street, or the waiver request must be amended to not require a Tree Zone.
- For Courts A-D, the plans show a proposed cartway width of 24± feet, and do not show an ultimate Right-of-Way, which is consistent with the adjacent property (901 Washington Street).
- The plans must be revised to provide a sidewalk and a Tree Zone along Courts A-D, or the waiver request must be amended to not require sidewalks and/or a Tree Zone.
- The plans must also be revised to show and dimension the cartway and ultimate Rights-of-Way for Lee Street and Station Avenue.

5. 105-30(C) The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that short extensions of existing streets with lesser right-of-way and/or cartway widths than prescribed above may be permitted; provided, however, that no section of new right-of-way be less than 40 feet in width and such extensions shall be less than 100 feet in length, in order to allow the Right-of-Way of Washington Street to measure 30-feet wide for a distance of 960-feet along the property frontage. The waiver request states that the Right-of-Way width would be 30 feet, where the plans show a width of 28 feet, and must be revised.

6. 105-33(B) The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that, whenever local street lines are deflected in excess of 5°, connection shall be made by horizontal curves. This section of the ordinance requires that the minimum center-line radii for horizontal curves shall be 150 feet, and plans show a horizontal curve radii of 28 feet at the intersection of Washington Street and Court D. We do not recommend the granting of this waiver. The applicant's engineer should review alternatives which can meet the requirement to the maximum extent feasible.

	Section	Description
7.	105-38(F)	The applicant is requesting a waiver from the requirements of this section of the ordinance, in order to allow Angle or perpendicular parking along Washington Street.
8.	105-38(H)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires that all parking areas shall be set back from the right-of-way line and all property lines at least 15 feet in order to allow the proposed 10-space parking area and 11 existing parking spaces along the Western property line to be located within the required setback.
9.	105-38(L)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that, in no case shall parking areas for three or more vehicles be designed to require or encourage cars to back into a public street in order to leave the lot, in order to allow the proposed 10-space parking area to be located along Washington Street.
10.	105-38(O)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that parking areas shall be located at least 10 feet from any building or structure. The existing 11-space parking area appears to be located 4.6-feet from Units 1-6. The granting of any waiver should be conditioned on the applicant obtaining the approval of the Fire Marshal.
11.	105-47(K)(1)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the provision of a right-of-way of at least 25 feet in width to be offered for dedication to the Township for the public riverfront access, perpendicular to the river. The waiver is being requested to allow the provision of an easement for public access. Since no easement appears to be shown, it is assumed that the applicant is proposing to provide a blanket access across the entire site common areas. Whether an easement or right-of-way, maintenance agreements must be provided in a form acceptable to the Township.
12.	105-48	The plans must be revised in order to demonstrate compliance with this section of the ordinance, which requires the installation of street trees along all streets where suitable trees do not exist, or a waiver must be obtained. The landscape requirements table on Sheet C7.0 does not appear to indicate that Street Trees are proposed.
13.	105-48(E)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires that street trees shall be planted within a tree planting zone of lawn area or other material approved by the Shade Tree Commission, situated between the sidewalk and curb and measuring a minimum of 5 feet in width from the planting edge of the curb to the planting edge of the sidewalk. The plans show proposed sidewalk directly adjacent to curbing, with no planting strip. Additionally, there are no planting strips or street trees between the curb, sidewalk and/or dwelling units. It is noted that the applicant was granted a variance from Section 116-283(C)(1) in order to permit the curb and sidewalk layout along Washington Street without street trees or the required 5-foot tree planting zone.
14.	105-52(B)(2)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires that all buffers shall have a minimum width of 50 feet. The Board of Supervisors may permit an alternative planting option which shall have a screening capability equal to or greater than any of the available options. The applicant should provide evidence in sufficient detail to the Board of Supervisors in order to demonstrate that sufficient screening will be provided.

	Section	Description
15.	105-53(D)(1)(c)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that no more than 25% of the minimum land area required for park and recreation land may consist of floodplain or riparian corridor buffer areas, wetlands or areas with slopes in excess of 8%. The entire property is located within the floodplain and riparian corridor.
16.	105-56(A)(1)(a)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that, where a street is designed so that all units face on local streets or courts and where on-street parking is not anticipated and no safety hazard will be created, the cartway width may be reduced. This reduction is limited to 26 feet on private streets and courts. The plans show Courts A, B, C and D having a proposed width of 24 feet.
17.	58-28(D)(11)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that edges of slopes shall be a minimum of five feet from property lines or right-of-way lines in order to permit the normal rounding of the edge without encroaching on the abutting property. The waiver is being requested to allow for connection to offsite features such as trails, walks and streets.
18.	58-29(E)	The applicant is requesting relief from the requirements of this section of the ordinance, which states that fills shall not encroach on natural watercourses, floodways, floodway fringes, constructed channels, or on wetlands unless permitted by the Army Corps of Engineers, Pennsylvania Department of Environmental Protection (PADEP) and approved by the Township. We do not recommend the granting of this relief. The applicant must obtain the required outside agency permits.
19.	58-34(B)(7)(d)	The applicant is requesting relief from the requirements of this section of the ordinance, which requires that all storm pipes shall be reinforced concrete pipe (RCP). The waiver is requested in order to allow on-site pipes to be constructed of High Density Polyethylene Pipe (HDPE). Proposed storm pipes within the public Right-of-way will be RCP. We have no objection to the granting of this waiver.
20.	55-4(B)	The applicant is requesting relief from the requirements of this section of the ordinance, which states that the removal of more than 33% of Trees, having a DBH of six inches or greater, on any Lot, shall not be permitted. The plans appear to show 85% of existing trees as proposed to be removed.
21.	55-4(D)(6)(A), 55-4(F)	The applicant is requesting relief from the requirements of these sections of the ordinance, which states that every living and healthy tree with a DBH of six inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new canopy trees, of a type and species approved by the Shade Tree Commission or its designee, with a trunk diameter of not less than three inches in caliper. The total caliper of replacement trees, measured at six inches above the ground line, shall equal or exceed the DBH of the removed trees. The waiver is being requested to allow a maximum of 40% of the replacement trees to be replaced with ornamental trees, in accordance with Section 55-4(F).

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

	Section	Description
22.	105-19(E), 105-45	The Surveyors' Notes on the Existing Features Plan describe several easements, rights and/or restrictions that require additional information to resolve and/or show correctly, which must be resolved.
23.	105-21(B)(1)	Notes 6,13, and 16 do not appear to be applicable to this site, and must be removed from Sheet 3.0. Note 1 must be revised in order to be consistent with Note 1 on Sheet C1.0.
24.	105-21(B)(1)(d)[1]	The plans must be revised to show the boundaries of the Heavy Industrial (HVY), Riverfront Development Overlay District (RDD-1), and Recreational Overlay Districts, consistent with the Township Zoning Map.
25.	105-21(B)(1)(j)	Additional survey is required, extending further off site along Washington Street, Lee Street, and Station Avenue to ensure continuity between existing and proposed streets.
26.	105-21(B)(1)(o)	The plans must be revised to address the treatment of existing features (monument sign, parking spaces, asphalt/fire lane) within the existing easement over the SEPTA property.
27.	105-21(B)(1)(o)	The plans must be revised to provide ADA accessible parking for the overflow lot west of Court A.
28.	105-21(B)(1)(o)	The plans show an existing parking area along the Western property line, that spans the subject property and the adjacent property at 901 Washington Street. Sheet C4.0 notes that, "Final Design and grading to be coordinated with 901 Washington Street and Whitemarsh Township prior to final submission". The following, at a minimum, must be addressed: • ADA Accessible curb ramps and crosswalks must be provided. • Existing/proposed grading must be shown. • Clarification must be provided regarding ownership and maintenance of the area. Easements must be established, as required.
29.	105-21(B)(1)(o)[1]	The plans must be revised to provide detailed design illustrating the connection of the proposed Washington Street extension and Lee Street, Station Avenue and Washington Street. The proposed ultimate right-of-way, cartway edge, curbing and sidewalk must align with those on the existing streets. Detailed intersection plans must be provided.
30.	105-21(B)(1)(o)[4]	The plans must be revised to show any proposed open space areas, and indication as to whether offered for dedication.
31.	105-21(B)(1)(o)[6]	The plans show an existing endwall at the Schuylkill River, within an "existing 25' Drainage Easement". The associated stormwater piping must also be shown.
32.	105-21(B)(1)(o)[7]	The plans must be revised to show how the proposed 7-foot wide trail along the River will connect to the 10-foot wide trail along the River on the adjacent property at 901 Washington Street.

	Section	Description
33.	105-21(B)(6)(a)	Sheet C5.0 indicates that the "Detailed design [is] still in progress", for the proposed Sanitary Sewer Pumping Station and that the exact location and depth of the proposed sanitary sewer force main is to be field verified by the contractor prior to start of construction. Sanitary sewerage facilities must be fully engineered and shown in their final location on the plans.
34.	105-21(B)(6)(b)	Sheet C5.0 indicates that the location of the proposed water main is to be coordinated with AQUA. Water supply lines must be fully engineered and shown in their final location on the plans.
35.	105-21(B)(8)	The plans must be revised to include a center-line profile for the extension of Washington Street.
36.	105-21(B)(9)	The following comments related to the Traffic Impact Study must be addressed:

1. As discussed previously, coordinate with the Township to determine the appropriate traffic control and circulation patterns along Washington Street and its intersections with Lee Street and Station Avenue. The analysis may need to be revised based on the outcome of those discussions.
2. §105-21.B(9)(d)[6][a] – Levels of service below LOS C are considered deficient. Improvements should be identified to mitigate the deficiency and indicate whether that improvement will be constructed in conjunction with the development.
3. Revise the last sentence within the "Whitemarsh Township Improvements" section (Page 6). It appears that the sentence is incomplete.
4. We note that the wrong edition of the *Trip Generation Manual* is referenced within the text of the document and should be revised to the latest edition (11th). However, the trip generation equations and values are correct.
5. The analysis assumes a 25% reduction in trips due to the proximity of existing transit options. The report references Table B.3 within the ITE Handbook, but that table discusses baseline vehicle occupancy. Update the reference and/or provide the table within the appendices that was used to determine the trip reduction.
6. Update the "Projected (Build) Condition Traffic Volumes" section to reference the correct years for each scenario mentioned. The report currently indicates 2022, which is incorrect.
7. Update Figure 4 to show the trip distribution for the near-by development. The current figure shows the existing volumes.
8. Review the traffic redistribution shown on Figure 5. There appears to be several inconsistencies:
    i. Eastbound Hector St at Lee St shows redistribution of 59 vehicles for the AM peak, but eastbound Washington Street shows 69 vehicles added to that movement.
    ii. Southbound North Lane at Hector St shows 6 vehicles redistributed for the AM peak, but 8 vehicles are added to the through movement.

Section	Description
105-21(B)(9) (con't)	iii. Westbound Hector St at North Ln shows 102 vehicles redistributed for the AM peak, but only 50 vehicles are added to the left turn movement. Additionally, the report notes a 15% redistribution of traffic on Hector St. The existing westbound through movement has 588 vehicles, so 15% would equate to 88 but the figure shows 102.
	iv. Westbound Hector St at Lee St shows 86 and 55 vehicles redistributed during the AM and PM peaks, but only 28 and 18 vehicles are added to the left turn movement, respectively.
	9. Provide additional narrative within the report to explain how the values were derived for the redistribution and list any assumptions made. Update the traffic volume development worksheets once the site redistribution values have been confirmed.
	10. Review the paths of the site trips shown on Figure 7. For example, assuming that Station Ave is open, the northbound right turning movements at Hector St/Lee St would likely use Station Ave. As mentioned above, discussions with the Township regarding the circulation within the study area could have an impact on the routes site trips can take and should be taken into account when updating this figure.
	11. Coordinate with SEPTA regarding the project, potential travel routes, parking, etc. and provide the correspondence in future submissions.
	12. Verify the westbound left turn lane length indicated in the analyses of Station Avenue/North Lane & Hector Street. The analysis indicates 100' but it measures closer to 80-85 feet. Update the queue analysis table accordingly.

37. 105-21(B)(17) This section of the ordinance requires the submission of a Community association document, for all subdivision and land development applications which propose lands and/or facilities to be used or owned in common by all the residents of that subdivision or land development and not deeded to the Township.

38. 105-21(B)(18) This section of the ordinance states that a Preliminary common open space ownership and management plan is required as part of any Preliminary Plan submission.

39. 105-21.1(K)(2) Within the South Transportation Service Area an impact fee in the amount of Two Thousand Five Hundred and Twenty-Nine Dollars ($2,529.00) per anticipated peak hour trip must be provided by the applicant. Based on data documented within the latest edition of the ITE Trip Generation Manual, the proposed development will generate 18 PM peak hour trips. Therefore, the traffic impact fee totals $45,522.00 ($2,529.00 x 18 peak hour trips).

40. 105-26(E) The applicant must provide evidence in sufficient detail to demonstrate that there are no environmental concerns related to previous uses of the site.

	Section	Description
41.	105-27, 105-84	Where a proposed park, playground, school or other public use shown in the Comprehensive Plan is located in whole or in part in a subdivision or land development, the Board of Supervisors may require the dedication or reservation of such area within the subdivision or land development, in those cases in which the Board of Supervisors deems such requirements to be necessary. Please note that both the Comprehensive Plan and the 'Spring Mill Area Study'[1] call for amenities along the River in this location such as restrooms, fishing piers, non-motorized boat launches, and facilities for bike and boat rentals.
42.	105-28(A)	The plans should be revised to provide a roadway cross section consistent with the recommendations on Page 49 of the 'Spring Mill Area Study'.[1]
43.	105-32(A)	This section of the ordinance states that no more than eight lots may be permitted to front on a private street. A waiver must be obtained in order to allow more than eight lots to front on the private courts.
44.	105-32(D)	Courts A-D shall be owned and maintained by all abutting property owners. A homeowner's association or other legal entity approved by the Board of Supervisors shall be formed in order to properly administer such maintenance responsibilities.
45.	105-33(E)	The plans must be revised to provide additional detail at the connection points to Lee Street and Station Avenue. The approaches to an intersection shall follow a straight course for at least 50 feet for local streets and courts.
46.	105-34(C)	The Court profiles on Sheet C6.0 must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, which states that vertical curves shall be used at changes of grade exceeding 1%.
47.	105-35(A)	The plans must be revised to demonstrate that Lee Street and Station Avenue will intersect with Washington Street as nearly as possible at right angles.
48.	105-37	The control of grades, curvature and obstructions at intersections is required to ensure adequate sight distance for safe and efficient vehicular operation. Consider elimination of the proposed obstruction (Lot 40). Depict required sight lines for the various intersections along Washington Street (Courts A-D, Lee Street, Supplemental Parking Shared Access, SEPTA Driveways) on both the Record Plan and Landscaping Plan.
49.	105-38	The plans must be revised to provide appropriate regulatory signage and striping. The following, at a minimum, must be addressed: • Provide intersection control for the SEPTA driveway and Washington Street at Station Avenue • All proposed signs must be labeled, and dimensions included on the construction details. • All stop bars are to be a minimum of 4 feet from a crosswalk.

[1] http://www.whitemarshtwp.org/DocumentCenter/View/3323/Whitemarsh-Spring-Mill-Multi-Modal-and-Land-Use-Study---Final-Report

	Section	Description
50.	105-38	The plans must be revised to provide additional detail with regard to the connection of Washington Street with the existing driveway for the SEPTA parking lot. The plans must address the existing fencing across the driveway opening, and necessary transitions between existing and proposed curbing and pavement.
51.	105-38(C)	The applicant must obtain the approval of the Fire Marshal with regard to access for fire protection equipment.
52.	105-38(C)	This section of the ordinance requires curves/turns in entrance and exit drives and all internal parking lot aisles necessary for providing access for fire protection equipment to have a minimum inside turning radius of 25 feet and a minimum outside turning radius of 50 feet. The applicant shall submit plans using truck turning templates showing the required turning radii are provided for access to each building.
53.	105-38(M), 105-50(E)(1)	Entrances and exits to and from off-street parking areas shall be located so as to minimize interference with street traffic and driveways shall enter public streets at safe locations. The intersection of Washington Street, Court D and the SEPTA parking lot must be provided with appropriate signage and paving markings. Available sight distance at the intersection must be indicated, particularly for Eastbound vehicles approaching Court D.
54.	105-38(Q)	The plans must be revised to label all curb radii in order to demonstrate compliance with the requirements of this section of the ordinance, which states that no less than a five-foot radius of curvature shall be permitted for all curblines in parking areas.
55.	105-38(R)	The plans must be revised to provide adequate space for vehicles to back out of the end unit driveways. The truck turning exhibit appears to show the vehicle tires cross the curb line.
56.	105-38(W),	Where semiattached, attached or multiple dwellings are proposed and where private garages or driveways are proposed to meet the off street parking requirements, additional overflow off-street parking shall be provided in accordance with the following:

Access Drive or Cartway Width (feet)	Overflow Spaces Required
36 or greater	1 for each 4 dwelling units
Less than 36	4 for each 4 dwelling units

Section 116-282(E) of the Zoning Ordinance states that residential uses shall not be subject to the overflow parking requirements of Chapter 105, Subdivision and Land Development § 105-38W.

57.	105-38(U)	All common parking areas shall be adequately lighted during after-dark operating hours. Additional lighting is required for the parking lot west of Court A.
58.	105-39(A)	This section of the ordinance requires that all parking areas shall have at least one tree of three inches minimum caliper for every two parking spaces provided. The Landscape Requirements Table on Sheet C7.0 calculates the required number of trees based on 11 parking spaces, however, the plans show 21 parking spaces. This discrepancy must be resolved.

	Section	Description
59.	105-40(A)	Required off street loading facilities, must be designed so that each space shall be no less than 14 feet wide, 50 feet long, and 17 feet high, exclusive of drives and maneuvering space and located entirely on the lot being served. The plans must be revised to demonstrate compliance with this section of the ordinance.
60.	105-40(A)	The plans must be revised in order to demonstrate that there will be adequate maneuvering space for required off street loading facilities, such as moving trucks and package deliveries.
61.	105-46	The plans must be revised to clarify the pavement edge treatment of the Courts. Additionally, the proposed curbing along Court A must be revised to extend around the entire paved area.
62.	105-47	The plans must be revised to provide for pedestrian movements along Courts A-D, including egress to and from building entrances.
63.	105-47	The plans show 'proposed two sided "River Trail" with arrow signs" as being located in the middle of the sidewalk and trail, which should be relocated so as not to obstruct the pedestrian routes.
64.	105-47, 105-49	The plans must be revised provide sidewalks, pedestrian paths and crosswalks to provide safe access. All crosswalks shall be marked. The plans must be revised to address how pedestrians will be able to safely cross: • Court D between ADA ramps • Washington Street to access the SEPTA station • The intersection of Lee Street and Washington Street • The intersection of Station Avenue and Washington Street • The SEPTA rail line for access to the Schuylkill River Trail
65.	105-47(A)	Sidewalks shall be provided along Washington Street in accordance with sections 105-30, 105-47 and 105-73 of the Whitemarsh Township Code.
66.	105-47(B)	The minimum width of all sidewalks and pedestrian paths shall be five feet; in areas of higher pedestrian density, the minimum width of all sidewalks shall be eight feet.
67.	105-47(D)	The plans must be revised to include construction details and detailed designs at a scale of 1"=5' for all ADA Curb Ramps.
68.	105-47(H)	The grading plan must be revised to demonstrate that grade of the pedestrian path along the River, will not exceed a grade of 7% at the following locations: • At the point of connection with the central perpendicular trail • Along the River trail, between Units 23 and 29
69.	105-47(K)	In areas zoned Riverfront Development District, in the RDD-1 subdistrict, public riverfront access, perpendicular to the river, is required for all properties that have access to the river, and shall be subject to the following. Lighting fixtures, site furniture, and signage shall be of a style as recommended by the Planning Commission and approved by the Board of Supervisors.

	Section	Description
70.	105-50(A)	Access and circulation for fire-fighting and other emergency equipment, moving vans, fuel trucks, garbage collection, deliveries and snow removal shall be planned for efficient operation and convenience. The applicant shall submit plans using truck turning templates for trash pickup.
71.	105-50(C)(1), 105-50(C)(3)	While the plans show 21 overflow parking spaces, they do not appear to be convenient for the use by visitors of units 9-44. Access to the dwellings and circulation between buildings and other important project facilities for vehicular and pedestrian traffic shall be comfortable and convenient for the occupants. Walking distance from the main entrance of a building or single-family dwelling unit to a parking area shall be less than 100 feet. In no case shall the distance exceed 250 feet.
72.	105-50(C)(2)	The plans must be revised to indicate adequate access for fire-fighting and other emergency equipment, moving vans, fuel trucks, garbage collection, deliveries and snow removal.
73.	105-52	The plans show 'proposed chain link fence' between Washington Street and the rail lines. Any proposed buffer shall be of a style as recommended by the Planning Commission and approved by the Board of Supervisors. We also recommend coordination with SEPTA with regard to safety along the tracks.
74.	105-52, 105-83	All landscaping plans are subject to the review and recommendation of the Shade Tree Commission.
75.	105-53(D)	This section of the ordinance requires the dedication of land in the amount of 10% of the total Site Area for Park and/or Recreational use. The applicant has the option of offering a fee in lieu of dedicating actual land area and can also provide a combination of a fee in lieu and dedication of land. All offers of land and/or fees in lieu of dedication must meet the requirements of this section of the ordinance.
76.	105-56(A)(1)(b)	Cartways fewer than 30 feet shall be restricted to prohibit parking on both sides. The plans must be revised to provide appropriate regulatory signage.
77.	105-69(A)	The 'Storm Pipe Trench' detail on Sheet C9.1 must be revised to provide compacted 2A stone above stormwater piping up to pavement base course.
78.	105-69(C)	Along the existing street on which a subdivision or land development abuts, improvements shall be made to the street. The improvements to the boundary street shall be determined by the width of the required cartway and built to the specifications established by the Township.
79.	105-70	The plans must be revised to show street name, warning and regulatory signs, as required.
80.	105-72(A)	Monuments must be provided at all property line corners. Monuments shall be placed at each change in direction of a boundary along the street line; two to be placed at each street intersection and one on each side of any street at angle points and at the beginning and end of curves.

	Section	Description
81.	105-73	This section of the ordinance requires sidewalks to be constructed as required by sections 105-30 and 105-47. The plans must be revised to indicate the installation of sidewalks where required.
82.	105-76	The applicant must obtain a letter of approval from the Township Fire Marshal in order to ensure that adequate fire protection is provided.
83.	105-78	The applicant must obtain the approval of the Whitemarsh Township Authority with regard to proposed sanitary sewerage facilities.
84.	105-79	All preliminary plan submissions shall include a completed sewage facilities planning module (the planning module) for land development provided by DEP.
85.	105-81	All electric, telephone and communication service facilities, both main and service lines, shall be provided by underground cables, installed in accordance with the prevailing standards and practices of the utility and other companies providing such service. Final plans shall show locations of all utilities and shall be coordinated with landscaping.
86.	105-89	The developer shall enter into a written agreement with the Township in the manner and form approved by the Solicitor wherein the developer shall agree, to construct or cause to be constructed at his own expense all proposed improvements shown on the approved land development plan, all in strict accordance with the standards and specifications of the Township and within the time specified in said agreement, and to deposit with the Township financial security in an amount sufficient to cover the cost of all subdivision or land development improvements, including both public and private improvements.

FLOODPLAIN MANAGEMENT

	Section	Description
87.	101-9(C)(3)	Note 2 on Sheet 3.0 must be revised to state that the base flood elevation, as designated by FEMA Flood Insurance Maps and Surveys, is at an elevation of 58.5, and the lowest floor elevation and/or the elevation to which the structure would be floodproofed must be indicated.
88.	101-9(B)(2), 101-23(C)	The plans must be revised in order to demonstrate that all utilities and facilities, such as sewer, gas, electrical and water systems are located and constructed to minimize or eliminate flood damage.
89.	101-9(C)(4)(e)	The applicant must provide documentation, certified by a registered professional engineer, to show that the cumulative effect of any proposed development, when combined with all other existing and anticipated development, will not increase the base flood elevation at any point within the community.

	Section	Description
90.	101-9(C)(4)(f), 101-22(B), 101-22(C)	The applicant must provide a document, certified by a registered professional engineer or architect, which states that the proposed construction or development has been adequately designed to withstand the pressures, velocities, impact and uplift forces associated with the base flood. Such statement shall include a description of the type and extent of flood proofing measures which have been incorporated into the design of the structure and/or the development.
91.	101-9(C)(4)(g)	The applicant must indicate whether any materials or substances referred to in § 101-23F and §101-24 are intended to be used, produced, stored or otherwise maintained on site.
92.	101-17(A)(1)	The plans show proposed features within the floodway. This section of the ordinance states that no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted within the floodway area unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.
93.	101-17(A)(1)	In the Floodplain Conservation District, no development shall be permitted except where the effect of such development on flood heights is fully offset by accompanying improvements which have been approved by all appropriate local, state, and federal authorities as required. The applicant must provide evidence in sufficient detail to demonstrate compliance with the requirements of this section of the ordinance, such as the inclusion of a cut/fill analysis plan demonstrating there will be no net fill.
94.	101-17(A)(2)	The plans show several proposed features within the floodway. This section of the ordinance states that no new construction or development shall be allowed within the floodway area unless the appropriate approvals are obtained from the Army Corps of Engineers, Federal Emergency Management Agency, Pennsylvania Department of Environmental Protection and approved by the Township.
95.	101-23(H)	The plans must be revised to demonstrate that any structures, including fencing, signage, mechanical equipment and trash enclosures, shall be adequately anchored to prevent flotation, collapse, or lateral movement.

CHAPTER 55 - TREE PROTECTION STANDARDS

	Section	Description
96.	55-4(C)	This section of the ordinance requires that a tree survey plan and a landscape plan shall be prepared and reviewed by the Shade Tree Commission in a public meeting.
97.	55-4(A)(6)	Any tree lost or destroyed within the past five years must be shown on the Tree Survey Plan as a “Removed Tree” and must be replaced as part of the proposed project.
98.	55-4(C)	This section of the ordinance requires that a tree survey plan and a landscape plan shall be prepared and reviewed by the Shade Tree Commission in a public meeting.

	Section	Description
99.	55-4(D)(6)(A), 55-4(F)	The applicant is requesting relief from the requirements of these sections of the ordinance, which states that every living and healthy tree with a DBH of six inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new canopy trees, of a type and species approved by the Shade Tree Commission or its designee, with a trunk diameter of not less than three inches in caliper. The total caliper of replacement trees, measured at six inches above the ground line, shall equal or exceed the DBH of the removed trees. The waiver is being requested to allow a maximum of 40% of the replacement trees to be replaced with ornamental trees, in accordance with Section 55-4(F).
100.	55-4(B)	The applicant is requesting relief from the requirements of this section of the ordinance, which states that the removal of more than 33% of Trees, having a DBH of six inches or greater, on any Lot, shall not be permitted. The plans appear to show 85% of existing trees as proposed to be removed.
101.	55-4(B)(1)	Item #3 in the construction sequence must be revised to state that protective fencing to be placed around trees on the property prior to proceeding with any other activity.
102.	55-4(C)(4)(b)	The plans must be revised to show the location of tree protection fences, encompassing the dimensions of each root protection zone as established by one of the following two means, whichever is greater: [1] Calculated at 1.25 feet (radius) per one inch of (DBH) diameter breast height. [2] A circle with a radius extending from a tree's trunk to a point no less than the furthest crown dripline.
103.	55-4(A)(7)	Heritage trees and boundary trees shall be individually noted on the tree survey plan.
104.	55-4(D)(1)(a)	Detail 8 on Sheet C7.2 must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, which states that the protective fencing shall be at least six feet tall with two-inch mesh chain link fabric. Two-inch posts shall be tied with six-gauge aluminum wires at 24 inches on center. Posts shall be a minimum of two feet in the ground and space of 10 feet on center. Plastic zip ties may not be used in place of required six-gauge aluminum wire.
105.	55-4(D)(2)	Item #3 in the construction sequence must be revised to note that a pre-construction conference with the Township Shade Tree Commission's designee prior to start of construction.

GRADING, EROSION CONTROL, STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES ORDINANCE:

	Section	Description
106.	58-17(A)(2)(k)	The proposed grading of Rain Garden 1 must be revised to clearly show the berm at contour lines representing elevations 54 and 53.
107.	58-17(A)(2)(o)	Construction Details must be provided for the proposed stairs, including railings and fall protection. Adequate fall protection must also be provided along retaining walls.

	Section	Description
108.	58-17(A)(2)(p)	The plan must be revised to show the size, location and construction details of all existing and proposed storm drainage facilities. At a minimum, both existing and proposed pipe sizes, lengths, slopes and materials should be shown.
109.	58-17(A)(7)	The plans must be revised to include profile drawings of all stormwater management BMPs, including drainage structures, pipes, open channels, and swales.
110.	58-17(A)(18)	The stormwater management reports must be revised to indicate the numerical weighted curve number, instead of "WQ".
111.	58-18(2)	Since the limit of disturbance appears to be greater than one acre, the applicant must obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Pennsylvania Department of Environmental Protection. Once obtained, a copy must be submitted to the Township.
112.	58-23(A)	An as-built survey of all stormwater BMPs must be submitted to the Township in paper and digital (dwg) formats. A note must be added to the plans stating an as-built survey will be completed and submitted in both formats to the Township.
113.	58-24(K)(2)	Stormwater facilities shall be accessible to permit periodic maintenance and an access easement shall be provided to permit such access. The following blanket stormwater easement note, must be added to the plan: *'Stormwater facilities shall be owned and maintained by the property owner in perpetuity. The property owner shall provide a blanket stormwater access easement to the Township for the purpose of access to the stormwater facilities. If, in the judgment of the Township Engineer, the owner has failed to maintain the stormwater facilities in such a manner as to ensure their proper functioning, the Township after providing a written notice, shall have the right to enter upon the lands of the owner and to make any repairs as may be necessary to the stormwater facilities to ensure that such facilities function and perform in accordance with the design specifications. Any and all costs incurred by the Township for such repairs and/or maintenance shall be paid in full by the owner. A lien or liens may be placed against the property if the owner fails to remit payment within sixty (60) days.'*
114.	58-28(D)(16)	The plans must be revised to provide a tire cleaning area at <u>each</u> point of access to the project site.
115.	58-29(A)	No excavation shall be made with a cut face steeper than 3:1 unless a concrete, masonry, or other approved retaining wall designed by a Registered Professional Engineer experienced in structural engineering, and constructed in accordance with approved standards, is provided to support the face of the excavation. The following areas appear to create slopes exceeding 3:1, and must be revised: • The area adjacent to a retaining wall, at the end of Court D • In front of units 11 & 12 • The rear corner of Unit 45
116.	58-29(A)	Detailed plans and calculations, including all factors of safety, for all of the proposed retaining walls that are prepared, signed and sealed by a professional engineer licensed in the Commonwealth of Pennsylvania must be submitted to the Township for review. Constructible details and elevation views of all proposed retaining walls as well as the top and bottom of wall elevations must be added to the plans.

	Section	Description
117.	58-30(A)(8)	If in the course of reviewing the stormwater management plan, the Township Engineer determines that off-site improvements are necessary to satisfactorily control the stormwater from the site, the applicant shall be responsible for such off-site improvements.
118.	58-31(A)(16)	The applicant must submit legal descriptions for any proposed rights-of-way, easements, or lands to be offered for dedication.
119.	58-32(C)	Pipes shall be sized by the use of inlet/outlet control calculations. The applicant must submit inlet/outlet control calculations in order to demonstrate compliance with the requirements of this section of the ordinance.
120.	58-35(C)(3)(e)	Based on our review of the infiltration report the tested rates provided for design (38.53 inches per hour) exceed DEP Appendix C guidance for infiltration BMPs. The provided rates are not approved for use in the design. The design engineer shall clearly indicate how the data complies with the DEP guidance for infiltration rates and meets the appropriate standards for water quality protection.

Any future submission of the design plans for this project must be accompanied by a letter, prepared by the applicant's engineer, which addresses each of the comments contained in this report. Should you have any questions regarding this matter, please do not hesitate to contact me at this office.

Sincerely,

Krista Heinrich, PE
Township Engineer

c: Charles L. Guttenplan, AICP – Director of Planning and Zoning
Sean Kilkenny, Esq.; The Law Offices of Sean Kilkenny, LLC – Township Solicitor
David Landskroner, HT 1001 Washington, LLC – Applicant
Craig R. Lewis, Esq.– Applicant's Attorney
Herb Schultz– Applicant's Architect
James P. Bannon, Jr., PE – Applicant's Engineer

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EM&C RIGHT OF ENTRY REVIEW COMMENTS

Project: 1001 Washington St

Applicant: Hightop Development

Reviewer: Youssef Youssef

Date: 12/10/2024

ROE No. : Design Review

***A** - Approved* ***B** - Approved as Modified* ***C** - Disapproved* ***D** - Resolution Required* ***E** - Answer Provided*

Ref. No.	Page No.	EMC Reviewer	Drawing No./ Spec. Selection	Comments	Response	Final Disposition
1		ASB	All Plans	Not clearly showing SEPTA overhead catenary structures and its columns in the existing and proposed site plans. Clearly indicate all overhead catenary structures and its columns adjacent to the project site in all site plans. All SEPTA catenary structures, columns, signal huts and signals shall not be disturbed or undermined due to construction activities. Provide protection for SEPTA catenary structures, columns, signal huts and signals.		
2		SG		Confirm that no construction is taking place on SEPTA property and clearly show the SEPTA ROW lines on the plans.		
3		SG		How will the buildings and parking garage be demolished? Will cranes be used during demo/construction? Coordination with SEPTA may be required.		
4		SG		The plans currently do not include the existing pedestrian sidewalk on the north side of Washington Street. This sidewalk needs to be accurately represented on the plans. Will the sidewalk be removed as part of this project? How will pedestrian access be maintained in this area during construction?		
5		SG		Is all stormwater from within the LOD directed to inlets and captured in the 1001 property or is there some stormwater bypass that flows onto SEPTA property?		

EM&C RIGHT OF ENTRY REVIEW COMMENTS

Project: 1001 Washington St

Applicant: Hightop Development

Reviewer: Youssef Youssef

Date: 12/10/2024

ROE No. : Design Review

***A** - Approved* ***B** - Approved as Modified* ***C** - Disapproved* ***D** - Resolution Required* ***E** - Answer Provided*

Ref. No.	Page No.	EMC Reviewer	Drawing No./ Spec. Selection	Comments	Response	Final Disposition
6		SG		C6.0 – Clearly show the SEPTA ROW on plan and extend the 4 profiles to show the tie into SEPTA property.		
7		SG		Is the Lee Street crossing being closed during construction? Where will the traffic be detoured?		

1001 Washington Street Townhomes Traffic and Site Plan Discussion

April 16, 2025

Participants:

Greg Richardson, TPD
Damon Drummond, Gilmore
Kristin Norwood, Gilmore
Krista Heinrich, Gilmore
Jim Bannon, Nave Newell
Paige Glassman, TPD

Notes:

- Traffic counts were completed. TPD is intends to submit the traffic study to Township soon. The traffic study was conducted to be consistent with the 901 Washington Street study. Intersections included are as follows:
    - Hector Street and Lee Street
    - Hector Street and Station Avenue/North Lane
    - Hector Street and Barren Hill Road/Cedar Grove Lane
    - Cedar Grove Lane and Washington Street
    - Washington Street and Lee Street
- 901 Washington Street: 23 of the approved 62 townhomes constructed as of traffic counts. The development was included in the traffic study as background development.
- Washington Street is planned to be from the property's western boundary to Station Avenue.
    - Based on the counts that were conducted, existing traffic along Washington Street is low
    - The TPD traffic study assumes a redistribution of traffic from Hector Street to account for the Washington Street extension.
        - Based on other past studies completed by TPD, 10-15% of the traffic could potentially be diverted. Therefore, TPD redistributed 15% of Hector Street traffic onto Washington Street. Gilmore will review the projections and opine as to the reasonableness of the assumption.
    - Gilmore stated that the intersections of Hector Street/Cherry Street and Washington Street/Cherry Street may need to be included in the traffic study scope. Upon a formal review of the submitted traffic study, Gilmore will make a final determination whether these intersections should be included in a future submission.

- Based on its proximity to the SEPTA station, this development will be defined as a TOD. Consistent with the 901 Washington Street traffic study, TPD assumed a trip reduction (25%) for this multi-modal aspect.
- Due to the close proximity of the SEPTA train tracks and trail to Washington Street, a discussion was undertaken regarding the proposed traffic control its intersection with Lee Street intersection.
- TPD will consider revisiting the site-related traffic that is proposed to utilize Lee Street, specifically left turns from Lee Street to Washington Street
- Site Plan
    - The proposed parking indicated on the plan, on the south side of Washington Street, is the development's use only. The existing parking on the north side of Washington Street is for the SEPTA station. Additional SEPTA parking is provided further north on Station Avenue.
    - The David's Bridal parking garage will be eliminated.
    - A horizontal curve exists along Washington Street, which impacts the Court D driveway. Due to limited sight distance looking to the left, the plans have been designed to assume a three-way stop.
    - There are two (2) garage parking spaces proposed for each townhome. One additional car can be accommodated on each driveway. Overflow parking is provided on the south side of Washington Street across from the SEPTA parking, and on the west side of the site, which can be accessed via the 901 Washington Street access. An access easement exists between the 901 Washington Street development and David's Bridal.
- Station Avenue
    - Gilmore stated that the Township has existing concerns regarding high pedestrian/bike traffic in the area of the SEPTA station.
    - The existing Station Avenue "cul-de-sac" has high pedestrian and bike traffic. Adding vehicular traffic to the extension could create a safety issue.
    - A discussion was undertaken to consider limiting vehicular traffic along Station Avenue, or converting Washington Street to one-way between Lee Street and Station Avenue. Township staff to discuss further.
    - A fence is present along Washington Street next to Station Avenue.
        - The fence is on SEPTA property. The last 10 feet of the fence appear to be in the public ROW
    - The roadway that crosses the SEPTA tracks is most likely Station Avenue, owned by the Township. However, some research will be undertaken by the Township to determine if this section of roadway can be utilized by the public.

    - Gilmore questioned whether the applicant has coordinated with SEPTA to make them aware of the project. TPD/Nave were unsure of discussions to date.
    - TPD expressed concerns regarding the width of the connection between Station Avenue and the extended Washington Street. The presence of the SEPTA fence/David's Bridal privacy gates coupled with the narrow pavement width should be considered during the Township's Station Avenue/Washington Street usage/configuration discussion.
- Washington Street
    - Sidewalk is proposed by the applicant on the south side of Washington Street.
    - Gilmore questioned the future status of the paved trapezoidal area between Washington Street and the rail. This area was proposed by the 901 Washington Street project to provide vehicular and access around the David's Bridal building. Nave stated it would no longer be needed and removal of the pavement should be considered.
    - Washington Street is planned to have a 28 foot wide cartway, with two (2) 12 foot lanes and a 2 foot shoulders. This is consistent with the 901 Washington Street development.

APPENDIX B:
Study Area Photographs

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 1 Lee St & Hector St



Direction / Road: **NB Lee St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **NB Lee St**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 1 Lee St & Hector St



Direction / Road: **SB Lee St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **SB Lee St**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 1 Lee St & Hector St



Direction / Road: **EB Hector St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **EB Hector St**
Approach / Departure: Approach
Distance: 150 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 1 Lee St & Hector St



Direction / Road: **WB Hector St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **WB Hector St**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 2 North Lane-Station Ave & Hector St



Direction / Road: **NB North Lane**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **NB North Lane**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 2 North Lane-Station Ave & Hector St



Direction / Road: **SB Station Ave**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **SB Station Ave**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 2 North Lane-Station Ave & Hector St



Direction / Road: **EB Hector St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **EB Hector St**
Approach / Departure: Approach
Distance: 150 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 2 North Lane-Station Ave & Hector St



Direction / Road: **WB Hector St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **WB Hector St**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 3 Barren Hill Rs-Cedar Grove Ln & Hector St



Direction / Road: **NB Barren Hill RD**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **NB Barren Hill RD**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 3 Barren Hill Rs-Cedar Grove Ln & Hector St



Direction / Road: **SB Cedar Grove Lane**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **SB Cedar Grove Lane**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 3 Barren Hill Rs-Cedar Grove Ln & Hector St



Direction / Road: **EB Hector St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **EB Hector St**
Approach / Departure: Approach
Distance: 150 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 4 Cedar Gove Ln & Joshua Rd



Direction / Road: **NB Cedar Grove Lane**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **NB Cedar Grove Lane**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 4 Cedar Gove Ln & Joshua Rd



Direction / Road: **SB Cedar Grove Lane**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **SB Cedar Grove Lane**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 4 Cedar Gove Ln & Joshua Rd



Direction / Road: **WB Joshua Rd**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **WB Joshua Rd**
Approach / Departure: Approach
Distance: 150 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 5 Lee St & Washington St



Direction / Road: **SB Lee St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **SB Lee St**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 5 Lee St & Washington St



Direction / Road: **EB Washington St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **EB Washington St**
Approach / Departure: Approach
Distance: 200 Feet

Job #: HTOP.00002 *Date Taken:* 3-7-2025 *Intersection Of:* 5 Lee St & Washington St



Direction / Road: **WB Washington St**
Approach / Departure: Approach
Distance: 50 feet



Direction / Road: **WB Washington St**
Approach / Departure: Approach
Distance: 150 Feet

APPENDIX C:
Manual Traffic Count Printouts

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Count Name: 1 Lee St & Hector St
Site Code:
Start Date: 03/06/2025

Turning Movement Data

Start Time	Hector St Eastbound					Hector St Westbound					Lee St Northbound					Lee St Southbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
7:00 AM	5	118	1	0	124	1	65	15	0	81	1	0	3	1	4	11	2	1	0	14	223
7:15 AM	1	74	1	2	76	3	97	10	0	110	1	0	1	0	2	8	1	1	2	10	198
7:30 AM	0	90	1	2	91	4	99	9	2	112	0	2	2	1	4	6	1	2	1	9	216
7:45 AM	2	113	0	0	115	3	141	7	0	151	0	2	5	0	7	7	2	2	0	11	284
Hourly Total	8	395	3	4	406	11	402	41	2	454	2	4	11	2	17	32	6	6	3	44	921
8:00 AM	4	116	0	1	120	4	138	19	1	161	0	0	1	3	1	12	0	1	0	13	295
8:15 AM	2	86	0	7	88	7	149	21	0	177	1	0	3	3	4	7	2	0	2	9	278
8:30 AM	4	74	1	1	79	6	143	23	0	172	2	0	6	1	8	11	2	4	0	17	276
8:45 AM	2	78	1	4	81	6	105	27	2	138	2	1	4	1	7	11	0	1	1	12	238
Hourly Total	12	354	2	13	368	23	535	90	3	648	5	1	14	8	20	41	4	6	3	51	1087
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	1	154	3	8	158	4	89	2	0	95	2	0	11	0	13	16	0	8	6	24	290
4:15 PM	6	191	1	1	198	4	76	4	0	84	1	0	4	1	5	15	1	2	1	18	305
4:30 PM	0	189	3	3	192	8	77	7	0	92	2	0	4	0	6	12	2	4	1	18	308
4:45 PM	0	185	2	4	187	3	84	6	2	93	2	2	3	4	7	18	1	3	4	22	309
Hourly Total	7	719	9	16	735	19	326	19	2	364	7	2	22	5	31	61	4	17	12	82	1212
5:00 PM	2	170	1	12	173	4	103	7	0	114	2	0	12	6	14	34	2	5	5	41	342
5:15 PM	3	190	5	13	198	3	102	5	0	110	3	0	4	0	7	21	2	8	8	31	346
5:30 PM	1	183	5	9	189	7	81	12	1	100	3	1	12	2	16	13	0	2	6	15	320
5:45 PM	1	131	1	4	133	5	73	8	1	86	0	3	13	1	16	10	2	3	1	15	250
Hourly Total	7	674	12	38	693	19	359	32	2	410	8	4	41	9	53	78	6	18	20	102	1258
Grand Total	34	2142	26	71	2202	72	1622	182	9	1876	22	11	88	24	121	212	20	47	38	279	4478
Approach %	1.5	97.3	1.2	-	-	3.8	86.5	9.7	-	-	18.2	9.1	72.7	-	-	76.0	7.2	16.8	-	-	-
Total %	0.8	47.8	0.6	-	49.2	1.6	36.2	4.1	-	41.9	0.5	0.2	2.0	-	2.7	4.7	0.4	1.0	-	6.2	-
Lights	34	2094	26	-	2154	69	1587	180	-	1836	22	11	84	-	117	212	19	45	-	276	4383
% Lights	100.0	97.8	100.0	-	97.8	95.8	97.8	98.9	-	97.9	100.0	100.0	95.5	-	96.7	100.0	95.0	95.7	-	98.9	97.9
Other Vehicles	0	48	0	-	48	3	35	2	-	40	0	0	4	-	4	0	1	2	-	3	95
% Other Vehicles	0.0	2.2	0.0	-	2.2	4.2	2.2	1.1	-	2.1	0.0	0.0	4.5	-	3.3	0.0	5.0	4.3	-	1.1	2.1
Pedestrians	-	-	-	71	-	-	-	-	9	-	-	-	-	24	-	-	-	-	38	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Traffic Planning and Design, Inc
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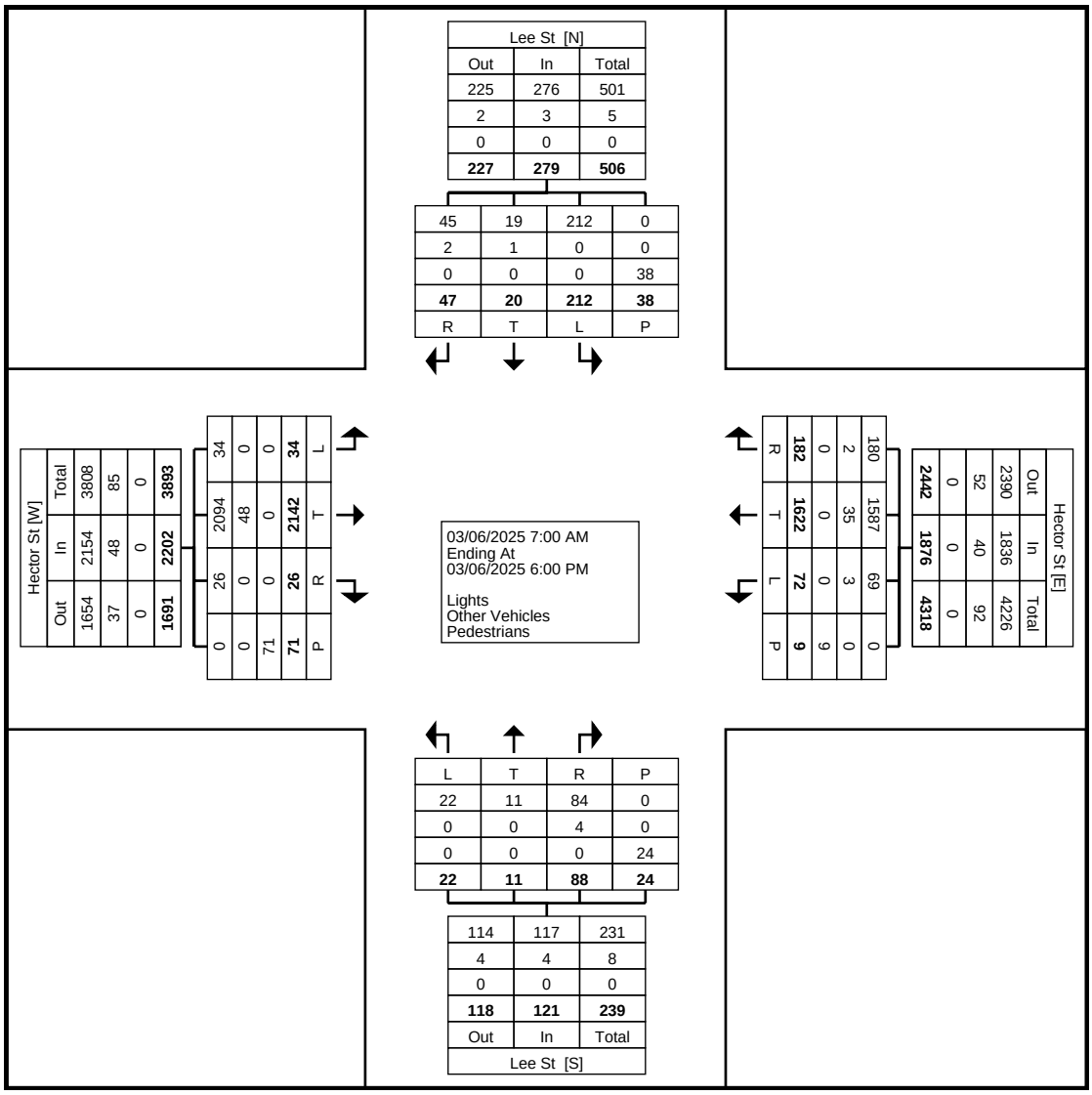
610.326.3100 jhudak@trafficpd.com

Count Name: 1 Lee St & Hector St
Site Code:
Start Date: 03/06/2025



Turning Movement Data Plot

Counted By: Mio:
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Count Name: 1 Lee St & Hector St
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Hector St Eastbound					Hector St Westbound					Lee St Northbound					Lee St Southbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
7:45 AM	2	113	0	0	115	3	141	7	0	151	0	2	5	0	7	7	2	2	0	11	284
8:00 AM	4	116	0	1	120	4	138	19	1	161	0	0	1	3	1	12	0	1	0	13	295
8:15 AM	2	86	0	7	88	7	149	21	0	177	1	0	3	3	4	7	2	0	2	9	278
8:30 AM	4	74	1	1	79	6	143	23	0	172	2	0	6	1	8	11	2	4	0	17	276
Total	12	389	1	9	402	20	571	70	1	661	3	2	15	7	20	37	6	7	2	50	1133
Approach %	3.0	96.8	0.2	-	-	3.0	86.4	10.6	-	-	15.0	10.0	75.0	-	-	74.0	12.0	14.0	-	-	-
Total %	1.1	34.3	0.1	-	35.5	1.8	50.4	6.2	-	58.3	0.3	0.2	1.3	-	1.8	3.3	0.5	0.6	-	4.4	-
PHF	0.750	0.838	0.250	-	0.838	0.714	0.958	0.761	-	0.934	0.375	0.250	0.625	-	0.625	0.771	0.750	0.438	-	0.735	0.960
Lights	12	375	1	-	388	19	560	69	-	648	3	2	14	-	19	37	6	6	-	49	1104
% Lights	100.0	96.4	100.0	-	96.5	95.0	98.1	98.6	-	98.0	100.0	100.0	93.3	-	95.0	100.0	100.0	85.7	-	98.0	97.4
Other Vehicles	0	14	0	-	14	1	11	1	-	13	0	0	1	-	1	0	0	1	-	1	29
% Other Vehicles	0.0	3.6	0.0	-	3.5	5.0	1.9	1.4	-	2.0	0.0	0.0	6.7	-	5.0	0.0	0.0	14.3	-	2.0	2.6
Pedestrians	-	-	-	9	-	-	-	-	1	-	-	-	-	7	-	-	-	-	2	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

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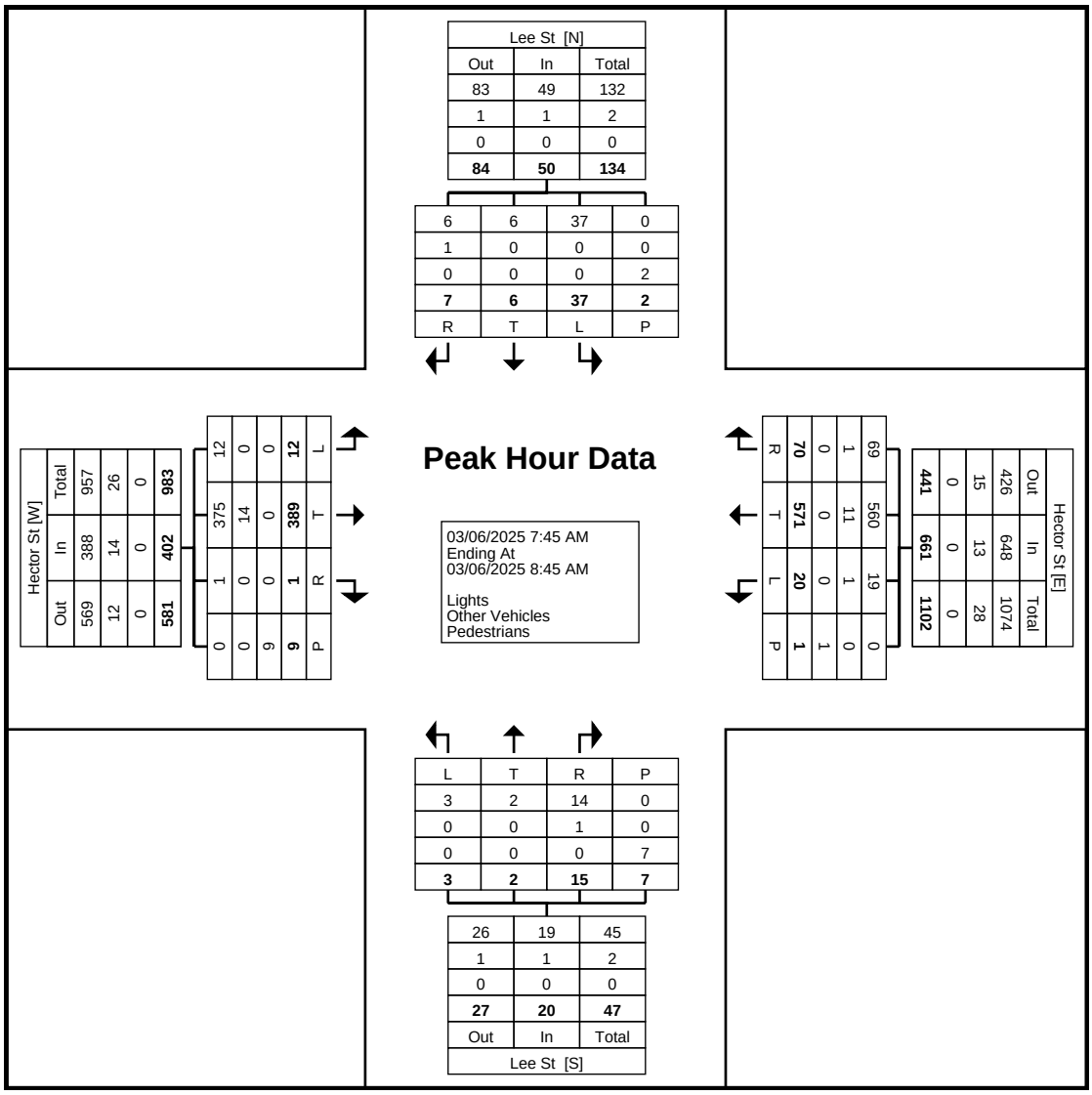

Turning Movement Peak Hour Data Plot (7:45 AM)

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Counted By: Mio:
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Weather:Clear:

Count Name: 1 Lee St & Hector St
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Hector St Eastbound					Hector St Westbound					Lee St Northbound					Lee St Southbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
4:45 PM	0	185	2	4	187	3	84	6	2	93	2	2	3	4	7	18	1	3	4	22	309
5:00 PM	2	170	1	12	173	4	103	7	0	114	2	0	12	6	14	34	2	5	5	41	342
5:15 PM	3	190	5	13	198	3	102	5	0	110	3	0	4	0	7	21	2	8	8	31	346
5:30 PM	1	183	5	9	189	7	81	12	1	100	3	1	12	2	16	13	0	2	6	15	320
Total	6	728	13	38	747	17	370	30	3	417	10	3	31	12	44	86	5	18	23	109	1317
Approach %	0.8	97.5	1.7	-	-	4.1	88.7	7.2	-	-	22.7	6.8	70.5	-	-	78.9	4.6	16.5	-	-	-
Total %	0.5	55.3	1.0	-	56.7	1.3	28.1	2.3	-	31.7	0.8	0.2	2.4	-	3.3	6.5	0.4	1.4	-	8.3	-
PHF	0.500	0.958	0.650	-	0.943	0.607	0.898	0.625	-	0.914	0.833	0.375	0.646	-	0.688	0.632	0.625	0.563	-	0.665	0.952
Lights	6	723	13	-	742	17	365	30	-	412	10	3	31	-	44	86	5	18	-	109	1307
% Lights	100.0	99.3	100.0	-	99.3	100.0	98.6	100.0	-	98.8	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	-	100.0	99.2
Other Vehicles	0	5	0	-	5	0	5	0	-	5	0	0	0	-	0	0	0	0	-	0	10
% Other Vehicles	0.0	0.7	0.0	-	0.7	0.0	1.4	0.0	-	1.2	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.8
Pedestrians	-	-	-	38	-	-	-	-	3	-	-	-	-	12	-	-	-	-	23	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

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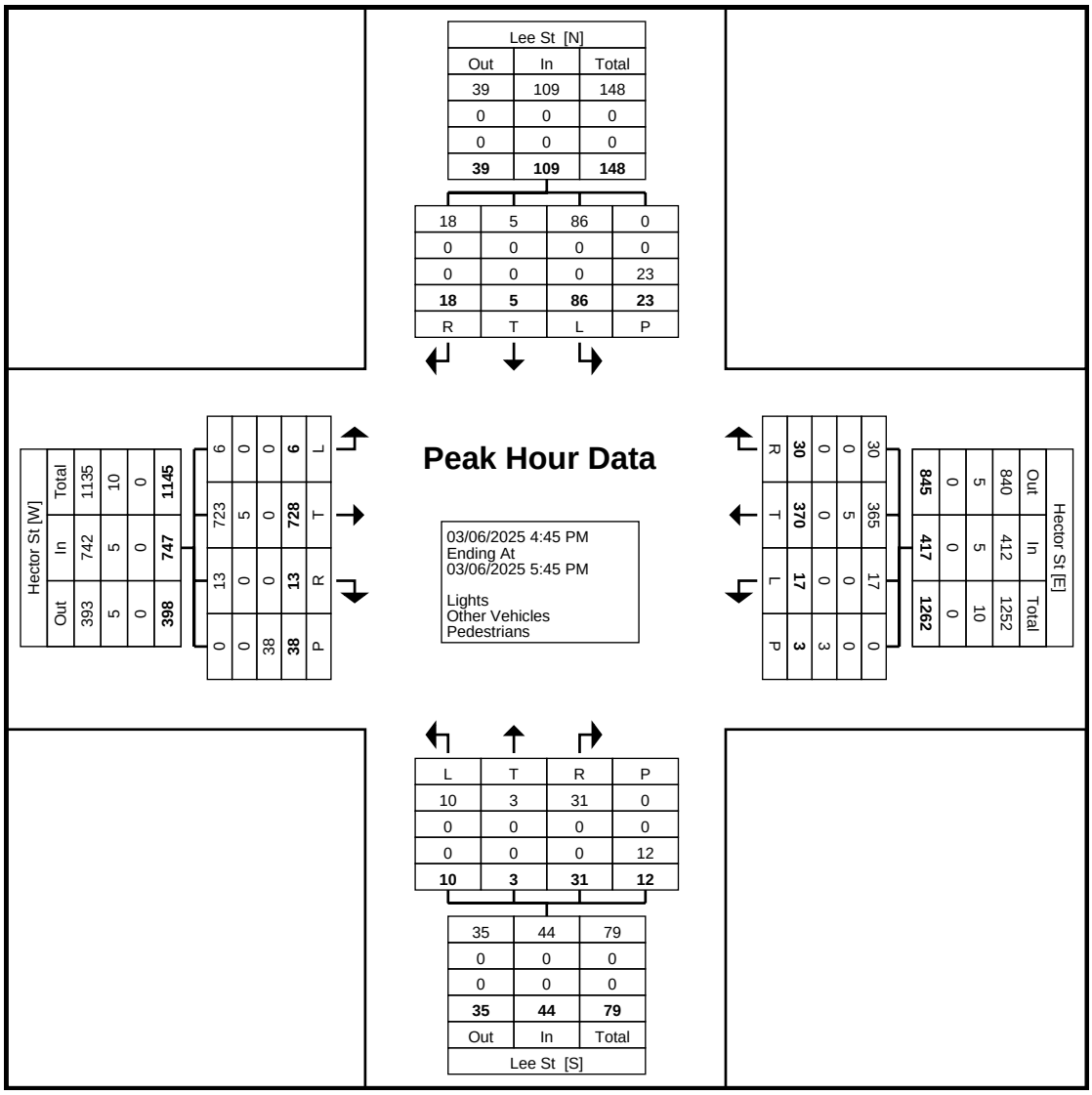
Weather:Clear:

Count Name: 1 Lee St & Hector St
Site Code:
Start Date: 03/06/2025



Turning Movement Peak Hour Data Plot (4:45 PM)

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Count Name: 2 North Lane - Station Ave & Hector St
Site Code:
Start Date: 03/06/2025

Turning Movement Data

Start Time	Hector St Eastbound						Hector St Westbound						Station Ave Northbound						North Lane 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	33	95	3	0	0	131	3	70	8	0	1	81	0	3	0	0	0	3	12	9	13	1	1	35	250
7:15 AM	27	63	0	0	2	90	2	96	15	0	2	113	4	4	5	0	1	13	13	7	10	0	1	30	246
7:30 AM	21	77	2	0	3	100	1	99	16	1	1	117	1	3	0	0	0	4	27	5	11	3	0	46	267
7:45 AM	31	90	2	0	5	123	1	146	17	0	0	164	2	10	2	1	2	15	19	9	15	0	0	43	345
Hourly Total	112	325	7	0	10	444	7	411	56	1	4	475	7	20	7	1	3	35	71	30	49	4	2	154	1108
8:00 AM	31	98	3	0	0	132	2	142	34	0	4	178	3	7	0	0	2	10	14	4	17	0	0	35	355
8:15 AM	27	75	4	0	2	106	1	147	20	2	0	170	3	5	1	0	0	9	19	2	23	2	0	46	331
8:30 AM	26	63	3	0	2	92	0	153	22	0	3	175	3	4	0	0	3	7	13	8	16	0	0	37	311
8:45 AM	25	66	1	0	1	92	2	119	15	1	0	137	3	2	1	0	0	6	9	2	23	0	0	34	269
Hourly Total	109	302	11	0	5	422	5	561	91	3	7	660	12	18	2	0	5	32	55	16	79	2	0	152	1266
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	23	158	2	0	2	183	3	77	14	0	4	94	0	8	3	1	1	12	15	4	18	1	0	38	327
4:15 PM	26	183	1	0	1	210	7	67	14	0	0	88	2	2	1	0	0	5	22	8	17	4	0	51	354
4:30 PM	17	183	0	0	4	200	12	75	24	0	4	111	1	13	6	0	2	20	20	7	10	4	0	41	372
4:45 PM	27	186	0	0	6	213	9	75	18	0	0	102	0	4	0	0	0	4	20	7	11	2	0	40	359
Hourly Total	93	710	3	0	13	806	31	294	70	0	8	395	3	27	10	1	3	41	77	26	56	11	0	170	1412
5:00 PM	25	175	2	0	2	202	3	77	18	0	11	98	2	9	4	0	1	15	33	5	24	3	0	65	380
5:15 PM	32	193	1	0	0	226	5	102	10	0	2	117	1	5	2	0	0	8	28	7	14	0	0	49	400
5:30 PM	31	172	3	0	0	206	1	76	15	0	2	92	6	18	2	0	0	26	27	6	21	0	0	54	378
5:45 PM	29	123	1	0	0	153	6	55	5	0	1	66	3	3	2	0	1	8	22	8	26	1	0	57	284
Hourly Total	117	663	7	0	2	787	15	310	48	0	16	373	12	35	10	0	2	57	110	26	85	4	0	225	1442
Grand Total	431	2000	28	0	30	2459	58	1576	265	4	35	1903	34	100	29	2	13	165	313	98	269	21	2	701	5228
Approach %	17.5	81.3	1.1	0.0	-	-	3.0	82.8	13.9	0.2	-	-	20.6	60.6	17.6	1.2	-	-	44.7	14.0	38.4	3.0	-	-	-
Total %	8.2	38.3	0.5	0.0	-	47.0	1.1	30.1	5.1	0.1	-	36.4	0.7	1.9	0.6	0.0	-	3.2	6.0	1.9	5.1	0.4	-	13.4	-
Lights	422	1960	28	0	-	2410	58	1546	259	4	-	1867	34	99	29	2	-	164	302	98	264	21	-	685	5126
% Lights	97.9	98.0	100.0	-	-	98.0	100.0	98.1	97.7	100.0	-	98.1	100.0	99.0	100.0	100.0	-	99.4	96.5	100.0	98.1	100.0	-	97.7	98.0
Other Vehicles	9	40	0	0	-	49	0	30	6	0	-	36	0	1	0	0	-	1	11	0	5	0	-	16	102
% Other Vehicles	2.1	2.0	0.0	-	-	2.0	0.0	1.9	2.3	0.0	-	1.9	0.0	1.0	0.0	0.0	-	0.6	3.5	0.0	1.9	0.0	-	2.3	2.0
Pedestrians	-	-	-	-	30	-	-	-	-	-	35	-	-	-	-	-	13	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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Count Name: 2 North Lane - Station Ave & Hector St
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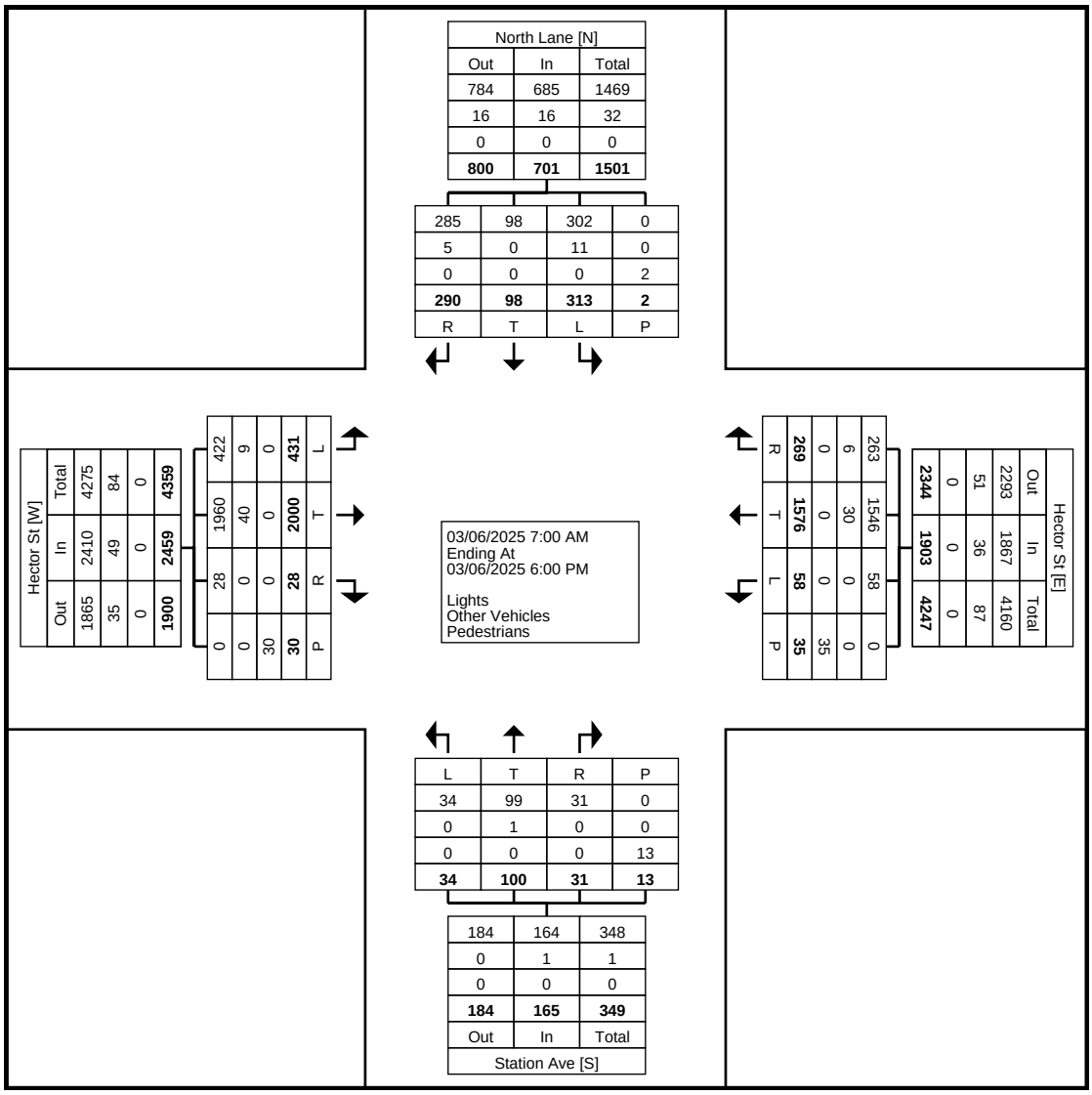

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Turning Movement Peak Hour Data (7:45 AM)

Start Time	Hector St Eastbound						Hector St Westbound						Station Ave Northbound						North Lane 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	
7:45 AM	31	90	2	0	5	123	1	146	17	0	0	164	2	10	2	1	2	15	19	9	15	0	0	43	345
8:00 AM	31	98	3	0	0	132	2	142	34	0	4	178	3	7	0	0	2	10	14	4	17	0	0	35	355
8:15 AM	27	75	4	0	2	106	1	147	20	2	0	170	3	5	1	0	0	9	19	2	23	2	0	46	331
8:30 AM	26	63	3	0	2	92	0	153	22	0	3	175	3	4	0	0	3	7	13	8	16	0	0	37	311
Total	115	326	12	0	9	453	4	588	93	2	7	687	11	26	3	1	7	41	65	23	71	2	0	161	1342
Approach %	25.4	72.0	2.6	0.0	-	-	0.6	85.6	13.5	0.3	-	-	26.8	63.4	7.3	2.4	-	-	40.4	14.3	44.1	1.2	-	-	-
Total %	8.6	24.3	0.9	0.0	-	33.8	0.3	43.8	6.9	0.1	-	51.2	0.8	1.9	0.2	0.1	-	3.1	4.8	1.7	5.3	0.1	-	12.0	-
PHF	0.927	0.832	0.750	0.000	-	0.858	0.500	0.961	0.684	0.250	-	0.965	0.917	0.650	0.375	0.250	-	0.683	0.855	0.639	0.772	0.250	-	0.875	0.945
Lights	114	312	12	0	-	438	4	577	92	2	-	675	11	25	3	1	-	40	59	23	70	2	-	154	1307
% Lights	99.1	95.7	100.0	-	-	96.7	100.0	98.1	98.9	100.0	-	98.3	100.0	96.2	100.0	100.0	-	97.6	90.8	100.0	98.6	100.0	-	95.7	97.4
Other Vehicles	1	14	0	0	-	15	0	11	1	0	-	12	0	1	0	0	-	1	6	0	1	0	-	7	35
% Other Vehicles	0.9	4.3	0.0	-	-	3.3	0.0	1.9	1.1	0.0	-	1.7	0.0	3.8	0.0	0.0	-	2.4	9.2	0.0	1.4	0.0	-	4.3	2.6
Pedestrians	-	-	-	-	9	-	-	-	-	-	7	-	-	-	-	-	7	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

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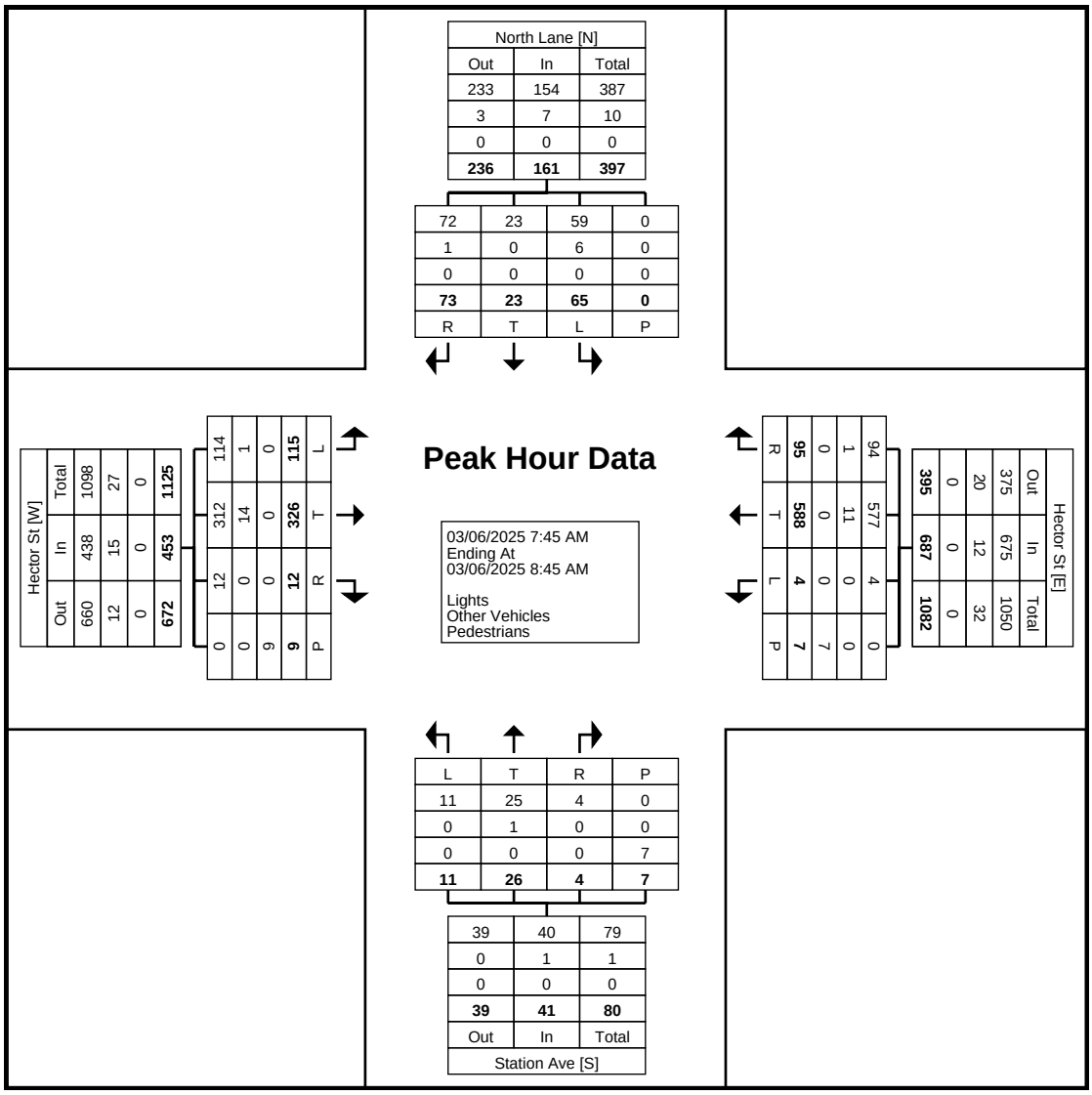

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Site Code:
Start Date: 03/06/2025

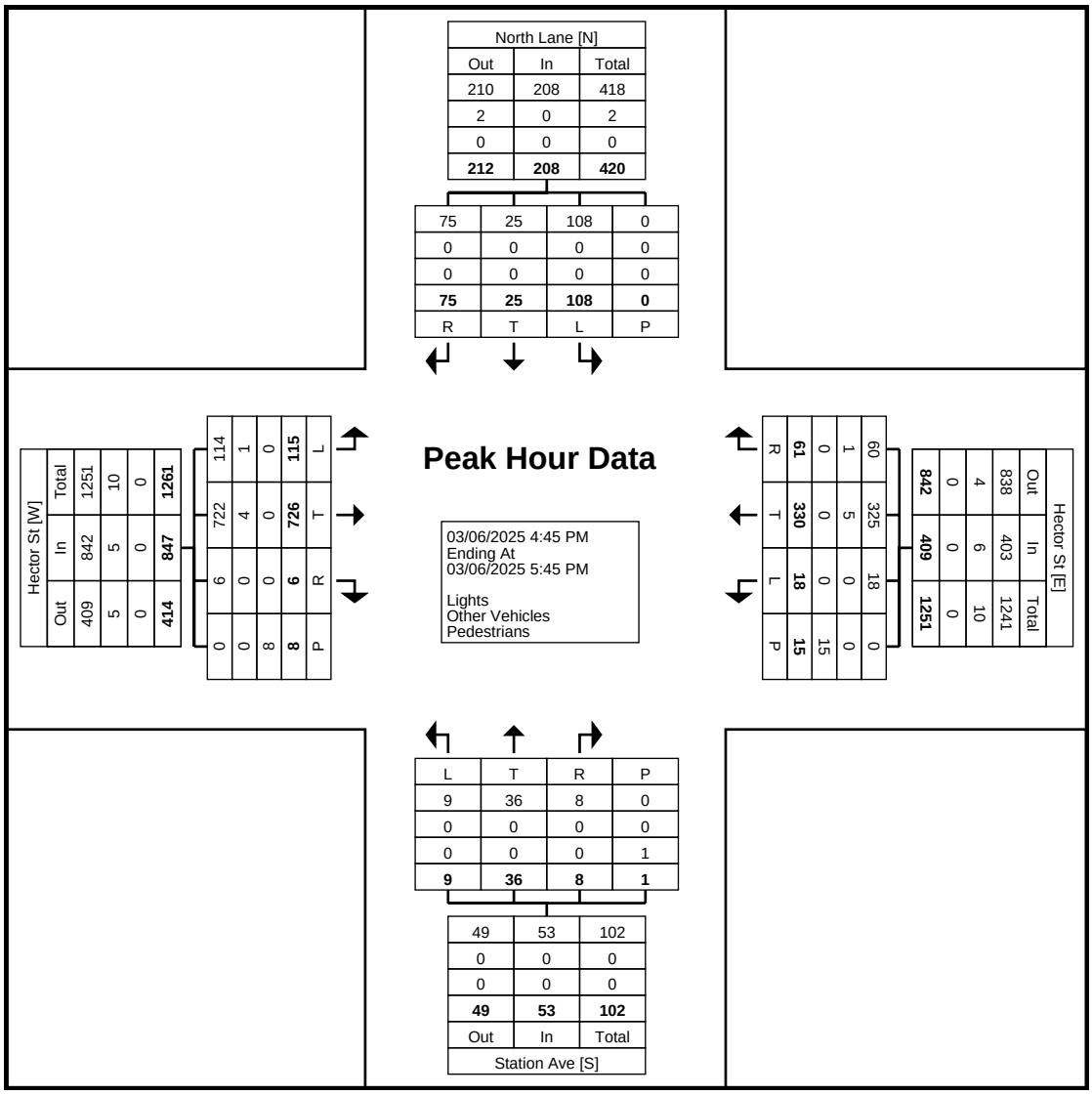
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Hector St Eastbound						Hector St Westbound						Station Ave Northbound						North Lane Southbound						Int. Total
	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	
4:45 PM	27	186	0	0	6	213	9	75	18	0	0	102	0	4	0	0	0	4	20	7	11	2	0	40	359
5:00 PM	25	175	2	0	2	202	3	77	18	0	11	98	2	9	4	0	1	15	33	5	24	3	0	65	380
5:15 PM	32	193	1	0	0	226	5	102	10	0	2	117	1	5	2	0	0	8	28	7	14	0	0	49	400
5:30 PM	31	172	3	0	0	206	1	76	15	0	2	92	6	18	2	0	0	26	27	6	21	0	0	54	378
Total	115	726	6	0	8	847	18	330	61	0	15	409	9	36	8	0	1	53	108	25	70	5	0	208	1517
Approach %	13.6	85.7	0.7	0.0	-	-	4.4	80.7	14.9	0.0	-	-	17.0	67.9	15.1	0.0	-	-	51.9	12.0	33.7	2.4	-	-	-
Total %	7.6	47.9	0.4	0.0	-	55.8	1.2	21.8	4.0	0.0	-	27.0	0.6	2.4	0.5	0.0	-	3.5	7.1	1.6	4.6	0.3	-	13.7	-
PHF	0.898	0.940	0.500	0.000	-	0.937	0.500	0.809	0.847	0.000	-	0.874	0.375	0.500	0.500	0.000	-	0.510	0.818	0.893	0.729	0.417	-	0.800	0.948
Lights	114	722	6	0	-	842	18	325	60	0	-	403	9	36	8	0	-	53	108	25	70	5	-	208	1506
% Lights	99.1	99.4	100.0	-	-	99.4	100.0	98.5	98.4	-	-	98.5	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	100.0	-	100.0	99.3
Other Vehicles	1	4	0	0	-	5	0	5	1	0	-	6	0	0	0	0	-	0	0	0	0	0	-	0	11
% Other Vehicles	0.9	0.6	0.0	-	-	0.6	0.0	1.5	1.6	-	-	1.5	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.7
Pedestrians	-	-	-	-	8	-	-	-	-	-	15	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 2 North Lane - Station Ave & Hector St
Site Code:
Start Date: 03/06/2025



Turning Movement Peak Hour Data Plot (4:45 PM)

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Count Name: 3 Baren Hill Rd-Cedar Grove Ln & Hector St
Site Code:
Start Date: 03/06/2025

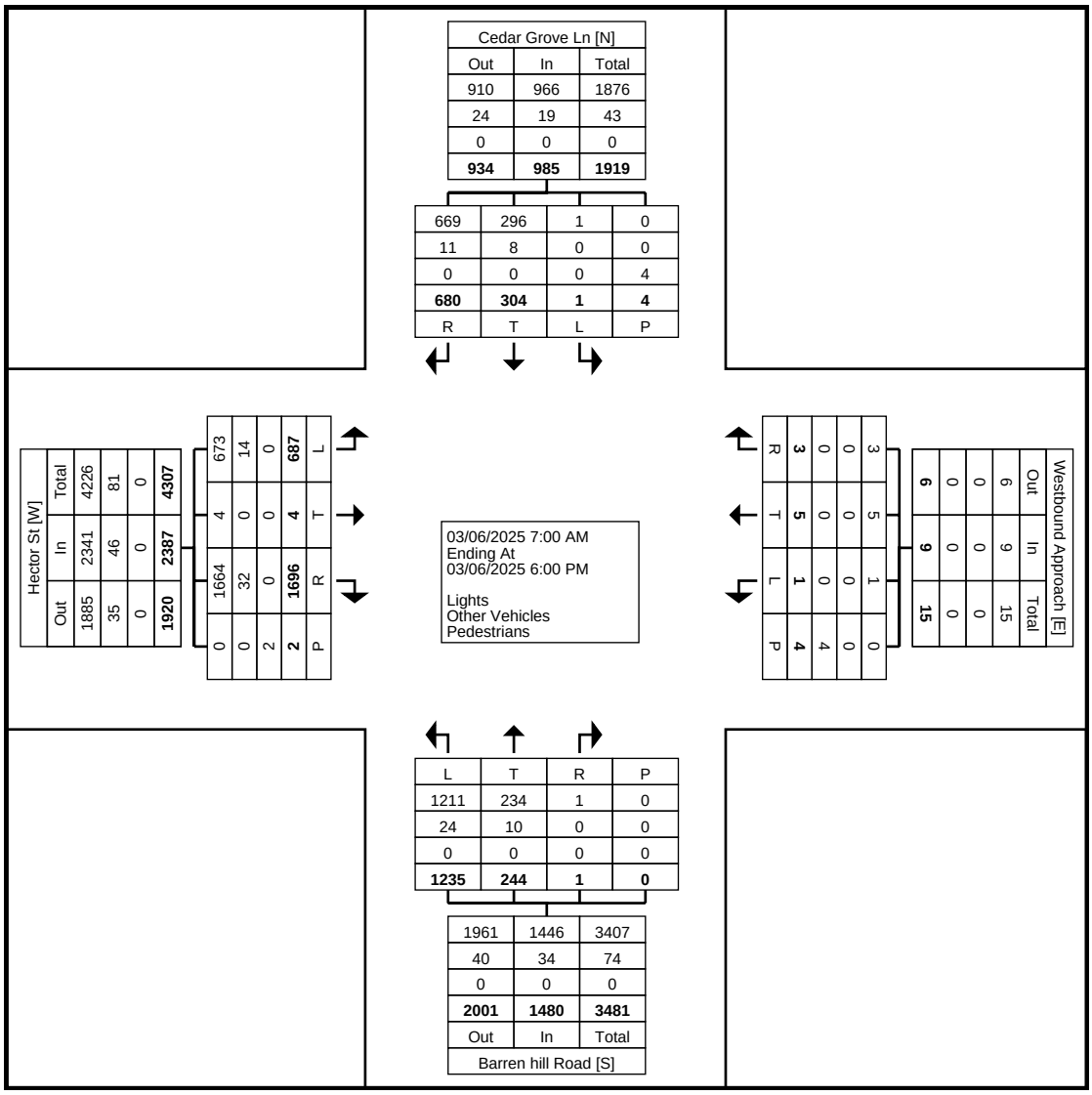
Turning Movement Data

Start Time	Hector St Eastbound						Westbound Approach Westbound						Barren hill Road Northbound						Cedar Grove Ln 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	33	0	34	36	0	103	0	0	0	0	0	0	67	7	0	0	0	74	0	20	23	4	0	47	224
7:15 AM	32	0	26	23	2	81	0	0	0	0	0	0	72	14	0	0	0	86	0	16	24	7	0	47	214
7:30 AM	23	2	40	41	0	106	0	0	0	0	0	0	83	10	0	0	0	93	0	29	40	2	0	71	270
7:45 AM	22	1	44	47	0	114	0	0	0	0	0	0	113	21	0	0	0	134	0	33	63	0	0	96	344
Hourly Total	110	3	144	147	2	404	0	0	0	0	0	0	335	52	0	0	0	387	0	98	150	13	0	261	1052
8:00 AM	28	0	29	49	0	106	0	0	0	0	0	0	135	16	0	1	0	152	1	29	52	11	0	93	351
8:15 AM	29	0	34	32	0	95	0	1	0	1	1	2	133	22	0	0	0	155	0	20	39	3	1	62	314
8:30 AM	24	0	20	28	0	72	0	0	0	0	0	0	106	16	0	0	0	122	0	10	52	11	0	73	267
8:45 AM	26	0	26	30	0	82	0	1	0	0	0	1	93	12	0	0	0	105	0	13	36	7	0	56	244
Hourly Total	107	0	109	139	0	355	0	2	0	1	1	3	467	66	0	1	0	534	1	72	179	32	1	284	1176
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	59	0	62	60	0	181	0	0	1	0	0	1	50	19	0	0	0	69	0	16	26	8	0	50	301
4:15 PM	62	0	65	87	0	214	0	0	0	0	0	0	48	10	0	0	0	58	0	11	36	7	0	54	326
4:30 PM	46	1	58	106	0	211	0	3	0	0	1	3	62	21	0	0	0	83	0	12	30	8	1	50	347
4:45 PM	56	0	73	87	0	216	1	0	1	0	2	2	62	9	0	0	0	71	0	17	26	5	2	48	337
Hourly Total	223	1	258	340	0	822	1	3	2	0	3	6	222	59	0	0	0	281	0	56	118	28	3	202	1311
5:00 PM	64	0	124	29	0	217	0	0	0	0	0	0	58	19	0	0	0	77	0	30	42	2	0	74	368
5:15 PM	66	0	116	50	0	232	0	0	0	0	0	0	67	14	0	0	0	81	0	18	40	4	0	62	375
5:30 PM	67	0	90	50	0	207	0	0	0	0	0	0	49	20	0	0	0	69	0	17	38	0	0	55	331
5:45 PM	50	0	65	35	0	150	0	0	0	0	0	0	37	14	0	0	0	51	0	13	22	12	0	47	248
Hourly Total	247	0	395	164	0	806	0	0	0	0	0	0	211	67	0	0	0	278	0	78	142	18	0	238	1322
Grand Total	687	4	906	790	2	2387	1	5	2	1	4	9	1235	244	0	1	0	1480	1	304	589	91	4	985	4861
Approach %	28.8	0.2	38.0	33.1	-	-	11.1	55.6	22.2	11.1	-	-	83.4	16.5	0.0	0.1	-	-	0.1	30.9	59.8	9.2	-	-	-
Total %	14.1	0.1	18.6	16.3	-	49.1	0.0	0.1	0.0	0.0	-	0.2	25.4	5.0	0.0	0.0	-	30.4	0.0	6.3	12.1	1.9	-	20.3	-
Lights	673	4	893	771	-	2341	1	5	2	1	-	9	1211	234	0	1	-	1446	1	296	580	89	-	966	4762
% Lights	98.0	100.0	98.6	97.6	-	98.1	100.0	100.0	100.0	100.0	-	100.0	98.1	95.9	-	100.0	-	97.7	100.0	97.4	98.5	97.8	-	98.1	98.0
Other Vehicles	14	0	13	19	-	46	0	0	0	0	-	0	24	10	0	0	-	34	0	8	9	2	-	19	99
% Other Vehicles	2.0	0.0	1.4	2.4	-	1.9	0.0	0.0	0.0	0.0	-	0.0	1.9	4.1	-	0.0	-	2.3	0.0	2.6	1.5	2.2	-	1.9	2.0
Pedestrians	-	-	-	-	2	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 3 Baren Hill Rd-Cedar Grove Ln & Hector St
Site Code:
Start Date: 03/06/2025



Turning Movement Data Plot

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
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610.326.3100 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 3 Baren Hill Rd-Cedar Grove Ln & Hector St
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Hector St Eastbound						Westbound Approach Westbound						Barren hill Road Northbound						Cedar Grove Ln 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	23	2	40	41	0	106	0	0	0	0	0	0	83	10	0	0	0	93	0	29	40	2	0	71	270
7:45 AM	22	1	44	47	0	114	0	0	0	0	0	0	113	21	0	0	0	134	0	33	63	0	0	96	344
8:00 AM	28	0	29	49	0	106	0	0	0	0	0	0	135	16	0	1	0	152	1	29	52	11	0	93	351
8:15 AM	29	0	34	32	0	95	0	1	0	1	1	2	133	22	0	0	0	155	0	20	39	3	1	62	314
Total	102	3	147	169	0	421	0	1	0	1	1	2	464	69	0	1	0	534	1	111	194	16	1	322	1279
Approach %	24.2	0.7	34.9	40.1	-	-	0.0	50.0	0.0	50.0	-	-	86.9	12.9	0.0	0.2	-	-	0.3	34.5	60.2	5.0	-	-	-
Total %	8.0	0.2	11.5	13.2	-	32.9	0.0	0.1	0.0	0.1	-	0.2	36.3	5.4	0.0	0.1	-	41.8	0.1	8.7	15.2	1.3	-	25.2	-
PHF	0.879	0.375	0.835	0.862	-	0.923	0.000	0.250	0.000	0.250	-	0.250	0.859	0.784	0.000	0.250	-	0.861	0.250	0.841	0.770	0.364	-	0.839	0.911
Lights	98	3	142	161	-	404	0	1	0	1	-	2	456	65	0	1	-	522	1	105	190	15	-	311	1239
% Lights	96.1	100.0	96.6	95.3	-	96.0	-	100.0	-	100.0	-	100.0	98.3	94.2	-	100.0	-	97.8	100.0	94.6	97.9	93.8	-	96.6	96.9
Other Vehicles	4	0	5	8	-	17	0	0	0	0	-	0	8	4	0	0	-	12	0	6	4	1	-	11	40
% Other Vehicles	3.9	0.0	3.4	4.7	-	4.0	-	0.0	-	0.0	-	0.0	1.7	5.8	-	0.0	-	2.2	0.0	5.4	2.1	6.3	-	3.4	3.1
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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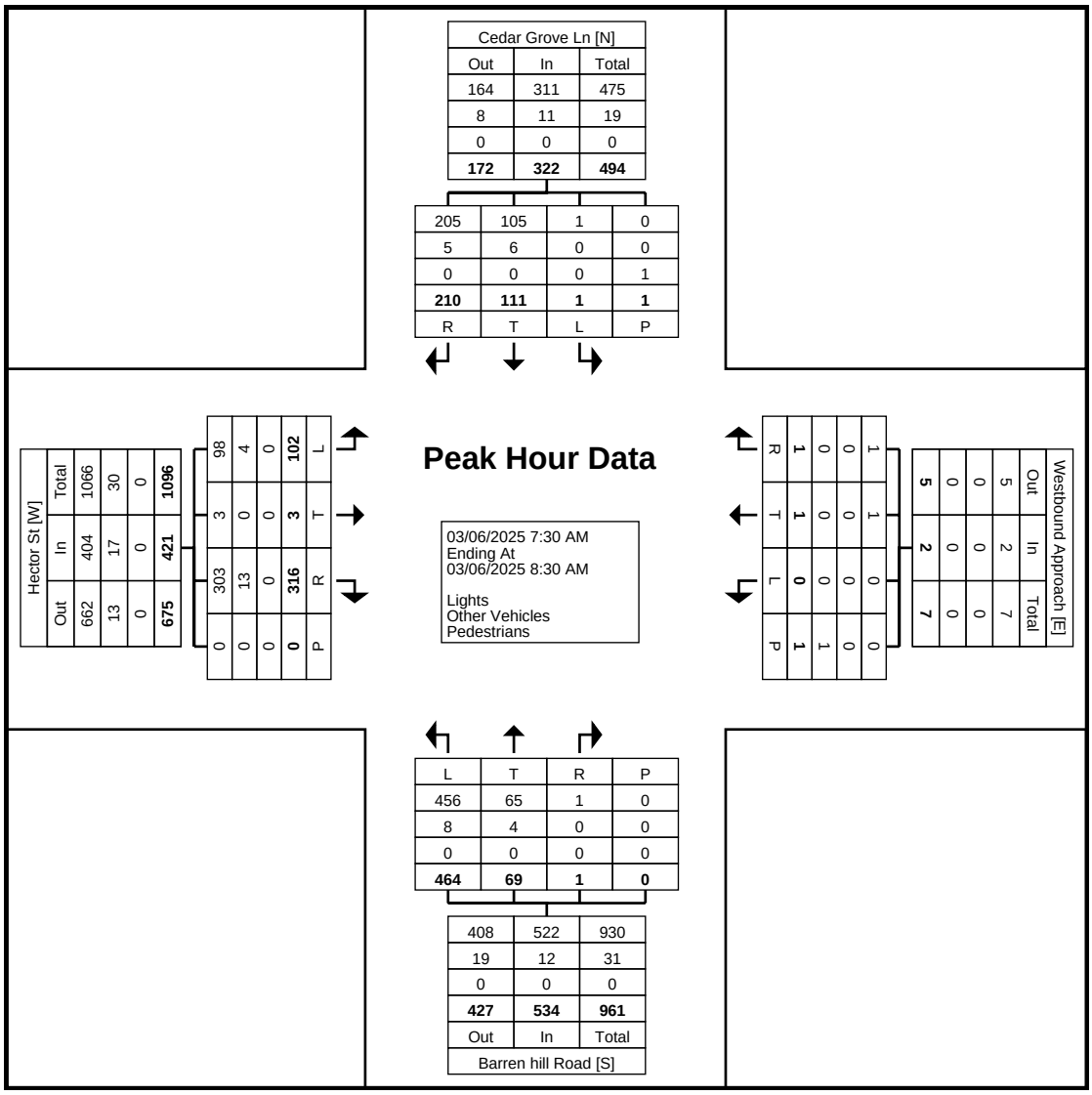
Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 3 Baren Hill Rd-Cedar Grove Ln & Hector St
Site Code:
Start Date: 03/06/2025



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

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 3 Baren Hill Rd-Cedar Grove Ln & Hector St
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Hector St Eastbound						Westbound Approach Westbound						Barren hill Road Northbound						Cedar Grove Ln 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	46	1	58	106	0	211	0	3	0	0	1	3	62	21	0	0	0	83	0	12	30	8	1	50	347
4:45 PM	56	0	73	87	0	216	1	0	1	0	2	2	62	9	0	0	0	71	0	17	26	5	2	48	337
5:00 PM	64	0	124	29	0	217	0	0	0	0	0	0	58	19	0	0	0	77	0	30	42	2	0	74	368
5:15 PM	66	0	116	50	0	232	0	0	0	0	0	0	67	14	0	0	0	81	0	18	40	4	0	62	375
Total	232	1	371	272	0	876	1	3	1	0	3	5	249	63	0	0	0	312	0	77	138	19	3	234	1427
Approach %	26.5	0.1	42.4	31.1	-	-	20.0	60.0	20.0	0.0	-	-	79.8	20.2	0.0	0.0	-	-	0.0	32.9	59.0	8.1	-	-	-
Total %	16.3	0.1	26.0	19.1	-	61.4	0.1	0.2	0.1	0.0	-	0.4	17.4	4.4	0.0	0.0	-	21.9	0.0	5.4	9.7	1.3	-	16.4	-
PHF	0.879	0.250	0.748	0.642	-	0.944	0.250	0.250	0.250	0.000	-	0.417	0.929	0.750	0.000	0.000	-	0.940	0.000	0.642	0.821	0.594	-	0.791	0.951
Lights	231	1	370	271	-	873	1	3	1	0	-	5	242	63	0	0	-	305	0	76	137	19	-	232	1415
% Lights	99.6	100.0	99.7	99.6	-	99.7	100.0	100.0	100.0	-	-	100.0	97.2	100.0	-	-	-	97.8	-	98.7	99.3	100.0	-	99.1	99.2
Other Vehicles	1	0	1	1	-	3	0	0	0	0	-	0	7	0	0	0	-	7	0	1	1	0	-	2	12
% Other Vehicles	0.4	0.0	0.3	0.4	-	0.3	0.0	0.0	0.0	-	-	0.0	2.8	0.0	-	-	-	2.2	-	1.3	0.7	0.0	-	0.9	0.8
Pedestrians	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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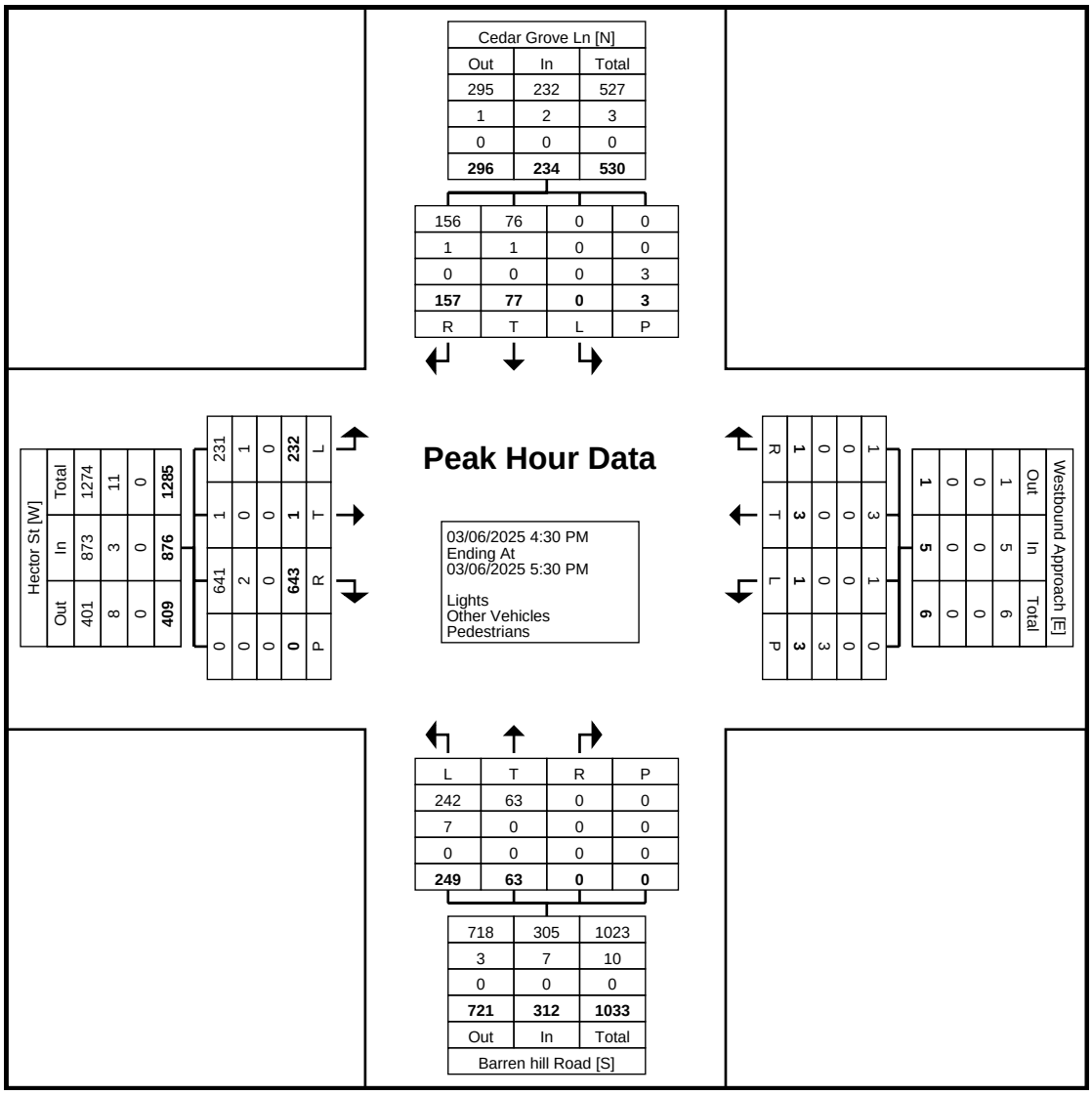
Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 3 Baren Hill Rd-Cedar Grove Ln & Hector St
Site Code:
Start Date: 03/06/2025



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

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Count Name: 4 Cedar Grove Ln & Joshua Rd
Site Code:
Start Date: 03/06/2025

Turning Movement Data

Start Time	Joshua Rd Westbound				Cedar Grove Ln Northbound				Cedar Grove Ln Southbound				
	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
7:00 AM	31	10	0	41	14	26	0	40	19	20	0	39	120
7:15 AM	37	22	0	59	15	31	0	46	9	18	0	27	132
7:30 AM	40	26	0	66	8	26	0	34	17	32	0	49	149
7:45 AM	68	13	0	81	20	23	0	43	30	32	0	62	186
Hourly Total	176	71	0	247	57	106	0	163	75	102	0	177	587
8:00 AM	60	29	0	89	15	23	0	38	12	31	0	43	170
8:15 AM	48	20	0	68	35	25	0	60	20	17	0	37	165
8:30 AM	53	28	0	81	14	24	0	38	20	20	0	40	159
8:45 AM	40	17	0	57	11	31	0	42	27	19	0	46	145
Hourly Total	201	94	0	295	75	103	0	178	79	87	0	166	639
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	34	21	0	55	20	54	0	74	15	17	0	32	161
4:15 PM	38	20	0	58	18	57	0	75	23	15	0	38	171
4:30 PM	37	22	0	59	21	53	0	74	24	15	0	39	172
4:45 PM	35	22	0	57	12	47	0	59	23	20	0	43	159
Hourly Total	144	85	0	229	71	211	0	282	85	67	0	152	663
5:00 PM	33	24	0	57	25	60	0	85	33	34	0	67	209
5:15 PM	35	20	0	55	16	66	0	82	28	27	0	55	192
5:30 PM	36	18	0	54	24	65	0	89	33	17	0	50	193
5:45 PM	28	22	0	50	20	36	0	56	21	21	0	42	148
Hourly Total	132	84	0	216	85	227	0	312	115	99	0	214	742
Grand Total	653	334	0	987	288	647	0	935	354	355	0	709	2631
Approach %	66.2	33.8	-	-	30.8	69.2	-	-	49.9	50.1	-	-	-
Total %	24.8	12.7	-	37.5	10.9	24.6	-	35.5	13.5	13.5	-	26.9	-
Lights	638	325	-	963	280	629	-	909	349	349	-	698	2570
% Lights	97.7	97.3	-	97.6	97.2	97.2	-	97.2	98.6	98.3	-	98.4	97.7
Other Vehicles	15	9	-	24	8	18	-	26	5	6	-	11	61
% Other Vehicles	2.3	2.7	-	2.4	2.8	2.8	-	2.8	1.4	1.7	-	1.6	2.3
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

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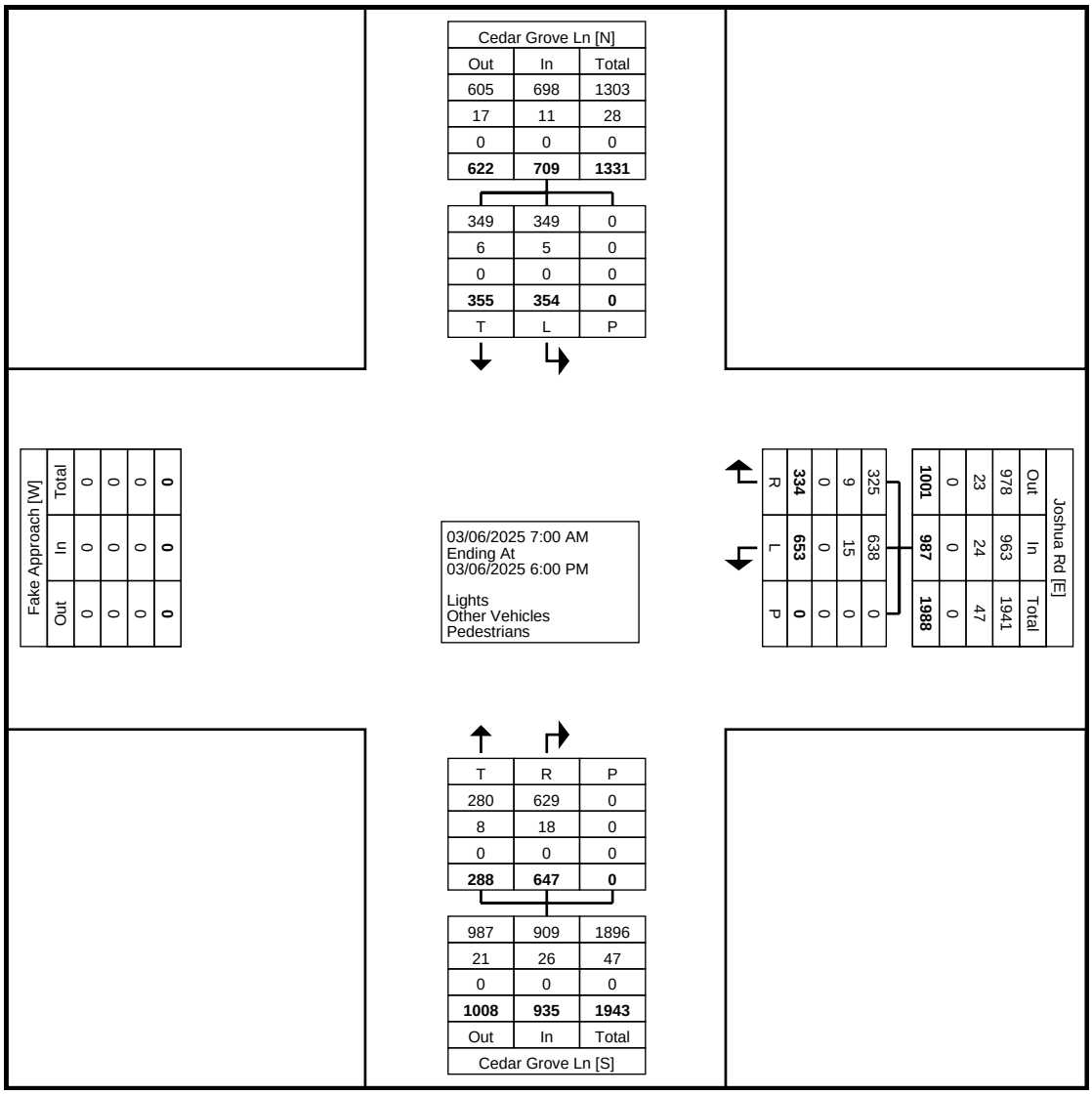
610.326.3100 jhudak@trafficpd.com

Count Name: 4 Cedar Grove Ln & Joshua Rd
Site Code:
Start Date: 03/06/2025
Page No: 2



Turning Movement Data Plot

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Count Name: 4 Cedar Grove Ln & Joshua Rd
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Joshua Rd Westbound				Cedar Grove Ln Northbound				Cedar Grove Ln Southbound				
	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
7:45 AM	68	13	0	81	20	23	0	43	30	32	0	62	186
8:00 AM	60	29	0	89	15	23	0	38	12	31	0	43	170
8:15 AM	48	20	0	68	35	25	0	60	20	17	0	37	165
8:30 AM	53	28	0	81	14	24	0	38	20	20	0	40	159
Total	229	90	0	319	84	95	0	179	82	100	0	182	680
Approach %	71.8	28.2	-	-	46.9	53.1	-	-	45.1	54.9	-	-	-
Total %	33.7	13.2	-	46.9	12.4	14.0	-	26.3	12.1	14.7	-	26.8	-
PHF	0.842	0.776	-	0.896	0.600	0.950	-	0.746	0.683	0.781	-	0.734	0.914
Lights	224	87	-	311	79	88	-	167	78	99	-	177	655
% Lights	97.8	96.7	-	97.5	94.0	92.6	-	93.3	95.1	99.0	-	97.3	96.3
Other Vehicles	5	3	-	8	5	7	-	12	4	1	-	5	25
% Other Vehicles	2.2	3.3	-	2.5	6.0	7.4	-	6.7	4.9	1.0	-	2.7	3.7
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

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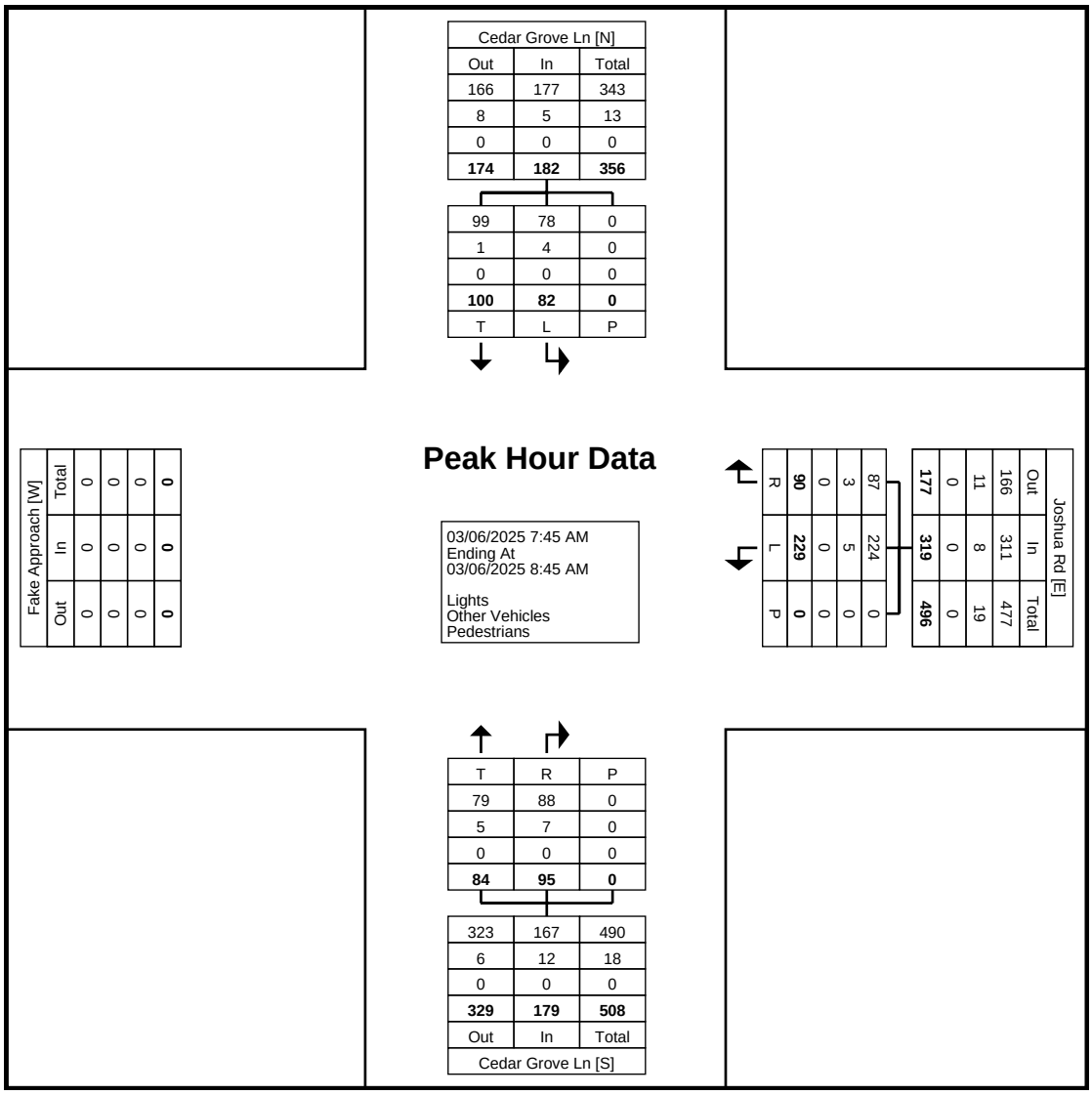
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 4 Cedar Grove Ln & Joshua Rd
Site Code:
Start Date: 03/06/2025



Turning Movement Peak Hour Data Plot (7:45 AM)

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610.326.3100 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 4 Cedar Grove Ln & Joshua Rd
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Joshua Rd Westbound				Cedar Grove Ln Northbound				Cedar Grove Ln Southbound				
	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
4:45 PM	35	22	0	57	12	47	0	59	23	20	0	43	159
5:00 PM	33	24	0	57	25	60	0	85	33	34	0	67	209
5:15 PM	35	20	0	55	16	66	0	82	28	27	0	55	192
5:30 PM	36	18	0	54	24	65	0	89	33	17	0	50	193
Total	139	84	0	223	77	238	0	315	117	98	0	215	753
Approach %	62.3	37.7	-	-	24.4	75.6	-	-	54.4	45.6	-	-	-
Total %	18.5	11.2	-	29.6	10.2	31.6	-	41.8	15.5	13.0	-	28.6	-
PHF	0.965	0.875	-	0.978	0.770	0.902	-	0.885	0.886	0.721	-	0.802	0.901
Lights	138	83	-	221	77	237	-	314	117	98	-	215	750
% Lights	99.3	98.8	-	99.1	100.0	99.6	-	99.7	100.0	100.0	-	100.0	99.6
Other Vehicles	1	1	-	2	0	1	-	1	0	0	-	0	3
% Other Vehicles	0.7	1.2	-	0.9	0.0	0.4	-	0.3	0.0	0.0	-	0.0	0.4
Pedestrians	-	-	0	-	-	-	0	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-

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Counted By: Mio:
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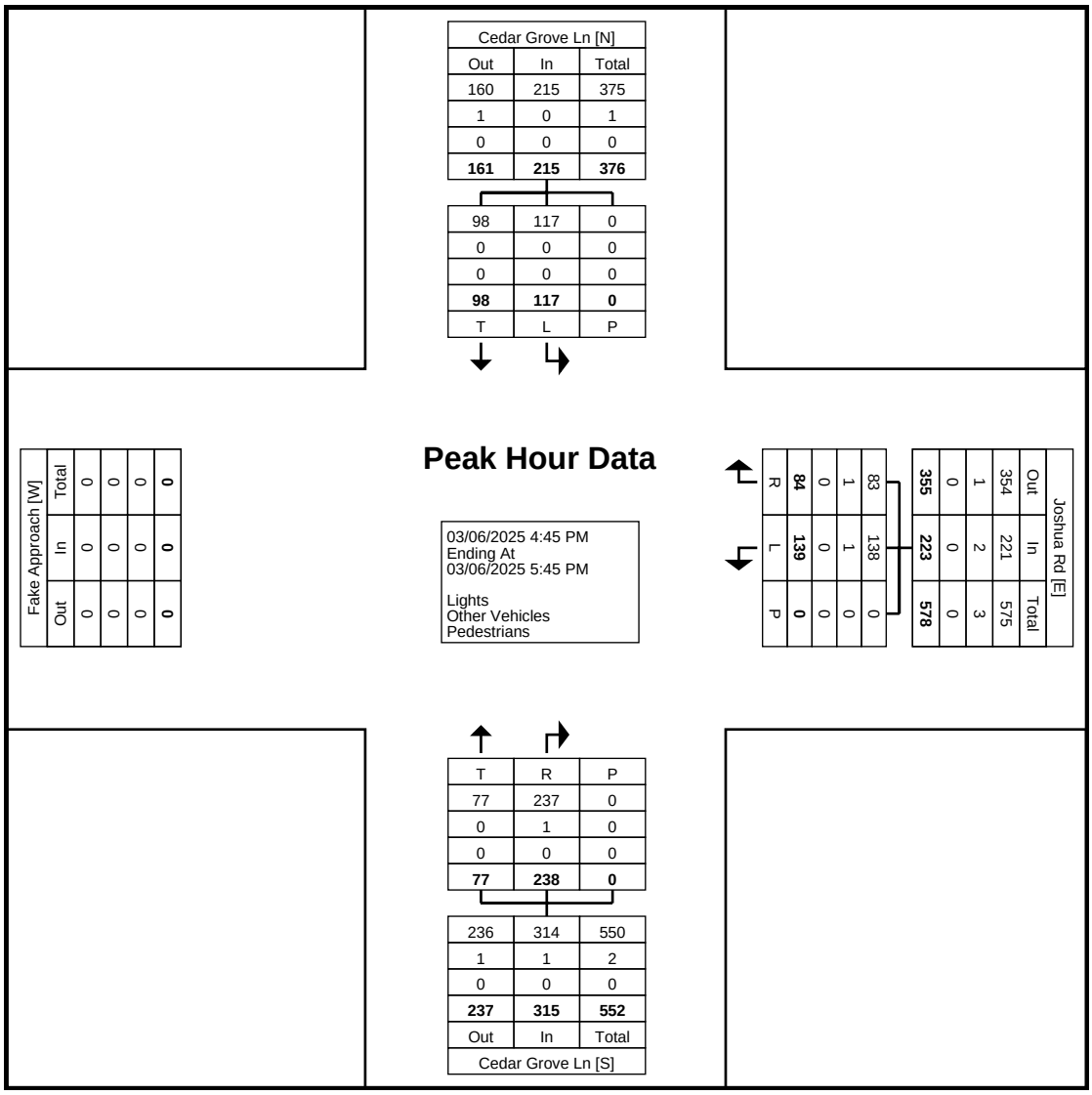
Weather:Clear:

Count Name: 4 Cedar Grove Ln & Joshua Rd
Site Code:
Start Date: 03/06/2025



Turning Movement Peak Hour Data Plot (4:45 PM)

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Traffic Planning and Design, Inc
2500 East High Street
Suite 650
Pottstown, Pennsylvania, United States 19464
610.326.3100 jhudak@trafficpd.com

Count Name: 5 Lee St & Washington St
Site Code:
Start Date: 03/06/2025

Turning Movement Data

Start Time	Washington St Eastbound				Washington St Westbound					Lee St Southbound				
	Left	Thru	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
7:00 AM	1	0	0	1	0	0	0	0	0	1	0	8	1	2
7:15 AM	0	1	0	1	0	1	0	0	1	1	1	10	2	4
7:30 AM	1	0	0	1	0	1	0	0	1	0	0	9	0	2
7:45 AM	1	1	0	2	0	0	0	0	0	0	0	4	0	2
Hourly Total	3	2	0	5	0	2	0	0	2	2	1	31	3	10
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	2	1	1
8:15 AM	1	1	0	2	0	0	0	0	0	0	1	3	1	3
8:30 AM	2	0	0	2	0	0	0	0	0	0	2	7	2	4
8:45 AM	1	0	0	1	0	1	0	0	1	0	2	5	2	4
Hourly Total	4	1	0	5	0	1	0	0	1	0	6	17	6	12
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	1	0	0	1	0	1	0	0	1	0	2	15	2	4
4:15 PM	0	0	0	0	0	1	0	0	1	0	4	31	4	5
4:30 PM	1	0	0	1	0	9	0	0	9	0	8	24	8	18
4:45 PM	1	1	0	2	0	3	0	0	3	0	1	42	1	6
Hourly Total	3	1	0	4	0	14	0	0	14	0	15	112	15	33
5:00 PM	3	1	0	4	1	0	0	0	1	0	2	13	2	7
5:15 PM	1	0	0	1	0	2	0	0	2	1	0	15	1	4
5:30 PM	0	0	0	0	0	1	1	0	2	1	2	15	3	5
5:45 PM	5	1	0	6	0	1	0	0	1	0	0	19	0	7
Hourly Total	9	2	0	11	1	4	1	0	6	2	4	62	6	23
Grand Total	19	6	0	25	1	21	1	0	23	4	26	222	30	78
Approach %	76.0	24.0	-	-	4.3	91.3	4.3	-	-	13.3	86.7	-	-	-
Total %	24.4	7.7	-	32.1	1.3	26.9	1.3	-	29.5	5.1	33.3	-	38.5	-
Lights	19	6	-	25	1	21	1	-	23	4	26	-	30	78
% Lights	100.0	100.0	-	100.0	100.0	100.0	100.0	-	100.0	100.0	100.0	-	100.0	100.0
Other Vehicles	0	0	-	0	0	0	0	-	0	0	0	-	0	0
% Other Vehicles	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	0	-	-	-	-	0	-	-	-	222	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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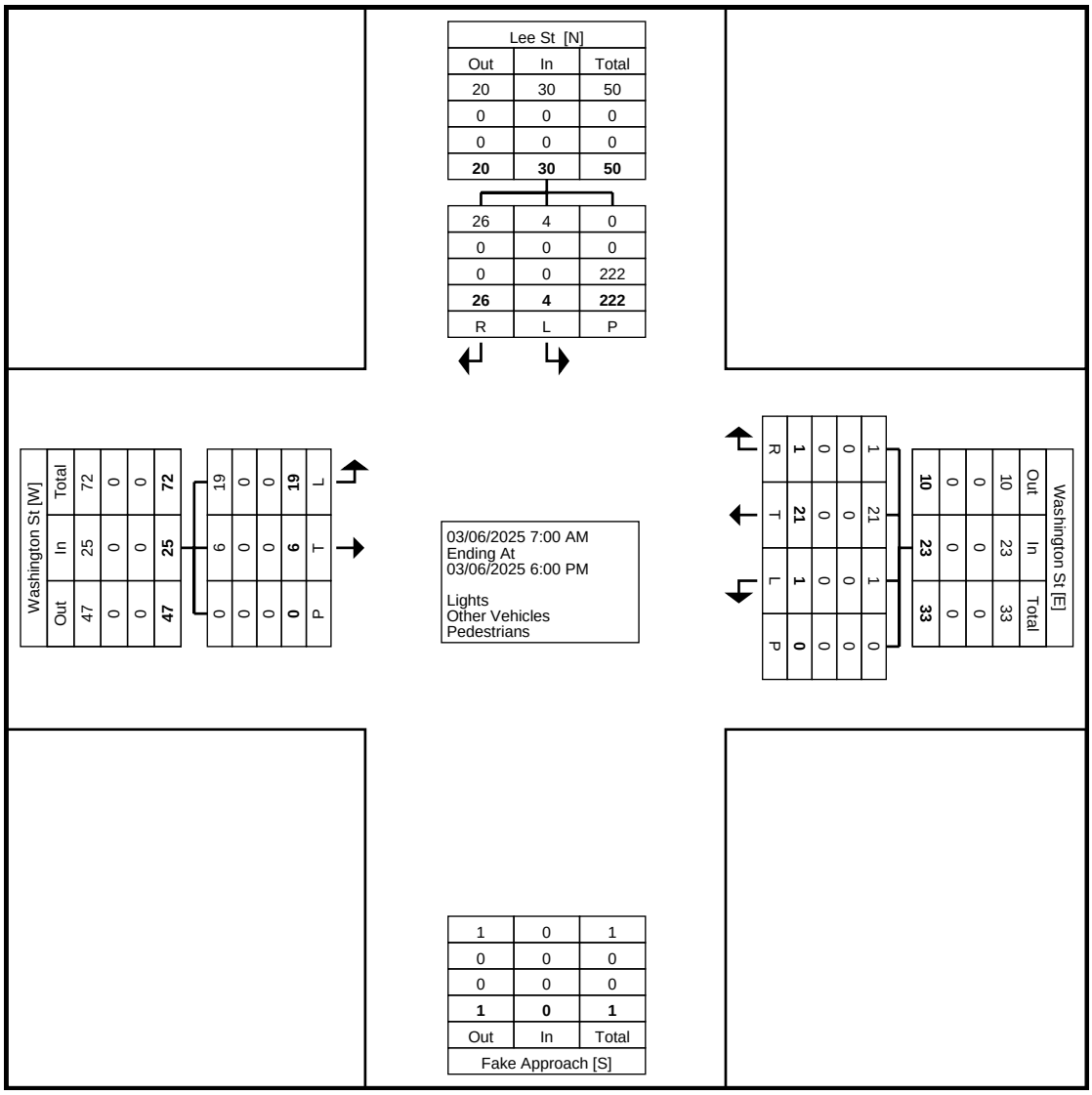
Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 5 Lee St & Washington St
Site Code:
Start Date: 03/06/2025



Turning Movement Data Plot

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2500 East High Street
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610.326.3100 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 5 Lee St & Washington St
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Washington St Eastbound				Washington St Westbound					Lee St Southbound				
	Left	Thru	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
8:00 AM	0	0	0	0	0	0	0	0	0	0	1	2	1	1
8:15 AM	1	1	0	2	0	0	0	0	0	0	1	3	1	3
8:30 AM	2	0	0	2	0	0	0	0	0	0	2	7	2	4
8:45 AM	1	0	0	1	0	1	0	0	1	0	2	5	2	4
Total	4	1	0	5	0	1	0	0	1	0	6	17	6	12
Approach %	80.0	20.0	-	-	0.0	100.0	0.0	-	-	0.0	100.0	-	-	-
Total %	33.3	8.3	-	41.7	0.0	8.3	0.0	-	8.3	0.0	50.0	-	50.0	-
PHF	0.500	0.250	-	0.625	0.000	0.250	0.000	-	0.250	0.000	0.750	-	0.750	0.750
Lights	4	1	-	5	0	1	0	-	1	0	6	-	6	12
% Lights	100.0	100.0	-	100.0	-	100.0	-	-	100.0	-	100.0	-	100.0	100.0
Other Vehicles	0	0	-	0	0	0	0	-	0	0	0	-	0	0
% Other Vehicles	0.0	0.0	-	0.0	-	0.0	-	-	0.0	-	0.0	-	0.0	0.0
Pedestrians	-	-	0	-	-	-	-	0	-	-	-	17	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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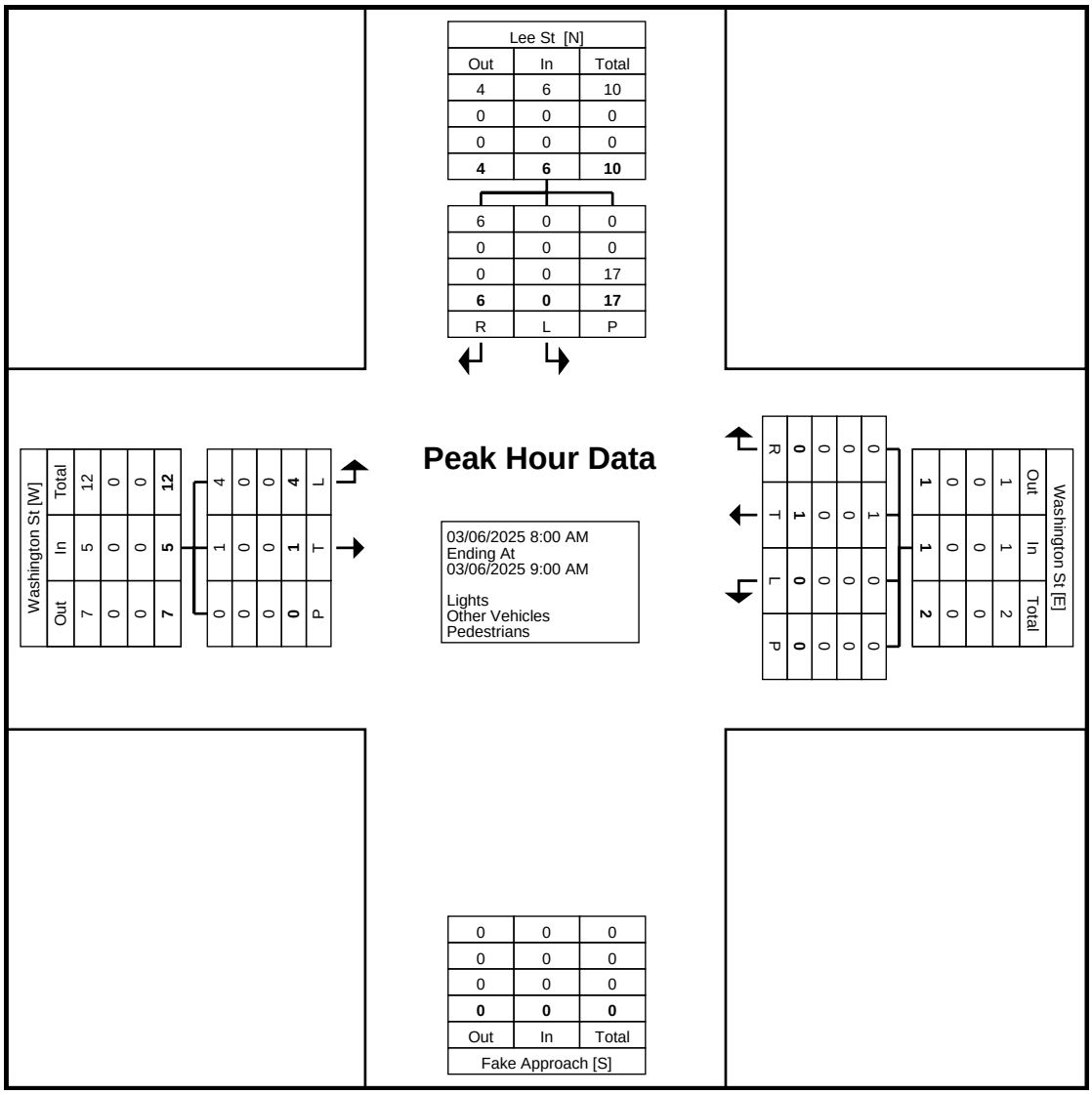
Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 5 Lee St & Washington St
Site Code:
Start Date: 03/06/2025



Turning Movement Peak Hour Data Plot (8:00 AM)

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Suite 650
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610.326.3100 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 5 Lee St & Washington St
Site Code:
Start Date: 03/06/2025

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Washington St Eastbound				Washington St Westbound					Lee St Southbound				
	Left	Thru	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
4:15 PM	0	0	0	0	0	1	0	0	1	0	4	31	4	5
4:30 PM	1	0	0	1	0	9	0	0	9	0	8	24	8	18
4:45 PM	1	1	0	2	0	3	0	0	3	0	1	42	1	6
5:00 PM	3	1	0	4	1	0	0	0	1	0	2	13	2	7
Total	5	2	0	7	1	13	0	0	14	0	15	110	15	36
Approach %	71.4	28.6	-	-	7.1	92.9	0.0	-	-	0.0	100.0	-	-	-
Total %	13.9	5.6	-	19.4	2.8	36.1	0.0	-	38.9	0.0	41.7	-	41.7	-
PHF	0.417	0.500	-	0.438	0.250	0.361	0.000	-	0.389	0.000	0.469	-	0.469	0.500
Lights	5	2	-	7	1	13	0	-	14	0	15	-	15	36
% Lights	100.0	100.0	-	100.0	100.0	100.0	-	-	100.0	-	100.0	-	100.0	100.0
Other Vehicles	0	0	-	0	0	0	0	-	0	0	0	-	0	0
% Other Vehicles	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	-	0.0	-	0.0	0.0
Pedestrians	-	-	0	-	-	-	-	0	-	-	-	110	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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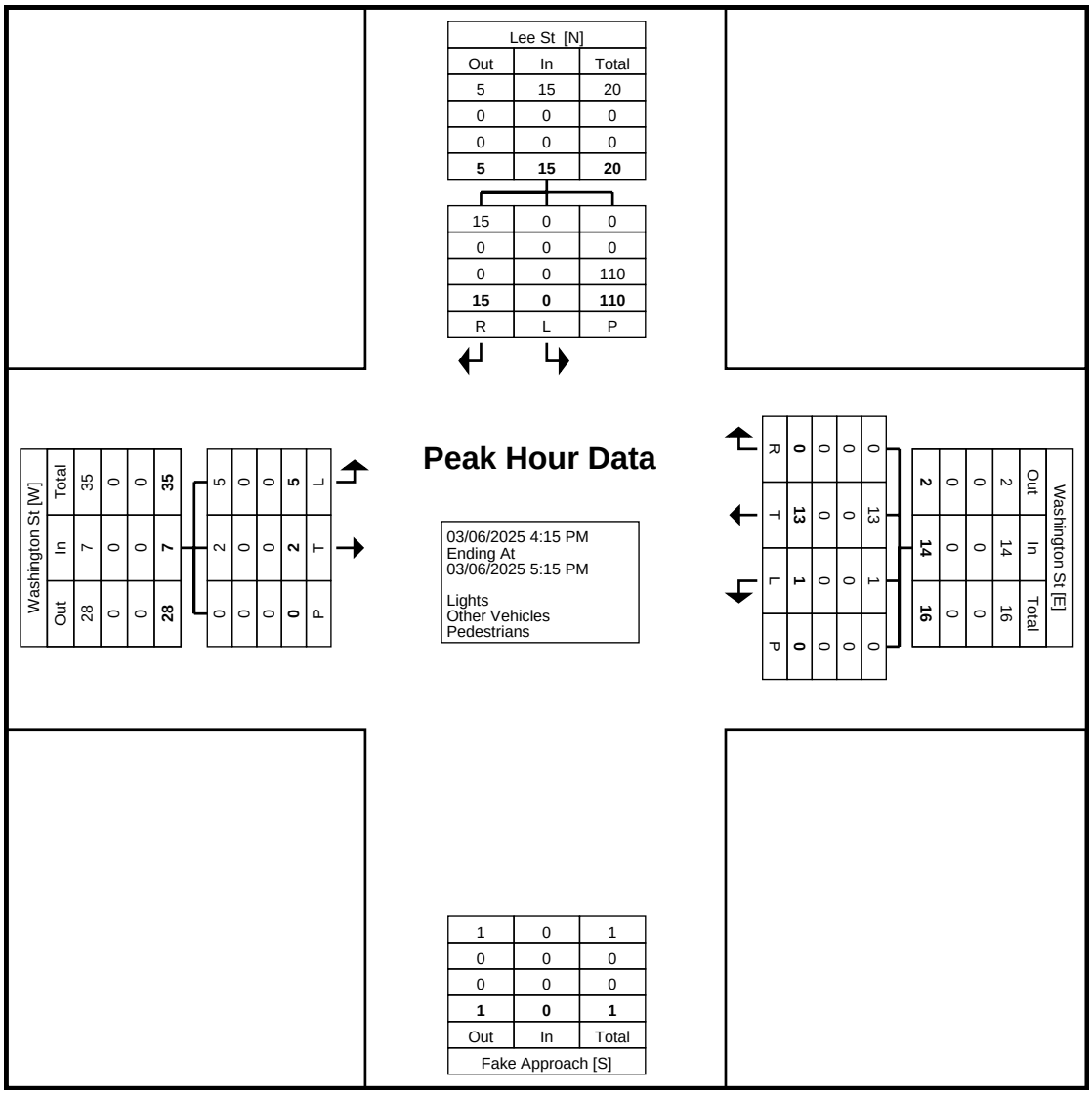
610.326.3100 jhudak@trafficpd.com

Counted By: Mio:
Set Up By: JH:
Weather:Clear:

Count Name: 5 Lee St & Washington St
Site Code:
Start Date: 03/06/2025
Page No: 6



Turning Movement Peak Hour Data Plot (4:15 PM)

APPENDIX D:
Nearby Development Information

October 17, 2019

TPD# EKAN.000001

Est. 1989

TRAFFIC PLANNING AND DESIGN, INC.





901 Washington Street Townhomes

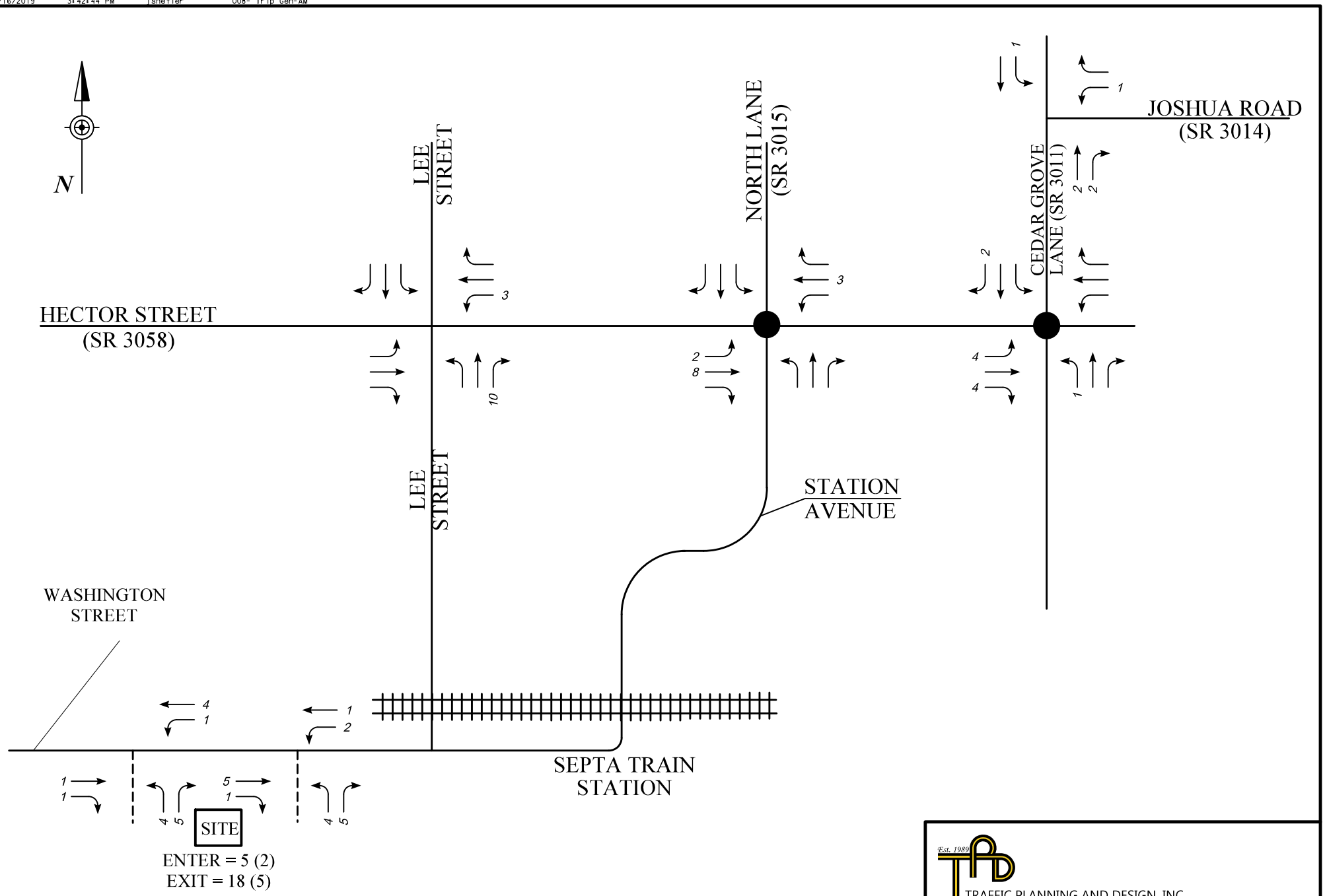
Transportation Impact Study

Whitemarsh Township, Montgomery County, PA

For Submission to:

Whitemarsh Township, PA

\\PTO-FS\Engineering\0-Planning\EKAN\00001 (901 Washington St)\Excel\2019-10-04 (25% TOD) Revised Traffic Impact Study\Figures (x)\2019-10-16, TIS Figures.dgn
10/16/2019 3:42:44 PM jshetler 008- Trip Gen-AM



KEY:

● **SIGNALIZED INTERSECTION**

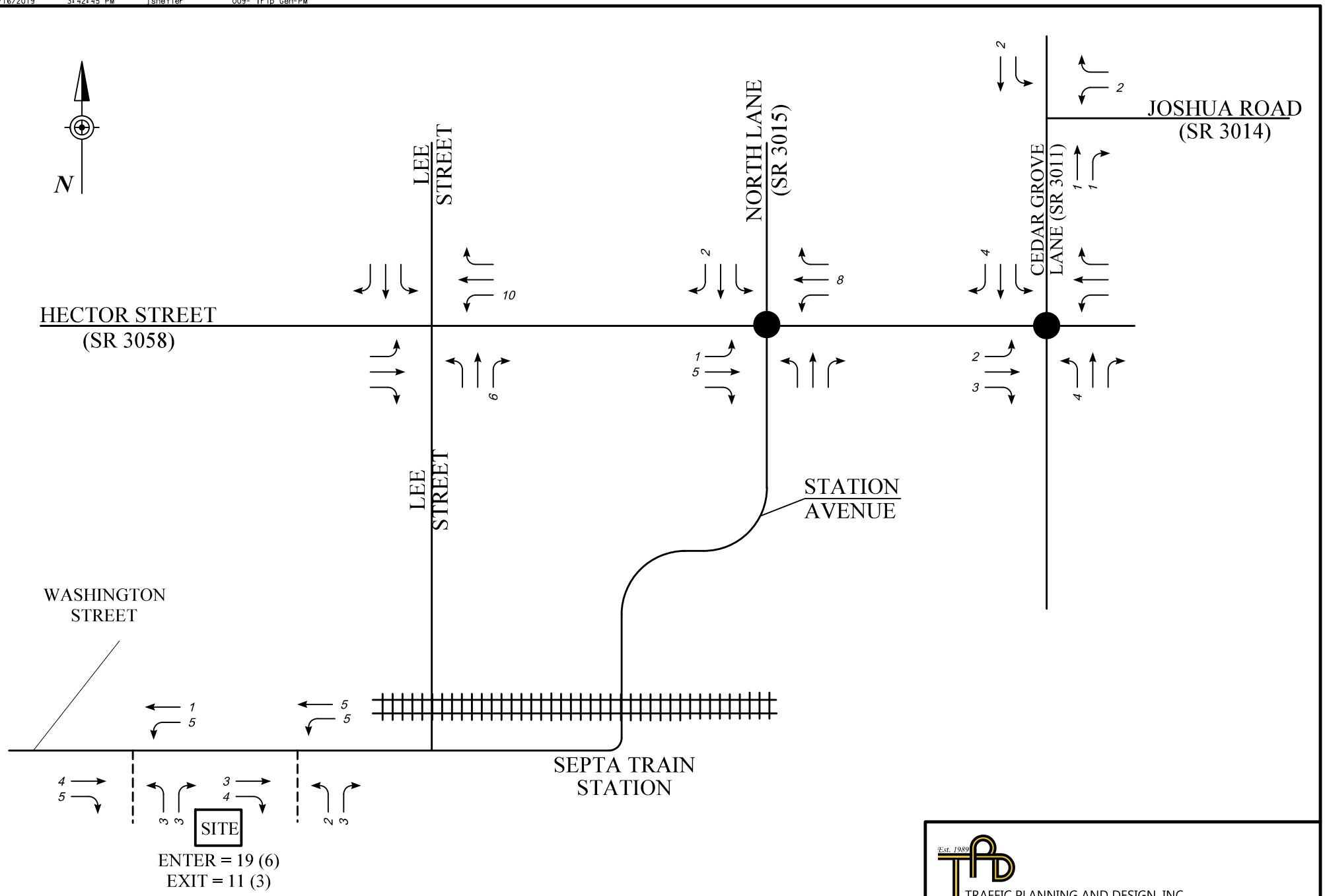
- - - - - - **PROPOSED DRIVEWAY**

Est. 1989
TRAFFIC PLANNING AND DESIGN, INC.
www.TrafficPD.com | 610.326.3100 | TPD@TrafficPD.com

FIGURE 8

TRIP DISTRIBUTIONS
WEEKDAY AM PEAK HOUR
TRAFFIC VOLUMES

\\PTO-FS\Engineering\0-Planning\EKAN\00001 (901 Washington St)\Excel\2019-10-04 (25% TOD) Revised Traffic Impact Study\Figures (x)\2019-10-16, TIS Figures.dgn
10/16/2019 3:42:45 PM jshetler 009- Trip Gen-PM



KEY:

● **SIGNALIZED INTERSECTION**

- - - - - - **PROPOSED DRIVEWAY**

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FIGURE 9

TRIP DISTRIBUTIONS
WEEKDAY PM PEAK HOUR
TRAFFIC VOLUMES

APPENDIX E:
Traffic Volume Development Worksheets

TPD# HTOP.00002
6/25/2025
Traffic Volumes Worksheet

Intersection:	**Lee Street & Hector Street**									
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
2025 Existing Counts	**12**	**389**	**1**	**20**	**571**	**70**	**3**	**2**	**15**	**37**	**6**	**7**	**1133**
Balancing													0
2025 Existing Volumes (Balanced)	**12**	**389**	**1**	**20**	**571**	**70**	**3**	**2**	**15**	**37**	**6**	**7**	**1133**
Base growth (0.17% compounded for 6 yrs)	0	4	0	0	6	1	0	0	0	0	0	0	11
													0
901 Washington Street				3					10				13
2031 Base (No-Build) Volumes	**12**	**393**	**1**	**23**	**577**	**71**	**3**	**2**	**25**	**37**	**6**	**7**	**1157**
New Trips													0
Existing Site Redistribution		-59			-99								-158
Total Trip Distribution	**0**	**-59**	**0**	**0**	**-99**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-158**
2031 Projected (Build) Volumes	**12**	**334**	**1**	**23**	**478**	**71**	**3**	**2**	**25**	**37**	**6**	**7**	**999**

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
2025 Existing Counts	**6**	**728**	**13**	**17**	**370**	**30**	**10**	**3**	**31**	**86**	**5**	**18**	**1317**
Balancing													0
2025 Existing Volumes (Balanced)	**6**	**728**	**13**	**17**	**370**	**30**	**10**	**3**	**31**	**86**	**5**	**18**	**1317**
Base growth (0.17% compounded for 6 yrs)	0	7	0	0	4	0	0	0	0	1	0	0	12
0													0
901 Washington Street				10					6				16
2031 Base (No-Build) Volumes	**6**	**735**	**13**	**27**	**374**	**30**	**10**	**3**	**37**	**87**	**5**	**18**	**1345**
New Trips													0
Existing Site Redistribution		-110			-61								-171
Total Trip Distribution	**0**	**-110**	**0**	**0**	**-61**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-171**
2031 Projected (Build) Volumes	**6**	**625**	**13**	**27**	**313**	**30**	**10**	**3**	**37**	**87**	**5**	**18**	**1174**

TPD# HTOP.00002
6/25/2025
Traffic Volumes Worksheet

Intersection:	**Hector Street & Station Avenue/North Lane**									
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
2025 Existing Counts	**115**	**326**	**12**	**4**	**588**	**95**	**11**	**26**	**4**	**65**	**23**	**73**	**1342**
Balancing													0
2025 Existing Volumes (Balanced)	**115**	**326**	**12**	**4**	**588**	**95**	**11**	**26**	**4**	**65**	**23**	**73**	**1342**
Base growth (0.17% compounded for 6 yrs)	1	3	0	0	6	1	0	0	0	1	0	1	13
													0
901 Washington Street	2	8			3								13
2031 Base (No-Build) Volumes	**118**	**337**	**12**	**4**	**597**	**96**	**11**	**26**	**4**	**66**	**23**	**74**	**1368**
New Trips				1				1	6				8
Existing Site Redistribution	-15	-44		88	-88			15	44		11	-11	0
Total Trip Distribution	**-15**	**-44**	**0**	**89**	**-88**	**0**	**0**	**16**	**50**	**0**	**11**	**-11**	**8**
2031 Projected (Build) Volumes	**103**	**293**	**12**	**93**	**509**	**96**	**11**	**42**	**54**	**66**	**34**	**63**	**1376**

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
2025 Existing Counts	**115**	**726**	**6**	**18**	**330**	**61**	**9**	**36**	**8**	**108**	**25**	**75**	**1517**
Balancing													0
2025 Existing Volumes (Balanced)	**115**	**726**	**6**	**18**	**330**	**61**	**9**	**36**	**8**	**108**	**25**	**75**	**1517**
Base growth (0.17% compounded for 6 yrs)	1	7	0	0	3	1	0	0	0	1	0	1	14
0													0
901 Washington Street	1	5			8							2	16
2031 Base (No-Build) Volumes	**117**	**738**	**6**	**18**	**341**	**62**	**9**	**36**	**8**	**109**	**25**	**78**	**1547**
New Trips				4				1	4		1		10
Existing Site Redistribution	-15	-95		50	-50			15	95		11	-11	0
Total Trip Distribution	**-15**	**-95**	**0**	**54**	**-50**	**0**	**0**	**16**	**99**	**0**	**12**	**-11**	**10**
2031 Projected (Build) Volumes	**102**	**643**	**6**	**72**	**291**	**62**	**9**	**52**	**107**	**109**	**37**	**67**	**1557**

TPD# HTOP.00002
6/25/2025
Traffic Volumes Worksheet

Intersection:	**Hector Street & Barren Hill Road/Cedar Grove Lane**									
Synchro Node:	**3**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**South**	**0**

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2025 Existing Counts	**102**	**3**	**316**	**0**	**1**	**1**	**464**	**69**	**1**	**1**	**111**	**210**	**1279**
Balancing													0
2025 Existing Volumes (Balanced)	**102**	**3**	**316**	**0**	**1**	**1**	**464**	**69**	**1**	**1**	**111**	**210**	**1279**
Base growth (0.17% compounded for 6 yrs)	1	0	3	0	0	0	5	1	0	0	1	2	13
													0
901 Washington Street	4		4				1					2	11
2031 Base (No-Build) Volumes	**107**	**3**	**323**	**0**	**1**	**1**	**470**	**70**	**1**	**1**	**112**	**214**	**1303**
New Trips	2		2				1						5
Existing Site Redistribution													0
Total Trip Distribution	**2**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**5**
2031 Projected (Build) Volumes	**109**	**3**	**325**	**0**	**1**	**1**	**471**	**70**	**1**	**1**	**112**	**214**	**1308**

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
2025 Existing Counts	**232**	**1**	**643**	**1**	**3**	**1**	**249**	**63**	**0**	**0**	**77**	**157**	**1427**
Balancing													0
2025 Existing Volumes (Balanced)	**232**	**1**	**643**	**1**	**3**	**1**	**249**	**63**	**0**	**0**	**77**	**157**	**1427**
Base growth (0.17% compounded for 6 yrs)	2	0	7	0	0	0	3	1	0	0	1	2	16
0													0
901 Washington Street	2		3				4					4	13
2031 Base (No-Build) Volumes	**236**	**1**	**653**	**1**	**3**	**1**	**256**	**64**	**0**	**0**	**78**	**163**	**1456**
New Trips	1		2				2					2	7
Existing Site Redistribution													0
Total Trip Distribution	**1**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**7**
2031 Projected (Build) Volumes	**237**	**1**	**655**	**1**	**3**	**1**	**258**	**64**	**0**	**0**	**78**	**165**	**1463**

TPD# HTOP.00002
6/25/2025
Traffic Volumes Worksheet

Intersection:	**Cedar Grove Lane and Joshua Road**									
Synchro Node:	**4**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**South**	**0**

Time Period: Weekday A.M. Peak Hour

	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2025 Existing Counts	**0**	**0**	**0**	**229**	**0**	**90**	**0**	**84**	**95**	**82**	**100**	**0**	**680**
Balancing													0
2025 Existing Volumes (Balanced)	**0**	**0**	**0**	**229**	**0**	**90**	**0**	**84**	**95**	**82**	**100**	**0**	**680**
Base growth (0.17% compounded for 6 yrs)	0	0	0	2	0	1	0	1	1	1	1	0	7
													0
901 Washington Street				1				2	2		1		6
2031 Base (No-Build) Volumes	**0**	**0**	**0**	**232**	**0**	**91**	**0**	**87**	**98**	**83**	**102**	**0**	**693**
New Trips								1	1				2
Existing Site Redistribution													0
Total Trip Distribution	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**2**
2031 Projected (Build) Volumes	**0**	**0**	**0**	**232**	**0**	**91**	**0**	**88**	**99**	**83**	**102**	**0**	**695**

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
2025 Existing Counts	**0**	**0**	**0**	**139**	**0**	**84**	**0**	**77**	**238**	**117**	**98**	**0**	**753**
Balancing													0
2025 Existing Volumes (Balanced)	**0**	**0**	**0**	**139**	**0**	**84**	**0**	**77**	**238**	**117**	**98**	**0**	**753**
Base growth (0.17% compounded for 6 yrs)	0	0	0	1	0	1	0	1	2	1	1	0	7
0													0
901 Washington Street				2				1	1		2		6
2031 Base (No-Build) Volumes	**0**	**0**	**0**	**142**	**0**	**85**	**0**	**79**	**241**	**118**	**101**	**0**	**766**
New Trips				1				1			1		3
Existing Site Redistribution													0
Total Trip Distribution	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**3**
2031 Projected (Build) Volumes	**0**	**0**	**0**	**143**	**0**	**85**	**0**	**80**	**241**	**118**	**102**	**0**	**769**

TPD# HTOP.00002
6/25/2025
Traffic Volumes Worksheet

Intersection:	**Washington Street & Lee Street**								
Synchro Node:	**5**	**Adjacent intersections:**	**West**	**0**	**East**	**0**	**North**	**0**	**South**	**0**

Time Period: Weekday A.M. Peak Hour

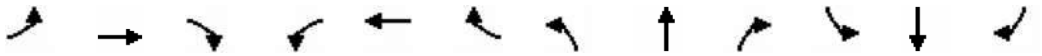
	Eastbound			Westbound			Northbound			Southbound			Intersection
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	Volume
2025 Existing Counts	**4**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**12**
Balancing													0
2025 Existing Volumes (Balanced)	**4**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**12**
Base growth (0.17% compounded for 6 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
													0
901 Washington Street	10											3	13
2031 Base (No-Build) Volumes	**14**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**25**
New Trips		2			3								5
Existing Site Redistribution		59			99								158
Total Trip Distribution	**0**	**61**	**0**	**0**	**102**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**163**
2031 Projected (Build) Volumes	**14**	**62**	**0**	**0**	**103**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**188**

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
2025 Existing Counts	**5**	**2**	**0**	**0**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**35**
Balancing													0
2025 Existing Volumes (Balanced)	**5**	**2**	**0**	**0**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**35**
Base growth (0.17% compounded for 6 yrs)	0	0	0	0	0	0	0	0	0	0	0	0	0
0													0
901 Washington Street	6											10	16
2031 Base (No-Build) Volumes	**11**	**2**	**0**	**0**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**25**	**51**
New Trips		6			2								8
Existing Site Redistribution		110			61								171
Total Trip Distribution	**0**	**116**	**0**	**0**	**63**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**179**
2031 Projected (Build) Volumes	**11**	**118**	**0**	**0**	**76**	**0**	**0**	**0**	**0**	**0**	**0**	**25**	**230**

APPENDIX F:
Capacity Analysis Worksheets

Existing Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	389	1	20	571	70	3	2	15	37	6	7
Future Volume (vph)	12	389	1	20	571	70	3	2	15	37	6	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	11	11	11	11	11	11
Grade (%)		2%			-2%			0%			-3%	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		403			769			463			326	
Travel Time (s)		11.0			21.0			12.6			8.9	
Confl. Peds. (#/hr)	2		7	7		2	9		1	1		9
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%	4%	0%	5%	2%	1%	0%	0%	7%	0%	0%	14%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

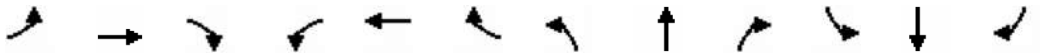
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	389	1	20	571	70	3	2	15	37	6	7
Future Vol, veh/h	12	389	1	20	571	70	3	2	15	37	6	7
Conflicting Peds, #/hr	2	0	7	7	0	2	9	0	1	1	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	0	-	-	-3	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	4	0	5	2	1	0	0	7	0	0	14
Mvmt Flow	13	405	1	21	595	73	3	2	16	39	6	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	670	0	0	413	0	0	1128	1151	414	1118	1115	643
Stage 1	-	-	-	-	-	-	439	439	-	676	676	-
Stage 2	-	-	-	-	-	-	689	712	-	442	439	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	6.5	6.27	6.5	5.9	6.04
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.2	3	4	3.2
Pot Cap-1 Maneuver	703	-	-	866	-	-	200	200	654	245	252	502
Stage 1	-	-	-	-	-	-	681	582	-	559	510	-
Stage 2	-	-	-	-	-	-	491	439	-	730	626	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	702	-	-	861	-	-	181	186	649	225	234	496
Mov Cap-2 Maneuver	-	-	-	-	-	-	181	186	-	225	234	-
Stage 1	-	-	-	-	-	-	661	565	-	544	489	-
Stage 2	-	-	-	-	-	-	454	421	-	692	607	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.3	0.3	14.6	23.6
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	397	702	-	-	861	-	-	245
HCM Lane V/C Ratio	0.052	0.018	-	-	0.024	-	-	0.213
HCM Control Delay (s/veh)	14.6	10.2	0	-	9.3	0	-	23.6
HCM Lane LOS	B	B	A	-	A	A	-	C
HCM 95th %tile Q (veh)	0.2	0.1	-	-	0.1	-	-	0.8



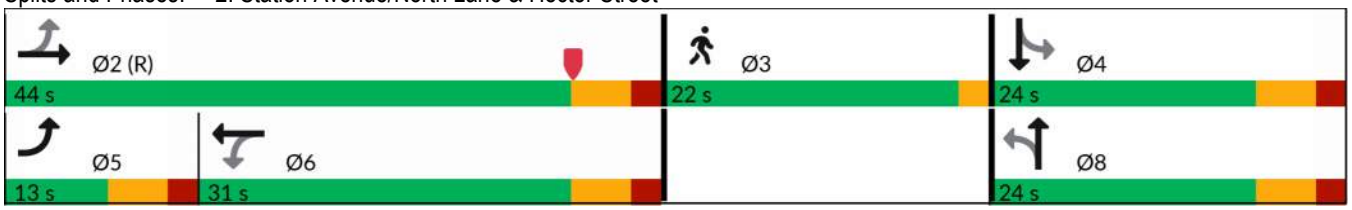
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	326	12	4	588	95	11	26	4	65	23	73
Future Volume (vph)	115	326	12	4	588	95	11	26	4	65	23	73
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	13	13	12	12	12	16	16	16
Grade (%)		-1%			4%			6%			-5%	
Storage Length (ft)	180		0	80		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	75			40			25			25		
Satd. Flow (prot)	1588	1847	0	1564	1752	0	0	1652	0	0	1812	0
Flt Permitted	0.092			0.548				0.913			0.850	
Satd. Flow (perm)	154	1847	0	896	1752	0	0	1524	0	0	1562	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			35	
Link Distance (ft)		769			1291			301			1034	
Travel Time (s)		15.0			25.1			8.2			20.1	
Confl. Peds. (#/hr)			7	7			9		7	7		9
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	4%	0%	0%	2%	1%	0%	4%	0%	9%	0%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	121	356	0	4	719	0	0	43	0	0	169	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	44.0		31.0	31.0		24.0	24.0		24.0	24.0	
Total Split (%)	14.4%	48.9%		34.4%	34.4%		26.7%	26.7%		26.7%	26.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		Min	Min		Min	Min		Min	Min	
Act Effct Green (s)	53.3	53.3		38.5	38.5			17.7			17.7	
Actuated g/C Ratio	0.59	0.59		0.43	0.43			0.20			0.20	
v/c Ratio	0.48	0.32		0.01	0.95			0.14			0.55	
Control Delay (s/veh)	18.6	11.0		10.2	45.0			29.1			38.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	18.6	11.0		10.2	45.0			29.1			38.8	
LOS	B	B		B	D			C			D	
Approach Delay (s/veh)		13.0			44.9			29.1			38.8	
Approach LOS		B			D			C			D	
Queue Length 50th (ft)	28	94		1	428			20			87	
Queue Length 95th (ft)	78	171		m2	m#712			45			140	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	19.0
Total Split (s)	22.0
Total Split (%)	24%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			1211			221			954	
Turn Bay Length (ft)	180			80								
Base Capacity (vph)	250	1094		383	749			339			347	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.48	0.33		0.01	0.96			0.13			0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 26 (29%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay (s/veh): 32.9		Intersection LOS: C	
Intersection Capacity Utilization 74.0%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Station Avenue/North Lane & Hector Street



Lane Group	Ø3
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

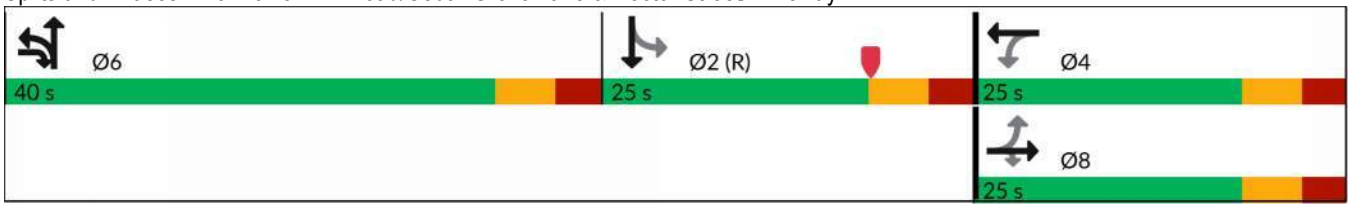
Intersection Summary

3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway

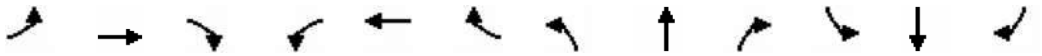
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	3	316	0	1	1	464	69	1	1	111	210
Future Volume (vph)	102	3	316	0	1	1	464	69	1	1	111	210
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	11	11	16	16	16
Grade (%)		2%			-4%			-3%			2%	
Storage Length (ft)	0		80	0		0	130		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			100			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1291			310			527			657	
Travel Time (s)		25.1			8.5			10.3			12.8	
Confl. Peds. (#/hr)	1					1			1	1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	0%	4%	0%	0%	0%	2%	6%	0%	0%	5%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov		NA		Split	NA		Perm	NA	
Protected Phases		8	6		4		6	6			2	
Permitted Phases	8		8	4						2		
Detector Phase	8	8	6	4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	25.0	25.0	40.0	25.0	25.0		40.0	40.0		25.0	25.0	
Total Split (%)	27.8%	27.8%	44.4%	27.8%	27.8%		44.4%	44.4%		27.8%	27.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0			6.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		C-Max	C-Max	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway



3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	3	316	0	1	1	464	69	1	1	111	210
Future Volume (veh/h)	102	3	316	0	1	1	464	69	1	1	111	210
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	1722	1778	1722	1949	1949	1949	1883	1826	1912	1849	1776	1820
Adj Flow Rate, veh/h	112	3	347	0	1	1	510	76	1	1	122	231
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	0	4	0	0	0	2	6	0	0	5	2
Cap, veh/h	327	8	753	0	174	174	578	580	8	1	155	293
Arrive On Green	0.18	0.19	0.19	0.00	0.19	0.18	0.32	0.32	0.31	0.27	0.28	0.27
Sat Flow, veh/h	1275	40	1455	0	893	893	1794	1798	24	4	547	1036
Grp Volume(v), veh/h	115	0	347	0	0	2	510	0	77	354	0	0
Grp Sat Flow(s),veh/h/ln	1315	0	1455	0	0	1785	1794	0	1822	1587	0	0
Q Serve(g_s), s	6.8	0.0	13.6	0.0	0.0	0.1	24.2	0.0	2.7	18.6	0.0	0.0
Cycle Q Clear(g_c), s	7.3	0.0	13.6	0.0	0.0	0.1	24.2	0.0	2.7	18.6	0.0	0.0
Prop In Lane	0.97		1.00	0.00		0.50	1.00		0.01	0.00		0.65
Lane Grp Cap(c), veh/h	320	0	753	0	0	347	578	0	587	449	0	0
V/C Ratio(X)	0.36	0.00	0.46	0.00	0.00	0.01	0.88	0.00	0.13	0.79	0.00	0.00
Avail Cap(c_a), veh/h	342	0	777	0	0	377	678	0	688	449	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.00	0.96	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.8	0.0	13.8	0.0	0.0	29.4	28.9	0.0	21.6	30.1	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.4	0.0	0.0	0.0	11.7	0.0	0.1	13.1	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	7.7	0.0	0.0	0.0	11.7	0.0	1.1	8.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.4	0.0	14.2	0.0	0.0	29.4	40.6	0.0	21.7	43.1	0.0	0.0
LnGrp LOS	C		B			C	D		C	D		
Approach Vol, veh/h		462			2			587			354	
Approach Delay, s/veh		19.0			29.4			38.1			43.1	
Approach LOS		B			C			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.5		23.5		35.0		23.5				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		18.0		18.0		33.0		18.0				
Max Q Clear Time (g_c+I1), s		20.6		2.5		26.7		16.1				
Green Ext Time (p_c), s		0.0		0.0		1.3		0.4				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			33.1									
HCM 6th LOS			C									



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	229	90	84	95	82	100
Future Volume (vph)	229	90	84	95	82	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	14	14	15	15
Grade (%)	-7%		3%			6%
Link Speed (mph)	35		35			35
Link Distance (ft)	1154		657			602
Travel Time (s)	22.5		12.8			11.7
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	3%	6%	7%	5%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	11.1
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	229	90	84	95	82	100
Future Vol, veh/h	229	90	84	95	82	100
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	3	6	7	5	1
Mvmt Flow	252	99	92	104	90	110
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	12.3	9.7	10.4
HCM LOS	B	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	72%	45%
Vol Thru, %	47%	0%	55%
Vol Right, %	53%	28%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	179	319	182
LT Vol	0	229	82
Through Vol	84	0	100
RT Vol	95	90	0
Lane Flow Rate	197	351	200
Geometry Grp	1	1	1
Degree of Util (X)	0.264	0.474	0.289
Departure Headway (Hd)	4.837	4.867	5.206
Convergence, Y/N	Yes	Yes	Yes
Cap	736	736	684
Service Time	2.915	2.936	3.285
HCM Lane V/C Ratio	0.268	0.477	0.292
HCM Control Delay, s/veh	9.7	12.3	10.4
HCM Lane LOS	A	B	B
HCM 95th-tile Q	1.1	2.6	1.2

5: Washington Street & Lee Street



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	1	1	0	0	6
Future Volume (vph)	4	1	1	0	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	16	16
Grade (%)		-1%	1%		-1%	
Link Speed (mph)		25	25		25	
Link Distance (ft)		946	682		463	
Travel Time (s)		25.8	18.6		12.6	
Confl. Peds. (#/hr)	17			17		
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

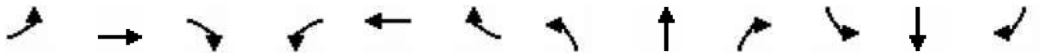
Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	1	1	0	0	6
Future Vol, veh/h	4	1	1	0	0	6
Conflicting Peds, #/hr	17	0	0	17	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	-1	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	5	1	1	0	0	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	18	0	-	0	29	18
Stage 1	-	-	-	-	18	-
Stage 2	-	-	-	-	11	-
Critical Hdwy	4.3	-	-	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1183	-	-	-	1155	1135
Stage 1	-	-	-	-	1178	-
Stage 2	-	-	-	-	1187	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1157	-	-	-	1101	1110
Mov Cap-2 Maneuver	-	-	-	-	1101	-
Stage 1	-	-	-	-	1147	-
Stage 2	-	-	-	-	1161	-

Approach	EB	WB	SB
HCM Control Delay, s/v	6.5	0	8.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1157	-	-	-	1110
HCM Lane V/C Ratio	0.005	-	-	-	0.007
HCM Control Delay (s/veh)	8.1	0	-	-	8.3
HCM Lane LOS	A	A	-	-	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)	6	728	13	17	370	30	10	3	31	86	5	18
Future Volume (vph)	6	728	13	17	370	30	10	3	31	86	5	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	11	11	11	11	11	11
Grade (%)		2%			-2%			0%			-3%	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		403			769			463			326	
Travel Time (s)		11.0			21.0			12.6			8.9	
Confl. Peds. (#/hr)	23		12	12		23	38		3	3		38
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

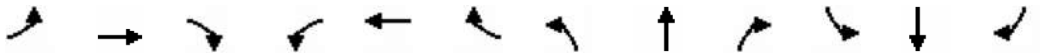
Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	728	13	17	370	30	10	3	31	86	5	18
Future Vol, veh/h	6	728	13	17	370	30	10	3	31	86	5	18
Conflicting Peds, #/hr	23	0	12	12	0	23	38	0	3	3	0	38
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	0	-	-	-3	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	6	766	14	18	389	32	11	3	33	91	5	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	444	0	0	792	0	0	1288	1277	788	1270	1268	466
Stage 1	-	-	-	-	-	-	797	797	-	464	464	-
Stage 2	-	-	-	-	-	-	491	480	-	806	804	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	6.5	6.2	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	845	-	-	637	-	-	154	168	412	196	210	657
Stage 1	-	-	-	-	-	-	426	401	-	712	613	-
Stage 2	-	-	-	-	-	-	636	558	-	481	456	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	828	-	-	630	-	-	133	155	406	167	194	615
Mov Cap-2 Maneuver	-	-	-	-	-	-	133	155	-	167	194	-
Stage 1	-	-	-	-	-	-	416	392	-	689	579	-
Stage 2	-	-	-	-	-	-	562	527	-	432	446	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.1	0.4	22.1	48.8
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	257	828	-	-	630	-	-	191
HCM Lane V/C Ratio	0.18	0.008	-	-	0.028	-	-	0.601
HCM Control Delay (s/veh)	22.1	9.4	0	-	10.9	0	-	48.8
HCM Lane LOS	C	A	A	-	B	A	-	E
HCM 95th %tile Q (veh)	0.6	0	-	-	0.1	-	-	3.3



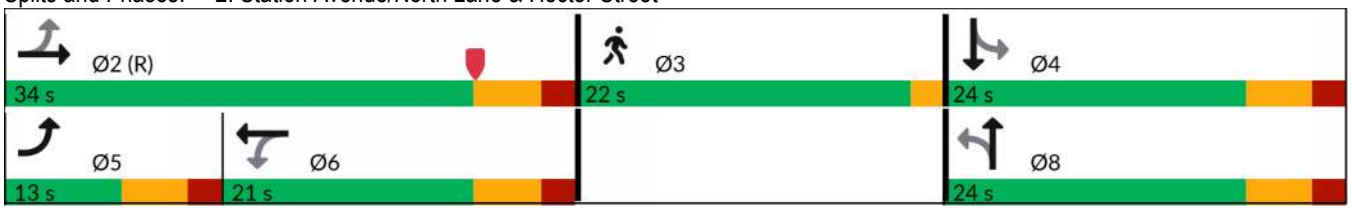
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	726	6	18	330	61	9	36	8	108	25	75
Future Volume (vph)	115	726	6	18	330	61	9	36	8	108	25	75
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	13	13	12	12	12	16	16	16
Grade (%)		-1%			4%			6%			-5%	
Storage Length (ft)	180		0	80		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	75			40			25			25		
Satd. Flow (prot)	1588	1908	0	1564	1746	0	0	1685	0	0	1913	0
Flt Permitted	0.282			0.246				0.939			0.807	
Satd. Flow (perm)	471	1908	0	405	1746	0	0	1592	0	0	1560	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			35	
Link Distance (ft)		769			1291			301			1034	
Travel Time (s)		15.0			25.1			8.2			20.1	
Confl. Peds. (#/hr)			1	1			8		15	15		8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	0%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	121	770	0	19	411	0	0	55	0	0	219	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	34.0		21.0	21.0		24.0	24.0		24.0	24.0	
Total Split (%)	16.3%	42.5%		26.3%	26.3%		30.0%	30.0%		30.0%	30.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		Min	Min		Min	Min		Min	Min	
Act Effct Green (s)	42.0	42.0		29.5	29.5			19.0			19.0	
Actuated g/C Ratio	0.53	0.53		0.37	0.37			0.24			0.24	
v/c Ratio	0.31	0.76		0.12	0.63			0.14			0.59	
Control Delay (s/veh)	13.4	23.4		19.1	22.9			23.1			33.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	13.4	23.4		19.1	22.9			23.1			33.1	
LOS	B	C		B	C			C			C	
Approach Delay (s/veh)		22.1			22.8			23.1			33.2	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	29	288		4	80			22			97	
Queue Length 95th (ft)	66	#565		m9	#380			46			151	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	19.0
Total Split (s)	22.0
Total Split (%)	28%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			1211			221			954	
Turn Bay Length (ft)	180			80								
Base Capacity (vph)	389	1002		149	643			411			402	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.31	0.77		0.13	0.64			0.13			0.54	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 76 (95%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 23.8		Intersection LOS: C	
Intersection Capacity Utilization 85.2%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Station Avenue/North Lane & Hector Street



Lane Group	Ø3
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

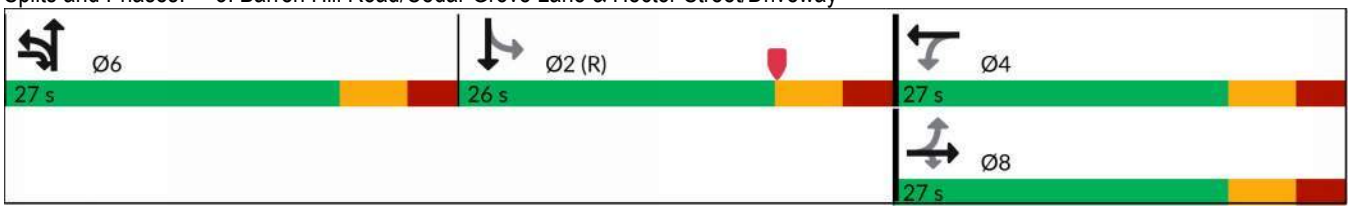
Intersection Summary

3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway

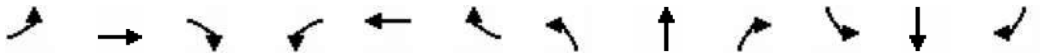
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	232	1	643	1	3	1	249	63	0	0	77	157
Future Volume (vph)	232	1	643	1	3	1	249	63	0	0	77	157
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	11	11	16	16	16
Grade (%)		2%			-4%			-3%			2%	
Storage Length (ft)	0		80	0		0	130		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			100			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1291			310			527			657	
Travel Time (s)		25.1			8.5			10.3			12.8	
Confl. Peds. (#/hr)	3					3			3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	3%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA			NA	
Protected Phases		8	6		4		6	6			2	
Permitted Phases	8		8	4						2		
Detector Phase	8	8	6	4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	27.0	27.0	27.0	27.0	27.0		27.0	27.0		26.0	26.0	
Total Split (%)	33.8%	33.8%	33.8%	33.8%	33.8%		33.8%	33.8%		32.5%	32.5%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0			6.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		C-Max	C-Max	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway



3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	1	643	1	3	1	249	63	0	0	77	157
Future Volume (veh/h)	232	1	643	1	3	1	249	63	0	0	77	157
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1764	1778	1764	1949	1949	1949	1869	1912	1912	1849	1834	1834
Adj Flow Rate, veh/h	244	1	677	1	3	1	262	66	0	0	81	165
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	1	0	0	0	3	0	0	0	1	1
Cap, veh/h	221	1	675	54	141	35	340	365	0	0	173	352
Arrive On Green	0.25	0.26	0.26	0.25	0.26	0.25	0.19	0.19	0.00	0.00	0.32	0.31
Sat Flow, veh/h	498	2	1486	0	537	134	1780	1912	0	0	537	1094
Grp Volume(v), veh/h	245	0	677	5	0	0	262	66	0	0	0	246
Grp Sat Flow(s),veh/h/ln	500	0	1486	671	0	0	1780	1912	0	0	0	1631
Q Serve(g_s), s	0.0	0.0	21.0	0.0	0.0	0.0	11.2	2.3	0.0	0.0	0.0	9.7
Cycle Q Clear(g_c), s	20.0	0.0	21.0	20.0	0.0	0.0	11.2	2.3	0.0	0.0	0.0	9.7
Prop In Lane	1.00		1.00	0.20		0.20	1.00		0.00	0.00		0.67
Lane Grp Cap(c), veh/h	215	0	675	222	0	0	340	365	0	0	0	525
V/C Ratio(X)	1.14	0.00	1.00	0.02	0.00	0.00	0.77	0.18	0.00	0.00	0.00	0.47
Avail Cap(c_a), veh/h	215	0	675	222	0	0	467	502	0	0	0	525
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.55	0.00	0.55	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	33.8	0.0	17.7	23.0	0.0	0.0	30.7	27.1	0.0	0.0	0.0	22.0
Incr Delay (d2), s/veh	89.4	0.0	26.3	0.0	0.0	0.0	5.3	0.2	0.0	0.0	0.0	3.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	0.0	17.8	0.1	0.0	0.0	5.1	1.0	0.0	0.0	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	123.2	0.0	44.0	23.1	0.0	0.0	36.0	27.4	0.0	0.0	0.0	25.0
LnGrp LOS	F		F	C			D	C				C
Approach Vol, veh/h		922			5			328			246	
Approach Delay, s/veh		65.1			23.1			34.3			25.0	
Approach LOS		E			C			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.7		27.0		21.3		27.0				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		19.0		20.0		20.0		20.0				
Max Q Clear Time (g_c+I1), s		11.7		22.0		13.7		23.5				
Green Ext Time (p_c), s		0.5		0.0		0.6		0.0				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			51.6									
HCM 6th LOS			D									



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	139	84	77	238	117	98
Future Volume (vph)	139	84	77	238	117	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	14	14	15	15
Grade (%)	-7%		3%			6%
Link Speed (mph)	35		35			35
Link Distance (ft)	1154		657			602
Travel Time (s)	22.5		12.8			11.7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	1%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	139	84	77	238	117	98
Future Vol, veh/h	139	84	77	238	117	98
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	1	1	0	1	0	0
Mvmt Flow	154	93	86	264	130	109
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	11	10.8	10.7
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	62%	54%
Vol Thru, %	24%	0%	46%
Vol Right, %	76%	38%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	315	223	215
LT Vol	0	139	117
Through Vol	77	0	98
RT Vol	238	84	0
Lane Flow Rate	350	248	239
Geometry Grp	1	1	1
Degree of Util (X)	0.428	0.352	0.335
Departure Headway (Hd)	4.399	5.116	5.046
Convergence, Y/N	Yes	Yes	Yes
Cap	812	696	707
Service Time	2.465	3.207	3.125
HCM Lane V/C Ratio	0.431	0.356	0.338
HCM Control Delay, s/veh	10.8	11	10.7
HCM Lane LOS	B	B	B
HCM 95th-tile Q	2.2	1.6	1.5

5: Washington Street & Lee Street



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	2	13	0	0	15
Future Volume (vph)	5	2	13	0	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	16	16
Grade (%)		-1%	1%		-1%	
Link Speed (mph)		25	25		25	
Link Distance (ft)		946	682		463	
Travel Time (s)		25.8	18.6		12.6	
Confl. Peds. (#/hr)	110			110		
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	5.3

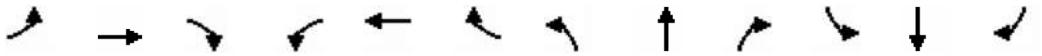
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	2	13	0	0	15
Future Vol, veh/h	5	2	13	0	0	15
Conflicting Peds, #/hr	110	0	0	110	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	-1	-
Peak Hour Factor	50	50	50	50	50	50
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	10	4	26	0	0	30

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	136	0	-	0	160	136
Stage 1	-	-	-	-	136	-
Stage 2	-	-	-	-	24	-
Critical Hdwy	4.3	-	-	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1079	-	-	-	973	977
Stage 1	-	-	-	-	1043	-
Stage 2	-	-	-	-	1171	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	928	-	-	-	711	841
Mov Cap-2 Maneuver	-	-	-	-	711	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	1007	-

Approach	EB	WB	SB
HCM Control Delay, s/v	6.4	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	928	-	-	-	841
HCM Lane V/C Ratio	0.011	-	-	-	0.036
HCM Control Delay (s/veh)	8.9	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	0.1

2031 Base (No-Build) Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	393	1	23	577	71	3	2	25	37	6	7
Future Volume (vph)	12	393	1	23	577	71	3	2	25	37	6	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	11	11	11	11	11	11
Grade (%)		2%			-2%			0%			-3%	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		403			769			463			326	
Travel Time (s)		11.0			21.0			12.6			8.9	
Confl. Peds. (#/hr)	2		7	7		2	9		1	1		9
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%	4%	0%	5%	2%	1%	0%	0%	7%	0%	0%	14%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

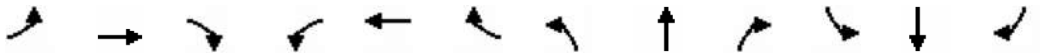
Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	393	1	23	577	71	3	2	25	37	6	7
Future Vol, veh/h	12	393	1	23	577	71	3	2	25	37	6	7
Conflicting Peds, #/hr	2	0	7	7	0	2	9	0	1	1	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	0	-	-	-3	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	4	0	5	2	1	0	0	7	0	0	14
Mvmt Flow	13	409	1	24	601	74	3	2	26	39	6	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	677	0	0	417	0	0	1145	1168	418	1139	1131	649
Stage 1	-	-	-	-	-	-	443	443	-	688	688	-
Stage 2	-	-	-	-	-	-	702	725	-	451	443	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	6.5	6.27	6.5	5.9	6.04
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.2	3	4	3.2
Pot Cap-1 Maneuver	699	-	-	863	-	-	195	195	650	238	248	498
Stage 1	-	-	-	-	-	-	677	579	-	551	505	-
Stage 2	-	-	-	-	-	-	482	433	-	723	624	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	698	-	-	858	-	-	175	180	645	214	229	492
Mov Cap-2 Maneuver	-	-	-	-	-	-	175	180	-	214	229	-
Stage 1	-	-	-	-	-	-	657	562	-	537	481	-
Stage 2	-	-	-	-	-	-	443	413	-	674	605	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.3	0.3	13.6	24.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	448	698	-	-	858	-	-	234
HCM Lane V/C Ratio	0.07	0.018	-	-	0.028	-	-	0.223
HCM Control Delay (s/veh)	13.6	10.3	0	-	9.3	0	-	24.7
HCM Lane LOS	B	B	A	-	A	A	-	C
HCM 95th %tile Q (veh)	0.2	0.1	-	-	0.1	-	-	0.8



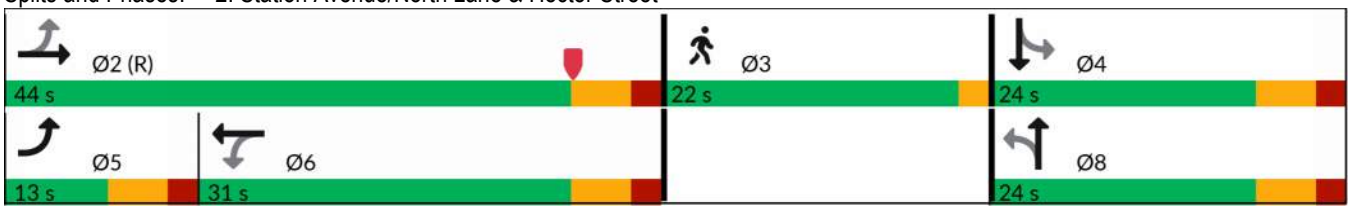
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	337	12	4	597	96	11	26	4	66	23	74
Future Volume (vph)	118	337	12	4	597	96	11	26	4	66	23	74
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	13	13	12	12	12	16	16	16
Grade (%)		-1%			4%			6%			-5%	
Storage Length (ft)	180		0	80		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	75			40			25			25		
Satd. Flow (prot)	1588	1847	0	1564	1752	0	0	1652	0	0	1812	0
Flt Permitted	0.092			0.542				0.913			0.849	
Satd. Flow (perm)	154	1847	0	886	1752	0	0	1524	0	0	1560	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			35	
Link Distance (ft)		769			1291			301			1034	
Travel Time (s)		15.0			25.1			8.2			20.1	
Confl. Peds. (#/hr)			7	7			9		7	7		9
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	4%	0%	0%	2%	1%	0%	4%	0%	9%	0%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	368	0	4	729	0	0	43	0	0	171	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	44.0		31.0	31.0		24.0	24.0		24.0	24.0	
Total Split (%)	14.4%	48.9%		34.4%	34.4%		26.7%	26.7%		26.7%	26.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		Min	Min		Min	Min		Min	Min	
Act Effct Green (s)	53.2	53.2		38.3	38.3			17.8			17.8	
Actuated g/C Ratio	0.59	0.59		0.43	0.43			0.20			0.20	
v/c Ratio	0.49	0.33		0.01	0.97			0.14			0.55	
Control Delay (s/veh)	19.1	11.2		10.2	46.2			29.0			38.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	19.1	11.2		10.2	46.2			29.0			38.8	
LOS	B	B		B	D			C			D	
Approach Delay (s/veh)		13.3			46.0			29.0			38.8	
Approach LOS		B			D			C			D	
Queue Length 50th (ft)	29	98		1	426			20			88	
Queue Length 95th (ft)	80	179		m2	m#721			45			141	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	19.0
Total Split (s)	22.0
Total Split (%)	24%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			1211			221			954	
Turn Bay Length (ft)	180			80								
Base Capacity (vph)	251	1091		377	745			340			348	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.49	0.34		0.01	0.98			0.13			0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 26 (29%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay (s/veh): 33.5		Intersection LOS: C	
Intersection Capacity Utilization 74.9%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Station Avenue/North Lane & Hector Street



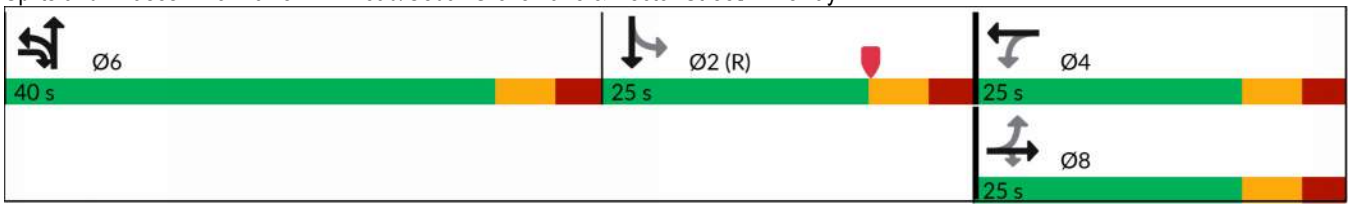
Lane Group	Ø3
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

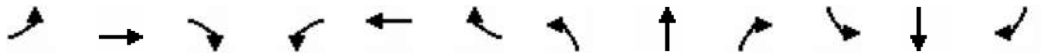
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	3	323	0	1	1	470	70	1	1	112	214
Future Volume (vph)	107	3	323	0	1	1	470	70	1	1	112	214
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	11	11	16	16	16
Grade (%)		2%			-4%			-3%			2%	
Storage Length (ft)	0		80	0		0	130		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			100			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1291			310			527			657	
Travel Time (s)		25.1			8.5			10.3			12.8	
Confl. Peds. (#/hr)	1					1			1	1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	0%	4%	0%	0%	0%	2%	6%	0%	0%	5%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov		NA		Split	NA		Perm	NA	
Protected Phases		8	6		4		6	6			2	
Permitted Phases	8		8	4						2		
Detector Phase	8	8	6	4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	25.0	25.0	40.0	25.0	25.0		40.0	40.0		25.0	25.0	
Total Split (%)	27.8%	27.8%	44.4%	27.8%	27.8%		44.4%	44.4%		27.8%	27.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0			6.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		C-Max	C-Max	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	3	323	0	1	1	470	70	1	1	112	214
Future Volume (veh/h)	107	3	323	0	1	1	470	70	1	1	112	214
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	1722	1778	1722	1949	1949	1949	1883	1826	1912	1849	1776	1820
Adj Flow Rate, veh/h	118	3	355	0	1	1	516	77	1	1	123	235
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	0	4	0	0	0	2	6	0	0	5	2
Cap, veh/h	330	7	761	0	176	176	583	585	8	1	151	288
Arrive On Green	0.19	0.20	0.20	0.00	0.20	0.19	0.33	0.33	0.31	0.27	0.28	0.27
Sat Flow, veh/h	1277	38	1455	0	893	893	1794	1799	23	4	544	1038
Grp Volume(v), veh/h	121	0	355	0	0	2	516	0	78	359	0	0
Grp Sat Flow(s),veh/h/ln	1315	0	1455	0	0	1786	1794	0	1822	1586	0	0
Q Serve(g_s), s	7.2	0.0	13.9	0.0	0.0	0.1	24.5	0.0	2.7	19.1	0.0	0.0
Cycle Q Clear(g_c), s	7.7	0.0	13.9	0.0	0.0	0.1	24.5	0.0	2.7	19.1	0.0	0.0
Prop In Lane	0.98		1.00	0.00		0.50	1.00		0.01	0.00		0.65
Lane Grp Cap(c), veh/h	323	0	761	0	0	352	583	0	593	441	0	0
V/C Ratio(X)	0.37	0.00	0.47	0.00	0.00	0.01	0.88	0.00	0.13	0.81	0.00	0.00
Avail Cap(c_a), veh/h	342	0	782	0	0	377	678	0	688	441	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.7	0.0	13.6	0.0	0.0	29.3	28.8	0.0	21.4	30.7	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.4	0.0	0.0	0.0	12.0	0.0	0.1	15.2	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.3	0.0	12.3	0.0	0.0	0.1	17.6	0.0	2.1	13.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.4	0.0	14.0	0.0	0.0	29.3	40.8	0.0	21.5	45.9	0.0	0.0
LnGrp LOS	C		B			C	D		C	D		
Approach Vol, veh/h		476			2			594			359	
Approach Delay, s/veh		18.9			29.3			38.2			45.9	
Approach LOS		B			C			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.0		23.7		35.3		23.7				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		18.0		18.0		33.0		18.0				
Max Q Clear Time (g_c+I1), s		21.1		2.5		27.0		16.4				
Green Ext Time (p_c), s		0.0		0.0		1.3		0.4				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			33.7									
HCM 6th LOS			C									



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	232	91	87	98	83	102
Future Volume (vph)	232	91	87	98	83	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	14	14	15	15
Grade (%)	-7%		3%			6%
Link Speed (mph)	35		35			35
Link Distance (ft)	1154		657			602
Travel Time (s)	22.5		12.8			11.7
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	3%	6%	7%	5%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	232	91	87	98	83	102
Future Vol, veh/h	232	91	87	98	83	102
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	3	6	7	5	1
Mvmt Flow	255	100	96	108	91	112
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	12.5	9.8	10.5
HCM LOS	B	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	72%	45%
Vol Thru, %	47%	0%	55%
Vol Right, %	53%	28%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	185	323	185
LT Vol	0	232	83
Through Vol	87	0	102
RT Vol	98	91	0
Lane Flow Rate	203	355	203
Geometry Grp	1	1	1
Degree of Util (X)	0.274	0.482	0.295
Departure Headway (Hd)	4.857	4.892	5.23
Convergence, Y/N	Yes	Yes	Yes
Cap	732	731	681
Service Time	2.938	2.965	3.312
HCM Lane V/C Ratio	0.277	0.486	0.298
HCM Control Delay, s/veh	9.8	12.5	10.5
HCM Lane LOS	A	B	B
HCM 95th-tile Q	1.1	2.6	1.2



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	14	1	1	0	0	9
Future Volume (vph)	14	1	1	0	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	16	16
Grade (%)		-1%	1%		-1%	
Link Speed (mph)		25	25		25	
Link Distance (ft)		946	682		463	
Travel Time (s)		25.8	18.6		12.6	
Confl. Peds. (#/hr)	17			17		
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	1	1	0	0	9
Future Vol, veh/h	14	1	1	0	0	9
Conflicting Peds, #/hr	17	0	0	17	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	-1	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	19	1	1	0	0	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	18	0	-	0	57	18
Stage 1	-	-	-	-	18	-
Stage 2	-	-	-	-	39	-
Critical Hdwy	4.3	-	-	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1183	-	-	-	1114	1135
Stage 1	-	-	-	-	1178	-
Stage 2	-	-	-	-	1153	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1157	-	-	-	1048	1110
Mov Cap-2 Maneuver	-	-	-	-	1048	-
Stage 1	-	-	-	-	1133	-
Stage 2	-	-	-	-	1128	-

Approach	EB	WB	SB
HCM Control Delay, s/v	7.6	0	8.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1157	-	-	-	1110
HCM Lane V/C Ratio	0.016	-	-	-	0.011
HCM Control Delay (s/veh)	8.2	0	-	-	8.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	0

1: Lee Street & Hector Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	735	13	27	374	30	10	3	37	87	5	18
Future Volume (vph)	6	735	13	27	374	30	10	3	37	87	5	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	11	11	11	11	11	11
Grade (%)		2%			-2%			0%			-3%	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		403			769			463			326	
Travel Time (s)		11.0			21.0			12.6			8.9	
Confl. Peds. (#/hr)	23		12	12		23	38		3	3		38
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	735	13	27	374	30	10	3	37	87	5	18
Future Vol, veh/h	6	735	13	27	374	30	10	3	37	87	5	18
Conflicting Peds, #/hr	23	0	12	12	0	23	38	0	3	3	0	38
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	0	-	-	-3	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	6	774	14	28	394	32	11	3	39	92	5	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	449	0	0	800	0	0	1321	1310	796	1306	1301	471
Stage 1	-	-	-	-	-	-	805	805	-	489	489	-
Stage 2	-	-	-	-	-	-	516	505	-	817	812	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	6.5	6.2	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	841	-	-	632	-	-	146	160	407	186	202	653
Stage 1	-	-	-	-	-	-	421	398	-	692	600	-
Stage 2	-	-	-	-	-	-	616	544	-	475	452	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	824	-	-	625	-	-	124	144	401	153	182	611
Mov Cap-2 Maneuver	-	-	-	-	-	-	124	144	-	153	182	-
Stage 1	-	-	-	-	-	-	411	389	-	669	553	-
Stage 2	-	-	-	-	-	-	531	502	-	418	442	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.1	0.7	22.5	57.9
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	258	824	-	-	625	-	-	176
HCM Lane V/C Ratio	0.204	0.008	-	-	0.045	-	-	0.658
HCM Control Delay (s/veh)	22.5	9.4	0	-	11	0	-	57.9
HCM Lane LOS	C	A	A	-	B	A	-	F
HCM 95th %tile Q (veh)	0.7	0	-	-	0.1	-	-	3.8

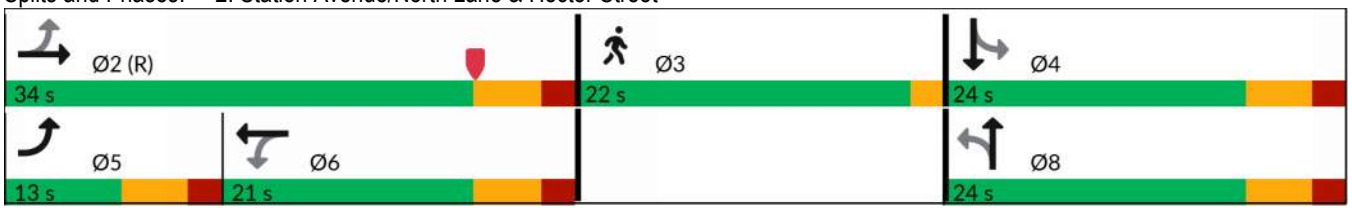
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	738	6	18	341	62	9	36	8	109	25	78
Future Volume (vph)	117	738	6	18	341	62	9	36	8	109	25	78
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	13	13	12	12	12	16	16	16
Grade (%)		-1%			4%			6%			-5%	
Storage Length (ft)	180		0	80		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	75			40			25			25		
Satd. Flow (prot)	1588	1908	0	1564	1746	0	0	1685	0	0	1911	0
Flt Permitted	0.266			0.231				0.939			0.809	
Satd. Flow (perm)	445	1908	0	380	1746	0	0	1592	0	0	1562	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			35	
Link Distance (ft)		769			1291			301			1034	
Travel Time (s)		15.0			25.1			8.2			20.1	
Confl. Peds. (#/hr)			1	1			8		15	15		8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	0%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	123	783	0	19	424	0	0	55	0	0	223	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	34.0		21.0	21.0		24.0	24.0		24.0	24.0	
Total Split (%)	16.3%	42.5%		26.3%	26.3%		30.0%	30.0%		30.0%	30.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		Min	Min		Min	Min		Min	Min	
Act Effct Green (s)	41.9	41.9		29.3	29.3			19.1			19.1	
Actuated g/C Ratio	0.52	0.52		0.37	0.37			0.24			0.24	
v/c Ratio	0.32	0.78		0.13	0.66			0.14			0.59	
Control Delay (s/veh)	13.7	24.3		20.0	24.0			23.0			33.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	13.7	24.3		20.0	24.0			23.0			33.2	
LOS	B	C		B	C			C			C	
Approach Delay (s/veh)		22.9			23.8			23.0			33.2	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	30	297		4	83			22			99	
Queue Length 95th (ft)	68	#584		m9	#399			46			153	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	19.0
Total Split (s)	22.0
Total Split (%)	28%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			1211			221			954	
Turn Bay Length (ft)	180			80								
Base Capacity (vph)	378	998		139	639			413			405	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.33	0.78		0.14	0.66			0.13			0.55	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 76 (95%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay (s/veh): 24.6		Intersection LOS: C	
Intersection Capacity Utilization 86.2%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Station Avenue/North Lane & Hector Street



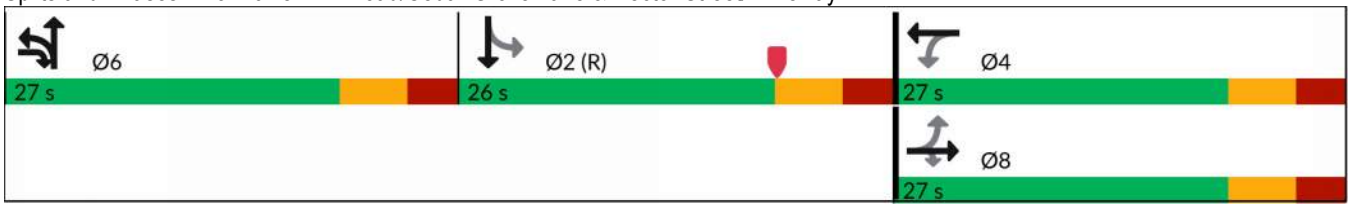
Lane Group	Ø3
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

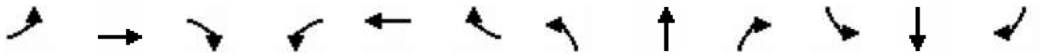
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	236	1	653	1	3	1	256	64	0	0	78	163
Future Volume (vph)	236	1	653	1	3	1	256	64	0	0	78	163
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	11	11	16	16	16
Grade (%)		2%			-4%			-3%			2%	
Storage Length (ft)	0		80	0		0	130		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			100			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1291			310			527			657	
Travel Time (s)		25.1			8.5			10.3			12.8	
Confl. Peds. (#/hr)	3					3			3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	3%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA			NA	
Protected Phases		8	6		4		6	6			2	
Permitted Phases	8		8	4						2		
Detector Phase	8	8	6	4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	27.0	27.0	27.0	27.0	27.0		27.0	27.0		26.0	26.0	
Total Split (%)	33.8%	33.8%	33.8%	33.8%	33.8%		33.8%	33.8%		32.5%	32.5%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0			6.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		C-Max	C-Max	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	236	1	653	1	3	1	256	64	0	0	78	163
Future Volume (veh/h)	236	1	653	1	3	1	256	64	0	0	78	163
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1764	1778	1764	1949	1949	1949	1869	1912	1912	1849	1834	1834
Adj Flow Rate, veh/h	248	1	687	1	3	1	269	67	0	0	82	172
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	1	0	0	0	3	0	0	0	1	1
Cap, veh/h	221	1	681	54	141	35	346	372	0	0	167	351
Arrive On Green	0.25	0.26	0.26	0.25	0.26	0.25	0.19	0.19	0.00	0.00	0.32	0.31
Sat Flow, veh/h	498	2	1486	0	537	134	1780	1912	0	0	526	1103
Grp Volume(v), veh/h	249	0	687	5	0	0	269	67	0	0	0	254
Grp Sat Flow(s),veh/h/ln	500	0	1486	671	0	0	1780	1912	0	0	0	1629
Q Serve(g_s), s	0.0	0.0	21.0	0.0	0.0	0.0	11.5	2.3	0.0	0.0	0.0	10.2
Cycle Q Clear(g_c), s	20.0	0.0	21.0	20.0	0.0	0.0	11.5	2.3	0.0	0.0	0.0	10.2
Prop In Lane	1.00		1.00	0.20		0.20	1.00		0.00	0.00		0.68
Lane Grp Cap(c), veh/h	215	0	681	222	0	0	346	372	0	0	0	518
V/C Ratio(X)	1.16	0.00	1.01	0.02	0.00	0.00	0.78	0.18	0.00	0.00	0.00	0.49
Avail Cap(c_a), veh/h	215	0	681	222	0	0	467	502	0	0	0	518
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.53	0.00	0.53	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	33.8	0.0	17.5	23.0	0.0	0.0	30.6	26.9	0.0	0.0	0.0	22.3
Incr Delay (d2), s/veh	95.6	0.0	27.3	0.0	0.0	0.0	5.7	0.2	0.0	0.0	0.0	3.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	14.8	0.0	23.4	0.1	0.0	0.0	9.0	1.9	0.0	0.0	0.0	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	129.4	0.0	44.8	23.1	0.0	0.0	36.3	27.1	0.0	0.0	0.0	25.6
LnGrp LOS	F		F	C			D	C				C
Approach Vol, veh/h		936			5			336			254	
Approach Delay, s/veh		67.3			23.1			34.5			25.6	
Approach LOS		E			C			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.4		27.0		21.6		27.0				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		19.0		20.0		20.0		20.0				
Max Q Clear Time (g_c+I1), s		12.2		22.0		14.0		23.5				
Green Ext Time (p_c), s		0.5		0.0		0.6		0.0				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			53.1									
HCM 6th LOS			D									



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	142	85	79	241	118	101
Future Volume (vph)	142	85	79	241	118	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	14	14	15	15
Grade (%)	-7%		3%			6%
Link Speed (mph)	35		35			35
Link Distance (ft)	1154		657			602
Travel Time (s)	22.5		12.8			11.7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	1%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	142	85	79	241	118	101
Future Vol, veh/h	142	85	79	241	118	101
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	1	1	0	1	0	0
Mvmt Flow	158	94	88	268	131	112
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	11.2	10.9	10.8
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	63%	54%
Vol Thru, %	25%	0%	46%
Vol Right, %	75%	37%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	320	227	219
LT Vol	0	142	118
Through Vol	79	0	101
RT Vol	241	85	0
Lane Flow Rate	356	252	243
Geometry Grp	1	1	1
Degree of Util (X)	0.437	0.36	0.343
Departure Headway (Hd)	4.422	5.144	5.068
Convergence, Y/N	Yes	Yes	Yes
Cap	807	691	703
Service Time	2.492	3.237	3.15
HCM Lane V/C Ratio	0.441	0.365	0.346
HCM Control Delay, s/veh	10.9	11.2	10.8
HCM Lane LOS	B	B	B
HCM 95th-tile Q	2.2	1.6	1.5



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	11	2	13	0	0	25
Future Volume (vph)	11	2	13	0	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	16	16	16	16
Grade (%)		-1%	1%		-1%	
Link Speed (mph)		25	25		25	
Link Distance (ft)		946	682		463	
Travel Time (s)		25.8	18.6		12.6	
Confl. Peds. (#/hr)	110			110		
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	6.6

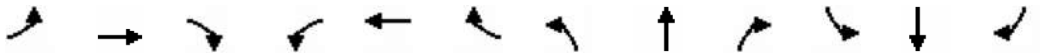
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	2	13	0	0	25
Future Vol, veh/h	11	2	13	0	0	25
Conflicting Peds, #/hr	110	0	0	110	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	1	-	-1	-
Peak Hour Factor	50	50	50	50	50	50
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	22	4	26	0	0	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	136	0	-	0	184	136
Stage 1	-	-	-	-	136	-
Stage 2	-	-	-	-	48	-
Critical Hdwy	4.3	-	-	-	6.2	6.1
Critical Hdwy Stg 1	-	-	-	-	5.2	-
Critical Hdwy Stg 2	-	-	-	-	5.2	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1079	-	-	-	943	977
Stage 1	-	-	-	-	1043	-
Stage 2	-	-	-	-	1142	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	928	-	-	-	681	841
Mov Cap-2 Maneuver	-	-	-	-	681	-
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	982	-

Approach	EB	WB	SB
HCM Control Delay, s/v	7.6	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	928	-	-	-	841
HCM Lane V/C Ratio	0.024	-	-	-	0.059
HCM Control Delay (s/veh)	9	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q (veh)	0.1	-	-	-	0.2

2031 Projected (Build) Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (vph)	12	334	1	23	478	71	3	2	25	37	6	7
Future Volume (vph)	12	334	1	23	478	71	3	2	25	37	6	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	11	11	11	11	11	11
Grade (%)		2%			-2%			0%			-3%	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		403			769			463			326	
Travel Time (s)		11.0			21.0			12.6			8.9	
Confl. Peds. (#/hr)	2		7	7		2	9		1	1		9
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%	4%	0%	5%	2%	1%	0%	0%	7%	0%	0%	14%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	334	1	23	478	71	3	2	25	37	6	7
Future Vol, veh/h	12	334	1	23	478	71	3	2	25	37	6	7
Conflicting Peds, #/hr	2	0	7	7	0	2	9	0	1	1	0	9
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	0	-	-	-3	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	4	0	5	2	1	0	0	7	0	0	14
Mvmt Flow	13	348	1	24	498	74	3	2	26	39	6	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	574	0	0	356	0	0	981	1004	357	975	967	546
Stage 1	-	-	-	-	-	-	382	382	-	585	585	-
Stage 2	-	-	-	-	-	-	599	622	-	390	382	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	6.5	6.27	6.5	5.9	6.04
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.2	3	4	3.2
Pot Cap-1 Maneuver	761	-	-	906	-	-	254	244	705	301	301	568
Stage 1	-	-	-	-	-	-	733	616	-	620	552	-
Stage 2	-	-	-	-	-	-	552	482	-	775	657	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	760	-	-	900	-	-	231	227	700	274	281	561
Mov Cap-2 Maneuver	-	-	-	-	-	-	231	227	-	274	281	-
Stage 1	-	-	-	-	-	-	713	599	-	606	529	-
Stage 2	-	-	-	-	-	-	511	462	-	727	639	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.3	0.4	12.3	19.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	522	760	-	-	900	-	-	296
HCM Lane V/C Ratio	0.06	0.016	-	-	0.027	-	-	0.176
HCM Control Delay (s/veh)	12.3	9.8	0	-	9.1	0	-	19.7
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q (veh)	0.2	0.1	-	-	0.1	-	-	0.6

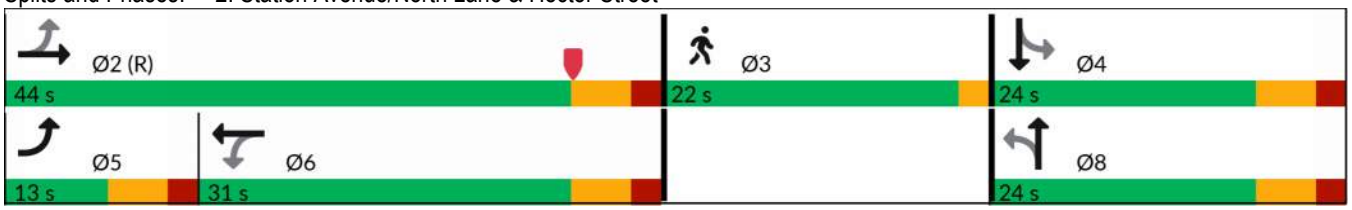
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	293	12	93	509	96	11	42	54	66	34	63
Future Volume (vph)	103	293	12	93	509	96	11	42	54	66	34	63
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	13	13	12	12	12	16	16	16
Grade (%)		-1%			4%			6%			-5%	
Storage Length (ft)	180		0	80		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	75			40			25			25		
Satd. Flow (prot)	1588	1845	0	1564	1747	0	0	1565	0	0	1838	0
Flt Permitted	0.162			0.566				0.962			0.811	
Satd. Flow (perm)	271	1845	0	925	1747	0	0	1511	0	0	1513	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			35	
Link Distance (ft)		769			1291			301			1034	
Travel Time (s)		15.0			25.1			8.2			20.1	
Confl. Peds. (#/hr)			7	7			9		7	7		9
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	4%	0%	0%	2%	1%	0%	4%	0%	9%	0%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	108	321	0	98	637	0	0	113	0	0	171	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	44.0		31.0	31.0		24.0	24.0		24.0	24.0	
Total Split (%)	14.4%	48.9%		34.4%	34.4%		26.7%	26.7%		26.7%	26.7%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		Min	Min		Min	Min		Min	Min	
Act Effct Green (s)	53.0	53.0		41.0	41.0			18.0			18.0	
Actuated g/C Ratio	0.59	0.59		0.46	0.46			0.20			0.20	
v/c Ratio	0.36	0.29		0.23	0.80			0.37			0.56	
Control Delay (s/veh)	12.8	10.9		12.6	25.9			33.5			39.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	12.8	10.9		12.6	25.9			33.5			39.2	
LOS	B	B		B	C			C			D	
Approach Delay (s/veh)		11.4			24.2			33.6			39.2	
Approach LOS		B			C			C			D	
Queue Length 50th (ft)	25	84		38	300			56			88	
Queue Length 95th (ft)	56	154		m55	m#581			98			142	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	19.0
Total Split (s)	22.0
Total Split (%)	24%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			1211			221			954	
Turn Bay Length (ft)	180			80								
Base Capacity (vph)	301	1086		420	795			338			339	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.36	0.30		0.23	0.80			0.33			0.50	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 26 (29%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay (s/veh): 22.9		Intersection LOS: C	
Intersection Capacity Utilization 69.8%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Station Avenue/North Lane & Hector Street



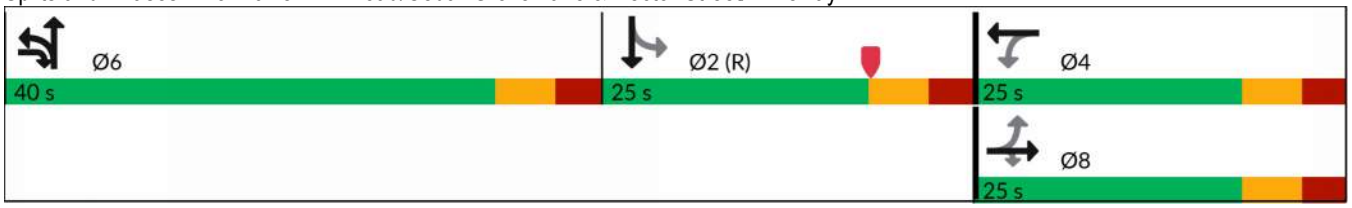
Lane Group	Ø3
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

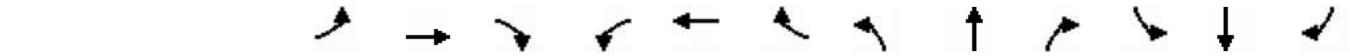
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	3	325	0	1	1	471	70	1	1	112	214
Future Volume (vph)	109	3	325	0	1	1	471	70	1	1	112	214
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	11	11	16	16	16
Grade (%)		2%			-4%			-3%			2%	
Storage Length (ft)	0		80	0		0	130		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			100			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1291			310			527			657	
Travel Time (s)		25.1			8.5			10.3			12.8	
Confl. Peds. (#/hr)	1					1			1	1		
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	4%	0%	4%	0%	0%	0%	2%	6%	0%	0%	5%	2%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov		NA		Split	NA		Perm	NA	
Protected Phases		8	6		4		6	6			2	
Permitted Phases	8		8	4						2		
Detector Phase	8	8	6	4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	25.0	25.0	40.0	25.0	25.0		40.0	40.0		25.0	25.0	
Total Split (%)	27.8%	27.8%	44.4%	27.8%	27.8%		44.4%	44.4%		27.8%	27.8%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0			6.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		C-Max	C-Max	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	

Splits and Phases: 3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	3	325	0	1	1	471	70	1	1	112	214
Future Volume (veh/h)	109	3	325	0	1	1	471	70	1	1	112	214
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	1722	1778	1722	1949	1949	1949	1883	1826	1912	1849	1776	1820
Adj Flow Rate, veh/h	120	3	357	0	1	1	518	77	1	1	123	235
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	0	4	0	0	0	2	6	0	0	5	2
Cap, veh/h	331	7	763	0	176	176	585	587	8	1	150	287
Arrive On Green	0.19	0.20	0.20	0.00	0.20	0.19	0.33	0.33	0.32	0.27	0.28	0.27
Sat Flow, veh/h	1277	37	1455	0	893	893	1794	1799	23	4	544	1038
Grp Volume(v), veh/h	123	0	357	0	0	2	518	0	78	359	0	0
Grp Sat Flow(s),veh/h/ln	1314	0	1455	0	0	1786	1794	0	1822	1586	0	0
Q Serve(g_s), s	7.3	0.0	13.9	0.0	0.0	0.1	24.6	0.0	2.7	19.1	0.0	0.0
Cycle Q Clear(g_c), s	7.8	0.0	13.9	0.0	0.0	0.1	24.6	0.0	2.7	19.1	0.0	0.0
Prop In Lane	0.98		1.00	0.00		0.50	1.00		0.01	0.00		0.65
Lane Grp Cap(c), veh/h	324	0	763	0	0	353	585	0	595	438	0	0
V/C Ratio(X)	0.38	0.00	0.47	0.00	0.00	0.01	0.89	0.00	0.13	0.82	0.00	0.00
Avail Cap(c_a), veh/h	342	0	783	0	0	377	678	0	688	438	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.00	0.97	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.7	0.0	13.5	0.0	0.0	29.2	28.7	0.0	21.3	30.8	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.4	0.0	0.0	0.0	12.1	0.0	0.1	15.6	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.4	0.0	12.4	0.0	0.0	0.1	17.7	0.0	2.0	13.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.5	0.0	14.0	0.0	0.0	29.2	40.8	0.0	21.4	46.4	0.0	0.0
LnGrp LOS	C		B			C	D		C	D		
Approach Vol, veh/h		480			2			596			359	
Approach Delay, s/veh		19.0			29.2			38.3			46.4	
Approach LOS		B			C			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		30.9		23.8		35.4		23.8				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		18.0		18.0		33.0		18.0				
Max Q Clear Time (g_c+I1), s		21.1		2.5		27.1		16.4				
Green Ext Time (p_c), s		0.0		0.0		1.2		0.3				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			33.8									
HCM 6th LOS			C									



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	232	91	88	99	83	102
Future Volume (vph)	232	91	88	99	83	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	14	14	15	15
Grade (%)	-7%		3%			6%
Link Speed (mph)	35		35			35
Link Distance (ft)	1154		657			602
Travel Time (s)	22.5		12.8			11.7
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	3%	6%	7%	5%	1%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

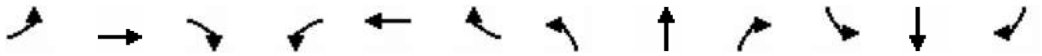
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	232	91	88	99	83	102
Future Vol, veh/h	232	91	88	99	83	102
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	3	6	7	5	1
Mvmt Flow	255	100	97	109	91	112
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	12.5	9.8	10.5
HCM LOS	B	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	72%	45%
Vol Thru, %	47%	0%	55%
Vol Right, %	53%	28%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	187	323	185
LT Vol	0	232	83
Through Vol	88	0	102
RT Vol	99	91	0
Lane Flow Rate	205	355	203
Geometry Grp	1	1	1
Degree of Util (X)	0.277	0.483	0.296
Departure Headway (Hd)	4.857	4.898	5.233
Convergence, Y/N	Yes	Yes	Yes
Cap	732	728	681
Service Time	2.942	2.972	3.317
HCM Lane V/C Ratio	0.28	0.488	0.298
HCM Control Delay, s/veh	9.8	12.5	10.5
HCM Lane LOS	A	B	B
HCM 95th-tile Q	1.1	2.7	1.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	62	0	0	103	0	0	0	0	0	0	9
Future Volume (vph)	14	62	0	0	103	0	0	0	0	0	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	16	12	12	12	16	12	16
Grade (%)		-1%			1%			0%			-1%	
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		946			682			232			463	
Travel Time (s)		25.8			18.6			0.0			12.6	
Confl. Peds. (#/hr)	17					17						
Peak Hour Factor	0.75	0.75	0.92	0.92	0.75	0.75	0.92	0.92	0.92	0.75	0.92	0.75
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	2%	2%	2%	0%	2%	0%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

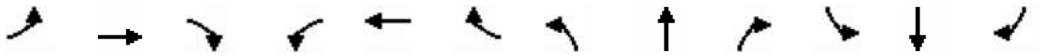
Intersection	
Int Delay, s/veh	9.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	62	0	0	103	0	0	0	0	0	0	9
Future Vol, veh/h	14	62	0	0	103	0	0	0	0	0	0	9
Conflicting Peds, #/hr	17	0	0	0	0	17	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	0	-	-	-1	-
Peak Hour Factor	75	75	92	92	75	75	92	92	92	75	92	75
Heavy Vehicles, %	0	0	2	2	0	0	2	2	2	0	2	0
Mvmt Flow	19	83	0	0	137	0	0	0	0	0	0	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	92	6	-	-	12	17	12	0	0	0	0	0
Stage 1	6	6	-	-	0	-	-	-	-	-	-	-
Stage 2	86	0	-	-	12	-	-	-	-	-	-	-
Critical Hdwy	6.9	6.3	-	-	6.7	6.3	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.9	5.3	-	-	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	5.3	-	-	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	-	-	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	1045	894	0	0	886	1136	1189	-	-	-	-	-
Stage 1	1191	895	0	0	-	-	-	-	-	-	-	-
Stage 2	1080	-	0	0	889	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	906	894	-	-	886	1118	1189	-	-	-	-	-
Mov Cap-2 Maneuver	906	894	-	-	886	-	-	-	-	-	-	-
Stage 1	1191	895	-	-	-	-	-	-	-	-	-	-
Stage 2	1063	-	-	-	889	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.5	9.8	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1189	-	-	896	886	-	-	-
HCM Lane V/C Ratio	-	-	-	0.113	0.155	-	-	-
HCM Control Delay (s/veh)	0	-	-	9.5	9.8	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q (veh)	0	-	-	0.4	0.5	-	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	625	13	27	313	30	10	3	37	87	5	18
Future Volume (vph)	6	625	13	27	313	30	10	3	37	87	5	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	15	15	15	15	15	15	11	11	11	11	11	11
Grade (%)		2%			-2%			0%			-3%	
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		403			769			463			326	
Travel Time (s)		11.0			21.0			12.6			8.9	
Confl. Peds. (#/hr)	23		12	12		23	38		3	3		38
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	625	13	27	313	30	10	3	37	87	5	18
Future Vol, veh/h	6	625	13	27	313	30	10	3	37	87	5	18
Conflicting Peds, #/hr	23	0	12	12	0	23	38	0	3	3	0	38
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	0	-	-	-3	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	6	658	14	28	329	32	11	3	39	92	5	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	384	0	0	684	0	0	1140	1129	680	1125	1120	406
Stage 1	-	-	-	-	-	-	689	689	-	424	424	-
Stage 2	-	-	-	-	-	-	451	440	-	701	696	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	6.5	6.2	6.5	5.9	5.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	5.5	4.9	-
Follow-up Hdwy	3	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	886	-	-	695	-	-	196	206	476	243	251	707
Stage 1	-	-	-	-	-	-	491	450	-	745	634	-
Stage 2	-	-	-	-	-	-	670	581	-	543	501	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	868	-	-	688	-	-	168	188	469	205	229	661
Mov Cap-2 Maneuver	-	-	-	-	-	-	168	188	-	205	229	-
Stage 1	-	-	-	-	-	-	481	441	-	722	590	-
Stage 2	-	-	-	-	-	-	584	540	-	487	490	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.1	0.8	18.3	35
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	324	868	-	-	688	-	-	232
HCM Lane V/C Ratio	0.162	0.007	-	-	0.041	-	-	0.499
HCM Control Delay (s/veh)	18.3	9.2	0	-	10.5	0	-	35
HCM Lane LOS	C	A	A	-	B	A	-	E
HCM 95th %tile Q (veh)	0.6	0	-	-	0.1	-	-	2.5

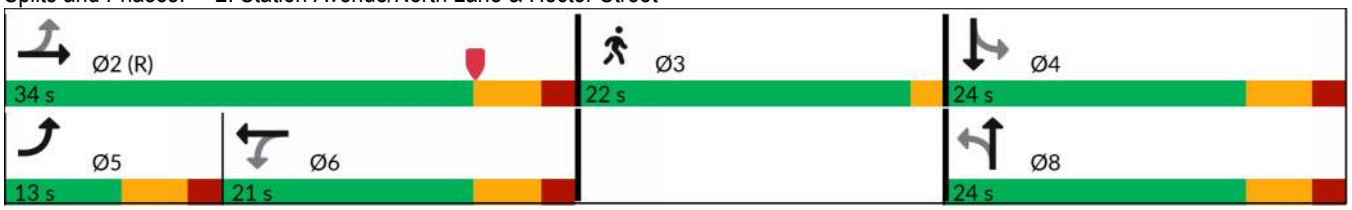
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	643	6	72	291	62	9	52	107	109	37	67
Future Volume (vph)	102	643	6	72	291	62	9	52	107	109	37	67
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	14	14	10	13	13	12	12	12	16	16	16
Grade (%)		-1%			4%			6%			-5%	
Storage Length (ft)	180		0	80		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	75			40			25			25		
Satd. Flow (prot)	1588	1908	0	1564	1741	0	0	1539	0	0	1929	0
Flt Permitted	0.300			0.312				0.980			0.706	
Satd. Flow (perm)	502	1908	0	513	1741	0	0	1512	0	0	1381	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			25			35	
Link Distance (ft)		769			1291			301			1034	
Travel Time (s)		15.0			25.1			8.2			20.1	
Confl. Peds. (#/hr)			1	1			8		15	15		8
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	1%	0%	0%	2%	2%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	683	0	76	371	0	0	177	0	0	225	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	9.0	21.0		21.0	21.0		9.0	9.0		9.0	9.0	
Total Split (s)	13.0	34.0		21.0	21.0		24.0	24.0		24.0	24.0	
Total Split (%)	16.3%	42.5%		26.3%	26.3%		30.0%	30.0%		30.0%	30.0%	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	C-Max		Min	Min		Min	Min		Min	Min	
Act Effct Green (s)	39.8	39.8		27.5	27.5			21.2			21.2	
Actuated g/C Ratio	0.50	0.50		0.34	0.34			0.27			0.27	
v/c Ratio	0.28	0.71		0.43	0.61			0.44			0.61	
Control Delay (s/veh)	14.4	22.9		29.9	24.1			27.0			32.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	14.4	22.9		29.9	24.1			27.0			32.7	
LOS	B	C		C	C			C			C	
Approach Delay (s/veh)		21.8			25.2			27.1			32.7	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	28	255		15	73			73			98	
Queue Length 95th (ft)	64	#496		m#80	#358			118			154	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	19.0
Total Split (s)	22.0
Total Split (%)	28%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		689			1211			221			954	
Turn Bay Length (ft)	180			80								
Base Capacity (vph)	384	950		176	599			419			382	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.28	0.72		0.43	0.62			0.42			0.59	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 76 (95%), Referenced to phase 2:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay (s/veh): 24.8		Intersection LOS: C	
Intersection Capacity Utilization 89.6%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Station Avenue/North Lane & Hector Street



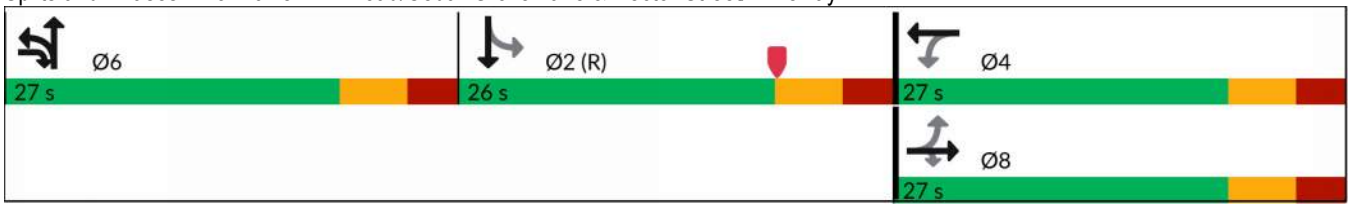
Lane Group	Ø3
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

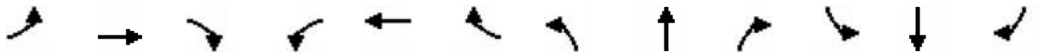
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	237	1	655	1	3	1	258	64	0	0	78	165
Future Volume (vph)	237	1	655	1	3	1	258	64	0	0	78	165
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	10	10	12	12	12	10	11	11	16	16	16
Grade (%)		2%			-4%			-3%			2%	
Storage Length (ft)	0		80	0		0	130		0	0		0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (ft)	25			25			100			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1291			310			527			657	
Travel Time (s)		25.1			8.5			10.3			12.8	
Confl. Peds. (#/hr)	3					3			3	3		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	3%	0%	0%	0%	1%	1%
Shared Lane Traffic (%)												
Turn Type	Perm	NA	pm+ov	Perm	NA		Split	NA			NA	
Protected Phases		8	6		4		6	6			2	
Permitted Phases	8		8	4						2		
Detector Phase	8	8	6	4	4		6	6		2	2	
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s)	27.0	27.0	27.0	27.0	27.0		27.0	27.0		26.0	26.0	
Total Split (%)	33.8%	33.8%	33.8%	33.8%	33.8%		33.8%	33.8%		32.5%	32.5%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0		-1.0	-1.0			-1.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0			6.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	None		C-Max	C-Max	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:SBTL, Start of Yellow	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	

Splits and Phases: 3: Barren Hill Road/Cedar Grove Lane & Hector Street/Driveway





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	237	1	655	1	3	1	258	64	0	0	78	165
Future Volume (veh/h)	237	1	655	1	3	1	258	64	0	0	78	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	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	1764	1778	1764	1949	1949	1949	1869	1912	1912	1849	1834	1834
Adj Flow Rate, veh/h	249	1	689	1	3	1	272	67	0	0	82	174
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	1	0	0	0	3	0	0	0	1	1
Cap, veh/h	221	1	683	54	141	35	349	375	0	0	165	350
Arrive On Green	0.25	0.26	0.26	0.25	0.26	0.25	0.20	0.20	0.00	0.00	0.32	0.30
Sat Flow, veh/h	498	2	1486	0	537	134	1780	1912	0	0	522	1107
Grp Volume(v), veh/h	250	0	689	5	0	0	272	67	0	0	0	256
Grp Sat Flow(s),veh/h/ln	500	0	1486	671	0	0	1780	1912	0	0	0	1628
Q Serve(g_s), s	0.0	0.0	21.0	0.0	0.0	0.0	11.6	2.3	0.0	0.0	0.0	10.3
Cycle Q Clear(g_c), s	20.0	0.0	21.0	20.0	0.0	0.0	11.6	2.3	0.0	0.0	0.0	10.3
Prop In Lane	1.00		1.00	0.20		0.20	1.00		0.00	0.00		0.68
Lane Grp Cap(c), veh/h	215	0	683	222	0	0	349	375	0	0	0	515
V/C Ratio(X)	1.16	0.00	1.01	0.02	0.00	0.00	0.78	0.18	0.00	0.00	0.00	0.50
Avail Cap(c_a), veh/h	215	0	683	222	0	0	467	502	0	0	0	515
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.00	0.62	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	33.8	0.0	17.4	23.0	0.0	0.0	30.5	26.8	0.0	0.0	0.0	22.5
Incr Delay (d2), s/veh	100.5	0.0	29.2	0.0	0.0	0.0	5.9	0.2	0.0	0.0	0.0	3.4
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	15.5	0.0	24.3	0.1	0.0	0.0	9.1	1.9	0.0	0.0	0.0	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	134.3	0.0	46.6	23.1	0.0	0.0	36.4	27.0	0.0	0.0	0.0	25.9
LnGrp LOS	F		F	C			D	C				C
Approach Vol, veh/h		939			5			339			256	
Approach Delay, s/veh		70.0			23.1			34.6			25.9	
Approach LOS		E			C			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		31.3		27.0		21.7		27.0				
Change Period (Y+Rc), s		7.0		7.0		7.0		7.0				
Max Green Setting (Gmax), s		19.0		20.0		20.0		20.0				
Max Q Clear Time (g_c+I1), s		12.3		22.0		14.1		23.5				
Green Ext Time (p_c), s		0.5		0.0		0.6		0.0				

Intersection Summary												
HCM 6th Ctrl Delay, s/veh			54.7									
HCM 6th LOS			D									



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	143	85	80	241	118	102
Future Volume (vph)	143	85	80	241	118	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	14	14	15	15
Grade (%)	-7%		3%			6%
Link Speed (mph)	35		35			35
Link Distance (ft)	1154		657			602
Travel Time (s)	22.5		12.8			11.7
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	1%	0%	1%	0%	0%
Shared Lane Traffic (%)						
Sign Control	Stop		Stop			Stop

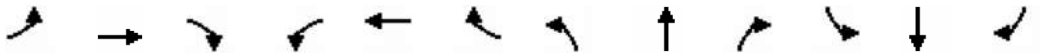
Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	143	85	80	241	118	102
Future Vol, veh/h	143	85	80	241	118	102
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	1	1	0	1	0	0
Mvmt Flow	159	94	89	268	131	113
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay, s/veh	11.2	11	10.8
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	63%	54%
Vol Thru, %	25%	0%	46%
Vol Right, %	75%	37%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	321	228	220
LT Vol	0	143	118
Through Vol	80	0	102
RT Vol	241	85	0
Lane Flow Rate	357	253	244
Geometry Grp	1	1	1
Degree of Util (X)	0.439	0.362	0.344
Departure Headway (Hd)	4.428	5.149	5.073
Convergence, Y/N	Yes	Yes	Yes
Cap	806	689	702
Service Time	2.498	3.244	3.156
HCM Lane V/C Ratio	0.443	0.367	0.348
HCM Control Delay, s/veh	11	11.2	10.8
HCM Lane LOS	B	B	B
HCM 95th-tile Q	2.3	1.7	1.5



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	118	0	0	76	0	0	0	0	0	0	25
Future Volume (vph)	11	118	0	0	76	0	0	0	0	0	0	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	16	12	12	12	16	12	16
Grade (%)		-1%			1%			0%			-1%	
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		946			682			275			463	
Travel Time (s)		25.8			18.6			0.0			12.6	
Confl. Peds. (#/hr)	110					110						
Peak Hour Factor	0.50	0.50	0.92	0.92	0.50	0.50	0.92	0.92	0.92	0.50	0.92	0.50
Heavy Vehicles (%)	0%	0%	2%	2%	0%	0%	2%	2%	2%	0%	2%	0%
Shared Lane Traffic (%)												
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	9.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	118	0	0	76	0	0	0	0	0	0	25
Future Vol, veh/h	11	118	0	0	76	0	0	0	0	0	0	25
Conflicting Peds, #/hr	110	0	0	0	0	110	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	1	-	-	0	-	-	-1	-
Peak Hour Factor	50	50	92	92	50	50	92	92	92	50	92	50
Heavy Vehicles, %	0	0	2	2	0	0	2	2	2	0	2	0
Mvmt Flow	22	236	0	0	152	0	0	0	0	0	0	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	211	25	-	-	50	110	50	0	0	0	0	0
Stage 1	25	25	-	-	0	-	-	-	-	-	-	-
Stage 2	186	0	-	-	50	-	-	-	-	-	-	-
Critical Hdwy	6.9	6.3	-	-	6.7	6.3	4.3	-	-	4.3	-	-
Critical Hdwy Stg 1	5.9	5.3	-	-	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.9	5.3	-	-	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3	4	-	-	4	3.1	3	-	-	3	-	-
Pot Cap-1 Maneuver	873	873	0	0	843	1004	1154	-	-	-	-	-
Stage 1	1164	880	0	0	-	-	-	-	-	-	-	-
Stage 2	955	-	0	0	855	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	673	873	-	-	843	899	1154	-	-	-	-	-
Mov Cap-2 Maneuver	673	873	-	-	843	-	-	-	-	-	-	-
Stage 1	1164	880	-	-	-	-	-	-	-	-	-	-
Stage 2	855	-	-	-	855	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	11.1	10.2	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1154	-	-	851	843	-	-	-
HCM Lane V/C Ratio	-	-	-	0.303	0.18	-	-	-
HCM Control Delay (s/veh)	0	-	-	11.1	10.2	0	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q (veh)	0	-	-	1.3	0.7	-	-	-

APPENDIX G:
Traffic Signal Plans

MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

PHASE	2+5			2+6			PED			4+8			FLASH
INTERVAL / SIGNAL	1	2	3	4	5	6	7	8	9	10	11	12	
1,2	R	R	R	G	Y	R	R	R	R	R	R	R	Y
3	G ①	Y ①	R ②	G	Y	R	R	R	R	R	R	R	Y
4	G	Y ②	R ②	G	Y	R	R	R	R	R	R	R	Y
5,6	R	R	R	R	R	R	R	R	R	G	Y	R	R
7,8	R	R	R	R	R	R	R	R	R	G	Y	R	R
9,10	H	H	H	H	H	H	M	FH	H	H	H	H	OFF
11,12	H	H	H	H	H	H	M	FH	H	H	H	H	OFF
13,14,15,16	H	H	H	H	H	H	M	FH	H	H	H	H	OFF

FIXED		4	2		4	2					4	2
MINIMUM	3			15						3		
PASSAGE	3			**						5		
MAX 1	7			34						12		
PEDESTRIAN ✳							7	12	3			
MEMORY	NL			MN			L			L		

REFER TO SYSTEM PERMIT #I-0225 FOR PROGRAM TIMINGS AND WEEKLY PROGRAM CHART

OPERATION NOTES

① ⅋ IF FOLLOWED BY 2+6 ② G IF FOLLOWED BY 2+6

✳ UPON PEDESTRIAN ACTUATION, OTHERWISE HAND SYMBOL AT ALL TIMES

- CONTROLLER TO DWELL IN PHASE 2+6 UNTIL ACTUATED BY PHASE 4+8 OR THE PEDESTRIAN PHASE
- PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL.
- THIS SIGNAL TO BE EQUIPPED WITH ACCESSIBLE PEDESTRIAN SIGNAL ACTIVATED DURING THE PEDESTRIAN PHASE (INTERVAL 7) TO ASSIST SIGHT-IMPAIRED PEDESTRIANS

**DENSITY ZONE NOTES

- RANGE OF DETECTION: 0-100 FEET FROM STOP BAR
- SPEED BOUNDARY: 5-30 MPH

**ADVANCE DILEMMA ZONE NOTES

- ESTIMATED TIME OF ARRIVAL: MIN 2.5 - MAX 5.5 SEC.
- RANGE OF DETECTION: 0-450 FEET FROM STOP BAR
- SPEED BOUNDARY: 27-100 MPH

EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

PHASE	2			6			4			8		
INTERVAL / SIGNALS	13	14	15	16	17	18	19	20	21	22	23	24
1,2	R	R	R	G	Y	R	R	R	R	R	R	R
3	G ⅋	Y	R	R	R	R	R	R	R	R	R	R
4	G	Y	R	R	R	R	R	R	R	R	R	R
5,6	R	R	R	R	R	R	R	R	R	G	Y	R
7,8	R	R	R	R	R	R	G	Y	R	R	R	R
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
13,14,15,16	H	H	H	H	H	H	H	H	H	H	H	H
FIXED	▲	4	2	▲	4	2	▲	4	2	▲	4	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.

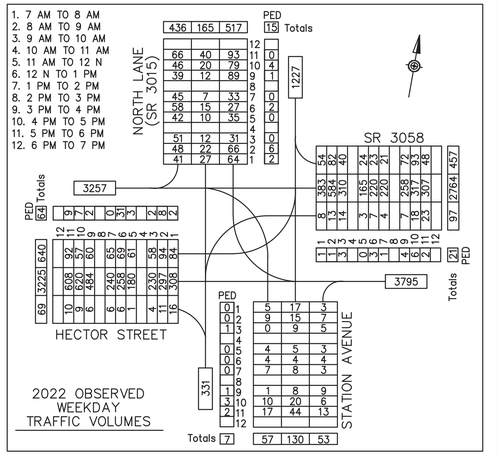
EMERGENCY PRE-EMPTION OPERATION NOTES

ⓐ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION

ⓑ SIGNAL TO INDICATE ⅋ WHEN RETURNING TO NORMAL OPERATION

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE NORTHBOUND APPROACH OF STATION AVENUE AND THE SOUTHBOUND APPROACH OF NORTH LANE (SR 3015) AND THE EASTBOUND AND WESTBOUND APPROACHES OF HECTOR STREET (SR 3058) WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED THE PED "WALK (MAN)" INTERVAL SHALL TERMINATE IMMEDIATELY AND THE PED "CLEAR (FLASHING HAND AND COUNTDOWN TIMER)" INTERVAL SHALL TIME OUT THIS INTERVAL FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PREEMPTION.
- IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING ALL SIGNALS SHALL REMAIN FLASHING.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- UPON COMPLETION OF PRE-EMPTION PHASE 2,4,6 OR 8 IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 4 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.
- LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.



SIGNAL INDICATIONS

SIGN TABULATION

PLAN SYMBOL	SERIES	SIZE	DESCRIPTION
A	D3-4	90"x16"	STREET SIGN "Hector Street" (SWINGING BRACKETS)
B	D3-5	96"x28"	STREET SIGN "←North Lane" "Station Ave→"
C	D3-5	96"x28"	STREET SIGN "←Station Ave" "North Lane→"
D	R10-3E(R)	9"x15"	EDUCATIONAL PUSH BUTTON SIGN →
E	R10-3E(L)	9"x15"	EDUCATIONAL PUSH BUTTON SIGN ←
F	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
G	R10-11	30"x36"	NO TURN ON RED ●
J	R10+12	30"x36"	LEFT TURN YIELD ON GREEN

CLEARVIEW 3-W 8" UPPER CASE 6" LOWER CASE LETTERS

NOTES:
STREET SIGNS TO HAVE GREEN BACKGROUND WITH WHITE LETTERS AND BORDER.
STREET SIGNS TO BE MOUNTED ON SWINGING BRACKETS.

LEGEND

- 25' MA — MAST ARM/ IDENTIFYING LENGTH
- ④ — SIGNAL HEAD/ IDENTIFYING NUMBER
- ④ — PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- A — PEDESTRIAN PUSHBUTTON/ SIGN WITH IDENTIFYING LETTER
- A — SIGN/ IDENTIFYING LETTER
- 6'X20' — LOOP SENSOR/SIZE
- CURB RAMP
- EMERGENCY PRE-EMPTION DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- CONTROLLER CABINET
- DC — DEPRESSED CURB
- PHASE NUMBER
- UTILITY POLE
- ADVANCED DILEMMA/DENSITY ZONE OF DETECTION
- VIDEO DETECTOR
- 20' LA — LUMINAIRE/ IDENTIFYING LENGTH
- FENCE
- GUIDE RAIL

0 25 50 FEET

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

SYSTEM PERMIT # I-0225

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: WHITEMARSH TOWNSHIP
INTERSECTION: HECTOR STREET (SR 3058) & NORTH LANE (SR 3015)/STATION AVE

REVIEWED: Richard L. Mellor, Jr. 06/13/2023
Richard L. Mellor, Jr. DATE 06/13/2023
MUNICIPAL OFFICIAL DATE

RECOMMENDED:
MARK L KRAY 05-28-91
DOUGLAS MAY 05-30-91
DISTRICT TRAFFIC ENGINEER DATE

NO	REVISION	DES/ REVW	DATE	REVW	DATE	RECOM	DATE
1	ADDED NO TURN ON RED 7 AM-7 PM	PAI	09-23-93	MLK	10-01-93	DWM	10-01-93
2	NEW DWG - ADDED PREEMPT	PAI/ CB	10-29-01	MLK	11-02-01	LRB	11-06-01
3	REVISE NW & SW CORNERS; ADD CURB RAMPS, WAVETRONIX, & DSNS; REVISE PRE-EMPTION NOTES; ADD @ 5	TPD		DLA	11/28/11	ABP	11/28/11
4	AS-BUILT	KPL	02/13/15	DLA	3/4/15	ABP	3/5/15
5	TIMING ADJUSTMENTS, UPDATED SR INFO, REVISED TRAFFIC COUNTS	McM	11/18/22	MJS	Digitally signed by MJS Date: 2023.06.06 09:16:14 -04'00'	KPL	Digitally signed by KPL Date: 2023.08.07 20:40:57 -04'00'
6							
7							
8							

SHEET 2 OF 2 | PERMIT # 64-2732 | FILE # 2732

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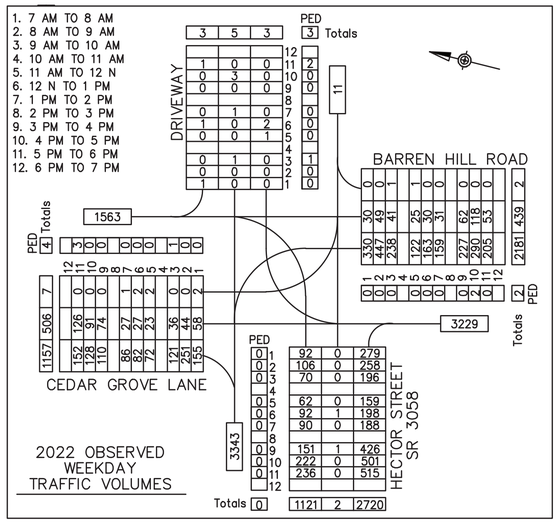
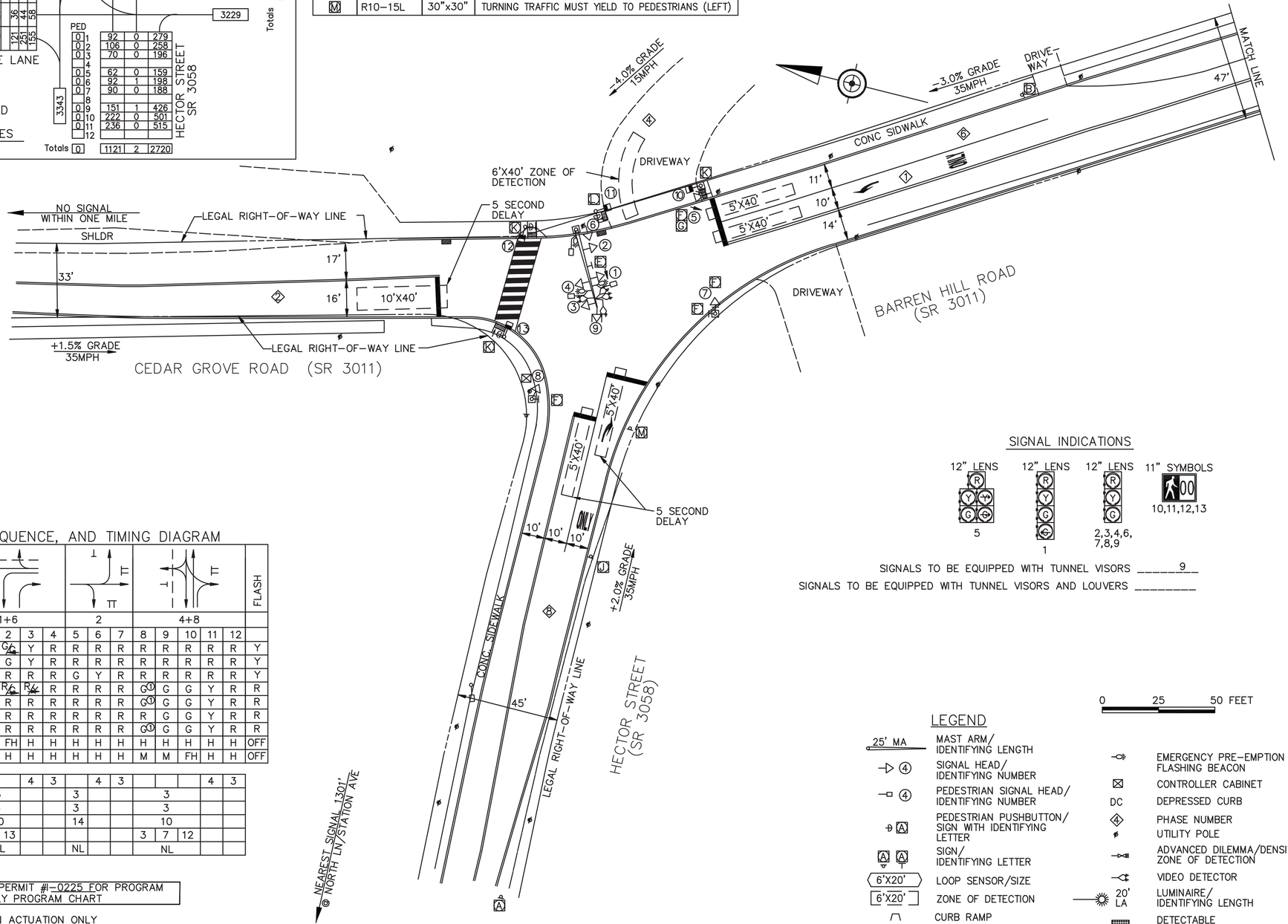


SIGN TABULATION			
PLAN SYMBOL	SERIES	SIZE	DESCRIPTION
A	W3-3	36"x36"	SIGNAL AHEAD
B	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
C	R3-5L	30"x36"	LEFT TURN SIGN
D	R3-5A	30"x36"	STRAIGHT THROUGH SIGN
E	R10-12	30"x36"	LEFT TURN YIELD ON GREEN ●
F	R9-3	18"x18"	NO PEDESTRIAN CROSSING
G	R10-10R	24"x30"	RIGHT TURN SIGNAL
J	R3-7R	30"x30"	RIGHT LANE MUST TURN RIGHT
K	R10-3E(L)	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON WITH COUNTDOWN TIMER ←
L	R10-3E(R)	9"x15"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON WITH COUNTDOWN TIMER →
M	R10-15L	30"x30"	TURNING TRAFFIC MUST YIELD TO PEDESTRIANS (LEFT)



MOVEMENT, SEQUENCE, AND TIMING DIAGRAM

PHASE	1+6				2			4+8					FLASH
INTERVAL / SIGNAL	1	2	3	4	5	6	7	8	9	10	11	12	
1	G	G	Y	R	R	R	R	R	R	R	R	R	Y
2	G	G	Y	R	R	R	R	R	R	R	R	R	Y
3,4	R	R	R	R	G	Y	R	R	R	R	R	R	Y
5	R	R	R	R	R	R	R	G①	G	G	Y	R	R
6	R	R	R	R	R	R	R	G①	G	G	Y	R	R
7,8	R	R	R	R	R	R	R	R	G	G	Y	R	R
9	R	R	R	R	R	R	R	G①	G	G	Y	R	R
10,11	M	FH	H	H	H	H	H	H	H	H	H	H	OFF
12,13	H	H	H	H	H	H	H	M	M	FH	H	H	OFF

FIXED			4	3		4	3				4	3
MINIMUM	3				3			3				
PASSAGE	3				3			3				
MAX 1	20				14			10				
PEDESTRIAN ✳	7	13						3	7	12		
MEMORY	NL				NL			NL				

REFER TO SYSTEM PERMIT #I-0225 FOR PROGRAM TIMINGS AND WEEKLY PROGRAM CHART

✳ UPON PEDESTRIAN ACTUATION ONLY
① R IF ACTUATED BY PEDESTRIAN

SIGNAL INDICATIONS

SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS 9
SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS AND LOUVERS _____

0 25 50 FEET

LEGEND

- 25' MA — MAST ARM/ IDENTIFYING LENGTH
- ④ — SIGNAL HEAD/ IDENTIFYING NUMBER
- ④ — PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- Ⓐ — PEDESTRIAN PUSHBUTTON/ SIGN WITH IDENTIFYING LETTER
- Ⓐ Ⓐ — SIGN/ IDENTIFYING LETTER
- 6'X20' — LOOP SENSOR/SIZE
- 6'X20' — ZONE OF DETECTION
- CURB RAMP
- EMERGENCY PRE-EMPTION DETECTOR
- EMERGENCY PRE-EMPTION FLASHING BEACON
- ⊠ — CONTROLLER CABINET
- DC — DEPRESSED CURB
- ④ — PHASE NUMBER
- UTILITY POLE
- ADVANCED DILEMMA/DENSITY ZONE OF DETECTION
- VIDEO DETECTOR
- 20' LA — LUMINAIRE/ IDENTIFYING LENGTH
- DETECTABLE WARNING SURFACE

GENERAL NOTES

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ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

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SYSTEM PERMIT # I-0225

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: WHITEMARSH TOWNSHIP
INTERSECTION: BARREN HILL RD/CEDAR GROVE RD (SR 3011) AND HECTOR ST (SR 3058)

REVIEWED:

RICHARD L. MELLOR — DATE 11/7/17
MUNICIPAL OFFICIAL — DATE

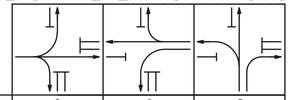
RECOMMENDED:
GRW — 03-12-86

WERNER J. EICHORN — 03-12-86
DISTRICT TRAFFIC ENGINEER — DATE

NO	REVISION	DES/ REVW	DATE	REVW	DATE	RECOM	DATE
1	PHASING CHANGES	TWW	8/25/86				
2	TIMING CHANGES	McM / BPP	10/4/06	MK	10/10/06	MK	10/13/06
3	INSTALL LOOPS FOR NB, SB, EB APPROACHES, INSTALL VIDEO DETECTION FOR WB APPROACH; RETIME.	TPD	11/11/11	DLA	11/28/11	ABP	11/28/11
4	RESTRIPE HECTOR STREET FOR A RIGHT TURN LANE ADD ADA CURB RAMPS	TPD	11/11/11	DLA	11/28/11	ABP	11/28/11
5	ADD COUNTDOWN PEDESTRIAN HEADS	KPL	2/10/17	DLA	3/29/17	ABP	4/3/17
6	TIMING CHANGES	KPL	1/9/18	KPL	1/24/18	DLA	1/24/18
7	ADDED EMERGENCY PRE-EMPTION	H&K	3/1/19	KPL	4/25/19	DLA	4/25/19
8	TIMING ADJUSTMENTS, UPDATED SR INFO, REVISED TRAFFIC COUNTS	McM	11/18/22	MJS	8/4/23	KPL	8/7/23
9	LPI, UPDATE CROSSWALK, COUNTDOWN HAND/MANS, PED SIGNAGE	G&A	7/22/24	MJS	Digitally signed by MJS Date: 2024.07.29 09:58:51 -04'00'	KPL	Digitally signed by KPL Date: 2024.07.29 09:58:51 -04'00'

SHEET 2 OF 3 | PERMIT # 64-2351 | FILE # 2351

EMERGENCY PRE–EMPTION PHASING



PHASE		2				6				8			
SIGNALS \ INTERVAL		13	14	15		16	17	18		19	20	21	
1	SELECTIVE CLEARANCES	R	R	R	SELECTIVE CLEARANCES	G/Y	Y ⓐ	R ⓑ	SELECTIVE CLEARANCES	R	R	R	SELECTIVE CLEARANCES
2		R	R	R		G	Y ⓐ	R ⓑ		R	R	R	
3,4		G	Y	R		R	R	R		R	R	R	
5		R	R	R		R	R	R		G	Y	R	
6		R	R	R		R	R	R		G	Y	R	
7,8		R	R	R		R	R	R		R	R	R	
9		R	R	R		R	R	R		G	Y	R	
10,11		H	H	H		H	H	H		H	H	H	
12,13		H	H	H		H	H	H		H	H	H	
FIXED		**	4	3		**	4	3		**	4	3	

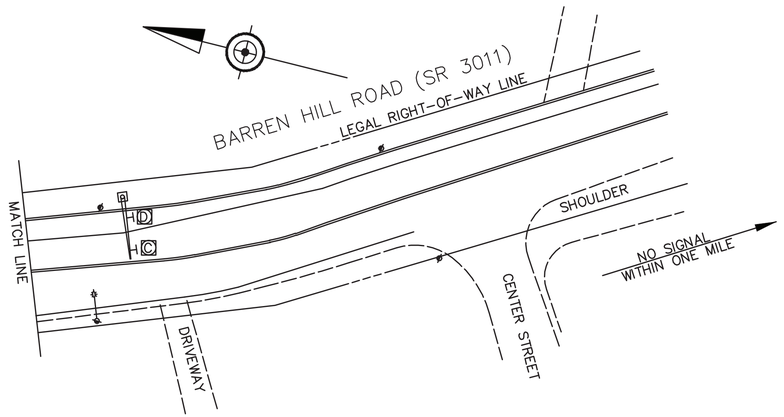
** FOR DURATION OF PRE–EMPTION

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.

ⓐ G/Y WHEN RETURNING TO NORMAL OPERATION.
ⓑ G WHEN RETURNING TO NORMAL OPERATION.

EMERGENCY PRE–EMPTION NOTES

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE–EMPTION FOR THE NORTHBOUND APPROACH OF BARREN HILL ROAD (SR 3011), THE SOUTHBOUND APPROACH OF CEDAR GROVE ROAD (SR 3011), AND THE EASTBOUND APPROACH OF HECTOR STREET (SR 3058), WITH A FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION.
- THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE–EMPTION PHASE SHALL FOLLOW. ONLY THOSE PHASES NOT POSING A YELLOW TRAP CONDITION MAY REMAIN GREEN (2 AND 1+6) WHEN GOVERNED BY AN APPROACHING EMERGENCY VEHICLE.
- THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE–EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF THE SIGNALS ARE FLASHING WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ALL SIGNALS SHALL REMAIN FLASHING.
- UPON COMPLETION OF PRE–EMPTION PHASE 2, 6 OR 8, IN RETURNING TO NORMAL OPERATION, PHASE 1+6 INTERVAL 1 SHALL FOLLOW.
- IF ADDITIONAL PRE–EMPTION PHASES ARE ACTIVATED WHILE IN PRE–EMPTION, THE ORIGINAL PRE–EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE–EMPTION PHASE.
- IN EMERGENCY PRE–EMPTION, NO PRIORITY SHALL BE ESTABLISHED. PRE–EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.
- THE FIELD LOCATIONS OF THE PRE–EMPTION DETECTORS MAY DIFFER FROM THE LOCATIONS DEPICTED ON THE CONDITION DIAGRAM, AS THE DETECTORS MAY NEED TO BE RELOCATED AND/OR ADJUSTED TO PROVIDE ACCEPTABLE OPERATION AS DEEMED APPROPRIATE BY DEPARTMENT PERSONNEL.
- IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE–EMPTED, THE PED "WALK (MAN)" INTERVAL SHALL TERMINATE IMMEDIATELY AND THE PED "CLEAR (FLASHING HAND AND COUNTDOWN TIMER)" INTERVAL SHALL TIME OUT THIS INTERVAL, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE GOING INTO EMERGENCY PRE–EMPTION.



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SYSTEM PERMIT # I–0225

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6–0

COUNTY: MONTGOMERY
MUNICIPALITY: WHITEMARSH TOWNSHIP
INTERSECTION: BARREN HILL RD/CEDAR GROVE RD
(SR 3011) AND HECTOR ST (SR 3058)

REVIEWED:

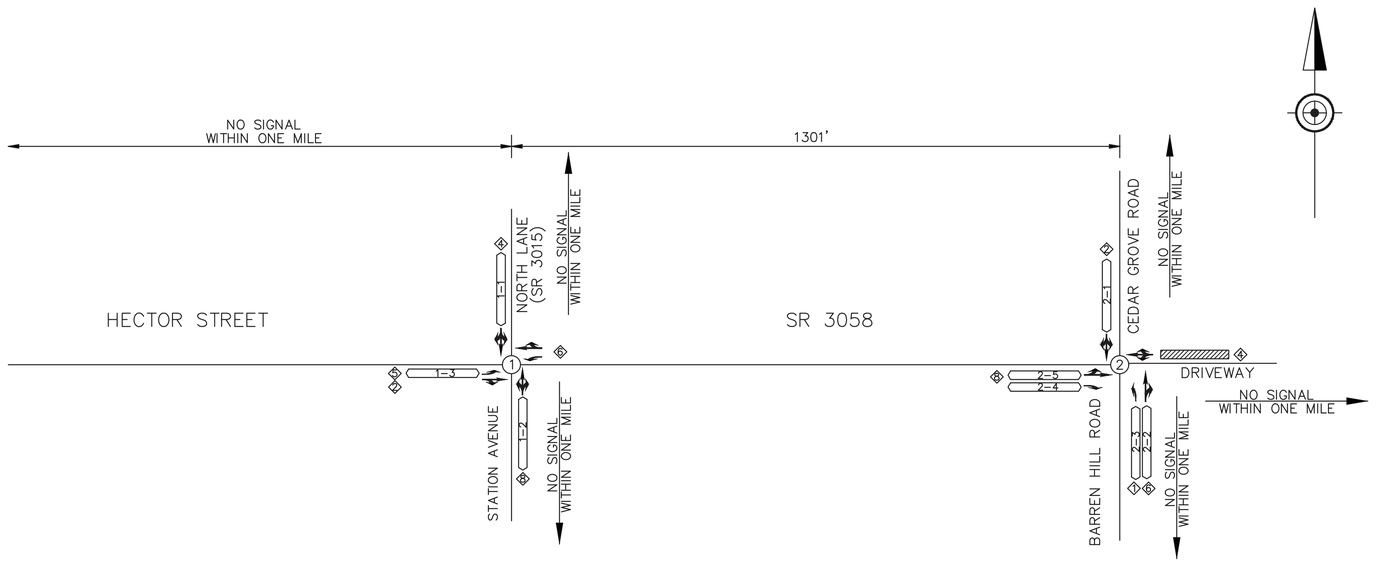
RICHARD L. MELLOR — DATE 11/7/17
MUNICIPAL OFFICIAL — DATE

RECOMMENDED:
GRW — 03–12–86

WERNER J. EICHORN — 03–12–86
DISTRICT TRAFFIC ENGINEER — DATE

NO	REVISION	DES/ REVW	DATE	REVW	DATE	RECOM	DATE
1	PHASING CHANGES	TWW	8/25/86				
2	TIMING CHANGES	McM / BPP	10/4/06	MK	10/10/06	MK	10/13/06
3	INSTALL LOOPS FOR NB, SB, EB APPROACHES, INSTALL VIDEO DETECTION FOR WB APPROACH; RETIME.	TPD	11/11/11	DLA	11/28/11	ABP	11/28/11
4	RESTRIPE HECTOR STREET FOR A RIGHT TURN LANE ADD ADA CURB RAMPS	TPD	11/11/11	DLA	11/28/11	ABP	11/28/11
5	ADD COUNTDOWN PEDESTRIAN HEADS	KPL	2/10/17	DLA	3/29/17	ABP	4/3/17
6	TIMING CHANGES	KPL	1/9/18	KPL	1/24/18	DLA	1/24/18
7	ADDED EMERGENCY PRE–EMPTION	H&K	3/1/19	KPL	4/25/19	DLA	4/25/19
8	TIMING ADJUSTMENTS, UPDATED SR INFO, REVISED TRAFFIC COUNTS	McM	11/18/22	MJS	8/4/23	KPL	8/7/23
9	LPI, UPDATE CROSSWALK, COUNTDOWN HAND/MANS, PED SIGNAGE	G&A	7/22/24	MJS		KPL	Digitally signed by KPL Date: 2024.07.26 09:55:54 -04'00'

SHEET 3 OF 3 | PERMIT # 64–2351 | FILE # 2351



CYCLE / SPLIT / OFFSET

	PROGRAM 1=	PHASE										CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
	INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	PED				
11															
10															
9															
8															
7															
6															
5															
4															
3															
2	HECTOR ST & CEDAR GROVE RD/BARREN HILL RD	2351		25 (SPLIT)		25		40 (SPLIT)		25		90	0		
1	HECTOR ST & NORTH LN/STATION AVE	2732		44		24	13 (LEAD)	31		24	22	90	26		
	PROGRAM 2=	PHASE										CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
	INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	PED				
11															
10															
9															
8															
7															
6															
5															
4															
3															
2	HECTOR ST & CEDAR GROVE RD/BARREN HILL RD	2351		26 (SPLIT)		27		27 (SPLIT)		27		80	0		
1	HECTOR ST & NORTH LN/STATION AVE	2732		34		24	13 (LEAD)	21		24	22	80	76		
	PROGRAM 3=	PHASE										CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
	INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	PED				
11															
10															
9															
8															
7															
6															
5															
4															
3															
2															
1															
	PROGRAM 4=	PHASE										CYCLE	OFFSET#1	OFFSET#2	OFFSET#3
	INTERSECTIONS	FILE #	1	2	3	4	5	6	7	8	PED				
11															
10															
9															
8															
7															
6															
5															
4															
3															
2															
1															

Notes:
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
- REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX 2 AND CLEARANCE AND PED TIMES.

SYSTEM NOTES

1. THE SIGNALS ALONG HECTOR STREET AVENUE FROM NORTH LANE/STATION AVENUE TO CEDAR GROVE ROAD/BARREN HILL ROAD ARE TO BE COORDINATED.
2. PROGRAMS TO BE SELECTED BY CLOSED LOOP SYSTEM OR TBC BACKUP.
3. OFFSETS REFERENCES:
   -BEGINNING OF PHASE 2 (EB) YELLOW AT STATION AVE/NORTH LN.
   -BEGINNING OF PHASE 2 (SB) YELLOW AT BARREN HILL RD/CEDAR GROVE RD.
4. SYSTEM LIMITS:
   HECTOR STREET (SR 3059) – FROM NORTH LANE/STATION AVENUE TO CEDAR GROVE ROAD/BARREN HILL ROAD
5. PRIMARY COORDINATION: GPS TIMECLOCK
   SECONDARY COORDINATION: TIME BASED COORDINATION (DEFAULT TO BACKUP TBC PROGRAM CHART)
6. CYCLES, SPLITS & OFFSETS ARE IN SECONDS.
7. FIXED FORCE-OFFS USED AT INTERSECTION #1.

WEEKLY/BACKUP PROGRAM CHART

EVENT	▲DAY	TIME	PROGRAM*	REMARKS
1	1-7	0000	MAXIMUM 1	FREE
2	1-5	0600	1	AM PEAK
3	1-5	1000	MAXIMUM 1	FREE
4	1-5	1500	2	PM PEAK
5	1-5	1900	MAXIMUM 1	FREE

▲DAY 1 = MONDAY
* MAX / FREE WHERE NOTED IN CYCLE / SPLIT / OFFSET MATRIX.

LEGEND

- (4) INTERSECTION ADDRESS
- (S#) SYSTEM LOOP/ IDENTIFYING NUMBER
- LOOP SENSOR / INTERSECTION X – LOOP NUMBER Y
- VIDEO DETECTION AREA
- PHASE NUMBER

NOT TO SCALE

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REFER TO TRAFFIC SIGNAL PERMIT DRAWING FOR INDIVIDUAL INTERSECTION OPERATION, GEOMETRY, PHASING AND CRITICAL TIMES.

FOR CONSTRUCTION AND INSPECTION THE SYSTEM PERMIT SHOULD ALWAYS BE ACCOMPANIED WITH TRAFFIC SIGNAL PERMIT DRAWING.

TEST THE SYSTEM AT LOCAL INTERSECTION LEVEL, SUBSYSTEM LEVEL MASTER CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE DIAL UP LEVEL.

GATHER THE SYSTEM FAILURE CRITICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.

SET UP PENNDOT DISTRICT 6-0 COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SYSTEMS REVISIONS.

ASSIGN LOOP DETECTORS AND PROGRAM THE CONTROLLERS TO GATHER TRAFFIC VOLUMES IN 15 MINUTE INTERVAL, WHERE APPLICABLE.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

OBTAIN POLE ATTACHMENT PERMIT FOR AERIAL FIBER OPTIC INSTALLATION.

MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE DROPS.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

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PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: WHITEMARSH TOWNSHIP
INTERSECTION: HECTOR STREET (SR 3058) FROM CEDAR GROVE ROAD/BARREN HILL ROAD TO NORTH LANE (SR 3015)/STATION AVENUE

REVIEWED:
Richard L. Mellor, Jr. 06/13/2023
Ricahrd L. Mellor, Jr. DATE 06/13/2023
MUNICIPAL OFFICIAL DATE

RECOMMENDED:
DAVID ADAMS 11/28/2011
ASHWIN PATEL 11/28/2011
DISTRICT TRAFFIC ENGINEER DATE

NO	REVISION	DES/ REVW	DATE	REVW	DATE	RECOM	DATE
1	TIMING ADJ	BURNS	6/29/15	KPL	1/24/18	DLA	1/24/18
2	TIMING ADJUSTMENTS, UPDATED SR INFO	McM	5/03/23	MJS	Digitally signed by MJS Date: 2023.06.04 09:19:01 -04'00'	KPL	Digitally signed by KPL Date: 2023.06.07 09:41:22 -04'00'
3							
4							
5							
6							
7							
8							

SYSTEM PERMIT # I-0225

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2500 East High Street, Suite 650, Pottstown, PA 19464
610.326.3100 | INFO@TPDINC.COM
WWW.TPDINC.COM

Memorandum

To: David Landskroner – Hightop Development

From: Greg Richardson, P.E.

Date: June 26, 2025

Re: **1001 Washington Street**
Horizontal Curve Analysis
Whitemarsh Township, Montgomery County, PA
TPD No. HTOP.00002

cc: Ryan Lohbauer
Tom Ferraro
Greg Newell
Jim Bannon
John Eckman
Herb Schultz
Rob Lewis

Per your request, we have examined the proposed extension of existing Washington Street through your proposed land development. Specifically, we have analyzed the proposed horizontal curvature of the road. Based on this analysis, we offer the following results and conclusions:

- Per the June 26, 2025 site plan prepared by Nave Newell (see attached), the proposed extension of Washington Street will be designed to include a combination horizontal curve in the area of Unit 40 and Lot D. The proposed horizontal curvature has been designed to account for the existing property lines for the site as well as the adjacent SEPTA rail station property limits.
- The combination horizontal curve will consist of a centerline radii of **40 feet**.
- As proposed, the intersection of Washington Street and Court D will be designed with a multi-way stop traffic control.
- To determine the safe travel speed for a free-flow vehicle through this horizontal curvature, TPD relied on the design standards laid forth in the AASHTO A Policy on Geometric Design of Highways and Streets (aka, the "Green Book"), 7th Edition, 2018. Per the design standards for low speed streets (see attached excerpt), for a centerline radius of 40 feet, the safe travel speed would be approximately **13-14 mph**.
- For informational purposes, the typical speed for free-flow right turn movements is approximately **15 mph**.

June 27, 2025

VIA HAND DELIVERY

Charles L. Guttenplan, AICP
Director of Planning and Zoning / Zoning Officer
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

Reference: ***1001 Washington Street***
Preliminary Land Development Plan – Traffic Impact Study
Whitemarsh Township, Montgomery County, PA
Nave Newell No. 2024-001.02

Dear Mr. Guttenplan

On behalf of our client, HT 1001 Washington, LLC, please find enclosed the following items for a Preliminary Plan submission for the above-referenced project located in Whitemarsh Township, Montgomery County, PA (quantities enclosed are listed after each item):

1. Traffic Impact Study prepared by TPD, last revised June 26, 2025 (3 copies); and
2. Washington Street – Horizontal Curve Geometry Memo, dated June 26, 2025 (3 copies).

We are submitting this items to supplement the Preliminary Land Development submission that was made on June 26, 2025.

TPD offer the following responses to the Traffic Impact Study comments in the Gilmore & Associates letter dated

36. 105-21(B)(9) The following comments related to the Traffic Impact Study must be addressed:

1. As discussed previously, coordinate with the Township to determine the appropriate traffic control and circulation patterns along Washington Street and its intersections with Lee Street and Station Avenue. The analysis may need to be revised based on the outcome of those discussions.

   Response: Will Comply.

2. §105-21.B(9)(d)[6][a] – Levels of service below LOS C are considered deficient. Improvements should be identified to mitigate the deficiency and indicate whether that improvement will be constructed in conjunction with the development.

   Response: The applicant will comply to the extent that the proposed roadway improvements will be limited and directly related to driveway access intersections. Per the PA MPC, applicants are not obligated to provide improvements at off-site intersections. All deficient levels of service are existing conditions; with the proposed site, all movement levels of service are maintained. The applicant will be requesting a waiver of this requirement.

3. Revise the last sentence within the "Whitemarsh Township Improvements" section (Page 6). It appears that the sentence is incomplete.

Response: Will Comply.

4. We note that the wrong edition of the *Trip Generation Manual* is referenced within the text of the document and should be revised to the latest edition (11th). However, the trip generation equations and values are correct.

   Response: The TIS will be revised accordingly.

5. The analysis assumes a 25% reduction in trips due to the proximity of existing transit options. The report references Table B.3 within the ITE Handbook, but that table discusses baseline vehicle occupancy. Update the reference and/or provide the table within the appendices that was used to determine the trip reduction.

   Response: Will Comply. The table reference has been revised to cite Table C.1.

6. Update the "Projected (Build) Condition Traffic Volumes" section to reference the correct years for each scenario mentioned. The report currently indicates 2022, which is incorrect.

   Response: Will Comply.

7. Update Figure 4 to show the trip distribution for the near-by development. The current figure shows the existing volumes.

   Response: Figure 4 has been revised accordingly.

8. Review the traffic redistribution shown on Figure 5. There appears to be several inconsistencies:

   i. Eastbound Hector St at Lee St shows redistribution of 59 vehicles for the AM peak, but eastbound Washington Street shows 69 vehicles added to that movement.

   ii. Southbound North Lane at Hector St shows 6 vehicles redistributed for the AM peak, but 8 vehicles are added to the through movement.

   iii. Westbound Hector St at North Ln shows 102 vehicles redistributed for the AM peak, but only 50 vehicles are added to the left turn movement. Additionally, the report notes a 15% redistribution of traffic on Hector St. The existing westbound through movement has 588 vehicles, so 15% would equate to 88 but the figure shows 102.

   iv. Westbound Hector St at Lee St shows 86 and 55 vehicles redistributed during the AM and PM peaks, but only 28 and 18 vehicles are added to the left turn movement, respectively.

   Response: The TIS has been revised to eliminate the discrepancies.

9. Provide additional narrative within the report to explain how the values were derived for the redistribution and list any assumptions made. Update the traffic volume development worksheets once the site redistribution values have been confirmed.

   Response: Will Comply. Additional information/language has been provided in the "Existing Trip Redistribution" section.

10. Review the paths of the site trips shown on Figure 7. For example, assuming that Station Ave is open, the northbound right turning movements at Hector St/Lee St would likely use Station Ave. As mentioned above, discussions with the Township regarding the circulation within the study area could have an impact on the routes site trips can take and should be taken into account when updating this figure.

    Response: Will Comply. The TIS has been revised based on consultation with the Township Traffic Consultant.

11. Coordinate with SEPTA regarding the project, potential travel routes, parking, etc. and provide the correspondence in future submissions.

    Response: The applicant has started the coordination process. Correspondence (to date) from SEPTA has been provided in the TIS appendices.

12. Verify the westbound left turn lane length indicated in the analyses of Station Avenue/North Lane & Hector Street. The analysis indicates 100' but it measures closer to 80-85 feet. Update the queue analysis table accordingly.

    Response: Will Comply. The TIS has been revised.

If you have any questions or need additional information, please contact me at (610) 265-8323 or via email at jbannon@navenewell.net.

Sincerely,

James P. Bannon, Jr., PE

JGE/

Enclosure

cc (via email): Krista Heinrich / Damon Drummond / Kristin Norwood – Gilmore & Associates
David Landskroner / Ryan Lohbauer – Hightop Development
Craig R. Lewis, Esq. – Kaplin Stewart
Greg Richardson / Paige Glassman - TPD

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PRELIMINARY LAND DEVELOPMENT PLANS
FOR

1001 WASHINGTON STREET

SITUATED IN
WHITEMARSH TOWNSHIP,
MONTGOMERY COUNTY, PENNSYLVANIA

PLAN INDEX				
DRAWING NUMBER	SHEET TITLE	SHEET NUMBER	SHEET DATE	REV 2 DATE
C0.0	TITLE SHEET	1	11/15/24	6/26/2025
C0.1	SITE CONTEXT MAP	2	11/15/24	6/26/2025
C0.2	EXISTING RESOURCES AND SITE ANALYSIS PLAN	3	11/15/24	6/26/2025
C1.0	EXISTING FEATURES PLAN & SOIL MAP & PRELIMINARY IMPACT PLAN	4	11/15/24	6/26/2025
C1.1	TREE INVENTORY	5	3/27/2025	--
C2.0	DEMOLITION PLAN	6	11/15/24	6/26/2025
C3.0	SITE PLAN	7	11/15/24	6/26/2025
C4.0	GRADING PLAN	8	11/15/24	6/26/2025
C5.0	UTILITY PLAN	9	11/15/24	6/26/2025
C6.0	ROAD PLAN AND PROFILE SHEET	10	11/15/24	6/26/2025
C7.0	LANDSCAPE PLAN	11	11/15/24	6/26/2025
C7.1	LIGHTING PLAN	12	11/15/24	6/26/2025
C7.2	LANDSCAPE AND LIGHTING DETAIL SHEET	13	11/15/24	6/26/2025
C8.0	EROSION AND SEDIMENTATION PLAN	14	11/15/24	6/26/2025
C9.0	POST CONSTRUCTION STORMWATER MANAGEMENT - O&M PLAN	16	11/15/24	6/26/2025
C8.1	EROSION AND SEDIMENTATION DETAIL SHEET	15	11/15/24	6/26/2025
C9.1	POST CONSTRUCTION STORMWATER MANAGEMENT DETAIL SHEET	17	11/15/24	6/26/2025
C10.0	CONSTRUCTION DETAIL SHEET	18	11/15/24	6/26/2025
C10.1	CONSTRUCTION DETAIL SHEET	19	3/27/25	6/26/2025
C11.0	VEHICLE TURNING EXHIBIT	20	3/27/25	6/26/2025

WAIVERS AND/OR MODIFICATIONS REQUESTED:

1. **105-30(A) - STREET STANDARDS.** MODIFICATION REQUESTED FROM THE REQUIREMENT THAT THE ULTIMATE RIGHT-OF-WAY MEASURE 56' AND THE CARTWAY WIDTH MEASURE 36'. DUE TO THE EXISTING SITE CONSTRAINTS THE PROPOSED ULTIMATE RIGHT-OF-WAY MEASURES 28', AND THE CARTWAY WIDTH MEASURES BELOW 36'. ALSO, THE PROPOSED COURTS WILL HAVE CARTWAY WIDTH BELOW 30'.
2. **105-30(C) - STREET STANDARDS.** WAIVER REQUEST FROM THE REQUIREMENT OF SHORT EXTENSIONS OF EXISTING STREETS WITH LESSER RIGHT-OF-WAY AND/OR CARTWAY WIDTHS THAN PRESCRIBED ABOVE MAY BE PERMITTED; PROVIDED, HOWEVER, THAT NO SECTION OF NEW RIGHT-OF-WAY BE LESS THAN 40 FEET IN WIDTH AND SUCH EXTENSIONS SHALL BE LESS THAN 100 FEET IN LENGTH TO ALLOW THE RIGHT-OF-WAY WIDTH OF WASHINGTON STREET MEASURE 30 FEET FOR A DISTANCE OF 960' ALONG THE PROPERTY FRONTAGE.
3. **105-33(B) - STREET ALIGNMENT.** WAIVER REQUEST FROM THE REQUIREMENT OF LOCAL STREETS HAVING HORIZONTAL CURVES OF 150'. DUE TO THE EXISTING SITE CONSTRAINTS AND ITS CURRENT ALIGNMENT, WE ARE PROPOSING HORIZONTAL CURVE RADII OF 28' ON WASHINGTON STREET.
4. **105-37- SIGHT DISTANCES -** WAIVER REQUEST FROM THE REQUIREMENT OF THE SIGHT DISTANCES LISTED IN THIS SECTION. THE INTERSECTION OF COURT D AND WASHINGTON STREET IS DESIGNED AS A MULTI-STOP INTERSECTION.
5. **105-56(A)(1)(a) - PRIVATE STREETS AND COURTS SHALL BE 26' WIDE.** A WAIVER IS REQUESTED FROM THIS SECTION TO ALLOW THE COURTS TO BE 24', THIS MATCHES THE ADJACENT DEVELOPMENT AND IS CONSISTENT WITH THE CHARACTER OF THE AREA.
6. **105-30(A) ; 105-47(A) AND 105-73-SIDEWALKS.** MODIFICATION IS REQUESTED FROM THE REQUIREMENT OF THE SECTIONS TO INSTALL SIDEWALKS AS SHOWN ON THE SITE PLAN. VARIANCE WAS GRANTED FROM SECTION 116-283.C(1), SO AS TO PERMIT CURB AND SIDEWALK ALIGNMENT ALONG WASHINGTON STREET WITHOUT STREET TREES AND THE REQUIRED 5 FOOTVERGE STRIP.
7. **105-47(K)(1) - IN THE RDD-1 SUBDISTRICT, 25' RIGHT-OF-WAY BE OFFERED FOR DEDICATION TO THE TOWNSHIP.** A MODIFICATION IS REQUESTED TO THIS REQUIREMENT TO OFFER AN EASEMENT FOR PUBLIC ACCESS AND USE RATHER THAN RIGHT-OF-WAY DEDICATION.
8. **105-38(F) - ANGLE OR PERPENDICULAR PARKING SHALL NOT BE PERMITTED ALONG PUBLIC OR PRIVATE STREETS.** WAIVER REQUESTED FROM THE REQUIREMENT AS CARTWAY WIDTH MEASURES ABOUT 31'. BACKING OUT FROM THE PERPENDICULAR PARKING WILL NOT POSE A SAFETY RISK GIVEN THE LOW VOLUMES OF TRAFFIC. THE SPACES ARE PROVIDED FOR EXTRA GUEST PARKING AND PUBLIC USE. THE CARTWAY WIDTH MEETS THE MINIMUM REQUIREMENT OF 105-56(A)(1)(B).
9. **105-38H - EXCEPT AT ENTRANCE AND EXIT DRIVES, ALL PARKING AREAS SHALL BE SET BACK FROM THE RIGHT-OF-WAY LINE AND ALL PROPERTY LINES AT LEAST 15 FEET, OR AS REQUIRED BY THE APPLICABLE SECTIONS OF THE ZONING ORDINANCE, THE GREATER PROVISION TO PREVAIL. THE DISTANCE BETWEEN THIS REQUIRED SETBACK AND THE CARTWAY SHALL BE MAINTAINED AS A PLANTING STRIP OR PLANTING STRIP AND SIDEWALK.** A WAIVER IS REQUESTED FROM THIS SECTION FOR THE PROPOSED PARKING ALONG WASHINGTON STREET AND THE EXISTING PARKING SPACES THAT ARE ADJACENT TO THE DAVID'S BRIDAL FACILITY TODAY.
10. **105-38(L) - IN NO CASE SHALL PARKING AREAS FOR THREE OR MORE VEHICLES BE DESIGNED TO REQUIRE OR ENCOURAGE CARS TO BACK INTO A PUBLIC STREET.** A WAIVER IS REQUESTED FROM THIS SECTION FOR THE 10 PARKING SPACES ADJACENT TO WASHINGTON STREET, BACKING OUT FROM THE PERPENDICULAR PARKING SHOULD NOT POSE A SAFETY RISK GIVEN THE LOW VOLUMES OF TRAFFIC. THE SPACES ARE PROVIDED FOR EXTRA GUEST PARKING AND PUBLIC USE.
11. **105-38(O) - PARKING AREAS SHALL BE LOCATED AT LEAST 10 FEET FROM ANY BUILDING OR STRUCTURE.** A WAIVER IS REQUESTED FROM THIS SECTION TO ALLOW THE EXISTING PARKING SPACES ALONG THE 901 AND 1001 PROPERTY LINE TO BE LOCATED LESS THAN 5' FROM THE ADJACEMT DECKS. THE PARKING SPACES WILL BE GREATER THAN 10' AWAY FROM THE BUILDINGS AT GROUND LEVERL, BUT WILL BE LESS THAN 5', HORIZONTALLY, FROM THE DECKS ON THR SECOND FLOOR.
12. **105-50(C)(1) AND (3) - WALKING DISTANCE FROM A SINGLE-FAMILY DWELLING UNIT TO APARKING AREA SHALL BE LESS THAM 100'. IN NO CASE SHALL THE DISTANCE EXCEED 250' -** A WAIVER IS REQUESTED FROM THIS SECTION TO ALLOW THE TWO OFF- STREET PARKING AREAS TO BE DESIGNED AS SHOWN ON THE LAND DEVELOPMENT PLANS. THE PROPOSED OFF STREET PARKING AREAS ARE NOT REQUIRED BY CODE AND BEING PROVIDED FOR PUBLIC USE AT THE PROPOSED KAYAK LAUNCH AND AS AN EXTRA AMENITY FOR RESIDENTS.
13. **55-4B - MAXIMUM TREE REMOVAL. THE REMOVAL OF MORE THAN 33% OF TREES, HAVING A DBH OF SIX INCHES OR GREATER, ON ANY LOT, SHALL NOT BE PERMITTED.** A WAIVER IS REQUESTED TO PERMIT THE REMOVAL OF GREATER THAN 33%.
14. **55-4D(6)(A) AND 55-4F - TREE REPLACEMENT SUBSTITUTION, LIVING AND HEALTHY TREE WITH A DBH OF SIX INCHES OR GREATER AND WHICH IS DESIGNATED TO BE REMOVED OR WHICH IS DESTROYED, SHALL BE REPLACED WITH ONE OR MORE NEW CANOPY TREES, OF A TYPE AND SPECIES APPROVED BY THE SHADE TREE COMMISSION OR ITS DESIGNEE, WITH A TRUNK DIAMETER OF NOT LESS THAN THREE INCHES IN CALIPER. THE TOTAL CALIPER OF REPLACEMENT TREES, MEASURED AT SIX INCHES ABOVE THE GROUND LINE, SHALL EQUAL OR EXCEED THE DBH OF THE REMOVED TREES. UPON REQUEST FOR WAIVER BY THE APPLICANT, AS SPECIFIED WITHIN THIS CHAPTER UNDER "EXCEPTION TO LITERAL ENFORCEMENT STANDARDS," AND SUBJECT TO APPROVAL BY THE SHADE TREE COMMISSION, A PORTION OF REPLACEMENT TREES MAY BE SUBSTITUTED AS FOLLOWS. THE COMBINED TOTAL OF SUBSTITUTIONS SHALL NOT EXCEED 40% OF THE REPLACEMENT TREE REQUIREMENT.** A WAIVER IS REQUESTED TO PERMIT GREATER THAN 40% OF THE REPLACEMENT TREES TO BE REPLACED BY UNDERSTORY/ORNAMENTAL TREES AND BY A FEE IN-LIEU PAYMENT.
15. **105-52(B)(2) - BUFFERS SHALL HAVE A MINIMUM WIDTH OF 50 -** A WAIVER IS REQUESTED FROM THIS SECTION TO ALLOW THE BUFFERS AS SHOWN ON THE PLAN, DUE TO THE SITES UNUSUAL SIZE AND SHAPE.
16. **105-52(D)(1)(C) - NO MORE THAN 25% OF THE MINIMUM LAND AREA REQUIRED FOR PARK AND RECREATION LAND MAY CONSIST OF FLOODPLAIN OR RIPARIAN CORRIDOR AREAS.** A WAIVER IS REQUESTED FROM THIS SECTION DUE TO THE ENTIRE PROPERTY BEING LOCATED WITHIN THE FLOODPLAIN.
17. **58-28(D)(11) - EDGE OF SLOPES SHALL BE A MINIMUM OF FIVE FEET FROM PROPERTY LINES OR RIGHT-OF-WAY LINES** A WAIVER IS REQUESTED OF THIS REQUIREMENT TO ALLOW SUCH GRADING TO OCCUR CLOSER THAN 5' FROM PROPERTY AND RIGHT-OF-WAY LINES. THE PROPOSED GRADING ABUTS THE ULTIMATE RIGHT-OF-WAY OF WASHINGTON STREET. PROPOSED GRADING NEEDS TO BE LESS THAN 5' FROM PROPERTY AND RIGHT-OF-WAY LINES TO TIE BACK INTO EXISTING CONDITIONS.
18. **58-29E - FILLS SHALL NOT ENCROACH ON NATURAL WATERCOURSES, FLOODWAYS, FLOODWAY FRINGES, CONSTRUCTED CHANNELS, OR WETLANDS.** A WAIVER IS REQUESTED FROM THIS SECTION BECAUSE THE WHOLE PROPERTY IS LOCATED WITHIN THE FLOODPLAIN. WE HAVE SUBMITTED A LETTER OF MAP REVISION (LOMR) REQUEST TO FEMA TO REVISE THE FLOODWAY SO THE EXISTING STRUCTURES AND PROPOSED IMPROVEMENTS ARE REMOVED FROM THE FLOODWAY.
19. **58-34(B)(7)(D) - ALL STORM PIPE SHALL BE REINFORCED CONCRETE PIPE.** A WAIVER IS REQUESTED TO ALLOW THE PROPOSED STORM PIPES ON THE SITE TO BE HDPE IN-LIEU OF REINFORCED CONCRETE PIPE. PROPOSED STORM PIPES WITHIN THE PUBLIC RIGHT-OF-WAY WILL BE CONCRETE.
20. **150-21.B(9)(A)(a) - ALL STREETS AND/OR INTERSECTIONS SHOWING A LEVEL OF SERVICE BELOW C SHALL BE CONSIDERED DEFICIENT, AND SPECIFIC RECOMMENDATIONS FOR THE ELIMINATION OF THESE PROBLEMS SHALL BE LISTED.** A WAIVER IS REQUESTED FROM THIS SECTION. THE APPLICANT WILL COMPLY TO THE EXTENT THAT THE PROPOSED ROADWAY IMPROVEMENTS WILL BE LIMITED AND DIRECTLY RELATED TO DRIVEWAY ACCESS INTERSECTIONS. PER THE PA MPC APPLICANTS ARE NOT OBLIGATED TO PROVIDE IMPROVEMENTS AT OFF-SITE INTERSECTIONS.

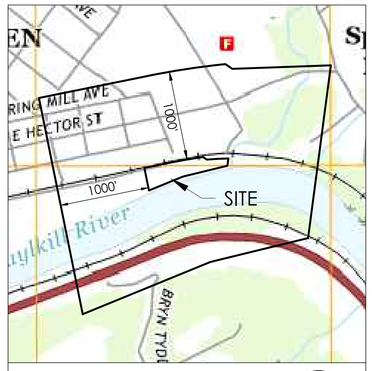

IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'

OWNER/APPLICANT:

HT 1001 WASHINGTON, LLC
1331 S. JUNIPER STREET
PHILADELPHIA, PA 19147
PHONE: (215) 246-0606
ATTN: DAVID LANDSKRONER

CIVIL ENGINEER

NAVE NEWELL, INC.
900 WEST VALLEY ROAD, SUITE 1100
WAYNE, PA 19087
PHONE: (610) 265-8323
ATTN: JAMES P. BANNON, P.E.

LANDSCAPE ARCHITECT:

NAVE NEWELL, INC.
900 WEST VALLEY ROAD
SUITE 1100
PHONE: 610-265-8323
ATTN: PAUL E. LEPARD, JR., RLA

GENERAL NOTES:

1. THIS PLAN IS BASED ON A SURVEY CONDUCTED IN THE FIELD BY RUGGIERO PLANTE LAND DESIGN COMPLETED ON NOVEMBER 9, 2023 AND ADDITIONAL FIELD SURVEY PERFORMED BY NAVE NEWELL ON JULY 29, 2024.
2. THIS SURVEY REPRESENTS CONDITIONS AS OF THE DATE OF THE SURVEY EXCEPT SUCH IMPROVEMENTS OR EASEMENTS, IF ANY, THAT MAY BE LOCATED BELOW THE SURFACE OF THE LAND, ON THE SURFACE OF THE LANDS OR ABOVE THE SURFACE OF THE LANDSAND NOT VISIBLE.
3. TITLE TO THE SUBJECT PROPERTY IS FILED IN THE MONTGOMERY COUNTY COURT HOUSE IN DEED BOOK 6334 PAGE 01619 IN THE WHITEMARSH TOWNSHIP, COUNTY OF MONTGOMERY, PENNSYLVANIA.
4. BEARING BASIS FOR THE SURVEY IS THE RECORD DEED AS REFERENCED IN NOTE 3, ABOVE.
5. THE ELEVATIONS FOR THIS PLAN ARE BASED ON NAVD88. THE SITE BENCHMARK IS A MAG NAIL SET IN THE DRIVE LOCATION AT THE NORTHEAST CORNER OF THE PROPERTY HAVING AN ELEVATION OF 49.23'. THIS ELEVATION AND BENCHMARK NOT TAKEN FROM ALTA/NSPS LAND TITLE SURVEY PLAN PREPARED BY RUGGIERO PLANTE LAND DESIGN DATED NOVEMBER 15, 2023, LAST REVISED DECEMBER 12, 2023.
6. PROPERTY AS SHOWN IS IN ZONE "AE" (BASE FLOOD ELEVATIONS DETERMINED) AS DEPICTED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FIRM FLOOD INSURANCE RATE MAP COMMUNITY PANEL #42091C0358 G, PANEL 358 OF 451. BASE ELEVATION = 59, NAVD 1988 DATUM.
7. PLAN DATUM IS NGVD 1929, BASE FLOOD ELEVATION CONVERTED TO NGVD 1929 DATUM = ELEVATION ±60.
8. LOCATIONS OF EXISTING UTILITIES AS SHOWN HEREIN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS. PLANS BY OTHERS AND/OR ABOVE GROUND EXAMINATION OF SITE. THE COMPLETENESS OR ACCURACIES OF THE LOCATIONS ARE NOT GUARANTEED. SHOULD ANY NEW CONSTRUCTION BE PROPOSED, THE CONTRACTOR MUST VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES BEFORE START OF WORK.
9. PURSUANT TO ACT 287 "PENNSYLVANIA ONE CALL INC." WAS PLACED. INFORMATION THEREBY OBTAINED WAS USED TO ILLUSTRATE EXISTING UTILITIES.
10. NO REVIEW OF THE PROPERTY REGARDING THE PRESENCE OF WETLANDS WAS ACCOMPLISHED AS A PART OF THIS SURVEY.
11. UNIT AND BLOCK NUMBERS REFER TO THE OFFICIAL TAX MAPS OF WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA.
12. IF CONTRACTOR DEVIATES FROM THE PLANS AND/OR SPECIFICATIONS WITHOUT FIRST OBTAINING THE WRITTEN AUTHORIZATION OF THE OWNER, NAVE NEWELL, INC., AND THE JURISDICTIONAL AUTHORITY(IES), THE CONTRACTOR SHALL BE LIABLE AND RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK DONE WHICH DEVIATES FROM THE PLANS AND/OR SPECIFICATIONS, ALL FINES AND/OR PENALTIES ASSESSED, AND ALL COMPENSATORY, CONSEQUENTIAL, AND/OR PUNITIVE DAMAGES RESULTING THEREFROM. THE CONTRACTOR IS ON NOTICE THAT BY DEVIATING FROM SUCH PLANS AND/OR SPECIFICATIONS, THE CONTRACTOR IS ASSUMING THE RISK OF ALL SUCH DAMAGES, AND CONTRACTOR WILL BE SUBJECT TO INDEMNITY, CONTRIBUTION, AND/OR HOLD HARMLESS CLAIMS FROM THE OWNER AND/OR NAVE NEWELL, INC. FOR ALL SUCH LIABILITIES.

PROJECT SERIAL NO. 20233050644
CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE - STOP CALL
Pennsylvania One Call System, Inc.
1-800-242-1776

WHITEMARSH BOARD OF SUPERVISORS:

THIS PLAN WAS APPROVED BY THE BOARD OF SUPERVISORS OF WHITEMARSH TOWNSHIP AT A MEETING HELD ON THE _____ DAY OF _____, 20____.

_____ CHAIRMAN

_____ SECRETARY

WHITEMARSH TOWNSHIP ENGINEER:

_____ ENGINEER

_____ DATE

MONTGOMERY COUNTY PLANNING COMMISSION CERTIFICATION:

THIS PLAN WAS REVIEWED BY THE MONTGOMERY COUNTY PLANNING COMMISSION ON _____.

MCPC FILE NUMBER _____

_____ DIRECTOR

CERTIFICATE OF OWNERSHIP AND ACKNOWLEDGEMENT OF PLAN

ON THIS, THE _____ DAY OF _____, 20____ BEFORE ME, THE UNDERSIGNED OFFICER,

PERSONALLY APPEARED _____

_____ NAME OF OWNER

WHO BEING DULY SWORN ACCORDING TO LAW, DEPOSES AND SAYS THAT HE IS THE _____ OF _____, THE OWNER OF THE PROPERTY SHOWN ON THIS PLAN, AND THAT HE ACKNOWLEDGES THE SAME TO BE HIS ACT AND PLAN AND DESIRES THE SAME BE RECORDED AS SUCH ACCORDING TO LAW.
WITNESS MY HAND AND SEAL THE DAY AND DATE ABOVE WRITTEN.
MY COMMISSION EXPIRES:

_____ _____ NOTARY PUBLIC OR OTHER OFFICER

I, _____, CERTIFY THAT I AM THE _____ OF _____, THE OWNER OF THE LAND HEREIN SUBDIVIDED (OR DEVELOPED), AND THAT I DO HEREBY ADOPT THIS PLAN AND DESIRE THE SAME TO BE RECORDED.

_____ OWNER

ZONING RELIEF GRANTED BY ZONING HEARING BOARD DECISION #2024-12

1. A Variance from Section 116-165, so as to permit structures in the Floodplain Conservation District that are not permitted by right or by Special Exception under Sections 116-166.B.(2) and (3).
2. A Special Exception under Section 116-166.A.(1), so as to permit a small portion of the kayak boat ramp and boardwalk in the floodway within the Floodplain Conservation District.
3. Special Exceptions under Sections 116-166.B.(2) and (3), so as to permit utilities and other necessary facilities in the floodway fringe within the Floodplain Conservation District.
4. A Variance from Section 116-280.H, so as to permit residential use in the RDD District-1 without a minimum of 2% non-residential use.
5. A Variance from Section 116-281.A.(3)(a), so as to permit a minimum setback of less than 10' and average of 20' from the Ultimate Right-of-Way of Washington Street.
6. A Variance from Section 116-281.A.(3)(b), so as to permit a setback from other unattached buildings of 28 feet, rather than the 40 feet required.
7. A Variance from Section 116-281.A.(3)(c), so as to permit a setback from a public trail of 8.5 feet, rather than the 10 feet required.
8. A Variance from Section 116-281.A.(7)(a), so as to permit single-family structures with building heights greater than 3 habitable stories above the floodplain.
9. A Variance from Section 116-281.A.(9), so as to include the riverfront open space area in the total tract area calculation.
10. A Variance from Section 116-283.A.(4), so as to permit a building greater than 100 feet in length without 20% architectural features.
11. A Variance from Section 116-283.C.(1), so as to permit curb and sidewalk alignment along Washington Street without street trees and the required 5 foot verge/strip, both as required in cross-referenced Section 105-48 of the Subdivision and Land Development Ordinance.
12. A Variance from Section 116-283.D.(1)(e), so as to permit curb and sidewalk without a planting strip.
13. Variances from Sections 116-284.A.(1) and E.(3), so as to permit a boardwalk trail, rather than macadam, which is less than 10' wide.
14. Variances from Sections 116-284.A. through C., so as to permit a reduction in the riverfront area as shown on the Zoning Plan, but not less than 20'.

NAVE NEWELL
ENGINEERING • SURVEYING • LAND PLANNING
A MOWELL COMPANY
Excellence. Engineered.
900 WEST VALLEY ROAD, SUITE 1100
WAYNE, PA 19087-1830
P: 610.265.8323 F: 610.265.4299
WWW.NAVENEWELL.COM

REVISIONS

no.	description	date:	chk'd	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	JGE	JT
2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	6/26/2025	JPB	JGE
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SEAL:
COMMONWEALTH OF PENNSYLVANIA — JAMES P. BANNON — ENGINEER — No. PE082137 — PROFESSIONAL
JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: TITLE SHEET
LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

1001 WASHINGTON STREET

project no.: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: N.T.S.	approv. by: JPB

sheet no.
C0.0
1 of 20

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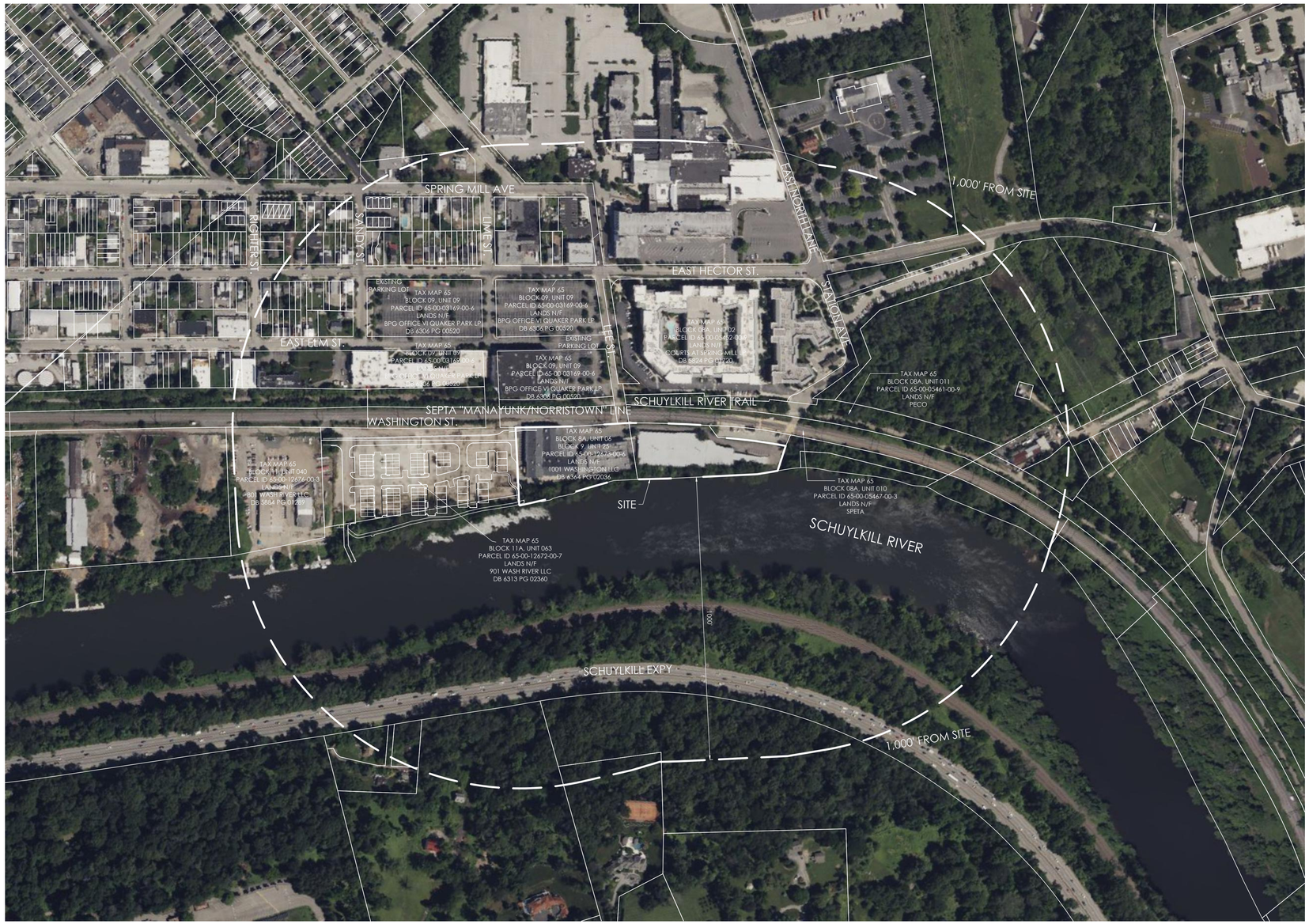
K:\24PROJ\24001_1001_WASHINGTON_STREET\CAD\PLAN_SET\24001_C0.0_TITLE.DWG
6/26/2025 11:46 AM
USER: ----



200 0 100 200 400 800

(IN FEET)
1 inch = 200 ft

PROJECT SERIAL NO: 20233050644

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Pennsylvania One Call System, Inc.

1-800-242-1776

K:\24PROJ\24001_1001_WASHINGTON_STREET\CAD\PLAN_SET\24001_C0.1_SITE CONTEXT MAP.DWG
6/26/2025 11:46 AM
USER: ----

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WAYNE, PA 19087-1830
P: 610.265.8323 F: 610.265.4299
WWW.NAVENEWELL.COM

REVISIONS

no.	description	date:	chk'd	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	JGE	JT
2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	6/26/2025	JPB	JGE
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SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

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DRAWING NAME: SITE CONTEXT MAP

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no.: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1" = 200'	approv. by: JPB

sheet no.

C0.1

2 of 20



SOILS LEGEND:

SOILS INFORMATION OBTAINED FROM THE USDA-NRCS WEB SOIL SURVEY, VERSION 10, SURVEY PERFORMED ON 7/24/2024.

Ug8 - URBAN LAND, 0-8 PERCENT SLOPES

SOIL LIMITATIONS AND RESOLUTIONS		
APPLICABILITY TO PROJECT	SOIL LIMITATION	RESOLUTION(S)
YES	DEPTH TO SATURATED ZONE / SEASONAL HIGH WATER TABLE	SOILS SHOULD BE EVALUATED FOR WETNESS PRIOR TO USE IN SITE WORK. IF GEOTECHNICAL ENGINEER DEEMS SOILS TOO WET FOR SITE WORK, THEN SOILS SHALL BE AMENDED OR DRIED PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
YES	FROST ACTION	SOILS SHOULD BE FREE OF FROZEN OR MUCKY MATERIALS. FILL SHOULD NOT BE PLACED ON SATURATED OR FROZEN SURFACES. EARTHWORK INVOLVING THESE SOILS SHOULD BE LIMITED TO THE WARMER MONTHS WHEN PRACTICAL.

GEOLOGIC CONDITIONS NOTE:

SITE IS UNDERLAIN BY THE CONESTOGA FORMATION, COMPOSED OF ORDOVICIAN AND CAMBRIAN BASED ON PADEP'S EMAPPA PROGRAM.

SITE/ZONING DATA TABLE

TAX PARCEL NUMBER:	*65-00-12673-00-6*
ADDRESS:	*1001 WASHINGTON STREET CONSHOHOCKEN, PA 19428*
GROSS LOT AREA:	*3.7 ACRES / 160,973 SF*
LOT AREA:	*2.96 ACRES / 128,879 SF*
CLASSIFICATION:	*HVY HEAVY INDUSTRIAL DISTRICT* *RCCD RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT* *FLOODPLAIN CONSERVATION OVERLAY DISTRICT* *STEEP SLOPE OVERLAY DISTRICT* *RDD-1 RIVERFRONT DEVELOPMENT OVERLAY DISTRICT* *RECREATIONAL OVERLAY DISTRICT*
PROPOSED USE:	*SINGLE FAMILY ATTACHED*

CRITERIA: RDD-1	*REQUIRED*	*EXISTING*
MIN LOT AREA	3 ACRES	3.7 ACRES
MIN LOT WIDTH	200 FT	*880 FT*
BUILDING SETBACK		
FROM PROPERTY LINE	20 FT	4.33 FT
FROM UNATTACHED BUILDINGS	40 FT	30.1 FT
FROM RIGHT OF WAY	10 FT MIN/ 20 FT AVE	N/A
FROM PUBLIC TRAIL	10 FT	N/A
PARKING SETBACK		
FROM PROPERTY LINE	15 FT	0 FT
FROM BUILDING	10 FT	0 FT
MAX BUILDING HEIGHT	3 STORIES ABOVE FLOODPLAIN	40 FT
MAX BUILDING COVERAGE	40%	53.1%
MAX IMPERVIOUS COVERAGE	75%	84%
MIN RIVERFRONT AREA	150 FT	28.25 FT
MAX ACCESSORY USES IN REAR YARD	30%	0%

** IMPROVED NON-CONFORMITY

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft

PROJECT SERIAL NO. 20233050644

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Pennsylvania One Call System, Inc.

1-800-242-1776

K:\24PROJ\24001_1001_WASHINGTON_STREET\CAD\PLAN_SET\24001_C0.2_ERSAP.DWG
6/26/2025 11:46 AM
USER: ----

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| REVISIONS | | |

BELOW NOTES ARE FROM "ALTA/NSPS LAND TITLE SURVEY" PREPARED BY RUGGIERO PLANTE LAND DESIGN DATED NOVEMBER 13, 2023, LAST REVSIED DECEMBER 12, 2023.

SURVEYOR'S NOTES

This survey is prepared with reference to a Commitment for Title Insurance by Commonwealth Title Insurance Company, Commitment Number PACLT23-4305 M/K, having a commitment date of October 24, 2023, where the following exceptions listed in Schedule B Section II are addressed to the limits of the signing Pennsylvania Land Surveyor.

9. Premises is bisected by a 25 feet wide strip of land leading from the former Lee Tire premises to the river. - **LEE TIRE AND RUBBER CO DRAINAGE EASEMENT SHOWN**
10. Easement of Railroad Siding which extends into premises and rights of use of same by adjoining owners. **NO RAILROAD SIDINGS OBSERVED ON THE PROPERTY AT THE TIME OF THE SURVEY**
11. Rights of others in and to Spring Mill Creek crossing premises. **NEED FURTHER INFORMATION FROM TITLE COMPANY TO DETERMINE LOCATION**
12. Easement of Towpath on Schuylkill Canal. **NEED FURTHER INFORMATION FROM TITLE COMPANY TO DETERMINE LOCATION**
13. Subject to the rights of Ingress and regress over premises as in Deed Book 280 page 66. - **DOCUMENT NOT LEGIBLE**
14. The 25 feet wide strip leading from Lee Tire to the river is subject to the provision of Deed Book 619 page 261, concerning sewers and railroad sidings. - **LEE TIRE AND RUBBER CO DRAINAGE EASEMENT SHOWN**
15. Water, Ferry and Passage Rights as in Deed Book 10 page 413.- **DOCUMENT NOT LEGIBLE**
16. Water, Ferry and Passage Rights as in Deed Book 34 page 434. - **DOCUMENT NOT LEGIBLE**
17. Water, Ferry and Passage Rights as in Deed Book 395 page 41. - **DOCUMENT NOT LEGIBLE**
18. Premises is located within the 100 year flood plan of the Schuylkill River. - **FEMA FLOODWAY AND ZONE AE FLOOD ZONE SHOWN**
19. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 52 page 88. - **DOCUMENT NOT LEGIBLE**
20. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 55 page 438. - **DOCUMENT NOT LEGIBLE**
21. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 72 page 552. - **DOCUMENT NOT LEGIBLE**
22. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 153 page 47. - **DOCUMENT NOT LEGIBLE**
23. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 182 page 315. - **DOCUMENT NOT LEGIBLE**
24. Right of way granted to the Philadelphia Electric Company as in Deed Book 4762 page 1035. - **NOT PLOTTABLE, PLANS NOT PROVIDED**

SURVEYOR'S NOTES CONTINUED

25. Subject to conditions as shown on a Plan of Subdivision recorded in Plan Book A-43 page 87. - **DRAINAGE EASEMENT AND ROW LINES SHOWN - APPLICABLE NOTES, CONDITIONS, ITEMS ETC. HAVE BEEN CARRIED OVER TO THE PLAN**
26. Rights reserved in Deed Book 4671 page 263 for use of water, wells, pumps, piping and roof storage tank. - **AREA SHOWN ON PLAN**
27. Right of way granted to The Bell Telephone Company of Pennsylvania as in Deed Book 4877 page 1032. - **SHOWN APPROXIMATELY**
28. Memorandum of Improvement Agreement as in Deed Book 5021 page 2030. - **BLANKET IN NATURE**
29. Subject to conditions as shown on a Land Site Plan recorded in Land Site Plan Book L-2 page 151. - **PARKING DECK SHOWN - APPLICABLE NOTES, CONDITIONS, ITEMS ETC. HAVE BEEN CARRIED OVER TO THE PLAN**
30. Possible rights of the United States of America, the Commonwealth of Pennsylvania, the Public and other riparian owners between the high and low water marks of the Schuylkill River. - **SCHUYLKILL RIVER SHOWN**
31. Subject to the laws and authority of the Federal and State Governments, their political subdivisions and agencies, to regulate commerce and navigation over part of the premises extending beyond the high water mark of the Schuylkill River; and to exert governmental title and ownership in the area lying beyond the original low water mark. - **SCHUYLKILL RIVER SHOWN**
32. Reciprocal Easement Agreement set forth in Deed Book 5967 page 411. - **EASEMENT SHOWN**

REFERENCE PLANS

1. ALTA/NSPS LAND TITLE SURVEY PREPARED BY RUGGIERO PLANTE LAND DESIGN DATED NOVEMBER 15, 2023, LAST REVISED DECEMBER 12, 2023.

GENERAL NOTES:

1. THIS PLAN IS BASED ON A SURVEY CONDUCTED IN THE FIELD BY RUGGIERO PLANTE LAND DESIGN COMPLETED ON NOVEMBER 9, 2023 AND ADDITIONAL FIELD SURVEY PERFORMED BY NAVE NEWELL ON JULY 29, 2024.
2. THIS SURVEY REPRESENTS CONDITIONS AS OF THE DATE OF THE SURVEY EXCEPT SUCH IMPROVEMENTS OR EASEMENTS, IF ANY, THAT MAY BE LOCATED BELOW THE SURFACE OF THE LAND, ON THE SURFACE OF THE LANDS OR ABOVE THE SURFACE OF THE LANDSAND NOT VISIBLE.
3. TITLE TO THE SUBJECT PROPERTY IS FILED IN THE MONTGOMERY COUNTY COURT HOUSE IN DEED BOOK 6334 PAGE 01619 IN THE WHITEMARSH TOWNSHIP, COUNTY OF MONTGOMERY, PENNSYLVANIA.
4. BEARING BASIS FOR THE SURVEY IS THE RECORD DEED AS REFERENCED IN NOTE 3, ABOVE.
5. THE ELEVATIONS FOR THIS PLAN ARE BASED ON NAVD88. THE SITE BENCHMARK IS A MAG NAIL SET IN THE DRIVE LOCATION AT THE NORTHEAST CORNER OF THE PROPERTY HAVING AN ELEVATION OF 49.23'. THIS ELEVATION AND BENCHMARK NOT TAKEN FROM ALTA/NSPS LAND TITLE SURVEY PLAN PREPARED BY RUGGIERO PLANTE LAND DESIGN DATED NOVEMBER 15, 2023, LAST REVISED DECEMBER 12, 2023.
6. PROPERTY AS SHOWN IS IN ZONE "AE" (BASE FLOOD ELEVATIONS DETERMINED) AS DEPICTED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FIRM FLOOD INSURANCE RATE MAP COMMUNITY PANEL #42091C0358 G, PANEL 358 OF 451. BASE ELEVATION = 59, NAVD 1988 DATUM.
7. PLAN DATUM IS NGVD 1929, BASE FLOOD ELEVATION CONVERTED TO NGVD 1929 DATUM = ELEVATION ±60.
8. LOCATIONS OF EXISTING UTILITIES AS SHOWN HEREIN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS, PLANS BY OTHERS AND/OR ABOVE GROUND EXAMINATION OF SITE. THE COMPLETENESS OR ACCURACIES OF THE LOCATIONS ARE NOT GUARANTEED. SHOULD ANY NEW CONSTRUCTION BE PROPOSED, THE CONTRACTOR MUST VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES BEFORE START OF WORK.
9. PURSUANT TO ACT 287 "PENNSYLVANIA ONE CALL INC." WAS PLACED. INFORMATION THEREBY OBTAINED WAS USED TO ILLUSTRATE EXISTING UTILITIES.
10. NO REVIEW OF THE PROPERTY REGARDING THE PRESENCE OF WETLANDS WAS ACCOMPLISHED AS A PART OF THIS SURVEY.
11. UNIT AND BLOCK NUMBERS REFER TO THE OFFICIAL TAX MAPS OF WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA.
12. IF CONTRACTOR DEVIATES FROM THE PLANS AND/OR SPECIFICATIONS WITHOUT FIRST OBTAINING THE WRITTEN AUTHORIZATION OF THE OWNER, NAVE NEWELL, INC., AND THE JURISDICTIONAL AUTHORITY(IES), THE CONTRACTOR SHALL BE LIABLE AND RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK DONE WHICH DEVIATES FROM THE PLANS AND/OR SPECIFICATIONS, ALL FINES AND/OR PENALTIES ASSESSED, AND ALL COMPENSATORY, CONSEQUENTIAL, AND/OR PUNITIVE DAMAGES RESULTING THEREFROM. THE CONTRACTOR IS ON NOTICE THAT BY DEVIATING FROM SUCH PLANS AND/OR SPECIFICATIONS, THE CONTRACTOR IS ASSUMING THE RISK OF ALL SUCH DAMAGES, AND CONTRACTOR WILL BE SUBJECT TO INDEMNITY, CONTRIBUTION, AND/OR HOLD HARMLESS CLAIMS FROM THE OWNER

SOILS LEGEND:

SOILS INFORMATION OBTAINED FROM THE USDA-NRCS WEB SOIL SURVEY, VERSION 10, SURVEY PERFORMED ON 7/24/2024.

UgB - URBAN LAND, 0-8 PERCENT SLOPES

SOIL LIMITATIONS AND RESOLUTIONS		
APPLICABILITY TO PROJECT	SOIL LIMITATION	RESOLUTION(S)
YES	DEPTH TO SATURATED ZONE / SEASONAL HIGH WATER TABLE	SOILS SHOULD BE EVALUATED FOR WETNESS PRIOR TO USE IN SITE WORK. IF GEOTECHNICAL ENGINEER DEEMS SOILS TOO WET FOR SITE WORK, THEN SOILS SHALL BE AMENDED OR DRIED PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
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GEOLOGIC CONDITIONS NOTE:

SITE IS UNDERLAIN BY THE CONESTOGA FORMATION, COMPOSED OF ORDOVICIAN AND CAMBRIAN BASED ON PADEP'S EMAPPA PROGRAM.

UTILITY OWNERS

DATE CONTACTED: November 1, 2023

SERIAL NUMBER: 20233050644

COMPANY: WHITEMARSH TOWNSHIP AUTHORITY
ADDRESS: 2015 JASHUA RD, BLDG 100, LAFAYETTE HILL, PA 19444
CONTACT: TOM BONJO
EMAIL: tbonjo@whitmarshauthority.org
PHONE: 610-825-1412

COMPANY: COMCAST CABLEVISION
ADDRESS: 1250 HADDONFIELD-BERLIN RD, CHERRY HILL, NJ 08034
CONTACT: WYATT PARISH
EMAIL: Wyatt_Parrish@comcast.com
PHONE: 484-368-4391

COMPANY: AQUA OENNSYLVANIA
ADDRESS: 762 LANCASTER AVE, BRYN MAWR, PA 19010
CONTACT: THOMAS WADDY
EMAIL: twaddy@aquaamerica.com
PHONE: 610-525-1400 X52105

COMPANY: PECO AN EXELON COMPANY C/O USIC
ADDRESS: 450 S HENDERSON RD, SUITE B, KING OF PRUSSIA , PA 19406
CONTACT: NIKKIA SIMPKINS
EMAIL: nikkiasimpkins@usicinc.com
PHONE: 484-681-5720

COMPANY: LUMEN FORMERLY LEVEL 3
ADDRESS: 1025 ELDORADO BLVD, BROOMFIELD, CO 80021
CONTACT: LUMEN OPERATOR PERSONNEL
EMAIL: relocations@lumen.com
PHONE: 877-366-8344 X 3

COMPANY: VERIZON BUSINESS FORMERLY MCI
ADDRESS: 7000 WESTON PKWY, CARY, NC 27513
CONTACT: VICTOR WOOD
EMAIL: victor.s.wood@verizon.com
PHONE: 919-414-2782

COMPANY: WHITEMARSH TOWNSHIP PUBLIC WORKS
ADDRESS: 616 GEMANTOWN PIKE, LAFAYETTE HILLS, PA 19444
CONTACT: JOHN FIELDS
EMAIL: jfields@whitmarshtwp.org
PHONE: 215-783-1617

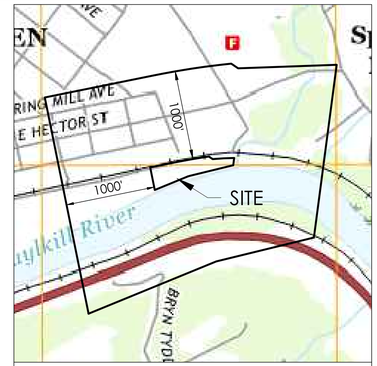
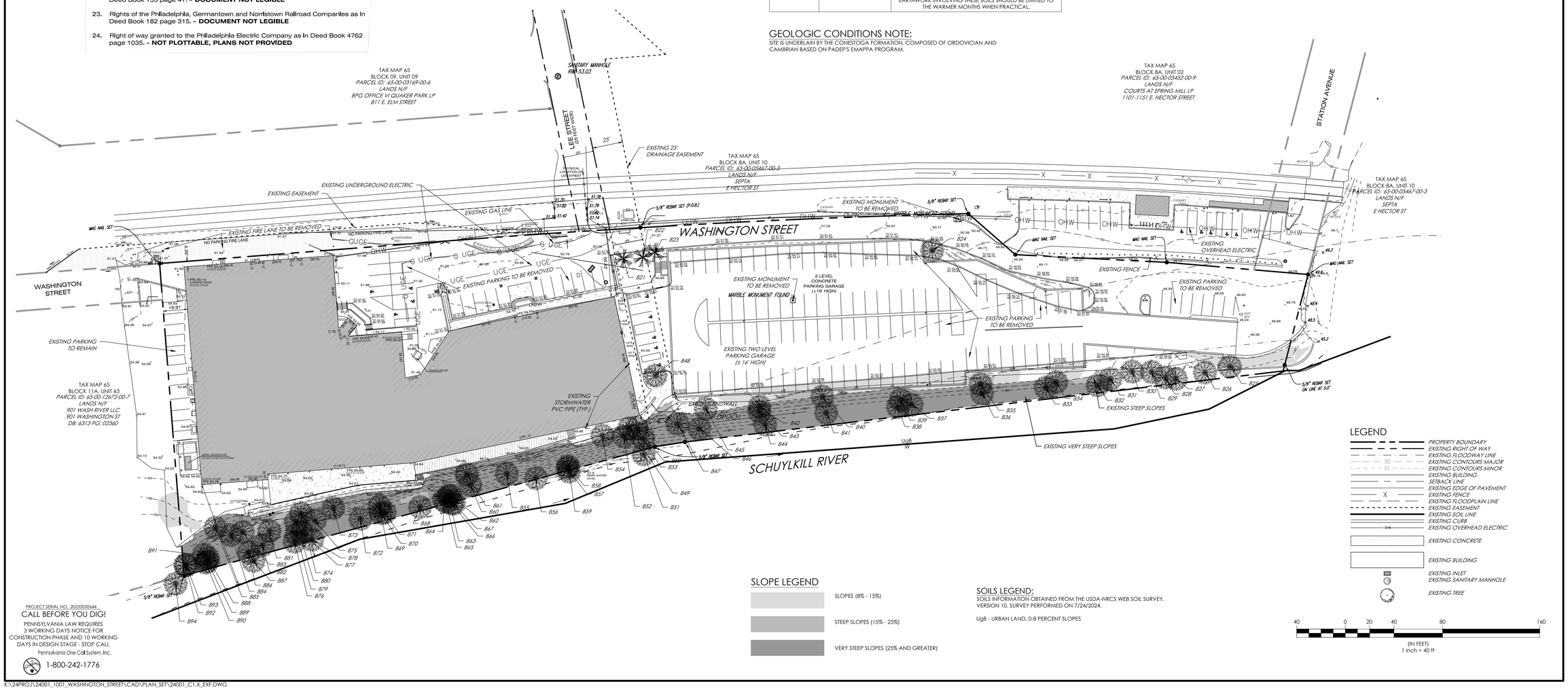


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'



SLOPE LEGEND

- SLOPES (8% - 15%)
- STEEP SLOPES (15% - 25%)
- VERY STEEP SLOPES (25% AND GREATER)

SOILS LEGEND:

SOILS INFORMATION OBTAINED FROM THE USDA-NRCS WEB SOIL SURVEY, VERSION 10. SURVEY PERFORMED ON 7/24/2024.

UgB - URBAN LAND, 0-8 PERCENT SLOPES

LEGEND

- PROPERTY BOUNDARY
- EXISTING RIGHT OF WAY
- EXISTING FLOODWAY LINE
- EXISTING CONTOURS MAJOR
- EXISTING CONTOURS MINOR
- EXISTING BUILDING
- SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING FENCE
- EXISTING FLOODPLAIN LINE
- EXISTING EASEMENT
- EXISTING SOIL LINE
- EXISTING CURB
- EXISTING OVERHEAD ELECTRIC
- EXISTING CONCRETE
- EXISTING BUILDING
- EXISTING INLET
- EXISTING SANITARY MANHOLE
- EXISTING TREE

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

PROJECT SERIAL NO. 20233050644

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no.	description	date:	chk'd	by
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2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	6/26/2025	JPB	JGE

SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: EXISTING FEATURES PLAN & SOIL MAP & PRELIMINARY IMPACT PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no.	drawn by:
2024-001.02	JT
date:	chk'd by:
11/15/24	JGE
scale:	approv. by:
1" = 40'	JPB

sheet no.

C1.0

4 of 20

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1001 Washington Street					
Date of Inventory: 2/28/2025				Person: Brian Kelly	
Tree ID #	DBH (")	Multi	Common Name	Botanical Name	Condition Notes
821	10		Norway Spruce	Picea abies	
822	10		Norway Spruce	Picea abies	
823	10		Eastern Hemlock	Tsuga canadensis	Compromised/major decline
824	13		Little-leaf Linden	Tilia cordata	
825	6		Boxelder Maple	Acer negundo	
826	24		American Sycamore	Platanus occidentalis	
827	24		Red Elm	Ulmus rubra	
828	24		American Sycamore	Platanus occidentalis	
829	10		Boxelder Maple	Acer negundo	Compromised/major decline
830	30	x	Boxelder Maple	Acer negundo	
831	30		American Sycamore	Platanus occidentalis	
832	24		American Sycamore	Platanus occidentalis	Compromised, major vine damage
833	36		American Sycamore	Platanus occidentalis	
834	7				Dead
835	8		Empress Tree	Paulownia tomentosa	
836	12		American Sycamore	Platanus occidentalis	
837	18		Red Elm	Ulmus rubra	
838	20		Red Elm	Ulmus rubra	
839	18		American Sycamore	Platanus occidentalis	
840	7		Red Maple	Acer rubrum	
841	16		Red Elm	Ulmus rubra	
842	12		Boxelder Maple	Acer negundo	
843	6		White Ash	Fraxinus americana	
844	12		Boxelder Maple	Acer negundo	
845	9		White Ash	Fraxinus americana	
846	24		Red Maple	Acer rubrum	
847	18		Boxelder Maple	Acer negundo	
848	10		Bradford Pear	Pryus calleryana	
849	16		Boxelder Maple	Acer negundo	Compromised/decay
850	18		Boxelder Maple	Acer negundo	
851	24		Red Maple	Acer rubrum	
852	18		Red Maple	Acer rubrum	Compromised
853	18		Boxelder Maple	Acer negundo	
854	18		White Ash	Fraxinus americana	
855	6				
856	24		American Sycamore	Platanus occidentalis	
857	18		Red Maple	Acer rubrum	
858	18		Red Maple	Acer rubrum	
859	18		Red Maple	Acer rubrum	
860	10		Boxelder Maple	Acer negundo	Compromised/major decline
861	18		Boxelder Maple	Acer negundo	Compromised/major decline
862	10		Boxelder Maple	Acer negundo	
863	14		Red Maple	Acer rubrum	
864	20		Red Maple	Acer rubrum	
865	20		Red Maple	Acer rubrum	
866	8		Red Maple	Acer rubrum	
867	6		Red Maple	Acer rubrum	
868	14		Red Elm	Ulmus rubrua	
869	24		American Sycamore	Platanus occidentalis	
870	10		Boxelder Maple	Acer negundo	
871	24		American Sycamore	Platanus occidentalis	
872	17		Boxelder Maple	Acer negundo	
873	16		Boxelder Maple	Acer negundo	Decay/decline
874	24		Boxelder Maple	Acer negundo	
875	15		Boxelder Maple	Acer negundo	
876	12		Boxelder Maple	Acer negundo	
877	12		Boxelder Maple	Acer negundo	
878	12		Boxelder Maple	Acer negundo	
879	18		Boxelder Maple	Acer negundo	Compromised/major damage
880	24		Boxelder Maple	Acer negundo	
881	18x7	x	Boxelder Maple	Acer negundo	
882	12		Boxelder Maple	Acer negundo	Vine damage
883	8		Red Maple	Acer rubrum	Vine damage
884	12		Boxelder Maple	Acer negundo	Vine damage
885	24		American Elm	Ulmus americana	
886	30	x	Boxelder Maple	Acer negundo	
887	15		Boxelder Maple	Acer negundo	Compromised
888	25	x	American Elm	Ulmus americana	Dead
889	10		Red Maple	Acer rubrum	
890	20		Red Maple	Acer rubrum	
891	12		Red Maple	Acer rubrum	
892	14		Red Maple	Acer rubrum	
893	16		Boxelder Maple	Acer negundo	Compromised/major damage
894	8		Boxelder Maple	Acer negundo	

PROJECT SERIAL NO.: 20233050644

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REVISIONS

date:	no.	description	chk'd	by
6/26/2025	1	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	BTK	GSS

SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: TREE INVENTORY

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no.	drawn by:
2024-001.02	GSS
date:	chk'd by:
3/27/2025	BTK
scale:	approv. by:
N.T.S.	PEL

sheet no.

C1.1

5 of 20

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DEMOLITION NOTES:

1. LOCATIONS OF EXISTING UTILITIES AS SHOWN HEREIN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS, PLANS BY OTHERS, ABOVE GROUND EXAMINATION OF THE SITE AND/OR PRIVATE UTILITY LOCATION COMPANY. THE COMPLETENESS OR ACCURACY OF THE LOCATIONS ARE NOT GUARANTEED. THE CONTRACTOR MUST VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES BEFORE START OF WORK.
2. PRIOR TO STARTING CONSTRUCTION, ALL UTILITY SERVICES IN THE AREA ARE TO BE LOCATED, THE USER NOTIFIED, AND MEASURES TAKEN TO PROTECT THE LINES IN ACCORDANCE WITH PA ACT 287, AS AMENDED. CONTRACTORS ARE TO IMMEDIATELY NOTIFY THE ENGINEER OF ANY DEVIATIONS FROM THE PLAN INFORMATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT PA "ONE-CALL" AT LEAST 72 HOURS TO ANY EXCAVATION OR DEMOLITION ON-SITE.
3. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO THE START OF DEMOLITION.
4. THE EXISTING ASPHALT TO BE RESURFACED SHALL BE PATCHED, FILLED AND/OR REPAIRED AS NECESSARY PRIOR TO THE APPLICATION OF THE WEARING COURSE.
5. IN ALL AREAS WHERE FINISHED PAVING IS TO BE PROVIDED, THE CONTRACTOR IS TO BREAK APART EXISTING ASPHALT TO EXISTING SUBBASE STONE. FOLLOWING MILLING, THE EXPOSED SUBGRADE SHALL BE INSPECTED FOR ITS SUITABILITY AS PAVEMENT SUBBASE. IN AREAS WHERE EXISTING ASPHALT WILL BE CONVERTED TO GREEN SPACE OR BUILDING, THE CONTRACTOR IS TO MILL OUT THE EXISTING ASPHALT FOR ITS REUSE ON-SITE AS SUBBASE IN PROPOSED ASPHALT PAVEMENT AREAS. ALL FILL MEASURES TO BE COMPACTED IN ACCORDANCE WITH THE GEOTECHNICAL SPECIFICATIONS.
6. WHERE IMPROVEMENTS ARE PROPOSED TO TIE INTO EXISTING FEATURES, THE EXISTING FEATURES SHALL BE FIELD VERIFIED FOR ELEVATION AND LOCATION. IF FIELD LOCATED DATA IS DIFFERENT THAN THE DATA CONTAINED WITH THE CONSTRUCTION DOCUMENTS, THE CONTRACTOR SHALL NOTIFY NAVE NEWELL, INC. PRIOR TO ANY DESIGN CHANGES.
7. THE PAVEMENT SECTION AREA DELINEATED ON THE PLANS TO BE MODIFIED SHALL BE USED AS GUIDANCE. EXPAND OR CONTRACT THIS AREA AT THE TIE IN LOCATION TO EXISTING PAVEMENT, SIDEWALK, DRIVEWAY APRONS, AND LOADING AREAS AS THE FIELD CONDITIONS WARRANT. ALL PAVEMENT SEAMS SHALL BE SEALED.
8. SITE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE DISCONNECTION, ABANDONMENT, RELOCATION AND/OR REMOVAL OF ALL APPLICABLE ON-SITE UTILITIES. IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS AS WELL AS ANY REQUIREMENTS FROM THE RELEVANT UTILITY COMPANY.
9. ALL DEMOLITION SHALL BE PERFORMED BY A QUALIFIED, LICENSED CONTRACTOR IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
10. THIS PLAN IS NOT INTENDED TO DEPICT ALL FACETS AND ITEMS TO BE ADDRESSED DURING THE COURSE OF DEMOLITION ACTIVITIES. THIS PLAN IS INTENDED TO REPRESENT ONLY THE READILY VISIBLE, EXISTING IMPROVEMENTS ON-SITE. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE SITE CONDITION PRIOR TO FINALIZING HIS BID AND PROVIDE ALL NECESSARY DEMOLITION SERVICES REQUIRED TO COMPLETE THE SCOPE OF WORK OUTLINED ON THESE DRAWINGS. UPON INITIATION OF DEMOLITION, CONTRACTOR SHALL ADVISE THE ENGINEER OF RECORD IMMEDIATELY, SHOULD CONFLICTS ARISE IN THE FIELD.
11. CONTRACTOR IS TO EXERCISE CARE WHEN REMOVING PAVEMENT OVER EXISTING PIPES TO REMAIN. DURING CONSTRUCTION, CONTRACTOR SHALL TAKE STEPS TO MAINTAIN ADEQUATE COVER OVER ALL EXISTING PIPES TO REMAIN AND TO PREVENT CONSTRUCTION TRAFFIC FROM DAMAGING SAID PIPES. IF THE EXISTING PIPES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM IN KIND AT THE CONTRACTORS COST.
12. ALL PAVEMENT WITHIN THE LIMITS OF DISTURBANCE NOT SCHEDULED TO BE REMOVED SHALL BE MILLED AND OVERLAID WITH 1.5" ID-2 BITUMINOUS WEARING COURSE. MILLING AND OVERLAYING SHALL BE PERFORMED TO MAKE PATCHING NONVISUAL WHEN COMPLETED.
13. CONTRACTOR SHALL USE EXTREME CAUTION WHEN REMOVING EXISTING UTILITIES TO PREVENT ANY DISTURBANCE TO UTILITIES THAT ARE TO REMAIN. IF SAID REMAINING UTILITY IS DAMAGED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR UTILITY REPAIRS.
14. ALL UTILITIES TO BE ABANDONED AND LEFT IN PLACE SHALL BE PLUGGED AND FILLED WITH FLOWABLE CONCRETE.
15. ALL EXCAVATED UNSUITABLE MATERIAL MUST BE TRANSPORTED TO AN APPROVED DISPOSAL LOCATION.
16. CONTRACTOR IS RESPONSIBLE FOR ALL SHORING REQUIRED DURING EXCAVATION AND SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS, AS WELL AS ADDITIONAL PROVISIONS TO ASSURE STABILITY OF CONTIGUOUS STRUCTURES, AS FIELD CONDITIONS DICTATE.

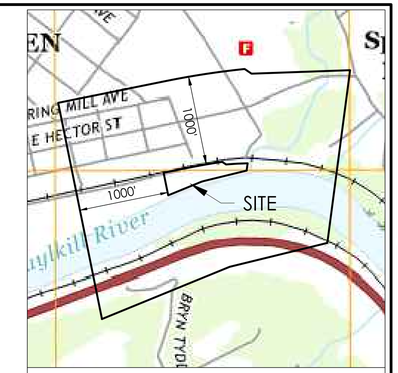
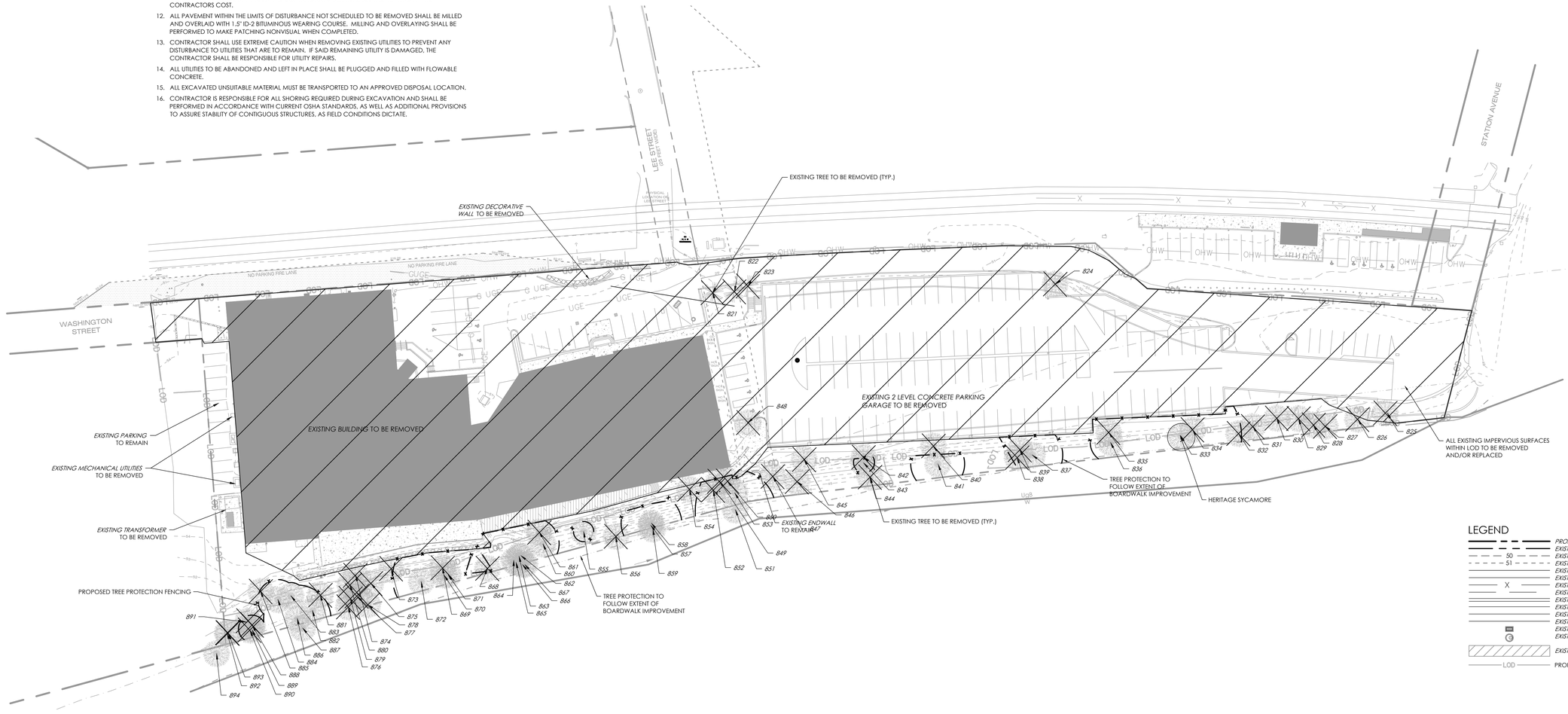


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'



LEGEND

- PROPERTY BOUNDARY
- EXISTING RIGHT OF WAY
- 50 EXISTING CONTOURS MAJOR
- 51 EXISTING CONTOURS MINOR
- EXISTING BUILDING
- X EXISTING EDGE OF PAVEMENT
- EXISTING FENCE
- EXISTING FLOODPLAIN LINE
- EXISTING CURB
- EXISTING RETAINING WALL
- EXISTING OVERHEAD ELECTRIC
- EXISTING UNDERGROUND ELECTRIC
- EXISTING INLET
- EXISTING SANITARY MANHOLE
- EXISTING IMPERVIOUS TO BE REMOVED
- LOD PROPOSED LIMIT OF DISTURBANCE

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

PROJECT SERIAL NO. 20233050644
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Pennsylvania One Call System, Inc.
1-800-242-1776

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6/26/2025 11:47 AM
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REVISIONS

no.	description	date	chk'd	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	BTK	GSS
2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	6/26/2025	JPB	JGE
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SEAL:
COMMONWEALTH OF PENNSYLVANIA — JAMES P. BANNON — ENGINEER — No. PE082137 — PROFESSIONAL
JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: DEMOLITION PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP , MONTGOMERY COUNTY, PA

project no.	drawn by:
2024-001.02	JT
date:	chk'd by:
11/15/24	JGE
scale:	approv. by:
1"=40'	JPB

sheet no.

C2.0

6 of 20

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SITE/ZONING DATA TABLE

TAX PARCEL NUMBER:	65-00-12673-00-6
ADDRESS:	1001 WASHINGTON STREET CONSHOHOCKEN, PA 19428
GROSS LOT AREA:	3.7 ACRES / 160,973 SF
LOT AREA:	2.96 ACRES / 128,879 SF
CLASSIFICATION:	HVY HEAVY INDUSTRIAL DISTRICT RCCD RIPARIAN CORRIDOR CONSERVATION OVERLAY DISTRICT FLOODPLAIN CONSERVATION OVERLAY DISTRICT STEEP SLOPE OVERLAY DISTRICT RDD-1 RIVERFRONT DEVELOPMENT OVERLAY DISTRICT RECREATIONAL OVERLAY DISTRICT
PROPOSED USE:	SINGLE FAMILY ATTACHED

CRITERIA: RDD-1	REQUIRED	EXISTING	PROPOSED
MIN LOT AREA	3 ACRES	3.7 ACRES	2.96 ACRES †
MIN LOT WIDTH	200 FT	880 FT	880 FT
BUILDING SETBACK			
FROM PROPERTY LINE	20 FT	4.33 FT	20 FT
FROM UNATTACHED BUILDINGS	40 FT	30.1 FT	28 FT †
FROM RIGHT OF WAY	10 FT MIN/ 20 FT AVE	N/A	5.5 FT †
FROM PUBLIC TRAIL	10 FT	N/A	8.5 FT †
PARKING SETBACK			
FROM PROPERTY LINE	15 FT	0 FT	0 FT
FROM BUILDING	10 FT	0 FT	14 FT
MAX BUILDING HEIGHT	3 STORIES ABOVE FLOODPLAIN	40 FT	4 HABITABLE STORIES †
MAX BUILDING COVERAGE	40%	53.1%	28.9%
MAX IMPERVIOUS COVERAGE	75%	84%	59.8%
MIN RIVERFRONT AREA	150 FT	28.25 FT	26.4 FT †
MAX ACCESSORY USES IN REAR YARD	30%	0%	21.6% (RIVER WALK)

** IMPROVED NON-CONFORMITY
† VARIANCE GRANTED MAY 15, 2024

PARKING DATA TABLE

2 PARKING SPACES REQUIRED PER DWELLING UNIT (TOWNHOUSE)
46 UNITS = 92 PARKING SPACES REQUIRED

21 PUBLIC PARKING SPACES PROVIDED
92 GARAGE SPACES PROVIDED
46 DRIVEWAY/APRON SPACES PROVIDED
159 TOTAL PARKING SPACES PROVIDED

RESIDENTIAL DENSITY

REQUIREMENT:
RESIDENTIAL DENSITY SHALL NOT EXCEED 30 DWELLING UNITS PER GROSS ACRE.

PERMITTED	PROPOSED
3.7 X 30 = 111 UNITS	46 UNITS

SITE NOTES:

1. SEE ARCHITECTURAL DRAWINGS FOR DETAILED BUILDING, STRUCTURAL, ELECTRICAL, LIGHTING, ELEVATORS, STAIRWELLS AND SIDEWALK INFORMATION AND DETAILS, INCLUDING PAVEMENT FINISHES SHOWN AS ANYTHING OTHER THAN ASPHALT.
2. CONTRACTOR IS TO ENSURE THAT ALL ACCESSIBLE FACILITIES SHALL BE CONSTRUCTED IN CONFORMANCE WITH CURRENT ADA REQUIREMENTS.
3. ALL INTERNAL CURB IS TO BE 6" REVEAL REFER TO DETAIL SHEET.
4. ALL INTERNAL CURB RADII IS TO BE 5' UNLESS OTHERWISE NOTED.
5. REFER TO THE CONSTRUCTION NOTES PROVIDED ON THE GRADING PLAN FOR ADDITIONAL NOTES. IN CASE OF DISCREPANCIES BETWEEN PLANS, THE SITE PLAN WILL SUPERSEDE IN ALL CASES. NOTIFY ENGINEER OF RECORD OF ANY CONFLICT IN WRITING.
6. CONTRACTOR TO MATCH EXISTING PAVEMENT, CURB, AND SIDEWALK ELEVATIONS/LOCATIONS WHERE THE PROPOSED IMPROVEMENTS TIE INTO EXISTING FEATURES.

OWNER/APPLICANT:

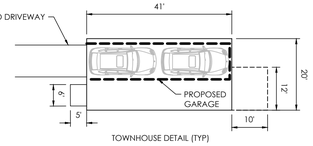
HT 1001 WASHINGTON, LLC
1331 S. JUNIPER STREET
PHILADELPHIA, PA 19147
PHONE: (215) 246-0606
ATTN: DAVID LANDSKRONER

CIVIL ENGINEER

NAVE NEWELL, INC.
900 WEST VALLEY ROAD, SUITE 1100
WAYNE, PA 19087
PHONE: (610) 265-8323
ATTN: JAMES P. BANNON, P.E.

LANDSCAPE ARCHITECT:

NAVE NEWELL, INC.
900 WEST VALLEY ROAD
SUITE 1100
PHONE: 610-265-8323
ATTN: PAUL E. LEPARD, JR., RLA



TOWNHOUSE DETAIL (TYP)

GENERAL NOTES:

1. THIS PLAN IS BASED ON A SURVEY CONDUCTED IN THE FIELD BY RUGGIERO PLANTE LAND DESIGN COMPLETED ON NOVEMBER 9, 2023 AND ADDITIONAL FIELD SURVEY PERFORMED BY NAVE NEWELL ON JULY 29, 2024.
2. PROPERTY AS SHOWN IS IN ZONE "AE" (BASE FLOOD ELEVATIONS DETERMINED) AS DEPICTED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FIRM FLOOD INSURANCE RATE MAP COMMUNITY PANEL #42091C0358 G, PANEL 358 OF 451. BASE ELEVATION = 58.5, NAVD 1988 DATUM. PLAN DATUM IS NGVD 1929, BASE FLOOD ELEVATION CONVERTED TO NGVD 1929 DATUM = ELEVATION ±60.
3. NO REVIEW OF THE PROPERTY REGARDING THE PRESENCE OF WETLANDS WAS ACCOMPLISHED AS A PART OF THIS SURVEY.
4. THE ENTIRE PROPERTY IS WITHIN THE FLOODPLAIN CONSERVATION OVERLAY DISTRICT. THE BOUNDARY LINE OF ZONE 2 FALLS OUTSIDE OF THE SITE BOUNDARY. THE ENTIRE PROPERTY IS WITHIN THE RIPARIAN CORRIDOR CONSERVATION DISTRICT.
5. THE ENTIRE PROPERTY IS LOCATED WITHIN THE RIPARIAN CORRIDOR CONSERVATION DISTRICT. AS SUCH, THE RIPARIAN CORRIDOR CONSERVATION DISTRICT SHALL SERVE AS A SUPPLEMENT TO THE UNDERLYING DISTRICT PROVISIONS.
6. THIS PROJECT WILL REQUIRE PUBLIC WATER, SEWER AND STORMWATER MANAGEMENT CONTROLS.
7. ACCESS EASEMENTS BETWEEN 901 WASHINGTON STREET AND DAVIDS BRIDAL WILL BE PROVIDED.
8. THE PERMANENT REMOVAL OF TOPSOIL FROM THE TOWNSHIP IS PROHIBITED.
9. OFFER OF DEDICATION OF WASHINGTON STREET IS SUBJECT TO ACCEPTANCE BY THE TOWNSHIP BOARD OF SUPERVISORS.
10. THE PROPOSED DEVELOPMENT WILL BE SERVICED BY PUBLIC WATER AND SANITARY SEWER.
11. THE SANITARY SEWER DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE WHITEMARSH TOWNSHIP AUTHORITY STANDARDS.
12. PROPOSED STORMWATER MANAGEMENT FACILITIES WILL BE DESIGNED TO MEET ALL APPLICABLE STATE, COUNTY, AND TOWNSHIP REQUIREMENTS. AN INDIVIDUAL NPDES PERMIT OR AMENDMENT TO THE EXISTING NPDES PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES WILL BE REQUIRED.
13. UNIT NUMBERS ARE SUBJECT TO CHANGE WITH FUTURE ADDRESS PLAN.
14. ALL COMMON OPEN SPACE AREAS ON THE SUBJECT PROPERTY, INCLUDING OPEN SPACE OPEN TO PUBLIC USE ARE TO BE OWNED AND MAINTAINED BY A HOME OWNER'S ASSOCIATION.
15. IN THE EVENT THAT THE PROPERTY OWNER SHALL REFUSE OR NEGLECT TO COMPLY WITH THE PROVISIONS OF CHAPTER 58 OR THE REQUIREMENTS OF THE TOWNSHIP ENGINEER, AND THE NONCOMPLIANCE IS CREATING A DANGER TO THE HEALTH, SAFETY AND WELFARE OF THE COMMUNITY, THE BOARD OF SUPERVISORS MAY TAKE APPROPRIATE MEASURES TO CORRECT THE VIOLATION AND ASSESS ALL EXPENSES OF SUCH MEASURES AGAINST THE PERSON. THE BOARD OF SUPERVISORS MAY SEEK REIMBURSEMENT BY ANY MEANS PERMITTED BY LAW.
16. TRASH COLLECTION WILL BE PICKED UP AT INDIVIDUAL RESIDENT DRIVEWAYS, CONSISTENT WITH HOMEOWNER EXPECTATIONS. THERE IS NO COMMUNAL TRASH RECEPTACLE PROPOSED.
17. A REPORT INDICATING SUITABILITY OF THE SUBJECT SITE FOR DEVELOPMENT ADDRESSING THE POTENTIAL FOR SUBSIDENCE AND MEASURES TO ADDRESS SAME, TOPOGRAPHICAL SUITABILITY, AND GENERAL PRESERVATION OF HEALTH, LIFE, AND PROPERTY SHALL BE PREPARED BY REGISTERED PROFESSIONAL ENGINEER EXPERIENCED IN GEOTECHNICAL ENGINEERING.
18. DETAILED DESIGN PLANS AND CALCULATIONS FOR ALL PROPOSED RETAINING WALLS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE COMMONWEALTH OF PENNSYLVANIA SHALL BE SUBMITTED TO THE TOWNSHIP PRIOR TO FINAL PLAN APPROVAL.
19. ALL PUBLIC UTILITIES AND FACILITIES SUCH AS SEWER, GAS, ELECTRICAL, AND WATER SYSTEMS SHALL BE LOCATED AND CONSTRUCTED TO MINIMIZE OR ELIMINATE FLOOD DAMAGE IN ACCORDANCE WITH 44 CFR 60.3 (a)(4) THROUGH 44 CFR 60.3 (a)(6).
20. ALL CONSTRUCTION SHALL BE IN FULL COMPLIANCE WITH 44 CFR 60.3(a) THROUGH (d) OF THE NATIONAL FLOOD INSURANCE PROGRAM REGULATIONS.
21. SERVICE WALKS TO UNITS MAY CHANGE IN THE FIELD TO REFLECT FINAL BUILDING CONFIGURATIONS.
22. ALL PAVEMENT MARKINGS MUST BE THERMOPLASTIC, AND CONSISTENT WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
23. THE OPEN SPACE ON THE PROPERTY SHALL BE SUBJECT TO A CONSERVATION EASEMENT PROHIBITING FURTHER DEVELOPMENT OF THE OPEN SPACE, WHICH CONSERVATION EASEMENT SHALL BE PREPARED BY THE APPLICANT AND APPROVED BY THE TOWNSHIP SOLICITOR. THE HOMEOWNERS ASSOCIATION SHALL BE SOLELY RESPONSIBLE FOR MAINTAINING THE OPEN SPACE.

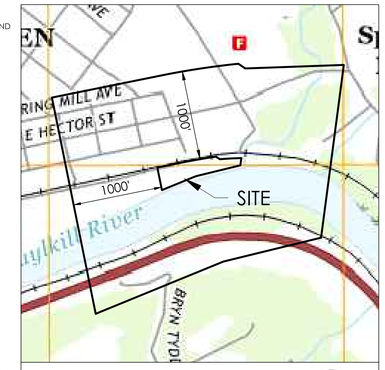
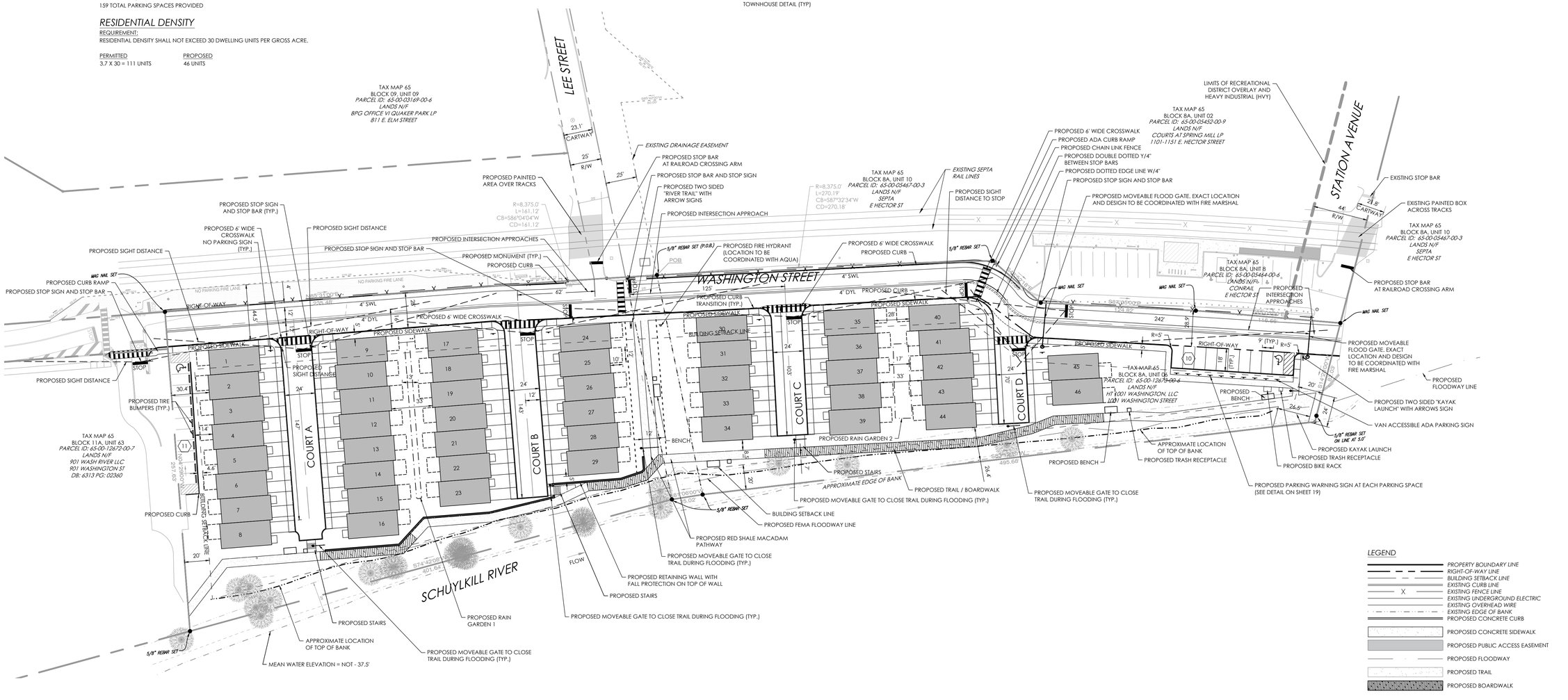


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'



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1-800-242-1776

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USER: ----

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3/27/2025	1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	----	----	----	----	----	----
6/26/2025	2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	----	----	----	----	----	----
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SEAL:
COMMONWEALTH OF PENNSYLVANIA
JAMES P. BANNON
ENGINEER
No. PE082137
JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: SITE PLAN
LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

1001 WASHINGTON STREET

project no.: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1"=40'	approv. by: JPB

sheet no.
C3.0
7 of 20

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RETAINING WALL NOTE:

RETAINING WALL TO BE DESIGNED BY STRUCTURAL ENGINEER. PLANS WILL BE PROVIDED TO THE TOWNSHIP FOR REVIEW PRIOR TO ISSUANCE OF BUILDING PERMITS.

STEEP SLOPE RATIO CALCULATION

AREA OF STEEP & VERY STEEP SLOPES: 0.44 ACRES
0.48 ACRES / 2.96 ACRES = 16.2 STEEP SLOPE RATIO

STEEP SLOPE DISTURBANCE

	EXISTING	DISTURBANCE ALLOWED	DISTURBED
15-25%	21,580 SF	774 SF (30%)	413 SF (16%)
GREATER THAN 25%	18,320 SF	2748 SF (15%)	2593 SF (14.2%)

GRADING NOTES:

1. THE ELEVATIONS FOR THIS PLAN ARE BASED ON NAVD88. THE SITE BENCHMARK IS A MAG NAIL SET IN THE DRIVE LOCATION AT THE NORTHEAST CORNER OF THE PROPERTY HAVING AN ELEVATION OF 49.23'. THIS ELEVATION AND BENCHMARK NOT TAKEN FROM ALTA/NSPS LAND TITLE SURVEY PLAN PREPARED BY RUGGIERO PLANTE LAND DESIGN DATED NOVEMBER 15, 2023. LAST REVISED DECEMBER 12, 2023.
2. PROPERTY AS SHOWN IS IN ZONE "AE" (BASE FLOOD ELEVATIONS DETERMINED) AS DEPICTED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FIRM FLOOD INSURANCE RATE MAP COMMUNITY PANEL #42091C0358 G, PANEL 358 OF 451. BASE ELEVATION = 59, NAVD 1988 DATUM.
3. PLAN DATUM IS NGVD 1929, BASE FLOOD ELEVATION CONVERTED TO NGVD 1929 DATUM = ELEVATION ±60.\
4. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION AND UTILITY INVERT ELEVATIONS, PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. ANY DISCREPANCIES THAT MAY AFFECT PUBLIC SAFETY AND/OR PROJECT COST MUST BE IDENTIFIED IMMEDIATELY TO THE ENGINEER OF RECORD IN WRITING. PROCEEDING WITH CONSTRUCTION WITH DESIGN DISCREPANCIES IS DONE AT THE CONTRACTOR'S OWN RISK.
5. IF THE CONTRACTOR DEVIATES FROM THE PLANS AND SPECIFICATIONS WITHOUT FIRST OBTAINING THE WRITTEN AUTHORIZATION OF THE OWNER AND NAVE NEWELL, INC., THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK DONE WHICH DEVIATES FROM THE PLANS, ALL FINES AND/OR PENALTIES ASSESSED, AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE OWNER AND NAVE NEWELL, INC. HARMLESS FROM ALL SUCH COSTS RELATED TO SAME.
6. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING ALL SOFT, YIELDING OR UNSUITABLE MATERIALS AND REPLACING WITH SUITABLE MATERIALS. ALL EXCAVATED OR FILLED AREAS SHALL BE COMPACTED TO 95% OF MODIFIED PROCTOR MAXIMUM DENSITY PER A.S.T.M. TEST D-1557. MOISTURE CONTENT AT THE TIME OF PLACEMENT SHALL BE NO MORE THAN 2% ABOVE OR 3% BELOW OPTIMUM. CONTRACTOR SHALL SUBMIT A COMPACTION REPORT, PREPARED BY A QUALIFIED SOILS ENGINEER, REGISTERED WITH THE STATE WHERE THE WORK IS PERFORMED, VERIFYING THAT ALL FILLED AREAS AND SUBGRADE AREAS WITHIN THE BUILDING PAD AREA AND AREAS TO BE PAVED HAVE BEEN COMPACTED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.
7. SUBBASE MATERIAL FOR SIDEWALKS, OR ASPHALT SHALL BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. SHOULD SUBBASE BE DEEMED UNSUITABLE, SUBBASE IS TO BE REMOVED AND FILLED WITH APPROVED FILL MATERIAL AND COMPACTED TO 95% OPTIMUM DENSITY (AS DETERMINED BY MODIFIED PROCTOR METHOD).
8. SITE CLEARING SHALL INCLUDE THE LOCATION AND REMOVAL OF ALL UNDERGROUND TANKS, PIPES, VALVES, ETC.
9. ALL EXCAVATED UNSUITABLE MATERIAL MUST BE TRANSPORTED TO AN APPROVED DISPOSAL LOCATION.
10. CONTRACTOR IS RESPONSIBLE FOR ALL SHORING REQUIRED DURING EXCAVATION AND SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS, AS WELL AS ADDITIONAL PROVISIONS TO ASSURE STABILITY OF CONTIGUOUS STRUCTURES, AS FIELD CONDITIONS DICTATE.
11. CROSS SLOPES OF ALL PEDESTRIAN ROUTES SHALL NOT EXCEED 2.08%. THIS INCLUDES CURB RAMPS, SIDEWALKS, ASSOCIATED GUTTERS, AND CROSSWALKS.
12. LONGITUDINAL SLOPES ALONG PEDESTRIAN ROUTES SHALL NOT EXCEED 5.00% (EXCEPT ON CURB RAMPS AND RAMPS, SEE BELOW).
13. LONGITUDINAL SLOPES OF CURB RAMPS AND RAMPS SHALL NOT EXCEED 8.33%.
14. GAPS OR OPENINGS ALONG AN PEDESTRIAN ROUTE MUST BE NO MORE THAN 1/2 INCH WIDE.
15. CONTRACTOR TO MATCH EXISTING PAVEMENT, CURB, AND SIDEWALK ELEVATIONS/LOCATIONS WHERE THE PROPOSED IMPROVEMENTS TIE INTO EXISTING FEATURES.
16. ALL GRADING SHALL BE A MAXIMUM OF 3H : 1V SLOPE.
17. CONTRACTOR TO ENSURE COMPLIANCE WITH ADA REGULATIONS.
18. UNTIL ALL FINAL GOVERNMENTAL APPROVALS (INCLUDING, BUT NOT LIMITED TO, APPROVALS AND THIRD PARTY PERMITTING REQUIRED UNDER ORDINANCES, STATUTES, AND REGULATIONS GOVERNING ZONING, SUBDIVISION, LAND DEVELOPMENT, AND STORMWATER MANAGEMENT) HAVE BEEN GRANTED, THE PLANS PREPARED BY NAVE NEWELL, INC. ARE SUBJECT TO CHANGE TO COMPLY WITH GOVERNMENTAL REVIEWS AND REQUIREMENTS. AS A RESULT, NAVE NEWELL, INC. SHALL NOT BE RESPONSIBLE FOR ANY COSTS INCURRED BY CLIENT IF THE CLIENT BIDS THE PROJECT, AWARDS CONTRACTS, AND/OR ADVANCES CONSTRUCTION PRIOR TO THE DEVELOPMENT AND ISSUANCE OF FINAL PLANS FROM NAVE NEWELL, INC. TO CLIENT, AND FINAL GOVERNMENTAL APPROVALS HAVE BEEN ISSUED BASED ON THOSE FINAL PLANS.

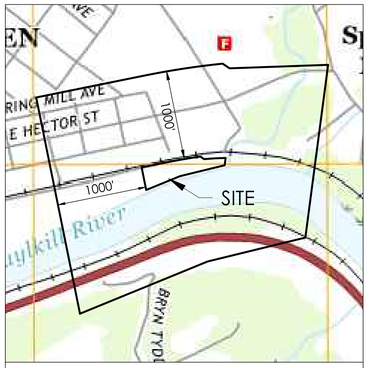
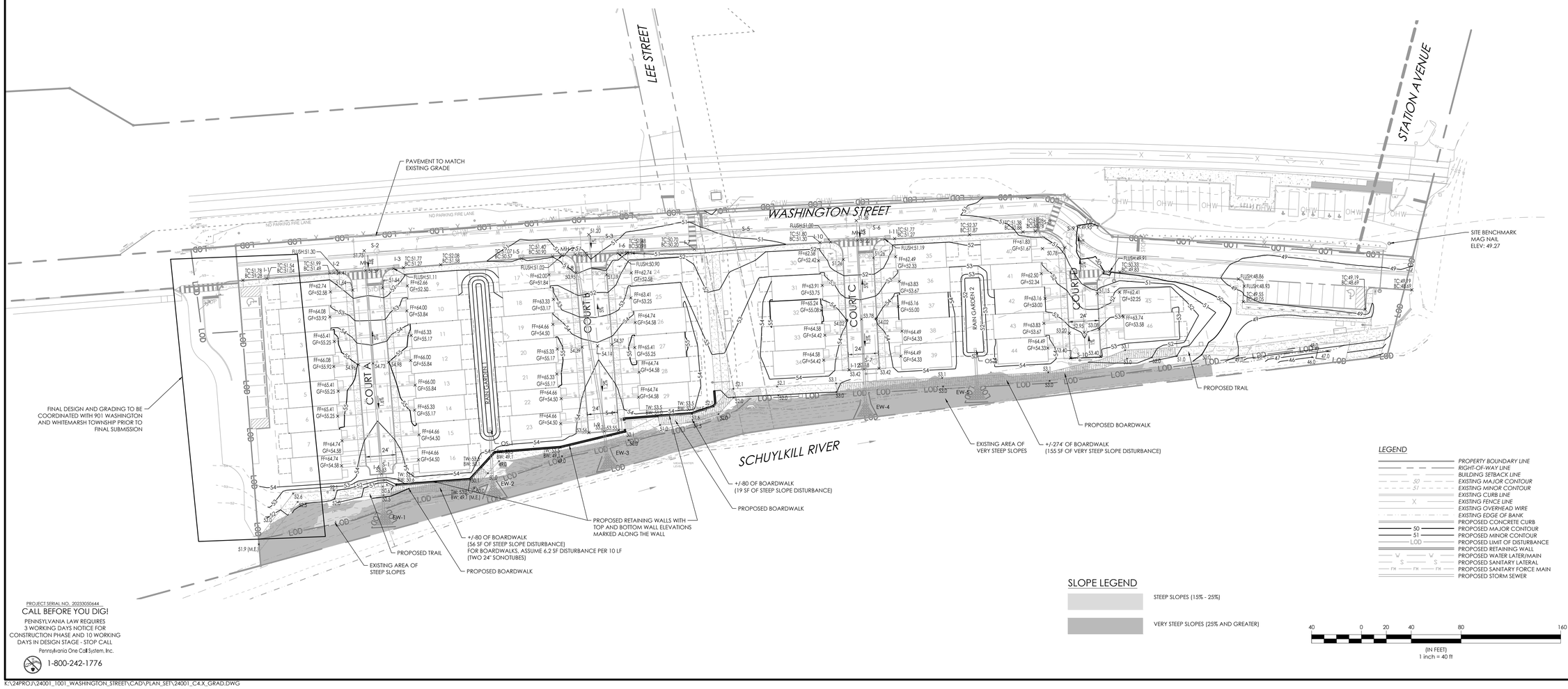


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'



LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT-OF-WAY LINE
- BUILDING SETBACK LINE
- 50 EXISTING MAJOR CONTOUR
- 51 EXISTING MINOR CONTOUR
- EXISTING CURB LINE
- X EXISTING FENCE LINE
- EXISTING OVERHEAD WIRE
- EXISTING EDGE OF BANK
- PROPOSED CONCRETE CURB
- 50 PROPOSED MAJOR CONTOUR
- 51 PROPOSED MINOR CONTOUR
- LOD PROPOSED LIMIT OF DISTURBANCE
- PROPOSED RETAINING WALL
- W PROPOSED WATER LATER/MAIN
- S PROPOSED SANITARY LATERAL
- FM PROPOSED SANITARY FORCE MAIN
- PROPOSED STORM SEWER

SLOPE LEGEND

- STEEP SLOPES (15% - 25%)
- VERY STEEP SLOPES (25% AND GREATER)

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

PROJECT SERIAL NO. 20233050644
CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE - STOP CALL
PennsyAvania One Call System, Inc.
1-800-242-1776

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6/26/2025 11:47 AM
USER: ----

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REVISIONS

no.	date:	description	chk'd	by
1	3/27/2025	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	JGE	JT
2	6/26/2025	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	JPB	JGE

SEAL:
COMMONWEALTH OF PENNSYLVANIA — JAMES P. BANNON — ENGINEER — No. PE082137 — PROFESSIONAL

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: GRADING PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no.	drawn by:
2024-001.02	JT
date:	chk'd by:
11/15/24	JGE
scale:	approv. by:
1"=40'	JPB

sheet no.

C4.0

8 of 20

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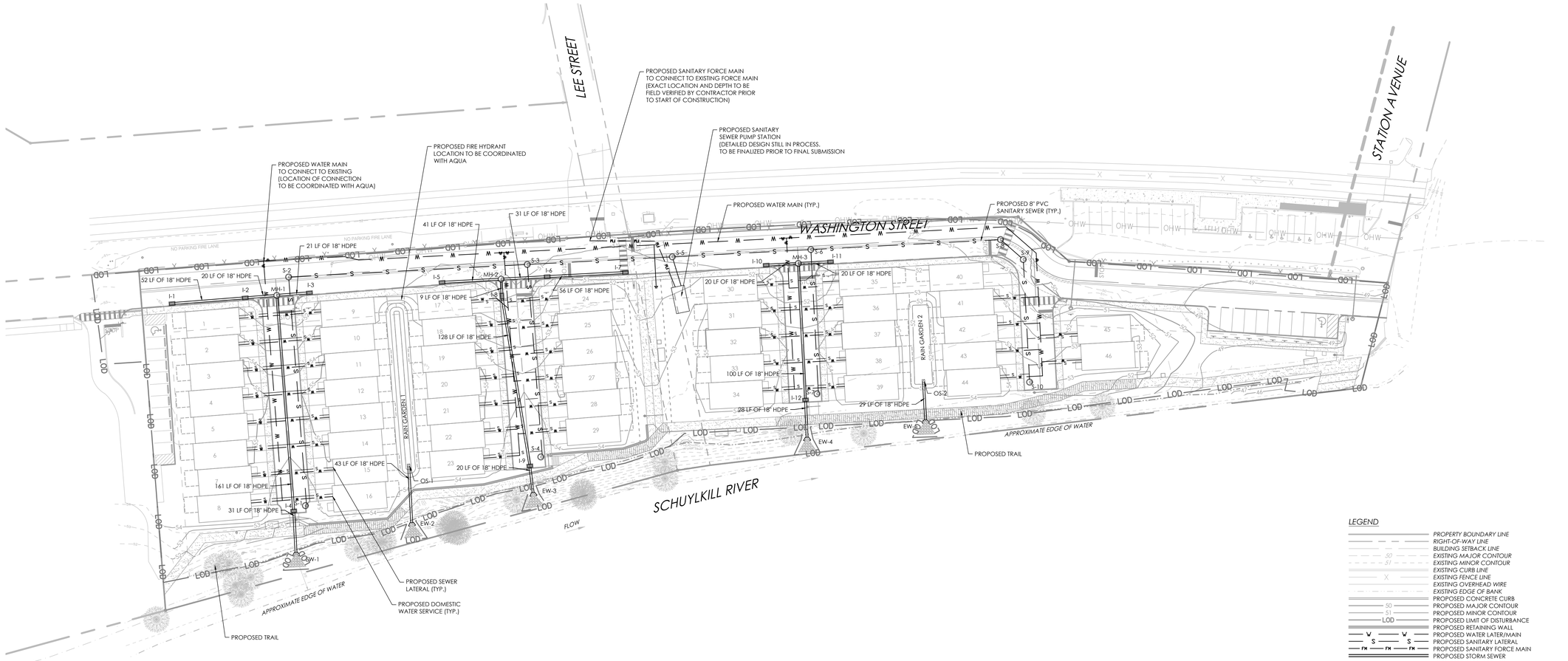
UTITILY NOTES:

1. INSTALLATION OF ALL UTILITIES SHALL BE IN ACCORDANCE WITH THE ENGINEERING STANDARDS AND SPECIFICATIONS OF THE WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, OR OTHER PUBLIC UTILITY CONCERNS.
2. CONTRACTOR SHALL REFER TO ARCHITECTS FINAL PLANS FOR EXACT BUILDING DIMENSIONS, UTILITY CONNECTION LOCATIONS AND UTILITY SERVICE SIZING AND MATERIAL.
3. SITE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE DISCONNECTION, ABANDONMENT, RELOCATION AND/OR REMOVAL OF ALL APPLICABLE ON-SITE UTILITIES, IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS AS WELL AS ANY REQUIREMENTS FROM THE RELEVANT UTILITY COMPANY.
4. ALL UTILITIES AND STRUCTURES WITHIN THE PUBLIC RIGHT-OF-WAY OR EASEMENTS SHALL REMAIN, UNLESS OTHERWISE NOTED.
5. ANY UTILITIES, TO REMAIN THAT ARE DAMAGED DURING DEMOLITION AND/OR CONSTRUCTION SHALL BE REPAIRED AND/OR REPLACED IN KIND BY THE CONTRACTOR AT THEIR OWN EXPENSE.
6. CONSTRUCTION OF PROPOSED UTILITIES SHALL COMMENCE AT THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND INSTALLATIONS SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
7. CLEANOUTS AND CURB BOXES WITHIN PAVED AREAS MUST HAVE TRAFFIC LOADING FRAMES AND COVERS.
8. EXISTING STORM STRUCTURES AND PIPES TO BE INSPECTED BY CONTRACTOR PRIOR TO CONSTRUCTION AND ANY DEFICIENCIES FOUND SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
9. ALL UTILITY CONNECTIONS SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY.
10. ALL WET UTILITIES SHALL HAVE WATERPROOF JOINTS.
11. ANY STRUCTURE, INFRASTRUCTURE, UTILITIES, SEWAGE DISPOSAL SYSTEMS, OR OTHER PROPOSED LAND DISTURBANCE INDICATED ON THE APPROVED FINAL PLAN SHALL ONLY OCCUR AT THE LOCATIONS SHOWN ON THE PLAN. CHANGES TO SUCH LOCATIONS SHALL BE SUBJECT TO ADDITIONAL REVIEW AND RE-APPROVAL IN ACCORDANCE WITH THE PROVISIONS OF THE WHITEMARSH TOWNSHIP.
12. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE TO MAKE SURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION AND/OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS BY ALL OF THE PERMITTING AUTHORITIES



LEGEND

- PROPERTY BOUNDARY LINE
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- BUILDING SETBACK LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING CURB LINE
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- PROPOSED RETAINING WALL
- PROPOSED WATER LATER/MAIN
- PROPOSED SANITARY LATERAL
- PROPOSED SANITARY FORCE MAIN
- PROPOSED STORM SEWER

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

PROJECT SERIAL NO. 20233050644

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REVISIONS

no.	description	date:	chk'd	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	JGE	JT
2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	6/26/2025	JPB	JGE
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SEAL:

COMMONWEALTH OF PENNSYLVANIA — PROFESSIONAL ENGINEER — JAMES P. BANNON — ENGINEER No. PE082137 — JAMES P. BANNON

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: UTILITY PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP , MONTGOMERY COUNTY, PA

project no.	drawn by:
2024-001.02	JT
date:	chk'd by:
11/15/24	JGE
scale:	approv. by:
1"=40'	JPB

sheet no.

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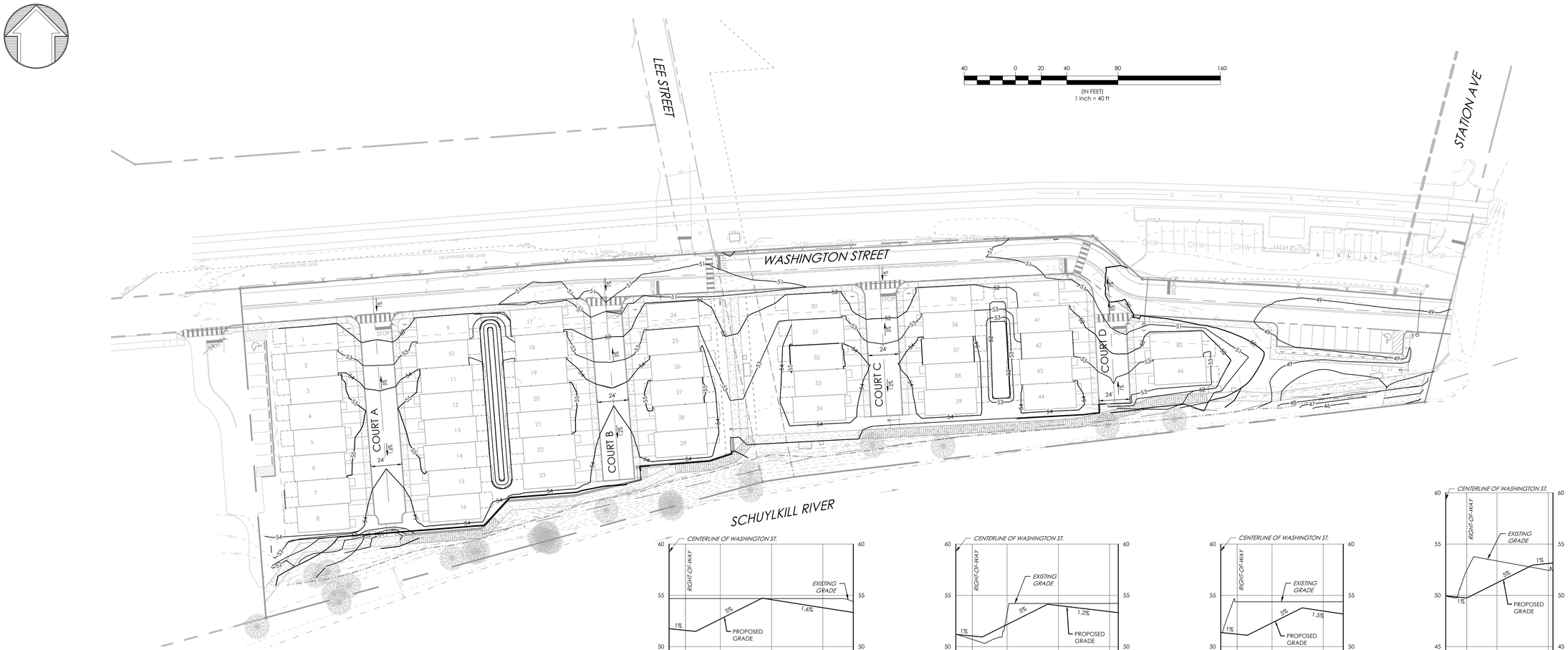
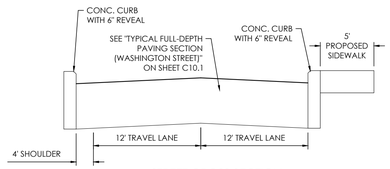




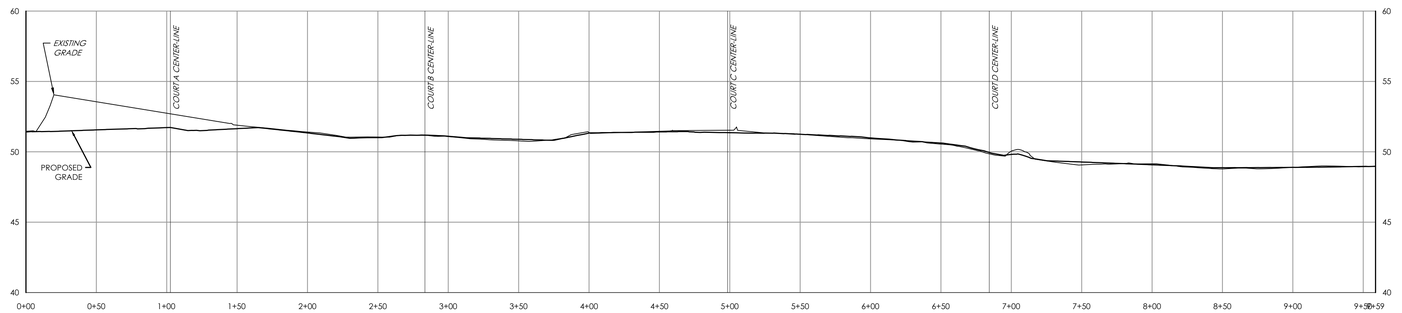
STREET CROSS SECTION
N.T.S.

COURT A PROFILE
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'

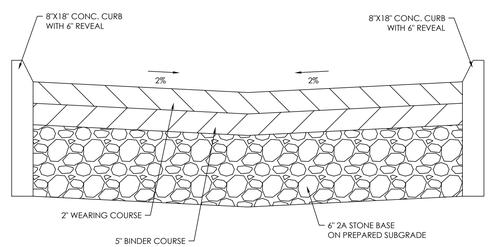
COURT B PROFILE
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'

COURT C PROFILE
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'

COURT D PROFILE
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'



WASHINGTON ST. PROFILE
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'



TYPICAL COURT CROSS SECTION
N.T.S.

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6/26/2025 11:48 AM
USER: ----

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SEAL:
COMMONWEALTH OF PENNSYLVANIA — JAMES P. BANNON — ENGINEER — No. PE082137 — PROFESSIONAL

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: ROAD PLAN AND PROFILE SHEET

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no.	drawn by:
2024-001.02	JT
date:	chk'd by:
11/15/24	JGE
scale:	approv. by:
1"=40'	JPB
sheet no.	

C6.0

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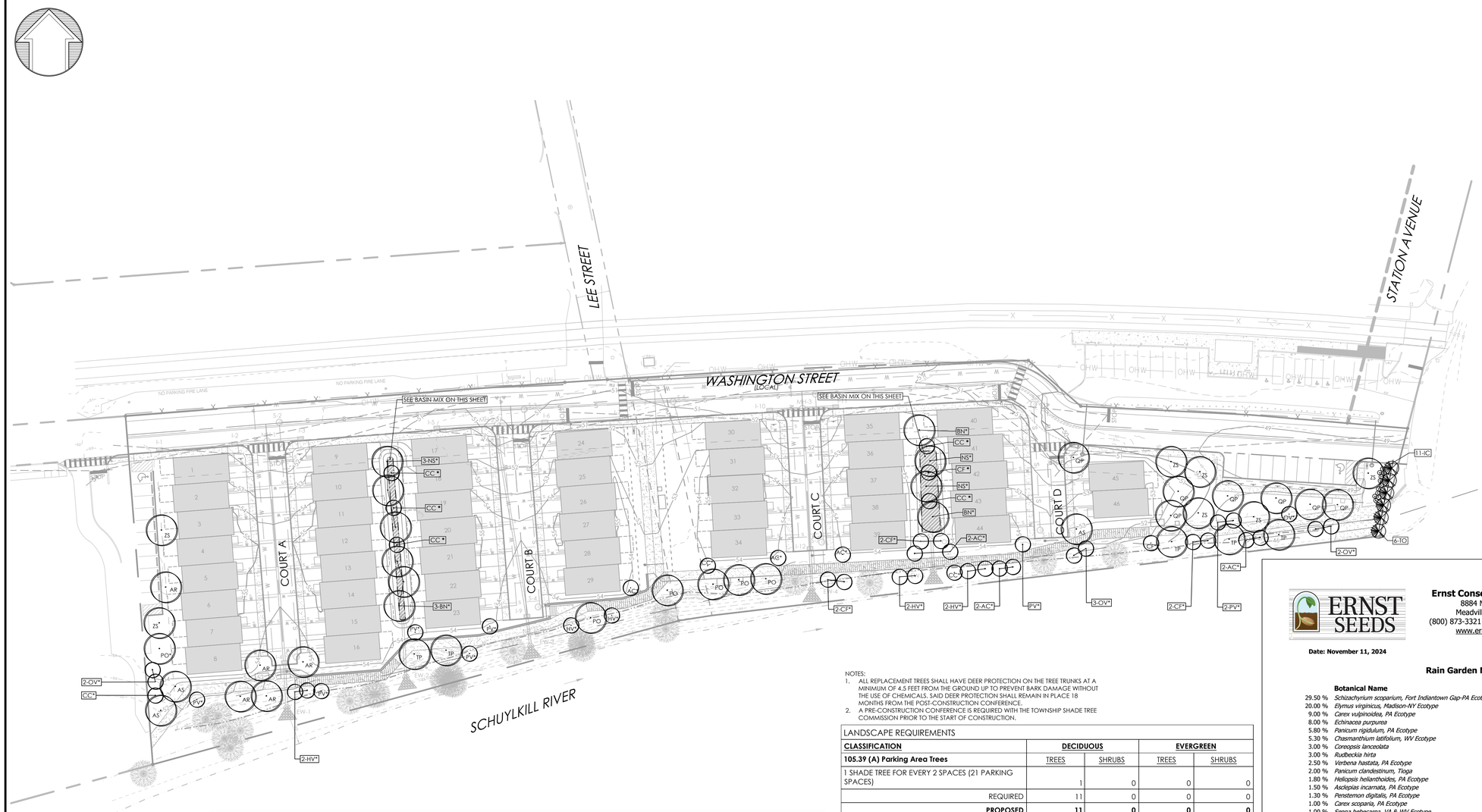

LANDSCAPE SCHEDULE

Count	SYMBOL	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	CALIPER	ROOT	NOTES	
8	AC	AMELANCHIER CANADENSIS	SERVICEBERRY	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
6	AR	ACER RUBRUM	RED MAPLE	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
3	AS	ACER SACCHARUM	SUGAR MAPLE	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
5	BN	BETULA NIGRA	RIVER BIRCH	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
8	CC	CERCIS CANADENSIS	EASTERN REDBUD	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
8	CF	CORNUS FLORIDA	FLOWERING DOGWOOD	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
8	HV	HAMAMELIS VIRGINIANA	COMMON WITCH HAZEL	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
5	NS	NYSSA SYLVATICA	BLACKGUM	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
8	OV	OSTRYA VIRGINIANA	AMERICAN HOPHORNBEAM	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
6	PO	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
8	PV	PRUNUS VIRGINIANA	CHOKECHERRY	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
6	QP	QUERCUS PHELLOS	WILLOW OAK	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
5	TP	LIRIODENDRON TULIPIFERA	TULIP POPLAR	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
7	ZS	ZELKVOA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE- CANOPY

* **DENOTES QUANTIFYING FOR TREE REPLACEMENT CRITERIA PER CHAPTER 55**

EVERGREEN TREES

Count	SYMBOL	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	CALIPER	ROOT	NOTES
6	TO	THUJA OCCIDENTALIS	AMERICAN ARBORVITAE	6' MIN.			B&B	UNIFORM SIZE AND SPREAD

EVERGREEN SHRUBS

Count	SYMBOL	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	CALIPER	ROOT	NOTES
11	IC	ILEX CRENATA	JAPANESE HOLLY	24"-36" MIN.	24"-36" MIN.		#5 CONT.	UNIFORM SIZE AND SPREAD

LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT-OF-WAY LINE
- BUILDING SETBACK LINE
- 50 EXISTING MAJOR CONTOUR
- 51 EXISTING MINOR CONTOUR
- EXISTING CURB LINE
- EXISTING FENCE LINE
- EXISTING EDGE OF BANK
- 50 PROPOSED CONCRETE CURB
- PROPOSED MAJOR CONTOUR
- 51 PROPOSED MINOR CONTOUR
- PROPOSED RETAINING WALL
- PROPOSED LANDSCAPING

NOTES:
1. ALL REPLACEMENT TREES SHALL HAVE DEER PROTECTION ON THE TREE TRUNKS AT A MINIMUM OF 4.5 FEET FROM THE GROUND UP TO PREVENT BARK DAMAGE WITHOUT THE USE OF CHEMICALS. SAID DEER PROTECTION SHALL REMAIN IN PLACE 18 MONTHS FROM THE POST-CONSTRUCTION CONFERENCE.
2. A PRE-CONSTRUCTION CONFERENCE IS REQUIRED WITH THE TOWNSHIP SHADE TREE COMMISSION PRIOR TO THE START OF CONSTRUCTION.

LANDSCAPE REQUIREMENTS

CLASSIFICATION	**DECIDUOUS**		**EVERGREEN**	
105.39 (A) Parking Area Trees	TREES	SHRUBS	TREES	SHRUBS
1 SHADE TREE FOR EVERY 2 SPACES (21 PARKING SPACES)	1	0	0	0
REQUIRED	11	0	0	0
PROPOSED	**11**	**0**	**0**	**0**
105.52 (A) Buffer Trees	TREES	SHRUBS	TREES	SHRUBS
1 EVERGREEN TREE PER 15 LF; 1 EVERGREEN SHRUB PER 8 LF. (1,299.2 LF.)	0	0	1	1
REQUIRED	0	0	6	11
PROPOSED	**0**	**0**	**6**	**11**
116.284 (A).3 Trail Landscaping	TREES	SHRUBS	TREES	SHRUBS
1 TREE PER 50 LINEAR FEET (1,045.2 LF)	1	0	0	0
REQUIRED	21	0	0	0
PROPOSED	**21**	**0**	**0**	**0**
CH 55: SECTION 55-1.6.A	TREES	SHRUBS	TREES	SHRUBS
PER REMOVED TREE W/ DBH OF 6" OR GREATER (39 LIVING/HEALTHY TREES REMOVED). TOTAL CALIPER OF REPLACEMENT TREES MUST EQUAL/EXCEED TOTAL DBH REMOVED (662"). 1 (3") or 2 (2")	0	0	0	0
REQUIRED	221	0	0	0
PROPOSED	**59***	**0**	**0**	**0**
	DECIDUOUS		**EVERGREEN**	
TOTAL LANDSCAPING	TREES	SHRUBS	TREES	SHRUBS
REQUIRED	253	0	6	11
PROPOSED	**91**	**-**	**6**	**11**

* **11 CANOPY (3") AND 48 UNDERSTORY (2")**

NOTE:
WHITEMARSH TOWNSHIP ZONING HEARING BOARD GRANTED THE FOLLOWING RELIEF BY DECISION DATED MAY 15 2024:
1. VARIANCE PURSUANT TO SECTION 116.283.C.(1), SO AS TO PERMIT CURB AND SIDEWALK ALIGNMENT ALONG WASHINGTON STREET WITHOUT STREET TREES AND THE REQUIRED 5 FOOT VERGE/STRIP, BOTH AS REQUIRED IN CROSS-REFERENCED SECTION 105-48 OF THE SUBDIVISION AND LAND DEVELOPMENT ORDINANCE.
2. VARIANCE PURSUANT TO SECTION 116.283.D.(1)(e), SO AS TO PERMIT CURB AND SIDEWALK WITHOUT A PLANTING STRIP.

ERNST SEEDS

Ernst Conservation Seeds
8884 Mercer Pike
Meadville, PA 16335
(800) 873-3321 Fax (814) 336-5191
www.ernstseed.com

Date: November 11, 2024

Rain Garden Mix - ERNMX-180

	Botanical Name	**Common Name**	**Price/Lb**
29.50 %	*Schizachyrium scoparium, Fort Indiantown Gap-PA Ecotype*	Little Bluestem, Fort Indiantown Gap-PA Ecotype	12.99
20.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	10.46
9.00 %	*Carex vulpinoidea, PA Ecotype*	Fox Sedge, PA Ecotype	28.80
8.00 %	*Echinacea purpurea*	Purple Coneflower	43.20
5.80 %	*Panicum rigidulum, PA Ecotype*	Redtop Panicgrass, PA Ecotype	57.60
5.30 %	*Chasmanthium latifolium, WV Ecotype*	River Oats, WV Ecotype	96.00
3.00 %	*Coreopsis lanceolata*	Lanceleaf Coreopsis	28.80
3.00 %	*Rudbeckia hirta*	Blackeyed Susan	31.20
2.50 %	*Verbena hastata, PA Ecotype*	Blue Vervain, PA Ecotype	38.40
2.00 %	*Panicum clandestinum, Tioga*	Deertongue, Tioga	22.26
1.80 %	*Heliopsis helianthoides, PA Ecotype*	Oxeye Sunflower, PA Ecotype	33.60
1.50 %	*Asclepias incarnata, PA Ecotype*	Swamp Milkweed, PA Ecotype	177.60
1.30 %	*Penstemon digitalis, PA Ecotype*	Tall White Beardtongue, PA Ecotype	168.00
1.00 %	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype	81.60
1.00 %	*Senna hebecarpa, VA & WV Ecotype*	Wild Senna, VA & WV Ecotype	28.80
1.00 %	*Zizia aurea, PA Ecotype*	Golden Alexanders, PA Ecotype	72.00
0.50 %	*Baptisia australis, Southern WV Ecotype*	Blue False Indigo, Southern WV Ecotype	96.00
0.50 %	*Juncus effusus*	Soft Rush	48.00
0.50 %	*Juncus tenuis, PA Ecotype*	Path Rush, PA Ecotype	48.00
0.50 %	*Pycnanthemum tenuifolium*	Narrowleaf Mountainmint	240.00
0.50 %	*Vernonia noveboracensis, PA Ecotype*	New York Ironweed, PA Ecotype	264.00
0.40 %	*Aster novae-angliae*	New England Aster	336.00
0.40 %	*Monarda fistulosa, Fort Indiantown Gap-PA Ecotype*	Wild Bergamot, Fort Indiantown Gap-PA Ecotype	96.00
0.20 %	*Aster lateriflorus*	Calico Aster	336.00
0.20 %	*Aster prenanthoides, PA Ecotype*	Zigzag Aster, PA Ecotype	432.00
0.10 %	*Aster pilosus, PA Ecotype*	Heath Aster, PA Ecotype	264.00
0.10 %	*Eupatorium perfoliatum, PA Ecotype*	Boneset, PA Ecotype	192.00
0.10 %	*Mimulus ringens, PA Ecotype*	Square Stemmed Monkeyflower, PA Ecotype	216.00
0.10 %	*Solidago juncea, PA Ecotype*	Early Goldenrod, PA Ecotype	336.00
0.10 %	*Solidago nemoralis, PA Ecotype*	Gray Goldenrod, PA Ecotype	264.00
0.10 %	*Solidago rugosa, PA Ecotype*	Wrinkleleaf Goldenrod, PA Ecotype	264.00

100.00 % **Mix Price/Lb Bulk: $39.16**

Seeding Rate: 20 lb per acre with a cover crop. For sites that drain within 24 hours of a rain event use one of the following cover crops:Oats (1 Jan to 31 Jul; 30 lbs/acre); Japanese Millet (1 May to 31 Aug; 10 lbs/acre), or grain rye (1 Aug to 31 Dec; 30 lbs/acre).

Grasses & Grass-like Species - Herbaceous Perennial; Herbaceous Flowering Species - Herbaceous Perennial; Stormwater Management; Uplands & Meadows

The native perennial forbs and grasses provide food and cover for rain garden biodiversity. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

Price quotes guaranteed for 30 days.
All prices are FOB Meadville, PA.
Please check our web site at www.ernstseed.com
for current pricing when placing orders.

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

PROJECT SERIAL NO. 20233050644
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Pennsylvania One Call System, Inc.
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6/26/2025 11:48 AM
USER: ----

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REVISIONS

no.	description	date:	chk'd	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	BTK	GSS
2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	6/26/2025	BTK	GSS
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SEAL:
COMMONWEALTH OF PENNSYLVANIA
REGISTERED LANDSCAPE ARCHITECT
PAUL E. HERNANDEZ, JR.
Registered Landscape Architect
Pennsylvania License No. LA001222-R

DRAWING NAME: LANDSCAPE PLAN
LOCATION: 1001 WASHINGTON STREET
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no.	drawn by:
2024-001.02	GSS
date:	chk'd by:
11/15/24	BTK
scale:	approv. by:
1"=40'	PEL

sheet no.
C7.0
11 of 20

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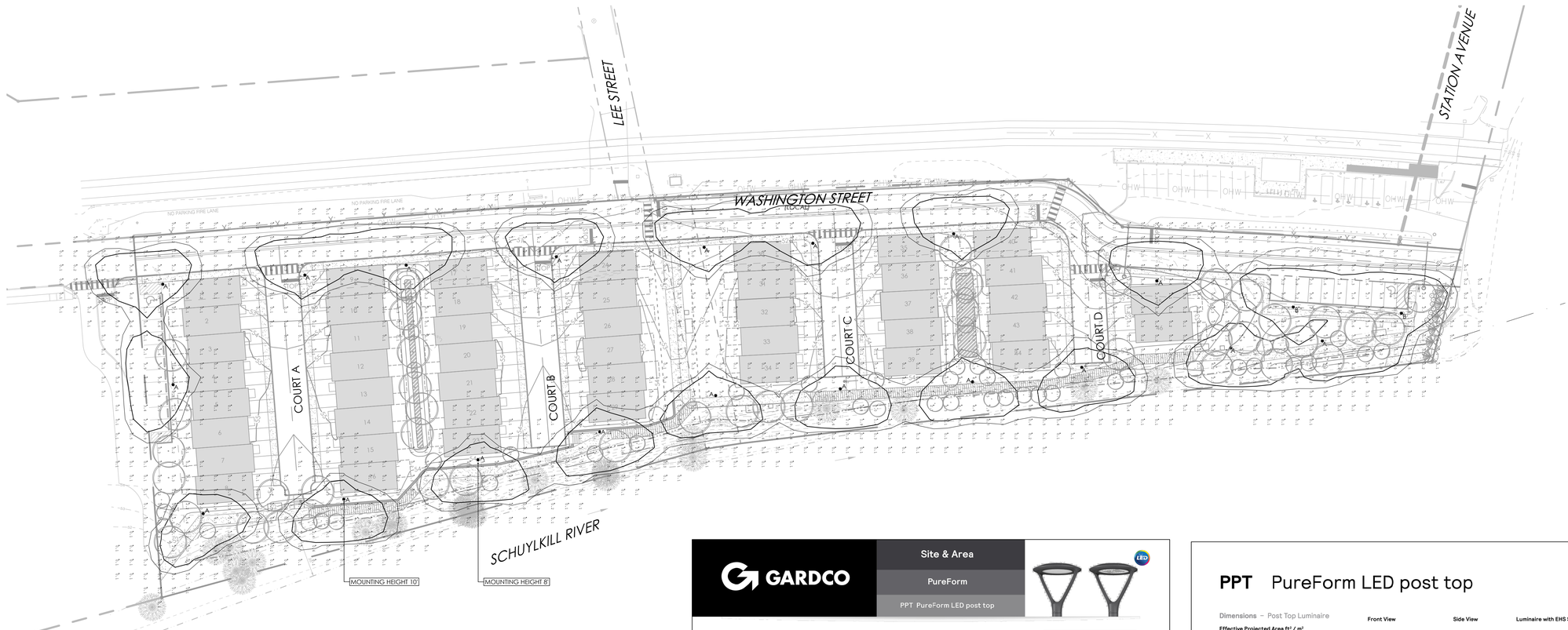
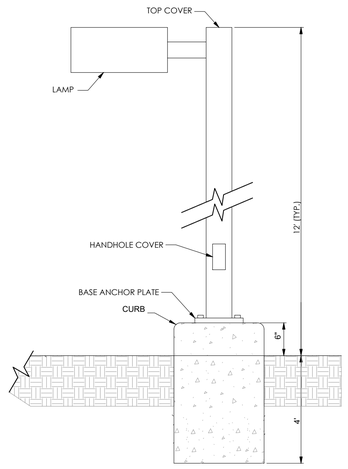


Luminaire Schedule										
Symbol	Qty	Label	Arrangement	Description	Tag	LLF	Luminaire Lumens	Luminaire Watts	Total Watts	Mounting Height
A	19	PPT-P-A05-730-BLC	Single	PPT-P-A05-730-T3M	BLC	1.000	8585	53.9	808.5	12' (TYP.)
B	2	PPT-P-A05-730-T3M	Single	PPT-P-A05-730-T3M	T3	1.000	8585	53.9	107.8	12'

NOTES

1. THIS PLAN IS FOR LIGHTING PURPOSES ONLY. ALL SITE IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO, BUILDING LOCATIONS, CURBING, SIDEWALK, UTILITIES, AND THEIR ANCILLARY APPURTENANCES, ARE SHOWN FOR INFORMATION PURPOSES ONLY AND ARE SUBJECT TO MODIFICATION AND REVISION. CONTRACTOR SHALL REFER TO THE SITE PLAN AND CONSTRUCTION IMPROVEMENTS PLAN, AND THEIR RELATED DETAIL SHEETS, FOR ALL SITE IMPROVEMENTS OTHER THAN LIGHTING.
2. BUILDING LIGHTING IS NOT SHOWN ON THIS PLAN. REFER TO ARCHITECTURAL PLANS.
3. NO SUBSTITUTIONS SHALL BE PERMITTED WITHOUT WRITTEN AUTHORIZATION FROM NAVE NEWELL.
4. VEGETATION SHALL BE MAINTAINED TO ENSURE GROWTH DOES NOT IMPACT THE PROPOSED LIGHTING LEVELS IN THE PARKING LOTS AND DRIVE AISLES.
5. ELECTRICAL CONDUIT SHALL BE ROUTED AROUND PROPOSED TREE LOCATIONS, PLANTING ISLANDS AND CONFLICTING VEGETATION AREAS.
6. POST-APPROVAL ALTERATIONS TO LIGHTING PLANS OR INTENDED SUBSTITUTIONS FOR APPROVED LIGHTING EQUIPMENT SHALL BE SUBMITTED TO THE TOWNSHIP FOR REVIEW AND APPROVAL.
7. THE TOWNSHIP RESERVES THE RIGHT TO CONDUCT A POST-INSTALLATION NIGHTTIME INSPECTION TO VERIFY COMPLIANCE WITH THE REQUIREMENTS OF THIS ORDINANCE, AND IF APPROPRIATE, TO REQUIRE REMEDIAL ACTION AT NO EXPENSE TO THE MUNICIPALITY.



1 LIGHT POLE DETAIL
N.T.S.

NOTE: LIGHT POLE FOUNDATION TO BE DESIGNED BY OTHERS. A SHOP DRAWING PREPARED BY A PA REGISTERED STRUCTURAL ENGINEER SHALL BE PROVIDED TO THE TOWNSHIP FOR THEIR REVIEW AND APPROVAL PRIOR TO INSTALLATION.

LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT-OF-WAY LINE
- BUILDING SETBACK LINE
- 50 EXISTING MAJOR CONTOUR
- 51 EXISTING MINOR CONTOUR
- EXISTING CURB LINE
- X EXISTING FENCE LINE
- EXISTING EDGE OF BANK
- PROPOSED CONCRETE CURB
- 50 PROPOSED MAJOR CONTOUR
- 51 PROPOSED MINOR CONTOUR
- PROPOSED RETAINING WALL
- PROPOSED LIGHT POLE
- 4.8 PROPOSED FOOTCANDLE

PROJECT SERIAL NO. 20233050644

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USER: ----

GARDCO

Site & Area

PureForm

PPT PureForm LED post top

Gardco PureForm LED post top features a sleek, low profile design and is available with two light engines. ComfortEdge optics provide a unique and lower glare lighting solution designed to enhance visual comfort for pedestrian applications, while precision optics maximize efficiency and spacing. PureForm post top is available with multiple optical distributions with output up to 17,000 lumens. A full range of control options provides additional energy savings. Optional integral emergency battery backup is available for path-of-egress illumination.

Project:
Location:
Cat.No:
Type:
Lamps: Qty:
Notes:

Ordering guide

Example: PPT-P-A09-840-T5M-T3-120-DALI-CS30-PCB-BZ

Prefix	Catalog Code	Lumens Selection	CCT/CRI	Distribution	Shielding	Mounting	Voltage
PPT							
PPT PureForm post top, comfort optics	P Precision optics	A01[1] 2500 A06 11000 A02[1] 3500 A07 13500 A03[1] 5000 A08 16000 A04 7000 A09 17000 A05 9000	730 70CRI, 3000K 740 70CRI, 4000K 750 70CRI, 5000K 830 80CRI, 3000K 840 80CRI, 4000K 827[1] 80CRI, 2700K (ETO+)	T2M Area optic type 2 T3M Area optic type 3 T4M Area optic type 4 T5M Area optic type 5 BLC Back light control	None – HIS[2] Internal house side shield (clip-on)	T3 Mounts to a 3"x4" tenon (standard) T2 Post top tenon adapter for 2-3/8" x 4" (ships separately)	120 120V 208 208V 240 240V 277 10-277V UNV 120-277V 347 347V 480 480V HVU 374-480V
	C Comfort optics	A01[1] 2000 A06 11000 A02 3500 A07[1] 13500 A03 5000 A08[1] 16000 A04 7000 A09[1] 17000 A05 9000	830 80CRI, 3000K 840 80CRI, 4000K 827[1] 80CRI, 2700K (ETO+) 835[1] 80CRI, 3500K (ETO+) 750[1] 70CRI, 5000K (ETO+)	T2M Comfort optic type 2M T3M Comfort optic type 3M T4M Comfort optic type 4M T5M Comfort optic type 5M	None – (comfort shielding must be ordered as separately as accessory PPT-SHS-BK)		

Driver type	Dimming Controls (only one may be selected)	Lighting controls[4,5] (only one may be selected)	Emergency	Finish
0-10V			None –	Standard textured finish
010V 0-10V	None – DLEA Dimming leads externally accessible (controls by others) FAWS Field adjustable wattage selector BLS0L2[1] PIR motion response dim to 50% L2 lens BLS0L3[1] PIR motion response dim to 50% L3 lens BL30MW[6] Microwave motion sensor factory set at 50% dimming	None – PCB[7,8,9] Photocontrol button TLR5 5-pin twist lock w/ 0-10v driver TLR7 7-pin twist lock w/ 0-10v driver (non-D4i) TLRPC[4,9] 7-pin twist lock w/ 0-10v driver (non-D4i) & on/off photocell	EM[14,15] Emergency battery backup (0°C to +40°C/32°F to +104°F) EMC[1,14,15,16] Emergency battery pack cold rated (20°C to +40°C/-4°F to +104°F)	BK Black WH White BZ Bronze DG Dark gray MG Medium gray
DALI			Fusing	Customer specified
DALI SR/ DALI	None – CSG0[1,4] Security 50 % dimming, 7 hours CM50[1,4] Median 50 % dimming, 8 hours CS30[1,4] Security 30 % dimming, 7 hours CM30[1,4] Median 30 % dimming, 8 hours SRDR[1,4] SR driver connected to Zhaga socket (D4i) WIAPLW[1,4] Wireless Interact outdoor low mounting (7-15'), white housing WIAPLB[1,4] Wireless Interact outdoor low mounting (7-15'), black housing WIAPHW[1,4] Wireless Interact outdoor low mounting (15-40'), white housing WIAPHB[1,4] Wireless Interact outdoor low mounting (15-40'), black housing	None – PCB[1,7,9] Photocontrol button TRS[1,4,9] 5-pin twist lock SR/DALI driver TR7[1,4,9] 7-pin twist lock SR/DALI driver (D4i) TLP[1,4,9] 7-pin twist lock SR/DALI driver (D4i) & on/off photocell	None – F1[11] Single Fuse (120V, 277V, or 347V) F2[11] Double Fuse (208V, 240V, or 480V) F3[11] Double Fuse Canadian double pole (208V, 240V, or 277V)	OC Optional color (specify optional color or RAL, contact factory) SC Special color (must supply color chip, requires factory quote)
			Surge Protection	
			None SP1 Surge Protector 10kV / 10kA (standard) SP2 Surge Protector 20kV/ 10kA (option)	

1. Extended lead times apply. Contact factory for details.
2. Available with Area optics only. Not allowed with Comfort optics.
3. Available with Comfort optics only at 120-347V. Not allowed with Area optics.
4. Not available at 347-480V(HVU).
5. Not available at 347-480V(HVU) for Pixelated (P-Axx) optic lumen packages. A01-A02 and Comfort (C-Axx) optic lumen packages A01-A09.
6. Not available at 120-277V(UNV) for Pixelated (P-Axx) optic lumen packages A01-A02 and Comfort (C-Axx) optic lumen packages A01-A02.
7. EMC only compatible with DLEA and Dynadimmer (CSXX, CMXX) Dimming control options.
8. Not available with Microwave Motion Sensor BL50MW.
9. Not available with Comfort (C-Axx) optic lumen packages A07-A09.
10. If selected with Dimming control, DIM leads from receptacle will not be connected to driver.
11. Available only w/t Comfort optics.
12. Must specify input voltage.
13. BL50MW options and Twistlock photocell options (TLR5, TLR7, TLRPC, PCB) are not compatible due to mechanical conflict.
14. Not available with emergency options.
15. EMC limited to 25°C max ambient with shielding and A09. All other configurations listed to 40°C ambient.
16. For comfort PPT, emergency cold-pack conflicts with BL50xx & PCB/TLRx & Zhaga & FAWS.

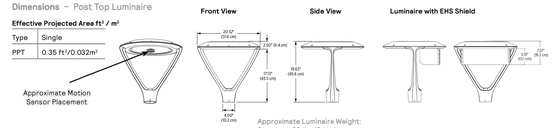
2 PROPOSED POST TOP LIGHTING - GARDCO
N.T.S.

PPT PureForm LED post top

Dimensions – Post Top Luminaire

Effective Projected Area ft² / m²

Type	Single
PPT	0.35 ft²/0.032m²



Approximate Luminaire Weight:
Standard: 20 lbs (9.1 kg)
With battery pack: 26 lbs (11.8 kg)

Precision Optical Distributions



Comfort Optical Distributions

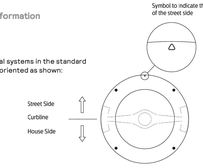


Asymmetric Optical Orientation Information

Standard Optic Position

Aimed Between The Yoke Supports

Luminaires ordered with asymmetric optical systems in the standard optic position will have the optical system oriented as shown:



40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

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SEAL:
COMMONWEALTH OF PENNSYLVANIA
LICENSED LANDSCAPE ARCHITECT
REGISTERED
PAUL E. LEONARD, JR.
Registered Landscape Architect
Pennsylvania License No. LA001222-R

DRAWING NAME: LIGHTING PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no.	drawn by:
2024-001.02	GSS
date:	chk'd by:
11/15/24	BTK
scale:	approv. by:
1"=40'	PEL

sheet no.

C7.1

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GENERAL PLANTING

SUBMITTALS:

Topsoil & Planting soils: A soil analysis report shall be submitted and show the percentage of each constituent, pH, and other pertinent soil characteristics. Recommendations should include quantities of each soil amendment and fertilizer required to achieve optimal soil conditions.

Maintenance Written Maintenance Instructions for the owner's use and reference for the maintenance of landscaping must be submitted prior to acceptance of landscaping. This will list the scope of maintenance, including initial maintenance recommendations, 12 months, and long term.

QUALITY ASSURANCE:

General All material must comply with the American Standard for Nursery Stock (ANSI Z60.1) new standards applicable to landscaping. Material must be provided as indicated with no substitutions permitted unless with approval from the landscape architect.

Inspection The landscape architect retains the right to inspect planting materials at any time for compliance with the contract documents. Regarding, but not limited, to latent defects, lack of protection or maintenance, and may reject defective or damaged material. Rejected material must be immediately removed from the project site. Contractor shall schedule plant inspection with landscape architect prior to installation of all plant materials.

DELIVERY, STORAGE, AND HANDLING:

Packaged Materials Material must be delivered in original unopened containers displaying weight, guaranteed chemical analysis, and manufacturer's name or furnished in bulk with appropriate certificates and protected from deterioration.

Sod Delivery of sod shall be timed so that it will be installed within 24 hours after delivery. Sod shall be protected against drying and breakage.

Ground Covers and Plants Delivery shall be scheduled to avoid on site storage. If planting does not occur on same day as delivery, store in location protected from sun and weather. All trees and shrubs shall not be pruned before delivery in order to prevent shock. Stock must be covered for protection during transportation. Stock shall be bound to protect branches, bark, and overall shape during transport. Any balled and burlapped stock must be freshly dug unless otherwise approved. Stock must not be dropped. Stock must be delivered only after soil has been prepared. Schedule plant harvest with delivery in quantities suitably timed for immediate planting upon arrival. If planting cannot be accomplished immediately, provide shade, protect from wind and protect root balls from drying out by covering at all times with moist saw dust, wood chips, shredded bark or other similar mulching materials. All plant material shall be suitably watered during on site storage.

PROJECT CONDITIONS:

Work coordination All work shall be scheduled and coordinated with work occurring in other sections of the project and local seasons. All underground utilities must be located so to avoid damage and injury. The contractor shall be responsible for all repairs to any utility damages associated with excavation and planting.

The landscape architect shall be notified prior to the beginning of planting operations. Spring planting should be between April 15' and June 15'. Fall planting should occur between August 30' and October 15'. Do not install plant materials when temperatures are below 35 degrees Fahrenheit or above 90 degrees Fahrenheit.

Sequencing Final grades must be established before planting trees and shrubs. Lawns may then be installed unless specified on the plans differently. Earlier plantings must be protected from later planting operations and repairs made to any resulting damage or inconsistencies.

WARRANTIES:

General Warranties shall be addition to, and not a limitation of, other rights the owner may have against the contractor under the contract documents.

Lawns Warrant lawns until turf exhibits vigorous growth for (12) months. Lawns need to have 80% coverage/viable seed for survival.

Trees and Shrubs Warrant trees and shrubs for twelve (12) months after final approval by Township Landscape Architect. Warranty shall cover death, unsatisfactory growth, neglect, vandalism, and/or acts of God. If completion of landscaping work is materially delayed beyond the date of substantial completion, provide warranty commencing on date of acceptance by the project landscape architect and township/municipality landscape architect.

Unsatisfactory Material Replace unsatisfactory material with matching, healthy, vigorous plants. Plant only during the subsequent planting season. At the direction of the project landscape architect, either replace materials exhibiting poor quality, marginal condition or extend the warranty covering such materials for one full growing season. Any plant material of which 25% or more is dead shall be considered unsatisfactory. A tree shall be considered dead when more than 25% of the trees main leader has died, 25% of the crown is dead or the root buttress circumference is damaged. Another inspection will be conducted at the end of the extended warranty period(s), if any, to determine acceptance or rejection. Only one replacement will be required at the end of the warranty period, except for losses or replacements due to neglect or failure to comply with specified requirements.

MAINTENANCE:

Lawns- Maintain lawn from immediately after planting until an acceptable lawn is established. At the end of the maintenance period, sodded lawns shall be uniform in texture, density and species variety. Water regularly and at such times and rates as necessary for optimum growth and to avoid wilting, puddling, runoff, or erosion. Mow grass at regular intervals. Do not cut more than 1/3 of grass blade at any one mowing. Trim edges and clip by hand where necessary. Immediately remove clippings after mowing and trimming. Follow-up application of fertilizer for cool season turf/lawn: if the seeding was done in the fall, fertilizer should be applied no later than November 15. For seed sown in the spring, do not apply after June 1. Apply 0.9-1.8 lbs a year 0.9lb. in September and 0.9lb. in October for cool season grasses. Do not apply fertilizer between November 15 and March 1. Control growth of weeds by applying herbicides in accordance with manufacturer's instructions. Remedy any damage resulting from use of herbicides.

Regrade and replant areas to correct rutted, damaged, or improperly graded areas.

Trees and Shrubs Maintain trees and shrubs from immediately after planting through the warranty period. Provide all maintenance necessary to achieve healthy plant growth such as eroded watering basis around trunks if needed. Adjust stakes and guys to provide proper support and replant trees and shrubs to vertical position if necessary. Apply insecticides or fungicides if necessary to prevent or correct insect infestation and disease.

Ground Covers/Small Plants/Plugs - Maintain ground covers, small plants, and plugs from immediately after planting through the warranty period. Provide the following maintenance necessary to achieve healthy plant growth; water regularly and on a timely basis, remove weeds and replace mulch if needed, and spray as required to keep ground cover and small plants free of insects and disease.

Watering All plants shall be thoroughly watered twice during the first 24 hours after planting. Until plants and lawns are accepted by the landscape architect, the contractor is responsible for watering. Watering shall be provided as needed to assure healthy plant materials, turf and trees.

PRODUCTS:

TOPSOIL

Topsoil at Site Verify suitability and quantity of topsoil stockpiled at site. If sufficient quantities of suitable topsoil are not available at the site, provide topsoil from approved off-site sources. Fertile agricultural soil, typical for locality, capable of sustaining vigorous plant growth and taken from a drained site; free of subsoil, rocks larger than 2 inches in diameter, clay, toxic matter, plants, weeds, and roots.

SOIL AMENDMENTS

Lime Pulverized dolomitic limestone containing not less than 85 percent total carbonates with a minimum of 30 percent magnesium carbonates; minimum 90 percent passing a 10-mesh sieve and minimum 50 passing a 100-mesh sieve.

Humus Shall be decomposed organic matter; pH suitable for intended use.

Sand Shall be clean, washed sand, free of toxic materials.

Perlite Horticultural perlite of soil amendment grade.

Commercial Fertilizer Granular, commercial grade, pH neutral, comprised of both slow and fast release elements and containing the following minimum content of available plant nutrients;

- Trees and shrubs 5% total nitrogen, 10% phosphoric acid, 5% soluble potash
- Ground cover and plants 3% total nitrogen, 10% phosphoric acid, 5% soluble potash
- Lawns Available nitrogen content as required to provide 1 pound per 1,000 square feet at normal application rate, minimum 4% phosphoric acid, and minimum 2% soluble potash.

SEEDING:

Apply seed at a rate of 4 lbs. per 1,000 square feet evenly in two intersecting directions. Rake in slightly. Do not seed areas in excess of that which can be mulched the same day. Do not sow immediately following rain, when ground is too dry, or during windy periods. Roll seeded area with roller not exceeding 100 lbs. Immediately following seeding and compacting, apply even layer of hay mulch. Maintain clear of shrubs and trees. Apply water with a fine spray immediately after area has been mulch. Saturate to 4 inches of soil.

SEED SPECIFICATION

Turf Mixture:
15% Kentucky Bluegrass
35% Kentucky 31 Fescue
25% Chewings Fescue
15% Perennial Rye Grass
10% Reclaned Redtop

HYDROSEEDING

Apply seeding slurry with a hydraulic seeder at a rate of 4 lbs. of seed per 1,000 square feet evenly in two intersecting directions. Do not hydroseed areas in excess of that which can be mulched on the same day. Immediately following seeding, apply an even layer of hay mulch. Maintain clear of shrubs and trees. Apply water with a fine spray immediately after the area has been mulched. Saturate to 4 inches of soil.

SEED PROTECTION

Cover seeded slopes where grade exceeds 1' in 5' or greater with a jute erosion control blanket (NA Green's BioNet). Roll fabric onto slopes without stretching or pulling. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Provide 12 inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil. Secure outside edges and overlaps at 36"intervals with stakes. Lightly dress slopes with topsoil to ensure close contact between fabric and soil. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches

SPECIFICATIONS:

TREES AND SHRUBS

General Provide nursery or plantation grown stock conforming to the American Standard for Nursery Stock. All vegetation shall be nursery grown, well-branched and uniformly sound, vigorous, healthy, and free from disease, sun-scald, windburn, abrasion, and harmful insects or insect eggs. Deciduous trees and shrubs shall be symmetrically developed, uniform habit growth, with straight trunks or stems, and free from objectionable disfigurements. Coniferous evergreen trees and shrubs shall have well- developed symmetrical canopies with uniform spread of branches for each particular species or variety. Provide stock complying in all respect with ANSI Z60.1 and in sizes indicated, measured in accordance with ANSI Z60.1. Larger sizes with larger roots and root containment may be furnished, if approved by the landscape architect. Do not spread or compress branches when measuring. Measure main body of branches; do not measure extreme tip to tips of single branches. Pruning to size is not acceptable. Shade and flowering trees, deciduous, shrubs, and coniferous evergreens shall be balled and burlapped (B&B).

PLANTS

General Provide field-grown or acclimatized container-grown plants from a commercial nursery, healthy, vigorous, of sizes indicated and in accordance with ANSI Z60.1, Section 7, "Young Plants".

PLUGS

General Provide field-grown or acclimatized container-grown plants from a commercial nursery, healthy, vigorous, of the sizes indicated and in accordance with ANSI Z60.1, Section 7, "Young Plants".

GRASS MATERIALS

Sod Provide viable (not dormant) certified turf grass complying with ASPA specifications for thickness, size, strength, moisture content, mowed height, time between harvest and transplanting, thatch, disease, nematodes, insects, and weeds. Sod type shall be Kentucky Bluegrass (Poa pratensis). (Seed Mix: 30% Midnight Star Kentucky Bluegrass, 30% Brilliant Kentucky Bluegrass, 40% P105 Kentucky Bluegrass)

Miscellaneous Landscape Material:

Decorative Mulch Shall be free of harmful materials, suitable for top dressing of plantings, and consisting of dye/pigment free, composted double shredded hardwood.

Anti-desiccant is a film forming an emulsion, permeable to transpiration yet retarding to excessive moisture loss.

Staking and Guying Materials Stakes shall be hardwood lumber of sizes indicated; sound, straight, and free of splits and knots larger than ¼ of the least nominal dimension of the piece. Sharpen end and chamfer sides of driven end to prevent splitting from off-center hammer strikes. Stakes shall be fastened to tree using ½" 2" wide, flat, woven polypropylene material such as Arbor Tie™or use 3"wide webbing straps secured to stakes with galvanized mild steel wire, minimum 12 gauge; provide double strands. Do not run wire through hose. Attach loosely to allow flexing, remove staking material after one year.

PLANTING SOIL

Soil Mix Provide planting soil mix, consisting of topsoil and amendments as recommended by soil analysis laboratory report.

Mixing Mix topsoil and amendments thoroughly to provide uniform mixture, using a drum-type mechanical mixer, powered rotary tiller, or other means acceptable to the landscape architect.

EXECUTION

PREPARATION:

Clearing and Grubbing
The work consists of clearing, grubbing, and disposing of trees, snags, logs, brush, stumps, shrubs, and rubbish from the designated areas.
Protection of existing vegetation
Trees and other vegetation designated to remain undisturbed shall be protected from damage throughout the duration of the construction period. Any damages resulting from the contractor's operations or neglect shall be repaired or replaced by the contractor.
Marking
The limits of the area(s) to be cleared and grubbed shall be marked by stakes, flags, tree markings, or other suitable methods. Trees to be left standing and uninjured will be designated by special markings that are conducive to preventing injury to the tree and shall be placed on the trunk about 4 feet above the ground surface.
Clearing and grubbing
All trees not marked for preservation and all snags, logs, brush, stumps, shrubs, rubbish, and similar materials shall be cleared from within the limits of the designated areas. Unless otherwise specified, all stumps, roots, and root clusters that have a diameter of 1 inch or larger shall be grubbed out to a depth of at least 2 feet below subgrade for concrete structures and 1 foot below the ground surface at embankment sites and other designated areas.
Disposal
All materials cleared and grubbed from the designated areas shall be disposed of at locations shown on the drawings or in a manner specified in section 7. The contractor is responsible for complying with all local rules and regulations and the payment of any and all fees that may result from disposal at locations away from the project site.

Layout Lay out planting locations, mark with stakes, adjust locations if requested and obtain the landscape architect's approval of locations before proceeding with installation.

Subgrades All subgrades under planting areas (except for within an area equal to the dripline underneath existing trees to remain) shall be scarified to a depth of 4 inches before placing topsoil. Where compaction has resulted from construction operations, the owner may require scarification to a depth of 6 inches.

Preparation of Planting Soil Prior to mixing in drum type mixer or during tillage operations, clean topsoil of sticks, stones, clay lumps, vegetable matter, and other objectionable objects. Pit and trench backfill: mix planting soil and stockpile at site, ready for use as backfill. For planting beds and lawns, either mix planting soil before placing or uniformly spread fertilizer in and soil amendments on surface of in place topsoil and till thoroughly before planting.

Preparation for Planting Lawns Prepare only those areas that will be immediately planted. Allow for sod thickness in area to be sodded. For preparation of stripped areas, till subgrade to a depth of at least 4 inches. Place topsoil in two approximately equal lifts, working first lift into subgrade before placing second lift. Spread second lift to comply with finished lines, grades, and elevations required after allowing for settlement. To prepare for unchanged grades, prepare yet unstripped areas as follows: remove existing vegetation including grasses and dispose of off-site. Till the soil to a depth of at least 6 inches. Clean topsoil of sticks, stones, clay, lumps, vegetable matter, and other objectionable objects. Fine-grade, roll, rake, and drag lawn areas cutting down high spots and filling low spots, leaving a smooth, even surface of fine-textured soil complying with required grades. If dry, water full depth of topsoil thoroughly but not excessively and allow surface moisture to dry before planting. Just before planting, correct any lawn areas that have been eroded, rutted, or settled.

Preparation of Planting Beds Till planting bed area to a depth of at least 6 inches, clear, and add soil amendments necessary to achieve optimum growing conditions and till thoroughly.

Excavation for Trees and Shrubs Pits, beds, and trenches: Excavate with sides vertical and bottom flat. Deglaze sides and loosen bottom.

All excavated holes shall have vertical sides and shall be of a size that is three times the diameter and 1 and 1/2 times the depth of the root ball for all trees and shrubs. After pits are dug, roughen the sides of the pit and loosen soil in the bottom of the pit to a depth of 3 inches. Construct tool-tamped mound in the bottom of the pit to support the plant at the proper level. All excavated subsoil from the site shall be mixed with appropriate volumes of soil amendments as recommended by soils analysis laboratory report as indicated on plans prior use of planting backfill.

PLANTING TREES AND SHRUBS:

Balled and Burlapped Stock Cut and remove rope and wire from the top 2/3 of the root ball. Set plants in excavation with top of ball to match adjacent finished grade. Add soil as required under ball to achieve plumb. Remove burlap from the top 2/3 of ball; retain burlap on bottom of ball. Place backfill in 3 4 inch thick layers. Work each layer by hand to compact backfill and eliminate voids. Maintain plumb during backfilling. When backfilling is approximately 2/3 complete, saturate backfill with water and repeat until suitably filled and compacted. Remainder of backfill and water again, provide earth watering basin saucer, as indicated on the plans, and water stock.

Container Grown Plant/Plug Immediately before placing, remove container, or can. Container Removal: a. Cut containers on 2 sides with a can cutter designed for the job. b. Do not injure root ball. c. Do not cut containers with spade or ax. d. After removing plant, superficially cut edge roots with knife on 3 sides. Set and plumb plants. Place initial backfill and remove sides of container, taking care to avoid damage to root system.

Groundcover plants shall be grown in flats or gallon containers as indicated on the Drawings. Flat grown plants shall remain in those flats until transplanting. The flat's soil shall contain sufficient moisture so that it will not fall apart when lifting the plants. 2. Groundcover shall be planted in straight rows and evenly spaced, unless otherwise noted, and at intervals called out in the Drawings. Triangular spacing shall be used unless otherwise noted on the Drawings. 3. Each rooted plant shall be planted with its proportionate amount of flat or container soil. Plantings shall be immediately sprinkled with water after planting until the entire area is soaked to the full depth of each hole. 4. Care shall be exercised at all times to protect the plants after planting. Any damage to plants by trampling or other operations shall be repaired immediately.

Basin Form earthen watering basin around excavation area with backfill holding at least 2 ½gallons for shrubs and 5 gallons for trees. Apply mulch.

Anti-desiccant Spray Apply, covering all portions of plant in accordance with manufacturer's instructions. If in full leaf, spray deciduous trees or shrubs at nursery just before transportation, and 2 weeks after transplanting.

Pruning Remove dead or broken branches. Prune to retain typical growth habit of plants with as much height and spread as practical. Make cuts with sharp instruments and flush with trunk or adjacent branch. Do not remove leaders from trees.

STAKING AND GUYING OF TREES:

Guy and stake trees the same day as planting. Unless otherwise directed, trees shall be staked as shown on the plans and in accordance with these specifications. Refer to drawings and schedule for guying and staking requirements. Trees shall stand plumb after staking. At the time the stakes are removed any holes left by the stake shall be filled with topsoil of the same quality as the backfill previously specified for planting.

SODDING NEW LAWNS:

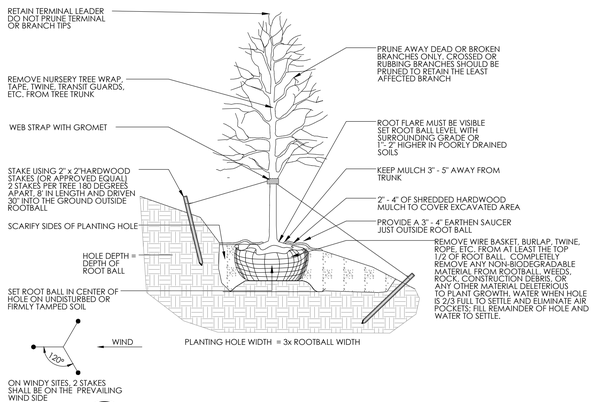
Laying Sod Do not lay dried or broken sod; Use only fresh, properly protected sod. Lay first and subsequent parallel rows in a straight line with tightly butted joints. Do not overlap sod or leave voids. Stagger lateral joints. When each section is laid, lightly roll the entire area to ensure contact between sod and subgrade. Water sod immediately after planting to thoroughly wet the pad and subgrade immediately beneath. During first week, maintain soil continually moist to depth of 4 inches by watering daily or more often, absent adequate rainfall.

MISCELLANEOUS MATERIALS:

Decorative Mulch Apply a uniform three inch (3") thick layer of double shredded hardwood mulch in the following areas: individual planting pits and planting beds. During maintenance and warranty period, the contractor is required to apply new mulch as necessary due to erosion, settling or as required by landscape architect.

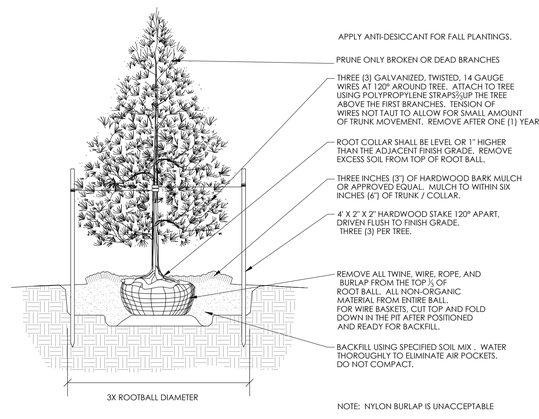
GENERAL NOTE:

It is agreed that the professional services of the design professional do not extend to or include the review or site observation of the contractor's work, unless otherwise specified and agreed. It is further agreed that the owner will hold harmless, indemnify and defend the design professional from any claim or suit whatsoever arising from the contractor's performance or the failure of the contractor's work to conform to the design plans and the contract documents.

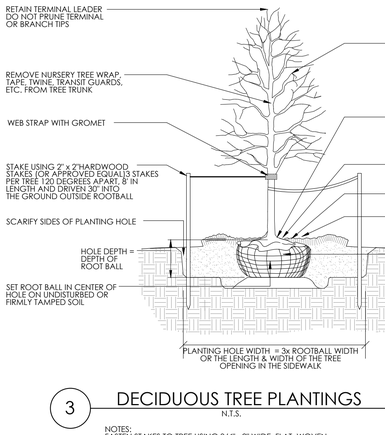


1 TREE PLANTED ON SLOPE DETAIL
N.T.S.

NOTES:
FASTEN STAKES TO TREE USING 3/4" - 2" WIDE, FLAT, WOVEN POLYPROPYLENE MATERIAL SUCH AS ARBOR TIE (TM) OR USE 3" WIDE WEBBING STRAPS SECURED TO STAKES WITH HEAVY GAUGE WIRE. DO NOT USE WIRE RUN THROUGH HOSE. ATTACH TREE LOOSELY TO ALLOW FLEXING. REMOVE STAKING MATERIAL AFTER ONE YEAR.

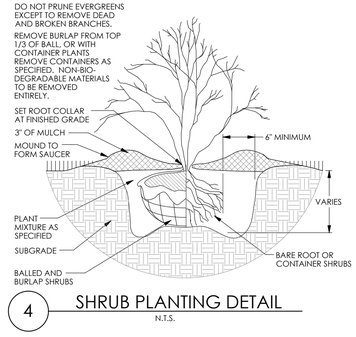


2 EVERGREEN PLANTING DETAIL
N.T.S.

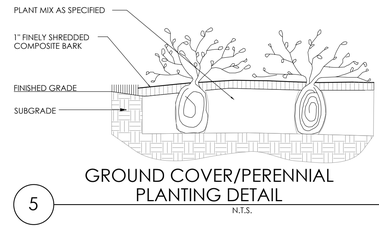


3 DECIDUOUS TREE PLANTINGS
N.T.S.

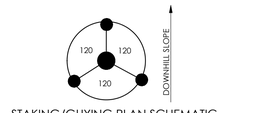
NOTES:
FASTEN STAKES TO TREE USING 3/4" - 2" WIDE, FLAT, WOVEN POLYPROPYLENE MATERIAL SUCH AS ARBOR TIE (TM) OR USE 3" WIDE WEBBING STRAPS SECURED TO STAKES WITH HEAVY GAUGE WIRE. DO NOT USE WIRE RUN THROUGH HOSE. ATTACH TREE LOOSELY TO ALLOW FLEXING. REMOVE STAKING MATERIAL AFTER ONE YEAR.



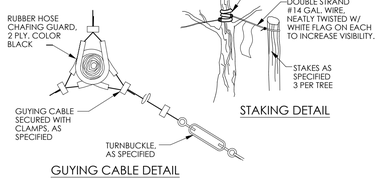
4 SHRUB PLANTING DETAIL
N.T.S.



5 GROUND COVER/PERENNIAL PLANTING DETAIL
N.T.S.



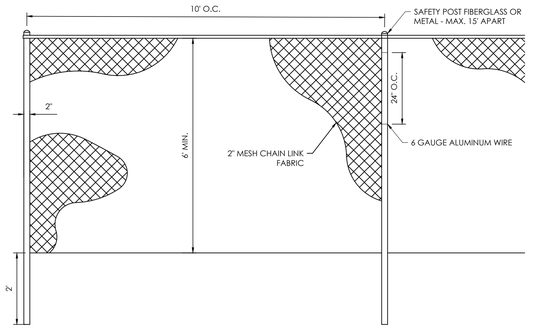
STAKING/GUYING PLAN SCHEMATIC



GUYING CABLE DETAIL

STAKING DETAIL

6 TREE STAKING AND GUYING DETAIL
N.T.S.



7 TREE PROTECTION FENCE DETAIL
N.T.S.

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WAYNE, PA 19087-1830
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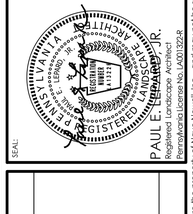
WWW.NAVENEWELL.COM

REVISIONS

no.	description	date	chk'd	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	BTK	GSS
2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	6/26/2025	BTK	GSS

SEAL:



PAUL E. LENARDO, JR.
Registered Landscape Architect
Pennsylvania License No. LA001226-R

DRAWING NAME: LANDSCAPE AND LIGHTING DETAIL SHEET

LOCATION: WHITEMARSH TOWNSHIP , MONTGOMERY COUNTY, PA

1001 WASHINGTON STREET

project no.	drawn by:
2024-001.02	GSS
date:	chk'd by:
11/15/24	BTK
scale:	approv. by:
AS NOTED	PEL

sheet no.

C7.2

13 of 20

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SEQUENCE OF CONSTRUCTION

CRITICAL STAGES OF INSPECTION WHEN A LICENSED PROFESSIONAL IS TO BE PRESENT ON SITE ARE INDICATED WITH AN ASTERISK (*) IN THE FOLLOWING CONSTRUCTION SEQUENCES.

1. AT LEAST 7 DAYS BEFORE ANY EARTH DISTURBANCE ACTIVITIES, THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN PREPARER, THE DESIGNATED LICENSED PROFESSIONAL, AND MONTGOMERY COUNTY CONSERVATION DISTRICT TO AN ON-SITE PRE-CONSTRUCTION MEETING. ALSO, AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.
2. STABILIZATION NOTE. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY THAT WILL EXCEED 4 DAYS, OR ANY STAGE THEREOF, THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION. HAY OR STRAW MULCH MUST BE APPLIED AT 3.0 TONS PER ACRE. HYDROSEED IS NOT CONSIDERED STABILIZATION UNTIL IT GERMINATES. IN NO CASE SHOULD AN AREA EXCEEDING 15,000 SQUARE FEET, WHICH IS TO BE STABILIZED BY VEGETATION, REACH FINAL GRADE WITHOUT BEING SEEDED AND MULCHED.
3. THE LIMITS OF DISTURBANCE AND TREES MUST BE DELINEATED WITH ORANGE CONSTRUCTION FENCE OR APPROVED EQUAL PRIOR TO EARTH-MOVING ACTIVITIES. ANY CESSATION OF ACTIVITIES FOR MORE THAN FOUR DAYS OR LONGER REQUIRES TEMPORARY STABILIZATION. A PRE-CONSTRUCTION CONFERENCE WITH THE TOWNSHIP SHADE TREE COMMISSION'S DESIGNEE IS REQUIRED PRIOR TO START OF CONSTRUCTION.
4. INSTALL STABILIZED CONSTRUCTION ENTRANCES AND WATER BARS AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLANS AT WASHINGTON STREET. CONTRACTOR TO UTILIZE ACCEPTABLE STANDARDS AND PRACTICES TO ENSURE SEDIMENT IS NOT TRACKED OFF THE PROPERTY AND ONTO PUBLIC RIGHTS-OF-WAY. STABILIZE ANY RESULTING DISTURBANCE IMMEDIATELY, AS APPROPRIATE.
5. ***PLACE PERIMETER EROSION AND SEDIMENT CONTROLS AS SHOWN ON EROSION AND SEDIMENT CONTROL PLAN THAT INCLUDE: COMPOST FILTER SOCK, AND LOCATIONS FOR TEMPORARY TOPSOIL STOCKPILE AREAS. STABILIZE ANY RESULTANT DISTURBANCE IMMEDIATELY, AS APPROPRIATE.**
6. CLEAR AND GRUB TREES AND VEGETATION THROUGHOUT THE DISTURBANCE AREA, AS INDICATED ON THE EXISTING FEATURES AND DEMOLITION PLAN. STABILIZE ANY RESULTING DISTURBANCE IMMEDIATELY, AS APPROPRIATE.
7. REMOVE EXISTING BUILDING AND PARKING GARAGE.
8. REMOVE AND/OR RELOCATE EXISTING UTILITIES, AS NEEDED.
9. INSTALL TRAIL ALONG RIVER AND RETAINING WALL.
10. CONDUCT BULK GRADING OPERATIONS; ADJUST THE EROSION AND SEDIMENT CONTROLS, AS APPROPRIATE.
11. INSTALL STORM DRAINS FROM EW-1 TO I-4, EW-2 TO OS-1, EW-3 TO I-9, EW-4 TO I-12, EW-5 TO OS-2.
12. INSTALL REMAINING STORM DRAINS AND STRUCTURES.
13. INSTALL REMAINING UTILITIES.
14. PERFORM FINAL GRADING AND ROUGH GRADING FOR BUILDING PADS.
15. INSTALL LIGHT STANDARDS.
16. INSTALL SUBBASE FOR PAVEMENT, SIDEWALK, CURBS, AND CURB RAMPS.
17. INSTALL CURBS.
18. INSTALL BINDER COURSE.
19. ***BEGIN CONSTRUCTION OF RAIN GARDEN 1 AND RAIN GARDEN 2. CONTRACTOR SHALL TAKE GREAT CARE DURING CONSTRUCTION TO KEEP FOREIGN DEBRIS AND SEDIMENT OUT OF THE SYSTEM DURING CONSTRUCTION.**
20. ***INSTALL PROPOSED LANDSCAPE MATERIAL AND PERFORM FINAL STABILIZATION OF DISTURBED AREAS.**
21. ONCE CONSTRUCTION SITE TRAFFIC IS COMPLETE, APPLY WEARING COURSE ASPHALT. AFTER SITE FINAL STABILIZATION HAS OCCURRED, AN ON-SITE INSPECTION SHALL BE SCHEDULED WITH THE MONTGOMERY COUNTY CONSERVATION DISTRICT. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE, THE OPERATOR SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITIES. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE SPECIFIED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS. DISTURBED AREAS WHICH ARE AT FINISHED GRADE OR WHICH WILL NOT BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
22. ***AFTER AN ON-SITE INSPECTION AND APPROVAL BY THE DESIGNATED LICENSED PROFESSIONAL, REMOVE ALL PERIMETER EROSION AND SEDIMENT CONTROL MEASURES. STABILIZE ANY RESULTING DISTURBANCE IMMEDIATELY.**
23. UPON COMPLETION OF PERMITTED IMPROVEMENTS, PERMITTEE SHALL SUBMIT THE REQUIRED NOTICE OF TERMINATION.

RAIN GARDEN - SEQUENCE OF CONSTRUCTION

CRITICAL STAGES OF INSPECTION WHEN A LICENSED PROFESSIONAL IS TO BE PRESENT ON SITE ARE INDICATED WITH AN ASTERISK (*) IN THE FOLLOWING CONSTRUCTION SEQUENCES.

1. DELINEATE AREA OF PROPOSED STORMWATER SYSTEM PRIOR TO START OF CONSTRUCTION.
2. RUNOFF TO BE DIVERTED AROUND THE PROPOSED SYSTEM UNTIL DRAINAGE AREAS ARE COMPLETELY STABILIZED.
3. GRADE TO FINAL CONFIGURATION. PLACE EROSION CONTROL BLANKET ON ALL SIDE SLOPES OF 3H:1V SLOPES OR GREATER. APPLY PERMANENT VEGETATIVE COVER TO SIDE SLOPES.
4. ***EXCAVATE TO SUBGRADE ELEVATION AND PREPARE SUBGRADE SURFACE *(ENSURE SURFACE IS DRY).**
5. ***PLACE GEOTEXTILE FABRIC ALONG BOTTOM AND SIDES OF EXCAVATION. ENSURE NO FOREIGN MATERIAL (SEDIMENT OR OTHER) REMAINS IN THE EXCAVATION UPON PLACEMENT OF THE LINING.**
6. PLACE STONE MEDIA AND SOIL MEDIA AT SYSTEM BOTTOM.
7. INSTALL PERMANENT PLANTINGS AND SEEDING IN THE SYSTEM.
8. UPON COMPLETE STABILIZATION OF UPSTREAM DRAINAGE AREA, INSPECT TO ENSURE PRE-TREATMENT DEVICES, INLETS, AND STORM DRAINS ARE FREE OF ANY DEBRIS AND SEDIMENT.

WATER QUALITY STRUCTURE CONSTRUCTION SEQUENCE (CRITICAL STAGE)

CRITICAL STAGES OF INSPECTION WHEN A LICENSED PROFESSIONAL IS TO BE PRESENT ON SITE ARE INDICATED WITH AN ASTERISK (*) IN THE FOLLOWING CONSTRUCTION SEQUENCES.

1. STABILIZE ALL CONTRIBUTING AREAS BEFORE INSTALLING WATER QUALITY INSERTS.
2. ***INSTALL INSERTS ON THE STORMWATER STRUCTURES AS NOTED ON THE PCSM PLANS. FOLLOW THE MANUFACTURER'S GUIDELINES FOR INSTALLATION.**

PENNSYLVANIA FISH AND BOAT COMMISSION AVOIDANCE MEASURES:

1. CONTRACTOR TO IMPLEMENT CONSTRUCTION TECHNIQUES THAT ELIMINATE IN-STREAM WORK, SEDIMENTATION AND CHANGES TO WATER QUALITY.
2. CONTRACTOR TO AVOID ANY IN-STREAM DISTURBANCE WATER QUALITY DEGRADATION DURING AND AFTER THE PROJECT INSTALLATION.
3. STORM SEWERS AND SCMs HAVE BEEN DESIGNED TO MINIMIZE/REMOVE ALL SILT FROM THE WATER BEFORE IT IS RELEASED INTO THE RIVER.
4. CONTRACTOR TO EMPLOY STRICT EROSION AND SEDIMENTATION CONTROL MEASURES, AS WELL AS BEST MANAGEMENT PRACTICES.

SOILS LEGEND:
SOILS INFORMATION OBTAINED FROM THE USDA-NRCS WEB SOIL SURVEY, VERSION 10, SURVEY PERFORMED ON 7/24/2024.

UgB - URBAN LAND, 0-8 PERCENT SLOPES

SOIL LIMITATIONS AND RESOLUTIONS

APPLICABILITY TO PROJECT	SOIL LIMITATION	RESOLUTION(S)
YES	DEPTH TO SATURATED ZONE / SEASONAL HIGH WATER TABLE	SOILS SHOULD BE EVALUATED FOR WETNESS PRIOR TO USE IN SITE WORK. IF GEOTECHNICAL ENGINEER DEEMS SOILS TOO WET FOR SITE WORK, THEN SOILS SHALL BE AMENDED OR DRIED PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
YES	FROST ACTION	SOILS SHOULD BE FREE OF FROZEN OR MUCKY MATERIALS. FILL SHOULD NOT BE PLACED ON SATURATED OR FROZEN SURFACES. EARTHWORK INVOLVING THESE SOILS SHOULD BE LIMITED TO THE WARMER MONTHS WHEN PRACTICAL.

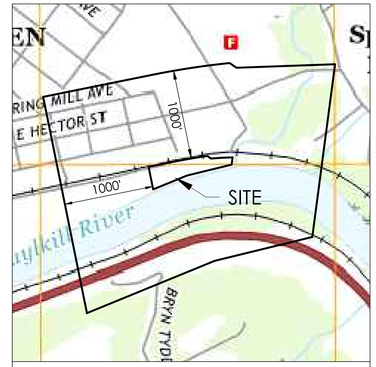
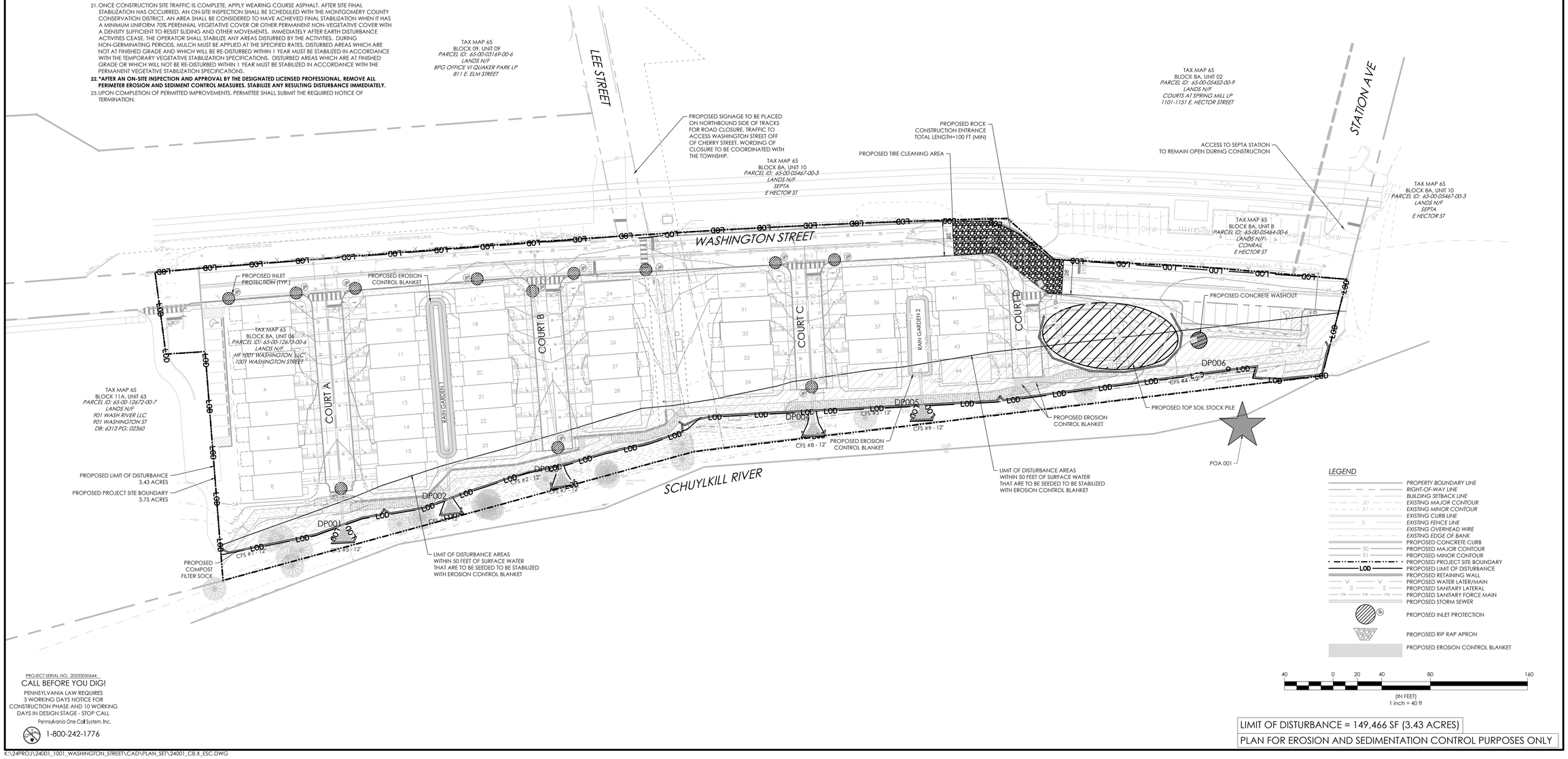


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'



LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT-OF-WAY LINE
- BUILDING SETBACK LINE
- 50 EXISTING MAJOR CONTOUR
- 51 EXISTING MINOR CONTOUR
- EXISTING CURB LINE
- X EXISTING FENCE LINE
- EXISTING OVERHEAD WIRE
- EXISTING EDGE OF BANK
- PROPOSED CONCRETE CURB
- 50 PROPOSED MAJOR CONTOUR
- 51 PROPOSED MINOR CONTOUR
- PROPOSED PROJECT SITE BOUNDARY
- LOD PROPOSED LIMIT OF DISTURBANCE
- PROPOSED RETAINING WALL
- W PROPOSED WATER LATER/MAIN
- S PROPOSED SANITARY LATERAL
- FM PROPOSED SANITARY FORCE MAIN
- PROPOSED STORM SEWER
- PROPOSED INLET PROTECTION
- PROPOSED RIP RAP APRON
- PROPOSED EROSION CONTROL BLANKET

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

LIMIT OF DISTURBANCE = 149,466 SF (3.43 ACRES)

PLAN FOR EROSION AND SEDIMENTATION CONTROL PURPOSES ONLY

PROJECT SERIAL NO. 20233050644

CALL BEFORE YOU DIG!

PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE - STOP CALL

Pennsylvania One Call System, Inc.

1-800-242-1776

K:\24PROJ\24001_1001_WASHINGTON_STREET\CAD\PLAN_SET\24001_C8.X_ESC.DWG
6/26/2025 11:49 AM
USER: ----

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REVISIONS								
no.	description	date:	chk'd	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	JGE	JT
2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	6/26/2025	JPB	JGE
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SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: EROSION AND SEDIMENTATION PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP , MONTGOMERY COUNTY, PA

project no. 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1"=40'	approv. by: JPB

sheet no.

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14 of 20

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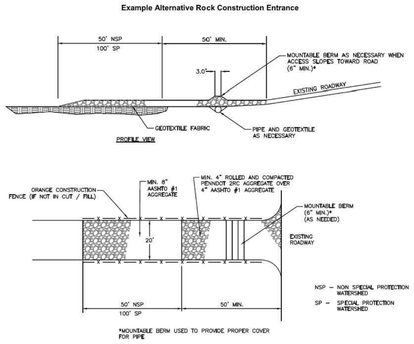


ROCK CONSTRUCTION ENTRANCE
NO SCALE

* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

NOTES:

REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.

RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.

MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.

MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

ALTERNATIVE ROCK CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

GENERAL CONSERVATION NOTES AND SPECIFICATIONS

INTENT OF CONSERVATION PROGRAM: THE INTENT OF THIS PROGRAM IS TO PREVENT ACCELERATED EROSION OF THE EXPOSED SITE SOILS DURING THE CONSTRUCTION AND PERMANENT LIFE PERIODS OF THE DEVELOPMENT. THE PROGRAM REQUIRES RETENTION OF ALL SEDIMENTS ON THE CONSTRUCTION SITE TO MINIMIZE THE IMPACT OF DEVELOPMENT ON EXISTING STREAMS AND ADJACENT PROPERTY OWNERS. THESE OBJECTIVES WILL BE ACHIEVED BY MINIMIZING THE EXPOSURE TIME OF POTENTIALLY EROSIVE SOILS TO RUNOFF AND INSTALLATION OF THE TEMPORARY CONSTRUCTION. THE INTENT OF THIS PROGRAM SHOULD BE UNDERSTOOD AND IMPLEMENTED THROUGHOUT THE ENTIRE DEVELOPMENT, THE VARIOUS CONSTRUCTION TRADES SHOULD BE APPRAISED OF THIS PROGRAM AND DIRECTED TO PREVENT UNDUE DISTURBANCE OF PREPARED AND PROTECTED SURFACES.

SURFACE STABILIZATION CRITERIA: ALL DENUDED SOIL SURFACES, INCLUDING SOIL STOCKPILES, ARE SUBJECT TO EROSION AND SHALL BE STABILIZED EITHER TEMPORARILY OR PERMANENTLY, IMMEDIATELY DURING NON-GERMINATION PERIODS. MULCH MUST BE APPLIED AT RECOMMENDED RATES. CRUSHED STONE ON PAVEMENT SUBGRADES IS CONSIDERED ADEQUATE PROTECTION. ALL DISTURBED ZONES AND VEGETATED REGIONS SHALL BE STABILIZED, PREFERABLY WITH A PERMANENT TREATMENT AS FOLLOWS:

SEEDING & MULCHING SPECIFICATIONS

TEMPORARY: SEEDING SHALL BE COMMON RYE GRASS APPLIED AT 45 LBS. PER ACRE. LIMING TO BE APPLIED AT 1 TON/ACRE. 50-50-50 FERTILIZER TO BE APPLIED AT 1000 LBS/ACRE. HAY OR STRAW MULCH TO BE APPLIED AT 3 TONS/ACRE.
% PURE LIVE SEED = % PURITY (95%) x % GERMINATION RATE (85%) = 0.95 x 0.85 = 0.8075 ~ 81% PURE LIVE SEED.

PERMANENT: SEEDING SHALL BE 15% KENTUCKY BLUEGRASS, 35% KENTUCKY 31 FESCUE, 25% CHEWINGS FESCUE, 15% PERENNIAL RYE GRASS, AND 10% RECLEANED REDTOP AT A RATE OF 60 LBS. PER ACRE.

% PURE LIVE SEED = % PURITY x % GERMINATION RATE
KENTUCKY BLUEGRASS = 85% x 75% = 0.85 x 0.75 = 0.6375 x 0.15 = 0.0956
KENTUCKY 31 FESCUE = 95% x 80% = 0.95 x 0.80 = 0.7600 x 0.35 = 0.2660
CHEWINGS FESCUE = 95% x 80% = 0.95 x 0.80 = 0.7600 x 0.25 = 0.1900
PERENNIAL RYE GRASS = 95% x 85% = 0.95 x 0.85 = 0.8075 x 0.15 = 0.1211
REDCLEANED REDTOP = 92% x 80% = 0.92 x 0.80 = 0.7360 x 0.10 = 0.0736
0.7452 ~ 75% PURE LIVE SEED

LIMING TO BE APPLIED AT 3 TONS/ACRE. 10-20-30 FERTILIZER TO BE APPLIED AT 1000 LBS/ACRE. HAY OR STRAW MULCH TO BE APPLIED AT 3 TONS/ACRE. POLYMER TACKIFIERS SHALL BE USED AND APPLIED AT A RATE OF 40 TO 60 LBS PER ACRE. THE NON-GERMINATING PERIODS ARE BETWEEN 6/15 THROUGH 8/15 AND 9/30 THROUGH 4/15. AREAS DISTURBED DURING THESE PERIODS MUST BE LIMED, FERTILIZED, SEEDED AND MULCHED IMMEDIATELY FOLLOWING THE END OF THOSE PERIODS. TOPSOIL TAKEN FROM CONSTRUCTION AREAS SHALL BE SEEDED WITH VEGETATIVE COVER AND STOCKPILES FOR RE-USE IN FINISH GRADING. THERE IS TO BE NO EARTH DISTURBANCE OR VEGETATIVE CLEARING IN AREAS OUTSIDE OF THE DELINEATED AREAS TO BE DISTURBED.

TOPSOIL APPLICATION

TOPSOIL SHOULD BE UNIFORMLY DISTRIBUTED ACROSS THE DISTURBED AREA TO A DEPTH OF 4 TO 8 INCHES MINIMUM. SPREADING SHOULD BE DONE IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL PREPARATION OR TILLAGE. IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOIL PLACEMENT SHOULD BE CORRECTED IN ORDER TO PREVENT FORMATION OF DEPRESSIONS. TOPSOIL SHOULD NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION. COMPACTED SOILS SHOULD BE SCARIFIED 6 TO 12 INCHES ALONG CONTOUR WHEREVER POSSIBLE PRIOR TO SEEDING. TOPSOIL SHOULD BE APPLIED AND PREPARED PRIOR TO SOD PLACEMENT. FAILURE TO PROPERLY PREPARE THE SOIL BEFORE SOD IS PLACED COULD RESULT IN FAILURE OF THE SOD ITSELF.

SEDIMENT DISPOSAL:

SILT REMOVED FROM TEMPORARY SEDIMENT CONTROL STRUCTURES SHALL BE DISPOSED ON-SITE IN LANDSCAPED AREAS LOCATED OUTSIDE OF FLOOD PLAINS, WETLANDS, STEEP SLOPES, AND DRAINAGE SWALES. AREAS OF SEDIMENT DISPOSAL SHALL BE CONSIDERED C.V.A..

DUST CONTROL:

DUST AND OTHER PARTICULATES SHALL BE KEPT WITHIN TOLERABLE LIMITS BY USING WATER. APPLICATION SHALL BE AS NEEDED OR AS DIRECTED BY THE TOWNSHIP ENGINEER OR THE CONSERVATION DISTRICT.

CRITICAL VEGETATION AREAS (C.V.A.):

CRITICAL VEGETATION AREAS ARE TO BE GRADED, HYDROSEEDED AND MULCHED WITHIN 10 DAYS OF THE BEGINNING OF EXCAVATION. IN GENERAL, CRITICAL VEGETATION AREAS ARE DEFINED AS CUT SLOPES STEEPER THAN 3H:1V, ALL FILL SLOPES STEEPER THAN 4H:1V AND IN ALL DRAINAGE SWALES.

GENERAL NOTES FOR UTILITY CONSTRUCTION

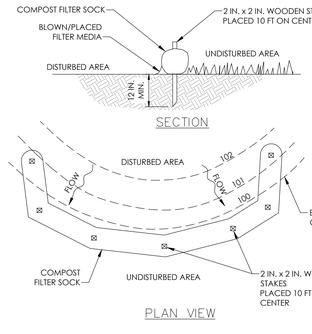
1. EXCAVATED MATERIAL SHOULD BE STAGED ON THE UPSTREAM SIDE OF A TRENCH.
2. THE DAILY EXTENT OF TRENCHING SHOULD NOT EXCEED WHAT CAN BE BACK FILLED AND STABILIZED IN ONE WORKING DAY.
3. LIMIT ADVANCED CLEARING AND GRUBBING OPERATIONS TO A DISTANCE EQUAL TO TWO TIMES THE LENGTH OF PIPE INSTALLATION THAT CAN BE COMPLETED IN ONE DAY.
4. WORK CREWS AND EQUIPMENT FROM TRENCHING, PLACEMENT OF PIPE, AND BACKFILLING WILL BE SELF CONTAINED AND SEPARATE FROM CLEARING AND GRUBBING AND SITE RESTORATION AND STABILIZATION OPERATIONS.
5. WATER WHICH ACCUMULATES IN THE OPEN TRENCH WILL BE COMPLETEY REMOVED BY PUMPING BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS. WATER REMOVED FROM THE TRENCH SHALL BE PUMPED THROUGH A FILTRATION DEVICE.
6. ON THE DAY FOLLOWING PIPE PLACEMENT AND TRENCH BACKFILLING, THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS AND IMMEDIATELY STABILIZED.
7. SOILS EXCAVATED FROM EXISTING SURFACE LAYER SHOULD BE STOCKPILED SEPARATELY AND RETURNED AS FINAL SURFACE LAYER FOLLOWING TRENCH BACKFILLING.

MAINTENANCE SCHEDULE FOR TEMPORARY SEDIMENTATION CONTROL STRUCTURES

INSPECTION AND MAINTENANCE OF ALL FACILITIES SHALL BE MADE AFTER EACH RAIN STORM EVENT AND ON A WEEKLY BASIS. MAINTENANCE OF ALL TEMPORARY SEDIMENTATION CONTROL STRUCTURES SHALL BE IN ACCORDANCE WITH THESE PLANS AND THE "EROSION AND SEDIMENT CONTROL NARRATIVE."

MAINTENANCE OF TEMPORARY SEDIMENTATION CONTROL STRUCTURES

MAINTENANCE OF ALL TEMPORARY SEDIMENTATION CONTROL STRUCTURES SHALL BE IN ACCORDANCE WITH THESE PLANS AND THE "EROSION AND SEDIMENT CONTROL NARRATIVE." INSPECTION AND MAINTENANCE OF ALL FACILITIES SHALL BE MADE AFTER EACH RAIN STORM EVENT AND ON A WEEKLY BASIS. INSPECTIONS SHALL BE LOGGED ONTO THE MOST RECENTLY DATED DEP FORM ENTITLED "CHAPTER 102 VISUAL SITE INSPECTION REPORT 3800-FM-BCW0271d, AND KEPT ON SITE AT ALL TIMES.



NOTES:

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

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

TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

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

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

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

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

STANDARD CONSTRUCTION DETAIL #4-1
COMPOST FILTER SOCK

NOT TO SCALE

MAINTENANCE PROGRAM FOR TEMPORARY SEDIMENTATION CONTROLS STRUCTURES

MAINTENANCE OF ALL TEMPORARY SEDIMENTATION CONTROL STRUCTURES SHALL BE THE RESPONSIBILITY OF THE DEVELOPER AND AS STATED BELOW:

1. ROCK CONSTRUCTION ENTRANCE - MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH ONE-HALF THE ABOVE-GROUND HEIGHT OF SILT FENCING.
2. EROSION CONTROL BLANKET (ECB) - BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.
3. PUMPED WATER FILTER BAGS - FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.
4. COMPOST FILTER SOCK - 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.
5. INLET PROTECTION - 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.
6. ROCK FILTER OUTLET - SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET. ADD ADDITIONAL ROCK AS NEEDED.
7. CONTROLLED NON-DISCHARGE CONCRETE WASH OUT - ALL CONCRETE WASHOUT FACILITIES SHOULD BE INSPECTED DAILY. DAMAGED OR LEAKING WASHOUTS SHOULD BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY. WHEN WASHOUT MATERIAL REACHES 50% CAPACITY OF FILTERING HEIGHT, STOP USAGE OF THAT RING. WHEN STABLE, BREAK UP CONCRETE WASHOUT MATERIAL AND DISPOSE OF APPROPRIATELY.
8. SEDIMENT BASIN/TRAP MAINTENANCE. PROVIDE ACCESS FOR SEDIMENT REMOVAL AND OTHER MAINTENANCE REMOVAL REQUIRED MAINTENANCE ACTIVITIES. A CLEAN OUT STAKE SHALL BE PLACED NEAR THE CENTER OF EACH BASIN. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED THE CLEANOUT ELEVATION ON THE STAKE AND THE BASIN RESTORED TO ITS ORIGINAL DIMENSIONS. BASIN EMBANKMENTS, SPILLWAYS, AND OUTLETS SHALL BE INSPECTED FOR EROSION, PIPING AND SETTLEMENT. DISPLACED RIPRAP WITHIN THE OUTLET ENERGY DISSIPATER SHALL BE REPLACED IMMEDIATELY. ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISTURBED AREAS SHALL BE STABILIZED INSIDE THE BASIN BEFORE CONVERSION TO A STORMWATER MANAGEMENT FACILITY.

POTENTIAL THERMAL IMPACTS

THERMAL IMPACTS DURING CONSTRUCTION ACTIVITIES WILL BE MINIMIZED THROUGH AVOIDING DIRECT DISCHARGE INTO SURFACE WATERS, LIMITING THE EXTENT AND DURATION OF EARTH DISTURBANCE AND THE USE OF COMPOST FILTER SOCK, WHICH IS THE PRIMARY PERIMETER CONTROL. RUNOFF WILL BE TREATED BY THE COMPOST FILTER SOCK AND THEN DISCHARGED TO STABILIZED VEGETATIVE COVER, AS THE DISCHARGE FLOWS BELOW THE CANOPY OF EXISTING VEGETATION (LAWN, TREES, ETC.,). THE DISCHARGE WILL BE AFFORDED TIME TO COOL PRIOR TO REACHING THE RECEIVING WATERWAYS.

GEOLOGIC FORMATIONS/SOIL CONDITIONS/POLLUTANT PREVENTION

THE PROPOSED SITE IS UNDERLAIN BY CONESTOGA FORMATION COMPOSED OF LIMESTONE AND SHALE, BASED ON CHESTER COUNTY GEOLOGY SURVEY (JUNE 1973). GEOTECHNICAL INVESTIGATIONS SHOWED NO EVIDENCE OF KARST FEATURES ON SITE, OR SOIL CONDITIONS ARE KNOWN TO BE PRESENT THAT WOULD REQUIRE SPECIFIC BMP'S TO MINIMIZE POLLUTION EFFECTS ASSOCIATED WITH SAID FEATURES, BASED ON THE INFORMATION OBTAINED AT THE BORING LOCATION, THE GEOTECHNICAL REPORT CONCLUDES THAT THE SITE SOILS WILL PROVIDE ADEQUATE INFILTRATION AT THE DEPTHS TESTED; IT IS NOT ANTICIPATED THAT BEDROCK WILL BE ENCOUNTERED WITHIN THE EXCAVATION AREA OF THE PROPOSED INFILTRATION FACILITIES; AND GROUNDWATER IS NOT ANTICIPATED TO BE ENCOUNTERED WITHIN THE LIMITS OF EXCAVATION FOR THE PROPOSED INFILTRATION FACILITIES. IF ISSUES ARISE ON SITE DURING CONSTRUCTION THE GEOTECHNICAL ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

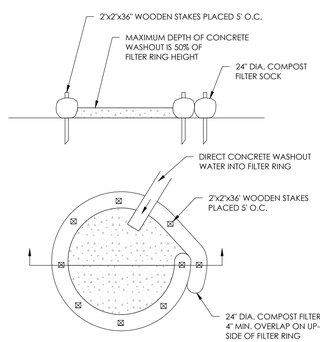
ANTICIPATED E&S BMP RELATED CONSTRUCTION WASTES AND DISPOSAL PROCEDURES

SEDIMENT: SILT REMOVED FROM TEMPORARY SEDIMENT CONTROL STRUCTURES SHALL BE DISPOSED OF ON-SITE IN LANDSCAPED AREAS LOCATED OUTSIDE FLOODPLAINS, WETLANDS, STEEP SLOPES, AND DRAINAGE SWALES. SILT AND SEDIMENT CATEGORIZED AS CONTAMINATED SHALL BE DISPOSED OF PER THE SOIL MANAGEMENT NOTES.

TRASH & LITTER: TRASH AND LITTER SHALL BE REMOVED FROM EROSION AND SEDIMENTATION CONTROL BMPS AND DISPOSED OF IN APPROPRIATE TRASH RECEPTABLE.

CONCRETE WASHWATER: CONCRETE WASHWATER SHALL BE DISPOSED OF IN THE LOCATION SHOWN ON-SITE. ONCE WASHWATER SOLIDIFIES THE HARDENED CONCRETE SHALL BE DISPOSED OF OFF-SITE IN AN APPROVED MANNER.

NOTE:ANY APPLICABLE MATERIAL SHALL BE RECYCLED IN ACCORDANCE TO THE APPROPRIATE REGULATIONS.



NOTES:
1. A SUITABLE IMPERVIOUS GEO-MEMBRANE SHALL BE PLACED AT THE LOCATION OF THE WASHOUT PRIOR TO INSTALLING THE SOCKS.
2. INSTALL ON FLAT GRADE FOR OPTIMUM PERFORMANCE.
3. 18" DIAMETER FILTER SOCKS MAY BE STACKED ONTO DOUBLE 24" DIAMETER SOCKS IN PYRAMIDAL CONFIGURATION FOR ADDED HEIGHT.
4. ALL CONCRETE WASHOUT FACILITIES SHOULD BE INSPECTED DAILY. DAMAGED OR LEAKING WASHOUTS SHOULD BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY.

CONTROLLED NON-DISCHARGE CONCRETE WASH OUT

NOT TO SCALE

SOIL EROSION AND SEDIMENTATION CONTROL NOTES:

1. ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.
2. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRE-CONSTRUCTION MEETING.
3. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
4. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.
5. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.
6. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY SUBSEQUENT STAGE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.
7. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
8. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAPS(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER.
9. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT.
10. ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1, AND 287.1 ET. SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.
11. ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED.
12. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL, FORM FP-001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.
13. ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS.
14. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RE-SEEDING, RE-MULCHING AND RE-NETTING MUST BE PERFORMED IMMEDIATELY. IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.
15. A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.
16. SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY, OR AS NEEDED, OR AS DIRECTED BY THE LOCAL CONSERVATION DISTRICT OR THE MUNICIPALITY, AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEPT INTO ANY ROAD SIDE DITCH, STORM SEWER, OR SURFACE WATER.
17. ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS.
18. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES -- 6 TO 12 INCHES ON COMPACTED SOILS -- PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.
19. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.
20. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.
21. FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
22. FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.
23. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.
24. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.
25. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. ALL SLOPES 3H:1V OR STEEPER AND SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.
26. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE P

LONG-TERM OPERATION AND MAINTENANCE (O&M) SCHEDULE				
BMP	SCM	PROCEDURE	FAILURE / CORRECTIVE ACTION	RESPONSIBILITY
BMP 6.4.5 - RAIN GARDEN / BIOFILTRATION (BMP 1)	RAIN GARDEN 1 (SCM 1) RAIN GARDEN 2 (SCM 2)	ANY TRASH/DEBRIS AND SEDIMENT BUILDUP ARE TO BE REMOVED FROM THE RAIN GARDEN AND STRUCTURES TO MAINTAIN THAT THE BMP FUNCTIONS AS DESIGNED. SEDIMENT MUST BE DISPOSED OF AT AN APPROVED LOCATION. STRUCTURAL REPAIRS ARE TO BE PERFORMED AS SOON AS ISSUES ARE KNOWN. SEDIMENT REGRADED ON SITE IN LANDSCAPE AREA OR DISPOSED OFFSITE IN ACCORDANCE WITH DEP REGULATIONS.	FAILURE: INLET CLOGGED OR RUNOFF IS NO LONGER ABSORBED BY THE AMENDED SOILS IN THE RAIN GARDEN. CORRECTIVE ACTION: UNCLOG THE INLET, REPLACE AMENDED SOILS IN THE RAIN GARDEN AS NEEDED.	PROPERTY OWNER
STORMWATER CONVEYANCE SYSTEMS (BMP 2)		CATCH BASINS, MANHOLES AND INLETS SHOULD BE INSPECTED AT LEAST TWO TIMES PER YEAR AND AFTER RUNOFF EVENTS	FAILURE: CONVEYANCE SYSTEM DOES NOT FUNCTION PROPERTY. CORRECTIVE ACTION: REPLACE/REPAIR CONVEYANCE SYSTEMS AS REQUIRED.	PROPERTY OWNER
BMP 6.6.4 - WATER QUALITY STRUCTURES (BMP 3)		CATCH BASINS, MANHOLES AND INLETS SHOULD BE INSPECTED AT LEAST TWO TIMES PER YEAR AND AFTER LARGE STORMS (2 INCHES IN 24 HOURS)	FAILURE: INLET BECOMES CLOGGED WITH DEBRIS. CORRECTIVE ACTION: REMOVE DEBRIS AND INSPECT STRUCTURE MORE FREQUENTLY.	PROPERTY OWNER

*MAINTENANCE OF PERMANENT BMPS DURING CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
**STRUCTURAL BMPS SHALL BE INSPECTED FOR ACCUMULATION OF SEDIMENT, DAMAGE TO THE OUTLET STRUCTURES, SIGNS OF CONTAMINATION AND/OR BERM STABILITY.

ANTICIPATED PCSM SCM RELATED CONSTRUCTION WASTES AND DISPOSAL PROCEDURES	
LAWN DEBRIS	LAWN DEBRIS SHALL BE REMOVED FROM POST CONSTRUCTION STORMWATER MANAGEMENT SCMS AND DISPOSED OF IN AN APPROPRIATE LOCATION
TRASH & LITTER	TRASH AND LITTER SHALL BE REMOVED FROM POST CONSTRUCTION STORMWATER MANAGEMENT SCMS AND DISPOSED OF IN APPROPRIATE TRASH RECEPTACLE
ROAD GRIT	ROAD GRIT SHALL BE REMOVED FROM POST CONSTRUCTION STORMWATER MANAGEMENT SCMS AND DISPOSED OF IN AN APPROPRIATE MANNER
NOTE: ANY APPLICABLE MATERIAL SHALL BE RECYCLED IN ACCORDANCE TO THE APPROPRIATE REGULATIONS.	

LANDOWNER ACKNOWLEDGEMENT

STORMWATER BMPS ARE FIXTURES THAT CAN BE ALTERED OR REMOVED ONLY AFTER APPROVAL BY THE TOWNSHIP.

LANDOWNER _____ DATE _____

ENGINEER'S CERTIFICATION

I _____, ON THIS DATE _____, HAS REVIEWED AND HEREBY CERTIFIES THAT THE STORMWATER AMNAGEMENT SITE PLAN MEETS ALL DESIGN STANDARDS AND CRITERIA OF CHAPTER 58, "GRADING, EROSION CONTROL, STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES."

PENNSYLVANIA FISH AND BOAT COMMISSION AVOIDANCE MEASURES:

1. CONTRACTOR TO IMPLEMENT CONSTRUCTION TECHNIQUES THAT ELIMINATE IN-STREAM WORK, SEDIMENTATION AND CHANGES TO WATER QUALITY.
2. CONTRACTOR TO AVOID ANY IN-STREAM DISTURBANCE WATER QUALITY DEGRADATION DURING AND AFTER THE PROJECT INSTALLATION.
3. STORM SEWERS AND SCMs HAVE BEEN DESIGNED TO MINIMIZE/REMOVE ALL SILT FROM THE WATER BEFORE IT IS RELEASED INTO THE RIVER.
4. CONTRACTOR TO EMPLOY STRICT EROSION AND SEDIMENTATION CONTROL MEASURES, AS WELL AS BEST MANAGEMENT PRACTICES.

STORMWATER EASEMENT NOTE:

STORMWATER FACILITIES SHALL BE OWNED AND MAINTAINED BY THE PROPERTY OWNER IN PERPETUITY. THE PROPERTY OWNER SHALL PROVIDE A BLANKET STORMWATER ACCESS EASEMENT TO THE TOWNSHIP FOR THE PURPOSE OF ACCESS TO THE STORMWATER FACILITIES. IF, IN THE JUDGMENT OF THE TOWNSHIP ENGINEER, THE OWNER HAS FAILED TO MAINTAIN THE STORMWATER FACILITIES IN SUCH A MANNER AS TO ENSURE THEIR PROPER FUNCTIONING, THE TOWNSHIP AFTER PROVIDING A WRITTEN NOTICE, SHALL HAVE THE RIGHT TO ENTER UPON THE LANDS OF THE OWNER AND TO MAKE ANY REPAIRS AS MAY BE NECESSARY TO THE STORMWATER FACILITIES TO ENSURE THAT SUCH FACILITIES FUNCTION AND PERFORM IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS. ANY AND ALL COSTS INCURRED BY THE TOWNSHIP FOR SUCH REPAIRS AND/OR MAINTENANCE SHALL BE PAID IN FULL BY THE OWNER. A LIEN OR LIENS MAY BE PLACED AGAINST THE PROPERTY IF THE OWNER FAILS TO REMIT PAYMENT WITHIN SIXTY (60) DAYS.

POST-CONSTRUCTION STORMWATER MANAGEMENT NOTES:

1. PRESERVATION OF EXISTING STREAM CHANNELS, AS WELL AS THE PROTECTION OF THE PHYSICAL, BIOLOGICAL, AND CHEMICAL QUALITIES OF THE RECEIVING STREAM, WILL BE ACHIEVED THROUGH THE IMPLEMENTATION OF APPROVED STORMWATER BMPS THAT WILL REDUCE THE RATE AND RUNOFF VOLUME IN THE POST-DEVELOPMENT CONDITION. WATER QUALITY BMPS ARE ALSO PROPOSED TO MITIGATE POLLUTION IMPACTS.
2. POST-CONSTRUCTION RUNOFF RATES WILL BE REDUCED TO LESS THAN PRE-CONSTRUCTION RUNOFF RATES FOR THE OVERALL SITE THROUGH THE USE OF RAIN GARDENS.
3. THE POST-DEVELOPMENT RUNOFF VOLUME WILL BE REDUCED TO LESS THAN THE PRE-DEVELOPMENT RUNOFF VOLUME THROUGH THE USE OF RAIN GARDENS.
4. PRE-DEVELOPMENT DRAINAGE PATTERNS WERE MAINTAINED IN THE POST-DEVELOPMENT CONDITION, TO THE EXTENT PRACTICAL. ALL OF THE SITE DISCHARGE DRAINS TO THE SCHUYLKILL RIVER), WHICH HAS A CHAPTER 93 CLASSIFICATION OF WWF/MF.
5. THE INTRODUCTION OF ADDITIONAL IMPERVIOUS SURFACES WAS MINIMIZED TO THE EXTENT PRACTICAL.
6. THE LIMIT OF EARTH DISTURBANCE (INCLUDING GRADING AND LAND CLEARING) IS MINIMIZED AND THE PRESERVATION OF EXISTING VEGETATION IS MAXIMIZED TO THE EXTENT PRACTICAL.
7. NO ADDITIONAL DISCHARGES TO THE WATERCOURSES ARE PROPOSED AS PART OF THIS PROJECT. THE BMPS PROPOSED TO DP001 WILL DISCHARGE TO THE WATERCOURSES VIA EXISTING DRAINAGE FACILITIES. THE BMPS PROPOSED TO DP001) WILL DISCHARGE TO THE WATERCOURSES VIA EXISTING DRAINAGE FACILITIES.
8. SOIL COMPACTION SHALL BE MINIMIZED TO THE EXTENT PRACTICAL, PARTICULARLY IN THE AREAS TO BE PERVIOUS IN THE POST-DEVELOPMENT CONDITION.
9. CHANGES TO THE SITE'S RUNOFF WILL BE MINIMIZED THROUGH THE USE OF RAIN GARDENS.
10. THE PERMITTEE SHALL PROVIDE ENGINEERING CONSTRUCTION OVERSIGHT FOR THE PROPOSED STORMWATER BMPS. A LICENSED PROFESSIONAL ENGINEER KNOWLEDGEABLE IN THE DESIGN AND CONSTRUCTION OF STORMWATER BMPS, PREFERABLY THE DESIGN ENGINEER, SHALL CONDUCT THE OVERSIGHT.
11. AS-BUILT PLANS OF THE STORMWATER BMPS SHALL BE PROVIDED WITHIN SIX MONTHS FOLLOWING THE COMPLETION OF THE BMP CONSTRUCTION. THE AS-BUILT PLANS SHALL BE SIGNED AND SEALED BY A PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER.
12. A NOTICE OF TERMINATION (NOT) WILL BE REQUIRED TO BE SUBMITTED FOLLOWING APPROVAL OF THE FINAL AS-BUILT PLANS. PRIOR TO ACCEPTING THE NOT, THE DEPARTMENT AND/OR CONSERVATION DISTRICT STAFF WILL PERFORM A FINAL INSPECTION TO ENSURE SITE STABILIZATION AND VERIFY ADEQUATE INSTALLATION AND FUNCTION OF THE STORMWATER BMPS.
13. NO UNTREATED RUNOFF SHALL ENTER ANY BMPS UNTIL FINAL SITE STABILIZATION IS ACHIEVED IN THE TRIBUTARY DRAINAGE AREA. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.
14. ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1 AND 287.1 ET. SEQ. NO BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.
15. THE PROJECT AREA IS NOT LOCATED IN AN HQ - HIGH QUALITY OR EV - EXCEPTIONAL VALUE WATERSHED.
16. A WRITTEN REPORT DOCUMENTING EACH INSPECTION AND ALL BMP REPAIR AND MAINTENANCE ACTIVITIES MUST BE PROVIDED AS PART OF THE LONG-TERM OPERATION AND MAINTENANCE PROGRAM.
17. THE PCSM PLAN, INSPECTION REPORTS AND MONITORING RECORDS SHALL BE KEPT ON SITE AND AVAILABLE FOR REVIEW AND INSPECTION BY THE DEPARTMENT AND CONSERVATION DISTRICT.
18. THE POTENTIAL FOR THERMAL IMPACTS IS MINIMIZED THROUGH THE USE OF RAIN GARDENS, WHICH WILL PROVIDE TIME FOR RUNOFF TO COOL.
19. THE STORMWATER MANAGEMENT FACILITIES ARE A PERMANENT PART OF THE DEVELOPMENT AND SHALL NOT BE REMOVED, ALTERED, OR MODIFIED.

SEQUENCE OF CONSTRUCTION

CRITICAL STAGES OF INSPECTION WHEN A LICENSED PROFESSIONAL IS TO BE PRESENT ON SITE ARE INDICATED WITH AN ASTERISK (*) IN THE FOLLOWING CONSTRUCTION SEQUENCES.

1. AT LEAST 7 DAYS BEFORE ANY EARTH DISTURBANCE ACTIVITIES, THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN PREPARER, THE DESIGNATED LICENSED PROFESSIONAL, AND MONTGOMERY COUNTY CONSERVATION DISTRICT TO AN ON-SITE PRE-CONSTRUCTION MEETING. ALSO, AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.
2. STABILIZATION NOTE. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY THAT WILL EXCEED 4 DAYS, OR ANY STAGE THEREOF, THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION. HAY OR STRAW MULCH MUST BE APPLIED AT 3.0 TONS PER ACRE. HYDROSEED IS NOT CONSIDERED STABILIZATION UNTIL IT GERMINATES. IN NO CASE SHOULD AN AREA EXCEEDING 15,000 SQUARE FEET, WHICH IS TO BE STABILIZED BY VEGETATION, REACH FINAL GRADE WITHOUT BEING SEEDED AND MULCHED.
3. THE LIMITS OF DISTURBANCE AND TREES MUST BE DELINEATED WITH ORANGE CONSTRUCTION FENCE OR APPROVED EQUAL PRIOR TO EARTH-MOVING ACTIVITIES. ANY CESSATION OF ACTIVITIES FOR MORE THAN FOUR DAYS OR LONGER REQUIRES TEMPORARY STABILIZATION. A PRE-CONSTRUCTION CONFERENCE WITH THE TOWNSHIP SHADE TREE COMMISSION'S DESIGNEE PRIOR TO START OF CONSTRUCTION.
4. INSTALL STABILIZED CONSTRUCTION ENTRANCES AND WATER BARS AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLANS AT WASHINGTON STREET. CONTRACTOR TO UTILIZE ACCEPTABLE STANDARDS AND PRACTICES TO ENSURE SEDIMENT IS NOT TRACKED OFF THE PROPERTY AND ONTO PUBLIC RIGHTS-OF-WAY. STABILIZE ANY RESULTING DISTURBANCE IMMEDIATELY, AS APPROPRIATE.
5. ***PLACE PERIMETER EROSION AND SEDIMENT CONTROLS AS SHOWN ON EROSION AND SEDIMENT CONTROL PLAN THAT INCLUDE: COMPOST FILTER SOCK, AND LOCATIONS FOR TEMPORARY TOPSOIL STOCKPILE AREAS. STABILIZE ANY RESULTANT DISTURBANCE IMMEDIATELY, AS APPROPRIATE.**
6. CLEAR AND GRUB TREES AND VEGETATION THROUGHOUT THE DISTURBANCE AREA, AS INDICATED ON THE EXISTING FEATURES AND DEMOLITION PLAN. STABILIZE ANY RESULTING DISTURBANCE IMMEDIATELY, AS APPROPRIATE.
7. REMOVE EXISTING BUILDING AND PARKING GARAGE.
8. REMOVE AND/OR RELOCATE EXISTING UTILITIES, AS NEEDED.
9. INSTALL TRAIL ALONG RIVER AND RETAINING WALL.
10. CONDUCT BULK GRADING OPERATIONS; ADJUST THE EROSION AND SEDIMENT CONTROLS, AS APPROPRIATE.
11. INSTALL STORM DRAINS FROM EW-1 TO I-4, EW-2 TO OS-1, EW-3 TO I-9, EW-4 TO I-12, EW-5 TO OS-2.
12. INSTALL REMAINING STORM DRAINS AND STRUCTURES.
13. INSTALL REMAINING UTILITIES.
14. PERFORM FINAL GRADING AND ROUGH GRADING FOR BUILDING PADS.
15. INSTALL LIGHT STANDARDS.
16. INSTALL SUBBASE FOR PAVEMENT, SIDEWALK, CURBS, AND CURB RAMPS.
17. INSTALL CURBS.
18. INSTALL BINDER COURSE.
19. ***BEGIN CONSTRUCTION OF RAIN GARDEN 1 AND RAIN GARDEN 2. CONTRACTOR SHALL TAKE GREAT CARE DURING CONSTRUCTION TO KEEP FOREIGN DEBRIS AND SEDIMENT OUT OF THE SYSTEM DURING CONSTRUCTION.**
20. ***INSTALL PROPOSED LANDSCAPE MATERIAL AND PERFORM FINAL STABILIZATION OF DISTURBED AREAS.**
21. ONCE CONSTRUCTION SITE TRAFFIC IS COMPLETE, APPLY WEARING COURSE ASPHALT. AFTER SITE FINAL STABILIZATION HAS OCCURRED, AN ON-SITE INSPECTION SHALL BE SCHEDULED WITH THE MONTGOMERY COUNTY CONSERVATION DISTRICT. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE, THE OPERATOR SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITIES. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE SPECIFIED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS. DISTURBED AREAS WHICH ARE AT FINISHED GRADE OR WHICH WILL NOT BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
22. ***AFTER AN ON-SITE INSPECTION AND APPROVAL BY THE DESIGNATED LICENSED PROFESSIONAL, REMOVE ALL PERIMETER EROSION AND SEDIMENT CONTROL MEASURES. STABILIZE ANY RESULTING DISTURBANCE IMMEDIATELY.**
23. UPON COMPLETION OF PERMITTED IMPROVEMENTS, PERMITTEE SHALL SUBMIT THE REQUIRED NOTICE OF TERMINATION.

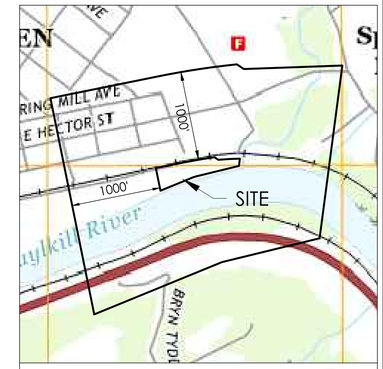


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'

RAIN GARDEN - SEQUENCE OF CONSTRUCTION

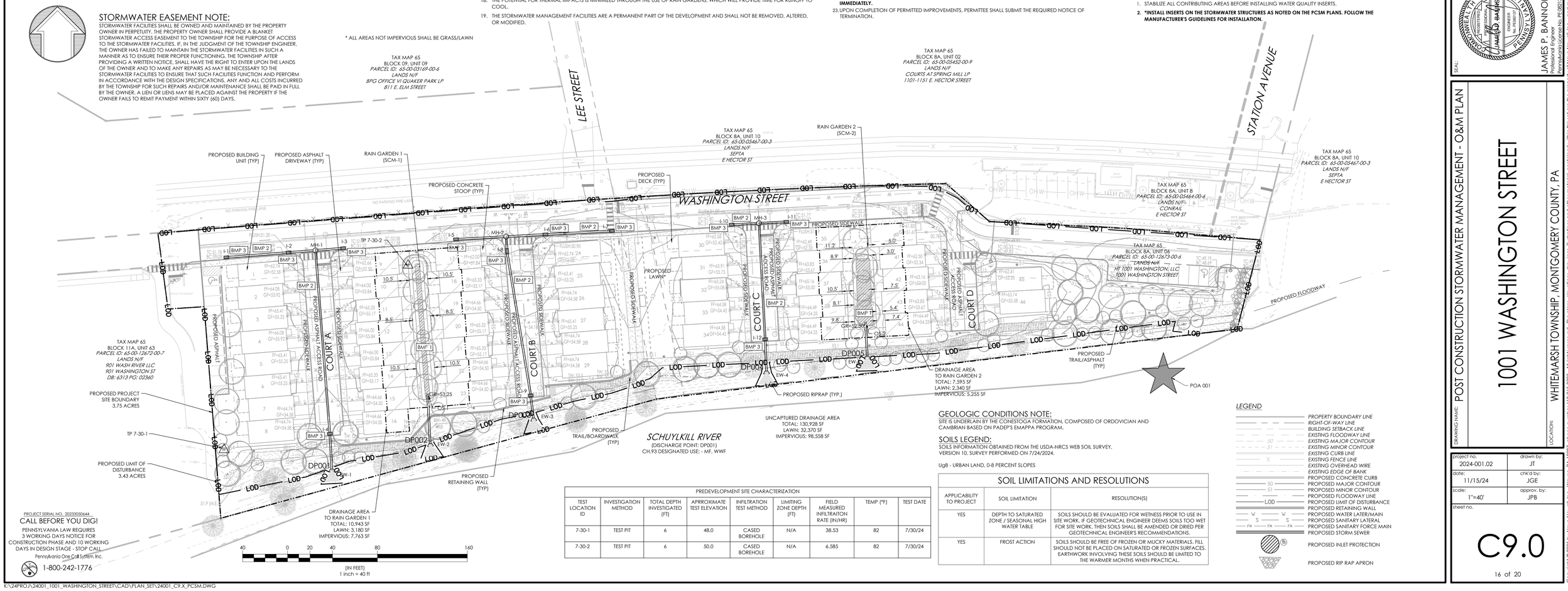
CRITICAL STAGES OF INSPECTION WHEN A LICENSED PROFESSIONAL IS TO BE PRESENT ON SITE ARE INDICATED WITH AN ASTERISK (*) IN THE FOLLOWING CONSTRUCTION SEQUENCES.

1. DELINEATE AREA OF PROPOSED STORMWATER SYSTEM PRIOR TO START OF CONSTRUCTION.
2. RUNOFF TO BE DIVERTED AROUND THE PROPOSED SYSTEM UNTIL DRAINAGE AREAS ARE COMPLETELY STABILIZED.
3. GRADE TO FINAL CONFIGURATION. PLACE EROSION CONTROL BLANKET ON ALL SIDE SLOPES OF 3H:1V SLOPES OR GREATER. APPLY PERMANENT VEGETATIVE COVER TO SIDE SLOPES.
4. ***EXCAVATE TO SUBGRADE ELEVATION AND PREPARE SUBGRADE SURFACE *(ENSURE SURFACE IS DRY).**
5. ***PLACE GEOTEXTILE FABRIC ALONG BOTTOM AND SIDES OF EXCAVATION. ENSURE NO FOREIGN MATERIAL (SEDIMENT OR OTHER) REMAINS IN THE EXCAVATION UPON PLACEMENT OF THE LINING.**
6. PLACE STONE MEDIA AND SOIL MEDIA AT SYSTEM BOTTOM.
7. INSTALL PERMANENT PLANTINGS AND SEEDING IN THE SYSTEM.
8. UPON COMPLETE STABILIZATION OF UPSTREAM DRAINAGE AREA, INSPECT TO ENSURE PRE-TREATMENT DEVICES, INLETS, AND STORM DRAINS ARE FREE OF ANY DEBRIS AND SEDIMENT.
9. ***COMPLETION OF AN SCM CONSTRUCTION CERTIFICATION FORM FOR EACH STRUCTURAL PCSM SCM MUST BE COMPLETED AND SUBMITTED WITHIN 30 DAYS OF COMPLETION OF THE SCM.**

WATER QUALITY STRUCTURE CONSTRUCTION SEQUENCE (CRITICAL STAGE)

CRITICAL STAGES OF INSPECTION WHEN A LICENSED PROFESSIONAL IS TO BE PRESENT ON SITE ARE INDICATED WITH AN ASTERISK (*) IN THE FOLLOWING CONSTRUCTION SEQUENCES.

1. STABILIZE ALL CONTRIBUTING AREAS BEFORE INSTALLING WATER QUALITY INSERTS.
2. ***INSTALL INSERTS ON THE STORMWATER STRUCTURES AS NOTED ON THE PCSM PLANS. FOLLOW THE MANUFACTURER'S GUIDELINES FOR INSTALLATION.**



PREDEVELOPMENT SITE CHARACTERIZATION								
TEST LOCATION ID	INVESTIGATION METHOD	TOTAL DEPTH INVESTIGATED (FT)	APPROXIMATE TEST ELEVATION	INFILTRATION TEST METHOD	LIMITING ZONE DEPTH (FT)	FIELD MEASURED INFILTRAITON RATE (IN/HR)	TEMP (°F)	TEST DATE
7-30-1	TEST PIT	6	48.0	CASED BOREHOLE	N/A	38.53	82	7/30/24
7-30-2	TEST PIT	6	50.0	CASED BOREHOLE	N/A	6.585	82	7/30/24

GEOLOGIC CONDITIONS NOTE:

SITE IS UNDERLAIN BY THE CONESTOGA FORMATION, COMPOSED OF ORDOVICIAN AND CAMBRIAN BASED ON PADEP'S EMAPPA PROGRAM.

SOILS LEGEND:

SOILS INFORMATION OBTAINED FROM THE USDA-NRCS WEB SOIL SURVEY, VERSION 10. SURVEY PERFORMED ON 7/24/2024.

UgB - URBAN LAND, 0-8 PERCENT SLOPES

SOIL LIMITATIONS AND RESOLUTIONS		
APPLICABILITY TO PROJECT	SOIL LIMITATION	RESOLUTION(S)
YES	DEPTH TO SATURATED ZONE / SEASONAL HIGH WATER TABLE	SOILS SHOULD BE EVALUATED FOR WETNESS PRIOR TO USE IN SITE WORK. IF GEOTECHNICAL ENGINEER DEEMS SOILS TOO WET FOR SITE WORK, THEN SOILS SHALL BE AMENDED OR DRIED PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
YES	FROST ACTION	SOILS SHOULD BE FREE OF FROZEN OR MUCKY MATERIALS. FILL SHOULD NOT BE PLACED ON SATURATED OR FROZEN SURFACES. EARTHWORK INVOLVING THESE SOILS SHOULD BE LIMITED TO THE WARMER MONTHS WHEN PRACTICAL.

LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT-OF-WAY LINE
- BUILDING SETBACK LINE
- EXISTING FLOODWAY LINE
- 50 EXISTING MAJOR CONTOUR
- 51 EXISTING MINOR CONTOUR
- EXISTING CURB LINE
- EXISTING FENCE LINE
- EXISTING OVERHEAD WIRE
- EXISTING EDGE OF BANK
- PROPOSED CONCRETE CURB
- 50 PROPOSED MAJOR CONTOUR
- 51 PROPOSED MINOR CONTOUR
- PROPOSED FLOODWAY LINE
- LOD PROPOSED LIMIT OF DISTURBANCE
- PROPOSED RETAINING WALL
- W W W PROPOSED WATER LATER/MAIN
- S S S PROPOSED SANITARY LATERAL
- FM FM FM PROPOSED SANITARY FORCE MAIN
- PROPOSED STORM SEWER
- PROPOSED INLET PROTECTION
- PROPOSED RIP RAP APRON

PROJECT SERIAL NO.: 20233050644
CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE - STOP CALL
Pennsylvania One Call System, Inc.
1-800-242-1776

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REVISIONS

no.	description	date	chk'd	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	JGE	JT
2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	6/26/2025	JPB	JGE

SEAL:
COMMONWEALTH OF PENNSYLVANIA — JAMES P. BANNON — ENGINEER No. PE082137 — PROFESSIONAL
JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: POST CONSTRUCTION STORMWATER MANAGEMENT - O&M PLAN
LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

1001 WASHINGTON STREET

project no.	drawn by:
2024-001.02	JT
date: 11/15/24	chk'd by: JGE
scale: 1"=40'	approv. by: JPB

sheet no.
C9.0
16 of 20

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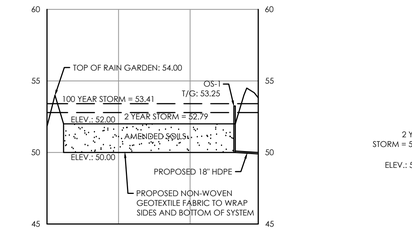
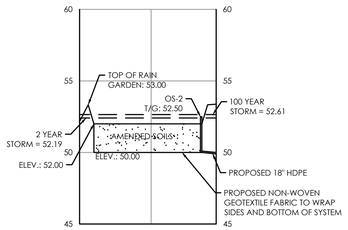


RAIN GARDEN 1
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'

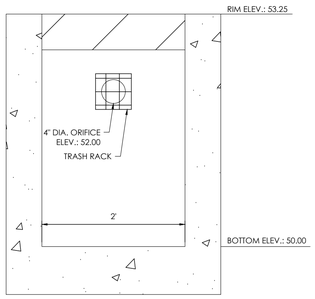


RAIN GARDEN 2
HORIZ. SCALE: 1" = 50'
VERT. SCALE: 1" = 5'

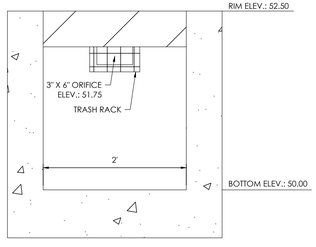
CROSS-SECTION DETAILS

GEOTEXTILE FOR FILTRATION MUST CONSIST OF POLYPROPYLENE FIBERS AND MEET THE FOLLOWING SPECIFICATIONS (AASHTO CLASS 1 OR CLASS 2 LIGHTWEIGHT GEOTEXTILE IS RECOMMENDED):

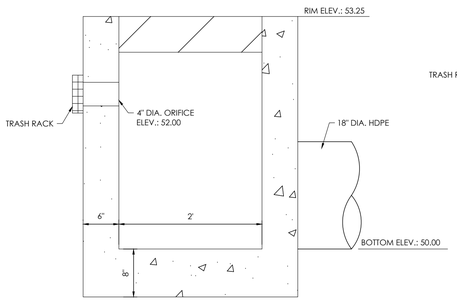
a. GRAB TENSILE STRENGTH (ASTM D 4632): ≥ 120 LBS
b. MULLEN BURST STRENGTH (ASTM D 3786): ≥ 225 PSI
c. FLOW RATE (ASTM D 4491): ≥ 95 GAL/MIN/FT2
d. UV RESISTANCE AFTER 500 HRS (ASTM D 4355): ≥ 70%
e. HEAT-SET OR HEAT-CALENDARED FABRICS ARE NOT PERMITTED.



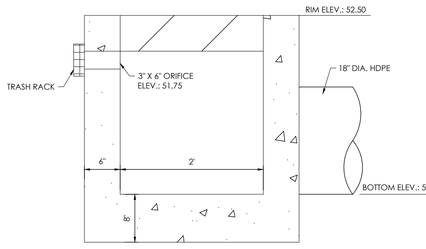
SECTION
WEIR WALL



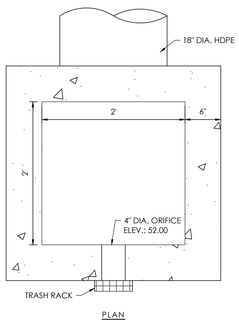
SECTION
WEIR WALL



SIDE VIEW



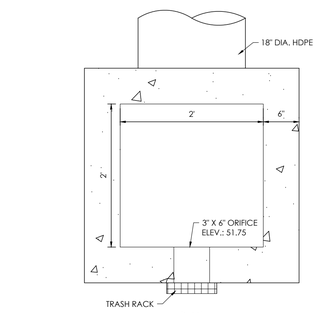
SIDE VIEW



PLAN

(OS-1) OUTLET CONTROL STRUCTURE (2' x 2' BOX)

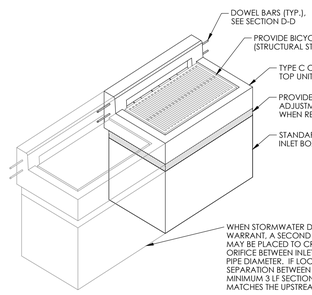
N.T.S.
ALL HDPE PIPE SHALL BE WATER TIGHT.
ALL RCP SHALL BE O-RING PIPE WITH WATER TIGHT JOINTS.
ALL JOINTS SHALL BE PROVIDED WITH WATERTIGHT SEALS.
OUTLET STRUCTURE SHALL BE OLD CASTLE 2'X2' CONCRETE AREA DRAIN OR EQUIVALENT



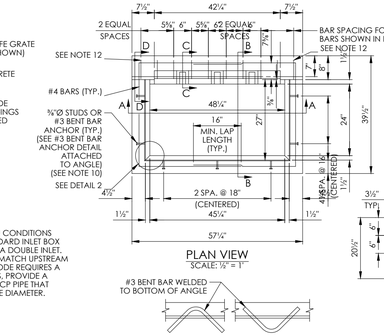
PLAN

(OS-2) OUTLET CONTROL STRUCTURE (2' x 2' BOX)

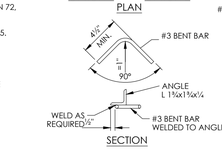
N.T.S.
ALL HDPE PIPE SHALL BE WATER TIGHT.
ALL RCP SHALL BE O-RING PIPE WITH WATER TIGHT JOINTS.
ALL JOINTS SHALL BE PROVIDED WITH WATERTIGHT SEALS.
OUTLET STRUCTURE SHALL BE OLD CASTLE 2'X2' CONCRETE AREA DRAIN OR EQUIVALENT



ISOMETRIC VIEW
N.T.S.



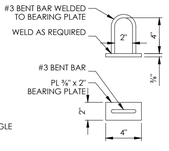
PLAN VIEW
SCALE: ½" = 1'



SECTION

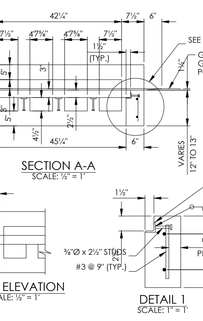
#3 BENT BAR ANCHOR DETAIL ATTACHED TO ANGLE

ALTERNATE DETAIL IN PLACE OF PROVIDING ¾"Ø STUD
SCALE: 1½" = 1'

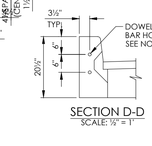


#3 BENT BAR ANCHOR DETAIL ATTACHED TO BEARING PLATE

ALTERNATE DETAIL IN PLACE OF PROVIDING ¾"Ø STUD
SCALE: 1½" = 1'



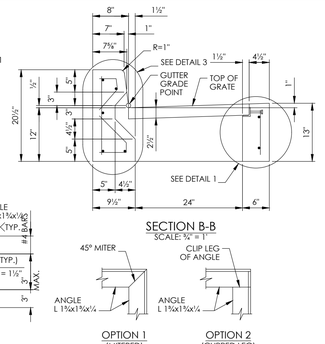
SECTION A-A
SCALE: ½" = 1'



SECTION D-D
SCALE: ½" = 1'

SCALE: ½" = 1'

DETAIL 1
SCALE: 1" = 1'

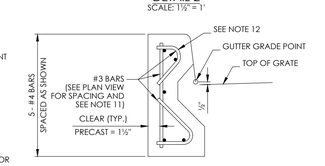


SECTION B-B
SCALE: ¾" = 1'

OPTION 1
(MITERED)

OPTION 2
(CLIPPED LEG)

DETAIL 2
SCALE: 1½" = 1'



SECTION C-C
SCALE: ¾" = 1'

DETAIL 3
SCALE: 1" = 1'

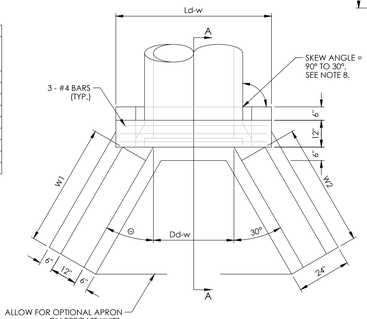
TYPE 'C' INLET / CONCRETE TOP UNIT

(PER PENNDOT PUBLICATION 72, RC-45M)
SCALE: AS NOTED

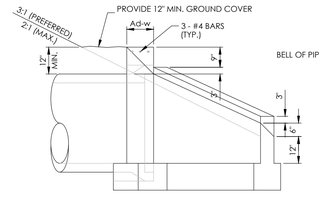
TYPE 'C' INLET / CONCRETE TOP UNIT GENERAL NOTES:
1. CONSTRUCT CONCRETE TOP UNITS IN ACCORDANCE WITH THE REQUIREMENTS OF PENNDOT PUBLICATION 72, RC45M, AND PUBLICATION 408, SECTION 605 AND 714.
2. PROVIDE PRECAST CONCRETE TOP UNITS SUPPLIED BY A MANUFACTURER LISTED IN PENNDOT BULLETIN 15.
3. PROVIDE WELDED INLET ANGLE ASSEMBLIES SUPPLIED BY A MANUFACTURER LISTED IN PENNDOT BULLETIN 15.
4. PROVIDE A TOP SLAB TO SUPPORT THE INLET TOP UNITS IF A STANDARD INLET BOX IS NOT SPECIFIED.
5. MINIMUM CONCRETE STRENGTH 4000 PSI @ 28 DAYS (PENNDOT CLASS AA).
6. STEEL REINFORCEMENT OR WELDED WIRE FABRIC (WWF) SHALL BE PROVIDED IN ACCORDANCE WITH THE REQUIREMENTS OF PENNDOT PUBLICATION 72, RC45M.
7. PLACEMENT OF TYPE C CONCRETE TOP UNIT:
   DOWEL THE TOP UNIT INTO THE ADJACENT CURB SECTIONS WITH 2-#8 x 1'-0" DOWEL BARS. PLACE ¾" WIDE PRE-MOLDED EXPANSION JOINT FILLER BETWEEN THE TOP UNIT AND ADJACENT CURB.
8. SET THE PRECAST CONCRETE TOP UNIT ON A NON-SHRINK GROUT PAD TO PROVIDE FULL BEARING ON THE SUPPORTING SURFACE. NON-SHRINK GROUT IS ALSO PERMITTED FOR CROSS SLOPE AND LONGITUDINAL GRADE ADJUSTMENTS.
   - PROVIDE NON-SHRINK GROUT IN ACCORDANCE WITH PUBLICATION 408, SECTION 1001.2(d).
   - MINIMUM GROUT DEPTH = ½"
   - MAXIMUM GROUT DEPTH = 1"
9. PROVIDE A PRECAST CONCRETE GRADE ADJUSTMENT RING/RISER AS NECESSARY. BRICK OR BRICK AND MORTAR ARE NOT ALLOWED FOR GRADE ADJUSTMENTS FOR NEW OR REHABILITATION PROJECTS.
10. A MAXIMUM OF TWO HOLES ARE PERMITTED IN THE PLATE TO POSITION AND HOLD THE PLATE IN PLACE DURING FABRICATION. HOLES ARE NOT PERMITTED TO BE GREATER THAN ¼" DIAMETER.
11. FABRICATOR TO DETERMINE NUMBER OF BARS REQUIRED TO MATCH SHAPE INDICATED. PROVIDE ONE, TWO, OR THREE BARS AS REQUIRED.
12. BEND OUTSIDE STIRRUP TO ACCOMMODATE DOWEL BARS AND STILL MAINTAIN CLEARANCE REQUIREMENTS.

TYPE D-W ENDWALL SIZING CHART (SEE NOTE 8)						
PIPE DIAMETER (Dd-w)	HEAD WALL LENGTH (Ld-w)	HEAD WALL THICKNESS (Ad-w)	WINGWALL LENGTH (W1) (3:1 SLOPES)	WINGWALL LENGTH (W2) (3:1 SLOPES)	WINGWALL LENGTH (W1) (2:1 SLOPES)	WINGWALL LENGTH (W2) (2:1 SLOPES)
18"	4.0'	12"	2.3'	2.3'	1.2'	1.2'
24"	4.6'	12"	4.1'	4.1'	2.3'	2.3'
30"	5.2'	12"	5.8'	5.8'	3.5'	3.5'
36"	5.8'	12"	7.5'	7.5'	4.6'	4.6'
42"	6.3'	12"	9.2'	9.2'	5.8'	5.8'
48"	6.9'	12"	11.0'	11.0'	6.9'	6.9'
54"	7.5'	12"	12.7'	12.7'	8.0'	8.0'
60"	8.1'	15"	14.4'	14.4'	9.2'	9.2'
72"	9.2'	15"	17.9'	17.9'	11.5'	11.5'

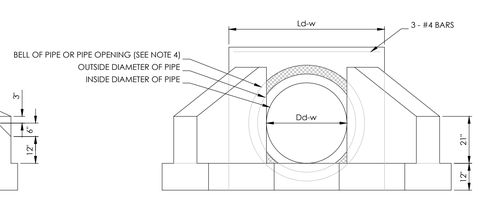
NOTES:
1. PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH THE REQUIREMENTS OF PENNDOT PUBLICATION 408, SECTION 605 AND SECTION 714.
2. PRECAST TYPE D-W ENDWALLS TO BE SUPPLIED BY A MANUFACTURER LISTED IN PENNDOT BULLETIN 15.
3. USE CLASS A CONCRETE OR BETTER & CHAMFER EXPOSED EDGES AT 1".
4. PROVIDE PIPE OPENING IN PRECAST UNITS AT LEAST 2", BUT NOT MORE THAN 4", LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE.
5. PROVIDE SUITABLE LIFTING DEVICES FOR HANDLING AND INSTALLATION OF PRECAST ENDWALLS. GALVANIZE METAL DEVICES AS SPECIFIED IN PENNDOT PUBLICATION 408, SECTION 1105.
6. PROVIDE MORTAR BED OF 1" PLACED ON TOP OF THE SUBBASE MATERIAL FOR LEVELING PURPOSES, WHEN REQUIRED.
7. PROVIDE REINFORCEMENT, 0.12 SQ. IN. / LN. FT., IN ACCORDANCE WITH PENNDOT PUBLICATION 408, SECTION 709. SEE PENNDOT RC-31M FOR FURTHER REINFORCEMENT DETAILS.
8. D-W ENDWALL SIZING DIMENSIONS, PROVIDED IN THE CHART, ARE BASED ON STORMWATER PIPES THAT CONNECT TO THE D-W ENDWALL WITH A SKEW ANGLE FALLING BETWEEN 90° TO 60° WITH WINGWALL ANGLE (Θ) EQUALING 30°. IF THE SKEW ANGLE CONNECTION BETWEEN PIPE AND ENDWALL IS LESS THAN 60°, REFER TO PENNDOT PUBLICATION 72, RC-31M FOR PROPER D-W ENDWALL SIZING SPECIFICATIONS.



PLAN VIEW



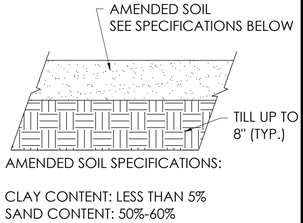
SECTION A-A



FRONT ELEVATION VIEW

TYPE D-W ENDWALL DETAIL

(PER PENNDOT PUBLICATION 72, RC-31M)
SCALE: ¾" = 1'

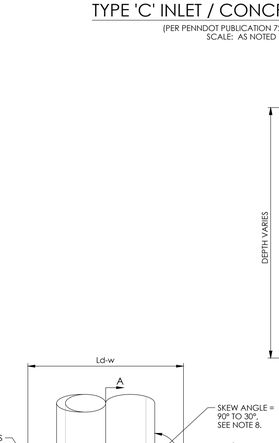


AMENDED SOIL SPECIFICATIONS:

CLAY CONTENT: LESS THAN 5%
SAND CONTENT: 50%-60%
LEAF COMPOST OR AGED LEAF MULCH: 20%-30%
HIGH QUALITY TOPSOIL: 20%-30%
PERMEABILITY OF AT LEAST 0.5 IN/HR
FREE OF STONES, STUMPS, ROOTS, OR OTHER WOODY MATERIAL
OVER 1" IN DIAMETER
FREE OF BRUSH OR SEEDS FROM NOXIOUS WEEDS
MIN. SOIL POROSITY: 20%

SOIL AMENDMENT DETAIL

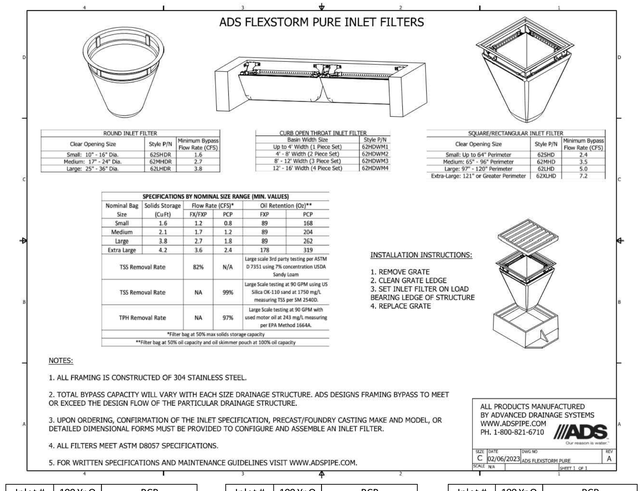
N.T.S



NOTES:
1. ALL STONE GRADATIONS ARE AASHTO CLASSIFICATION.
2. DETAIL FOR PIPE 4" AND LARGER.

STORM PIPE TRENCH DETAIL

N.T.S.



Inlet #	100 Yr Q (cfs)	PCP Bag Nominal Size
I-1	1.53	Large
I-2	0.80	Small
I-3	0.99	Medium
I-4	1.54	Large

Inlet #	100 Yr Q (cfs)	PCP Bag Nominal Size
I-5	0.97	Medium
I-6	0.65	Small
I-7	2.36	X-Large
I-8	0.38	Small

Inlet #	100 Yr Q (cfs)	PCP Bag Nominal Size
I-9	0.33	Small
I-10	0.54	Small
I-11	0.77	Small
I-12	0.70	Small

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no.	description	date	chk'd	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	JGE	JT
2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	6/26/2025	JGE	JPB

REVISIONS

SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

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DRAWING NAME: POST CONSTRUCTION STORMWATER MANAGEMENT DETAIL SHEET

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no. 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: AS NOTED	approv. by: JPB

sheet no.

C9.1

17 of 20

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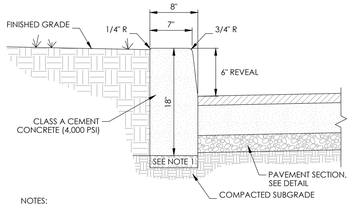
6/26/2025 11:49 AM
USER: ----

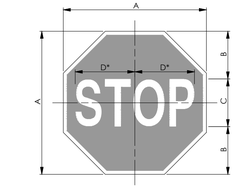


NOTES:

1. ANY EXCAVATION BELOW DESIRED GRADE DUE TO OVER EXCAVATION OR WET SOIL CONDITIONS SHALL BE BACKFILLED WITH ¾" CLEAN CRUSHED STONE. ALL SUBGRADES SHALL BE APPROVED BY THE TOWNSHIP ENGINEER PRIOR TO POURING.
2. EXPANSION JOINTS SHALL BE PROVIDED AT EQUAL DISTANCES OF NOT MORE THAN 20' AND AT ALL STORM SEWER INLETS. JOINTS SHALL BE FILLED WITH PREFORMED EXPANSION JOINT FILLER, ½" THICK, CONFORMING TO PENNSYLVANIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. CONTRACTION JOINTS SHALL BE PROVIDED EVERY 10'. THE JOINT SHALL BE RECESSED ½" FROM THE TOP AND FRONT OF THE CONCRETE CURB.
3. CURB SHALL BE TEMPORARILY BACKFILLED TO FINISHED GRADE WITH SOIL BEHIND AND STONE ON THE ROAD SIDE AS SOON AS IT HAS ATTAINED SUFFICIENT SUPPORTING STRENGTH OR WITHIN 24 HOURS OF POURING (WHICHEVER IS LESS).
4. WHEN NEW CURB IS INSTALLED ALONG AN EXISTING PAVED AREA, THE EXISTING PAVEMENT SHALL BE CUT 2 FEET IN FRONT OF THE NEW CURB FACE IN A STRAIGHT LINE AT A 45 DEGREE ANGLE WITH A CUTTING WHEEL OR PNEUMATIC HAMMER. THE NEW PAVEMENT SHALL BE TACKED AND BUTTED TO THE EXISTING PAVEMENT.
5. THE GENERAL CONTRACTOR OR OWNER IS RESPONSIBLE FOR MAINTAINING ALL CURB UNTIL FORMALLY ACCEPTED BY THE TOWNSHIP. ALL CURB THAT IS BROKEN, CRACKED, OR OUT OF ALIGNMENT SHALL BE REPLACED PRIOR TO FINAL PAVING AND/OR ACCEPTANCE. CURB REPLACEMENT SHALL BE FROM EXPANSION JOINT TO EXPANSION JOINT ONLY.

PROPOSED CURB

N.T.S.



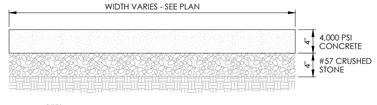
COLOR: LEGEND AND BORDER - WHITE (RETROREFLECTORIZED)
BACKGROUND - RED (REFLECTORIZED)

SIGN SIZE	DIMENSIONS			BOR.	BLANK
A x A	B	C	D	DER	STD
30" x 30"	10"	10CC"	10"	0.8	B1-30

* Reduce spacing 40%

STOP SIGN (R1-1)

N.T.S. (REFER TO PENNDOT PUB. 236)

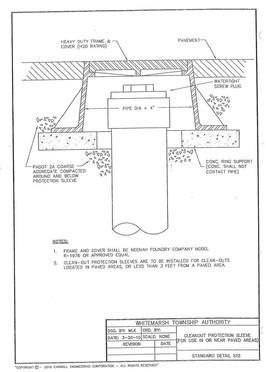


NOTES:

1. SIDEWALKS SHALL BE CONSTRUCTED WITH A GRADE NOT LESS THAN ONE-QUARTER (1/4) INCH TO ONE INCH, SLOPED TOWARD THE STREET. THE FINISHED GRADE BETWEEN THE OUTSIDE OF THE SIDEWALK TO THE CURBLINE (EDGE OF THE CARTWAY) SHALL NEVER EXCEED A TOTAL VERTICAL ELEVATION CHANGE OF ONE FOOT.
2. CONCRETE USED IN SIDEWALK WORK SHALL BE FOUR THOUSAND (4,000) PSI AIR ENTRAINED AT TWENTY-EIGHT (28) DAYS WITH CERTIFICATION OF THE MIX FURNISHED TO THE TOWNSHIP ENGINEER. CONCRETE SHALL BE PLACED IN FORMS THAT ARE STRAIGHT AND SECURELY BRACED. CARE SHALL BE TAKEN TO CONTROL THE WATER CONTENT TO PREVENT SEPARATION OF THE AGGREGATES. THE CONCRETE SHALL HAVE A BROOM FINISH AND THE EDGES SHALL BE FINISHED WITH AN APPROVED EDGING TOOL.
3. ALL CONCRETE SIDEWALKS SHALL BE CONSTRUCTED ON A FOUR-INCH CRUSHED STONE OR GRAVEL BASE TO INSURE PROPER DRAINAGE. THE CONCRETE SHALL BE PLACED SO THAT THERE IS A SEPARATE JOINT EVERY FIVE (5) FEET AND SHALL BE SO CONSTRUCTED SO THAT THE FIVE FOOT SECTIONS ARE COMPLETELY SEPARATED FROM ADJACENT SECTIONS. ONE-HALF-INCH PREMOLDED EXPANSION JOINTS SHALL BE PLACED EVERY TWENTY (20) FEET AND BETWEEN ALL POINTS WHERE THE CONCRETE SIDEWALK ABUTS A CONCRETE CURB.
4. ALL CONCRETE SIDEWALKS SHALL HAVE A MINIMUM THICKNESS OF FOUR (4) INCHES.

CONCRETE SIDEWALK

N.T.S.



WHITEMARSH TOWNSHIP AUTHORITY		
DSG. BY: MLK DWG. BY:		
DATE: 3-20-19 SCALE: NONE		CLEANOUT PROTECTION SLEEVE FOR USE IN OR NEAR PAVED AREAS
REVISION	DATE	
		STANDARD DETAIL S12

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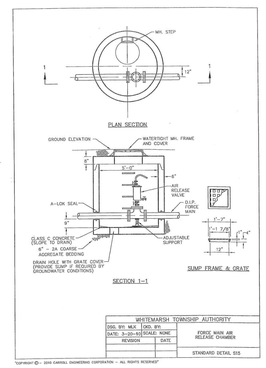
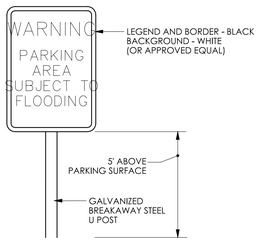

MH. STEP
12"
PLAN SECTION
GROUND ELEVATION
WATERTIGHT MH. FRAME AND COVER
A-LOK SEAL
CLASS 'C' CONCRETE (6,000 PSI MINIMUM)
6" - 2A COARSE AGGREGATE BEDDING
DRAIN HOLE WITH GRATE COVER (PROVIDE SUMP IF REQUIRED BY GROUNDWATER CONDITIONS)
6" MIN. PIPE SUPPORT
6" MIN. (TYP.)
6" MIN. (TYP.)
6" MIN. (TYP.)

PARKING WARNING SIGN KEY

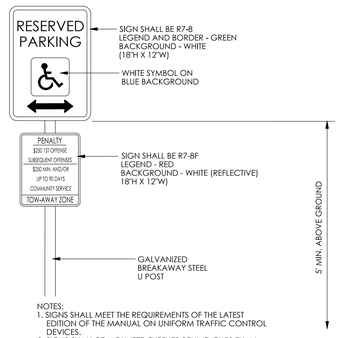
① PROPOSED 'WARNING- PARKING AREA SUBJECT TO FLOODING' SIGN- SIGN ON ONE SIDE

② PROPOSED 'WARNING- PARKING AREA SUBJECT TO FLOODING' SIGN- SIGN ON BOTH SIDES



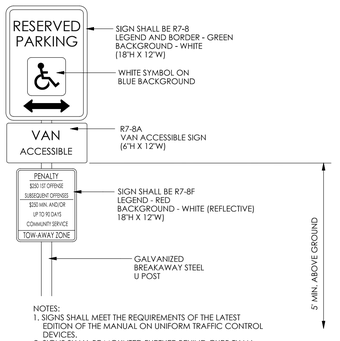
NOTES:
1. SIGNS SHALL BE 12" WIDE X 18" HIGH.
2. USE "ACORN NUTS" OR OTHER METHOD TO AVOID EXPOSED BOLTS.

PARKING WARNING SIGN
N.T.S.



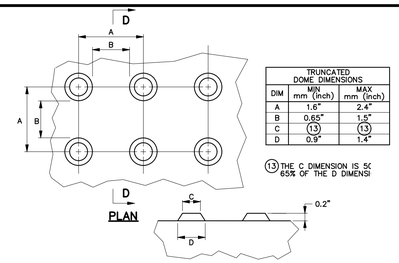
NOTES:
1. SIGNS SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. SIGNS SHALL BE MOUNTED BEHIND CURB THAN BOLLARDS TO PREVENT CARS FROM HITTING THEM.
3. USE "ACORN NUTS" OR OTHER METHOD TO AVOID EXPOSED BOLTS.

ACCESSIBLE PARKING SIGN
N.T.S.



NOTES:
1. SIGNS SHALL MEET THE REQUIREMENTS OF THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. SIGNS SHALL BE MOUNTED FURTHER BEHIND CURB THAN BOLLARDS TO PREVENT CARS FROM HITTING THEM.
3. USE "ACORN NUTS" OR OTHER METHOD TO AVOID EXPOSED BOLTS.

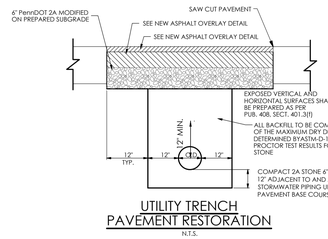
VAN ACCESSIBLE PARKING SIGN
N.T.S.



TRUNCATED DOME DIMENSIONS		
DIM	MIN mm (inch)	MAX mm (inch)
A	1.6"	2.4"
B	0.65"	1.5"
C	(13)	(13)
D	0.9"	1.4"

(13) THE C DIMENSION IS 5(65% OF THE D DIMENSI

DETECTABLE WARNING SURFACE (DWS) TRUNCATED DOME DETAILS



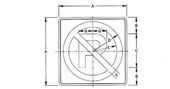
UTILITY TRENCH PAVEMENT RESTORATION
N.T.S.

R8-3
NO PARKING SYMBOL SIGN

(a) Justification. This No Parking Symbol Sign (R8-3) shall be authorized for use to prohibit parking along a given highway. If the restriction applies to a limited area or zone, supplemental signs or messages shall be mounted below the R8-3 sign. Examples of such supplemental messages are "ZONE" or "ANYTIME". Where the restriction is more than 200-(feet), No Parking Restriction, Fines Double Signs (R8-3(D)), No Parking Loading Zone Plaques (R8-3(P-1)), No Parking Arrow Plaque (R3-3(D)), Tow-Away Zone Sign (R7-201)(PA) and No Parking On Pavement (R8-3(P-2)) signs may be used in conjunction with the R8-3 sign. Where the appropriate supplemental message and the no parking symbol may be incorporated into a single sign.

(b) Size. The standard size R8-3 sign shall be 24" x 30" in business, residential, or park areas and 24" x 24" in rural areas. The standard size for expressways shall be 36" x 36", and on freeways shall be 48" x 48".

(c) Placement. Signs should be set at an angle of not less than 30° or more than 45° with a line parallel to the flow of traffic so as to be visible to approaching traffic. Care should be taken to ensure the supplemental message is mounted directly below the symbol. Signs shall be placed at the beginning of and throughout the restriction at reasonable intervals. Signs shall be placed at the beginning of and throughout the restriction.



DIMENSIONS – IN								
SIGN SIZE A x B	C	D	E	F	G	MAR-GIN	BOR-DER	BLANK STD.
24" x 30"	4E	1	20E	3	7.5	0.4	0.6	R8-3(D)
24" x 24"	4	1	16E	3	6	0.4	0.6	R8-3(P)
30" x 36"	5	1	24E	3	9	0.5	0.8	R8-3(I)
36" x 48"	6	1	32E	4	12	0.6	0.8	R8-3(J)
48" x 48"	8	1	40E	4	12	0.8	1.2	R8-3(K)

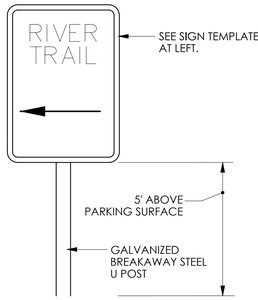
COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION
By: John C. Reed Date: 02-29-12
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations



FLEXIBLE PAVEMENT RESTORATION IN WASHINGTON STREET R/W
N.T.S.





R2–1
SPEED LIMIT SIGN

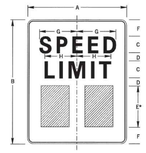
The Speed Limit Sign (R2-1) shall be authorized for use to display the maximum legal speed limit on a highway. When used as a variable speed limit sign, speed display module(s) may be attached to the sign or inserted through cut-outs in the sign substrate.

The R2-1 Sign shall be placed at intervals as specified in Department regulations. The standard size signs shall be as follows:

(1) 24" x 30". All single lane conventional highways having any speed limit.

(2) 30" x 36". Multi-lane conventional highways regardless of speed limit.

(3) 48" x 60". Expressways and freeways.



DIMENSIONS – IN								
SIGN SIZE A x B	C	D	E	F	G	H	MAR-GIN	BOR-DER	BLANK STD.
24" x 30"	4E	2	10E	4	9.6	7.3	0.4	0.6	R5-3024
30" x 36"	5E	2	12E	5	12	9.1	0.6	0.8	R5-3630
48" x 60"	8E	4	20E	6	19.1	14.6	0.8	1.2	R5-4048

* OPTICALLY SPACE NUMERALS ABOUT VERTICAL ℄

COLOR:
LEGEND AND BORDER:
BLACK (NON-REFLECTORIZED)
BACKGROUND:
WHITE (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION
By: John C. Reed Date: 02-29-12
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations

R1–3P
ALL WAY PLAQUE

(a) Justification. The All Way Plaque (R1-3P) shall be used below the Stop Sign (R1-1) at multiway stop intersections to indicate that all approaches are required to stop.



DIMENSIONS – IN						
SIGN SIZE A x B	C	D	E	F	ROU-NDS	BLANK STD.
18" x 6"	1.5	3C	1.5	7.3	0.4	R6-1806

COLOR:
LEGEND AND BORDER:
WHITE, (REFLECTORIZED)
BACKGROUND:
RED (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION
By: John C. Reed Date: 11-07-13
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations

D3–1
STREET NAME SIGN

The Street Name Sign (D3-1) shall be authorized for use as a post-mounted sign to identify names of streets for motorists and pedestrians. The D3-1 sign, or other official type of street name sign, should be placed at all street intersections regardless of other route marking that may be present.

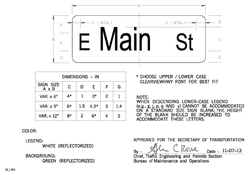
When the D3-1 signs are used in business districts, they should be placed at least on the diagonally opposite corners of the intersection. In this case, the signs should be mounted to face traffic on the more important street. Signs serving both streets should be erected at each location. They should be mounted with their faces parallel to the streets they name, as close to the corner as practical with the nearest part of the each sign not less than 1' and preferably 2' back from both curb lines.

In residential districts, D3-1 signs should be mounted as in business districts, but a single location at each intersection shall ordinarily suffice on all but the most important thoroughfares.

Lettering on post-mounted D3-1 signs should be composed of 6" UC&LC letters. On multi-lane streets with speed limits greater than 40 MPH, the lettering on post-mounted D3-1 signs should be composed of initial upper-case letters at least 8 inches in height and lower-case letters at least 6 inches in height. The overall length of the sign shall be adjusted to accommodate the street name legend. On streets with 25 MPH or less, in sections of the city such as "Y&Y" should not be used. When used, this supplemental lettering may be in smaller lettering, composed of 5" UC&LC letters. For roads functionally classified as local with speed limits of 25 MPH or less, the lettering may be 4" UC&LC letters.

A pictograph may be used on a D3-1 sign. If a pictograph is used, the height and width of the pictograph shall not exceed the upper-case letter height of the principal legend of the sign.

The street name sign should be reflectorized or illuminated and should have a white legend on a green background, white legend on a brown background, white legend on a blue background, or black legend on a white background. Borders are not required. The same background color for D3-1 signs should be applied to all signs on roadways under the jurisdiction of a particular highway agency.



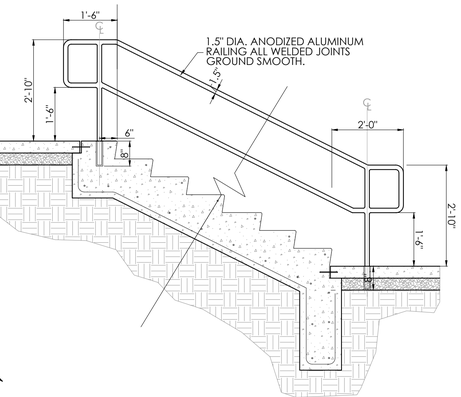
DIMENSIONS – IN					
SIGN SIZE A x B	C	D	E	F	G
4" x 1"	4"	1	7"	2	1
6" x 1.5"	6"	1.5	4.5"	3	1.4
8" x 2"	8"	2	6"	4	2

* CHOOSE UPPER / LOWER CASE CLEARSIDEWAY FONT FOR BEST FIT

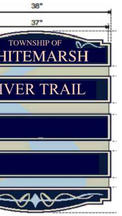
NOTE:
WHEN DESCENDING LOWER-CASE LEGEND (e.g. g, p, q, y) CANNOT BE ACCOMMODATED OR IF BLANK(S) EXIST SIDE BLANK, THE HEIGHT OF THE BLANK SHOULD BE INCREASED TO ACCOMMODATE THESE LETTERS.

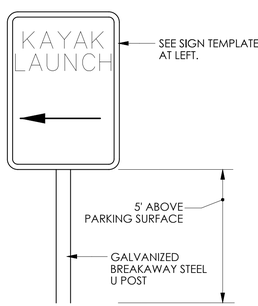
COLOR:
LEGEND:
WHITE (REFLECTORIZED)
BACKGROUND:
GREEN (REFLECTORIZED)

APPROVED FOR THE SECRETARY OF TRANSPORTATION
By: John C. Reed Date: 11-07-13
Chief, Traffic Engineering and Permits Section
Bureau of Maintenance and Operations



STAIR RAILING DETAIL
N.T.S.



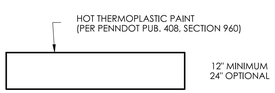


NOTES:
1. WAY FINDING SIGN FOR THE RIVER TRAIL SHALL BE CONSISTENT WITH WITH SIGN AS DETAILED ABOVE PER "SPRING MILL MULTI-MODAL AND LAND USE STUDY".

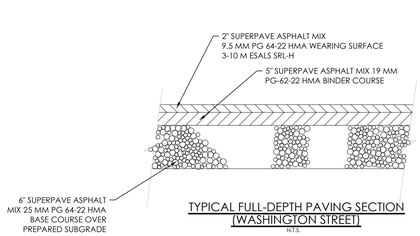
RIVER TRAIL SIGN

NOTES:
1. WAY FINDING SIGN FOR THE KAYAK LAUNCH SHALL BE CONSISTENT WITH WITH SIGN AS DETAILED ABOVE PER "SPRING MILL MULTI-MODAL AND LAND USE STUDY".

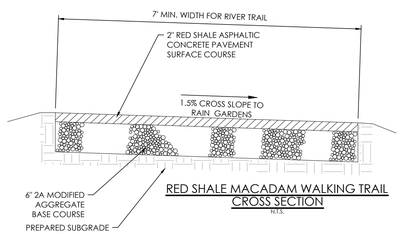
KAYAK LAUNCH SIGN



STOP BAR
N.T.S.

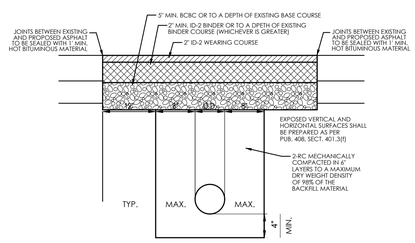


TYPICAL FULL-DEPTH PAVING SECTION (WASHINGTON STREET)
N.T.S.



RED SHALE MACADAM WALKING TRAIL CROSS SECTION
N.T.S.

MILL & OVERLAY PAVING SECTION
N.T.S.



FLEXIBLE PAVEMENT RESTORATION
N.T.S.

PROJECT SERIAL NO. 20233050644
CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE - STOP CALL
PennsylvaniaOne Call System, Inc.
1-800-242-1776

K:\24PROJ\24001_1001_WASHINGTON_STREET\CAD\PLAN_SET\24001_C10.X_CONDET.DWG
6/26/2025 11:50 AM
USER: ----

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WAYNE, PA 19087-1830
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WWW.NAVENEWELL.COM

REVISIONS							
no.	description	date:	chk'd	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	JGE	JT
2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	6/26/2025	JPB	JGE
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SEAL:
JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: CONSTRUCTION DETAIL SHEET
LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

1001 WASHINGTON STREET

project no.	drawn by:
2024-001.02	CC
date:	chk'd by:
3/27/2025	JGE
scale:	approv. by:
AS NOTED	JPB

sheet no.
C10.1
19 of 20

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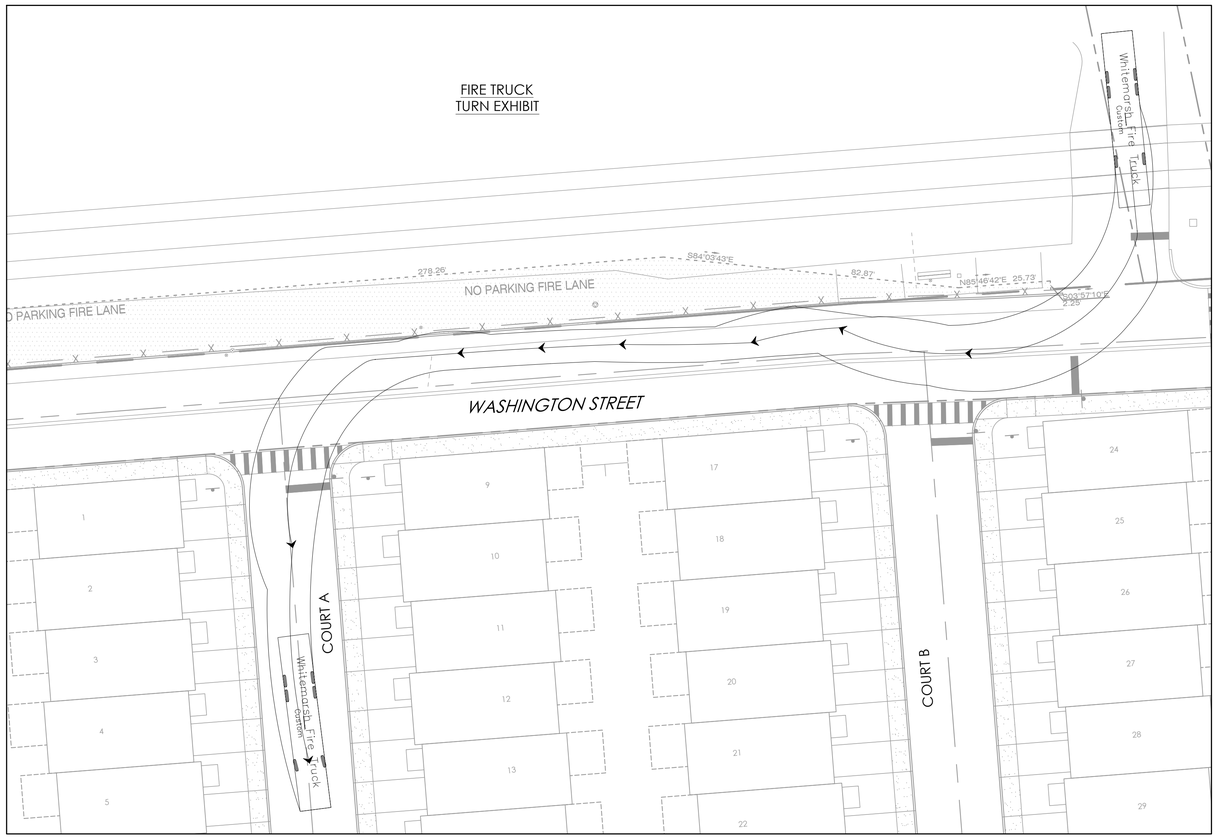
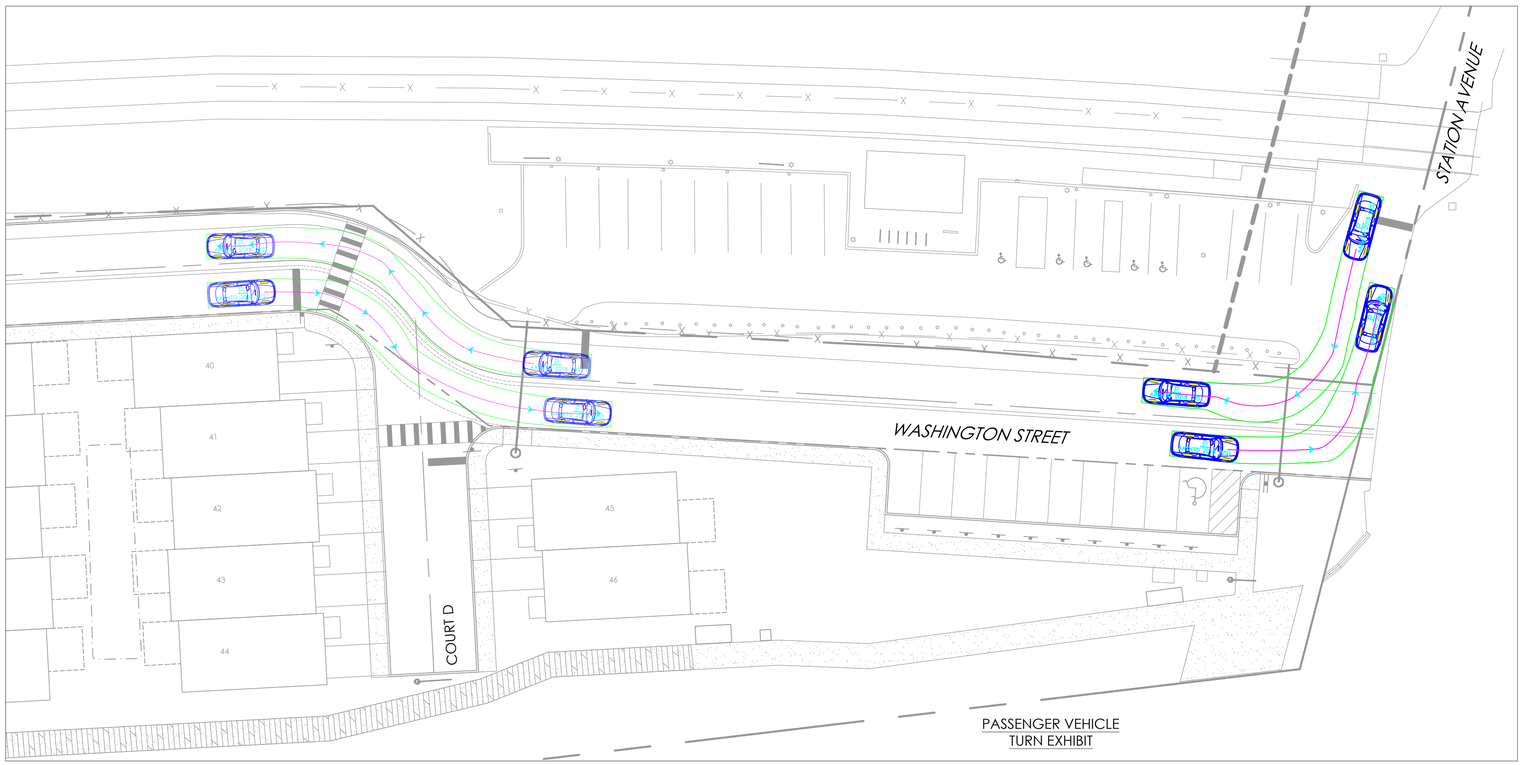
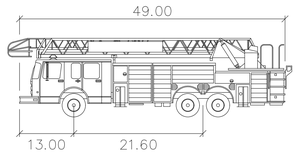


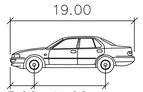






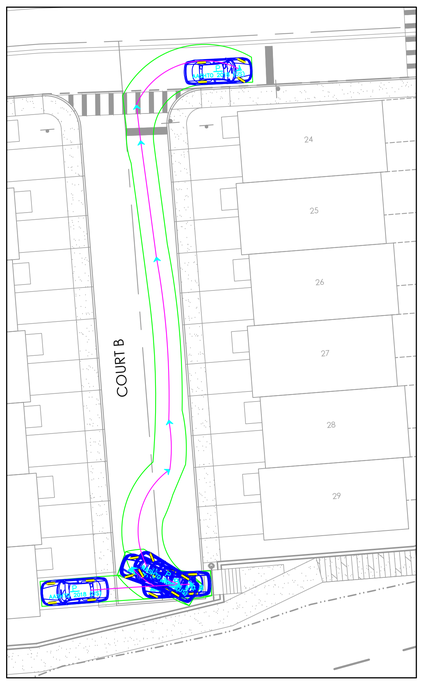
Whitemarsh Fire Truck

	feet
Width	: 8.67
Track	: 8.67
Lock to Lock Time	: 5.0
Steering Angle	: 27.0



P

	feet
Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.6



20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft

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no.	description	date	chk'd	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	JGE	JT
2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	6/26/25	JPB	JGE
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REVISIONS

SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: VEHICLE TURNING EXHIBIT

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no. 2024-001.02	drawn by: CC
date: 3/27/2025	chk'd by: JPB
scale: AS NOTED	approv. by: JPB
sheet no. C11.0	

20 of 20

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K:\24PROJ\24001_1001_WASHINGTON_STREET\CAD\PLAN_SET\24001_C11_X_TRUCK.DWG
6/26/2025 11:50 AM
USER: ----

ASSESSMENT OF TREE INVENTORY – TREE REMOVAL JUSTIFICATION

1001 WASHINGTON STREET
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA

HT 1001 WASHINGTON, LLC.

Issued: JUNE 26, 2025
Nave Newell No.: 2024-001.02

900 W Valley Rd #1100, Wayne, PA 19087 | PHONE 610 265 8323 | FAX 610 265 4299

Per Whitemarsh Ordinance 55-4A, the existing trees on the site at 1001 Washington Street were inventoried to assess location and condition to influence the proposed improvements. Overall, 46 trees are being removed, 39 being healthy and trees of value. The following trees were labeled to be severely compromised or dead and were therefore not included in the calculation for the replacement requirements, per Section 55-4D(6)(a). The numbers correspond to the information in the tree inventory provided in the Land Development plans, page C1.1.

823 – Eastern Hemlock, 18" DBH:



Compromised/Major decline

829 – Boxelder Maple, 10" DBH:



Compromised/Major decline

832 – American Sycamore, 24” DBH:



Compromised/Major vine damage

834 – 7” DBH:



Dead.

861 – Boxelder Maple, 18” DBH:



Compromised/Major decline

888 – American Elm, 25” DBH:



Dead.

893 – Boxelder Maple, 16” DBH:



Compromised/Major damage

Per Whitemarsh Ordinance Section 55-4D(6)(a), all living and healthy trees with a diameter of 6” or more will be replaced with a new tree of no less than 3” caliper. While 46 trees are being removed, only 39 of them are living and healthy, and will therefore be replaced by the applicant. The trees mentioned in this report will not be included in the replacement calculation due to their condition classified as either dead or severely compromised. The 39 trees (662”) being removed will be replaced by a combination of eleven 3” Canopy trees (33”), forty-eight 2” Understory trees (96”), and a fee-in-lieu payment to the township for the remainder.

Applicant Name: HT 1001 WASHINGTON, LLC

Development Name: 1001 WASHINGTON ST. LAND DEVELOPMENT

Location of Property: 1001 WASHINGTON ST, CONSHOHOCKEN, PA 19428

Date: 6/26/2025

PROJECT COVER SHEET – *Approved at June 6, 2023 Shade Tree Commission Meeting*

To verify fulfillment of Chapter 55 Ordinance requirements for:

1. *Maximum Tree Removal – 55-4B*
2. *Tree Replacement – 55-4D(6)(a)*
3. *Substitutions for Replacements – 55-4F*
4. *Replacement Tree Species – 55-4E*
5. *Tree and Shrub requirements for Chapters other than Chapter 55*

Complete the following tables, filling in data for each lettered item, and resolving each Compliance Test. In accordance with 55-4C(4)(e), provide this completed Cover Sheet together with the Landscape Plan.

Citations to Sections of Chapter 55 are provided for the convenience of the Applicant. Other Chapters of the Whitemarsh Township Code and other sections of Chapter 55, such as 55-2 Definitions, may be relevant. In the event of an inconsistency between this Cover Sheet and any provision of the Code, the language of the Code shall be controlling.

1) Calculation of Requirement for Maximum Tree Removal – 55-4B:

A.	***Total of all existing Trees on the lot with DBH of 6" or greater**, per 55-4C(3)(a).*	74
B.	*33% of line (A) = **maximum existing Trees which may be Removed.***	24
C.	*Provide **number of existing Trees proposed to be Removed by the Applicant,** per 55-4C(3)(a).*	46
	***COMPLIANCE TEST:** If Line (C) is greater than Line (B), the Applicant's proposal is not in compliance with the requirement that no more than 33% of trees having a DBH of six inches or greater may be removed.*	NOT COMPLIANT

2) *Calculation of Replacement Requirement for Removed Trees having a DBH of Six Inches or Greater 55-4D(6)(a):*

D.	***Total DBH of all existing Living and Healthy Trees*** *(as determined per 55-4A) having a DBH of 6" or greater* ***that are proposed to be Removed****, per 55-4C(3)(a).*	662"
E.	***Total DBH of all Living and Healthy Trees*** *(as determined per 55-4A) having a DBH of 6" or greater,* ***removed within five years prior to the submission of application****, per 55-4C(3)(b).*	0
F.	*Sum of line (D) and line (E) =* ***Total DBH that must be replaced for all Removed Living and Healthy Trees.***	662"
G.	***Total Caliper inches of Canopy Replacement Trees proposed to be planted*** *by the Applicant (as shown on the Landscape Plan) per 55-4D(6)(a). Each Canopy Replacement Tree shall have a minimum Caliper of three inches.*	33"
	COMPLIANCE TEST: *If Line (G) is less than Line (F), the Applicant's proposal is not in compliance with the minimum Canopy Tree Replacement Requirement.* *To comply with this requirement, the Applicant may request a waiver from the Shade Tree Commission to permit limited substitutions per 55-4F. If so, proceed to Substitution calculation (3) below.*	NOT COMPLIANT

3) *Calculation of maximum Proposed Substitutions for Replacement Canopy Trees – 554F, subject to certain limitations and approval by the Shade Tree Commission.*

H.	*40% of line (F) (round fractions down to a whole number) =* ***maximum Caliper of required Replacement Canopy Trees that may be substituted*** *with Understory Trees and/or FIL, upon STC approval, per 55-4F.*	264"
I.	*Line (F) less Line (G) =* ***Shortfall in DBH compliance with the minimum Canopy Tree Replacement Requirement,*** *per 55-4D(6)(a).*	629"
	COMPLIANCE TEST: *If line (H) is less than line (I), the deficit of minimum Canopy Tree Replacement requirement, per 55-4D(6) cannot be fully compensated with Substitutions, per 55-4F.*	NOT COMPLIANT

J.	*Line (I) divided by 3" (round fractions up to a whole number) =* ***Shortfall in the number of required 3" Canopy Replacement Trees.***	210
K.	*Provide the* ***total number of substitution Understory Trees proposed to be planted*** *by the Applicant, per 55-4F(1).*	48
L.	*Line (K) divided by two =* ***Number of required 3"-cal. Replacement Canopy Trees being substituted with Understory Trees*** *per 55-4F(1).*	24
M.	*Line (J) less Line (L) =* ***Number of required 3"-cal. Replacement Canopy Trees proposed by the Applicant to be substituted with payment of in-lieu fees****, per 55-4F(2).* ***NOTE:*** *Review proposed Landscape Plan to ensure that the use of Replacement Understory Tree substitutes has been maximized prior to calculating the number of substitutes via in-lieu fees, per 55-4F(4).*	186
N.	*Sum of Line (L) and Line (M) =* ***Total proposed number of Replacement Canopy Trees being substituted per 55-4F.***	210
O.	*Line (N) multiplied by 3" =* ***Total shortfall of DBH to be fulfilled with substitutions*** *as proposed by this Landscape Plan.*	630"
	COMPLIANCE TEST: *If (O) is greater than (H), the Applicant's proposal has exceeded the 40% maximum eligible for consideration for Replacement substitutions, per 55-4F, and is not in compliance.*	NOT COMPLIANT
P.	*Sum of Line (O) and (G) =* ***Total Caliper compensation for Removed Trees*** *as provided by this proposed Landscape Plan.*	663"
	COMPLIANCE TEST: *If (P) is less than (F), the Applicant's proposal is not in compliance with the Tree Replacement Requirement.*	COMPLIANT

4) Compliance with Species Requirement of Replacement Trees – 55-4E:

Q.	***Total number of proposed Canopy Replacement Trees,*** *per 55-4C(4)(c).*	11

R.	*75% of line (Q) (round fractions up to the next whole number) =* ***Minimum required number of Native Species Replacement Canopy Trees****, per 55-4E.*	9
S.	*Provide the* ***number of proposed Native Species Canopy Replacement Trees,*** *per 55-4C(4)(c).*	11
	COMPLIANCE TEST: *If Line (S) is less than Line (R), the Applicant's proposal is not in compliance with the 75% Native Species requirement for Replacement Canopy Trees, per 55-4E.*	COMPLIANT
T.	*Provide the* ***number of proposed Native Species Understory Trees****.*	48
	COMPLIANCE TEST: *If Line (T) is less than line (K), he Applicant's proposal is not in compliance with the 100% Native Species requirement for Replacement Understory Trees.*	COMPLIANT

5) Compliance with Landscaping Requirements of Other Code Chapters. Complete the following Tables for each applicable requirement.

REQUIRED TREES:

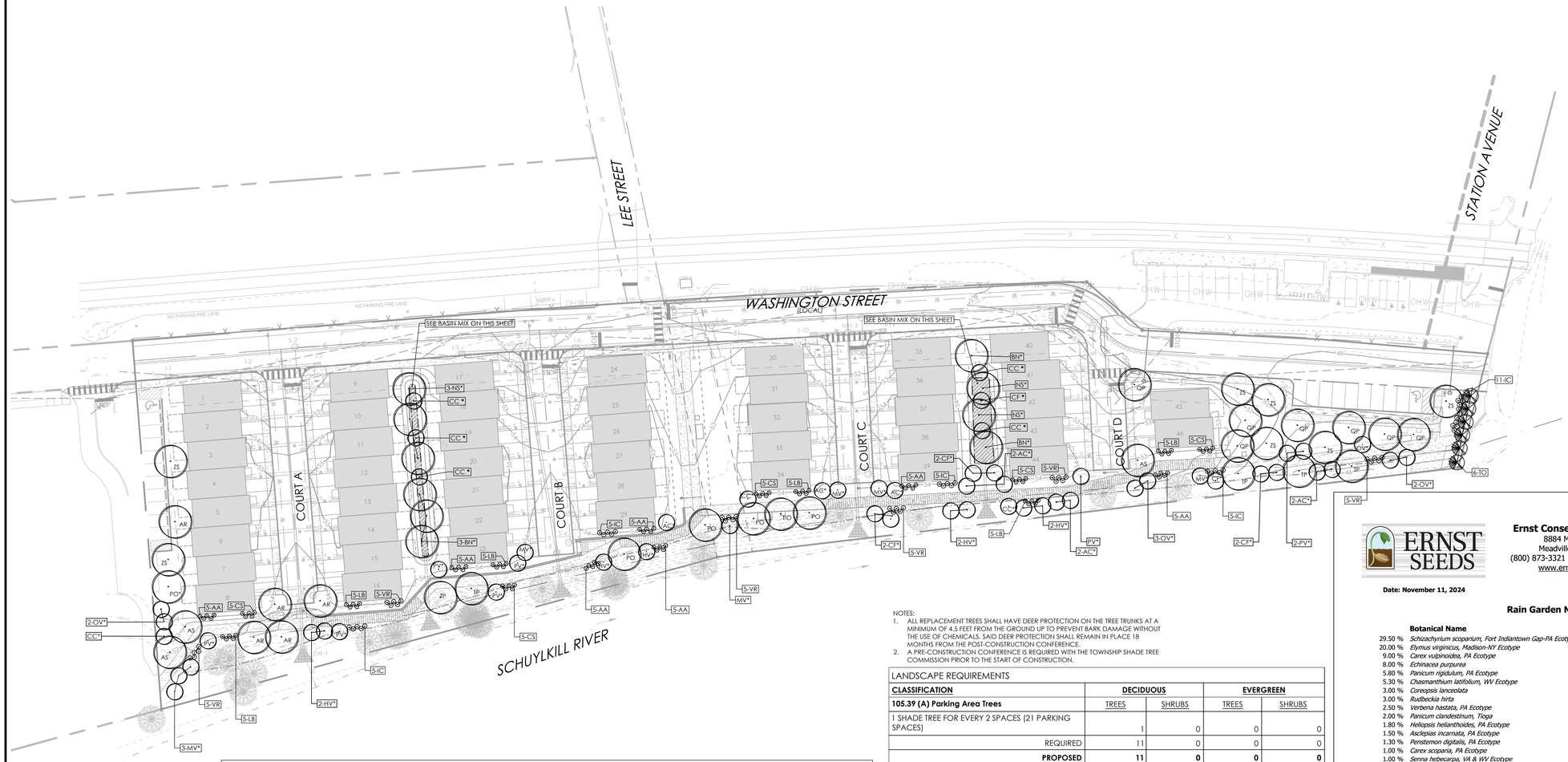
A	B	C	D*	E	F**
Full Code Citation: Chapter; sub-chapter, etc.	Subject matter as indicated in Code caption	Required # of Trees	Credits for Preserved Trees per 55-4D(5)	Proposed # of Trees	Column (C) less Columns (D) and (E)
CHAPTER 105.39 (A)	LANDSCAPING OF PARKING FACILITIES	11	N/A	11	0
CHAPTER 105.52 (A)	BUFFER YARDS	6	0	6	0
CHAPTER 116.284 (A).3	RIVERFRONT ACCESS AND OPEN SPACE	21	N/A	21	0

NOTE: Column (D) Credits are strictly limited to calculating Chapter 105-52 Buffer yards, in accordance with 55-4D(5).
****NOTE: When the result in Column (F) is greater than zero, the Applicant's proposal is not in compliance with the applicable Code requirement.***

REQUIRED SHRUBS:

A	B	C	D	E*
Full Code Citation: Chapter; sub-chapter, etc.	Subject matter as indicated in Code caption	Required # of Shrubs	Proposed # of Shrubs	Column (C) less Column (D)
CHAPTER 105.52 (A)	BUFFER YARDS	11	11	0

NOTE: When the result in Column (E) is greater than zero, the Applicant's proposal is not in compliance with the applicable Code requirement.



NOTE:
WHITEMARSH TOWNSHIP ZONING HEARING BOARD GRANTED THE FOLLOWING RELIEF BY DECISION DATED MAY 15 2024:

1. VARIANCE PURSUANT TO SECTION 116.283.C.(1), SO AS TO PERMIT CURB AND SIDEWALK ALIGNMENT ALONG WASHINGTON STREET WITHOUT STREET TREES AND THE REQUIRED 5 FOOT VERGE/STRIP, BOTH AS REQUIRED IN CROSS-REFERENCED SECTION 105-48 OF THE SUBDIVISION AND LAND DEVELOPMENT ORDINANCE.
2. VARIANCE PURSUANT TO SECTION 116.283.D.(1)(e), SO AS TO PERMIT CURB AND SIDEWALK WITHOUT A PLANTING STRIP.

NOTES:

1. ALL REPLACEMENT TREES SHALL HAVE DEER PROTECTION ON THE TREE TRUNKS AT A MINIMUM OF 4.5 FEET FROM THE GROUND UP TO PREVENT BARK DAMAGE WITHOUT THE USE OF CHEMICALS. SAID DEER PROTECTION SHALL REMAIN IN PLACE 18 MONTHS FROM THE POST-CONSTRUCTION CONFERENCE.
2. A PRE-CONSTRUCTION CONFERENCE IS REQUIRED WITH THE TOWNSHIP SHADE TREE COMMISSION PRIOR TO THE START OF CONSTRUCTION.

LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT-OF-WAY LINE
- BUILDING SETBACK LINE
- 50 EXISTING MAJOR CONTOUR
- 51 EXISTING MINOR CONTOUR
- EXISTING CURB LINE
- EXISTING FENCE LINE
- EXISTING EDGE OF BANK
- 50 PROPOSED CONCRETE CURB
- PROPOSED MAJOR CONTOUR
- 51 PROPOSED MINOR CONTOUR
- PROPOSED RETAINING WALL
- PROPOSED LANDSCAPING

LANDSCAPE SCHEDULE

Count	SYMBOL	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	CALIPER	ROOT	NOTES	
8	AC	AMELANCHIER CANADENSIS	SERVICEBERRY	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
6	AR	ACER RUBRUM	RED MAPLE	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
3	AS	ACER SACCHARUM	SUGAR MAPLE	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
5	BN	BETULA NIGRA	RIVER BIRCH	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
8	CC	CERCIS CANADENSIS	EASTERN REDBUD	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
8	CF	CORNUS FLORIDA	FLOWERING DOGWOOD	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
8	HV	HAMAMELIS VIRGINIANA	COMMON WITCH HAZEL	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
8	MV	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
5	NS	NYSSA SYLVATICA	BLACKGUM	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
8	OV	OSTRYA VIRGINIANA	AMERICAN HOPHORNBEAM	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
6	PO	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
8	PV	PRUNUS VIRGINIANA	CHOKECHERRY	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
6	QP	QUERCUS PHELLOS	WILLOW OAK	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
5	TP	LIRIODENDRON TULIPIFERA	TULIP POPLAR	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE- CANOPY
7	ZS	ZELKVOA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY

*** DENOTES QUANTIFYING FOR TREE REPLACEMENT CRITERIA PER CHAPTER 55**

EVERGREEN TREES

Count	SYMBOL	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	CALIPER	ROOT	NOTES
6	TO	THUJA OCCIDENTALIS	AMERICAN ARBORVITAE	6' MIN.			B&B	UNIFORM SIZE AND SPREAD

SHRUBS

Count	SYMBOL	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	CALIPER	ROOT	NOTES
34	AA	ARONIA ARBUTIFOLIA	RED CHOKEBERRY	24"-36" MIN.	24"-36" MIN.		#5 CONT.	UNIFORM SIZE AND SPREAD
25	CS	CORNUS SERICEA	RED OSIER DOGWOOD	24"-36" MIN.	24"-36" MIN.		#5 CONT.	UNIFORM SIZE AND SPREAD
31	IC	ILEX CRENATA	JAPANESE HOLLY	24"-36" MIN.	24"-36" MIN.		#5 CONT.	UNIFORM SIZE AND SPREAD
30	LB	LINDERA BENZOIN	SPICEBUSH	24"-36" MIN.	24"-36" MIN.		#5 CONT.	UNIFORM SIZE AND SPREAD
25	VR	VIBURNUM RHYTIDOPHYLLUM	LEATHERLEAF VIBURNUM	24"-36" MIN.	24"-36" MIN.		#5 CONT.	UNIFORM SIZE AND SPREAD

LANDSCAPE REQUIREMENTS

CLASSIFICATION	DECIDUOUS		EVERGREEN	
105.39 (A) Parking Area Trees	TREES	SHRUBS	TREES	SHRUBS
1 SHADE TREE FOR EVERY 2 SPACES (21 PARKING SPACES)	1	0	0	0
REQUIRED	11	0	0	0
PROPOSED	**11**	**0**	**0**	**0**
105.52 (A) Buffer Trees	TREES	SHRUBS	TREES	SHRUBS
1 EVERGREEN TREE PER 15 LF; 1 EVERGREEN SHRUB PER 8 LF. (1,299.2 LF.)	0	0	1	1
REQUIRED	0	0	6	11
PROPOSED	**0**	**0**	**6**	**11**
116.284 (A).3 Trail Landscaping	TREES	SHRUBS	TREES	SHRUBS
1 TREE PER 50 LINEAR FEET (1,045.2 LF)	1	0	0	0
REQUIRED	21	0	0	0
PROPOSED	**21**	**0**	**0**	**0**
CH 55: SECTION 55-1.6.A	TREES	SHRUBS	TREES	SHRUBS
PER REMOVED TREE W/ DBH OF 6" OR GREATER (39 LIVING/HEALTHY TREES REMOVED). TOTAL CALIPER OF REPLACEMENT TREES MUST EQUAL/EXCEED TOTAL DBH REMOVED (662"). 1 (3") or 2 (2")	0	0	0	0
REQUIRED	221	0	0	0
PROPOSED	**67***	**90**	**0**	**50**
	DECIDUOUS		**EVERGREEN**	
TOTAL LANDSCAPING	TREES	SHRUBS	TREES	SHRUBS
REQUIRED	253	0	6	11
PROPOSED	**91**	**90**	**6**	**61**

*** 11 CANOPY (3") AND 56 UNDERSTORY (2")**

TREE REPLACEMENT REQUIREMENT: 662" FOR 39 HEALTHY TREES REMOVED		
	PROPOSED REPLACEMENT TREES AND SHRUBS	CALIPER INCHES
3" SHADE TREE	11	33"
2" ORNAMENTAL TREE (2:1)	56 (/2=28)	84"
SHRUBS (5:1)	140 (/5=28)	84"
		201" TOTAL REPLACED. REMAINDER TO BE REPLACED BY FEE-IN-LIEU

ERNST SEEDS

Ernst Conservation Seeds
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Meadville, PA 16335
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www.ernstseed.com

Date: November 11, 2024

Rain Garden Mix - ERNMX-180

	Botanical Name	Common Name	Price/Lb
29.50 %	*Schizachyrium scoparium, Fort Indiantown Gap-PA Ecotype*	Little Bluestem, Fort Indiantown Gap-PA Ecotype	12.99
20.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	10.46
9.00 %	*Carex vulpinoidea, PA Ecotype*	Fox Sedge, PA Ecotype	28.80
8.00 %	*Echinacea purpurea*	Purple Coneflower	43.20
5.80 %	*Panicum rigidulum, PA Ecotype*	Redtop Panicgrass, PA Ecotype	57.60
5.30 %	*Chasmanthium latifolium, WV Ecotype*	River Oats, WV Ecotype	96.00
3.00 %	*Coreopsis lanceolata*	Lanceleaf Coreopsis	28.80
3.00 %	*Rudbeckia hirta*	Blackeyed Susan	31.20
2.50 %	*Verbena hastata, PA Ecotype*	Blue Vervain, PA Ecotype	38.40
2.00 %	*Panicum clandestinum, Tioga*	Deertongue, Tioga	22.26
1.80 %	*Heliopsis helianthoides, PA Ecotype*	Oxeye Sunflower, PA Ecotype	33.60
1.50 %	*Asclepias incarnata, PA Ecotype*	Swamp Milkweed, PA Ecotype	177.60
1.30 %	*Penstemon digitalis, PA Ecotype*	Tall White Beardtongue, PA Ecotype	168.00
1.00 %	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype	81.60
1.00 %	*Senna hebecarpa, VA & WV Ecotype*	Wild Senna, VA & WV Ecotype	28.80
1.00 %	*Zizia aurea, PA Ecotype*	Golden Alexanders, PA Ecotype	72.00
0.50 %	*Baptisia australis, Southern WV Ecotype*	Blue False Indigo, Southern WV Ecotype	96.00
0.50 %	*Juncus effusus*	Soft Rush	48.00
0.50 %	*Juncus tenuis, PA Ecotype*	Path Rush, PA Ecotype	48.00
0.50 %	*Pycnanthemum tenuifolium*	Narrowleaf Mountainmint	240.00
0.50 %	*Vernonia noveboracensis, PA Ecotype*	New York Ironweed, PA Ecotype	264.00
0.40 %	*Aster novae-angliae*	New England Aster	336.00
0.40 %	*Monarda fistulosa, Fort Indiantown Gap-PA Ecotype*	Wild Bergamot, Fort Indiantown Gap-PA Ecotype	96.00
0.20 %	*Aster lateriflorus*	Calico Aster	336.00
0.20 %	*Aster prenanthoides, PA Ecotype*	Zigzag Aster, PA Ecotype	432.00
0.10 %	*Aster pilosus, PA Ecotype*	Heath Aster, PA Ecotype	264.00
0.10 %	*Eupatorium perfoliatum, PA Ecotype*	Boneset, PA Ecotype	192.00
0.10 %	*Mimulus ringens, PA Ecotype*	Square Stemmed Monkeyflower, PA Ecotype	216.00
0.10 %	*Solidago juncea, PA Ecotype*	Early Goldenrod, PA Ecotype	336.00
0.10 %	*Solidago nemoralis, PA Ecotype*	Gray Goldenrod, PA Ecotype	264.00
0.10 %	*Solidago rugosa, PA Ecotype*	Wrinkleleaf Goldenrod, PA Ecotype	264.00
100.00 %		**Mix Price/Lb Bulk:**	**$39.16**

Seeding Rate: 20 lb per acre with a cover crop. For sites that drain within 24 hours of a rain event use one of the following cover crops:Oats (1 Jan to 31 Jul; 30 lbs/acre), Japanese Millet (1 May to 31 Aug; 10 lbs/acre), or grain rye (1 Aug to 31 Dec; 30 lbs/acre).

Grasses & Grass-like Species - Herbaceous Perennial; Herbaceous Flowering Species - Herbaceous Perennial; Stormwater Management; Uplands & Meadows

The native perennial forbs and grasses provide food and cover for rain garden biodiversity. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

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All prices are FOB Meadville, PA.
Please check our web site at www.ernstseed.com
for current pricing when placing orders.

(IN FEET)
1 inch = 40 ft

PROJECT SERIAL NO. 20233050644
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date:	no.	description	chk'd	by
3/27/2025	1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	BTK	GSS
6/26/2025	2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	BTK	GSS
7/8/2025	3	REVISED PER TOWNSHIP COMMENT	BTK	GSS
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SEAL:
COMMONWEALTH OF PENNSYLVANIA
REGISTERED LANDSCAPE ARCHITECT
PAUL E. LEITZ, JR.
Pennsylvania License No. LA001322A

DRAWING NAME: LANDSCAPE PLAN
LOCATION: 1001 WASHINGTON STREET
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no.	drawn by:
2024-001.02	GSS
date:	chk'd by:
11/15/24	BTK
scale:	approv. by:
1"=40'	PEL

sheet no.
C7.0
11 of 20

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Applicant Name: HT 1001 WASHINGTON, LLC

Development Name: 1001 WASHINGTON ST. LAND DEVELOPMENT

Location of Property: 1001 WASHINGTON ST, CONSHOHOCKEN, PA 19428

Date: 07/08/2025

PROJECT COVER SHEET – *Approved at June 6, 2023 Shade Tree Commission Meeting*

To verify fulfillment of Chapter 55 Ordinance requirements for:

1. *Maximum Tree Removal – 55-4B*
2. *Tree Replacement – 55-4D(6)(a)*
3. *Substitutions for Replacements – 55-4F*
4. *Replacement Tree Species – 55-4E*
5. *Tree and Shrub requirements for Chapters other than Chapter 55*

Complete the following tables, filling in data for each lettered item, and resolving each Compliance Test. In accordance with 55-4C(4)(e), provide this completed Cover Sheet together with the Landscape Plan.

Citations to Sections of Chapter 55 are provided for the convenience of the Applicant. Other Chapters of the Whitemarsh Township Code and other sections of Chapter 55, such as 55-2 Definitions, may be relevant. In the event of an inconsistency between this Cover Sheet and any provision of the Code, the language of the Code shall be controlling.

1) Calculation of Requirement for Maximum Tree Removal – 55-4B:

A.	***Total of all existing Trees on the lot with DBH of 6" or greater**, per 55-4C(3)(a).*	74
B.	*33% of line (A) = **maximum existing Trees which may be Removed.***	24
C.	*Provide **number of existing Trees proposed to be Removed by the Applicant,** per 55-4C(3)(a).*	46
	***COMPLIANCE TEST:** If Line (C) is greater than Line (B), the Applicant's proposal is not in compliance with the requirement that no more than 33% of trees having a DBH of six inches or greater may be removed.*	NOT COMPLIANT

2) *Calculation of Replacement Requirement for Removed Trees having a DBH of Six Inches or Greater 55-4D(6)(a):*

D.	***Total DBH of all existing Living and Healthy Trees*** *(as determined per 55-4A) having a DBH of 6" or greater* ***that are proposed to be Removed****, per 55-4C(3)(a).*	662"
E.	***Total DBH of all Living and Healthy Trees*** *(as determined per 55-4A) having a DBH of 6" or greater,* ***removed within five years prior to the submission of application****, per 55-4C(3)(b).*	0
F.	*Sum of line (D) and line (E) =* ***Total DBH that must be replaced for all Removed Living and Healthy Trees.***	662"
G.	***Total Caliper inches of Canopy Replacement Trees proposed to be planted*** *by the Applicant (as shown on the Landscape Plan) per 55-4D(6)(a). Each Canopy Replacement Tree shall have a minimum Caliper of three inches.*	33"
	COMPLIANCE TEST: *If Line (G) is less than Line (F), the Applicant's proposal is not in compliance with the minimum Canopy Tree Replacement Requirement.* *To comply with this requirement, the Applicant may request a waiver from the Shade Tree Commission to permit limited substitutions per 55-4F. If so, proceed to Substitution calculation (3) below.*	NOT COMPLIANT

3) *Calculation of maximum Proposed Substitutions for Replacement Canopy Trees – 554F, subject to certain limitations and approval by the Shade Tree Commission.*

H.	*40% of line (F) (round fractions down to a whole number) =* ***maximum Caliper of required Replacement Canopy Trees that may be substituted*** *with Understory Trees and/or FIL, upon STC approval, per 55-4F.*	264"
I.	*Line (F) less Line (G) =* ***Shortfall in DBH compliance with the minimum Canopy Tree Replacement Requirement,*** *per 55-4D(6)(a).*	629"
	COMPLIANCE TEST: *If line (H) is less than line (I), the deficit of minimum Canopy Tree Replacement requirement, per 55-4D(6) cannot be fully compensated with Substitutions, per 55-4F.*	NOT COMPLIANT

J.	*Line (I) divided by 3" (round fractions up to a whole number) =* ***Shortfall in the number of required 3" Canopy Replacement Trees.***	210
K.	*Provide the* ***total number of substitution Understory Trees proposed to be planted*** *by the Applicant, per 55-4F(1).* *TOTAL NUMBER OF SUBSTITUTION SHRUBS PROPOSED TO BE PLANTED	56 *140
L.	*Line (K) divided by two =* ***Number of required 3"-cal. Replacement Canopy Trees being substituted with Understory Trees*** *per 55-4F(1).* *NUMBER OF REQUIRED REPLACEMENT TREES BEING SUBSTITUTED WITH SHRUBS	28 *28
M.	*Line (J) less Line (L) =* ***Number of required 3"-cal. Replacement Canopy Trees proposed by the Applicant to be substituted with payment of in-lieu fees****, per 55-4F(2).* ***NOTE:*** *Review proposed Landscape Plan to ensure that the use of Replacement Understory Tree substitutes has been maximized prior to calculating the number of substitutes via in-lieu fees, per 55-4F(4).*	154
N.	*Sum of Line (L) and Line (M) =* ***Total proposed number of Replacement Canopy Trees being substituted per 55-4F.***	210
O.	*Line (N) multiplied by 3" =* ***Total shortfall of DBH to be fulfilled with substitutions*** *as proposed by this Landscape Plan.*	630"
	COMPLIANCE TEST: *If (O) is greater than (H), the Applicant's proposal has exceeded the 40% maximum eligible for consideration for Replacement substitutions, per 55-4F, and is not in compliance.*	NOT COMPLIANT
P.	*Sum of Line (O) and (G) =* ***Total Caliper compensation for Removed Trees*** *as provided by this proposed Landscape Plan.*	663"
	COMPLIANCE TEST: *If (P) is less than (F), the Applicant's proposal is not in compliance with the Tree Replacement Requirement.*	COMPLIANT

4) Compliance with Species Requirement of Replacement Trees – 55-4E:

Q.	***Total number of proposed Canopy Replacement Trees,*** *per 55-4C(4)(c).*	11

R.	*75% of line (Q) (round fractions up to the next whole number) =* ***Minimum required number of Native Species Replacement Canopy Trees****, per 55-4E.*	9
S.	*Provide the* ***number of proposed Native Species Canopy Replacement Trees,*** *per 55-4C(4)(c).*	11
	COMPLIANCE TEST: *If Line (S) is less than Line (R), the Applicant's proposal is not in compliance with the 75% Native Species requirement for Replacement Canopy Trees, per 55-4E.*	COMPLIANT
T.	*Provide the* ***number of proposed Native Species Understory Trees****.*	56
	COMPLIANCE TEST: *If Line (T) is less than line (K), he Applicant's proposal is not in compliance with the 100% Native Species requirement for Replacement Understory Trees.*	COMPLIANT

5) Compliance with Landscaping Requirements of Other Code Chapters. Complete the following Tables for each applicable requirement.

REQUIRED TREES:

A	B	C	D*	E	F**
Full Code Citation: Chapter; sub-chapter, etc.	Subject matter as indicated in Code caption	Required # of Trees	Credits for Preserved Trees per 55-4D(5)	Proposed # of Trees	Column (C) less Columns (D) and (E)
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CHAPTER 105.52 (A)	BUFFER YARDS	6	0	6	0
CHAPTER 116.284 (A).3	RIVERFRONT ACCESS AND OPEN SPACE	21	N/A	21	0

NOTE: Column (D) Credits are strictly limited to calculating Chapter 105-52 Buffer yards, in accordance with 55-4D(5).
****NOTE: When the result in Column (F) is greater than zero, the Applicant's proposal is not in compliance with the applicable Code requirement.***

REQUIRED SHRUBS:

A	B	C	D	E*
Full Code Citation: Chapter; sub-chapter, etc.	Subject matter as indicated in Code caption	Required # of Shrubs	Proposed # of Shrubs	Column (C) less Column (D)
CHAPTER 105.52 (A)	BUFFER YARDS	11	11	0

NOTE: When the result in Column (E) is greater than zero, the Applicant's proposal is not in compliance with the applicable Code requirement.

WHITEMARSH TOWNSHIP

To: Craig McAnally, Township Manager

From: Samantha Zrillo, Township Planner

Subject: **SLD #7-23 HT 1001 Washington LLC-- 7.15.25 STC Meeting**

Date: July 18, 2025

cc: **Charlie Guttenplan, AICP, Township Director of Planning and Zoning**
Krista Heinrich, PE, Township Engineer, Gilmore Associates
John Hosbach Jr., RCA, ACF, CUCF, Township's Consulting Arborist
Craig Robert Lewis, Esq., Applicant's Attorney
Brian Kelly, RLA, Applicant's Landscape Architect
Jim Bannon, P.E., Applicant's Engineer

Plans Reviewed: *Nave Newell Engineering, dated 11.15.24, revised 6.26.25. Revised Landscape Plan dated 7.8.25.*

In attendance: Brian Kelly, RLA, and Jim Bannon, P.E., of Nave Newell Engineering

Mr. Kelly presented the landscape plan for the proposed development, discussing existing and proposed site plans and the various waivers being requested. Several trees within the corridor are dead, hazardous, or affected by disease, and efforts are being made to preserve key trees, including a Heritage Sycamore. The required trail was re-aligned to protect this tree, and a boardwalk is being proposed in place of pavement in certain areas to minimize soil disruption.

The project proposes 96 new trees and 150 shrubs. A total of 662 inches DBH are being removed, with 201 inches proposed for replacement, made up of a combination of canopy and understory trees and shrubs. Due to spatial constraints, the applicant is requesting a waiver to permit shrub substitution at a 5:1 ratio in place of canopy trees and to allow for a fee-in-lieu payment for trees that cannot be accommodated on site. The applicant is also requesting waivers for: removal of more than 33% of trees 6" DBH or greater; reduced tree protection fencing distances; exceeding the 40% ornamental/understory tree threshold; and relief from the 50-foot buffer requirement in Chapter 105.

Discussion followed regarding the tree protection fencing, potential for larger-caliper tree plantings (5" instead of 3"), and the use of the central drainage easement corridor for additional plantings.

Public comments included the opposition of using shrubs in place of trees and concerns about safety and a lack of compliance with the ordinance.

A member from the Commission expressed concern about the long-term implementation and compliance of the plan, referencing past developments that failed to follow through with proposed landscaping. Another member of the Commission expressed disappointment in the lack of street trees.

There was an agreement between the Applicant's representatives and the Shade Tree Commission to continue the discussion at the August meeting with revised plans. The plans should have the following revisions:

- **Updated landscape plan with any proposed plantings in the central drainage easement**
- **Updated landscape schedule (to include the easement plantings and 5" caliper trees)**
- **Tree protection fencing detail**
- **Relocated soil stockpile**
- **A formal request of all requested waivers**
- **Clarification of tree removal percentage**

Samantha Zrillo
Township Planner
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2608
Email: szrillo@whitemarshtwp.org

Whitemarsh TOWNSHIP

616 GERMANTOWN PIKE – LAFAYETTE HILL, PA 19444-1821
TEL: 610-825-3535 FAX: 610-825-9416
www.whitemarshtwp.org

BOARD of SUPERVISORS

Jacy Toll – Chair
Fran McCusker – Vice-Chair
Vincent Manuele
Patrice Turenne
Elizabeth Moy

Craig T. McAnally
Township Manager

July 21, 2025

SENT VIA ELECTRONIC MAIL ONLY

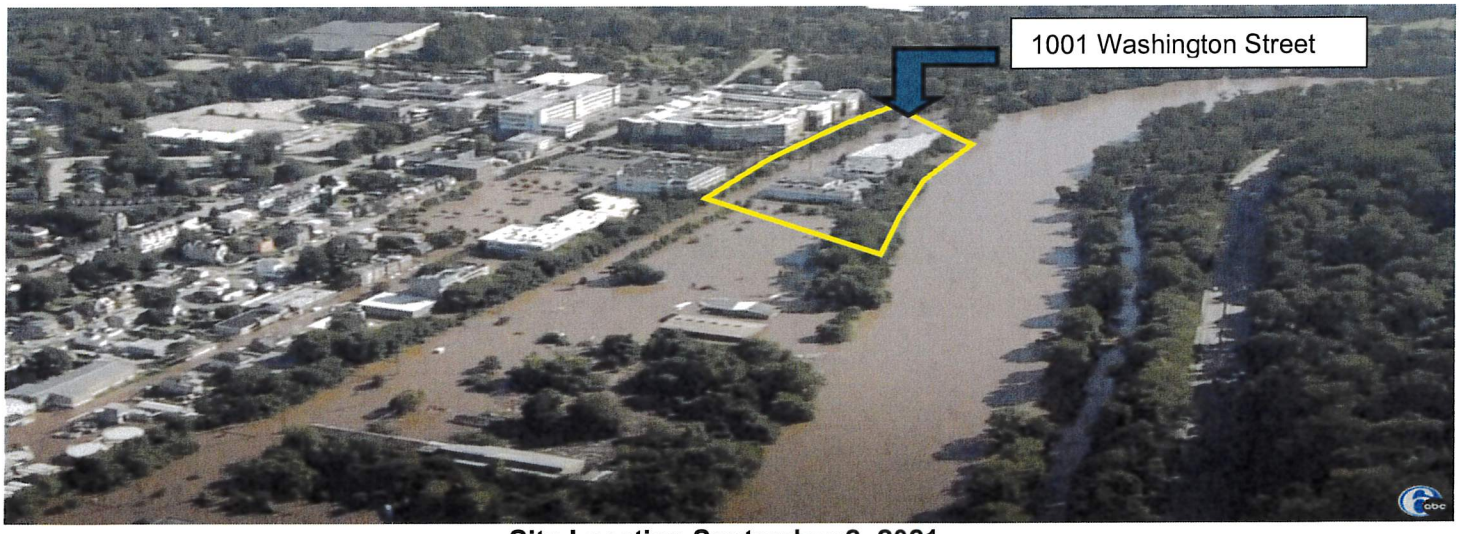
Shima Chenar, Ph.D., CFM
Water Resources Engineer
LJA, a member of Focus Revision Partners JV
Email: Shima@leonardjackson.net

RE: FEMA Case No. 24-03-0882P
Letter of Map Revision (LOMR)
1001 Washington Street
FIRM Number 42091C0358G
Township of Whitemarsh, Montgomery County, Pennsylvania

Dear Ms. Chenar:

Whitemarsh Township would like to restate why the Community (CEO) refused to sign the MT-2 form required to initiate the map change. The property, and surrounding area, have a history of significant and repetitive flooding, causing significant risk to public safety, damage to property and infrastructure, and the need for Emergency Response and water rescues. It is for this reason that Whitemarsh Township opposes the requested map change.

Per 44 CFR 65.4(b), all requests for changes to effective maps, other than those initiated by FEMA, must be made in writing by the Chief Executive Officer of the Community (CEO) or an official designated by the CEO. Should the CEO refuse to submit such a request on behalf of another party, FEMA will agree to review it only if written evidence is provided indicating the CEO or designee has been requested to do so.



Site Location September 2, 2021

As you evaluate the requested map revision, we urge you to consider the risks posed by narrowing the regulatory floodway, the channel of the River and the adjacent land area that is reserved from encroachment in order to discharge the base flood without cumulatively increasing the water-surface elevation by more than a foot. Narrowing the floodway by granting the requested map revision will likely result in more homes and residents being put in harm's way. As FEMA itself recognizes "Preserving the capacity of floodplains to convey floodwaters through the designation and preservation of a floodway has been an important concept in floodplain management from the very beginning. Preserving the floodway limits the impact of development from occurring in the floodplain that will increase flood heights and damages to upstream and downstream properties and avoid allowing excess velocities resulting in stream stability and damages to downstream properties."[1] We urge FEMA to act in accordance with its own guidance and to reject the requested map revision.

Should you have any questions regarding this matter, please do not hesitate to contact me at this office.

Sincerely,

Craig T. McAnally
Whitemarsh Township Manager

c: Krista Heinrich, PE - Township Engineer
Charles L. Guttenplan, AICP – Director of Planning and Zoning
Sean Kilkenny, Esq.; The Law Offices of Sean Kilkenny, LLC – Township Solicitor
Fatima Abdelwahd, CFM, Revisions Coordinator for PA (abdelwahdfz@cdmsmith.com)
April Cummings, Director, Mitigation Division, FEMA, Region III
Kathirvel Arumugam, CFM, AECOM (kathirvel.arumugam@aecom.com)

[1] FEMA Guidance Document 79, "Guidance for Flood Risk Analysis and Mapping", Page 1



1

CONSHOHOCKEN TOWNHOMES

MONTGOMERY COUNTY, PA

MATERIALS

JULY 18, 2025



SECOND FLOOR PLAN - 755 SF

FIRST FLOOR PLAN -75 SF

FAIRVIEW | MODERN | CONTEMPORARY | MODERN | FAIRVIEW

TYPICAL BUILDING FLOOR PLANS

2,185 SF

2

CONSHOHOCKEN TOWNHOMES

MONTGOMERY COUNTY, PA

JULY 18, 2025



FOURTH FLOOR PLAN - 610 SF



3 THIRD FLOOR PLAN - 745 SF

CONSHOHOCKEN TOWNHOMES

MONTGOMERY COUNTY, PA

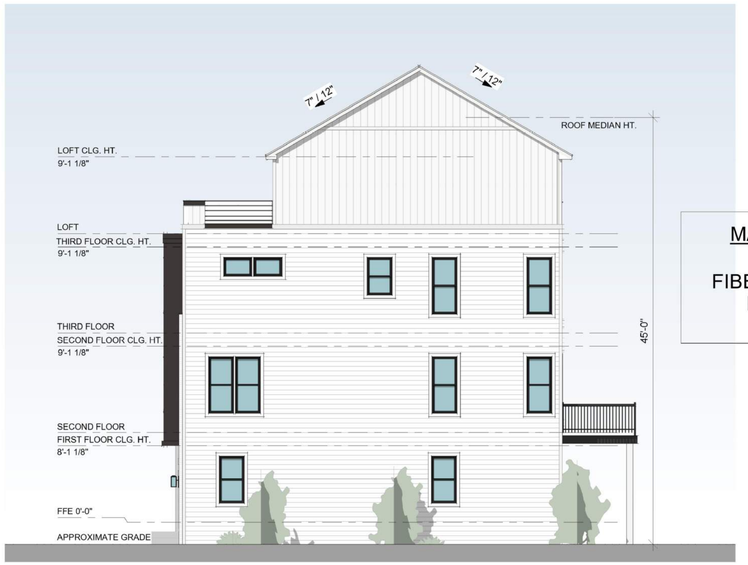
TYPICAL BUILDING FLOOR PLANS

2,185 SF

JULY 18, 2025



FAIRVIEW MODERN CONTEMPORARY MODERN FAIRVIEW



SIDE ELEVATION

MATERIAL CALCULATION
5 UNIT BUILDING
FIBER CEMENT SIDING = 84%
PAINTED BRICK = 12%
ACCENT PANEL = 4%

MATERIAL CALCULATION
2 UNIT BUILDING
FIBER CEMENT SIDING = 85%
PAINTED BRICK = 10%
ACCENT PANEL = 5%



FAIRVIEW FAIRVIEW



FAIRVIEW CONTEMPORARY MODERN CONTEMPORARY MODERN FAIRVIEW

MATERIAL CALCULATION
6 UNIT BUILDING
FIBER CEMENT SIDING = 83.5%
PAINTED BRICK = 12.5%
ACCENT PANEL = 4%

CONSHOHOCKEN TOWNHOMES

MONTGOMERY COUNTY, PA

ELEVATIONS

JULY 18, 2025



FAIRVIEW MODERN CONTEMPORARY MODERN CONTEMPORARY MODERN FAIRVIEW

MATERIAL CALCULATION
7 UNIT BUILDING
FIBER CEMENT SIDING = 83.5%
PAINTED BRICK = 13%
ACCENTPANEL = 3.5%



FAIRVIEW CONTEMPORARY MODERN CONTEMPORARY MODERN CONTEMPORARY MODERN FAIRVIEW

MATERIAL CALCULATION
8 UNIT BUILDING
FIBER CEMENT SIDING = 83%
PAINTED BRICK = 13%
ACCENT PANEL = 4%

CONSHOHOCKEN TOWNHOMES

MONTGOMERY COUNTY, PA

ELEVATIONS

JULY 18, 2025



VIEW OF PUBLIC ACCESS PARKING AND KAYAK RAMP AT WASHINGTON AND STATION

STUDIO HS4
ARCHITECTURE | DESIGN | DEVELOPMENT
575 NORTH MIDDLETOWN RD
MEDIA, PA 19063 215.995.4908

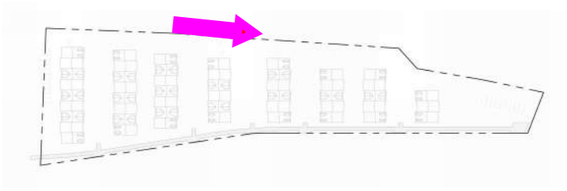
HIGHTOP
DEVELOPMENT



CONSHOHOCKEN RIVERFRONT DEVELOPMENT

04/21/2024

VIEW DOWN EXTENDED WASHINGTON STREET WALKING TOWARD SEPTA STATION



CONSHOHOCKEN RIVERFRONT DEVELOPMENT

04/21/2024

STUDIO HS4
ARCHITECTURE | DESIGN | DEVELOPMENT
575 NORTH MIDDLETOWN RD
MEDIA, PA 19063 215.995.4908

HIGHTOP
DEVELOPMENT

APPROACH VIEW TO PUBLIC ACCESS BOARDWALK



STUDIO HS4
ARCHITECTURE | DESIGN | DEVELOPMENT
575 NORTH MIDDLETOWN RD
MEDIA, PA 19063 215.995.4008

HIGHTOP
DEVELOPMENT

BELOW NOTES ARE FROM "ALTA/NSPS LAND TITLE SURVEY" PREPARED BY RUGGIERO PLANTE LAND DESIGN DATED NOVEMBER 13, 2023, LAST REVSIED DECEMBER 12, 2023.

SURVEYOR'S NOTES

This survey is prepared with reference to a Commitment for Title Insurance by Commonwealth Title Insurance Company, Commitment Number PACLT23-4305 M/K, having a commitment date of October 24, 2023, where the following exceptions listed in Schedule B Section II are addressed to the limits of the signing Pennsylvania Land Surveyor.

9. Premises is bisected by a 25 feet wide strip of land leading from the former Lee Tire premises to the river. - **LEE TIRE AND RUBBER CO DRAINAGE EASEMENT SHOWN**
10. Easement of Railroad Siding which extends into premises and rights of use of same by adjoining owners. **NO RAILROAD SIDINGS OBSERVED ON THE PROPERTY AT THE TIME OF THE SURVEY**
11. Rights of others in and to Spring Mill Creek crossing premises. **NEED FURTHER INFORMATION FROM TITLE COMPANY TO DETERMINE LOCATION**
12. Easement of Towpath on Schuylkill Canal. **NEED FURTHER INFORMATION FROM TITLE COMPANY TO DETERMINE LOCATION**
13. Subject to the rights of Ingress and regress over premises as in Deed Book 280 page 66. - **DOCUMENT NOT LEGIBLE**
14. The 25 feet wide strip leading from Lee Tire to the river is subject to the provision of Deed Book 619 page 261, concerning sewers and railroad sidings. - **LEE TIRE AND RUBBER CO DRAINAGE EASEMENT SHOWN**
15. Water, Ferry and Passage Rights as in Deed Book 10 page 413.- **DOCUMENT NOT LEGIBLE**
16. Water, Ferry and Passage Rights as in Deed Book 34 page 434. - **DOCUMENT NOT LEGIBLE**
17. Water, Ferry and Passage Rights as in Deed Book 395 page 41. - **DOCUMENT NOT LEGIBLE**
18. Premises is located within the 100 year flood plan of the Schuylkill River. - **FEMA FLOODWAY AND ZONE AE FLOOD ZONE SHOWN**
19. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 52 page 88. - **DOCUMENT NOT LEGIBLE**
20. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 55 page 438. - **DOCUMENT NOT LEGIBLE**
21. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 72 page 552. - **DOCUMENT NOT LEGIBLE**
22. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 153 page 47. - **DOCUMENT NOT LEGIBLE**
23. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 182 page 315. - **DOCUMENT NOT LEGIBLE**
24. Right of way granted to the Philadelphia Electric Company as in Deed Book 4762 page 1035. - **NOT PLOTTABLE, PLANS NOT PROVIDED**

SURVEYOR'S NOTES CONTINUED

25. Subject to conditions as shown on a Plan of Subdivision recorded in Plan Book A-43 page 87. - **DRAINAGE EASEMENT AND ROW LINES SHOWN - APPLICABLE NOTES, CONDITIONS, ITEMS ETC. HAVE BEEN CARRIED OVER TO THE PLAN**
26. Rights reserved in Deed Book 4671 page 263 for use of water, wells, pumps, piping and roof storage tank. - **AREA SHOWN ON PLAN**
27. Right of way granted to The Bell Telephone Company of Pennsylvania as in Deed Book 4877 page 1032. - **SHOWN APPROXIMATELY**
28. Memorandum of Improvement Agreement as in Deed Book 5021 page 2030. - **BLANKET IN NATURE**
29. Subject to conditions as shown on a Land Site Plan recorded in Land Site Plan Book L-2 page 151. - **PARKING DECK SHOWN - APPLICABLE NOTES, CONDITIONS, ITEMS ETC. HAVE BEEN CARRIED OVER TO THE PLAN**
30. Possible rights of the United States of America, the Commonwealth of Pennsylvania, the Public and other riparian owners between the high and low water marks of the Schuylkill River. - **SCHUYLKILL RIVER SHOWN**
31. Subject to the laws and authority of the Federal and State Governments, their political subdivisions and agencies, to regulate commerce and navigation over part of the premises extending beyond the high water mark of the Schuylkill River; and to exert governmental title and ownership in the area lying beyond the original low water mark. - **SCHUYLKILL RIVER SHOWN**
32. Reciprocal Easement Agreement set forth in Deed Book 5967 page 411. - **EASEMENT SHOWN**

REFERENCE PLANS

1. ALTA/NSPS LAND TITLE SURVEY PREPARED BY RUGGIERO PLANTE LAND DESIGN DATED NOVEMBER 15, 2023, LAST REVISED DECEMBER 12, 2023.

GENERAL NOTES:

1. THIS PLAN IS BASED ON A SURVEY CONDUCTED IN THE FIELD BY RUGGIERO PLANTE LAND DESIGN COMPLETED ON NOVEMBER 9, 2023 AND ADDITIONAL FIELD SURVEY PERFORMED BY NAVE NEWELL ON JULY 29, 2024.
2. THIS SURVEY REPRESENTS CONDITIONS AS OF THE DATE OF THE SURVEY EXCEPT SUCH IMPROVEMENTS OR EASEMENTS, IF ANY, THAT MAY BE LOCATED BELOW THE SURFACE OF THE LAND, ON THE SURFACE OF THE LANDS OR ABOVE THE SURFACE OF THE LANDS AND NOT VISIBLE.
3. TITLE TO THE SUBJECT PROPERTY IS FILED IN THE MONTGOMERY COUNTY COURT HOUSE IN DEED BOOK 6334 PAGE 01619 IN THE WHITEMARSH TOWNSHIP, COUNTY OF MONTGOMERY, PENNSYLVANIA.
4. BEARING BASIS FOR THE SURVEY IS THE RECORD DEED AS REFERENCED IN NOTE 3, ABOVE.
5. THE ELEVATIONS FOR THIS PLAN ARE BASED ON NAVD88. THE SITE BENCHMARK IS A MAG NAIL SET IN THE DRIVE LOCATION AT THE NORTHEAST CORNER OF THE PROPERTY HAVING AN ELEVATION OF 49.23'. THIS ELEVATION AND BENCHMARK NOT TAKEN FROM ALTA/NSPS LAND TITLE SURVEY PLAN PREPARED BY RUGGIERO PLANTE LAND DESIGN DATED NOVEMBER 15, 2023, LAST REVISED DECEMBER 12, 2023.
6. PROPERTY AS SHOWN IS IN ZONE "AE" (BASE FLOOD ELEVATIONS DETERMINED) AS DEPICTED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FIRM FLOOD INSURANCE RATE MAP COMMUNITY PANEL #42091C0358 G, PANEL 358 OF 451. BASE ELEVATION = 59, NAVD 1988 DATUM.
7. PLAN DATUM IS NGVD 1929. BASE FLOOD ELEVATION CONVERTED TO NGVD 1929 DATUM = ELEVATION ±60.
8. LOCATIONS OF EXISTING UTILITIES AS SHOWN HEREIN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS, PLANS BY OTHERS AND/OR ABOVE GROUND EXAMINATION OF SITE. THE COMPLETENESS OR ACCURACIES OF THE LOCATIONS ARE NOT GUARANTEED. SHOULD ANY NEW CONSTRUCTION BE PROPOSED, THE CONTRACTOR MUST VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES BEFORE START OF WORK.
9. PURSUANT TO ACT 287 "PENNSYLVANIA ONE CALL INC." WAS PLACED. INFORMATION THEREBY OBTAINED WAS USED TO ILLUSTRATE EXISTING UTILITIES.
10. NO REVIEW OF THE PROPERTY REGARDING THE PRESENCE OF WETLANDS WAS ACCOMPLISHED AS A PART OF THIS SURVEY.
11. UNIT AND BLOCK NUMBERS REFER TO THE OFFICIAL TAX MAPS OF WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA.
12. IF CONTRACTOR DEVIATES FROM THE PLANS AND/OR SPECIFICATIONS WITHOUT FIRST OBTAINING THE WRITTEN AUTHORIZATION OF THE OWNER, NAVE NEWELL, INC., AND THE JURISDICTIONAL AUTHORITY(IES), THE CONTRACTOR SHALL BE LIABLE AND RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK DONE WHICH DEVIATES FROM THE PLANS AND/OR SPECIFICATIONS, ALL FINES AND/OR PENALTIES ASSESSED, AND ALL COMPENSATORY, CONSEQUENTIAL, AND/OR PUNITIVE DAMAGES RESULTING THEREFROM. THE CONTRACTOR IS ON NOTICE THAT BY DEVIATING FROM SUCH PLANS AND/OR SPECIFICATIONS, THE CONTRACTOR IS ASSUMING THE RISK OF ALL SUCH DAMAGES, AND CONTRACTOR WILL BE SUBJECT TO INDEMNITY, CONTRIBUTION, AND/OR HOLD HARMLESS CLAIMS FROM THE OWNER

SOILS LEGEND:

SOILS INFORMATION OBTAINED FROM THE USDA-NRCS WEB SOIL SURVEY, VERSION 10, SURVEY PERFORMED ON 7/24/2024.

UgB - URBAN LAND, 0-8 PERCENT SLOPES

SOIL LIMITATIONS AND RESOLUTIONS		
APPLICABILITY TO PROJECT	SOIL LIMITATION	RESOLUTION(S)
YES	DEPTH TO SATURATED ZONE / SEASONAL HIGH WATER TABLE	SOILS SHOULD BE EVALUATED FOR WETNESS PRIOR TO USE IN SITE WORK. IF GEOTECHNICAL ENGINEER DEEMS SOILS TOO WET FOR SITE WORK, THEN SOILS SHALL BE AMENDED OR DRIED PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
YES	FROST ACTION	SOILS SHOULD BE FREE OF FROZEN OR MUCKY MATERIALS. FILL SHOULD NOT BE PLACED ON SATURATED OR FROZEN SURFACES. EARTHWORK INVOLVING THESE SOILS SHOULD BE LIMITED TO THE WARMER MONTHS WHEN PRACTICAL.

GEOLOGIC CONDITIONS NOTE:

SITE IS UNDERLAIN BY THE CONESTOGA FORMATION, COMPOSED OF ORDOVICIAN AND CAMBRIAN BASED ON PADEP'S EMAPPA PROGRAM.

UTILITY OWNERS

DATE CONTACTED: November 1, 2023

SERIAL NUMBER: 20233050644

COMPANY: WHITEMARSH TOWNSHIP AUTHORITY
ADDRESS: 2015 JASHUA RD, BLDG 100, LAFAYETTE HILL, PA 19444
CONTACT: TOM BONJO
EMAIL: tbonjo@whitmarshauthority.org
PHONE: 610-825-1412

COMPANY: COMCAST CABLEVISION
ADDRESS: 1250 HADDONFIELD-BERLIN RD, CHERRY HILL, NJ 08034
CONTACT: WYATT PARISH
EMAIL: Wyatt_Parish@comcast.com
PHONE: 484-368-4391

COMPANY: AQUA OENNSYLVANIA
ADDRESS: 762 LANCASTER AVE, BRYN MAWR, PA 19010
CONTACT: THOMAS WADDY
EMAIL: twaddy@aquaamerica.com
PHONE: 610-525-1400 X52105

COMPANY: PECO AN EXELON COMPANY C/O USIC
ADDRESS: 450 S HENDERSON RD, SUITE B, KING OF PRUSSIA , PA 19406
CONTACT: NIKKIA SIMPKINS
EMAIL: nikkiasimpkins@usicinc.com
PHONE: 484-681-5720

COMPANY: LUMEN FORMERLY LEVEL 3
ADDRESS: 1025 ELDORADO BLVD, BROOMFIELD, CO 80021
CONTACT: LUMEN OPERATOR PERSONNEL
EMAIL: relocations@lumen.com
PHONE: 877-366-8344 X 3

COMPANY: VERIZON BUSINESS FORMERLY MCI
ADDRESS: 7000 WESTON PKWY, CARY, NC 27513
CONTACT: VICTOR WOOD
EMAIL: victor.s.wood@verizon.com
PHONE: 919-414-2782

COMPANY: WHITEMARSH TOWNSHIP PUBLIC WORKS
ADDRESS: 616 GEMANTOWN PIKE, LAFAYETTE HILLS, PA 19444
CONTACT: JOHN FIELDS
EMAIL: jfields@whitmarshtwp.org
PHONE: 215-783-1617

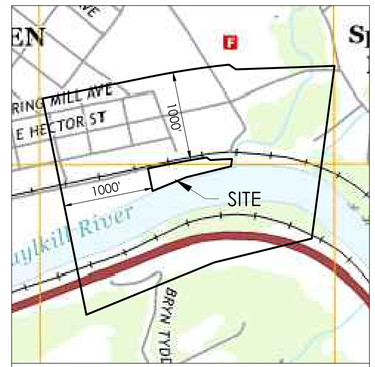
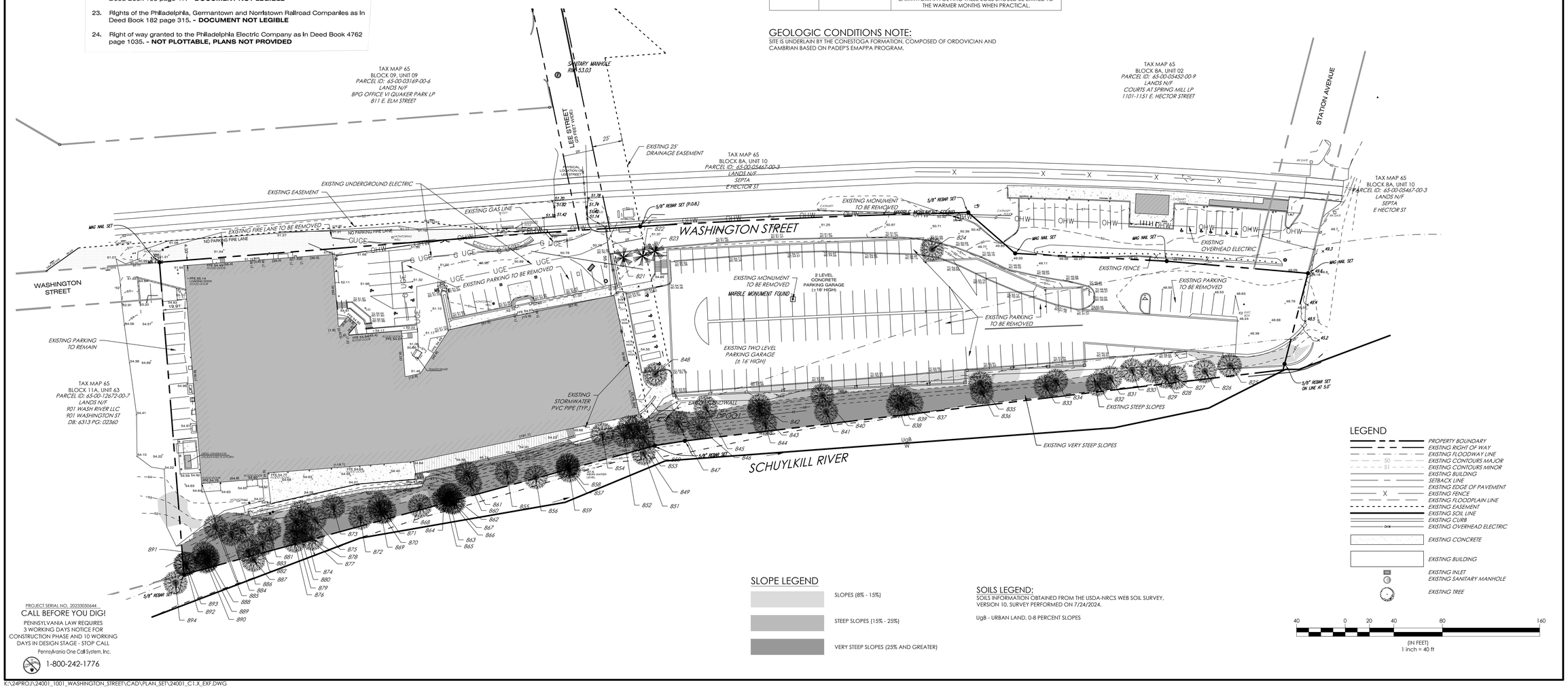


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'



SLOPE LEGEND

- SLOPES (8% - 15%)
- STEEP SLOPES (15% - 25%)
- VERY STEEP SLOPES (25% AND GREATER)

SOILS LEGEND:

SOILS INFORMATION OBTAINED FROM THE USDA-NRCS WEB SOIL SURVEY, VERSION 10, SURVEY PERFORMED ON 7/24/2024.

UgB - URBAN LAND, 0-8 PERCENT SLOPES

LEGEND

- PROPERTY BOUNDARY
- EXISTING RIGHT OF WAY
- EXISTING FLOODWAY LINE
- EXISTING CONTOURS MAJOR
- EXISTING CONTOURS MINOR
- EXISTING BUILDING
- SETBACK LINE
- EXISTING EDGE OF PAVEMENT
- EXISTING FENCE
- EXISTING FLOODPLAIN LINE
- EXISTING EASEMENT
- EXISTING SOIL LINE
- EXISTING CURB
- EXISTING OVERHEAD ELECTRIC
- EXISTING CONCRETE
- EXISTING BUILDING
- EXISTING INLET
- EXISTING SANITARY MANHOLE
- EXISTING TREE

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

K:\24PROJ\24001_1001_WASHINGTON_STREET\CAD\PLAN_SET\24001_C1.X_EXF.DWG
7/29/2025 1:39 PM
USER: ----

NAVE NEWELL
ENGINEERING • SURVEYING • LAND PLANNING
A MOWELL COMPANY
Excellence. Engineered.
900 WEST VALLEY ROAD, SUITE 1100
WAYNE, PA 19087 1830
P: 610.265.8323 F: 610.265.4299
WWW.NAVENEWELL.COM

REVISIONS

no.	description	date:	chk'd	by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	3/27/2025	JGE	JT
2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	6/24/2025	JPB	JGE

SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: EXISTING FEATURES PLAN & SOIL MAP & PRELIMINARY IMPACT PLAN

LOCATION: 1001 WASHINGTON STREET
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no.: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1" = 40'	approv. by: JPB

sheet no.

C1.0

4 of 20

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1001 Washington Street						
Date of Inventory: 2/28/2025				Person: Brian Kelly		
Tree ID #	DBH (")	Multi	Common Name	Botanical Name	Condition Notes	To Be Removed
821	10		Norway Spruce	Picea abies		x
822	10		Norway Spruce	Picea abies		x
823	10		Eastern Hemlock	Tsuga canadensis	Compromised/major decline	x
824	13		Little-leaf Linden	Tilia cordata		x
825	6		Boxelder Maple	Acer negundo		x
826	24		American Sycamore	Platanus occidentalis		x
827	24		Red Elm	Ulmus rubra		x
828	24		American Sycamore	Platanus occidentalis		x
829	10		Boxelder Maple	Acer negundo	Compromised/major decline	x
830	30	x	Boxelder Maple	Acer negundo		x
831	30		American Sycamore	Platanus occidentalis		x
832	24		American Sycamore	Platanus occidentalis	Compromised, major vine damage	x
833	36		American Sycamore	Platanus occidentalis		
834	7				Dead	x
835	8		Empress Tree	Paulownia tomentosa		x
836	12		American Sycamore	Platanus occidentalis		
837	18		Red Elm	Ulmus rubra		
838	20		Red Elm	Ulmus rubra		x
839	18		American Sycamore	Platanus occidentalis		x
840	7		Red Maple	Acer rubrum		x
841	16		Red Elm	Ulmus rubra		
842	12		Boxelder Maple	Acer negundo		x
843	6		White Ash	Fraxinus americana		
844	12		Boxelder Maple	Acer negundo		x
845	9		White Ash	Fraxinus americana		x
846	24		Red Maple	Acer rubrum		x
847	18		Boxelder Maple	Acer negundo		x
848	10		Bradford Pear	Pryus calleryana		x
849	16		Boxelder Maple	Acer negundo	Compromised/decay	x
850	18		Boxelder Maple	Acer negundo		x
851	24		Red Maple	Acer rubrum		
852	18		Red Maple	Acer rubrum	Compromised	x
853	18		Boxelder Maple	Acer negundo		
854	18		White Ash	Fraxinus americana		x
855	6					
856	24		American Sycamore	Platanus occidentalis		x
857	18		Red Maple	Acer rubrum		
858	18		Red Maple	Acer rubrum		
859	18		Red Maple	Acer rubrum		
860	10		Boxelder Maple	Acer negundo	Compromised/major decline	
861	18		Boxelder Maple	Acer negundo	Compromised/major decline	x
862	10		Boxelder Maple	Acer negundo		
863	14		Red Maple	Acer rubrum		
864	20		Red Maple	Acer rubrum		
865	20		Red Maple	Acer rubrum		
866	8		Red Maple	Acer rubrum		
867	6		Red Maple	Acer rubrum		
868	14		Red Elm	Ulmus rubrua		x
869	24		American Sycamore	Platanus occidentalis		x
870	10		Boxelder Maple	Acer negundo		
871	24		American Sycamore	Platanus occidentalis		
872	17		Boxelder Maple	Acer negundo		
873	16		Boxelder Maple	Acer negundo	Decay/decline	x
874	24		Boxelder Maple	Acer negundo		x
875	15		Boxelder Maple	Acer negundo		x
876	12		Boxelder Maple	Acer negundo		x
877	12		Boxelder Maple	Acer negundo		x
878	12		Boxelder Maple	Acer negundo		x
879	18		Boxelder Maple	Acer negundo	Compromised/major damage	x
880	24		Boxelder Maple	Acer negundo		x
881	18x7	x	Boxelder Maple	Acer negundo		x
882	12		Boxelder Maple	Acer negundo	Vine damage	
883	8		Red Maple	Acer rubrum	Vine damage	
884	12		Boxelder Maple	Acer negundo	Vine damage	
885	24		American Elm	Ulmus americana		x
886	30	x	Boxelder Maple	Acer negundo		
887	15		Boxelder Maple	Acer negundo	Compromised	
888	25	x	American Elm	Ulmus americana	Dead	x
889	10		Red Maple	Acer rubrum		
890	20		Red Maple	Acer rubrum		x
891	12		Red Maple	Acer rubrum		x
892	14		Red Maple	Acer rubrum		x
893	16		Boxelder Maple	Acer negundo	Compromised/major damage	x
894	8		Boxelder Maple	Acer negundo		

PROJECT SERIAL NO. 20233050644

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REVISIONS

no.	description	date:	chk'd by
1	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	6/26/2025	BTK
2	REVISED PER STC REVIEW MEMO DATED 7/18/2025	7/29/2025	JPB
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SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: TREE INVENTORY

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no.: 2024-001.02	drawn by: GSS
date: 3/27/2025	chk'd by: BTK
scale: N.T.S.	approv. by: PEL

sheet no.

C1.1

5 of 20

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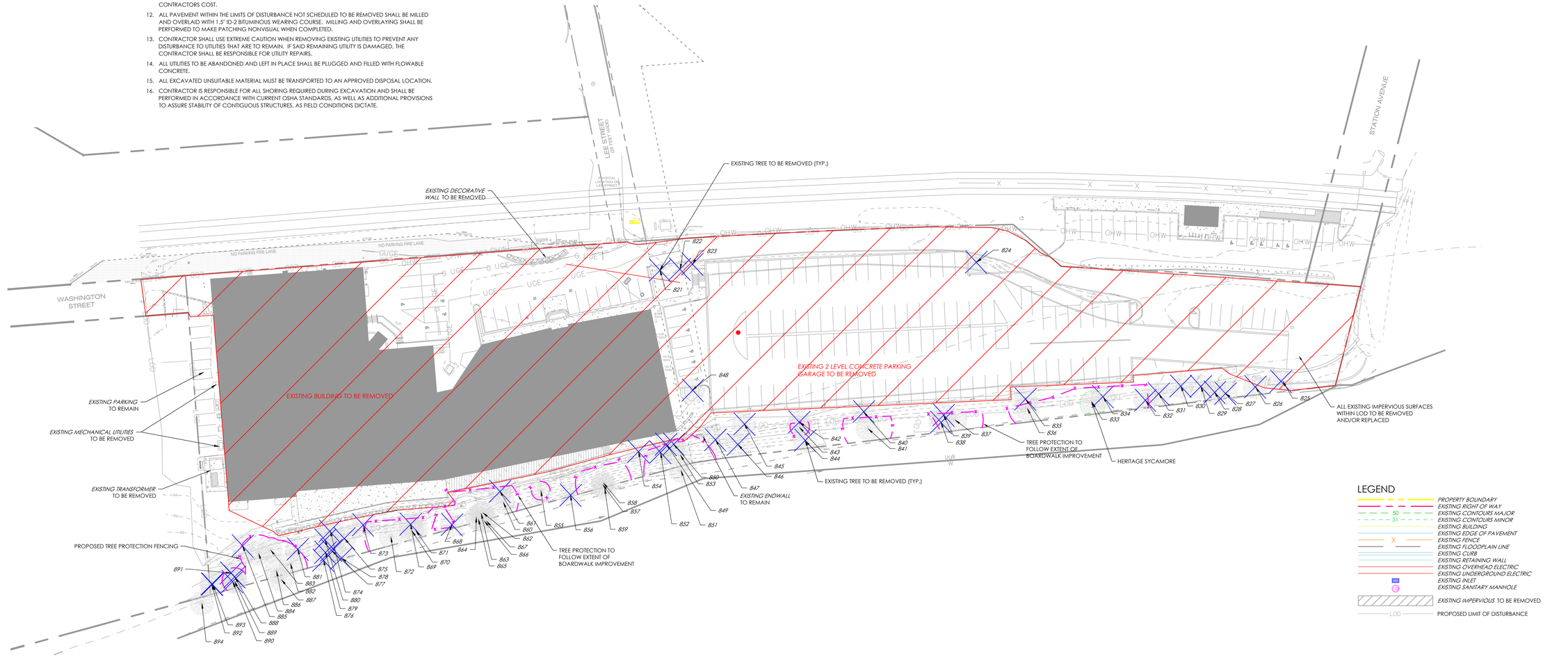
DEMOLITION NOTES:

1. LOCATIONS OF EXISTING UTILITIES AS SHOWN HEREIN HAVE BEEN DEVELOPED FROM EXISTING UTILITY RECORDS, PLANS BY OTHERS, ABOVE GROUND EXAMINATION OF THE SITE AND/OR PRIVATE UTILITY LOCATION COMPANY. THE COMPLETENESS OR ACCURACY OF THE LOCATIONS ARE NOT GUARANTEED. THE CONTRACTOR MUST VERIFY LOCATIONS AND DEPTHS OF ALL UTILITIES BEFORE START OF WORK.
2. PRIOR TO STARTING CONSTRUCTION, ALL UTILITY SERVICES IN THE AREA ARE TO BE LOCATED, THE USER NOTIFIED, AND MEASURES TAKEN TO PROTECT THE LINES IN ACCORDANCE WITH PA ACT 287, AS AMENDED. CONTRACTORS ARE TO IMMEDIATELY NOTIFY THE ENGINEER OF ANY DEVIATIONS FROM THE PLAN INFORMATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT PA "ONE-CALL" AT LEAST 72 HOURS TO ANY EXCAVATION OR DEMOLITION ON-SITE.
3. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO THE START OF DEMOLITION.
4. THE EXISTING ASPHALT TO BE RESURFACED SHALL BE PATCHED, FILLED AND/OR REPAIRED AS NECESSARY PRIOR TO THE APPLICATION OF THE WEARING COURSE.
5. IN ALL AREAS WHERE FINISHED PAVING IS TO BE PROVIDED, THE CONTRACTOR IS TO BREAK APART EXISTING ASPHALT TO EXISTING SUBBASE STONE, FOLLOWING MILLING, THE EXPOSED SUBGRADE SHALL BE INSPECTED FOR ITS SUITABILITY AS PAVEMENT SUBBASE, IN AREAS WHERE EXISTING ASPHALT WILL BE CONVERTED TO GREEN SPACE OR BUILDING, THE CONTRACTOR IS TO MILL OUT THE EXISTING ASPHALT FOR ITS REUSE ON-SITE AS SUBBASE IN PROPOSED ASPHALT PAVEMENT AREAS. ALL FILL MEASURES TO BE COMPACTED IN ACCORDANCE WITH THE GEOTECHNICAL SPECIFICATIONS.
6. WHERE IMPROVEMENTS ARE PROPOSED TO TIE INTO EXISTING FEATURES, THE EXISTING FEATURES SHALL BE FIELD VERIFIED FOR ELEVATION AND LOCATION. IF FIELD LOCATED DATA IS DIFFERENT THAN THE DATA CONTAINED WITH THE CONSTRUCTION DOCUMENTS, THE CONTRACTOR SHALL NOTIFY NAVE NEWELL, INC., PRIOR TO ANY DESIGN CHANGES.
7. THE PAVEMENT SECTION AREA DELINEATED ON THE PLANS TO BE MODIFIED SHALL BE USED AS GUIDANCE. EXPAND OR CONTRACT THIS AREA AT THE TIE IN LOCATION TO EXISTING PAVEMENT, SIDEWALK, DRIVEWAY APRONS, AND LOADING AREAS AS THE FIELD CONDITIONS WARRANT. ALL PAVEMENT SEAMS SHALL BE SEALED.
8. SITE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE DISCONNECTION, ABANDONMENT, RELOCATION AND/OR REMOVAL OF ALL APPLICABLE ON-SITE UTILITIES, IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS AS WELL AS ANY REQUIREMENTS FROM THE RELEVANT UTILITY COMPANY.
9. ALL DEMOLITION SHALL BE PERFORMED BY A QUALIFIED, LICENSED CONTRACTOR IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
10. THIS PLAN IS NOT INTENDED TO DEPICT ALL FACETS AND ITEMS TO BE ADDRESSED DURING THE COURSE OF DEMOLITION ACTIVITIES. THIS PLAN IS INTENDED TO REPRESENT ONLY THE READILY VISIBLE, EXISTING IMPROVEMENTS ON-SITE. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE SITE CONDITION PRIOR TO FINALIZING HIS BID AND PROVIDE ALL NECESSARY DEMOLITION SERVICES REQUIRED TO COMPLETE THE SCOPE OF WORK OUTLINED ON THESE DRAWINGS. UPON INITIATION OF DEMOLITION, CONTRACTOR SHALL ADVISE THE ENGINEER OF RECORD IMMEDIATELY, SHOULD CONFLICTS ARISE IN THE FIELD.
11. CONTRACTOR IS TO EXERCISE CARE WHEN REMOVING PAVEMENT OVER EXISTING PIPES TO REMAIN. DURING CONSTRUCTION, CONTRACTOR SHALL TAKE STEPS TO MAINTAIN ADEQUATE COVER OVER ALL EXISTING PIPES TO REMAIN AND TO PREVENT CONSTRUCTION TRAFFIC FROM DAMAGING SAID PIPES. IF THE EXISTING PIPES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM IN KIND AT THE CONTRACTORS COST.
12. ALL PAVEMENT WITHIN THE LIMITS OF DISTURBANCE NOT SCHEDULED TO BE REMOVED SHALL BE MILLED AND OVERLAID WITH 1.5" ID-2 BITUMINOUS WEARING COURSE. MILLING AND OVERLAYING SHALL BE PERFORMED TO MAKE PATCHING NONVISUAL WHEN COMPLETED.
13. CONTRACTOR SHALL USE EXTREME CAUTION WHEN REMOVING EXISTING UTILITIES TO PREVENT ANY DISTURBANCE TO UTILITIES THAT ARE TO REMAIN. IF SAID REMAINING UTILITY IS DAMAGED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR UTILITY REPAIRS.
14. ALL UTILITIES TO BE ABANDONED AND LEFT IN PLACE SHALL BE PLUGGED AND FILLED WITH FLOWABLE CONCRETE.
15. ALL EXCAVATED UNSUITABLE MATERIAL MUST BE TRANSPORTED TO AN APPROVED DISPOSAL LOCATION.
16. CONTRACTOR IS RESPONSIBLE FOR ALL SHORING REQUIRED DURING EXCAVATION AND SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS, AS WELL AS ADDITIONAL PROVISIONS TO ASSURE STABILITY OF CONTIGUOUS STRUCTURES, AS FIELD CONDITIONS DICTATE.



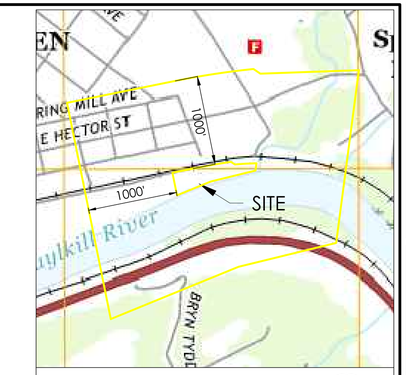


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'

LEGEND

- PROPERTY BOUNDARY
- EXISTING RIGHT OF WAY
- EXISTING CONTOURS MAJOR
- EXISTING CONTOURS MINOR
- EXISTING BUILDING
- EXISTING EDGE OF PAVEMENT
- EXISTING FENCE
- EXISTING FLOODPLAIN LINE
- EXISTING CURB
- EXISTING RETAINING WALL
- EXISTING OVERHEAD ELECTRIC
- EXISTING UNDERGROUND ELECTRIC
- EXISTING INLET
- EXISTING SANITARY MANHOLE
- EXISTING IMPERVIOUS TO BE REMOVED
- PROPOSED LIMIT OF DISTURBANCE

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

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3	REVISED PER SEC REVIEW MEMO DATED 7/18/2025	7/29/2025	JPB JGE
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REVISIONS

SEAL: COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER JAMES P. BANNON ENGINEER No. PE082137

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: DEMOLITION PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no.: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1"=40'	approv. by: JPB

sheet no.

C2.0

6 of 20

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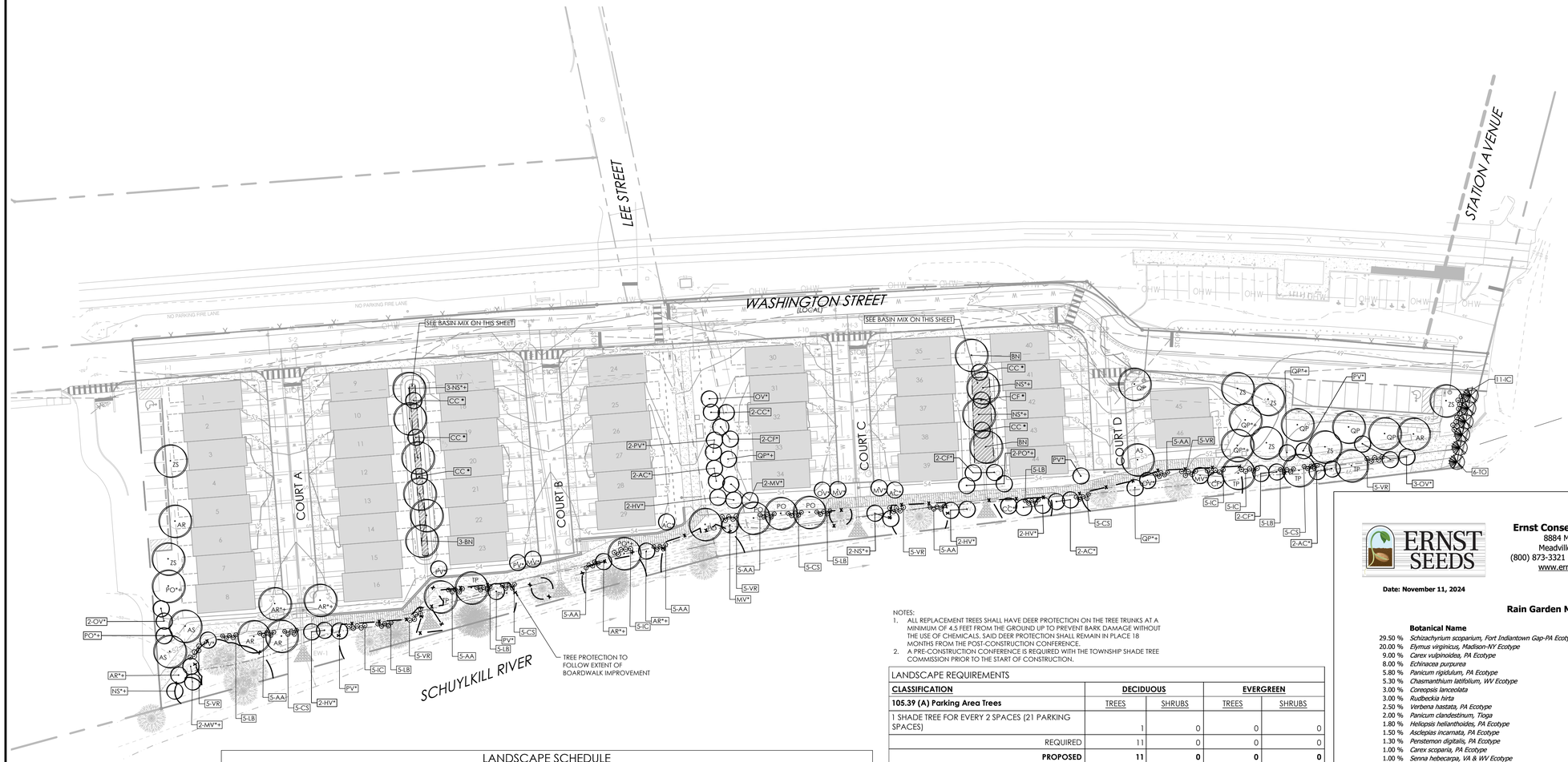

LANDSCAPE SCHEDULE

Count	SYMBOL	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	CALIPER	ROOT	NOTES	
8	AC	AMELANCHIER CANADENSIS	SERVICEBERRY	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
9	AR	ACER RUBRUM	RED MAPLE	10-12'		3" CAL. (TYP.)	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
3	AS	ACER SACCHARUM	SUGAR MAPLE	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
5	BN	BETULA NIGRA	RIVER BIRCH	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
8	CC	CERCIS CANADENSIS	EASTERN REDBUD	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
8	CF	CORNUS FLORIDA	FLOWERING DOGWOOD	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
8	HV	HAMAMELIS VIRGINIANA	COMMON WITCH HAZEL	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
8	MV	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
8	NS	NYSSA SYLVATICA	BLACKGUM	10-12'		3" CAL. (TYP.)	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
8	OV	OSTRYA VIRGINIANA	AMERICAN HOPHORNBEAM	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
9	PO	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	10-12'		3" CAL. (TYP.)	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
9	PV	PRUNUS VIRGINIANA	CHOKECHERRY	10-12'		2" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - UNDERSTORY
9	QP	QUERCUS PHELLOS	WILLOW OAK	10-12'		3" CAL. (TYP.)	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY
5	TP	LIRIODENDRON TULIPIFERA	TULIP POPLAR	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE- CANOPY
7	ZS	ZELKVOA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	10-12'		3" CAL.	B&B	UNIFORM SIZE AND SPREAD	NATIVE - CANOPY

+ DENOTES 5" CALIPER

*** DENOTES QUANTIFYING FOR TREE REPLACEMENT CRITERIA PER CHAPTER 55**

EVERGREEN TREES

Count	SYMBOL	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	CALIPER	ROOT	NOTES
6	TO	THUJA OCCIDENTALIS	AMERICAN ARBORVITAE	6' MIN.			B&B	UNIFORM SIZE AND SPREAD

SHRUBS

Count	SYMBOL	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	CALIPER	ROOT	NOTES
35	AA	ARONIA ARBUTIFOLIA	RED CHOKEBERRY	24"-36" MIN.	24"-36" MIN.		#5 CONT.	UNIFORM SIZE AND SPREAD
25	CS	CORNUS SERICEA	RED OSIER DOGWOOD	24"-36" MIN.	24"-36" MIN.		#5 CONT.	UNIFORM SIZE AND SPREAD
31	IC	ILEX CRENATA	JAPANESE HOLLY	24"-36" MIN.	24"-36" MIN.		#5 CONT.	UNIFORM SIZE AND SPREAD
30	LB	LINDERA BENZOIN	SPICEBUSH	24"-36" MIN.	24"-36" MIN.		#5 CONT.	UNIFORM SIZE AND SPREAD
30	VR	VIBURNUM RHYTIDOPHYLLUM	LEATHERLEAF VIBURNUM	24"-36" MIN.	24"-36" MIN.		#5 CONT.	UNIFORM SIZE AND SPREAD

NOTES:
1. ALL REPLACEMENT TREES SHALL HAVE DEER PROTECTION ON THE TREE TRUNKS AT A MINIMUM OF 4.5 FEET FROM THE GROUND UP TO PREVENT BARK DAMAGE WITHOUT THE USE OF CHEMICALS. SAID DEER PROTECTION SHALL REMAIN IN PLACE 18 MONTHS FROM THE POST-CONSTRUCTION CONFERENCE.
2. A PRE-CONSTRUCTION CONFERENCE IS REQUIRED WITH THE TOWNSHIP SHADE TREE COMMISSION PRIOR TO THE START OF CONSTRUCTION.

LANDSCAPE REQUIREMENTS				
CLASSIFICATION	**DECIDUOUS**		**EVERGREEN**	
105.39 (A) Parking Area Trees	TREES	SHRUBS	TREES	SHRUBS
1 SHADE TREE FOR EVERY 2 SPACES (21 PARKING SPACES)	1	0	0	0
REQUIRED	11	0	0	0
PROPOSED	**11**	**0**	**0**	**0**
105.52 (A) Buffer Trees	TREES	SHRUBS	TREES	SHRUBS
1 EVERGREEN TREE PER 15 LF; 1 EVERGREEN SHRUB PER 8 LF. (1,299.2 LF.)	0	0	1	1
REQUIRED	0	0	6	11
PROPOSED	**0**	**0**	**6**	**11**
116.284 (A).3 Trail Landscaping	TREES	SHRUBS	TREES	SHRUBS
1 TREE PER 50 LINEAR FEET (1,045.2 LF)	1	0	0	0
REQUIRED	21	0	0	0
PROPOSED	**21**	**0**	**0**	**0**
CH 55: SECTION 55-1.6.A	TREES	SHRUBS	TREES	SHRUBS
PER REMOVED TREE W/ DBH OF 6" OR GREATER (39 LIVING/HEALTHY TREES REMOVED). TOTAL CALIPER OF REPLACEMENT TREES MUST EQUAL/EXCEED TOTAL DBH REMOVED (662"). 1 (3") or 2 (2")	0	0	0	0
REQUIRED	221	0	0	0
PROPOSED*	**81**	**90**	**0**	**50**
	DECIDUOUS		**EVERGREEN**	
TOTAL LANDSCAPING	TREES	SHRUBS	TREES	SHRUBS
REQUIRED	253	0	6	11
PROPOSED	**113**	**90**	**6**	**61**

*** 11 CANOPY (5") AND 70 UNDERSTORY (2") (TYP.)**

TREE REPLACEMENT REQUIREMENT: 662" FOR 39 HEALTHY TREES REMOVED, 53% OF TOTAL EXISTING		
	PROPOSED REPLACEMENT TREES AND SHRUBS	CALIPER INCHES
5" SHADE TREE	11	55"
5" ORNAMENTAL TREE	12	60"
2" ORNAMENTAL TREE (2:1)	58 (/2=29)	87"
SHRUBS (5:1)	140 (/5=28)	84"
		286" TOTAL REPLACED, REMAINDER TO BE REPLACED BY FEE-IN-LIEU

*** 134 REQUIRED 3" CAL. REPLACEMENT TREES TO BE SUBSTITUTED BY FEE-IN-LIEU AT $125,960 ($940 * 134)**

NOTE:
WHITEMARSH TOWNSHIP ZONING HEARING BOARD GRANTED THE FOLLOWING RELIEF BY DECISION DATED MAY 15 2024:
1. VARIANCE PURSUANT TO SECTION 116.283.C.(1), SO AS TO PERMIT CURB AND SIDEWALK ALIGNMENT ALONG WASHINGTON STREET WITHOUT STREET TREES AND THE REQUIRED 5 FOOT VERGE/STRIP, BOTH AS REQUIRED IN CROSS-REFERENCED SECTION 105-48 OF THE SUBDIVISION AND LAND DEVELOPMENT ORDINANCE.
2. VARIANCE PURSUANT TO SECTION 116.283.D.(1)(e), SO AS TO PERMIT CURB AND SIDEWALK WITHOUT A PLANTING STRIP.

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www.ernstseed.com

Date: November 11, 2024

Rain Garden Mix - ERNMX-180

	Botanical Name	Common Name	Price/Lb
29.50 %	*Schizachyrium scoparium, Fort Indiantown Gap-PA Ecotype*	Little Bluestem, Fort Indiantown Gap-PA Ecotype	12.99
20.00 %	*Elymus virginicus, Madison-NY Ecotype*	Virginia Wildrye, Madison-NY Ecotype	10.46
9.00 %	*Carex vulpinoidea, PA Ecotype*	Fox Sedge, PA Ecotype	28.80
8.00 %	*Echinacea purpurea*	Purple Coneflower	43.20
5.80 %	*Panicum rigidulum, PA Ecotype*	Redtop Panicgrass, PA Ecotype	57.60
5.30 %	*Chasmanthium latifolium, WV Ecotype*	River Oats, WV Ecotype	96.00
3.00 %	*Coreopsis lanceolata*	Lanceleaf Coreopsis	28.80
3.00 %	*Rudbeckia hirta*	Blackeyed Susan	31.20
2.50 %	*Verbena hastata, PA Ecotype*	Blue Vervain, PA Ecotype	38.40
2.00 %	*Panicum clandestinum, Tioga*	Deertongue, Tioga	22.26
1.80 %	*Heliopsis helianthoides, PA Ecotype*	Oxeye Sunflower, PA Ecotype	33.60
1.50 %	*Asclepias incarnata, PA Ecotype*	Swamp Milkweed, PA Ecotype	177.60
1.30 %	*Penstemon digitalis, PA Ecotype*	Tall White Beardtongue, PA Ecotype	168.00
1.00 %	*Carex scoparia, PA Ecotype*	Blunt Broom Sedge, PA Ecotype	81.60
1.00 %	*Senna hebecarpa, VA & WV Ecotype*	Wild Senna, VA & WV Ecotype	28.80
1.00 %	*Zizia aurea, PA Ecotype*	Golden Alexanders, PA Ecotype	72.00
0.50 %	*Baptisia australis, Southern WV Ecotype*	Blue False Indigo, Southern WV Ecotype	96.00
0.50 %	*Juncus effusus*	Soft Rush	48.00
0.50 %	*Juncus tenuis, PA Ecotype*	Path Rush, PA Ecotype	48.00
0.50 %	*Pycnanthemum tenuifolium*	Narrowleaf Mountainmint	240.00
0.50 %	*Vernonia noveboracensis, PA Ecotype*	New York Ironweed, PA Ecotype	264.00
0.40 %	*Aster novae-angliae*	New England Aster	336.00
0.40 %	*Monarda fistulosa, Fort Indiantown Gap-PA Ecotype*	Wild Bergamot, Fort Indiantown Gap-PA Ecotype	96.00
0.20 %	*Aster lateriflorus*	Calico Aster	336.00
0.20 %	*Aster prenanthoides, PA Ecotype*	Zigzag Aster, PA Ecotype	432.00
0.10 %	*Aster pilosus, PA Ecotype*	Heath Aster, PA Ecotype	264.00
0.10 %	*Eupatorium perfoliatum, PA Ecotype*	Boneset, PA Ecotype	192.00
0.10 %	*Mimulus ringens, PA Ecotype*	Square Stemmed Monkeyflower, PA Ecotype	216.00
0.10 %	*Solidago juncea, PA Ecotype*	Early Goldenrod, PA Ecotype	336.00
0.10 %	*Solidago nemoralis, PA Ecotype*	Gray Goldenrod, PA Ecotype	264.00
0.10 %	*Solidago rugosa, PA Ecotype*	Wrinkleleaf Goldenrod, PA Ecotype	264.00
100.00 %		**Mix Price/Lb Bulk:**	**$39.16**

Seeding Rate: 20 lb per acre with a cover crop. For sites that drain within 24 hours of a rain event use one of the following cover crops:Oats (1 Jan to 31 Jul; 30 lbs/acre), Japanese Millet (1 May to 31 Aug; 10 lbs/acre), or grain rye (1 Aug to 31 Dec; 30 lbs/acre).

Grasses & Grass-like Species - Herbaceous Perennial; Herbaceous Flowering Species - Herbaceous Perennial; Stormwater Management; Uplands & Meadows

The native perennial forbs and grasses provide food and cover for rain garden biodiversity. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

Price quotes guaranteed for 30 days.
All prices are FOB Meadville, PA.
Please check our web site at www.ernstseed.com
for current pricing when placing orders.

LEGEND

- PROPERTY BOUNDARY LINE
- RIGHT-OF-WAY LINE
- BUILDING SETBACK LINE
- 50 EXISTING MAJOR CONTOUR
- 51 EXISTING MINOR CONTOUR
- EXISTING CURB LINE
- EXISTING FENCE LINE
- EXISTING EDGE OF BANK
- 50 PROPOSED CONCRETE CURB
- PROPOSED MAJOR CONTOUR
- 51 PROPOSED MINOR CONTOUR
- PROPOSED RETAINING WALL
- PROPOSED LANDSCAPING

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REVISIONS				
date:	no.	description	chk'd	by
3/27/2025	1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	BTK	GSS
6/26/2025	2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	BTK	GSS
7/29/2025	3	REVISED PER STC REVIEW MEMO DATED 7/18/2025	JPB	JGE
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SEAL:
PAUL E. LEGGE, ASSOC. AIA
REGISTERED ARCHITECT
Registered Architect/Landscape Architect
Pennsylvania License No. LA001322-R

DRAWING NAME: LANDSCAPE PLAN
LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

1001 WASHINGTON STREET

project no.	drawn by:
2024-001.02	GSS
date:	chk'd by:
11/15/24	BTK
scale:	approv. by:
1"=40'	PEL

sheet no.
C7.0
11 of 20

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

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GENERAL PLANTING

SUBMITTALS:

Topsoil & Planting soils: A soil analysis report shall be submitted and show the percentage of each constituent, pH, and other pertinent soil characteristics. Recommendations should include quantities of each soil amendment and fertilizer required to achieve optimal soil conditions.

Maintenance Written Maintenance Instructions for the owner's use and reference for the maintenance of landscaping must be submitted prior to acceptance of landscaping. This will list the scope of maintenance, including initial maintenance recommendations, 12 months, and long term.

QUALITY ASSURANCE:

General All material must comply with the American Standard for Nursery Stock (ANSI Z60.1) new standards applicable to landscaping. Material must be provided as indicated with no substitutions permitted unless with approval from the landscape architect.

Inspection The landscape architect retains the right to inspect planting materials at any time for compliance with the contract documents. Regarding, but not limited to, latent defects, lack of protection or maintenance, and may reject defective or damaged material. Rejected material must be immediately removed from the project site. Contractor shall schedule plant inspection with landscape architect prior to installation of all plant materials.

DELIVERY, STORAGE, AND HANDLING:

Packaged Materials Material must be delivered in original unopened containers displaying weight, guaranteed chemical analysis, and manufacturer's name or furnished in bulk with appropriate certificates and protected from deterioration.

Sod Delivery of sod shall be timed so that it will be installed within 24 hours after delivery, sod shall be protected against drying and breakage.

Ground Covers and Plants Delivery shall be scheduled to avoid on site storage. If planting does not occur on same day as delivery, store in location protected from sun and weather. All trees and shrubs shall not be pruned before delivery in order to prevent shock. Stock must be covered for protection during transportation. Stock shall be bound to protect branches, bark, and overall shape during transport. Any balled and burlapped stock must be freshly dug unless otherwise approved. Stock must not be dropped. Stock must be delivered only after soil has been prepared. Schedule plant harvest with delivery in quantities suitably timed for immediate planting upon arrival. If planting cannot be accomplished immediately, provide shade, protect from wind and protect root balls from drying out by covering at all times with moist saw dust, wood chips, shredded bark or other similar mulching materials. All plant material shall be suitably watered during on site storage.

PROJECT CONDITIONS:

Work coordination All work shall be scheduled and coordinated with work occurring in other sections of the project and local seasons. All underground utilities must be located so to avoid damage and injury. The contractor shall be responsible for all repairs to any utility damages associated with excavation and planting.

The landscape architect shall be notified prior to the beginning of planting operations. Spring planting should be between April 15' and June 15'. Fall planting should occur between August 30' and October 15'. Do not install plant materials when temperatures are below 35 degrees Fahrenheit or above 90 degrees Fahrenheit.

Sequencing Final grades must be established before planting trees and shrubs. Lawns may then be installed unless specified on the plans differently. Earlier plantings must be protected from later planting operations and repairs made to any resulting damage or inconsistencies.

WARRANTIES:

General Warranties shall be addition to, and not a limitation of, other rights the owner may have against the contractor under the contract documents.

Lawns Warrant lawns until turf exhibits vigorous growth for (12) months. Lawns need to have 80% coverage/viable seed for survival.

Trees and Shrubs Warrant trees and shrubs for twelve (12) months after final approval by Township Landscape Architect. Warranty shall cover death, unsatisfactory growth, neglect, vandalism, and/or acts of God. If completion of landscaping work is materially delayed beyond the date of substantial completion, provide warranty commencing on date of acceptance by the project landscape architect and township/municipality landscape architect.

Unsatisfactory Material Replace unsatisfactory material with matching, healthy, vigorous plants. Plant only during the subsequent planting season. At the direction of the project landscape architect, either replace materials exhibiting poor quality, marginal condition or extend the warranty covering such materials for one full growing season. Any plant material of which 25% or more is dead shall be considered unsatisfactory. A tree shall be considered dead when more than 25% of the trees main leader has died, 25% of the crown is dead or the root buttress circumference is damaged. Another inspection will be conducted at the end of the extended warranty period(s), if any, to determine acceptance or rejection. Only one replacement will be required at the end of the warranty period, except for losses or replacements due to neglect or failure to comply with specified requirements.

MAINTENANCE:

Lawns- Maintain lawn from immediately after planting until an acceptable lawn is established. At the end of the maintenance period, sodded lawns shall be uniform in texture, density and species variety. Water regularly and at such times and rates as necessary for optimum growth and to avoid wilting, puddling, runoff, or erosion. Mow grass at regular intervals. Do not cut more than 1/3 of grass blade at any one mowing. Trim edges and clip by hand where necessary. Immediately remove clippings after mowing and trimming. Follow-up application of fertilizer for cool season turf/lawns: if the seeding was done in the fall, fertilizer should be applied no later than November 15. For seed sown in the spring, do not apply after June 1. Apply 0.9-1.8 lbs a year 0.9lb. in September and 0.9lb. in October for cool season grasses. Do not apply fertilizer between November 15 and March 1. Control growth of weeds by applying herbicides in accordance with manufacturer's instructions. Remedy any damage resulting from use of herbicides.

Regrade and replant areas to correct rutted, damaged, or improperly graded areas.

Trees and Shrubs Maintain trees and shrubs from immediately after planting through the warranty period. Provide all maintenance necessary to achieve healthy plant growth such as eroded watering basis around trunks if needed. Adjust stakes and guys to provide proper support and replant trees and shrubs to vertical position if necessary. Apply insecticides or fungicides if necessary to prevent or correct insect infestation and disease.

Ground Covers/Small Plants/Plugs - Maintain ground covers, small plants, and plugs from immediately after planting through the warranty period. Provide the following maintenance necessary to achieve healthy plant growth: water regularly and on a timely basis, remove weeds and replace mulch if needed, and spray as required to keep ground cover and small plants free of insects and disease.

Watering All plants shall be thoroughly watered twice during the first 24 hours after planting. Until plants and lawns are accepted by the landscape architect, the contractor is responsible for watering. Watering shall be provided as needed to assure healthy plant materials, turf and trees.

PRODUCTS:

TOPSOIL

Topsoil at Site Verify suitability and quantity of topsoil stockpiled at site. If sufficient quantities of suitable topsoil are not available at the site, provide topsoil from approved off-site sources. Fertile agricultural soil, typical for locality, capable of sustaining vigorous plant growth and taken from a drained site; free of subsoil, rocks larger than 2 inches in diameter, clay, toxic matter, plants, weeds, and roots.

SOIL AMENDMENTS

Lime Pulverized dolomitic limestone containing not less than 85 percent total carbonates with a minimum of 30 percent magnesium carbonates; minimum 90 percent passing a 10-mesh sieve and minimum 50 passing a 100-mesh sieve.

Humus Shall be decomposed organic matter; pH suitable for intended use.

Sand Shall be clean, washed sand, free of toxic materials.

Perlite Horticultural perlite of soil amendment grade.

Commercial Fertilizer Granular, commercial grade, pH neutral, comprised of both slow and fast release elements and containing the following minimum content of available plant nutrients:

- Trees and shrubs 5% total nitrogen, 10% phosphoric acid, 5% soluble potash
- Ground cover and plants 3% total nitrogen, 10% phosphoric acid, 5% soluble potash
- Lawns Available nitrogen content as required to provide 1 pound per 1,000 square feet at normal application rate, minimum 4% phosphoric acid, and minimum 2% soluble potash.

SEEDING:

Apply seed at a rate of 4 lbs. per 1,000 square feet evenly in two intersecting directions. Rake in slightly. Do not seed areas in excess of that which can be mulched the same day. Do not sow immediately following rain, when ground is too dry, or during windy periods. Roll seeded area with roller not exceeding 100 lbs. Immediately following seeding and compacting, apply even layer of hay mulch. Maintain clear of shrubs and trees. Apply water with a fine spray immediately after area has been mulch. Saturate to 4 inches of soil.

SEED SPECIFICATION

Turf Mixture:
15% Kentucky Bluegrass
35% Kentucky 31 Fescue
25% Chewings Fescue
15% Perennial Rye Grass
10% Reclaened Redtop

HYDROSEEDING

Apply seeding slurry with a hydraulic seeder at a rate of 4 lbs. of seed per 1,000 square feet evenly in two intersecting directions. Do not hydroseed areas in excess of that which can be mulched on the same day. Immediately following seeding, apply an even layer of hay mulch. Maintain clear of shrubs and trees. Apply water with a fine spray immediately after the area has been mulched. Saturate to 4 inches of soil.

SEED PROTECTION

Cover seeded slopes where grade exceeds 1' in 5' or greater with a jute erosion control blanket (NA Green's BioNet). Roll fabric onto slopes without stretching or pulling. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Provide 12 inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil. Secure outside edges and overlaps at 36"intervals with stakes. Lightly dress slopes with topsoil to ensure close contact between fabric and soil. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches

SPECIFICATIONS:

TREES AND SHRUBS

General Provide nursery or plantation grown stock conforming to the American Standard for Nursery Stock. All vegetation shall be nursery grown, well-branched and uniformly sound, vigorous, healthy, and free from disease, sun-scald, windburn, abrasion, and harmful insects or insect eggs. Deciduous trees and shrubs shall be symmetrically developed, uniform habit growth, with straight trunks or stems, and free from objectionable disfigurements. Coniferous evergreen trees and shrubs shall have well- developed symmetrical canopies with uniform spread of branches for each particular species or variety. Provide stock complying in all respect with ANSI Z60.1 and in sizes indicated, measured in accordance with ANSI Z60.1. Larger sizes with larger roots and root containment may be furnished, if approved by the landscape architect. Do not spread or compress branches when measuring. Measure main body of branches; do not measure extreme tip to tips of single branches. Pruning to size is not acceptable. Shade and flowering trees, deciduous, shrubs, and coniferous evergreens shall be balled and burlapped (B&B).

PLANTS

General Provide field-grown or acclimatized container-grown plants from a commercial nursery, healthy, vigorous, of sizes indicated and in accordance with ANSI Z60.1, Section 7, "Young Plants".

PLUGS

General Provide field-grown or acclimatized container-grown plants from a commercial nursery, healthy, vigorous, of the sizes indicated and in accordance with ANSI Z60.1, Section 7, "Young Plants".

GRASS MATERIALS

Sod Provide viable (not dormant) certified turf grass complying with ASPA specifications for thickness, size, strength, moisture content, mowed height, time between harvest and transplanting, thatch, disease, nematodes, insects, and weeds. Sod type shall be Kentucky Bluegrass (Poa pratensis). (Seed Mix: 30% Midnight Star Kentucky Bluegrass, 30% Brilliant Kentucky Bluegrass, 40% P105 Kentucky Bluegrass)

Miscellaneous Landscape Material:

Decorative Mulch Shall be free of harmful materials, suitable for top dressing of plantings, and consisting of dye/pigment free, composted double shredded hardwood.

Anti-desiccant is a film forming an emulsion, permeable to transpiration yet retarding to excessive moisture loss.

Staking and Guying Materials Stakes shall be hardwood lumber of sizes indicated; sound, straight, and free of splits and knots larger than ¼ of the least nominal dimension of the piece. Sharpen end and chamfer sides of driven end to prevent splitting from off-center hammer strikes. Stakes shall be fastened to tree using ½" 2" wide, flat, woven polypropylene material such as Arbor Tie™or use 3"wide webbing straps secured to stakes with galvanized mild steel wire, minimum 12 gauge; provide double strands. Do not run wire through hose. Attach loosely to allow flexing, remove staking material after one year.

PLANTING SOIL

Soil Mix Provide planting soil mix, consisting of topsoil and amendments as recommended by soil analysis laboratory report.

Mixing Mix topsoil and amendments thoroughly to provide uniform mixture, using a drum-type mechanical mixer, powered rotary tiller, or other means acceptable to the landscape architect.

EXECUTION

PREPARATION:

Clearing and Grubbing
The work consists of clearing, grubbing, and disposing of trees, snags, logs, brush, stumps, shrubs, and rubbish from the designated areas.
Protection of existing vegetation
Trees and other vegetation designated to remain undisturbed shall be protected from damage throughout the duration of the construction period. Any damages resulting from the contractor's operations or neglect shall be repaired or replaced by the contractor.
Marking
The limits of the area(s) to be cleared and grubbed will be marked by stakes, flags, tree markings, or other suitable methods. Trees to be left standing and uninjured will be designated by special markings that are conducive to preventing injury to the tree and shall be placed on the trunk about 6 feet above the ground surface.
Clearing and grubbing
All trees not marked for preservation and all snags, logs, brush, stumps, shrubs, rubbish, and similar materials shall be cleared from within the limits of the designated areas. Unless otherwise specified, all stumps, roots, and root clusters that have a diameter of 1 inch or larger shall be grubbed out to a depth of at least 2 feet below subgrade for concrete structures and 1 foot below the ground surface at embankment sites and other designated areas.
Disposal
All materials cleared and grubbed from the designated areas shall be disposed of at locations shown on the drawings or in a manner specified in section 7. The contractor is responsible for complying with all local rules and regulations and the payment of any and all fees that may result from disposal at locations away from the project site.

Layout Lay out planting locations, mark with stakes, adjust locations if requested and obtain the landscape architect's approval of locations before proceeding with installation.

Subgrades All subgrades under planting areas (except for within an area equal to the dripline underneath existing trees to remain) shall be scarified to a depth of 4 inches before placing topsoil. Where compaction has resulted from construction operations, the owner may require scarification to a depth of 6 inches.

Preparation of Planting Soil Prior to mixing in drum type mixer or during tillage operations, clean topsoil of sticks, stones, clay lumps, vegetable matter, and other objectionable objects. Pit and trench backfill: mix planting soil and stockpile at site, ready for use as backfill. For planting beds and lawns, either mix planting soil before placing or uniformly spread fertilizer in and soil amendments on surface of in place topsoil and till thoroughly before planting.

Preparation for Planting Lawns Prepare only those areas that will be immediately planted. Allow for sod thickness in area to be sodded. For preparation of stripped areas, till subgrade to a depth of at least 4 inches. Place topsoil in two approximately equal lifts, working first lift into subgrade before placing second lift. Spread second lift to comply with finished lines, grades, and elevations required after allowing for settlement. To prepare for unchanged grades, prepare yet unstripped areas as follows: remove existing vegetation including grasses and dispose of off-site. Till the soil to a depth of at least 6 inches. Clean topsoil of sticks, stones, clay, lumps, vegetable matter, and other objectionable objects. Fine-grade, roll, rake, and drag lawn areas cutting down high spots and filling low spots, leaving a smooth, even surface of fine-textured soil complying with required grades. If dry, water full depth of topsoil thoroughly but not excessively and allow surface moisture to dry before planting. Just before planting, correct any lawn areas that have been eroded, rutted, or settled.

Preparation of Planting Beds Till planting bed area to a depth of at least 6 inches, clear, and add soil amendments necessary to achieve optimum growing conditions and till thoroughly.

Excavation for Trees and Shrubs Pits, beds, and trenches: Excavate with sides vertical and bottom flat. Deglaze sides and loosen bottom.

All excavated holes shall have vertical sides and shall be of a size that is three times the diameter and 1 and 1/2 times the depth of the root ball for all trees and shrubs. After pits are dug, roughen the sides of the pit and loosen soil in the bottom of the pit to a depth of 3 inches. Construct foot-tamped mound in the bottom of the pit to support the plant at the proper level. All excavated subsoil from the site shall be mixed with appropriate volumes of soil amendments as recommended by soils analysis laboratory report as indicated on plans prior use of planting backfill.

PLANTING TREES AND SHRUBS:

Balled and Burlapped Stock Cut and remove rope and wire from the top 2/3 of the root ball. Set plants in excavation with top of ball to match adjacent finished grade. Add soil as required under ball to achieve plumb. Remove burlap from the top 2/3 of ball; retain burlap on bottom of ball. Place backfill in 3 4 inch thick layers. Work each layer by hand to compact backfill and eliminate voids. Maintain plumb during backfilling. When backfilling is approximately 2/3 complete, saturate backfill with water and repeat until suitably filled and compacted. Remainder of backfill and water again, provide earth watering basin saucer, as indicated on the plans, and water stock.

Container Grown Plant/Plug Immediately before placing, remove container, or can. Container Removal: a. Cut containers on 2 sides with a can cutter designed for the job. b. Do not injure root ball. c. Do not cut containers with spade or ax. d. After removing plant, superficially cut edge roots with knife on 3 sides. Set and plumb plants. Place initial backfill and remove sides of container, taking care to avoid damage to root system.

Groundcover plants shall be grown in flats or gallon containers as indicated on the Drawings. Flat grown plants shall remain in those flats until transplanting. The flat's soil shall contain sufficient moisture so that it will not fall apart when lifting the plants. 2. Groundcover shall be planted in straight rows and evenly spaced, unless otherwise noted, and at intervals called out in the Drawings. Triangular spacing shall be used unless otherwise noted on the Drawings. 3. Each rooted plant shall be planted with its proportionate amount of flat or container soil. Plantings shall be immediately sprinkled with water after planting until the entire area is soaked to the full depth of each hole. 4. Care shall be exercised at all times to protect the plants after planting. Any damage to plants by trampling or other operations shall be repaired immediately.

Basin Form earthen watering basin around excavation area with backfill holding at least 2 ½gallons for shrubs and 5 gallons for trees. Apply mulch.

Anti-dessicant Spray Apply, covering all portions of plant in accordance with manufacturer's instructions. If in full leaf, spray deciduous trees or shrubs at nursery just before transportation, and 2 weeks after transplanting.

Pruning Remove dead or broken branches. Prune to retain typical growth habit of plants with as much height and spread as practical. Make cuts with sharp instruments and flush with trunk or adjacent branch. Do not remove leaders from trees.

STAKING AND GUYING OF TREES:

Guy and stake trees the same day as planting. Unless otherwise directed, trees shall be staked as shown on the plans and in accordance with these specifications. Refer to drawings and schedule for guying and staking requirements. Trees shall stand plumb after staking. At the time the stakes are removed any holes left by the stake shall be filled with topsoil of the same quality as the backfill previously specified for planting.

SODDING NEW LAWNS:

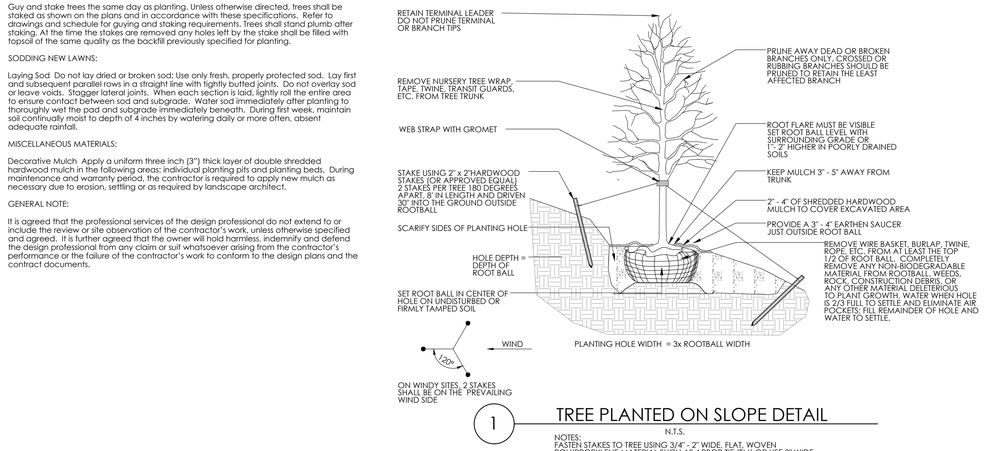
Laying Sod Do not lay dried or broken sod; Use only fresh, properly protected sod. Lay first and subsequent parallel rows in a straight line with tightly butted joints. Do not overlay sod or leave voids. Stagger lateral joints. When each section is laid, lightly roll the entire area to ensure contact between sod and subgrade. Water sod immediately after planting to thoroughly wet the pad and subgrade immediately beneath. During first week, maintain soil continually moist to depth of 4 inches by watering daily or more often, absent adequate rainfall.

MISCELLANEOUS MATERIALS:

Decorative Mulch Apply a uniform three inch (3") thick layer of double shredded hardwood mulch in the following areas: individual planting pits and planting beds. During maintenance and warranty period, the contractor is required to apply new mulch as necessary due to erosion, settling or as required by landscape architect.

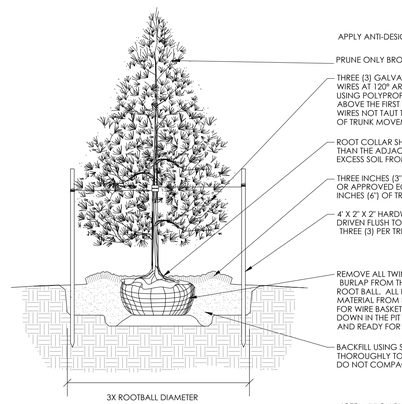
GENERAL NOTE:

It is agreed that the professional services of the design professional do not extend to or include the review or site observation of the contractor's work, unless otherwise specified and agreed. It is further agreed that the owner will hold harmless, indemnify and defend the design professional from any claim or suit whatsoever arising from the contractor's performance or the failure of the contractor's work to conform to the design plans and the contract documents.



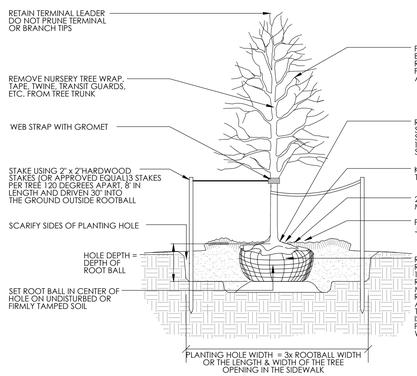
1 TREE PLANTED ON SLOPE DETAIL
N.T.S.

NOTES:
FASTEN STAKES TO TREE USING 3/4" - 2" WIDE, FLAT, WOVEN POLYPROPYLENE MATERIAL SUCH AS ARBOR TIE (TM) OR USE 3" WIDE WEBBING STRAPS SECURED TO STAKES WITH HEAVY GAUGE WIRE. DO NOT USE WIRE RUN THROUGH HOSE. ATTACH TREE LOOSELY TO ALLOW FLEXING. REMOVE STAKING MATERIAL AFTER ONE YEAR.



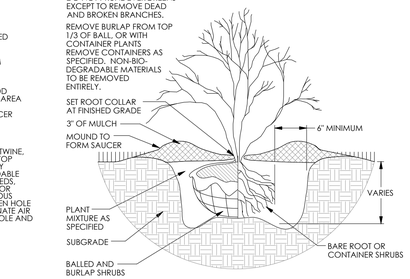
NOTE: NYLON BURLAP IS UNACCEPTABLE

2 EVERGREEN PLANTING DETAIL
N.T.S.

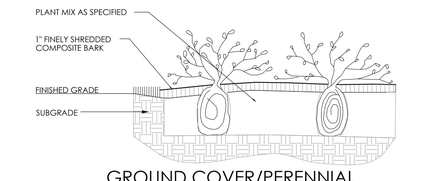


3 DECIDUOUS TREE PLANTINGS
N.T.S.

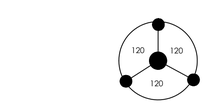
NOTES:
FASTEN STAKES TO TREE USING 3/4" - 2" WIDE, FLAT, WOVEN POLYPROPYLENE MATERIAL SUCH AS ARBOR TIE (TM) OR USE 3" WIDE WEBBING STRAPS SECURES TO STAKES WITH HEAVY GAUGE WIRE. DO NOT USE WIRE RUN THROUGH HOSE. ATTACH TREE LOOSELY TO ALLOW FLEXING. REMOVE STAKING MATERIAL AFTER ONE YEAR.



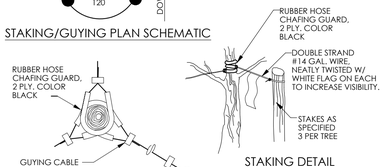
4 SHRUB PLANTING DETAIL
N.T.S.



5 GROUND COVER/PERENNIAL PLANTING DETAIL
N.T.S.



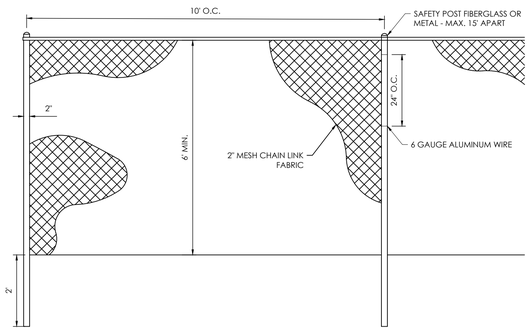
STAKING/GUYING PLAN SCHEMATIC



STAKING DETAIL

GUYING CABLE DETAIL

6 TREE STAKING AND GUYING DETAIL
N.T.S.



7 TREE PROTECTION FENCE DETAIL
N.T.S.

NAVE NEWELL
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A MOWELL COMPANY
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REVISIONS

SEAL:

PAUL E. LEDDA
Registered Landscape Architect
Pennsylvania License No. LA001322R

DRAWING NAME: LANDSCAPE AND LIGHTING DETAIL SHEET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

1001 WASHINGTON STREET

project no.	drawn by:
2024-001.02	GSS
date:	chk'd by:
11/15/24	BTK
scale:	approv. by:
AS NOTED	PEL

sheet no.

C7.2

13 of 20

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SEQUENCE OF CONSTRUCTION

CRITICAL STAGES OF INSPECTION WHEN A LICENSED PROFESSIONAL IS TO BE PRESENT ON SITE ARE INDICATED WITH AN ASTERISK (*) IN THE FOLLOWING CONSTRUCTION SEQUENCES.

1. AT LEAST 7 DAYS BEFORE ANY EARTH DISTURBANCE ACTIVITIES, THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN PREPARER, THE DESIGNATED LICENSED PROFESSIONAL, AND MONTGOMERY COUNTY CONSERVATION DISTRICT TO AN ON-SITE PRE-CONSTRUCTION MEETING. ALSO, AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.
2. STABILIZATION NOTE. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY THAT WILL EXCEED 4 DAYS, OR ANY STAGE THEREOF, THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION. HAY OR STRAW MULCH MUST BE APPLIED AT 3.0 TONS PER ACRE. HYDROSEED IS NOT CONSIDERED STABILIZATION UNTIL IT GERMINATES. IN NO CASE SHOULD AN AREA EXCEEDING 15,000 SQUARE FEET, WHICH IS TO BE STABILIZED BY VEGETATION, REACH FINAL GRADE WITHOUT BEING SEEDED AND MULCHED.
3. THE LIMITS OF DISTURBANCE AND TREES MUST BE DELINEATED WITH ORANGE CONSTRUCTION FENCE OR APPROVED EQUAL PRIOR TO EARTH-MOVING ACTIVITIES. ANY CESSATION OF ACTIVITIES FOR MORE THAN FOUR DAYS OR LONGER REQUIRES TEMPORARY STABILIZATION. A PRE-CONSTRUCTION CONFERENCE WITH THE TOWNSHIP SHADE TREE COMMISSION'S DESIGNEE IS REQUIRED PRIOR TO START OF CONSTRUCTION.
4. INSTALL STABILIZED CONSTRUCTION ENTRANCES AND WATER BARS AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLANS AT WASHINGTON STREET. CONTRACTOR TO UTILIZE ACCEPTABLE STANDARDS AND PRACTICES TO ENSURE SEDIMENT IS NOT TRACKED OFF THE PROPERTY AND ONTO PUBLIC RIGHTS-OF-WAY. STABILIZE ANY RESULTING DISTURBANCE IMMEDIATELY, AS APPROPRIATE.
5. ***PLACE PERIMETER EROSION AND SEDIMENT CONTROLS AS SHOWN ON EROSION AND SEDIMENT CONTROL PLAN THAT INCLUDE: COMPOST FILTER SOCK, AND LOCATIONS FOR TEMPORARY TOPSOIL STOCKPILE AREAS. STABILIZE ANY RESULTANT DISTURBANCE IMMEDIATELY, AS APPROPRIATE.**
6. CLEAR AND GRUB TREES AND VEGETATION THROUGHOUT THE DISTURBANCE AREA, AS INDICATED ON THE EXISTING FEATURES AND DEMOLITION PLAN. STABILIZE ANY RESULTING DISTURBANCE IMMEDIATELY, AS APPROPRIATE.
7. REMOVE EXISTING BUILDING AND PARKING GARAGE.
8. REMOVE AND/OR RELOCATE EXISTING UTILITIES, AS NEEDED.
9. INSTALL TRAIL ALONG RIVER AND RETAINING WALL.
10. CONDUCT BULK GRADING OPERATIONS; ADJUST THE EROSION AND SEDIMENT CONTROLS, AS APPROPRIATE.
11. INSTALL STORM DRAINS FROM EW-1 TO I-4, EW-2 TO OS-1, EW-3 TO I-9, EW-4 TO I-12, EW-5 TO OS-2.
12. INSTALL REMAINING STORM DRAINS AND STRUCTURES.
13. INSTALL REMAINING UTILITIES.
14. PERFORM FINAL GRADING AND ROUGH GRADING FOR BUILDING PADS.
15. INSTALL LIGHT STANDARDS.
16. INSTALL SUBBASE FOR PAVEMENT, SIDEWALK, CURBS, AND CURB RAMPS.
17. INSTALL CURBS.
18. INSTALL BINDER COURSE.
19. ***BEGIN CONSTRUCTION OF RAIN GARDEN 1 AND RAIN GARDEN 2. CONTRACTOR SHALL TAKE GREAT CARE DURING CONSTRUCTION TO KEEP FOREIGN DEBRIS AND SEDIMENT OUT OF THE SYSTEM DURING CONSTRUCTION.**
20. ***INSTALL PROPOSED LANDSCAPE MATERIAL AND PERFORM FINAL STABILIZATION OF DISTURBED AREAS.**
21. ONCE CONSTRUCTION SITE TRAFFIC IS COMPLETE, APPLY WEARING COURSE ASPHALT. AFTER SITE FINAL STABILIZATION HAS OCCURRED, AN ON-SITE INSPECTION SHALL BE SCHEDULED WITH THE MONTGOMERY COUNTY CONSERVATION DISTRICT. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE, THE OPERATOR SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITIES. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE SPECIFIED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY VEGETATIVE STABILIZATION SPECIFICATIONS. DISTURBED AREAS WHICH ARE AT FINISHED GRADE OR WHICH WILL NOT BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
22. ***AFTER AN ON-SITE INSPECTION AND APPROVAL BY THE DESIGNATED LICENSED PROFESSIONAL, REMOVE ALL PERIMETER EROSION AND SEDIMENT CONTROL MEASURES. STABILIZE ANY RESULTING DISTURBANCE IMMEDIATELY.**
23. UPON COMPLETION OF PERMITTED IMPROVEMENTS, PERMITTEE SHALL SUBMIT THE REQUIRED NOTICE OF TERMINATION.

RAIN GARDEN - SEQUENCE OF CONSTRUCTION

CRITICAL STAGES OF INSPECTION WHEN A LICENSED PROFESSIONAL IS TO BE PRESENT ON SITE ARE INDICATED WITH AN ASTERISK (*) IN THE FOLLOWING CONSTRUCTION SEQUENCES.

1. DELINEATE AREA OF PROPOSED STORMWATER SYSTEM PRIOR TO START OF CONSTRUCTION.
2. RUNOFF TO BE DIVERTED AROUND THE PROPOSED SYSTEM UNTIL DRAINAGE AREAS ARE COMPLETELY STABILIZED.
3. GRADE TO FINAL CONFIGURATION. PLACE EROSION CONTROL BLANKET ON ALL SIDE SLOPES OF 3H:1V SLOPES OR GREATER. APPLY PERMANENT VEGETATIVE COVER TO SIDE SLOPES.
4. ***EXCAVATE TO SUBGRADE ELEVATION AND PREPARE SUBGRADE SURFACE *(ENSURE SURFACE IS DRY).**
5. ***PLACE GEOTEXTILE FABRIC ALONG BOTTOM AND SIDES OF EXCAVATION. ENSURE NO FOREIGN MATERIAL (SEDIMENT OR OTHER) REMAINS IN THE EXCAVATION UPON PLACEMENT OF THE LINING.**
6. PLACE STONE MEDIA AND SOIL MEDIA AT SYSTEM BOTTOM.
7. INSTALL PERMANENT PLANTINGS AND SEEDING IN THE SYSTEM.
8. UPON COMPLETE STABILIZATION OF UPSTREAM DRAINAGE AREA, INSPECT TO ENSURE PRE-TREATMENT DEVICES, INLETS, AND STORM DRAINS ARE FREE OF ANY DEBRIS AND SEDIMENT.

WATER QUALITY STRUCTURE CONSTRUCTION SEQUENCE (CRITICAL STAGE)

CRITICAL STAGES OF INSPECTION WHEN A LICENSED PROFESSIONAL IS TO BE PRESENT ON SITE ARE INDICATED WITH AN ASTERISK (*) IN THE FOLLOWING CONSTRUCTION SEQUENCES.

1. STABILIZE ALL CONTRIBUTING AREAS BEFORE INSTALLING WATER QUALITY INSERTS.
2. ***INSTALL INSERTS ON THE STORMWATER STRUCTURES AS NOTED ON THE PCSM PLANS. FOLLOW THE MANUFACTURER'S GUIDELINES FOR INSTALLATION.**

PENNSYLVANIA FISH AND BOAT COMMISSION AVOIDANCE MEASURES:

1. CONTRACTOR TO IMPLEMENT CONSTRUCTION TECHNIQUES THAT ELIMINATE IN-STREAM WORK, SEDIMENTATION AND CHANGES TO WATER QUALITY.
2. CONTRACTOR TO AVOID ANY IN-STREAM DISTURBANCE WATER QUALITY DEGRADATION DURING AND AFTER THE PROJECT INSTALLATION.
3. STORM SEWERS AND SCMs HAVE BEEN DESIGNED TO MINIMIZE/REMOVE ALL SILT FROM THE WATER BEFORE IT IS RELEASED INTO THE RIVER.
4. CONTRACTOR TO EMPLOY STRICT EROSION AND SEDIMENTATION CONTROL MEASURES, AS WELL AS BEST MANAGEMENT PRACTICES.

SOILS LEGEND:

SOILS INFORMATION OBTAINED FROM THE USDA-NRCS WEB SOIL SURVEY, VERSION 10, SURVEY PERFORMED ON 7/24/2024.

UgB - URBAN LAND, 0-8 PERCENT SLOPES

SOIL LIMITATIONS AND RESOLUTIONS

APPLICABILITY TO PROJECT	SOIL LIMITATION	RESOLUTION(S)
YES	DEPTH TO SATURATED ZONE / SEASONAL HIGH WATER TABLE	SOILS SHOULD BE EVALUATED FOR WETNESS PRIOR TO USE IN SITE WORK. IF GEOTECHNICAL ENGINEER DEEMS SOILS TOO WET FOR SITE WORK, THEN SOILS SHALL BE AMENDED OR DRIED PER GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
YES	FROST ACTION	SOILS SHOULD BE FREE OF FROZEN OR MUCKY MATERIALS. FILL SHOULD NOT BE PLACED ON SATURATED OR FROZEN SURFACES. EARTHWORK INVOLVING THESE SOILS SHOULD BE LIMITED TO THE WARMER MONTHS WHEN PRACTICAL.

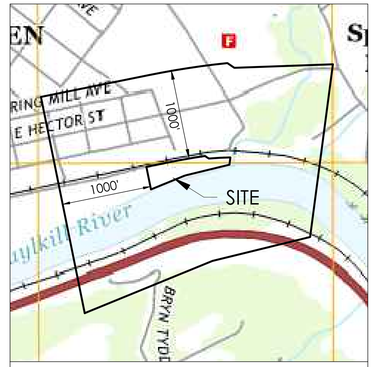
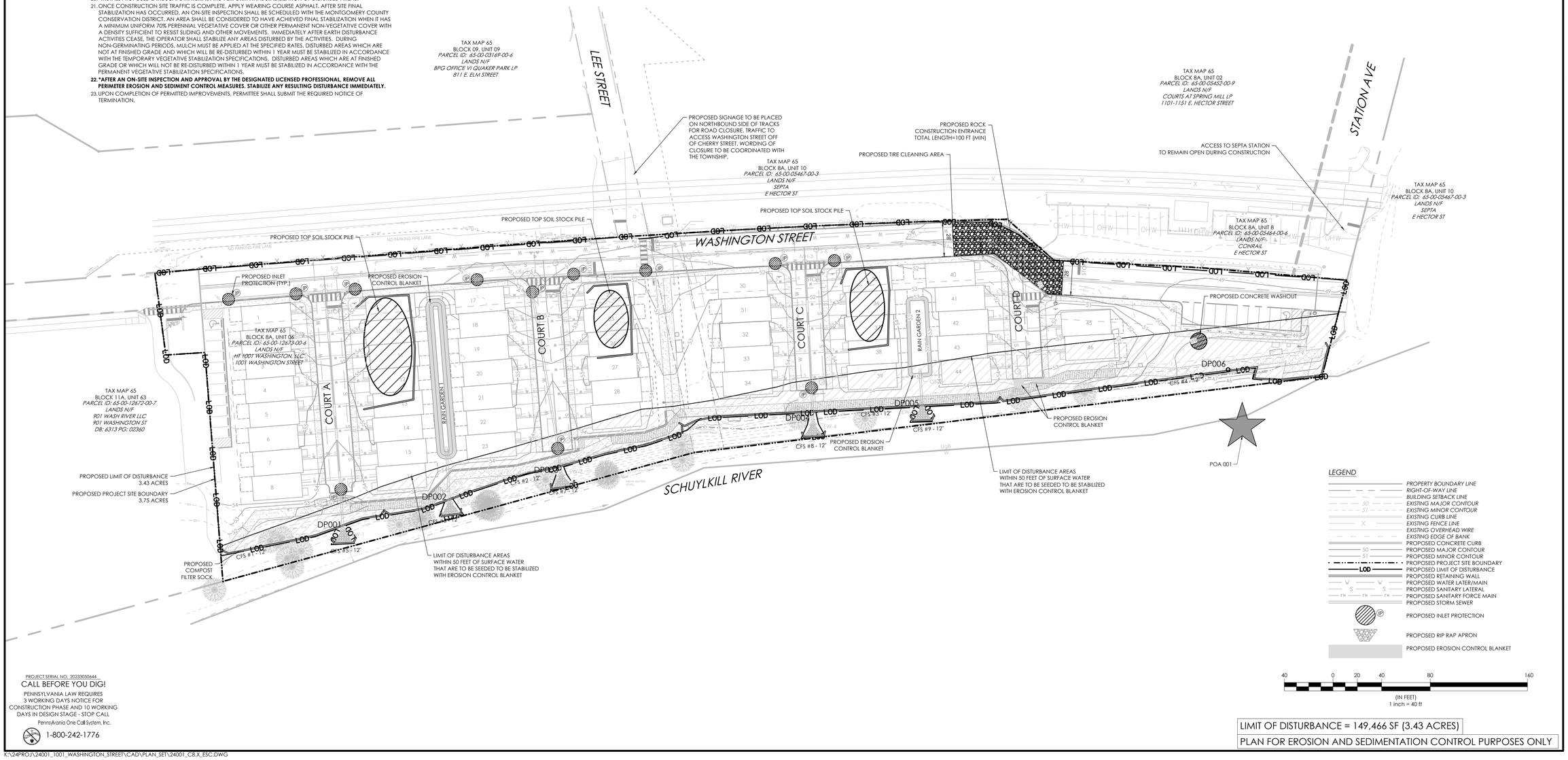


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP
SCALE 1" = 800'



LEGEND

- *PROPERTY BOUNDARY LINE*
- *RIGHT-OF-WAY LINE*
- *BUILDING SETBACK LINE*
- *EXISTING MAJOR CONTOUR*
- *EXISTING MINOR CONTOUR*
- *EXISTING CURB LINE*
- *EXISTING FENCE LINE*
- *EXISTING OVERHEAD WIRE*
- *EXISTING EDGE OF BANK*
- PROPOSED CONCRETE CURB
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED PROJECT SITE BOUNDARY
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED RETAINING WALL
- PROPOSED WATER LATER/MAIN
- PROPOSED SANITARY LATERAL
- PROPOSED SANITARY FORCE MAIN
- PROPOSED STORM SEWER
- PROPOSED INLET PROTECTION
- PROPOSED RIP RAP APRON
- PROPOSED EROSION CONTROL BLANKET

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

LIMIT OF DISTURBANCE = 149,466 SF (3.43 ACRES)

PLAN FOR EROSION AND SEDIMENTATION CONTROL PURPOSES ONLY

PROJECT SERIAL NO. 20233050644

CALL BEFORE YOU DIG!

PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE - STOP CALL

Pennsylvania One Call System, Inc.

1-800-242-1776

K:\24PROJ\24001_1001_WASHINGTON_STREET\CAD\PLAN_SET\24001_C8.X_ESC.DWG
7/29/2025 1:40 PM
USER: ----

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WAYNE, PA 19087 1830
P: 610.265.8323 F: 610.265.4299
WWW.NAVENEWELL.COM

date:	no.	description	chk'd	by
3/27/2025	1	REVISED PER TOWNSHIP REVIEW LETTER DATED 1/21/2025	JGE	JT
6/26/2025	2	REVISED PER TOWNSHIP REVIEW LETTER DATED 5/30/2025	JPB	JGE
7/29/2025	3	REVISED PER SFC REVIEW MEMO DATED 7/18/2025	JPB	JGE
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REVISIONS

SEAL:

JAMES P. BANNON
PROFESSIONAL ENGINEER
Pennsylvania License No. PE082137

DRAWING NAME: EROSION AND SEDIMENTATION PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no. 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1"=40'	approv. by: JPB

sheet no.

C8.0

14 of 20

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Applicant Name: HT 1001 WASHINGTON, LLC

Development Name: 1001 WASHINGTON ST. LAND DEVELOPMENT

Location of Property: 1001 WASHINGTON ST, CONSHOHOCKEN, PA 19428

Date: 07/29/2025

PROJECT COVER SHEET – *Approved at June 6, 2023 Shade Tree Commission Meeting*

To verify fulfillment of Chapter 55 Ordinance requirements for:

1. *Maximum Tree Removal – 55-4B*
2. *Tree Replacement – 55-4D(6)(a)*
3. *Substitutions for Replacements – 55-4F*
4. *Replacement Tree Species – 55-4E*
5. *Tree and Shrub requirements for Chapters other than Chapter 55*

Complete the following tables, filling in data for each lettered item, and resolving each Compliance Test. In accordance with 55-4C(4)(e), provide this completed Cover Sheet together with the Landscape Plan.

Citations to Sections of Chapter 55 are provided for the convenience of the Applicant. Other Chapters of the Whitemarsh Township Code and other sections of Chapter 55, such as 55-2 Definitions, may be relevant. In the event of an inconsistency between this Cover Sheet and any provision of the Code, the language of the Code shall be controlling.

1) Calculation of Requirement for Maximum Tree Removal – 55-4B:

A.	***Total of all existing Trees on the lot with DBH of 6" or greater**, per 55-4C(3)(a).*	74
B.	*33% of line (A) = **maximum existing Trees which may be Removed.***	24
C.	*Provide **number of existing Trees proposed to be Removed by the Applicant,** per 55-4C(3)(a).*	46
	***COMPLIANCE TEST:** If Line (C) is greater than Line (B), the Applicant's proposal is not in compliance with the requirement that no more than 33% of trees having a DBH of six inches or greater may be removed.*	NOT COMPLIANT

2) *Calculation of Replacement Requirement for Removed Trees having a DBH of Six Inches or Greater 55-4D(6)(a):*

D.	***Total DBH of all existing Living and Healthy Trees*** *(as determined per 55-4A) having a DBH of 6" or greater* ***that are proposed to be Removed****, per 55-4C(3)(a).*	662"
E.	***Total DBH of all Living and Healthy Trees*** *(as determined per 55-4A) having a DBH of 6" or greater,* ***removed within five years prior to the submission of application****, per 55-4C(3)(b).*	0
F.	*Sum of line (D) and line (E) =* ***Total DBH that must be replaced for all Removed Living and Healthy Trees.***	662"
G.	***Total Caliper inches of Canopy Replacement Trees proposed to be planted*** *by the Applicant (as shown on the Landscape Plan) per 55-4D(6)(a). Each Canopy Replacement Tree shall have a minimum Caliper of three inches.* *CANOPY TREES PLANTED @ 5" CAL.	*55"
	COMPLIANCE TEST: *If Line (G) is less than Line (F), the Applicant's proposal is not in compliance with the minimum Canopy Tree Replacement Requirement.* *To comply with this requirement, the Applicant may request a waiver from the Shade Tree Commission to permit limited substitutions per 55-4F. If so, proceed to Substitution calculation (3) below.*	NOT COMPLIANT

3) *Calculation of maximum Proposed Substitutions for Replacement Canopy Trees – 554F, subject to certain limitations and approval by the Shade Tree Commission.*

H.	*40% of line (F) (round fractions down to a whole number) =* ***maximum Caliper of required Replacement Canopy Trees that may be substituted*** *with Understory Trees and/or FIL, upon STC approval, per 55-4F.*	264"
I.	*Line (F) less Line (G) =* ***Shortfall in DBH compliance with the minimum Canopy Tree Replacement Requirement,*** *per 55-4D(6)(a).*	607"
	COMPLIANCE TEST: *If line (H) is less than line (I), the deficit of minimum Canopy Tree Replacement requirement, per 55-4D(6) cannot be fully compensated with Substitutions, per 55-4F.*	NOT COMPLIANT

J.	*Line (I) divided by 3" (round fractions up to a whole number) =* ***Shortfall in the number of required 3" Canopy Replacement Trees.***	203
K.	*Provide the* ***total number of substitution Understory Trees proposed to be planted*** *by the Applicant, per 55-4F(1).*	58 *140 **12
L.	*Line (K) divided by two =* ***Number of required 3"-cal. Replacement Canopy Trees being substituted with Understory Trees*** *per 55-4F(1).*	29 *28 **12
M.	*Line (J) less Line (L) =* ***Number of required 3"-cal. Replacement Canopy Trees proposed by the Applicant to be substituted with payment of in-lieu fees****, per 55-4F(2).* ***NOTE:*** *Review proposed Landscape Plan to ensure that the use of Replacement Understory Tree substitutes has been maximized prior to calculating the number of substitutes via in-lieu fees, per 55-4F(4).*	134
N.	*Sum of Line (L) and Line (M) =* ***Total proposed number of Replacement Canopy Trees being substituted per 55-4F.***	203
O.	*Line (N) multiplied by 3" =* ***Total shortfall of DBH to be fulfilled with substitutions*** *as proposed by this Landscape Plan.*	609"
	COMPLIANCE TEST: *If (O) is greater than (H), the Applicant's proposal has exceeded the 40% maximum eligible for consideration for Replacement substitutions, per 55-4F, and is not in compliance.*	NOT COMPLIANT
P.	*Sum of Line (O) and (G) =* ***Total Caliper compensation for Removed Trees*** *as provided by this proposed Landscape Plan.*	664"
	COMPLIANCE TEST: *If (P) is less than (F), the Applicant's proposal is not in compliance with the Tree Replacement Requirement.*	COMPLIANT

K *TOTAL NUMBER OF SUBSTITUTION SHRUBS PROPOSED TO BE PLANTED
K **TOTAL NUMBER OF SUBSTITUTION UNDERSTORY TREES TO BE PLANTED AT 5" CAL.

4) Compliance with Species Requirement of Replacement Trees – 55-4E:

Q.	***Total number of proposed Canopy Replacement Trees,*** *per 55-4C(4)(c).*	11

L *NUMBER OF REQUIRED REPLACEMENT TREES BEING SUBSTITUTED WITH SHRUBS
L **NUMBER OF REQUIRED REPLACEMENT TREES BEING SUBSTITUTED WITH 5" ORNAMENTALS

R.	*75% of line (Q) (round fractions up to the next whole number) =* ***Minimum required number of Native Species Replacement Canopy Trees****, per 55-4E.*	9
S.	*Provide the* ***number of proposed Native Species Canopy Replacement Trees,*** *per 55-4C(4)(c).*	11
	COMPLIANCE TEST: *If Line (S) is less than Line (R), the Applicant's proposal is not in compliance with the 75% Native Species requirement for Replacement Canopy Trees, per 55-4E.*	COMPLIANT
T.	*Provide the* ***number of proposed Native Species Understory Trees****.*	70
	COMPLIANCE TEST: *If Line (T) is less than line (K), he Applicant's proposal is not in compliance with the 100% Native Species requirement for Replacement Understory Trees.*	COMPLIANT

5) Compliance with Landscaping Requirements of Other Code Chapters. Complete the following Tables for each applicable requirement.

REQUIRED TREES:

A	B	C	D*	E	F**
Full Code Citation: Chapter; sub-chapter, etc.	Subject matter as indicated in Code caption	Required # of Trees	Credits for Preserved Trees per 55-4D(5)	Proposed # of Trees	Column (C) less Columns (D) and (E)
CHAPTER 105.39 (A)	LANDSCAPING OF PARKING FACILITIES	6	N/A	6	0
CHAPTER 105.52 (A)	BUFFER YARDS	6	0	6	0
CHAPTER 116.284 (A).3	RIVERFRONT ACCESS AND OPEN SPACE	21	N/A	21	0

NOTE: Column (D) Credits are strictly limited to calculating Chapter 105-52 Buffer yards, in accordance with 55-4D(5).
****NOTE: When the result in Column (F) is greater than zero, the Applicant's proposal is not in compliance with the applicable Code requirement.***

REQUIRED SHRUBS:

A	B	C	D	E*
Full Code Citation: Chapter; sub-chapter, etc.	Subject matter as indicated in Code caption	Required # of Shrubs	Proposed # of Shrubs	Column (C) less Column (D)
CHAPTER 105.52 (A)	BUFFER YARDS	11	11	0

NOTE: When the result in Column (E) is greater than zero, the Applicant's proposal is not in compliance with the applicable Code requirement.

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A HOWELL COMPANY

July 29, 2025

Charles L. Guttenplan, AICP
Director of Planning and Zoning / Zoning Officer
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

Reference: ***1001 Washington Street***
Updated Waiver / Modification Requests
Whitemarsh Township, Montgomery County, PA
Nave Newell No. 2024-001.02

Dear Mr. Guttenplan

On behalf of our client, HT 1001 Washington, LLC, and in accordance with the Whitemarsh Township Subdivision and Land Development Ordinance. The Applicant respectfully requests the following waivers and/or modifications for the cited provisions of the ordinance.

Streets

1. **105-30(A) – Street Standards**
   A modification is requested from the requirement that the ultimate right-of-way measure 56’ and the cartway width measure 36’. Due to the existing site constraints the proposed ultimate right-of-way measures 28’, and the cartway width measures below 36’. Also, the proposed Courts will have cartway widths below 30’.

2. **105-30(C) – Street Standards**
   A waiver is requested from the requirement of short extensions of existing streets with lesser right-of-way and/or cartway widths than prescribed above may be permitted; provided, however, that no section of new right-of-way be less than 40 feet in width and such extensions shall be less than 100 feet in length to allow the right-of-way width of Washington Street measure 28 feet for a distance of 960’ along the property frontage.

3. **105-33(B) – Street Alignment**
   A waiver is requested from the requirement of local streets having horizontal curves of 150’. Due to the existing site constraints and its current alignment, we are proposing horizontal curve radii of 40’ on Washington Street

4. **105-37 – Sight Distances**
   A waiver is requested from the requirement of the sight distances listed in this section. The intersection of Court D and Washington Street is designed as a multi-stop intersection.

5. **105-56(A)(1)(a) – Private streets and courts shall be 26’ wide.**

900 W Valley Rd #1100, Wayne, PA 19087 | PHONE 610 265 8323 | FAX 610 265 4299

A waiver is requested from this section to allow the courts to be 24'. This matches the adjacent development and is consistent with the character of the area.

Sidewalks

6. **105-30(A); 105-47(A), and 105-73 – Sidewalks**
   A modification is requested from the requirement of these sections to install sidewalks as shown on the Site Plan. Variance was granted from Section 116-283.C.(1), so as to permit curb and sidewalk alignment along Washington Street without street trees and the required 5 foot/verge strip.

7. **105-47(K)(1) – In the RDD-1 subdistrict, 25' right-of-way be offered for dedication to the Township**
   A modification is requested to this requirement to offer an easement for public access and use rather than right-of-way dedication.

Parking

8. **105-38(F) – Angle or perpendicular parking shall not be permitted along public or private streets**
   A waiver is requested from the requirement as cartway width measures about 31'. Backing out from the perpendicular parking should not pose a safety risk given the low volumes of traffic. The spaces are provided for public use and extra guest parking. The cartway width meets the minimum requirement of 105-56(A)(1)(b).

9. **105-38H – Except at entrance and exit drives, all parking areas shall be set back from the right-of-way line and all property lines at least 15 feet, or as required by the applicable sections of the Zoning Ordinance, the greater provision to prevail. The distance between this required setback and the cartway shall be maintained as a planting strip or planting strip and sidewalk.**
   A waiver is requested from this section to keep the existing parking spaces that are adjacent to the David's Bridal Facility and for the proposed parking along Washington Street near the proposed kayak launch.

10. **105-38(L) – In no case shall parking areas for three or more vehicles be designed to require or encourage carts to back into a public street.**
    A waiver is requested from this section for the 10 parking spaces adjacent to Washington Street. Backing out from the perpendicular parking should not pose a safety risk given the low volumes of traffic. The spaces are provided for extra guest parking and public use.

11. **105-38(O) – Parking areas shall be located at least 10 feet from any building or structure.**
    A waiver is requested from this section to allow the existing parking spaces along the 901 and 1001 property line to be located less than 5' from the adjacent decks. The parking spaces will be greater than 10' away from the buildings at ground level, but will be less than 5', horizontally, from the decks on the second floor.

12. **105-50(C)(1) and (3) – Walking distance from a single-family dwelling unit to a parking area shall be less than 100'. In no case shall the distance exceed 250'**
    A waiver is requested from this section to allow the two off-street parking areas to be designed as shown on the Land Development Plans. The proposed off-street parking areas are not required by code and being provided for public use at the proposed kayak launch and as an extra amenity for residents.

Trees / Buffers

13. **55-4B – Maximum tree removal. The removal of more than 33% of trees, having a DBH of six inches or greater, on any lot, shall not be permitted.**
    A waiver is requested to permit the removal of greater than 33% (62% total, 53% healthy removed).

14. **55-4(D)(6)(A), 55-4(F)- Tree Replacement Substitution. living and healthy tree with a DBH of six inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new canopy trees, of a type and species approved by the Shade Tree Commission or its designee, with a trunk diameter of not less than three inches in caliper. The total caliper of replacement trees, measured at six inches above the ground line, shall equal or exceed the DBH of the removed trees. The waiver is being requested to allow a maximum of 40% of the replacement trees to be replaced with ornamental trees, in accordance with Section 55-4(F).**
    A waiver is requested to permit greater than 40% of the replacement trees to be replaced by understory/ornamental trees and by a fee in-lieu payment.

15. **105-52(B)(2) – Buffers shall have a minimum width of 50'.**
    A waiver is requested from this section to allow the buffers as shown on the plan, due to the sites unusual sized and shape.

16. **55-4.C.(4)(b) and 55-4.D.(1)(d) – Denote location and species of each preserved tree and all boundary trees and the location of tree protection fences, encompassing the dimensions of each root protection zone, either calculated and 1.25 feet (radius) per one inch of DBH, or a circle with a radius extending from e tree's trunk to a point no less than the furthest crown dripline, whichever is greater. Nothing shall be stored stockpiled, temporarily placed, or allowed in the root protection zone.**
    A waiver is requested to permit tree protection fencing at a smaller radius, and to allow disturbance within the root protection zone.

Parks and recreational facilities

17. **105-53(D)(1)(c) – No more than 25% of the minimum land area required for park and recreation land may consist of floodplain or riparian corridor areas.**
    A waiver is requested from this section due to the entire property being located within the floodplain.

Grading

18. **58-28(D)(11) – Edge of slopes shall be a minimum of five feet from property lines or right-of-way lines**
    A waiver is requested of this requirement to allow such grading to occur closer than 5' from property and right-of-way lines. The proposed grading abuts the ultimate right-of-way of Washington Street. Proposed grading needs to be less than 5' from property and right-of-way lines to tie back into existing conditions.

19. **58-29E – Fills shall not encroach on natural watercourses, floodways, floodway fringes, constructed channels, or wetlands**
    A waiver is requested from this section because the whole property is located within the floodplain. We have submitted a Letter of Map Revision (LOMR) request to FEMA to revise the floodway so the existing structures and proposed improvements are removed from the floodway.

Stormwater Management

20. 58-34(B)(7)(d) – All storm pipe shall be reinforced concrete pipe

A waiver is requested to allow the proposed storm pipes on the site to be HDPE in-lieu of reinforced concrete pipe. Proposed storm pipes within the public right-of-way will be concrete.

Traffic Study

21. 105-21.B(9)(d)(6)(a) – All streets and/or intersections showing a level of service below C shall be considered deficient, and specific recommendations for the elimination of these problems shall be listed.

A waiver is requested from this section. The applicant will comply to the extent that the proposed roadway improvements will be limited and directly related to driveway access intersections. Per the PA MPC, applicants are not obligated to provide improvements at off-site intersections.

If you have any questions or need additional information. Please contact me at (610) 265-8323 or via email at jbannon@navenewell.net.

Sincerely,

James P. Bannon, Jr., PE

JPB/JGE

Enclosure

cc (via email): David Landskroner & Ryan Lohbauer – Hightop Development
Craig R. Lewis, Esq. – Kaplin Stewart

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ROCKWELL ASSOCIATES

Urban Foresters - Natural Resource Consultants Planners - Forensic Arborists

1001 Washington Street

July 29, 2025

To: Samantha Zrillo
Whitemarsh Township - Planner
616 Germantown Pike Lafayette
Hill, PA 19444-1821
From: John Hosbach
Applicant: 1001 Washington Street- Revised Plan set

Dear Sam,

The said applicant is proposing the demolition of the former David's Bridal HQ. The site is currently being proposed for improvements including dwellings. It is my understanding that this plan was previously approved. However, a few items need to be addressed for the shade tree commission. Amendments/ revisions to the plan were previously provided. Date of revisions is July 9th, 2025.

Tree survey plan

Plan identifying the size, species, and location of all existing trees having a diameter at breast height (DBH) of six inches or greater and denoting each tree to be saved or removed. All removed trees shall be identified if removed in the past five years.

The current revision has captured the required inventory.

Tree Removal

Maximum tree removal.

The removal of more than 33% of trees, having a DBH of six inches or greater, on any lot, shall not be permitted.

A waiver will be required as they are removing greater than 33% of the existing trees onsite. However, numerous trees with the river buffer were reviewed as being risk related, or hazardous. I believe the applicant has denoted these trees for removal. A total of 42 trees/662" DBH are being condemned.

ROCKWELL ASSOCIATES

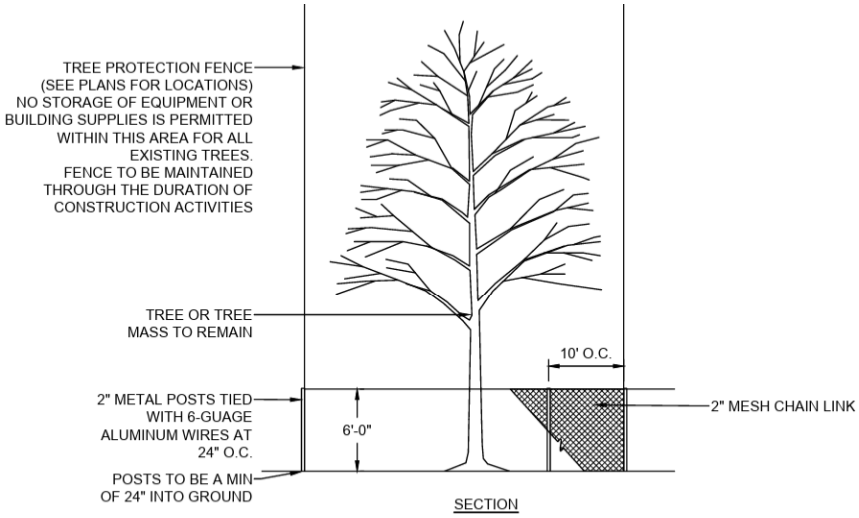
Urban Foresters - Natural Resource Consultants Planners - Forensic Arborists

Tree Protection

Denote location and species of each preserved tree and all boundary trees, and the location of tree protection fences, encompassing the dimensions of each root protection zone as established by one of the following two means, whichever is greater:

[1] Calculated at 1.25 feet (radius) per one inch of (DBH) diameter breast height.
[2] A circle with a radius extending from a tree's trunk to a point no less than the furthest crown dripline.

Please update the plan to reflect utilizing this tree protection detail.



TREE PROTECTION DETAIL
N.T.S.

Replacement tree requirement.

Every living and healthy tree with a DBH of six inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new canopy trees, of a type and species approved by the Shade Tree Commission or its designee, with a trunk diameter of not less than three inches in caliper. The total caliper of replacement trees, measured at six inches above the ground line, shall equal or exceed the DBH of the removed trees.

The waiver is being requested to allow a maximum of 40% of the replacement trees to be replaced with ornamental trees, in accordance with Section 55-4(F). A waiver is requested to permit greater than 40% of the replacement trees to be replaced by understory/ornamental trees and by a fee in-lieu payment.

The applicant is requesting the use of shrubs and large stock size (5”). A waiver will be required.
Fee in lieu proposed - 134 REQUIRED 3" CAL. REPLACEMENT TREES TO BE SUBSTITUTED BY FEE-IN-LIEU AT $125,960 ($940 * 134)

Urban Foresters - Natural Resource Consultants Planners - Forensic Arborists

General Notes from July STC Meeting

- Updated landscape plan with any proposed plantings in the central drainage easement – this was implemented and provided on the plan.
- Updated landscape schedule (to include the easement plantings and 5" caliper trees) provided on the STC checklist
- Tree protection fencing detail – Provided
- Relocated soil stockpile – Implemented and shown on the plan
- A formal request of all requested waivers - Provided
- Clarification of tree removal percentage – Provided

Additional notes

- The species list provides a diverse and suitable palate and is primarily a native schedule.
- The site has now been maximized for planting.
- The boardwalk will not conflict with tree roots.



Whitemarsh TOWNSHIP
616 GERMANTOWN PIKE - LAFAYETTE HILL, PA 19444-1821
TEL: 610-825-3535 FAX: 610-825-9416
www.whitemarshtwp.org

BOARD of SUPERVISORS

Jacy Toll – Chair
Fran McCusker– Vice Chair
Vincent Manuele
Elizabeth Moy
Patrice Turenne

Craig T. McAnally
Township Manager

August 5, 2025

HT 1001 Washington, LLC
c/o David Landskroner
1331 S. Juniper Street
Philadelphia, PA 19147

RE: SLD #07-23: 1001 Washington Street - Washington Riverfront Development
Revised Preliminary Plan / Land Development for 46 Townhouses
Zoning Ordinance Compliance Review Letter #2

Dear Mr. Landskroner:

Please accept this as a review of the Zoning Ordinance Compliance issues for your above referenced Revised Land Development Preliminary Plan, based upon a 20-sheet plan set prepared by Nave Newell, Inc., for HT 1001 Washington, LLC, dated November 15, 2024, with the most recent revision date of June 26, 2025. We have also referenced updated architectural renderings, elevations and floor plans, all dated July 18, 2025 (originally dated May 2, 2025), and a three-page views analysis prepared by HS4, dated April 21, 2024, transmitted to our office on July 23, 2025. We deferred issuing this review until the latter architectural plans were received.

This site has most recently been the corporate headquarters of David's Bridal, Inc. We reviewed the original preliminary land development plan set in a letter dated December 20, 2024 and a revised plan set in a letter dated May 20, 2025. The current plan includes the same number of traditional townhouses (46) as the initial preliminary plan. It is acknowledged that the Washington Street extension, as shown on the adopted Township's Official Map, is depicted on the plan. The Township sees this as a critical element of any redevelopment of this site. Please note that any offers of dedication are subject to acceptance by the Board of Supervisors.

Relief Granted by the ZHB

In case ZHB #2024-12, the Zoning Hearing Board granted the relief listed below to a plan showing a substantially similar layout (which included 3 additional townhouses for a total of 49), by decision issued on May 15, 2024. A request to extend the validity of that decision for 180 days was approved by the Zoning Hearing Board, on May 7, 2025; that decision now expires on November 11, 2025.

1. **Variance from Section 116-165.**, to permit structures in the Floodplain Conservation District that are not permitted by right or by Special Exception under Sections 116-166.B.(2) and (3).

2. **Special Exception under Section 116-166.A.(1)**, to permit a small portion of the kayak boat ramp and boardwalk in the floodway within the Floodplain Conservation District.
3. **Special Exceptions under Sections 116-166.B.(2) and (3)**, so as to permit utilities and other necessary facilities in the floodway fringe within the Floodplain Conservation District.
4. **Variance from Section 116-280.H.**, so as to permit residential use in the RDD District-1 without a minimum of 2% non-residential use.
5. **Variance from Section 116-281.A.(3)(a)**, so as to permit a minimum setback of less than 10' and average of 20' from the Ultimate Right-of-Way of Washington Street.
6. **Variance from Section 116-281.A.(3)(b)**, so as to permit a setback from other unattached buildings of 28 feet, rather than the 40 feet required.
7. **Variance from Section 116-281.A.(3)(c)**, so as to permit a setback from a public trail of 8.5 feet, rather than the 10 feet required.
8. **Variance from Section 116-281.A.(7)(a)**, so as to permit single-family structures with building heights greater than 3 habitable stories above the floodplain.
9. **Variance from Section 116-281.A.(9)**, so as to include the riverfront open space area in the total tract area calculation.
10. **Variance from Section 116-283.A.(4)**, so as to permit a building greater than 100 feet in length without 20% architectural features.
11. **Variance from Section 116-283.C.(1)**, so as to permit curb and sidewalk alignment along Washington Street without street trees and the required 5 foot verge/strip, both as required in cross-referenced Section 105-48 of the Subdivision and Land Development Ordinance.
12. **Variance from Section 116-283.D.(1)(e)**, so as to permit curb and sidewalk without a planting strip.
13. **Variances from Sections 116-284.A.(1) and E.(3)**, so as to permit a boardwalk trail, rather than macadam, which is less than 10' wide.
14. **Variances from Sections 116-284.A. through C.**, so as to permit a reduction in the riverfront area as shown on the Zoning Plan, but not less than 20'.

The above relief was granted with certain conditions. One of those conditions is that the approval is specifically conditioned and contingent upon the Applicant obtaining approval from FEMA of a Letter of Map Revision (LOMR) such that the floodway line shall be exactly as shown to the ZHB on the plan used for approval. That floodway line is the same as shown on the submitted revised preliminary land development plan. We understand that the LOMR has received FEMA approval, subject to a 90-day appeal period beginning on April 23, 2025; The Township is on record requesting FEMA to reject the requested revision by letter dated July 21,

2025. Should FEMA not consider any appeal successful, the revised floodway could become effective on August 21, 2025.

Additional Zoning Compliance Comments

We are in receipt of a letter from James Bannon, P.E. of Nave Newell dated June 26, 2025 in which he responded to various reviews of the original preliminary plan submission, including our zoning compliance review dated May 20, 2025. Below we have repeated the comments from our original letter, the response in italics, and the current status of each in bold. We have maintained the original comment number for easy reference.

	Section	Issue/Comment
6.	§116-165.A.	This section allows dwellings in the floodway fringe, provided that they are in compliance with the provisions of the underlying district; they cause no increase in the elevation of the one-hundred-year-frequency recurrent interval flood by more than one food at any point; and are not prohibited by any other ordinances or regulations. The Plan shows dwellings within the floodway as currently delineated by FEMA. As noted earlier in this letter, a LOMR has been submitted to move the floodway line and this proposed plan would only be valid if that LOMR is approved. Note: Should the LOMR go into effect on August 21, 2025 as noted earlier in this letter, this comment will have been addressed. *Response: Noted. The LOMR approval will be forwarded to the Township when it is received.* **Township Response: This comment is repeated for reference.**
18.	§116-283.	The applicant must submit architectural plans including elevation views for all proposed buildings in order to demonstrate compliance with the requirements of this section of the ordinance. Response to March 27th letter: §116-283.A.(1): Please confirm how high the HVAC will be elevated above the garage floor. If any mechanical components are located outside, they must be detailed on the plan. *Response: Detailed architectural plans are still being prepared. All HVAC equipment will be mounted above the base flood elevation of 60.0, as required.* **Township Response: The elevated height of the HVAC units should be noted on plans.** §116-283.A.(2): Exterior material calculations should be modified to show each material with their associated percentage separately. The dominant material shall be 60% or greater. Some materials appear to have been overlooked in the current calculations.

Response: We have requested architectural elevations and calculations. They will be forwarded to the Township when received.
Township Response: We acknowledge the changes that were made between the two architectural submissions. The most recent changes now comply with this section.

19. §116-283.B. Any public amenities provided must be in accordance with the requirements of this section of the ordinance. We note a kayak launch (boat launch) is proposed along the eastern end of the river frontage.
Response to March 27th letter: Please provide the specifications for the kayak launch when provided by the PA Fish and Boat Commission.
Response: Noted. We will forward the details for the kayak launch when they are received.
Township Response: These have not yet been received.

22. §116-284.A. §116-284.B. §116-284.C. Theses sections state that an area parallel to the river, meeting the requirements of Sections 118-284(A), (B), or (C), whichever is applicable, measured from the mean water elevation of the Rivers of the United States/Pennsylvania, shall be provided along the length of the river. While a variance (noted previously) was granted for the width of this area, the minimum width of 26.4' is measured from approximate edge of the river bank; the aforementioned mean water elevation is not identified. Further, the Site/Zoning Data Table lists the minimum riverfront area as 32' This discrepancy must be resolved.

This area along the river shall be offered for dedication to the Township. If the area is not accepted for dedication, an easement for public use must be provided along with maintenance agreements acceptable to the Township. This area shall include:

(1) A red shale macadam trail of at least 10 feet in width, the length of the river, to connect to adjoining property trails. [As noted earlier, a variance was granted to allow a boardwalk less than 10' wide.]
Response to March 27th letter: The detail on sheet C10.1 says the minimum width for the trail is 10' wide. This detail should be modified to match the Site Plan on C3.0. The plan shall also be modified to differentiate the areas that are going to be boardwalk from the red shale macadam. Additionally, a detail of the boardwalk must be provided.
Response: We have added a detail for the boardwalk and revised the Red Shale Macadam Walking Trail Cross Section on the Construction Detail Sheet (Sheet C10.1) to show a minimum width of 7', to match the Site Plan. We have also added patterning to the Site Plan (Sheet C3.0) to differentiate the macadam trail from the boardwalk.

Township Response: A detail of the boardwalk should be provided.

25. §116-287.B.(2) The applicant must submit architectural plans for any proposed buildings in adequate detail to indicate building setback, footprint dimensions, building heights, and building mass and to indicate how proposed buildings will affect views to the river and across the river to the hills and ridges. Architectural drawings must also be provided showing concepts for facades, roof design and materials for buildings, structured parking facilities, signs as well as proposed lighting, street furniture and sidewalk design.

In addition to physical access to the river, visual access to the river is important as cited in our planning for the Spring Mill Area, including our most recent (2022) *Spring Mill Multi-Modal and Land Use Study* (adopted as an amendment to the Township's Comprehensive Plan.) A views analysis shall be submitted to demonstrate visual access to the river.
Response to March 27th letter: A views analysis should be included to indicate how the proposed buildings will affect views to and across the river.
Response: We will provide analysis in the next submission.
Township Response: The views analysis does not match the site plan or the architectural plans in various aspects; they appear to be showing different developments. Additionally, a demarcation should be considered between the path to the river and the adjacent dwellings; while trees are proposed, additional vegetation and/or fencing to assure privacy for the adjacent residences should be considered.

Additional Comments

27. As indicated in the introduction to this review, the plans implement an Official Map roadway improvement, extending Washington Street to Lee Street; the plan further extends it to intersect with Station Avenue as well, to complete a roadway parallel to the river and provide improved access, including to the Spring Mill SEPTA rail station. However, the plan does not depict how Washington Street will intersect with Lee Street and Station Avenue. These intersections need to be engineered and provided on the plans. (Additional comment on this issue is anticipated in the Township Engineer's review.)
Response to March 27th letter: While these intersections still do not appear to be adequately detailed, we will defer to the recommendations of the Township Engineer.
Response: We have added additional detail of the intersections of Lee Street and Station Avenue.
Township Response: We acknowledge the additional detail of the intersections and will defer to the Township Engineer for further comment.

28. There is no indication on the plans showing how trash containers will be stored and/or if dumpsters are anticipated. This detail is extremely important in a townhouse development where storage areas are very limited. Details for trash removal/container storage must to be provided.
    Response to March 27th letter: Acknowledged. We will seek out those details on the final plan submission.
    Response: No dumpsters are proposed on the site. Trash container storage will be the responsibility of the individual owners and details will be provided prior to final approval.
    Township Response: This comment is repeated as it is not yet addressed.

Any future submission should include the architectural plans, views analysis, and plan revisions under one cover in a single submission. Should you have any questions, please do not hesitate to contact me.

Very truly yours,

Charles L. Guttenplan, AICP
Director of Planning and Zoning/Zoning Officer

cc: Craig McAnally, Township Manager
Robert A. Sztubinski, B.C.O., Director of Building and Codes
Andrew Thomas, Fire Marshal
Sean P. Kilkenny, Esq., Township Solicitor
Krista Heinrich, P.E., Township Engineer
Craig R. Lewis, Esq., Applicant's Attorney
James P. Bannon, P.E., Applicant's Engineer

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

August 7, 2025

Mr. Craig T. McAnally - Township Manager
Whitemarsh Township Municipal Building
616 Germantown Pike
Lafayette Hill, PA 19444

RE: Preliminary Plan Review
1001 Washington Street
Whitemarsh Township, Montgomery County, PA
S/LD # 07-23
Our Project Number 2023-11054

Dear Mr. McAnally:

As requested, we have reviewed plans for the above referenced Preliminary Plan Submission consisting of a 20-Sheet Plan prepared by Nave Newell and dated November 15, 2024, and last revised June 26, 2025. The following comments are offered for your consideration:

The applicant is requesting or requires waivers and/or relief from the requirements of the following sections of the ordinance:

	Section	Description
1.	105-21.B(9)(d)[6][a]	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that improvements should be identified to mitigate the deficiency of intersections showing a level of service below C and indicate whether that improvement will be constructed in conjunction with the development. We note that although the results show an overall level of service below C at one intersection (Hector Street & Barren Hill Road/Cedar Grove Road), it is an existing condition, and the proposed development adds minimal delay to the approach.
2.	105-30(A)	The applicant is requesting a waiver from the requirements of this section of the ordinance. As defined by Section 105-29(C) and 105-30(A), streets adjacent to the site are subject to the following requirements:

Street Name	Classification	Required Ultimate R.O.W	Required Cartway Width	Curbs	Sidewalks	Tree Zone
Washington Street	Local Street	56 feet	36 feet	Required	Required	Required
Lee Street	Local Street	56 feet	36 feet	Required	Required	Required
Station Avenue	Local Street	56 feet	36 feet	Required	Required	Required
Courts A-D	Court	50 feet	30 feet	Required	Required	Required

The waiver is requested to allow the Ultimate Right-of-Way width of proposed Washington Street to be 28-feet, and the cartway width to be below 36-feet and to allow the proposed Courts will have cartway widths below 30'.

	Section	Description
	105-30(A) (cont.)	The following comments are offered for consideration: • For Washington Street, the plans appear to show a proposed Right-of-way width of 28 feet and a proposed cartway width of 28± feet. At a minimum, the proposed ultimate right-of-way, cartway edge, centerline, curbing and sidewalk should align with those on the adjacent property (901 Washington Street). For reference, the widths approved on the adjacent property were 46-feet for the Ultimate Right-of-way, and 27.3-feet for the cartway. • The plans do not show proposed curbing on Washington Street along the SEPTA parking lot. • The plans do not show the required Tree Zone along Washington Street. • For Courts A-D, the plans show a proposed cartway width of 24± feet, and do not show an ultimate Right-of-Way, which is consistent with the adjacent property (901 Washington Street). • The plans do not show a a Tree Zone along Courts A-D. • The plans must also be revised to show and dimension the cartway and ultimate Rights-of-Way for Lee Street and Station Avenue; both are local Streets with an Ultimate Right-of-Way width of 56 feet.
3.	105-30(C)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that short extensions of existing streets with lesser right-of-way and/or cartway widths than prescribed above may be permitted; provided, however, that no section of new right-of-way be less than 40 feet in width and such extensions shall be less than 100 feet in length, in order to allow the Right-of-Way of Washington Street to measure 28-feet wide for a distance of 960± feet along the property frontage.
4.	105-33(B)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that, whenever local street lines are deflected in excess of 5°, connection shall be made by horizontal curves. This section of the ordinance requires that the minimum center-line radii for horizontal curves shall be 150 feet, and the plans show a horizontal curve radii of 40 feet at the intersection of Washington Street and Court D. As noted in the horizonal curve analysis provided by the applicant, the 40-foot radius is for a design speed lower than 15mph. AASHTO's minimum radius for a 15 MPH design speed is not met with the current design. Refer to the AASHTO Greenbook or the AASHTO Geometric Design for Low Volume Roadways for additional guidance. In addition, the proposed radius will be less than existing conditions. For safety, even if a waiver is granted, the radius should be no less the AASHTO minimum radius requirement. If the required 150-foot radius cannot be met, we recommend the designer review alternatives which can meet the requirement to the maximum extent feasible, with the radius greater than the minimum AASHTO requirements. We currently do not recommend the granting of this waiver.
5.	105-37	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that the control of grades, curvature and obstructions at intersections is required to ensure adequate sight distance for safe and efficient vehicular operation. We do not recommend sight distance waivers unless the applicant can demonstrate they will meet transportation engineering sight distance industry standards.

	Section	Description
	105-37 (cont.)	Depict required sight lines (i.e., 150 feet) for the various intersections along Washington Street (Courts A-D, Lee Street, Supplemental Parking Shared Access, SEPTA Driveways) on both the Record Plan and Landscaping Plan. We note sight distance lines are shown but no distances are provided to indicate if the sight distance requirements are met. If the sight distance is less than the requirement for this section, provide justification for using smaller sight distance.
6.	105-38(F)	The applicant is requesting a waiver from the requirements of this section of the ordinance, in order to allow Angle or perpendicular parking along Washington Street.
7.	105-38(H)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires that all parking areas shall be set back from the right-of-way line and all property lines at least 15 feet in order to allow the proposed 10-space parking area and 11 existing parking spaces along the Western property line to be located within the required setback.
8.	105-38(L)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that, in no case shall parking areas for three or more vehicles be designed to require or encourage cars to back into a public street in order to leave the lot, in order to allow the proposed 10-space parking area to be located along Washington Street.
9.	105-38(O)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that parking areas shall be located at least 10 feet from any building or structure. The waiver is requested to allow the existing parking spaces along the 901 and 1001 property line to be located less than 5' from the adjacent decks. The parking spaces will be greater than 10' away from the buildings at ground level, but will be less than 5', horizontally, from the decks on the second floor. The granting of any waiver should be conditioned on the applicant obtaining the approval of the Fire Marshal.
10.	105-47(A)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the provision of sidewalks along Washington Street in accordance with sections 105-30, 105-47 and 105-73 of the Whitemarsh Township Code, in order to permit the curb and sidewalk layout along Washington Street without street trees or the required 5-foot tree planting zone.
11.	105-47(K)(1)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires the provision of a right-of-way of at least 25 feet in width to be offered for dedication to the Township for the public riverfront access, perpendicular to the river. The waiver is being requested to allow the provision of an easement for public access, instead of a dedicated right-of-way. The plans must be revised to label and dimension the easement. Whether an easement or right-of-way, maintenance agreements must be provided in a form acceptable to the Township.
12.	105-48	The applicant is requesting a waiver from the requirements of this section of the ordinance, to not require the installation of street trees along all streets where suitable trees do not exist.

	Section	Description
13.	105-48(E)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires that street trees shall be planted within a tree planting zone of lawn area or other material approved by the Shade Tree Commission, situated between the sidewalk and curb and measuring a minimum of 5 feet in width from the planting edge of the curb to the planting edge of the sidewalk. The plans show proposed sidewalk directly adjacent to curbing, with no planting strip. Additionally, there are no planting strips or street trees between the curb, sidewalk and/or dwelling units. It is noted that the applicant was granted a variance from Section 116-283(C)(1) in order to permit the curb and sidewalk layout along Washington Street without street trees or the required 5-foot tree planting zone.
14.	105-50(C)(1), 105-50(C)(3)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that access to the dwellings and circulation between buildings and other important project facilities for vehicular and pedestrian traffic shall be comfortable and convenient for the occupants. Walking distance from the main entrance of a building or single-family dwelling unit to a parking area shall be less than 100 feet. In no case shall the distance exceed 250 feet. While the plans show 21 overflow parking spaces, they do not appear to be convenient for the use by visitors of units 9-44.
15.	105-52(B)(2)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires that all buffers shall have a minimum width of 50 feet. The Board of Supervisors may permit an alternative planting option which shall have a screening capability equal to or greater than any of the available options. The applicant should provide evidence in sufficient detail to the Board of Supervisors in order to demonstrate that sufficient screening will be provided.
16.	105-53(D)(1)(c)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that no more than 25% of the minimum land area required for park and recreation land may consist of floodplain or riparian corridor buffer areas, wetlands or areas with slopes in excess of 8%. The entire property is located within the floodplain and riparian corridor.
17.	105-56(A)(1)(a)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that, where a street is designed so that all units face on local streets or courts and where on-street parking is not anticipated and no safety hazard will be created, the cartway width may be reduced. This reduction is limited to 26 feet on private streets and courts. The plans show Courts A, B, C and D having a proposed width of 24 feet.
18.	105-73	The applicant is requesting a waiver from the requirements of this section of the ordinance, which requires sidewalks to be constructed as required by sections 105-30 and 105-47, in order to not require sidewalks along both sides of Washington Street and to not require the 5-foot tree planting zone.
19.	58-28(D)(11)	The applicant is requesting a waiver from the requirements of this section of the ordinance, which states that edges of slopes shall be a minimum of five feet from property lines or right-of-way lines in order to permit the normal rounding of the edge without encroaching on the abutting property. The waiver is being requested to allow for connection to offsite features such as trails, walks and streets.

	Section	Description
20.	58-29(E)	The applicant is requesting relief from the requirements of this section of the ordinance, which states that fills shall not encroach on natural watercourses, floodways, floodway fringes, constructed channels, or on wetlands unless permitted by the Army Corps of Engineers, Pennsylvania Department of Environmental Protection (PADEP) and approved by the Township. We do not recommend the granting of this relief. The applicant must obtain the required outside agency permits. This waiver is not required if the outside agency permits are obtained.
21.	58-34(B)(7)(d)	The applicant is requesting relief from the requirements of this section of the ordinance, which requires that all storm pipes shall be reinforced concrete pipe (RCP). The waiver is requested in order to allow on-site pipes to be constructed of High Density Polyethylene Pipe (HDPE). Proposed storm pipes within the public Right-of-way will be RCP. We have no objection to the granting of this waiver.
22.	55-4(B)	The applicant is requesting relief from the requirements of this section of the ordinance, which states that the removal of more than 33% of Trees, having a DBH of six inches or greater, on any Lot, shall not be permitted. The plans appear to show 85% of existing trees as proposed to be removed.
23.	55-4(D)(6)(A), 55-4(F)	The applicant is requesting relief from the requirements of these sections of the ordinance, which states that every living and healthy tree with a DBH of six inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new canopy trees, of a type and species approved by the Shade Tree Commission or its designee, with a trunk diameter of not less than three inches in caliper. The total caliper of replacement trees, measured at six inches above the ground line, shall equal or exceed the DBH of the removed trees. The waiver is being requested to allow a maximum of 40% of the replacement trees to be replaced with ornamental trees, in accordance with Section 55-4(F).

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

	Section	Description
24.	105-19(E), 105-45	The Surveyors' Notes on the Existing Features Plan describe several easements, rights and/or restrictions that require additional information to resolve and/or show correctly, which must be resolved.
25.	105-21(B)(1)(d)[1]	The boundaries of the Heavy Industrial (HVY), Riverfront Development Overlay District (RDD-1), and Recreational Overlay Districts do not appear to be consistent with the Township Zoning Map, and must be revised
26.	105-21(B)(1)(j), 105-21(B)(1)(o)[1]	The plans must be revised to ensure continuity between existing and proposed streets. As currently shown, the proposed striping along the subject property does not align with the striping and stop bar along the frontage of 901 Washington Street, or provide a transition to Station Avenue. Detailed intersection plans must be provided.
27.	105-21(B)(1)(o)	The plans must be revised to address the treatment of existing features (monument sign, parking spaces, asphalt/fire lane) within the existing easement over the SEPTA property.

	Section	Description
28.	105-21(B)(1)(o)	The plans show an existing parking area along the Western property line, that spans the subject property and the adjacent property at 901 Washington Street. Sheet C4.0 notes that, "Final Design and grading to be coordinated with 901 Washington Street and Whitemarsh Township prior to final submission". The following, at a minimum, must be addressed: • Existing/proposed grading must be shown. • Clarification must be provided regarding ownership and maintenance of the area. Easements must be established, as required.
29.	105-21(B)(1)(o)[4]	The plans must be revised to show any proposed open space areas, and indication as to whether offered for dedication.
30.	105-21(B)(1)(o)[6]	The plans show an existing endwall at the Schuylkill River, within an "existing 25' Drainage Easement". The associated stormwater piping must also be shown.
31.	105-21(B)(1)(o)[7]	The plans must be revised to show how the proposed 7-foot wide trail along the River will connect/transition to the 10-foot wide trail along the River on the adjacent property at 901 Washington Street.
32.	105-21(B)(6)(a)	Sheet C5.0 indicates that the "Detailed design [is] still in progress", for the proposed Sanitary Sewer Pumping Station and that the exact location and depth of the proposed sanitary sewer force main is to be field verified by the contractor prior to start of construction. Sanitary sewerage facilities must be fully engineered and shown in their final location on the plans.
33.	105-21(B)(6)(b)	Sheet C5.0 indicates that the location of the proposed water main is to be coordinated with AQUA. Water supply lines must be fully engineered and shown in their final location on the plans.
34.	105-21(B)(8)	Sheet 6.0 must be revised to include Station Labels along Washington Street that correspond with the center-line profile.
35.	105-21(B)(9)	The following comments related to the Traffic Impact Study must be addressed: 1. As discussed previously, coordinate with the Township to determine the appropriate traffic control and circulation patterns along Washington Street and its intersections with Lee Street and Station Avenue. We recommend Lee Street and Station Avenue remain free flow at Washington Street due to the rail tracks. 2. Coordinate with SEPTA regarding the project, potential travel routes, parking, etc. and provide the correspondence in future submissions. The applicant has acknowledged and started coordination with SEPTA.
36.	105-21(B)(15)	The "Preliminary Resource Impact and Conservation Plan" (the "Preliminary Impact Plan") must be revised to include a delineation of areas to be left undisturbed, an analysis of how resources will be protected, and location of structures and alignment of infrastructure.
37.	105-21(B)(17)	This section of the ordinance requires the submission of a Community association document, for all subdivision and land development applications which propose lands and/or facilities to be used or owned in common by all the residents of that subdivision or land development and not deeded to the Township.

	Section	Description
38.	105-21(B)(18)	This section of the ordinance states that a Preliminary common open space ownership and management plan is required as part of any Preliminary Plan submission.
39.	105-21.1(K)(2)	Within the South Transportation Service Area an impact fee in the amount of Two Thousand Five Hundred and Twenty-Nine Dollars ($2,529.00) per anticipated peak hour trip must be provided by the applicant. Based on data documented within the latest edition of the ITE Trip Generation Manual, the proposed development will generate 18 PM peak hour trips. Therefore, the traffic impact fee totals $45,522.00 ($2,529.00 x 18 peak hour trips).
40.	105-26(E)	The applicant must provide evidence in sufficient detail to demonstrate that there are no environmental concerns related to previous uses of the site.
41.	105-28	The cross section for the proposed courts should have a crown with the road draining towards the edge line.
42.	105-32(D)	Courts A-D shall be owned and maintained by all abutting property owners. A homeowner's association or other legal entity approved by the Board of Supervisors shall be formed in order to properly administer such maintenance responsibilities.
43.	105-34(C)	The Court profiles on Sheet C6.0 must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, which states that vertical curves shall be used at changes of grade exceeding 1%.
44.	105-35(E)	Streets entering opposite sides of another street shall be laid out directly opposite one another or with a minimum offset of 200 feet between their center lines. Court B is less than 60’ from Lee Street.
45.	105-38, 105-70	The plans must be revised to provide appropriate regulatory signage and striping. The following, at a minimum, must be addressed: • All proposed signs must be labeled, and dimensions included on the construction details. • The double yellow center line should be broken at Court A, B and C. • Provide a STOP sign exiting the SEPTA parking lot onto Station Avenue. • The crosswalk at Court C cannot extend into the Washington Street travel lane. Shift the crosswalk slightly to the south. • At Court D, extend westbound stop bar to the double yellow line. Provide a stop sign for the westbound approach. • At Lee Street and Washington Street, remove the northbound stop sign noted on Sheet 7 of 20. Lee Street should remain free flow along Lee Street at the railroad tracks.
46.	105-38	The plans must be revised to provide additional detail with regard to the connection of Washington Street with the existing driveway for the SEPTA parking lot. The plans must address the existing fencing across the driveway opening, and necessary transitions between existing and proposed curbing and pavement.
47.	105-38(Q)	The plans must be revised to label all curb radii in order to demonstrate compliance with the requirements of this section of the ordinance.

	Section	Description

48. 105-38(R) The plans must be revised to provide adequate space for vehicles to back out of the end unit driveways. Provide area at the end of Court B, Court C and Court D, for turning maneuvers. Consider a design similar to Court A. Switching the driveway side to the north side of these end units may also be considered.

49. 105-38(W), Where semiattached, attached or multiple dwellings are proposed and where private garages or driveways are proposed to meet the off street parking requirements, additional overflow off-street parking shall be provided in accordance with the following:

Access Drive or Cartway Width (feet)	Overflow Spaces Required
36 or greater	1 for each 4 dwelling units
Less than 36	4 for each 4 dwelling units

Section 116-282(E) of the Zoning Ordinance states that residential uses shall not be subject to the overflow parking requirements of Chapter 105, Subdivision and Land Development § 105-38W.

50. 105-40(A) The plans must be revised in order to demonstrate that there will be adequate maneuvering space for required off street loading facilities, such as moving trucks and package deliveries.

51. 105-47 The plans must be revised to provide for pedestrian movements along Courts A-D, including egress to and from building entrances.

52. 105-47(A) Vehicles parked in the residential driveways will have signigicant encroachment on proposed sidewalks. The driveway parking should be designed in a manner to not affect the usage of the sidewalk. Consider lengthening the driveways.

53. 105-47(C) Sidewalks and public paths shall be located within a public right-of-way, a public easement or a common open space area.

- Provide a sidewalk easement for the proposed trail along the Schuylkill River.
- Provide a sidewalk easement for the sidewalk along the Washington Street site frontage.

54. 105-45 The plans must be revised to provide easements for the following:

- An easement with 901 Washington should be provided for the access to the parking area west of Court A.
- A shared access easement should be provided with SEPTA.
- Portions of the fencing along Washington Street appear to be within the SEPTA property line. Obtain the necessary easements from SEPTA regarding the fence construction and maintenance.

55. 105-47(D) The plans must be revised to include construction details and detailed designs at a scale of 1”=5’ for all ADA Curb Ramps.

56. 105-47(H) Provide proposed grading to the proposed trail along the Schuylkill River. The grading should meet the latest ADA compliance for trails.

	Section	Description
57.	105-47(K)	In areas zoned Riverfront Development District, in the RDD-1 subdistrict, public riverfront access, perpendicular to the river, is required for all properties that have access to the river, and shall be subject to the following. The Planning Commission should review and make recommendations to the Board of Supervisors regarding the style of Lighting fixtures, site furniture, and signage.
58.	105-50(A), 105-50(C)(2)	Access and circulation for fire-fighting and other emergency equipment, moving vans, fuel trucks, garbage collection, deliveries and snow removal shall be planned for efficient operation and convenience. The applicant shall submit plans using applicable truck turning templates. All turning templates for trash trucks and fire trucks must also be shown through the horizonal curve.
59.	105-50(C)(1)	Access to the dwellings and circulation between buildings and other important project facilities for vehicular and pedestrian traffic shall be comfortable and convenient for the occupants. The following must be addressed: • The applicant is to coordinate with 901 Washington Street west of the property. The proposed conditions must be shown to ensure proper tie-in with trails, sidewalk and the roadway. Show the proposed building and features on 901 Washington Street to ensure the overflow parking west on of Court will not impact circulation on their site. • The parking area along 901 Washington Street appears to be obstructed by curbing and signage (near unit 1 and the proposed stopbar) along 901 Washington Street property. Revise as needed for adequate circulation. • There is a paved area on the north side of Washington Street with a proposed fence. The proposed fence should be designed in a manner to control access to this area. • Provide curb, barrier, or some other permanent means to close the SEPTA connection to Washington Street at Court D. • For the crosswalk crossing Washington Street at Court D, provide an opening in the proposed chain link fence for pedestrians to access the SEPTA station.
60.	105-52	The plans show ‘proposed chain link fence’ between Washington Street and the rail lines. The Planning Commission should review and make recommendations to the Board of Supervisors regarding the style of fencing. We also recommend coordination with SEPTA with regard to safety along the tracks.
61.	105-52, 105-83	All landscaping plans are subject to the review and recommendation of the Shade Tree Commission.
62.	105-53(D)	This section of the ordinance requires the dedication of land in the amount of 10% of the total Site Area for Park and/or Recreational use. The applicant has the option of offering a fee in lieu of dedicating actual land area and can also provide a combination of a fee in lieu and dedication of land. All offers of land and/or fees in lieu of dedication must meet the requirements of this section of the ordinance.
63.	105-69(C)	Along the existing street on which a subdivision or land development abuts, improvements shall be made to the street. The improvements to the boundary street shall be determined by the width of the required cartway and built to the specifications established by the Township.

	Section	Description
64.	105-72(A)	Monuments must be provided at all property line corners. Monuments shall be placed at each change in direction of a boundary along the street line (right-of-way); two to be placed at each street intersection and one on each side of any street at angle points and at the beginning and end of curves.
65.	105-78	The applicant must obtain the approval of the Whitemarsh Township Authority with regard to proposed sanitary sewerage facilities.
66.	105-79	The applicant has provided a draft sewage facilities planning module (the planning module) for review.
67.	105-81	All electric, telephone and communication service facilities, both main and service lines, shall be provided by underground cables, installed in accordance with the prevailing standards and practices of the utility and other companies providing such service. Final plans shall show locations of all utilities and shall be coordinated with landscaping.
68.	105-89	The developer shall enter into a written agreement with the Township in the manner and form approved by the Solicitor wherein the developer shall agree, to construct or cause to be constructed at his own expense all proposed improvements shown on the approved land development plan, all in strict accordance with the standards and specifications of the Township and within the time specified in said agreement, and to deposit with the Township financial security in an amount sufficient to cover the cost of all subdivision or land development improvements, including both public and private improvements.

FLOODPLAIN MANAGEMENT

	Section	Description
69.	101-9(B)(2), 101-23(C)	The plans must be revised in order to demonstrate that all utilities and facilities, such as sewer, gas, electrical and water systems are located and constructed to minimize or eliminate flood damage.
70.	101-9(C)(4)(e)	The applicant must provide documentation, certified by a registered professional engineer, to show that the cumulative effect of any proposed development, when combined with all other existing and anticipated development, will not increase the base flood elevation at any point within the community.
71.	101-9(C)(4)(f), 101-22(B), 101-22(C)	The applicant must provide a document, certified by a registered professional engineer or architect, which states that the proposed construction or development has been adequately designed to withstand the pressures, velocities, impact and uplift forces associated with the base flood. Such statement shall include a description of the type and extent of flood proofing measures which have been incorporated into the design of the structure and/or the development.
72.	101-9(C)(4)(g)	The applicant must indicate how the storage of any materials or substances referred to in § 101-23F and §101-24 will be prevented in private garages.

Section		Description
73.	101-17(A)(1)	The plans show proposed features within the floodway. This section of the ordinance states that no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted within the floodway area unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.
74.	101-17(A)(1)	In the Floodplain Conservation District, no development shall be permitted except where the effect of such development on flood heights is fully offset by accompanying improvements which have been approved by all appropriate local, state, and federal authorities as required. The applicant must provide evidence in sufficient detail to demonstrate compliance with the requirements of this section of the ordinance, such as the inclusion of a cut/fill analysis plan demonstrating there will be no net fill.
75.	101-17(A)(2)	The plans show several proposed features within the floodway. This section of the ordinance states that no new construction or development shall be allowed within the floodway area unless the appropriate approvals are obtained from the Army Corps of Engineers, Federal Emergency Management Agency, Pennsylvania Department of Environmental Protection and approved by the Township.
76.	101-23(H)	The plans must be revised to demonstrate that any structures, including fencing, signage, mechanical equipment and trash enclosures, shall be adequately anchored to prevent flotation, collapse, or lateral movement.

CHAPTER 55 - TREE PROTECTION STANDARDS

Section		Description
77.	55-4(C)	It is our understanding that the tree survey plan and a landscape plan were prepared and reviewed by the Shade Tree Commission at their public meeting on July 15th. There was an agreement between the Applicant's representatives and the Shade Tree Commission to continue the discussion at the August meeting with revised plans.
78.	55-4(A)(6)	Any tree lost or destroyed within the past five years must be shown on the Tree Survey Plan as a “Removed Tree” and must be replaced as part of the proposed project.

GRADING, EROSION CONTROL, STORMWATER MANAGEMENT AND BEST MANAGEMENT PRACTICES ORDINANCE:

	Section	Description
79.	58-16	This section of the ordinance states that, in order to protect and improve water quality, a riparian buffer easement shall be created and recorded as part of any subdivision or land development that encompasses a riparian buffer. Except as required by 25 Pa. Code Chapter 102, the riparian buffer easement should be no less than a minimum of 35 feet from the top of the streambank.
80.	58-17(A)(2)(k)	Contour labels must be added to the proposed grading of Rain Garden 1.
81.	58-17(A)(2)(o)	Construction Details must be provided for the proposed stairs, including railings and fall protection. Adequate fall protection must also be provided along retaining walls.
82.	58-17(A)(2)(p)	The plan must be revised to show the size, location and construction details of all existing and proposed storm drainage facilities. At a minimum, both existing and proposed pipe sizes, lengths, slopes and materials should be shown.
83.	58-17(A)(7)	The plans must be revised to include profile drawings of all stormwater management BMPs, including drainage structures, pipes, open channels, and swales.
84.	58-17(A)(18)	The stormwater management reports must be revised to indicate the numerical weighted curve number, instead of “WQ”.
85.	58-18(2)	Since the limit of disturbance appears to be greater than one acre, the applicant must obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Pennsylvania Department of Environmental Protection. Once obtained, a copy must be submitted to the Township.
86.	58-23(A)	An as-built survey of all stormwater BMPs must be submitted to the Township in paper and digital (dwg) formats. A note must be added to the plans stating an as-built survey will be completed and submitted in both formats to the Township.
87.	58-28(D)(16)	The plans must be revised to provide a tire cleaning area at each point of access to the project site. The Construction entrance is currently shown internal to the site, and it appears that the entrance/tire cleaning area would instead be required at either Station Avenue, Lee Street and/or at the entrance to the site from 901 Washington Street.
88.	58-29(A)	Detailed plans and calculations, including all factors of safety, for all of the proposed retaining walls that are prepared, signed and sealed by a professional engineer licensed in the Commonwealth of Pennsylvania must be submitted to the Township for review. Constructible details and elevation views of all proposed retaining walls as well as the top and bottom of wall elevations must be added to the plans.
89.	58-30(A)(8)	If in the course of reviewing the stormwater management plan, the Township Engineer determines that off-site improvements are necessary to satisfactorily control the stormwater from the site, the applicant shall be responsible for such off-site improvements.

	Section	Description
90.	58-31(A)(16)	The applicant must submit legal descriptions for any proposed rights-of-way, easements, or lands to be offered for dedication.
91.	58-32(C)	Pipes shall be sized by the use of inlet/outlet control calculations. The applicant must submit inlet/outlet control calculations in order to demonstrate compliance with the requirements of this section of the ordinance.
92.	58-35(C)(3)(e)	Based on our review of the infiltration report the tested rates provided for design (38.53 inches per hour) exceed DEP Appendix C guidance for infiltration BMPs. The provided rates are not approved for use in the design. The design engineer shall clearly indicate how the data complies with the DEP guidance for infiltration rates and meets the appropriate standards for water quality protection.

Any future submission of the design plans for this project must be accompanied by a letter, prepared by the applicant's engineer, which addresses each of the comments contained in this report. Should you have any questions regarding this matter, please do not hesitate to contact me at this office.

Sincerely,

Krista Heinrich, PE
Township Engineer

c: Charles L. Guttenplan, AICP – Director of Planning and Zoning
Sean Kilkenny, Esq.; The Law Offices of Sean Kilkenny, LLC – Township Solicitor
David Landskroner, HT 1001 Washington, LLC – Applicant
Craig R. Lewis, Esq.– Applicant's Attorney
Herb Schultz– Applicant's Architect
James P. Bannon, Jr., PE – Applicant's Engineer

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August 8, 2025

Charles L. Guttenplan, AICP
Director of Planning and Zoning / Zoning Officer
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

Reference: ***1001 Washington Street***
Updated Waiver / Modification Requests
Whitemarsh Township, Montgomery County, PA
Nave Newell No. 2024-001.02

Dear Mr. Guttenplan

On behalf of our client, HT 1001 Washington, LLC, and in accordance with the Whitemarsh Township Subdivision and Land Development Ordinance. The Applicant respectfully requests the following waivers and/or modifications for the cited provisions of the ordinance.

Streets

1. **105-30(A) – Street Standards**
   A modification is requested from the requirement that the ultimate right-of-way measure 56’ and the cartway width measure 36’. Due to the existing site constraints the proposed ultimate right-of-way measures 28’, and the cartway width measures below 36’. Also, the proposed Courts will have cartway widths below 30’.

2. **105-30(C) – Street Standards**
   A waiver is requested from the requirement of short extensions of existing streets with lesser right-of-way and/or cartway widths than prescribed above may be permitted; provided, however, that no section of new right-of-way be less than 40 feet in width and such extensions shall be less than 100 feet in length to allow the right-of-way width of Washington Street measure 28 feet for a distance of 960’ along the property frontage.

3. **105-33(B) – Street Intersections**
   A waiver is requested from the requirement of streets entering opposite sides of another street shall have a minimum offset of 200’. Due to the property layout, we are proposing Court B and Court C to be offset less than 200’ from Lee Street, all three of which will be stop controlled.

4. **105-35(E) – Street Alignment**
   A waiver is requested from the requirement of local streets having horizontal curves of 150’. Due to the existing site constraints and its current alignment, we are proposing horizontal curve radii of 40’ on Washington Street

5. **105-37 – Sight Distances**

A waiver is requested from the requirement of the sight distances listed in this section. The intersection of Court D and Washington Street is designed as a multi-stop intersection.

6. **105-56(A)(1)(a) – Private streets and courts shall be 26' wide.**
   A waiver is requested from this section to allow the courts to be 24'. This matches the adjacent development and is consistent with the character of the area.

Sidewalks

7. **105-30(A); 105-47(A), and 105-73 – Sidewalks**
   A modification is requested from the requirement of these sections to install sidewalks as shown on the Site Plan. Variance was granted from Section 116-283.C.(1), so as to permit curb and sidewalk alignment along Washington Street without street trees and the required 5 foot/verge strip.

8. **105-47(K)(1) – In the RDD-1 subdistrict, 25' right-of-way be offered for dedication to the Township**
   A modification is requested to this requirement to offer an easement for public access and use rather than right-of-way dedication.

Parking

9. **105-38(F) – Angle or perpendicular parking shall not be permitted along public or private streets**
   A waiver is requested from the requirement as cartway width measures about 31'. Backing out from the perpendicular parking should not pose a safety risk given the low volumes of traffic. The spaces are provided for public use and extra guest parking. The cartway width meets the minimum requirement of 105-56(A)(1)(b).

10. **105-38H – Except at entrance and exit drives, all parking areas shall be set back from the right-of-way line and all property lines at least 15 feet, or as required by the applicable sections of the Zoning Ordinance, the greater provision to prevail. The distance between this required setback and the cartway shall be maintained as a planting strip or planting strip and sidewalk.**
    A waiver is requested from this section to keep the existing parking spaces that are adjacent to the David's Bridal Facility and for the proposed parking along Washington Street near the proposed kayak launch.

11. **105-38(L) – In no case shall parking areas for three or more vehicles be designed to require or encourage carts to back into a public street.**
    A waiver is requested from this section for the 10 parking spaces adjacent to Washington Street. Backing out from the perpendicular parking should not pose a safety risk given the low volumes of traffic. The spaces are provided for extra guest parking and public use.

12. **105-38(O) – Parking areas shall be located at least 10 feet from any building or structure.**
    A waiver is requested from this section to allow the existing parking spaces along the 901 and 1001 property line to be located less than 5' from the adjacent decks. The parking spaces will be greater than 10' away from the buildings at ground level, but will be less than 5', horizontally, from the decks on the second floor.

13. **105-50(C)(1) and (3) – Walking distance from a single-family dwelling unit to a parking area shall be less than 100'. In no case shall the distance exceed 250'**
    A waiver is requested from this section to allow the two off-street parking areas to be designed as shown on the Land Development Plans. The proposed off-street parking areas are not required by code and being provided for public use at the proposed kayak launch and as an extra amenity for residents.

Trees / Buffers

14. **55-4B – Maximum tree removal. The removal of more than 33% of trees, having a DBH of six inches or greater, on any lot, shall not be permitted.**
    A waiver is requested to permit the removal of greater than 33% (62% total, 53% healthy removed).

15. **55-4(D)(6)(A), 55-4(F)- Tree Replacement Substitution. living and healthy tree with a DBH of six inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new canopy trees, of a type and species approved by the Shade Tree Commission or its designee, with a trunk diameter of not less than three inches in caliper. The total caliper of replacement trees, measured at six inches above the ground line, shall equal or exceed the DBH of the removed trees. The waiver is being requested to allow a maximum of 40% of the replacement trees to be replaced with ornamental trees, in accordance with Section 55-4(F).**
    A waiver is requested to permit greater than 40% of the replacement trees to be replaced by understory/ornamental trees, shrubs, and by a fee in-lieu payment.

16. **105-52(B)(2) – Buffers shall have a minimum width of 50'.**
    A waiver is requested from this section to allow the buffers as shown on the plan, due to the sites unusual sized and shape.

17. **55-4.C.(4)(b) and 55-4.D.(1)(d) – Denote location and species of each preserved tree and all boundary trees and the location of tree protection fences, encompassing the dimensions of each root protection zone, either calculated and 1.25 feet (radius) per one inch of DBH, or a circle with a radius extending from e tree's trunk to a point no less than the furthest crown dripline, whichever is greater. Nothing shall be stored stockpiled, temporarily placed, or allowed in the root protection zone.**
    A waiver is requested to permit tree protection fencing at a smaller radius, and to allow disturbance within the root protection zone.

Parks and recreational facilities

18. **105-53(D)(1)(c) – No more than 25% of the minimum land area required for park and recreation land may consist of floodplain or riparian corridor areas.**
    A waiver is requested from this section due to the entire property being located within the floodplain.

Grading

19. **58-16(B) – Riparian buffer easements no less than 35', measured from the top of bank, shall be created**
    A waiver is requested from this requirement to allow the proposed development as shown on the Land Development Plans, which are consistent with the zoning relief granted and include a riverfront trail/boardwalk, dwelling units, and other improvements less than 35' from the top of bank.

20. **58-28(D)(11) – Edge of slopes shall be a minimum of five feet from property lines or right-of-way lines**
    A waiver is requested of this requirement to allow such grading to occur closer than 5' from property and right-of-way lines. The proposed grading abuts the ultimate right-of-way of Washington Street. Proposed grading needs to be less than 5' from property and right-of-way lines to tie back into existing conditions.

21. **58-29E – Fills shall not encroach on natural watercourses, floodways, floodway fringes, constructed channels, or wetlands**
    A waiver is requested from this section because the whole property is located within the floodplain. We have submitted a Letter of Map Revision (LOMR) request to FEMA to revise the floodway so the existing structures and proposed improvements are removed from the floodway.

Stormwater Management

22. **58-34(B)(7)(d) – All storm pipe shall be reinforced concrete pipe**
    A waiver is requested to allow the proposed storm pipes on the site to be HDPE in-lieu of reinforced concrete pipe. Proposed storm pipes within the public right-of-way will be concrete.

Traffic Study

23. **105-21.B(9)(d)(6)(a) – All streets and/or intersections showing a level of service below C shall be considered deficient, and specific recommendations for the elimination of these problems shall be listed.**
    A waiver is requested from this section. The applicant will comply to the extent that the proposed roadway improvements will be limited and directly related to driveway access intersections. Per the PA MPC, applicants are not obligated to provide improvements at off-site intersections.

If you have any questions or need additional information. Please contact me at (610) 265-8323 or via email at jbannon@navenewell.net.

Sincerely,

James P. Bannon, Jr., PE

JPB/

Enclosure

cc (via email): David Landskroner & Ryan Lohbauer – Hightop Development
Craig R. Lewis, Esq. – Kaplin Stewart

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WHITEMARSH TOWNSHIP

To: Craig McAnally, Township Manager

From: Samantha Zrillo, Township Planner

Subject: **SLD #7-23 HT 1001 Washington LLC—8.5.25 STC Meeting** 83

Date: August 7, 2025

cc: **Charlie Guttenplan, AICP, Township Director of Planning and Zoning**
Krista Heinrich, PE, Township Engineer, Gilmore Associates
John Hosbach Jr., RCA, ACF, CUCF, Township's Consulting Arborist
Craig Robert Lewis, Esq., Applicant's Attorney
Brian Kelly, RLA, Applicant's Landscape Architect
Jim Bannon, P.E., Applicant's Engineer

Plans Reviewed: *Nave Newell Engineering, partial plan set dated 11.15.24 with the most recent revision date of 7.29.25.*

Project Representative: Brian Kelly, RLA, of Nave Newell Engineering

Mr. Kelly presented revised landscape plans, reflecting comments and direction from the July Shade Tree Commission meeting. Revisions included the addition of 13 understory trees within the central drainage easement area, increased caliper replacements on 23 trees—including willow oak, sycamore, black gum, and red maple— to five-inch caliper, adding a 5:1 shrub replacement ratio exclusively along the river, relocating the soil stockpile further away from trees, an updated landscape schedule, and the inclusion of tree protection fencing detail. The percentage of removed trees was also clarified to be 62% (52% healthy trees).

In total, the revised plans account for 286" of caliper replacement in the field, with the request that the remaining 376" inches to be met by fee-in-lieu.

The following waivers were requested: §55-4.B. to permit removal of more than 33% of on-site trees (proposing 62% removal), §55-4.D.(6)(a) and §55-4.F. to allow more than 40% of replacement to include understory trees, shrubs, and fee-in-lieu, §105-52.B.(2) to reduce the required 50-foot buffer due to site layout constraints and trail placement, §55-4.C.(4)(b) and §55-4.D.(1)(d) to allow reductions in tree protection zones to be up against the improvements of the boardwalk and existing infrastructure and to permit minimal disturbance within the root protection zone where necessary for boardwalk footings.

Several concerns were raised regarding the number and scope of waivers. Opposition was voiced to counting shrubs as tree replacements. Questions were raised about the root protection zone reductions, nature of permitted disturbances, and monitoring protocols during construction. Concerns about development density and its impact on tree preservation were also expressed, and the importance of designing within ordinance constraints was highlighted.

Following discussion, Ms. Borkowski made a motion to recommend approval of the plans with waivers from the following sections:

- **§55-4.B. to permit the removal of 62% of trees**
- **§55-4.C.(4)(b) and §55-4.D.(1)(d) to allow tree protection zones to be less than the required distance**
- **§55-4.D.(6)(a) and §55-4.F. to allow more than 40% of replacement to include understory trees, shrubs, and fee-in-lieu**
- **§105-52.B.(2) to allow a reduction in the required 50-foot buffer**

Ms. Kosabutski seconded the motion. Motion carried unanimously (Vote 3-0).

Samantha Zrillo
Township Planner
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2608
Email: szrillo@whitemarshtwp.org

WHITEMARSH TOWNSHIP

To: Charlie L. Guttenplan, Director of Planning & Zoning/Zoning Officer.

From: **Andrew G. Thomas, Fire Marshal**

Subject: SLD#07-23 Washington Riverfront Development
1001 Washington Street
Conshohocken, PA 19428

Date: 8/8/2025

After reviewing the submitted Plan for Washington Riverfront Development, the following items must be addressed.

1. **The hydrant was noted on March 27, 2025 response letter and discussed in the in person and virtual meetings about being moved closer to Lee St. The updated plans submitted to the township do not match from the site and utility plans show different hydrant locations.** The plan shall be in accordance with the International Fire Code in section 507.5. Fire hydrant systems. Fire hydrant systems shall comply with Sections 507.5.1 through 507.5.6 and Whitemarsh Township Ordinance 1012.
    a. At the meeting on 2/20 we discussed moving the proposed fire hydrant to align with Lee Street, the current proposed placement puts it very close to an already installed fire hydrant from the 901 Washington Project.

2. **The FDC connection under the SEPTA rail line was noted on March 27, 2025 response letter and discussed in the in person and virtual meetings. It is not shown on any of the submitted plans.** During the meeting on 2/20 we discussed installing a FDC at Lee St. this would be installing a hard piped dry waterway underneath the train tracks to assist with getting water during fire suppression operations to either side of the train tracks without interrupting rail traffic. This will also make this rail crossing uniformed with the other crossing in Conshohocken Borough. The cost of materials for this would be approximately $8,000 to $10,000. The contact from SEPTA that would help with this project is John Townsend 215-580-6078 or JTownsend@septa.org

3. **There is no NO PARKING BY ORDER OF FIRE MARSHAL signs shown in the construction details page of the submitted plans.** No parking by order of Fire Marshal or No Parking Fire Lane signage will need to be installed in the complex and in areas needed by the directive of the Fire Marshal

Andrew G. Thomas
Fire Marshal, Emergency Management Coordinator
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2614
Email: athomas@whitemarshtwp.org

Federal Emergency Management Agency

Washington, D.C. 20472

August 8, 2025

LOMR COMMENT RESPONSE

Craig T. McAnally
Township Manager
Township of Whitemarsh
616 Germantown Pike
Lafayette Hill, PA 19444

IN REPLY REFER TO:
Case No.: 24-03-0882P
Community: Township of Whitemarsh, PA

Community No. 420712

Dear Craig McAnally:

This letter responds to a letter dated July 21, 2025, which you sent to FEMA regarding a Letter of Map Revision (LOMR), Case No. 24-03-0882P. The Department of Homeland Security, Federal Emergency Management Agency (FEMA) issued this LOMR on April 4, 2025, for the Township of Whitemarsh, Pennsylvania. The LOMR proposed to revise Panel 42091C0358G of the effective Flood Insurance Rate Map (FIRM) for Montgomery County, Pennsylvania (All Jurisdictions), dated March 2, 2016. Specifically, the LOMR proposed to narrow the regulatory floodway along the Schuylkill River, on the left overbank, from approximately 7,650 feet downstream of Fayette Street to approximately 6,210 feet downstream of Fayette Street. No project was associated with this LOMR request, and it was based on the existing conditions.

The July 21 letter expressed the community's opposition to the LOMR. It cited empirical evidence for the regular and substantial flooding that occurs beyond the boundary of the current effective floodway. The Township believes that the floodway boundary should not be moved closer to the river.

FEMA has reviewed the comments from the July 21 letter. Each community is responsible for establishing and regulating its floodways (in accordance with 44 CFR part 60.3(d)). The floodway is a community's tool for floodplain management, and a participating community is FEMA's partner in administering the National Flood Insurance Program. As the Township is opposed to the floodway change proposed in the LOMR, the LOMR will not become effective and FEMA has withdrawn the notice to publish this change in the Federal Register.

If you have any questions about the floodplain management regulations for your community or the National Flood Insurance Program in general, please contact Brian Koper of my staff in Washington, DC, either by telephone at (202) 733-7859 or by email at Brian.Koper@fema.dhs.gov. You may also call the FEMA Mapping and Insurance eXchange (FMIX), toll free, at 1-877-336-2627. Additional information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

Sincerely,

David N. Bascom

David N. Bascom, Acting Director
Engineering and Modeling Division
Risk Analysis, Planning, and Information Directorate

cc: Krista Heinrich, P.E., Township Engineer, Township of Whitemarsh
Sydelle D. Zove
David Landskroner, HT 1001 Washington, LLC
Gregory C. Newell, P.E., Nave Newell, Inc.

WHITEMARSH TOWNSHIP

To: Charlie L. Guttenplan, Director of Planning & Zoning/Zoning Officer.

From: **Andrew G. Thomas, Fire Marshal**

Subject: HT 1001 Washington, LLC c/o Hightop Development Emergency Plan

Date: 8/8/2025

The Emergency Plan for 1001 Washington Street was reviewed by the listed parties below.

Andrew G. Thomas: *Whitemarsh Township Fire Marshal/Emergency Management Coordinator*
Christopher Ward: *Whitemarsh Township Police Chief*
Wayne Masters Jr.: *Spring Mill Fire Co. No. 1 Fire Chief*

- Once the below edits are made to the emergency plan the plan can be approved:
  - On page 12 After The Storm:
    - A section should be added to have a structural engineer come out after severe flooding or storms to check the structural integrity of the boardwalk along the river.
  - On page 7 of the plan it reads:
    - Whitemarsh Township Fire Marshall/OEM non-Emergency: 484-594-2614
      - Edit should read **Whitemarsh Township Fire Marshal/OEM Non-Emergency: 484-594-2614**

  - On page 12 of the plan it reads:

Gas Odor/Leak

- - Call 9-1-1 to report the odor/leak
- - Open the windows
- - Do not turn any electric devices on or off including light switches
- - Follow on-site Evacuation Plan
    - **Edit requested is remove "open the windows".**

Andrew G. Thomas
Fire Marshal, Emergency Management Coordinator
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2614
Email: athomas@whitemarshtwp.org

Section B:

Previous Documents that are Still Relevant

WHITEMARSH TOWNSHIP
SUBDIVISION and/or LAND DEVELOPMENT APPLICATION

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

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

Plan Type:
☐ Sketch ☒ Preliminary ☐ Final

INSERT "N/A" FOR NOT APPLICABLE WHERE APPROPRIATE

Name of Subdivision/Land Development: 1001 Washington Street

Location of Subdivision/Land Development: 1001 Washington Street, Conshohocken, PA
(~~Primary Access Roadway Name~~)

Between: Lee Street (Roadway Name) and E North Lane (Roadway Name)

Number of Parcels: 1 **Block Number(s):** 08A **Unit Number(s):** 006

Parcel Number(s): 65-00-12673-00-6

Acreage: 3.7 **Total Lots Proposed:** 1 **Zoning District:** Heavy Industrial District

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

Applicant Name: HT 1001 Washington, LLC **Contact Name:** David Landskroner

Phone #: 215-246-0606 Fax #: N/A Email: david@hightopdevelopment.com

Address: 1331 S. Juniper Street, Philadelphia, PA 19147

Owner of Record Name (If Different):

Phone #: Fax #: Email:

Address:

Engineer Name: James P. Bannon, Jr., PE **Firm Name:** Nave Newell, Inc.

Phone #: 610-265-8323 Fax #: 610-265-4299 Email: jbannon@navenewell.net

Address: 900 West Valley Road, Suite 1100, Wayne, PA 19087

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

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

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

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

Date of Submission: 11-15-24

Signature: [signature]

(Original Signature must be submitted)

Printed Name: DAVID LANDSKRONER

I, **(name)** DAVID Landskroner **(title)** MANAGING MEMBER of

(entity submitting application) HT 1001 WASHINGTON LLC do hereby affirm

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

Date: 11/11/24 Signature: [signature]

(Original Signature must be submitted)

WHITEMARSH TOWNSHIP
SUBDIVISION and/or LAND DEVELOPMENT
TIME WAIVER FORM

Date: 11/11/24

Granted to: Whitemarsh Township Board of Supervisors

Name of Subdivision and/or Land Development: 1001 Washington Street

On or about, November 15, 2024, I/we submitted for official filing the above-reference application.

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

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

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

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

Date: 11/11/24

Signature: [signature]

(Original Signature must be submitted)

Printed Name: DAVID LANDSKRONE

Firm Name: HT 1001 Washington LLC

(if applicable)

Title: Managing member

(if applicable)

Prepared by and after recording please return to:
UNRUH TURNER BURKE & FREES
P.O. BOX 515
WEST CHESTER PA 19381-0515
Attn: William J. Burke, III, Esquire

Tax Map Parcels Nos. 65-00-12672-00-7 (Tax Map 65, Block 8A Unit 6 & Block 9 Unit 25)
and
Tax Map 65, Block 9 Unit 24
Map 65, Block 10 Unit 24.

GROUND LEASE AGREEMENT

SEPTA REGISTRY NO. 6379

This **GROUND LEASE** (this "**Lease**" or "**Agreement**") is executed the 12th day of July, 2022, between the **SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY** ("**SEPTA**" or "**Lessor**"), a body corporate and politic exercising the public powers of the Commonwealth of Pennsylvania as an agency and instrumentality thereof, for itself and its successors and assigns; and **901 WASHINGTON PARTNERS, L.P.**, a Pennsylvania limited partnership, its successors and assigns as hereinafter provided ("**901 Washington**" or "**Lessee**"). Lessor and Lessee are sometimes herein individually called a "**Party**" and collectively the "**Parties**").

RECITALS

A. 901 Washington owns the real property and improvements containing approximately 4.817 acres of land, situate in Whitemarsh Township ("**Township**"), Montgomery County, Commonwealth of Pennsylvania, being and comprising Montgomery County, PA Tax Parcel No. 65-00-12672-00-7, having an address of 901 Washington Street, Conshohocken, PA 19428, and more fully described in that certain deed dated October 15, 2013 from Spring Mill Corporation to 901 Washington recorded in the Office of the Recorder of Deeds in and for Montgomery County, Pennsylvania ("**Recorder's Office**") on October 23, 2013 at Book 5893, page 1322 ("**901 Washington Parcel**"), formerly property of Walker Brothers. The 901 Washington Parcel includes the former bed and right of way of Washington Street (now vacated).

B. DAVID'S BRIDAL, LLC, a Florida limited liability company and successor in interest to David's Bridal, Inc. ("**David's Bridal**") owns the real property and improvements containing approximately 3.695 acres of land, immediately east of the 901 Washington Parcel, along Washington Street (vacated) and south of the southerly terminus of Lee Street, in Whitemarsh Township, Montgomery County, Commonwealth of Pennsylvania, being and comprising Montgomery County, PA Tax Parcel No. 65-00-12673-00-6, having an address of 1001 Washington Street, Conshohocken PA 19428 and more fully described in that certain deed

dated 1/5/2000 from Spring Mill Partners to 1001 Washington Street, Inc. (of which David's Bridal is a successor by merger) recorded in the Recorder's Office at Book 5303, page 2431 ("**David's Bridal Parcel**"). The David's Bridal Parcel is contiguous with and immediately adjacent to the easterly boundary of the 901 Washington Parcel.

C. SEPTA (as successor in interest to the Philadelphia and Reading Railroad) is the owner of the real property and improvements situate on the northerly side of Washington Street (vacated), in Whitemarsh Township, Montgomery County, Commonwealth of Pennsylvania, being and comprising Montgomery County, PA, Tax Map 65, Block 9 Unit 24, and Map 65, Block 10 Unit 24. ("**SEPTA Parcel**"). The SEPTA Parcel is located along the entire length of the northerly boundary line of the 901 Washington Parcel and the David's Bridal Parcel, running in a westerly direction from the westerly side of Lee Street to the easterly side of Sandy Street. The SEPTA Parcel includes a regional rail line running parallel to the northerly side of Washington Street that leads to and from the Spring Mill Station located to the east of Lee Street.

D. Primary vehicular access to and from the 901 Washington Parcel is by means of Lee Street and Washington Street (vacated). There is a rail crossing on Lee Street at or near it's southerly terminus which is immediately north of the main entrance to the David's Bridal Parcel. The 901 Washington Parcel has, for many years, used portions of the SEPTA Parcel as shown on the Survey as a means of vehicular and pedestrian access, as well as for railroad siding, pipe crossings, and other uses under and pursuant to certain leases or other agreements between SEPTA (and/or its predecessor, Reading Company) and Lessee's predecessors in title, which are more fully identified on **Exhibit "A"** attached hereto (collectively, the "**Existing Agreements**").

E. 901 Washington has obtained approval from the Township to develop the 901 Parcel as and for a residential subdivision and planned community, to be known as "River Place" intended to contain and include sixty-two (62) residential townhouse dwelling units as well as interior parking, streets and other site improvements and amenities (the "**Development**"), pursuant to certain final subdivision and land development plans of 901 Washington Street prepared by Nave Newell, dated October 3, 2019, most recently revised February 9, 2022, sheets 1 through 28 and granted final approval (subject to conditions) by the Township on December 9, 2021 (the "**Development Plans**"). The Development Plans provide that a means of vehicular and pedestrian access to and from the Development will be over and across a certain existing driveway leading from Lee Street, across a portion of the David's Bridal Parcel (by means of an easement from David's Bridal granted to 901 Washington), and across a portion of the SEPTA Parcel.

F. The Lessee has requested that SEPTA lease unto Lessee, its successors and assigns, a portion of the SEPTA Parcel (hereinafter defined as the "**Leased Premises**") for access, ingress, egress and regress, and for the construction, use, maintenance, repair and replacement of certain

related improvements, as well as for certain utilities, and the Parties have entered into this Agreement to set forth the terms and conditions thereof.

NOW THEREFORE, in consideration of the mutual covenants and agreements contained herein, and other good and valuable consideration as described herein, the sufficiency of which is hereby acknowledged, the Parties, intending to be legally bound, hereby covenant and agree with one another as follows:

AGREEMENT

1. **Incorporation of Recitals**: The foregoing Recitals are fully incorporated into the substantive terms of this Agreement. Terms that are defined in the Recitals that are used in the substantive provisions of this Agreement shall have the meanings ascribed to them in such Recitals.

2. **Exemption and Exclusion from Realty Transfer Tax**: As an agency and instrumentality of the Commonwealth of Pennsylvania, SEPTA is exempt from the obligation to pay realty transfer tax pursuant to 72 Pa.C.S. § 8102-C.2. Accordingly, as between SEPTA and Lessee, Lessee is solely responsible for any realty transfer tax that is assessed or levied by virtue of this Lease, but the Parties will cooperate with one another to claim any exclusion from Realty Transfer Tax that may be available.

3. **Integration; Amendment**: This Agreement represents the entire agreement between SEPTA and Lessee regarding the rights described in this Agreement and supersedes all of the Existing Agreements in their entirety to the extent that they pertain to, benefit or affect the 901 Parcel. Without limiting the preceding, to the extent that the Existing Agreements or any matters of record refer to any agreement, lease, easement or other right of privilege in favor of SEPTA and/or the Benefitted Parcels (hereinafter defined) for the location, construction, use, enjoyment and/or maintenance of any railroad siding serving either or both of the Benefitted Parcels, any such easement, right, lease or other agreement shall be and is hereby extinguished, it being agreed that no such siding(s) exist as of the date hereof and any right to maintain the same is hereby terminated. However, to the extent that there are any pipe crossings or other improvements of continuing utility or remaining in service under and pursuant to the Existing Agreements, or any of them, then Lessee shall have the right to continue to use the same and to maintain, repair and replace the same under this Lease. This Agreement may be amended or modified only by means of a writing signed by an authorized officer or representative of SEPTA and the Lessee, or their respective successors or assigns. Lessee may, with SEPTA's consent, not to be unreasonably withheld, sublease all or a part of the Leased Premises to David's Bridal for its use, in common with Lessee, in connection with the use and occupancy of the David's Bridal Parcel (which, if and when so granted by 901 Washington, is hereinafter called the "**DB Sublease**"). If and when, if ever, 901 Washington enters into the DB Sublease, then if and to the extent such amendment would affect the rights or obligations of David's Bridal as sublessee, then

if and to the extent required by the terms of the DB Sublease such amendment or modification shall be subject to the written consent of an authorized officer or representative of David's Bridal. When used in this Agreement, the term "**Benefited Parcel(s)**" means the 901 Washington Parcel and the individual lots and units to be created therein and, if and only 901 Washington enters into a DB Sublease, the David's Bridal Parcel, to the extent set forth in the DB Sublease.

4. **Lease of Leased Premises:** Subject to the terms and conditions of this Lease, SEPTA does hereby lease and demise unto Lessee, and Lessee hereby takes and leases from SEPTA, all that certain portion of the SEPTA Parcel more fully described on the plan depicting the leased area and the improvements to be constructed thereon attached hereto as **Exhibit "B"** (the "**Lease Plan**") and by metes and bounds on **Exhibit "C"** attached hereto and made a part hereof (the "**Leased Premises**"), together with the right of Lessee to use, occupy and enjoy the surface of the Leased Premises and the subsurface thereof, for purposes of constructing, maintaining, repairing, replacing, using and enjoying the Improvements (hereinafter defined), and for the purposes of providing Lessee, and the owners, tenants, and occupants of the residential units to be constructed as part of the Development (and of the David's Bridal Parcel if Lessee enters into the DB Sublease), and their invitees, contractors and subcontractors a means of vehicular and pedestrian access to, from and between the respective Benefitted Parcels and Lee Street. This Lease includes the right of Lessee, its successors, assigns, and subtenants, to enter and cause or permit their contractors and subcontractors and utility service providers to enter upon the Leased Premises, with construction vehicles, equipment, and workers, and to construct, install, repair, replace, repair, improve and maintain utility improvements, including public water, public sewer and other utility services in order to provide electric, natural gas, sanitary sewer, internet, cable television and other utility services to the residential and commercial improvements now or hereafter located on the respective Benefitted Parcels, subject to the terms of this Lease. Lessee shall have the right to grant rights to Aqua Pennsylvania and other utility providers to install utilities in the Leased Premises to serve the Improvements and the Development.

5. Lease Term; Termination.

(a) The term of this Lease (the **"Term"**) shall commence on the earlier of (i) March 1, 2023, or (ii) such earlier date on which Lessee commences construction of the Improvements (hereinafter defined) on the Leased Premises upon giving Lessor thirty (30) days prior notice thereof ("**Commencement Date**") and shall expire on the earlier of (A) the date that is twenty-nine (29) years and six (6) months after the Commencement Date ("**Stated Term**") or (ii) the Termination Date (hereinafter defined). At the expiration of the Stated Term of this Lease, the Stated Term shall automatically renew and be extended for a further period of ten (10) years, and so on for successive periods of ten (10) years each, unless either (i) SEPTA exercises its right to terminate this Lease pursuant to Section 5 (b) hereof, or (ii) Lessee exercises its right to terminate this Lease pursuant to Section 5(c) hereof. For purposes of this Lease, the term "Lease

Year" means an annual period beginning on the Commencement Date and ending on the date that is twelve (12) full calendar months thereafter, or any successive anniversary thereof.

(b) SEPTA has the right to terminate this Lease as follows:

1) **Lessee Default**. If Lessee defaults in the performance of a material obligation of Lessee under this Lease and if such default continues uncured for a period of thirty (30) days after written notice of such default is given by SEPTA , provided that if such default cannot be cured solely by the payment of money in a liquidated sum and otherwise cannot reasonably be cured within such thirty (30) day period, Lessees shall have such additional reasonable period of time to cure such default provided that Lessees are exercising due diligence and commercially reasonable efforts to cure such default. If the DB Sublease is in effect, then prior to any termination of this Lease by SEPTA for a default by Lessee, SEPTA shall give David's Bridal written notice of such default and David's Bridal shall have the right to cure such default and if David's Bridal elects to do so then SEPTA agrees to accept such cure by David's Bridal as if it had been made by Lessee.

2) **Recapture for Transit Use**: If SEPTA determines, in its sole discretion, to recapture the Leased Premises in whole or in part to provide public transit service along the rail line running parallel to the SEPTA Easement Area or to meet requirements imposed by applicable law that SEPTA cannot otherwise satisfy with reasonable effort, then SEPTA may terminate this Lease effective upon 12 months prior written notice to the then-owner(s) of the Benefitted Parcels and the Association. Lessee acknowledges and agrees that, in the event of such termination, neither they nor anyone claiming by, through or under them or any of them shall assert or maintain any failure or lack of consideration under this Agreement. Upon any termination under this Subsection, Lessee shall be entitled to a refund of any rent that has been prepaid and is allocable to any part of the Stated Term of this Lease that extends beyond the effective date of termination under this subsection.

(c) Lessee Right of Early Termination. Lessee shall have the right to terminate this Lease as of the end of any Lease Year upon giving SEPTA not less than three (3) months' prior written notice.

(d) David's Bridal Assumption. Notwithstanding the preceding, if the DB Sublease is in effect at the time that Lessee exercises its right of termination under Section 5(c) hereof, then David's Bridal shall have the right to save the termination of this Lease by electing to take an assignment of this Lease and assume the rights and obligations of Lessee under this Lease on the date on which such termination would otherwise be effective ("**Lease Assumption Date**") by written agreement in form and substance acceptable to SEPTA and Lessee, and in that case Lessee shall be released from all further obligations arising under this Lease and accruing from and after

the Lease Assumption Date and David's Bridal shall assume, perform and discharge all the obligations of Lessee hereunder accruing and arising from and after the Lease Assumption Date.

6. Rent; Escalation. In consideration of the lease of the Leased Area as set forth herein, during the Term of this Lease, Lessee shall pay to SEPTA the sum of Fifteen Thousand Dollars ($15,000) per year (as adjusted pursuant to this Section 6, the "**Annual Rent**"). Annual Rent shall, at Lessee's option, be payable, in advance, either (i) in a lump sum on the first day of each Lease Year, (ii) in equal monthly installments on the first (1st) day of each calendar month, or (iii) in equal quarterly installments on the first business days of each of the months of January, April, July and October of each calendar year(apportioned for any partial calendar quarter included in the Lease Term). The first installment of Annual Rent shall be due and payable within five (5) Business Days after the Commencement Date, for the period from the Commencement Date to the end of the then current calendar year quarter. The Annual Rent payable for each year of the Term after the first year shall increase by the greater of (i) one percent (1%) of the Annual Rent payable during the preceding Lease Year, or (ii) the percentage increase in the Consumer Price Index (as hereinafter defined) for the period beginning three (3) months before the beginning of the immediately preceding Lease Year and ending three (3) months before the Lease year for which such computation is being made (the "**Escalation Percentage**"). The Annual Rent for each such lease Year after the first lease year shall then be the sum of (i) the Annual Rent for the preceding Lease Year, plus (ii) an amount determined by multiplying such Annual Rent by the Escalation Percentage. For purposes hereof, the "Consumer Price Index" shall mean the Consumer Price Index for all urban consumers for the Philadelphia area, all items, 1982-84 = 100, as published by the U.S. Department of Labor, Bureau of Labor Statistics. If the Department of Labor ceases to publish such Consumer Price Index, then there shall be substituted in its place a comparable index as determined by mutual agreement of SEPTA and Lessees, each acting reasonably.

7. Construction and Maintenance of Lessee Improvements:

A. **Improvements**. Lessee shall have the right and the obligation to construct the improvements ("**Improvements**") on the Leased Premises as shown on the plan attached hereto as **Exhibit "D"** (the "**Lease Improvement Plan**"), in accordance with applicable laws, regulations and ordinances, and in compliance with this Lease, all at the sole expense of Lessee, and in accordance with SEPTA safety policies and procedures. Lessee will have the right to enter upon and cause its contractors and subcontractors to enter upon the Leased Premises, with construction vehicles, equipment, and workers, and to construct, install, repair, replace, repair, improve and maintain the Improvements within or immediately alongside the Leased Premises. The Improvements include without limitation paving, striping, curbing, sidewalks, curb cuts, guide rails and fencing, directional signs, traffic signs, storm water management facilities, utilities and other improvements required or shown on the Lease Improvement Plan and as otherwise may be required by the Township or by the terms of this Agreement.

B. **Expense; Compliance**. All such work, construction, Improvements, maintenance, repairs and the like shall be performed by Lessee, at its sole cost and expense, in compliance with all applicable laws, regulations and ordinances, and Lessee is solely responsible to obtain and keep in force all permits and governmental approvals relating to the construction and installation of the Improvements. Lessee or its contractors shall erect and maintain such safety fencing, barriers and other safety measures as may be required by applicable law or by this Agreement. Lessee shall keep the SEPTA Parcel and the Leased Premises free and clear of all liens arising out of any work done on or about the SEPTA Parcel and shall promptly pay, discharge or bond against any lien that may be filed against SEPTA or the SEPTA Parcel on account of any work done by any contractor or subcontractor of any tier for or on behalf of or claiming by through or under Lessees; provided that for the avoidance of doubt all such Improvements and other work shall be solely for the convenience and benefit of Lessees and not SEPTA, and shall be made without any financial contribution by SEPTA whatsoever, and nothing herein shall be construed as any authority granted by SEPTA to Lessees to engage or cause any work to be done in the name of or for the benefit of or account of SEPTA.

C. **Maintenance**. Lessee or the Association (hereinafter defined), as the case may be, shall be solely responsible for the maintenance, upkeep, repair and replacement of the Improvements, and shall contract for the removal of snow, ice and trash from and otherwise maintain and repair the Leased Premises at their expense. Lessee may delegate responsibility for certain maintenance, including snow-removal, to David's Bridal under the terms of the DB Sublease. SEPTA has no responsibility for such maintenance, repair or replacement of the Improvements or of the Leased Premises.

8. Indemnity and Insurance: The provisions of this section of the Lease will survive expiration of the easements provided for herein.

A. Lessee's Indemnification of SEPTA: In furtherance, and not in limitation, of the rest and remainder of this Lease, Lessee shall indemnify, defend (with counsel reasonably acceptable to SEPTA), and save harmless SEPTA (and anyone claiming by, through or under SEPTA) against any and all claims, demands, causes of action, suits, or judgments, including attorney's fees, costs, and expenses related to or arising from death or injuries to any persons or entities or for loss of or damage to property of any persons or entities arising out of or in connection with the use, exercise and/or occupancy of the Leased Premises and the Improvements by Lessee, and those claiming under or through Lessee, and the exercise of Lessee's rights hereunder; provided that such indemnity shall not extend to or exonerate SEPTA from liability for damages or injuries to persons (including death) or damage to property caused by, arising out of or due to SEPTA's own gross negligence or intentional misconduct.

B. Liability Insurance: At all times during the term of this Lease and/or during the pendency of any of the easements declared and/or confirmed in this Lease, Lessee will maintain one or more policies of general commercial liability insurance and/or umbrella liability

insurance insuring against claims for which Lessee have an obligation to indemnify SEPTA. These policies shall have limits of not less than $2,000,000.00 per occurrence and $4,000,000 in the aggregate. The policy or policies of insurance maintained by Lessee pursuant to this Lease must be primary and non-contributing with regard to any insurance policies (or self-insurance) maintained by SEPTA, shall name SEPTA as an additional insured thereunder, and shall not be subject to termination or cancellation except upon not less than thirty (30) days' prior written notice to SEPTA.

9. **No Inference or Obstruction:** SEPTA will not interfere with or obstruct the lawful exercise of the peaceful enjoyment of the Leased Premises by Lessee or those claiming by, through or under Lessee hereunder, or with the rights and privileges conferred on Lessee by this Agreement. Notwithstanding the preceding, SEPTA and its personnel and contractors shall have reasonable access to and over the Leased Premises in order to inspect, maintain and repair any facilities owned by SEPTA along SEPTA's regional rail line that are adjacent to and accessible only from the Leased Premises. SEPTA will restore and repair any damage to the Leased Premises and the Improvements arising out of such entry or activities of SEPTA, its personnel or contractors.

10. **No Public Dedication**: Nothing in this Agreement shall be construed as creating any rights in the general public, dedicating any property owned by Lessees or SEPTA for public use or creating or confirming any rights than those expressly and specifically identified in this Lease.

11. **No Waiver**: Nothing stated in this Agreement is a waiver by SEPTA of the immunity it enjoys under and pursuant to 74 PA.C.S.A. § 1781, a waiver of the immunities, limitations on damages, and defenses that SEPTA enjoys under 42 PA.C.S. §§ 8501-8564 or any other defense, exemption or immunity that SEPTA enjoys.

12. **Attorneys' Fees and Costs**: In the event of any dispute between SEPTA and Lessees, or either of them, under or pursuant to this Agreement, the prevailing party shall be entitled to collect from the other party the prevailing party's actual and reasonable attorneys' fees and costs associated with enforcement of the terms, conditions, and provisions of this Lease.

13. **Hazardous Substances**:

A. When used in this Lease, the terms "Hazardous Substance" and "Hazardous Substances" do and shall mean, without limitation, flammables, explosives, radioactive materials, asbestos, polychlorinated biphenyls (PCBs), chemicals known to cause cancer or reproductive toxicity, pollutants, contaminants, hazardous wastes, toxic substances or related materials, petroleum and petroleum products and substances declared to be hazardous or toxic under any law

or regulation now or hereafter enacted or promulgated by any government that has jurisdiction over the Grantee Parcels and/or the SEPTA Parcel.

B. Neither SEPTA, nor Lessee shall knowingly cause or permit any of the following actions or conditions to occur on the Grantee Parcels or SEPTA properties governed by this Lease:

i. any violation of any federal, state, or local law, statute, ordinance, or regulation now or hereafter enacted, related to environmental conditions; or

ii. the use, generation, release, manufacture, refining, production, processing, storage, or disposal of any Hazardous Substance or the transportation of any Hazardous Substance, except however, that the use and storage of cleaning products and paint, in the ordinary course of Lessees ' or their successors' respective businesses (or those of tenants' or sub-tenants).

C. Lessee's obligations and liabilities under this Section 13 of this Lease shall survive termination of this Lease and the expiration of the Term of this Lease.

14. Notices: Any notice, report or demand required, permitted or desired to be given under or pursuant to this Lease shall be in writing and shall be deemed to have been sufficiently given or served to a party hereto for all purposes if it is deposited by the sender with an internationally recognized overnight courier service guaranteeing next Business Day delivery with delivery confirmation. Each such notice shall be effective on the next Business Day following timely deposit with an internationally recognized overnight courier service. When used in this Lease, the term "Business Day" does and shall mean any day that is not a Saturday, Sunday or legal holiday in the Commonwealth of Pennsylvania. Notices shall be sent to the following addresses:

if to SEPTA:

Southeastern Pennsylvania
Transportation Authority
Office of General Counsel
1234 Market Street, 5th Floor
Philadelphia, Pennsylvania 19107
Attn: General Counsel and
Attn: Director of Real Estate

If to 901 Washington:
Eli Kahn
901 Washington Partners, LP
120 Pennsylvania Avenue
Malvern, PA 19355

with a required

copy in all instances to:

Riverplace, LLC
Attn: Sarah Peck
Five Great Valley Parkway
Suite 210
Malvern, PA 19355

15. Legal Representation and Costs: SEPTA and Lessees have availed themselves of independent legal counsel during the negotiation and preparation of this Lease and each of them acknowledges that it is and shall be solely responsible for its respective legal costs and expenses.

16. Recording and Subsequent Conveyances:

A. Promptly upon execution of this Lease, the parties will sign, and acknowledge, in proper recordable form, a Memorandum of this Lease and cause the same to be recorded in the Recorder's Office at Lessee's sole cost and expense in order to give record notice to all persons of the existence of this Lease. Upon termination of this Lease, the Parties shall execute, acknowledge and cause to be recorded an instrument confirming the termination of this Lease.

B. Lessee (and if Lessee enters into a DB Sublease, David's Bridal), and their respective agents and successors-in-interest and successors-in-title, shall include in all documents pertaining to the conveyance or subdivision of the Benefitted Parcels notification of the existence of this Lease and the rights, obligations and restrictions set forth in this Agreement.

C. In connection with the Development of the 901 Washington Parcel, the developer thereof shall create and establish a planned community with respect to the Development subject to the Pennsylvania Uniform Planned Community Act, and the developer thereof will organize an association of and among the unit owners of the Association to be known as Riverplace Homeowners, Inc. ("**Association**") that will be responsible for the management, maintenance, administration, insurance, repair and replacement of certain common elements and amenities of the Development, which will include Lessee's right and obligations under this Lease. At such time as Lessee or other developer of the 901 Parcel conveys the common areas and turns over to the Association responsibility for the common elements of the Development, Lessee or such other developer shall assign this Lease to the Association, and Lessee shall provide SEPTA with notice of such assignment and a copy of the instrument of assignment and assumption. 901 Washington covenants that it shall include in the Declaration for the Development the affirmative obligation of the association to inspect, monitor, clean, maintain, repair and replace, from time to time the Improvements constructed by 901 Washington on the SEPTA Parcel. Upon assignment of this Lease to such Association, then from and after such date the Association shall be responsible for 901 Washington's obligations hereunder and 901 Washington shall have no further obligations

hereunder except those arising prior to and from acts, omissions or circumstances occurring prior to the date of such assignment.

D. Lessee may assign its rights under this Lease to any successor owner of its Benefitted Parcel. However, this Lease is appurtenant to and cannot be assigned to any assignee or sublet to any subtenant other than an owner of a Benefitted Parcel, or in the case of the 901 Washington Parcel, the Association for the benefit of the owners and occupants of the residential dwelling units in the Development, and their invitees. The rights of Lessee and its successors, assigns and sub-tenants cannot be severed from or used and enjoyed other than in connection with the use and enjoyment of a Benefitted Parcel.

E. Lessee and any subtenant may mortgage or encumber its interest in and under this Lease or any right or interest herein but only in connection with the financing or refinancing of a Benefitted Parcel. In connection with any leasehold mortgage, SEPTA will cooperate with Lessee or such subtenant and their lender(s) to execute a written instrument acknowledging and recognizing such leasehold mortgage and granting the leasehold mortgagee the right to notice of and to cure any default of Lessee hereunder.

F. Lessee shall have the right to sublet all or a portion of the Leased Premises and the Improvements thereon to David's Bridal for use by David's Bridal in connection with the use, occupancy and conduct of business and other lawful uses of the David's Bridal Parcel. Such DB Sublease shall be under and subject to the terms of this Lease, and shall be in form and substance reasonably acceptable to SEPTA (such approval not to be unreasonably withheld or delayed) and such that requires David's Bridal to (i) use and enjoy the Leased Premises in compliance with this Lease, (ii) maintain insurance for the benefit of SEPTA and indemnify SEPTA for acts or omissions arising out of David's Bridal's use and enjoyment of the Leased Premises in accordance with Section 8 of this Lease, (iii) and comply with Sections 13 and 17 of this Lease. Unless and until 901 Washington or its successor enters into a DB Sublease, nothing herein shall confer any rights, privileges or benefits on David's Bridal or the David's Bridal Parcel.

17. Restoration: In furtherance, and not in limitation, of the rest and remainder of this Agreement, if Lessee damages any aspect of SEPTA's real property during the Term of this Lease, Lessees will restore that real property to as near the condition in which the property existed at the time immediately preceding such damages or to such a condition as is as is reasonably practicable and/or commercially reasonable.

18. **ESTOPPEL CERTIFICATE**. From time to time within ten (10) days after request in writing therefor from either Party, the other party agrees to execute and deliver to the requesting party, or to such other addressee or addressees as the requesting party may reasonably designate (and the requesting party and any such addressee may rely thereon), a statement in writing in customary commercial form and substance (herein called an **"Estoppel Certificate"**), certifying

as to such matters as may be reasonably requested by the requesting party. SEPTA agrees that Lessee may request the issuance by SEPTA of an Estoppel Certificate to Lessee's lender(s) at any time, who may act in material reliance thereon.

19. **SEPTA Title; Peaceful Enjoyment**. Lessees shall, upon compliance with this lease, peacefully enjoy the use of the Leased Premises free of interference by others, subject only to the rights of SEPTA hereunder.

20. **Miscellaneous.**

A. Any rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not apply to the interpretation of this Lease or any amendments or exhibits hereto.

B. It is agreed that nothing in this Lease shall be deemed or construed as creating a partnership or joint venture between SEPTA and Lessee.

C. The captions of the paragraphs in this Lease are inserted and included solely for convenience and shall not be considered or given any effect in construing the provisions hereof.

D. If any provision contained in this Lease shall be invalid or unenforceable, the remainder of this Lease shall not be affected thereby, and each and every provision of this Lease shall be valid and enforceable to the fullest extent permitted by law.

E. This Lease shall be governed by and construed in accordance with the laws of the Commonwealth of Pennsylvania, without giving effect to the principles of conflict of laws.

F. If the last day for performance of any obligation or giving of any notice is a Saturday, Sunday or legal holiday, the subject date shall be extended to the next following business day.

G. Lessee and SEPTA hereby warrant and represent to each other that they have not employed any broker or finder in connection with the transactions contemplated by this Lease, and that they have not had any dealings with any other person or entity which might entitle that person or entity to a fee or commission. Lessee and SEPTA shall each indemnify and hold the other harmless against any losses, costs or expenses (including reasonable attorney's fees) arising out of claims of any other broker or finder in connection with this transaction, the obligation for which was incurred by the indemnifying party.

G. This Lease may be executed in any number of counterparts, each of which shall be an original, and all of which taken together shall constitute a single agreement. For

purposes of this Lease, an email or facsimile copy of an executed counterpart shall constitute an original. Any party delivering an executed counterpart of this Lease by email or facsimile shall also deliver an original executed counterpart of this Lease, but the failure to deliver an original executed counterpart shall not affect the validity of this Lease.

H.

IN WITNESS WHEREOF, the said parties hereto intending to be legally bound hereby have caused the Lease to be duly executed and delivered as of the date first above written.

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY,

By: _____
Name: Jody L. Holton
Title: Assistant General Manager for Planning and Strategic Initiatives
Date: 7-12-22

ATTEST:

By: _____
Name Carol R. Looby
Title: Secretary to the Board
Date: 7-13-2022

901 WASHINGTON PARTNERS, LP
a Pennsylvania limited partnership

By: 901 Washington General, LLC, its sole general partner

By: _____
Eli A. Kahn, Authorized Member

APPROVED AS TO FORM:

By: _____
Southeastern Pennsylvania Transportation Authority
Office of the General Counsel

[Notary Pages To Be Attached]

COMMONWEALTH OF PENNSYLVANIA :
: **SS.**
COUNTY OFPHILADELPHIA :

On this 12th day of July, 2022, before me, the undersigned officer, personally appeared **JODY L. HOLTON**, who acknowledged herself to be the Assistant General Manager for Planning and Strategic Initiatives of the Southeastern Pennsylvania Transportation Authority, and that she, as such, executed the foregoing instrument for the purposes therein contained by signing the foregoing Agreement with the full intent to be legally bound thereby.

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

Commonwealth of Pennsylvania - Notary Seal
CRYSTAL GARDNER, Notary Public
Philadelphia County
My Commission Expires January 28, 2023
Commission Number 1230352

Crystal Gardner
NOTARY PUBLIC

COMMONWEALTH OF PENNSYLVANIA :
: SS
COUNTY OF Chester :

On this 26th day of July, 2022, before me, the undersigned notary public, personally appeared Eli A. Kahn as Authorized Member of 901 Washington General, LLC the sole general partner of 901 WASHINGTON PARTNER, LP, personally known to me to be the person who has subscribed to the foregoing instrument, and acknowledged that he has executed the same on behalf of said corporation and that he was duly authorized so to do.

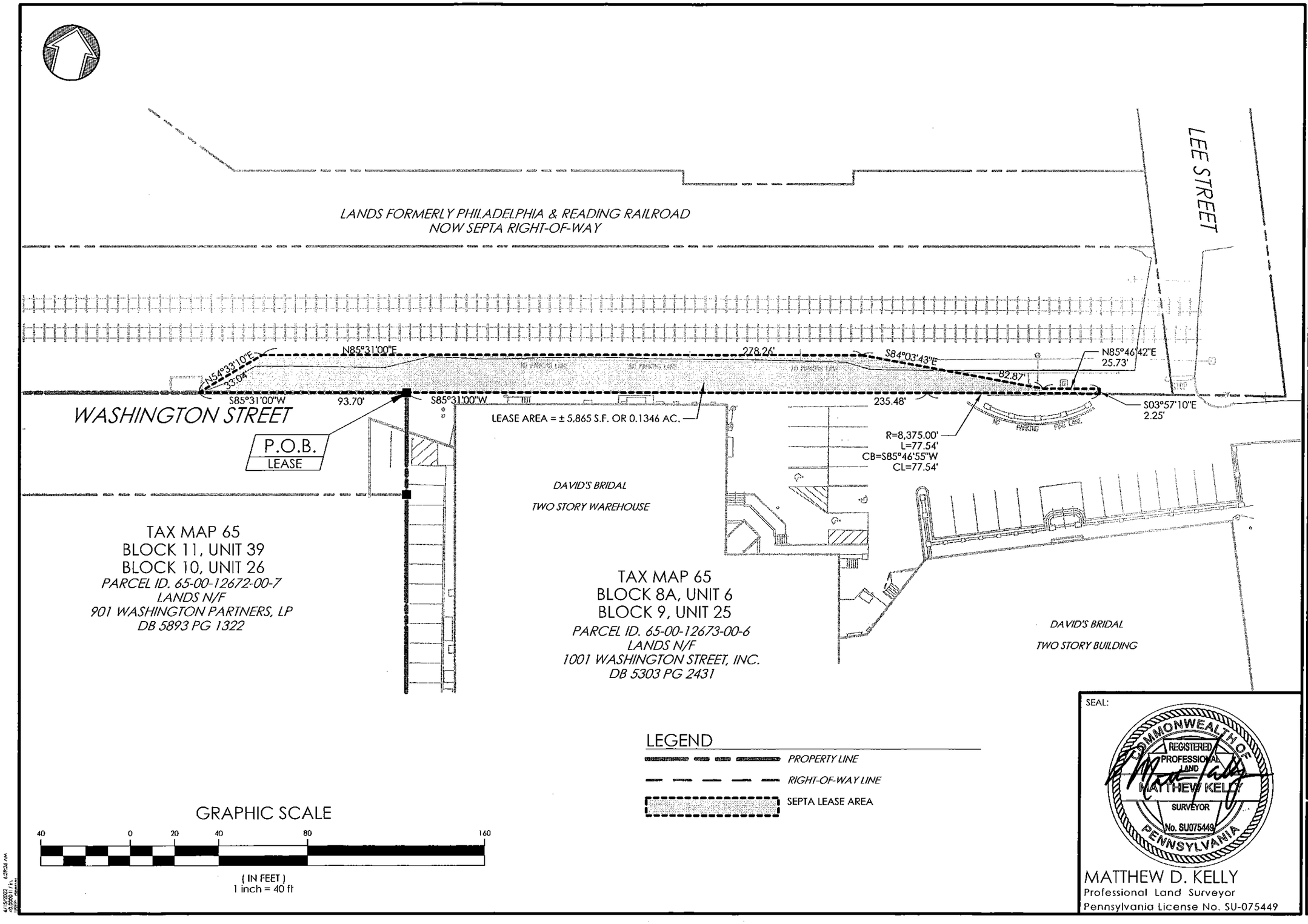
Mary Ellen Fedora
Notary Public

Commonwealth of Pennsylvania - Notary Seal
Mary Ellen Fedora, Notary Public
Chester County
My commission expires April 10, 2023
Commission number 1232328
Member, Pennsylvania Association of Notaries

EXHIBIT "A"

Existing Agreements

Date	Description
May 15, 1929	Siding Agreement between Reading Company, successor to and assignee of Philadelphia and Reading Company, successor to and assignee of The Philadelphia and Reading Railroad Company, Lessee of Philadelphia, Germantown and Norristown Railroad ("Reading Company") and Walker Brothers.
November 26, 1929	Siding extension agreement between Reading Company and Walker Brothers.
April 26, 1941	Agreement between Reading Company and Walker Brothers relating to the construction, maintenance, and use of the 8" water pipe line.
September 30, 1946	Agreement between Reading Company and Walker Brothers relating to the fire hydrant.
April 19, 1949	Agreement between Reading Company and Walker Brothers
April 17, 1952	Agreement between Reading Company and Walker Brothers relating to the right-of-way across from the railroad property for two pipe lines.



SEAL:

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL LAND
MATTHEW KELLY
SURVEYOR
No. SU075449

MATTHEW D. KELLY
Professional Land Surveyor
Pennsylvania License No. SU-075449

Nave NEWELL

Date	No.	Description	Drwn	By
3/14/22	1	REVISED LEASE AREA	MDK	DWN

REVISIONS

DRAWING NAME: EXHIBIT E - SEPTA PARCEL

901 Washington Street

SEPTA LEASE AREA

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

project no. 2009-134.06	drawn by: DWN
date: 3/10/2022	chk'd by: MDK
scale: 1" = 40	approv. by: MDK
sheet no. 1 of 1	

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Nave Newell No. 2009-134.05

DESCRIPTION OF SEPTA LEASE AREA
TOWNSHIP OF WHITEMARSH
MONTGOMERY COUNTY, PENNSYLVANIA

ALL THAT CERTAIN tract or parcel of land situate in the Township of Whitemarsh, County of Montgomery, and the Commonwealth of Pennsylvania, being more particularly bounded and described as follows:

BEGINNING AT A POINT, said point being the northeast property corner of the parcel being described as Montgomery County, PA tax parcel 65-00-12672-00-7, owned now or formerly by 901 Washington Partners, LP., and the northwest property corner of the parcel being described as Montgomery County, PA tax parcel 65-00-12673-00-6, owned now or formerly by 1001 Washington Street, Inc., as shown on the exhibit entitled "Exhibit E- SEPTA PARCEL, 901 Washington Street" prepared by Nave Newell Inc., dated March 10, 2022, last revised June 14, 2022 and from said beginning point runs the following six (6) course and distances:

1) South 85° 31' 00" West, along the lands now of formerly of 901 Washington Partners, LP., a distance of 93.70 feet to a point; thence,
2) North 54° 33' 10" East, a distance of 33.04 feet to a point; thence.
3) North 85° 31' 00" East, a distance of 278.26 feet to a point; thence,
4) South 84° 03' 43" East, a distance of 82.87 feet to a point; thence,
5) North 85° 46' 42" East, a distance of 25.73 feet to a point; thence,
6) South 03° 57' 10" East, a distance of 2.25 feet to a point on the northern property line of lands now or formerly of 1001 Washington Street, LP.; thence,
7) Along an arc curving to the right having a radius of 8,375 feet, an arc length of 56.92 feet, said arc subtended by a chord bearing South 85° 42' 41" West, a chord distance of 56.92 feet to a point of tangency; thence,
8) South 85° 31' 00" West, along the lands now or formerly 1001 Washington Street, LP. a distance of 235.48 feet to a point; said point being the ***POINT OF BEGINNING.***

SAID ABOVE DESCRIBED tract of land to be containing within said bounds 5,865 square feet more or less or 0.1346 acres, more or less.



Date: June 14, 2022

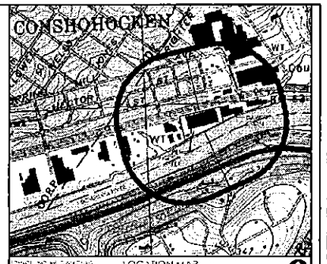
Matthew D. Kelly
Professional Land Surveyor
Pennsylvania License No. SU075449

GENERAL NOTES:

1. SEPTA TO BE NOTIFIED AS SOON AS A PA ONE-CALL TICKET HAS BEEN ENTERED.
2. DIMENSIONS OF ALL MECHANICAL AND CONSTRUCTION EQUIPMENT USED DURING CONSTRUCTION OF THE PROPOSED DRIVEWAY AND PEDESTRIAN ACCESS RAMP SHALL NOT EXCEED THE FOLLOWING:

GROUND CLEARANCE	9"
HEIGHT TO TOP OF SUSPENDED CAB	9'-11"
TRANSPORT LENGTH	22'-3"
TRANSPORT WIDTH	7'-8"

3. THERE ARE EXISTING SIGNAL POWER CABLES HANGING AERIALLY AT APPROXIMATELY 8-10 FT FROM THE EDGE OF RAIL THAT ARE CLOSE TO WHERE THE EQUIPMENT WORKS. IN THIS AREA, THE EQUIPMENT USED SHALL BE OPERATED FROM BOOM AND ASTRAY MOVES POSSIBLE FROM THESE SIGNAL CABLES DURING CONSTRUCTION. 30 KV+ POWER IS ALSO PRESENT IN THIS REGION. AL RAIL LINE IS RATED AT 25 KV.
4. EXCAVATIONS THAT EXTEND INTO ZONE 2 REQUIRE SHORING. REFER TO SEPTA STRUCTURAL STANDARDS 3.03 AND 4.41 SHORING GROUPS 1 THRU 5 AS APPLICABLE.
5. ALL EXCAVATION ON SEPTA PROPERTY MUST FOLLOW THE SEPTA MAINTENANCE SPECIFICATION AND SEPTA MANAGEMENT PROGRAMS FOR SOILS CONTAMINATION AND DEWATERING GENERATED FROM SEPTA PROPERTY.
6. ALL ELEVATIONS ON SEPTA PROPERTY ARE TO REMAIN UNCHANGED FOLLOWING CONSTRUCTION.
7. THE PROPOSED FENCE TO BE BONDED AND GROUNDED. THE PICKET, RAILS, POSTS ARE CONNECTED FROM FENCE POST TO THE NEXT FENCE POST AND FINAL CONNECTION FOR GROUND BONDED AT THE NEAREST STRUCTURE (STRUCTURE 13710, SEE DETAIL THIS SHEET).
8. ALL PROPOSED STEEL LIGHT POLES TO BE PROPERLY BONDED AND GROUNDED. SEE DETAIL THIS SHEET.



NOTES:
1. ANY EXCAVATION BELOW DESIRED GRADE DUE TO OVER EXCAVATION OR WET SOIL CONDITIONS SHALL BE BACKFILLED WITH NO. 57 CLEAN CRUSHED STONE. ALL SUBGRADES SHALL BE APPROVED BY THE TOWNSHIP ENGINEER PRIOR TO POURING.
2. EXPANSION JOINTS SHALL BE PROVIDED AT EQUAL DISTANCES OF NOT MORE THAN 20' AND AT ALL STORM SEWER INLETS. JOINTS SHALL BE FILLED WITH PREMOLDED EXPANSION JOINT FILLER OF SPACE CONFORMING TO PENNSYLVANIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. CONTRACTION JOINTS SHALL BE PROVIDED EVERY 10' THE JOINT SHALL BE RECESSED ½" FROM THE TOP AND FRONT OF THE CONCRETE CURB.
3. CURB SHALL BE TEMPORARILY BACKFILLED TO FINISHED GRADE WITH SOIL BEHIND AND STONE ON THE ROAD SIDE AS SOON AS IT HAS ATTAINED SUFFICIENT SUPPORTING STRENGTH OR WITHIN 24 HOURS OF POURING (WHICHEVER IS LESS).
4. WHEN NEW CURB IS INSTALLED ALONG AN EXISTING PAVED AREA, THE EXISTING PAVEMENT SHALL BE CUT 2 FEET IN FRONT OF THE NEW CURB FACE IN A STRAIGHT LINE AT A 45 DEGREE ANGLE WITH A CUTTING WHEEL OR PNEUMATIC HAMMER. THE NEW PAVEMENT SHALL BE TACKED AND BUTTED TO THE EXISTING PAVEMENT.
5. THE GENERAL CONTRACTOR OR OWNER IS RESPONSIBLE FOR MAINTAINING ALL CURB UNTIL FORMALLY ACCEPTED BY THE TOWNSHIP. ALL CURB THAT IS BROKEN, CRACKED, OR OUT OF ALIGNMENT SHALL BE REPLACED PRIOR TO FINAL PAVING AND/OR ACCEPTANCE. CURB REPLACEMENT SHALL BE FROM EXPANSION JOINT TO EXPANSION JOINT ONLY.
6. MOUNTABLE CURB TO BE OFFERED IN LIEU OF STANDARD UPRIGHT CURB WHERE AND IF DEEMED NECESSARY BY EMERGENCY SERVICES PERSONNEL.

6-INCH REVEAL CURB
N.T.S.

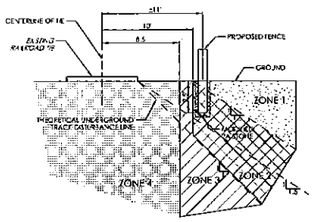
NOTES:
1. THE ORDER INFORMATION FOR ALL BEACON ACORN STYLE STREET LIGHTS IS 2A24TA-FFUF21A-E03C35EC-3D-24HS-30TA109724-G-350745AU19-PTLBS.
2. LIGHT POLES FOR ALL BEACON ACORN STYLE LIGHTS SHALL BE SPAULDING MODEL RTA, ROUND TAPERED ALUMINUM POLE. COLOR OF LIGHT POLES SHALL BE BLACK. (ORDER ID: RTA/10/42/A/OT/BLK/018)
3. CONTRACTOR SHALL CONSULT MANUFACTURER FOR SPECIFICATIONS AND INSTALLATION INSTRUCTIONS. UPON ORDERING LIGHT POLES.
4. ANY PROPOSED SUBSTITUTE SHALL BE SUBMITTED TO APPLICANT, ENGINEER AND TOWNSHIP FOR APPROVAL PRIOR TO INSTALLATION.
5. FOR FOOTING, USE 18" SONOTUBE WITH 6 #6 VERTICAL X 3 TIES @ 12" X 4' LONG.
6. ANCHOR BOLTS ARE 3/4" DIAMETER BY 24" LONG WITH 3" HOOK. ASTM A 576 55,000 PSI YIELD AND HOT DIPPED GALVANIZED.
7. SPACING AND NUMBER OF ANCHOR BOLTS SHALL BE PER MANUFACTURER SPECIFICATIONS.
8. ALL PROPOSED STEEL LIGHT POLES TO BE PROPERLY BONDED AND GROUNDED.

STREETLIGHTS
N.T.S.

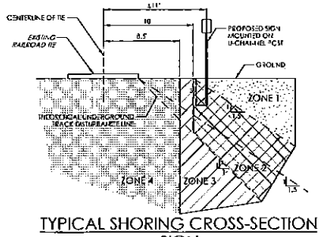
ALTERNATIVE TO ESTATE FENCE FOR PEDESTRIAN PROTECTION

PROPOSED FULL DEPTH PAVEMENT REPLACEMENT BITUMINOUS SUPERPAVE PAVEMENT SECTION
N.T.S.

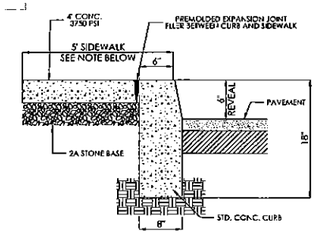
TYPICAL SHORING CROSS-SECTION BANNER
N.T.S.



TYPICAL SHORING CROSS-SECTION FENCE
N.T.S.



TYPICAL SHORING CROSS-SECTION SIGN
N.T.S.



RAISED CONCRETE SIDEWALK
N.T.S.

NOTE: SEE PLAN FOR LOCATION OF 4'-6" MINIMUM WIDE SECTION

TYPICAL GROUNDING DETAIL
N.T.S.

NOTES:
1. REFERENCE STRUCTURAL DESIGN CRITERIA AND GUIDELINES BY SOUTHEASTERN TRANSPORTATION AUTHORITY STRUCTURAL ENGINEERING STRUCTURAL DESIGN CRITERIA AND GUIDELINES AUGUST 2005 SECTION 10.1 AND 10.3.

GRAPHIC SCALE
0 10 20 40 80
(IN FEET)
1 inch = 40 ft

NO.	DESCRIPTION	BY
1	REVISED PER DAVIDS BRIDAL COMMENTS	JPB
2	REVISED PER SEPTA COMMENTS	CW
3	REVISED PER SEPTA COMMENTS	CW
4	REVISED PER SEPTA COMMENTS	JPB
5	REVISED PER SEPTA SITE MEETING COMMENTS	JPB
6	LIGHTS/BANNERS REVISED	JPB
7	PEDESTRIAN ROUTE REVISED	JPB
8	PEDESTRIAN ROUTE REVISED	JPB
9	REVISED ACCESS ALONG DAVIDS BRIDAL	JPB

DATE	BY
5/15/2020	CW
7/20/20	CW
7/28/20	CW
10/29/20	JPB
3/9/21	JPB
7/26/21	JPB
8/26/21	JPB
12/2/21	JPB
5/10/22	JLH

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SEAL

DRAWING NAME: LEE STREET - WASHINGTON ACCESS PLAN

901 Washington Street
LEE STREET ACCESS PLAN

RIVERplace

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA

Project no. 2009-134.05	drawn by: JLH
date: 4/27/2020	check by: JPB
scale: 1" = 40'	approv. by: JPB

Sheet no.
25 of 28
(REVISED)

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K:\07-nn\09134\CAD\Plan_Set\SEPTA\Easement_Exhibit\09134SEPTA_ROW_CleanPlan_w_SEPTA Easement.dgn
5/17/2022 5:54:54 PM
45.00 ft / in.
USER: jhogan

POST-CONSTRUCTION STORMWATER MANAGEMENT REPORT

1001 WASHINGTON STREET
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA

HT 1001 WASHINGTON, LLC



Issued: November 15, 2024
Nave Newell No.: 2024-001.02

900 W Valley Rd #1100, Wayne, PA 19087 | PHONE 610 265 8323 | FAX 610 265 4299

POST-CONSTRUCTION STORMWATER MANAGEMENT REPORT
TABLE OF CONTENTS

Section	Title	Page
I.	PCSM Narrative	1
II.	Maps • Location Map • NRCS Soil Map	8
III.	Peak Rate Control Summary	11
IV.	Volume Control Summary • DEP Volume Worksheet • DEP Water Quality Worksheet • Volume Summary • Dewatering Summary	15
V.	Pre-Development HydroCAD Routing Model and Summaries • Routing Diagram • Drainage Area Summaries • Discharge Point Summaries • Drainage Areas Hydrographs and Tables • Discharge point Hydrographs and Tables	24
VI.	Post-Development HydroCAD Routing Model and Summaries • Routing Diagram • Drainage Area Summaries • Discharge Area Summaries • Drainage Areas Hydrographs and Tables • Discharge point Hydrographs and Tables	56
Appendix A	Supporting Environmental Results • NRCS Web Soil Survey • NOAA Atlas 14 Precipitation • Infiltration Testing Results Pre-Development Drainage Area Plan Post-Development Drainage Area Plan	190 Pocket

I.

Post-Construction Stormwater Management (PCSM) Narrative

Introduction

This Post-Construction Stormwater Management Narrative was developed to comply with the requirements of Chapter 102, Title 25 of the Administrative Code, created under the Clean Streams Law and the Whitemarsh Township Stormwater Management Ordinance. The Pennsylvania Department of Environmental Protection (PADEP) Pennsylvania Stormwater Best Management Practices Manual was used as a reference in facilities design.

Project Description

This site is located in Whitemarsh Township. The project includes the demolition of existing building and parking garage, and construction of 46 townhouses and accompanying driveways. Two above ground rain gardens will be utilized to comply with the Township's stormwater peak rate control and volume control requirements.

Existing Conditions

The site is located at 1001 Washington Street, Whitemarsh Township, Montgomery County, Pennsylvania.

Site topography description: The majority of the project area generally drains south towards the river.

Existing and Historic land use: The parcel is currently a two story building with a two level parking garage.

Watershed Information: The entire area lies within the Schuylkill River Watershed and the site is tributary to the Schuylkill River. The Schuylkill River is currently classified as WWF – Warm Water Fishes, Migratory Fish by the Pennsylvania Chapter 93 classifications.

Proposed Conditions

The project proposes the construction of 46 townhouses and driveways. The site will be configured to utilize the existing drainage patterns of the property. Two above ground rain gardens will be proposed.

PCSM PLAN STORMWATER ANALYSIS §102.8(g):

Stormwater Management
The project is subject to the provisions of Whitemarsh Township's Stormwater Management Ordinance as well as to the requirements imposed by the PA DEP in the course of obtaining a NPDES Permit.

The following discharge points were established in order to perform the analysis:

Discharge Point Name:	**001**
Location of POI:	Located at the southern portion of the property.
Drainage Area within the LOD:	3.43 AC
Description:	The majority of the study area currently flows overland to the Schuylkill River at the southern portion of the site. In the proposed conditions, the studied area will drain to proposed stormwater management facilities, or directly to the Schuylkill River.

(1) Predevelopment site characterization and assessment of soil and geology including appropriate infiltration and geotechnical studies that identify location and depths of test sites and methods used.

These supplementary reports are provided later in this report.

Infiltration testing was conducted on site by Howell Engineering on July 30, 2024. Report Summary: Two hydraulic conductivity tests were conducted to determine site suitability for the proposed stormwater infiltration areas associated with proposed improvements at the site. Test pit 7-30-1 resulted in an infiltration rate of 38.53 inches per hour, and test pit 7-30-2 resulted in an infiltration rate of 6.585 inches per hour.

VOLUME CONTROL AND WATER QUALITY §102.8(g)(2)

Analysis demonstrating that the PCSM BMPs will meet the volume reduction and water quality requirements specified in an applicable Department approved and current Act 167 stormwater management watershed plan; or manage the net change for storms up to and including the 2-year/24-hour storm event when compared to preconstruction runoff volume and water quality.

Township Requirement
Per the Whitemarsh Township Stormwater Management Ordinance, the post-construction total runoff volume shall not exceed the pre-development total runoff condition for all storms equal to or less than the 2-year, 24-hour duration precipitation (design storm).

Volume Control
Two-year runoff volumes were evaluated for each discharge point. The following BMP's are proposed for this project:

- BMP 6.4.5. Rain Garden (RG) – Two rain gardens are constructed to regulate peak rate and volume control.
    - Discharge Point 001: RG-1 will discharge to the Schuylkill River and will treat runoff from units 9-23.
    - Discharge Point 001: RG-2 will discharge to the Schuylkill River and will treat runoff from units 35-44.

Groundwater Recharge/Infiltration
Per the Whitemarsh Township Stormwater Management Ordinance, the post-construction total runoff volume shall not exceed the pre-development total runoff condition for all storms equal to or less than the 2-year, 24-hour duration precipitation (design storm).

Water Quality
The following BMPs are used to meet the water quality requirements of the NPDES permit and the Township:

- BMP 6.4.5. Rain Garden (RG)
- BMP 6.6.4. Water Quality Filters (WQ)

A detailed sequence of construction is included on the Erosion and Sedimentation Plan, and operations and maintenance schedule is included on the PCSM Plan.

RATE CONTROL §102.8(g)(3)

Analysis demonstrating that the PCSM BMPs will meet the rate requirements specified in an applicable Department approved and current Act 167 stormwater management watershed plan; or manage the net change in peak rate for the 2-, 10-, 50-, and 100-year/24-hour storm events in a manner not to exceed preconstruction rates.

Township Requirement
Per the Township Stormwater Management Ordinance, the following peak flow rate reductions are required for redevelopment:

Pre-development Design Storm (24-Hour)	Post-development Design Storm (24-Hour)
1 – year	1 – year pre
2 – year	2 – year pre
5 – year	5 – year pre
10 – year	10 – year pre
25 – year	25 – year pre
50 - year	50 – year pre
100 - year	100 – year pre

METHODOLGY §102.8(g)(4)

Methodologies Identification of the methodologies for calculating the total runoff volume and peak rate of runoff and provide supporting documentation and calculations.

Volume Control Methodology - The Soil Cover Complex Method was utilized to calculate the pre-development and post-development volumes. The rainfall values from NOAA Atlas 14, Volume 2, Version 3 used for the stormwater calculations. The following rainfall values were used:

Average recurrence interval (years)	Rainfall (inches)
1 year	2.73
2 year	3.28
5 year	4.12
10 year	4.82
25 year	5.83
50 year	6.69
100 year	7.61

Rate Control Methodology – Stormwater rate calculations are based on the SCS TR-20 method and were calculated using HydroCAD, Version 10.

SPECIAL CONSIDERATION TO ADDRESS SOIL AND GEOLOGIC LIMITATIONS §102.8(g)(5)

Soil Summary:
The following soils are mapped for the project area per the NRCS Web Soil Survey, dated September 8, 2023.

UgB Urban Land, 0 to 8 percent slopes HSG N/A

Soil Limitations are as follows:

SOIL NAME	CUTBANKS CAVE	CORROSIVE TO CONCRETE	CORROSIVE TO STEEL	DROUGHTY	EASILY ERODIBLE	FLOODING	DEPTH TO SATURATED ZONE/ SEASONAL HIGH WATER TABLE	HYDRIC/ HYDRIC INCLUSIONS	LOW STRENGTH / LANDSLIDE PRONE	SLOW PERCOLATION	PIPING	POOR SOURCE OF TOPSOIL	FROST ACTION	SHRINK - SWELL	POTENTIAL SINKHOLE	PONDING	WETNESS
							x						x				

Soil Resolutions are as follows:

SOIL LIMITATION	RESOLUTION(S) AVOID/MINIMIZE/MITIGATION
Depth to Saturated Zone / Seasonal High Water Table	Soils should be evaluated for wetness prior to use in site work. If geotechnical engineer deems soils too wet for site work, then soils shall be amended or dried per geotechnical engineer's recommendations.
Frost Action	Soils should be free of frozen or mucky materials. Fill should not be placed on saturated or frozen surfaces. Earthwork involving these soils should be limited to the warmer months when practical.

Geologic information within the project area was identified using the Pennsylvania Department of Conservation and Natural Resources website (http://www.gis.dcnr.state.pa.us/geology/index.html).

Geologic Formation Name	Formation Age	Lithology
Conestoga	Ordovician and Cambrian	Limestone

While standard E&S practices will be implemented and strictly enforced throughout construction, the soils and geology alone do not require additional, special construction techniques to prevent pollution from leaving the site.

Conclusion

The project will include the construction of 46 townhouses and accompanying driveways. The proposed stormwater management facilities/practices to the project site allow the project to adequately meet the Township and State's stormwater management requirements.

II.

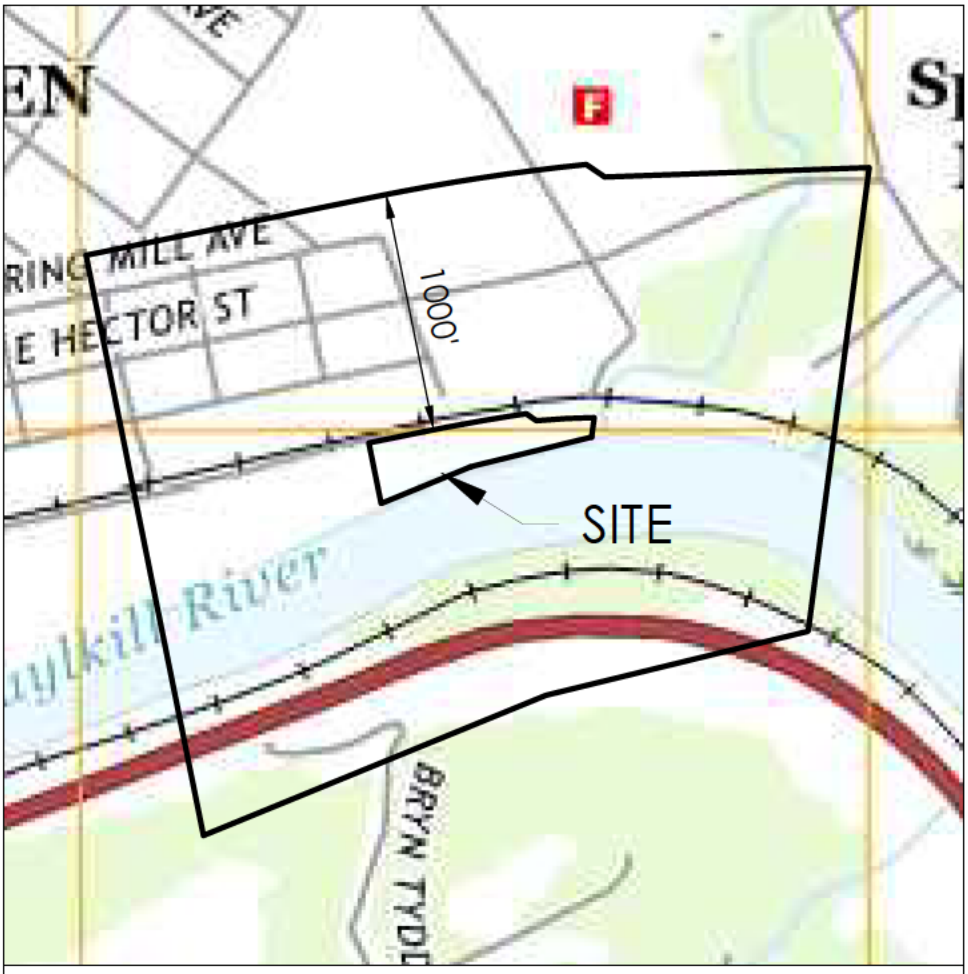
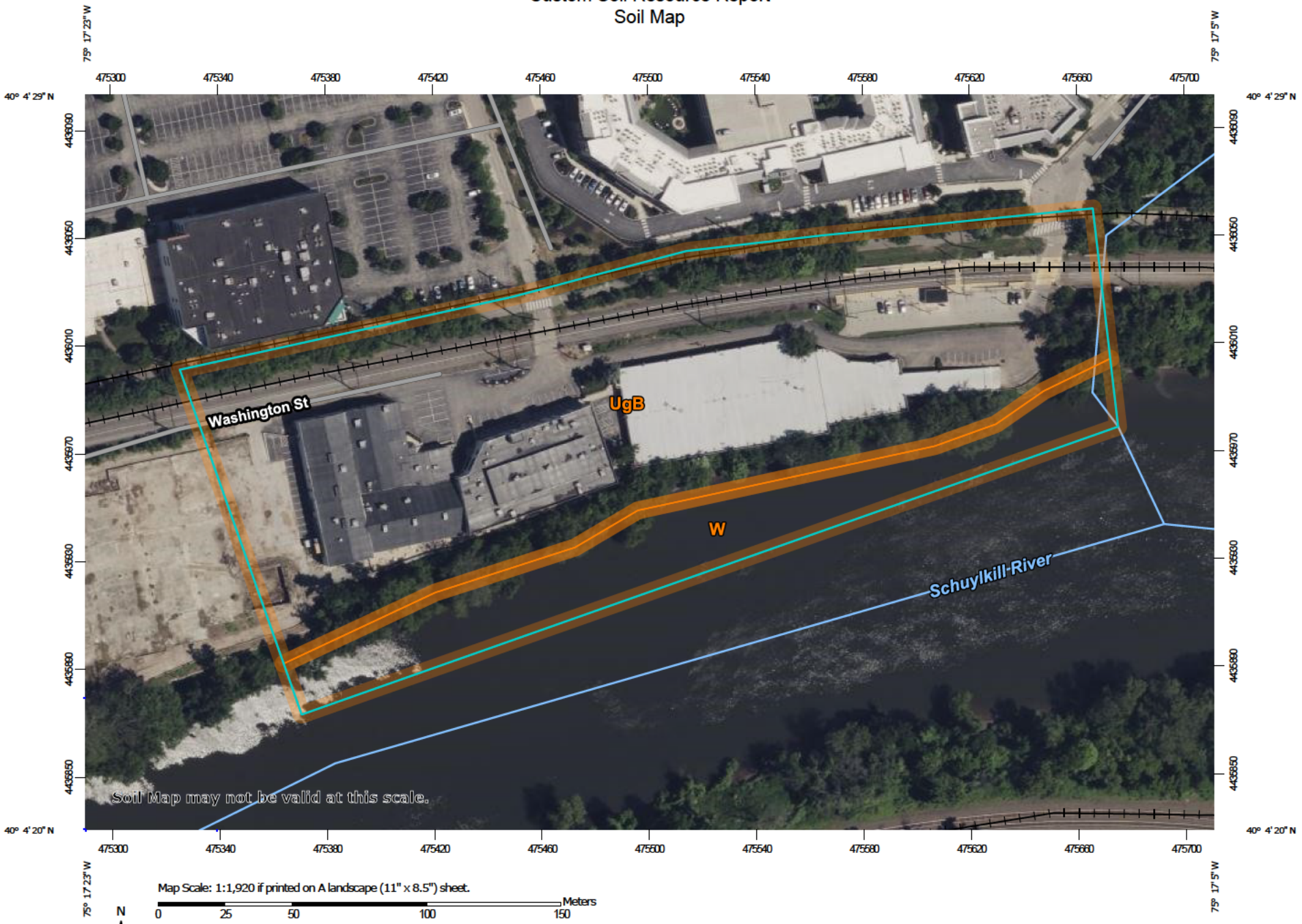


IMAGE SOURCE
US QUAD MAP
NORRISTOWN

LOCATION MAP

SCALE 1" = 800'

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,920 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

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

III.

DP001 SUMMARY OF FLOWS
Pre-Development/Post Development

Storm	Pre-Development Flow (CFS)	Allowable Flow* (CFS)	Post-Development Flow (CFS)	Net Change in Runoff (CFS)	% of Allowable Flow
1	10.39	10.39	10.24	-0.15	99%
2	12.92	12.92	12.62	-0.30	98%
5	16.87	16.87	16.29	-0.58	97%
10	20.22	20.22	19.38	-0.84	96%
25	25.12	25.12	23.87	-1.25	95%
50	29.33	29.33	27.74	-1.59	95%
100	33.87	33.87	32.45	-1.42	96%

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Wayne, PA
(610) 265-8323

PROJECT NAME: 1001 Washington Street
JOB #: 24001.02 **BY:** JGE
DATE: 11/6/2024 **CHK'D:** JPB

Events for Link 3L: DP001 (PRE)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	10.39	10.39	**0.00**
2-Year	12.92	12.92	0.00
5-Year	16.87	16.87	0.00
10-Year	20.22	20.22	0.00
25-Year	25.12	25.12	0.00
50-Year	29.33	29.33	0.00
100-Year	**33.87**	**33.87**	0.00

Events for Link 7L: DP001 (POST)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	10.24	10.24	**0.00**
2-Year	12.62	12.62	0.00
5-Year	16.29	16.29	0.00
10-Year	19.38	19.38	0.00
25-Year	23.87	23.87	0.00
50-Year	27.74	27.74	0.00
100-Year	**32.45**	**32.45**	0.00

IV.

Volume Management

Instructions | General | *Volume* | Rate | Quality

2-Year / 24-Hour Storm Event (NOAA Atlas 14): **3.28** inches

Alternative 2-Year / 24-Hour Storm Event: inches

Alternative Source:

Pre-Construction Conditions: *No. Rows:* **3**

☐ *Exempt from Meadow in Good Condition* ☑ *Automatically Calculate CN, Ia, Runoff and Volume*

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Pervious as Meadow	0.34	C	71	0.817	0.93	1,133
Impervious as Meadow	0.62	C	71	0.817	0.93	2,082
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	2.48	C	98	0.041	3.05	27,388
TOTAL (ACRES):	**3.43**				**TOTAL (CF):**	**30,603**

Post-Construction Conditions: *No. Rows:* **2**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	0.87	C	74	0.703	1.09	3,440
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	2.56	C	98	0.041	3.05	28,328
TOTAL (ACRES):	**3.43**				**TOTAL (CF):**	**31,768**

NET CHANGE IN VOLUME TO MANAGE (CF): **1,165**

Non-Structural BMP Volume Credits:

☐ Tree Planting Credit

Number of new deciduous trees that will be planted within disturbed area:

Number of new evergreen trees that will be planted within disturbed area:

CREDIT (CF):

CREDIT (CF):

☐ Other (attach calculations):

Structural BMP Volume Credits: *No. Structural BMPs:* **2** *Start BMP Numbering at:* **1**

DP No.	BMP No.	BMP Name	MRC?	Discharge	Incremental BMP DA (acres)	Volume Routed to BMP (CF)	Infiltration / Vegetated Area (SF)	Infiltration Rate (in/hr)	Infiltration Period (hrs)	Vegeta-ted?	Media Depth (ft)	Storage Volume (CF)	Infiltration Credit (CF)	ET Credit (CF)
001	1	Rain Garden / Bioretention	-	Off-Site	0.25	2,260	476	2.00	12	Yes	2.0	194	**857**	**250**
001	2	Rain Garden / Bioretention	-	Off-Site	0.17	1,547	982			Yes	2.0	344		**517**
												Totals:	**857**	**767**

INFILTRATION & ET CREDITS (CF): **1,624**

NET CHANGE IN VOLUME TO MANAGE (CF): **1,165**

TOTAL CREDITS (CF): **1,624**

VOLUME REQUIREMENT SATISFIED

Water Quality

PRINT

Instructions | General | Volume | Rate | *Quality*

Pre-Construction Pollutant Loads:

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Pervious as Meadow	Grassland/Herbaceous	0.34	C	1,133	48.8	0.22	2.30	3.45	0.02	0.16
Impervious as Meadow	Grassland/Herbaceous	0.62	C	2,082	48.8	0.22	2.30	6.34	0.03	0.30
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	2.48	C	27,388	65.0	0.29	2.05	111.16	0.50	3.51
	TOTAL (ACRES):	**3.43**					**TOTALS:**	**120.96**	**0.54**	**3.97**

Post-Construction Pollutant Loads (without BMPs):

Land Cover (from Volume Worksheet)	Land Cover for Water Quality	Area (acres)	Soil Group	Runoff Volume (cf)	Pollutant Conc. (mg/L)			Pollutant Loads (lbs)		
					TSS	TP	TN	TSS	TP	TN
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	Open Space	0.87	C	3,440	78.0	0.25	1.25	16.76	0.05	0.27
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	Residential	2.56	C	28,328	65.0	0.29	2.05	114.98	0.51	3.63

TOTAL (ACRES):	**3.43**	**TOTALS:**	**131.73**	**0.57**	**3.89**

POLLUTANT LOAD REDUCTION REQUIREMENTS (LBS):	**10.77**	**0.03**	**0.00**

☑ **Characterize Undetained Areas (for Untreated Stormwater)** *No. Rows:* **2**

Land Cover	Area (acres)	Soil Group	CN	Ia (in)	Q Runoff (in)	Runoff Volume (cf)
Open Space (Lawns, Parks, Golf Courses, Cemeteries, Etc.) - Good Condition (Grass Cover > 75%)	**0.74**	**C**	**74**	**0.703**	**1.09**	**2,929**
Impervious Areas: Paved Parking Lots, Roofs, Driveways, Etc. (Excluding ROW)	**2.26**	**C**	**98**	**0.041**	**3.05**	**24,999**

Non-Structural BMP Water Quality Credits:

☐ Pervious Undetained Area Credit

☐ Other (attach calculations)

Structural BMP Water Quality Credits:

☑ *Use default BMP Outflows and Median BMP Outflow Concentrations*

DP No.	BMP No.	BMP Name	MRC?	BMP DA (acres)	Vol. Routed to BMP (CF)	Inf. & ET Credits (CF)	Capture & Buffer Credits (CF)	Outflow (CF)	Outflow Conc. (mg/L)			Pollutant Loads (lbs)		
									TSS	TP	TN	TSS	TP	TN
001	1	Rain Garden / Bioretention	-	0.25	2,260	1,107		1,153	10.00	0.24	0.96	0.72	0.02	0.07
001	2	Rain Garden / Bioretention	-	0.17	1,547	517		1,030	10.00	0.24	0.96	0.64	0.02	0.06

	TSS	TP	TN
POLLUTANT LOADS FROM STRUCTURAL BMP (TREATED) OUTFLOWS (LBS):	**1.36**	**0.03**	**0.13**
POLLUTANT LOADS FROM UNTREATED STORMWATER (LBS):	**115.73**	**0.50**	**3.43**
NON-STRUCTURAL BMP WATER QUALITY CREDITS (LBS):			

NET POLLUTANT LOADS FROM SITE, POST-CONSTRUCTION (LBS):	**117.10**	**0.53**	**3.56**
POLLUTANT LOADS FROM SITE, PRE-CONSTRUCTION (LBS):	**120.96**	**0.54**	**3.97**

WATER QUALITY REQUIREMENT SATISFIED

CERTIFICATION

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

John Eckman	11/14/2024
Spreadsheet User Name	Date

Stage-Area-Storage for Pond 8P: RG1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	476	0
50.05	476	5
50.10	476	10
50.15	476	14
50.20	476	19
50.25	476	24
50.30	476	29
50.35	476	33
50.40	476	38
50.45	476	43
50.50	476	48
50.55	476	52
50.60	476	57
50.65	476	62
50.70	476	67
50.75	476	71
50.80	476	76
50.85	476	81
50.90	476	86
50.95	476	90
51.00	476	95
51.05	476	100
51.10	476	105
51.15	476	109
51.20	476	114
51.25	476	119
51.30	476	124
51.35	476	129
51.40	476	133
51.45	476	138
51.50	476	143
51.55	476	148
51.60	476	152
51.65	476	157
51.70	476	162
51.75	476	167
51.80	476	171
51.85	476	176
51.90	476	181
51.95	476	186
52.00	476	194
52.05	516	219
52.10	555	246
52.15	595	275
52.20	634	305
52.25	674	338
52.30	713	373
52.35	753	409
52.40	792	448
52.45	832	488
52.50	871	531
52.55	911	576
52.60	950	622
52.65	990	671
52.70	1,029	721
52.75	1,069	774
52.80	1,108	828
52.85	1,148	884
52.90	1,187	943
52.95	1,227	1,003
53.00	1,267	1,065
53.05	1,306	1,130
53.10	1,346	1,196
53.15	1,385	1,264
53.20	1,425	1,335
53.25	1,464	1,407
53.30	1,504	1,481
53.35	1,543	1,557
53.40	1,583	1,635
53.45	1,622	1,715
53.50	1,662	1,798
53.55	1,701	1,882
53.60	1,741	1,968
53.65	1,780	2,056
53.70	1,820	2,146
53.75	1,859	2,238
53.80	1,899	2,332
53.85	1,938	2,428
53.90	1,978	2,525
53.95	2,017	2,625
54.00	**2,057**	**2,727**

Stage-Area-Storage for Pond 9P: RG2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	982	0
50.05	982	10
50.10	982	20
50.15	982	29
50.20	982	39
50.25	982	49
50.30	982	59
50.35	982	69
50.40	982	79
50.45	982	88
50.50	982	98
50.55	982	108
50.60	982	118
50.65	982	128
50.70	982	137
50.75	982	147
50.80	982	157
50.85	982	167
50.90	982	177
50.95	982	187
51.00	982	196
51.05	982	206
51.10	982	216
51.15	982	226
51.20	982	236
51.25	982	246
51.30	982	255
51.35	982	265
51.40	982	275
51.45	982	285
51.50	982	295
51.55	982	304
51.60	982	314
51.65	982	324
51.70	982	334
51.75	982	344
51.80	982	354
51.85	982	363
51.90	982	373
51.95	982	383
52.00	982	401
52.05	1,009	450
52.10	1,037	502
52.15	1,064	554
52.20	1,091	608
52.25	1,119	663
52.30	1,146	720
52.35	1,173	778
52.40	1,201	837
52.45	1,228	898
52.50	1,256	960
52.55	1,283	1,023
52.60	1,310	1,088
52.65	1,338	1,155
52.70	1,365	1,222
52.75	1,392	1,291
52.80	1,420	1,361
52.85	1,447	1,433
52.90	1,474	1,506
52.95	1,502	1,580
53.00	**1,529**	**1,656**

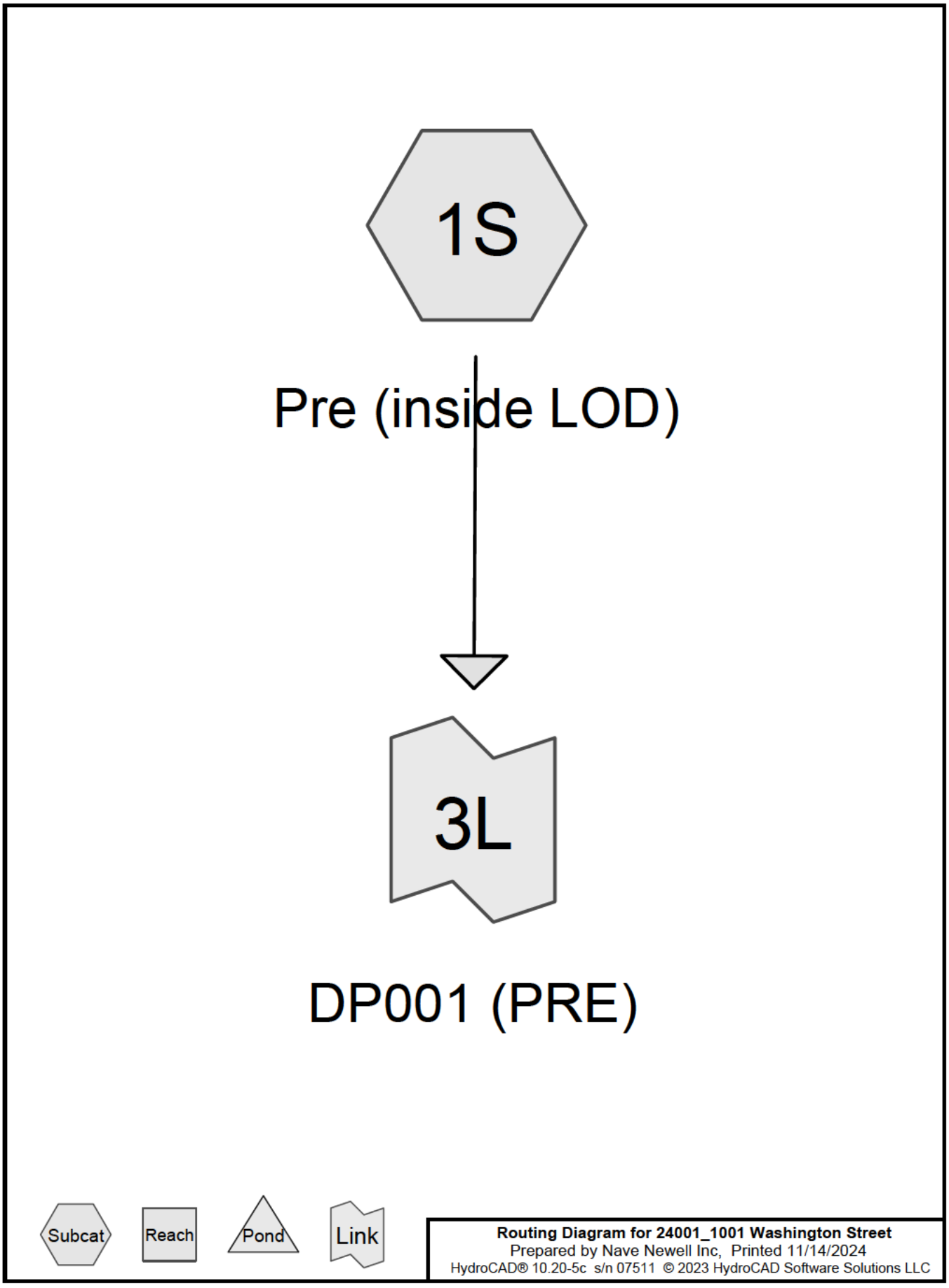
DEWATERING CALCULATIONS
1001 WASHINGTON STREET
NN PROJECT NO. 2024-001.02 rev:

RAIN GARDEN 1

Bed Area (SF) =	476	
Design Infiltration Rate (in/hr) =	2	
2 yr. Volume to Infiltrate (CF) =	194	

in/hr to ft/ hr =	0.5 (in/hr)/ 12 =	0.1667 ft/hr	
Total cf/hr =	0.0417 (ft/hr) * 145,858 SF =		79 cf/hr
Drain Time =	136,372 (CF) / 6,077 (cf/hr) =		2 hrs

V.



Routing Diagram for 24001_1001 Washington Street
Prepared by Nave Newell Inc, Printed 11/14/2024
HydroCAD® 10.20-5c s/n 07511 © 2023 HydroCAD Software Solutions LLC

Summary for Subcatchment 1S: Pre (inside LOD)

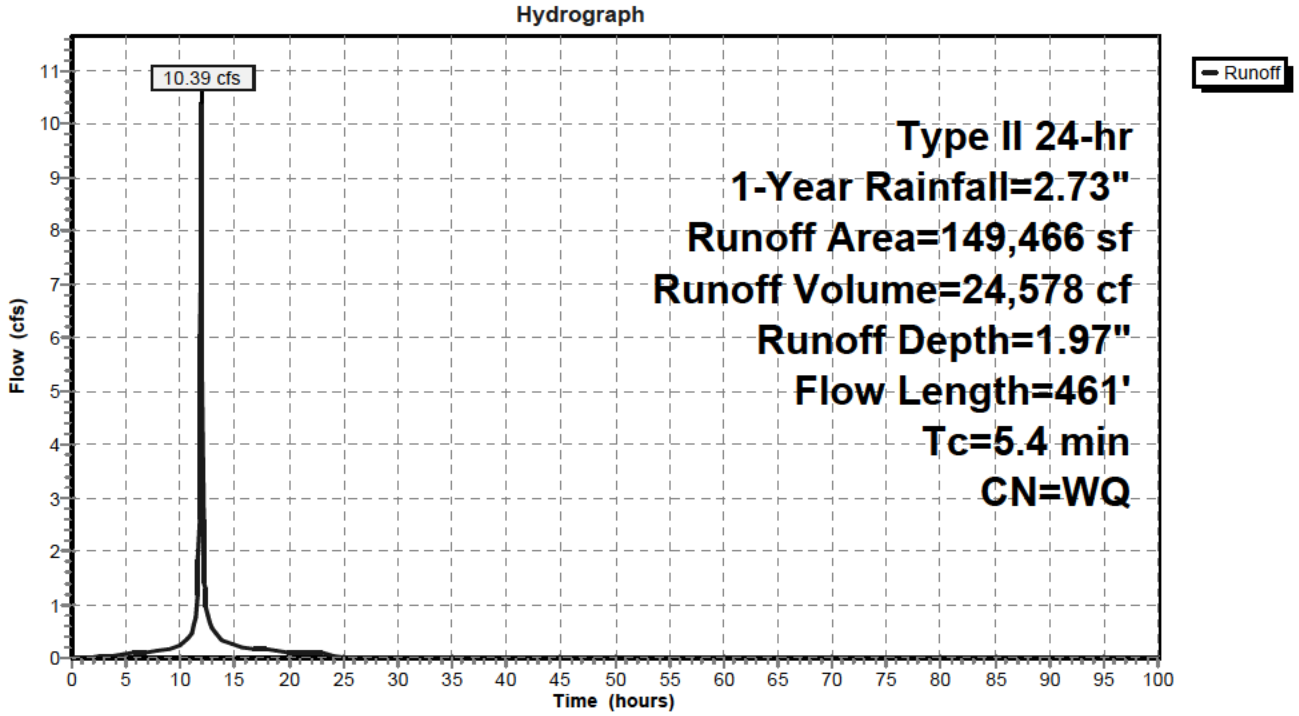
Runoff = 10.39 cfs @ 11.96 hrs, Volume= 24,578 cf, Depth= 1.97"
Routed to Link 3L : DP001 (PRE)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.73"

	Area (sf)	CN	Description
	14,672	71	Meadow, non-grazed, HSG C
*	26,959	71	Meadow, non-grazed, HSG C (20% imp.)
	107,835	98	Paved parking, HSG C
	149,466		Weighted Average
	36,239		24.25% Pervious Area
	113,227		75.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	100	0.0050	0.80		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 3.28"
3.3	361	0.0080	1.82		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	461	Total			

Subcatchment 1S: Pre (inside LOD)



Hydrograph for Subcatchment 1S: Pre (inside LOD)

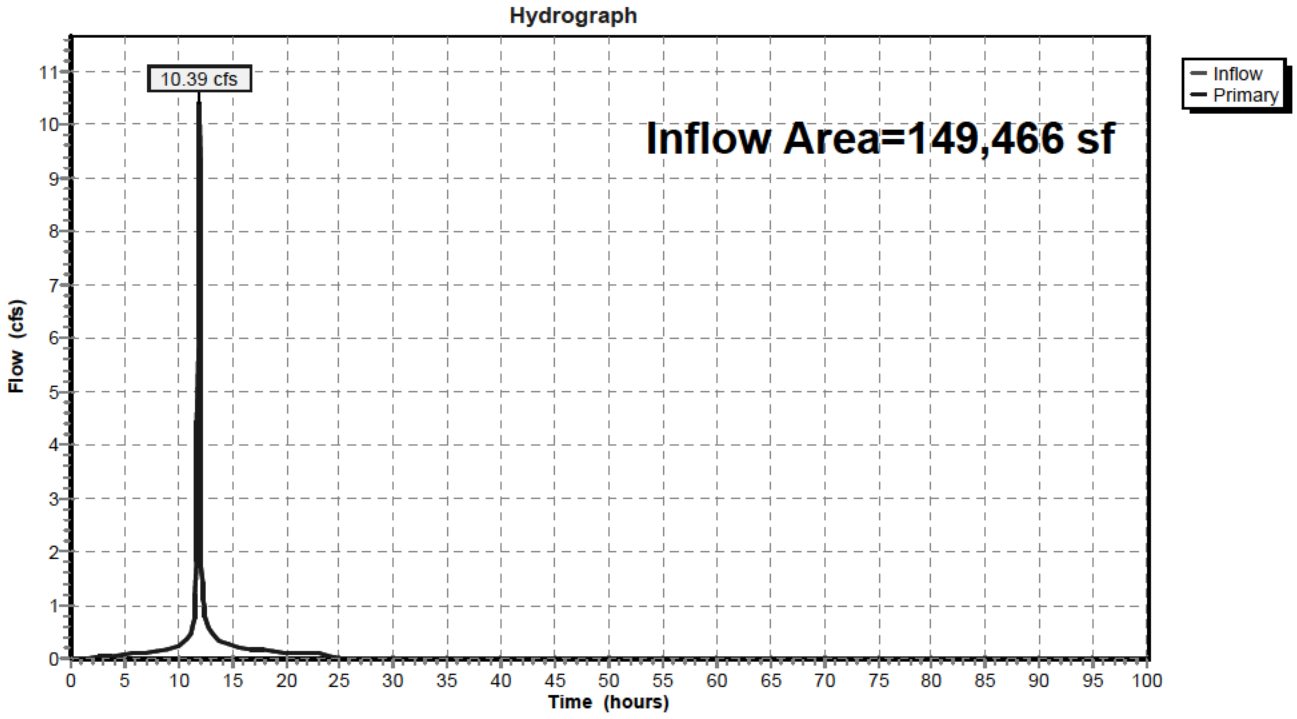
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.01
3.00	0.09	0.00	0.03
4.00	0.13	0.00	0.05
5.00	0.17	0.00	0.07
6.00	0.22	0.00	0.09
7.00	0.27	0.00	0.10
8.00	0.33	0.01	0.12
9.00	0.40	0.02	0.18
10.00	0.49	0.05	0.24
11.00	0.64	0.11	**0.44**
12.00	1.81	0.93	**9.21**
13.00	2.11	1.19	0.51
14.00	2.24	1.30	0.31
15.00	2.33	1.38	0.24
16.00	2.40	1.44	0.19
17.00	2.46	1.50	0.17
18.00	2.51	1.54	0.15
19.00	2.56	1.58	0.13
20.00	2.60	1.62	0.11
21.00	2.63	1.65	0.10
22.00	2.67	1.68	0.10
23.00	2.70	1.71	0.09
24.00	**2.73**	**1.74**	0.09
25.00	2.73	1.74	0.00
26.00	2.73	1.74	0.00
27.00	2.73	1.74	0.00
28.00	2.73	1.74	0.00
29.00	2.73	1.74	0.00
30.00	2.73	1.74	0.00
31.00	2.73	1.74	0.00
32.00	2.73	1.74	0.00
33.00	2.73	1.74	0.00
34.00	2.73	1.74	0.00
35.00	2.73	1.74	0.00
36.00	2.73	1.74	0.00
37.00	2.73	1.74	0.00
38.00	2.73	1.74	0.00
39.00	2.73	1.74	0.00
40.00	2.73	1.74	0.00
41.00	2.73	1.74	0.00
42.00	2.73	1.74	0.00
43.00	2.73	1.74	0.00
44.00	2.73	1.74	0.00
45.00	2.73	1.74	0.00
46.00	2.73	1.74	0.00
47.00	2.73	1.74	0.00
48.00	2.73	1.74	0.00
49.00	2.73	1.74	0.00
50.00	2.73	1.74	0.00
51.00	2.73	1.74	0.00
52.00	2.73	1.74	0.00
53.00	2.73	1.74	0.00
54.00	2.73	1.74	0.00
55.00	2.73	1.74	0.00
56.00	2.73	1.74	0.00
57.00	2.73	1.74	0.00
58.00	2.73	1.74	0.00
59.00	2.73	1.74	0.00
60.00	2.73	1.74	0.00
61.00	2.73	1.74	0.00
62.00	2.73	1.74	0.00
63.00	2.73	1.74	0.00
64.00	2.73	1.74	0.00
65.00	2.73	1.74	0.00
66.00	2.73	1.74	0.00
67.00	2.73	1.74	0.00
68.00	2.73	1.74	0.00
69.00	2.73	1.74	0.00
70.00	2.73	1.74	0.00
71.00	2.73	1.74	0.00
72.00	2.73	1.74	0.00
73.00	2.73	1.74	0.00
74.00	2.73	1.74	0.00
75.00	2.73	1.74	0.00
76.00	2.73	1.74	0.00
77.00	2.73	1.74	0.00
78.00	2.73	1.74	0.00
79.00	2.73	1.74	0.00
80.00	2.73	1.74	0.00
81.00	2.73	1.74	0.00
82.00	2.73	1.74	0.00
83.00	2.73	1.74	0.00
84.00	2.73	1.74	0.00
85.00	2.73	1.74	0.00
86.00	2.73	1.74	0.00
87.00	2.73	1.74	0.00
88.00	2.73	1.74	0.00
89.00	2.73	1.74	0.00
90.00	2.73	1.74	0.00
91.00	2.73	1.74	0.00
92.00	2.73	1.74	0.00
93.00	2.73	1.74	0.00
94.00	2.73	1.74	0.00
95.00	2.73	1.74	0.00
96.00	2.73	1.74	0.00
97.00	2.73	1.74	0.00
98.00	2.73	1.74	0.00
99.00	2.73	1.74	0.00
100.00	2.73	1.74	0.00

Summary for Link 3L: DP001 (PRE)

Inflow Area = 149,466 sf, 75.75% Impervious, Inflow Depth = 1.97" for 1-Year event
Inflow = 10.39 cfs @ 11.96 hrs, Volume= 24,578 cf
Primary = 10.39 cfs @ 11.96 hrs, Volume= 24,578 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Link 3L: DP001 (PRE)



Hydrograph for Link 3L: DP001 (PRE)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.01	0.00	0.01	54.00	0.00	0.00	0.00
3.00	0.03	0.00	0.03	55.00	0.00	0.00	0.00
4.00	0.05	0.00	0.05	56.00	0.00	0.00	0.00
5.00	0.07	0.00	0.07	57.00	0.00	0.00	0.00
6.00	0.09	0.00	0.09	58.00	0.00	0.00	0.00
7.00	0.10	0.00	0.10	59.00	0.00	0.00	0.00
8.00	0.12	0.00	0.12	60.00	0.00	0.00	0.00
9.00	0.18	0.00	0.18	61.00	0.00	0.00	0.00
10.00	0.24	0.00	0.24	62.00	0.00	0.00	0.00
11.00	**0.44**	0.00	**0.44**	63.00	0.00	0.00	0.00
12.00	**9.21**	0.00	**9.21**	64.00	0.00	0.00	0.00
13.00	0.51	0.00	0.51	65.00	0.00	0.00	0.00
14.00	0.31	0.00	0.31	66.00	0.00	0.00	0.00
15.00	0.24	0.00	0.24	67.00	0.00	0.00	0.00
16.00	0.19	0.00	0.19	68.00	0.00	0.00	0.00
17.00	0.17	0.00	0.17	69.00	0.00	0.00	0.00
18.00	0.15	0.00	0.15	70.00	0.00	0.00	0.00
19.00	0.13	0.00	0.13	71.00	0.00	0.00	0.00
20.00	0.11	0.00	0.11	72.00	0.00	0.00	0.00
21.00	0.10	0.00	0.10	73.00	0.00	0.00	0.00
22.00	0.10	0.00	0.10	74.00	0.00	0.00	0.00
23.00	0.09	0.00	0.09	75.00	0.00	0.00	0.00
24.00	0.09	0.00	0.09	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	97.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	98.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	99.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Subcatchment 1S: Pre (inside LOD)

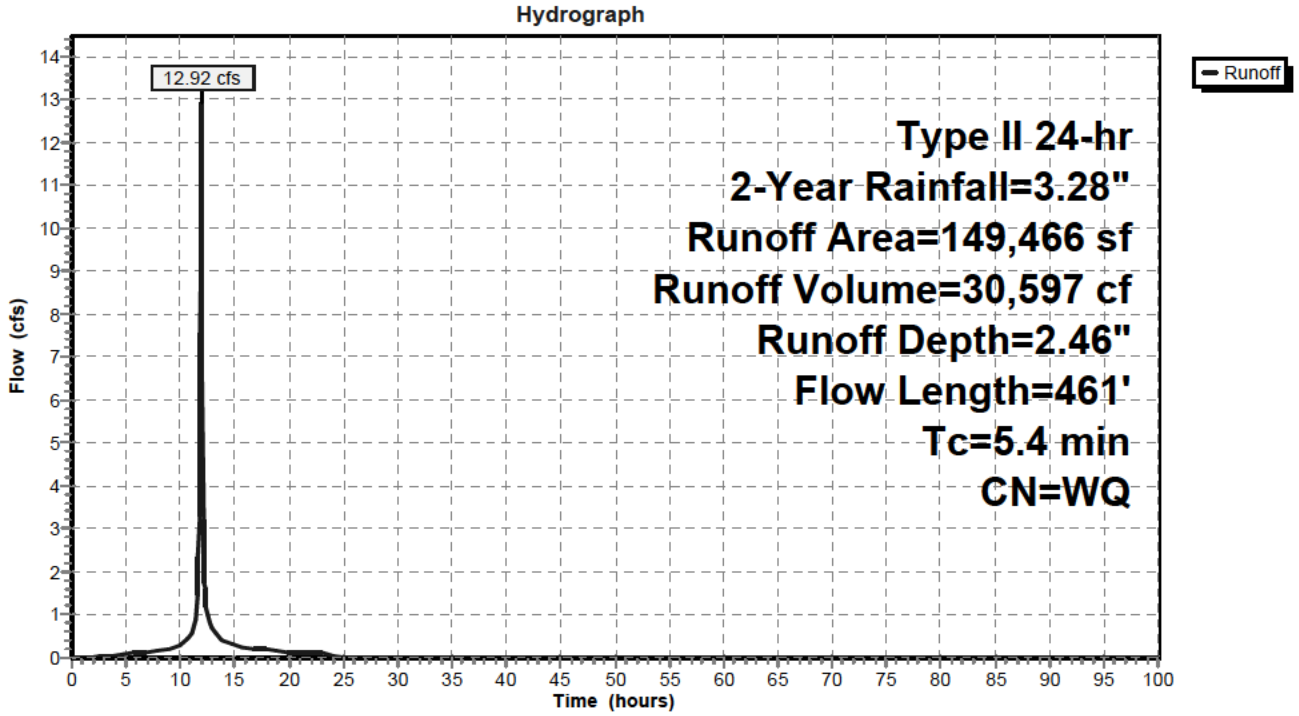
Runoff = 12.92 cfs @ 11.96 hrs, Volume= 30,597 cf, Depth= 2.46"
Routed to Link 3L : DP001 (PRE)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.28"

	Area (sf)	CN	Description
	14,672	71	Meadow, non-grazed, HSG C
*	26,959	71	Meadow, non-grazed, HSG C (20% imp.)
	107,835	98	Paved parking, HSG C
	149,466		Weighted Average
	36,239		24.25% Pervious Area
	113,227		75.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	100	0.0050	0.80		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 3.28"
3.3	361	0.0080	1.82		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	461	Total			

Subcatchment 1S: Pre (inside LOD)



Hydrograph for Subcatchment 1S: Pre (inside LOD)

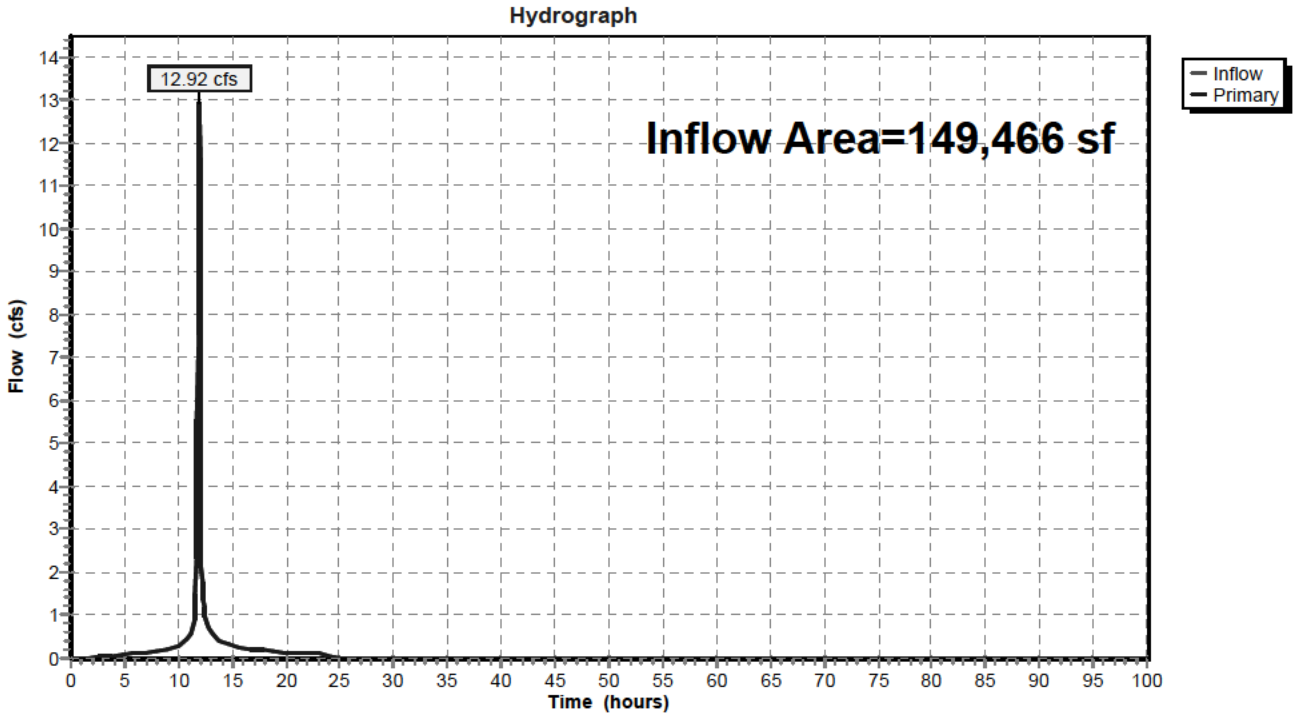
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.02
3.00	0.11	0.00	0.05
4.00	0.16	0.00	0.07
5.00	0.21	0.00	0.09
6.00	0.26	0.00	0.11
7.00	0.32	0.01	0.13
8.00	0.39	0.02	0.15
9.00	0.48	0.05	0.23
10.00	0.59	0.09	0.29
11.00	0.77	0.18	**0.53**
12.00	2.17	1.24	**11.43**
13.00	2.53	1.56	0.64
14.00	2.69	1.70	0.38
15.00	2.80	1.80	0.30
16.00	2.89	1.88	0.23
17.00	2.96	1.95	0.21
18.00	3.02	2.00	0.18
19.00	3.08	2.05	0.16
20.00	3.12	2.10	0.13
21.00	3.16	2.14	0.13
22.00	3.20	2.17	0.12
23.00	3.24	2.21	0.12
24.00	**3.28**	**2.24**	0.11
25.00	3.28	2.24	0.00
26.00	3.28	2.24	0.00
27.00	3.28	2.24	0.00
28.00	3.28	2.24	0.00
29.00	3.28	2.24	0.00
30.00	3.28	2.24	0.00
31.00	3.28	2.24	0.00
32.00	3.28	2.24	0.00
33.00	3.28	2.24	0.00
34.00	3.28	2.24	0.00
35.00	3.28	2.24	0.00
36.00	3.28	2.24	0.00
37.00	3.28	2.24	0.00
38.00	3.28	2.24	0.00
39.00	3.28	2.24	0.00
40.00	3.28	2.24	0.00
41.00	3.28	2.24	0.00
42.00	3.28	2.24	0.00
43.00	3.28	2.24	0.00
44.00	3.28	2.24	0.00
45.00	3.28	2.24	0.00
46.00	3.28	2.24	0.00
47.00	3.28	2.24	0.00
48.00	3.28	2.24	0.00
49.00	3.28	2.24	0.00
50.00	3.28	2.24	0.00
51.00	3.28	2.24	0.00
52.00	3.28	2.24	0.00
53.00	3.28	2.24	0.00
54.00	3.28	2.24	0.00
55.00	3.28	2.24	0.00
56.00	3.28	2.24	0.00
57.00	3.28	2.24	0.00
58.00	3.28	2.24	0.00
59.00	3.28	2.24	0.00
60.00	3.28	2.24	0.00
61.00	3.28	2.24	0.00
62.00	3.28	2.24	0.00
63.00	3.28	2.24	0.00
64.00	3.28	2.24	0.00
65.00	3.28	2.24	0.00
66.00	3.28	2.24	0.00
67.00	3.28	2.24	0.00
68.00	3.28	2.24	0.00
69.00	3.28	2.24	0.00
70.00	3.28	2.24	0.00
71.00	3.28	2.24	0.00
72.00	3.28	2.24	0.00
73.00	3.28	2.24	0.00
74.00	3.28	2.24	0.00
75.00	3.28	2.24	0.00
76.00	3.28	2.24	0.00
77.00	3.28	2.24	0.00
78.00	3.28	2.24	0.00
79.00	3.28	2.24	0.00
80.00	3.28	2.24	0.00
81.00	3.28	2.24	0.00
82.00	3.28	2.24	0.00
83.00	3.28	2.24	0.00
84.00	3.28	2.24	0.00
85.00	3.28	2.24	0.00
86.00	3.28	2.24	0.00
87.00	3.28	2.24	0.00
88.00	3.28	2.24	0.00
89.00	3.28	2.24	0.00
90.00	3.28	2.24	0.00
91.00	3.28	2.24	0.00
92.00	3.28	2.24	0.00
93.00	3.28	2.24	0.00
94.00	3.28	2.24	0.00
95.00	3.28	2.24	0.00
96.00	3.28	2.24	0.00
97.00	3.28	2.24	0.00
98.00	3.28	2.24	0.00
99.00	3.28	2.24	0.00
100.00	3.28	2.24	0.00

Summary for Link 3L: DP001 (PRE)

Inflow Area = 149,466 sf, 75.75% Impervious, Inflow Depth = 2.46" for 2-Year event
Inflow = 12.92 cfs @ 11.96 hrs, Volume= 30,597 cf
Primary = 12.92 cfs @ 11.96 hrs, Volume= 30,597 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Link 3L: DP001 (PRE)



Hydrograph for Link 3L: DP001 (PRE)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.02	0.00	0.02	54.00	0.00	0.00	0.00
3.00	0.05	0.00	0.05	55.00	0.00	0.00	0.00
4.00	0.07	0.00	0.07	56.00	0.00	0.00	0.00
5.00	0.09	0.00	0.09	57.00	0.00	0.00	0.00
6.00	0.11	0.00	0.11	58.00	0.00	0.00	0.00
7.00	0.13	0.00	0.13	59.00	0.00	0.00	0.00
8.00	0.15	0.00	0.15	60.00	0.00	0.00	0.00
9.00	0.23	0.00	0.23	61.00	0.00	0.00	0.00
10.00	0.29	0.00	0.29	62.00	0.00	0.00	0.00
11.00	**0.53**	0.00	**0.53**	63.00	0.00	0.00	0.00
12.00	**11.43**	0.00	**11.43**	64.00	0.00	0.00	0.00
13.00	0.64	0.00	0.64	65.00	0.00	0.00	0.00
14.00	0.38	0.00	0.38	66.00	0.00	0.00	0.00
15.00	0.30	0.00	0.30	67.00	0.00	0.00	0.00
16.00	0.23	0.00	0.23	68.00	0.00	0.00	0.00
17.00	0.21	0.00	0.21	69.00	0.00	0.00	0.00
18.00	0.18	0.00	0.18	70.00	0.00	0.00	0.00
19.00	0.16	0.00	0.16	71.00	0.00	0.00	0.00
20.00	0.13	0.00	0.13	72.00	0.00	0.00	0.00
21.00	0.13	0.00	0.13	73.00	0.00	0.00	0.00
22.00	0.12	0.00	0.12	74.00	0.00	0.00	0.00
23.00	0.12	0.00	0.12	75.00	0.00	0.00	0.00
24.00	0.11	0.00	0.11	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	97.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	98.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	99.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Subcatchment 1S: Pre (inside LOD)

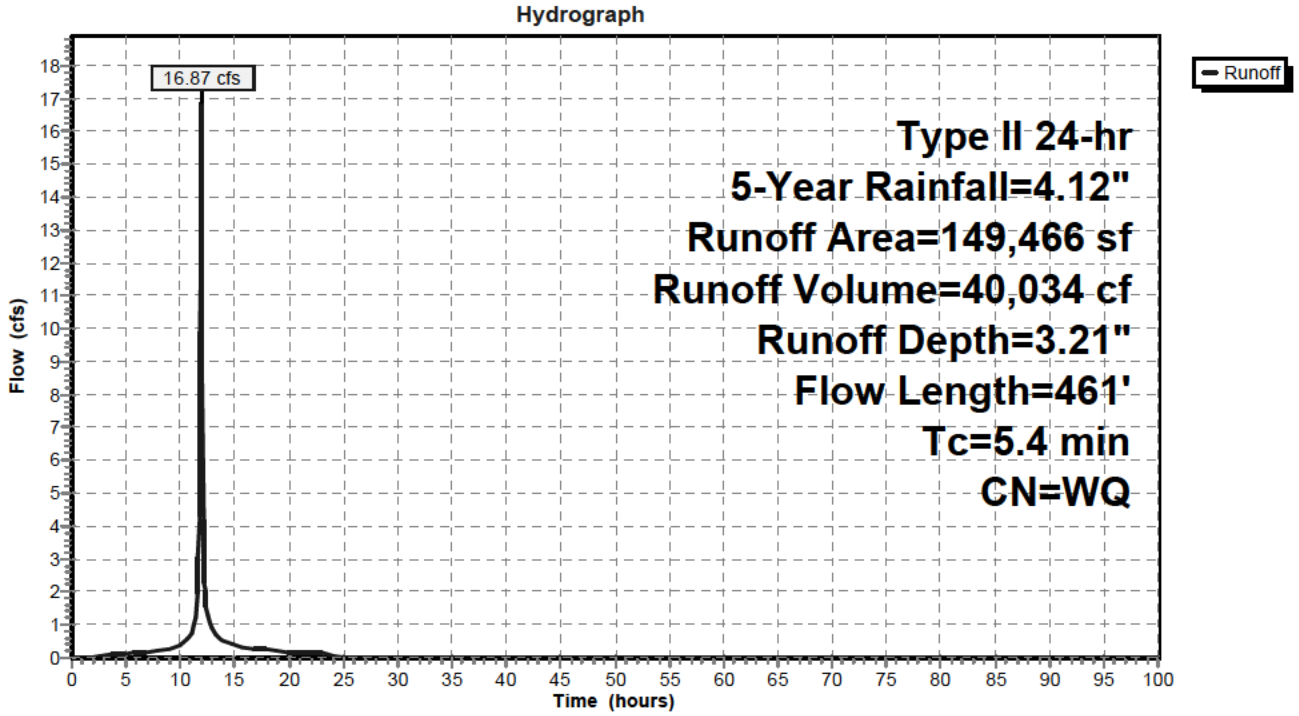
Runoff = 16.87 cfs @ 11.96 hrs, Volume= 40,034 cf, Depth= 3.21"
Routed to Link 3L : DP001 (PRE)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=4.12"

	Area (sf)	CN	Description
	14,672	71	Meadow, non-grazed, HSG C
*	26,959	71	Meadow, non-grazed, HSG C (20% imp.)
	107,835	98	Paved parking, HSG C
	149,466		Weighted Average
	36,239		24.25% Pervious Area
	113,227		75.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	100	0.0050	0.80		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 3.28"
3.3	361	0.0080	1.82		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	461	Total			

Subcatchment 1S: Pre (inside LOD)



Hydrograph for Subcatchment 1S: Pre (inside LOD)

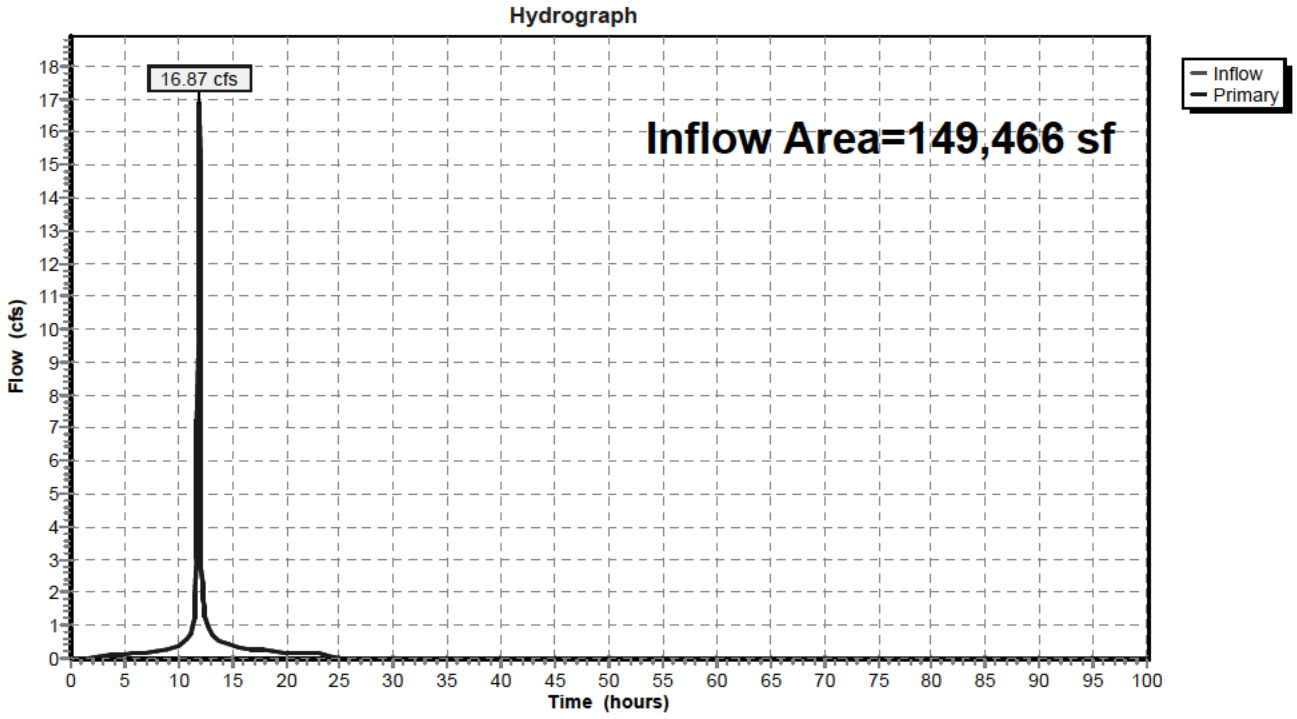
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.12	3.03	0.00
1.00	0.04	0.00	0.00	53.00	4.12	3.03	0.00
2.00	0.09	0.00	0.04	54.00	4.12	3.03	0.00
3.00	0.14	0.00	0.07	55.00	4.12	3.03	0.00
4.00	0.20	0.00	0.10	56.00	4.12	3.03	0.00
5.00	0.26	0.00	0.12	57.00	4.12	3.03	0.00
6.00	0.33	0.01	0.15	58.00	4.12	3.03	0.00
7.00	0.41	0.03	0.18	59.00	4.12	3.03	0.00
8.00	0.49	0.05	0.20	60.00	4.12	3.03	0.00
9.00	0.61	0.10	0.30	61.00	4.12	3.03	0.00
10.00	0.75	0.17	0.38	62.00	4.12	3.03	0.00
11.00	0.97	0.30	**0.70**	63.00	4.12	3.03	0.00
12.00	2.73	1.74	**14.91**	64.00	4.12	3.03	0.00
13.00	3.18	2.15	0.82	65.00	4.12	3.03	0.00
14.00	3.38	2.33	0.49	66.00	4.12	3.03	0.00
15.00	3.52	2.46	0.39	67.00	4.12	3.03	0.00
16.00	3.63	2.57	0.30	68.00	4.12	3.03	0.00
17.00	3.72	2.65	0.27	69.00	4.12	3.03	0.00
18.00	3.79	2.72	0.23	70.00	4.12	3.03	0.00
19.00	3.86	2.79	0.20	71.00	4.12	3.03	0.00
20.00	3.92	2.85	0.17	72.00	4.12	3.03	0.00
21.00	3.97	2.90	0.16	73.00	4.12	3.03	0.00
22.00	4.03	2.94	0.16	74.00	4.12	3.03	0.00
23.00	4.07	2.99	0.15	75.00	4.12	3.03	0.00
24.00	**4.12**	**3.03**	0.14	76.00	4.12	3.03	0.00
25.00	4.12	3.03	0.00	77.00	4.12	3.03	0.00
26.00	4.12	3.03	0.00	78.00	4.12	3.03	0.00
27.00	4.12	3.03	0.00	79.00	4.12	3.03	0.00
28.00	4.12	3.03	0.00	80.00	4.12	3.03	0.00
29.00	4.12	3.03	0.00	81.00	4.12	3.03	0.00
30.00	4.12	3.03	0.00	82.00	4.12	3.03	0.00
31.00	4.12	3.03	0.00	83.00	4.12	3.03	0.00
32.00	4.12	3.03	0.00	84.00	4.12	3.03	0.00
33.00	4.12	3.03	0.00	85.00	4.12	3.03	0.00
34.00	4.12	3.03	0.00	86.00	4.12	3.03	0.00
35.00	4.12	3.03	0.00	87.00	4.12	3.03	0.00
36.00	4.12	3.03	0.00	88.00	4.12	3.03	0.00
37.00	4.12	3.03	0.00	89.00	4.12	3.03	0.00
38.00	4.12	3.03	0.00	90.00	4.12	3.03	0.00
39.00	4.12	3.03	0.00	91.00	4.12	3.03	0.00
40.00	4.12	3.03	0.00	92.00	4.12	3.03	0.00
41.00	4.12	3.03	0.00	93.00	4.12	3.03	0.00
42.00	4.12	3.03	0.00	94.00	4.12	3.03	0.00
43.00	4.12	3.03	0.00	95.00	4.12	3.03	0.00
44.00	4.12	3.03	0.00	96.00	4.12	3.03	0.00
45.00	4.12	3.03	0.00	97.00	4.12	3.03	0.00
46.00	4.12	3.03	0.00	98.00	4.12	3.03	0.00
47.00	4.12	3.03	0.00	99.00	4.12	3.03	0.00
48.00	4.12	3.03	0.00	100.00	4.12	3.03	0.00
49.00	4.12	3.03	0.00				
50.00	4.12	3.03	0.00				
51.00	4.12	3.03	0.00				

Summary for Link 3L: DP001 (PRE)

Inflow Area = 149,466 sf, 75.75% Impervious, Inflow Depth = 3.21" for 5-Year event
Inflow = 16.87 cfs @ 11.96 hrs, Volume= 40,034 cf
Primary = 16.87 cfs @ 11.96 hrs, Volume= 40,034 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Link 3L: DP001 (PRE)



Hydrograph for Link 3L: DP001 (PRE)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.04	0.00	0.04	54.00	0.00	0.00	0.00
3.00	0.07	0.00	0.07	55.00	0.00	0.00	0.00
4.00	0.10	0.00	0.10	56.00	0.00	0.00	0.00
5.00	0.12	0.00	0.12	57.00	0.00	0.00	0.00
6.00	0.15	0.00	0.15	58.00	0.00	0.00	0.00
7.00	0.18	0.00	0.18	59.00	0.00	0.00	0.00
8.00	0.20	0.00	0.20	60.00	0.00	0.00	0.00
9.00	0.30	0.00	0.30	61.00	0.00	0.00	0.00
10.00	0.38	0.00	0.38	62.00	0.00	0.00	0.00
11.00	**0.70**	0.00	**0.70**	63.00	0.00	0.00	0.00
12.00	**14.91**	0.00	**14.91**	64.00	0.00	0.00	0.00
13.00	0.82	0.00	0.82	65.00	0.00	0.00	0.00
14.00	0.49	0.00	0.49	66.00	0.00	0.00	0.00
15.00	0.39	0.00	0.39	67.00	0.00	0.00	0.00
16.00	0.30	0.00	0.30	68.00	0.00	0.00	0.00
17.00	0.27	0.00	0.27	69.00	0.00	0.00	0.00
18.00	0.23	0.00	0.23	70.00	0.00	0.00	0.00
19.00	0.20	0.00	0.20	71.00	0.00	0.00	0.00
20.00	0.17	0.00	0.17	72.00	0.00	0.00	0.00
21.00	0.16	0.00	0.16	73.00	0.00	0.00	0.00
22.00	0.16	0.00	0.16	74.00	0.00	0.00	0.00
23.00	0.15	0.00	0.15	75.00	0.00	0.00	0.00
24.00	0.14	0.00	0.14	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	97.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	98.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	99.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Subcatchment 1S: Pre (inside LOD)

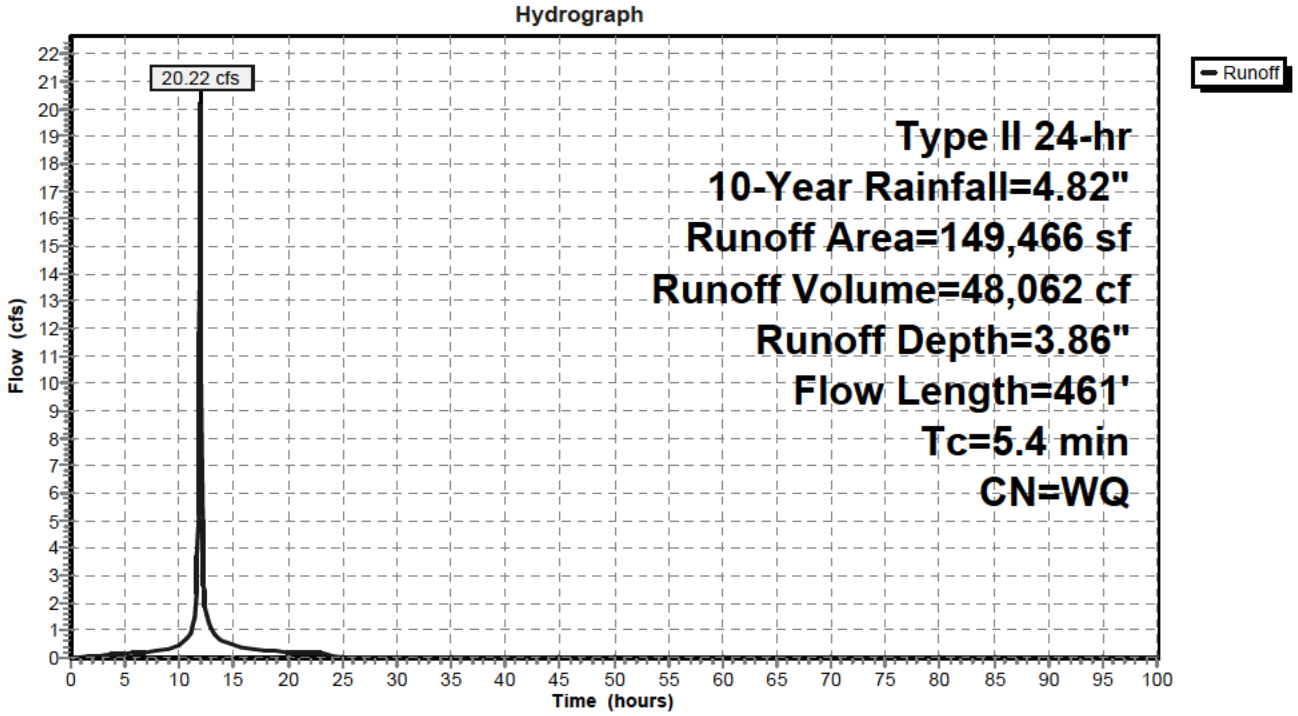
Runoff = 20.22 cfs @ 11.96 hrs, Volume= 48,062 cf, Depth= 3.86"
Routed to Link 3L : DP001 (PRE)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=4.82"

	Area (sf)	CN	Description
	14,672	71	Meadow, non-grazed, HSG C
*	26,959	71	Meadow, non-grazed, HSG C (20% imp.)
	107,835	98	Paved parking, HSG C
	149,466		Weighted Average
	36,239		24.25% Pervious Area
	113,227		75.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	100	0.0050	0.80		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 3.28"
3.3	361	0.0080	1.82		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	461	Total			

Subcatchment 1S: Pre (inside LOD)



Hydrograph for Subcatchment 1S: Pre (inside LOD)

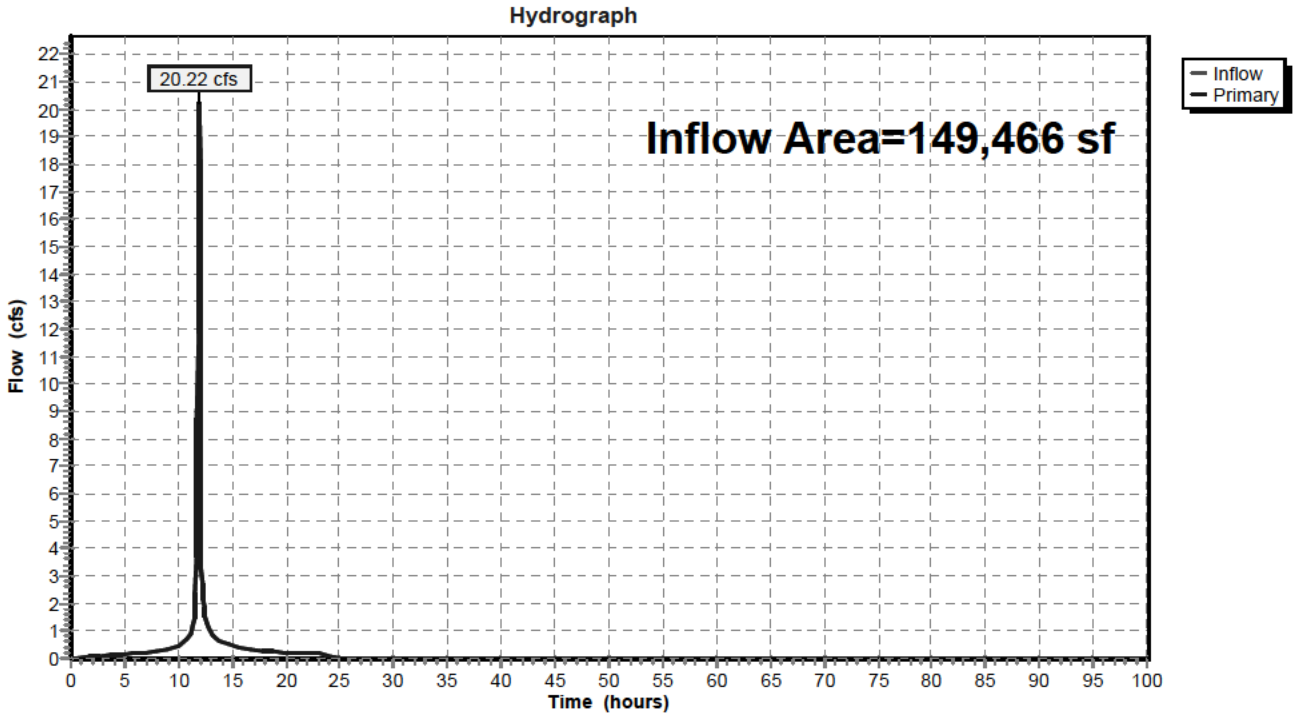
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.01
2.00	0.11	0.00	0.06
3.00	0.17	0.00	0.09
4.00	0.23	0.00	0.12
5.00	0.30	0.01	0.15
6.00	0.39	0.02	0.18
7.00	0.48	0.05	0.21
8.00	0.58	0.09	0.24
9.00	0.71	0.15	0.35
10.00	0.87	0.24	0.45
11.00	1.13	0.41	**0.85**
12.00	3.20	2.16	**17.85**
13.00	3.72	2.66	0.98
14.00	3.95	2.87	0.59
15.00	4.11	3.03	0.47
16.00	4.24	3.15	0.36
17.00	4.35	3.25	0.32
18.00	4.44	3.34	0.28
19.00	4.52	3.41	0.24
20.00	4.59	3.48	0.20
21.00	4.65	3.54	0.19
22.00	4.71	3.60	0.19
23.00	4.77	3.65	0.18
24.00	**4.82**	**3.70**	0.17
25.00	4.82	3.70	0.00
26.00	4.82	3.70	0.00
27.00	4.82	3.70	0.00
28.00	4.82	3.70	0.00
29.00	4.82	3.70	0.00
30.00	4.82	3.70	0.00
31.00	4.82	3.70	0.00
32.00	4.82	3.70	0.00
33.00	4.82	3.70	0.00
34.00	4.82	3.70	0.00
35.00	4.82	3.70	0.00
36.00	4.82	3.70	0.00
37.00	4.82	3.70	0.00
38.00	4.82	3.70	0.00
39.00	4.82	3.70	0.00
40.00	4.82	3.70	0.00
41.00	4.82	3.70	0.00
42.00	4.82	3.70	0.00
43.00	4.82	3.70	0.00
44.00	4.82	3.70	0.00
45.00	4.82	3.70	0.00
46.00	4.82	3.70	0.00
47.00	4.82	3.70	0.00
48.00	4.82	3.70	0.00
49.00	4.82	3.70	0.00
50.00	4.82	3.70	0.00
51.00	4.82	3.70	0.00
52.00	4.82	3.70	0.00
53.00	4.82	3.70	0.00
54.00	4.82	3.70	0.00
55.00	4.82	3.70	0.00
56.00	4.82	3.70	0.00
57.00	4.82	3.70	0.00
58.00	4.82	3.70	0.00
59.00	4.82	3.70	0.00
60.00	4.82	3.70	0.00
61.00	4.82	3.70	0.00
62.00	4.82	3.70	0.00
63.00	4.82	3.70	0.00
64.00	4.82	3.70	0.00
65.00	4.82	3.70	0.00
66.00	4.82	3.70	0.00
67.00	4.82	3.70	0.00
68.00	4.82	3.70	0.00
69.00	4.82	3.70	0.00
70.00	4.82	3.70	0.00
71.00	4.82	3.70	0.00
72.00	4.82	3.70	0.00
73.00	4.82	3.70	0.00
74.00	4.82	3.70	0.00
75.00	4.82	3.70	0.00
76.00	4.82	3.70	0.00
77.00	4.82	3.70	0.00
78.00	4.82	3.70	0.00
79.00	4.82	3.70	0.00
80.00	4.82	3.70	0.00
81.00	4.82	3.70	0.00
82.00	4.82	3.70	0.00
83.00	4.82	3.70	0.00
84.00	4.82	3.70	0.00
85.00	4.82	3.70	0.00
86.00	4.82	3.70	0.00
87.00	4.82	3.70	0.00
88.00	4.82	3.70	0.00
89.00	4.82	3.70	0.00
90.00	4.82	3.70	0.00
91.00	4.82	3.70	0.00
92.00	4.82	3.70	0.00
93.00	4.82	3.70	0.00
94.00	4.82	3.70	0.00
95.00	4.82	3.70	0.00
96.00	4.82	3.70	0.00
97.00	4.82	3.70	0.00
98.00	4.82	3.70	0.00
99.00	4.82	3.70	0.00
100.00	4.82	3.70	0.00

Summary for Link 3L: DP001 (PRE)

Inflow Area = 149,466 sf, 75.75% Impervious, Inflow Depth = 3.86" for 10-Year event
Inflow = 20.22 cfs @ 11.96 hrs, Volume= 48,062 cf
Primary = 20.22 cfs @ 11.96 hrs, Volume= 48,062 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Link 3L: DP001 (PRE)



Hydrograph for Link 3L: DP001 (PRE)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.01	0.00	0.01	53.00	0.00	0.00	0.00
2.00	0.06	0.00	0.06	54.00	0.00	0.00	0.00
3.00	0.09	0.00	0.09	55.00	0.00	0.00	0.00
4.00	0.12	0.00	0.12	56.00	0.00	0.00	0.00
5.00	0.15	0.00	0.15	57.00	0.00	0.00	0.00
6.00	0.18	0.00	0.18	58.00	0.00	0.00	0.00
7.00	0.21	0.00	0.21	59.00	0.00	0.00	0.00
8.00	0.24	0.00	0.24	60.00	0.00	0.00	0.00
9.00	0.35	0.00	0.35	61.00	0.00	0.00	0.00
10.00	0.45	0.00	0.45	62.00	0.00	0.00	0.00
11.00	**0.85**	0.00	**0.85**	63.00	0.00	0.00	0.00
12.00	**17.85**	0.00	**17.85**	64.00	0.00	0.00	0.00
13.00	0.98	0.00	0.98	65.00	0.00	0.00	0.00
14.00	0.59	0.00	0.59	66.00	0.00	0.00	0.00
15.00	0.47	0.00	0.47	67.00	0.00	0.00	0.00
16.00	0.36	0.00	0.36	68.00	0.00	0.00	0.00
17.00	0.32	0.00	0.32	69.00	0.00	0.00	0.00
18.00	0.28	0.00	0.28	70.00	0.00	0.00	0.00
19.00	0.24	0.00	0.24	71.00	0.00	0.00	0.00
20.00	0.20	0.00	0.20	72.00	0.00	0.00	0.00
21.00	0.19	0.00	0.19	73.00	0.00	0.00	0.00
22.00	0.19	0.00	0.19	74.00	0.00	0.00	0.00
23.00	0.18	0.00	0.18	75.00	0.00	0.00	0.00
24.00	0.17	0.00	0.17	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	97.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	98.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	99.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Subcatchment 1S: Pre (inside LOD)

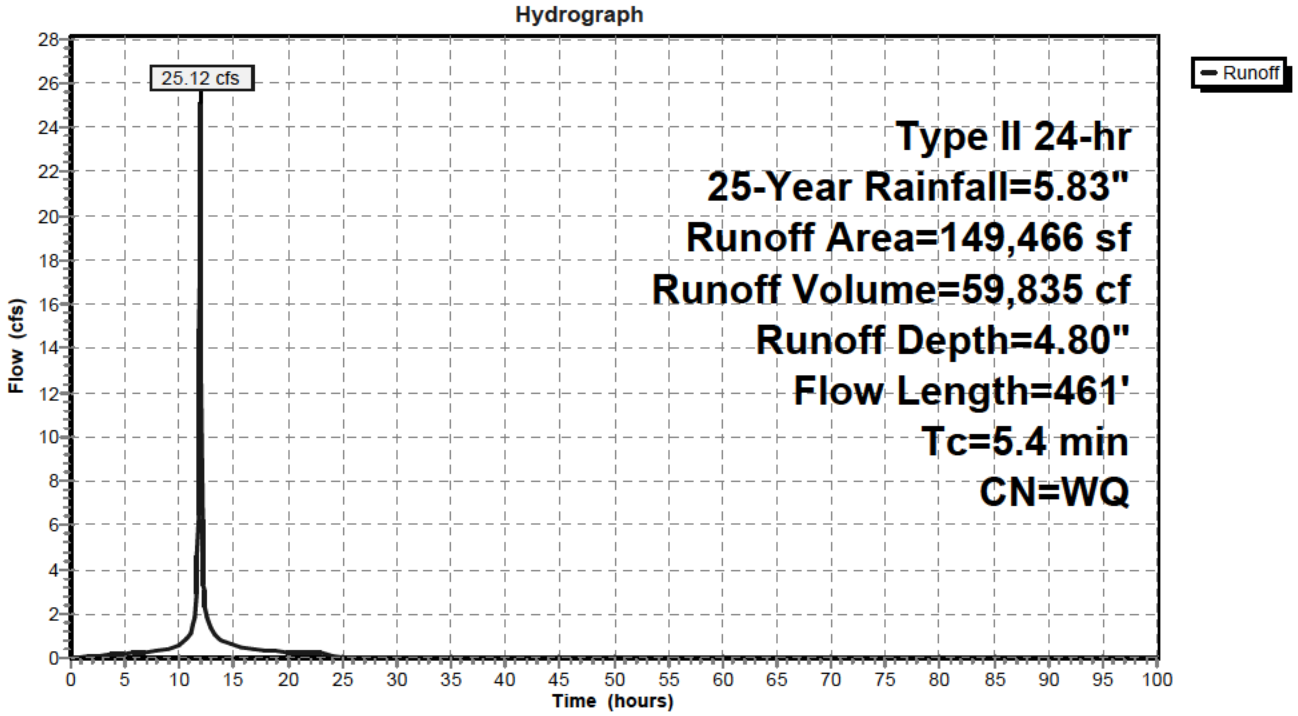
Runoff = 25.12 cfs @ 11.96 hrs, Volume= 59,835 cf, Depth= 4.80"
Routed to Link 3L : DP001 (PRE)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=5.83"

	Area (sf)	CN	Description
	14,672	71	Meadow, non-grazed, HSG C
*	26,959	71	Meadow, non-grazed, HSG C (20% imp.)
	107,835	98	Paved parking, HSG C
	149,466		Weighted Average
	36,239		24.25% Pervious Area
	113,227		75.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	100	0.0050	0.80		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 3.28"
3.3	361	0.0080	1.82		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	461	Total			

Subcatchment 1S: Pre (inside LOD)



Hydrograph for Subcatchment 1S: Pre (inside LOD)

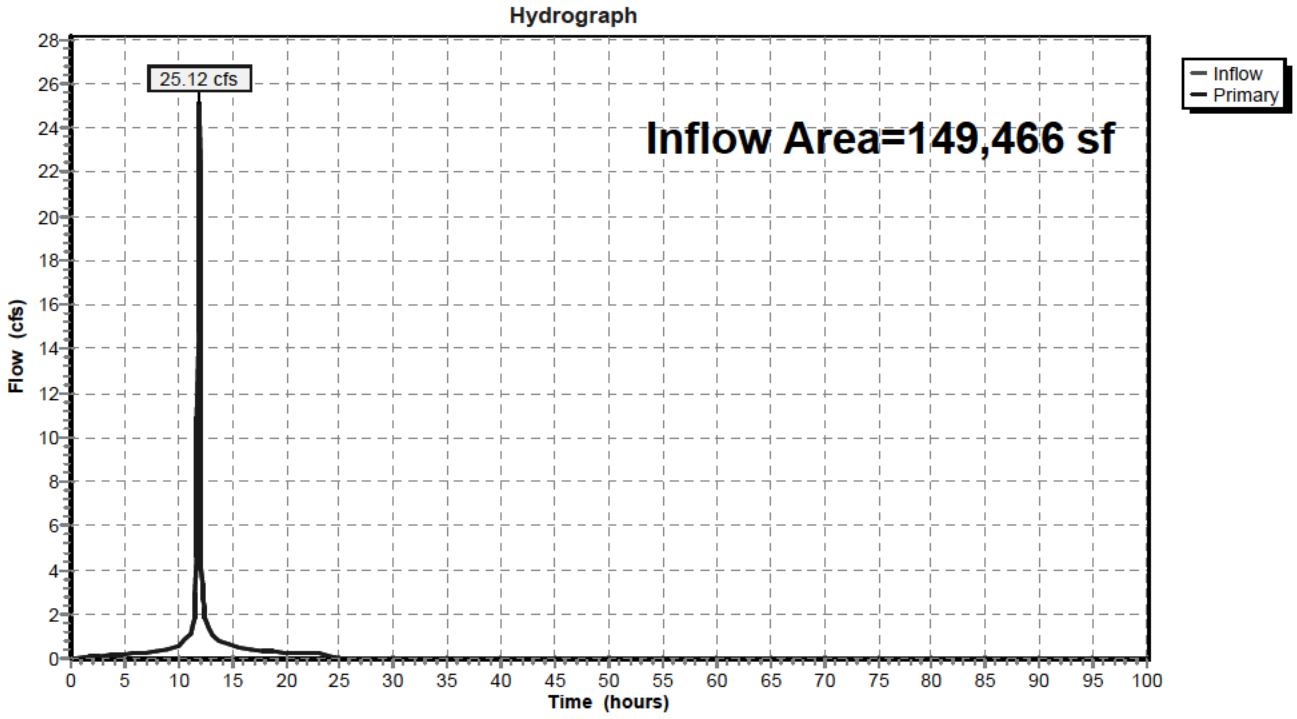
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.02
2.00	0.13	0.00	0.08
3.00	0.20	0.00	0.13
4.00	0.28	0.00	0.16
5.00	0.37	0.02	0.20
6.00	0.47	0.04	0.23
7.00	0.58	0.09	0.27
8.00	0.70	0.14	0.30
9.00	0.86	0.23	0.44
10.00	1.06	0.36	0.57
11.00	1.37	0.58	**1.06**
12.00	3.87	2.79	**22.15**
13.00	4.50	3.40	1.21
14.00	4.78	3.67	0.72
15.00	4.98	3.85	0.57
16.00	5.13	4.00	0.44
17.00	5.26	4.12	0.39
18.00	5.37	4.23	0.34
19.00	5.47	4.33	0.30
20.00	5.55	4.41	0.25
21.00	5.62	4.48	0.24
22.00	5.70	4.55	0.23
23.00	5.76	4.62	0.22
24.00	**5.83**	**4.68**	0.21
25.00	5.83	4.68	0.00
26.00	5.83	4.68	0.00
27.00	5.83	4.68	0.00
28.00	5.83	4.68	0.00
29.00	5.83	4.68	0.00
30.00	5.83	4.68	0.00
31.00	5.83	4.68	0.00
32.00	5.83	4.68	0.00
33.00	5.83	4.68	0.00
34.00	5.83	4.68	0.00
35.00	5.83	4.68	0.00
36.00	5.83	4.68	0.00
37.00	5.83	4.68	0.00
38.00	5.83	4.68	0.00
39.00	5.83	4.68	0.00
40.00	5.83	4.68	0.00
41.00	5.83	4.68	0.00
42.00	5.83	4.68	0.00
43.00	5.83	4.68	0.00
44.00	5.83	4.68	0.00
45.00	5.83	4.68	0.00
46.00	5.83	4.68	0.00
47.00	5.83	4.68	0.00
48.00	5.83	4.68	0.00
49.00	5.83	4.68	0.00
50.00	5.83	4.68	0.00
51.00	5.83	4.68	0.00
52.00	5.83	4.68	0.00
53.00	5.83	4.68	0.00
54.00	5.83	4.68	0.00
55.00	5.83	4.68	0.00
56.00	5.83	4.68	0.00
57.00	5.83	4.68	0.00
58.00	5.83	4.68	0.00
59.00	5.83	4.68	0.00
60.00	5.83	4.68	0.00
61.00	5.83	4.68	0.00
62.00	5.83	4.68	0.00
63.00	5.83	4.68	0.00
64.00	5.83	4.68	0.00
65.00	5.83	4.68	0.00
66.00	5.83	4.68	0.00
67.00	5.83	4.68	0.00
68.00	5.83	4.68	0.00
69.00	5.83	4.68	0.00
70.00	5.83	4.68	0.00
71.00	5.83	4.68	0.00
72.00	5.83	4.68	0.00
73.00	5.83	4.68	0.00
74.00	5.83	4.68	0.00
75.00	5.83	4.68	0.00
76.00	5.83	4.68	0.00
77.00	5.83	4.68	0.00
78.00	5.83	4.68	0.00
79.00	5.83	4.68	0.00
80.00	5.83	4.68	0.00
81.00	5.83	4.68	0.00
82.00	5.83	4.68	0.00
83.00	5.83	4.68	0.00
84.00	5.83	4.68	0.00
85.00	5.83	4.68	0.00
86.00	5.83	4.68	0.00
87.00	5.83	4.68	0.00
88.00	5.83	4.68	0.00
89.00	5.83	4.68	0.00
90.00	5.83	4.68	0.00
91.00	5.83	4.68	0.00
92.00	5.83	4.68	0.00
93.00	5.83	4.68	0.00
94.00	5.83	4.68	0.00
95.00	5.83	4.68	0.00
96.00	5.83	4.68	0.00
97.00	5.83	4.68	0.00
98.00	5.83	4.68	0.00
99.00	5.83	4.68	0.00
100.00	5.83	4.68	0.00

Summary for Link 3L: DP001 (PRE)

Inflow Area = 149,466 sf, 75.75% Impervious, Inflow Depth = 4.80" for 25-Year event
Inflow = 25.12 cfs @ 11.96 hrs, Volume= 59,835 cf
Primary = 25.12 cfs @ 11.96 hrs, Volume= 59,835 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Link 3L: DP001 (PRE)



Hydrograph for Link 3L: DP001 (PRE)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.02	0.00	0.02	53.00	0.00	0.00	0.00
2.00	0.08	0.00	0.08	54.00	0.00	0.00	0.00
3.00	0.13	0.00	0.13	55.00	0.00	0.00	0.00
4.00	0.16	0.00	0.16	56.00	0.00	0.00	0.00
5.00	0.20	0.00	0.20	57.00	0.00	0.00	0.00
6.00	0.23	0.00	0.23	58.00	0.00	0.00	0.00
7.00	0.27	0.00	0.27	59.00	0.00	0.00	0.00
8.00	0.30	0.00	0.30	60.00	0.00	0.00	0.00
9.00	0.44	0.00	0.44	61.00	0.00	0.00	0.00
10.00	0.57	0.00	0.57	62.00	0.00	0.00	0.00
11.00	**1.06**	0.00	**1.06**	63.00	0.00	0.00	0.00
12.00	**22.15**	0.00	**22.15**	64.00	0.00	0.00	0.00
13.00	1.21	0.00	1.21	65.00	0.00	0.00	0.00
14.00	0.72	0.00	0.72	66.00	0.00	0.00	0.00
15.00	0.57	0.00	0.57	67.00	0.00	0.00	0.00
16.00	0.44	0.00	0.44	68.00	0.00	0.00	0.00
17.00	0.39	0.00	0.39	69.00	0.00	0.00	0.00
18.00	0.34	0.00	0.34	70.00	0.00	0.00	0.00
19.00	0.30	0.00	0.30	71.00	0.00	0.00	0.00
20.00	0.25	0.00	0.25	72.00	0.00	0.00	0.00
21.00	0.24	0.00	0.24	73.00	0.00	0.00	0.00
22.00	0.23	0.00	0.23	74.00	0.00	0.00	0.00
23.00	0.22	0.00	0.22	75.00	0.00	0.00	0.00
24.00	0.21	0.00	0.21	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	97.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	98.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	99.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Subcatchment 1S: Pre (inside LOD)

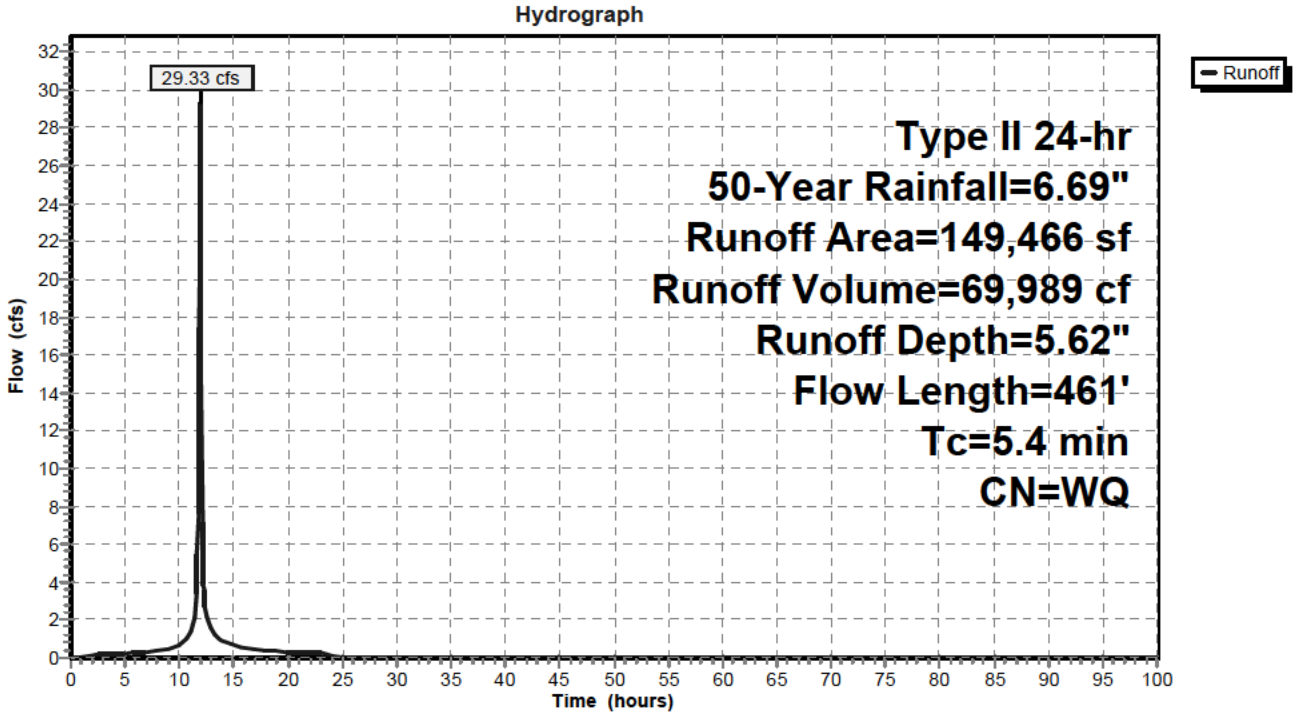
Runoff = 29.33 cfs @ 11.96 hrs, Volume= 69,989 cf, Depth= 5.62"
Routed to Link 3L : DP001 (PRE)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=6.69"

	Area (sf)	CN	Description
	14,672	71	Meadow, non-grazed, HSG C
*	26,959	71	Meadow, non-grazed, HSG C (20% imp.)
	107,835	98	Paved parking, HSG C
	149,466		Weighted Average
	36,239		24.25% Pervious Area
	113,227		75.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	100	0.0050	0.80		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 3.28"
3.3	361	0.0080	1.82		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	461	Total			

Subcatchment 1S: Pre (inside LOD)



Hydrograph for Subcatchment 1S: Pre (inside LOD)

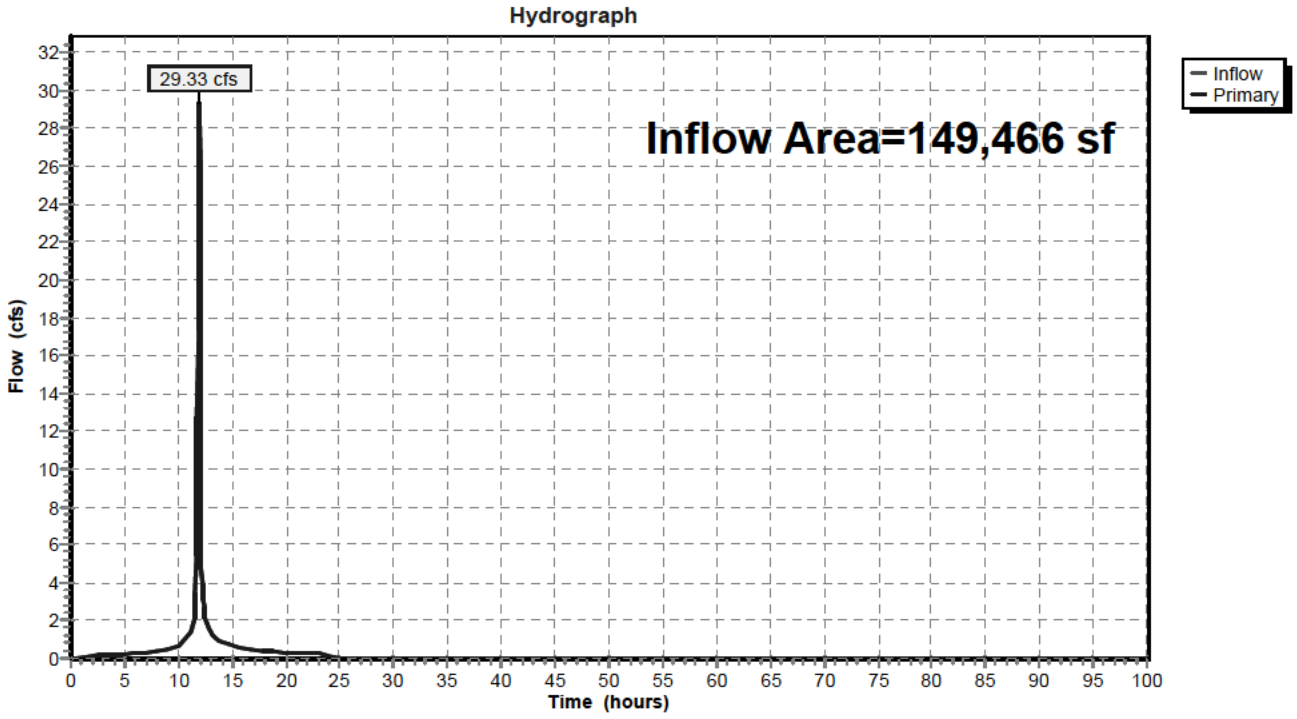
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.07	0.00	0.04
2.00	0.15	0.00	0.11
3.00	0.23	0.00	0.16
4.00	0.32	0.01	0.19
5.00	0.42	0.03	0.23
6.00	0.54	0.07	0.27
7.00	0.66	0.12	0.31
8.00	0.80	0.20	0.35
9.00	0.98	0.31	0.52
10.00	1.21	0.47	0.67
11.00	1.57	0.74	**1.25**
12.00	4.44	3.33	**25.83**
13.00	5.16	4.04	1.41
14.00	5.49	4.35	0.84
15.00	5.71	4.56	0.67
16.00	5.89	4.74	0.52
17.00	6.03	4.88	0.45
18.00	6.16	5.00	0.40
19.00	6.27	5.11	0.34
20.00	6.37	5.21	0.29
21.00	6.45	5.29	0.28
22.00	6.54	5.37	0.27
23.00	6.61	5.45	0.25
24.00	**6.69**	**5.52**	0.24
25.00	6.69	5.52	0.00
26.00	6.69	5.52	0.00
27.00	6.69	5.52	0.00
28.00	6.69	5.52	0.00
29.00	6.69	5.52	0.00
30.00	6.69	5.52	0.00
31.00	6.69	5.52	0.00
32.00	6.69	5.52	0.00
33.00	6.69	5.52	0.00
34.00	6.69	5.52	0.00
35.00	6.69	5.52	0.00
36.00	6.69	5.52	0.00
37.00	6.69	5.52	0.00
38.00	6.69	5.52	0.00
39.00	6.69	5.52	0.00
40.00	6.69	5.52	0.00
41.00	6.69	5.52	0.00
42.00	6.69	5.52	0.00
43.00	6.69	5.52	0.00
44.00	6.69	5.52	0.00
45.00	6.69	5.52	0.00
46.00	6.69	5.52	0.00
47.00	6.69	5.52	0.00
48.00	6.69	5.52	0.00
49.00	6.69	5.52	0.00
50.00	6.69	5.52	0.00
51.00	6.69	5.52	0.00
52.00	6.69	5.52	0.00
53.00	6.69	5.52	0.00
54.00	6.69	5.52	0.00
55.00	6.69	5.52	0.00
56.00	6.69	5.52	0.00
57.00	6.69	5.52	0.00
58.00	6.69	5.52	0.00
59.00	6.69	5.52	0.00
60.00	6.69	5.52	0.00
61.00	6.69	5.52	0.00
62.00	6.69	5.52	0.00
63.00	6.69	5.52	0.00
64.00	6.69	5.52	0.00
65.00	6.69	5.52	0.00
66.00	6.69	5.52	0.00
67.00	6.69	5.52	0.00
68.00	6.69	5.52	0.00
69.00	6.69	5.52	0.00
70.00	6.69	5.52	0.00
71.00	6.69	5.52	0.00
72.00	6.69	5.52	0.00
73.00	6.69	5.52	0.00
74.00	6.69	5.52	0.00
75.00	6.69	5.52	0.00
76.00	6.69	5.52	0.00
77.00	6.69	5.52	0.00
78.00	6.69	5.52	0.00
79.00	6.69	5.52	0.00
80.00	6.69	5.52	0.00
81.00	6.69	5.52	0.00
82.00	6.69	5.52	0.00
83.00	6.69	5.52	0.00
84.00	6.69	5.52	0.00
85.00	6.69	5.52	0.00
86.00	6.69	5.52	0.00
87.00	6.69	5.52	0.00
88.00	6.69	5.52	0.00
89.00	6.69	5.52	0.00
90.00	6.69	5.52	0.00
91.00	6.69	5.52	0.00
92.00	6.69	5.52	0.00
93.00	6.69	5.52	0.00
94.00	6.69	5.52	0.00
95.00	6.69	5.52	0.00
96.00	6.69	5.52	0.00
97.00	6.69	5.52	0.00
98.00	6.69	5.52	0.00
99.00	6.69	5.52	0.00
100.00	6.69	5.52	0.00

Summary for Link 3L: DP001 (PRE)

Inflow Area = 149,466 sf, 75.75% Impervious, Inflow Depth = 5.62" for 50-Year event
Inflow = 29.33 cfs @ 11.96 hrs, Volume= 69,989 cf
Primary = 29.33 cfs @ 11.96 hrs, Volume= 69,989 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Link 3L: DP001 (PRE)



Hydrograph for Link 3L: DP001 (PRE)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.04	0.00	0.04	53.00	0.00	0.00	0.00
2.00	0.11	0.00	0.11	54.00	0.00	0.00	0.00
3.00	0.16	0.00	0.16	55.00	0.00	0.00	0.00
4.00	0.19	0.00	0.19	56.00	0.00	0.00	0.00
5.00	0.23	0.00	0.23	57.00	0.00	0.00	0.00
6.00	0.27	0.00	0.27	58.00	0.00	0.00	0.00
7.00	0.31	0.00	0.31	59.00	0.00	0.00	0.00
8.00	0.35	0.00	0.35	60.00	0.00	0.00	0.00
9.00	0.52	0.00	0.52	61.00	0.00	0.00	0.00
10.00	0.67	0.00	0.67	62.00	0.00	0.00	0.00
11.00	**1.25**	0.00	**1.25**	63.00	0.00	0.00	0.00
12.00	**25.83**	0.00	**25.83**	64.00	0.00	0.00	0.00
13.00	1.41	0.00	1.41	65.00	0.00	0.00	0.00
14.00	0.84	0.00	0.84	66.00	0.00	0.00	0.00
15.00	0.67	0.00	0.67	67.00	0.00	0.00	0.00
16.00	0.52	0.00	0.52	68.00	0.00	0.00	0.00
17.00	0.45	0.00	0.45	69.00	0.00	0.00	0.00
18.00	0.40	0.00	0.40	70.00	0.00	0.00	0.00
19.00	0.34	0.00	0.34	71.00	0.00	0.00	0.00
20.00	0.29	0.00	0.29	72.00	0.00	0.00	0.00
21.00	0.28	0.00	0.28	73.00	0.00	0.00	0.00
22.00	0.27	0.00	0.27	74.00	0.00	0.00	0.00
23.00	0.25	0.00	0.25	75.00	0.00	0.00	0.00
24.00	0.24	0.00	0.24	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	97.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	98.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	99.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Subcatchment 1S: Pre (inside LOD)

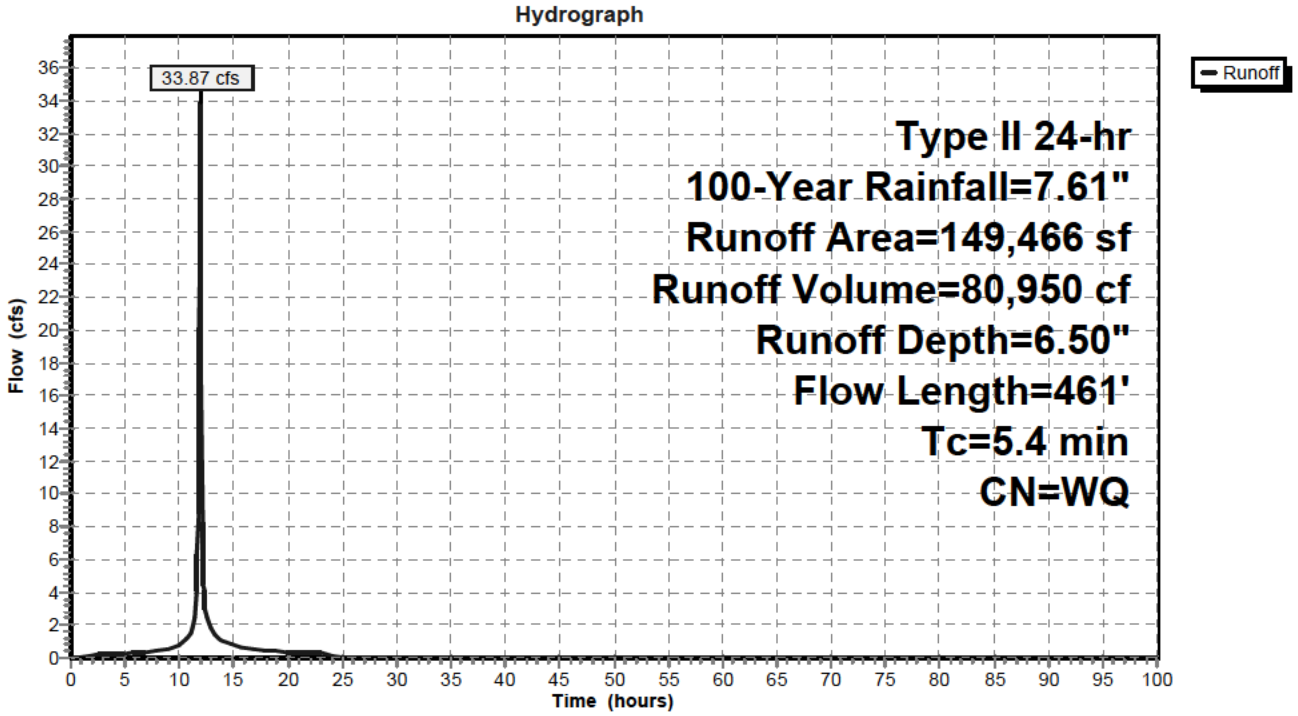
Runoff = 33.87 cfs @ 11.96 hrs, Volume= 80,950 cf, Depth= 6.50"
Routed to Link 3L : DP001 (PRE)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=7.61"

	Area (sf)	CN	Description
	14,672	71	Meadow, non-grazed, HSG C
*	26,959	71	Meadow, non-grazed, HSG C (20% imp.)
	107,835	98	Paved parking, HSG C
	149,466		Weighted Average
	36,239		24.25% Pervious Area
	113,227		75.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	100	0.0050	0.80		**Sheet Flow, 1** Smooth surfaces n= 0.011 P2= 3.28"
3.3	361	0.0080	1.82		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	461	Total			

Subcatchment 1S: Pre (inside LOD)



Hydrograph for Subcatchment 1S: Pre (inside LOD)

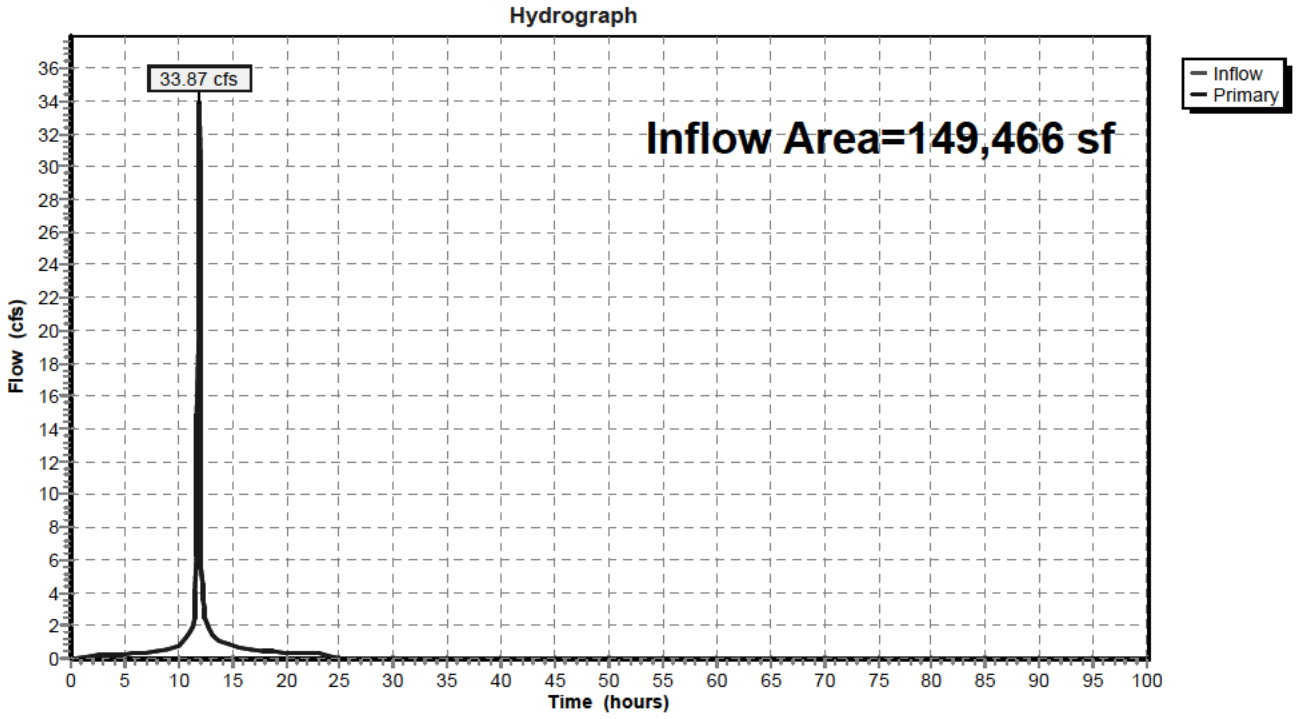
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	7.61	6.42	0.00
1.00	0.08	0.00	0.05	53.00	7.61	6.42	0.00
2.00	0.17	0.00	0.14	54.00	7.61	6.42	0.00
3.00	0.26	0.00	0.19	55.00	7.61	6.42	0.00
4.00	0.37	0.02	0.22	56.00	7.61	6.42	0.00
5.00	0.48	0.05	0.27	57.00	7.61	6.42	0.00
6.00	0.61	0.10	0.31	58.00	7.61	6.42	0.00
7.00	0.75	0.17	0.36	59.00	7.61	6.42	0.00
8.00	0.91	0.26	0.41	60.00	7.61	6.42	0.00
9.00	1.12	0.40	0.61	61.00	7.61	6.42	0.00
10.00	1.38	0.59	0.78	62.00	7.61	6.42	0.00
11.00	1.79	0.92	**1.46**	63.00	7.61	6.42	0.00
12.00	5.05	3.92	**29.79**	64.00	7.61	6.42	0.00
13.00	5.87	4.72	1.62	65.00	7.61	6.42	0.00
14.00	6.24	5.08	0.96	66.00	7.61	6.42	0.00
15.00	6.50	5.33	0.77	67.00	7.61	6.42	0.00
16.00	6.70	5.53	0.59	68.00	7.61	6.42	0.00
17.00	6.86	5.69	0.52	69.00	7.61	6.42	0.00
18.00	7.01	5.83	0.46	70.00	7.61	6.42	0.00
19.00	7.14	5.96	0.40	71.00	7.61	6.42	0.00
20.00	7.24	6.06	0.33	72.00	7.61	6.42	0.00
21.00	7.34	6.16	0.32	73.00	7.61	6.42	0.00
22.00	7.43	6.25	0.30	74.00	7.61	6.42	0.00
23.00	7.52	6.34	0.29	75.00	7.61	6.42	0.00
24.00	**7.61**	**6.42**	0.28	76.00	7.61	6.42	0.00
25.00	7.61	6.42	0.00	77.00	7.61	6.42	0.00
26.00	7.61	6.42	0.00	78.00	7.61	6.42	0.00
27.00	7.61	6.42	0.00	79.00	7.61	6.42	0.00
28.00	7.61	6.42	0.00	80.00	7.61	6.42	0.00
29.00	7.61	6.42	0.00	81.00	7.61	6.42	0.00
30.00	7.61	6.42	0.00	82.00	7.61	6.42	0.00
31.00	7.61	6.42	0.00	83.00	7.61	6.42	0.00
32.00	7.61	6.42	0.00	84.00	7.61	6.42	0.00
33.00	7.61	6.42	0.00	85.00	7.61	6.42	0.00
34.00	7.61	6.42	0.00	86.00	7.61	6.42	0.00
35.00	7.61	6.42	0.00	87.00	7.61	6.42	0.00
36.00	7.61	6.42	0.00	88.00	7.61	6.42	0.00
37.00	7.61	6.42	0.00	89.00	7.61	6.42	0.00
38.00	7.61	6.42	0.00	90.00	7.61	6.42	0.00
39.00	7.61	6.42	0.00	91.00	7.61	6.42	0.00
40.00	7.61	6.42	0.00	92.00	7.61	6.42	0.00
41.00	7.61	6.42	0.00	93.00	7.61	6.42	0.00
42.00	7.61	6.42	0.00	94.00	7.61	6.42	0.00
43.00	7.61	6.42	0.00	95.00	7.61	6.42	0.00
44.00	7.61	6.42	0.00	96.00	7.61	6.42	0.00
45.00	7.61	6.42	0.00	97.00	7.61	6.42	0.00
46.00	7.61	6.42	0.00	98.00	7.61	6.42	0.00
47.00	7.61	6.42	0.00	99.00	7.61	6.42	0.00
48.00	7.61	6.42	0.00	100.00	7.61	6.42	0.00
49.00	7.61	6.42	0.00				
50.00	7.61	6.42	0.00				
51.00	7.61	6.42	0.00				

Summary for Link 3L: DP001 (PRE)

Inflow Area = 149,466 sf, 75.75% Impervious, Inflow Depth = 6.50" for 100-Year event
Inflow = 33.87 cfs @ 11.96 hrs, Volume= 80,950 cf
Primary = 33.87 cfs @ 11.96 hrs, Volume= 80,950 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Link 3L: DP001 (PRE)



Hydrograph for Link 3L: DP001 (PRE)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.05	0.00	0.05	53.00	0.00	0.00	0.00
2.00	0.14	0.00	0.14	54.00	0.00	0.00	0.00
3.00	0.19	0.00	0.19	55.00	0.00	0.00	0.00
4.00	0.22	0.00	0.22	56.00	0.00	0.00	0.00
5.00	0.27	0.00	0.27	57.00	0.00	0.00	0.00
6.00	0.31	0.00	0.31	58.00	0.00	0.00	0.00
7.00	0.36	0.00	0.36	59.00	0.00	0.00	0.00
8.00	0.41	0.00	0.41	60.00	0.00	0.00	0.00
9.00	0.61	0.00	0.61	61.00	0.00	0.00	0.00
10.00	0.78	0.00	0.78	62.00	0.00	0.00	0.00
11.00	**1.46**	0.00	**1.46**	63.00	0.00	0.00	0.00
12.00	**29.79**	0.00	**29.79**	64.00	0.00	0.00	0.00
13.00	1.62	0.00	1.62	65.00	0.00	0.00	0.00
14.00	0.96	0.00	0.96	66.00	0.00	0.00	0.00
15.00	0.77	0.00	0.77	67.00	0.00	0.00	0.00
16.00	0.59	0.00	0.59	68.00	0.00	0.00	0.00
17.00	0.52	0.00	0.52	69.00	0.00	0.00	0.00
18.00	0.46	0.00	0.46	70.00	0.00	0.00	0.00
19.00	0.40	0.00	0.40	71.00	0.00	0.00	0.00
20.00	0.33	0.00	0.33	72.00	0.00	0.00	0.00
21.00	0.32	0.00	0.32	73.00	0.00	0.00	0.00
22.00	0.30	0.00	0.30	74.00	0.00	0.00	0.00
23.00	0.29	0.00	0.29	75.00	0.00	0.00	0.00
24.00	0.28	0.00	0.28	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	97.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	98.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	99.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

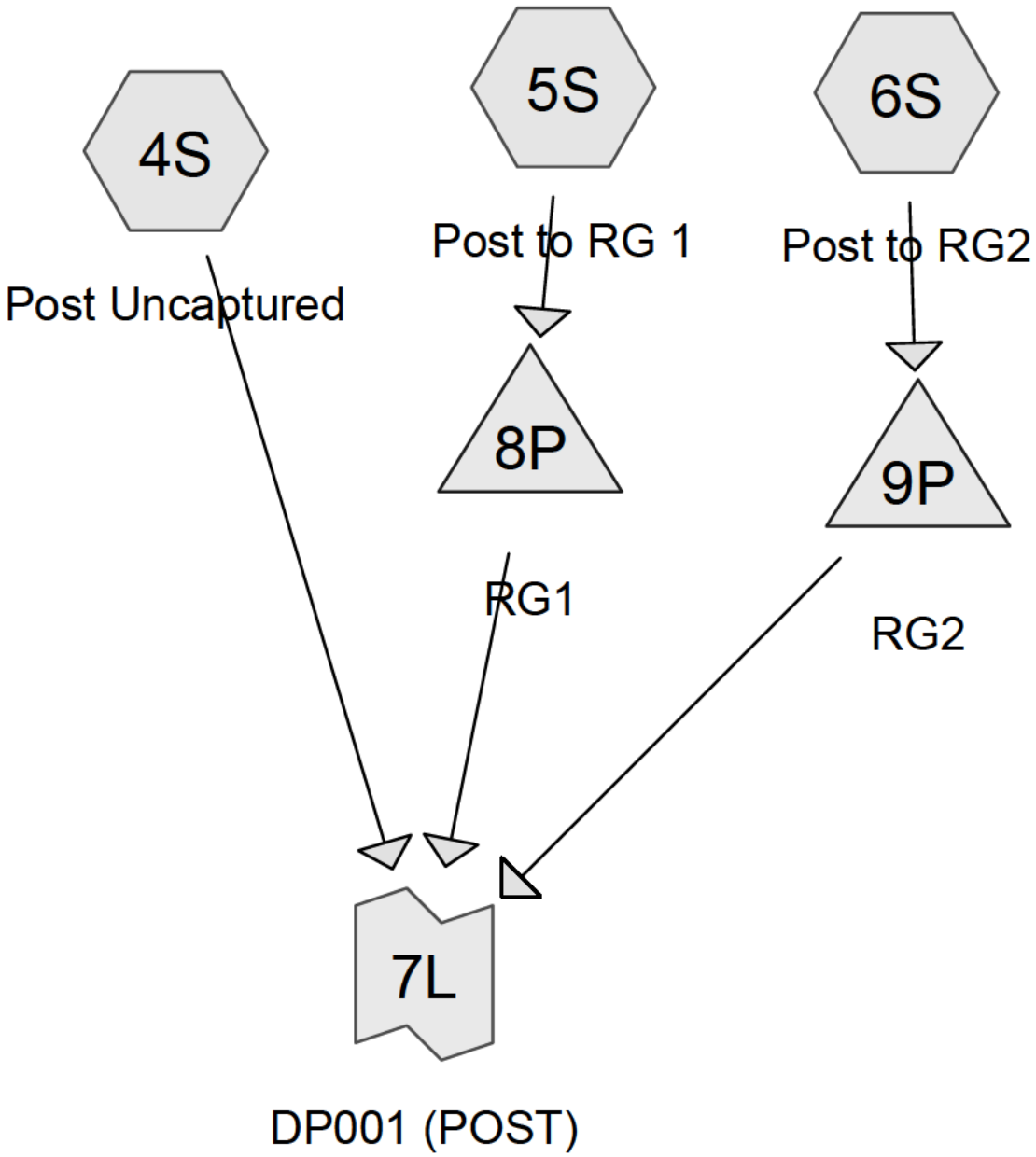
Events for Subcatchment 1S: Pre (inside LOD)

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.73	10.39	24,578	1.97
2-Year	3.28	12.92	30,597	2.46
5-Year	4.12	16.87	40,034	3.21
10-Year	4.82	20.22	48,062	3.86
25-Year	5.83	25.12	59,835	4.80
50-Year	6.69	29.33	69,989	5.62
100-Year	**7.61**	**33.87**	**80,950**	**6.50**

Events for Link 3L: DP001 (PRE)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	10.39	10.39	**0.00**
2-Year	12.92	12.92	0.00
5-Year	16.87	16.87	0.00
10-Year	20.22	20.22	0.00
25-Year	25.12	25.12	0.00
50-Year	29.33	29.33	0.00
100-Year	**33.87**	**33.87**	0.00

VI.



Subcat Reach Pond Link

Routing Diagram for 24001_1001 Washington Street
Prepared by Nave Newell Inc, Printed 11/14/2024
HydroCAD® 10.20-5c s/n 07511 © 2023 HydroCAD Software Solutions LLC

Summary for Subcatchment 4S: Post Uncaptured

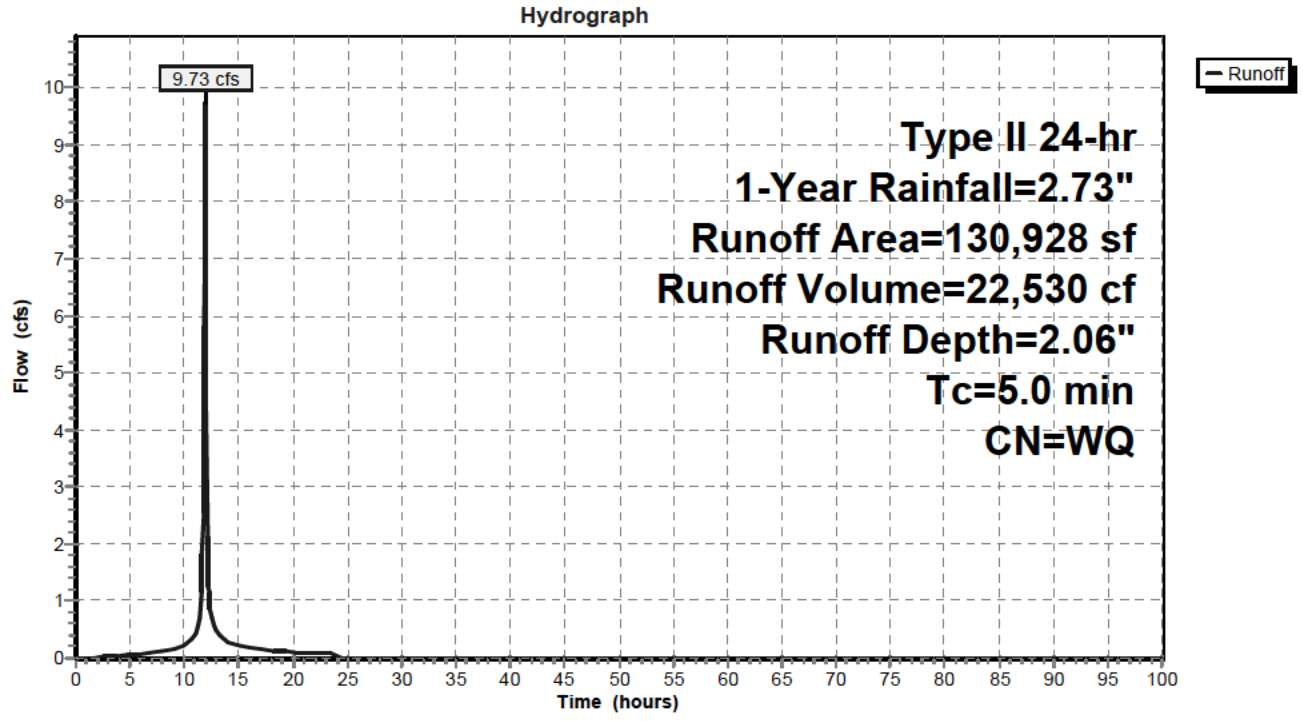
Runoff = 9.73 cfs @ 11.95 hrs, Volume= 22,530 cf, Depth= 2.06"
Routed to Link 7L : DP001 (POST)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.73"

Area (sf)	CN	Description
32,370	74	>75% Grass cover, Good, HSG C
98,558	98	Paved parking, HSG C
130,928		Weighted Average
32,370		24.72% Pervious Area
98,558		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Post Uncaptured



Hydrograph for Subcatchment 4S: Post Uncaptured

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.06	0.00	0.01
3.00	0.09	0.00	0.03
4.00	0.13	0.00	0.04
5.00	0.17	0.00	0.06
6.00	0.22	0.00	0.08
7.00	0.27	0.01	0.10
8.00	0.33	0.02	0.11
9.00	0.40	0.05	0.17
10.00	0.49	0.09	0.22
11.00	0.64	0.16	**0.40**
12.00	1.81	1.07	**8.22**
13.00	2.11	1.33	0.47
14.00	2.24	1.45	0.28
15.00	2.33	1.54	0.22
16.00	2.40	1.60	0.17
17.00	2.46	1.66	0.15
18.00	2.51	1.71	0.13
19.00	2.56	1.75	0.12
20.00	2.60	1.78	0.10
21.00	2.63	1.82	0.09
22.00	2.67	1.85	0.09
23.00	2.70	1.88	0.09
24.00	**2.73**	**1.91**	0.08
25.00	2.73	1.91	0.00
26.00	2.73	1.91	0.00
27.00	2.73	1.91	0.00
28.00	2.73	1.91	0.00
29.00	2.73	1.91	0.00
30.00	2.73	1.91	0.00
31.00	2.73	1.91	0.00
32.00	2.73	1.91	0.00
33.00	2.73	1.91	0.00
34.00	2.73	1.91	0.00
35.00	2.73	1.91	0.00
36.00	2.73	1.91	0.00
37.00	2.73	1.91	0.00
38.00	2.73	1.91	0.00
39.00	2.73	1.91	0.00
40.00	2.73	1.91	0.00
41.00	2.73	1.91	0.00
42.00	2.73	1.91	0.00
43.00	2.73	1.91	0.00
44.00	2.73	1.91	0.00
45.00	2.73	1.91	0.00
46.00	2.73	1.91	0.00
47.00	2.73	1.91	0.00
48.00	2.73	1.91	0.00
49.00	2.73	1.91	0.00
50.00	2.73	1.91	0.00
51.00	2.73	1.91	0.00
52.00	2.73	1.91	0.00
53.00	2.73	1.91	0.00
54.00	2.73	1.91	0.00
55.00	2.73	1.91	0.00
56.00	2.73	1.91	0.00
57.00	2.73	1.91	0.00
58.00	2.73	1.91	0.00
59.00	2.73	1.91	0.00
60.00	2.73	1.91	0.00
61.00	2.73	1.91	0.00
62.00	2.73	1.91	0.00
63.00	2.73	1.91	0.00
64.00	2.73	1.91	0.00
65.00	2.73	1.91	0.00
66.00	2.73	1.91	0.00
67.00	2.73	1.91	0.00
68.00	2.73	1.91	0.00
69.00	2.73	1.91	0.00
70.00	2.73	1.91	0.00
71.00	2.73	1.91	0.00
72.00	2.73	1.91	0.00
73.00	2.73	1.91	0.00
74.00	2.73	1.91	0.00
75.00	2.73	1.91	0.00
76.00	2.73	1.91	0.00
77.00	2.73	1.91	0.00
78.00	2.73	1.91	0.00
79.00	2.73	1.91	0.00
80.00	2.73	1.91	0.00
81.00	2.73	1.91	0.00
82.00	2.73	1.91	0.00
83.00	2.73	1.91	0.00
84.00	2.73	1.91	0.00
85.00	2.73	1.91	0.00
86.00	2.73	1.91	0.00
87.00	2.73	1.91	0.00
88.00	2.73	1.91	0.00
89.00	2.73	1.91	0.00
90.00	2.73	1.91	0.00
91.00	2.73	1.91	0.00
92.00	2.73	1.91	0.00
93.00	2.73	1.91	0.00
94.00	2.73	1.91	0.00
95.00	2.73	1.91	0.00
96.00	2.73	1.91	0.00
97.00	2.73	1.91	0.00
98.00	2.73	1.91	0.00
99.00	2.73	1.91	0.00
100.00	2.73	1.91	0.00

Summary for Subcatchment 5S: Post to RG 1

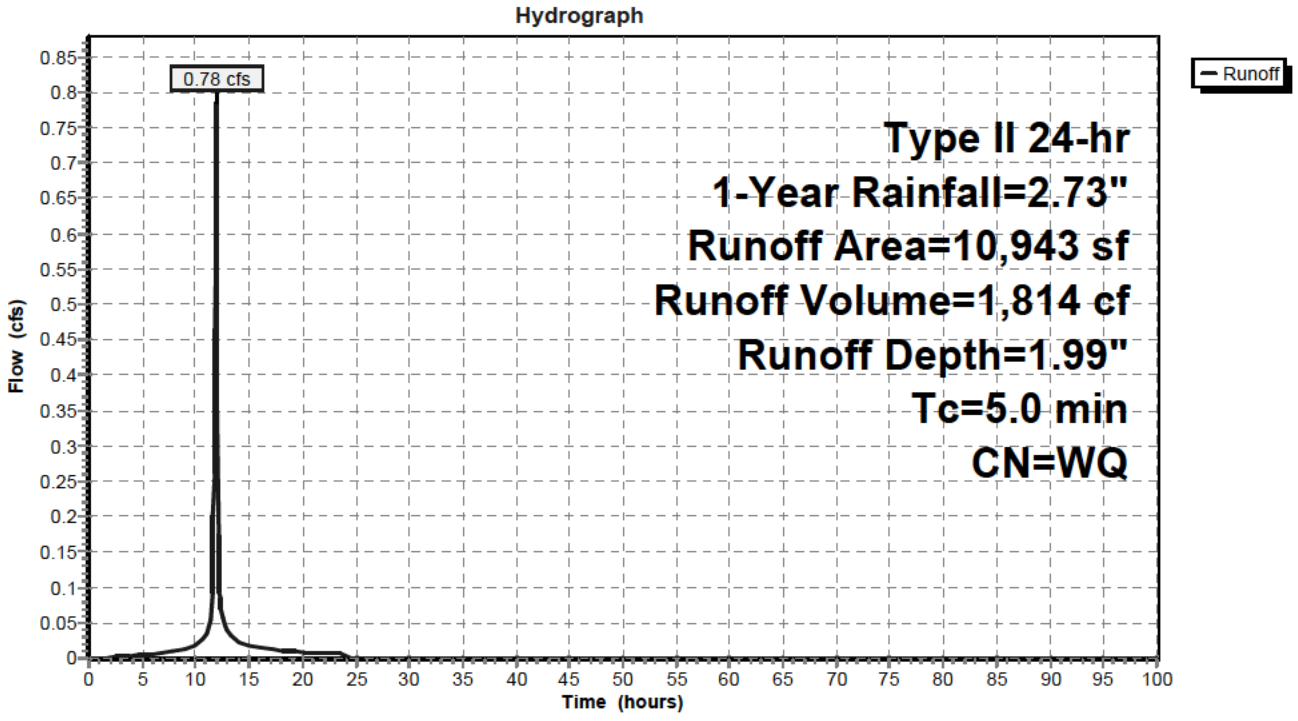
Runoff = 0.78 cfs @ 11.95 hrs, Volume= 1,814 cf, Depth= 1.99"
Routed to Pond 8P : RG1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.73"

Area (sf)	CN	Description
3,180	74	>75% Grass cover, Good, HSG C
7,763	98	Paved parking, HSG C
10,943		Weighted Average
3,180		29.06% Pervious Area
7,763		70.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Post to RG 1



Hydrograph for Subcatchment 5S: Post to RG 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	2.73	1.82	0.00
1.00	0.03	0.00	0.00	53.00	2.73	1.82	0.00
2.00	0.06	0.00	0.00	54.00	2.73	1.82	0.00
3.00	0.09	0.00	0.00	55.00	2.73	1.82	0.00
4.00	0.13	0.00	0.00	56.00	2.73	1.82	0.00
5.00	0.17	0.00	0.00	57.00	2.73	1.82	0.00
6.00	0.22	0.00	0.01	58.00	2.73	1.82	0.00
7.00	0.27	0.00	0.01	59.00	2.73	1.82	0.00
8.00	0.33	0.02	0.01	60.00	2.73	1.82	0.00
9.00	0.40	0.03	0.01	61.00	2.73	1.82	0.00
10.00	0.49	0.07	0.02	62.00	2.73	1.82	0.00
11.00	0.64	0.14	**0.03**	63.00	2.73	1.82	0.00
12.00	1.81	1.00	**0.67**	64.00	2.73	1.82	0.00
13.00	2.11	1.26	0.04	65.00	2.73	1.82	0.00
14.00	2.24	1.37	0.02	66.00	2.73	1.82	0.00
15.00	2.33	1.46	0.02	67.00	2.73	1.82	0.00
16.00	2.40	1.52	0.01	68.00	2.73	1.82	0.00
17.00	2.46	1.58	0.01	69.00	2.73	1.82	0.00
18.00	2.51	1.62	0.01	70.00	2.73	1.82	0.00
19.00	2.56	1.67	0.01	71.00	2.73	1.82	0.00
20.00	2.60	1.70	0.01	72.00	2.73	1.82	0.00
21.00	2.63	1.73	0.01	73.00	2.73	1.82	0.00
22.00	2.67	1.76	0.01	74.00	2.73	1.82	0.00
23.00	2.70	1.79	0.01	75.00	2.73	1.82	0.00
24.00	**2.73**	**1.82**	0.01	76.00	2.73	1.82	0.00
25.00	2.73	1.82	0.00	77.00	2.73	1.82	0.00
26.00	2.73	1.82	0.00	78.00	2.73	1.82	0.00
27.00	2.73	1.82	0.00	79.00	2.73	1.82	0.00
28.00	2.73	1.82	0.00	80.00	2.73	1.82	0.00
29.00	2.73	1.82	0.00	81.00	2.73	1.82	0.00
30.00	2.73	1.82	0.00	82.00	2.73	1.82	0.00
31.00	2.73	1.82	0.00	83.00	2.73	1.82	0.00
32.00	2.73	1.82	0.00	84.00	2.73	1.82	0.00
33.00	2.73	1.82	0.00	85.00	2.73	1.82	0.00
34.00	2.73	1.82	0.00	86.00	2.73	1.82	0.00
35.00	2.73	1.82	0.00	87.00	2.73	1.82	0.00
36.00	2.73	1.82	0.00	88.00	2.73	1.82	0.00
37.00	2.73	1.82	0.00	89.00	2.73	1.82	0.00
38.00	2.73	1.82	0.00	90.00	2.73	1.82	0.00
39.00	2.73	1.82	0.00	91.00	2.73	1.82	0.00
40.00	2.73	1.82	0.00	92.00	2.73	1.82	0.00
41.00	2.73	1.82	0.00	93.00	2.73	1.82	0.00
42.00	2.73	1.82	0.00	94.00	2.73	1.82	0.00
43.00	2.73	1.82	0.00	95.00	2.73	1.82	0.00
44.00	2.73	1.82	0.00	96.00	2.73	1.82	0.00
45.00	2.73	1.82	0.00	97.00	2.73	1.82	0.00
46.00	2.73	1.82	0.00	98.00	2.73	1.82	0.00
47.00	2.73	1.82	0.00	99.00	2.73	1.82	0.00
48.00	2.73	1.82	0.00	100.00	2.73	1.82	0.00
49.00	2.73	1.82	0.00				
50.00	2.73	1.82	0.00				
51.00	2.73	1.82	0.00				

Summary for Subcatchment 6S: Post to RG2

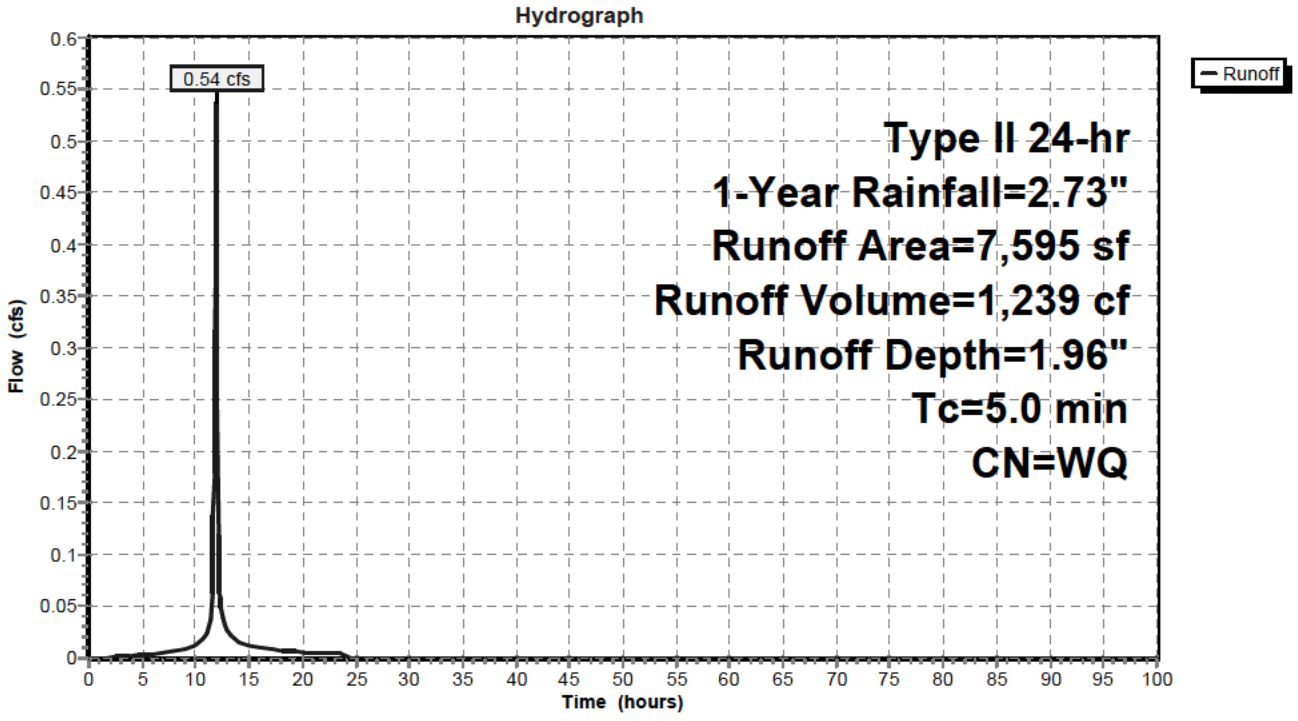
Runoff = 0.54 cfs @ 11.95 hrs, Volume= 1,239 cf, Depth= 1.96"
Routed to Pond 9P : RG2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.73"

Area (sf)	CN	Description
2,340	74	>75% Grass cover, Good, HSG C
5,255	98	Paved parking, HSG C
7,595		Weighted Average
2,340		30.81% Pervious Area
5,255		69.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Post to RG2



Hydrograph for Subcatchment 6S: Post to RG2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	2.73	1.82	0.00
1.00	0.03	0.00	0.00	53.00	2.73	1.82	0.00
2.00	0.06	0.00	0.00	54.00	2.73	1.82	0.00
3.00	0.09	0.00	0.00	55.00	2.73	1.82	0.00
4.00	0.13	0.00	0.00	56.00	2.73	1.82	0.00
5.00	0.17	0.00	0.00	57.00	2.73	1.82	0.00
6.00	0.22	0.00	0.00	58.00	2.73	1.82	0.00
7.00	0.27	0.00	0.01	59.00	2.73	1.82	0.00
8.00	0.33	0.02	0.01	60.00	2.73	1.82	0.00
9.00	0.40	0.03	0.01	61.00	2.73	1.82	0.00
10.00	0.49	0.07	0.01	62.00	2.73	1.82	0.00
11.00	0.64	0.14	**0.02**	63.00	2.73	1.82	0.00
12.00	1.81	1.00	**0.46**	64.00	2.73	1.82	0.00
13.00	2.11	1.26	0.03	65.00	2.73	1.82	0.00
14.00	2.24	1.37	0.02	66.00	2.73	1.82	0.00
15.00	2.33	1.46	0.01	67.00	2.73	1.82	0.00
16.00	2.40	1.52	0.01	68.00	2.73	1.82	0.00
17.00	2.46	1.58	0.01	69.00	2.73	1.82	0.00
18.00	2.51	1.62	0.01	70.00	2.73	1.82	0.00
19.00	2.56	1.67	0.01	71.00	2.73	1.82	0.00
20.00	2.60	1.70	0.01	72.00	2.73	1.82	0.00
21.00	2.63	1.73	0.01	73.00	2.73	1.82	0.00
22.00	2.67	1.76	0.01	74.00	2.73	1.82	0.00
23.00	2.70	1.79	0.00	75.00	2.73	1.82	0.00
24.00	**2.73**	**1.82**	0.00	76.00	2.73	1.82	0.00
25.00	2.73	1.82	0.00	77.00	2.73	1.82	0.00
26.00	2.73	1.82	0.00	78.00	2.73	1.82	0.00
27.00	2.73	1.82	0.00	79.00	2.73	1.82	0.00
28.00	2.73	1.82	0.00	80.00	2.73	1.82	0.00
29.00	2.73	1.82	0.00	81.00	2.73	1.82	0.00
30.00	2.73	1.82	0.00	82.00	2.73	1.82	0.00
31.00	2.73	1.82	0.00	83.00	2.73	1.82	0.00
32.00	2.73	1.82	0.00	84.00	2.73	1.82	0.00
33.00	2.73	1.82	0.00	85.00	2.73	1.82	0.00
34.00	2.73	1.82	0.00	86.00	2.73	1.82	0.00
35.00	2.73	1.82	0.00	87.00	2.73	1.82	0.00
36.00	2.73	1.82	0.00	88.00	2.73	1.82	0.00
37.00	2.73	1.82	0.00	89.00	2.73	1.82	0.00
38.00	2.73	1.82	0.00	90.00	2.73	1.82	0.00
39.00	2.73	1.82	0.00	91.00	2.73	1.82	0.00
40.00	2.73	1.82	0.00	92.00	2.73	1.82	0.00
41.00	2.73	1.82	0.00	93.00	2.73	1.82	0.00
42.00	2.73	1.82	0.00	94.00	2.73	1.82	0.00
43.00	2.73	1.82	0.00	95.00	2.73	1.82	0.00
44.00	2.73	1.82	0.00	96.00	2.73	1.82	0.00
45.00	2.73	1.82	0.00	97.00	2.73	1.82	0.00
46.00	2.73	1.82	0.00	98.00	2.73	1.82	0.00
47.00	2.73	1.82	0.00	99.00	2.73	1.82	0.00
48.00	2.73	1.82	0.00	100.00	2.73	1.82	0.00
49.00	2.73	1.82	0.00				
50.00	2.73	1.82	0.00				
51.00	2.73	1.82	0.00				

Summary for Pond 8P: RG1

Inflow Area = 10,943 sf, 70.94% Impervious, Inflow Depth = 1.99" for 1-Year event
Inflow = 0.78 cfs @ 11.95 hrs, Volume= 1,814 cf
Outflow = 0.29 cfs @ 12.07 hrs, Volume= 1,619 cf, Atten= 62%, Lag= 7.0 min
Primary = 0.29 cfs @ 12.07 hrs, Volume= 1,619 cf
Routed to Link 7L : DP001 (POST)

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 52.66' @ 12.07 hrs Surf.Area= 997 sf Storage= 679 cf

Plug-Flow detention time= 127.1 min calculated for 1,619 cf (89% of inflow)
Center-of-Mass det. time= 71.3 min (838.7 - 767.4)

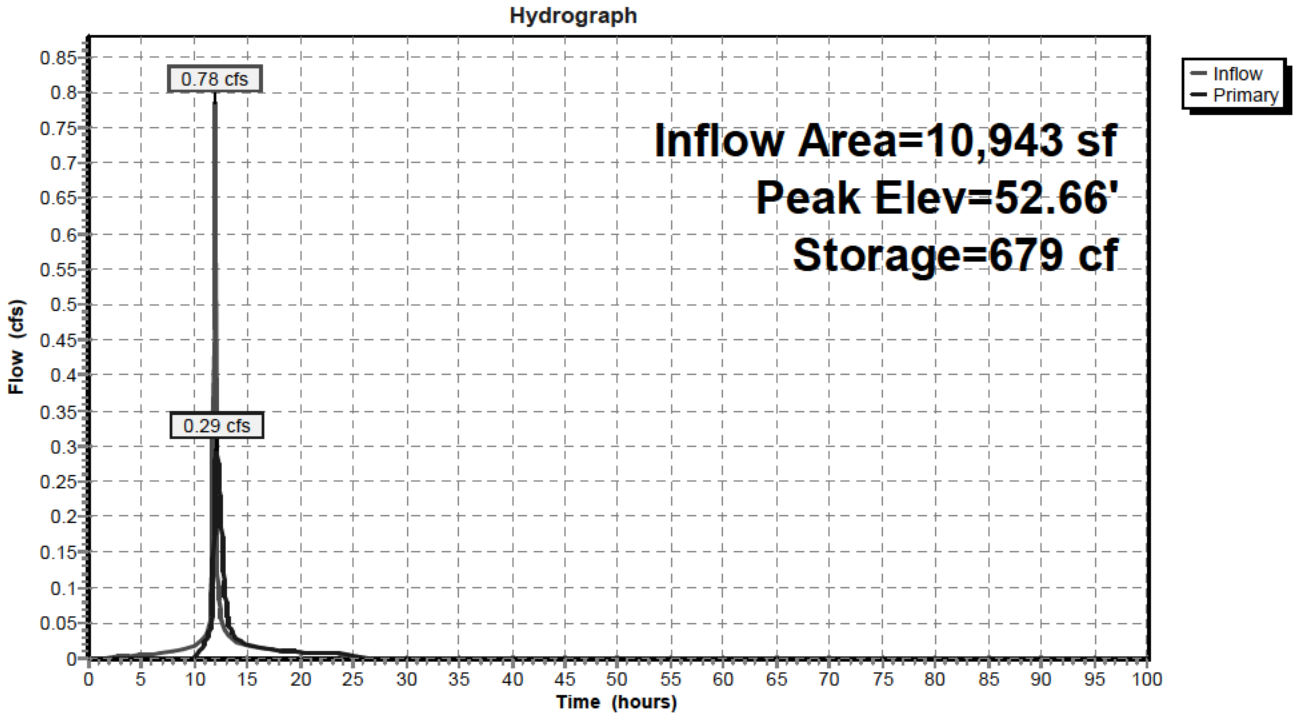
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	2,727 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.00	476	0.0	0	0
51.99	476	20.0	189	189
52.00	476	100.0	5	194
54.00	2,057	100.0	2,533	2,727

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	53.25'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	52.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.29 cfs @ 12.07 hrs HW=52.65' (Free Discharge)
└**1=Culvert** (Passes 0.29 cfs of 11.74 cfs potential flow)
└**2=Grate** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Orifice Controls 0.29 cfs @ 3.36 fps)

Pond 8P: RG1


Hydrograph
Inflow Area=10,943 sf
Peak Elev=52.66'
Storage=679 cf
0.78 cfs
0.29 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4 0.45 0.5 0.55 0.6 0.65 0.7 0.75 0.8 0.85
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Hydrograph for Pond 8P: RG1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	50.00	0.00
2.50	0.00	3	50.03	0.00
5.00	0.00	32	50.33	0.00
7.50	0.01	91	50.95	0.00
10.00	**0.02**	**197**	**52.01**	**0.00**
12.50	**0.06**	**443**	**52.39**	**0.20**
15.00	0.02	240	52.09	0.02
17.50	0.01	229	52.07	0.01
20.00	0.01	222	52.06	0.01
22.50	0.01	220	52.05	0.01
25.00	0.00	206	52.02	0.00
27.50	0.00	196	52.00	0.00
30.00	0.00	195	52.00	0.00
32.50	0.00	194	52.00	0.00
35.00	0.00	194	52.00	0.00
37.50	0.00	194	52.00	0.00
40.00	0.00	194	52.00	0.00
42.50	0.00	194	52.00	0.00
45.00	0.00	194	52.00	0.00
47.50	0.00	194	52.00	0.00
50.00	0.00	194	52.00	0.00
52.50	0.00	194	52.00	0.00
55.00	0.00	194	52.00	0.00
57.50	0.00	194	52.00	0.00
60.00	0.00	194	52.00	0.00
62.50	0.00	194	52.00	0.00
65.00	0.00	194	52.00	0.00
67.50	0.00	194	52.00	0.00
70.00	0.00	194	52.00	0.00
72.50	0.00	194	52.00	0.00
75.00	0.00	194	52.00	0.00
77.50	0.00	194	52.00	0.00
80.00	0.00	194	52.00	0.00
82.50	0.00	194	52.00	0.00
85.00	0.00	194	52.00	0.00
87.50	0.00	194	52.00	0.00
90.00	0.00	194	52.00	0.00
92.50	0.00	194	52.00	0.00
95.00	0.00	194	52.00	0.00
97.50	0.00	194	52.00	0.00
100.00	0.00	194	52.00	0.00

Stage-Discharge for Pond 8P: RG1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.00	0.00	51.04	0.00	52.08	0.02	53.12	0.41
50.02	0.00	51.06	0.00	52.10	0.02	53.14	0.41
50.04	0.00	51.08	0.00	52.12	0.03	53.16	0.42
50.06	0.00	51.10	0.00	52.14	0.04	53.18	0.42
50.08	0.00	51.12	0.00	52.16	0.06	53.20	0.43
50.10	0.00	51.14	0.00	52.18	0.07	53.22	0.43
50.12	0.00	51.16	0.00	52.20	0.08	53.24	0.44
50.14	0.00	51.18	0.00	52.22	0.10	53.26	0.47
50.16	0.00	51.20	0.00	52.24	0.11	53.28	0.58
50.18	0.00	51.22	0.00	52.26	0.13	53.30	0.74
50.20	0.00	51.24	0.00	52.28	0.14	53.32	0.94
50.22	0.00	51.26	0.00	52.30	0.15	53.34	1.16
50.24	0.00	51.28	0.00	52.32	0.17	53.36	1.41
50.26	0.00	51.30	0.00	52.34	0.17	53.38	1.69
50.28	0.00	51.32	0.00	52.36	0.18	53.40	1.99
50.30	0.00	51.34	0.00	52.38	0.19	53.42	2.30
50.32	0.00	51.36	0.00	52.40	0.20	53.44	2.64
50.34	0.00	51.38	0.00	52.42	0.21	53.46	3.00
50.36	0.00	51.40	0.00	52.44	0.22	53.48	3.37
50.38	0.00	51.42	0.00	52.46	0.23	53.50	3.76
50.40	0.00	51.44	0.00	52.48	0.24	53.52	4.16
50.42	0.00	51.46	0.00	52.50	0.24	53.54	4.58
50.44	0.00	51.48	0.00	52.52	0.25	53.56	5.01
50.46	0.00	51.50	0.00	52.54	0.26	53.58	5.46
50.48	0.00	51.52	0.00	52.56	0.26	53.60	5.92
50.50	0.00	51.54	0.00	52.58	0.27	53.62	6.39
50.52	0.00	51.56	0.00	52.60	0.28	53.64	6.88
50.54	0.00	51.58	0.00	52.62	0.28	53.66	7.38
50.56	0.00	51.60	0.00	52.64	0.29	53.68	7.89
50.58	0.00	51.62	0.00	52.66	0.30	53.70	8.42
50.60	0.00	51.64	0.00	52.68	0.30	53.72	8.95
50.62	0.00	51.66	0.00	52.70	0.31	53.74	9.50
50.64	0.00	51.68	0.00	52.72	0.31	53.76	10.06
50.66	0.00	51.70	0.00	52.74	0.32	53.78	10.63
50.68	0.00	51.72	0.00	52.76	0.32	53.80	11.21
50.70	0.00	51.74	0.00	52.78	0.33	53.82	11.80
50.72	0.00	51.76	0.00	52.80	0.33	53.84	12.40
50.74	0.00	51.78	0.00	52.82	0.34	53.86	13.01
50.76	0.00	51.80	0.00	52.84	0.34	53.88	13.63
50.78	0.00	51.82	0.00	52.86	0.35	53.90	14.26
50.80	0.00	51.84	0.00	52.88	0.35	53.92	14.90
50.82	0.00	51.86	0.00	52.90	0.36	53.94	15.20
50.84	0.00	51.88	0.00	52.92	0.36	53.96	15.24
50.86	0.00	51.90	0.00	52.94	0.37	53.98	15.29
50.88	0.00	51.92	0.00	52.96	0.37	54.00	**15.34**
50.90	0.00	51.94	0.00	52.98	0.38		
50.92	0.00	51.96	0.00	53.00	0.38		
50.94	0.00	51.98	0.00	53.02	0.39		
50.96	0.00	52.00	0.00	53.04	0.39		
50.98	0.00	52.02	0.00	53.06	0.40		
51.00	0.00	52.04	0.00	53.08	0.40		
51.02	0.00	52.06	0.01	53.10	0.41		

Stage-Area-Storage for Pond 8P: RG1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	476	0
50.05	476	5
50.10	476	10
50.15	476	14
50.20	476	19
50.25	476	24
50.30	476	29
50.35	476	33
50.40	476	38
50.45	476	43
50.50	476	48
50.55	476	52
50.60	476	57
50.65	476	62
50.70	476	67
50.75	476	71
50.80	476	76
50.85	476	81
50.90	476	86
50.95	476	90
51.00	476	95
51.05	476	100
51.10	476	105
51.15	476	109
51.20	476	114
51.25	476	119
51.30	476	124
51.35	476	129
51.40	476	133
51.45	476	138
51.50	476	143
51.55	476	148
51.60	476	152
51.65	476	157
51.70	476	162
51.75	476	167
51.80	476	171
51.85	476	176
51.90	476	181
51.95	476	186
52.00	476	194
52.05	516	219
52.10	555	246
52.15	595	275
52.20	634	305
52.25	674	338
52.30	713	373
52.35	753	409
52.40	792	448
52.45	832	488
52.50	871	531
52.55	911	576
52.60	950	622
52.65	990	671
52.70	1,029	721
52.75	1,069	774
52.80	1,108	828
52.85	1,148	884
52.90	1,187	943
52.95	1,227	1,003
53.00	1,267	1,065
53.05	1,306	1,130
53.10	1,346	1,196
53.15	1,385	1,264
53.20	1,425	1,335
53.25	1,464	1,407
53.30	1,504	1,481
53.35	1,543	1,557
53.40	1,583	1,635
53.45	1,622	1,715
53.50	1,662	1,798
53.55	1,701	1,882
53.60	1,741	1,968
53.65	1,780	2,056
53.70	1,820	2,146
53.75	1,859	2,238
53.80	1,899	2,332
53.85	1,938	2,428
53.90	1,978	2,525
53.95	2,017	2,625
54.00	**2,057**	**2,727**

Summary for Pond 9P: RG2

Inflow Area = 7,595 sf, 69.19% Impervious, Inflow Depth = 1.96" for 1-Year event
Inflow = 0.54 cfs @ 11.95 hrs, Volume= 1,239 cf
Outflow = 0.29 cfs @ 12.04 hrs, Volume= 896 cf, Atten= 46%, Lag= 5.5 min
Primary = 0.29 cfs @ 12.04 hrs, Volume= 896 cf
Routed to Link 7L : DP001 (POST)

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 52.11' @ 12.04 hrs Surf.Area= 1,045 sf Storage= 517 cf

Plug-Flow detention time= 176.8 min calculated for 896 cf (72% of inflow)
Center-of-Mass det. time= 79.3 min (847.7 - 768.4)

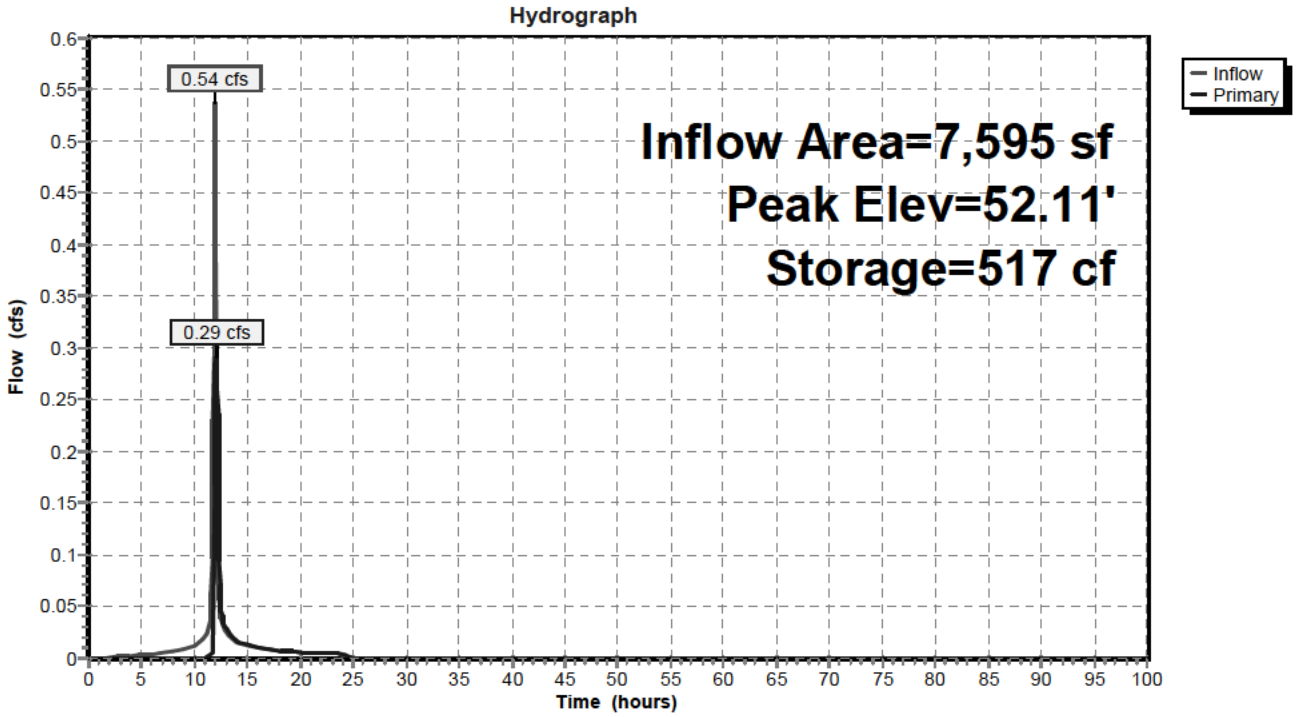
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	1,656 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.00	982	0.0	0	0
51.99	982	20.0	391	391
52.00	982	100.0	10	401
53.00	1,529	100.0	1,256	1,656

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	52.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	51.75'	**6.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.29 cfs @ 12.04 hrs HW=52.11' (Free Discharge)
└**1=Culvert** (Passes 0.29 cfs of 9.93 cfs potential flow)
└**2=Grate** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Orifice Controls 0.29 cfs @ 2.32 fps)

Pond 9P: RG2


Hydrograph
Inflow
Primary
Inflow Area=7,595 sf
Peak Elev=52.11'
Storage=517 cf
0.54 cfs
0.29 cfs
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Hydrograph for Pond 9P: RG2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	50.00	0.00
2.50	0.00	2	50.01	0.00
5.00	0.00	22	50.11	0.00
7.50	0.01	61	50.31	0.00
10.00	**0.01**	**134**	**50.68**	**0.00**
12.50	**0.04**	**363**	**51.85**	**0.05**
15.00	0.01	351	51.79	0.01
17.50	0.01	349	51.78	0.01
20.00	0.01	348	51.77	0.01
22.50	0.00	348	51.77	0.00
25.00	0.00	344	51.75	0.00
27.50	0.00	344	51.75	0.00
30.00	0.00	344	51.75	0.00
32.50	0.00	344	51.75	0.00
35.00	0.00	344	51.75	0.00
37.50	0.00	344	51.75	0.00
40.00	0.00	344	51.75	0.00
42.50	0.00	344	51.75	0.00
45.00	0.00	344	51.75	0.00
47.50	0.00	344	51.75	0.00
50.00	0.00	344	51.75	0.00
52.50	0.00	344	51.75	0.00
55.00	0.00	344	51.75	0.00
57.50	0.00	344	51.75	0.00
60.00	0.00	344	51.75	0.00
62.50	0.00	344	51.75	0.00
65.00	0.00	344	51.75	0.00
67.50	0.00	344	51.75	0.00
70.00	0.00	344	51.75	0.00
72.50	0.00	344	51.75	0.00
75.00	0.00	344	51.75	0.00
77.50	0.00	344	51.75	0.00
80.00	0.00	344	51.75	0.00
82.50	0.00	344	51.75	0.00
85.00	0.00	344	51.75	0.00
87.50	0.00	344	51.75	0.00
90.00	0.00	344	51.75	0.00
92.50	0.00	344	51.75	0.00
95.00	0.00	344	51.75	0.00
97.50	0.00	344	51.75	0.00
100.00	0.00	344	51.75	0.00

Stage-Discharge for Pond 9P: RG2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.00	0.00	51.04	0.00	52.08	0.27
50.02	0.00	51.06	0.00	52.10	0.28
50.04	0.00	51.08	0.00	52.12	0.29
50.06	0.00	51.10	0.00	52.14	0.31
50.08	0.00	51.12	0.00	52.16	0.32
50.10	0.00	51.14	0.00	52.18	0.33
50.12	0.00	51.16	0.00	52.20	0.34
50.14	0.00	51.18	0.00	52.22	0.35
50.16	0.00	51.20	0.00	52.24	0.36
50.18	0.00	51.22	0.00	52.26	0.37
50.20	0.00	51.24	0.00	52.28	0.38
50.22	0.00	51.26	0.00	52.30	0.39
50.24	0.00	51.28	0.00	52.32	0.40
50.26	0.00	51.30	0.00	52.34	0.41
50.28	0.00	51.32	0.00	52.36	0.42
50.30	0.00	51.34	0.00	52.38	0.43
50.32	0.00	51.36	0.00	52.40	0.44
50.34	0.00	51.38	0.00	52.42	0.44
50.36	0.00	51.40	0.00	52.44	0.45
50.38	0.00	51.42	0.00	52.46	0.46
50.40	0.00	51.44	0.00	52.48	0.47
50.42	0.00	51.46	0.00	52.50	0.48
50.44	0.00	51.48	0.00	52.52	0.56
50.46	0.00	51.50	0.00	52.54	0.70
50.48	0.00	51.52	0.00	52.56	0.88
50.50	0.00	51.54	0.00	52.58	1.10
50.52	0.00	51.56	0.00	52.60	1.34
50.54	0.00	51.58	0.00	52.62	1.61
50.56	0.00	51.60	0.00	52.64	1.90
50.58	0.00	51.62	0.00	52.66	2.21
50.60	0.00	51.64	0.00	52.68	2.54
50.62	0.00	51.66	0.00	52.70	2.89
50.64	0.00	51.68	0.00	52.72	3.25
50.66	0.00	51.70	0.00	52.74	3.64
50.68	0.00	51.72	0.00	52.76	4.03
50.70	0.00	51.74	0.00	52.78	4.45
50.72	0.00	51.76	0.00	52.80	4.88
50.74	0.00	51.78	0.01	52.82	5.32
50.76	0.00	51.80	0.02	52.84	5.78
50.78	0.00	51.82	0.03	52.86	6.25
50.80	0.00	51.84	0.04	52.88	6.73
50.82	0.00	51.86	0.06	52.90	7.23
50.84	0.00	51.88	0.08	52.92	7.74
50.86	0.00	51.90	0.09	52.94	8.26
50.88	0.00	51.92	0.11	52.96	8.79
50.90	0.00	51.94	0.13	52.98	9.33
50.92	0.00	51.96	0.15	53.00	**9.89**
50.94	0.00	51.98	0.18		
50.96	0.00	52.00	0.20		
50.98	0.00	52.02	0.22		
51.00	0.00	52.04	0.24		
51.02	0.00	52.06	0.25		

Stage-Area-Storage for Pond 9P: RG2

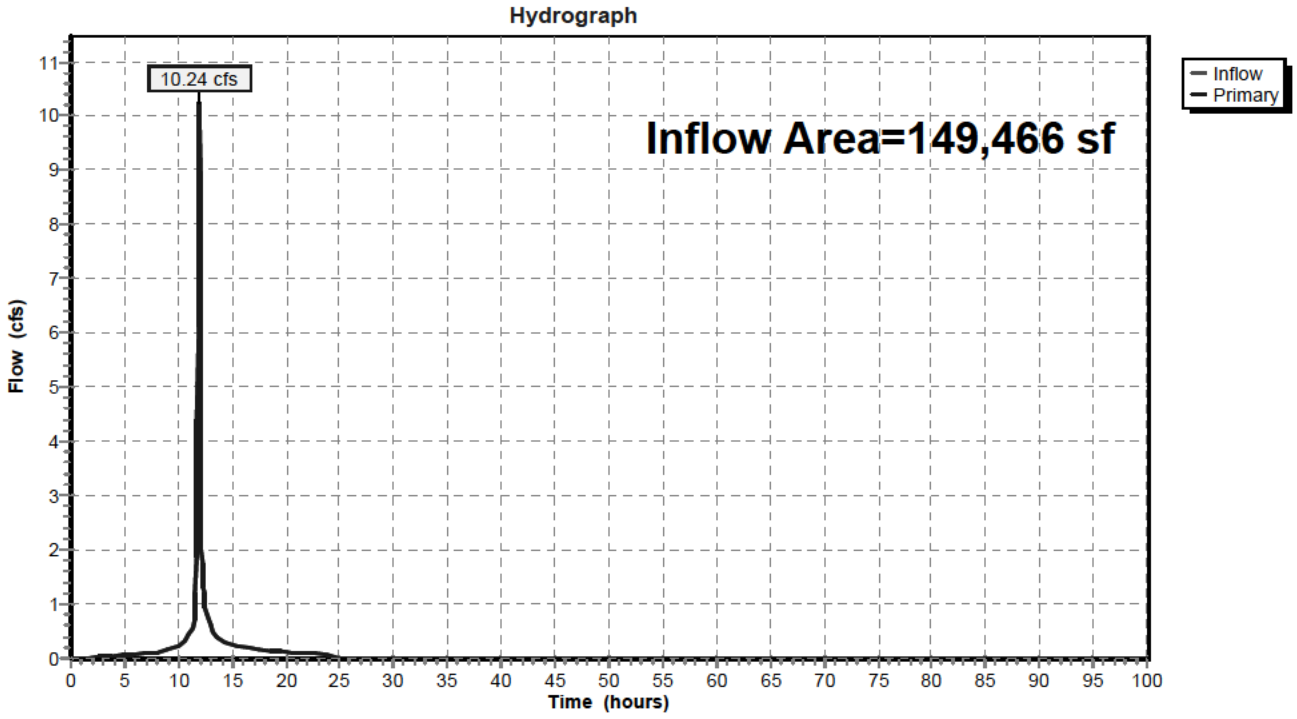
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	982	0
50.05	982	10
50.10	982	20
50.15	982	29
50.20	982	39
50.25	982	49
50.30	982	59
50.35	982	69
50.40	982	79
50.45	982	88
50.50	982	98
50.55	982	108
50.60	982	118
50.65	982	128
50.70	982	137
50.75	982	147
50.80	982	157
50.85	982	167
50.90	982	177
50.95	982	187
51.00	982	196
51.05	982	206
51.10	982	216
51.15	982	226
51.20	982	236
51.25	982	246
51.30	982	255
51.35	982	265
51.40	982	275
51.45	982	285
51.50	982	295
51.55	982	304
51.60	982	314
51.65	982	324
51.70	982	334
51.75	982	344
51.80	982	354
51.85	982	363
51.90	982	373
51.95	982	383
52.00	982	401
52.05	1,009	450
52.10	1,037	502
52.15	1,064	554
52.20	1,091	608
52.25	1,119	663
52.30	1,146	720
52.35	1,173	778
52.40	1,201	837
52.45	1,228	898
52.50	1,256	960
52.55	1,283	1,023
52.60	1,310	1,088
52.65	1,338	1,155
52.70	1,365	1,222
52.75	1,392	1,291
52.80	1,420	1,361
52.85	1,447	1,433
52.90	1,474	1,506
52.95	1,502	1,580
53.00	**1,529**	**1,656**

Summary for Link 7L: DP001 (POST)

Inflow Area = 149,466 sf, 74.65% Impervious, Inflow Depth = 2.01" for 1-Year event
Inflow = 10.24 cfs @ 11.95 hrs, Volume= 25,045 cf
Primary = 10.24 cfs @ 11.95 hrs, Volume= 25,045 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Link 7L: DP001 (POST)



Hydrograph for Link 7L: DP001 (POST)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.01	0.00	0.01	54.00	0.00	0.00	0.00
3.00	0.03	0.00	0.03	55.00	0.00	0.00	0.00
4.00	0.04	0.00	0.04	56.00	0.00	0.00	0.00
5.00	0.06	0.00	0.06	57.00	0.00	0.00	0.00
6.00	0.08	0.00	0.08	58.00	0.00	0.00	0.00
7.00	0.10	0.00	0.10	59.00	0.00	0.00	0.00
8.00	0.11	0.00	0.11	60.00	0.00	0.00	0.00
9.00	0.17	0.00	0.17	61.00	0.00	0.00	0.00
10.00	0.22	0.00	0.22	62.00	0.00	0.00	0.00
11.00	**0.42**	0.00	**0.42**	63.00	0.00	0.00	0.00
12.00	**8.79**	0.00	**8.79**	64.00	0.00	0.00	0.00
13.00	0.57	0.00	0.57	65.00	0.00	0.00	0.00
14.00	0.32	0.00	0.32	66.00	0.00	0.00	0.00
15.00	0.25	0.00	0.25	67.00	0.00	0.00	0.00
16.00	0.20	0.00	0.20	68.00	0.00	0.00	0.00
17.00	0.17	0.00	0.17	69.00	0.00	0.00	0.00
18.00	0.15	0.00	0.15	70.00	0.00	0.00	0.00
19.00	0.13	0.00	0.13	71.00	0.00	0.00	0.00
20.00	0.11	0.00	0.11	72.00	0.00	0.00	0.00
21.00	0.11	0.00	0.11	73.00	0.00	0.00	0.00
22.00	0.10	0.00	0.10	74.00	0.00	0.00	0.00
23.00	0.10	0.00	0.10	75.00	0.00	0.00	0.00
24.00	0.09	0.00	0.09	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	97.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	98.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	99.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Subcatchment 4S: Post Uncaptured

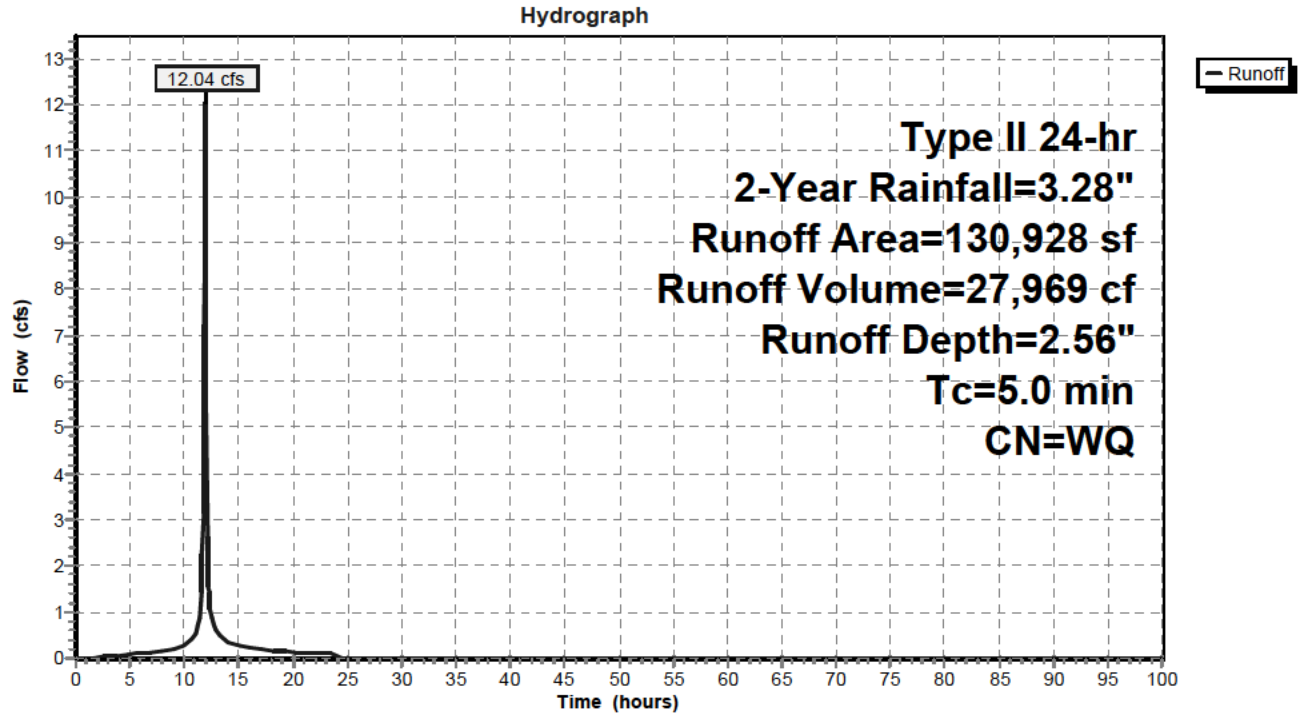
Runoff = 12.04 cfs @ 11.95 hrs, Volume= 27,969 cf, Depth= 2.56"
Routed to Link 7L : DP001 (POST)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.28"

Area (sf)	CN	Description
32,370	74	>75% Grass cover, Good, HSG C
98,558	98	Paved parking, HSG C
130,928		Weighted Average
32,370		24.72% Pervious Area
98,558		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Post Uncaptured



Hydrograph for Subcatchment 4S: Post Uncaptured

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.02
3.00	0.11	0.00	0.04
4.00	0.16	0.00	0.06
5.00	0.21	0.00	0.08
6.00	0.26	0.01	0.10
7.00	0.32	0.02	0.12
8.00	0.39	0.04	0.14
9.00	0.48	0.08	0.21
10.00	0.59	0.14	0.27
11.00	0.77	0.24	**0.49**
12.00	2.17	1.39	**10.16**
13.00	2.53	1.72	0.57
14.00	2.69	1.87	0.34
15.00	2.80	1.97	0.27
16.00	2.89	2.05	0.21
17.00	2.96	2.12	0.19
18.00	3.02	2.18	0.16
19.00	3.08	2.23	0.14
20.00	3.12	2.28	0.12
21.00	3.16	2.32	0.11
22.00	3.20	2.35	0.11
23.00	3.24	2.39	0.10
24.00	**3.28**	**2.43**	0.10
25.00	3.28	2.43	0.00
26.00	3.28	2.43	0.00
27.00	3.28	2.43	0.00
28.00	3.28	2.43	0.00
29.00	3.28	2.43	0.00
30.00	3.28	2.43	0.00
31.00	3.28	2.43	0.00
32.00	3.28	2.43	0.00
33.00	3.28	2.43	0.00
34.00	3.28	2.43	0.00
35.00	3.28	2.43	0.00
36.00	3.28	2.43	0.00
37.00	3.28	2.43	0.00
38.00	3.28	2.43	0.00
39.00	3.28	2.43	0.00
40.00	3.28	2.43	0.00
41.00	3.28	2.43	0.00
42.00	3.28	2.43	0.00
43.00	3.28	2.43	0.00
44.00	3.28	2.43	0.00
45.00	3.28	2.43	0.00
46.00	3.28	2.43	0.00
47.00	3.28	2.43	0.00
48.00	3.28	2.43	0.00
49.00	3.28	2.43	0.00
50.00	3.28	2.43	0.00
51.00	3.28	2.43	0.00
52.00	3.28	2.43	0.00
53.00	3.28	2.43	0.00
54.00	3.28	2.43	0.00
55.00	3.28	2.43	0.00
56.00	3.28	2.43	0.00
57.00	3.28	2.43	0.00
58.00	3.28	2.43	0.00
59.00	3.28	2.43	0.00
60.00	3.28	2.43	0.00
61.00	3.28	2.43	0.00
62.00	3.28	2.43	0.00
63.00	3.28	2.43	0.00
64.00	3.28	2.43	0.00
65.00	3.28	2.43	0.00
66.00	3.28	2.43	0.00
67.00	3.28	2.43	0.00
68.00	3.28	2.43	0.00
69.00	3.28	2.43	0.00
70.00	3.28	2.43	0.00
71.00	3.28	2.43	0.00
72.00	3.28	2.43	0.00
73.00	3.28	2.43	0.00
74.00	3.28	2.43	0.00
75.00	3.28	2.43	0.00
76.00	3.28	2.43	0.00
77.00	3.28	2.43	0.00
78.00	3.28	2.43	0.00
79.00	3.28	2.43	0.00
80.00	3.28	2.43	0.00
81.00	3.28	2.43	0.00
82.00	3.28	2.43	0.00
83.00	3.28	2.43	0.00
84.00	3.28	2.43	0.00
85.00	3.28	2.43	0.00
86.00	3.28	2.43	0.00
87.00	3.28	2.43	0.00
88.00	3.28	2.43	0.00
89.00	3.28	2.43	0.00
90.00	3.28	2.43	0.00
91.00	3.28	2.43	0.00
92.00	3.28	2.43	0.00
93.00	3.28	2.43	0.00
94.00	3.28	2.43	0.00
95.00	3.28	2.43	0.00
96.00	3.28	2.43	0.00
97.00	3.28	2.43	0.00
98.00	3.28	2.43	0.00
99.00	3.28	2.43	0.00
100.00	3.28	2.43	0.00

Summary for Subcatchment 5S: Post to RG 1

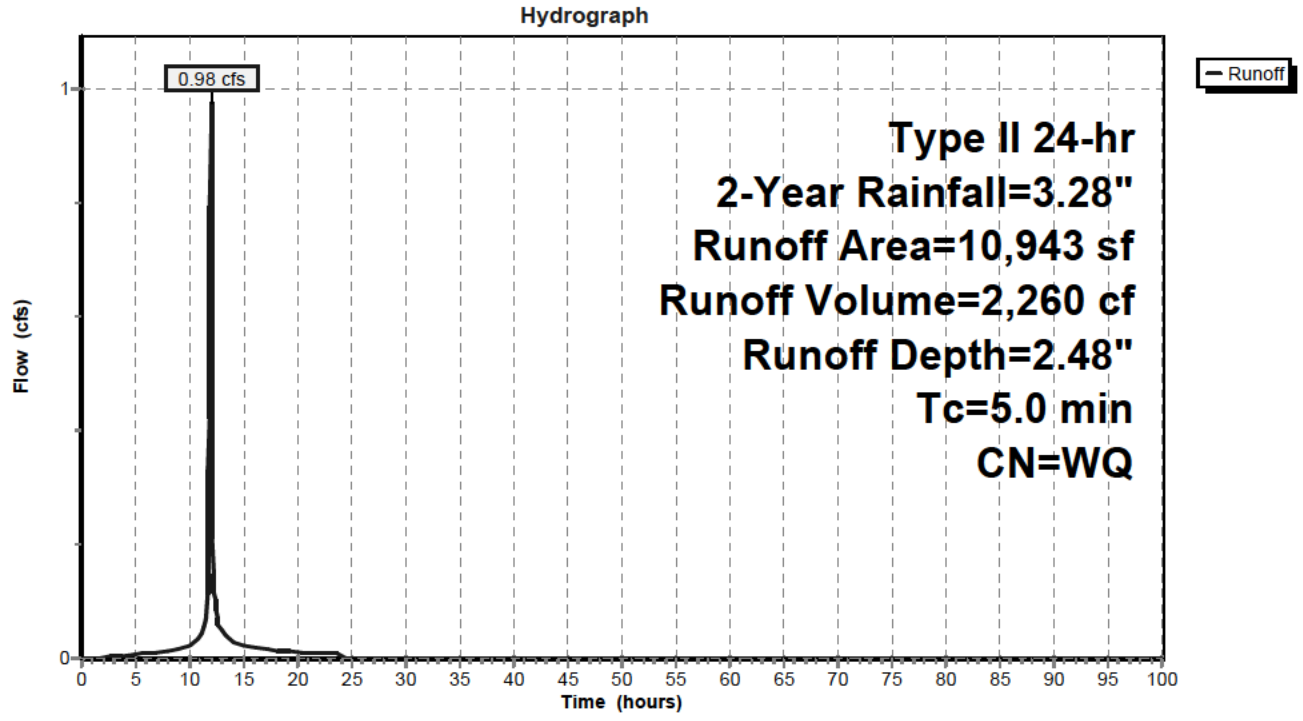
Runoff = 0.98 cfs @ 11.95 hrs, Volume= 2,260 cf, Depth= 2.48"
Routed to Pond 8P : RG1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.28"

Area (sf)	CN	Description
3,180	74	>75% Grass cover, Good, HSG C
7,763	98	Paved parking, HSG C
10,943		Weighted Average
3,180		29.06% Pervious Area
7,763		70.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Post to RG 1



Hydrograph for Subcatchment 5S: Post to RG 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.16	0.00	0.00
5.00	0.21	0.00	0.01
6.00	0.26	0.00	0.01
7.00	0.32	0.01	0.01
8.00	0.39	0.03	0.01
9.00	0.48	0.06	0.02
10.00	0.59	0.11	0.02
11.00	0.77	0.21	**0.04**
12.00	2.17	1.32	**0.83**
13.00	2.53	1.64	0.05
14.00	2.69	1.78	0.03
15.00	2.80	1.89	0.02
16.00	2.89	1.97	0.02
17.00	2.96	2.03	0.02
18.00	3.02	2.09	0.01
19.00	3.08	2.14	0.01
20.00	3.12	2.19	0.01
21.00	3.16	2.22	0.01
22.00	3.20	2.26	0.01
23.00	3.24	2.30	0.01
24.00	**3.28**	**2.33**	0.01
25.00	3.28	2.33	0.00
26.00	3.28	2.33	0.00
27.00	3.28	2.33	0.00
28.00	3.28	2.33	0.00
29.00	3.28	2.33	0.00
30.00	3.28	2.33	0.00
31.00	3.28	2.33	0.00
32.00	3.28	2.33	0.00
33.00	3.28	2.33	0.00
34.00	3.28	2.33	0.00
35.00	3.28	2.33	0.00
36.00	3.28	2.33	0.00
37.00	3.28	2.33	0.00
38.00	3.28	2.33	0.00
39.00	3.28	2.33	0.00
40.00	3.28	2.33	0.00
41.00	3.28	2.33	0.00
42.00	3.28	2.33	0.00
43.00	3.28	2.33	0.00
44.00	3.28	2.33	0.00
45.00	3.28	2.33	0.00
46.00	3.28	2.33	0.00
47.00	3.28	2.33	0.00
48.00	3.28	2.33	0.00
49.00	3.28	2.33	0.00
50.00	3.28	2.33	0.00
51.00	3.28	2.33	0.00
52.00	3.28	2.33	0.00
53.00	3.28	2.33	0.00
54.00	3.28	2.33	0.00
55.00	3.28	2.33	0.00
56.00	3.28	2.33	0.00
57.00	3.28	2.33	0.00
58.00	3.28	2.33	0.00
59.00	3.28	2.33	0.00
60.00	3.28	2.33	0.00
61.00	3.28	2.33	0.00
62.00	3.28	2.33	0.00
63.00	3.28	2.33	0.00
64.00	3.28	2.33	0.00
65.00	3.28	2.33	0.00
66.00	3.28	2.33	0.00
67.00	3.28	2.33	0.00
68.00	3.28	2.33	0.00
69.00	3.28	2.33	0.00
70.00	3.28	2.33	0.00
71.00	3.28	2.33	0.00
72.00	3.28	2.33	0.00
73.00	3.28	2.33	0.00
74.00	3.28	2.33	0.00
75.00	3.28	2.33	0.00
76.00	3.28	2.33	0.00
77.00	3.28	2.33	0.00
78.00	3.28	2.33	0.00
79.00	3.28	2.33	0.00
80.00	3.28	2.33	0.00
81.00	3.28	2.33	0.00
82.00	3.28	2.33	0.00
83.00	3.28	2.33	0.00
84.00	3.28	2.33	0.00
85.00	3.28	2.33	0.00
86.00	3.28	2.33	0.00
87.00	3.28	2.33	0.00
88.00	3.28	2.33	0.00
89.00	3.28	2.33	0.00
90.00	3.28	2.33	0.00
91.00	3.28	2.33	0.00
92.00	3.28	2.33	0.00
93.00	3.28	2.33	0.00
94.00	3.28	2.33	0.00
95.00	3.28	2.33	0.00
96.00	3.28	2.33	0.00
97.00	3.28	2.33	0.00
98.00	3.28	2.33	0.00
99.00	3.28	2.33	0.00
100.00	3.28	2.33	0.00

Summary for Subcatchment 6S: Post to RG2

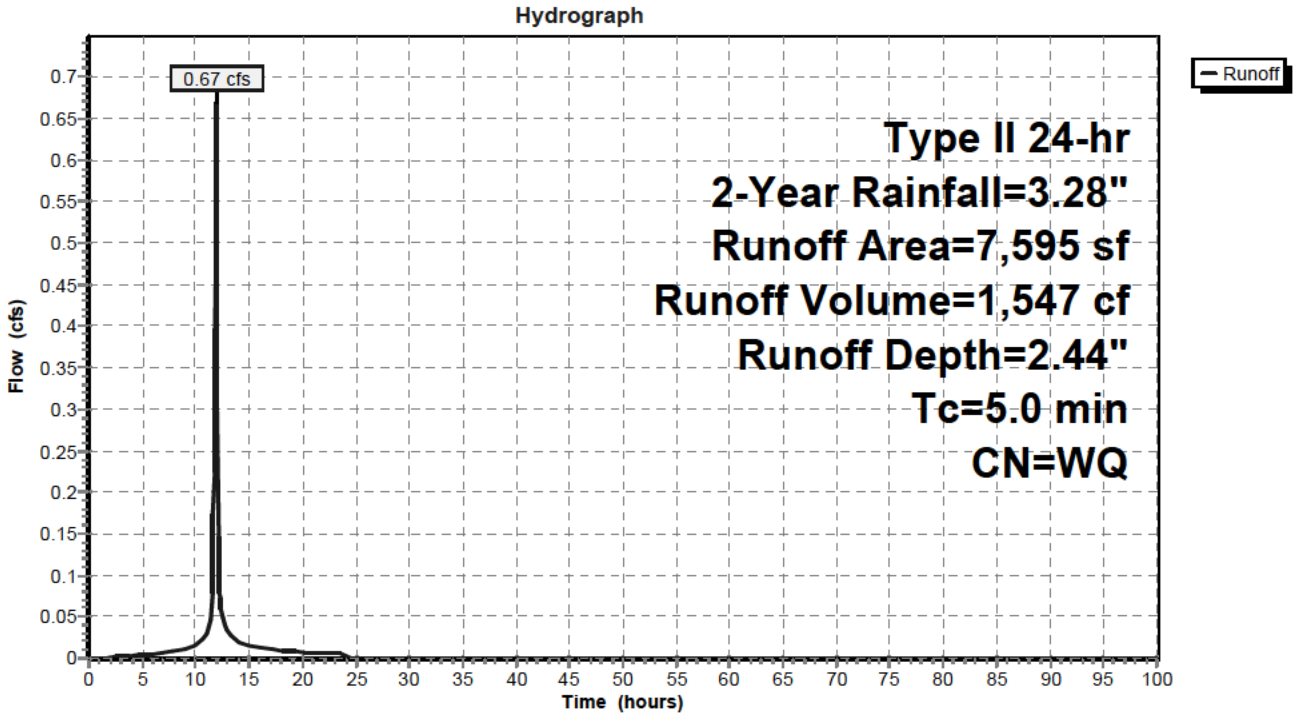
Runoff = 0.67 cfs @ 11.95 hrs, Volume= 1,547 cf, Depth= 2.44"
Routed to Pond 9P : RG2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.28"

Area (sf)	CN	Description
2,340	74	>75% Grass cover, Good, HSG C
5,255	98	Paved parking, HSG C
7,595		Weighted Average
2,340		30.81% Pervious Area
5,255		69.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Post to RG2



Hydrograph for Subcatchment 6S: Post to RG2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.03	0.00	0.00
2.00	0.07	0.00	0.00
3.00	0.11	0.00	0.00
4.00	0.16	0.00	0.00
5.00	0.21	0.00	0.00
6.00	0.26	0.00	0.01
7.00	0.32	0.01	0.01
8.00	0.39	0.03	0.01
9.00	0.48	0.06	0.01
10.00	0.59	0.11	0.01
11.00	0.77	0.21	**0.03**
12.00	2.17	1.32	**0.57**
13.00	2.53	1.64	0.03
14.00	2.69	1.78	0.02
15.00	2.80	1.89	0.02
16.00	2.89	1.97	0.01
17.00	2.96	2.03	0.01
18.00	3.02	2.09	0.01
19.00	3.08	2.14	0.01
20.00	3.12	2.19	0.01
21.00	3.16	2.22	0.01
22.00	3.20	2.26	0.01
23.00	3.24	2.30	0.01
24.00	**3.28**	**2.33**	0.01
25.00	3.28	2.33	0.00
26.00	3.28	2.33	0.00
27.00	3.28	2.33	0.00
28.00	3.28	2.33	0.00
29.00	3.28	2.33	0.00
30.00	3.28	2.33	0.00
31.00	3.28	2.33	0.00
32.00	3.28	2.33	0.00
33.00	3.28	2.33	0.00
34.00	3.28	2.33	0.00
35.00	3.28	2.33	0.00
36.00	3.28	2.33	0.00
37.00	3.28	2.33	0.00
38.00	3.28	2.33	0.00
39.00	3.28	2.33	0.00
40.00	3.28	2.33	0.00
41.00	3.28	2.33	0.00
42.00	3.28	2.33	0.00
43.00	3.28	2.33	0.00
44.00	3.28	2.33	0.00
45.00	3.28	2.33	0.00
46.00	3.28	2.33	0.00
47.00	3.28	2.33	0.00
48.00	3.28	2.33	0.00
49.00	3.28	2.33	0.00
50.00	3.28	2.33	0.00
51.00	3.28	2.33	0.00
52.00	3.28	2.33	0.00
53.00	3.28	2.33	0.00
54.00	3.28	2.33	0.00
55.00	3.28	2.33	0.00
56.00	3.28	2.33	0.00
57.00	3.28	2.33	0.00
58.00	3.28	2.33	0.00
59.00	3.28	2.33	0.00
60.00	3.28	2.33	0.00
61.00	3.28	2.33	0.00
62.00	3.28	2.33	0.00
63.00	3.28	2.33	0.00
64.00	3.28	2.33	0.00
65.00	3.28	2.33	0.00
66.00	3.28	2.33	0.00
67.00	3.28	2.33	0.00
68.00	3.28	2.33	0.00
69.00	3.28	2.33	0.00
70.00	3.28	2.33	0.00
71.00	3.28	2.33	0.00
72.00	3.28	2.33	0.00
73.00	3.28	2.33	0.00
74.00	3.28	2.33	0.00
75.00	3.28	2.33	0.00
76.00	3.28	2.33	0.00
77.00	3.28	2.33	0.00
78.00	3.28	2.33	0.00
79.00	3.28	2.33	0.00
80.00	3.28	2.33	0.00
81.00	3.28	2.33	0.00
82.00	3.28	2.33	0.00
83.00	3.28	2.33	0.00
84.00	3.28	2.33	0.00
85.00	3.28	2.33	0.00
86.00	3.28	2.33	0.00
87.00	3.28	2.33	0.00
88.00	3.28	2.33	0.00
89.00	3.28	2.33	0.00
90.00	3.28	2.33	0.00
91.00	3.28	2.33	0.00
92.00	3.28	2.33	0.00
93.00	3.28	2.33	0.00
94.00	3.28	2.33	0.00
95.00	3.28	2.33	0.00
96.00	3.28	2.33	0.00
97.00	3.28	2.33	0.00
98.00	3.28	2.33	0.00
99.00	3.28	2.33	0.00
100.00	3.28	2.33	0.00

Summary for Pond 8P: RG1

Inflow Area = 10,943 sf, 70.94% Impervious, Inflow Depth = 2.48" for 2-Year event
Inflow = 0.98 cfs @ 11.95 hrs, Volume= 2,260 cf
Outflow = 0.33 cfs @ 12.07 hrs, Volume= 2,066 cf, Atten= 66%, Lag= 7.3 min
Primary = 0.33 cfs @ 12.07 hrs, Volume= 2,066 cf
Routed to Link 7L : DP001 (POST)

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 52.79' @ 12.07 hrs Surf.Area= 1,100 sf Storage= 817 cf

Plug-Flow detention time= 114.1 min calculated for 2,066 cf (91% of inflow)
Center-of-Mass det. time= 66.7 min (831.2 - 764.5)

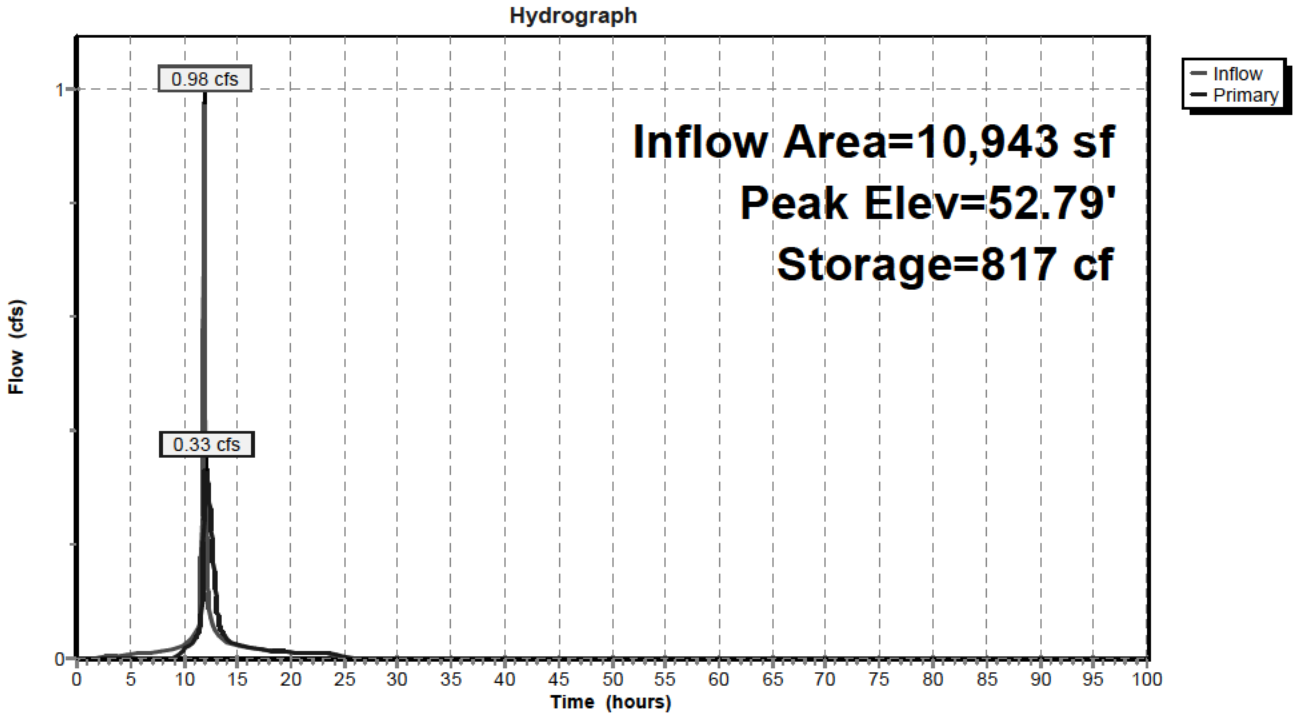
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	2,727 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.00	476	0.0	0	0
51.99	476	20.0	189	189
52.00	476	100.0	5	194
54.00	2,057	100.0	2,533	2,727

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	53.25'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	52.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.33 cfs @ 12.07 hrs HW=52.78' (Free Discharge)
└**1=Culvert** (Passes 0.33 cfs of 12.13 cfs potential flow)
└**2=Grate** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Orifice Controls 0.33 cfs @ 3.78 fps)

Pond 8P: RG1


Hydrograph
Inflow
Primary
0.98 cfs
0.33 cfs
Inflow Area=10,943 sf
Peak Elev=52.79'
Storage=817 cf
Flow (cfs)
Time (hours)
0
1
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Hydrograph for Pond 8P: RG1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	50.00	0.00
2.50	0.00	6	50.06	0.00
5.00	0.01	46	50.49	0.00
7.50	0.01	122	51.28	0.00
10.00	**0.02**	**233**	**52.08**	**0.01**
12.50	**0.07**	**551**	**52.52**	**0.25**
15.00	0.02	246	52.10	0.02
17.50	0.01	234	52.08	0.02
20.00	0.01	226	52.06	0.01
22.50	0.01	223	52.06	0.01
25.00	0.00	207	52.03	0.00
27.50	0.00	196	52.00	0.00
30.00	0.00	195	52.00	0.00
32.50	0.00	194	52.00	0.00
35.00	0.00	194	52.00	0.00
37.50	0.00	194	52.00	0.00
40.00	0.00	194	52.00	0.00
42.50	0.00	194	52.00	0.00
45.00	0.00	194	52.00	0.00
47.50	0.00	194	52.00	0.00
50.00	0.00	194	52.00	0.00
52.50	0.00	194	52.00	0.00
55.00	0.00	194	52.00	0.00
57.50	0.00	194	52.00	0.00
60.00	0.00	194	52.00	0.00
62.50	0.00	194	52.00	0.00
65.00	0.00	194	52.00	0.00
67.50	0.00	194	52.00	0.00
70.00	0.00	194	52.00	0.00
72.50	0.00	194	52.00	0.00
75.00	0.00	194	52.00	0.00
77.50	0.00	194	52.00	0.00
80.00	0.00	194	52.00	0.00
82.50	0.00	194	52.00	0.00
85.00	0.00	194	52.00	0.00
87.50	0.00	194	52.00	0.00
90.00	0.00	194	52.00	0.00
92.50	0.00	194	52.00	0.00
95.00	0.00	194	52.00	0.00
97.50	0.00	194	52.00	0.00
100.00	0.00	194	52.00	0.00

Stage-Discharge for Pond 8P: RG1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.00	0.00	51.04	0.00	52.08	0.02	53.12	0.41
50.02	0.00	51.06	0.00	52.10	0.02	53.14	0.41
50.04	0.00	51.08	0.00	52.12	0.03	53.16	0.42
50.06	0.00	51.10	0.00	52.14	0.04	53.18	0.42
50.08	0.00	51.12	0.00	52.16	0.06	53.20	0.43
50.10	0.00	51.14	0.00	52.18	0.07	53.22	0.43
50.12	0.00	51.16	0.00	52.20	0.08	53.24	0.44
50.14	0.00	51.18	0.00	52.22	0.10	53.26	0.47
50.16	0.00	51.20	0.00	52.24	0.11	53.28	0.58
50.18	0.00	51.22	0.00	52.26	0.13	53.30	0.74
50.20	0.00	51.24	0.00	52.28	0.14	53.32	0.94
50.22	0.00	51.26	0.00	52.30	0.15	53.34	1.16
50.24	0.00	51.28	0.00	52.32	0.17	53.36	1.41
50.26	0.00	51.30	0.00	52.34	0.17	53.38	1.69
50.28	0.00	51.32	0.00	52.36	0.18	53.40	1.99
50.30	0.00	51.34	0.00	52.38	0.19	53.42	2.30
50.32	0.00	51.36	0.00	52.40	0.20	53.44	2.64
50.34	0.00	51.38	0.00	52.42	0.21	53.46	3.00
50.36	0.00	51.40	0.00	52.44	0.22	53.48	3.37
50.38	0.00	51.42	0.00	52.46	0.23	53.50	3.76
50.40	0.00	51.44	0.00	52.48	0.24	53.52	4.16
50.42	0.00	51.46	0.00	52.50	0.24	53.54	4.58
50.44	0.00	51.48	0.00	52.52	0.25	53.56	5.01
50.46	0.00	51.50	0.00	52.54	0.26	53.58	5.46
50.48	0.00	51.52	0.00	52.56	0.26	53.60	5.92
50.50	0.00	51.54	0.00	52.58	0.27	53.62	6.39
50.52	0.00	51.56	0.00	52.60	0.28	53.64	6.88
50.54	0.00	51.58	0.00	52.62	0.28	53.66	7.38
50.56	0.00	51.60	0.00	52.64	0.29	53.68	7.89
50.58	0.00	51.62	0.00	52.66	0.30	53.70	8.42
50.60	0.00	51.64	0.00	52.68	0.30	53.72	8.95
50.62	0.00	51.66	0.00	52.70	0.31	53.74	9.50
50.64	0.00	51.68	0.00	52.72	0.31	53.76	10.06
50.66	0.00	51.70	0.00	52.74	0.32	53.78	10.63
50.68	0.00	51.72	0.00	52.76	0.32	53.80	11.21
50.70	0.00	51.74	0.00	52.78	0.33	53.82	11.80
50.72	0.00	51.76	0.00	52.80	0.33	53.84	12.40
50.74	0.00	51.78	0.00	52.82	0.34	53.86	13.01
50.76	0.00	51.80	0.00	52.84	0.34	53.88	13.63
50.78	0.00	51.82	0.00	52.86	0.35	53.90	14.26
50.80	0.00	51.84	0.00	52.88	0.35	53.92	14.90
50.82	0.00	51.86	0.00	52.90	0.36	53.94	15.20
50.84	0.00	51.88	0.00	52.92	0.36	53.96	15.24
50.86	0.00	51.90	0.00	52.94	0.37	53.98	15.29
50.88	0.00	51.92	0.00	52.96	0.37	54.00	**15.34**
50.90	0.00	51.94	0.00	52.98	0.38		
50.92	0.00	51.96	0.00	53.00	0.38		
50.94	0.00	51.98	0.00	53.02	0.39		
50.96	0.00	52.00	0.00	53.04	0.39		
50.98	0.00	52.02	0.00	53.06	0.40		
51.00	0.00	52.04	0.00	53.08	0.40		
51.02	0.00	52.06	0.01	53.10	0.41		

Stage-Area-Storage for Pond 8P: RG1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	476	0
50.05	476	5
50.10	476	10
50.15	476	14
50.20	476	19
50.25	476	24
50.30	476	29
50.35	476	33
50.40	476	38
50.45	476	43
50.50	476	48
50.55	476	52
50.60	476	57
50.65	476	62
50.70	476	67
50.75	476	71
50.80	476	76
50.85	476	81
50.90	476	86
50.95	476	90
51.00	476	95
51.05	476	100
51.10	476	105
51.15	476	109
51.20	476	114
51.25	476	119
51.30	476	124
51.35	476	129
51.40	476	133
51.45	476	138
51.50	476	143
51.55	476	148
51.60	476	152
51.65	476	157
51.70	476	162
51.75	476	167
51.80	476	171
51.85	476	176
51.90	476	181
51.95	476	186
52.00	476	194
52.05	516	219
52.10	555	246
52.15	595	275
52.20	634	305
52.25	674	338
52.30	713	373
52.35	753	409
52.40	792	448
52.45	832	488
52.50	871	531
52.55	911	576
52.60	950	622
52.65	990	671
52.70	1,029	721
52.75	1,069	774
52.80	1,108	828
52.85	1,148	884
52.90	1,187	943
52.95	1,227	1,003
53.00	1,267	1,065
53.05	1,306	1,130
53.10	1,346	1,196
53.15	1,385	1,264
53.20	1,425	1,335
53.25	1,464	1,407
53.30	1,504	1,481
53.35	1,543	1,557
53.40	1,583	1,635
53.45	1,622	1,715
53.50	1,662	1,798
53.55	1,701	1,882
53.60	1,741	1,968
53.65	1,780	2,056
53.70	1,820	2,146
53.75	1,859	2,238
53.80	1,899	2,332
53.85	1,938	2,428
53.90	1,978	2,525
53.95	2,017	2,625
54.00	**2,057**	**2,727**

Summary for Pond 9P: RG2

Inflow Area = 7,595 sf, 69.19% Impervious, Inflow Depth = 2.44" for 2-Year event
Inflow = 0.67 cfs @ 11.95 hrs, Volume= 1,547 cf
Outflow = 0.34 cfs @ 12.05 hrs, Volume= 1,203 cf, Atten= 50%, Lag= 5.8 min
Primary = 0.34 cfs @ 12.05 hrs, Volume= 1,203 cf
Routed to Link 7L : DP001 (POST)

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 52.19' @ 12.05 hrs Surf.Area= 1,086 sf Storage= 598 cf

Plug-Flow detention time= 159.5 min calculated for 1,203 cf (78% of inflow)
Center-of-Mass det. time= 71.6 min (837.1 - 765.5)

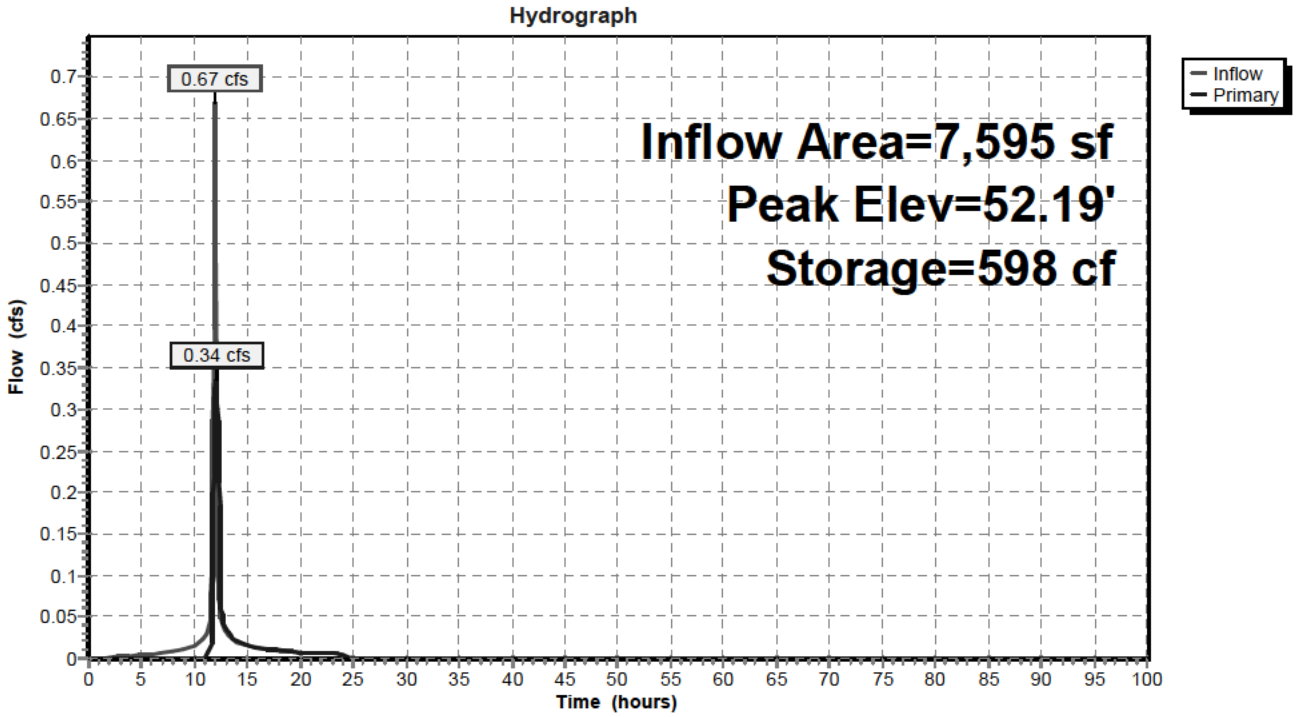
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	1,656 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.00	982	0.0	0	0
51.99	982	20.0	391	391
52.00	982	100.0	10	401
53.00	1,529	100.0	1,256	1,656

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	52.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	51.75'	**6.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.34 cfs @ 12.05 hrs HW=52.19' (Free Discharge)
└**1=Culvert** (Passes 0.34 cfs of 10.21 cfs potential flow)
└**2=Grate** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Orifice Controls 0.34 cfs @ 2.69 fps)

Pond 9P: RG2


Hydrograph
Inflow
Primary
Inflow Area=7,595 sf
Peak Elev=52.19'
Storage=598 cf
0.67 cfs
0.34 cfs
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
0.7
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Hydrograph for Pond 9P: RG2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	50.00	0.00
2.50	0.00	4	50.02	0.00
5.00	0.00	31	50.16	0.00
7.50	0.01	83	50.42	0.00
10.00	**0.01**	**173**	**50.88**	**0.00**
12.50	**0.05**	**369**	**51.88**	**0.07**
15.00	0.02	353	51.80	0.02
17.50	0.01	350	51.78	0.01
20.00	0.01	349	51.78	0.01
22.50	0.01	348	51.77	0.01
25.00	0.00	344	51.75	0.00
27.50	0.00	344	51.75	0.00
30.00	0.00	344	51.75	0.00
32.50	0.00	344	51.75	0.00
35.00	0.00	344	51.75	0.00
37.50	0.00	344	51.75	0.00
40.00	0.00	344	51.75	0.00
42.50	0.00	344	51.75	0.00
45.00	0.00	344	51.75	0.00
47.50	0.00	344	51.75	0.00
50.00	0.00	344	51.75	0.00
52.50	0.00	344	51.75	0.00
55.00	0.00	344	51.75	0.00
57.50	0.00	344	51.75	0.00
60.00	0.00	344	51.75	0.00
62.50	0.00	344	51.75	0.00
65.00	0.00	344	51.75	0.00
67.50	0.00	344	51.75	0.00
70.00	0.00	344	51.75	0.00
72.50	0.00	344	51.75	0.00
75.00	0.00	344	51.75	0.00
77.50	0.00	344	51.75	0.00
80.00	0.00	344	51.75	0.00
82.50	0.00	344	51.75	0.00
85.00	0.00	344	51.75	0.00
87.50	0.00	344	51.75	0.00
90.00	0.00	344	51.75	0.00
92.50	0.00	344	51.75	0.00
95.00	0.00	344	51.75	0.00
97.50	0.00	344	51.75	0.00
100.00	0.00	344	51.75	0.00

Stage-Discharge for Pond 9P: RG2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.00	0.00	51.04	0.00	52.08	0.27
50.02	0.00	51.06	0.00	52.10	0.28
50.04	0.00	51.08	0.00	52.12	0.29
50.06	0.00	51.10	0.00	52.14	0.31
50.08	0.00	51.12	0.00	52.16	0.32
50.10	0.00	51.14	0.00	52.18	0.33
50.12	0.00	51.16	0.00	52.20	0.34
50.14	0.00	51.18	0.00	52.22	0.35
50.16	0.00	51.20	0.00	52.24	0.36
50.18	0.00	51.22	0.00	52.26	0.37
50.20	0.00	51.24	0.00	52.28	0.38
50.22	0.00	51.26	0.00	52.30	0.39
50.24	0.00	51.28	0.00	52.32	0.40
50.26	0.00	51.30	0.00	52.34	0.41
50.28	0.00	51.32	0.00	52.36	0.42
50.30	0.00	51.34	0.00	52.38	0.43
50.32	0.00	51.36	0.00	52.40	0.44
50.34	0.00	51.38	0.00	52.42	0.44
50.36	0.00	51.40	0.00	52.44	0.45
50.38	0.00	51.42	0.00	52.46	0.46
50.40	0.00	51.44	0.00	52.48	0.47
50.42	0.00	51.46	0.00	52.50	0.48
50.44	0.00	51.48	0.00	52.52	0.56
50.46	0.00	51.50	0.00	52.54	0.70
50.48	0.00	51.52	0.00	52.56	0.88
50.50	0.00	51.54	0.00	52.58	1.10
50.52	0.00	51.56	0.00	52.60	1.34
50.54	0.00	51.58	0.00	52.62	1.61
50.56	0.00	51.60	0.00	52.64	1.90
50.58	0.00	51.62	0.00	52.66	2.21
50.60	0.00	51.64	0.00	52.68	2.54
50.62	0.00	51.66	0.00	52.70	2.89
50.64	0.00	51.68	0.00	52.72	3.25
50.66	0.00	51.70	0.00	52.74	3.64
50.68	0.00	51.72	0.00	52.76	4.03
50.70	0.00	51.74	0.00	52.78	4.45
50.72	0.00	51.76	0.00	52.80	4.88
50.74	0.00	51.78	0.01	52.82	5.32
50.76	0.00	51.80	0.02	52.84	5.78
50.78	0.00	51.82	0.03	52.86	6.25
50.80	0.00	51.84	0.04	52.88	6.73
50.82	0.00	51.86	0.06	52.90	7.23
50.84	0.00	51.88	0.08	52.92	7.74
50.86	0.00	51.90	0.09	52.94	8.26
50.88	0.00	51.92	0.11	52.96	8.79
50.90	0.00	51.94	0.13	52.98	9.33
50.92	0.00	51.96	0.15	53.00	**9.89**
50.94	0.00	51.98	0.18		
50.96	0.00	52.00	0.20		
50.98	0.00	52.02	0.22		
51.00	0.00	52.04	0.24		
51.02	0.00	52.06	0.25		

Stage-Area-Storage for Pond 9P: RG2

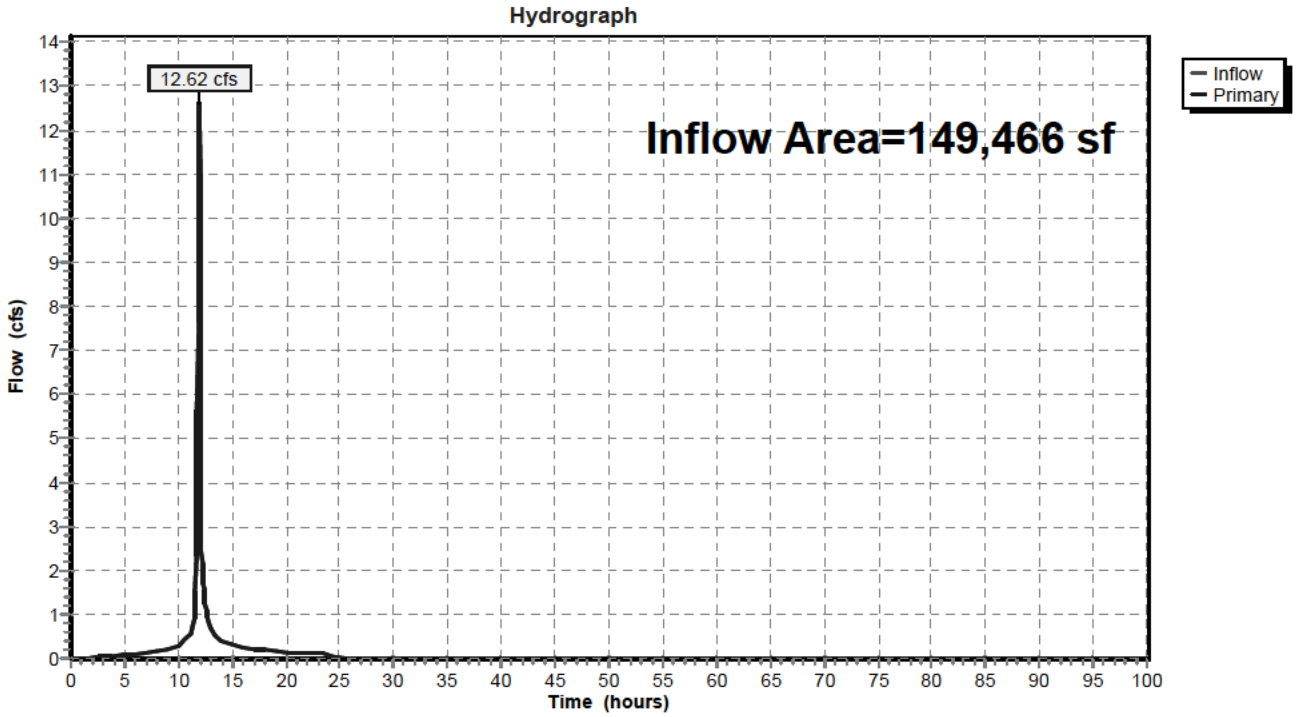
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	982	0
50.05	982	10
50.10	982	20
50.15	982	29
50.20	982	39
50.25	982	49
50.30	982	59
50.35	982	69
50.40	982	79
50.45	982	88
50.50	982	98
50.55	982	108
50.60	982	118
50.65	982	128
50.70	982	137
50.75	982	147
50.80	982	157
50.85	982	167
50.90	982	177
50.95	982	187
51.00	982	196
51.05	982	206
51.10	982	216
51.15	982	226
51.20	982	236
51.25	982	246
51.30	982	255
51.35	982	265
51.40	982	275
51.45	982	285
51.50	982	295
51.55	982	304
51.60	982	314
51.65	982	324
51.70	982	334
51.75	982	344
51.80	982	354
51.85	982	363
51.90	982	373
51.95	982	383
52.00	982	401
52.05	1,009	450
52.10	1,037	502
52.15	1,064	554
52.20	1,091	608
52.25	1,119	663
52.30	1,146	720
52.35	1,173	778
52.40	1,201	837
52.45	1,228	898
52.50	1,256	960
52.55	1,283	1,023
52.60	1,310	1,088
52.65	1,338	1,155
52.70	1,365	1,222
52.75	1,392	1,291
52.80	1,420	1,361
52.85	1,447	1,433
52.90	1,474	1,506
52.95	1,502	1,580
53.00	**1,529**	**1,656**

Summary for Link 7L: DP001 (POST)

Inflow Area = 149,466 sf, 74.65% Impervious, Inflow Depth = 2.51" for 2-Year event
Inflow = 12.62 cfs @ 11.95 hrs, Volume= 31,238 cf
Primary = 12.62 cfs @ 11.95 hrs, Volume= 31,238 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Link 7L: DP001 (POST)



Hydrograph for Link 7L: DP001 (POST)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.02	0.00	0.02	54.00	0.00	0.00	0.00
3.00	0.04	0.00	0.04	55.00	0.00	0.00	0.00
4.00	0.06	0.00	0.06	56.00	0.00	0.00	0.00
5.00	0.08	0.00	0.08	57.00	0.00	0.00	0.00
6.00	0.10	0.00	0.10	58.00	0.00	0.00	0.00
7.00	0.12	0.00	0.12	59.00	0.00	0.00	0.00
8.00	0.14	0.00	0.14	60.00	0.00	0.00	0.00
9.00	0.21	0.00	0.21	61.00	0.00	0.00	0.00
10.00	0.28	0.00	0.28	62.00	0.00	0.00	0.00
11.00	**0.53**	0.00	**0.53**	63.00	0.00	0.00	0.00
12.00	**10.80**	0.00	**10.80**	64.00	0.00	0.00	0.00
13.00	0.72	0.00	0.72	65.00	0.00	0.00	0.00
14.00	0.40	0.00	0.40	66.00	0.00	0.00	0.00
15.00	0.31	0.00	0.31	67.00	0.00	0.00	0.00
16.00	0.24	0.00	0.24	68.00	0.00	0.00	0.00
17.00	0.21	0.00	0.21	69.00	0.00	0.00	0.00
18.00	0.19	0.00	0.19	70.00	0.00	0.00	0.00
19.00	0.16	0.00	0.16	71.00	0.00	0.00	0.00
20.00	0.14	0.00	0.14	72.00	0.00	0.00	0.00
21.00	0.13	0.00	0.13	73.00	0.00	0.00	0.00
22.00	0.12	0.00	0.12	74.00	0.00	0.00	0.00
23.00	0.12	0.00	0.12	75.00	0.00	0.00	0.00
24.00	0.11	0.00	0.11	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	97.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	98.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	99.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Subcatchment 4S: Post Uncaptured

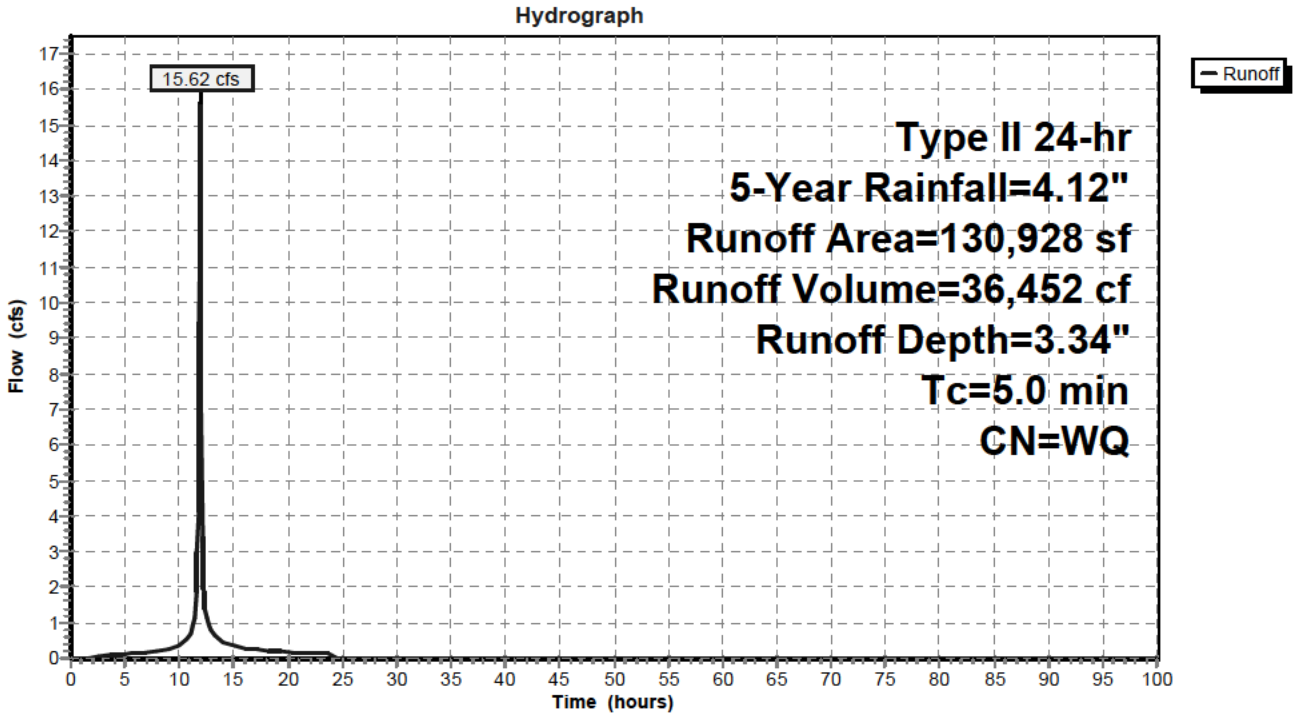
Runoff = 15.62 cfs @ 11.95 hrs, Volume= 36,452 cf, Depth= 3.34"
Routed to Link 7L : DP001 (POST)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=4.12"

Area (sf)	CN	Description
32,370	74	>75% Grass cover, Good, HSG C
98,558	98	Paved parking, HSG C
130,928		Weighted Average
32,370		24.72% Pervious Area
98,558		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Post Uncaptured



Hydrograph for Subcatchment 4S: Post Uncaptured

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.04
3.00	0.14	0.00	0.07
4.00	0.20	0.00	0.09
5.00	0.26	0.01	0.11
6.00	0.33	0.02	0.14
7.00	0.41	0.05	0.16
8.00	0.49	0.09	0.19
9.00	0.61	0.14	0.27
10.00	0.75	0.23	0.35
11.00	0.97	0.38	**0.65**
12.00	2.73	1.91	**13.16**
13.00	3.18	2.33	0.74
14.00	3.38	2.52	0.44
15.00	3.52	2.65	0.35
16.00	3.63	2.76	0.27
17.00	3.72	2.84	0.24
18.00	3.79	2.92	0.21
19.00	3.86	2.99	0.18
20.00	3.92	3.04	0.15
21.00	3.97	3.09	0.15
22.00	4.03	3.14	0.14
23.00	4.07	3.19	0.13
24.00	**4.12**	**3.23**	0.13
25.00	4.12	3.23	0.00
26.00	4.12	3.23	0.00
27.00	4.12	3.23	0.00
28.00	4.12	3.23	0.00
29.00	4.12	3.23	0.00
30.00	4.12	3.23	0.00
31.00	4.12	3.23	0.00
32.00	4.12	3.23	0.00
33.00	4.12	3.23	0.00
34.00	4.12	3.23	0.00
35.00	4.12	3.23	0.00
36.00	4.12	3.23	0.00
37.00	4.12	3.23	0.00
38.00	4.12	3.23	0.00
39.00	4.12	3.23	0.00
40.00	4.12	3.23	0.00
41.00	4.12	3.23	0.00
42.00	4.12	3.23	0.00
43.00	4.12	3.23	0.00
44.00	4.12	3.23	0.00
45.00	4.12	3.23	0.00
46.00	4.12	3.23	0.00
47.00	4.12	3.23	0.00
48.00	4.12	3.23	0.00
49.00	4.12	3.23	0.00
50.00	4.12	3.23	0.00
51.00	4.12	3.23	0.00
52.00	4.12	3.23	0.00
53.00	4.12	3.23	0.00
54.00	4.12	3.23	0.00
55.00	4.12	3.23	0.00
56.00	4.12	3.23	0.00
57.00	4.12	3.23	0.00
58.00	4.12	3.23	0.00
59.00	4.12	3.23	0.00
60.00	4.12	3.23	0.00
61.00	4.12	3.23	0.00
62.00	4.12	3.23	0.00
63.00	4.12	3.23	0.00
64.00	4.12	3.23	0.00
65.00	4.12	3.23	0.00
66.00	4.12	3.23	0.00
67.00	4.12	3.23	0.00
68.00	4.12	3.23	0.00
69.00	4.12	3.23	0.00
70.00	4.12	3.23	0.00
71.00	4.12	3.23	0.00
72.00	4.12	3.23	0.00
73.00	4.12	3.23	0.00
74.00	4.12	3.23	0.00
75.00	4.12	3.23	0.00
76.00	4.12	3.23	0.00
77.00	4.12	3.23	0.00
78.00	4.12	3.23	0.00
79.00	4.12	3.23	0.00
80.00	4.12	3.23	0.00
81.00	4.12	3.23	0.00
82.00	4.12	3.23	0.00
83.00	4.12	3.23	0.00
84.00	4.12	3.23	0.00
85.00	4.12	3.23	0.00
86.00	4.12	3.23	0.00
87.00	4.12	3.23	0.00
88.00	4.12	3.23	0.00
89.00	4.12	3.23	0.00
90.00	4.12	3.23	0.00
91.00	4.12	3.23	0.00
92.00	4.12	3.23	0.00
93.00	4.12	3.23	0.00
94.00	4.12	3.23	0.00
95.00	4.12	3.23	0.00
96.00	4.12	3.23	0.00
97.00	4.12	3.23	0.00
98.00	4.12	3.23	0.00
99.00	4.12	3.23	0.00
100.00	4.12	3.23	0.00

Summary for Subcatchment 5S: Post to RG 1

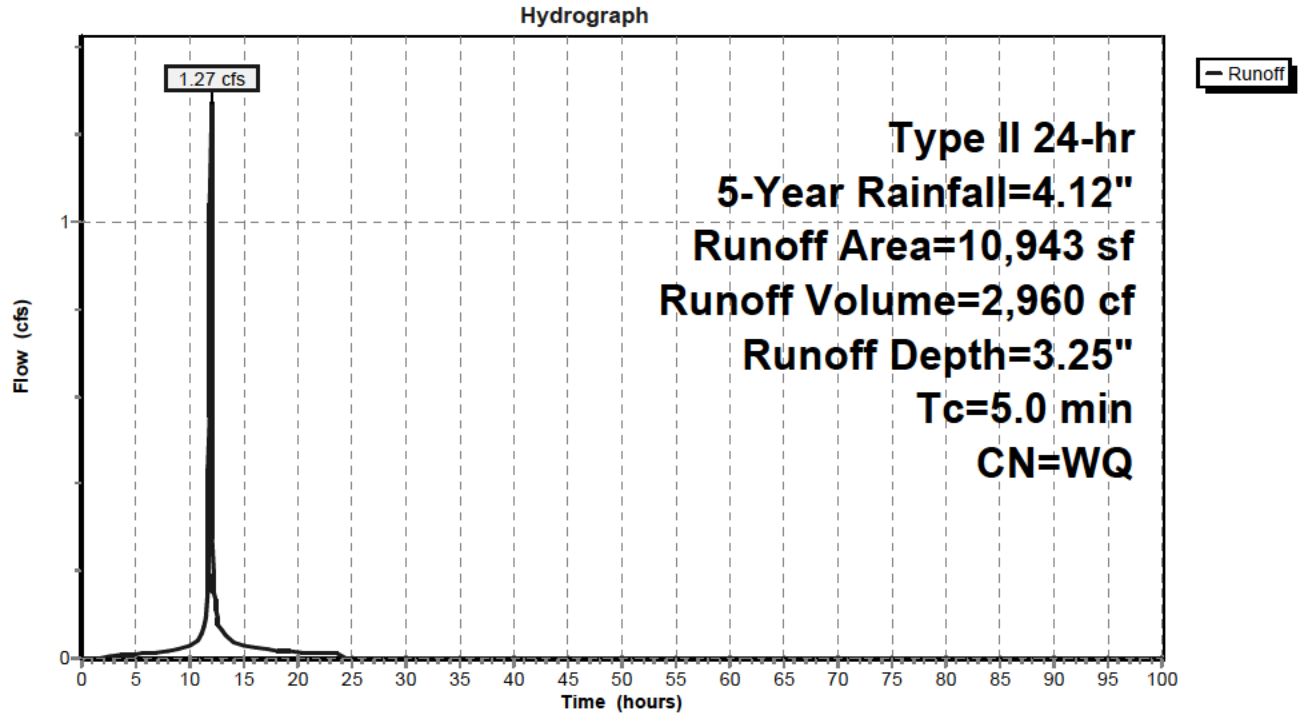
Runoff = 1.27 cfs @ 11.95 hrs, Volume= 2,960 cf, Depth= 3.25"
Routed to Pond 8P : RG1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=4.12"

Area (sf)	CN	Description
3,180	74	>75% Grass cover, Good, HSG C
7,763	98	Paved parking, HSG C
10,943		Weighted Average
3,180		29.06% Pervious Area
7,763		70.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Post to RG 1



Hydrograph for Subcatchment 5S: Post to RG 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.12	3.13	0.00
1.00	0.04	0.00	0.00	53.00	4.12	3.13	0.00
2.00	0.09	0.00	0.00	54.00	4.12	3.13	0.00
3.00	0.14	0.00	0.01	55.00	4.12	3.13	0.00
4.00	0.20	0.00	0.01	56.00	4.12	3.13	0.00
5.00	0.26	0.00	0.01	57.00	4.12	3.13	0.00
6.00	0.33	0.02	0.01	58.00	4.12	3.13	0.00
7.00	0.41	0.04	0.01	59.00	4.12	3.13	0.00
8.00	0.49	0.07	0.01	60.00	4.12	3.13	0.00
9.00	0.61	0.12	0.02	61.00	4.12	3.13	0.00
10.00	0.75	0.20	0.03	62.00	4.12	3.13	0.00
11.00	0.97	0.34	**0.05**	63.00	4.12	3.13	0.00
12.00	2.73	1.82	**1.08**	64.00	4.12	3.13	0.00
13.00	3.18	2.24	0.06	65.00	4.12	3.13	0.00
14.00	3.38	2.43	0.04	66.00	4.12	3.13	0.00
15.00	3.52	2.56	0.03	67.00	4.12	3.13	0.00
16.00	3.63	2.66	0.02	68.00	4.12	3.13	0.00
17.00	3.72	2.75	0.02	69.00	4.12	3.13	0.00
18.00	3.79	2.82	0.02	70.00	4.12	3.13	0.00
19.00	3.86	2.89	0.02	71.00	4.12	3.13	0.00
20.00	3.92	2.94	0.01	72.00	4.12	3.13	0.00
21.00	3.97	2.99	0.01	73.00	4.12	3.13	0.00
22.00	4.03	3.04	0.01	74.00	4.12	3.13	0.00
23.00	4.07	3.09	0.01	75.00	4.12	3.13	0.00
24.00	**4.12**	**3.13**	0.01	76.00	4.12	3.13	0.00
25.00	4.12	3.13	0.00	77.00	4.12	3.13	0.00
26.00	4.12	3.13	0.00	78.00	4.12	3.13	0.00
27.00	4.12	3.13	0.00	79.00	4.12	3.13	0.00
28.00	4.12	3.13	0.00	80.00	4.12	3.13	0.00
29.00	4.12	3.13	0.00	81.00	4.12	3.13	0.00
30.00	4.12	3.13	0.00	82.00	4.12	3.13	0.00
31.00	4.12	3.13	0.00	83.00	4.12	3.13	0.00
32.00	4.12	3.13	0.00	84.00	4.12	3.13	0.00
33.00	4.12	3.13	0.00	85.00	4.12	3.13	0.00
34.00	4.12	3.13	0.00	86.00	4.12	3.13	0.00
35.00	4.12	3.13	0.00	87.00	4.12	3.13	0.00
36.00	4.12	3.13	0.00	88.00	4.12	3.13	0.00
37.00	4.12	3.13	0.00	89.00	4.12	3.13	0.00
38.00	4.12	3.13	0.00	90.00	4.12	3.13	0.00
39.00	4.12	3.13	0.00	91.00	4.12	3.13	0.00
40.00	4.12	3.13	0.00	92.00	4.12	3.13	0.00
41.00	4.12	3.13	0.00	93.00	4.12	3.13	0.00
42.00	4.12	3.13	0.00	94.00	4.12	3.13	0.00
43.00	4.12	3.13	0.00	95.00	4.12	3.13	0.00
44.00	4.12	3.13	0.00	96.00	4.12	3.13	0.00
45.00	4.12	3.13	0.00	97.00	4.12	3.13	0.00
46.00	4.12	3.13	0.00	98.00	4.12	3.13	0.00
47.00	4.12	3.13	0.00	99.00	4.12	3.13	0.00
48.00	4.12	3.13	0.00	100.00	4.12	3.13	0.00
49.00	4.12	3.13	0.00				
50.00	4.12	3.13	0.00				
51.00	4.12	3.13	0.00				

Summary for Subcatchment 6S: Post to RG2

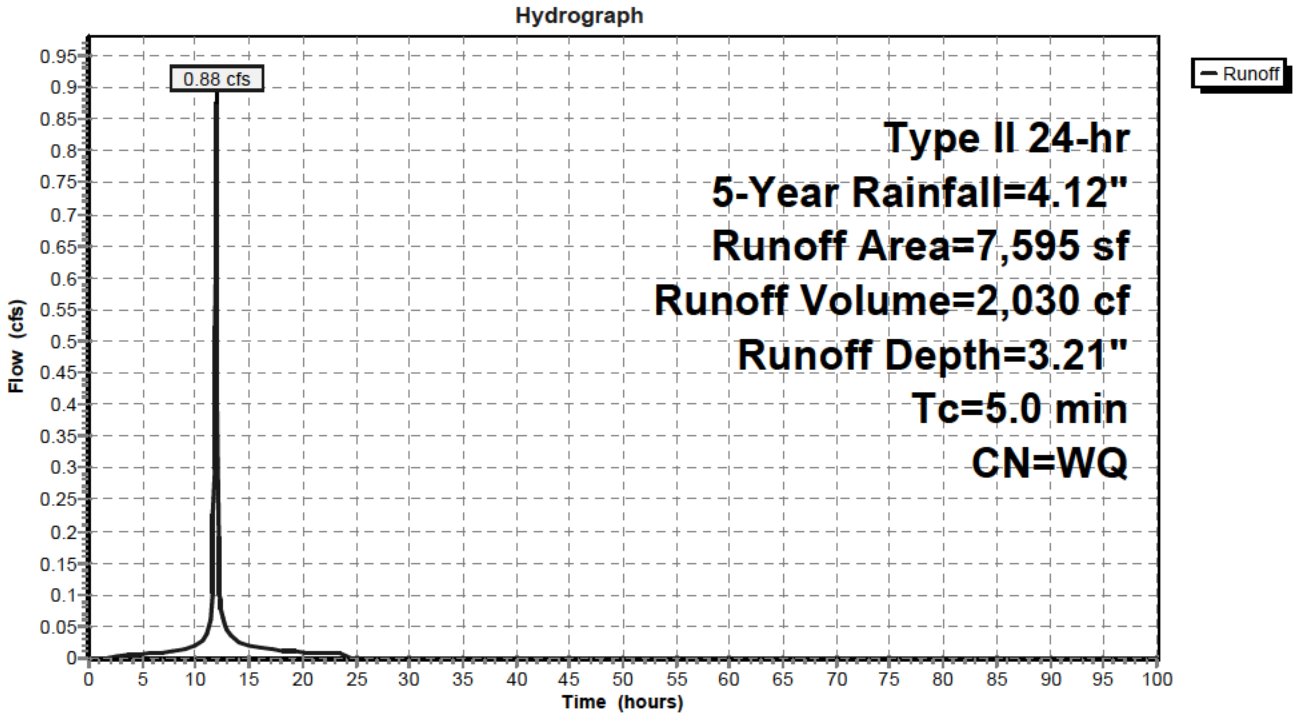
Runoff = 0.88 cfs @ 11.95 hrs, Volume= 2,030 cf, Depth= 3.21"
Routed to Pond 9P : RG2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=4.12"

Area (sf)	CN	Description
2,340	74	>75% Grass cover, Good, HSG C
5,255	98	Paved parking, HSG C
7,595		Weighted Average
2,340		30.81% Pervious Area
5,255		69.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Post to RG2



Hydrograph for Subcatchment 6S: Post to RG2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.04	0.00	0.00
2.00	0.09	0.00	0.00
3.00	0.14	0.00	0.00
4.00	0.20	0.00	0.00
5.00	0.26	0.00	0.01
6.00	0.33	0.02	0.01
7.00	0.41	0.04	0.01
8.00	0.49	0.07	0.01
9.00	0.61	0.12	0.01
10.00	0.75	0.20	0.02
11.00	0.97	0.34	**0.04**
12.00	2.73	1.82	**0.74**
13.00	3.18	2.24	0.04
14.00	3.38	2.43	0.03
15.00	3.52	2.56	0.02
16.00	3.63	2.66	0.02
17.00	3.72	2.75	0.01
18.00	3.79	2.82	0.01
19.00	3.86	2.89	0.01
20.00	3.92	2.94	0.01
21.00	3.97	2.99	0.01
22.00	4.03	3.04	0.01
23.00	4.07	3.09	0.01
24.00	**4.12**	**3.13**	0.01
25.00	4.12	3.13	0.00
26.00	4.12	3.13	0.00
27.00	4.12	3.13	0.00
28.00	4.12	3.13	0.00
29.00	4.12	3.13	0.00
30.00	4.12	3.13	0.00
31.00	4.12	3.13	0.00
32.00	4.12	3.13	0.00
33.00	4.12	3.13	0.00
34.00	4.12	3.13	0.00
35.00	4.12	3.13	0.00
36.00	4.12	3.13	0.00
37.00	4.12	3.13	0.00
38.00	4.12	3.13	0.00
39.00	4.12	3.13	0.00
40.00	4.12	3.13	0.00
41.00	4.12	3.13	0.00
42.00	4.12	3.13	0.00
43.00	4.12	3.13	0.00
44.00	4.12	3.13	0.00
45.00	4.12	3.13	0.00
46.00	4.12	3.13	0.00
47.00	4.12	3.13	0.00
48.00	4.12	3.13	0.00
49.00	4.12	3.13	0.00
50.00	4.12	3.13	0.00
51.00	4.12	3.13	0.00
52.00	4.12	3.13	0.00
53.00	4.12	3.13	0.00
54.00	4.12	3.13	0.00
55.00	4.12	3.13	0.00
56.00	4.12	3.13	0.00
57.00	4.12	3.13	0.00
58.00	4.12	3.13	0.00
59.00	4.12	3.13	0.00
60.00	4.12	3.13	0.00
61.00	4.12	3.13	0.00
62.00	4.12	3.13	0.00
63.00	4.12	3.13	0.00
64.00	4.12	3.13	0.00
65.00	4.12	3.13	0.00
66.00	4.12	3.13	0.00
67.00	4.12	3.13	0.00
68.00	4.12	3.13	0.00
69.00	4.12	3.13	0.00
70.00	4.12	3.13	0.00
71.00	4.12	3.13	0.00
72.00	4.12	3.13	0.00
73.00	4.12	3.13	0.00
74.00	4.12	3.13	0.00
75.00	4.12	3.13	0.00
76.00	4.12	3.13	0.00
77.00	4.12	3.13	0.00
78.00	4.12	3.13	0.00
79.00	4.12	3.13	0.00
80.00	4.12	3.13	0.00
81.00	4.12	3.13	0.00
82.00	4.12	3.13	0.00
83.00	4.12	3.13	0.00
84.00	4.12	3.13	0.00
85.00	4.12	3.13	0.00
86.00	4.12	3.13	0.00
87.00	4.12	3.13	0.00
88.00	4.12	3.13	0.00
89.00	4.12	3.13	0.00
90.00	4.12	3.13	0.00
91.00	4.12	3.13	0.00
92.00	4.12	3.13	0.00
93.00	4.12	3.13	0.00
94.00	4.12	3.13	0.00
95.00	4.12	3.13	0.00
96.00	4.12	3.13	0.00
97.00	4.12	3.13	0.00
98.00	4.12	3.13	0.00
99.00	4.12	3.13	0.00
100.00	4.12	3.13	0.00

Summary for Pond 8P: RG1

Inflow Area = 10,943 sf, 70.94% Impervious, Inflow Depth = 3.25" for 5-Year event
Inflow = 1.27 cfs @ 11.95 hrs, Volume= 2,960 cf
Outflow = 0.38 cfs @ 12.09 hrs, Volume= 2,765 cf, Atten= 70%, Lag= 8.2 min
Primary = 0.38 cfs @ 12.09 hrs, Volume= 2,765 cf
Routed to Link 7L : DP001 (POST)

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 52.98' @ 12.09 hrs Surf.Area= 1,250 sf Storage= 1,039 cf

Plug-Flow detention time= 99.6 min calculated for 2,764 cf (93% of inflow)
Center-of-Mass det. time= 62.0 min (823.0 - 761.0)

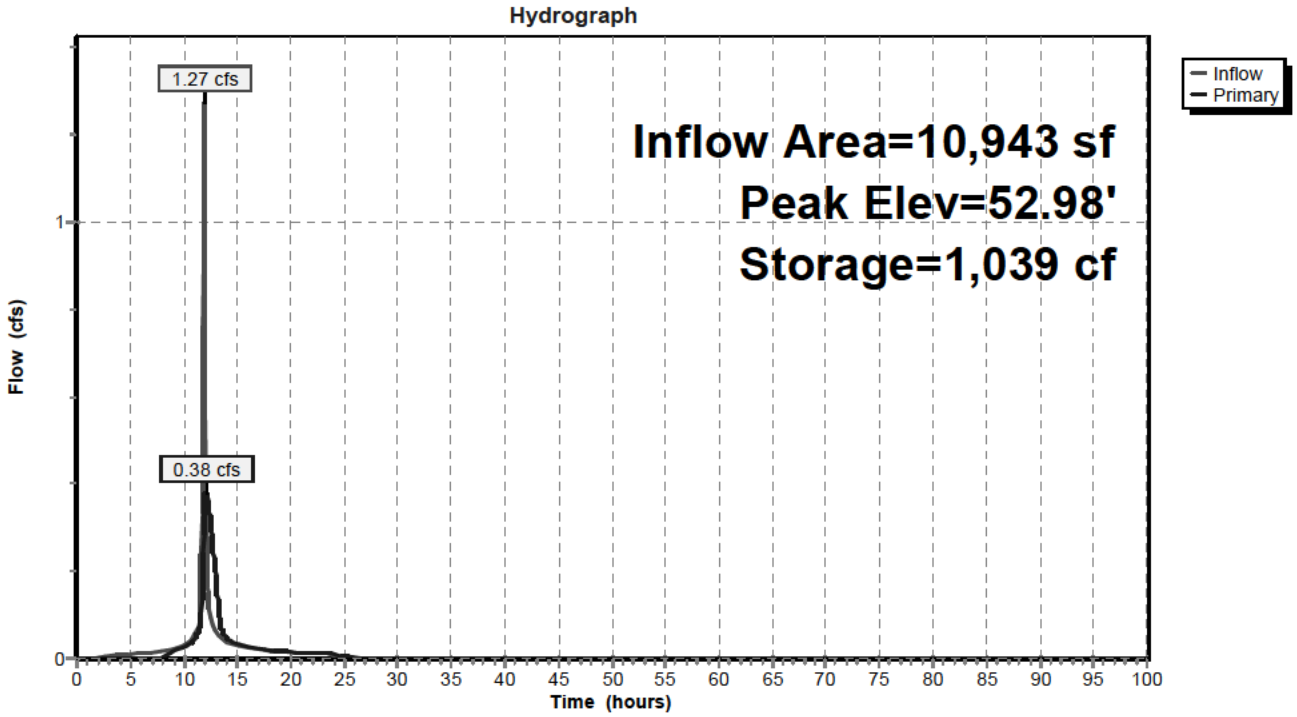
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	2,727 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.00	476	0.0	0	0
51.99	476	20.0	189	189
52.00	476	100.0	5	194
54.00	2,057	100.0	2,533	2,727

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	53.25'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	52.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.38 cfs @ 12.09 hrs HW=52.98' (Free Discharge)
└**1=Culvert** (Passes 0.38 cfs of 12.70 cfs potential flow)
└**2=Grate** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Orifice Controls 0.38 cfs @ 4.33 fps)

Pond 8P: RG1


Hydrograph
Inflow
Primary
1.27 cfs
0.38 cfs
Inflow Area=10,943 sf
Peak Elev=52.98'
Storage=1,039 cf
Flow (cfs)
Time (hours)
0
1
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Hydrograph for Pond 8P: RG1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	50.00	0.00
2.50	0.00	12	50.12	0.00
5.00	0.01	71	50.74	0.00
7.50	0.01	173	51.82	0.00
10.00	**0.03**	**245**	**52.10**	**0.02**
12.50	**0.10**	**748**	**52.73**	**0.31**
15.00	0.03	254	52.12	0.03
17.50	0.02	240	52.09	0.02
20.00	0.01	232	52.07	0.01
22.50	0.01	228	52.07	0.01
25.00	0.00	209	52.03	0.00
27.50	0.00	196	52.00	0.00
30.00	0.00	195	52.00	0.00
32.50	0.00	194	52.00	0.00
35.00	0.00	194	52.00	0.00
37.50	0.00	194	52.00	0.00
40.00	0.00	194	52.00	0.00
42.50	0.00	194	52.00	0.00
45.00	0.00	194	52.00	0.00
47.50	0.00	194	52.00	0.00
50.00	0.00	194	52.00	0.00
52.50	0.00	194	52.00	0.00
55.00	0.00	194	52.00	0.00
57.50	0.00	194	52.00	0.00
60.00	0.00	194	52.00	0.00
62.50	0.00	194	52.00	0.00
65.00	0.00	194	52.00	0.00
67.50	0.00	194	52.00	0.00
70.00	0.00	194	52.00	0.00
72.50	0.00	194	52.00	0.00
75.00	0.00	194	52.00	0.00
77.50	0.00	194	52.00	0.00
80.00	0.00	194	52.00	0.00
82.50	0.00	194	52.00	0.00
85.00	0.00	194	52.00	0.00
87.50	0.00	194	52.00	0.00
90.00	0.00	194	52.00	0.00
92.50	0.00	194	52.00	0.00
95.00	0.00	194	52.00	0.00
97.50	0.00	194	52.00	0.00
100.00	0.00	194	52.00	0.00

Stage-Discharge for Pond 8P: RG1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.00	0.00	51.04	0.00	52.08	0.02	53.12	0.41
50.02	0.00	51.06	0.00	52.10	0.02	53.14	0.41
50.04	0.00	51.08	0.00	52.12	0.03	53.16	0.42
50.06	0.00	51.10	0.00	52.14	0.04	53.18	0.42
50.08	0.00	51.12	0.00	52.16	0.06	53.20	0.43
50.10	0.00	51.14	0.00	52.18	0.07	53.22	0.43
50.12	0.00	51.16	0.00	52.20	0.08	53.24	0.44
50.14	0.00	51.18	0.00	52.22	0.10	53.26	0.47
50.16	0.00	51.20	0.00	52.24	0.11	53.28	0.58
50.18	0.00	51.22	0.00	52.26	0.13	53.30	0.74
50.20	0.00	51.24	0.00	52.28	0.14	53.32	0.94
50.22	0.00	51.26	0.00	52.30	0.15	53.34	1.16
50.24	0.00	51.28	0.00	52.32	0.17	53.36	1.41
50.26	0.00	51.30	0.00	52.34	0.17	53.38	1.69
50.28	0.00	51.32	0.00	52.36	0.18	53.40	1.99
50.30	0.00	51.34	0.00	52.38	0.19	53.42	2.30
50.32	0.00	51.36	0.00	52.40	0.20	53.44	2.64
50.34	0.00	51.38	0.00	52.42	0.21	53.46	3.00
50.36	0.00	51.40	0.00	52.44	0.22	53.48	3.37
50.38	0.00	51.42	0.00	52.46	0.23	53.50	3.76
50.40	0.00	51.44	0.00	52.48	0.24	53.52	4.16
50.42	0.00	51.46	0.00	52.50	0.24	53.54	4.58
50.44	0.00	51.48	0.00	52.52	0.25	53.56	5.01
50.46	0.00	51.50	0.00	52.54	0.26	53.58	5.46
50.48	0.00	51.52	0.00	52.56	0.26	53.60	5.92
50.50	0.00	51.54	0.00	52.58	0.27	53.62	6.39
50.52	0.00	51.56	0.00	52.60	0.28	53.64	6.88
50.54	0.00	51.58	0.00	52.62	0.28	53.66	7.38
50.56	0.00	51.60	0.00	52.64	0.29	53.68	7.89
50.58	0.00	51.62	0.00	52.66	0.30	53.70	8.42
50.60	0.00	51.64	0.00	52.68	0.30	53.72	8.95
50.62	0.00	51.66	0.00	52.70	0.31	53.74	9.50
50.64	0.00	51.68	0.00	52.72	0.31	53.76	10.06
50.66	0.00	51.70	0.00	52.74	0.32	53.78	10.63
50.68	0.00	51.72	0.00	52.76	0.32	53.80	11.21
50.70	0.00	51.74	0.00	52.78	0.33	53.82	11.80
50.72	0.00	51.76	0.00	52.80	0.33	53.84	12.40
50.74	0.00	51.78	0.00	52.82	0.34	53.86	13.01
50.76	0.00	51.80	0.00	52.84	0.34	53.88	13.63
50.78	0.00	51.82	0.00	52.86	0.35	53.90	14.26
50.80	0.00	51.84	0.00	52.88	0.35	53.92	14.90
50.82	0.00	51.86	0.00	52.90	0.36	53.94	15.20
50.84	0.00	51.88	0.00	52.92	0.36	53.96	15.24
50.86	0.00	51.90	0.00	52.94	0.37	53.98	15.29
50.88	0.00	51.92	0.00	52.96	0.37	54.00	**15.34**
50.90	0.00	51.94	0.00	52.98	0.38		
50.92	0.00	51.96	0.00	53.00	0.38		
50.94	0.00	51.98	0.00	53.02	0.39		
50.96	0.00	52.00	0.00	53.04	0.39		
50.98	0.00	52.02	0.00	53.06	0.40		
51.00	0.00	52.04	0.00	53.08	0.40		
51.02	0.00	52.06	0.01	53.10	0.41		

Stage-Area-Storage for Pond 8P: RG1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	476	0
50.05	476	5
50.10	476	10
50.15	476	14
50.20	476	19
50.25	476	24
50.30	476	29
50.35	476	33
50.40	476	38
50.45	476	43
50.50	476	48
50.55	476	52
50.60	476	57
50.65	476	62
50.70	476	67
50.75	476	71
50.80	476	76
50.85	476	81
50.90	476	86
50.95	476	90
51.00	476	95
51.05	476	100
51.10	476	105
51.15	476	109
51.20	476	114
51.25	476	119
51.30	476	124
51.35	476	129
51.40	476	133
51.45	476	138
51.50	476	143
51.55	476	148
51.60	476	152
51.65	476	157
51.70	476	162
51.75	476	167
51.80	476	171
51.85	476	176
51.90	476	181
51.95	476	186
52.00	476	194
52.05	516	219
52.10	555	246
52.15	595	275
52.20	634	305
52.25	674	338
52.30	713	373
52.35	753	409
52.40	792	448
52.45	832	488
52.50	871	531
52.55	911	576
52.60	950	622
52.65	990	671
52.70	1,029	721
52.75	1,069	774
52.80	1,108	828
52.85	1,148	884
52.90	1,187	943
52.95	1,227	1,003
53.00	1,267	1,065
53.05	1,306	1,130
53.10	1,346	1,196
53.15	1,385	1,264
53.20	1,425	1,335
53.25	1,464	1,407
53.30	1,504	1,481
53.35	1,543	1,557
53.40	1,583	1,635
53.45	1,622	1,715
53.50	1,662	1,798
53.55	1,701	1,882
53.60	1,741	1,968
53.65	1,780	2,056
53.70	1,820	2,146
53.75	1,859	2,238
53.80	1,899	2,332
53.85	1,938	2,428
53.90	1,978	2,525
53.95	2,017	2,625
54.00	**2,057**	**2,727**

Summary for Pond 9P: RG2

Inflow Area = 7,595 sf, 69.19% Impervious, Inflow Depth = 3.21" for 5-Year event
Inflow = 0.88 cfs @ 11.95 hrs, Volume= 2,030 cf
Outflow = 0.39 cfs @ 12.06 hrs, Volume= 1,686 cf, Atten= 55%, Lag= 6.4 min
Primary = 0.39 cfs @ 12.06 hrs, Volume= 1,686 cf
Routed to Link 7L : DP001 (POST)

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 52.30' @ 12.06 hrs Surf.Area= 1,148 sf Storage= 724 cf

Plug-Flow detention time= 140.5 min calculated for 1,686 cf (83% of inflow)
Center-of-Mass det. time= 65.0 min (827.1 - 762.1)

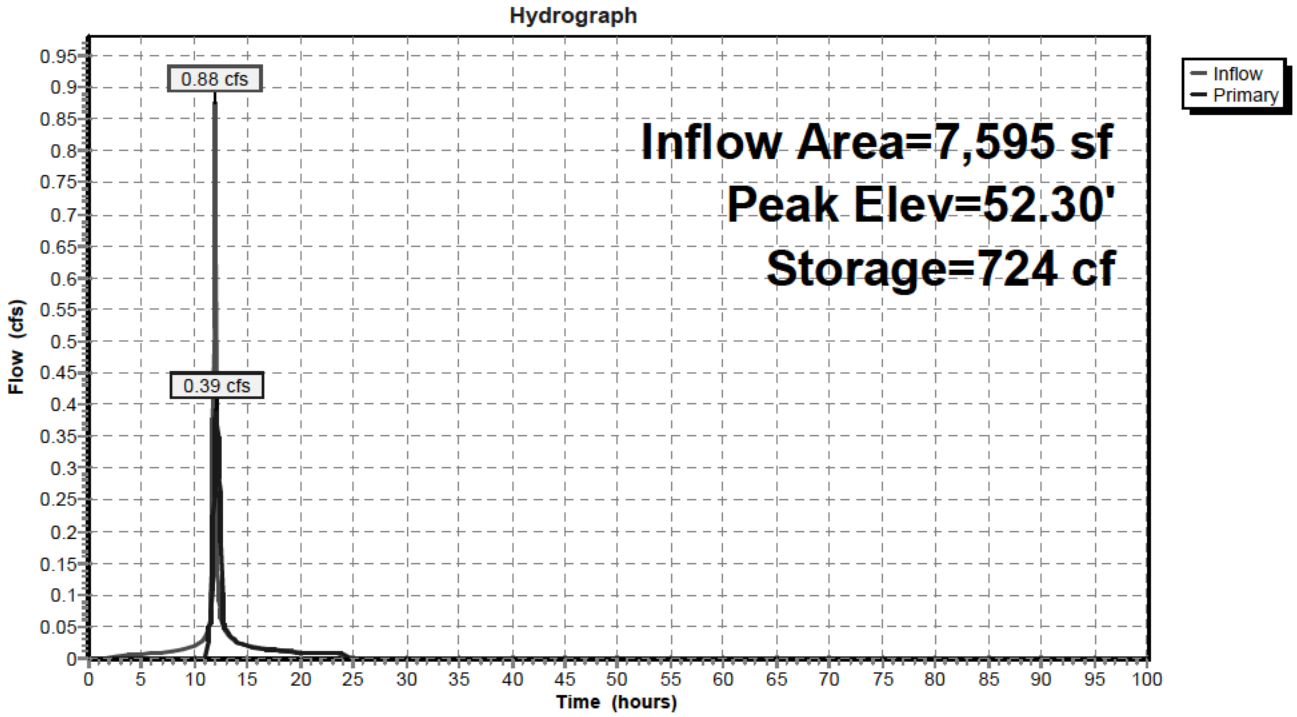
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	1,656 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.00	982	0.0	0	0
51.99	982	20.0	391	391
52.00	982	100.0	10	401
53.00	1,529	100.0	1,256	1,656

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	52.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	51.75'	**6.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.39 cfs @ 12.06 hrs HW=52.30' (Free Discharge)
└**1=Culvert** (Passes 0.39 cfs of 10.59 cfs potential flow)
└**2=Grate** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Orifice Controls 0.39 cfs @ 3.13 fps)

Pond 9P: RG2


Hydrograph
Inflow Area=7,595 sf
Peak Elev=52.30'
Storage=724 cf
0.88 cfs
0.39 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
0.7
0.75
0.8
0.85
0.9
0.95
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Hydrograph for Pond 9P: RG2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	50.00	0.00
2.50	0.00	8	50.04	0.00
5.00	0.01	48	50.24	0.00
7.50	0.01	117	50.60	0.00
10.00	**0.02**	**234**	**51.19**	**0.00**
12.50	**0.07**	**414**	**52.01**	**0.21**
15.00	0.02	354	51.80	0.02
17.50	0.01	351	51.79	0.01
20.00	0.01	350	51.78	0.01
22.50	0.01	349	51.78	0.01
25.00	0.00	344	51.75	0.00
27.50	0.00	344	51.75	0.00
30.00	0.00	344	51.75	0.00
32.50	0.00	344	51.75	0.00
35.00	0.00	344	51.75	0.00
37.50	0.00	344	51.75	0.00
40.00	0.00	344	51.75	0.00
42.50	0.00	344	51.75	0.00
45.00	0.00	344	51.75	0.00
47.50	0.00	344	51.75	0.00
50.00	0.00	344	51.75	0.00
52.50	0.00	344	51.75	0.00
55.00	0.00	344	51.75	0.00
57.50	0.00	344	51.75	0.00
60.00	0.00	344	51.75	0.00
62.50	0.00	344	51.75	0.00
65.00	0.00	344	51.75	0.00
67.50	0.00	344	51.75	0.00
70.00	0.00	344	51.75	0.00
72.50	0.00	344	51.75	0.00
75.00	0.00	344	51.75	0.00
77.50	0.00	344	51.75	0.00
80.00	0.00	344	51.75	0.00
82.50	0.00	344	51.75	0.00
85.00	0.00	344	51.75	0.00
87.50	0.00	344	51.75	0.00
90.00	0.00	344	51.75	0.00
92.50	0.00	344	51.75	0.00
95.00	0.00	344	51.75	0.00
97.50	0.00	344	51.75	0.00
100.00	0.00	344	51.75	0.00

Stage-Discharge for Pond 9P: RG2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.00	0.00	51.04	0.00	52.08	0.27
50.02	0.00	51.06	0.00	52.10	0.28
50.04	0.00	51.08	0.00	52.12	0.29
50.06	0.00	51.10	0.00	52.14	0.31
50.08	0.00	51.12	0.00	52.16	0.32
50.10	0.00	51.14	0.00	52.18	0.33
50.12	0.00	51.16	0.00	52.20	0.34
50.14	0.00	51.18	0.00	52.22	0.35
50.16	0.00	51.20	0.00	52.24	0.36
50.18	0.00	51.22	0.00	52.26	0.37
50.20	0.00	51.24	0.00	52.28	0.38
50.22	0.00	51.26	0.00	52.30	0.39
50.24	0.00	51.28	0.00	52.32	0.40
50.26	0.00	51.30	0.00	52.34	0.41
50.28	0.00	51.32	0.00	52.36	0.42
50.30	0.00	51.34	0.00	52.38	0.43
50.32	0.00	51.36	0.00	52.40	0.44
50.34	0.00	51.38	0.00	52.42	0.44
50.36	0.00	51.40	0.00	52.44	0.45
50.38	0.00	51.42	0.00	52.46	0.46
50.40	0.00	51.44	0.00	52.48	0.47
50.42	0.00	51.46	0.00	52.50	0.48
50.44	0.00	51.48	0.00	52.52	0.56
50.46	0.00	51.50	0.00	52.54	0.70
50.48	0.00	51.52	0.00	52.56	0.88
50.50	0.00	51.54	0.00	52.58	1.10
50.52	0.00	51.56	0.00	52.60	1.34
50.54	0.00	51.58	0.00	52.62	1.61
50.56	0.00	51.60	0.00	52.64	1.90
50.58	0.00	51.62	0.00	52.66	2.21
50.60	0.00	51.64	0.00	52.68	2.54
50.62	0.00	51.66	0.00	52.70	2.89
50.64	0.00	51.68	0.00	52.72	3.25
50.66	0.00	51.70	0.00	52.74	3.64
50.68	0.00	51.72	0.00	52.76	4.03
50.70	0.00	51.74	0.00	52.78	4.45
50.72	0.00	51.76	0.00	52.80	4.88
50.74	0.00	51.78	0.01	52.82	5.32
50.76	0.00	51.80	0.02	52.84	5.78
50.78	0.00	51.82	0.03	52.86	6.25
50.80	0.00	51.84	0.04	52.88	6.73
50.82	0.00	51.86	0.06	52.90	7.23
50.84	0.00	51.88	0.08	52.92	7.74
50.86	0.00	51.90	0.09	52.94	8.26
50.88	0.00	51.92	0.11	52.96	8.79
50.90	0.00	51.94	0.13	52.98	9.33
50.92	0.00	51.96	0.15	53.00	**9.89**
50.94	0.00	51.98	0.18		
50.96	0.00	52.00	0.20		
50.98	0.00	52.02	0.22		
51.00	0.00	52.04	0.24		
51.02	0.00	52.06	0.25		

Stage-Area-Storage for Pond 9P: RG2

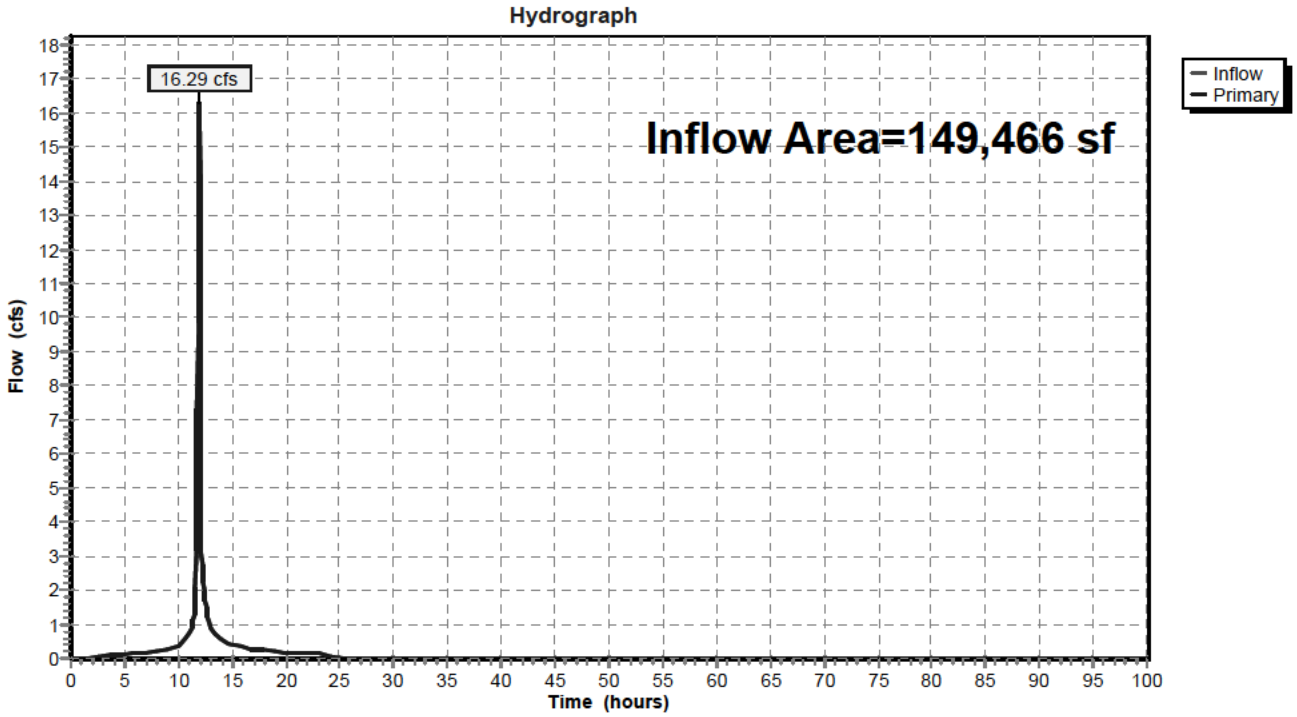
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	982	0
50.05	982	10
50.10	982	20
50.15	982	29
50.20	982	39
50.25	982	49
50.30	982	59
50.35	982	69
50.40	982	79
50.45	982	88
50.50	982	98
50.55	982	108
50.60	982	118
50.65	982	128
50.70	982	137
50.75	982	147
50.80	982	157
50.85	982	167
50.90	982	177
50.95	982	187
51.00	982	196
51.05	982	206
51.10	982	216
51.15	982	226
51.20	982	236
51.25	982	246
51.30	982	255
51.35	982	265
51.40	982	275
51.45	982	285
51.50	982	295
51.55	982	304
51.60	982	314
51.65	982	324
51.70	982	334
51.75	982	344
51.80	982	354
51.85	982	363
51.90	982	373
51.95	982	383
52.00	982	401
52.05	1,009	450
52.10	1,037	502
52.15	1,064	554
52.20	1,091	608
52.25	1,119	663
52.30	1,146	720
52.35	1,173	778
52.40	1,201	837
52.45	1,228	898
52.50	1,256	960
52.55	1,283	1,023
52.60	1,310	1,088
52.65	1,338	1,155
52.70	1,365	1,222
52.75	1,392	1,291
52.80	1,420	1,361
52.85	1,447	1,433
52.90	1,474	1,506
52.95	1,502	1,580
53.00	**1,529**	**1,656**

Summary for Link 7L: DP001 (POST)

Inflow Area = 149,466 sf, 74.65% Impervious, Inflow Depth = 3.28" for 5-Year event
Inflow = 16.29 cfs @ 11.95 hrs, Volume= 40,903 cf
Primary = 16.29 cfs @ 11.95 hrs, Volume= 40,903 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Link 7L: DP001 (POST)



Hydrograph for Link 7L: DP001 (POST)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.04	0.00	0.04	54.00	0.00	0.00	0.00
3.00	0.07	0.00	0.07	55.00	0.00	0.00	0.00
4.00	0.09	0.00	0.09	56.00	0.00	0.00	0.00
5.00	0.11	0.00	0.11	57.00	0.00	0.00	0.00
6.00	0.14	0.00	0.14	58.00	0.00	0.00	0.00
7.00	0.16	0.00	0.16	59.00	0.00	0.00	0.00
8.00	0.19	0.00	0.19	60.00	0.00	0.00	0.00
9.00	0.29	0.00	0.29	61.00	0.00	0.00	0.00
10.00	0.37	0.00	0.37	62.00	0.00	0.00	0.00
11.00	**0.70**	0.00	**0.70**	63.00	0.00	0.00	0.00
12.00	**13.90**	0.00	**13.90**	64.00	0.00	0.00	0.00
13.00	0.97	0.00	0.97	65.00	0.00	0.00	0.00
14.00	0.51	0.00	0.51	66.00	0.00	0.00	0.00
15.00	0.40	0.00	0.40	67.00	0.00	0.00	0.00
16.00	0.31	0.00	0.31	68.00	0.00	0.00	0.00
17.00	0.27	0.00	0.27	69.00	0.00	0.00	0.00
18.00	0.24	0.00	0.24	70.00	0.00	0.00	0.00
19.00	0.21	0.00	0.21	71.00	0.00	0.00	0.00
20.00	0.18	0.00	0.18	72.00	0.00	0.00	0.00
21.00	0.17	0.00	0.17	73.00	0.00	0.00	0.00
22.00	0.16	0.00	0.16	74.00	0.00	0.00	0.00
23.00	0.15	0.00	0.15	75.00	0.00	0.00	0.00
24.00	0.15	0.00	0.15	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	97.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	98.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	99.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Subcatchment 4S: Post Uncaptured

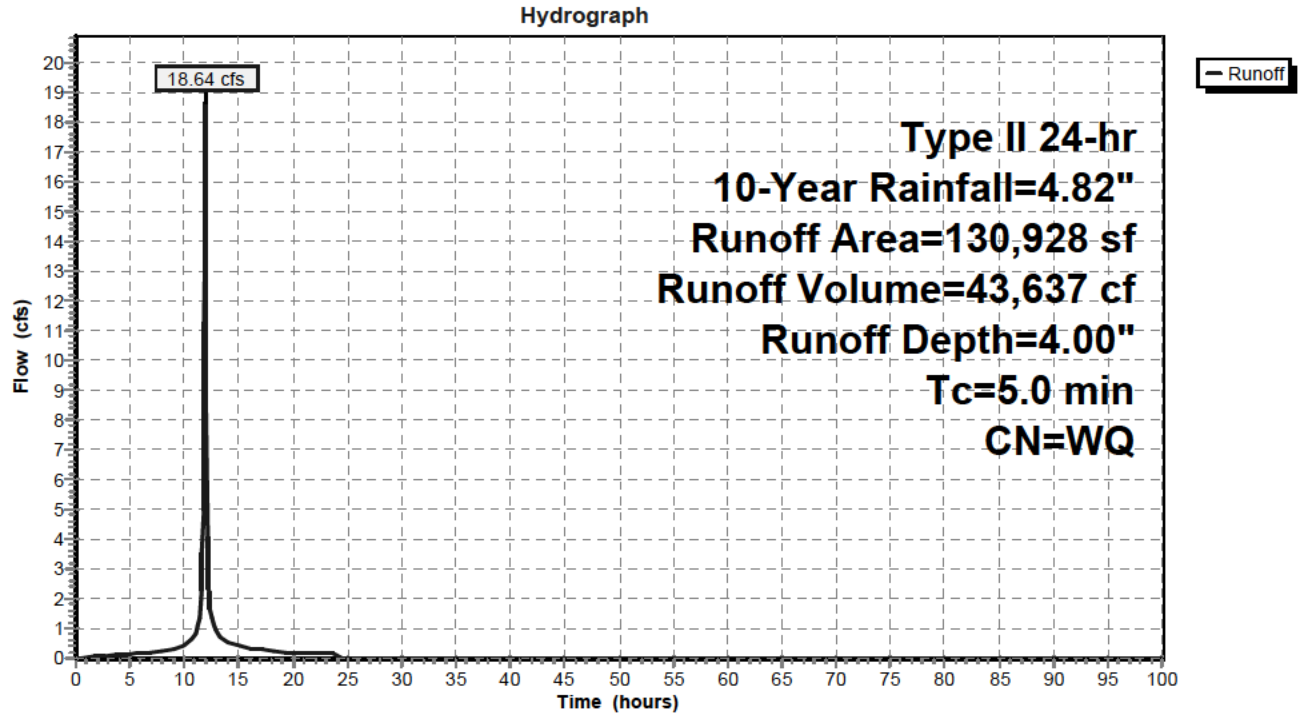
Runoff = 18.64 cfs @ 11.95 hrs, Volume= 43,637 cf, Depth= 4.00"
Routed to Link 7L : DP001 (POST)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=4.82"

Area (sf)	CN	Description
32,370	74	>75% Grass cover, Good, HSG C
98,558	98	Paved parking, HSG C
130,928		Weighted Average
32,370		24.72% Pervious Area
98,558		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Post Uncaptured



Hydrograph for Subcatchment 4S: Post Uncaptured

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.82	3.91	0.00
1.00	0.05	0.00	0.01	53.00	4.82	3.91	0.00
2.00	0.11	0.00	0.05	54.00	4.82	3.91	0.00
3.00	0.17	0.00	0.09	55.00	4.82	3.91	0.00
4.00	0.23	0.00	0.11	56.00	4.82	3.91	0.00
5.00	0.30	0.02	0.14	57.00	4.82	3.91	0.00
6.00	0.39	0.04	0.17	58.00	4.82	3.91	0.00
7.00	0.48	0.08	0.20	59.00	4.82	3.91	0.00
8.00	0.58	0.13	0.22	60.00	4.82	3.91	0.00
9.00	0.71	0.20	0.32	61.00	4.82	3.91	0.00
10.00	0.87	0.31	0.42	62.00	4.82	3.91	0.00
11.00	1.13	0.50	**0.79**	63.00	4.82	3.91	0.00
12.00	3.20	2.35	**15.69**	64.00	4.82	3.91	0.00
13.00	3.72	2.85	0.88	65.00	4.82	3.91	0.00
14.00	3.95	3.07	0.52	66.00	4.82	3.91	0.00
15.00	4.11	3.23	0.42	67.00	4.82	3.91	0.00
16.00	4.24	3.35	0.32	68.00	4.82	3.91	0.00
17.00	4.35	3.45	0.28	69.00	4.82	3.91	0.00
18.00	4.44	3.54	0.25	70.00	4.82	3.91	0.00
19.00	4.52	3.62	0.22	71.00	4.82	3.91	0.00
20.00	4.59	3.69	0.18	72.00	4.82	3.91	0.00
21.00	4.65	3.75	0.17	73.00	4.82	3.91	0.00
22.00	4.71	3.81	0.17	74.00	4.82	3.91	0.00
23.00	4.77	3.86	0.16	75.00	4.82	3.91	0.00
24.00	**4.82**	**3.91**	0.15	76.00	4.82	3.91	0.00
25.00	4.82	3.91	0.00	77.00	4.82	3.91	0.00
26.00	4.82	3.91	0.00	78.00	4.82	3.91	0.00
27.00	4.82	3.91	0.00	79.00	4.82	3.91	0.00
28.00	4.82	3.91	0.00	80.00	4.82	3.91	0.00
29.00	4.82	3.91	0.00	81.00	4.82	3.91	0.00
30.00	4.82	3.91	0.00	82.00	4.82	3.91	0.00
31.00	4.82	3.91	0.00	83.00	4.82	3.91	0.00
32.00	4.82	3.91	0.00	84.00	4.82	3.91	0.00
33.00	4.82	3.91	0.00	85.00	4.82	3.91	0.00
34.00	4.82	3.91	0.00	86.00	4.82	3.91	0.00
35.00	4.82	3.91	0.00	87.00	4.82	3.91	0.00
36.00	4.82	3.91	0.00	88.00	4.82	3.91	0.00
37.00	4.82	3.91	0.00	89.00	4.82	3.91	0.00
38.00	4.82	3.91	0.00	90.00	4.82	3.91	0.00
39.00	4.82	3.91	0.00	91.00	4.82	3.91	0.00
40.00	4.82	3.91	0.00	92.00	4.82	3.91	0.00
41.00	4.82	3.91	0.00	93.00	4.82	3.91	0.00
42.00	4.82	3.91	0.00	94.00	4.82	3.91	0.00
43.00	4.82	3.91	0.00	95.00	4.82	3.91	0.00
44.00	4.82	3.91	0.00	96.00	4.82	3.91	0.00
45.00	4.82	3.91	0.00	97.00	4.82	3.91	0.00
46.00	4.82	3.91	0.00	98.00	4.82	3.91	0.00
47.00	4.82	3.91	0.00	99.00	4.82	3.91	0.00
48.00	4.82	3.91	0.00	100.00	4.82	3.91	0.00
49.00	4.82	3.91	0.00				
50.00	4.82	3.91	0.00				
51.00	4.82	3.91	0.00				

Summary for Subcatchment 5S: Post to RG 1

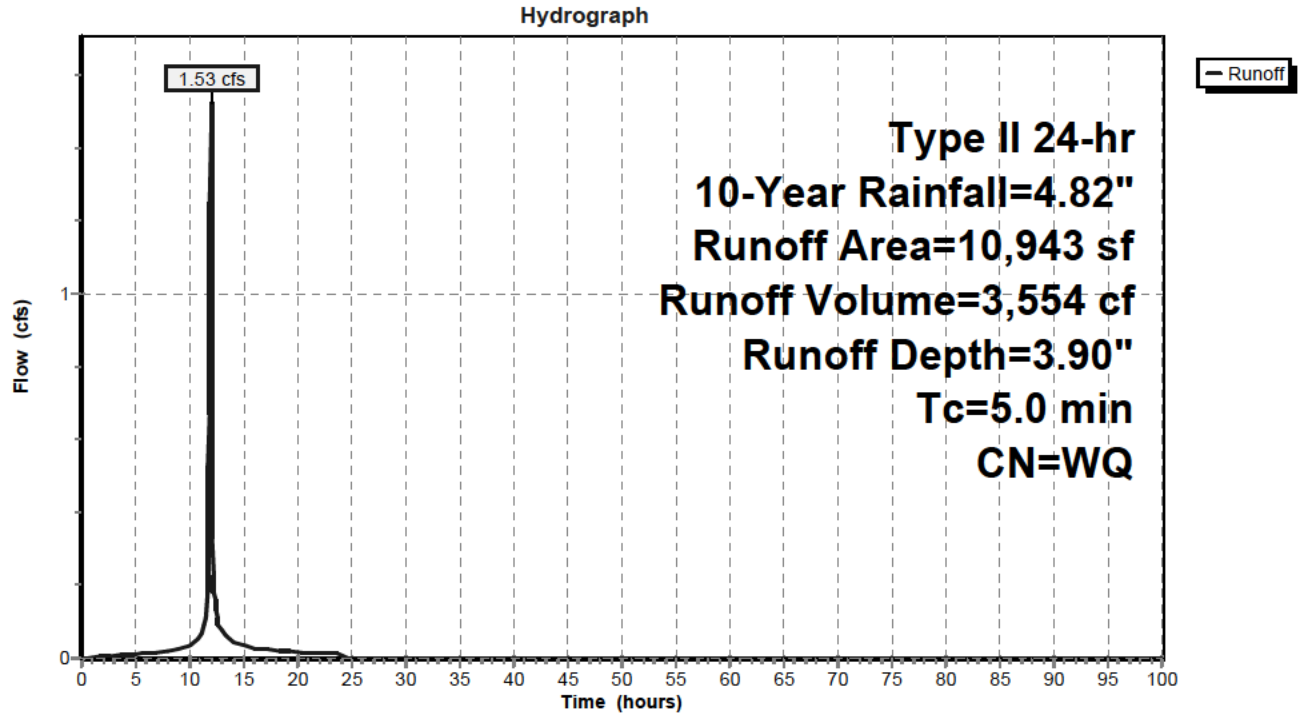
Runoff = 1.53 cfs @ 11.95 hrs, Volume= 3,554 cf, Depth= 3.90"
Routed to Pond 8P : RG1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=4.82"

Area (sf)	CN	Description
3,180	74	>75% Grass cover, Good, HSG C
7,763	98	Paved parking, HSG C
10,943		Weighted Average
3,180		29.06% Pervious Area
7,763		70.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Post to RG 1



Hydrograph for Subcatchment 5S: Post to RG 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.11	0.00	0.00
3.00	0.17	0.00	0.01
4.00	0.23	0.00	0.01
5.00	0.30	0.01	0.01
6.00	0.39	0.03	0.01
7.00	0.48	0.06	0.02
8.00	0.58	0.11	0.02
9.00	0.71	0.17	0.03
10.00	0.87	0.27	0.03
11.00	1.13	0.45	**0.06**
12.00	3.20	2.25	**1.29**
13.00	3.72	2.75	0.07
14.00	3.95	2.97	0.04
15.00	4.11	3.13	0.03
16.00	4.24	3.25	0.03
17.00	4.35	3.35	0.02
18.00	4.44	3.44	0.02
19.00	4.52	3.52	0.02
20.00	4.59	3.58	0.02
21.00	4.65	3.64	0.01
22.00	4.71	3.70	0.01
23.00	4.77	3.75	0.01
24.00	**4.82**	**3.81**	0.01
25.00	4.82	3.81	0.00
26.00	4.82	3.81	0.00
27.00	4.82	3.81	0.00
28.00	4.82	3.81	0.00
29.00	4.82	3.81	0.00
30.00	4.82	3.81	0.00
31.00	4.82	3.81	0.00
32.00	4.82	3.81	0.00
33.00	4.82	3.81	0.00
34.00	4.82	3.81	0.00
35.00	4.82	3.81	0.00
36.00	4.82	3.81	0.00
37.00	4.82	3.81	0.00
38.00	4.82	3.81	0.00
39.00	4.82	3.81	0.00
40.00	4.82	3.81	0.00
41.00	4.82	3.81	0.00
42.00	4.82	3.81	0.00
43.00	4.82	3.81	0.00
44.00	4.82	3.81	0.00
45.00	4.82	3.81	0.00
46.00	4.82	3.81	0.00
47.00	4.82	3.81	0.00
48.00	4.82	3.81	0.00
49.00	4.82	3.81	0.00
50.00	4.82	3.81	0.00
51.00	4.82	3.81	0.00
52.00	4.82	3.81	0.00
53.00	4.82	3.81	0.00
54.00	4.82	3.81	0.00
55.00	4.82	3.81	0.00
56.00	4.82	3.81	0.00
57.00	4.82	3.81	0.00
58.00	4.82	3.81	0.00
59.00	4.82	3.81	0.00
60.00	4.82	3.81	0.00
61.00	4.82	3.81	0.00
62.00	4.82	3.81	0.00
63.00	4.82	3.81	0.00
64.00	4.82	3.81	0.00
65.00	4.82	3.81	0.00
66.00	4.82	3.81	0.00
67.00	4.82	3.81	0.00
68.00	4.82	3.81	0.00
69.00	4.82	3.81	0.00
70.00	4.82	3.81	0.00
71.00	4.82	3.81	0.00
72.00	4.82	3.81	0.00
73.00	4.82	3.81	0.00
74.00	4.82	3.81	0.00
75.00	4.82	3.81	0.00
76.00	4.82	3.81	0.00
77.00	4.82	3.81	0.00
78.00	4.82	3.81	0.00
79.00	4.82	3.81	0.00
80.00	4.82	3.81	0.00
81.00	4.82	3.81	0.00
82.00	4.82	3.81	0.00
83.00	4.82	3.81	0.00
84.00	4.82	3.81	0.00
85.00	4.82	3.81	0.00
86.00	4.82	3.81	0.00
87.00	4.82	3.81	0.00
88.00	4.82	3.81	0.00
89.00	4.82	3.81	0.00
90.00	4.82	3.81	0.00
91.00	4.82	3.81	0.00
92.00	4.82	3.81	0.00
93.00	4.82	3.81	0.00
94.00	4.82	3.81	0.00
95.00	4.82	3.81	0.00
96.00	4.82	3.81	0.00
97.00	4.82	3.81	0.00
98.00	4.82	3.81	0.00
99.00	4.82	3.81	0.00
100.00	4.82	3.81	0.00

Summary for Subcatchment 6S: Post to RG2

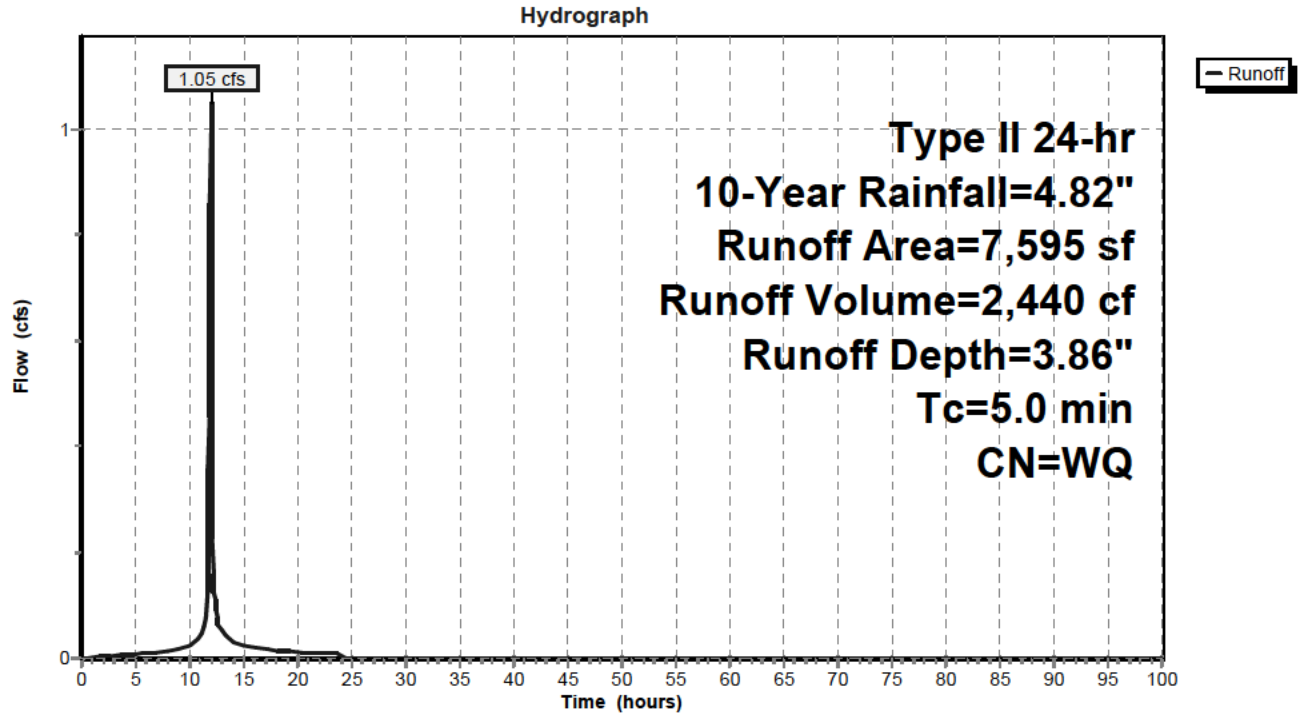
Runoff = 1.05 cfs @ 11.95 hrs, Volume= 2,440 cf, Depth= 3.86"
Routed to Pond 9P : RG2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=4.82"

Area (sf)	CN	Description
2,340	74	>75% Grass cover, Good, HSG C
5,255	98	Paved parking, HSG C
7,595		Weighted Average
2,340		30.81% Pervious Area
5,255		69.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Post to RG2



Hydrograph for Subcatchment 6S: Post to RG2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.05	0.00	0.00
2.00	0.11	0.00	0.00
3.00	0.17	0.00	0.00
4.00	0.23	0.00	0.01
5.00	0.30	0.01	0.01
6.00	0.39	0.03	0.01
7.00	0.48	0.06	0.01
8.00	0.58	0.11	0.01
9.00	0.71	0.17	0.02
10.00	0.87	0.27	0.02
11.00	1.13	0.45	**0.04**
12.00	3.20	2.25	**0.89**
13.00	3.72	2.75	0.05
14.00	3.95	2.97	0.03
15.00	4.11	3.13	0.02
16.00	4.24	3.25	0.02
17.00	4.35	3.35	0.02
18.00	4.44	3.44	0.01
19.00	4.52	3.52	0.01
20.00	4.59	3.58	0.01
21.00	4.65	3.64	0.01
22.00	4.71	3.70	0.01
23.00	4.77	3.75	0.01
24.00	**4.82**	**3.81**	0.01
25.00	4.82	3.81	0.00
26.00	4.82	3.81	0.00
27.00	4.82	3.81	0.00
28.00	4.82	3.81	0.00
29.00	4.82	3.81	0.00
30.00	4.82	3.81	0.00
31.00	4.82	3.81	0.00
32.00	4.82	3.81	0.00
33.00	4.82	3.81	0.00
34.00	4.82	3.81	0.00
35.00	4.82	3.81	0.00
36.00	4.82	3.81	0.00
37.00	4.82	3.81	0.00
38.00	4.82	3.81	0.00
39.00	4.82	3.81	0.00
40.00	4.82	3.81	0.00
41.00	4.82	3.81	0.00
42.00	4.82	3.81	0.00
43.00	4.82	3.81	0.00
44.00	4.82	3.81	0.00
45.00	4.82	3.81	0.00
46.00	4.82	3.81	0.00
47.00	4.82	3.81	0.00
48.00	4.82	3.81	0.00
49.00	4.82	3.81	0.00
50.00	4.82	3.81	0.00
51.00	4.82	3.81	0.00
52.00	4.82	3.81	0.00
53.00	4.82	3.81	0.00
54.00	4.82	3.81	0.00
55.00	4.82	3.81	0.00
56.00	4.82	3.81	0.00
57.00	4.82	3.81	0.00
58.00	4.82	3.81	0.00
59.00	4.82	3.81	0.00
60.00	4.82	3.81	0.00
61.00	4.82	3.81	0.00
62.00	4.82	3.81	0.00
63.00	4.82	3.81	0.00
64.00	4.82	3.81	0.00
65.00	4.82	3.81	0.00
66.00	4.82	3.81	0.00
67.00	4.82	3.81	0.00
68.00	4.82	3.81	0.00
69.00	4.82	3.81	0.00
70.00	4.82	3.81	0.00
71.00	4.82	3.81	0.00
72.00	4.82	3.81	0.00
73.00	4.82	3.81	0.00
74.00	4.82	3.81	0.00
75.00	4.82	3.81	0.00
76.00	4.82	3.81	0.00
77.00	4.82	3.81	0.00
78.00	4.82	3.81	0.00
79.00	4.82	3.81	0.00
80.00	4.82	3.81	0.00
81.00	4.82	3.81	0.00
82.00	4.82	3.81	0.00
83.00	4.82	3.81	0.00
84.00	4.82	3.81	0.00
85.00	4.82	3.81	0.00
86.00	4.82	3.81	0.00
87.00	4.82	3.81	0.00
88.00	4.82	3.81	0.00
89.00	4.82	3.81	0.00
90.00	4.82	3.81	0.00
91.00	4.82	3.81	0.00
92.00	4.82	3.81	0.00
93.00	4.82	3.81	0.00
94.00	4.82	3.81	0.00
95.00	4.82	3.81	0.00
96.00	4.82	3.81	0.00
97.00	4.82	3.81	0.00
98.00	4.82	3.81	0.00
99.00	4.82	3.81	0.00
100.00	4.82	3.81	0.00

Summary for Pond 8P: RG1

Inflow Area = 10,943 sf, 70.94% Impervious, Inflow Depth = 3.90" for 10-Year event
Inflow = 1.53 cfs @ 11.95 hrs, Volume= 3,554 cf
Outflow = 0.41 cfs @ 12.10 hrs, Volume= 3,360 cf, Atten= 73%, Lag= 8.7 min
Primary = 0.41 cfs @ 12.10 hrs, Volume= 3,360 cf
Routed to Link 7L : DP001 (POST)

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 53.13' @ 12.10 hrs Surf.Area= 1,371 sf Storage= 1,240 cf

Plug-Flow detention time= 92.6 min calculated for 3,360 cf (95% of inflow)
Center-of-Mass det. time= 59.4 min (818.2 - 758.8)

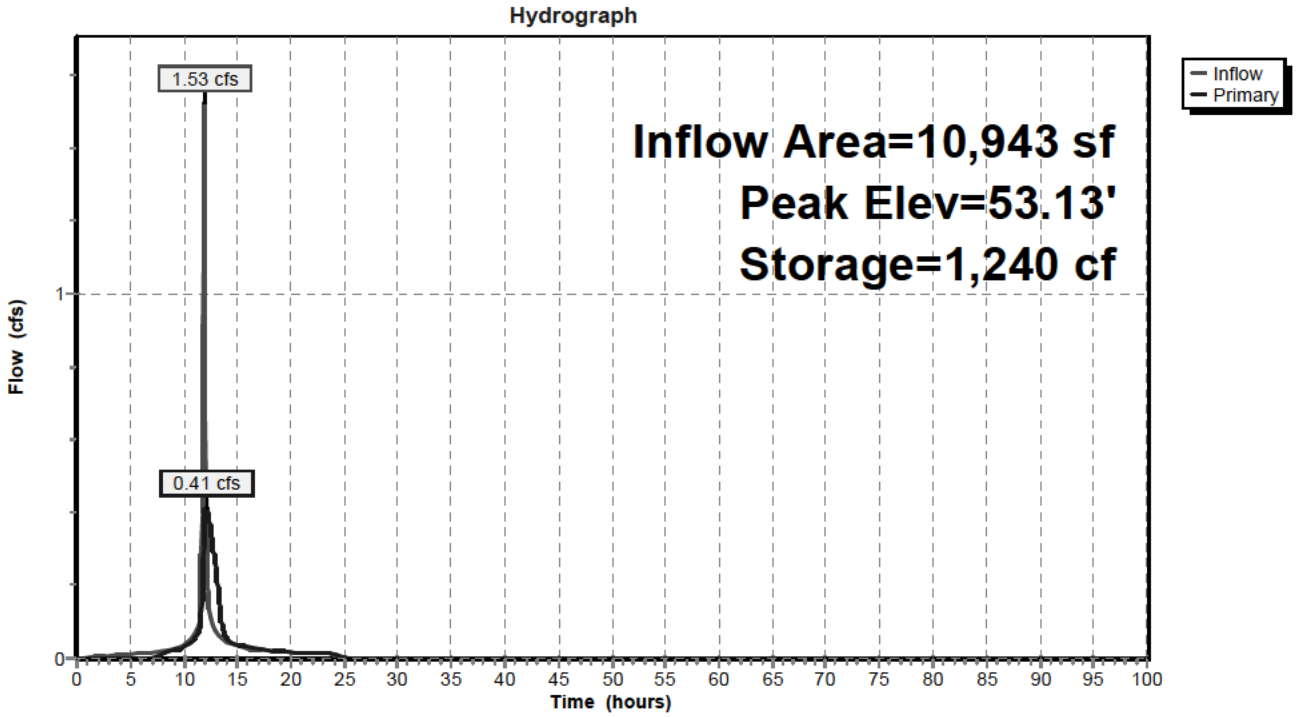
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	2,727 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.00	476	0.0	0	0
51.99	476	20.0	189	189
52.00	476	100.0	5	194
54.00	2,057	100.0	2,533	2,727

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	53.25'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	52.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.41 cfs @ 12.10 hrs HW=53.13' (Free Discharge)
└**1=Culvert** (Passes 0.41 cfs of 13.13 cfs potential flow)
└**2=Grate** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Orifice Controls 0.41 cfs @ 4.73 fps)

Pond 8P: RG1


Hydrograph
Inflow
Primary
1.53 cfs
0.41 cfs
Inflow Area=10,943 sf
Peak Elev=53.13'
Storage=1,240 cf
Flow (cfs)
Time (hours)
0
1
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Hydrograph for Pond 8P: RG1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	50.00	0.00
2.50	0.01	18	50.19	0.00
5.00	0.01	93	50.97	0.00
7.50	0.02	214	52.04	0.00
10.00	**0.03**	**252**	**52.11**	**0.03**
12.50	**0.12**	**935**	**52.89**	**0.36**
15.00	0.03	261	52.13	0.04
17.50	0.02	244	52.10	0.02
20.00	0.02	235	52.08	0.02
22.50	0.01	232	52.07	0.01
25.00	0.00	210	52.03	0.00
27.50	0.00	197	52.00	0.00
30.00	0.00	195	52.00	0.00
32.50	0.00	194	52.00	0.00
35.00	0.00	194	52.00	0.00
37.50	0.00	194	52.00	0.00
40.00	0.00	194	52.00	0.00
42.50	0.00	194	52.00	0.00
45.00	0.00	194	52.00	0.00
47.50	0.00	194	52.00	0.00
50.00	0.00	194	52.00	0.00
52.50	0.00	194	52.00	0.00
55.00	0.00	194	52.00	0.00
57.50	0.00	194	52.00	0.00
60.00	0.00	194	52.00	0.00
62.50	0.00	194	52.00	0.00
65.00	0.00	194	52.00	0.00
67.50	0.00	194	52.00	0.00
70.00	0.00	194	52.00	0.00
72.50	0.00	194	52.00	0.00
75.00	0.00	194	52.00	0.00
77.50	0.00	194	52.00	0.00
80.00	0.00	194	52.00	0.00
82.50	0.00	194	52.00	0.00
85.00	0.00	194	52.00	0.00
87.50	0.00	194	52.00	0.00
90.00	0.00	194	52.00	0.00
92.50	0.00	194	52.00	0.00
95.00	0.00	194	52.00	0.00
97.50	0.00	194	52.00	0.00
100.00	0.00	194	52.00	0.00

Stage-Discharge for Pond 8P: RG1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.00	0.00	51.04	0.00	52.08	0.02	53.12	0.41
50.02	0.00	51.06	0.00	52.10	0.02	53.14	0.41
50.04	0.00	51.08	0.00	52.12	0.03	53.16	0.42
50.06	0.00	51.10	0.00	52.14	0.04	53.18	0.42
50.08	0.00	51.12	0.00	52.16	0.06	53.20	0.43
50.10	0.00	51.14	0.00	52.18	0.07	53.22	0.43
50.12	0.00	51.16	0.00	52.20	0.08	53.24	0.44
50.14	0.00	51.18	0.00	52.22	0.10	53.26	0.47
50.16	0.00	51.20	0.00	52.24	0.11	53.28	0.58
50.18	0.00	51.22	0.00	52.26	0.13	53.30	0.74
50.20	0.00	51.24	0.00	52.28	0.14	53.32	0.94
50.22	0.00	51.26	0.00	52.30	0.15	53.34	1.16
50.24	0.00	51.28	0.00	52.32	0.17	53.36	1.41
50.26	0.00	51.30	0.00	52.34	0.17	53.38	1.69
50.28	0.00	51.32	0.00	52.36	0.18	53.40	1.99
50.30	0.00	51.34	0.00	52.38	0.19	53.42	2.30
50.32	0.00	51.36	0.00	52.40	0.20	53.44	2.64
50.34	0.00	51.38	0.00	52.42	0.21	53.46	3.00
50.36	0.00	51.40	0.00	52.44	0.22	53.48	3.37
50.38	0.00	51.42	0.00	52.46	0.23	53.50	3.76
50.40	0.00	51.44	0.00	52.48	0.24	53.52	4.16
50.42	0.00	51.46	0.00	52.50	0.24	53.54	4.58
50.44	0.00	51.48	0.00	52.52	0.25	53.56	5.01
50.46	0.00	51.50	0.00	52.54	0.26	53.58	5.46
50.48	0.00	51.52	0.00	52.56	0.26	53.60	5.92
50.50	0.00	51.54	0.00	52.58	0.27	53.62	6.39
50.52	0.00	51.56	0.00	52.60	0.28	53.64	6.88
50.54	0.00	51.58	0.00	52.62	0.28	53.66	7.38
50.56	0.00	51.60	0.00	52.64	0.29	53.68	7.89
50.58	0.00	51.62	0.00	52.66	0.30	53.70	8.42
50.60	0.00	51.64	0.00	52.68	0.30	53.72	8.95
50.62	0.00	51.66	0.00	52.70	0.31	53.74	9.50
50.64	0.00	51.68	0.00	52.72	0.31	53.76	10.06
50.66	0.00	51.70	0.00	52.74	0.32	53.78	10.63
50.68	0.00	51.72	0.00	52.76	0.32	53.80	11.21
50.70	0.00	51.74	0.00	52.78	0.33	53.82	11.80
50.72	0.00	51.76	0.00	52.80	0.33	53.84	12.40
50.74	0.00	51.78	0.00	52.82	0.34	53.86	13.01
50.76	0.00	51.80	0.00	52.84	0.34	53.88	13.63
50.78	0.00	51.82	0.00	52.86	0.35	53.90	14.26
50.80	0.00	51.84	0.00	52.88	0.35	53.92	14.90
50.82	0.00	51.86	0.00	52.90	0.36	53.94	15.20
50.84	0.00	51.88	0.00	52.92	0.36	53.96	15.24
50.86	0.00	51.90	0.00	52.94	0.37	53.98	15.29
50.88	0.00	51.92	0.00	52.96	0.37	54.00	**15.34**
50.90	0.00	51.94	0.00	52.98	0.38		
50.92	0.00	51.96	0.00	53.00	0.38		
50.94	0.00	51.98	0.00	53.02	0.39		
50.96	0.00	52.00	0.00	53.04	0.39		
50.98	0.00	52.02	0.00	53.06	0.40		
51.00	0.00	52.04	0.00	53.08	0.40		
51.02	0.00	52.06	0.01	53.10	0.41		

Stage-Area-Storage for Pond 8P: RG1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	476	0
50.05	476	5
50.10	476	10
50.15	476	14
50.20	476	19
50.25	476	24
50.30	476	29
50.35	476	33
50.40	476	38
50.45	476	43
50.50	476	48
50.55	476	52
50.60	476	57
50.65	476	62
50.70	476	67
50.75	476	71
50.80	476	76
50.85	476	81
50.90	476	86
50.95	476	90
51.00	476	95
51.05	476	100
51.10	476	105
51.15	476	109
51.20	476	114
51.25	476	119
51.30	476	124
51.35	476	129
51.40	476	133
51.45	476	138
51.50	476	143
51.55	476	148
51.60	476	152
51.65	476	157
51.70	476	162
51.75	476	167
51.80	476	171
51.85	476	176
51.90	476	181
51.95	476	186
52.00	476	194
52.05	516	219
52.10	555	246
52.15	595	275
52.20	634	305
52.25	674	338
52.30	713	373
52.35	753	409
52.40	792	448
52.45	832	488
52.50	871	531
52.55	911	576
52.60	950	622
52.65	990	671
52.70	1,029	721
52.75	1,069	774
52.80	1,108	828
52.85	1,148	884
52.90	1,187	943
52.95	1,227	1,003
53.00	1,267	1,065
53.05	1,306	1,130
53.10	1,346	1,196
53.15	1,385	1,264
53.20	1,425	1,335
53.25	1,464	1,407
53.30	1,504	1,481
53.35	1,543	1,557
53.40	1,583	1,635
53.45	1,622	1,715
53.50	1,662	1,798
53.55	1,701	1,882
53.60	1,741	1,968
53.65	1,780	2,056
53.70	1,820	2,146
53.75	1,859	2,238
53.80	1,899	2,332
53.85	1,938	2,428
53.90	1,978	2,525
53.95	2,017	2,625
54.00	**2,057**	**2,727**

Summary for Pond 9P: RG2

Inflow Area = 7,595 sf, 69.19% Impervious, Inflow Depth = 3.86" for 10-Year event
Inflow = 1.05 cfs @ 11.95 hrs, Volume= 2,440 cf
Outflow = 0.43 cfs @ 12.06 hrs, Volume= 2,097 cf, Atten= 59%, Lag= 6.7 min
Primary = 0.43 cfs @ 12.06 hrs, Volume= 2,097 cf
Routed to Link 7L : DP001 (POST)

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 52.40' @ 12.06 hrs Surf.Area= 1,201 sf Storage= 837 cf

Plug-Flow detention time= 128.3 min calculated for 2,096 cf (86% of inflow)
Center-of-Mass det. time= 61.2 min (821.1 - 759.9)

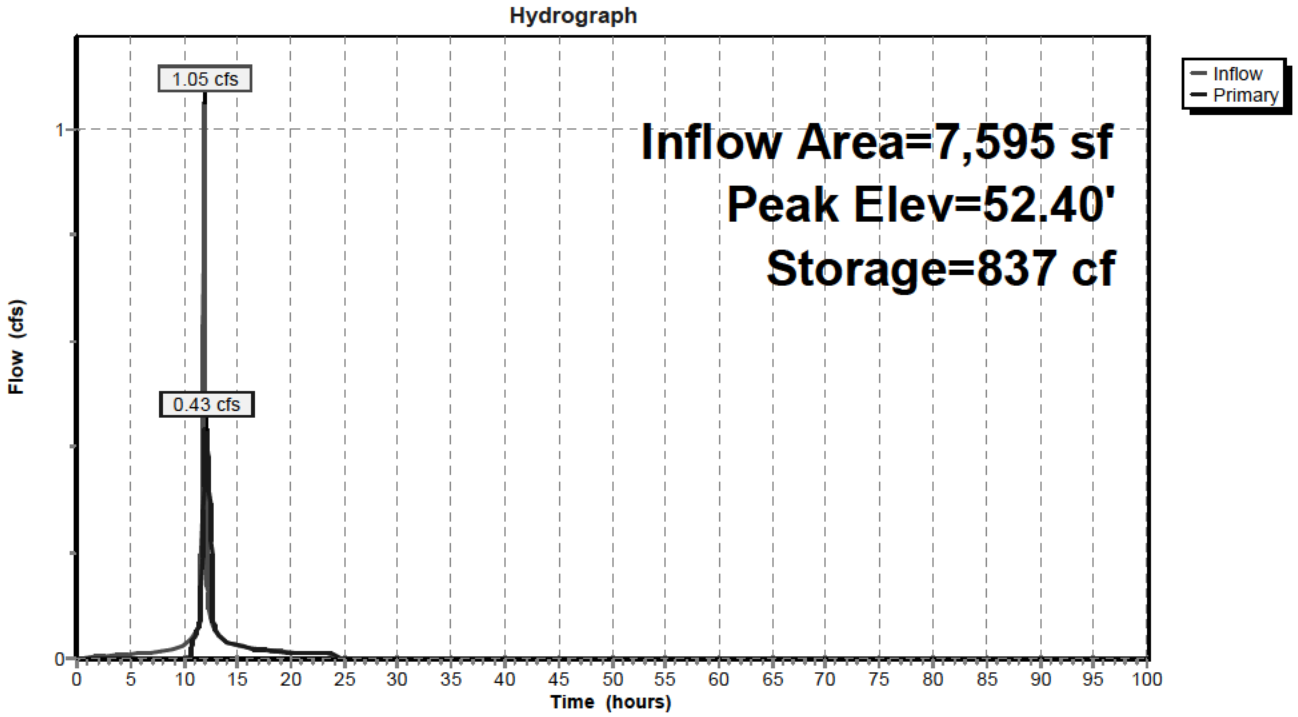
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	1,656 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.00	982	0.0	0	0
51.99	982	20.0	391	391
52.00	982	100.0	10	401
53.00	1,529	100.0	1,256	1,656

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	52.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	51.75'	**6.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.43 cfs @ 12.06 hrs HW=52.39' (Free Discharge)
↑└1=**Culvert** (Passes 0.43 cfs of 10.91 cfs potential flow)
↑└2=**Grate** (Controls 0.00 cfs)
└3=**Orifice/Grate** (Orifice Controls 0.43 cfs @ 3.46 fps)

Pond 9P: RG2


Hydrograph
Inflow
Primary
1.05 cfs
0.43 cfs
Inflow Area=7,595 sf
Peak Elev=52.40'
Storage=837 cf
Flow (cfs)
Time (hours)
0
1
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Hydrograph for Pond 9P: RG2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	50.00	0.00
2.50	0.00	12	50.06	0.00
5.00	0.01	63	50.32	0.00
7.50	0.01	147	50.75	0.00
10.00	**0.02**	**288**	**51.46**	**0.00**
12.50	**0.08**	**485**	**52.08**	**0.27**
15.00	0.02	356	51.81	0.02
17.50	0.02	352	51.79	0.02
20.00	0.01	350	51.78	0.01
22.50	0.01	350	51.78	0.01
25.00	0.00	344	51.75	0.00
27.50	0.00	344	51.75	0.00
30.00	0.00	344	51.75	0.00
32.50	0.00	344	51.75	0.00
35.00	0.00	344	51.75	0.00
37.50	0.00	344	51.75	0.00
40.00	0.00	344	51.75	0.00
42.50	0.00	344	51.75	0.00
45.00	0.00	344	51.75	0.00
47.50	0.00	344	51.75	0.00
50.00	0.00	344	51.75	0.00
52.50	0.00	344	51.75	0.00
55.00	0.00	344	51.75	0.00
57.50	0.00	344	51.75	0.00
60.00	0.00	344	51.75	0.00
62.50	0.00	344	51.75	0.00
65.00	0.00	344	51.75	0.00
67.50	0.00	344	51.75	0.00
70.00	0.00	344	51.75	0.00
72.50	0.00	344	51.75	0.00
75.00	0.00	344	51.75	0.00
77.50	0.00	344	51.75	0.00
80.00	0.00	344	51.75	0.00
82.50	0.00	344	51.75	0.00
85.00	0.00	344	51.75	0.00
87.50	0.00	344	51.75	0.00
90.00	0.00	344	51.75	0.00
92.50	0.00	344	51.75	0.00
95.00	0.00	344	51.75	0.00
97.50	0.00	344	51.75	0.00
100.00	0.00	344	51.75	0.00

Stage-Discharge for Pond 9P: RG2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.00	0.00	51.04	0.00	52.08	0.27
50.02	0.00	51.06	0.00	52.10	0.28
50.04	0.00	51.08	0.00	52.12	0.29
50.06	0.00	51.10	0.00	52.14	0.31
50.08	0.00	51.12	0.00	52.16	0.32
50.10	0.00	51.14	0.00	52.18	0.33
50.12	0.00	51.16	0.00	52.20	0.34
50.14	0.00	51.18	0.00	52.22	0.35
50.16	0.00	51.20	0.00	52.24	0.36
50.18	0.00	51.22	0.00	52.26	0.37
50.20	0.00	51.24	0.00	52.28	0.38
50.22	0.00	51.26	0.00	52.30	0.39
50.24	0.00	51.28	0.00	52.32	0.40
50.26	0.00	51.30	0.00	52.34	0.41
50.28	0.00	51.32	0.00	52.36	0.42
50.30	0.00	51.34	0.00	52.38	0.43
50.32	0.00	51.36	0.00	52.40	0.44
50.34	0.00	51.38	0.00	52.42	0.44
50.36	0.00	51.40	0.00	52.44	0.45
50.38	0.00	51.42	0.00	52.46	0.46
50.40	0.00	51.44	0.00	52.48	0.47
50.42	0.00	51.46	0.00	52.50	0.48
50.44	0.00	51.48	0.00	52.52	0.56
50.46	0.00	51.50	0.00	52.54	0.70
50.48	0.00	51.52	0.00	52.56	0.88
50.50	0.00	51.54	0.00	52.58	1.10
50.52	0.00	51.56	0.00	52.60	1.34
50.54	0.00	51.58	0.00	52.62	1.61
50.56	0.00	51.60	0.00	52.64	1.90
50.58	0.00	51.62	0.00	52.66	2.21
50.60	0.00	51.64	0.00	52.68	2.54
50.62	0.00	51.66	0.00	52.70	2.89
50.64	0.00	51.68	0.00	52.72	3.25
50.66	0.00	51.70	0.00	52.74	3.64
50.68	0.00	51.72	0.00	52.76	4.03
50.70	0.00	51.74	0.00	52.78	4.45
50.72	0.00	51.76	0.00	52.80	4.88
50.74	0.00	51.78	0.01	52.82	5.32
50.76	0.00	51.80	0.02	52.84	5.78
50.78	0.00	51.82	0.03	52.86	6.25
50.80	0.00	51.84	0.04	52.88	6.73
50.82	0.00	51.86	0.06	52.90	7.23
50.84	0.00	51.88	0.08	52.92	7.74
50.86	0.00	51.90	0.09	52.94	8.26
50.88	0.00	51.92	0.11	52.96	8.79
50.90	0.00	51.94	0.13	52.98	9.33
50.92	0.00	51.96	0.15	53.00	**9.89**
50.94	0.00	51.98	0.18		
50.96	0.00	52.00	0.20		
50.98	0.00	52.02	0.22		
51.00	0.00	52.04	0.24		
51.02	0.00	52.06	0.25		

Stage-Area-Storage for Pond 9P: RG2

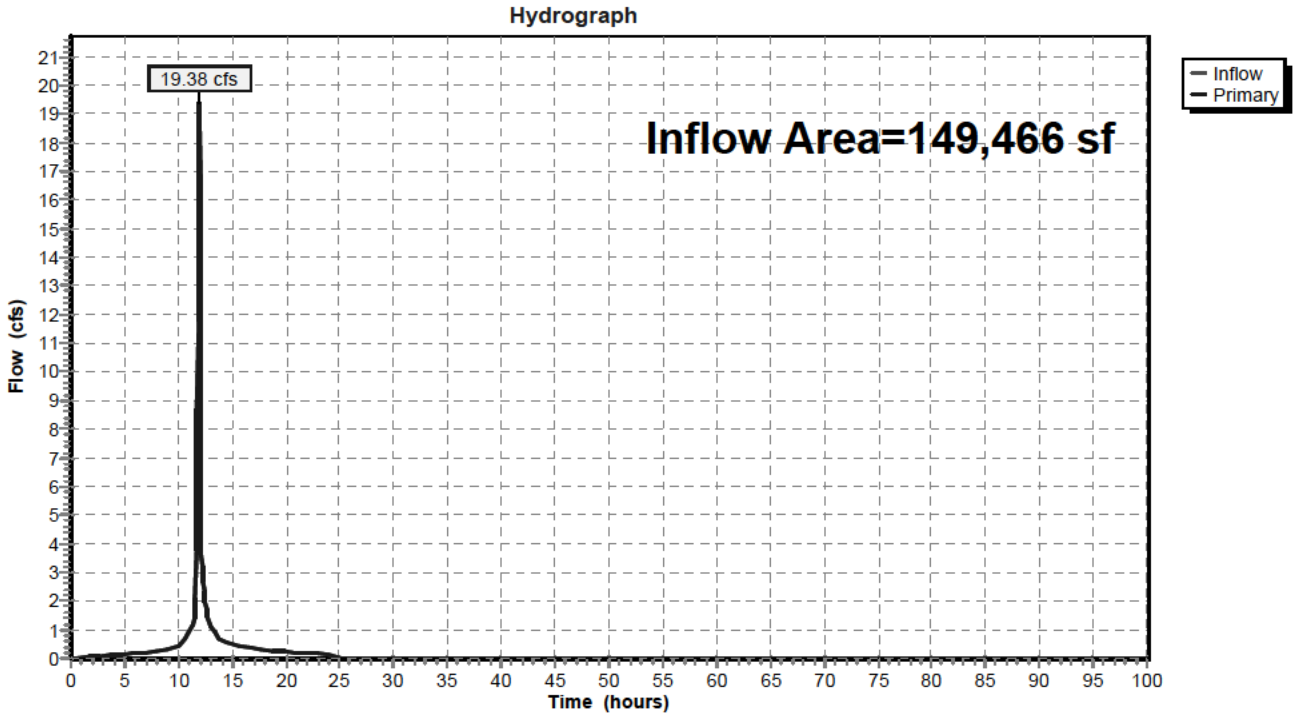
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	982	0
50.05	982	10
50.10	982	20
50.15	982	29
50.20	982	39
50.25	982	49
50.30	982	59
50.35	982	69
50.40	982	79
50.45	982	88
50.50	982	98
50.55	982	108
50.60	982	118
50.65	982	128
50.70	982	137
50.75	982	147
50.80	982	157
50.85	982	167
50.90	982	177
50.95	982	187
51.00	982	196
51.05	982	206
51.10	982	216
51.15	982	226
51.20	982	236
51.25	982	246
51.30	982	255
51.35	982	265
51.40	982	275
51.45	982	285
51.50	982	295
51.55	982	304
51.60	982	314
51.65	982	324
51.70	982	334
51.75	982	344
51.80	982	354
51.85	982	363
51.90	982	373
51.95	982	383
52.00	982	401
52.05	1,009	450
52.10	1,037	502
52.15	1,064	554
52.20	1,091	608
52.25	1,119	663
52.30	1,146	720
52.35	1,173	778
52.40	1,201	837
52.45	1,228	898
52.50	1,256	960
52.55	1,283	1,023
52.60	1,310	1,088
52.65	1,338	1,155
52.70	1,365	1,222
52.75	1,392	1,291
52.80	1,420	1,361
52.85	1,447	1,433
52.90	1,474	1,506
52.95	1,502	1,580
53.00	**1,529**	**1,656**

Summary for Link 7L: DP001 (POST)

Inflow Area = 149,466 sf, 74.65% Impervious, Inflow Depth = 3.94" for 10-Year event
Inflow = 19.38 cfs @ 11.95 hrs, Volume= 49,094 cf
Primary = 19.38 cfs @ 11.95 hrs, Volume= 49,094 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Link 7L: DP001 (POST)



Hydrograph for Link 7L: DP001 (POST)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.01	0.00	0.01	53.00	0.00	0.00	0.00
2.00	0.05	0.00	0.05	54.00	0.00	0.00	0.00
3.00	0.09	0.00	0.09	55.00	0.00	0.00	0.00
4.00	0.11	0.00	0.11	56.00	0.00	0.00	0.00
5.00	0.14	0.00	0.14	57.00	0.00	0.00	0.00
6.00	0.17	0.00	0.17	58.00	0.00	0.00	0.00
7.00	0.20	0.00	0.20	59.00	0.00	0.00	0.00
8.00	0.23	0.00	0.23	60.00	0.00	0.00	0.00
9.00	0.35	0.00	0.35	61.00	0.00	0.00	0.00
10.00	0.45	0.00	0.45	62.00	0.00	0.00	0.00
11.00	**0.88**	0.00	**0.88**	63.00	0.00	0.00	0.00
12.00	**16.50**	0.00	**16.50**	64.00	0.00	0.00	0.00
13.00	1.18	0.00	1.18	65.00	0.00	0.00	0.00
14.00	0.61	0.00	0.61	66.00	0.00	0.00	0.00
15.00	0.48	0.00	0.48	67.00	0.00	0.00	0.00
16.00	0.37	0.00	0.37	68.00	0.00	0.00	0.00
17.00	0.32	0.00	0.32	69.00	0.00	0.00	0.00
18.00	0.29	0.00	0.29	70.00	0.00	0.00	0.00
19.00	0.25	0.00	0.25	71.00	0.00	0.00	0.00
20.00	0.21	0.00	0.21	72.00	0.00	0.00	0.00
21.00	0.20	0.00	0.20	73.00	0.00	0.00	0.00
22.00	0.19	0.00	0.19	74.00	0.00	0.00	0.00
23.00	0.18	0.00	0.18	75.00	0.00	0.00	0.00
24.00	0.17	0.00	0.17	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	97.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	98.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	99.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Subcatchment 4S: Post Uncaptured

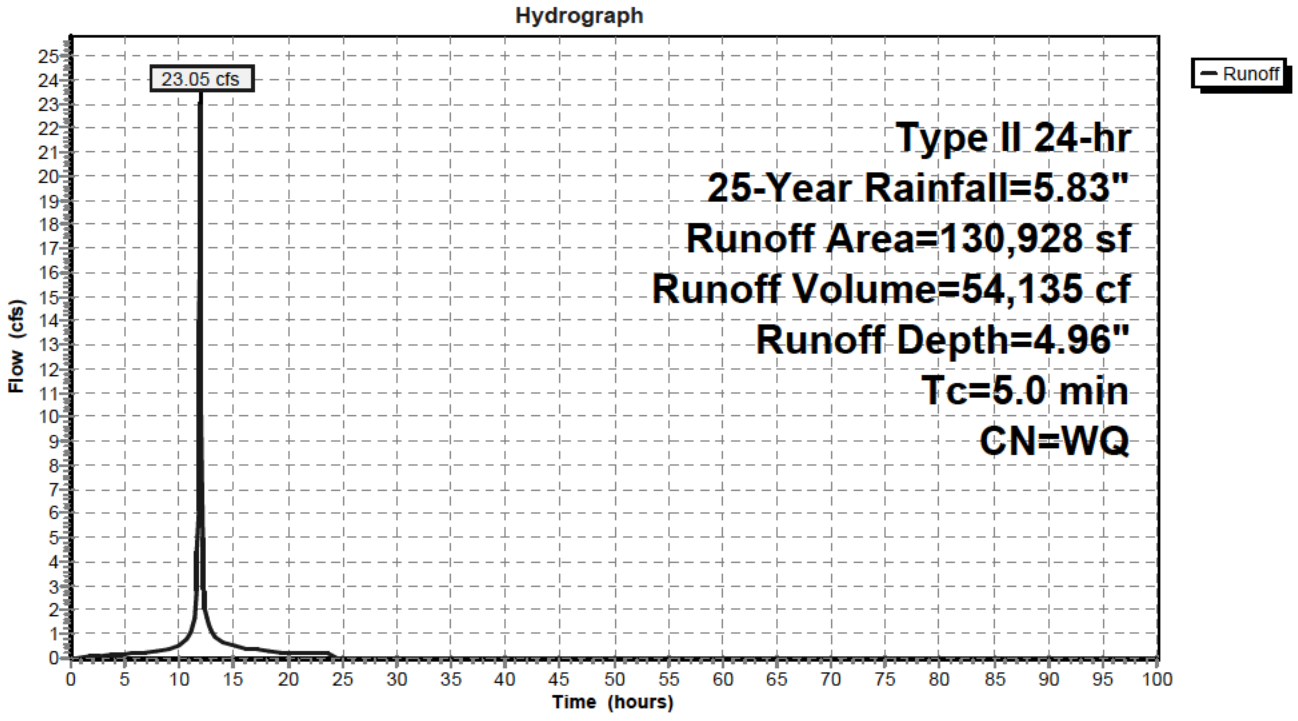
Runoff = 23.05 cfs @ 11.95 hrs, Volume= 54,135 cf, Depth= 4.96"
Routed to Link 7L : DP001 (POST)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=5.83"

Area (sf)	CN	Description
32,370	74	>75% Grass cover, Good, HSG C
98,558	98	Paved parking, HSG C
130,928		Weighted Average
32,370		24.72% Pervious Area
98,558		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Post Uncaptured



Hydrograph for Subcatchment 4S: Post Uncaptured

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.02
2.00	0.13	0.00	0.08
3.00	0.20	0.00	0.12
4.00	0.28	0.01	0.14
5.00	0.37	0.04	0.18
6.00	0.47	0.07	0.21
7.00	0.58	0.13	0.24
8.00	0.70	0.20	0.27
9.00	0.86	0.30	0.41
10.00	1.06	0.44	0.53
11.00	1.37	0.69	**0.98**
12.00	3.87	2.99	**19.37**
13.00	4.50	3.60	1.08
14.00	4.78	3.88	0.64
15.00	4.98	4.07	0.51
16.00	5.13	4.22	0.40
17.00	5.26	4.34	0.35
18.00	5.37	4.45	0.31
19.00	5.47	4.55	0.26
20.00	5.55	4.63	0.22
21.00	5.62	4.70	0.21
22.00	5.70	4.77	0.20
23.00	5.76	4.84	0.20
24.00	**5.83**	**4.90**	0.19
25.00	5.83	4.90	0.00
26.00	5.83	4.90	0.00
27.00	5.83	4.90	0.00
28.00	5.83	4.90	0.00
29.00	5.83	4.90	0.00
30.00	5.83	4.90	0.00
31.00	5.83	4.90	0.00
32.00	5.83	4.90	0.00
33.00	5.83	4.90	0.00
34.00	5.83	4.90	0.00
35.00	5.83	4.90	0.00
36.00	5.83	4.90	0.00
37.00	5.83	4.90	0.00
38.00	5.83	4.90	0.00
39.00	5.83	4.90	0.00
40.00	5.83	4.90	0.00
41.00	5.83	4.90	0.00
42.00	5.83	4.90	0.00
43.00	5.83	4.90	0.00
44.00	5.83	4.90	0.00
45.00	5.83	4.90	0.00
46.00	5.83	4.90	0.00
47.00	5.83	4.90	0.00
48.00	5.83	4.90	0.00
49.00	5.83	4.90	0.00
50.00	5.83	4.90	0.00
51.00	5.83	4.90	0.00
52.00	5.83	4.90	0.00
53.00	5.83	4.90	0.00
54.00	5.83	4.90	0.00
55.00	5.83	4.90	0.00
56.00	5.83	4.90	0.00
57.00	5.83	4.90	0.00
58.00	5.83	4.90	0.00
59.00	5.83	4.90	0.00
60.00	5.83	4.90	0.00
61.00	5.83	4.90	0.00
62.00	5.83	4.90	0.00
63.00	5.83	4.90	0.00
64.00	5.83	4.90	0.00
65.00	5.83	4.90	0.00
66.00	5.83	4.90	0.00
67.00	5.83	4.90	0.00
68.00	5.83	4.90	0.00
69.00	5.83	4.90	0.00
70.00	5.83	4.90	0.00
71.00	5.83	4.90	0.00
72.00	5.83	4.90	0.00
73.00	5.83	4.90	0.00
74.00	5.83	4.90	0.00
75.00	5.83	4.90	0.00
76.00	5.83	4.90	0.00
77.00	5.83	4.90	0.00
78.00	5.83	4.90	0.00
79.00	5.83	4.90	0.00
80.00	5.83	4.90	0.00
81.00	5.83	4.90	0.00
82.00	5.83	4.90	0.00
83.00	5.83	4.90	0.00
84.00	5.83	4.90	0.00
85.00	5.83	4.90	0.00
86.00	5.83	4.90	0.00
87.00	5.83	4.90	0.00
88.00	5.83	4.90	0.00
89.00	5.83	4.90	0.00
90.00	5.83	4.90	0.00
91.00	5.83	4.90	0.00
92.00	5.83	4.90	0.00
93.00	5.83	4.90	0.00
94.00	5.83	4.90	0.00
95.00	5.83	4.90	0.00
96.00	5.83	4.90	0.00
97.00	5.83	4.90	0.00
98.00	5.83	4.90	0.00
99.00	5.83	4.90	0.00
100.00	5.83	4.90	0.00

Summary for Subcatchment 5S: Post to RG 1

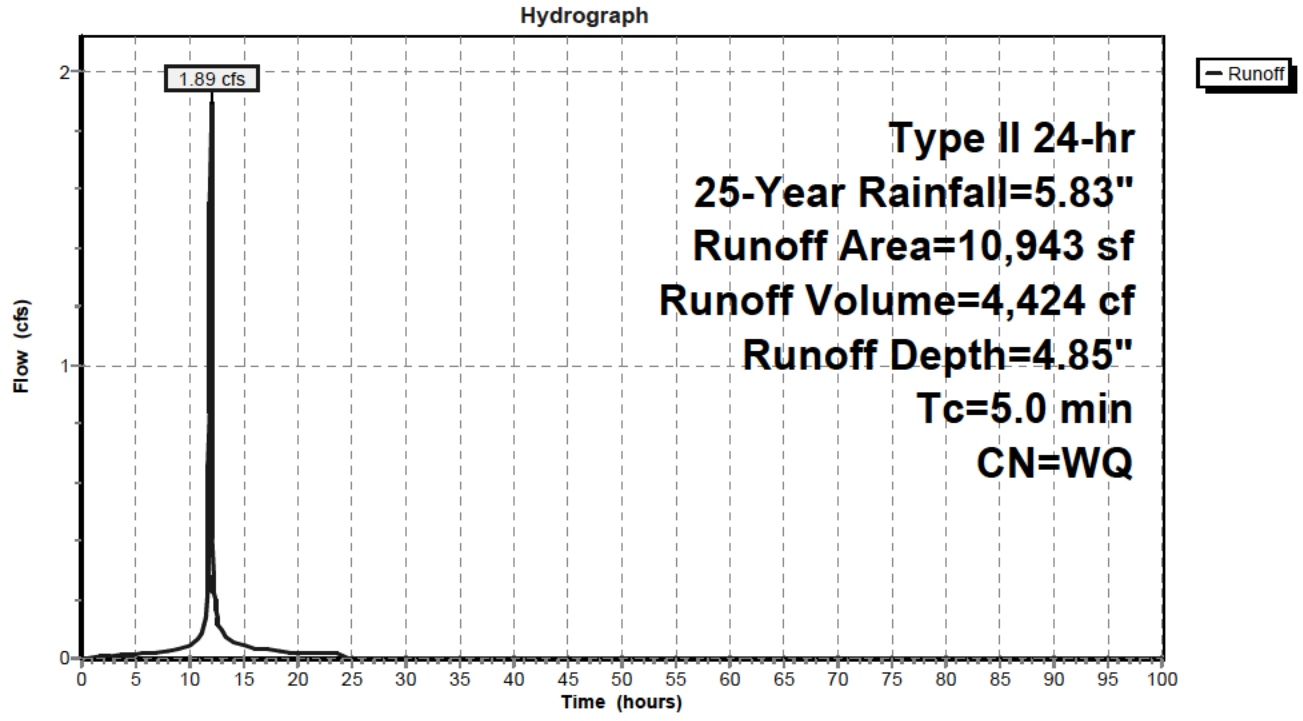
Runoff = 1.89 cfs @ 11.95 hrs, Volume= 4,424 cf, Depth= 4.85"
Routed to Pond 8P : RG1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=5.83"

Area (sf)	CN	Description
3,180	74	>75% Grass cover, Good, HSG C
7,763	98	Paved parking, HSG C
10,943		Weighted Average
3,180		29.06% Pervious Area
7,763		70.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Post to RG 1



Hydrograph for Subcatchment 5S: Post to RG 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.06	0.00	0.00
2.00	0.13	0.00	0.01
3.00	0.20	0.00	0.01
4.00	0.28	0.01	0.01
5.00	0.37	0.02	0.01
6.00	0.47	0.06	0.02
7.00	0.58	0.11	0.02
8.00	0.70	0.17	0.02
9.00	0.86	0.26	0.03
10.00	1.06	0.40	0.04
11.00	1.37	0.64	**0.08**
12.00	3.87	2.89	**1.59**
13.00	4.50	3.50	0.09
14.00	4.78	3.77	0.05
15.00	4.98	3.96	0.04
16.00	5.13	4.11	0.03
17.00	5.26	4.23	0.03
18.00	5.37	4.34	0.03
19.00	5.47	4.44	0.02
20.00	5.55	4.52	0.02
21.00	5.62	4.59	0.02
22.00	5.70	4.66	0.02
23.00	5.76	4.73	0.02
24.00	**5.83**	**4.79**	0.02
25.00	5.83	4.79	0.00
26.00	5.83	4.79	0.00
27.00	5.83	4.79	0.00
28.00	5.83	4.79	0.00
29.00	5.83	4.79	0.00
30.00	5.83	4.79	0.00
31.00	5.83	4.79	0.00
32.00	5.83	4.79	0.00
33.00	5.83	4.79	0.00
34.00	5.83	4.79	0.00
35.00	5.83	4.79	0.00
36.00	5.83	4.79	0.00
37.00	5.83	4.79	0.00
38.00	5.83	4.79	0.00
39.00	5.83	4.79	0.00
40.00	5.83	4.79	0.00
41.00	5.83	4.79	0.00
42.00	5.83	4.79	0.00
43.00	5.83	4.79	0.00
44.00	5.83	4.79	0.00
45.00	5.83	4.79	0.00
46.00	5.83	4.79	0.00
47.00	5.83	4.79	0.00
48.00	5.83	4.79	0.00
49.00	5.83	4.79	0.00
50.00	5.83	4.79	0.00
51.00	5.83	4.79	0.00
52.00	5.83	4.79	0.00
53.00	5.83	4.79	0.00
54.00	5.83	4.79	0.00
55.00	5.83	4.79	0.00
56.00	5.83	4.79	0.00
57.00	5.83	4.79	0.00
58.00	5.83	4.79	0.00
59.00	5.83	4.79	0.00
60.00	5.83	4.79	0.00
61.00	5.83	4.79	0.00
62.00	5.83	4.79	0.00
63.00	5.83	4.79	0.00
64.00	5.83	4.79	0.00
65.00	5.83	4.79	0.00
66.00	5.83	4.79	0.00
67.00	5.83	4.79	0.00
68.00	5.83	4.79	0.00
69.00	5.83	4.79	0.00
70.00	5.83	4.79	0.00
71.00	5.83	4.79	0.00
72.00	5.83	4.79	0.00
73.00	5.83	4.79	0.00
74.00	5.83	4.79	0.00
75.00	5.83	4.79	0.00
76.00	5.83	4.79	0.00
77.00	5.83	4.79	0.00
78.00	5.83	4.79	0.00
79.00	5.83	4.79	0.00
80.00	5.83	4.79	0.00
81.00	5.83	4.79	0.00
82.00	5.83	4.79	0.00
83.00	5.83	4.79	0.00
84.00	5.83	4.79	0.00
85.00	5.83	4.79	0.00
86.00	5.83	4.79	0.00
87.00	5.83	4.79	0.00
88.00	5.83	4.79	0.00
89.00	5.83	4.79	0.00
90.00	5.83	4.79	0.00
91.00	5.83	4.79	0.00
92.00	5.83	4.79	0.00
93.00	5.83	4.79	0.00
94.00	5.83	4.79	0.00
95.00	5.83	4.79	0.00
96.00	5.83	4.79	0.00
97.00	5.83	4.79	0.00
98.00	5.83	4.79	0.00
99.00	5.83	4.79	0.00
100.00	5.83	4.79	0.00

Summary for Subcatchment 6S: Post to RG2

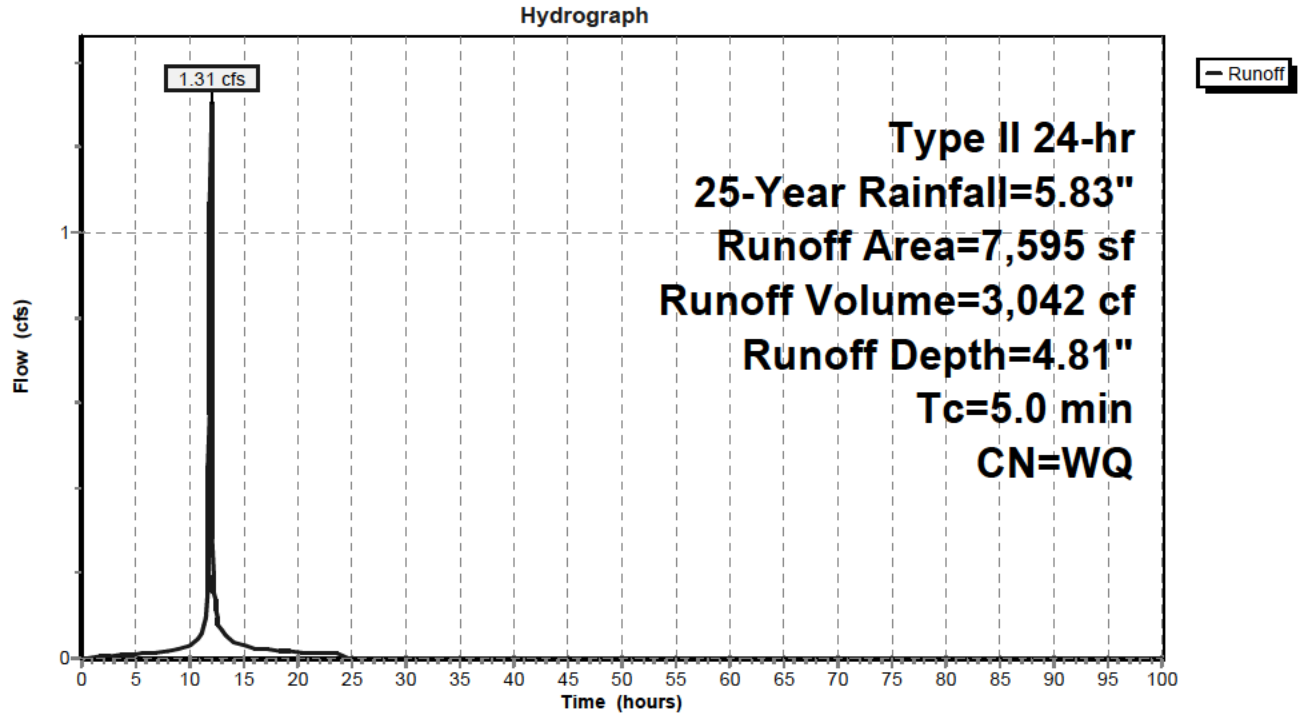
Runoff = 1.31 cfs @ 11.95 hrs, Volume= 3,042 cf, Depth= 4.81"
Routed to Pond 9P : RG2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=5.83"

Area (sf)	CN	Description
2,340	74	>75% Grass cover, Good, HSG C
5,255	98	Paved parking, HSG C
7,595		Weighted Average
2,340		30.81% Pervious Area
5,255		69.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Post to RG2



Hydrograph for Subcatchment 6S: Post to RG2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.83	4.79	0.00
1.00	0.06	0.00	0.00	53.00	5.83	4.79	0.00
2.00	0.13	0.00	0.00	54.00	5.83	4.79	0.00
3.00	0.20	0.00	0.01	55.00	5.83	4.79	0.00
4.00	0.28	0.01	0.01	56.00	5.83	4.79	0.00
5.00	0.37	0.02	0.01	57.00	5.83	4.79	0.00
6.00	0.47	0.06	0.01	58.00	5.83	4.79	0.00
7.00	0.58	0.11	0.01	59.00	5.83	4.79	0.00
8.00	0.70	0.17	0.01	60.00	5.83	4.79	0.00
9.00	0.86	0.26	0.02	61.00	5.83	4.79	0.00
10.00	1.06	0.40	0.03	62.00	5.83	4.79	0.00
11.00	1.37	0.64	**0.05**	63.00	5.83	4.79	0.00
12.00	3.87	2.89	**1.10**	64.00	5.83	4.79	0.00
13.00	4.50	3.50	0.06	65.00	5.83	4.79	0.00
14.00	4.78	3.77	0.04	66.00	5.83	4.79	0.00
15.00	4.98	3.96	0.03	67.00	5.83	4.79	0.00
16.00	5.13	4.11	0.02	68.00	5.83	4.79	0.00
17.00	5.26	4.23	0.02	69.00	5.83	4.79	0.00
18.00	5.37	4.34	0.02	70.00	5.83	4.79	0.00
19.00	5.47	4.44	0.02	71.00	5.83	4.79	0.00
20.00	5.55	4.52	0.01	72.00	5.83	4.79	0.00
21.00	5.62	4.59	0.01	73.00	5.83	4.79	0.00
22.00	5.70	4.66	0.01	74.00	5.83	4.79	0.00
23.00	5.76	4.73	0.01	75.00	5.83	4.79	0.00
24.00	**5.83**	**4.79**	0.01	76.00	5.83	4.79	0.00
25.00	5.83	4.79	0.00	77.00	5.83	4.79	0.00
26.00	5.83	4.79	0.00	78.00	5.83	4.79	0.00
27.00	5.83	4.79	0.00	79.00	5.83	4.79	0.00
28.00	5.83	4.79	0.00	80.00	5.83	4.79	0.00
29.00	5.83	4.79	0.00	81.00	5.83	4.79	0.00
30.00	5.83	4.79	0.00	82.00	5.83	4.79	0.00
31.00	5.83	4.79	0.00	83.00	5.83	4.79	0.00
32.00	5.83	4.79	0.00	84.00	5.83	4.79	0.00
33.00	5.83	4.79	0.00	85.00	5.83	4.79	0.00
34.00	5.83	4.79	0.00	86.00	5.83	4.79	0.00
35.00	5.83	4.79	0.00	87.00	5.83	4.79	0.00
36.00	5.83	4.79	0.00	88.00	5.83	4.79	0.00
37.00	5.83	4.79	0.00	89.00	5.83	4.79	0.00
38.00	5.83	4.79	0.00	90.00	5.83	4.79	0.00
39.00	5.83	4.79	0.00	91.00	5.83	4.79	0.00
40.00	5.83	4.79	0.00	92.00	5.83	4.79	0.00
41.00	5.83	4.79	0.00	93.00	5.83	4.79	0.00
42.00	5.83	4.79	0.00	94.00	5.83	4.79	0.00
43.00	5.83	4.79	0.00	95.00	5.83	4.79	0.00
44.00	5.83	4.79	0.00	96.00	5.83	4.79	0.00
45.00	5.83	4.79	0.00	97.00	5.83	4.79	0.00
46.00	5.83	4.79	0.00	98.00	5.83	4.79	0.00
47.00	5.83	4.79	0.00	99.00	5.83	4.79	0.00
48.00	5.83	4.79	0.00	100.00	5.83	4.79	0.00
49.00	5.83	4.79	0.00				
50.00	5.83	4.79	0.00				
51.00	5.83	4.79	0.00				

Summary for Pond 8P: RG1

Inflow Area = 10,943 sf, 70.94% Impervious, Inflow Depth = 4.85" for 25-Year event
Inflow = 1.89 cfs @ 11.95 hrs, Volume= 4,424 cf
Outflow = 0.79 cfs @ 12.06 hrs, Volume= 4,230 cf, Atten= 58%, Lag= 6.7 min
Primary = 0.79 cfs @ 12.06 hrs, Volume= 4,230 cf
Routed to Link 7L : DP001 (POST)

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 53.31' @ 12.07 hrs Surf.Area= 1,510 sf Storage= 1,493 cf

Plug-Flow detention time= 83.0 min calculated for 4,230 cf (96% of inflow)
Center-of-Mass det. time= 55.6 min (811.7 - 756.1)

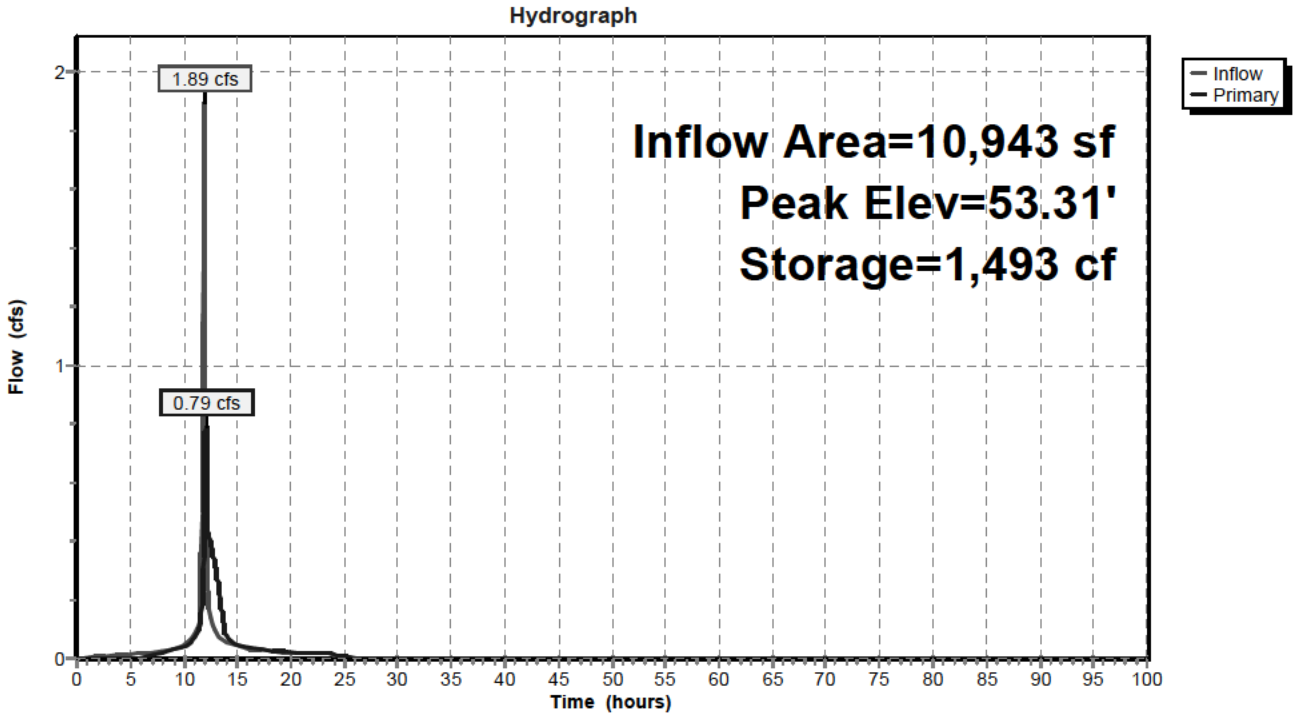
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	2,727 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.00	476	0.0	0	0
51.99	476	20.0	189	189
52.00	476	100.0	5	194
54.00	2,057	100.0	2,533	2,727

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	53.25'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	52.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.73 cfs @ 12.06 hrs HW=53.30' (Free Discharge)
- **1=Culvert** (Passes 0.73 cfs of 13.58 cfs potential flow)
  - **2=Grate** (Weir Controls 0.28 cfs @ 0.72 fps)
  - **3=Orifice/Grate** (Orifice Controls 0.45 cfs @ 5.12 fps)

Pond 8P: RG1


Hydrograph
Inflow Area=10,943 sf
Peak Elev=53.31'
Storage=1,493 cf
1.89 cfs
0.79 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Hydrograph for Pond 8P: RG1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	50.00	0.00
2.50	0.01	28	50.29	0.00
5.00	0.01	126	51.32	0.00
7.50	0.02	238	52.08	0.02
10.00	**0.04**	**261**	**52.13**	**0.04**
12.50	**0.14**	**1,142**	**53.06**	**0.40**
15.00	0.04	270	52.14	0.05
17.50	0.03	251	52.11	0.03
20.00	0.02	240	52.09	0.02
22.50	0.02	236	52.08	0.02
25.00	0.00	211	52.03	0.00
27.50	0.00	197	52.01	0.00
30.00	0.00	195	52.00	0.00
32.50	0.00	194	52.00	0.00
35.00	0.00	194	52.00	0.00
37.50	0.00	194	52.00	0.00
40.00	0.00	194	52.00	0.00
42.50	0.00	194	52.00	0.00
45.00	0.00	194	52.00	0.00
47.50	0.00	194	52.00	0.00
50.00	0.00	194	52.00	0.00
52.50	0.00	194	52.00	0.00
55.00	0.00	194	52.00	0.00
57.50	0.00	194	52.00	0.00
60.00	0.00	194	52.00	0.00
62.50	0.00	194	52.00	0.00
65.00	0.00	194	52.00	0.00
67.50	0.00	194	52.00	0.00
70.00	0.00	194	52.00	0.00
72.50	0.00	194	52.00	0.00
75.00	0.00	194	52.00	0.00
77.50	0.00	194	52.00	0.00
80.00	0.00	194	52.00	0.00
82.50	0.00	194	52.00	0.00
85.00	0.00	194	52.00	0.00
87.50	0.00	194	52.00	0.00
90.00	0.00	194	52.00	0.00
92.50	0.00	194	52.00	0.00
95.00	0.00	194	52.00	0.00
97.50	0.00	194	52.00	0.00
100.00	0.00	194	52.00	0.00

Stage-Discharge for Pond 8P: RG1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.00	0.00	51.04	0.00	52.08	0.02	53.12	0.41
50.02	0.00	51.06	0.00	52.10	0.02	53.14	0.41
50.04	0.00	51.08	0.00	52.12	0.03	53.16	0.42
50.06	0.00	51.10	0.00	52.14	0.04	53.18	0.42
50.08	0.00	51.12	0.00	52.16	0.06	53.20	0.43
50.10	0.00	51.14	0.00	52.18	0.07	53.22	0.43
50.12	0.00	51.16	0.00	52.20	0.08	53.24	0.44
50.14	0.00	51.18	0.00	52.22	0.10	53.26	0.47
50.16	0.00	51.20	0.00	52.24	0.11	53.28	0.58
50.18	0.00	51.22	0.00	52.26	0.13	53.30	0.74
50.20	0.00	51.24	0.00	52.28	0.14	53.32	0.94
50.22	0.00	51.26	0.00	52.30	0.15	53.34	1.16
50.24	0.00	51.28	0.00	52.32	0.17	53.36	1.41
50.26	0.00	51.30	0.00	52.34	0.17	53.38	1.69
50.28	0.00	51.32	0.00	52.36	0.18	53.40	1.99
50.30	0.00	51.34	0.00	52.38	0.19	53.42	2.30
50.32	0.00	51.36	0.00	52.40	0.20	53.44	2.64
50.34	0.00	51.38	0.00	52.42	0.21	53.46	3.00
50.36	0.00	51.40	0.00	52.44	0.22	53.48	3.37
50.38	0.00	51.42	0.00	52.46	0.23	53.50	3.76
50.40	0.00	51.44	0.00	52.48	0.24	53.52	4.16
50.42	0.00	51.46	0.00	52.50	0.24	53.54	4.58
50.44	0.00	51.48	0.00	52.52	0.25	53.56	5.01
50.46	0.00	51.50	0.00	52.54	0.26	53.58	5.46
50.48	0.00	51.52	0.00	52.56	0.26	53.60	5.92
50.50	0.00	51.54	0.00	52.58	0.27	53.62	6.39
50.52	0.00	51.56	0.00	52.60	0.28	53.64	6.88
50.54	0.00	51.58	0.00	52.62	0.28	53.66	7.38
50.56	0.00	51.60	0.00	52.64	0.29	53.68	7.89
50.58	0.00	51.62	0.00	52.66	0.30	53.70	8.42
50.60	0.00	51.64	0.00	52.68	0.30	53.72	8.95
50.62	0.00	51.66	0.00	52.70	0.31	53.74	9.50
50.64	0.00	51.68	0.00	52.72	0.31	53.76	10.06
50.66	0.00	51.70	0.00	52.74	0.32	53.78	10.63
50.68	0.00	51.72	0.00	52.76	0.32	53.80	11.21
50.70	0.00	51.74	0.00	52.78	0.33	53.82	11.80
50.72	0.00	51.76	0.00	52.80	0.33	53.84	12.40
50.74	0.00	51.78	0.00	52.82	0.34	53.86	13.01
50.76	0.00	51.80	0.00	52.84	0.34	53.88	13.63
50.78	0.00	51.82	0.00	52.86	0.35	53.90	14.26
50.80	0.00	51.84	0.00	52.88	0.35	53.92	14.90
50.82	0.00	51.86	0.00	52.90	0.36	53.94	15.20
50.84	0.00	51.88	0.00	52.92	0.36	53.96	15.24
50.86	0.00	51.90	0.00	52.94	0.37	53.98	15.29
50.88	0.00	51.92	0.00	52.96	0.37	54.00	**15.34**
50.90	0.00	51.94	0.00	52.98	0.38		
50.92	0.00	51.96	0.00	53.00	0.38		
50.94	0.00	51.98	0.00	53.02	0.39		
50.96	0.00	52.00	0.00	53.04	0.39		
50.98	0.00	52.02	0.00	53.06	0.40		
51.00	0.00	52.04	0.00	53.08	0.40		
51.02	0.00	52.06	0.01	53.10	0.41		

Stage-Area-Storage for Pond 8P: RG1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	476	0
50.05	476	5
50.10	476	10
50.15	476	14
50.20	476	19
50.25	476	24
50.30	476	29
50.35	476	33
50.40	476	38
50.45	476	43
50.50	476	48
50.55	476	52
50.60	476	57
50.65	476	62
50.70	476	67
50.75	476	71
50.80	476	76
50.85	476	81
50.90	476	86
50.95	476	90
51.00	476	95
51.05	476	100
51.10	476	105
51.15	476	109
51.20	476	114
51.25	476	119
51.30	476	124
51.35	476	129
51.40	476	133
51.45	476	138
51.50	476	143
51.55	476	148
51.60	476	152
51.65	476	157
51.70	476	162
51.75	476	167
51.80	476	171
51.85	476	176
51.90	476	181
51.95	476	186
52.00	476	194
52.05	516	219
52.10	555	246
52.15	595	275
52.20	634	305
52.25	674	338
52.30	713	373
52.35	753	409
52.40	792	448
52.45	832	488
52.50	871	531
52.55	911	576
52.60	950	622
52.65	990	671
52.70	1,029	721
52.75	1,069	774
52.80	1,108	828
52.85	1,148	884
52.90	1,187	943
52.95	1,227	1,003
53.00	1,267	1,065
53.05	1,306	1,130
53.10	1,346	1,196
53.15	1,385	1,264
53.20	1,425	1,335
53.25	1,464	1,407
53.30	1,504	1,481
53.35	1,543	1,557
53.40	1,583	1,635
53.45	1,622	1,715
53.50	1,662	1,798
53.55	1,701	1,882
53.60	1,741	1,968
53.65	1,780	2,056
53.70	1,820	2,146
53.75	1,859	2,238
53.80	1,899	2,332
53.85	1,938	2,428
53.90	1,978	2,525
53.95	2,017	2,625
54.00	**2,057**	**2,727**

Summary for Pond 9P: RG2

Inflow Area = 7,595 sf, 69.19% Impervious, Inflow Depth = 4.81" for 25-Year event
Inflow = 1.31 cfs @ 11.95 hrs, Volume= 3,042 cf
Outflow = 0.61 cfs @ 12.05 hrs, Volume= 2,698 cf, Atten= 53%, Lag= 6.2 min
Primary = 0.61 cfs @ 12.05 hrs, Volume= 2,698 cf
Routed to Link 7L : DP001 (POST)

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 52.53' @ 12.06 hrs Surf.Area= 1,271 sf Storage= 996 cf

Plug-Flow detention time= 115.3 min calculated for 2,698 cf (89% of inflow)
Center-of-Mass det. time= 56.8 min (814.0 - 757.2)

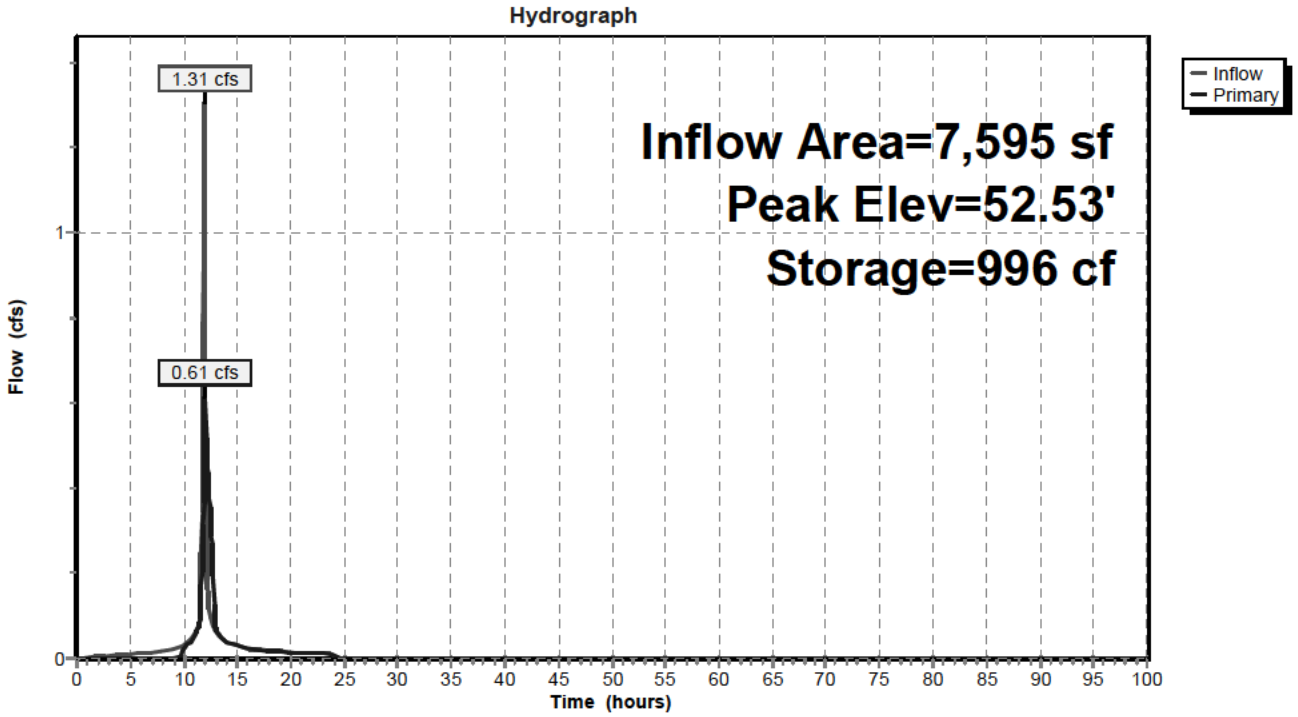
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	1,656 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.00	982	0.0	0	0
51.99	982	20.0	391	391
52.00	982	100.0	10	401
53.00	1,529	100.0	1,256	1,656

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	52.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	51.75'	**6.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.59 cfs @ 12.05 hrs HW=52.53' (Free Discharge)
↑**1=Culvert** (Passes 0.59 cfs of 11.34 cfs potential flow)
↑**2=Grate** (Weir Controls 0.11 cfs @ 0.52 fps)
3=Orifice/Grate (Orifice Controls 0.48 cfs @ 3.88 fps)

Pond 9P: RG2


Hydrograph
Inflow
Primary
1.31 cfs
0.61 cfs
Inflow Area=7,595 sf
Peak Elev=52.53'
Storage=996 cf
Flow (cfs)
Time (hours)
0
1
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Hydrograph for Pond 9P: RG2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	50.00	0.00
2.50	0.01	19	50.10	0.00
5.00	0.01	85	50.43	0.00
7.50	0.01	191	50.97	0.00
10.00	**0.03**	**356**	**51.81**	**0.02**
12.50	**0.10**	**594**	**52.19**	**0.33**
15.00	0.03	357	51.82	0.03
17.50	0.02	354	51.80	0.02
20.00	0.01	351	51.79	0.01
22.50	0.01	351	51.79	0.01
25.00	0.00	344	51.75	0.00
27.50	0.00	344	51.75	0.00
30.00	0.00	344	51.75	0.00
32.50	0.00	344	51.75	0.00
35.00	0.00	344	51.75	0.00
37.50	0.00	344	51.75	0.00
40.00	0.00	344	51.75	0.00
42.50	0.00	344	51.75	0.00
45.00	0.00	344	51.75	0.00
47.50	0.00	344	51.75	0.00
50.00	0.00	344	51.75	0.00
52.50	0.00	344	51.75	0.00
55.00	0.00	344	51.75	0.00
57.50	0.00	344	51.75	0.00
60.00	0.00	344	51.75	0.00
62.50	0.00	344	51.75	0.00
65.00	0.00	344	51.75	0.00
67.50	0.00	344	51.75	0.00
70.00	0.00	344	51.75	0.00
72.50	0.00	344	51.75	0.00
75.00	0.00	344	51.75	0.00
77.50	0.00	344	51.75	0.00
80.00	0.00	344	51.75	0.00
82.50	0.00	344	51.75	0.00
85.00	0.00	344	51.75	0.00
87.50	0.00	344	51.75	0.00
90.00	0.00	344	51.75	0.00
92.50	0.00	344	51.75	0.00
95.00	0.00	344	51.75	0.00
97.50	0.00	344	51.75	0.00
100.00	0.00	344	51.75	0.00

Stage-Discharge for Pond 9P: RG2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.00	0.00	51.04	0.00	52.08	0.27
50.02	0.00	51.06	0.00	52.10	0.28
50.04	0.00	51.08	0.00	52.12	0.29
50.06	0.00	51.10	0.00	52.14	0.31
50.08	0.00	51.12	0.00	52.16	0.32
50.10	0.00	51.14	0.00	52.18	0.33
50.12	0.00	51.16	0.00	52.20	0.34
50.14	0.00	51.18	0.00	52.22	0.35
50.16	0.00	51.20	0.00	52.24	0.36
50.18	0.00	51.22	0.00	52.26	0.37
50.20	0.00	51.24	0.00	52.28	0.38
50.22	0.00	51.26	0.00	52.30	0.39
50.24	0.00	51.28	0.00	52.32	0.40
50.26	0.00	51.30	0.00	52.34	0.41
50.28	0.00	51.32	0.00	52.36	0.42
50.30	0.00	51.34	0.00	52.38	0.43
50.32	0.00	51.36	0.00	52.40	0.44
50.34	0.00	51.38	0.00	52.42	0.44
50.36	0.00	51.40	0.00	52.44	0.45
50.38	0.00	51.42	0.00	52.46	0.46
50.40	0.00	51.44	0.00	52.48	0.47
50.42	0.00	51.46	0.00	52.50	0.48
50.44	0.00	51.48	0.00	52.52	0.56
50.46	0.00	51.50	0.00	52.54	0.70
50.48	0.00	51.52	0.00	52.56	0.88
50.50	0.00	51.54	0.00	52.58	1.10
50.52	0.00	51.56	0.00	52.60	1.34
50.54	0.00	51.58	0.00	52.62	1.61
50.56	0.00	51.60	0.00	52.64	1.90
50.58	0.00	51.62	0.00	52.66	2.21
50.60	0.00	51.64	0.00	52.68	2.54
50.62	0.00	51.66	0.00	52.70	2.89
50.64	0.00	51.68	0.00	52.72	3.25
50.66	0.00	51.70	0.00	52.74	3.64
50.68	0.00	51.72	0.00	52.76	4.03
50.70	0.00	51.74	0.00	52.78	4.45
50.72	0.00	51.76	0.00	52.80	4.88
50.74	0.00	51.78	0.01	52.82	5.32
50.76	0.00	51.80	0.02	52.84	5.78
50.78	0.00	51.82	0.03	52.86	6.25
50.80	0.00	51.84	0.04	52.88	6.73
50.82	0.00	51.86	0.06	52.90	7.23
50.84	0.00	51.88	0.08	52.92	7.74
50.86	0.00	51.90	0.09	52.94	8.26
50.88	0.00	51.92	0.11	52.96	8.79
50.90	0.00	51.94	0.13	52.98	9.33
50.92	0.00	51.96	0.15	53.00	**9.89**
50.94	0.00	51.98	0.18		
50.96	0.00	52.00	0.20		
50.98	0.00	52.02	0.22		
51.00	0.00	52.04	0.24		
51.02	0.00	52.06	0.25		

Stage-Area-Storage for Pond 9P: RG2

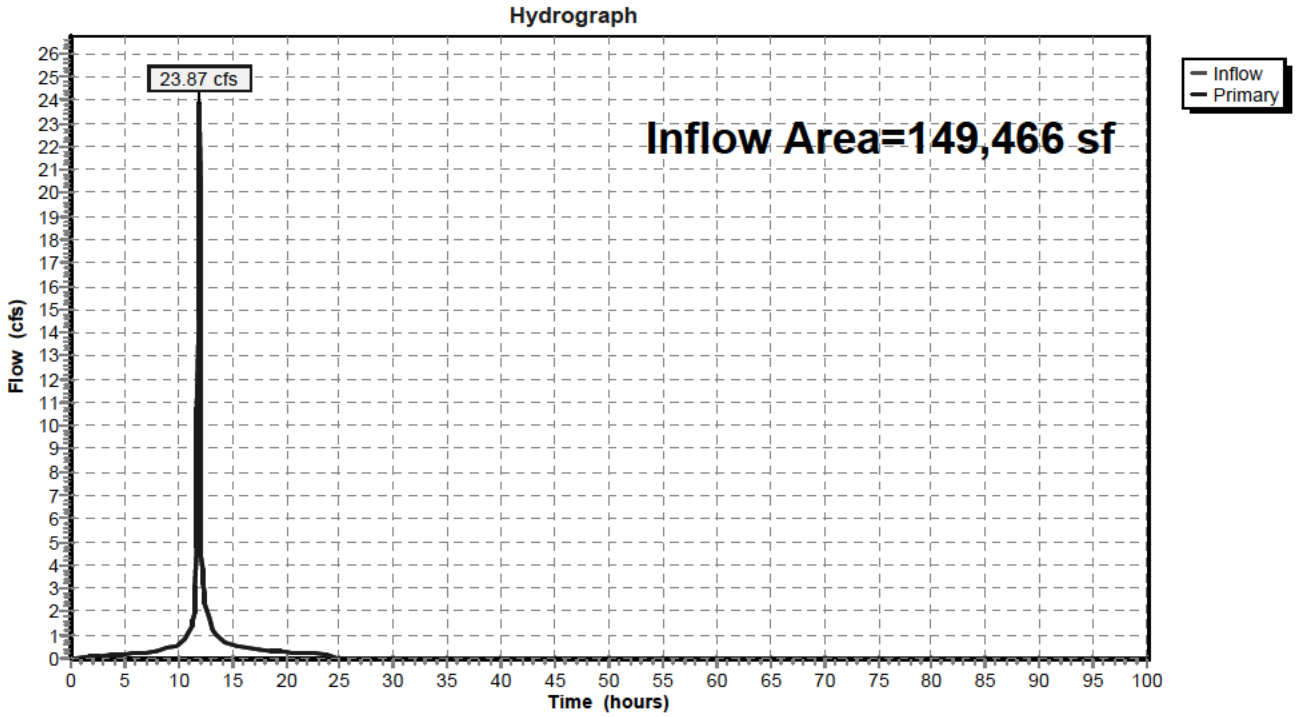
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	982	0
50.05	982	10
50.10	982	20
50.15	982	29
50.20	982	39
50.25	982	49
50.30	982	59
50.35	982	69
50.40	982	79
50.45	982	88
50.50	982	98
50.55	982	108
50.60	982	118
50.65	982	128
50.70	982	137
50.75	982	147
50.80	982	157
50.85	982	167
50.90	982	177
50.95	982	187
51.00	982	196
51.05	982	206
51.10	982	216
51.15	982	226
51.20	982	236
51.25	982	246
51.30	982	255
51.35	982	265
51.40	982	275
51.45	982	285
51.50	982	295
51.55	982	304
51.60	982	314
51.65	982	324
51.70	982	334
51.75	982	344
51.80	982	354
51.85	982	363
51.90	982	373
51.95	982	383
52.00	982	401
52.05	1,009	450
52.10	1,037	502
52.15	1,064	554
52.20	1,091	608
52.25	1,119	663
52.30	1,146	720
52.35	1,173	778
52.40	1,201	837
52.45	1,228	898
52.50	1,256	960
52.55	1,283	1,023
52.60	1,310	1,088
52.65	1,338	1,155
52.70	1,365	1,222
52.75	1,392	1,291
52.80	1,420	1,361
52.85	1,447	1,433
52.90	1,474	1,506
52.95	1,502	1,580
53.00	**1,529**	**1,656**

Summary for Link 7L: DP001 (POST)

Inflow Area = 149,466 sf, 74.65% Impervious, Inflow Depth = 4.90" for 25-Year event
Inflow = 23.87 cfs @ 11.95 hrs, Volume= 61,064 cf
Primary = 23.87 cfs @ 11.95 hrs, Volume= 61,064 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Link 7L: DP001 (POST)



Hydrograph for Link 7L: DP001 (POST)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.02	0.00	0.02	53.00	0.00	0.00	0.00
2.00	0.08	0.00	0.08	54.00	0.00	0.00	0.00
3.00	0.12	0.00	0.12	55.00	0.00	0.00	0.00
4.00	0.14	0.00	0.14	56.00	0.00	0.00	0.00
5.00	0.18	0.00	0.18	57.00	0.00	0.00	0.00
6.00	0.21	0.00	0.21	58.00	0.00	0.00	0.00
7.00	0.26	0.00	0.26	59.00	0.00	0.00	0.00
8.00	0.29	0.00	0.29	60.00	0.00	0.00	0.00
9.00	0.44	0.00	0.44	61.00	0.00	0.00	0.00
10.00	0.59	0.00	0.59	62.00	0.00	0.00	0.00
11.00	**1.10**	0.00	**1.10**	63.00	0.00	0.00	0.00
12.00	**20.27**	0.00	**20.27**	64.00	0.00	0.00	0.00
13.00	1.45	0.00	1.45	65.00	0.00	0.00	0.00
14.00	0.76	0.00	0.76	66.00	0.00	0.00	0.00
15.00	0.59	0.00	0.59	67.00	0.00	0.00	0.00
16.00	0.45	0.00	0.45	68.00	0.00	0.00	0.00
17.00	0.40	0.00	0.40	69.00	0.00	0.00	0.00
18.00	0.35	0.00	0.35	70.00	0.00	0.00	0.00
19.00	0.30	0.00	0.30	71.00	0.00	0.00	0.00
20.00	0.26	0.00	0.26	72.00	0.00	0.00	0.00
21.00	0.24	0.00	0.24	73.00	0.00	0.00	0.00
22.00	0.23	0.00	0.23	74.00	0.00	0.00	0.00
23.00	0.22	0.00	0.22	75.00	0.00	0.00	0.00
24.00	0.21	0.00	0.21	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	97.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	98.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	99.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Subcatchment 4S: Post Uncaptured

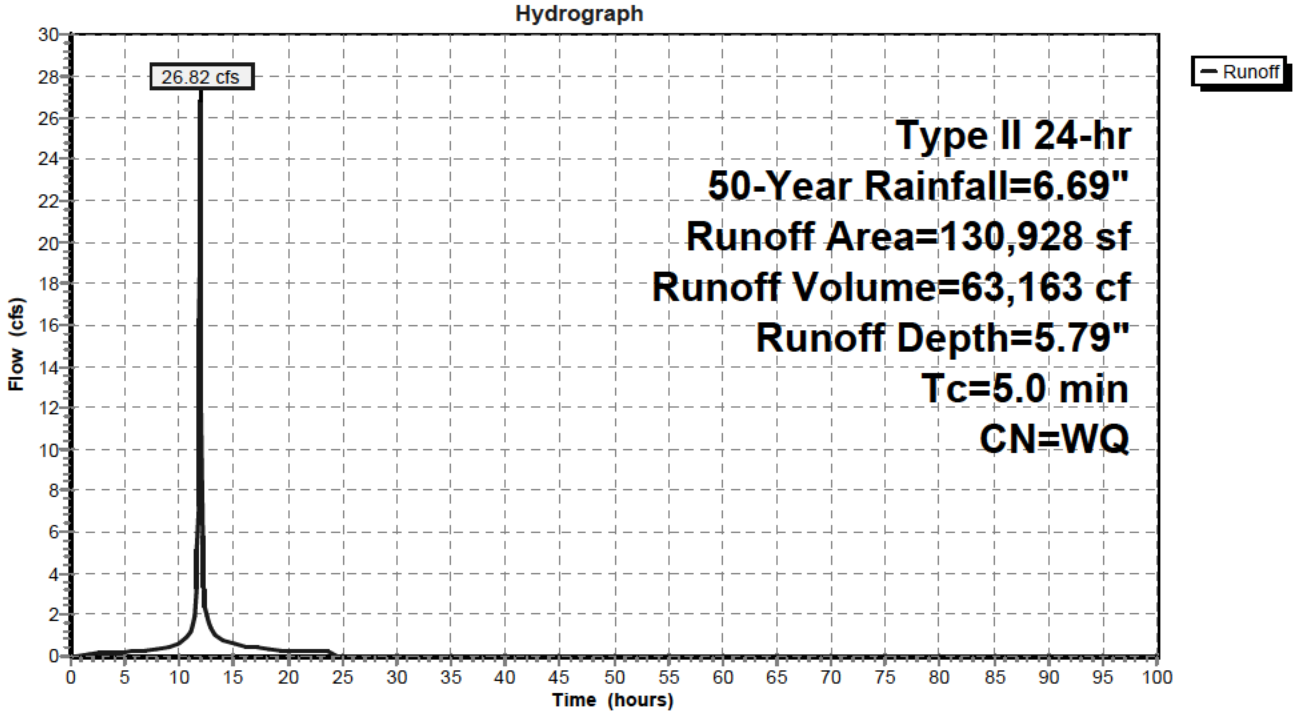
Runoff = 26.82 cfs @ 11.95 hrs, Volume= 63,163 cf, Depth= 5.79"
Routed to Link 7L : DP001 (POST)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=6.69"

Area (sf)	CN	Description
32,370	74	>75% Grass cover, Good, HSG C
98,558	98	Paved parking, HSG C
130,928		Weighted Average
32,370		24.72% Pervious Area
98,558		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Post Uncaptured



Hydrograph for Subcatchment 4S: Post Uncaptured

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.07	0.00	0.03
2.00	0.15	0.00	0.10
3.00	0.23	0.00	0.14
4.00	0.32	0.02	0.17
5.00	0.42	0.05	0.21
6.00	0.54	0.11	0.25
7.00	0.66	0.18	0.28
8.00	0.80	0.26	0.32
9.00	0.98	0.39	0.48
10.00	1.21	0.56	0.62
11.00	1.57	0.86	**1.16**
12.00	4.44	3.54	**22.52**
13.00	5.16	4.25	1.25
14.00	5.49	4.56	0.75
15.00	5.71	4.78	0.59
16.00	5.89	4.96	0.46
17.00	6.03	5.10	0.40
18.00	6.16	5.23	0.35
19.00	6.27	5.34	0.31
20.00	6.37	5.43	0.26
21.00	6.45	5.52	0.24
22.00	6.54	5.60	0.24
23.00	6.61	5.67	0.23
24.00	**6.69**	**5.75**	0.22
25.00	6.69	5.75	0.00
26.00	6.69	5.75	0.00
27.00	6.69	5.75	0.00
28.00	6.69	5.75	0.00
29.00	6.69	5.75	0.00
30.00	6.69	5.75	0.00
31.00	6.69	5.75	0.00
32.00	6.69	5.75	0.00
33.00	6.69	5.75	0.00
34.00	6.69	5.75	0.00
35.00	6.69	5.75	0.00
36.00	6.69	5.75	0.00
37.00	6.69	5.75	0.00
38.00	6.69	5.75	0.00
39.00	6.69	5.75	0.00
40.00	6.69	5.75	0.00
41.00	6.69	5.75	0.00
42.00	6.69	5.75	0.00
43.00	6.69	5.75	0.00
44.00	6.69	5.75	0.00
45.00	6.69	5.75	0.00
46.00	6.69	5.75	0.00
47.00	6.69	5.75	0.00
48.00	6.69	5.75	0.00
49.00	6.69	5.75	0.00
50.00	6.69	5.75	0.00
51.00	6.69	5.75	0.00
52.00	6.69	5.75	0.00
53.00	6.69	5.75	0.00
54.00	6.69	5.75	0.00
55.00	6.69	5.75	0.00
56.00	6.69	5.75	0.00
57.00	6.69	5.75	0.00
58.00	6.69	5.75	0.00
59.00	6.69	5.75	0.00
60.00	6.69	5.75	0.00
61.00	6.69	5.75	0.00
62.00	6.69	5.75	0.00
63.00	6.69	5.75	0.00
64.00	6.69	5.75	0.00
65.00	6.69	5.75	0.00
66.00	6.69	5.75	0.00
67.00	6.69	5.75	0.00
68.00	6.69	5.75	0.00
69.00	6.69	5.75	0.00
70.00	6.69	5.75	0.00
71.00	6.69	5.75	0.00
72.00	6.69	5.75	0.00
73.00	6.69	5.75	0.00
74.00	6.69	5.75	0.00
75.00	6.69	5.75	0.00
76.00	6.69	5.75	0.00
77.00	6.69	5.75	0.00
78.00	6.69	5.75	0.00
79.00	6.69	5.75	0.00
80.00	6.69	5.75	0.00
81.00	6.69	5.75	0.00
82.00	6.69	5.75	0.00
83.00	6.69	5.75	0.00
84.00	6.69	5.75	0.00
85.00	6.69	5.75	0.00
86.00	6.69	5.75	0.00
87.00	6.69	5.75	0.00
88.00	6.69	5.75	0.00
89.00	6.69	5.75	0.00
90.00	6.69	5.75	0.00
91.00	6.69	5.75	0.00
92.00	6.69	5.75	0.00
93.00	6.69	5.75	0.00
94.00	6.69	5.75	0.00
95.00	6.69	5.75	0.00
96.00	6.69	5.75	0.00
97.00	6.69	5.75	0.00
98.00	6.69	5.75	0.00
99.00	6.69	5.75	0.00
100.00	6.69	5.75	0.00

Summary for Subcatchment 5S: Post to RG 1

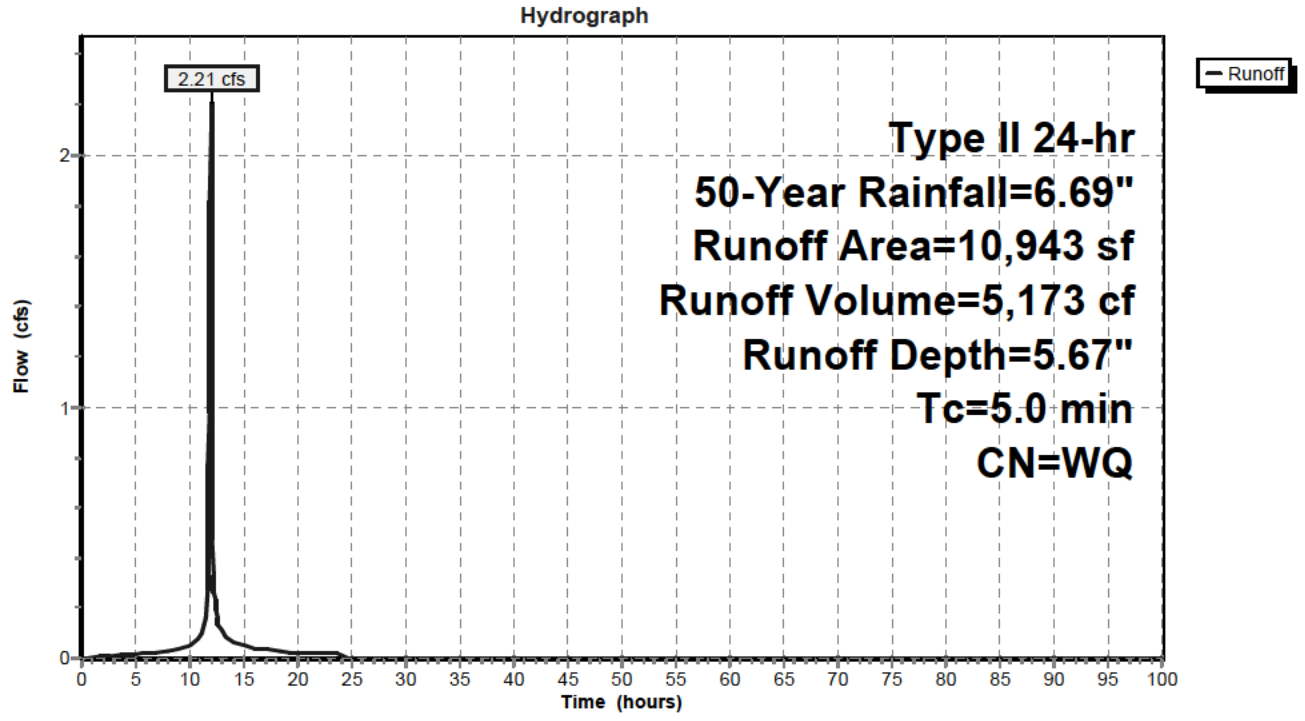
Runoff = 2.21 cfs @ 11.95 hrs, Volume= 5,173 cf, Depth= 5.67"
Routed to Pond 8P : RG1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=6.69"

Area (sf)	CN	Description
3,180	74	>75% Grass cover, Good, HSG C
7,763	98	Paved parking, HSG C
10,943		Weighted Average
3,180		29.06% Pervious Area
7,763		70.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Post to RG 1



Hydrograph for Subcatchment 5S: Post to RG 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.07	0.00	0.00
2.00	0.15	0.00	0.01
3.00	0.23	0.00	0.01
4.00	0.32	0.01	0.01
5.00	0.42	0.04	0.02
6.00	0.54	0.09	0.02
7.00	0.66	0.15	0.02
8.00	0.80	0.23	0.03
9.00	0.98	0.35	0.04
10.00	1.21	0.51	0.05
11.00	1.57	0.80	**0.09**
12.00	4.44	3.44	**1.86**
13.00	5.16	4.14	0.10
14.00	5.49	4.45	0.06
15.00	5.71	4.67	0.05
16.00	5.89	4.85	0.04
17.00	6.03	4.99	0.03
18.00	6.16	5.12	0.03
19.00	6.27	5.23	0.03
20.00	6.37	5.32	0.02
21.00	6.45	5.40	0.02
22.00	6.54	5.48	0.02
23.00	6.61	5.56	0.02
24.00	**6.69**	**5.63**	0.02
25.00	6.69	5.63	0.00
26.00	6.69	5.63	0.00
27.00	6.69	5.63	0.00
28.00	6.69	5.63	0.00
29.00	6.69	5.63	0.00
30.00	6.69	5.63	0.00
31.00	6.69	5.63	0.00
32.00	6.69	5.63	0.00
33.00	6.69	5.63	0.00
34.00	6.69	5.63	0.00
35.00	6.69	5.63	0.00
36.00	6.69	5.63	0.00
37.00	6.69	5.63	0.00
38.00	6.69	5.63	0.00
39.00	6.69	5.63	0.00
40.00	6.69	5.63	0.00
41.00	6.69	5.63	0.00
42.00	6.69	5.63	0.00
43.00	6.69	5.63	0.00
44.00	6.69	5.63	0.00
45.00	6.69	5.63	0.00
46.00	6.69	5.63	0.00
47.00	6.69	5.63	0.00
48.00	6.69	5.63	0.00
49.00	6.69	5.63	0.00
50.00	6.69	5.63	0.00
51.00	6.69	5.63	0.00
52.00	6.69	5.63	0.00
53.00	6.69	5.63	0.00
54.00	6.69	5.63	0.00
55.00	6.69	5.63	0.00
56.00	6.69	5.63	0.00
57.00	6.69	5.63	0.00
58.00	6.69	5.63	0.00
59.00	6.69	5.63	0.00
60.00	6.69	5.63	0.00
61.00	6.69	5.63	0.00
62.00	6.69	5.63	0.00
63.00	6.69	5.63	0.00
64.00	6.69	5.63	0.00
65.00	6.69	5.63	0.00
66.00	6.69	5.63	0.00
67.00	6.69	5.63	0.00
68.00	6.69	5.63	0.00
69.00	6.69	5.63	0.00
70.00	6.69	5.63	0.00
71.00	6.69	5.63	0.00
72.00	6.69	5.63	0.00
73.00	6.69	5.63	0.00
74.00	6.69	5.63	0.00
75.00	6.69	5.63	0.00
76.00	6.69	5.63	0.00
77.00	6.69	5.63	0.00
78.00	6.69	5.63	0.00
79.00	6.69	5.63	0.00
80.00	6.69	5.63	0.00
81.00	6.69	5.63	0.00
82.00	6.69	5.63	0.00
83.00	6.69	5.63	0.00
84.00	6.69	5.63	0.00
85.00	6.69	5.63	0.00
86.00	6.69	5.63	0.00
87.00	6.69	5.63	0.00
88.00	6.69	5.63	0.00
89.00	6.69	5.63	0.00
90.00	6.69	5.63	0.00
91.00	6.69	5.63	0.00
92.00	6.69	5.63	0.00
93.00	6.69	5.63	0.00
94.00	6.69	5.63	0.00
95.00	6.69	5.63	0.00
96.00	6.69	5.63	0.00
97.00	6.69	5.63	0.00
98.00	6.69	5.63	0.00
99.00	6.69	5.63	0.00
100.00	6.69	5.63	0.00

Summary for Subcatchment 6S: Post to RG2

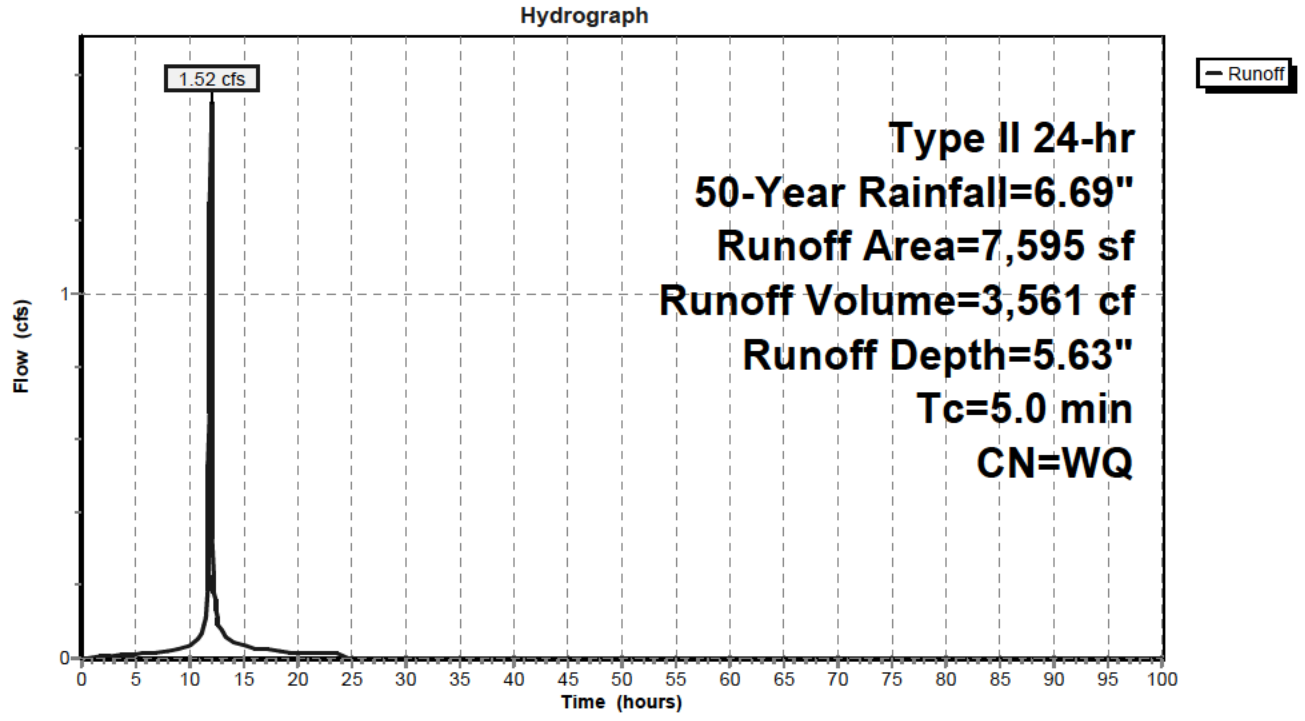
Runoff = 1.52 cfs @ 11.95 hrs, Volume= 3,561 cf, Depth= 5.63"
Routed to Pond 9P : RG2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=6.69"

Area (sf)	CN	Description
2,340	74	>75% Grass cover, Good, HSG C
5,255	98	Paved parking, HSG C
7,595		Weighted Average
2,340		30.81% Pervious Area
5,255		69.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Post to RG2



Hydrograph for Subcatchment 6S: Post to RG2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.07	0.00	0.00
2.00	0.15	0.00	0.01
3.00	0.23	0.00	0.01
4.00	0.32	0.01	0.01
5.00	0.42	0.04	0.01
6.00	0.54	0.09	0.01
7.00	0.66	0.15	0.02
8.00	0.80	0.23	0.02
9.00	0.98	0.35	0.03
10.00	1.21	0.51	0.03
11.00	1.57	0.80	**0.06**
12.00	4.44	3.44	**1.28**
13.00	5.16	4.14	0.07
14.00	5.49	4.45	0.04
15.00	5.71	4.67	0.03
16.00	5.89	4.85	0.03
17.00	6.03	4.99	0.02
18.00	6.16	5.12	0.02
19.00	6.27	5.23	0.02
20.00	6.37	5.32	0.01
21.00	6.45	5.40	0.01
22.00	6.54	5.48	0.01
23.00	6.61	5.56	0.01
24.00	**6.69**	**5.63**	0.01
25.00	6.69	5.63	0.00
26.00	6.69	5.63	0.00
27.00	6.69	5.63	0.00
28.00	6.69	5.63	0.00
29.00	6.69	5.63	0.00
30.00	6.69	5.63	0.00
31.00	6.69	5.63	0.00
32.00	6.69	5.63	0.00
33.00	6.69	5.63	0.00
34.00	6.69	5.63	0.00
35.00	6.69	5.63	0.00
36.00	6.69	5.63	0.00
37.00	6.69	5.63	0.00
38.00	6.69	5.63	0.00
39.00	6.69	5.63	0.00
40.00	6.69	5.63	0.00
41.00	6.69	5.63	0.00
42.00	6.69	5.63	0.00
43.00	6.69	5.63	0.00
44.00	6.69	5.63	0.00
45.00	6.69	5.63	0.00
46.00	6.69	5.63	0.00
47.00	6.69	5.63	0.00
48.00	6.69	5.63	0.00
49.00	6.69	5.63	0.00
50.00	6.69	5.63	0.00
51.00	6.69	5.63	0.00
52.00	6.69	5.63	0.00
53.00	6.69	5.63	0.00
54.00	6.69	5.63	0.00
55.00	6.69	5.63	0.00
56.00	6.69	5.63	0.00
57.00	6.69	5.63	0.00
58.00	6.69	5.63	0.00
59.00	6.69	5.63	0.00
60.00	6.69	5.63	0.00
61.00	6.69	5.63	0.00
62.00	6.69	5.63	0.00
63.00	6.69	5.63	0.00
64.00	6.69	5.63	0.00
65.00	6.69	5.63	0.00
66.00	6.69	5.63	0.00
67.00	6.69	5.63	0.00
68.00	6.69	5.63	0.00
69.00	6.69	5.63	0.00
70.00	6.69	5.63	0.00
71.00	6.69	5.63	0.00
72.00	6.69	5.63	0.00
73.00	6.69	5.63	0.00
74.00	6.69	5.63	0.00
75.00	6.69	5.63	0.00
76.00	6.69	5.63	0.00
77.00	6.69	5.63	0.00
78.00	6.69	5.63	0.00
79.00	6.69	5.63	0.00
80.00	6.69	5.63	0.00
81.00	6.69	5.63	0.00
82.00	6.69	5.63	0.00
83.00	6.69	5.63	0.00
84.00	6.69	5.63	0.00
85.00	6.69	5.63	0.00
86.00	6.69	5.63	0.00
87.00	6.69	5.63	0.00
88.00	6.69	5.63	0.00
89.00	6.69	5.63	0.00
90.00	6.69	5.63	0.00
91.00	6.69	5.63	0.00
92.00	6.69	5.63	0.00
93.00	6.69	5.63	0.00
94.00	6.69	5.63	0.00
95.00	6.69	5.63	0.00
96.00	6.69	5.63	0.00
97.00	6.69	5.63	0.00
98.00	6.69	5.63	0.00
99.00	6.69	5.63	0.00
100.00	6.69	5.63	0.00

Summary for Pond 8P: RG1

Inflow Area = 10,943 sf, 70.94% Impervious, Inflow Depth = 5.67" for 50-Year event
Inflow = 2.21 cfs @ 11.95 hrs, Volume= 5,173 cf
Outflow = 1.39 cfs @ 12.04 hrs, Volume= 4,979 cf, Atten= 37%, Lag= 5.4 min
Primary = 1.39 cfs @ 12.04 hrs, Volume= 4,979 cf
Routed to Link 7L : DP001 (POST)

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 53.36' @ 12.04 hrs Surf.Area= 1,550 sf Storage= 1,570 cf

Plug-Flow detention time= 75.0 min calculated for 4,979 cf (96% of inflow)
Center-of-Mass det. time= 51.1 min (805.3 - 754.2)

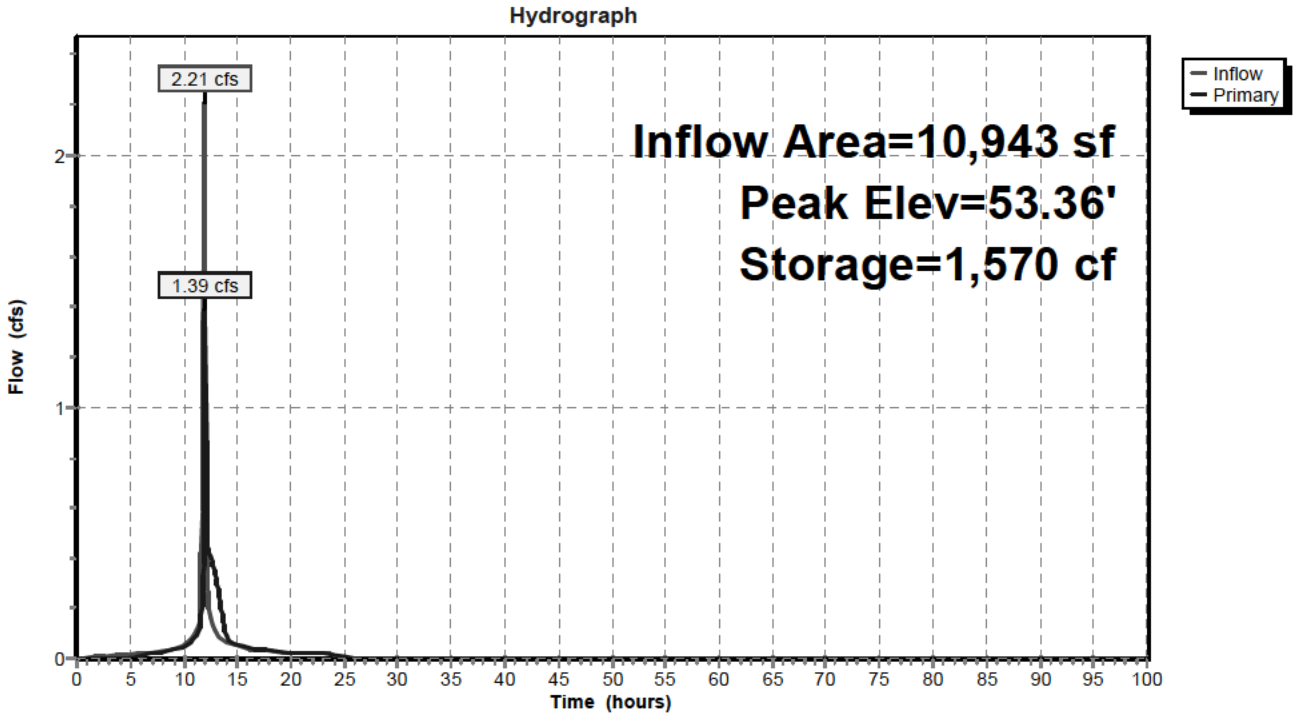
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	2,727 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.00	476	0.0	0	0
51.99	476	20.0	189	189
52.00	476	100.0	5	194
54.00	2,057	100.0	2,533	2,727

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	53.25'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	52.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.32 cfs @ 12.04 hrs HW=53.35' (Free Discharge)
↑**1=Culvert** (Passes 1.32 cfs of 13.73 cfs potential flow)
↑**2=Grate** (Weir Controls 0.87 cfs @ 1.05 fps)
3=Orifice/Grate (Orifice Controls 0.46 cfs @ 5.24 fps)

Pond 8P: RG1


Hydrograph
Inflow
Primary
2.21 cfs
1.39 cfs
Inflow Area=10,943 sf
Peak Elev=53.36'
Storage=1,570 cf
Flow (cfs)
Time (hours)
0
1
2
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Hydrograph for Pond 8P: RG1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	50.00	0.00
2.50	0.01	37	50.39	0.00
5.00	0.02	156	51.63	0.00
7.50	0.02	244	52.10	0.02
10.00	**0.05**	**269**	**52.14**	**0.04**
12.50	**0.17**	**1,190**	**53.10**	**0.40**
15.00	0.05	277	52.15	0.05
17.50	0.03	256	52.12	0.03
20.00	0.02	244	52.10	0.02
22.50	0.02	240	52.09	0.02
25.00	0.00	211	52.03	0.00
27.50	0.00	197	52.01	0.00
30.00	0.00	195	52.00	0.00
32.50	0.00	194	52.00	0.00
35.00	0.00	194	52.00	0.00
37.50	0.00	194	52.00	0.00
40.00	0.00	194	52.00	0.00
42.50	0.00	194	52.00	0.00
45.00	0.00	194	52.00	0.00
47.50	0.00	194	52.00	0.00
50.00	0.00	194	52.00	0.00
52.50	0.00	194	52.00	0.00
55.00	0.00	194	52.00	0.00
57.50	0.00	194	52.00	0.00
60.00	0.00	194	52.00	0.00
62.50	0.00	194	52.00	0.00
65.00	0.00	194	52.00	0.00
67.50	0.00	194	52.00	0.00
70.00	0.00	194	52.00	0.00
72.50	0.00	194	52.00	0.00
75.00	0.00	194	52.00	0.00
77.50	0.00	194	52.00	0.00
80.00	0.00	194	52.00	0.00
82.50	0.00	194	52.00	0.00
85.00	0.00	194	52.00	0.00
87.50	0.00	194	52.00	0.00
90.00	0.00	194	52.00	0.00
92.50	0.00	194	52.00	0.00
95.00	0.00	194	52.00	0.00
97.50	0.00	194	52.00	0.00
100.00	0.00	194	52.00	0.00

Stage-Discharge for Pond 8P: RG1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.00	0.00	51.04	0.00	52.08	0.02	53.12	0.41
50.02	0.00	51.06	0.00	52.10	0.02	53.14	0.41
50.04	0.00	51.08	0.00	52.12	0.03	53.16	0.42
50.06	0.00	51.10	0.00	52.14	0.04	53.18	0.42
50.08	0.00	51.12	0.00	52.16	0.06	53.20	0.43
50.10	0.00	51.14	0.00	52.18	0.07	53.22	0.43
50.12	0.00	51.16	0.00	52.20	0.08	53.24	0.44
50.14	0.00	51.18	0.00	52.22	0.10	53.26	0.47
50.16	0.00	51.20	0.00	52.24	0.11	53.28	0.58
50.18	0.00	51.22	0.00	52.26	0.13	53.30	0.74
50.20	0.00	51.24	0.00	52.28	0.14	53.32	0.94
50.22	0.00	51.26	0.00	52.30	0.15	53.34	1.16
50.24	0.00	51.28	0.00	52.32	0.17	53.36	1.41
50.26	0.00	51.30	0.00	52.34	0.17	53.38	1.69
50.28	0.00	51.32	0.00	52.36	0.18	53.40	1.99
50.30	0.00	51.34	0.00	52.38	0.19	53.42	2.30
50.32	0.00	51.36	0.00	52.40	0.20	53.44	2.64
50.34	0.00	51.38	0.00	52.42	0.21	53.46	3.00
50.36	0.00	51.40	0.00	52.44	0.22	53.48	3.37
50.38	0.00	51.42	0.00	52.46	0.23	53.50	3.76
50.40	0.00	51.44	0.00	52.48	0.24	53.52	4.16
50.42	0.00	51.46	0.00	52.50	0.24	53.54	4.58
50.44	0.00	51.48	0.00	52.52	0.25	53.56	5.01
50.46	0.00	51.50	0.00	52.54	0.26	53.58	5.46
50.48	0.00	51.52	0.00	52.56	0.26	53.60	5.92
50.50	0.00	51.54	0.00	52.58	0.27	53.62	6.39
50.52	0.00	51.56	0.00	52.60	0.28	53.64	6.88
50.54	0.00	51.58	0.00	52.62	0.28	53.66	7.38
50.56	0.00	51.60	0.00	52.64	0.29	53.68	7.89
50.58	0.00	51.62	0.00	52.66	0.30	53.70	8.42
50.60	0.00	51.64	0.00	52.68	0.30	53.72	8.95
50.62	0.00	51.66	0.00	52.70	0.31	53.74	9.50
50.64	0.00	51.68	0.00	52.72	0.31	53.76	10.06
50.66	0.00	51.70	0.00	52.74	0.32	53.78	10.63
50.68	0.00	51.72	0.00	52.76	0.32	53.80	11.21
50.70	0.00	51.74	0.00	52.78	0.33	53.82	11.80
50.72	0.00	51.76	0.00	52.80	0.33	53.84	12.40
50.74	0.00	51.78	0.00	52.82	0.34	53.86	13.01
50.76	0.00	51.80	0.00	52.84	0.34	53.88	13.63
50.78	0.00	51.82	0.00	52.86	0.35	53.90	14.26
50.80	0.00	51.84	0.00	52.88	0.35	53.92	14.90
50.82	0.00	51.86	0.00	52.90	0.36	53.94	15.20
50.84	0.00	51.88	0.00	52.92	0.36	53.96	15.24
50.86	0.00	51.90	0.00	52.94	0.37	53.98	15.29
50.88	0.00	51.92	0.00	52.96	0.37	54.00	**15.34**
50.90	0.00	51.94	0.00	52.98	0.38		
50.92	0.00	51.96	0.00	53.00	0.38		
50.94	0.00	51.98	0.00	53.02	0.39		
50.96	0.00	52.00	0.00	53.04	0.39		
50.98	0.00	52.02	0.00	53.06	0.40		
51.00	0.00	52.04	0.00	53.08	0.40		
51.02	0.00	52.06	0.01	53.10	0.41		

Stage-Area-Storage for Pond 8P: RG1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	476	0
50.05	476	5
50.10	476	10
50.15	476	14
50.20	476	19
50.25	476	24
50.30	476	29
50.35	476	33
50.40	476	38
50.45	476	43
50.50	476	48
50.55	476	52
50.60	476	57
50.65	476	62
50.70	476	67
50.75	476	71
50.80	476	76
50.85	476	81
50.90	476	86
50.95	476	90
51.00	476	95
51.05	476	100
51.10	476	105
51.15	476	109
51.20	476	114
51.25	476	119
51.30	476	124
51.35	476	129
51.40	476	133
51.45	476	138
51.50	476	143
51.55	476	148
51.60	476	152
51.65	476	157
51.70	476	162
51.75	476	167
51.80	476	171
51.85	476	176
51.90	476	181
51.95	476	186
52.00	476	194
52.05	516	219
52.10	555	246
52.15	595	275
52.20	634	305
52.25	674	338
52.30	713	373
52.35	753	409
52.40	792	448
52.45	832	488
52.50	871	531
52.55	911	576
52.60	950	622
52.65	990	671
52.70	1,029	721
52.75	1,069	774
52.80	1,108	828
52.85	1,148	884
52.90	1,187	943
52.95	1,227	1,003
53.00	1,267	1,065
53.05	1,306	1,130
53.10	1,346	1,196
53.15	1,385	1,264
53.20	1,425	1,335
53.25	1,464	1,407
53.30	1,504	1,481
53.35	1,543	1,557
53.40	1,583	1,635
53.45	1,622	1,715
53.50	1,662	1,798
53.55	1,701	1,882
53.60	1,741	1,968
53.65	1,780	2,056
53.70	1,820	2,146
53.75	1,859	2,238
53.80	1,899	2,332
53.85	1,938	2,428
53.90	1,978	2,525
53.95	2,017	2,625
54.00	**2,057**	**2,727**

Summary for Pond 9P: RG2

Inflow Area = 7,595 sf, 69.19% Impervious, Inflow Depth = 5.63" for 50-Year event
Inflow = 1.52 cfs @ 11.95 hrs, Volume= 3,561 cf
Outflow = 1.00 cfs @ 12.03 hrs, Volume= 3,217 cf, Atten= 35%, Lag= 4.9 min
Primary = 1.00 cfs @ 12.03 hrs, Volume= 3,217 cf
Routed to Link 7L : DP001 (POST)

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 52.57' @ 12.03 hrs Surf.Area= 1,294 sf Storage= 1,051 cf

Plug-Flow detention time= 103.9 min calculated for 3,216 cf (90% of inflow)
Center-of-Mass det. time= 52.6 min (807.8 - 755.3)

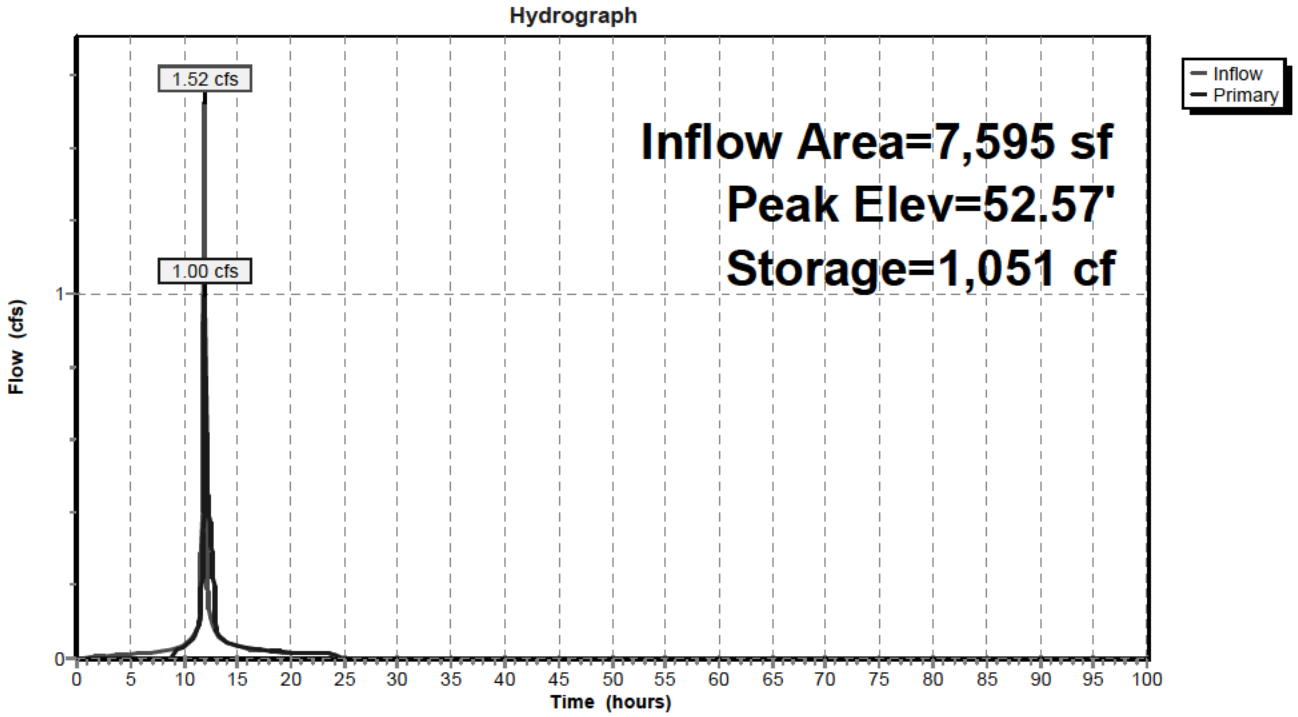
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	1,656 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.00	982	0.0	0	0
51.99	982	20.0	391	391
52.00	982	100.0	10	401
53.00	1,529	100.0	1,256	1,656

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	52.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	51.75'	**6.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.94 cfs @ 12.03 hrs HW=52.57' (Free Discharge)
↑ **1=Culvert** (Passes 0.94 cfs of 11.47 cfs potential flow)
↑ **2=Grate** (Weir Controls 0.44 cfs @ 0.84 fps)
3=Orifice/Grate (Orifice Controls 0.50 cfs @ 4.00 fps)

Pond 9P: RG2


Hydrograph
Inflow
Primary
1.52 cfs
1.00 cfs
Inflow Area=7,595 sf
Peak Elev=52.57'
Storage=1,051 cf
Flow (cfs)
Time (hours)
0
1
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Hydrograph for Pond 9P: RG2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	50.00	0.00
2.50	0.01	25	50.13	0.00
5.00	0.01	105	50.54	0.00
7.50	0.02	229	51.16	0.00
10.00	**0.03**	**358**	**51.82**	**0.03**
12.50	**0.11**	**628**	**52.22**	**0.35**
15.00	0.03	359	51.83	0.03
17.50	0.02	355	51.81	0.02
20.00	0.01	352	51.79	0.02
22.50	0.01	351	51.79	0.01
25.00	0.00	344	51.75	0.00
27.50	0.00	344	51.75	0.00
30.00	0.00	344	51.75	0.00
32.50	0.00	344	51.75	0.00
35.00	0.00	344	51.75	0.00
37.50	0.00	344	51.75	0.00
40.00	0.00	344	51.75	0.00
42.50	0.00	344	51.75	0.00
45.00	0.00	344	51.75	0.00
47.50	0.00	344	51.75	0.00
50.00	0.00	344	51.75	0.00
52.50	0.00	344	51.75	0.00
55.00	0.00	344	51.75	0.00
57.50	0.00	344	51.75	0.00
60.00	0.00	344	51.75	0.00
62.50	0.00	344	51.75	0.00
65.00	0.00	344	51.75	0.00
67.50	0.00	344	51.75	0.00
70.00	0.00	344	51.75	0.00
72.50	0.00	344	51.75	0.00
75.00	0.00	344	51.75	0.00
77.50	0.00	344	51.75	0.00
80.00	0.00	344	51.75	0.00
82.50	0.00	344	51.75	0.00
85.00	0.00	344	51.75	0.00
87.50	0.00	344	51.75	0.00
90.00	0.00	344	51.75	0.00
92.50	0.00	344	51.75	0.00
95.00	0.00	344	51.75	0.00
97.50	0.00	344	51.75	0.00
100.00	0.00	344	51.75	0.00

Stage-Discharge for Pond 9P: RG2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.00	0.00	51.04	0.00	52.08	0.27
50.02	0.00	51.06	0.00	52.10	0.28
50.04	0.00	51.08	0.00	52.12	0.29
50.06	0.00	51.10	0.00	52.14	0.31
50.08	0.00	51.12	0.00	52.16	0.32
50.10	0.00	51.14	0.00	52.18	0.33
50.12	0.00	51.16	0.00	52.20	0.34
50.14	0.00	51.18	0.00	52.22	0.35
50.16	0.00	51.20	0.00	52.24	0.36
50.18	0.00	51.22	0.00	52.26	0.37
50.20	0.00	51.24	0.00	52.28	0.38
50.22	0.00	51.26	0.00	52.30	0.39
50.24	0.00	51.28	0.00	52.32	0.40
50.26	0.00	51.30	0.00	52.34	0.41
50.28	0.00	51.32	0.00	52.36	0.42
50.30	0.00	51.34	0.00	52.38	0.43
50.32	0.00	51.36	0.00	52.40	0.44
50.34	0.00	51.38	0.00	52.42	0.44
50.36	0.00	51.40	0.00	52.44	0.45
50.38	0.00	51.42	0.00	52.46	0.46
50.40	0.00	51.44	0.00	52.48	0.47
50.42	0.00	51.46	0.00	52.50	0.48
50.44	0.00	51.48	0.00	52.52	0.56
50.46	0.00	51.50	0.00	52.54	0.70
50.48	0.00	51.52	0.00	52.56	0.88
50.50	0.00	51.54	0.00	52.58	1.10
50.52	0.00	51.56	0.00	52.60	1.34
50.54	0.00	51.58	0.00	52.62	1.61
50.56	0.00	51.60	0.00	52.64	1.90
50.58	0.00	51.62	0.00	52.66	2.21
50.60	0.00	51.64	0.00	52.68	2.54
50.62	0.00	51.66	0.00	52.70	2.89
50.64	0.00	51.68	0.00	52.72	3.25
50.66	0.00	51.70	0.00	52.74	3.64
50.68	0.00	51.72	0.00	52.76	4.03
50.70	0.00	51.74	0.00	52.78	4.45
50.72	0.00	51.76	0.00	52.80	4.88
50.74	0.00	51.78	0.01	52.82	5.32
50.76	0.00	51.80	0.02	52.84	5.78
50.78	0.00	51.82	0.03	52.86	6.25
50.80	0.00	51.84	0.04	52.88	6.73
50.82	0.00	51.86	0.06	52.90	7.23
50.84	0.00	51.88	0.08	52.92	7.74
50.86	0.00	51.90	0.09	52.94	8.26
50.88	0.00	51.92	0.11	52.96	8.79
50.90	0.00	51.94	0.13	52.98	9.33
50.92	0.00	51.96	0.15	53.00	**9.89**
50.94	0.00	51.98	0.18		
50.96	0.00	52.00	0.20		
50.98	0.00	52.02	0.22		
51.00	0.00	52.04	0.24		
51.02	0.00	52.06	0.25		

Stage-Area-Storage for Pond 9P: RG2

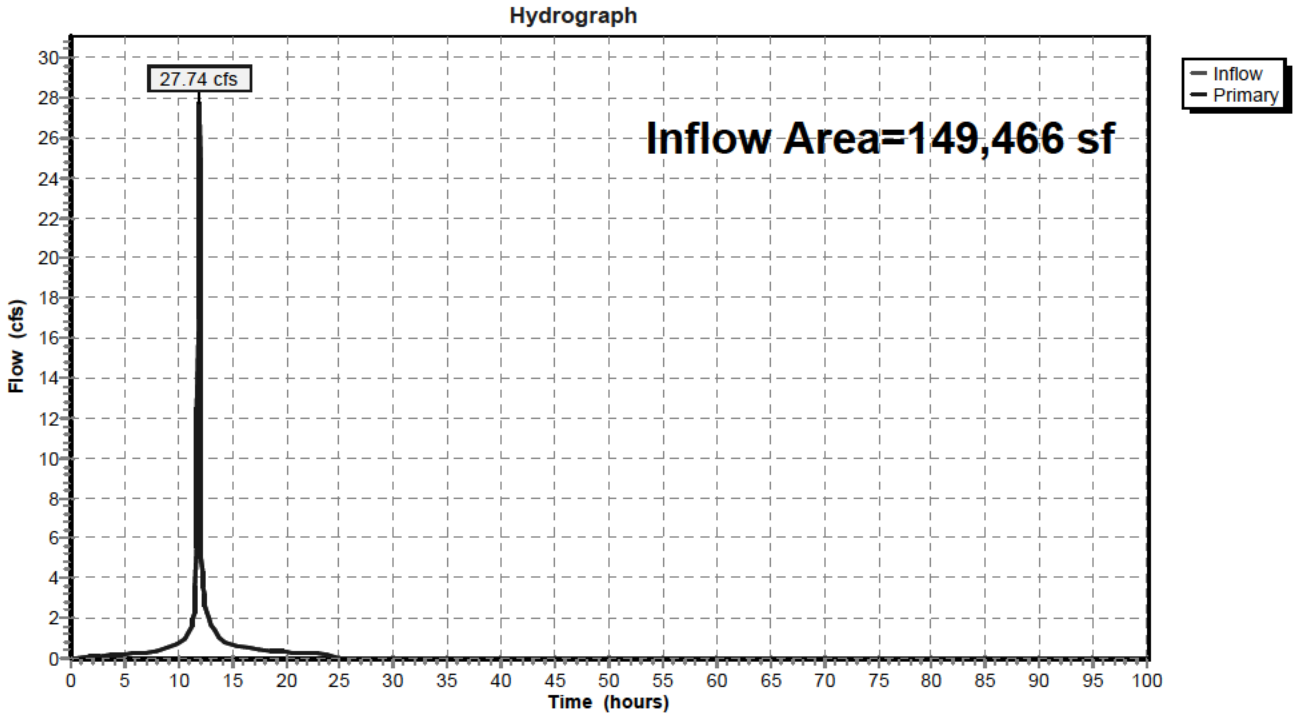
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	982	0
50.05	982	10
50.10	982	20
50.15	982	29
50.20	982	39
50.25	982	49
50.30	982	59
50.35	982	69
50.40	982	79
50.45	982	88
50.50	982	98
50.55	982	108
50.60	982	118
50.65	982	128
50.70	982	137
50.75	982	147
50.80	982	157
50.85	982	167
50.90	982	177
50.95	982	187
51.00	982	196
51.05	982	206
51.10	982	216
51.15	982	226
51.20	982	236
51.25	982	246
51.30	982	255
51.35	982	265
51.40	982	275
51.45	982	285
51.50	982	295
51.55	982	304
51.60	982	314
51.65	982	324
51.70	982	334
51.75	982	344
51.80	982	354
51.85	982	363
51.90	982	373
51.95	982	383
52.00	982	401
52.05	1,009	450
52.10	1,037	502
52.15	1,064	554
52.20	1,091	608
52.25	1,119	663
52.30	1,146	720
52.35	1,173	778
52.40	1,201	837
52.45	1,228	898
52.50	1,256	960
52.55	1,283	1,023
52.60	1,310	1,088
52.65	1,338	1,155
52.70	1,365	1,222
52.75	1,392	1,291
52.80	1,420	1,361
52.85	1,447	1,433
52.90	1,474	1,506
52.95	1,502	1,580
53.00	**1,529**	**1,656**

Summary for Link 7L: DP001 (POST)

Inflow Area = 149,466 sf, 74.65% Impervious, Inflow Depth = 5.73" for 50-Year event
Inflow = 27.74 cfs @ 11.96 hrs, Volume= 71,359 cf
Primary = 27.74 cfs @ 11.96 hrs, Volume= 71,359 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Link 7L: DP001 (POST)



Hydrograph for Link 7L: DP001 (POST)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.03	0.00	0.03	53.00	0.00	0.00	0.00
2.00	0.10	0.00	0.10	54.00	0.00	0.00	0.00
3.00	0.14	0.00	0.14	55.00	0.00	0.00	0.00
4.00	0.17	0.00	0.17	56.00	0.00	0.00	0.00
5.00	0.21	0.00	0.21	57.00	0.00	0.00	0.00
6.00	0.25	0.00	0.25	58.00	0.00	0.00	0.00
7.00	0.30	0.00	0.30	59.00	0.00	0.00	0.00
8.00	0.35	0.00	0.35	60.00	0.00	0.00	0.00
9.00	0.52	0.00	0.52	61.00	0.00	0.00	0.00
10.00	0.70	0.00	0.70	62.00	0.00	0.00	0.00
11.00	**1.30**	0.00	**1.30**	63.00	0.00	0.00	0.00
12.00	**24.56**	0.00	**24.56**	64.00	0.00	0.00	0.00
13.00	1.65	0.00	1.65	65.00	0.00	0.00	0.00
14.00	0.89	0.00	0.89	66.00	0.00	0.00	0.00
15.00	0.68	0.00	0.68	67.00	0.00	0.00	0.00
16.00	0.53	0.00	0.53	68.00	0.00	0.00	0.00
17.00	0.46	0.00	0.46	69.00	0.00	0.00	0.00
18.00	0.41	0.00	0.41	70.00	0.00	0.00	0.00
19.00	0.35	0.00	0.35	71.00	0.00	0.00	0.00
20.00	0.30	0.00	0.30	72.00	0.00	0.00	0.00
21.00	0.28	0.00	0.28	73.00	0.00	0.00	0.00
22.00	0.27	0.00	0.27	74.00	0.00	0.00	0.00
23.00	0.26	0.00	0.26	75.00	0.00	0.00	0.00
24.00	0.25	0.00	0.25	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	97.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	98.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	99.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Summary for Subcatchment 4S: Post Uncaptured

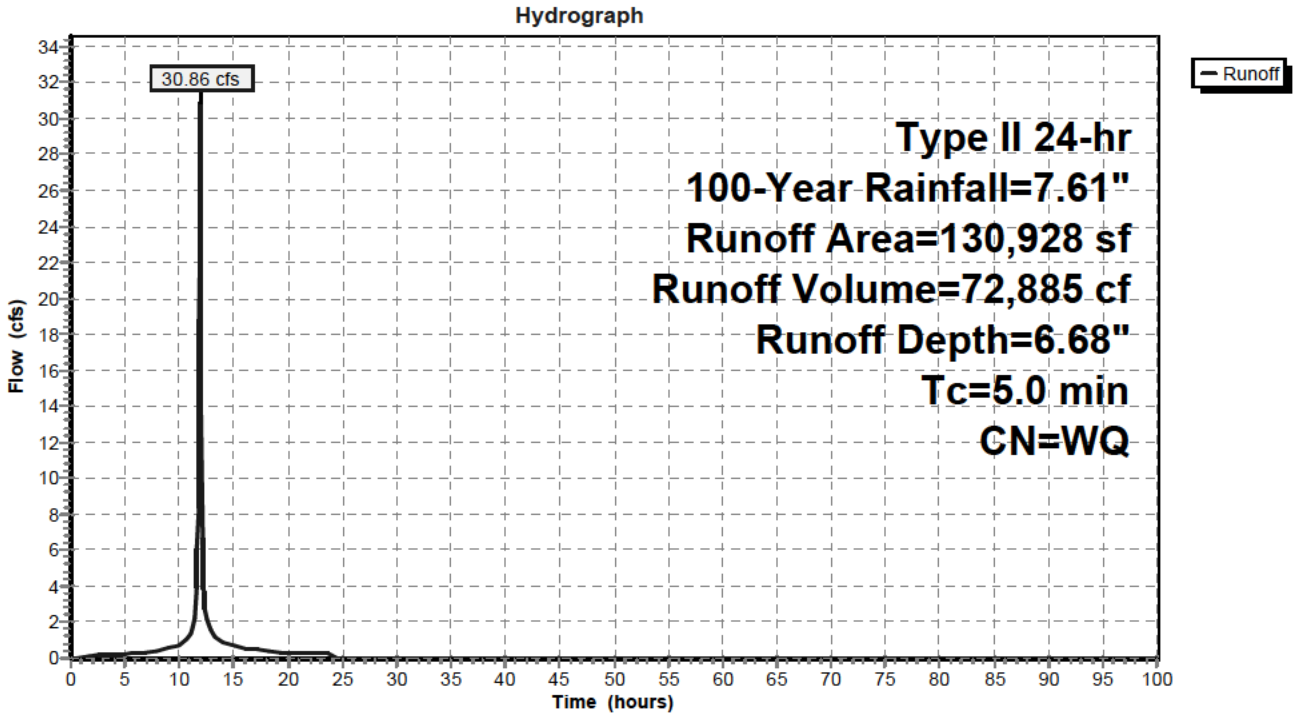
Runoff = 30.86 cfs @ 11.95 hrs, Volume= 72,885 cf, Depth= 6.68"
Routed to Link 7L : DP001 (POST)

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=7.61"

Area (sf)	CN	Description
32,370	74	>75% Grass cover, Good, HSG C
98,558	98	Paved parking, HSG C
130,928		Weighted Average
32,370		24.72% Pervious Area
98,558		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Post Uncaptured



Hydrograph for Subcatchment 4S: Post Uncaptured

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	7.61	6.66	0.00
1.00	0.08	0.00	0.05	53.00	7.61	6.66	0.00
2.00	0.17	0.00	0.12	54.00	7.61	6.66	0.00
3.00	0.26	0.01	0.17	55.00	7.61	6.66	0.00
4.00	0.37	0.03	0.20	56.00	7.61	6.66	0.00
5.00	0.48	0.08	0.25	57.00	7.61	6.66	0.00
6.00	0.61	0.14	0.29	58.00	7.61	6.66	0.00
7.00	0.75	0.23	0.33	59.00	7.61	6.66	0.00
8.00	0.91	0.34	0.38	60.00	7.61	6.66	0.00
9.00	1.12	0.49	0.56	61.00	7.61	6.66	0.00
10.00	1.38	0.70	0.72	62.00	7.61	6.66	0.00
11.00	1.79	1.05	**1.34**	63.00	7.61	6.66	0.00
12.00	5.05	4.13	**25.89**	64.00	7.61	6.66	0.00
13.00	5.87	4.95	1.44	65.00	7.61	6.66	0.00
14.00	6.24	5.31	0.86	66.00	7.61	6.66	0.00
15.00	6.50	5.56	0.68	67.00	7.61	6.66	0.00
16.00	6.70	5.76	0.52	68.00	7.61	6.66	0.00
17.00	6.86	5.92	0.46	69.00	7.61	6.66	0.00
18.00	7.01	6.06	0.41	70.00	7.61	6.66	0.00
19.00	7.14	6.19	0.35	71.00	7.61	6.66	0.00
20.00	7.24	6.30	0.29	72.00	7.61	6.66	0.00
21.00	7.34	6.39	0.28	73.00	7.61	6.66	0.00
22.00	7.43	6.48	0.27	74.00	7.61	6.66	0.00
23.00	7.52	6.57	0.26	75.00	7.61	6.66	0.00
24.00	**7.61**	**6.66**	0.25	76.00	7.61	6.66	0.00
25.00	7.61	6.66	0.00	77.00	7.61	6.66	0.00
26.00	7.61	6.66	0.00	78.00	7.61	6.66	0.00
27.00	7.61	6.66	0.00	79.00	7.61	6.66	0.00
28.00	7.61	6.66	0.00	80.00	7.61	6.66	0.00
29.00	7.61	6.66	0.00	81.00	7.61	6.66	0.00
30.00	7.61	6.66	0.00	82.00	7.61	6.66	0.00
31.00	7.61	6.66	0.00	83.00	7.61	6.66	0.00
32.00	7.61	6.66	0.00	84.00	7.61	6.66	0.00
33.00	7.61	6.66	0.00	85.00	7.61	6.66	0.00
34.00	7.61	6.66	0.00	86.00	7.61	6.66	0.00
35.00	7.61	6.66	0.00	87.00	7.61	6.66	0.00
36.00	7.61	6.66	0.00	88.00	7.61	6.66	0.00
37.00	7.61	6.66	0.00	89.00	7.61	6.66	0.00
38.00	7.61	6.66	0.00	90.00	7.61	6.66	0.00
39.00	7.61	6.66	0.00	91.00	7.61	6.66	0.00
40.00	7.61	6.66	0.00	92.00	7.61	6.66	0.00
41.00	7.61	6.66	0.00	93.00	7.61	6.66	0.00
42.00	7.61	6.66	0.00	94.00	7.61	6.66	0.00
43.00	7.61	6.66	0.00	95.00	7.61	6.66	0.00
44.00	7.61	6.66	0.00	96.00	7.61	6.66	0.00
45.00	7.61	6.66	0.00	97.00	7.61	6.66	0.00
46.00	7.61	6.66	0.00	98.00	7.61	6.66	0.00
47.00	7.61	6.66	0.00	99.00	7.61	6.66	0.00
48.00	7.61	6.66	0.00	100.00	7.61	6.66	0.00
49.00	7.61	6.66	0.00				
50.00	7.61	6.66	0.00				
51.00	7.61	6.66	0.00				

Summary for Subcatchment 5S: Post to RG 1

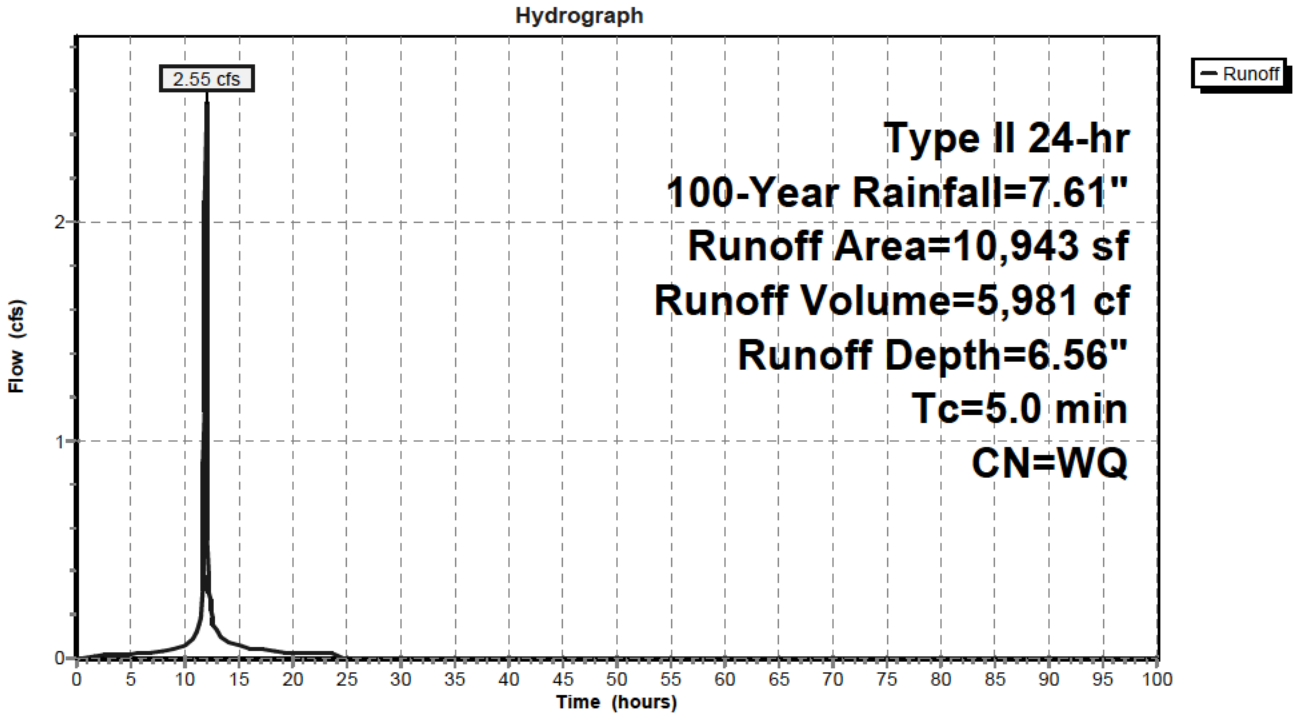
Runoff = 2.55 cfs @ 11.95 hrs, Volume= 5,981 cf, Depth= 6.56"
Routed to Pond 8P : RG1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=7.61"

Area (sf)	CN	Description
3,180	74	>75% Grass cover, Good, HSG C
7,763	98	Paved parking, HSG C
10,943		Weighted Average
3,180		29.06% Pervious Area
7,763		70.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: Post to RG 1



Hydrograph for Subcatchment 5S: Post to RG 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.08	0.00	0.00
2.00	0.17	0.00	0.01
3.00	0.26	0.00	0.01
4.00	0.37	0.02	0.02
5.00	0.48	0.06	0.02
6.00	0.61	0.12	0.02
7.00	0.75	0.20	0.03
8.00	0.91	0.30	0.03
9.00	1.12	0.44	0.04
10.00	1.38	0.64	0.06
11.00	1.79	0.98	**0.11**
12.00	5.05	4.03	**2.14**
13.00	5.87	4.83	0.12
14.00	6.24	5.19	0.07
15.00	6.50	5.44	0.06
16.00	6.70	5.64	0.04
17.00	6.86	5.80	0.04
18.00	7.01	5.95	0.03
19.00	7.14	6.07	0.03
20.00	7.24	6.18	0.02
21.00	7.34	6.28	0.02
22.00	7.43	6.37	0.02
23.00	7.52	6.46	0.02
24.00	**7.61**	**6.54**	0.02
25.00	7.61	6.54	0.00
26.00	7.61	6.54	0.00
27.00	7.61	6.54	0.00
28.00	7.61	6.54	0.00
29.00	7.61	6.54	0.00
30.00	7.61	6.54	0.00
31.00	7.61	6.54	0.00
32.00	7.61	6.54	0.00
33.00	7.61	6.54	0.00
34.00	7.61	6.54	0.00
35.00	7.61	6.54	0.00
36.00	7.61	6.54	0.00
37.00	7.61	6.54	0.00
38.00	7.61	6.54	0.00
39.00	7.61	6.54	0.00
40.00	7.61	6.54	0.00
41.00	7.61	6.54	0.00
42.00	7.61	6.54	0.00
43.00	7.61	6.54	0.00
44.00	7.61	6.54	0.00
45.00	7.61	6.54	0.00
46.00	7.61	6.54	0.00
47.00	7.61	6.54	0.00
48.00	7.61	6.54	0.00
49.00	7.61	6.54	0.00
50.00	7.61	6.54	0.00
51.00	7.61	6.54	0.00
52.00	7.61	6.54	0.00
53.00	7.61	6.54	0.00
54.00	7.61	6.54	0.00
55.00	7.61	6.54	0.00
56.00	7.61	6.54	0.00
57.00	7.61	6.54	0.00
58.00	7.61	6.54	0.00
59.00	7.61	6.54	0.00
60.00	7.61	6.54	0.00
61.00	7.61	6.54	0.00
62.00	7.61	6.54	0.00
63.00	7.61	6.54	0.00
64.00	7.61	6.54	0.00
65.00	7.61	6.54	0.00
66.00	7.61	6.54	0.00
67.00	7.61	6.54	0.00
68.00	7.61	6.54	0.00
69.00	7.61	6.54	0.00
70.00	7.61	6.54	0.00
71.00	7.61	6.54	0.00
72.00	7.61	6.54	0.00
73.00	7.61	6.54	0.00
74.00	7.61	6.54	0.00
75.00	7.61	6.54	0.00
76.00	7.61	6.54	0.00
77.00	7.61	6.54	0.00
78.00	7.61	6.54	0.00
79.00	7.61	6.54	0.00
80.00	7.61	6.54	0.00
81.00	7.61	6.54	0.00
82.00	7.61	6.54	0.00
83.00	7.61	6.54	0.00
84.00	7.61	6.54	0.00
85.00	7.61	6.54	0.00
86.00	7.61	6.54	0.00
87.00	7.61	6.54	0.00
88.00	7.61	6.54	0.00
89.00	7.61	6.54	0.00
90.00	7.61	6.54	0.00
91.00	7.61	6.54	0.00
92.00	7.61	6.54	0.00
93.00	7.61	6.54	0.00
94.00	7.61	6.54	0.00
95.00	7.61	6.54	0.00
96.00	7.61	6.54	0.00
97.00	7.61	6.54	0.00
98.00	7.61	6.54	0.00
99.00	7.61	6.54	0.00
100.00	7.61	6.54	0.00

Summary for Subcatchment 6S: Post to RG2

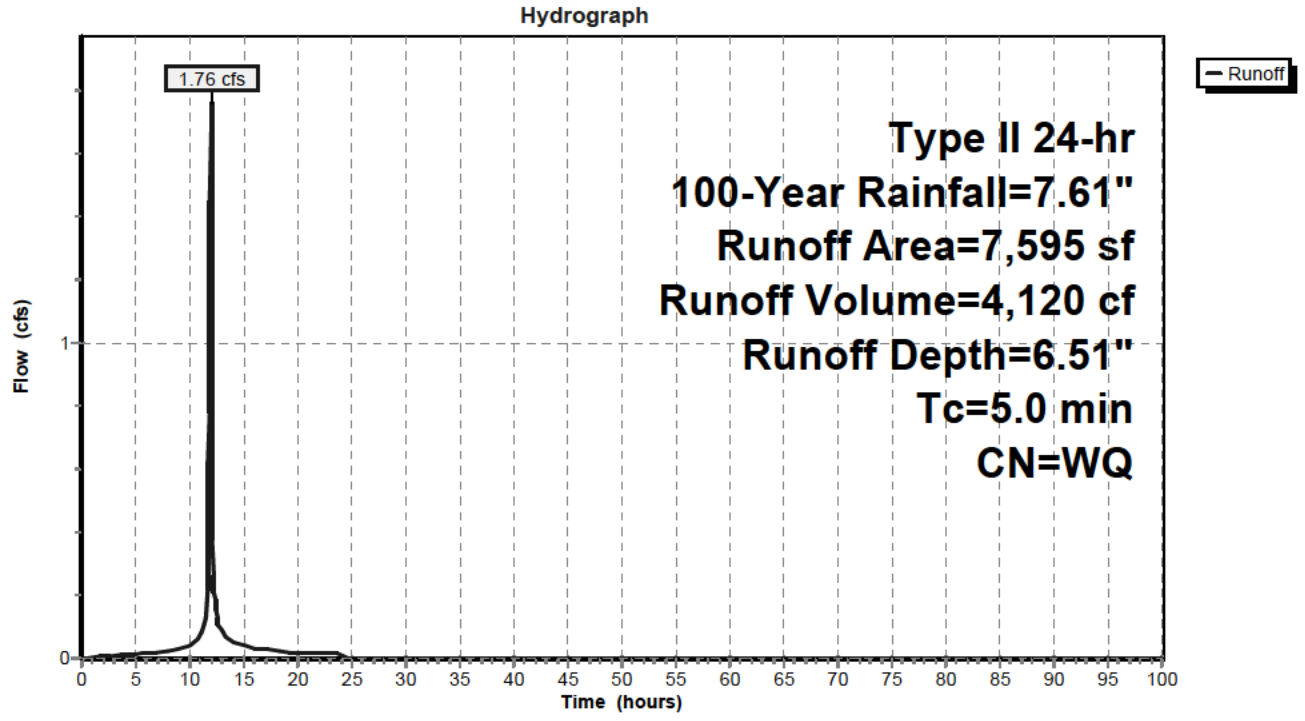
Runoff = 1.76 cfs @ 11.95 hrs, Volume= 4,120 cf, Depth= 6.51"
Routed to Pond 9P : RG2

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=7.61"

Area (sf)	CN	Description
2,340	74	>75% Grass cover, Good, HSG C
5,255	98	Paved parking, HSG C
7,595		Weighted Average
2,340		30.81% Pervious Area
5,255		69.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: Post to RG2



Hydrograph for Subcatchment 6S: Post to RG2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
1.00	0.08	0.00	0.00
2.00	0.17	0.00	0.01
3.00	0.26	0.00	0.01
4.00	0.37	0.02	0.01
5.00	0.48	0.06	0.01
6.00	0.61	0.12	0.02
7.00	0.75	0.20	0.02
8.00	0.91	0.30	0.02
9.00	1.12	0.44	0.03
10.00	1.38	0.64	0.04
11.00	1.79	0.98	**0.07**
12.00	5.05	4.03	**1.48**
13.00	5.87	4.83	0.08
14.00	6.24	5.19	0.05
15.00	6.50	5.44	0.04
16.00	6.70	5.64	0.03
17.00	6.86	5.80	0.03
18.00	7.01	5.95	0.02
19.00	7.14	6.07	0.02
20.00	7.24	6.18	0.02
21.00	7.34	6.28	0.02
22.00	7.43	6.37	0.02
23.00	7.52	6.46	0.01
24.00	**7.61**	**6.54**	0.01
25.00	7.61	6.54	0.00
26.00	7.61	6.54	0.00
27.00	7.61	6.54	0.00
28.00	7.61	6.54	0.00
29.00	7.61	6.54	0.00
30.00	7.61	6.54	0.00
31.00	7.61	6.54	0.00
32.00	7.61	6.54	0.00
33.00	7.61	6.54	0.00
34.00	7.61	6.54	0.00
35.00	7.61	6.54	0.00
36.00	7.61	6.54	0.00
37.00	7.61	6.54	0.00
38.00	7.61	6.54	0.00
39.00	7.61	6.54	0.00
40.00	7.61	6.54	0.00
41.00	7.61	6.54	0.00
42.00	7.61	6.54	0.00
43.00	7.61	6.54	0.00
44.00	7.61	6.54	0.00
45.00	7.61	6.54	0.00
46.00	7.61	6.54	0.00
47.00	7.61	6.54	0.00
48.00	7.61	6.54	0.00
49.00	7.61	6.54	0.00
50.00	7.61	6.54	0.00
51.00	7.61	6.54	0.00
52.00	7.61	6.54	0.00
53.00	7.61	6.54	0.00
54.00	7.61	6.54	0.00
55.00	7.61	6.54	0.00
56.00	7.61	6.54	0.00
57.00	7.61	6.54	0.00
58.00	7.61	6.54	0.00
59.00	7.61	6.54	0.00
60.00	7.61	6.54	0.00
61.00	7.61	6.54	0.00
62.00	7.61	6.54	0.00
63.00	7.61	6.54	0.00
64.00	7.61	6.54	0.00
65.00	7.61	6.54	0.00
66.00	7.61	6.54	0.00
67.00	7.61	6.54	0.00
68.00	7.61	6.54	0.00
69.00	7.61	6.54	0.00
70.00	7.61	6.54	0.00
71.00	7.61	6.54	0.00
72.00	7.61	6.54	0.00
73.00	7.61	6.54	0.00
74.00	7.61	6.54	0.00
75.00	7.61	6.54	0.00
76.00	7.61	6.54	0.00
77.00	7.61	6.54	0.00
78.00	7.61	6.54	0.00
79.00	7.61	6.54	0.00
80.00	7.61	6.54	0.00
81.00	7.61	6.54	0.00
82.00	7.61	6.54	0.00
83.00	7.61	6.54	0.00
84.00	7.61	6.54	0.00
85.00	7.61	6.54	0.00
86.00	7.61	6.54	0.00
87.00	7.61	6.54	0.00
88.00	7.61	6.54	0.00
89.00	7.61	6.54	0.00
90.00	7.61	6.54	0.00
91.00	7.61	6.54	0.00
92.00	7.61	6.54	0.00
93.00	7.61	6.54	0.00
94.00	7.61	6.54	0.00
95.00	7.61	6.54	0.00
96.00	7.61	6.54	0.00
97.00	7.61	6.54	0.00
98.00	7.61	6.54	0.00
99.00	7.61	6.54	0.00
100.00	7.61	6.54	0.00

Summary for Pond 8P: RG1

Inflow Area = 10,943 sf, 70.94% Impervious, Inflow Depth = 6.56" for 100-Year event
Inflow = 2.55 cfs @ 11.95 hrs, Volume= 5,981 cf
Outflow = 2.16 cfs @ 12.01 hrs, Volume= 5,787 cf, Atten= 15%, Lag= 3.7 min
Primary = 2.16 cfs @ 12.01 hrs, Volume= 5,787 cf
Routed to Link 7L : DP001 (POST)

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 53.41' @ 12.01 hrs Surf.Area= 1,593 sf Storage= 1,655 cf

Plug-Flow detention time= 67.5 min calculated for 5,784 cf (97% of inflow)
Center-of-Mass det. time= 47.1 min (799.6 - 752.5)

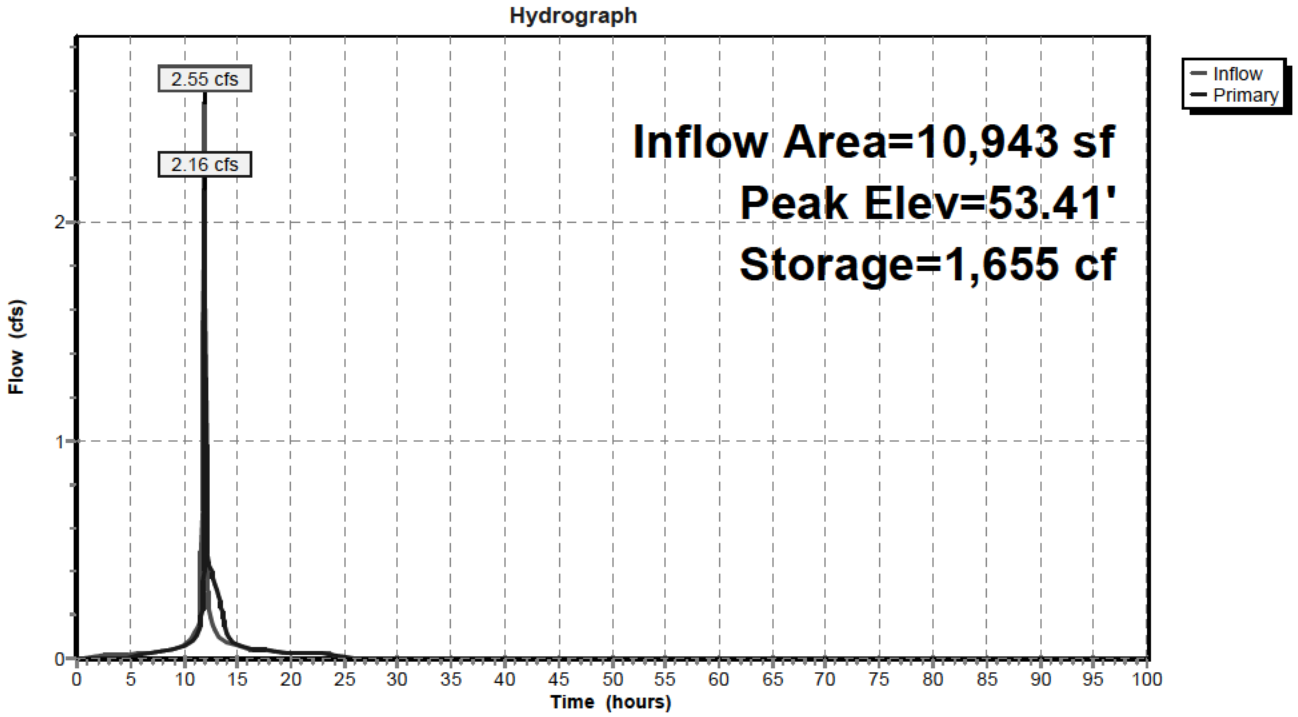
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	2,727 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.00	476	0.0	0	0
51.99	476	20.0	189	189
52.00	476	100.0	5	194
54.00	2,057	100.0	2,533	2,727

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	53.25'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	52.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.98 cfs @ 12.01 hrs HW=53.40' (Free Discharge)
└**1=Culvert** (Passes 1.98 cfs of 13.85 cfs potential flow)
└**2=Grate** (Weir Controls 1.51 cfs @ 1.26 fps)
└**3=Orifice/Grate** (Orifice Controls 0.47 cfs @ 5.35 fps)

Pond 8P: RG1


Hydrograph
Inflow
Primary
2.55 cfs
2.16 cfs
Inflow Area=10,943 sf
Peak Elev=53.41'
Storage=1,655 cf
Flow (cfs)
Time (hours)
0
1
2
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Hydrograph for Pond 8P: RG1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	50.00	0.00
2.50	0.01	48	50.51	0.00
5.00	0.02	188	51.98	0.00
7.50	0.03	249	52.10	0.03
10.00	**0.06**	**276**	**52.15**	**0.05**
12.50	**0.19**	**1,230**	**53.13**	**0.41**
15.00	0.06	284	52.17	0.06
17.50	0.04	261	52.13	0.04
20.00	0.02	248	52.10	0.03
22.50	0.02	243	52.10	0.02
25.00	0.00	212	52.04	0.00
27.50	0.00	197	52.01	0.00
30.00	0.00	195	52.00	0.00
32.50	0.00	194	52.00	0.00
35.00	0.00	194	52.00	0.00
37.50	0.00	194	52.00	0.00
40.00	0.00	194	52.00	0.00
42.50	0.00	194	52.00	0.00
45.00	0.00	194	52.00	0.00
47.50	0.00	194	52.00	0.00
50.00	0.00	194	52.00	0.00
52.50	0.00	194	52.00	0.00
55.00	0.00	194	52.00	0.00
57.50	0.00	194	52.00	0.00
60.00	0.00	194	52.00	0.00
62.50	0.00	194	52.00	0.00
65.00	0.00	194	52.00	0.00
67.50	0.00	194	52.00	0.00
70.00	0.00	194	52.00	0.00
72.50	0.00	194	52.00	0.00
75.00	0.00	194	52.00	0.00
77.50	0.00	194	52.00	0.00
80.00	0.00	194	52.00	0.00
82.50	0.00	194	52.00	0.00
85.00	0.00	194	52.00	0.00
87.50	0.00	194	52.00	0.00
90.00	0.00	194	52.00	0.00
92.50	0.00	194	52.00	0.00
95.00	0.00	194	52.00	0.00
97.50	0.00	194	52.00	0.00
100.00	0.00	194	52.00	0.00

Stage-Discharge for Pond 8P: RG1

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.00	0.00	51.04	0.00	52.08	0.02	53.12	0.41
50.02	0.00	51.06	0.00	52.10	0.02	53.14	0.41
50.04	0.00	51.08	0.00	52.12	0.03	53.16	0.42
50.06	0.00	51.10	0.00	52.14	0.04	53.18	0.42
50.08	0.00	51.12	0.00	52.16	0.06	53.20	0.43
50.10	0.00	51.14	0.00	52.18	0.07	53.22	0.43
50.12	0.00	51.16	0.00	52.20	0.08	53.24	0.44
50.14	0.00	51.18	0.00	52.22	0.10	53.26	0.47
50.16	0.00	51.20	0.00	52.24	0.11	53.28	0.58
50.18	0.00	51.22	0.00	52.26	0.13	53.30	0.74
50.20	0.00	51.24	0.00	52.28	0.14	53.32	0.94
50.22	0.00	51.26	0.00	52.30	0.15	53.34	1.16
50.24	0.00	51.28	0.00	52.32	0.17	53.36	1.41
50.26	0.00	51.30	0.00	52.34	0.17	53.38	1.69
50.28	0.00	51.32	0.00	52.36	0.18	53.40	1.99
50.30	0.00	51.34	0.00	52.38	0.19	53.42	2.30
50.32	0.00	51.36	0.00	52.40	0.20	53.44	2.64
50.34	0.00	51.38	0.00	52.42	0.21	53.46	3.00
50.36	0.00	51.40	0.00	52.44	0.22	53.48	3.37
50.38	0.00	51.42	0.00	52.46	0.23	53.50	3.76
50.40	0.00	51.44	0.00	52.48	0.24	53.52	4.16
50.42	0.00	51.46	0.00	52.50	0.24	53.54	4.58
50.44	0.00	51.48	0.00	52.52	0.25	53.56	5.01
50.46	0.00	51.50	0.00	52.54	0.26	53.58	5.46
50.48	0.00	51.52	0.00	52.56	0.26	53.60	5.92
50.50	0.00	51.54	0.00	52.58	0.27	53.62	6.39
50.52	0.00	51.56	0.00	52.60	0.28	53.64	6.88
50.54	0.00	51.58	0.00	52.62	0.28	53.66	7.38
50.56	0.00	51.60	0.00	52.64	0.29	53.68	7.89
50.58	0.00	51.62	0.00	52.66	0.30	53.70	8.42
50.60	0.00	51.64	0.00	52.68	0.30	53.72	8.95
50.62	0.00	51.66	0.00	52.70	0.31	53.74	9.50
50.64	0.00	51.68	0.00	52.72	0.31	53.76	10.06
50.66	0.00	51.70	0.00	52.74	0.32	53.78	10.63
50.68	0.00	51.72	0.00	52.76	0.32	53.80	11.21
50.70	0.00	51.74	0.00	52.78	0.33	53.82	11.80
50.72	0.00	51.76	0.00	52.80	0.33	53.84	12.40
50.74	0.00	51.78	0.00	52.82	0.34	53.86	13.01
50.76	0.00	51.80	0.00	52.84	0.34	53.88	13.63
50.78	0.00	51.82	0.00	52.86	0.35	53.90	14.26
50.80	0.00	51.84	0.00	52.88	0.35	53.92	14.90
50.82	0.00	51.86	0.00	52.90	0.36	53.94	15.20
50.84	0.00	51.88	0.00	52.92	0.36	53.96	15.24
50.86	0.00	51.90	0.00	52.94	0.37	53.98	15.29
50.88	0.00	51.92	0.00	52.96	0.37	54.00	**15.34**
50.90	0.00	51.94	0.00	52.98	0.38		
50.92	0.00	51.96	0.00	53.00	0.38		
50.94	0.00	51.98	0.00	53.02	0.39		
50.96	0.00	52.00	0.00	53.04	0.39		
50.98	0.00	52.02	0.00	53.06	0.40		
51.00	0.00	52.04	0.00	53.08	0.40		
51.02	0.00	52.06	0.01	53.10	0.41		

Stage-Area-Storage for Pond 8P: RG1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	476	0
50.05	476	5
50.10	476	10
50.15	476	14
50.20	476	19
50.25	476	24
50.30	476	29
50.35	476	33
50.40	476	38
50.45	476	43
50.50	476	48
50.55	476	52
50.60	476	57
50.65	476	62
50.70	476	67
50.75	476	71
50.80	476	76
50.85	476	81
50.90	476	86
50.95	476	90
51.00	476	95
51.05	476	100
51.10	476	105
51.15	476	109
51.20	476	114
51.25	476	119
51.30	476	124
51.35	476	129
51.40	476	133
51.45	476	138
51.50	476	143
51.55	476	148
51.60	476	152
51.65	476	157
51.70	476	162
51.75	476	167
51.80	476	171
51.85	476	176
51.90	476	181
51.95	476	186
52.00	476	194
52.05	516	219
52.10	555	246
52.15	595	275
52.20	634	305
52.25	674	338
52.30	713	373
52.35	753	409
52.40	792	448
52.45	832	488
52.50	871	531
52.55	911	576
52.60	950	622
52.65	990	671
52.70	1,029	721
52.75	1,069	774
52.80	1,108	828
52.85	1,148	884
52.90	1,187	943
52.95	1,227	1,003
53.00	1,267	1,065
53.05	1,306	1,130
53.10	1,346	1,196
53.15	1,385	1,264
53.20	1,425	1,335
53.25	1,464	1,407
53.30	1,504	1,481
53.35	1,543	1,557
53.40	1,583	1,635
53.45	1,622	1,715
53.50	1,662	1,798
53.55	1,701	1,882
53.60	1,741	1,968
53.65	1,780	2,056
53.70	1,820	2,146
53.75	1,859	2,238
53.80	1,899	2,332
53.85	1,938	2,428
53.90	1,978	2,525
53.95	2,017	2,625
54.00	**2,057**	**2,727**

Summary for Pond 9P: RG2

Inflow Area = 7,595 sf, 69.19% Impervious, Inflow Depth = 6.51" for 100-Year event
Inflow = 1.76 cfs @ 11.95 hrs, Volume= 4,120 cf
Outflow = 1.51 cfs @ 12.01 hrs, Volume= 3,777 cf, Atten= 14%, Lag= 3.5 min
Primary = 1.51 cfs @ 12.01 hrs, Volume= 3,777 cf
Routed to Link 7L : DP001 (POST)

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs
Peak Elev= 52.61' @ 12.01 hrs Surf.Area= 1,318 sf Storage= 1,107 cf

Plug-Flow detention time= 94.6 min calculated for 3,775 cf (92% of inflow)
Center-of-Mass det. time= 48.6 min (802.1 - 753.5)

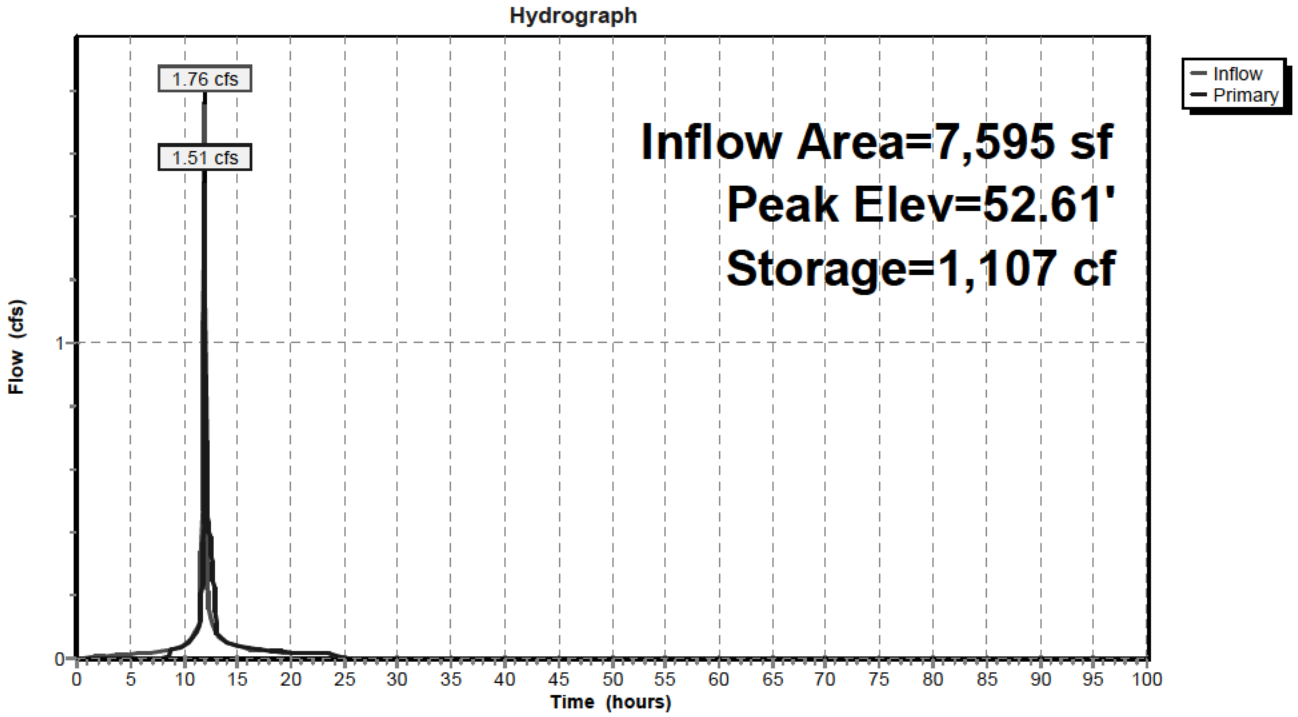
Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	1,656 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
50.00	982	0.0	0	0
51.99	982	20.0	391	391
52.00	982	100.0	10	401
53.00	1,529	100.0	1,256	1,656

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**18.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	52.50'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	51.75'	**6.0" W x 3.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.41 cfs @ 12.01 hrs HW=52.61' (Free Discharge)
↑**1=Culvert** (Passes 1.41 cfs of 11.59 cfs potential flow)
↑**2=Grate** (Weir Controls 0.90 cfs @ 1.06 fps)
3=Orifice/Grate (Orifice Controls 0.51 cfs @ 4.11 fps)

Pond 9P: RG2


Hydrograph
1.76 cfs
1.51 cfs
Inflow Area=7,595 sf
Peak Elev=52.61'
Storage=1,107 cf
Inflow
Primary
Flow (cfs)
0
1
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100
Time (hours)

Hydrograph for Pond 9P: RG2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	50.00	0.00
2.50	0.01	33	50.17	0.00
5.00	0.01	127	50.65	0.00
7.50	0.02	271	51.38	0.00
10.00	**0.04**	**360**	**51.83**	**0.04**
12.50	**0.13**	**660**	**52.25**	**0.37**
15.00	0.04	360	51.83	0.04
17.50	0.02	356	51.81	0.03
20.00	0.02	353	51.80	0.02
22.50	0.02	352	51.79	0.02
25.00	0.00	344	51.75	0.00
27.50	0.00	344	51.75	0.00
30.00	0.00	344	51.75	0.00
32.50	0.00	344	51.75	0.00
35.00	0.00	344	51.75	0.00
37.50	0.00	344	51.75	0.00
40.00	0.00	344	51.75	0.00
42.50	0.00	344	51.75	0.00
45.00	0.00	344	51.75	0.00
47.50	0.00	344	51.75	0.00
50.00	0.00	344	51.75	0.00
52.50	0.00	344	51.75	0.00
55.00	0.00	344	51.75	0.00
57.50	0.00	344	51.75	0.00
60.00	0.00	344	51.75	0.00
62.50	0.00	344	51.75	0.00
65.00	0.00	344	51.75	0.00
67.50	0.00	344	51.75	0.00
70.00	0.00	344	51.75	0.00
72.50	0.00	344	51.75	0.00
75.00	0.00	344	51.75	0.00
77.50	0.00	344	51.75	0.00
80.00	0.00	344	51.75	0.00
82.50	0.00	344	51.75	0.00
85.00	0.00	344	51.75	0.00
87.50	0.00	344	51.75	0.00
90.00	0.00	344	51.75	0.00
92.50	0.00	344	51.75	0.00
95.00	0.00	344	51.75	0.00
97.50	0.00	344	51.75	0.00
100.00	0.00	344	51.75	0.00

Stage-Discharge for Pond 9P: RG2

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
50.00	0.00	51.04	0.00	52.08	0.27
50.02	0.00	51.06	0.00	52.10	0.28
50.04	0.00	51.08	0.00	52.12	0.29
50.06	0.00	51.10	0.00	52.14	0.31
50.08	0.00	51.12	0.00	52.16	0.32
50.10	0.00	51.14	0.00	52.18	0.33
50.12	0.00	51.16	0.00	52.20	0.34
50.14	0.00	51.18	0.00	52.22	0.35
50.16	0.00	51.20	0.00	52.24	0.36
50.18	0.00	51.22	0.00	52.26	0.37
50.20	0.00	51.24	0.00	52.28	0.38
50.22	0.00	51.26	0.00	52.30	0.39
50.24	0.00	51.28	0.00	52.32	0.40
50.26	0.00	51.30	0.00	52.34	0.41
50.28	0.00	51.32	0.00	52.36	0.42
50.30	0.00	51.34	0.00	52.38	0.43
50.32	0.00	51.36	0.00	52.40	0.44
50.34	0.00	51.38	0.00	52.42	0.44
50.36	0.00	51.40	0.00	52.44	0.45
50.38	0.00	51.42	0.00	52.46	0.46
50.40	0.00	51.44	0.00	52.48	0.47
50.42	0.00	51.46	0.00	52.50	0.48
50.44	0.00	51.48	0.00	52.52	0.56
50.46	0.00	51.50	0.00	52.54	0.70
50.48	0.00	51.52	0.00	52.56	0.88
50.50	0.00	51.54	0.00	52.58	1.10
50.52	0.00	51.56	0.00	52.60	1.34
50.54	0.00	51.58	0.00	52.62	1.61
50.56	0.00	51.60	0.00	52.64	1.90
50.58	0.00	51.62	0.00	52.66	2.21
50.60	0.00	51.64	0.00	52.68	2.54
50.62	0.00	51.66	0.00	52.70	2.89
50.64	0.00	51.68	0.00	52.72	3.25
50.66	0.00	51.70	0.00	52.74	3.64
50.68	0.00	51.72	0.00	52.76	4.03
50.70	0.00	51.74	0.00	52.78	4.45
50.72	0.00	51.76	0.00	52.80	4.88
50.74	0.00	51.78	0.01	52.82	5.32
50.76	0.00	51.80	0.02	52.84	5.78
50.78	0.00	51.82	0.03	52.86	6.25
50.80	0.00	51.84	0.04	52.88	6.73
50.82	0.00	51.86	0.06	52.90	7.23
50.84	0.00	51.88	0.08	52.92	7.74
50.86	0.00	51.90	0.09	52.94	8.26
50.88	0.00	51.92	0.11	52.96	8.79
50.90	0.00	51.94	0.13	52.98	9.33
50.92	0.00	51.96	0.15	53.00	**9.89**
50.94	0.00	51.98	0.18		
50.96	0.00	52.00	0.20		
50.98	0.00	52.02	0.22		
51.00	0.00	52.04	0.24		
51.02	0.00	52.06	0.25		

Stage-Area-Storage for Pond 9P: RG2

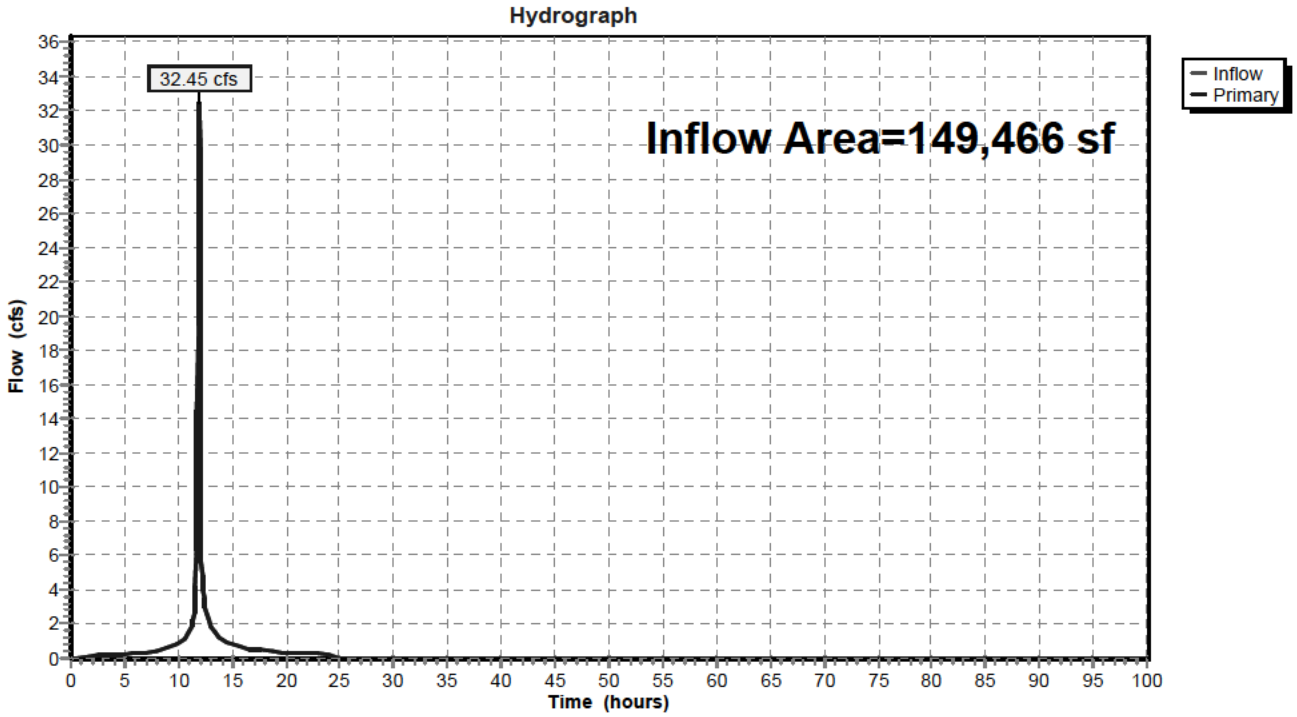
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
50.00	982	0
50.05	982	10
50.10	982	20
50.15	982	29
50.20	982	39
50.25	982	49
50.30	982	59
50.35	982	69
50.40	982	79
50.45	982	88
50.50	982	98
50.55	982	108
50.60	982	118
50.65	982	128
50.70	982	137
50.75	982	147
50.80	982	157
50.85	982	167
50.90	982	177
50.95	982	187
51.00	982	196
51.05	982	206
51.10	982	216
51.15	982	226
51.20	982	236
51.25	982	246
51.30	982	255
51.35	982	265
51.40	982	275
51.45	982	285
51.50	982	295
51.55	982	304
51.60	982	314
51.65	982	324
51.70	982	334
51.75	982	344
51.80	982	354
51.85	982	363
51.90	982	373
51.95	982	383
52.00	982	401
52.05	1,009	450
52.10	1,037	502
52.15	1,064	554
52.20	1,091	608
52.25	1,119	663
52.30	1,146	720
52.35	1,173	778
52.40	1,201	837
52.45	1,228	898
52.50	1,256	960
52.55	1,283	1,023
52.60	1,310	1,088
52.65	1,338	1,155
52.70	1,365	1,222
52.75	1,392	1,291
52.80	1,420	1,361
52.85	1,447	1,433
52.90	1,474	1,506
52.95	1,502	1,580
53.00	**1,529**	**1,656**

Summary for Link 7L: DP001 (POST)

Inflow Area = 149,466 sf, 74.65% Impervious, Inflow Depth = 6.62" for 100-Year event
Inflow = 32.45 cfs @ 11.96 hrs, Volume= 82,449 cf
Primary = 32.45 cfs @ 11.96 hrs, Volume= 82,449 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-100.00 hrs, dt= 0.05 hrs

Link 7L: DP001 (POST)



Hydrograph for Link 7L: DP001 (POST)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	52.00	0.00	0.00	0.00
1.00	0.05	0.00	0.05	53.00	0.00	0.00	0.00
2.00	0.12	0.00	0.12	54.00	0.00	0.00	0.00
3.00	0.17	0.00	0.17	55.00	0.00	0.00	0.00
4.00	0.20	0.00	0.20	56.00	0.00	0.00	0.00
5.00	0.25	0.00	0.25	57.00	0.00	0.00	0.00
6.00	0.30	0.00	0.30	58.00	0.00	0.00	0.00
7.00	0.35	0.00	0.35	59.00	0.00	0.00	0.00
8.00	0.41	0.00	0.41	60.00	0.00	0.00	0.00
9.00	0.63	0.00	0.63	61.00	0.00	0.00	0.00
10.00	0.82	0.00	0.82	62.00	0.00	0.00	0.00
11.00	**1.51**	0.00	**1.51**	63.00	0.00	0.00	0.00
12.00	**29.48**	0.00	**29.48**	64.00	0.00	0.00	0.00
13.00	1.88	0.00	1.88	65.00	0.00	0.00	0.00
14.00	1.02	0.00	1.02	66.00	0.00	0.00	0.00
15.00	0.78	0.00	0.78	67.00	0.00	0.00	0.00
16.00	0.60	0.00	0.60	68.00	0.00	0.00	0.00
17.00	0.53	0.00	0.53	69.00	0.00	0.00	0.00
18.00	0.46	0.00	0.46	70.00	0.00	0.00	0.00
19.00	0.40	0.00	0.40	71.00	0.00	0.00	0.00
20.00	0.34	0.00	0.34	72.00	0.00	0.00	0.00
21.00	0.32	0.00	0.32	73.00	0.00	0.00	0.00
22.00	0.31	0.00	0.31	74.00	0.00	0.00	0.00
23.00	0.30	0.00	0.30	75.00	0.00	0.00	0.00
24.00	0.28	0.00	0.28	76.00	0.00	0.00	0.00
25.00	0.00	0.00	0.00	77.00	0.00	0.00	0.00
26.00	0.00	0.00	0.00	78.00	0.00	0.00	0.00
27.00	0.00	0.00	0.00	79.00	0.00	0.00	0.00
28.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00
29.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
30.00	0.00	0.00	0.00	82.00	0.00	0.00	0.00
31.00	0.00	0.00	0.00	83.00	0.00	0.00	0.00
32.00	0.00	0.00	0.00	84.00	0.00	0.00	0.00
33.00	0.00	0.00	0.00	85.00	0.00	0.00	0.00
34.00	0.00	0.00	0.00	86.00	0.00	0.00	0.00
35.00	0.00	0.00	0.00	87.00	0.00	0.00	0.00
36.00	0.00	0.00	0.00	88.00	0.00	0.00	0.00
37.00	0.00	0.00	0.00	89.00	0.00	0.00	0.00
38.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00
39.00	0.00	0.00	0.00	91.00	0.00	0.00	0.00
40.00	0.00	0.00	0.00	92.00	0.00	0.00	0.00
41.00	0.00	0.00	0.00	93.00	0.00	0.00	0.00
42.00	0.00	0.00	0.00	94.00	0.00	0.00	0.00
43.00	0.00	0.00	0.00	95.00	0.00	0.00	0.00
44.00	0.00	0.00	0.00	96.00	0.00	0.00	0.00
45.00	0.00	0.00	0.00	97.00	0.00	0.00	0.00
46.00	0.00	0.00	0.00	98.00	0.00	0.00	0.00
47.00	0.00	0.00	0.00	99.00	0.00	0.00	0.00
48.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				

Events for Subcatchment 4S: Post Uncaptured

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.73	9.73	22,530	2.06
2-Year	3.28	12.04	27,969	2.56
5-Year	4.12	15.62	36,452	3.34
10-Year	4.82	18.64	43,637	4.00
25-Year	5.83	23.05	54,135	4.96
50-Year	6.69	26.82	63,163	5.79
100-Year	**7.61**	**30.86**	**72,885**	**6.68**

Events for Subcatchment 5S: Post to RG 1

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.73	0.78	1,814	1.99
2-Year	3.28	0.98	2,260	2.48
5-Year	4.12	1.27	2,960	3.25
10-Year	4.82	1.53	3,554	3.90
25-Year	5.83	1.89	4,424	4.85
50-Year	6.69	2.21	5,173	5.67
100-Year	**7.61**	**2.55**	**5,981**	**6.56**

Events for Subcatchment 6S: Post to RG2

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
1-Year	2.73	0.54	1,239	1.96
2-Year	3.28	0.67	1,547	2.44
5-Year	4.12	0.88	2,030	3.21
10-Year	4.82	1.05	2,440	3.86
25-Year	5.83	1.31	3,042	4.81
50-Year	6.69	1.52	3,561	5.63
100-Year	**7.61**	**1.76**	**4,120**	**6.51**

Events for Pond 8P: RG1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	0.78	0.29	52.66	679
2-Year	0.98	0.33	52.79	817
5-Year	1.27	0.38	52.98	1,039
10-Year	1.53	0.41	53.13	1,240
25-Year	1.89	0.79	53.31	1,493
50-Year	2.21	1.39	53.36	1,570
100-Year	**2.55**	**2.16**	**53.41**	**1,655**

Events for Pond 9P: RG2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-Year	0.54	0.29	52.11	517
2-Year	0.67	0.34	52.19	598
5-Year	0.88	0.39	52.30	724
10-Year	1.05	0.43	52.40	837
25-Year	1.31	0.61	52.53	996
50-Year	1.52	1.00	52.57	1,051
100-Year	**1.76**	**1.51**	**52.61**	**1,107**

Events for Link 7L: DP001 (POST)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-Year	10.24	10.24	**0.00**
2-Year	12.62	12.62	0.00
5-Year	16.29	16.29	0.00
10-Year	19.38	19.38	0.00
25-Year	23.87	23.87	0.00
50-Year	27.74	27.74	0.00
100-Year	**32.45**	**32.45**	0.00

Appendix A

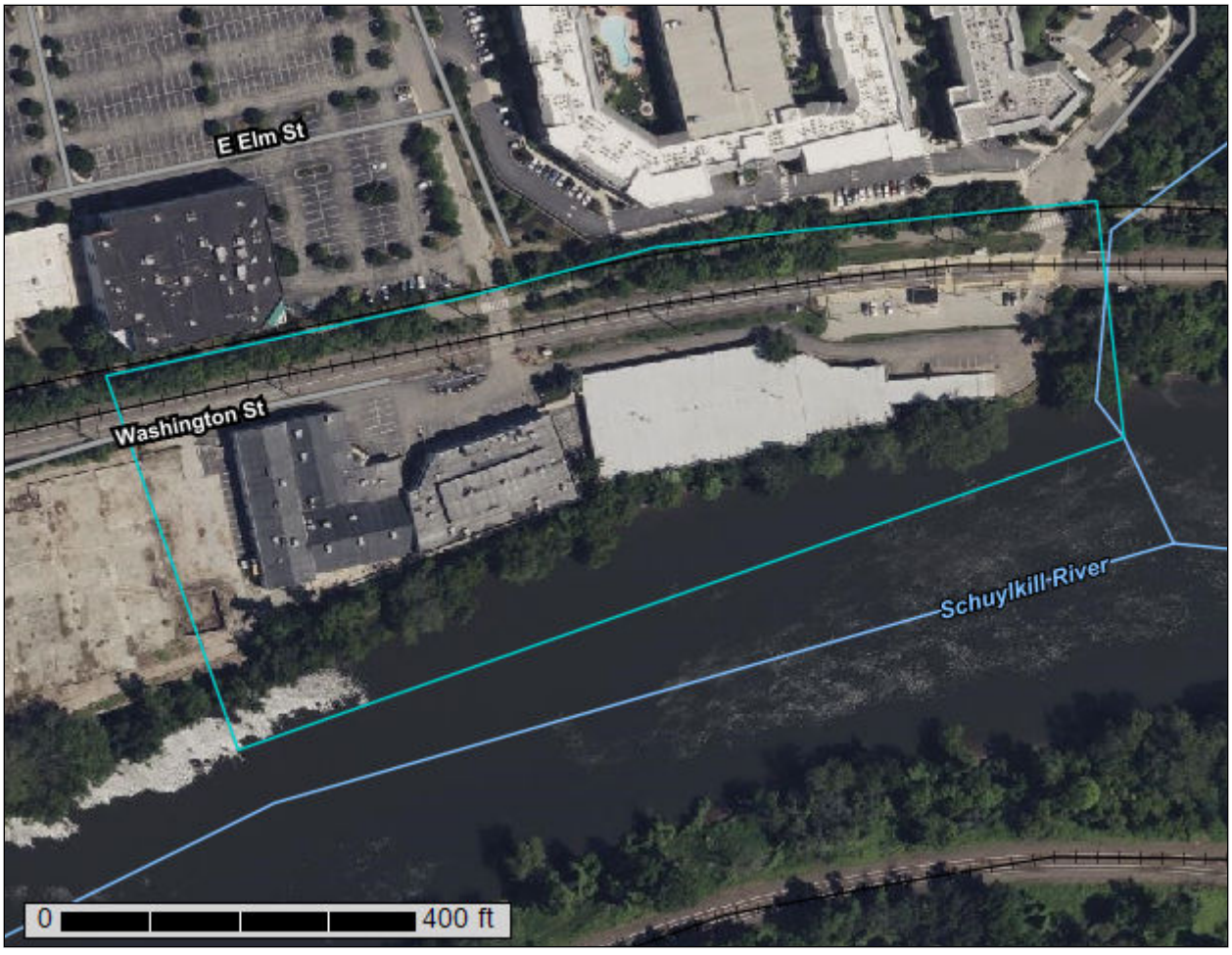
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Montgomery County, Pennsylvania



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
Montgomery County, Pennsylvania.....13
UgB—Urban land, 0 to 8 percent slopes.....13
W—Water.....13
References.....15

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

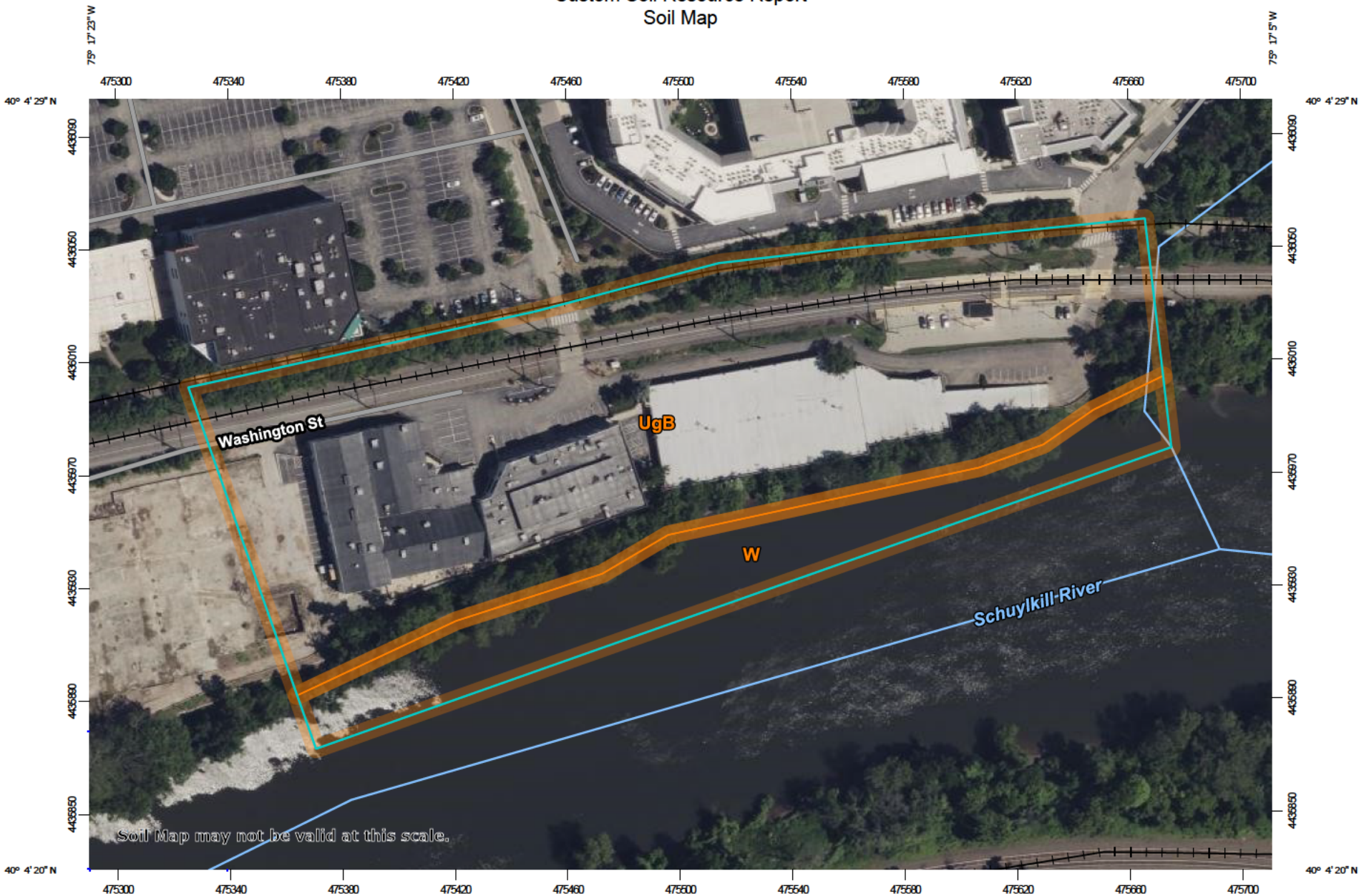
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,920 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Montgomery County, Pennsylvania
Survey Area Data: Version 18, Sep 8, 2023

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

Date(s) aerial images were photographed: Jun 3, 2022—Jul 20, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
UgB	Urban land, 0 to 8 percent slopes	7.5	80.2%
W	Water	1.9	19.8%
Totals for Area of Interest		**9.3**	**100.0%**

Map Unit Descriptions

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

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

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

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

onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Montgomery County, Pennsylvania

UgB—Urban land, 0 to 8 percent slopes

Map Unit Setting

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

Map Unit Composition

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

Description of Urban Land

Setting

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

Interpretive groups

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

Minor Components

Udorthents, unstable fill

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

W—Water

Map Unit Setting

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

Map Unit Composition

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

Description of Water

Setting

Parent material: Rivers streams ponds

Properties and qualities

Frequency of ponding: Frequent

References

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NOAA Atlas 14, Volume 2, Version 3
Location name: Conshohocken, Pennsylvania, USA*
Latitude: 40.0736°, Longitude: -75.288°
Elevation: 52 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.347** (0.318-0.378)	**0.412** (0.379-0.450)	**0.485** (0.444-0.528)	**0.535** (0.490-0.584)	**0.596** (0.542-0.650)	**0.638** (0.577-0.696)	**0.679** (0.611-0.742)	**0.714** (0.640-0.783)	**0.756** (0.671-0.833)	**0.787** (0.693-0.871)
10-min	**0.554** (0.509-0.604)	**0.660** (0.606-0.720)	**0.776** (0.710-0.845)	**0.856** (0.783-0.934)	**0.950** (0.864-1.04)	**1.02** (0.919-1.11)	**1.08** (0.972-1.18)	**1.13** (1.01-1.24)	**1.20** (1.06-1.32)	**1.24** (1.09-1.37)
15-min	**0.692** (0.636-0.755)	**0.829** (0.762-0.905)	**0.982** (0.899-1.07)	**1.08** (0.991-1.18)	**1.20** (1.10-1.31)	**1.29** (1.16-1.40)	**1.36** (1.23-1.49)	**1.43** (1.28-1.57)	**1.50** (1.34-1.66)	**1.56** (1.37-1.72)
30-min	**0.949** (0.872-1.04)	**1.14** (1.05-1.25)	**1.40** (1.28-1.52)	**1.57** (1.44-1.71)	**1.78** (1.62-1.94)	**1.94** (1.75-2.11)	**2.09** (1.88-2.28)	**2.22** (1.99-2.44)	**2.40** (2.13-2.64)	**2.52** (2.22-2.79)
60-min	**1.18** (1.09-1.29)	**1.44** (1.32-1.57)	**1.79** (1.64-1.95)	**2.04** (1.87-2.23)	**2.38** (2.16-2.59)	**2.62** (2.37-2.86)	**2.88** (2.59-3.14)	**3.12** (2.79-3.42)	**3.44** (3.05-3.78)	**3.68** (3.24-4.07)
2-hr	**1.42** (1.29-1.55)	**1.72** (1.57-1.89)	**2.15** (1.96-2.35)	**2.48** (2.25-2.71)	**2.91** (2.63-3.18)	**3.26** (2.92-3.56)	**3.60** (3.21-3.94)	**3.94** (3.49-4.32)	**4.41** (3.86-4.86)	**4.77** (4.13-5.27)
3-hr	**1.55** (1.42-1.70)	**1.88** (1.72-2.07)	**2.36** (2.15-2.59)	**2.72** (2.47-2.98)	**3.21** (2.90-3.52)	**3.60** (3.23-3.94)	**3.99** (3.56-4.38)	**4.39** (3.88-4.83)	**4.93** (4.30-5.45)	**5.36** (4.61-5.94)
6-hr	**1.94** (1.78-2.13)	**2.35** (2.15-2.58)	**2.93** (2.67-3.22)	**3.40** (3.09-3.72)	**4.06** (3.66-4.44)	**4.59** (4.11-5.03)	**5.16** (4.57-5.65)	**5.75** (5.04-6.32)	**6.58** (5.67-7.28)	**7.26** (6.16-8.06)
12-hr	**2.36** (2.16-2.61)	**2.85** (2.61-3.15)	**3.58** (3.27-3.95)	**4.19** (3.80-4.61)	**5.07** (4.56-5.57)	**5.82** (5.18-6.39)	**6.63** (5.82-7.29)	**7.50** (6.50-8.29)	**8.79** (7.45-9.75)	**9.86** (8.21-11.0)
24-hr	**2.73** (2.51-2.97)	**3.28** (3.02-3.58)	**4.12** (3.79-4.50)	**4.82** (4.42-5.25)	**5.83** (5.32-6.34)	**6.69** (6.06-7.26)	**7.61** (6.86-8.25)	**8.60** (7.70-9.32)	**10.1** (8.90-10.9)	**11.3** (9.86-12.2)
2-day	**3.15** (2.88-3.44)	**3.80** (3.48-4.15)	**4.78** (4.38-5.21)	**5.58** (5.10-6.08)	**6.71** (6.11-7.30)	**7.65** (6.94-8.32)	**8.65** (7.79-9.40)	**9.72** (8.70-10.6)	**11.2** (9.97-12.2)	**12.5** (11.0-13.6)
3-day	**3.32** (3.05-3.63)	**4.00** (3.68-4.37)	**5.02** (4.61-5.48)	**5.84** (5.35-6.37)	**7.01** (6.40-7.63)	**7.98** (7.25-8.68)	**9.01** (8.14-9.80)	**10.1** (9.07-11.0)	**11.7** (10.4-12.7)	**12.9** (11.4-14.1)
4-day	**3.49** (3.22-3.82)	**4.21** (3.88-4.60)	**5.26** (4.84-5.74)	**6.11** (5.61-6.66)	**7.32** (6.68-7.96)	**8.31** (7.57-9.04)	**9.36** (8.49-10.2)	**10.5** (9.44-11.4)	**12.1** (10.8-13.2)	**13.4** (11.8-14.6)
7-day	**4.08** (3.79-4.44)	**4.90** (4.54-5.33)	**6.06** (5.61-6.59)	**7.00** (6.47-7.61)	**8.36** (7.69-9.08)	**9.48** (8.68-10.3)	**10.7** (9.72-11.6)	**11.9** (10.8-12.9)	**13.7** (12.3-14.9)	**15.2** (13.5-16.5)
10-day	**4.65** (4.33-5.02)	**5.55** (5.17-5.99)	**6.77** (6.30-7.31)	**7.75** (7.19-8.37)	**9.11** (8.42-9.82)	**10.2** (9.41-11.0)	**11.3** (10.4-12.2)	**12.5** (11.4-13.5)	**14.2** (12.9-15.3)	**15.5** (14.0-16.8)
20-day	**6.29** (5.90-6.71)	**7.46** (7.00-7.96)	**8.90** (8.35-9.50)	**10.0** (9.40-10.7)	**11.6** (10.8-12.3)	**12.7** (11.9-13.6)	**13.9** (13.0-14.9)	**15.2** (14.0-16.2)	**16.8** (15.5-17.9)	**18.0** (16.5-19.3)
30-day	**7.84** (7.41-8.27)	**9.23** (8.73-9.75)	**10.8** (10.2-11.4)	**12.0** (11.3-12.6)	**13.5** (12.7-14.3)	**14.7** (13.8-15.5)	**15.8** (14.9-16.8)	**17.0** (15.9-18.0)	**18.5** (17.2-19.6)	**19.6** (18.2-20.8)
45-day	**9.96** (9.47-10.5)	**11.7** (11.1-12.3)	**13.5** (12.8-14.2)	**14.8** (14.0-15.5)	**16.4** (15.6-17.3)	**17.7** (16.7-18.6)	**18.9** (17.8-19.8)	**20.0** (18.8-21.0)	**21.3** (20.1-22.5)	**22.3** (20.9-23.6)
60-day	**11.9** (11.4-12.5)	**14.0** (13.3-14.7)	**16.0** (15.2-16.8)	**17.4** (16.6-18.3)	**19.3** (18.3-20.2)	**20.6** (19.6-21.6)	**21.8** (20.7-22.9)	**23.0** (21.8-24.2)	**24.4** (23.1-25.7)	**25.4** (24.0-26.8)

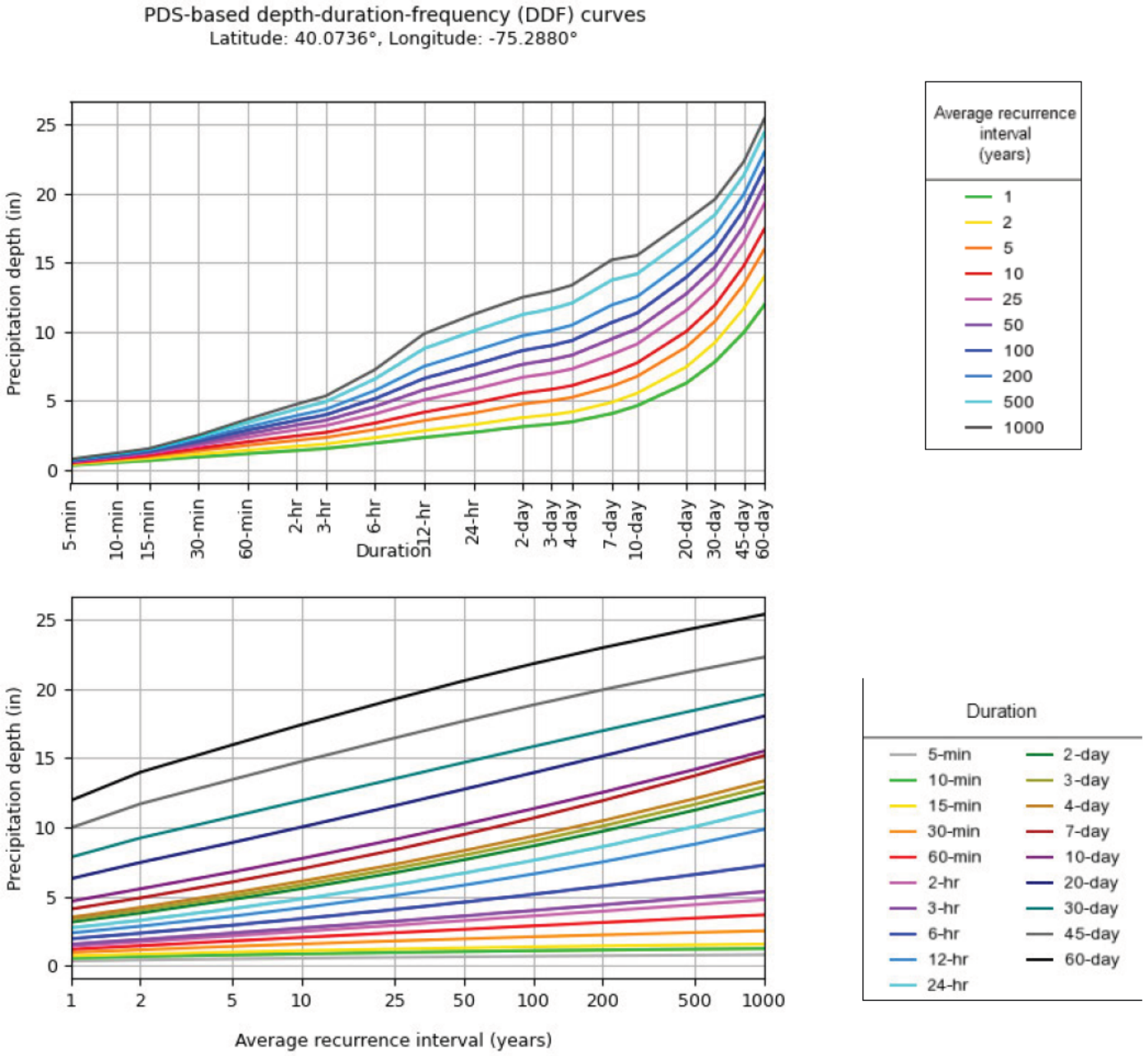
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



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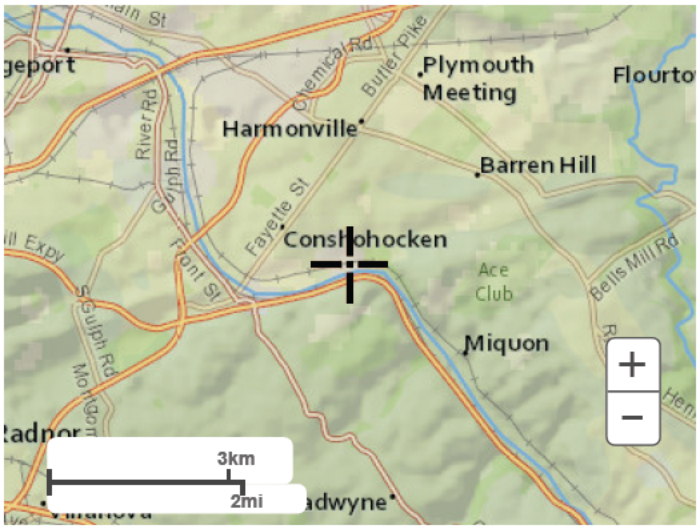
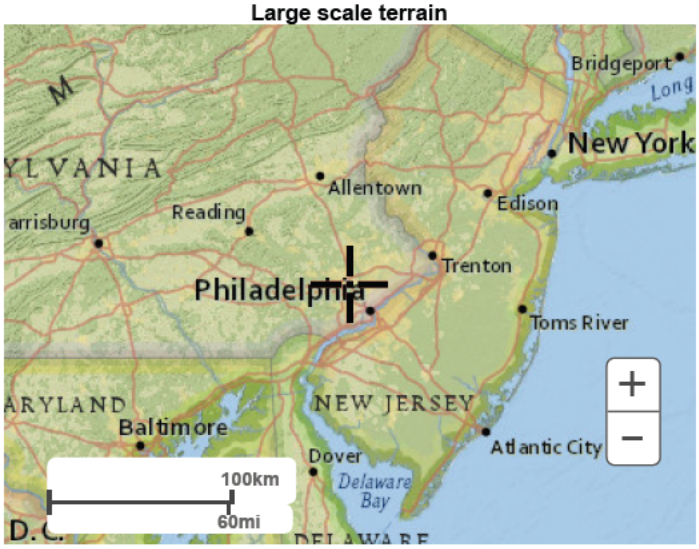
Back to Top

Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

STORMWATER INFILTRATION REPORT

FOR

1001 WASHINGTON STREET
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY

PREPARED FOR:

Nave Newell
900 W VALLEY ROAD
WAYNE, PA

PREPARED BY:

Prepared by:
HOWELL ENGINEERING
1250 Wrights Lane, West Chester, PA 19380
Phone: 610-918-9002 Fax: 610-918-9003

July 2024

Stormwater Infiltration Test Report
1001 Washington Street
Whitemarsh Township
Montgomery County

On Tuesday, July 30, 2024, Howell Engineering preformed hydraulic conductivity tests for the proposed stormwater management areas for the property located at 1001 Washington Street in Whitemarsh Township, Montgomery County. The purpose of the hydraulic conductivity testing was to determine site suitability for the proposed stormwater infiltration areas associated with proposed improvements at the site (see development plan).

Testing was conducted in general accordance with the Pennsylvania Department of Environmental Protection (PADEP)'s Pennsylvania Stormwater Best Management Practices Manual specifications, in a cased, sealed, borehole utilizing the falling head method designed to measure the vertical hydraulic conductivity of the soil. An approximate five-inch diameter borehole was hand dug to the depth of the proposed bottom elevation of the infiltration structure and a 3-inch diameter PVC casing was installed. A mixture of bentonite and soil was placed around the annulus of the casing and packed to seal the casing in place. The casing was presoaked immediately prior to the start of the test to simulate field saturated conditions. A measured amount of water was poured into the sealed casing to begin the 30-minute presoak. After the final 30-minute presoaking period, the water in the casing was adjusted to a known depth and consecutively re-adjusted after each reading and the drop of the water column is measured. The test continued until the readings became stabilized or for a maximum of eight readings. A stabilized rate of drop means a difference of ¼ inch or less of drop between the highest and lowest readings of four consecutive readings.

Within the site, two hydraulic conductivity tests were conducted at the elevation associated with the proposed bottom of the infiltration structure. One deep test pit was excavated at each infiltration test to identify limiting conditions such as mottling, depth of bedrock, and depth of groundwater. Testing was to be conducted within the footprint of the proposed infiltration structure.

- Infiltration Test 7-30-1 was conducted at approximately ± 4.0 feet below existing grade, which corresponds to an approximate infiltration elevation of 48.0. One deep test pit was excavated at this location to a depth of 6.0 feet below existing grade. No limiting conditions were identified at the time of excavation.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, Howell Engineering recommends the following infiltration rate for the soils underlying Tests 7-30-1: an infiltration rate of 38.53 inches per hour shall be used. EXESSIVELY DRAINED

- Infiltration Test 7-30-2 was conducted at approximately ± 3.5 feet below existing grade, which corresponds to an approximate infiltration elevation of 50.0. One deep test pit was excavated at this location to a depth of 6.0 feet below existing grade. No limiting conditions were identified at the time of excavation.

Based on the hydraulic conductivity testing located within the footprint of the infiltration structure, Howell Engineering recommends the following infiltration rate for the soils underlying Tests 7-30-2: an infiltration rate of 6.585 inches per hour shall be used.

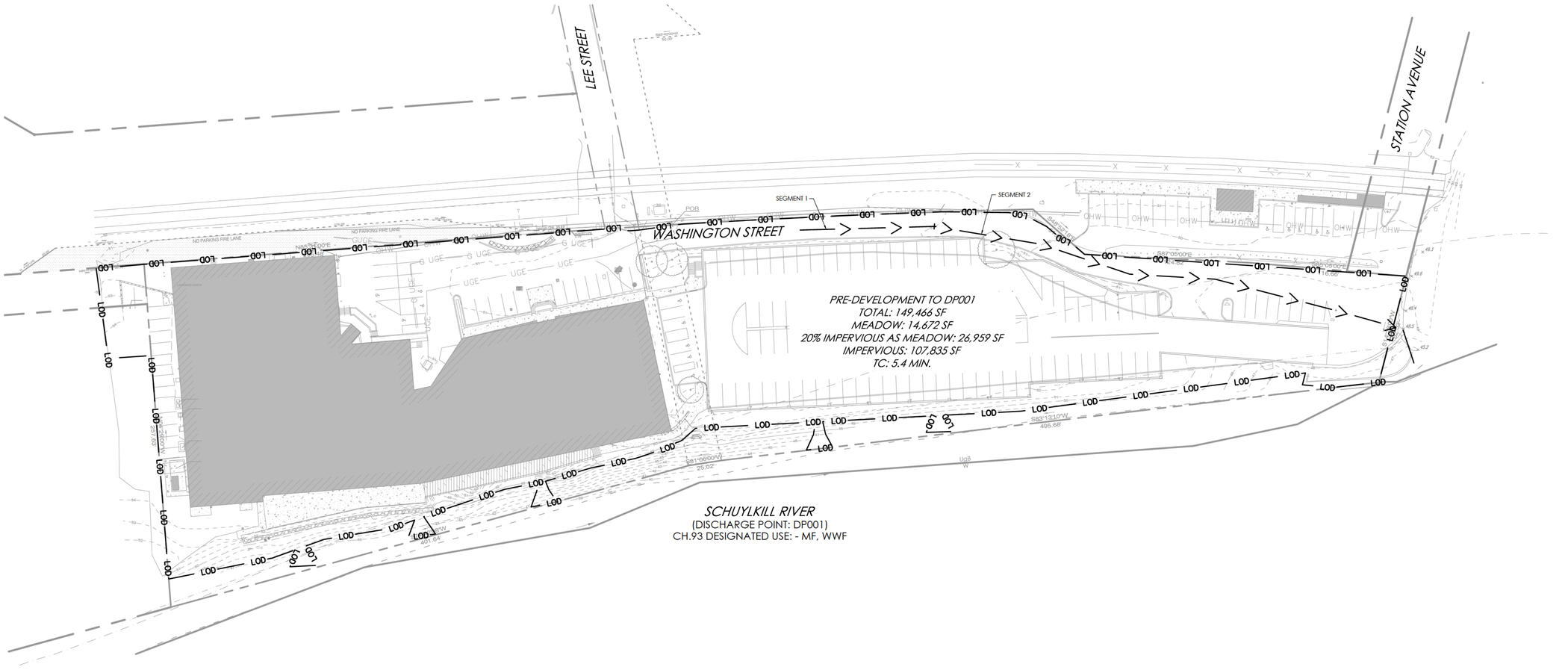
Please reference plan drawings for exact locations and visual representation of infiltration tests and test pits. Results of the hydraulic conductivity testing and soil horizon descriptions can be found in the enclosed attachments.

Hydraulic Conductivity Calculation

Coefficient of Permeability: $K = [A/(F*D*t)] \times \ln (h1 / h2)$

Where:
K = permeability (inches per hour)
A = cross sectional area of cased hole
F = shape factor (2.75 constant of flat bottom)
D = cased hole diameter
t = time for head change from h1 to h2
h1 = initial height of water column in casing
h2 = final height of water column in casing

*Reference *Soil Hydraulic Conductivity Analysis Form* for infiltration testing data and *Soil Morphology Form* for soil profile data.



40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft

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REVISIONS

SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: PRE-DEVELOPMENT DRAINAGE AREA PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1" = 40'	approv by: JPB
sheet no: 1 OF 2	

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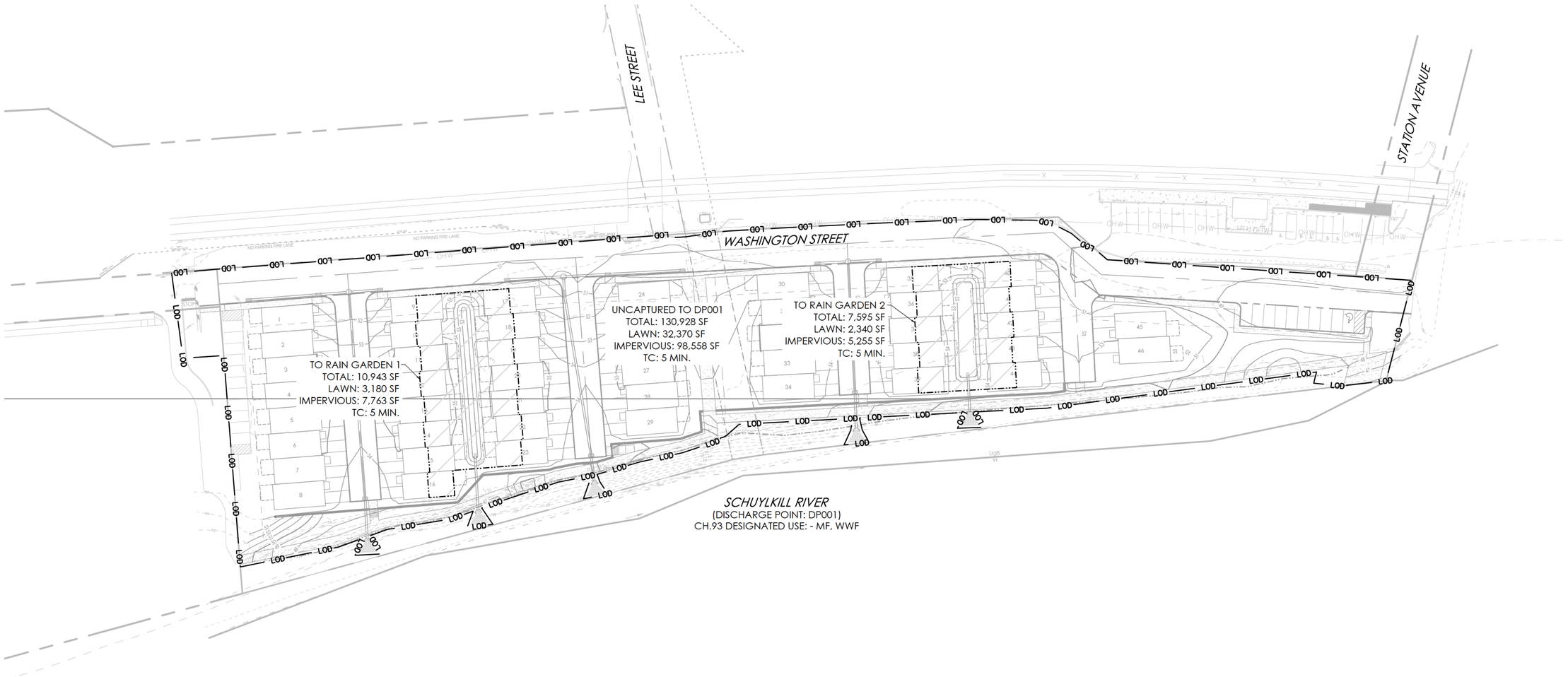

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

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REVISIONS

SEAL:

JAMES P. BANNON
Professional Engineer
Pennsylvania License No. PE082137

DRAWING NAME: POST-DEVELOPMENT DRAINAGE AREA PLAN

1001 WASHINGTON STREET

LOCATION: WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

project no: 2024-001.02	drawn by: JT
date: 11/15/24	chk'd by: JGE
scale: 1" = 40'	approv by: JPB

sheet no

2 OF 2

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NAVE NEWELL
ENGINEERING · SURVEYING · LAND PLANNING
A HOWELL COMPANY

MEMORANDUM

TO: Whitemarsh Township

FROM: Nave Newell, Inc.

DATE: November 15, 2024

SUBJECT: 1001 Washington Street – List of Encumbrances

NAVE NEWELL NO: 2024-001.02

The following list of Encumbrances are from the plan titled "ALTA/NSPS Land Title Survey" prepared by Ruggiero Plante Land Design dated November 15, 2023 and last revised December 12, 2023.

Discussion

This survey is prepared with reference to a Commitment for Title Insurance by Commonwealth Title Insurance Company, Commitment Number PACLT23-4305 M/K, having a commitment date of October 24, 2023, where the following exceptions listed in Schedule B Section II are addressed to the limits of the signing Pennsylvania Land Surveyor.

9. Premises is bisected by a 25 feet wide strip of land leading from the former Lee Tire premises to the river. – Lee Tire and Rubber Co Drainage Easement Shown
10. Easement of Railroad Siding which extends into premises and rights of use of same by adjoining owners. No railroad siding observed on the property at the time of the survey.
11. Rights of others in and to Spring Mill Creek crossing premises. Need further information from Title Company to determine location.
12. Easement of Towpath on Schuylkill Canal. Need further information from Title Company to determine location.
13. Subject to the rights of ingress and regress over premises as in Deed Book 280 page 66. Document not legible.
14. The 24 feet wide strip leading from Lee Tire to the river is subject to the provisions of Deed Book 619 page 261. Concerning sewers and railroad sidings. Lee Tire and Rubber Co drainage easement shown.
15. Water, Ferry and Passage Rights as in Deed Book 10 page 413. Document not legible.
16. Water, Ferry and Passage Rights as in Deed Book 34 page 434. Document not legible.
17. Water, Ferry and Passage Rights as in Deed Book 395 page 41. Document not legible.
18. Premises is located within the 100 year floodplain of the Schuylkill river. FEMA Floodway and Zone AE Flood Zone shown.
19. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 52 page 88. Document not legible.
20. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 55 page 438. Document not legible.
21. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 72 page 552. Document not legible.
22. Rights of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 153 page 47. Document not legible.
23. Right of the Philadelphia, Germantown and Norristown Railroad Companies as in Deed Book 182 page 315. Document not legible.
24. Right of way granted to the Philadelphia Electric Company as in Deed Book 4762 page 1035. Not plottable, plans not provided.

900 W Valley Rd #1100, Wayne, PA 19087 | PHONE 610 265 8323 | FAX 610 265 4299

25. Subject to conditions on a Plan of Subdivision recorded in Plan Book A-43 page 87. Drainage Easement and ROW lines shown – applicable notes, conditions, items etc. have been carried over to the plan.
26. Rights reserved in Deed Book 4671 page 263 for use of water, wells, pumps, piping and roof storage tank. Area shown on plan.
27. Right of way granted to the Bell Telephone Company of Pennsylvania as in Deed Book 4877 page 1032. Shown approximately.
28. Memorandum of Improvement Agreement as in Deed Book 5021 page 2030. Blanket in nature.
29. Subject to conditions as shown on a Land Site Plan recorded in Land Site Plan Book L-2 page 151. Parking deck shown – applicable notes, conditions, items, etc. Have been carried over to the plan.
30. Possible rights of the Unites States of America, the Commonwealth of Pennsylvania, the Public and other riparian owners between the high and low water marks of the Schuylkill River. Schuylkill River Shown.
31. Reciprocal Easement Agreement set forth in Deed Book 5967 page 441. Easement Shown.

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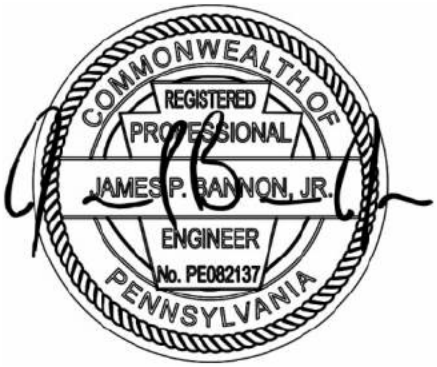
SEWER AND WATER FEASIBILITY REPORT

1001 WASHINGTON STREET
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PA

HT 1001 WASHINGTON, LLC



Issued: November 15, 2024
Nave Newell No.: 2024-001.02

900 W Valley Rd #1100, Wayne, PA 19087 | PHONE 610 265 8323 | FAX 610 265 4299

Project Summary
The project site location is 1001 Washington Street, Conshohocken, PA 19428 in Whitemarsh Township, Montgomery County, PA. The site is the former location of David's Bridal and parking garage. The project proposes the demolition of the existing building and parking garage, and construction of 46 townhouses.

Water Supply Feasibility
The project site is currently served by public water with AQUA being the water provider. A copy of AQUA's intent to "will serve" can be found at the end of this report.

Sanitary Sewage Disposal Feasibility
The project site is currently served by public sewer. Sewer flow drains to an existing pump located in the parking lot at the eastern end of the building. The pump is connected to a force main that is routed beneath the SEPTA track, and connects into a manhole located in Lee Street.

A meeting was held on October 7 2024 at the project site to discuss sanitary sewer. The following individuals were in attendance:

Carroll Engineering Corporation: Allen Mason, PE
Hightop Development: Jennifer Rosenberg
Ferraro Construction Group: Thomas Ferraro
Evans Mill Environmental, LLC: Daniel Hudson, PE
Nave Newell, Inc.: Gregory Newell, PE
John Eckman, PE

At the meeting. It was discussed that capacity at the Whitemarsh Treatment Plan would not be a concern. The existing force main pipe could be reused if the existing conditions of the pipe permitted. That way no boring would have to occur beneath the SEPTA tracks.

A new pump station would be proposed as part of the development. The pump station would be private. The intent is for the HOA to have responsibility of maintaining the pump. Detailed design information for the pump station is in process and will be finalized prior to Final Plan approval.



Figure 1: Existing Pump



Figure 2: Pump Housing



Figure 3: Manhole Connection



Figure 4: Manhole Interior Connection

November 13, 2024

Jim Bannon
Nave Newell, Inc. – Civil Development Manager
900 West Valley Road, Suite 1100
Wayne, PA 19087

Re: Water Availability
46 Townhomes
Whitemarsh Township, Montgomery County

Dear Mr. Bannon,

This letter will serve as confirmation that the above referenced property is situated within Aqua Pennsylvania Inc.'s ("Aqua") service territory. Service will be provided in accordance with Aqua's Rules and Regulations, from the current main in Washington Street approximately 430 feet west of the property.

This project consists of a proposed main extension to serve a townhome development at 1001 Washington Street, Conshohocken, PA.

Flow data information may be obtained from our Production Department so that you may determine the adequacy of our supply for your project needs. You may email a request to SEPAflowrequest@aquaamerica.com. Your request must include the Address, Street, Cross Street, Municipality, and All Pertinent Contact Information.

Please be advised that this availability letter is only valid for one year from the date first written above. If you need further assistance, you may contact me at 610-645-4230 or email at TWertz@aquawater.com

Sincerely,

Timothy Wertz

Timothy Wertz
New Business Representative

FUREY & BALDASSARI, P.C.

ATTORNEYS AT LAW
1043 S. PARK AVENUE
AUDUBON, PA 19403

MICHAEL E. FUREY
mike@fbpclaw.com

JOSEPH J. BALDASSARI*
joe@fbpclaw.com

*also member of NJ bar

(610) 666-7500
fax (610) 666-7200

May 15, 2024

HT 1001 Washington, LLC
c/o Hightop Development
1331 Juniper Street
Philadelphia, PA 19147

RE: Whitemarsh Township Zoning Hearing Board
Application of HT 1001 Washington, LLC, No. 2024-12

Dear Applicant:

Enclosed herewith please find a true and correct copy of the Decision and Order of the Whitemarsh Township Zoning Hearing Board pursuant to the vote rendered at its meeting on May 8, 2024. Please note that your application was granted, subject to conditions as recited in the Decision and Order.

All parties have thirty (30) days from the issuance of the Board's Decision and Order to file an appeal to the Court of Common Pleas of Montgomery County. As the matter was not contested by any party of record, the Board will not issue Findings of Fact and Conclusions of Law, unless an appeal is filed.

Sincerely,

MICHAEL E. FUREY
Solicitor to the Whitemarsh
Township Zoning Hearing Board

MEF/js
Enclosure
cc: Charles Guttenplan, Zoning Officer (w/enclosure)
Sean Kilkenny, Esquire (w/enclosure)
Craig Robert Lewis, Esquire (w/enclosure)
Mark Podgurski and Eileen Podgurski Manning (w/enclosure)

WHITEMARSH TOWNSHIP ZONING HEARING BOARD

DECISION AND ORDER

APPLICATION NO.: 2024-12
APPLICANT: HT 1001 Washington, LLC
Block 008A, Unit 006
1001 Washington Street
Conshohocken, PA 19428
HVY – Heavy Industrial District
Floodplain Conservation Overlay District
RCCD – Riparian Corridor Conservation Overlay District
RDD-1 Riverfront Development Overlay District (Subdistrict-1)
Recreational Overlay District

FIRST HEARING DATE: 04/03/24
CONTINUED HEARING DATE: 05/08/24
VOTE: 05/08/24
WRITTEN DECISION: 05/15/24
COPY MAILED: 05/15/24

The Applicant proposes to demolish the existing buildings and construct forty-nine (49) townhouses and associated improvements on the subject property.

After completion of public hearings on the above-referenced Application, pursuant to public notice as required by law, the Zoning Hearing Board of Whitemarsh Township decided and orders that the following relief and approvals are **GRANTED**:

1. A Variance from Section 116-165, so as to permit structures in the Floodplain Conservation District that are not permitted by right or by Special Exception under Sections 116-166.B.(2) and (3).

2. A Special Exception under Section 116-166.A.(1), so as to permit a small portion of the kayak boat ramp and boardwalk in the floodway within the Floodplain Conservation District.

3. Special Exceptions under Sections 116-166.B.(2) and (3), so as to permit utilities and other necessary facilities in the floodway fringe within the Floodplain Conservation District.

4. A Variance from Section 116-280.H, so as to permit residential use in the RDD District-1 without a minimum of 2% non-residential use.

5. A Variance from Section 116-281.A.(3)(a), so as to permit a minimum setback of less than 10' and average of 20' from the Ultimate Right-of-Way of Washington Street.

6. A Variance from Section 116-281.A.(3)(b), so as to permit a setback from other unattached buildings of 28 feet, rather than the 40 feet required.

7. A Variance from Section 116-281.A.(3)(c), so as to permit a setback from a public trail of 8.5 feet, rather than the 10 feet required.

8. A Variance from Section 116-281.A.(7)(a), so as to permit single-family structures with building heights greater than 3 habitable stories above the floodplain.

9. A Variance from Section 116-281.A.(9), so as to include the riverfront open space area in the total tract area calculation.

10. A Variance from Section 116-283.A.(4), so as to permit a building greater than 100 feet in length without 20% architectural features.

11. A Variance from Section 116-283.C.(1), so as to permit curb and sidewalk alignment along Washington Street without street trees and the required 5 foot verge/strip, both as required in cross-referenced Section 105-48 of the Subdivision and Land Development Ordinance.

12. A Variance from Section 116-283.D.(1)(e), so as to permit curb and sidewalk without a planting strip.

13. Variances from Sections 116-284.A.(1) and E.(3), so as to permit a boardwalk trail, rather than macadam, which is less than 10' wide.

14. Variances from Sections 116-284.A. through C., so as to permit a reduction in the riverfront area as shown on the Zoning Plan, but not less than 20'.

THIS DECISION IS SUBJECT TO THE FOLLOWING CONDITIONS:

1. All use and development permitted by this Decision shall substantially conform to the exhibits and testimony presented by the Applicant, unless inconsistent with any specific conditions imposed by this Board, in which case these specific conditions shall take precedence.

2. The Applicant shall apply for and obtain all permits required by the Township Codes in a timely manner.

3. The Applicant shall comply with all requirements of the Township related to the Subdivision and Land Development Ordinance, unless waived by the Board of Supervisors.

4. The Applicant shall comply with all requirements of the Township Engineer's Memo dated March 28, 2024, marked as Exhibit T-4 to the extent applicable. All structures shall be designed and constructed so as to have the capability of resisting the one-percent-annual-chance flood.

5. The Applicant shall comply with all requirements of the Township Engineer as set forth in the Township Engineer LOMR Request Review dated May 3, 2024, marked as Exhibit T-6. The relief and approvals granted herein are specifically conditioned and contingent upon the Applicant obtaining approval from FEMA of a Letter of Map Revision (LOMR) such that the floodway line shall be as exactly shown on the Revised Zoning Plan marked as Exhibit A-9, unless FEMA authorizes a minor adjustment to the location of the floodway line, and the Township Engineer determines that such minor adjustment does not result in any additional structures or improvements being located in the floodway. In any event, no portion of any dwelling unit shall be located in the floodway. If such FEMA approval is not received, the relief and approvals granted by this Decision and Order shall be of no force or effect.

6. The Applicant shall comply with all requirements of the Township, the Fire Marshal, and Emergency Services with respect to implementation and modification of the Emergency Action Plan for the property marked as Exhibit A-14, modified as required by the Fire Marshal Memo dated May 7, 2024. A copy of the Emergency Action Plan shall be provided by the homeowners' association to every unit owner upon the purchase, or resale, of each unit.

7. The Applicant shall extend and improve, and offer for dedication to the Township, the Washington Street extension substantially as shown on the plans, if and as may be required and approved by the Township.

8. The Applicant shall construct, install, and offer for dedication to the Township, the kayak boat ramp and boardwalk area, the access paths leading to same, and the public amenities as required by the Ordinance and/or as directed and approved by the Township. In the event that the Township elects not to accept dedication of some or all of same, the Applicant shall record easements granting public access to same. In any event, the Applicant shall maintain same in good order at all times.

9. The development shall not exceed forty-nine (49) single-family attached dwellings units (townhouses), as per the plans submitted.

The Board determines that the Applicant presented expert evidence and testimony to carry the burden of proof for the Board to determine that:

No special exception or variance has been granted in the floodplain fringe that will cause any increase in the flood elevation of the one-hundred-year-frequency recurrent interval flood by more than one foot at any point. Considering the required approval from FEMA with respect to the LOMR Request, no special exception or variance has been granted in the floodway that will cause any increase in flood levels during the one-hundred-year flood.

The special exceptions have been granted as the objective criteria of the applicable ordinances have been met. The project does not involve prohibited activities in the floodplain. There is good and sufficient cause for granting the variances. As a result of unique physical circumstances and conditions related to the property, there is no possibility of developing the property in strict conformity with the provisions of the applicable ordinances. The failure to grant the variances would result in unnecessary hardship to the Applicant. The granting of the variances will not result in an unacceptable or prohibited increase in flood heights, additional threats to public safety, additional public expense, create nuisances, cause fraud on, or victimize the public, or conflict with any other applicable state or local ordinances and regulations. The variances involve the least modification necessary to provide relief. Reasonable conditions and safeguards have been imposed in this Decision and Order to protect the public health, safety, and welfare, and to achieve the objectives of the applicable ordinances.

The Applicant is on notice that certain relief from floodplain regulations may result in increased premium rates for flood insurance and/or may increase the risks to life and property. The development of the property in the floodplain is entirely at the risk of the Applicant.

This Decision and Order of the Board is final and any appeal of it must be filed with the Court of Common Pleas of Montgomery County within thirty (30) days following the copy mailing date set out above.

The Board reserves the right to issue Findings of Fact and Conclusions of Law in the event of an appeal.

Section 116-223 of the Zoning Ordinance provides as follows:

Expiration of granted appeals. Unless otherwise specified by the Board, all approvals granted by the Zoning Hearing Board shall automatically expire 365 days after the date of the decision unless: (1) the applicant has acted upon the approval by obtaining the required permit(s) and paying the prescribed fees for same, or (2) the Zoning Hearing Board decision is on appeal to the courts, at which point, the approval, if upheld on appeal, shall expire 365 days after final determination on appeal.

The Zoning Hearing Board may extend the expiration date of approvals for a 180 day period upon request by the applicant, provided that the applicant is, in the opinion of the Zoning Hearing Board, diligently pursuing governmental and/or regulatory approvals as required. Requests for extensions shall be in writing and submitted to the Zoning Hearing Board at least 30 days before any applicable expiration date. Only one (1) extension may be provided for any application.

No. 2024-12
WHITEMARSH TOWNSHIP ZONING HEARING BOARD:

James Behr, Chair

Recused

Robert A. Bacine, Vice Chair

Marc Weinstein

Not Present

William E. Kramer

Gregory Nester

EMERGENCY ACTION PLAN

1001 Washington Street

Township of Whitemarsh

Montgomery County, PA

Issued: April 5, 2024

Revised: May 1, 2024

CONTENTS

Overview	Page 3
Hazard Analysis	Page 3
Concept of Operations	Page 4
Activation	Page 6
Notifications	Page 6
Emergency Coordinator Checklist	Page 7
Emergency Action Guides	Page 7
Evacuation	Page 8
Shelter-In-Place	Page 8
Fire I Fire Alarm	Page 9
Flooding I Severe Weather	Page 9
Actions	Page 10
After The Storm	Page 11
Utility Emergencies	Page 11
HOA Responsibilities	Page 12
Emergency Action Log	Page 13

OVERVIEW

This Emergency Action Plan was designed specifically for the townhouse complex located at 1001 Washington Street, Conshohocken, PA (Whitemarsh Township). The purpose of the plan is to provide management and occupants with guidelines and actions to respond to different types of emergencies. The plan is designed to be administered by a building Emergency Coordinator and Crisis Management Team. The plan will be reviewed and modified as needed once a year.

BUILDING LOCATION

The townhouse complex will consist of eight (8) buildings containing forty-nine (49) units. The site is located east of the RIVERplace townhouse project and west of the train station. The SEPTA rail line forms the northern boundary and the Schuylkill River the southern boundary.

HAZARD ANALYSIS

Building occupants are subject to the typical interior and external hazards common to this type of structure and building use, and the Emergency Action Plan addresses these in an All-Hazard approach. The building's location, however, does present the need to emphasize one specific hazard, flooding, because the site is located in the Federal Emergency Management Agency's 100-year flood plain.

CONCEPT OF OPERATIONS

The Homeowners Association shall appoint a Crisis Management Team for the complex. The Team will consist of management and maintenance personnel. The Homeowners Association (HOA) must designate an Emergency Coordinator and an Alternate. The Coordinator and /or Alternate must be available by phone contact 24 hours a day, and within a 15-minute response time. Each group of connected townhouses must designate an Building Captain and an Alternate. The Building Captain and /or Alternate must be available by phone contact 24 hours a day, and within a 15-minute response time.

Whitemarsh Township Emergency Management (WTEM) will declare all emergencies and ultimately declare the "all clear" at the appropriate time. Any time WTEM declares an emergency, the Emergency Coordinator or Alternate, or, if unavailable, a Senior Management Official on duty, will activate the Emergency Action Plan. The Emergency Coordinator will interface with Emergency Responders until a representative of Building Management is on the scene. The Crisis Management Team can declare an emergency, but the WTEM remains the ultimate authority.

The Crisis Management Team will report to the HOA, making notifications and implementing the Plan to the extent required.

ORGANIZATION

Emergency Coordinator and Alternate:

The Emergency Coordinator and Alternate will be available by phone contact at all times. The coordinator and alternate shall be familiar with all sections of this and other emergency plans used by the Townhome community. The coordinators will coordinate with Emergency Responders regarding evacuation and/or shelter in place strategies that will, in their best estimation, promote the safety of residents. The HOA will be responsible to see that all residents who may function as the Emergency Coordinator maintain a high state of readiness and are familiar with the Emergency Action Guide.

Building Captains:

Each Building group or cluster shall have at least one Building Captain appointed to assist with Evacuation. Building Captains must be familiar with the residents in their assigned buildings.

COMMUNICATIONS

Reliable and effective communications are a critical part of every Emergency Action Plan. Generally, communications between the Homeowners Association (HOA) and the Township will be via telephone.

The Crisis Management Team must maintain a state of vigilance, especially when heavy sustained rains or severe weather are predicted. A NOAA radio monitor with alert device and the Weather Channel shall be obtained, maintained, and monitored at all times. Internal communications shall be via email or cell phones for all key residents.

DIRECTION AND CONTROL:

The Emergency Coordinator shall:

- Work closely with and follow the directives of the Whitemarsh Township Emergency Management officials.
- Assess the situation and make appropriate notifications.
- Assemble the Crisis Management Team and Notify the HOA
- Greet and confer with responding Township Fire, Police, and Emergency Management officials.
- The Emergency Coordinator shall assist first responders with any information needed.

Note: The facility manager will maintain a current chain of command list (usually the Crisis Management Team listing) so that there will be a clear understanding of who is in charge in the coordinator's absence.

ADMINISTRATION

A current copy of this Emergency Action Plan must be maintained in the HOA office, or readily available to the Emergency Coordinator and Alternate.

A current copy must also be on file with the Township Emergency Management Coordinators. The HOA will insure that all Homeowners review and are familiar with the plan annually and that all phone numbers and email addresses are verified at least every 3 months. A record of changes shall be maintained as an element of this Emergency Action Plan.

EDUCATION OUTREACH:

It is essential that elements of this plan be provided to ALL HOMEOWNERS prior to the occurrence of an emergency.

READYMONTCO

All residents shall sign up for ReadyMontco at https://www.montcopa.org/3311/ReadyMontco and download the mobile app also located at the website. ReadyMontco is a system utilize by the Montgomery County Department of Public Safety and local municipalities to send out important messages to residents during emergencies. If the mobile app is downloaded an alert can be sent to your phone if are in the area of an emergency during an event.

ACTIVATION

The Emergency Action Plan shall be activated upon confirmation of one or more of the following conditions:

- Notification from Whitemarsh Township Emergency Management representative that an external emergency is threatening the Townhomes or the geographic area.
- Severe weather watch
- Fire or fire alarm
- Internal or external gas leak
- Internal or external bomb, security, or safety threat
- A utility failure that is seriously affecting the Townhomes
- Discretion of the HOA or Emergency Coordinator
- Activation by the Township Emergency Management Coordinator

NOTIFICATION AND IMPORTANT PHONE NUMBERS

FOR ANY POLICE, FIRE or MEDICAL EMERGENCY, CALL 9-1-1 FIRST:

- Give the proper address
- Cross streets
- Type of emergency (police, fire, medical)

Spring Mill Fire Company Non-Emergency: 610-825-1164

Whitemarsh Police Non-Emergency: 610-825-6530

Whitemarsh Township Community Ambulance Association: 610-828-0955

Whitemarsh Township Fire Marshall/OEM non-Emergency: 484-594-2614

HOA 24 Hr. Number: TBC

PECO - Gas or electric emergency: 800-841-4141

Poison Information Center: 800-222-1222

Phone numbers for all critical system vendors/contactors: TO BE FILLED IN UPON COMMENCEMENT OF CONSTRUCTION

EMERGENCY COORDINATOR CHECKLIST

Upon activation, the Emergency Coordinator will:

- Refer to the Emergency Action Plan
- Start a log of all activities (See attachment)
- Initiate evacuation from the Townhomes for fires, gas leaks, and/or immediate internal threats to the safety of the residents.
- For external emergency, confer with Township police, fire and Emergency Management officials
- Assess need for evacuation
- Estimate the duration of the emergency and address logistical needs for extended operations if they are anticipated.
- Provide information to residents via email, calls, or text messages
- Assist Certified Township Personnel with damage assessment.
- Scale down operations and return to normal as soon as possible

EMERGENCY ACTION GUIDES

Evacuation

Shelter-in-Place

Flooding and Severe Weather

Bomb Threats/Suspicious Mail/Packages

Utility Emergencies

Checklists

HOA Responsibilities

•Coordinator Responsibilities

•Building Captains

•Logs

EVACUATION

In the event of an internal emergency that poses an immediate threat to the safety of the residents, an immediate evacuation will be initiated. The individual observing or being made aware of the threat must contact the Crisis Management Team as the primary means to quickly evacuate the homes. Crisis Management Team members shall assist residents from the building, paying attention to those who may need additional assistance, such as the elderly and those with physical disabilities.

When the threat is external to the buildings, such as a toxic vapor cloud or a severe storm that is developing, the Township Police, Fire or Emergency Management Organization will advise the Emergency Coordinator regarding evacuation. IT IS CRITICAL THAT ACCURATE CONTACT PHONE NUMBERS AND EMAIL ADDRESSES BE MAINTAINED. However, in a rapidly developing crisis, such as a flash flood, the Emergency Coordinator may have to make a decision regarding evacuation or shelter in place.

EVACUATION DOs AND DON'Ts

EVACUATION DOs

- REMAIN CALM
- SHUT DOWN ALL ELECTRONICS
- EXIT THE HOMES
- FOLLOW INSTRUCTIONS OF CRISIS MANAGEMENT TEAM AND EMERGENCY RESPONDERS

EVACUATION DON'Ts

- DON'T PANIC AND DON'T RUN
- DON'T USE ELEVATORS
- DON'T RETURN FOR ANYTHING UNTIL "ALL CLEAR" IS GIVEN

SHELTER-IN-PLACE

In some instances, you will be asked to Shelter-in-Place. Sheltering is an option that helps protect people from outside exposures such as chemicals, radiation, police activity, or weather.

- Know where your ventilation system controls are and how to turn them off
- Have a Shelter-in-Place kit available
- Follow instructions of authorities regarding actions to be taken (i.e. sealing vents, windows, or staying away from windows and doors,)

Shelter-in-Place Kit

- Plastic Sheeting
- Duct Tape
- Scissors
- Towels and rags for blocking vents and under doors
- Drinking water
- Battery powered radio with emergency alert station taped to side
- Working Flashlight
- Extra Batteries
- Snacks

FIRE / FIRE ALARM

The Townhouse buildings will be sprinklered and equipped with the required fire alert systems.

FLOODING AND SEVERE WEATHER

The Townhouse Complex is located adjacent to the Schuylkill River and thus may be subject to flooding. The entire property falls within the FEMA 100-year flood line. This plan will discuss actions to be taken in the event of such flooding. **All residents are mandated by the HOA to register with the Montgomery County Emergency Notification System (Everbridge) to receive emergency alerts. Residents with special needs for evacuation will be required by the HOA to have the person registered with the HOA. This shall be checked quarterly.**

DEFINITIONS:

- Flash Flood or Flood Watch: Flash flooding or flooding is possible in the watch area.
- Flash Flood or Flood Warning: Flash flooding or flooding has been reported or is imminent
- Urban and Small Stream Advisory: Flooding of small streams, streets, and low-lying areas is occurring.
- Flash Flood or Flood Statement: Follow-up information regarding a flash flood event.

PROCEDURE:

Monitoring Conditions: The National Weather Service (NWS) in collaboration with the U.S. Geological Survey constantly monitors water levels in the Schuylkill River. These measurements are available real-time on line at the NWS web site. When weather conditions warrant, the NWS will issue weather ALERTS which are monitored by County and Local Emergency Management offices. Montgomery County will then issue ALERTS to communities which may be affected by the weather event.

The HOA shall register with the county ALERT system to receive these ALERTS by way of email and/or cell phone text messages. As a backup, the HOA shall obtain a NOAA Weather Radio that will activate anytime a weather alert is issued for the area. During Flood Advisories, the Crisis Management Team shall monitor the USGS river gauge web sites noted in this plan. Whitemarsh Township Office of Emergency Management will contact the HOA with vital information pertaining to River Flooding.

Restricted Parking in Flood Zones: All vehicle parking areas are located within the FEMA 100-year floodplain. These areas of the parking lots will be designated by a marked color line on the paved areas and residents advised that parking in this area during a flood emergency will be prohibited, and if not moved within a certain time period after notification, the Crisis Management Team will have them towed to a safe area.

ACTIONS: The Crisis Management Team will take the following actions according to the National Weather Service preparation levels:

FLOOD WATCH:

1. Review Emergency Action Plan will all residents and HOA.

FLOOD WARNING:

1. Monitor throughout the storm this website, which provides flooding information:
    a. www.weather.com
2. Send out a blast e-mail with the same message.
    a. Contact 2-3 local towing services to have them available before and during the storm to tow vehicles. The tow companies must be properly licensed and insured and have a Permit to work in Whitemarsh Township.
    b. As of May 2024, the below companies are Permitted to work in Whitemarsh Township. The HOA shall coordinate with Whitemarsh Township Emergency Management annually to get an updated list of approved towing services
        i. EVB Towing: 610-828-6522
        ii. Janeway Towing: 610-828-1613
        iii. Flourtown Sunoco: 215.233.9726
3. Shut down irrigation system.
4. Securing outdoor furniture or objects subject to floating or blowing away.

FLOOD ACTION STAGE: (River Gauge at 10')

1. The Whitemarsh Township Office of Emergency Management shall declare the emergency.
2. The HOA will re-send e-mail blast and text blast.
3. **Require all residents to respond to email and or text blasts acknowledging receipt.**
4. Advise Residents that they should consider the possibility that flooding may be severe enough to prohibit their ability to safely leave the property.
5. Advise residents that they may become stranded and prohibited by authorities from leaving if the water level rises to an unsafe level.
6. Have any remaining vehicles in flood zone way towed to a safe place.
7. Constantly monitor ingress and egress to the site and keep those areas clear of any obstructions
8. The boardwalk/riverfront trail shall be equipped with a manual barrier to prevent access. This barrier shall be closed at the direction of Whitemarsh Township Supervisors or Whitemarsh Emergency Management officials.
9. Coordinate any decision to evacuate the site with Whitemarsh Emergency Management officials.

AFTER THE STORM:

1. The Whitemarsh Township Office of Emergency Management shall declare the "all clear".
2. When determined safe, the HOA will send out e-mail and text blast telling all residents the storm is over and they can return.
3. Contact HOA-designated maintenance crew to begin cleanup efforts.
4. Clean and sweep parking lots and roadways
5. Look for missing irrigation lids which could create tripping hazards. Cover with wood until new lids are installed.
6. Assist certified Township personal with damage assessment to the complex

REMEMBER….. Even 6 inches of fast-moving water will knock you off your feet and 2 feet will float your car! NEVER try to walk or drive through swift moving water. If such conditions exist, do not allow occupants to drive through the water.

UTILITY EMERGENCIES

Every resident should be aware of what utilities are connected to their townhome, where the utility shut offs are located, and what companies supply the utilities. Natural gas and electricity will pose the greatest danger to homes.

Gas Odor/Leak

- Call 9-1-1 to report the odor/leak
- Open the windows
- Do not turn any electric devices on or off including light switches
- Follow on-site Evacuation Plan

Electrical Emergency

- Call 911
- If there is a power outage to a Townhome and a transformer is on fire or trees are causing wires to arc call 911
- When evacuating the Townhome be cautious of downed wires - consider any wires on the ground live

Telephone/Water/Cable

- Be sure to keep current contact numbers on the emergency contact list in case these utilities ever need to be contacted

HOA AND CRISIS MANAGEMENT TEAM RESPONSIBILITIES

- KNOW CLOSEST TWO EVACUATION AND ESCAPE ROUTES OR SHELTER AREAS
- KNOW WHO TO CONTACT IN AN EMERGENCY
- KNOW LOCATION OF COMMUNICATIONS CENTER
- KNOW AND CONTACT EACH BUILDING CAPTAIN
- STAY CALM AND EXIT QUICKLY
- REPORT ANY EXIT OR ESCAPE OBSTRUCTIONS TO THE HOA
- IF TRAPPED, GO TO A ROOM WITH A WINDOW AND TELEPHONE FOR HELP IF POSSIBLE

EVACUATION COORDINATOR:

Make sure all Emergency Plans are current and reviewed frequently.

Make sure Building Captains know their responsibilities and assignments

Account for all evacuees. Identify the name and last known location of any missing or unaccounted person and pass information on to-Emergency Responders

BUILDING CAPTAINS:

Ensure the evacuation of your assigned area. Perform a sweep of the area, to ensure all persons have been evacuated. Report the status of the evacuation to the Emergency Responders.

NOTE: THIS DOCUMENT WILL NEED TO BE REVISED AND ADJUSTED MOVING FORWARD AS CONSTRUCTION EVOLVES AND UNITS BECOME OCCUPIAD. MEETINGS WITH THE EMERGENCY MANAGEMENT COORDINATOR MUST BE COORDINATED WITH THE HOA.

EMERGENCY ACTION LOG

DATE/TIME	EVENT/ ACTION TAKEN	BY
-		
...		

WHITEMARSH TOWNSHIP

To: Charlie L. Guttenplan, Director of Planning & Zoning/Zoning Officer.

From: **Andrew G. Thomas, Fire Marshal**

Subject: HT 1001 Washington, LLC c/o Hightop Development Emergency Plan

Date: May 7, 2024

The Emergency Plan for 1001 Washington Street was reviewed by the listed parties below.

Andrew G. Thomas: *Whitemarsh Township Fire Marshal/Emergency Management Coordinator*
Christopher Ward: *Whitemarsh Township Police Chief*
Wayne Masters Jr.: *Spring Mill Fire Co. No. 1 Fire Chief*

- Once the below edits are made to the emergency plan the plan can be approved:
  - On page 11 of the plan it reads:

Gas Odor/Leak

- - Call 9-1-1 to report the odor/leak
- - Open the windows
- - Do not turn any electric devices on or off including light switches
- - Follow on-site Evacuation Plan
  - Edit requested is remove "open the windows".

Andrew G. Thomas
Fire Marshal, Emergency Management Coordinator
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2614
Email: athomas@whitemarshtwp.org

Outlook

RE: Emergency Action Plan Review Request

From Christopher Ward <cward@whitemarshpd.org>
Date Fri 1/3/2025 7:17 AM
To Samantha Zrillo <szrillo@whitemarshtwp.org>; Andrew Thomas <athomas@whitemarshtwp.org>
Cc Charlie Guttenplan <cguttenplan@whitemarshtwp.org>; Christopher Ward <cward@whitemarshpd.org>

Sam,

I had an opportunity to review this plan. I find it to be consistent with other plans that we have developed for this section of the Township and find it acceptable for the Police Department.

Chief

Chief Christopher P. Ward #35

Christopher P. Ward
Chief of Police
Whitemarsh Township Police Department
616 Germantown Pike
Lafayette Hill, PA 19444
(484) 594-2735
(610) 825-5078 Fax
cward@whitemarshpd.org

"Have the courage to say no. Have the courage to face the truth. Do the right thing because it is right. These are the magic keys to living your life with integrity." **-W. Clement Stone**

NOTICE OF CONFIDENTIALITY

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From: Samantha Zrillo <szrillo@whitemarshtwp.org>
Sent: Wednesday, December 18, 2024 11:43 AM
To: Andrew Thomas <athomas@whitemarshtwp.org>; Christopher Ward <cward@whitemarshpd.org>
Cc: Charlie Guttenplan <cguttenplan@whitemarshtwp.org>
Subject: Emergency Action Plan Review Request

Caution: This is an external email and has a suspicious subject or content. Please take care when clicking links or opening attachments. When in doubt, contact your IT Department

Hello Chief and Andrew,

Attached is a formal review request for the Emergency Action Plan regarding SLD#07-23 Hightop Real Estate & Development (1001 Washington Street). Please let me know if you have any questions.

Sincerely,

Sam

Samantha Zrillo

(she/her)

Whitemarsh Township

Planner

616 Germantown Pike

Lafayette Hill, PA 19444-1821

Direct Dial: 484-594-2608

MONTGOMERY COUNTY
BOARD OF COMMISSIONERS

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MONTGOMERY COUNTY
PLANNING COMMISSION

MONTGOMERY COUNTY • PO BOX 311
NORRISTOWN, PA 19404-0311

610-278-3722
PLANNING@MONTGOMERYCOUNTYPA.GOV

SCOTT FRANCE, AICP
EXECUTIVE DIRECTOR

January 23, 2025

Mr. Charles L. Guttenplan, AICP
Director of Planning & Zoning Officer
Whitmarsh Township
616 Germantown Pike
Lafayette Hill, Pennsylvania 19444

Re: MCPC #23-0239-002
Plan Name: 1001 Washington Street
Comprising 3.7 acres (gross) / 46 dwelling units
Situate: Washington Street (south) at Lee Street
Whitemarsh Township

Dear Mr. Guttenplan:

We have reviewed the above-referenced subdivision and land development proposal in accordance with Section 502 of Act 247, "The Pennsylvania Municipalities Planning Code," as you requested on November 18, 2024. We forward this letter as a report of our review.

BACKGROUND

The applicant, Hightop Real Estate & Development has submitted for review a land development plan that proposes the construction of 46 townhouses arranged in 8 buildings on a 3.69-acre site which was the former corporate headquarters of David's Bridal, Inc. The plan proposes the demolition of the former David's Bridal 75,916 sq. ft. office building and the 2-level parking garage and connecting Washington Street to Station Avenue along the development tract's frontage.

The development tract is within the Schuylkill River's 100-year floodplain and a large area is within FEMA's delineated floodway. The property is Tax Parcel # 65-00-05581-01-5, which is situated in the township's HVY- Heavy Industrial District and in the RDD-Riverfront Development Overlay District-(RDD-2 Sub-district) and in the Floodplain Conservation District. The development tract lies immediately east of Riverplace, a new 62-unit townhouse community (901 Washington Street) under construction and approved by the township in March 2021. Immediately east of the tract is the 38-acre Spring Mill County Park, a riparian park bisected by the Schuylkill River Trail. The plan shows the

extension of Washington Street to its intersection with Lee Street that was part of the recently adopted Township Official Map.

The planning commission's most recent review for the development of this tract was in a sketch plan review letter to the township dated January 4, 2024. The proposal included a 5 level, 165-unit apartment building constructed over an existing 2-level parking structure and 50-Up-Down townhouses. We did not support the proposal shown in the sketch plan, citing its adequacy in addressing multiple requirements of the township's Riverfront Development Overlay Zoning District and its inconsistency with both the county's comprehensive land use goals and the goals of the Spring Mill Multi-Modal & Land Use Study.

In their decision on May 15, 2024, the Zoning Hearing Board (ZHB) of Whitemarsh Township granted 2 Special Exceptions and 12 Variances to the applicant, subject to certain conditions. The Decision is subject to several Conditions: #5 states that:

> *"The relief and approvals granted herein are specifically conditioned and contingent upon the Applicant obtaining approval from FEMA of a Letter of Map Revision (LOMAR) such that the floodway line shall be as exactly shown on the Revised Zoning Plan marked as Exhibit A-9. . . If such FEMA approval is not received, the relief and approval granted by this Decision and Order shall be of no force or effect." (FEMA)*

The plan notes indicate that 18 waivers are requested: 12 waivers from Chapter 105, the township's Subdivision and Land Development; 3 waivers from Chapter 58, Grading, Erosion Control and Stormwater Management and 2 waivers from Chapter 55, Tree Protection Standards.

COMPREHENSIVE PLAN COMPLIANCE

Consistency with the *MONTCO 2040* – County Comprehensive Plan-

Montco 2024: A Shared Vision, the county comprehensive plan, supports the redevelopment and reinvestment in areas where infrastructure exists, with a special emphasis on opportunities near transit centers such as the Spring Mill area. However, the redevelopment of the site is entirely within the 100-year floodplain and +/- 20 units of the 46 proposed units are within the delineated floodway of the Schuylkill River. This arrangement is inconsistent with the 'Sustainable Places' land use vision of the Montco 2040: A Shared Vison, the Montgomery County Comprehensive Plan. The vision and plan recommendation is for communities to adopt local floodplain regulations that prohibit fill and new construction within the floodplain, except for sites that are brownfield redevelopments. The county's and the township's regulations were adopted in part to recognize that fill and new construction in the floodplain diminishes the flood storage capacity of the floodplain and that numerous encroachments will have a detrimental cumulative impact.

Consistency with the *Whitemarsh Township Selective Comprehensive Plan Update, 2020,* & *The Spring Mill Multi-Modal and Land Use Study, March 2022.*

The redevelopment proposal for this property appears incompatible with the township's future land use vision for this area which envisions it as a 'Waterfront District Character Area', as recommended by the *Whitemarsh Township Selective Comprehensive Plan Update, 2020*, specifically in Chapter Four-Future Land Use Plan. The future land use goal for this character area is to support high-density development and quality public spaces along the riverfront. The tract is considered a key opportunity for development by the recently completed *Spring Mill Multi-Modal and Land Use Study, March 2022*. The study recommends that underutilized parcels be redeveloped in a manner that leverages the regionally significant assets along the junction of the Schuylkill River Trail, Washington Street redevelopment projects, and the Spring Mill SEPTA transit station.

RECOMMENDATION

The Montgomery County Planning Commission (MCPC) is unable to support the applicant's plan for the redevelopment of the David's Bridal site as submitted. While we support the township's land use vision for a multi-use, residential redevelopment for this site, we believe the applicant's redevelopment plan is inadequate in addressing many of the land use goals of the township and its planning initiatives for the Spring Mill and Schuylkill Riverfront over the past decade.

We acknowledge that the Zoning Hearing Board approvals – contingent upon the LOMAR decision – will permit the proposed residential development within an area with a high probability of more frequent devastating flooding. As discussed, and illustrated in the following comments, we have a heightened concern about the devastating consequences of property losses and potential loss of human life with the ever-increasing Schuylkill River flooding events. We conclude that this will only increase, given the direction of climate change. These and other concerns are discussed below:

REVIEW COMMENTS ITE PLANNING

1. **Development in the Schuylkill River's Floodway and 100-Year Floodplain**

   a. *River Flooding and Public Safety*
   We have serious concerns regarding the redevelopment of the site as proposed in the plan. According to the FEMA mapping shown below, the site has a high risk of flooding — 99% of 3 ft. or greater flooding at this site — with the highest impacted area being near the confluence of the Spring Mill Creek and the Schuylkill River. The potential impacts on the public's health, safety and welfare, and the environmental impacts are very significant factors in assessing the applicant's plan for redevelopment. A chief concern is that this

development will inevitably place additional burdens on many local and county emergency services responding to Schuylkill River flooding events, including rescues at this site and on the neighboring properties.

Given the history of exceptionally damaging flooding in this area, the township should ensure that the flood emergency plan submitted by the applicant meets the challenges posed by potential catastrophic river flooding, such as shown below during the aftermath of Hurricane Ida rains on Sept 1 & 2, 2021. We recommend that professionals with experience in evaluating emergency plans assess the submitted *Emergency Action Plan, May 1, 2024.*

A concern that has arisen often with flood-prone multi-family developments in Conshohocken is having an accessible place to relocate both personal vehicles and pets. This is not identified in the plan and should be, in the event that an evacuation is ordered. The experience of Hurricane Ida, September 2021 and its aftermath was that hundreds of vehicles were a total loss along the riverfront. Therefore, a site for relocation should be identified at this juncture. We recommend the applicant provide the evacuation plan and disclose the risks associated with living at this location and the need for residents to heed and act on all evacuation orders, or risk the potential loss of life and property. In light of the catastrophic damages associated with Hurricane Ida, we believe this disclosure and blunt statement is warranted.

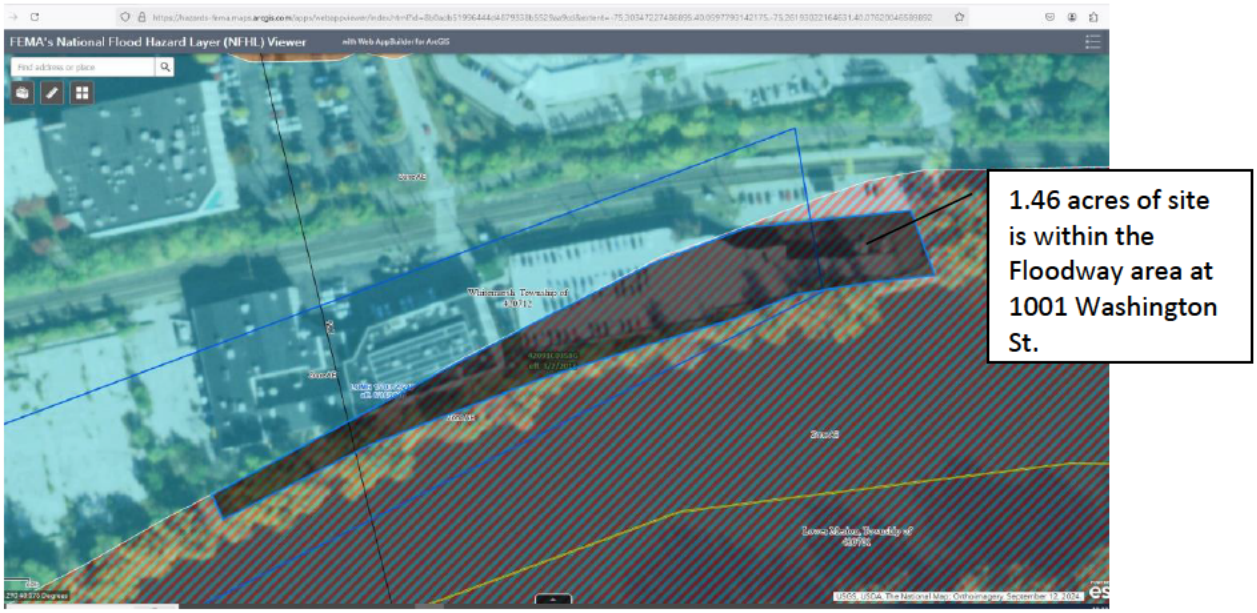


Hurricane Ida, September 1 & 2, 2021 – Flooding at Spring Mill and the applicant's development tract

b. Required DEP- Chapter 105 Encroachment Permit

As shown below, approximately 1.6 acres of the development tract (shaded area) lies within the FEMA-delineated floodway of the Schuylkill River. Section 402 of the The PA model Floodplain Ordinance (*Description and Special Requirements of Identified Floodplain Areas)* states:

1. Within any floodway area, no encroachments, including fill, new construction, substantial improvements, or other development shall be permitted unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.
2. Within any floodway area, no new construction or development shall be allowed, unless the appropriate permit is obtained from the Department of Environmental Protection Regional Office.



1001 Washington St - FEMA Flood Risk map- +/- 64,000 SF (1.46 ac) in the floodway

3. Washington Street & Pedestrian Amenities

a. *Streetscape Improvements & Pedestrian Amenities*

The plan does not address the various amenities and streetscape improvements necessary to ensure a pedestrian-friendly streetscape in the development of Washington Street, as required by Section 116-283.D.-Design Standards. The township's regulations for a pedestrian-oriented development requires various pedestrian-oriented improvements, including pedestrian lighting, benches, riverfront orientation signage and pavement variety. (Section 116-283.D.1.). These improvements are not shown in the submitted plan. The applicant has received a variance for the required planting of street trees and the landscape verge along the street.

Given this relief, the other amenities mentioned above would assist in making Washington Street more pedestrian-friendly, with an arrangement more consistent with other sections of the street, and should be included in the final plan. A recommendation from the ***Spring Mill Multi-Modal and Land Use Study, March 2022*** meriting township consideration for street improvement along the applicant's frontage is the low-mural wall. While a mural wall would require multiple partners for its implementation, it could serve as a significant visual amenity and improvement along the rail corridor.

b. *Safe Pedestrian Connections Are Needed-SEPTA Regional Rail Crossing at Lee Street & Station Avenue*

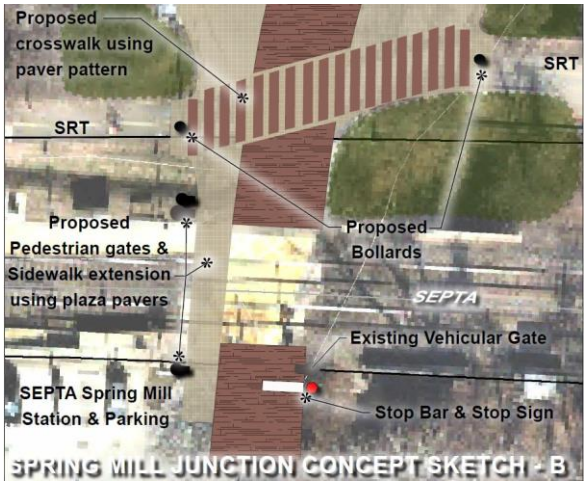
A safe, dedicated pedestrian connection is needed at the SEPTA rail crossing at the intersection of both Lee Street and Washington Street, and at Station Avenue and Washington Street. As shown in the photo below, pedestrians have limited options to safely cross the SEPTA Regional rail tracks and are forced to walk into the roadway at Lee Street. The development plan should include a pedestrian crosswalk, to allow for a safe connection at Washington Street and Lee Street. This is missing from the applicant's site development plan. As the photo below illustrates, the sidewalk connections along Lee Street are missing north of the rail tracks, and pedestrians are forced to walk in the street cartway. We recommend the township examine this missing sidewalk link and seek ways to complete the sidewalk network in this area.

Station Avenue Sidewalk Extension

The *Spring Mill Multi-Modal and Land Use Study (MMLUS) Recommendations* show a concept sketch with a sidewalk extension using pavers across the rail tracks and a pedestrian gate. We recommend the submitted plan be modified to include the paver sidewalk, as recommended in the Spring Mill Study, and a delineated pedestrian crosswalk at Washington Street and Station Avenue. We recommend the applicant and the township partner with SEPTA to make these improvements at these intersections.



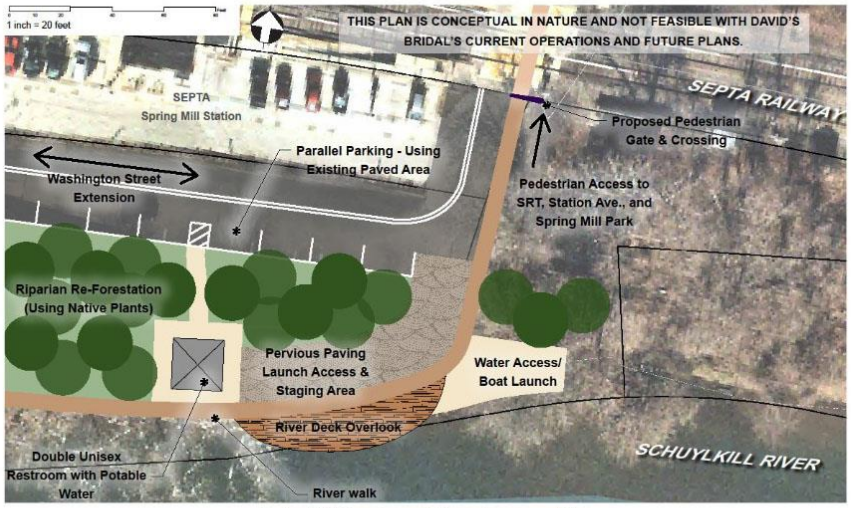
Lee Street- View looking south to Washington



Paver / Sidewalk Extension at Station Ave.

c. *Perpendicular parking at Washington St at the Station Avenue intersection*
The applicant is seeking a waiver of Section105.38.(F) that prohibits perpendicular parking along a public or private street. The applicant's note states that, "perpendicular parking will not pose a safety risk given the low volume of traffic." We believe that traffic volume will increase with the construction of several significant multi-family developments that have been approved west of the applicant's site. We do not support this relief and believe the proposed arrangement raises serious safety issues with the limited sight distance for motorists backing out onto a secondary street. We believe the safety issue is heightened with the proposed parking area located at a juncture of Washington Street, the SEPTA Regional Rail and the Station Avenue. As illustrated below and recommended by the Spring Mill Multi Modal and Land Use Study, parallel parking or back end angle parking should be considered, rather than perpendicular parking.

David's Bridal property, is, unfortunately, not feasible in the immediate future. Providing an informal boat launch, gathering space, and potential reforestation area here would not fit with the existing uses or parking garage ramp.



Spring Mill River Access Point – Conceptual Plan

d. *Pedestrian Amenities*
The applicant has received relief from providing the required street trees and a verge area along Washington Street, which are key ingredients in making a pedestrian and environmentally friendly streetscape. We recommend the township assess other potential amenities identified in the recommendations of the ***Spring Mill Multi-Modal and Land Use Study, March 2022.*** One amenity that should be considered and would assist in making the applicant's site more visually appealing is the low-mural wall.

4. Schuylkill Riverfront Trail

a. *Integrity of the Riverfront Trail*
The applicant and township should discuss how the riverfront trail's resiliency in the face of ever-increasing flood events along the Schuylkill River. The proposed trail is confined in several areas, wedged between the bottom of the proposed retaining wall and the top of a very steep riverbank. This area will be subject to flooding, accumulate river debris and be subject to the erosive power of the river. This may undercut the narrow trail and cause riverbank erosion and loss. The township should consider ways to make this area more resilient and determine where responsibility will lie for river trail cleanup and repairs after flooding events.

b. *Riverfront Trail User Safety*
The plan shows the slopes exceed 25% for most of the Riverfront Trail's length along the river, and there appears to be no safe area to step aside, such as a shoulder area, at the top of the river's embankment. Given that the trail is immediately adjacent to very steep slopes, the applicant should provide guard railing along the length of the trail to prevent users from falling down the steep embankment.

. 4. **Landscape Improvements Plan**

a. Impacts on the Tree Canopy Along the Schuylkill Riverfront
The 2-level parking deck and ramp occupy approximately 455 ft. of frontage adjacent to the Schuylkill Riverbank, and the deck and its ramp will be demolished. Demolition of the parking structure and the proposed construction of the retaining wall for the development will potentially impact the tree roots and long-term health of the riverbank's tree canopy. The applicant's demolition plan does not show any of these trees as existing natural features. We recommend the applicant provide greater detail on the size and location of these riverbank trees, and ensure that mitigation measures are in place to address township's tree-protection regulations and guard against the loss of tree canopy.

The applicant's waiver request includes several measures designed to protect the natural resources of the riparian corridor, including Section 44-4B. – Maximum Tree Removal and Sections 55-4D. & 55-4F.- Tree Replacement/Removals. We recommend the township assess the tree removal and its impact on the tree canopy coverage along the Schuylkill Riverbank. Preserving the riverbank's tree canopy by replacing those trees that will be critically impacted is important in preserving the river's open space and ensuring the riverbank's integrity. We recommend the township consider requiring additional riverside tree plantings so that the riverbank's tree canopy is not diminished.

b. Landscape improvements Needed Along 10 ft. Wide Public Path (Between Courts- B & C)
The landscape plan does not provide greening improvements along the public pathway connecting the Washington St. sidewalk and the riverfront trail. While there is a 25 ft. wide drainage easement that lies nearby, there is an opportunity to add needed greening

improvements. Plantings of smaller native trees and shrubs should be included to increase the greening of the site and provide greater diversity to the landscape.

CONCLUSION

We recommend the township address the above-mentioned issues and comments to its satisfaction. Please note that the review comments and recommendation contained in this report are advisory to the municipality and final disposition for the approval of any proposal will be made by the municipality.

Please be aware that the MCPC number #23-0239-002 has been set aside for the applicant' plan. If any subsequent plans are submitted for final recording, this MCPC number should appear on the applicant sheets within the plans in the box reserved for the seal of this agency.

Should the governing body approve a final plat of this proposal, the applicant must present the plan to our office for seal and signature prior to recording with the Recorder of Deeds office. A paper copy bearing the municipal seal and signature of approval must be supplied for our files.

Sincerely,

Barry W. Jeffries

Barry W Jeffries, ASLA, Senior Design Planner
bjeffrie@montgomerycountypa.gov
(610) 278-3444

c: Aaron Kostyk, Chair, Township Planning Commission
Krista Heinrich, PE, Township Engineer
David Sander, Esq., Township Solicitor
Hightop Real Estate & Development Applicant

Attachment A: Aerial Image of Site
Attachment B: Reduced Copy of Applicant's Proposed Site Plan

ATTACHMENTS A & B



1001 Washington Street
MCPC#220239002

Montgomery County Planning Commission
Montgomery County Courthouse - Planning Commission
PO Box 311 Norristown PA 19404-0311
(p) 610 278-3722 (f) 610 278-3941
www.montcopa.org/plan.com
Aerial photography provided by Nearmap

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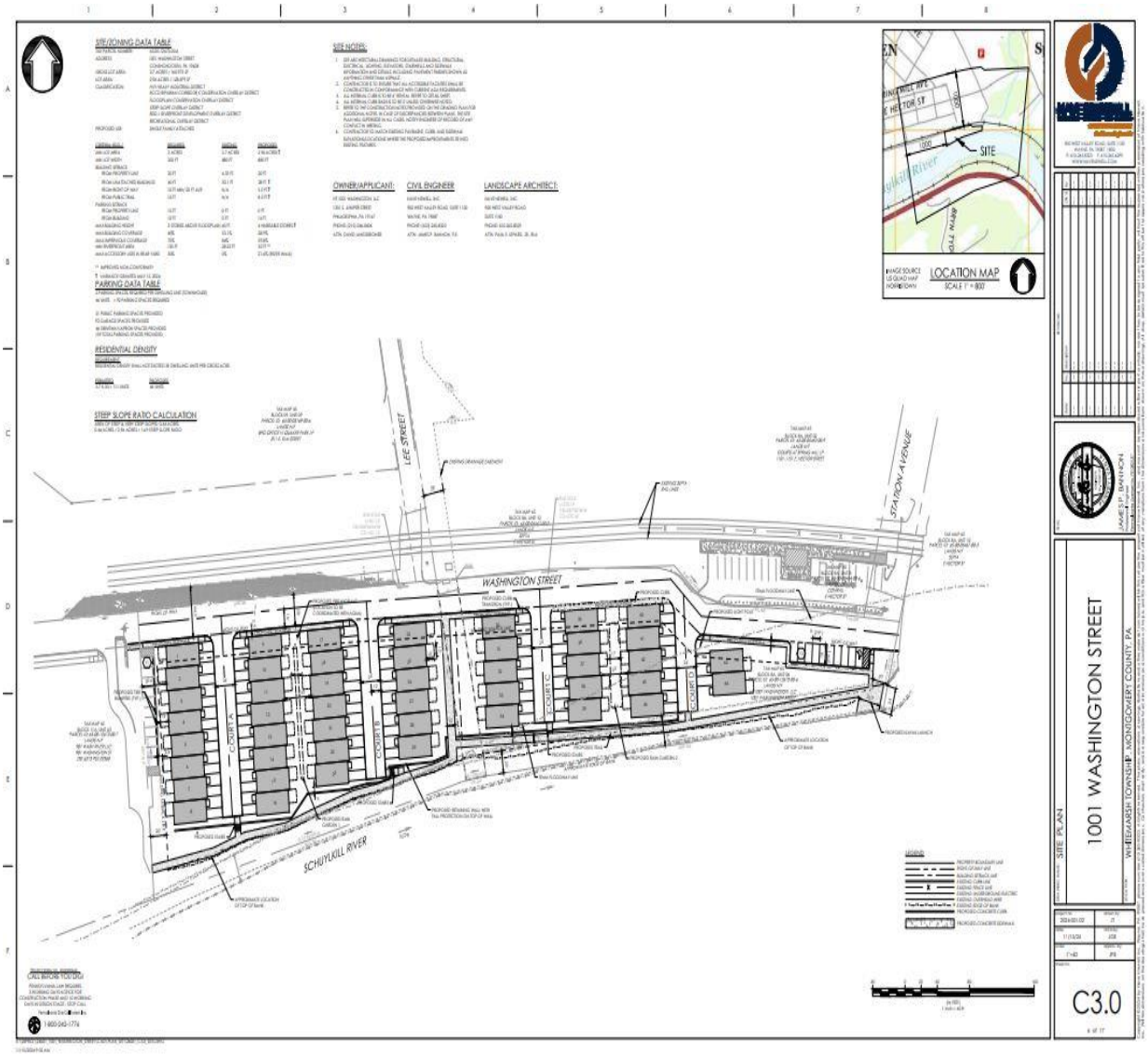

SITE/ZONING DATA TABLE
SITE NOTES:
OWNER/APPLICANT:
CIVIL ENGINEER
LANDSCAPE ARCHITECT:
PARKING DATA TABLE
RESIDENTIAL DENSITY
STEEP SLOPE RATIO CALCULATION
LOCATION MAP
SCALE 1" = 800'
SITE
LEE STREET
STATION AVENUE
WASHINGTON STREET
SCHUYLKILL RIVER
SITE PLAN
1001 WASHINGTON STREET
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA
C3.0

Federal Emergency Management Agency

Washington, D.C. 20472

April 4, 2025

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Craig McAnally
Township Manager, Township of Whitemarsh
616 Germantown Pike
Lafayette Hill, PA 19444

IN REPLY REFER TO:

Case No.:	24-03-0882P
Community Name:	Township of Whitemarsh, PA
Community No.:	420712
Effective Date of This Revision:	August 21, 2025

Dear Craig McAnally:

The Flood Insurance Study (FIS) report and Flood Insurance Rate Map (FIRM) for your community have been revised by this Letter of Map Revision (LOMR). Please use the enclosed annotated map panel revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community.

Additional documents are enclosed that provide information regarding this LOMR. Please see the List of Enclosures below to determine which documents are included. Other enclosures specific to this request may be included as referenced in the Determination Document. If you have any questions regarding floodplain management regulations for your community or the National Flood Insurance Program (NFIP) in general, please contact the Consultation Coordination Officer for your community. If you have any technical questions regarding this LOMR, please contact the Director, Mitigation Division of the Department of Homeland Security's Federal Emergency Management Agency (FEMA) in Philadelphia, Pennsylvania, at (215)931-5635, or the FEMA Mapping and Insurance eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

Sincerely,

Patrick "Rick" F. Sacbibit, P.E.
Chief, Engineering Services Branch
Federal Risk Analysis, Planning, and Information Directorate | Resilience

List of Enclosures:

Letter of Map Revision Determination Document
Annotated Flood Insurance Rate Map
Annotated Flood Insurance Study Report

cc: Krista Heinrich, P.E.
Township Engineer
Township of Whitemarsh

David Landskroner
HT 1001 Washington, LLC

Gregory C. Newell, P.E.
Nave Newell, Inc.

WHITEMARSH TOWNSHIP
RECEIVED
APR 16 2025
OFFICE OF THE TWP MANAGER

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	Township of Whitemarsh Montgomery County Pennsylvania	NO PROJECT	BASE MAP CHANGES 1D HYDRAULIC ANALYSIS FLOODWAY
	COMMUNITY NO.: 420712		
IDENTIFIER	1001 WASHINGTON STREET	APPROXIMATE LATITUDE AND LONGITUDE: 40.074, -75.288 SOURCE: Other DATUM: NAD 83	

ANNOTATED MAPPING ENCLOSURES	ANNOTATED STUDY ENCLOSURES
TYPE: FIRM* NO.: 42091C0358G DATE: March 2, 2016	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: March 2, 2016 FLOODWAY DATA TABLE: 5

Enclosures reflect changes to flooding sources affected by this revision.
* FIRM - Flood Insurance Rate Map

FLOODING SOURCE AND REVISED REACH

Schuylkill River – On the left overbank from approximately 7,650 feet downstream of Fayette Street to approximately 6,210 feet downstream of Fayette Street

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Schuylkill River	Floodway	Floodway	NONE	YES

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panel revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

Patrick "Rick" F. Sacbibit, P.E.
Chief, Engineering Services Branch
Risk Analysis, Planning, and Information Directorate | Resilience

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

We provide the floodway designation to your community as a tool to regulate floodplain development. Therefore, the floodway revision we have described in this letter, while acceptable to us, must also be acceptable to your community and adopted by appropriate community action, as specified in Paragraph 60.3(d) of the NFIP regulations.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance (base) flood discharges computed in the FIS for your community without considering subsequent changes in watershed characteristics that could increase flood discharges. Future development of projects upstream could cause increased flood discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on flood discharges subsequent to the publication of the FIS report for your community and could, therefore, establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

Patrick "Rick" F. Sacbibit, P.E.
Chief, Engineering Services Branch
Risk Analysis, Planning, and Information Directorate | Resilience

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

April Cummings
Director, Mitigation Division
Federal Emergency Management Agency, Region III
One Independence Mall, Sixth Floor
615 Chestnut Street
Philadelphia, PA 19106-4404
(215) 931-5635

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panels and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

Patrick "Rick" F. Sacbibit, P.E.
Chief, Engineering Services Branch
Federal Risk Analysis, Planning, and Information Directorate | Resilience

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

A notice of changes will be published in the *Federal Register*. This information also will be published in your local newspaper on or about the dates listed below, and through FEMA's Flood Hazard Mapping website at https://www.floodmaps.fema.gov/fhm/bfe_status/bfe_main.asp

LOCAL NEWSPAPER

Name: *The Times Herald*
Dates: April 16, 2025 and April 23, 2025

Within 90 days of the second publication in the local newspaper, any interested party may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. Therefore, this letter will be effective only after the 90-day appeal period has elapsed and we have resolved any appeals that we receive during this appeal period. Until this LOMR is effective, the revised flood hazard determination presented in this LOMR may be changed.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Mapping and Insurance eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 3601 Eisenhower Avenue, Suite 500, Alexandria, VA 22304-6426. Additional Information about the NFIP is available on our website at https://www.fema.gov/flood-insurance.

Patrick "Rick" F. Sacbibit, P.E.,
Chief, Engineering Services Branch
Risk Analysis, Planning, and Information Directorate | Resilience

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Schuylkill River								
A	66,301	376[2]	11,775	10.9	36.2	36.2	36.9	0.7
B	69,030	370[2]	10,917	10.0	39.6	39.6	40.6	1.0
C	71,537	400[2]	10,305	10.6	41.1	41.1	42.0	0.9
D	73,395	589[2]	14,927	7.3	42.6	42.6	43.6	1.0
E	76,046	789[2]	15,778	6.9	44.0	44.0	45.0	1.0
F	78,239	1,094[2]	14,523	7.5	44.8	44.8	45.7	0.9
G	79,960	608[2]	11,148	9.8	45.4	45.4	46.2	0.8
H	81,813	580[2]	11,846	9.2	50.6	50.6	51.0	0.4
I	84,453	500[2]	12,099	9.0	51.8	51.8	52.0	0.2
J	86,507	580[2]	13,962	7.8	52.6	52.6	53.0	0.4
K	88,127	500[2]	12,062	9.0	52.7	52.7	53.2	0.5
L	89,281	550	13,432	8.1	53.4	53.4	54.0	0.6
M	90,774	600	14,848	7.3	54.0	54.0	54.6	0.6
N	93,233	547	11,852	9.2	54.5	54.5	55.1	0.6
O	96,094	370	9,632	11.3	56.2	56.2	56.5	0.3
P	97,712	630	14,292	7.6	58.2	58.2	58.7	0.5
Q	99,111	508	12,320	8.8	58.7	58.7	59.3	0.6
R	101,095	530	12,203	8.9	59.9	59.9	60.4	0.5
S	103,793	503	10,480	10.4	61.5	61.5	62.0	0.5
T	104,860	440	10,518	10.4	62.7	62.7	63.1	0.4
U	106,049	445	10,927	10.0	63.6	63.6	64.3	0.7

REVISED DATA

[1]Feet above confluence with Delaware River

[2]This width extends beyond county boundary

TABLE 5

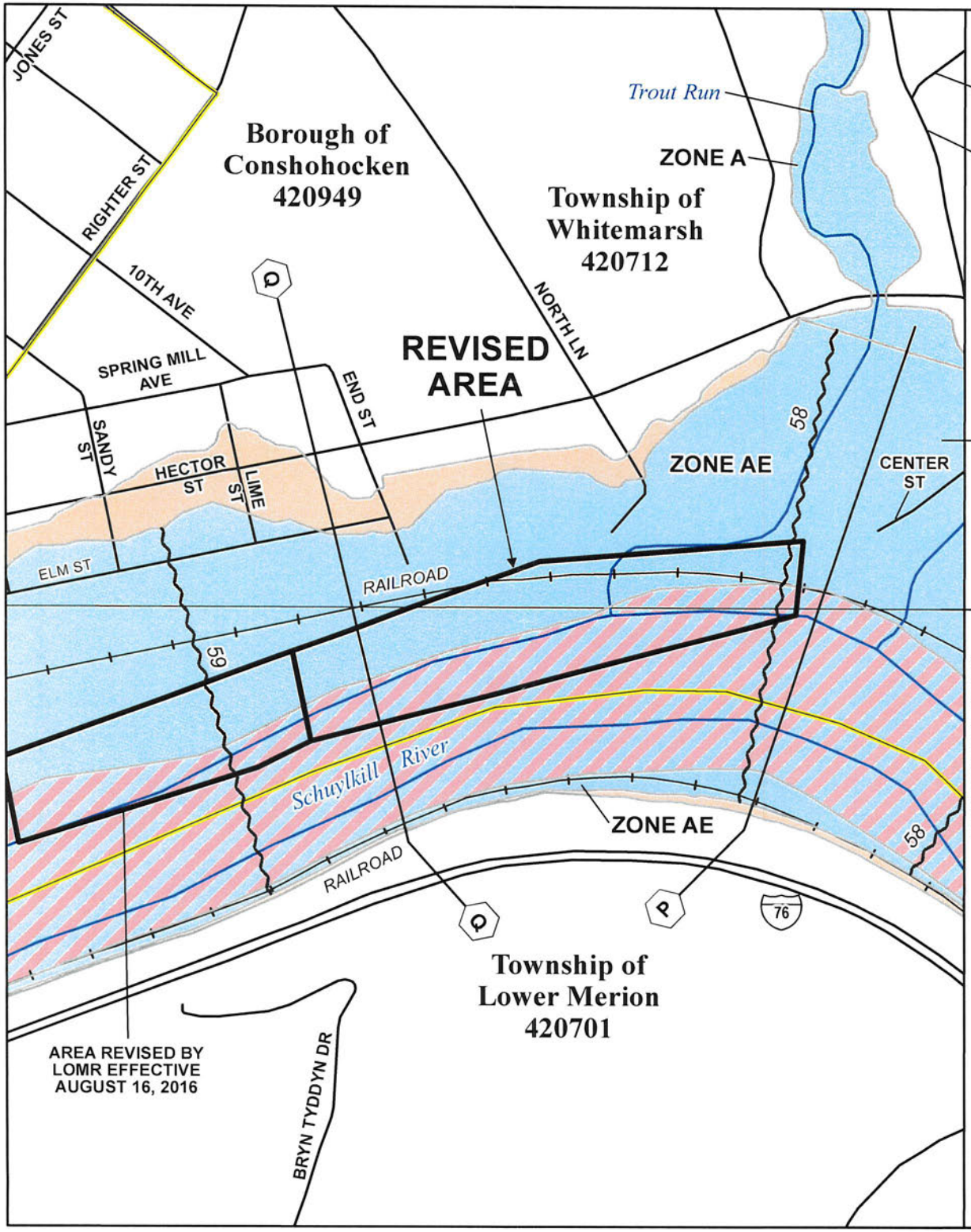
FEDERAL EMERGENCY MANAGEMENT AGENCY

MONTGOMERY COUNTY, PA (ALL JURISDICTIONS)

FLOODWAY DATA

REVISED TO REFLECT LOMR EFFECTIVE: August 21, 2025

SCHUYLKILL RIVER



SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee See Notes. Zone X

SCALE

Map Projection:
NAD 1983 UTM Zone 18N
Western Hemisphere, Vertical Datum NAVD 88

1 inch = 500 feet 1:6,000

0 250 500 1,000 Feet

0 75 150 300 Meters

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

MONTGOMERY COUNTY, PENNSYLVANIA
(All Jurisdictions)

PANEL 358 OF 451

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
CONSHOHOCKEN, BOR OF	420949	0358	G
LOWER MERION, TWP OF	420701	0358	G
PLYMOUTH, TWP OF	420955	0358	G
WHITEMARSH, TWP OF	420712	0358	G
WEST CONSHOHOCKEN, BOR OF	420710	0358	G

REVISED TO REFLECT LOMR EFFECTIVE: August 21, 2025

VERSION NUMBER
2.1.3.0

MAP NUMBER
42091C0358G

MAP REVISED
MARCH 2, 2016