Whitemarsh TOWNSHIP

616 GERMANTOWN PIKE – LAFAYETTE HILL, PA 19444-1821
TEL: 610-825-3535 FAX: 610-825-9416
www.whitemarshtwp.org

BOARD of SUPERVISORS

Laura Boyle Nester– Chair
Fran McCusker– Vice Chair
Michael Drossner
Vincent Manuele
Jacy Toll

Richard L. Mellor, Jr.
Township Manager

WHITEMARSH TOWNSHIP BOARD OF SUPERVISORS

MEETING OF SEPTEMBER 10, 2020 6:00 PM

ZOOM MEETING PARTICIPATION INFORMATION

The Whitemarsh Township Board of Supervisors will hold their monthly meeting on Thursday, September 10, 2020 at 6:00 p.m. In response to the COVID 19 health pandemic, and to promote social distancing this meeting will be conducted via ZOOM. Members of the Board, staff and public will participate remotely. The public may join this meeting by either telephone using the dial in number or entering the URL on an internet browser. Below you will find instructions on how to access and participate in the meeting:

- **Meeting Date:** Thursday, September 10, 2020
- **Meeting Time:** 6:00 PM
- **Meeting URL:** https://us02web.zoom.us/j/89151337130
- **Meeting via Zoom App:** if you have the Zoom App on your smartphone, tablet, or computer, open the program, click join a meeting, and enter the Meeting ID: 891 5133 7130
- **Meeting dial in number (no video):** 1-646-558-8656
- **Meeting ID number (to be entered when prompted):** 891 5133 7130

Public comment via email to Township Manager Rick Mellor, **rmellor@whitemarshtwp.org** must be submitted one hour before the start of the meeting. Public comment will also be accepted via the ZOOM chat button during the meeting. In both cases you will need to provide your name and address for the record.

Persons with a disability who wish to participate in the public hearing and require an auxiliary aid, service or other accommodation to participate in the hearing should contact Whitemarsh Township at 484-594-2601.

WHITEMARSH TOWNSHIP BOARD OF SUPERVISORS
MEETING OF SEPTEMBER 10, 2020 6:00 PM

BOYLE-NESTER ____ DROSSNER_____MANUELE ____ McCUSKER ____TOLL ____

CALL TO ORDER

PLEDGE OF ALLEGIANCE

ANNOUNCEMENTS

PUBLIC HEARINGS

Public Hearing for Conditional Use #02-20; Dhavel Shah/505½ Germantown Pike
Dental Office in the VC-1 District

APPROVAL OF MINUTES

August 13, 2020

BOARD PUBLIC DISCUSSION ITEMS

Review SLD #02-19; Argos Associates/Adelphi Land Associates/Polergodom Group; Longfield Farms/Butler Pike – Preliminary Plan
Construction of 58 Townhouses

CONSIDER ACTION ITEMS

Ordinances

Consider Ordinance to Purchase Real Property under Act 153
The Highlands/7001 Sheaff Lane – 27.82 acre Conservation Easement for $3,010,000.00

Consider Ordinance Amendment
Adopting the 2015 International Fire Code as the Township's Fire Prevention Code

Resolutions

Consider SLD #02-19; Argos Associates/Adelphi Land Associates/Polergodom Group; Longfield Farms/Butler Pike – Preliminary Plan
Construction of 58 Townhouses

Consider 2021 Minimum Municipal Obligation (MMO)
Police and Non-uniformed Pension Plans

Consider Annual Emergency Operation Plan Promulgation
Emergency Operations Plan (EOP) for Whitemarsh Township

Motions

Consider Conditional Use #02-20; Dhavel Shah/505½ Germantown Pike
Dental Office in the VC-1 District

Consider Ordinance Advertisement.
Process the minor nonviolent offenses of personal possession or personal use of small amounts of marijuana and personal possession of marijuana paraphernalia

Consider Fire Police Appointment
Michael Center – Spring Mill Fire Company

Consider Resignation
Peter Cornog – Planning Commission

Consider August 2020 Expenditures and Payroll and Pension Plan Paid Costs

PUBLIC COMMENT PERIOD

BOARD MEMBER COMMENTS

ANNOUNCE EXECUTIVE SESSION

ADJOURNMENT

PUBLIC PARTICIPATION INFORMATION

1. Public meetings of the Board shall follow a prescribed agenda, which will be available to the general public two days preceding the meeting.
2. If members of the public wish the Board to address a specific item at a public meeting, a written request to the Township Manager shall be submitted by noon on Friday of the week before the meeting. The written request shall specify the item or items the individual desires to be addressed.
3. The Board may consider other matters for the agenda as they see fit.
4. The Board will entertain Public Comment at either the beginning of the meeting or prior to specific action items during the meeting, at the discretion of the Chair. Individuals must advise the Chair of their desire to offer such comment.
5. A Public Comment period will be provided at the conclusion of a meeting for input on any subject.
6. The Board Chair shall preside over Public Comments and may within their discretion:
    a. Recognize individuals wishing to offer comment.
    b. Require identification of such persons.
    c. Allocate total available Public Comment time among all individuals wishing to comment.
    d. Allocate up to a five (5) minute maximum for each individual to offer Public Comment at a meeting, Township Staff shall time comments and shall announce, “one minute remaining” and “time expired” to the Chair.
    e. Rule out of order scandalous, impertinent and redundant comment or any comment the discernible purpose of which is to disrupt or prevent the conduct of the business of the meeting including the questioning of, or polling of, or debating with, individual members of the Board.

WHITEMARSH TOWNSHIP

TO: BOARD OF SUPERVISORS

FROM: **Charles L. Guttenplan, AICP, Director of Planning and Zoning**

SUBJECT: CONDITIONAL USE CU #02-20 DHAVAL SHAH DENTAL OFFICE
505½ GERMANTOWN PIKE

DATE: AUGUST 28, 2020

CC: Richard L. Mellor, Jr., Township Manager
Sean P. Kilkenny, Esq., Township Solicitor

There is a Public Hearing on your agenda for a Conditional Use application, CU #02-20, application of Dhaval Shah for a dental office, located at 505½ Germantown Pike. This site is within the VC-1, Village Commercial District, Sub-district 1; a 'medical/dental office' is a conditional use allowed pursuant to Section 116-290.C.(3) of the Zoning Ordinance. Dr. Shah has purchased this building to use for this purpose. He will be using the entire building for this use. Enclosed is the Conditional Use application and supporting documents, as well as a review from the Fire Marshal and my zoning compliance review. Also attached is the exhibit packet that will be used at the hearing. Should the Board want to take action on the Conditional Use application after the public hearing is concluded, a motion to do so is also listed on your agenda.

The Planning Commission reviewed this application at their Zoom meeting on August 25, 2020. After a brief description of the proposal and some questions about number of dentists and other employees anticipated, hours of operation, layout of the building, and parking and access, the Planning Commission recommended approval of the conditional use application.

If there are any questions, I would be happy to answer them by e-mail prior to the meeting (I am scheduled to be out of the office) or during the meeting.

Attachments

G:/BOARD OF SUPERVISORS COORDINATION/2020/September 10, 2020 Meeting (Zoom)/BOS Memo CU #02-20 Dr. Shah Dental Office 505 half Germantown.doc

Charles L. Guttenplan, AICP
Director of Planning and Zoning/Zoning Officer
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 484-594-2625 Fax: 610-825-6252
Email: cguttenplan@whitemarshtwp.org

WHITEMARSH TOWNSHIP
CONDITIONAL USE APPLICATION

Applicant Information

Name: Dhaval Shah

Address: [redacted]

City: [redacted] State: [redacted] Zip: [redacted]

Phone: [redacted] Email: [redacted]

Interest of Applicant, if not owner (agent, lessee, etc.): Equitable owner under Agreement of Sale

Owner Information

Name: 505A Germantown Pike Associates, LP

Address: 100 Springhouse Drive, Suite 205

City: Collegeville State: PA Zip: 19426

Phone: Email:

Attorney for Applicant Information

Name: Edward J. Hughes, Esquire

Address: 1250 Germantown Pike, Suite 205

City: Plymouth Meeting State: PA Zip: 19462

Phone: (610) 279-6800 Email: ehughes@hkolaw.com

1. Brief Description of Real Estate Affected:

Parcel #(s): 65-00-04333-00-3 Block No. 22K, Unit 25

Address: 505 1/2 Germantown Pike, Lafayette Hill, PA 19444

Lot Size: 1954 SF, Lot #14 Deed Recorded at Norristown in Deed Book No.: 6156 Page No.: 1827

Present Zoning Classification: VC-1 Present Use: Vacant Building

Present Improvements on Land: Office building formerly occupied by Heaven and Earth Body Experience

2. Specific Section(s) of the Zoning Code upon which this Application is based:

Section 116-290C(3)

WHITEMARSH TOWNSHIP
CONDITIONAL USE APPLICATION

3. Describe the Proposed Use of Property

To operate a dental office in the existing building.

4. Briefly State Why the Applicant Believes the Board of Supervisors Should Grant the Application:

NOTE: The applicant or its representative(s) shall be required to provide testimony at the Planning Commission meeting(s) at which this application is discussed and at the required Board of Supervisors Public Hearing(s) for this application, addressing the Board of Supervisors considerations as specified in Section 116-37.F. of the Whitemarsh Township Zoning Ordinance.

Dentist offices are permitted in the VC-1 District by conditional use.

5. Answer the Following Questions and Provide a Date of Previous Application (if known):

Has a previous Conditional Use Application been filed for this Property?	☐ Yes ☒ No	
Has a previous Zoning Hearing Board Application been filed for this Property?	☐ Yes ☐ No	
Has a previous Subdivision or Land Development Application been filed for this Property?	☒ Yes ☐ No	

In addition to this application, documentation must be submitted in compliance with Section 116-37.A. of the Zoning Ordinance, reproduced here for convenience.

116-37. A. Conditional use procedures. The procedure for granting of conditional uses in any zoning district shall be as follows:

A. The applicant shall file an application for a conditional use permit with the Board of Supervisors. The application shall contain the following material:
   (1) Appropriate design plans and/or specifications, in conformance with the requirements for a preliminary subdivision or land development plan.
   (2) Photographs depicting the site.
   (3) Appropriate engineering responses to any identified or suspected site development problem.
   (4) Other related information required to support the application.

My signature authorizes permission to post this property and permission to Township officials and staff to enter thereon for inspection purposes. My signature further authorizes a waiver of the 60-day requirement to hold the first hearing (from date of application) as stipulated in the PA Municipalities Planning Code, recognizing that the Township will make every effort to abide by said requirement but if circumstances do not permit, to hold the first hearing as soon as reasonable feasible.

I certify that the information provided on this application and supporting documentation and plans are true and correct to the best of my knowledge, information and belief.

DEPARTMENT USE ONLY

C.U. Application #: _____

Date Received: _____

Fee Paid: $ _____ Date Paid: ____/____/____

APPLICANT SIGNATURE: _____

PRINT NAME: Dhaval Shah

AGREEMENT FOR THE SALE OF COMMERCIAL REAL ESTATE

ASC

This form recommended and approved for, but not restricted to use by, the members of the Pennsylvania Association of Realtors® (PAR).

PARTIES

BUYER(S): Dhaval Shah And/Or Assigns	SELLER(S): 505A Germantown Pike Assocs Lp
271 Fairfield Circle West, Royersford PA 19468	100 Springhouse Dr Apt 205, Collegeville PA19426

PROPERTY

PROPERTY ADDRESS 505-1/2 Germantown Pike, Lafayette, Hill, PA

ZIP 19444,

in the municipality of Whitemarsh Twp,

County of MONTGOMERY, in the Commonwealth of Pennsylvania.

Identification (e.g., Parcel #; Lot, Block; Deed Book, Page, Recording Date): Lot # 025, Sub Lot # 14

Tax ID #(s): 65-00-04333-003

BUYER'S RELATIONSHIP WITH PA LICENSED BROKER

☐ **No Business Relationship (Buyer is not represented by a broker)**

Broker (Company) HomeStarr Realty

Company Address 850 Easton Rd, Warrington, PA 18976-2022

Company Phone (215)355-5565

Company Fax

Broker is (check only one):

☒ Buyer Agent (Broker represents Buyer only)

☐ Dual Agent (See Dual and/or Designated Agent box below)

Licensee(s) (Name) Jay Shah

License # RS 329349

Direct Phone(s)

Cell Phone(s) (732)421-7863

Fax

Email jayshah@homestarrinc.com

Licensee(s) is (check only one):

☐ Buyer Agent (all company licensees represent Buyer)

☒ Buyer Agent with Designated Agency (only Licensee(s) named above represent Buyer)

☐ Dual Agent (See Dual and/or Designated Agent box below)

☐ Transaction Licensee (Broker and Licensee(s) provide real estate services but do not represent Buyer)

SELLER'S RELATIONSHIP WITH PA LICENSED BROKER

☐ **No Business Relationship (Seller is not represented by a broker)**

Broker (Company) Long & Foster Real Estate, Inc.

Company Address 860 Penllyn Blue Bell PIKE, Blue Bell, PA 19422

Company Phone (215)654-5900

Company Fax

Broker is (check only one):

☒ Seller Agent (Broker represents Seller only)

☐ Dual Agent (See Dual and/or Designated Agent box below)

Licensee(s) (Name) Scott J Mayer

License # AB-043312-A

Direct Phone(s) (610)291-4045

Cell Phone(s)

Fax

Email scott.mayer@lnf.com

Licensee(s) is (check only one):

☐ Seller Agent (all company licensees represent Seller)

☒ Seller Agent with Designated Agency (only Licensee(s) named above represent Seller)

☐ Dual Agent(See Dual and/or Designated Agent box below)

☐ Transaction Licensee (Broker and Licensee(s) provide real estate services but do not represent Seller)

DUAL AND/OR DESIGNATED AGENCY

A Broker is a Dual Agent when a Broker represents both Buyer and Seller in the same transaction. A Licensee is a Dual Agent when a Licensee represents Buyer and Seller in the same transaction. All of Broker's licensees are also Dual Agents UNLESS there are separate Designated Agents for Buyer and Seller. If the same Licensee is designated for Buyer and Seller, the Licensee is a Dual Agent.

By signing this Agreement, Buyer and Seller each acknowledge having been previously informed of, and consented to, dual agency, if applicable.

Buyer Initials: DS DS

7/7/2020 | 2:15 PM EDT

Seller Initials: DS

Pennsylvania Association of Realtors®

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rev.11/20; rel.6/20

1. **By this Agreement, dated** July 3, 2020 **, Seller hereby agrees to sell and convey to Buyer, who agrees to purchase, the identified Property.**

2. **PURCHASE PRICE AND DEPOSITS (3-15)**

(A) Purchase Price $ _____

(_____ U.S. Dollars), to be paid by Buyer as follows:

1. Initial Deposit, within _____ days (5 if not specified) of Execution Date, if not included with this Agreement: $ _____
2. Additional Deposit within _____ days of the Execution Date: $ _____
3. _____ $ _____

Remaining balance will be paid at settlement.

(B) **All funds paid by Buyer, including deposits, will be paid by check, cashier's check or wired funds. All funds paid by Buyer within 30 DAYS of settlement, including funds paid at settlement, will be by cashier's check or wired funds, but not by personal check.**

(C) Deposits, regardless of the form of payment and the person designated as payee, will be paid in U.S. Dollars to Broker for Seller (unless otherwise stated here: _____), who will retain deposits in an escrow account in conformity with all applicable laws and regulations until consummation or termination of this Agreement. Only real estate brokers are required to hold deposits in accordance with the rules and regulations of the State Real Estate Commission. Checks tendered as deposit monies may be held uncashed pending the execution of this Agreement.

3. **SETTLEMENT AND POSSESSION (6-13)**

(A) Settlement Date is September 18, 2020, or before if Buyer and Seller agree.

(B) Settlement will occur in the county where the Property is located or in an adjacent county, during normal business hours, unless Buyer and Seller agree otherwise.

(C) At time of settlement, the following will be pro-rated on a daily basis between Buyer and Seller, reimbursing where applicable: current taxes; rents; interest on mortgage assumptions; condominium fees and homeowner association fees; water and/or sewer fees, together with any other lienable municipal service fees. All charges will be pro-rated for the period(s) covered. Seller will pay up to and including the date of settlement and Buyer will pay for all days following settlement, unless otherwise stated here: _____

(D) For purposes of prorating real estate taxes, the "periods covered" are as follows:

1. Municipal tax bills for all counties and municipalities in Pennsylvania are for the period from January 1 to December 31.
2. School tax bills for the Philadelphia, Pittsburgh and Scranton School Districts are for the period from January 1 to December 31. School tax bills for all other school districts are for the period from July 1 to June 30.

(E) Conveyance from Seller will be by fee simple deed of special warranty unless otherwise stated here: _____

(F) Payment of transfer taxes will be divided equally between Buyer and Seller unless otherwise stated here: _____

(G) Possession is to be delivered by deed, existing keys and physical possession to a vacant Property free of debris, with all structures broom-clean, at day and time of settlement, unless Seller, before signing this Agreement, has identified in writing that the Property is subject to a lease.

(H) If Seller has identified in writing that the Property is subject to a lease, possession is to be delivered by deed, existing keys and assignment of existing leases for the Property, together with security deposits and interest, if any, at day and time of settlement. Seller will not enter into any new leases, nor extend existing leases, for the Property without the written consent of Buyer. Buyer will acknowledge existing lease(s) by initialing the lease(s) at the execution of this Agreement, unless otherwise stated in this Agreement.

☐ **Tenant-Occupied Property Addendum (PAR Form TOP) is attached and made part of this Agreement.**

4. **DATES/TIME IS OF THE ESSENCE (3-15)**

(A) Written acceptance of all parties will be on or before: July 8, 2020

(B) The Settlement Date and all other dates and times identified for the performance of any obligations of this Agreement are of the essence and are binding.

(C) The Execution Date of this Agreement is the date when Buyer and Seller have indicated full acceptance of this Agreement by signing and/or initialing it. For purposes of this Agreement, the number of days will be counted from the Execution Date, excluding the day this Agreement was executed and including the last day of the time period. **All changes to this Agreement should be initialed and dated.**

(D) The Settlement Date is not extended by any other provision of this Agreement and may only be extended by mutual written agreement of the parties.

(E) Certain terms and time periods are pre-printed in this Agreement as a convenience to the Buyer and Seller. All pre-printed terms and time periods are negotiable and may be changed by striking out the pre-printed text and inserting different terms acceptable to all parties, except where restricted by law.

5. **FIXTURES AND PERSONAL PROPERTY (6-20)**

(A) It is possible for certain items of personal property to be so integrated into the Property that they become fixtures and will be regarded as part of the Property and therefore included in a sale. Buyer and Seller are encouraged to be specific when negotiating what items will be included or excluded in this sale.

(B) INCLUDED in this sale are all existing items permanently installed in the Property, free of liens, including plumbing; heating; HVAC equipment; lighting fixtures (including chandeliers and ceiling fans); and water treatment systems, unless otherwise stated below; any remaining heating, cooking and other fuels stored on the Property at the time of settlement. Also included: _____

(C) The following items are not owned by Seller and may be subject to a lease or other financing agreement: _____

(D) EXCLUDED fixtures and items: _____

6. ZONING (4-14)

Failure of this Agreement to contain the zoning classification (except in cases where the property (and each parcel thereof, if subdividable) is zoned solely or primarily to permit single-family dwellings) will render this Agreement voidable at Buyer's option, and, if voided, any deposits tendered by the Buyer will be returned to the Buyer without any requirement for court action.

Zoning Classification, as set forth in the local zoning ordinance: VCI

7. FINANCING CONTINGENCY (4-14)

☐ WAIVED. This sale is NOT contingent on financing, although Buyer may obtain financing and/or the parties may include an appraisal contingency.

☒ ELECTED

DS (A) This sale is contingent upon Buyer obtaining financing according to the following terms: 7/8/2020 | 9:57 AM EDT

First Loan on the Property (80%	VSM)	Second Loan on the Property
Loan Amount $ _____		Loan Amount $ _____
Minimum Term _____		Minimum Term _____ years
Type of Loan _____		Type of Loan _____
Interest rate _____ %; however, Buyer agrees to accept the interest rate as may be committed by the lender, not to exceed a maximum interest rate of _____ %.		Interest rate _____ %; however, Buyer agrees to accept the interest rate as may be committed by the lender, not to exceed a maximum interest rate of _____ %.

(B) Financing Commitment Date August 31, 2020

(C) Within _____ days (10 if not specified) from the Execution Date of this Agreement, Buyer will make a completed, written application for the financing terms stated above to a responsible lender(s) of Buyer's choice. Broker for Buyer, if any, otherwise Broker for Seller, is authorized to communicate with the lender(s) to assist in the financing process.

(D) Should Buyer furnish false or incomplete information to Seller, Broker(s), or the lender(s) concerning Buyer's legal or financial status, or fail to cooperate in good faith in processing the financing application, which results in the lender(s) refusing to approve a financing commitment, Buyer will be in default of this Agreement.

(E) Upon receipt of a financing commitment, Buyer will promptly deliver a copy of the commitment to Seller. Unless otherwise agreed to in writing by Buyer and Seller, if a written commitment is not received by Seller by the above date, this Agreement may be terminated by Buyer or Seller, with all deposit monies returned to Buyer according to the terms of Paragraph 24. Buyer will be responsible for any premiums for mechanics' lien insurance and/or title search, or fee for cancellation of same, if any; AND/OR any premiums for flood insurance and/or fire insurance with extended coverage, insurance binder charges or cancellation fee, if any; AND/OR any appraisal fees and charges paid in advance to lender.

8. CHANGE IN BUYER'S FINANCIAL STATUS (5-20)

If a change in Buyer's financial status effects Buyer's ability to purchase, Buyer will, within _____ days (5 if not specified) of said change notify Seller and lender(s) to whom the Buyer submitted loan application, if any, in writing. A change in financial status includes, but is not limited to, loss or a change in income; Buyer's having incurred a new financial obligation; entry of a judgment against Buyer. Buyer understands that applying for and/or incurring an additional financial obligation may affect Buyer's ability to purchase.

9. SELLER REPRESENTATIONS (1-20)

(A) Status of Water

Seller represents that the Property is served by:

☒ Public Water ☐ Community Water ☐ On-site Water ☐ None ☐

(B) Status of Sewer

1. Seller represents that the Property is served by:

☒ Public Sewer ☐ Community Sewage Disposal System ☐ Ten-Acre Permit Exemption (see Sewage Notice 2)
☐ Individual On-lot Sewage Disposal System (see Sewage Notice 1) ☐ Holding Tank (see Sewage Notice 3)
☐ Individual On-lot Sewage Disposal System in Proximity to Well (see Sewage Notice 1; see Sewage Notice 4, if applicable)
☐ None (see Sewage Notice 1) ☐ None Available/Permit Limitations in Effect (see Sewage Notice 5)
☐

2. Notices Pursuant to the Pennsylvania Sewage Facilities Act

Notice 1: There is no currently existing community sewage system available for the subject property. Section 7 of the Pennsylvania Sewage Facilities Act provides that no person shall install, construct, request bid proposals for construction, alter, repair or occupy any building or structure for which an individual sewage system is to be installed, without first obtaining a permit. Buyer is advised by this notice that, before signing this Agreement, Buyer should contact the local agency charged with administering the Act to determine the procedure and requirements for obtaining a permit for an individual sewage system. The

Buyer Initials: VSM

Seller Initials: _____

local agency charged with administering the Act will be the municipality where the Property is located or that municipality working cooperatively with others.

Notice 2: This Property is serviced by an individual sewage system installed under the ten-acre permit exemption provisions of Section 7 of the Pennsylvania Sewage Facilities Act. (Section 7 provides that a permit may not be required before installing, constructing, awarding a contract for construction, altering, repairing or connecting to an individual sewage system where a ten-acre parcel or lot is subdivided from a parent tract after January 10, 1987). Buyer is advised that soils and site testing were not conducted and that, should the system malfunction, the owner of the Property or properties serviced by the system at the time of a malfunction may be held liable for any contamination, pollution, public health hazard or nuisance which occurs as a result.

Notice 3: This Property is serviced by a holding tank (permanent or temporary) to which sewage is conveyed by a water carrying system and which is designed and constructed to facilitate ultimate disposal of the sewage at another site. Pursuant to the Pennsylvania Sewage Facilities Act, Seller must provide a history of the annual cost of maintaining the tank from the date of its installation or December 14, 1995, whichever is later.

Notice 4: An individual sewage system has been installed at an isolation distance from a well that is less than the distance specified by regulation. The regulations at 25 Pa. Code §73.13 pertaining to minimum horizontal isolation distances provide guidance. Subsection (b) of §73.13 states that the minimum horizontal isolation distance between an individual water supply or water supply system suction line and treatment tanks shall be 50 feet. Subsection (c) of §73.13 states that the horizontal isolation distance between the individual water supply or water supply system suction line and the perimeter of the absorption area shall be 100 feet.

Notice 5: This lot is within an area in which permit limitations are in effect and is subject to those limitations. Sewage facilities are not available for this lot and construction of a structure to be served by sewage facilities may not begin until the municipality completes a major planning requirement pursuant to the Pennsylvania Sewage Facilities Act and regulations promulgated thereunder.

(C) Seller represents and warrants that Seller has no knowledge except as noted in this Agreement that: (1) The premises have been contaminated by any substance in any manner which requires remediation; (2) The Property contains wetlands, flood plains, or any other environmentally sensitive areas, development of which is limited or precluded by law; (3) The Property contains asbestos, polychlorinated biphenyls, lead-based paint or any other substance, the removal or disposal of which is subject to any law or regulation; and (4) Any law has been violated in the handling or disposing of any material or waste or the discharge of any material into the soil, air, surface water, or ground water.

(D) Seller agrees to indemnify and to hold Broker harmless from and against all claims, demands, or liabilities, including attorneys fees and court costs, which arise from or are related to the environmental condition or suitability of the Property prior to, during, or after Seller's occupation of the Property including without limitation any condition listed in Paragraph 9(C).

(E) Seller is not aware of historic preservation restrictions regarding the Property unless otherwise stated here: _____

(F) Seller represents that, as of the date Seller signed this Agreement, no public improvement, condominium or homeowner association assessments have been made against the Property which remain unpaid, and that no notice by any government or public authority has been served upon Seller or anyone on Seller's behalf, including notices relating to violations of zoning, housing, building, safety or fire ordinances that remain uncorrected, and that Seller knows of no condition that would constitute a violation of any such ordinances that remain uncorrected, unless otherwise specified here: _____

(G) Seller knows of no other potential notices (including violations) and/or assessments except as follows: _____

(H) Access to a public road may require issuance of a highway occupancy permit from the Department of Transportation.

(I) **Internet of Things (IoT) Devices**

1. The presence of smart and green home devices that are capable of connecting to the Internet, directly or indirectly, and the data stored on those various devices make up a digital ecosystem in the Property sometimes referred to as the "Internet of Things (IoT)." Buyer and Seller acknowledge that IoT devices may transmit data to third parties outside of the control of their owner.
2. On or before settlement, Seller will make a reasonable effort to clear all data stored on all IoT devices located on the Property and included in the sale. Seller further acknowledges that all personal devices owned by Seller (including but not limited to cellular telephones, personal computers and tablets) having connectivity to any IoT device(s) located on the Property will be disconnected and cleared of relevant data prior to settlement. Further, no attempts will be made after settlement by Seller or anyone on Seller's behalf to access any IoT devices remaining on the Property.
3. Following settlement, Buyer will make a reasonable effort to clear all stored data from any IoT device(s) remaining on the Property and to restrict access to said devices by Seller, Seller's agents or any third party to whom Seller may have previously provided access. This includes, but is not limited to, restoring IoT devices to original settings, changing passwords or codes, updating network settings and submitting change of ownership and contact information to device manufacturers and service providers.
4. This paragraph will survive settlement.

10. WAIVER OF CONTINGENCIES (9-05)

If this Agreement is contingent on Buyer's right to inspect and/or repair the Property, or to verify insurability, environmental conditions, boundaries, certifications, zoning classification or use, or any other information regarding the Property, Buyer's failure to exercise any of Buyer's options within the times set forth in this Agreement is a WAIVER of that contingency and Buyer accepts the Property and agrees to the RELEASE in Paragraph 26 of this Agreement.

11. **BUYER'S DUE DILIGENCE (3-15)**

☐ **WAIVED.** This sale is NOT contingent upon the results of any inspection(s), although Buyer may inspect the Property (including fixtures and any personal property specifically listed herein). Buyer agrees to purchase the Property **IN ITS PRESENT CONDITION**, regardless of the results of any inspection(s) or findings that Buyer may learn of after the Execution Date of this Agreement.

☒ **ELECTED.** This sale IS contingent upon the results of inspection(s). It is Buyer's responsibility to determine that the condition and permitted use of the property is satisfactory. Buyer may, within _____ days (30 if not specified) from the Execution Date of this Agreement, conduct due diligence (Due Diligence Period), which includes, but is not limited to, verifying that the condition, permitted use, insurability, environmental conditions, boundaries, certifications, deed restrictions, zoning classifications and any other features of the Property are satisfactory. Buyer may request that the property be inspected, at Buyer's expense, by qualified professionals to determine the physical, structural, mechanical and environmental condition of the land, improvements or their components, or for the suitability of the property for Buyer's needs. If, as the result of Buyer's due diligence, Buyer determines that the Property is not suitable for Buyer's needs, Buyer may, prior to the expiration of the Due Diligence Period, terminate this Agreement by written notice to Seller, with all deposit monies returned to Buyer according to the terms of Paragraph 24 of this Agreement. In the event that Buyer has not provided Seller with written notice of Buyer's intent to terminate this Agreement prior to the end of the Due Diligence Period, this Agreement shall remain in full force and effect in accordance with the terms and conditions as more fully set forth in this Agreement.

(A) **Buyer has been given the opportunity to inspect the Property** (including fixtures and any personal property specifically listed herein) **and, subject to the Due Diligence contingency if elected, agrees to purchase the Property IN ITS PRESENT CONDITION unless the parties agree otherwise in writing. Buyer's decision to purchase the Property is a result of Buyer's own inspections and determinations and not because of or in reliance on any representations made by Seller or any other party.** Buyer acknowledges that Brokers, their licensees, employees, officers or partners have not made an independent examination or determination of the structural soundness of the Property, the age or condition of the components, environmental conditions, the permitted uses, nor of conditions existing in the locale where the Property is situated; nor have they made a mechanical inspection of any of the systems contained therein.

(B) Any repairs required by this Agreement will be completed in a workmanlike manner.

(C) Revised flood maps and changes to Federal law may substantially increase future flood insurance premiums or require insurance for formerly exempt properties. Buyer should consult with one or more insurance agents regarding the need for flood insurance and possible premium increases.

12. **NOTICES, ASSESSMENTS AND MUNICIPAL REQUIREMENTS (4-14)**

(A) In Pennsylvania, taxing authorities (school districts and municipalities) and property owners may appeal the assessed value of a property at the time of sale, or at any time thereafter. A successful appeal by a taxing authority may result in a higher assessed value for the property and an increase in property taxes. Also, periodic county-wide property reassessments may change the assessed value of the property and result in a change in property tax.

(B) With the exception of county-wide reassessments, assessment appeal notices, notices of change in millage rates or increases in rates, in the event any other notices, including violations, and/or assessments are received after Seller has signed this Agreement and before settlement, Seller will within _____ days (10 if not specified) of receiving the notices and/or assessments provide a copy of the notices and/or assessments to Buyer and will notify Buyer in writing that Seller will:

1. Fully comply with the notices and/or assessments, at Seller's expense, before settlement. If Seller fully complies with the notices and/or assessments, Buyer accepts the Property and agrees to the RELEASE in Paragraph 26 of this Agreement, OR
2. Not comply with the notices and/or assessments. If Seller chooses not to comply with the notices and/or assessments, or **fails within the stated time to notify Buyer whether Seller will comply,** Buyer will notify Seller in writing within _____ days (10 if not specified) that Buyer will:
   a. Comply with the notices and/or assessments at Buyer's expense, accept the Property, and agree to the RELEASE in Paragraph 26 of this Agreement, OR
   b. Terminate this Agreement by written notice to Seller, with all deposit monies returned to Buyer according to the terms of Paragraph 24 of this Agreement.

If Buyer fails to respond within the time stated in Paragraph 12(B) (2) or fails to terminate this Agreement by written notice to Seller within that time, **Buyer will accept the Property** and agree to the RELEASE in Paragraph 26 of this Agreement.

(C) If required by law, within 30 DAYS from the Execution Date of this Agreement, but in no case later than 15 DAYS prior to Settlement Date, Seller will order at Seller's expense a certification from the appropriate municipal department(s) disclosing notice of any uncorrected violations of zoning, housing, building, safety or fire ordinances and/or a certificate permitting occupancy of the Property. If Buyer receives a notice of any required repairs/improvements, Buyer will promptly deliver a copy of the notice to Seller.

(D) Seller has no knowledge of any current or pending condemnation or eminent domain proceedings that would affect the Property. If any portion of the Property should be subject to condemnation or eminent domain proceedings after the signing of this Agreement, Seller shall immediately advise Buyer, in writing, of such proceedings. Buyer will have the option to terminate this Agreement by written notice to Seller within _____ days (15 days if not specified) after Buyer learns of the filing of such proceedings, with all deposit monies returned to Buyer according to the terms of Paragraph 24 of this Agreement. **Buyer's failure to provide notice of termination within the time stated will constitute a WAIVER of this contingency and all other terms of this Agreement remain in full force and effect.**

13. **TAX DEFERRED EXCHANGE (4-14)**

(A) If Seller notifies Buyer that it wishes to enter into a tax deferred exchange for the Property pursuant to the Internal Revenue Code, Buyer agrees to cooperate with Seller in connection with such exchange, including the execution of such documents as may be reasonably necessary to conduct the exchange, provided that there shall be no delay in the agreed-to settlement date, and that any

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additional costs associated with the exchange are paid solely by Seller. Buyer is aware that Seller anticipates assigning Seller's interest in this Agreement to a third party under an Exchange Agreement and consents to such assignment. Buyer shall not be required to execute any note, contract, deed or other document providing any liability which would survive the exchange, nor shall Buyer be obligated to take title to any property other than the Property described in this Agreement. Seller shall indemnify and hold harmless Buyer against any liability which arises or is claimed to have arisen from any aspect of the exchange transaction

(B) If Buyer notifies Seller that it wishes to enter into a tax deferred exchange for the Property pursuant to the Internal Revenue Code, Seller agrees to cooperate with Buyer in connection with such exchange, including the execution of such documents as may be reasonably necessary to conduct the exchange, provided that there shall be no delay in the agreed-to settlement date, and that any additional costs associated with the exchange are paid solely by Buyer. Seller is aware that Buyer has assigned Buyer's interest in this Agreement to a third party under an Exchange Agreement and consents to such assignment. Seller shall not be required to execute any note, contract, deed or other document providing any liability which would survive the exchange. Buyer shall indemnify and hold harmless Seller against any liability which arises or is claimed to have arisen from any aspect of the exchange transaction.

14. COMMERCIAL CONDOMINIUM (10-01)

[X] NOT APPLICABLE.

[ ] APPLICABLE. Buyer acknowledges that the condominium unit to be transferred by this Agreement is intended for nonresidential use, and that Buyer may agree to modify or waive the applicability of certain provisions of the Uniform Condominium Act of Pennsylvania (68 Pa.C.S. §3101 *et seq.*).

15. TITLES, SURVEYS AND COSTS (6-20)

(A) The Property will be conveyed with good and marketable title that is insurable by a reputable title insurance company at the regular rates, free and clear of all liens, encumbrances, and easements, exceptng however the following: existing deed restrictions; historic preservation restrictions or ordinances; building restrictions; ordinances; easements of roads; easements visible upon the ground; easements of record; and privileges or rights of public service companies, if any.

(B) Buyer will pay for the following: (1) Title search, title insurance and/or mechanics' lien insurance, or any fee for cancellation; (2) Flood insurance, fire insurance, hazard insurance, mine subsidence insurance, or any fee for cancellation; (3) Appraisal fees and charges paid in advance to mortgage lender; (4) Buyer's customary settlement costs and accruals.

(C) Any survey or surveys required by the title insurance company or the abstracting company for preparing an adequate legal description of the Property (or the correction thereof) will be obtained and paid for by Seller. Any survey or surveys desired by Buyer or required by the mortgage lender will be obtained and paid for by Buyer.

(D) If a change in Seller's financial status affects Seller's ability to convey title to the Property as set forth in this Agreement on or before the Settlement Date, or any extension thereof, Seller shall, within _____ days (5 if not specified) notify Buyer, in writing. A change in financial status includes, but is not limited to, Seller filing bankruptcy; filing of a foreclosure law suit against the Property; entry of a monetary judgment against Seller; notice of public tax sale affecting the Property; and Seller learning that the sale price of the Property is no longer sufficient to satisfy all liens and encumbrances against the Property. In the event of the death of Seller, the representative of the estate, or a surviving Seller shall immediately notify Buyer

(E) If Seller is unable to give good and marketable title that is insurable by a reputable title insurance company at the regular rates, as specified in Paragraph 15(A), Buyer may terminate this Agreement by written notice to Seller, or take such title as Seller can convey. If the title condition precludes Seller from conveying title, Buyer's sole remedy shall be to terminate this Agreement. Upon termination, all deposit monies shall be returned to Buyer according to the terms of Paragraph 24 of this Agreement and Seller will reimburse Buyer for any costs incurred by Buyer for any inspections or certifications obtained according to the terms of this Agreement, and for those items specified in Paragraph 15(B) items (1), (2), (3) and in Paragraph 15(C).

(F) Oil, gas, mineral, or other rights of this Property may have been previously conveyed or leased, and Sellers make no representation about the status of those rights unless indicated elsewhere in this Agreement.

[ ] **Oil, Gas and Mineral Rights Addendum (PAR Form OGM) is attached and made part of this Agreement.**

(G) **COAL NOTICE (Where Applicable)**

THIS DOCUMENT MAY NOT SELL, CONVEY, TRANSFER, INCLUDE OR INSURE THE TITLE TO THE COAL AND RIGHTS OF SUPPORT UNDERNEATH THE SURFACE LAND DESCRIBED OR REFERRED TO HEREIN, AND THE OWNER OR OWNERS OF SUCH COAL MAY HAVE THE COMPLETE LEGAL RIGHT TO REMOVE ALL SUCH COAL AND IN THAT CONNECTION, DAMAGE MAY RESULT TO THE SURFACE OF THE LAND AND ANY HOUSE, BUILDING OR OTHER STRUCTURE ON OR IN SUCH LAND. (This notice is set forth in the manner provided in Section 1 of the Act of July 17, 1957, P.L. 984.) "Buyer acknowledges that he may not be obtaining the right of protection against subsidence resulting from coal mining operations, and that the property described herein may be protected from damage due to mine subsidence by a private contract with the owners of the economic interests in the coal. This acknowledgement is made for the purpose of complying with the provisions of Section 14 of the Bituminous Mine Subsidence and the Land Conservation Act of April 27, 1966." Buyer agrees to sign the deed from Seller which deed will contain the aforesaid provision.

(H) The Property is not a "recreational cabin" as defined in the Pennsylvania Construction Code Act unless otherwise stated here: _____

(I) 1. This property is not subject to a Private Transfer Fee Obligation unless otherwise stated here: _____

[ ] **Private Transfer Fee Addendum (PAR Form PTF) is attached and made part of this Agreement.**

2. **Notice Regarding Private Transfer Fees:** In Pennsylvania, Private Transfer Fees are defined and regulated in the Private Transfer Fee Obligation Act (Act 1 of 2011; 68 Pa.C.S. §§ 8101, et. seq.), which defines a Private Transfer Fee as "a fee that is payable upon the transfer of an interest in real property, or payable for the right to make or accept the transfer, if the obligation to pay the fee or charge runs with title to the property or otherwise binds subsequent owners of property, regardless of whether the fee or charge is a fixed amount or is determined as a percentage of the value of the property, the purchase price or other consideration given for the transfer." A Private Transfer Fee must be properly recorded to be binding, and sellers must

disclose the existence of the fees to prospective buyers. Where a Private Transfer Fee is not properly recorded or disclosed, the Act gives certain rights and protections to buyers.

16. MAINTENANCE AND RISK OF LOSS (10-06)

(A) Seller will maintain the Property, grounds, fixtures and personal property specifically listed in this Agreement in its present condition, normal wear and tear excepted.

(B) Seller will promptly notify the Buyer if, at any time prior to the time of settlement, all or any portion of the Property is destroyed, or damaged as a result of any cause whatsoever.

(C) Seller bears the risk of loss from fire or other casualties until settlement. If any property included in this sale is destroyed and not replaced, Buyer will:

1. Accept the Property in its then current condition together with the proceeds of any insurance recovery obtainable by Seller, OR
2. Terminate this Agreement by written notice to Seller, with all deposit monies returned to Buyer according to the terms of Paragraph 24 of this Agreement.

17. RECORDING (9-05)

This Agreement will not be recorded in the Office of the Recorder of Deeds or in any other office or place of public record. If Buyer causes or permits this Agreement to be recorded, Seller may elect to treat such act as a default of this Agreement.

18. ASSIGNMENT (1-10)

This Agreement is binding upon the parties, their heirs, personal representatives, guardians and successors, and to the extent assignable, on the assigns of the parties hereto. Buyer will not transfer or assign this Agreement without the written consent of Seller unless otherwise stated in this Agreement. Assignment of this Agreement may result in additional transfer taxes.

19. GOVERNING LAW, VENUE AND PERSONAL JURISDICTION (9-05)

(A) The validity and construction of this Agreement, and the rights and duties of the parties, will be governed in accordance with the laws of the Commonwealth of Pennsylvania.

(B) The parties agree that any dispute, controversy or claim arising under or in connection with this Agreement or its performance by either party submitted to a court shall be filed exclusively by and in the state or federal courts sitting in the Commonwealth of Pennsylvania. Seller understands that any documentation provided under this provision may be disclosed to the Internal Revenue Service by Buyer, and that any false statements contained therein could result in punishment by fine, imprisonment, or both.

20. NOTICE REGARDING CONVICTED SEX OFFENDERS (MEGAN'S LAW) (6-13)

The Pennsylvania General Assembly has passed legislation (often referred to as "Megan's Law," 42 Pa.C.S. § 9791 et seq.) providing for community notification of the presence of certain convicted sex offenders. **Buyers are encouraged to contact the municipal police department or the Pennsylvania State Police** for information relating to the presence of sex offenders near a particular property, or to check the information on the Pennsylvania State Police Web site at www.pameganslaw.state.pa.us.

21. CERTIFICATION OF NON-FOREIGN INTEREST (10-01)

☐ Seller **IS** a foreign person, foreign corporation, foreign partnership, foreign trust, or foreign estate subject to Section 1445 of the Internal Revenue Code, which provides that a transferee (Buyer) of a U.S. real property interest must withhold tax if the transferor (Seller) is a foreign person.

☒ Seller is **NOT** a foreign person, foreign corporation, foreign partnership, foreign trust, or a foreign estate as defined by the Internal Revenue Code, or is otherwise not subject to the tax withholding requirements of Section 1445 of the Internal Revenue Code. To inform Buyer that the withholding of tax is not required upon the sale/disposition of the Property by Seller, Seller hereby agrees to furnish Buyer, at or before closing, with the following:

☐ An affidavit stating, under penalty of perjury, the Seller's U.S. taxpayer identification number and that the Seller is not a foreign person.

☐ A "qualifying statement," as defined by statute, that tax withholding is not required by Buyer.

☐ Other: _____

22. REPRESENTATIONS (1-10)

(A) All representations, claims, advertising, promotional activities, brochures or plans of any kind made by Seller, Brokers, their licensees, employees, officers or partners are not a part of this Agreement unless expressly incorporated or stated in this Agreement. This Agreement contains the whole agreement between Seller and Buyer, and there are no other terms, obligations, covenants, representations, statements or conditions, oral or otherwise, of any kind whatsoever concerning this sale. This Agreement will not be altered, amended, changed or modified except in writing executed by the parties.

(B) Broker(s) have provided or may provide services to assist unrepresented parties in complying with this Agreement.

23. BROKER INDEMNIFICATION (6-13)

(A) Buyer and Seller represent that the only Brokers involved in this transaction are: **HomeStarr Realty and Long & Foster Real Estate Inc**

and that the transaction has not been brought about through the efforts of anyone other than said Brokers. It is agreed that if any claims for brokerage commissions or fees are ever made against Buyer or Seller in connection with this transaction, each party shall pay its own legal fees and costs in connection with such claims. It is further agreed that Buyer and Seller agree to indemnify and hold harmless each other and the above-listed Brokers from and against the non-performance of this Agreement by either party, and from any claim of loss or claim for brokerage commissions, including all legal fees and costs, that may be made by any person or entity. This paragraph shall survive settlement.

(B) Seller and Buyer acknowledge that any Broker identified in this Agreement: (1) Is a licensed real estate broker; (2) Is not an expert in construction, engineering, code or regulatory compliance or environmental matters and was not engaged to provide advice or guidance in such matters, unless otherwise stated in writing; and (3) Has not made and will not make any representations or warranties nor conduct investigations of the environmental condition or suitability of the Property or any adjacent property, including but not limited to those conditions listed in Paragraph 9(C).

24. DEFAULT, TERMINATION AND RETURN OF DEPOSITS (1-18)

(A) Where Buyer terminates this Agreement pursuant to any right granted by this Agreement, Buyer will be entitled to a return of all deposit monies paid on account of Purchase Price pursuant to the terms of Paragraph 24(B), and this Agreement will be VOID. Termination of this Agreement may occur for other reasons giving rise to claims by Buyer and/or Seller for the deposit monies.

(B) Regardless of the apparent entitlement to deposit monies, Pennsylvania law does not allow a Broker holding deposit monies to determine who is entitled to the deposit monies when settlement does not occur. Broker can only release the deposit monies:

1. If this Agreement is terminated prior to settlement and there is no dispute over entitlement to the deposit monies. A written agreement signed by both parties is evidence that there is no dispute regarding deposit monies.
2. If, after Broker has received deposit monies, Broker receives a written agreement that is signed by Buyer and Seller, directing Broker how to distribute some or all of the deposit monies.
3. According to the terms of a final order of court.
4. According to the terms of a prior written agreement between Buyer and Seller that directs the Broker how to distribute the deposit monies if there is a dispute between the parties that is not resolved. (See Paragraph 24 (C))

(C) Buyer and Seller agree that if there is a dispute over the entitlement to deposit monies that is unresolved 15 days (180 if not specified) days after the Settlement Date stated in Paragraph 3(A) (or any written extensions thereof) or following date of termination of the Agreement, whichever is earlier, then the Broker holding the deposit monies will, within 30 days of receipt of Buyer's written request, distribute the deposit monies to Buyer unless the Broker is in receipt of verifiable written notice that the dispute is the subject of litigation or mediation. If Broker has received verifiable written notice of litigation or mediation prior to the receipt of Buyer's request for distribution, Broker will continue to hold the deposit monies until receipt of a written distribution agreement between Buyer and Seller or a final court order. Buyer and Seller are advised to initiate litigation or mediation for any portion of the deposit monies prior to any distribution made by Broker pursuant to this paragraph. Buyer and Seller agree that the distribution of deposit monies based upon the passage of time does not legally determine entitlement to deposit monies, and that the parties maintain their legal rights to pursue litigation even after a distribution is made.

(D) Buyer and Seller agree that Broker who holds or distributes deposit monies pursuant to the terms of Paragraph 24 or Pennsylvania law will not be liable. Buyer and Seller agree that if any Broker or affiliated licensee is named in litigation regarding deposit monies, the attorneys' fees and costs of the Broker(s) and licensee(s) will be paid by the party naming them in litigation.

(E) Seller has the option of retaining all sums paid by Buyer, including the deposit monies, should Buyer:

1. Fail to make any additional payments as specified in Paragraph 2, OR
2. Furnish false or incomplete information to Seller, Broker(s), or any other party identified in this Agreement concerning Buyer's legal or financial status, OR
3. Violate or fail to fulfill and perform any other terms or conditions of this Agreement.

(F) **Unless otherwise checked in Paragraph 24(G),** Seller may elect to retain those sums paid by Buyer, including deposit monies:

1. On account of purchase price, OR
2. As monies to be applied to Seller's damages, OR
3. As liquidated damages for such default.

(G) [X] **SELLER IS LIMITED TO RETAINING SUMS PAID BY BUYER, INCLUDING DEPOSIT MONIES, AS LIQUIDATED DAMAGES.**

(H) If Seller retains all sums paid by Buyer, including deposit monies, as liquidated damages pursuant to Paragraph 24 (F) or (G), Buyer and Seller are released from further liability or obligation and this Agreement is VOID.

(I) Brokers and licensees are not responsible for unpaid deposits.

25. ARBITRATION OF DISPUTES (1-00)

Buyer and Seller agree to arbitrate any dispute between them that cannot be amicably resolved. After written demand for arbitration by either Buyer or Seller, each party will select a competent and disinterested arbitrator. The two so selected will select a third. If selection of the third arbitrator cannot be agreed upon within 30 days, either party may request that selection be made by a judge of a court of record in the county in which arbitration is pending. Each party will pay its chosen arbitrator, and bear equally expenses for the third and all other expenses of arbitration. Arbitration will be conducted in accordance with the provisions of Pennsylvania Common Law Arbitration 42 Pa. C.S.A. §7341 *et seq.* This agreement to arbitrate disputes arising from this Agreement will survive settlement.

26. RELEASE (9-05)

Buyer releases, quit claims and forever discharges SELLER, ALL BROKERS, their LICENSEES, EMPLOYEES and any OFFICER or PARTNER of any one of them and any other PERSON, FIRM or CORPORATION who may be liable by or through them, from any and all claims, losses or demands, including, but not limited to, personal injury and property damage and all of the consequences thereof, whether known or not, which may arise from the presence of termites or other wood-boring insects, radon, lead-based paint hazards, mold, fungi or indoor air quality, environmental hazards, any defects in the individual on-lot sewage disposal system or deficiencies in the on-site water service system, or any defects or conditions on the Property. Should Seller be in default under the terms of this Agreement or in violation of any Seller disclosure law or regulation, this release does not deprive Buyer of any right to pursue any remedies that may be available under law or equity. This release will survive settlement.

27. REAL ESTATE RECOVERY FUND (1-18)

A Real Estate Recovery Fund exists to reimburse any persons who have obtained a final civil judgment against a Pennsylvania real estate licensee (or a licensee's affiliates) owing to fraud, misrepresentation, or deceit in a real estate transaction and who have been unable to collect the judgment after exhausting all legal and equitable remedies. For complete details about the Fund, call (717) 783-3658.

28. COMMUNICATIONS WITH BUYER AND/OR SELLER (6-13)

Wherever this Agreement contains a provision that requires or allows communication/delivery to a Buyer, that provision shall be satisfied by communication/delivery to the Broker for Buyer, if any, except where required by law. If there is no Broker for Buyer, those provisions may be satisfied only by communication/delivery being made directly to the Buyer, unless otherwise agreed to by the

parties. Wherever this Agreement contains a provision that requires or allows communication/delivery to a Seller, that provision shall be satisfied by communication/delivery to the Broker for Seller, if any. If there is no Broker for Seller, those provisions may be satisfied only by communication/delivery being made directly to the Seller, unless otherwise agreed to by the parties.

29. NOTICE BEFORE SIGNING (4-14)

Unless otherwise stated in writing, Buyer and Seller acknowledge that Brokers are not experts in legal or tax matters and that Brokers have not made, nor will they make, any representations or warranties nor conduct research of the legal or tax ramifications of this Agreement. Buyer and Seller acknowledge that Brokers have advised them to consult and retain experts concerning the legal and tax effects of this Agreement and the completion of the sale, as well as the condition and/or legality of the Property, including, but not limited to, the Property's improvements, equipment, soil, tenancies, title and environmental aspects. Buyer and Seller acknowledge receipt of a copy of this Agreement at the time of signing. **This Agreement may be executed in one or more counterparts,** each of which shall be deemed to be an original and which counterparts together shall constitute one and the same Agreement of the Parties. **WHEN SIGNED, THIS AGREEMENT IS A BINDING CONTRACT.** Return of this Agreement, and any addenda and amendments ,including return by electronic transmission, bearing the signatures of all parties, constitutes acceptance by the parties.

30. SPECIAL CLAUSES (4-14)

(A) The following are part of this Agreement if checked:

- [X] Appraisal Contingency Addendum to Agreement of Sale (PAR Form ACA)
- [ ] Short Sale Addendum to Agreement of Sale (PAR Form SHS)
- [X] Zoning Approval Contingency Addendum to Agreement of Sale (PAR Form ZA)
- [ ] _____
- [ ] _____
- [ ] _____

(B) Additional Terms:

DSA Buyer has received the Consumer Notice, where applicable, as adopted by the State Real Estate Commission at 49 Pa. Code §35.336.

DSA Buyer has received a statement of Buyer's estimated closing costs before signing this Agreement.

DSA Buyer has received the Deposit Money Notice (for cooperative sales when Broker for Seller is holding deposit money) before signing this Agreement.

BUYER Dhaval Shah And/Or Assigns **DATE** 7/7/2020 | 2:15 PM EDT
Dhaval Shah And/Or Assigns
Mailing Address _____
Phone(s) _____ Fax _____ Email whitemarshdentistry@gmail.com
BUYER _____ **DATE** _____

Mailing Address _____
Phone(s) _____ Fax _____ Email _____
BUYER _____ **DATE** _____

Mailing Address _____
Phone(s) _____ Fax _____ Email _____
AUTHORIZED REPRESENTATIVE _____
Title _____
COMPANY _____

Seller has received the Consumer Notice, where applicable, as adopted by the State Real Estate Commission at 49 Pa. Code § 35.336. Seller has received a statement of Seller's estimated closing costs before signing this Agreement.

VOLUNTARY TRANSFER OF CORPORATE ASSETS (if applicable): The undersigned acknowledges that he/she is authorized by the Board of Directors to sign this Agreement on behalf of the Seller corporation and that this sale does not constitute a sale, lease, or exchange of all or substantially all the property and assets of the corporation, such as would require the authorization or consent of the shareholders pursuant to 15 P.S. §1311.

SELLER _____ **DATE** 7/7/2020
505 A Germantown Pike Associates
Mailing Address _____
Phone(s) _____ Fax _____ Email _____
SELLER _____ **DATE** _____

Mailing Address _____
Phone(s) _____ Fax _____ Email _____
SELLER _____ **DATE** _____

Mailing Address _____
Phone(s) _____ Fax _____ Email _____
AUTHORIZED REPRESENTATIVE _____
Title _____
COMPANY _____

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ADDENDUM/ENDORSEMENT TO AGREEMENT OF SALE

ASA

This form recommended and approved for, but not restricted to use by, the members of the Pennsylvania Association of Realtors®(PAR).

PROPERTY 505 1/2 Germantown Pike Lafayette Hill PA 19444

SELLER 505 A Germantown Pike Associates

BUYER Dhaval R. Shah And/Or Assigns ~~Ketav Shah~~ DSM

DATE OF AGREEMENT 07/03/20

Waiver of Certain Planned Community Act Provisions. The Property is intended for non-residential use. Accordingly, as permitted by the Pennsylvania Uniform Planned Community Act, 68 Pa C.S.A. §5101, et seq. (the "Act"), the parties intend and agree that Chapter 54 of the Act shall be inapplicable to the sale of the Property from Seller to Buyer. Without limiting the generality of the preceding sentence, none of the Seller, the developer, and the condominium association shall be subject to the requirements of the Act relating to (i) delivery of the Public Offering Statement, (ii) escrow deposit monies, (iii) Section 5409 of the Act (relating to release of liens with respect to units), (iv) Section 5410 of the Act (relating to communities containing conversion buildings), (v) Buyer's right of rescission, (vi) the warranty against structural defects with respect to the units contained in Section 5411 of the Act, (vii) the provisions of Sections 5412 and 5413 of the Act (relating to effect of violations on rights of action and labeling of promotional material), and (viii) the requirements of Section 5414 of the Act (relating to the execution and filing of certificates of substantial completion with respect to the units). As a material condition of the Agreement of Sale, Buyer waives the benefits of such provisions and any right to require Seller, the developer, and the condominium association to comply with such provisions. This release survives settlement and does not merge into or with the deed for the Property.

All other terms and conditions of the Agreement of Sale remain unchanged and in full force and effect.

WITNESS	BUYER DocuSigned by: Dhaval Shah And/Or Assigns 0983E5522BEB4FA	DATE 7/7/2020 | 2:15 PM
WITNESS	BUYER	DATE
WITNESS	BUYER DocuSigned by:	DATE
WITNESS	SELLER EFB14817903042D...	DATE 7/7/2020
WITNESS	SELLER	DATE
WITNESS	SELLER	DATE

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9/02

APPRAISAL CONTINGENCY ADDENDUM TO AGREEMENT OF SALE

ACA

This form recommended and approved for, but not restricted to use by, the members of the Pennsylvania Association of Realtors® (PAR).

PROPERTY 505-1/2 GERMANTOWN PIKE, LAFAYETTE HILL, PA 19444
SELLER 505A Germantown Pike Associates
BUYER Dhaval Shah And/Or Assigns

1. The Agreement of Sale is contingent upon the Property being appraised (in a manner that is acceptable to underwriter if Buyer is obtaining financing) and at a value that is equal to or higher than:
   - [ ] $ _____
   - [x] The Purchase Price

2. Contingency Period: 45 days (30 if not specified) from the Execution Date of the Agreement.
   Within the Contingency Period, Buyer may obtain an appraisal of the Property from a Pennsylvania certified appraiser. If Buyer is obtaining financing, the appraisal shall be performed by a Pennsylvania certified appraiser selected by the lender to whom Buyer has made application for financing. If Buyer is not obtaining financing, the appraisal shall be performed by a Pennsylvania certified appraiser selected by Buyer.
   (A) If the terms of Paragraph 1 are satisfied, or if the appraisal is not completed within the Contingency Period, Buyer accepts the Property and agrees to the terms of the RELEASE paragraph of the Agreement of Sale.
   (B) If the terms of Paragraph 1 are not satisfied, Buyer will deliver a copy of the appraisal report to Seller, and Buyer will, within the **Contingency Period:**
      1. **Terminate the Agreement of Sale** by written notice to Seller, with all deposit monies returned to Buyer according to the terms of the Agreement of Sale, OR
      2. Enter into a mutually acceptable written agreement with Seller.

3. If Buyer does not terminate the Agreement of Sale or enter into a mutually acceptable written agreement with Seller **within this Contingency Period,** Buyer waives this contingency.

All other terms and conditions of the Agreement of Sale remain unchanged and in full force and effect.

BUYER	DocuSigned by: Dhaval Shah And/Or Assigns D993E5228FB4F4...	**DATE**	7/7/2020 | 2:15 PM EDT
BUYER		**DATE**	
BUYER	DocuSigned by:	**DATE**	
SELLER	EF8140179039420...	**DATE**	7/7/2020
SELLER		**DATE**	
SELLER		**DATE**	

COPY RIGHT PENNSYLVANIA ASSOCIATION OF REALTORS® 2015
03/15
Homestarr Realty, 858 Easton Rd Warrington PA 18976 Phone: 7324317861 Fax: 2672825666 505 A Germantown
Jay Shah
Produced with zipForm® by zipLogix 18070 Fifteen Mile Road, Fraser, Michigan 48026 www.zipLogix.com

ZONING APPROVAL CONTINGENCY ADDENDUM TO AGREEMENT OF SALE

ZA

This form recommended and approved for, but not restricted to use by, the members of the Pennsylvania Association of Realtors® (PAR).

PROPERTY 505-1/2 GERMANTOWN PIKE, LAFAYETTE HILL, PA 19444
SELLER 505A Germantown Pike Associates
BUYER Dhaval Shah And/Or Assigns
DATE OF AGREEMENT July 3, 2020

☒ **VERIFICATION OF ZONING FOR PROPOSED USE CONTINGENCY**

1. **Contingency Period:** 45 days (15 days if not specified) from the Execution Date of the Agreement of Sale. **Within the Contingency Period,** Buyer, at Buyer's expense, may verify that Buyer's proposed use of the Property as **Dental Office** is permitted under the current zoning classification for the Property and is not prohibited by any other governmental land use restrictions.
2. If Buyer's proposed use of the Property is not permitted, Buyer will, within the Contingency Period, notify Seller in writing that the proposed use of the Property is not permitted, and Buyer will:
   (A) Accept the Property and agree to the terms of the RELEASE paragraph of the Agreement of Sale, OR
   (B) Terminate the Agreement of Sale by written notice to Seller, with all deposit monies returned to Buyer according to the terms of the Agreement of Sale.
   (C) Enter into a mutually acceptable written agreement with Seller.
   If Buyer and Seller do not reach a written agreement during the Contingency Period and Buyer does not terminate the Agreement of Sale by written notice to Seller within that time, Buyer will accept the Property and agree to the RELEASE paragraph of the Agreement of Sale.

☐ **CHANGE OF ZONING/MUNICIPAL APPROVAL FOR PROPOSED USE CONTINGENCY**

1. Within ____ DAYS of the Execution Date of the Agreement of Sale (15 days if not specified), Buyer will make a formal written application for zoning approval, variance, non-conforming use, or special exception from _____ (municipality) to use the Property as _____ (proposed use). Buyer will pay for applications, legal representation, and any other costs associated with the application and approval process.
2. If the municipality requires the application to be signed by the current owner, Seller agrees to do so.
3. If final, unappealable approval is not obtained by _____, Buyer will:
   (A) Accept the Property with the current zoning and agree to the terms of the RELEASE paragraph of the Agreement of Sale, OR
   (B) Terminate the Agreement of Sale by written notice to Seller, with all deposit monies returned to Buyer according to the terms of the Agreement of Sale, OR
   (C) Enter into a mutually acceptable written agreement with Seller.
   If Buyer and Seller do not reach a written agreement before the time specified in paragraph 3, and Buyer does not terminate the Agreement of Sale by written notice to Seller within that time, Buyer will accept the Property and agree to the terms of the RELEASE paragraph of the Agreement of Sale.

All other terms and conditions of the Agreement of Sale remain unchanged and in full force and effect.

BUYER DocuSigned by: Dhaval Shah And/Or Assigns **DATE** 7/7/2020 | 2:15 PM EDT
Dhaval Shah And/Or Assigns

BUYER _____ **DATE** _____

BUYER _____ **DATE** _____

SELLER DocuSigned by: [signature] **DATE** 7/7/2020
505A Germantown Pike Associates

SELLER _____ **DATE** _____

SELLER _____ **DATE** _____

Pennsylvania Association of Realtors®
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12/13

DEED BK 6156 PG 01827 to 01832.1
INSTRUMENT # : 2019070762
RECORDED DATE: 10/07/2019 12:41:41 PM

5688407-0016

RECORDER OF DEEDS
MONTGOMERY COUNTY
Jeanne Sorg

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

MONTGOMERY COUNTY ROD

OFFICIAL RECORDING COVER PAGE

Document Type: Deed of Confirmation	**Transaction #:** 5924015 - 14 Doc (s)
Document Date: 10/02/2019	**Document Page Count:** 5
Reference Info:	**Operator Id:** ppiyakan

RETURN TO: (Mail)
SECURITY ABSTRACT OF PA, INC.
1741 VALLEY FORGE RD
P.O. BOX 1060
WORCESTER, PA 19490

PAID BY:
SECURITY ABSTRACT OF PA INC

*** PROPERTY DATA:**

Parcel ID #:	65-00-04333-00-3
Address:	505 1/2 GERMANTOWN PIKE A PA
Municipality:	Whitemarsh Township (100%)
School District:	Colonial

*** ASSOCIATED DOCUMENT(S):**

CONSIDERATION/SECURED AMT: [redacted]

FEES / TAXES:

Recording Fee:Deed of Confirmation	[redacted]
Affidavit Fee	[redacted]
Additional Pages Fee	[redacted]
Affordable Housing Pages	[redacted]
Total:	[redacted]

DEED BK 6156 PG 01827 to 01832.1
Recorded Date: 10/07/2019 12:41:41 PM
I hereby CERTIFY that this document is recorded in the Recorder of Deeds Office in Montgomery County, Pennsylvania.

RECORDER'S OFFICE MONTGOMERY COUNTY, PA

Jeanne Sorg

Jeanne Sorg
Recorder of Deeds

Rev1a 2016-01-29

PLEASE DO NOT DETACH

THIS PAGE IS NOW PART OF THIS LEGAL DOCUMENT

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

Digitally signed 07/22/2020 by montgomery.county.rod@kofile.us

Certified and Digitally Signed

Validation may require Adobe 'Windows Integration'

Prepared by: Unruh, Turner, Burke & Frees
P.O. Box 515
West Chester, PA 19381-0515
610.692.1371

RECORDER OF DEEDS
2019 OCT -7 A 10: 55

Return to: Unruh, Turner, Burke & Frees
P.O. Box 515
West Chester, PA 19381-0515
610.692.1371

MONTGOMERY COUNTY COMMISSIONERS REGISTRY
65-00-04333-00-3 WHITEMARSH
505 1/2 GERMANTOWN PIKE A
505A GERMANTOWN PIKE ASSOCIATES $15.00
B 022K U 025 L 98 4321 DATE: 10/07/2019 JW

Parcel ID No. 65-00-04333-00-3.

----------[Space Above This Line For Recording Data]----------

SPA 46448

DEED OF CONFIRMATION

THIS INDENTURE is made this 2nd day of October, 2019, but effective as of this 2nd day of October, 2019, by and between 505A GERMANTOWN PIKE ASSOCIATES, L.P., a Pennsylvania limited partnership ("Grantor") and 505A GERMANTOWN PIKE ASSOCIATES, L.P., a Pennsylvania limited partnership ("Grantee").

BACKGROUND

The real estate more particularly described herein was granted and conveyed unto Grantor as part of a larger tract of real estate ("505A Germantown Pike") containing approximately 2.92 acres and described in that certain indenture dated August 12, 1999 and recorded in the office of the Recorder of Deeds in and for Montgomery County, Pennsylvania at Deed Book 5287, page 264.

On or about September 11, 2019, Grantor and 507 Germantown Pike Associates, L.P., a Pennsylvania limited partnership recorded with the office of the Recorder of Deeds in and for Montgomery County, Pennsylvania at Deed Book 6152, page 2857, that certain Declaration of The Knolls of Whitemarsh Planned Community dated September 10, 2019 (the "Declaration"), creating with respect to 505A Germantown Pike and certain contiguous properties, a mixed-use planned community known as "The Knolls of Whitemarsh Planned Community" and creating two (2) Commercial Units (as described in the Declaration) known as Unit 14 and Unit 15, nine (9) single-family townhome-style residential units, four (4) single-family detached residential units, and common elements.

THIS DEED IS BEING RECORDED FOR THE SOLE PURPOSE OF CONFIRMING OF RECORD THE OWNER OF UNIT 14 BY REASON OF THE RECORDING OF THE DECLARATION.

WITNESSETH, that in consideration of the sum of One Dollar ($1.00) lawful money of the United States of America, in hand paid, the receipt of which is hereby acknowledged, Grantor has granted, bargained, and sold, released and confirmed, and by these presents does grant, bargain, and sell, release and confirm unto Grantee, its successors and assigns,

eCertified copy of recorded # 2019070762 (page 2 of 7)
Montgomery County Recorder of Deeds

ALL THAT CERTAIN parcel of land situate in Whitemarsh Township, Montgomery County, Commonwealth of Pennsylvania, as more fully described on Exhibit "A" attached hereto and made a part hereof, being Unit 14 in "The Knolls of Whitemarsh Planned Community" as described according to the Declaration.

TOGETHER WITH an undivided interest in the common elements described in the Declaration and the right to use the limited common elements described in the Declaration appurtenant to Unit 14.

UNDER AND SUBJECT to all provisions, easements, and obligations as set forth in the Declaration including, but not limited to, the obligation to pay the share of common expense assessments allocated to Unit 14 and limited common elements, if any, pursuant to the terms of the Declaration.

AND UNDER AND SUBJECT to that certain PCSM Instrument for the Declaration of Restrictions and Covenants intended to be recorded in the office of the Recorder of Deeds in and for Montgomery County, Pennsylvania immediately prior to the recording of this Deed, the terms of which are incorporated herein by reference.

AND UNDER AND SUBJECT, to all easements, restrictions, covenants, and like matters now of record, to the extent the same are valid, subsisting, enforceable, and affect title to Unit 14.

TOGETHER with all and singular the buildings and improvements, ways, streets, alleys, driveways, passages, waters, water-courses, rights, liberties, privileges, hereditaments, and appurtenances, whatsoever unto Unit 14 belonging, or in anyway appertaining, and the reversions and remainders, rents, issues, and profits thereof; and all the estate, right, title, interest, property, claim, and demand whatsoever of Grantor, as well at law as in equity, of, in, and to the same.

TO HAVE AND TO HOLD Unit 14, with the hereditaments and premises hereby granted, or mentioned or intended so to be, with the appurtenances, unto Grantee, its successors and assigns, to and for the only proper use and benefit of Grantee, its successors and assigns, forever, subject as aforesaid.

AND Grantor, for itself and its successors and assigns, does covenant, promise, and agree to and with Grantee, its successors and assigns, by these presents, that Grantor, and its successors and assigns, all and singular the hereditaments and premises hereby granted or mentioned and intended so to be, with the appurtenances, unto Grantee, its successors and assigns, against it, Grantor, and its successors and assigns, and against all and every person and persons whomsoever lawfully claiming or to claim the same or any part thereof, by, from, or under it, them, or any of them, shall and will, *subject as aforesaid*, WARRANT and forever DEFEND.

[INTENTIONALLY BLANK – SIGNATURE PAGE FOLLOWS]

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Montgomery County Recorder of Deeds

IN WITNESS WHEREOF, Grantor has caused this Deed to be executed by its duly authorized general partner, on the day and year first above written.

505A GERMANTOWN PIKE ASSOCIATES, L.P.
By: Real Estate Services, Inc., its general partner

By: _____
Michael A. Nolen, President

The address of Grantee is:

100 Springhouse Drive, Suite 205
Collegeville, PA 19426

_____
On behalf of Grantee

eCertified copy of recorded # 2019070762 (page 4 of 7)
Montgomery County Recorder of Deeds

COMMONWEALTH OF PENNSYLVANIA :
: SS
COUNTY OF MONTGOMERY :

On the 2nd day of October, 2019, before me the undersigned, a notary public for the Commonwealth of Pennsylvania personally appeared MICHAEL A. NOLEN, who acknowledged himself to be the President of REAL ESTATE SERVICES, INC., the general partner of 505A GERMANTOWN PIKE ASSOCIATES, L.P., and that he as such officer, being authorized to do so, executed the foregoing instrument for the purposes herein contained by signing the name of the limited liability company by himself as such officer.

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

John A. Barbary
Notary Public

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
John A. Barbary, Notary Public
Earl Twp., Berks County
My Commission Expires Nov. 6, 2019
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

eCertified copy of recorded # 2019070762 (page 5 of 7)
Montgomery County Recorder of Deeds

EXHIBIT "A"
LEGAL DESCRIPTION OF UNIT 14

ALL THAT CERTAIN TRACT OF LAND situate in the Township of Whitemarsh, County of Montgomery, Commonwealth of Pennsylvania in accordance with a plan entitled "Land Development Plan", prepared for 505A Germantown Pike Associates, L.P. by Irick, Eberhardt & Mientus, Inc., dated March 21, 2017, last revised June 12, 2019 bounded and described as follows:

BEGINNING AT AN INTERIOR POINT, said point being located S 56°53'00" E, 28.69 feet from a point on the Ultimate Right-of-way of Germantown Pike (40' half width) in line of lands now or late of Westaway Associates LP;

Thence from said point of beginning the following eight (8) courses and distances:

1. N 71°34'48" E, 10.21 feet to a point;
2. N 18°19'19" W, 1.09 feet to a point;
3. N 71°35'13" E, 4.10 feet to a point;
4. S 18°07'01" E, 1.10 feet to a point;
5. N 71°35'13" E, 45.85 feet to a point;
6. S 18°24'47" E, 32.41 feet to a point;
7. S 71°35'13" W, 60.14 feet to a point;
8. N 18°26'55" W, 32.41 feet to the POINT OF BEGINNING.

CONTAINING: 1954 square feet or 0.0449 acres of land, more or less.

BEING Parcel Identification No. 65-00-04333-00-3.

BEING PART OF the same premises which Realty Operations Co., a partnership by indenture dated August 12, 1999 and recorded in the office of the Recorder of Deeds in and for Montgomery County, Pennsylvania at Deed Book 5287, page 264 granted and conveyed unto 505A Germantown Pike Associates, L.P., a Pennsylvania limited partnership, in fee.

eCertified copy of recorded # 2019070762 (page 6 of 7)
Montgomery County Recorder of Deeds

pennsylvania DEPARTMENT OF REVENUE (EX) MOD 04-19 (FI)

REV-183

BUREAU OF INDIVIDUAL TAXES
PO BOX 280603
HARRISBURG, PA 17128-0603

1830019105

REALTY TRANSFER TAX STATEMENT OF VALUE

COMPLETE EACH SECTION

RECORDER'S USE ONLY
State Tax Paid: 0
Book: 6156 Page: 1827
Instrument Number:
Date Recorded: 10-7-2019

SECTION I TRANSFER DATA

Date of Acceptance of Document: 10 02 2019

Grantor(s)/Lessor(s)	Telephone Number	Grantee(s)/Lessee(s)	Telephone Number
505A Germantown Pike Associates, L.P.	610-783-5800	505A Germantown Pike Associates, L.P.	610-783-5800
Mailing Address: 100 Springhouse Drive, Suite 205		Mailing Address: 100 Springhouse Drive, Suite 205	
City: Collegeville / State: PA / ZIP Code: 19426		City: Collegeville / State: PA / ZIP Code: 19426	

SECTION II REAL ESTATE LOCATION

Street Address	City, Township, Borough
505 1/2 Germantown Pike	Whitemarsh Township

County	School District	Tax Parcel Number
Montgomery	Colonial	65-00-04333-00-3

SECTION III VALUATION DATA

Was transaction part of an assignment or relocation? ☐ YES ☒ NO

1. Actual Cash Consideration	2. Other Consideration	3. Total Consideration
1.00	+ 0	= 1.00
4. County Assessed Value	5. Common Level Ratio Factor	6. Computed Value
[redacted]	X 2.03	= [redacted]

SECTION IV 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]	100 %	100 %

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 and all amendments.)
- ☐ Transfer from a trust. (Attach complete copy of trust agreement and all amendments.)
- ☐ 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 (Provide a detailed explanation of exemption claimed. If more space is needed attach additional sheets.)

This Deed is being recorded for the sole purpose of confirming of record the owner of Unit 14 by reason of the recording of the Declaration.

SECTION V CORRESPONDENT INFORMATION - All inquiries may be directed to the following person:

Name	Telephone Number
Security Abstract of PA, Inc.	(610) 584-6890

Mailing Address	City	State	ZIP Code
1741 Valley Forge Road, P.O. Box 1060	Worcester	PA	19490

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
Security Abstract of PA, Inc., By: [signature]	10-02-2019

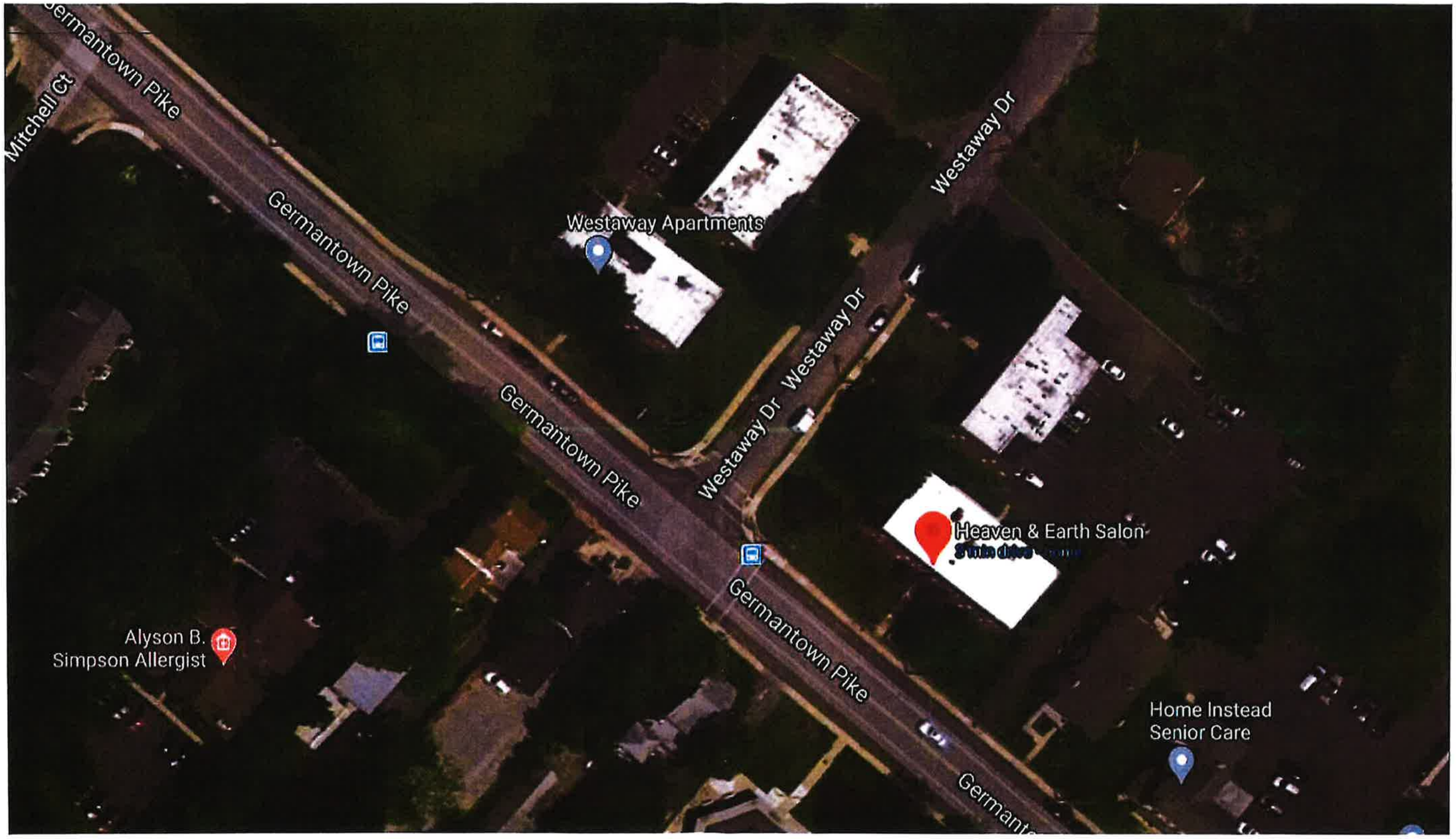
FAILURE TO COMPLETE THIS FORM PROPERLY OR ATTACH REQUESTED DOCUMENTATION MAY RESULT IN THE RECORDER'S REFUSAL TO RECORD THE DEED.

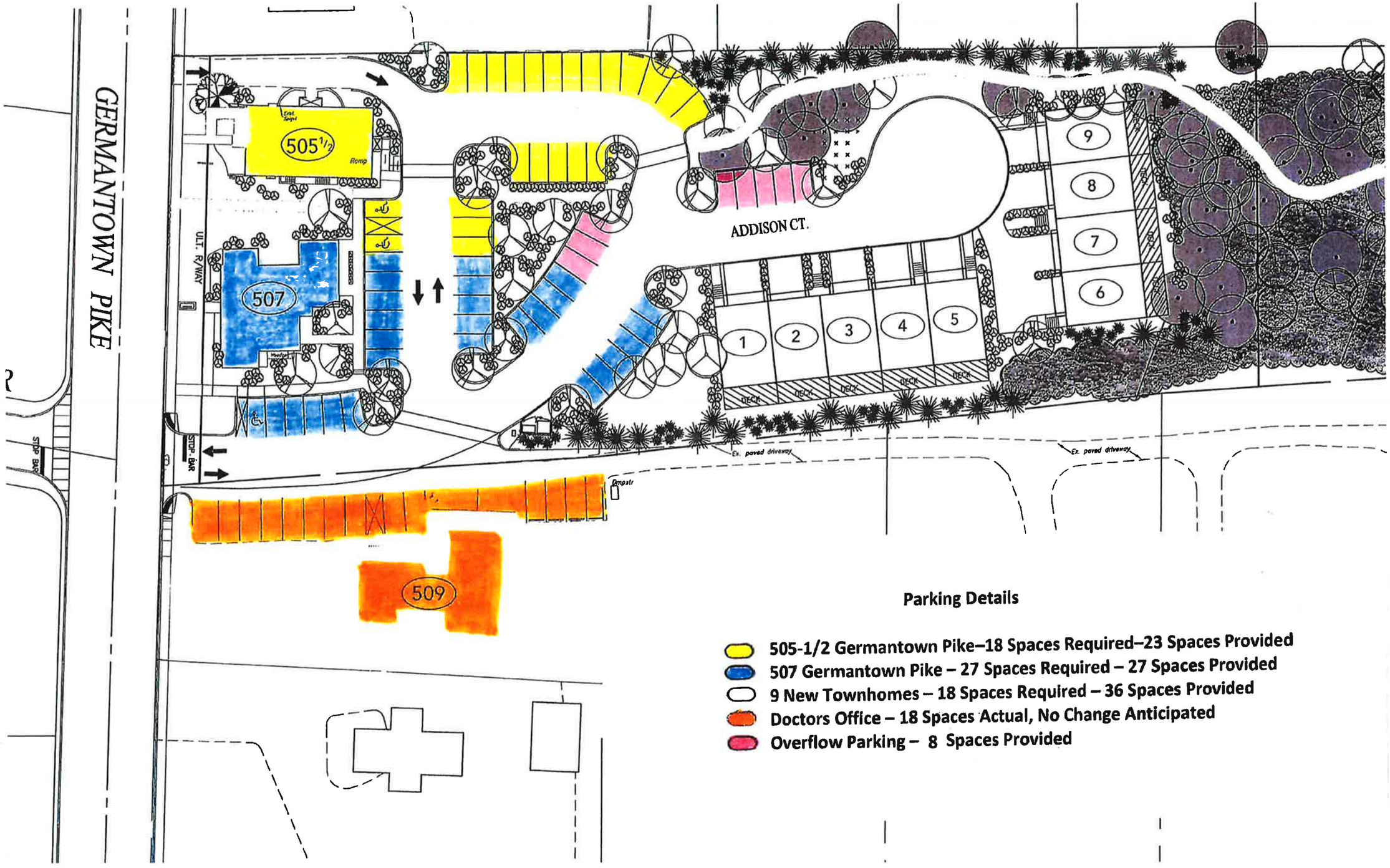
1830019105

1830019105

eCertified copy of recorded # 2019070762 (page 7 of 7)
Montgomery County Recorder of Deeds

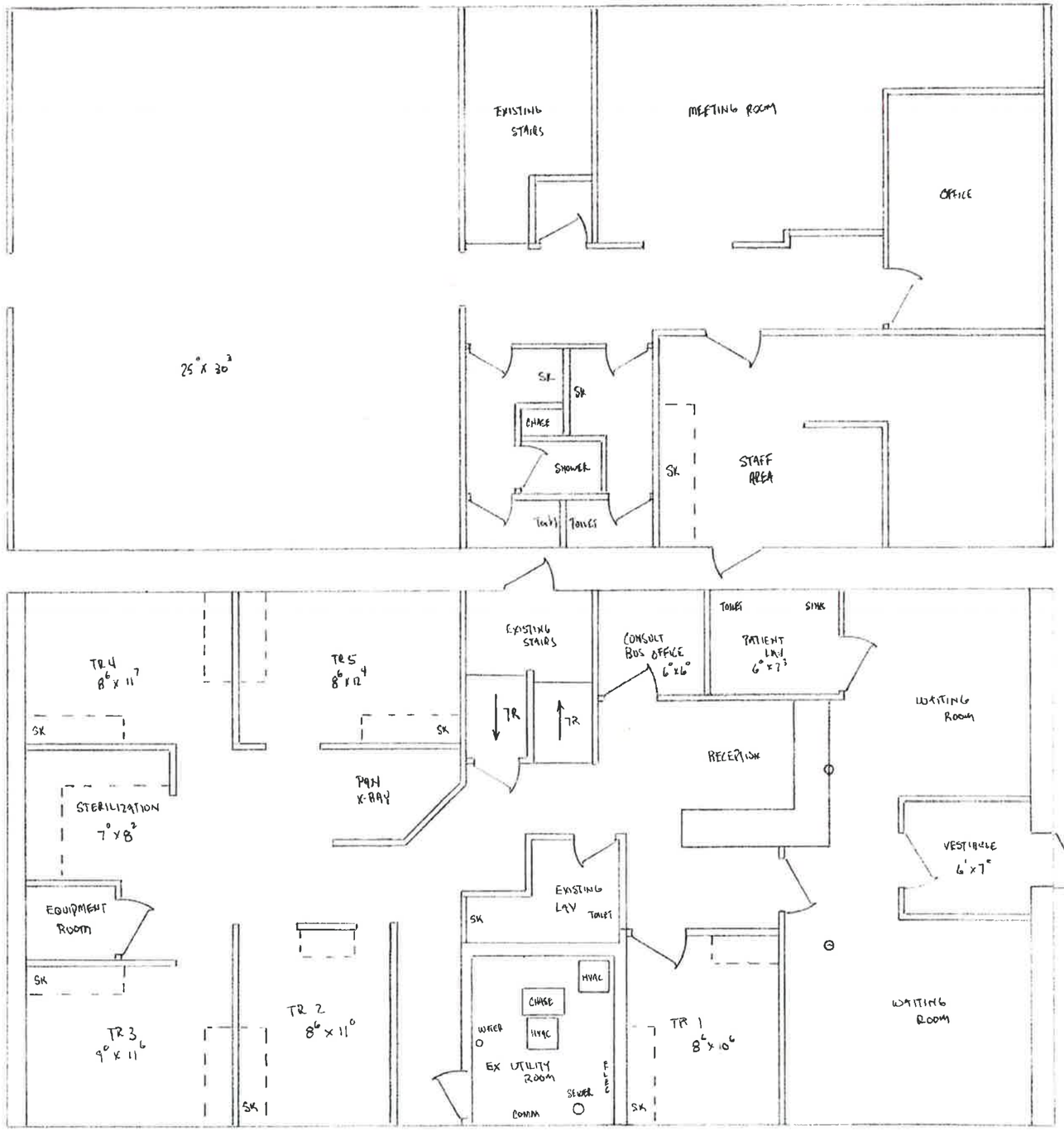
Google Maps Heaven & Earth Salon





Parking Details

- 505-1/2 Germantown Pike–18 Spaces Required–23 Spaces Provided
- 507 Germantown Pike – 27 Spaces Required – 27 Spaces Provided
- 9 New Townhomes – 18 Spaces Required – 36 Spaces Provided
- Doctors Office – 18 Spaces Actual, No Change Anticipated
- Overflow Parking – 8 Spaces Provided



UPPER LEVEL
ALL ROOMS EXISTING
≈ 1680 SQ FT

LOWER LEVEL
≈ 1680 SQ.FT.

DENTAL OFFICE

SCALE: 1/4" = 1'	APPROVED BY:	DRAWN BY
DATE		REVISED

505 1/2 GERMANTOWN PIKE, LAFAYETTE HILL, PA

DRAWING NUMBER

505½

Whitemarsh TOWNSHIP

616 GERMANTOWN PIKE - LAFAYETTE HILL, PA 19444-1821
TEL: 610-825-3535 FAX: 610-825-9416
www.whitemarshtwp.org

BOARD of SUPERVISORS

Laura Boyle Nester – Chair
Fran McCusker – Vice Chair
Michael Drossner
Vincent Manuele
Jacy Toll

Richard L. Mellor, Jr.
Township Manager

July 31, 2020

Dhaval Shah
400 R Germantown Pike
Lafayette Hill, PA 19444

Re: Conditional Use #02-20 Proposed Dental Office
505½ Germantown Pike; Lafayette Hill, PA
Zoning Ordinance Compliance Review

Dear Dr. Shah:

Please accept this as a review of the Zoning Ordinance compliance issues for the above referenced Conditional Use Application, proposing a Dental Office under Section 116-290.C.(3) of the Whitemarsh Township Zoning Ordinance. This review is based upon your Conditional Use Application and accompanying documentation submitted on July 24, 2020, for 505½ Germantown Pike. We understand that you have this property under agreement of sale; we have been provided with a redacted copy of same.

The property at 505½ Germantown Pike is in the VC-1 Village Commercial District, sub-district 1.

The following are the zoning issues identified that are associated with this proposal:

1. §116-37.F.(1)-(8) — Testimony must be provided to allow the Board of Supervisors to make determinations as required in these sections, for all conditional use requests.

2. §116-184.G. — All parking shall conform to the requirements of the Whitemarsh Township Fire Prevention Code as enacted and amended. The applicant must obtain approval from the Whitemarsh Township Fire Marshal. (A separate report will be provided from the Fire Marshal.) The parking spaces devoted to this building are existing and include portions of parking areas shared with adjacent uses.

3. §116-290.C.(3) — This section permits "medical/dental office" as a conditional use in the VC-1 Village Commercial District, sub-district 1. This application proposes a use under this section and conditional use approval is being sought based upon it.

4. §116-292. — This section contains requirements that must be met for all conditional uses in the Village Commercial District. Testimony must therefore be provided to demonstrate compliance with all applicable provisions of this section.

Should you have any questions, please do not hesitate to contact me.

Very truly yours,

Charles L. Guttenplan, AICP
Director of Planning and Zoning/Zoning Officer

cc: Richard L. Mellor, Jr., Township Manager
Robert A. Sztubinski, B.C.O., Director of Building and Codes
Nick Weaver, Fire Marshal
Sean P. Kilkenny, Esq., Township Solicitor
505A Germantown Pike Associates, LP, Property Owner
Edward J. Hughes, Esq., Applicant's Attorney

WHITEMARSH TOWNSHIP

To: Charlie L. Guttenplan, Director of Planning & Zoning/Zoning Officer

From: NICHOLAS W. WEAVER, FIRE MARSHAL

Subject: **CU #02-20 Dhaval Shah-Dental Use (505 1/2 Germantown Pike)**

Date: August 11, 2020

cc:

This application cannot be approved at this time for the following outstanding items:

1. Fire Apparatus Access Road widths are not provided. The one way entrance shall have a clear width of 12' & the two way entrance shall have a clear width of 24' as required by Ordinance #484.

Nicholas W. Weaver
Fire Marshal
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2614
Email: nweaver@whitemarshtwp.org

BEFORE THE PLANNING COMMISSION OF WHITEMARSH TOWNSHIP
APPLICATION OF DHAVAL SHAH
RE: 505½ GERMANTOWN PIKE - CONDITIONAL USE - DENTAL OFFICE

HEARING EXHIBITS

EXHIBITS:

A-4 Aerial Photograph
A-5 Subdivision and Land Development Plan
A-6 Excerpt from Subdivision and Land Development Plan
A-7 Parking Details
A-9 Photographs (4)
A-10 Floor Plan

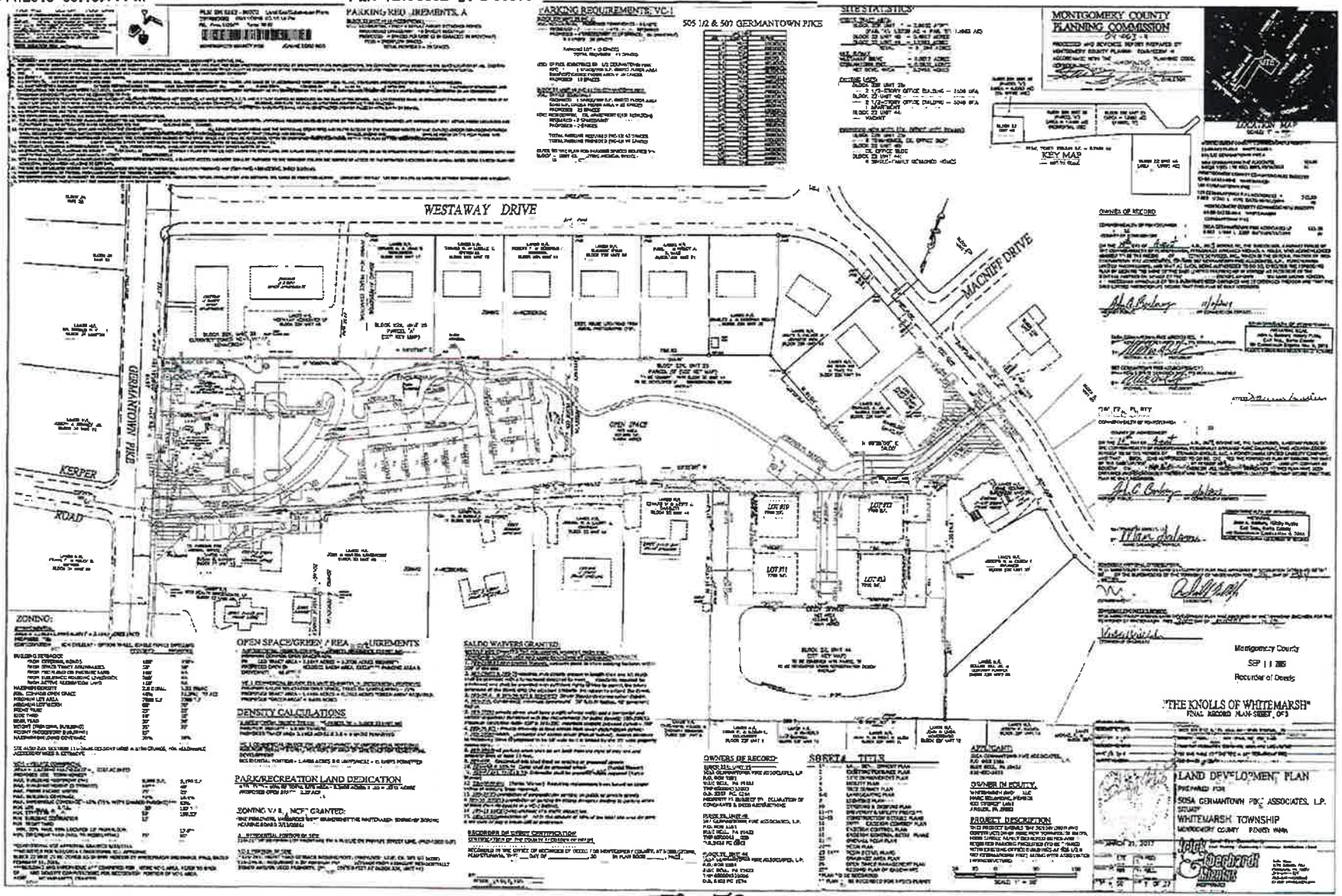
EXHIBIT

A-4

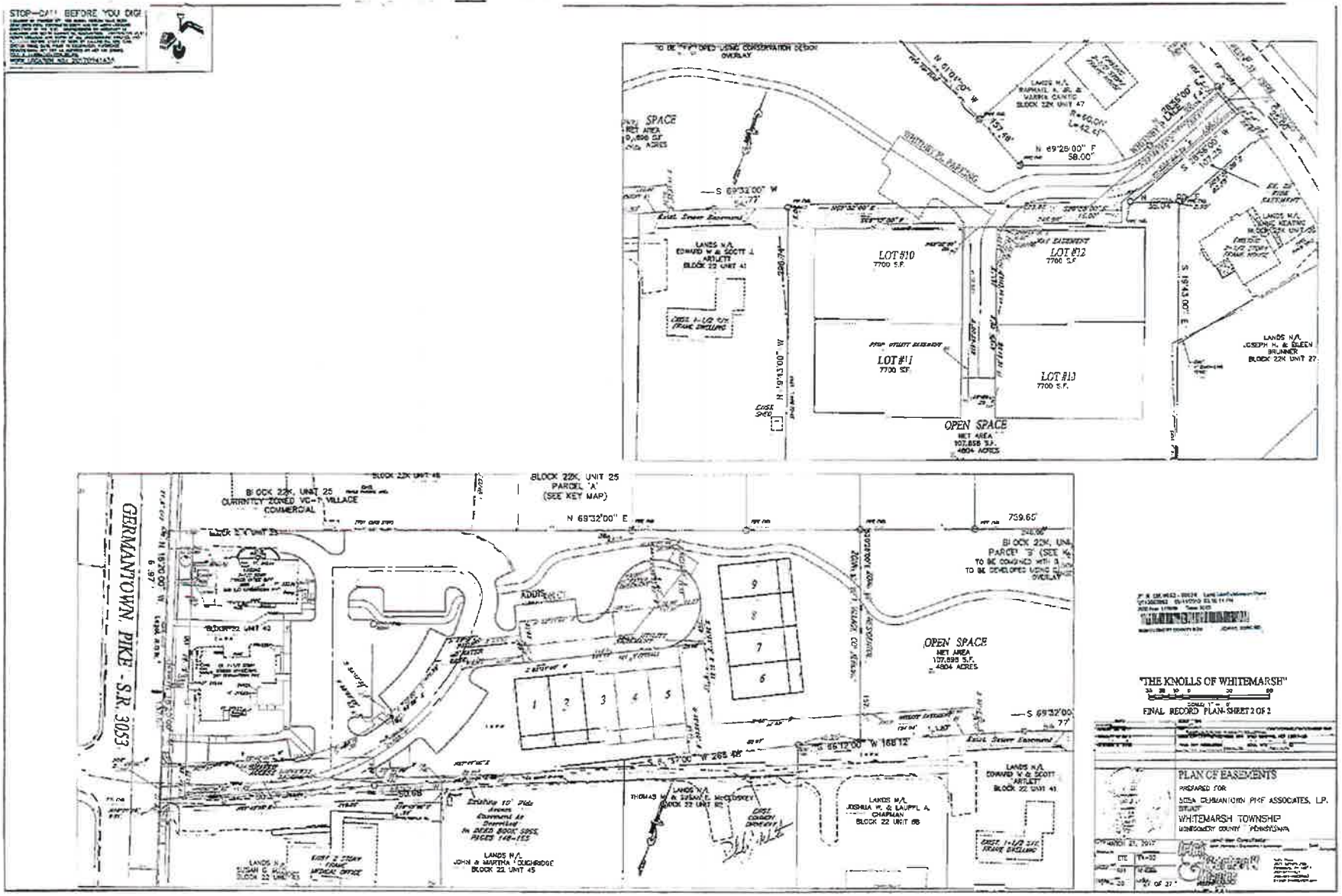
Google Maps

EXHIBIT

A-5



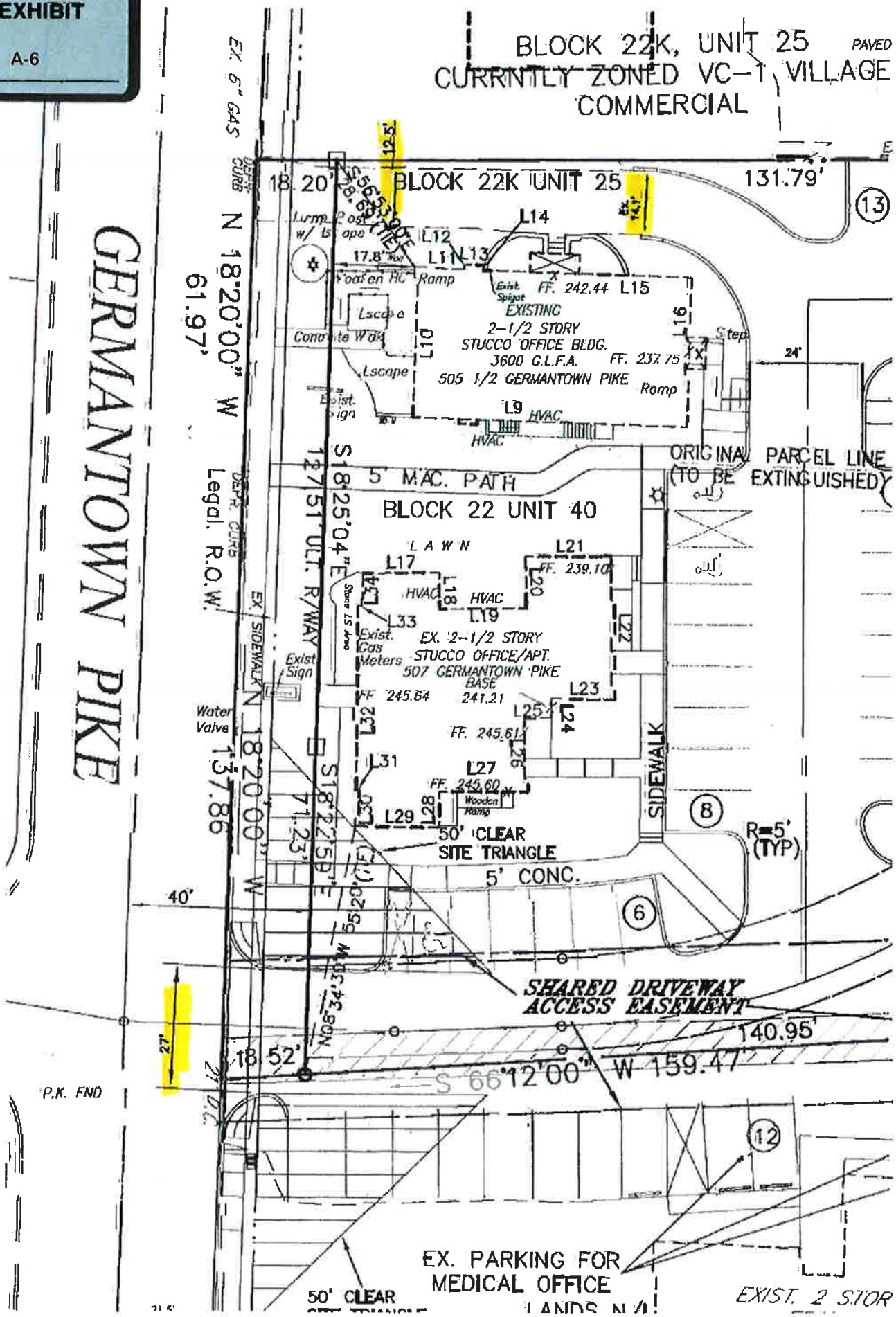
52-73.-74


LOT #10
7700 S.F.
LOT #12
7700 S.F.
LOT #11
7700 S.F.
LOT #13
7700 S.F.
OPEN SPACE
GERMANTOWN PIKE - S.R. 3053
BLOCK 22K, UNIT 25
PARCEL 'A'
(SEE KEY MAP)
OPEN SPACE
"THE KNOLLS OF WHITEMARSH"
FINAL RECORD PLAN-SHEET 2 OF 2
PLAN OF EASEMENTS
PREPARED FOR
SOSH GERMANTOWN PIKE ASSOCIATES, L.P.
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

52-74

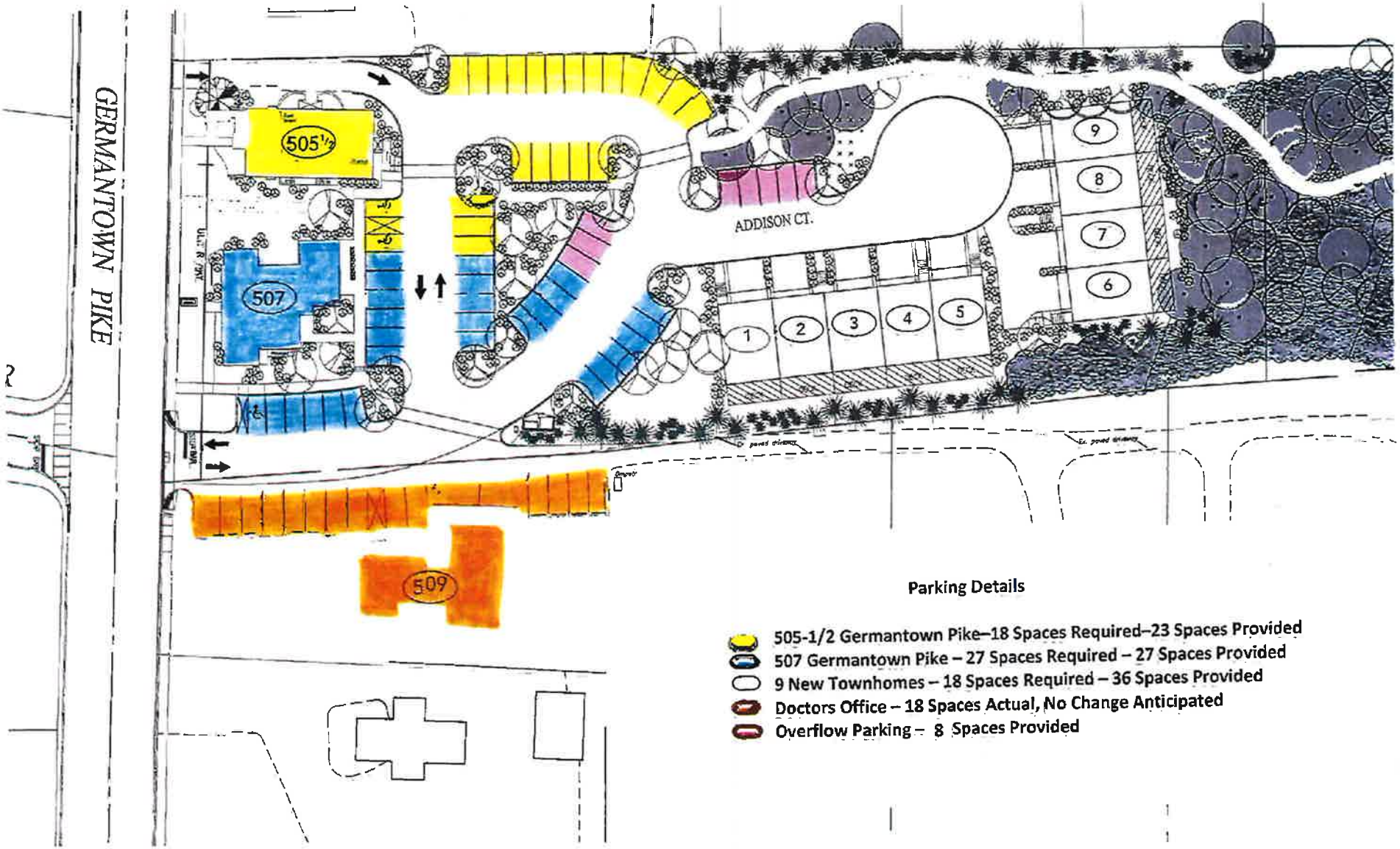
EXHIBIT

A-6


BLOCK 22K, UNIT 25
CURRNTLY ZONED VC-1 VILLAGE COMMERCIAL
PAVED
BLOCK 22K UNIT 25
131.79'
18.20'
N 18°20'00" W
61.97'
GERMANTOWN PIKE
EXISTING
2-1/2 STORY
STUCCO OFFICE BLDG.
3600 G.L.F.A.
505 1/2 GERMANTOWN PIKE
FF. 242.44
FF. 237.75
Concrete Walk
Lscape
HVAC
ORIGINAL PARCEL LINE (TO BE EXTINGUISHED)
5' MAC. PATH
BLOCK 22 UNIT 40
S 18°25'04" E
127.51' ULT. R/WAY
LAWN
FF. 239.10
EX. 2-1/2 STORY
STUCCO OFFICE/APT.
507 GERMANTOWN PIKE
BASE 241.21
FF. 245.64
FF. 245.61
FF. 245.60
Exist. Gas Meters
Exist. Sign
Water Valve
SIDEWALK
50' CLEAR SITE TRIANGLE
5' CONC.
R=5' (TYP)
N 18°20'00" W
137.86'
71.23'
S 18°27'58" E
N 66°34'30" W
SHARED DRIVEWAY ACCESS EASEMENT
140.95'
S 66°12'00" W 159.47'
18.52'
P.K. FND
EX. PARKING FOR MEDICAL OFFICE
50' CLEAR
EXIST. 2 STOR

EXHIBIT

A-7



Parking Details

- 505-1/2 Germantown Pike–18 Spaces Required–23 Spaces Provided
- 507 Germantown Pike – 27 Spaces Required – 27 Spaces Provided
- 9 New Townhomes – 18 Spaces Required – 36 Spaces Provided
- Doctors Office – 18 Spaces Actual, No Change Anticipated
- Overflow Parking – 8 Spaces Provided

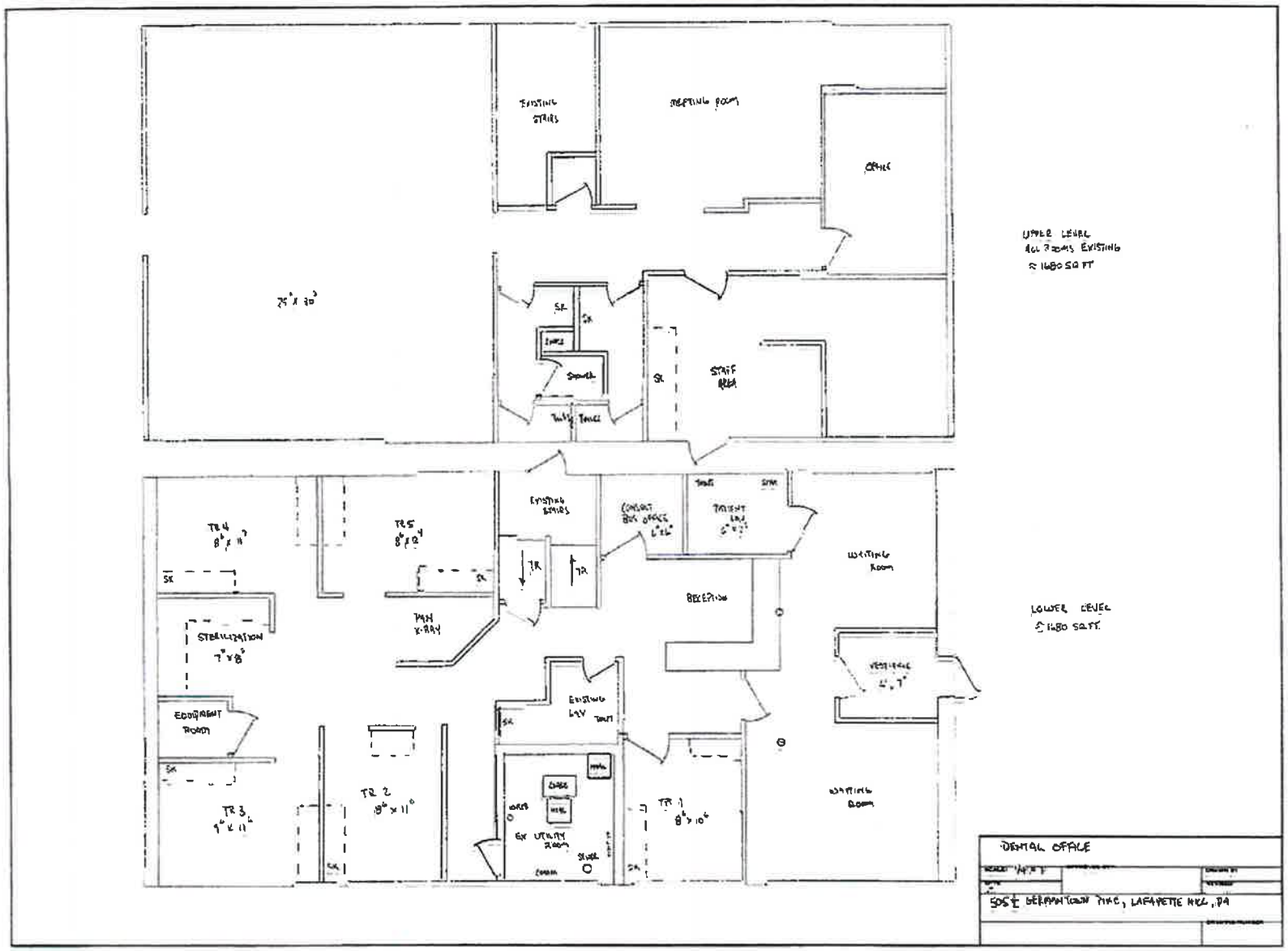
EXHIBIT

A-9

505½

EXHIBIT

A-10


EXISTING STAIRS
MEETING ROOM
OFFICE
UPPER LEVEL
ALL ROOMS EXISTING
≈ 1680 SQ FT
STAFF AREA
SHOWER
TR 4
TR 5
TR 3
TR 2
TR 1
STERILIZATION
EQUIPMENT ROOM
PAN X-RAY
EXISTING STAIRS
CONSULT BOX OFFICE
TREATMENT ROOM
WAITING ROOM
RECEPTION
EXISTING LAV
EX UTILITY ROOM
WAITING ROOM
LOWER LEVEL
≈ 1680 SQ FT.
DENTAL OFFICE
505 E. GERMANTOWN PIKE, LAFAYETTE HILL, PA

WHITEMARSH TOWNSHIP BOARD OF SUPERVISORS
PUBLIC MEETING MINUTES

AUGUST 13, 2020

The Regular Monthly Meeting of the Whitemarsh Township Board of Supervisors was held on Thursday, August 13, 2020 at 6:00 PM, a virtual ZOOM meeting, due to COVID-19 pandemic.

Supervisors Present: Laura Boyle Nester, Chair; Fran McCusker, Vice-Chair; Michael Drossner; Vincent Manuele and Jacy Toll.

Also Present: Richard L. Mellor, Jr., Township Manager; Sean Kilkenny, Township Solicitor; James Hersh, P.E. Township Engineer and Charles L. Guttenplan, AICP

PLEDGE OF ALLEGIANCE

ANNOUNCEMENTS

Supervisor McCusker announced:

The Library has re-opened for limited services and hours Wednesdays through Saturdays. Details are available at www.JeanesLibrary.Org

The Census Deadline for self-responses has been extended until September 30, 2020. Residents should visit 2020census.Gov for additional details.

All Storm-related road closures have been repaired and are now open for vehicle traffic. Help is available for MontCo residents with damage caused by Hurricane Isaias. The Montgomery County Department of Public Safety has partnered with neighboring agencies to create the Home Cleanup Hotline to support residents in need. Residents should call 1-844-965-1386 to provide details that will be shared with volunteers from local disaster relief organizations. Common requests include help cutting fallen trees, removing affected drywall, flooring, or appliances; tarping roofs, and mold mitigation. These services are being provided free from volunteers. Efforts will be made to support as many residents as possible, but assistance cannot be guaranteed.

Supervisor McCusker introduced Staff Sergeant Chase Crump who is an Army Recruiter and is the Staff Commander at the Plymouth Meeting Mall. He explained the work he is doing with recruiting and that he and the other recruiters speak with individuals about pushing their education further and towards their career moving forward. Chair Nester asked for contact information. Supervisor Drossner asked if under aged children who are interested in possibly joining the military can come in to the recruiting office. Staff Sergeant Crump said absolutely they are welcome to come in and discuss a possible future in the military.

PUBLIC HEARINGS

None

APPROVAL OF MINUTES

DRAFT

1. July 9, 2020

Eli Glick asked that his comments made at the July 9, 2020 be reflected in these minutes. He stated the minutes do not reflect his statement that through photographs he provided and the Shade Tree Commission motion that the shade tree protection at Whitemarsh Knolls does not follow Act 55 and failed to meet the requirements of the Ordinance and those protections at Whitemarsh Knolls are not being followed.

On a motion by Supervisor Toll, seconded by Supervisor McCusker (Vote 5-0) the Board of Supervisors approved the July 9, 2020 meeting minutes, with amendments.

BOARD PUBLIC DISCUSSION ITEMS

1. Police Department Liaison - Supervisor Michael Drossner

Supervisor Drossner stated he met with Chief Ward and that the Chief has spoken with residents about injustice in the police world. Supervisor Drossner said they will continue to meet quarterly but that can talk whenever needed. He congratulated the Police Department on their recent Re-Accreditation and stated that it is their 12th year of accreditation. Supervisor Drossner spoke about the difficulty of the accreditation process. He said Whitemarsh Police Department did the extra work for accreditation and he is proud of them. He stated Chief Ward released internal policies and drafted Duties to Intervene Policy wherein if officers are acting in an unsafe manner is empowers officer to intervene with each other. He explained statistics (ie. Arrest, car stops, etc.) are being released annually for public review. He stated in 2019 there were 5 use of force reports and 5 internal affairs investigations, 4 of which were initiated internally. He his role as a liaison, he has the ability as a non-law enforcement officer to be approached by residents who may have a concern they are reluctant to speak with an officer about.

Chief Ward stated that he completely agreed with Supervisor Drossner and moving forward things will evolve as needed.

2. SLD#01-20; Kevin and Donna McBurney/4013 Crescent Avenue - Preliminary/Final Minor Subdivision Plan; Lot Line Change

Mr. Guttenplan explained SLD #01-20, is a Preliminary/Final Minor Subdivision Plan (Lot Line Change) for Kevin and Donna McBurney at 4013 Crescent Avenue, Lafayette Hill. The plan proposes to shift the lot line with neighboring 4009 Crescent Avenue approximately 28 feet, resulting in an increase of just less than 4,100 square feet for the McBurney lot, with the commensurate decrease in the 4009 Crescent Avenue lot (owned by Michael and Melissa Toman). No other changes are proposed; both lots are improved with single-family detached homes and related improvements and will continue to comply with applicable zoning requirements. The Planning Commission reviewed this plan and after a very brief discussion to understand the reason for the lot line change (to provide a more reasonable back yard to the McBurney lot), the Commission passed a unanimous motion recommending approval of the preliminary/ final plan and recommending approval of the waivers requested.

ORDINANCES

None

RESOLUTIONS

1. SLD#01-20; Kevin and Donna McBurney/4013 Crescent Avenue - Preliminary/Final Minor Subdivision Plan; Lot Line Change

On a motion by Supervisor Toll, seconded by Supervisor McCusker (Vote 5-0) the Board of Supervisors adopted **Resolution #2020-16** granting Preliminary/Final Plan approval for SLD #01-20; McBurney/4013 Crescent Avenue for a lot line change to add approximately 4,100 square feet from 4009 Crescent Avenue.

MOTIONS

1. Ordinance Advertisement - Adopting the 2015 International Fire Code as the Township's Fire Prevention Code

Fire Marshal Nick Weaver explained the adoption of the 2015 International Fire Code will provide the legal authority to enforce the current fire code. The township's adopted fire code by ordinance is the 1982 edition of NFPA (National Fire Protection Association) 1 Fire Code. The Pennsylvania Uniform Construction Code presently utilizes the 2015 International Code Council Series, such as our 2015 International Building Code. Adopting the fire code will allow the township to legally enforce fire and safety requirements with current standards. He stated the adoption of a Fire Inspection Program would allow the township to enforce the fire code fairly and equally to all commercial properties of the township. The Program would also promote positive relationships with property and business owners with a shared mission of providing safe buildings. Visiting every commercial property annually would verify that all required permits are obtained for construction and operational purposes. A business list and emergency contact list would be able to be up to date constantly with the valuable information available readily.

Chair Nester asked to if this would cause new fees. Fire Marshal Weaver explained the ordinances are not enacting new fees, there currently are fees required for operational permits already adopted by ordinance that is not being done. This program would ensure the required operational permits are received. If the Board determines additional fees are necessary in the future if applicable. There was a discussion regarding building inspection and emergency contact lists.

On a motion by Supervisor McCusker, seconded by Supervisor Manuele (Vote 5-0) the Board of Supervisors authorized the Ordinance advertisement adopting the 2015 International Fire Code as the Township's Fire Prevention Code.

2. Board/Commission Resignation

On a motion by Supervisor Toll, seconded by Supervisor Manuele (Vote 5-0) the Board of Supervisors accepted the resignation of Kate Johnson from the Environmental Advisory Board.

3. 2020 Road Paving Program

Mr. Hersh explained the engineer's office reviewed the bids submitted to the Township and publicly opened on August 11, 2020 for the for the 2020 Road Paving Program. He stated based on the bid evaluation Allan Myers, L.P. is the lowest responsive bidder for the Total Bid for this project. It is therefore recommended that the Board of Supervisors authorize the Township Engineer's office to issue a Notice of Intent to Award to Allan Myers, L.P. for the Total Bid cost of $396,000.00. He stated the final awarding of the contract is contingent upon a successful outcome to the required Responsible Contractor Determination that will be performed by our office and the majority of this project will be funded by PennDOT Liquid Fuels Funding which will help offset the cost of construction.

On a motion by Supervisor Drossner, seconded by Supervisor McCusker (Vote 5-0) the Board of Supervisors authorized the notice of intent to proceed and bid approval based on the successful review of the 2020 road paving bid to Allen Myers, L.P. for total base bid and alternate amount of $396,000.00.

DRAFT

4. Change Order Request #2 - James D. Morrissey – Stenton/Flourtown/Cricket Intersection Project - $67,708.38

Mr. Hersh explained the project scope was revised to include modifications related to delays and additional work resulting from PECO and Aqua main relocations through the project site. JDM had to demobilize from the site in order to permit PECO and Aqua to relocate large diameter utility mains.
He explained the delays and additional work that was required. He stated approval will be effective immediately upon the withdrawal of James D. Morrissey, lnc.'s litigation with prejudice. Penn DOT has approved a closure of Stenton Avenue between Joshua Road and Flourtown/W. Valley Green Roads which started on August 3rd, 2020. James D. Morrissey, Inc. was issued a notice to proceed on July 22, 2020 and that construction activities must begin within 14 days from the date of that letter. The contract will be extended to require all work to be completed within 90 calendar days from the date in the notice to proceed. The date of completion of all work is therefore October 20, 2020.

Sydelle Zove (Harts Ridge Road) asked if it was able to anticipate this issue and was something overlooked in RFP preparation. Mr. Mellor explained nothing was overlooked. It wasn't until they started digging they discovered large amount of rocks and explained the amount of rock encountered. Ms. Zove asked in future if something to the Township can do to see what is going on underground. Mr. Mellor explained the utilities are responsible for themselves and the amount of rock uncovered was surprising. Ms. Zove asked if there is testing that could have located the rock. Mr. Hersh explained there is testing, but the money spent on testing would have cost more than the cost of the change order.

On a motion by Supervisor Drossner, seconded by Supervisor McCusker (Vote 5-0) the Board of Supervisors authorized the change order request #2 to James D. Morrissey for the contract at Stenton/Flourtown/Cricket in the amount of $67,712.38 and by doing so James D. Morrissey has agreed to withdraw the lawsuit against the Township related the prompt payment act.

5. July 2020 Expenditures and Payroll and Pension Plan Paid Costs

On a motion by Supervisor Drossner seconded by Supervisor Toll (Vote 5-0) the Board of Supervisors approved expenditures totaling $1,152,661.86; and payroll totaling $631,169.90 and pension paid costs totaling $7,577.52 for July 2020.

AMEND AGENDA

On a motion by Supervisor McCusker, seconded by Supervisor Toll (Vote 5-0) the Board of Supervisors amended the agenda.

6. Certificate of Appropriateness – 105 Black Walnut Lane

Mr. Guttenplan explained the application is for replacing the roof (with same shingles as existing), adding a 6-foot wooden stockade fence along rear property line, and constructing a fire pit with river rock surround in the rear yard at 105 Black Walnut Lane. While the majority of homes on this street were constructed about 20 years ago, this is an original home built in 1937. HARB saw no issues with these improvements and passed a unanimous motion recommending approval of a Certificate of Appropriateness for all of them, as proposed.

On a motion by Supervisor Manuele, seconded by Supervisor Drossner (Vote 5-0) the Board of Supervisors approved the Certificate of Appropriateness for the installation of a roof, fence and backyard improvements to 105 Black Walnut Lane.

7. Certificate of Appropriateness – 3049 Spring Mill Road

DRAFT

Mr. Guttenplan explained the installation of a patio in the rear of the home at 3049 Spring Mill Road. This is one of the new homes in the 'Maple Hill' development (the one with the historic school house in the front yard). The total patio area is 940 square feet, with approximately half under a standing seam metal roof, matching other roof areas on the house. The patio will be constructed with two shades of gray pavers and an ebony cap on retaining walls at the patio's edge. HARB saw no issues with this proposal and noted that it is similar to what has been constructed at some of the other homes in this development and that it will be in the rear yard and not visible from the street. A motion was passed unanimously recommending approval of a Certificate of Appropriateness for the patio as proposed.

On a motion by Supervisor McCusker, seconded by Supervisor Manuele (Vote 5-0) the Board of Supervisors approved the Certificate of Appropriateness for the installation of a patio at 3049 Spring Mill Road.

8. Waiver of Conflict

Mr. Kilkenny explained the next day there will be hearing in the Court of Common Please where the Township filed an injunction against the Hill at Whitemarsh for the continued use of the Temporary Construction Access Road. He explained Robert Careless is the attorney for the Hill and he previously worked as an attorney for Kilkenny Law, LLC. He stated Mr. Careless did minimal work for the Hill when at Whitemarsh and recommends the waiver. He further explained neither Mr. Careless nor himself would testify only Mr. Mellor would testify. Supervisor Drossner stated it is the right decision.

On a motion by Supervisor Manuele, seconded by Supervisor Drossner (Vote 5-0) the Board of Supervisors authorized the Board of Supervisors to provide informed consent to Kilkenny Law, LLC. to waive a conflict of interest with regard to a former attorney of Kilkenny Law, LLC, Robert Careless, Esq., who represents Whitemarsh Continuing Care Retirement Community D/B/A the Hill at Whitemarsh in connection with opposing Whitemarsh Township's Petition for a Preliminary Injunction with regard to the Hill's use of a Temporary Construction Access Road.

9. Petition to Intervene – Ambler

Mr. Kilkenny explained the township received correspondence from the Solicitor for Upper Dublin Township and additionally the Solicitor for Lower Gwynedd Township that they will be intervening in this matter. He explained Ambler Borough provides water service to parts of Whitemarsh Township. They are now going to the Pennsylvania Utilities Commission and asking to set up an Authority. The Township had some discussion with the Borough however have not heard anything for a while and did not know the Borough was now going to the Utilities Commission.

Chair Nester asked how many residents are provided water by Ambler. Mr. Mellor explained there are approximately 240 residences.

On a motion by Supervisor Manuele, seconded by Supervisor Toll (Vote 5-0) the Board of Supervisors authorized the Township Solicitor to intervene in Ambler Borough's petition to create an Authority before the Pennsylvania Utilities Commission.

PUBLIC COMMENT PERIOD

Sydelle Zove (Harts Ridge Road) thanked Chair Nester for comments made to Philadelphia Inquirer reporter about township interest in pursuing acquisition of Abolition Hall. She stated it's an important piece of property in the community. Chair Nester stated it is a team effort. They are all working on figuring it out and looking at it from all angles.

Justin Cadwell (Kottler Drive) spoke about the meeting with the developer at Whitemarsh Knolls, Rick Mellor,

Fran McCusker and Krista Heinrich. He thanked them for arranging it. He said he wanted to state the issues that he wants addressed. He asked for an exact timeline for the basin, fencing around the basin, the mosquito problem due to the basin and how it is going to be addressed, he asked for the developer to redrawn property lines to keep his land intact from washing into the basin, the issue of work hours – contractors working beyond 6PM and after the development is complete who will the residents contact about further issues with the basin.

Eli Glick (Whitefield Drive) stated he was also at the meeting. He spoke about the care of the trees. He said he believes if the trees had been properly cared for it would have been a first line of defense for the stormwater issues. He asked why the developer can't put tress and fencing up now.
He also brought up the issue of stormwater in Whitemarsh Valley Farms.

Chair Nestor thanked him for his comments and spoke about the stormwater problems in the area. She stated she has been speaking with Mr. Mellor and Mr. Hersh about looking at it. She explained there were plans previously but the cost is immense, but it does need attention. Mr. Mellor explained it is a capital budget item and can be reconsidered during the upcoming budget time. He stated a lot has been done beginning in 2000's but there is more to do.

Mr. Hersh stated that the tree protection fence that is installed at the Knolls is as per the plan and the Shade Tree Ordinance. Eli Glick discussed what he believed the fencing should be per the code.

Eli Glick stated the stormwater problem is a man-made problem and downstream from development needs to be looked at.

Linda Doll (Fairway Road) spoke of her concerns stormwater management.

Sydelle Zove asked why the plan for the development approved if it doesn't meet Chapter 55 Tree Protection. She also asked about escrow releases for the project and she suggested before more funds are released, someone take a look at the plans and the actual conditions currently. Supervisor Manuele stated in response to her first question, were waivers granted in association with the plan and he stated it is a valid question. Mr. Mellor addressed this and answered Ms. Zove.

BOARD MEMBER COMMENTS

EXECUTIVE SESSION

Chair Nester announced the Board of Supervisors held an Executive Session on prior to the meeting to discuss real estate and litigation. She announced the Board of Supervisors held an Executive Session on the morning of July 13, 2020 to discuss litigation and personnel.

ADJOURNMENT

On a Motion by Supervisor Manuele, seconded by Supervisor Toll the meeting for August 13, 2020 was adjourned at 7:30 PM.

Respectfully Submitted,

DRAFT

Richard L. Mellor, Jr.
Township Manager

DRAFT

WHITEMARSH TOWNSHIP

TO: BOARD OF SUPERVISORS

FROM: **Charles L. Guttenplan, AICP, Director of Planning and Zoning**

SUBJECT: SLD #02-19 PRELIMINARY LAND DEVELOPMENT PLAN FOR ARGOS ASSOCIATES/ADELPHI LAND ASSOCIATES/POLERGODOM GROUP, LTD. KNOWN AS 'LONGFIELD FARM'

DATE: AUGUST 28, 2020

CC: Richard L. Mellor, Jr., Township Manager
Sean P. Kilkenny, Esq., Township Solicitor

There is an item on your agenda for discussion of SLD #02-19, Preliminary Land Development Plans for Argos Associates/Adelphi Land Associates/Polergodom Group, Ltd. for 'Longfield Farm', for development of 58 townhomes on the site, within the VC-4, Village Commercial District, Sub-district 4. In addition to the 58 townhomes, there is an existing pre-1940's single-family home, fronting on Butler Pike, which is being preserved as part of the development. The approximate 15-acre site is located adjacent to the intersection of Butler and Skippack Pikes. The Board of Supervisors last saw this as a Conditional Use application for the townhome use; the Board approved that application on November 21, 2019 with 11 conditions. [For reference, the Conditional Use Decision is one of the attachments.] In addition to plans and other supporting documents, a number of review letters are also attached as is a waiver request letter.

This plan was reviewed by the Planning Commission at their June 23 and August 11, 2020 meetings. At the June 23rd meeting, there was extensive discussion about the plan; at the end, the Commission requested that the applicant address certain issues and come back with some resolution of these at a future meeting. Issues raised included stormwater management, open space, disappointment with the proposed landscape plan, and the desire to see some arrangement for a potential connection to an adjacent parcel owned by the applicant and zoned AD—Attached Dwelling District. Additionally, there were outstanding comments in the various reviews that had to be addressed. When the applicant returned on August 11th, they summarized how they had addressed the various comments; only a few remain that require additional coordination with outside agencies including the County (Butler Pike is a County Road requiring a permit for the entry/exit drive and coordination with regard to a stormwater pipe crossing the road) and the state (PennDOT must issue a highway occupancy permit for the entry/exit drive on Skippack Pike). The majority of other comments had been addressed between the two meetings; in the interim, the applicant had also been before the Shade Tree Commission and had gotten a recommendation from them (attached). At the conclusion of another lengthy discussion on August 11th, the Planning Commission made three motions. One was to recommend approval of the first 8 waivers requested from the Subdivision and Land Development Ordinance (with a minor modification to one) and to recommend approval of the final three waivers all of which dealt with engineering details of the stormwater system. The second motion was to recommend granting a partial waiver from Section105-53.D. of the Subdivision and Land Development Ordinance to recommend that the Board not accept a payment of a fee in lieu (of open space land) but that the Board require an additional 10% of open area above and beyond the 45% on the site already depicted as open space, and that this additional open space be preserved and maintained by the Homeowners' Association. The third motion was to recommend approval of the preliminary land development plan, but with the addition of the 1-½ acres of open space, to be under the ownership and management of the Homeowners' Association.

There is also a proposed resolution on your agenda (attached) should the Board decide to consider granting conditional preliminary land development plan approval at this meeting. You will note that two review letters from Whitpain Township, received after the Township Planning Commission made their recommendations, are discussed in Paragraph 'D' in the resolution.

If there are any questions, I would be happy to answer them by e-mail prior to the meeting (I am scheduled to be out of the office) or during the meeting.

Attachments

G:/BOARD OF SUPERVISORS COORDINATION/2020/September 10, 2020 Meeting (Zoom)/BOS Memo SLD #02-19 Longfield Farm Preliminary Plan.doc

Charles L. Guttenplan, AICP
Director of Planning and Zoning/Zoning Officer
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 484-594-2625 Fax: 610-825-6252
Email: cguttenplan@whitemarshtwp.org

LONGFIELD FARM

SLD#02-19

- Application
- Draft Resolution for Approval
- Cover Letter 4/23/2020
- Waiver Request Letter Revised September 2, 2020
- Conditional Use Decision 11/21/2019

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

RECEIVED
JUN 13 2019
WHITEMARSH TOWNSHIP
ZONING & ENGINEERING

INSERT "N/A" FOR NOT APPLICABLE WHERE APPROPRIATE

Name of Subdivision/Land Development: Longfield Farm

Location of Subdivision/Land Development: Butler Pike / Skippack Pike
(Primary Access Roadway Name)

Between: Skippack Pike (Roadway Name) and Norristown Rd (Roadway Name)

Number of Parcels: 4 **Block Number(s):** **Unit Number(s):**

Parcel Number(s): 65-00-01375-00-9, 65-00-01372-01-2, 65-00-10735-00-9 65-00-10723-00-3

Acreage: 14.85 **Total ~~Lots~~ UNITS Proposed:** 58 **Zoning District:** VC-4

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

Applicant Name: Argos Associates/Adelphi Land Associates/Polergodom Group, Ltd. **Contact Name:** Robert Downs

Phone #: (215) 643-5800 Ext 211 Fax #: - Email: rdowns@spartanorg.com

Address: P.O. Box 785, Ft. Washington, PA 19034

Owner of Record Name (If Different): SAME

Phone #: Fax #: Email:

Address:

Engineer Name: E. Eberhardt, PE / R. Irick, RLA **Firm Name:** Irick, Eberhardt, Mientus, Inc.

Phone #: (215) 541-4626 Ext 16 Fax #: - Email: birick@ieandm.com eteberhardt@ieandm.com

Address: 2771 Geryville Pike, Ste. 3 Pennsburg, PA 18073

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: 6/13/19

Signature: Robert Downs, V.P.

(Original Signature must be submitted)

Printed Name: Robert Downs

I, (name) Robert Downs **(title)** V.P. Business Development & General Counsel of

(entity submitting application) Argos Associates/Adelphi Land Associates/Polergodom Group, Ltd. do hereby affirm

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

Date: 6/13/19 Signature: Robert Downs, V.P.

(Original Signature must be submitted)

WHITEMARSH TOWNSHIP
SUBDIVISION and/or LAND DEVELOPMENT
TIME WAIVER FORM

Date: 6/13/19

Granted to: Whitemarsh Township Board of Supervisors

Name of Subdivision and/or Land Development: Longfield Farm

On or about, 6/13/19, 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: 6/13/19

Signature: Robert Downs, V.P.

(Original Signature must be submitted)

Printed Name: Robert Downs

Firm Name: Argos Associates / Adelphi Land Associates / Polergodom Group Ltd.
(if applicable)

Title: V.P. Business Development & General Counsel
(if applicable)

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

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

Check the appropriate line:

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

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

Name of Subdivision and/or Land Development: _____

Date: 6/13/19 Signature: Robert Downs, V.P.
(Original Signature must be submitted)

WHITEMARSH TOWNSHIP BOARD OF SUPERVISORS
RESOLUTION #2020-____

BE IT RESOLVED, and it is hereby resolved by the Board of Supervisors of Whitemarsh Township, as follows:

A. Argos Associates, Adelphi Land Associates, and Polergodom Group, Ltd. (collectively the "***Applicant***"), has caused to be prepared and filed with the Township ***Plan S/LD #02-19,*** entitled ***"Longfield Farm"*** consisting of thirty (30) sheets, prepared by Irick, Eberhardt & Mientus, Inc. and Land*Concepts*, LLC dated June 12, 2019, last revised March 27, 2020, in addition to Landscape and Lighting plans, sheets 7 and 8, updated through July 23, 2020 (the "***Plan***").

B. The Plan proposes the construction of a 58-unit townhome community (the "***Project***") on 15.24 acres of land at the southeast corner of Butler Pike and Skippack Pike, Whitemarsh Township, PA, being Montgomery County Tax Parcel Nos. 65-00-01375-00-9, 65-00-01372-01-2, 65-00-10735-00-9, and 65-00-10723-00-3 (collectively the **"Property"**).

C. The Whitemarsh Township Planning Commission reviewed the Plan at its August 11, 2020 meeting and recommended approval of the Plan as a Preliminary Plan subject to certain conditions.

D. The Board of Supervisors of Whitemarsh Township acknowledges receipt of (i) a project review letter dated August 19, 2020 from James E. Blanch, the Whitpain Township Engineer, and (ii) a project review letter dated August 20, 2020 from McMahon Associates, Inc., the Whitpain Township Traffic Engineer (collectively, the **"Whitpain Township Letters").** The Board has reviewed and is aware of the comments and issues raised in the Whitpain Township Letters and is satisfied, after the comprehensive reviews conducted by the Whitemarsh Township staff, Township Engineer, Township Traffic Engineer, and other Township consultants that, subject to all of the conditions contained in this Resolution, the Applicant has demonstrated satisfactory compliance with the applicable ordinances, statutes and regulations relating to the issues raised in the Whitpain Township Letters.

NOW, THEREFORE, the Plan is hereby granted ***Conditional Preliminary Land Development Approval*** subject to the satisfaction of the following conditions by the Applicant:

1. Compliance with all comments as outlined in the Letter of Review dated June 16, 2020, prepared by Gilmore & Associates, Inc., attached hereto as ***Exhibit "A"*** and incorporated herein by reference;

2. Compliance with all comments as outlined in the Zoning Ordinance Compliance Review of S/LD #02-19 dated June 16, 2020, prepared by Charles L. Guttenplan, AICP, Whitemarsh Township Director of Planning and Zoning/Zoning Officer, attached hereto as ***Exhibit "B"*** and incorporated herein by reference;

3. Compliance with all conditions set forth in the Whitemarsh Township Board of Supervisors' Conditional Use Decision dated November 21, 2019, a copy of which is attached hereto as ***Exhibit "C"*** and incorporated herein by reference;

4. Compliance with the comments of the Township Fire Marshal dated April 28, 2020, attached hereto as ***Exhibit "D"*** and incorporated herein by reference;

5. Compliance with the recommendations of the Shade Tree Commission as set forth in a memorandum dated August 5, 2020, a copy of which is attached hereto as ***Exhibit "E"*** and incorporated herein by reference;

6. Compliance with advisory recommendations of the Montgomery County Planning Commission set forth in a letter dated June 17, 2020, attached hereto as ***Exhibit "F"*** and incorporated

herein by reference, to the extent feasible and consistent with the stated objectives at Township Planning Commission meetings as provided in ***Exhibit "G"*** attached hereto and incorporated herein by reference;

7. Compliance with all comments as outlined in the Letter of Review dated June 18, 2020, prepared by Heinrich & Klein Associates, Inc. attached hereto as ***Exhibit "H"*** and incorporated herein by reference;

8. Unless waived by the Board of Supervisors, payment, in a form acceptable to the Township, of a traffic impact fee of **$101,700.00**, based upon the amount of $2,825.00 per anticipated peak hour trip multiplied by 36 PM peak hour trips (calculated as follows: $2,825.00 x 36 PM peak hour trips), assessed using the ITE Trip Generation Manual, which contribution shall be made prior to the Township's issuance of a building permit;

9. Unless waived by the Board of Supervisors, payment, in a form acceptable to the Township, of a Park and Recreation Fee in the amount of **$112,094.00** in accordance with Section 105-53(D) of the Township's Subdivision and Land Development Ordinance, as a fee-in-lieu of dedication of such land which contribution shall be made prior to the Township's issuance of a building permit;

10. In lieu of the payment prescribed by Paragraph 10 (Traffic Impact Fee) and paragraph 11 (Park and Recreation Fee) above, the Applicant will make a voluntary lump sum contribution in a form acceptable to the Township in the amount of **$213,794.00** prior to the Township's issuance of a building permit to enable the Township to use the payment as it sees fit;

11. Further, the Board of Supervisors takes the following action as to the Applicant's request for waivers from the requirements of Chapter 105 of the Whitemarsh Township Code – "Subdivision and Land Development":

a. ***Section 105-21.B.(1)(n):*** a partial waiver from the requirement to show drainage, utility, and other man-made features within 500 feet of the site, to allow the Applicant to submit an aerial plan of the surrounding area;

□ Granted □ Denied

b. ***Section 105-21.B.(13):*** from the requirement to provide an Existing Resources and Site Analysis Plan (ERSAP);

□ Granted □ Denied

c. ***Section 105-29.C.:*** from the requirement that proposed roads A, B, and C have a right-of-way and cartway of 36 feet to allow them to have a right-of-way and cartway of 26 feet;

□ Granted □ Denied

d. ***Section 105-30.A.:*** from the requirement that curbs be installed along Butler Pike and Skippack Pike to not require curbing along Butler Pike and Skippack Pike;

□ Granted □ Denied

e. ***Section 105-32.B.:*** from the requirement that private streets shall have a right-of-way width and a horizontal and vertical alignment consistent with the requirements for public streets per Section 105-33.B(1) to allow the proposed streets to be developed as shown on the Plan;

□ Granted □ Denied

f. ***Section 105-36.C.:*** from the requirement that private driveways shall not be located less than 40 feet from an intersection and shall provide access to the street of lower classification

when a corner lot is bounded by streets of two different classifications to allow the driveways for units 40 and 4 to be developed as shown on the Plan;

□ Granted □ Denied

g. ***Section 105-38.F.:*** from the requirement that perpendicular parking is not permitted on public or private streets to allow perpendicular parking as shown on the Plan;

□ Granted □ Denied

h. ***Section 105-47.B.:*** from the requirement that the minimum width of all sidewalks and pedestrian paths be 5 feet to allow sidewalks to be 4 feet wide;

□ Granted □ Denied

i. ***Sections 105-47.A., 105-56.G. and 105-73:*** a partial waiver from the requirement that sidewalks be provided to allow sidewalks to be provided for pedestrian access to each unit, parking spaces, and open spaces so that the roadways do not need to be used for such access, and to allow sidewalks/pedestrian paths to be provided along the entire frontage of Skippack Pike and Butler Pike;

□ Granted □ Denied

j. ***Section 105-53.(D):*** from the requirement for dedication of land in the amount of 10% of the total site area and to the Township suitable for park and recreation use;

□ Granted □ Denied

k. ***Sections 105-33.B(1) and 105.33.C:*** from the requirement of 150' centerline radii, and minimum 100' tangent between curves, respectively.

□ Granted □ Denied

12. Further, the Board of Supervisors takes the following action as to the Applicant's request for waivers from the requirements of Resolution #2004-8, adopted pursuant to Chapter 58 of the Whitemarsh Township Code – "Grading, Erosion Control, Stormwater Management and Best Management Practices", as follows:

a. ***Section II.D.(8):*** from the requirement that emergency spillways must be 3 feet lower than the spillway crest to allow all basins to be less than 3.5 deep from spillway to basin invert;

□ Granted □ Denied

b. ***Section II.D.(12):*** from the requirement that inlet pipes into a basin be 6 inches above the floor of the basin to allow some basins not to comply with this requirement, but to require all basins to have forebays to reduce velocity and impact on amended soil material in basin pool area;

□ Granted □ Denied

c. ***Section II.E.2.(g)(iv):*** from the requirement that storm pipe have a minimum diameter of 18 inches to allow the use of 15-inch diameter storm pipes.

□ Granted □ Denied

DRAFT

The Conditional Preliminary Land Development Approval granted herein shall be rescinded automatically upon the Applicant's failure to accept, in writing, all conditions herein imposed within seven (7) days of receipt of this Resolution, as evidenced by Applicant's signature below.

ADOPTED**,** as a Resolution by the Whitemarsh Township Board of Supervisors this 10th day of September, 2020.

ATTEST:

WHITEMARSH TOWNSHIP BOARD OF SUPERVISORS

_____

RICHARD L. MELLOR, JR., SECRETARY

By:_____

LAURA BOYLE NESTER, CHAIR

THE UNDERSIGNED HEREBY REPRESENTS THAT HE IS AUTHORIZED ON BEHALF OF THE APPLICANT TO AGREE, AND HEREBY AGREES TO THE ABOVE CONDITIONAL PRELIMINARY LAND DEVELOPMENT PLAN APPROVAL RESOLUTION:

APPLICANT:

ARGOS ASSOCIATES

By: _____ ***Dated :*** _____

_____, _____

ADELPHI LAND ASSOCIATES

By: _____ ***Dated:*** _____

_____, _____

POLERGODOM GROUP, LTD.

By: _____ ***Dated:*** _____

_____, _____

DRAFT

EXHIBIT "A"

GILMORE & ASSOCIATES REVIEW LETTER
June 16, 2020
[ATTACHED]

DRAFT

EXHIBIT "B"

ZONING ORDINANCE COMPLIANCE REVIEW
June 16, 2020
[ATTACHED]

DRAFT

EXHIBIT "C"

CONDITIONAL USE DECISION
November 21, 2019
[ATTACHED]

DRAFT

EXHIBIT "D"

TOWNSHIP FIRE MARSHAL'S MEMORANDUM
April 28, 2020
[ATTACHED]

DRAFT

EXHIBIT "E"

TOWNSHIP SHADE TREE COMMISSION'S MEMORANDUM
August 5, 2020
[ATTACHED]

DRAFT

EXHIBIT "F"

MONTGOMERY COUNTY PLANNING COMMISSION LETTER
June 17, 2020
[ATTACHED]

DRAFT

EXHIBIT "G"

COMMENTS WITH RESPECT TO THE MCPC REVIEW LETTER

Comment #1 - Consistent with the MCPC's recommendation to consider the roadway extension, the Applicant has adjusted the right-of-way of the internal roadway and shall reserve or convey an easement in favor of the owner of the adjoining parcel to enable construction of a roadway connection between the two parcels if the adjacent parcel is developed in the future and the Township requires or allows such a connection.

Comment #2 - Consistent with the MCPC's recommendation, the Applicant has revised the stormwater design to exceed the Conditional Use obligation and directed all stormwater from the Butler Pike pipe to Skippack Pike and has further amended the stormwater design as related to the emergency spillway such that it has been redirected to Skippack Pike.

Comment #3 - Per the Applicant's traffic expert, and in accordance with the Township traffic engineer's review, the Township accepts the design without the 45' right-of-way along Butler Pike which could be added if the County permit requires it.

Comment #4 - Consistent with the MCPC's recommendation, the plan provides for two, level open areas for recreation and has deferred the design and components until the units are occupied and the users' needs and preferences are known.

Comment #5 - Consistent with the MCPC's recommendation, due consideration was given to adding the sidewalks in consultation with the Borough (property owner) and the Applicant will abide by the Borough's determination that there is no intention to construct these sidewalks and that sidewalks are not recommended based on cited major constraints and impediments. The plans have been modified to provide for walkways along the full frontage of the property on Butler and Skippack Pikes.

Comment # 6 - Consistent with the MCPC's recommendation, a new landscape plan was prepared and was approved by the Shade Tree Commission with one additional condition agreed to by the Applicant.

Comments #7 - Consistent with the MCPC's recommendation, the septic issue is a non-issue and has been reviewed and addressed with the Township as new sanitary service will be provided to all units in this community.

DRAFT

EXHIBIT "H"

HEINRICH & KLEIN ASSOCIATES, INC's REVIEW LETTER
June 18, 2020
[ATTACHED]

DRAFT

April 3, 2020

LandConcepts GROUP

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

Re: Longfield Farm
Preliminary Land Development
Revised Plan Submission

Dear Charlie and Other Reviewers:

Enclosed please find the submission of revised plans and documents for the above-referenced project. This project was initially submitted and reviewed as a Sketch Plan and subsequently for Conditional Use approval and Preliminary Land Development approval. Conditional Use approval was granted. The plans and reports have been revised to respond to prior review letter comments and the conditions that were imposed for the Conditional Use approval.

This letter lists what is included in this submission and summarizes as an overview the key changes in the plan for this project.

Enclosed are the following:

- Preliminary Land Development Plans (30 sheets last revised 3/27/2020) (2 full size sets, 1 electronic set)
- Waiver Request Letter dated 4/2/2020
- Stormwater Management Report (2 copies, last revised 3/27/2020)
- CD with pdf copies of the above-referenced documents

Note a Traffic Report dated January, 2019 was previously submitted and reviewed.

We chose not to submit a response letter to the Township's Conditional Use review letter responding to each individual comment as, in most cases, those comments were specific to the conditions that were determined at the hearing as satisfied. Where those prior comments relate to land development items, they have been addressed in the revised plans and report.

Key Changes

1) Plan - The project plan and design remains essentially the same as the prior submissions. The number of units (58), circulation system, access and egress points,

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TEL 215/646-2031 • Fax 215/619-9071 • E-MAIL RCPlan@aol.com • www.landconceptsgroup.com

green open space areas remain the same. The entry points from the public roads are the same and the design refined including full operation intersection on Butler Pike with a decel lane and left turn in slot traveling south from Skippack Pike. The right turn in and right turn out at Skippack Pike remains and designed per PADOT standards. There is no left turn into the project from Skippack Pike (west bound towards Butler Pike).

2) Road Network - The interior road system is the same with one exception. That is the width of the internal roads was increased from 24' width to 26' width which has been accepted in numerous other similar projects in the Township and was suggested after consultation with the Township staff. A waiver for this width and the radii is included in the application.

3) Stormwater Management - The stormwater management plan has been designed in greater detail to meet the Township and the PADEP standards/BMPs. The basins and conveyance system are similar to the initial design with some modifications in configuration. The significant change is that all of the project stormwater is being directed to the existing system in Skippack Pike with a piped connection under the highway as in the preliminary design. Unlike the prior preliminary design, no project water will be conveyed to Whitpain Township via the County pipe under Butler Pike. The change has been reviewed with the County, PADOT and with Township staff. The condition from the Conditional Use approval of no increase in stormwater entering the pipe has been more than satisfied by the redirection and elimination of all project water from entering Whitpain Township.

4) Pedestrian Circulation - The sidewalk system has been expanded along the Butler Pike frontage and within the proposed community to access each unit and the guest parking spaces. This change is consistent with the MCPC recommendation letter and has replaced the earlier trail network posed for pedestrian circulation. The proposed sidewalk system satisfies the Conditional Use requirement.

5) Recreation Space - The required recreational green space proposed for the open area behind units 1-4 has been provided. The facilities to be installed in that space will be determined based on the residents' needs and preferences. The space for them is committed in the revised plans.

Hard copies of the revised plans and documents have been mailed to the Township offices given the current Township procedures during the COVID-19 emergency. Electronic copies of these documents are being sent today by email to you and the other Township reviewers as you are working remotely until further notice.

Members of our team (Irick Eberhardt & Mientus, Land*Concepts*, Pennoni Associates) and the owner's representative (Robert Downs) are available by email and phone for questions or the need for further information. We can arrange a conference line if that would be helpful during your reviews.

Thank you for your attention to this matter.

Sincerely,

Richard Collier, Jr., FAICP
Principal

Cc: Robert Downs, Esq., Spartan Organization
Robert Irick, RLA, IEandM
Estelle Eberhardt, P.E. IEand M
Brian Keaveney, P.E., Pennoni Associates

Attachments

Irick Eberhardt & Mientus
INCORPORATED

LAND USE CONSULTANTS

Revised September 2, 2020

Mr. Charlie Guttenplan
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

Re: Longfield Land Development
Butler Pike & Skippack Pike

Dear Charlie,

Pursuant to Section 105-10 of the Subdivision and Land Development Ordinance (SALDO) of Whitemarsh Township, this letter is a request for modifications/waivers (to be referred as waivers) as listed on the Preliminary Land Development Plan :

1. 105-21(B)(1)(n) - (Partial Waiver). Requires plans to show existing features within 500' of the site. *Any information within 500' of the site needed for review of this development has been provided. An aerial photograph has been provided within the plan set for the remainder.*

2. 105-21(B)(13) - The Existing Resources and Site Analysis Plan (ERSAP) must be revised to show all features required by this section of the ordinance, both on the proposed development tract and within 500 feet of the tract boundaries *Any information within 500' of the site needed for review of this development has been provided. An aerial photograph has been provided within the plan set for the remainder.*

3. 105-29(C) & 105-30(A) - A waiver must be requested in order to permit the following:
   a. To allow proposed Roads A, B, C to have a right-of-way and cartway width of 26 feet, where 36 feet is required. *This will be a private community with privately owned and maintained facilities. Adequate areas have been provided for parking negating the need of on-street parking.*

   b. To not required curbing along Butler and Skippack Pikes. *Curbing has been provided along Butler and Skippack Pikes where necessary for traffic control.*

4. 105-32(B) - Private streets shall have a right-of-way width and a horizontal and vertical alignment consistent with the requirements for public streets as per 105-33B(1). *All streets will be owned and maintained by a homeowners association. Adequate width is provided for installation of all utilities.*

5. 105-36(C) - This section of the ordinance requires that private driveways, where provided, shall be located not less than 40 feet from the intersection and shall provide access to the street of lower classification when a corner lot is bounded by streets of two different classifications as defined herein. The driveways for Units 40 & 4 appear to require revision in order to demonstrate compliance with the requirements of this section of the ordinance. *This will be a private community with low speed road. All drives will be able to exit safely.*

6. 105-38(F) - Prohibition of perpendicular parking on public or private streets. *The roadway will be posted at a 15 MPH that allows safe back out opportunities in a low traffic volume community. Parking is provided at locations convenient for residents and guests.*

7. 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. *Concrete sidewalks are proposed to be 4' wide. Macadam pathways are proposed to be 6' wide.*

8. 105-47 (A), 56(G) & 73 - Sidewalks shall be provided where required (Partial Waiver*). Sidewalks have been provided to allow pedestrian assess to each unit, parking spaces and open spaces so the roadways do not need to be used for such access. Sidewalks/pedestrian paths have been provided along entire frontage along Skippack and Butler Pikes.*

9. 105-53(D)- Dedication of land in the amount of 10% of the total site area for park & recreational uses or pay a fee-in-lieu of dedication. *A fee in lieu of has been offered.*

10. 105-33(B)(1) Minimum centerline radii - 150' & 105-33C. *The roadway will be posted at 15 MPH. Centerline radii (37') provided are adequate for movement of emergency vehicles.An AutoTurn Plan will be provided to verify.*

11. Resolution 2004-8.II.D.(8) - Requires emergency spillway to be 3.0 feet lower than the spillway crest. *All basins are less than 3.5 deep from spillway to basin invert. Proposing 1.0' from spillway to spillway crest with 0.50' of freeboard provides adequate design without adding unnecessary depth to the basins.*

12. Resolution 2004-8.II.D.(12) - Requires inlet pipes into a basin to be 6 inches above the floor. *Minimal native slopes across the property create a design challenge for adequate cover for the inlet pipes. The 6 above the floor while providing adequate cover is not available in some basins. All basins have forebays to reduce velocity and impact on amended soil material in basin pool area.*

13. Resolution 2004-8.II.E.2.(g)(iv) - Requires a minimum diameter of 18" for storm pipe. *Minimal native slopes across the property and basin invert requirements above limiting zones create minimum vertical change across the site. Each basin has a small watershed (1.4-4.2 acres) and 15" pipe provides needed capacity while maximizing pipe cover. If a connection will be needed to the existing Butler Pike pipe (currently not proposed), proposed pipes must match the 15" existing pipe size.*

Sincerely yours,

Irick, Eberhardt & Mientus, Inc.

Robert F. Irick, RLA, ASLA

C: Bob Downs

BEFORE THE
BOARD OF SUPERVISORS OF WHITEMARSH TOWNSHIP

IN RE: APPLICATION OF ARGOS ASSOCIATES, ADELPHI LAND ASSOCIATES, AND POLERGODOM GROUP, LTD. FOR A CONDITIONAL USE	: : :

DECISION

I. FINDINGS OF FACT

1. On June 13, 2109, Argos Associates ("Argos") a Pennsylvania limited partnership, Adelphi Land Associates ("Adelphi") a Florida limited partnership, and Polergodom Group, Ltd. ("Polergodom") a Pennsylvania limited partnership (collectively the "Applicant") filed an Application (the "Application") with Whitemarsh Township (the "Township") seeking conditional use approval for 58 new townhome units (the "Proposed Development") on Parcel I.D. Nos. 65-00-01375-00-9, 65-00-01372-01-2, 65-00-10735-00-9, 65-00-10723-00-3 (collectively, the "Property"), four (4) parcels located at the southwest corner of Skippack Pike and Butler Pike in Whitemarsh Township, Montgomery County, Pennsylvania. Exhibit T-2.

2. Parcel I.D. No. 65-00-01375-00-9 is owned by Argos and Adelphi. Parcel I.D. No. 65-00-01372-01-2 is owned by Argos and Polergodom. Parcel I.D. No. 65-00-10735-00-9 is owned by Adelphi. Parcel I.D. No. 65-00-10723-00-3 is owned by Argos and Polergodom. Exhibit A-2.

3. The Property is zoned VC-4 – Village Commercial District, Subdistrict 4, pursuant to the Whitemarsh Township Zoning Ordinance (the "Ordinance").

4. A public hearing (the "Hearing") before the Board of Supervisors of Whitemarsh Township (the "Board of Supervisors") was advertised for September 12, 2019 by publication of a notice in the Times Herald, a newspaper of general circulation in the Township, twice: Once on August 22, 2019, and once on August 29, 2019. Exhibit T-1.

5. On September 4, 2019, written notice of the Hearing was conspicuously posted on the Property. Exhibit T-8.

6. The original 60-day time period for holding a hearing on the Application expired on September 11, 2019, but the Applicant granted an extension of time to the Township through September 30, 2019 to commence a public hearing on the Application. Exhibit T-7.

7. The Applicant was represented at the Hearing by Caroline A. Edwards, Esquire. N.T. 9/12/19 at p. 26.

8. Patricia Sheinman ("Sheinman"), 999 and 983 Butler Pike, Blue Bell, Whitpain Township, Pennsylvania, was granted party status to the Hearing. Notes of Testimony ("N.T.") 9/12/19 at pp. 14-18, 22.

9. Sheinman owns 360 feet of frontage along Butler Pike directly across from the Proposed Development. N.T. 9/12/19 at p. 16.

10. Christopher Lee Miller ("Miller"), 1033 Butler Pike, Blue Bell, Whitpain Township, Pennsylvania, was granted party status to the Hearing. N.T. 9/12/19 at pp. 19-22.

11. Miller owns property directly across Butler Pike from the Proposed Development. N.T. 9/12/19 at p.20.

12. Whitpain Township, represented at the Hearing by its Solicitor, Frank R. Bartle, Esquire, was granted party status to the hearing. N.T. 10/10/19 at pp. 24-25.

13. The Township marked and entered into evidence the following exhibits:

a. T-1 – Proof of publication of notice of the Hearing.
b. T-2 – The Application.
c. T-3 – Resident notification letter dated August 19, 2019, a mailing list, and a map showing a 500-foot radius from the Property.
d. T-4 – Zoning ordinance compliance review letter dated July 25, 2019 from Charles L. Guttenplan, AIPC, Director of Planning and Zoning, to the Applicant.
e. T-5 – Montgomery County Planning Commission letter dated August 7, 2019.
f. T-6 – Whitemarsh Township Planning Commission meeting minutes of August 13, 2019.
g. T-7 – E-mail correspondence dated July 10, 2019 and July 11, 2019 between the Applicant and Mr. Guttenplan.
h. T-8 – Proof of posting of Property with notice of the Hearing.

N.T. 9/12/19 at pp. 8-11.

14. The Applicant marked and entered into evidence the following exhibits:

a. A-1 – Robert Downs – curriculum vitae.
b. A-2 - Property title information.
c. A-3 – Richard Collier – curriculum vitae.
d. A-4 – Site Plan.
e. A-5 – Zoning Ordinance Section 116-290(A)-(B).
f. A-6 – Zoning Officer review letter dated 7/25/19 (same as Exhibit T-4).
g. A-7 – Aerial plan of the Property.
h. A-8 – Sidewalk plan.
i. A-9 – Excerpts from the 2003 Comprehensive Plan.
j. A-10 – Montgomery County Planning Commission letter dated 8/7/19 (same as Exhibit T-5).
k. A-11 – Open Space Plan.
l. A-12 – Except from Montgomery County Planning Commission Report "Building Better Townhouse Communities".
m. A-13 – Whitemarsh Township Authority E-mail.
n. A-14 – Ambler Borough Water Department E-mail.

o. A-15 – Architectural renderings.
p. A-16 – Robert Irick – curriculum vitae.
q. A-17 – List of waiver requests from SALDO.
r. A-18 – Site Improvement Plan – Sheets 5 and 6.
s. A-19 – Lighting and Landscape Plan – Sheets 7 and 8.
t. A-20 – Brian Keaveney – curriculum vitae.
u. A-21 – Transportation Impact Study.
v. A-22 – Heinrich & Klein Traffic Review Letter dated 2/11/19.
w. A-23 – Montgomery County Planning Commission Report – "Characteristics of the Population in New and Existing Housing Units" dated January, 2012.
x. A-24 – Watertower Office Building property title information.
y. A-25 – Shared Parking Agreement
z. A-26 – Estelle Eberhardt – curriculum vitae.

N.T. 10/10/19 at pp. 106-107.

15. Miller marked and entered into evidence the following exhibits:

a. M-1 – 2 color photographs of Miller's neighbor's property.
b. M-2 – 1 black-and-white photograph of Miller's neighbor's property.
c. M-3 – Site plan from Whitpain Township website depicting properties across Butler Pike from the Proposed Development and storm sewer/drainage system.

N.T. 10/10/19 at pp. 181-195.

16. Whitpain Township marked and entered into evidence the following exhibit:

a. W-1 – October 10, 2019 letter from Frank Bartle, Esq. to David J. Sander, Esq.

N.T. 10/10/19 at pp. 45, 108.

17. Robert Downs ("Downs") testified for the Applicant. N.T. 9/12/19 at pp. 27, *et seq*.

18. Downs is Vice-President and General Counsel of the Spartan Organization, Inc., with which the Applicant entities are affiliated. N.T. 9/12/19 at p. 29; Exhibit A-1.

19. The Applicant intends to comply with all requirements of the Ordinance applicable to conditional uses, including Sections 116-37, 116-291, and 116-292 of the Ordinance. N.T. 9/12/19 at p. 42.

20. Each proposed townhome units will have a 2-car garage, a basement, will range in area from between 2,600 and 3,400 square feet, and most be 3-bedroom, 2-1/2- bathroom units, with options for a fourth bedroom and a third full bathroom. N.T. 9/12/19 at pp. 44-45.

21. The Proposed Development will consist of three- or four-unit buildings. N.T. 9/12/19 at pp. 45, 64.

22. The Proposed Development will have private streets that will be the responsibility of a community association to maintain. N.T. 9/12/19 at p. 45.

23. Sales prices are proposed to start in the $600,000's and top out in the $900,000's. N.T. 9/21/19 at p. 45.

24. The proposed townhome units will be two stories in height. N.T. 9/21/19 at pp. 51, 148.

25. Richard Collier ("Collier") testified for the Applicant. N.T. 9/12/19 at pp. 54, *et seq.*

26. Collier was qualified and approved as an expert in land planning, landscape design, and site design. N.T. 9/12/19 at p. 60.

27. Collier performed planning services for the Applicant by laying out the proposed roads, buildings, open space areas, and stormwater management areas on the Property. N.T. 9/12/19 at p. 61.

28. A boulevard-type entrance is proposed from Butler Pike into the Proposed Development. N.T. 9/12/19 at p. 63.

29. The proposed access to the Proposed Development from Butler Pike is a full-turn intersection, allowing turns in and out of the Proposed Development in all directions. The proposed access from Skippack Pike to the Proposed Development provides a right-in, right-out turning movement only. N.T. 9/12/19 at p. 64.

30. The plan for the Proposed Development was designed to allow each dwelling unit to face onto or back onto open space. N.T. 9/12/19 at p. 66.

31. The proposed townhomes will be buffered in accordance with the requirements of the Whitemarsh Township Subdivision and Land Development Ordinance ("SALDO"). N.T. 9/12/19 at p. 66.

32. Sidewalks are proposed to serve every townhome unit in the Proposed Development. N.T. 9/12/19 at p. 67.

33. The Proposed Development shows 48% open space where the requirement for open space in the VC-4 District is 25%. N.T. 9/12/19 at p. 72.

34. Section 116-290.B.(1) of the Ordinance permits townhomes by conditional use in the VC-4 District. N.T. 9/12/19 at p. 72; Exhibit A-5, Exhibits T-4/A-6.

36. The neighborhood in which the Proposed Development is located is a mixed-use area of retail and service uses, and residential uses, forming a village of intense use at or near the intersection of Butler Pike and Skippack Pike, then stepping back to being more residential and less intense as you move away from the intersection. N.T. 9/12/19 at p. 82.

37. The Proposed Development is compatible with the character of the neighborhood in which the Property is located because it is consistent with the attached units across Butler Pike in Whitpain Township and serve as a transition from commercial uses to single-family residential uses. N.T. 9/12/19 at p. 84.

38. The Proposed Development does not create a need to safeguard adjoining properties from the impact of the Proposed Development. N.T. 9/12/19 at p. 84.

39. The Proposed Development will be well-buffered from the adjacent uses. N.T. 9/21/19 at p. 86.

40. The proposed sidewalks meet the requirements of the SALDO. N.T. 9/12/19 at p. 86.

41. The 2003 Whitemarsh Township Comprehensive Plan is the comprehensive plan that is in effect in Whitemarsh Township. N.T. 9/12/19 at p. 86-87.

42. The Comprehensive Plan suggests that density in the area in which the Property is located should be between 1.4 and 4.3 dwelling units per acre, termed "medium density", and the Proposed Development is 3.9 dwelling units per acre. N.T. 9/12/19 at p. 92.

43. The only way in which the Proposed Development is not consistent with the Comprehensive Plan is that the Comprehensive Plan states that medium density should be limited to single-family detached dwellings, and not attached dwellings, however, the Ordinance permits townhome units in the VC-4 District. N.T. 9/12/19 at pp. 92-93.

44. Pursuant to the VC-4 Zoning District provisions, a density of 8 dwelling units per acres is permitted, and the Proposed Development shows a density of 3.9 dwelling units per acre. N.T. 9/12/19 at pp. 93, 119; N.T. 9/26/19 at pp. 119-120.

45. The Proposed Development is consistent with the 2006 Whitemarsh Township Open Space Plan (currently in effect). The Property is designated as "Country Residential" in the Open Space Plan and there is no recommendation for the Property to be acquired for open space preservation. N.T. 9/12/19 at pp. 105, 108; N.T. 9/26/19 at pp. 30-32, 35-39.

46. The maximum density in the VC-4 Zoning District is 8 dwelling units per acre, which would allow the construction of 118 townhomes on the Property, whereas the Applicant proposes 58 townhomes, fewer than half the number of townhomes that would be permitted to be built on the Property. N.T. 9/12/19 at p. 119; N.T. 9/26/19 at pp. 119-121.

47. There are no characteristics of the Proposed Development that would cause it to have detrimental effects that are greater than would ordinarily be expected by a townhome use. N.T. 9/12/19 at pp. 119-120.

48. When the Proposed Development is built, the surrounding neighborhood will not be subjected to objectionable noise, light, or glare. N.T. 9/12/19 at p. 120.

49. The lighting in the Proposed Development will conform to all Township ordinance standards that include features that eliminate glare. N.T. 9/12/19 at p. 120.

50. When the Proposed Development is built, the surrounding neighborhood will not be subjected to objectionable heat, ventilation, smoke, fumes, vapors, dust, dirt, gases, or radioactive or electrical disturbance. N.T. 9/12/19 at p. 121.

51. The Proposed Development requires no variances from the provisions of the Ordinance, and it is the Applicant's intention to comply with all Ordinance requirements. N.T. 9/12/19 at p. 127.

52. According to the Montgomery County Planning Commission's 2012 study entitled, "Characteristics of the Population in New and Existing Housing Units", the factor for calculating the number of school-aged children (ages 5 through 17) produced in new single-family attached dwellings (townhomes) is 0.21. N.T. 9/12/19 at pp. 132-133; Exhibit A-23.

53. Multiplying the factor 0.21 by the number of proposed townhome units in the Proposed Development (58) results in 12.18, or roughly 12 or 13 school-aged children produced by the Proposed Development. N.T. 9/12/19 at p. 134; N.T. 9/26/19 at pp. 15-16.

54. The Proposed Development will not have an impact on schools that would be greater than what would ordinarily be expected from a townhome community. N.T. 9/12/19 at p. 138.

55. The Property is within the sanitary sewer service area of the Whitemarsh Authority and the Whitemarsh Authority advised the Applicant that sanitary sewer service is available for the Proposed Development. N.T. 9/12/19 at pp. 138-139; Exhibit A-13.

56. The Property is within the public water service area of the Ambler Water Department and the Ambler Water Department advised the Applicant that public water service is available for the Proposed Development based on an estimated water demand of 20,300 gallons per day. N.T. 9/12/19 at pp. 139-141; Exhibit A-14.

57. There are no characteristics of the Proposed Development that would result in a higher use of police, fire protection, or park resources than would ordinarily be expected for a townhome community. N.T. 9/12/19 at pp. 142-143.

58. There are no drive-through windows proposed in connection with the Proposed Development. N.T. 9/12/19 at p. 143.

59. The Applicant is not requesting that the Board of Supervisors reduce the total required parking for the proposed Development. N.T. 9/12/19 at p. 143.

60. The plans for the Proposed Development do not propose any parking between the street line and the front principal building plane. N.T. 9/12/19 at p. 143.

61. All buildings in the Proposed Development will be at or less than 35 feet in height. N.T. 9/12/19 at pp. 143-144.

62. All the lots in the Proposed Community comply with the requirement that each lot shall have no more than one curb cut per street frontage. N.T. 9/12/19 at p. 144.

63. The gross site area of the Property exceeds 15 acres. N.T. 9/12/19 at p. 144.

64. The architectural features of the proposed townhomes will be substantially similar to the elevations shown in Exhibit A-15 and will contain features at the entrances of each home to protect people from the rain and sun. N.T. 9/12/19 at p. 145- 147; Exhibit A-15.

65. The building placement in the Proposed Development allows for pedestrian access ways that link buildings, doorways, and open spaces. N.T. 9/12/19 at p. 148.

66. Where they don't already exist, the Applicant will install sidewalks along the full frontage of Butler Pike. N.T. 9/12/19 at p. 149.

67. Each of the townhome units in the Proposed Development has a side or rear access in addition to the front door access. N.T. 9/12/19 at pp. 149-150.

68. No buildings in the Proposed Development will be 70,000 square feet or larger. N.T. 9/12/19 at p. 150.

69. No tenant in the Proposed Development will be able to have space in excess of 20,000 square feet. N.T. 9/12/19 at p. 151.

70. The townhomes in the Proposed Development will be multi-story (two stories). N.T. 9/12/19 at p. 151.

71. There are architectural features proposed for the townhomes in the Proposed Development that articulate the line between the ground and upper levels. N.T. 9/12/19 at p. 151.

72. The architectural features include dormers, peaked roofs, side-loaded garages, setback doors and no blank walls. N.T. 9/12/19 at pp. 151-152.

73. All sides of the townhomes in the Proposed Development are designed to have a similar façade to the front façade. N.T. 9/12/19 at pp. 152-153.

74. The townhomes, as designed, contain projecting and recessed elements such as porches, windows, and roof dormers. N.T. 9/12/19 at p. 153.

75. Breaks in the façade and roof lines of the townhomes in the Proposed Development occur at least every 100 feet. N.T. 9/12/19 at p. 153.

76. The different buildings in the Proposed Development vary in length from 85 feet long for the three-unit buildings to 130 feet long for the four-unit buildings. N.T. 9/12/19 at p. 154.

77. There are no uninterrupted lengths of façade that exceed 130 feet in the Proposed Development. N.T. 9/12/19 at p. 154.

78. There are no building facades of greater than 200 feet in length in the Proposed Development. N.T. 9/12/19 at p. 154.

79. There are no buildings in the Proposed Development that have a footprint of over 40,000 square feet. N.T. 9/12/19 at p. 154.

80. The exterior wall materials will comply with the requirements of the Ordinance. N.T. 9/12/19 at p. 155.

81. There are no exterior wall materials proposed for the Proposed Development that are prohibited by the Ordinance. N.T. 9/12/19 at p. 155.

82. Any changes to the existing house on the Property will be performed in accordance with the Ordinance. N.T. 9/12/19 at p. 155.

83. All exposed concrete walls, if any, will be stuccoed or painted. N.T. 9/12/19 at p. 155.

84. If there are any painted concrete block walls, they will not exceed 36 inches in height above the ground. N.T. 9/12/19 at pp. 155-156.

85. The Proposed Development will share parking with the Water Tower office building on Butler Pike, which is located on property adjoining the Property. N.T. 9/12/19 at pp. 156-158.

86. The hearing was continued on the record to September 26, 2019 at 7:00 PM in the Whitemarsh Township Building. N.T. 9/12/19 at pp. 172, 174-175.

87. There will be 94 parking spaces on the Water Tower office building property that will be designated as "shared parking" for the residents of the Proposed Development, and there will be 16 parking spaces in the Proposed Development that will be designated as "shared parking" for the Water Tower office building. N.T. 9/26/19 at pp. 19-20.

88. The Proposed Development provides a shared driveway with an adjoining property along Butler Pike. N.T. 9/26/19 at pp. 23-25.

89. The abutting property on which an office building is located, referred to as the "Watertower Office Building", is owned by Watertower Properties, LLC, and is not part of the conditional use application. N.T. 9/26/19 at pp. 75-76; Exhibit A-24.

90. The Applicant provided a shared parking agreement between the Applicant and Watertower Properties, LLC, which states that the owners, the occupants, and the guests of each property have the right to use shared parking on the other's property. N.T. 9/26/19 at pp. 76-77; Exhibit A-25.

91. Estelle Eberhardt ("Eberhardt") testified for the Applicant. N.T. 9/26/19 at pp. 81, et seq.

92. Eberhardt was qualified and approved as an expert in professional engineering. N.T. 9/2/619 at pp. 81-84; Exhibit A-26.

93. The Proposed Development was designed with reference to the SALDO, the Ordinance, and Chapter 58 of the Township's Code of Ordinances. N.T. 9/26/19 at pp. 84-85.

94. The Applicant complies with all provisions of the Ordinance. N.T. 9/26/19 at p. 85.

95. The Applicant is requesting waivers from the SALDO and from Resolution No. 2004-82, and Eberhardt discussed each requested waiver and the reasons therefor. N.T. 9/26/19 at pp. 85-101.

96. None of the requested waivers creates an adverse impact on the surrounding neighborhood or on the Township. N.T. 9/26/19 at p. 101.

97. The types of soils underlying the Property indicate that there is bedrock underneath the soil which poses no potential problems for a residential community at the Property. N.T. 9/26/19 at p. 103.

98. There are two detention basins proposed to handle stormwater runoff from "Watershed A" on the Property, and there are four detention or infiltration basins proposed for the northeastern side of the Property that would release into the storm sewer in Skippack Pike. N.T. 9/26/19 at pp. 105-106.

99. As proposed, the stormwater management facilities will reduce the one- through 100-year storm events to the predevelopment meadow condition, as required by Resolution 2004-8. N.T. 9/26/19 at p. 110.

100. The impervious coverage of the Proposed Development is 39%, whereas the maximum allowable impervious coverage is 65%, or 75% with shared parking. N.T. 9/26/19 at p. 111.

101. The green area being provided by the Proposed Development is 7.25 acres, nearly 49%, whereas the minimum required green area requirement is 25% or about 3.7 acres. N.T. 9/26/19 at p. 111.

102. The stormwater from the Proposed Development will not unduly burden the stormwater management system in this area of the Township. N.T. 9/26/19 at p. 112.

103. Public water service and public sewer service are proposed for the Proposed Development and are noted on the Plan. N.T. 9/26/19 at p. 112.

104. The Proposed Development's use of public water and sewer does not create an impact that exceeds what would ordinarily be expected from a townhome community. N.T. 9/26/19 at p. 119.

105. The Proposed Development will be designed with all utility lines located underground. N.T. 9/26/19 at p. 119.

106. The permitted density for townhomes in the VC-4 District is 8 dwelling units per acre. N.T. 9/26/19 at p. 119.

107. The Applicant has prepared a lighting design for the Proposed Development that utilizes single-pole light fixtures at each location indicated on the Plan, and that will be aimed, located, designed, fitted, and maintained so that it does not present a hazard to pedestrians and drivers. N.T. 9/26/19 at pp. 121-122.

108. The lighting is designed so that it does not reflect or project light onto adjoining properties. N.T. 9/26/19 at p. 122.

109. There will be no light spill at the Proposed Development's boundaries that exceeds 0.1 footcandles at any point along off-street areas. N.T. 9/26/19 at p. 124.

110. At no point along the development boundaries measured five feet above grade will the illumination level be more than 0.3 footcandles. N.T. 9/26/19 at pp. 124-125.

111. The landscaping plans for the Proposed Development show Class B buffers of 50 feet in width adjacent to all surrounding parcels. N.T. 9/26/19 at pp. 125, 127.

112. The proposed buffers comply with Section 116-295 of the Ordinance and Section 105-52 of the SALDO. N.T. 9/26/19 at p. 127.

113. No easements on adjacent properties are required for maintenance of the proposed buffers and landscaping. N.T. 9/26/19 at pp. 127-128.

114. The minimum caliper of all deciduous trees proposed to be planted in the Proposed Development is 3 inches, which exceeds the minimum 2.5 inches required in the Ordinance. N.T. 9/26/19 at p. 128.

115. The minimum size of evergreen trees proposed to be planted in the Proposed Development is 10 feet in height, which exceeds the minimum 6 to 8 feet required in the Ordinance. N.T. 9/26/19 at p. 128.

116. All proposed parking areas in the Proposed Development are single-bay parking. N.T. 9/26/19 at p. 129.

117. At least one tree of 2.5-inch minimum caliper will be provided for every five parking spaces in each parking area in the Proposed Development, and there will be no parking islands. N.T. 9/26/19 at p. 129.

118. The Hearing was continued on the record to October 10, 2019 at 7:00 PM at the Whitemarsh Township Building. N.T. 9/26/19 at pp. 167-168.

119. Whitpain Township, through its Solicitor Frank Bartle, Esquire, presented a letter to the Board of Supervisors dated October 10, 2019, which contains conditions related to stormwater management and traffic which, if the Board of Supervisors approves the Application, were agreed-upon by Whitpain Township and the Applicant to become conditions of approval. N.T. 10/10/19 at pp. 42-46.

120. Lynn Hoffman ("Hoffman"), 1097 Butler Pike, Blue Bell, Whitpain Township, Pennsylvania, was granted party status to the Hearing. N.T. 10/10/19 at P. 36.

121. Brian R. Keaveney ("Keaveney") testified for the Applicant. N.T. 10/10/19 at pp. 37, *et seq*.

122. Keaveney was qualified and approved as an expert in traffic engineering. N.T. 10/10/19 at 39; Exhibit A-20.

123. Keaveney prepared a traffic impact study for the Proposed Development in keeping with both PennDOT and Township requirements. N.T. 10/10/19 at pp. 40-41, 54; Exhibit A-21.

124. Access to the Proposed Development will be from both Skippack Pike and from Butler Pike. N.T. 10/10/19 at p. 47.

125. The Butler Pike access will be a "full-access" that will allow traffic to turn right or left into the Proposed Development and to turn right or left out of the Proposed Development. N.T. 10/10/19 at p. 47.

126. The Skippack Pike access will be limited to a "right-in, right-out" access, which prohibits left turns into and out of the Proposed Development. N.T. 10/10/19 at pp. 47-49.

127. The impact of the traffic that will be generated by the Proposed Development will not change the level of service rating (currently an "E") at the intersection of Butler Pike and Skippack Pike. N.T. 10/10/19 at p. 56.

128. There are no characteristics of the Proposed Development that would cause it to have impacts on local traffic that would be greater than those ordinarily expected from a townhome community. N.T. 10/10/19 at p. 57.

129. The size of the Proposed Development will not have any harmful effect on local vehicular traffic. N.T. 10/10/19 at p. 57.

130. The expected daily and peak hour traffic generated by the Proposed Development is what would ordinarily be expected from a townhome community. N.T. 10/10/19 at p. 58.

131. The Applicant will comply with all the comments made by the Township's traffic engineer in its February 11, 2019 letter. N.T. 10/10/19 at pp. 59-60; Exhibit A-22.

132. The proposed traffic circulation pattern in the Proposed Development will provide connectivity to all residential units with supplemental parking spread throughout the Proposed Development. N.T. 10/10/19 at p. 62.

133. The proposed interior traffic circulation and parking do not create any issues that would adversely affect traffic on adjoining roadways. N.T. 10/10/19 at p. 63.

134. The Hearing was closed on October 10, 2019. N.T. 10/10/19 T pp. 228-229.

135. At its regular meeting of November 14, 2019, the Board of Supervisors voted to approve the Application with conditions as set forth in the below Order.

II. CONCLUSIONS OF LAW

1. The Applicant has legal standing to file and prosecute the Application as the legal owners of the Property.

2. The Board of Supervisors of Whitemarsh Township has jurisdiction to hear the Application and render a decision on it pursuant to Section 913.2 of the Pennsylvania Municipalities Planning Code (the "MPC"), 53 P.S. Section 10913.2.

3. Notice of the Hearing was advertised and posted as required by Section 603(c)(2) and Section 908(1) of the MPC.

4. Sheinman, Miller, Whitpain Township, and Hoffman were properly granted party status to the Hearing based on their respective interests in the Application as aggrieved parties.

5. The Property is located in the VC-4 – Village Commercial District, Subdistrict 4, in which townhomes are permitted by conditional use pursuant to Section 116-290.B.(1) of the Ordinance.

6. The Applicant met its initial burden if going forward with evidence and proving that the Proposed Development has met all of the requirements of the following provisions of the Ordinance:

   a. Section 116-291 ("Conditions of approval for all uses")

   b. Section 116-292 ("Conditions of approval for all conditional uses")

7. The burden shifted to the protestants to show that the Proposed Development would be adverse to the health, safety, and general welfare of the public.

8. The protestants did not meet their burden of proving that the Proposed Development would be adverse to the health, safety, and general welfare of the public.

9. In granting conditional use approval, the Board is authorized to place such additional reasonable conditions and safeguards as it deems appropriate to ensure compliance with the purposes and provisions of the Ordinance and to protect the health, safety, and general welfare of the community. Those conditions are set forth in the below Order.

10. The Applicant is entitled to conditional use approval in accordance with this Decision.

III. DISCUSSION

An applicant for conditional use approval has the burden to demonstrate compliance with the specific criteria of the zoning ordinance. *Levin v. Board of Supervisors of Benner Township,* 669 A.2d 1063 (Pa. Cmwlth., 1995), *aff'd,* 547 Pa. 161, 689 A.2d 224 (1997). Once the applicant meets the requirements, it has made out its *prima facie* case and the application must be granted unless the

objectors present sufficient evidence that the proposed use has a detrimental effect on the public health, safety, and welfare. *Bailey v. Upper Southampton Township,* 690 A.2d 1324 (Pa. Cmwlth., 1997).

In this case, the Applicant met its burden of demonstrating that its proposed townhome use complies with the specific criteria of the Ordinance, as noted in Conclusion of Law No. 6, above. Thus, the Applicant is entitled to conditional use approval.

Further, Section 913.2(a) of the MPC, 53 P.S. § 10913.2(a), provides that a governing body can grant or deny a conditional use pursuant to express standards and criteria, and permits a governing body to attach such reasonable conditions and safeguards, in addition to those expressed in an ordinance, as it may deem necessary to implement the purposes of the MPC in the zoning ordinance. *In re: Thompson*, 896 Ad. 659 (Pa. Cmwlth., 2006).

In this case, the Board is of the opinion that the grant of conditional use approval to the Applicant must be qualified by the imposition of the conditions set forth in the Order below in order to protect the public health, safety and welfare. The conditions placed on conditional use approval are all reasonable and closely tailored to address certain objectionable impacts of the proposed use. The fact that the parties to the conditional use hearing agreed to the conditions is another reason that the Board determines that they are reasonable under the specific facts of this case.

IV. ORDER

AND NOW, this 21st day of November, 2019, it is hereby **ORDERED** that the application of Argos Associates, Adelphi Land Associates, and Polergodom Group, Ltd. for a conditional use to allow a 58-unit townhome development in the VC-4 – Village Commercial District, Subdistrict 4 in Whitemarsh Township is hereby **GRANTED**, conditioned on the Applicant's compliance with the following conditions:

> 1. That within 90 days of the date of issuance of the certificate of occupancy for the 58th home, there be an evaluation of the traffic signal timing at the intersection of Butler and Skippack Pikes to determine whether the signal is operating in accordance with the traffic signal permit and whether any timing changes are required to accommodate the proposed development.

2. That the Applicant shall provide access to the development from both Butler and Skippack Pikes.

3. That any land development approval of this project shall include a requirement of compliance with the Montgomery County-initiated Act 167 Stormwater Management Study that was approved by the Pennsylvania Department of Environmental Protection in July 2015 as to any stormwater released, directly or indirectly, to Whitpain Township from the Property.

4. That the rate and volume of stormwater shall be no more than predevelopment with respect to stormwater released to Whitpain Township from the Property.

5. That the Applicant develop its proposed townhome units in substantial accordance with the architectural features shown on the three (3) renderings depicting townhome units that the Applicant presented at the Hearing, which are attached hereto as Exhibit "A" and incorporated herein by reference.

6. To the extent not restricted by existing easements and/or other restrictions, that the Applicant install pedestrian walkways (which shall include concrete sidewalks and/or macadam paths) on the full frontages of its property along Butler and Skippack Pikes.

7. That the Applicant provide a defined and reasonably level open or green space, exclusive of the stormwater management facilities for recreational facilities suitable to residents of this development. The open space allocation/basin shall be designed to the satisfaction of the Township Engineer.

8. That the Applicant use its good faith, commercially reasonable efforts to design and build townhome units which contain energy-efficient features, such as LED lights, energy efficient windows, and lower VOC (volatile organic compound) paints and stains.

9. That the Applicant offer solar panels as an option to its homebuyers where the orientation of the townhome and other characteristics make solar panels feasible.

10. That the Applicant shall develop the Property in substantial compliance with the exhibits, plans, and testimony submitted to the Board of Supervisors at the Hearing.

11. That the Applicant shall install one (1) electric car charging station in the Water Tower Office Complex.

ATTEST:

Richard L. Mellor, Jr., Manager

BOARD OF SUPERVISORS OF WHITEMARSH TOWNSHIP

By: Amy P. Grossman, Vice-Chair

PLANS

- Full Plan Set - dated 6/12/2019, last revised 3/27/2020
- Landscape & Lighting Plan (pages 7 & 8); last revised 7/23/2020
- Autoturn & Hydrant Exhibit - dated 3/28/2020
- Common Facilities Plan– dated 6/12/2019
- Tree Survey – dated 3/17/14; last revised 6/10/2019 (currently being revised)
- Predeve. D. Area Plan – Dated 6/12/2019; last revised 3/27/2020
- Viewshed Exhibit – dated 6/12/2019
- 3 & 4 Unit Grouping & Exterior Elevation Renderings

LONGFIELD FARM

LOCATION MAP
SCALE: 1" = 800'

INDEX OF DRAWINGS

SHEET	TITLE
1.	LAND DEVELOPMENT PLAN*
2.	OVERALL PROPERTY PLAN
3.	EXISTING RESOURCE AND SITE ANALYSIS PLAN
4.	AERIAL PHOTO PLAN
5.	SITE IMPROVEMENT PLAN
6.	SITE IMPROVEMENT PLAN
7.	LANDSCAPING PLAN
8.	LANDSCAPING PLAN
9	PLAN OF UTILITIES
10.	PLAN OF UTILITIES
11.	DRIVE "A" PROFILE - 0+00 TO 11+50
12.	DRIVE "A" PROFILE - 11+50 TO TERM.
13.	DRIVE "B" PROFILES
14.	DRIVE "C" PROFILE
15.	OFF-ROAD STORM SEWER PROFILES
16.	OFF-ROAD STORM & SANITARY SEWER PROFILES
17.	CONSTRUCTION DETAILS
18.	CONSTRUCTION DETAILS
19.	CONSTRUCTION DETAILS
20.	EROSION CONTROL PLAN
21.	EROSION CONTROL PLAN
22.	E & S CONSTRUCTION DETAILS
23.	E & S CONSTRUCTION DETAILS
24.	E & S CONSTRUCTION DETAILS
25.	PCSM PLAN**
26.	PCSM PLAN**
27.	PCSM DETAILS**
28.	PCSM DETAILS**
29.	OPEN SPACE MANAGEMENT PLAN
30.	DRAINAGE AREAS TO INLETS

*PLAN TO BE RECORDED
**PLAN TO BE RECORDED PER NPDES PERMIT REQUIREMENT

SITUATE

WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA

JUNE 12, 2019
REVISED MARCH 27, 2020
PRELIMINARY PLAN - NOT FOR RECORDING

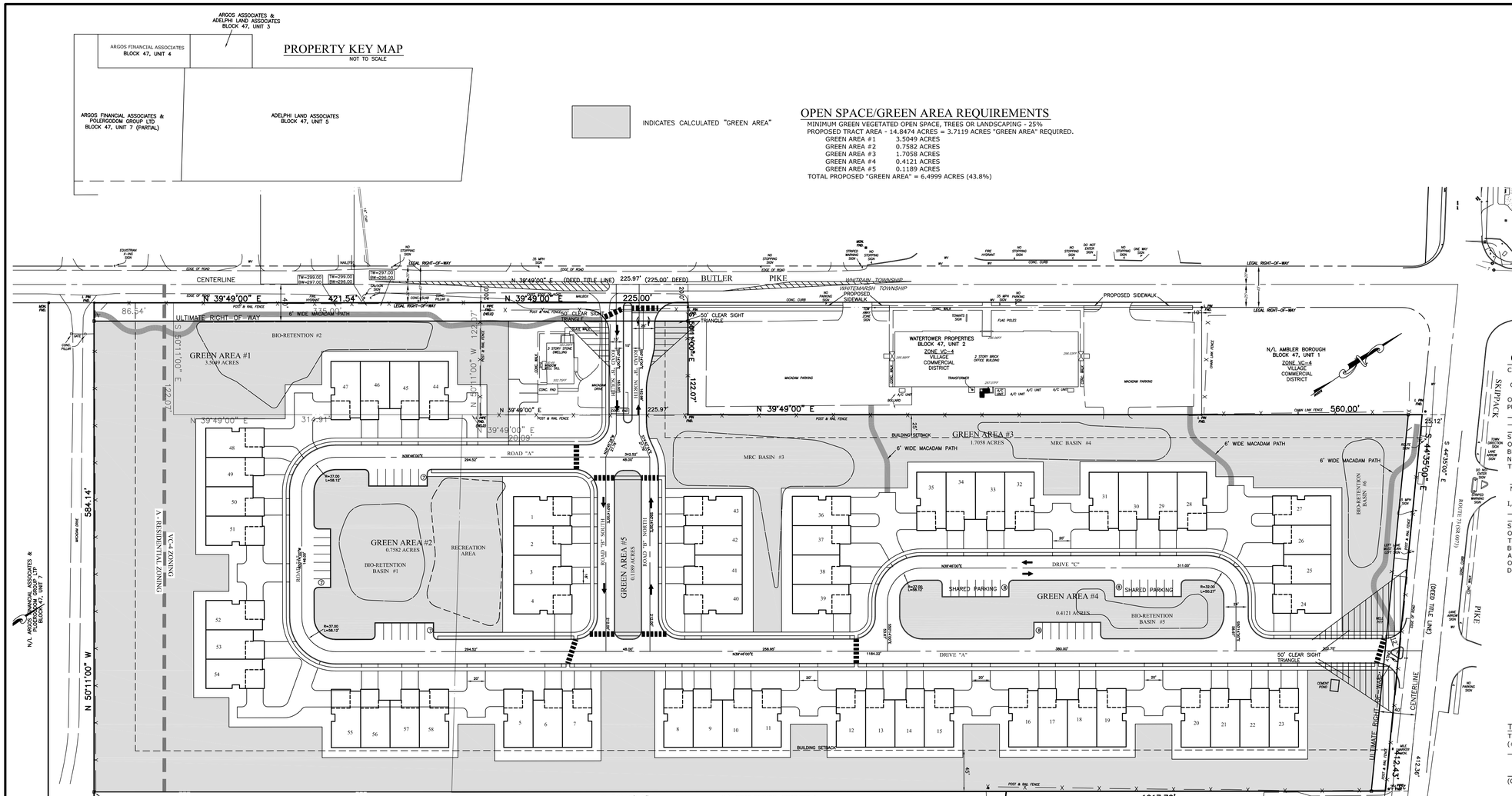
PLANS PREPARED FOR:

SPARTAN ORGANIZATION
P.O. BOX 736
FORT WASHINGTON, PA 19034-0736
215) 643-5800

PLANS PREPARED BY:

Irick Eberhardt Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215-541-4626
E-Mail: Info@IEANDM.com

Land Concepts, LLC
593 Skippack Pike
Suite 300
Blue Bell, PA 19422
215-646-2988



LOCATION MAP
SCALE: 1" = 800'

OPEN SPACE/GREEN AREA REQUIREMENTS

MINIMUM GREEN VEGETATED OPEN SPACE, TREES OR LANDSCAPING - 25%
PROPOSED TRACT AREA - 14.8474 ACRES = 3.7119 ACRES "GREEN AREA" REQUIRED.

GREEN AREA #1	3.5049 ACRES
GREEN AREA #2	0.7582 ACRES
GREEN AREA #3	1.7058 ACRES
GREEN AREA #4	0.4121 ACRES
GREEN AREA #5	0.1189 ACRES

TOTAL PROPOSED "GREEN AREA" = 6.4999 ACRES (43.8%)

OWNER CERTIFICATIONS

COMMONWEALTH OF PENNSYLVANIA :
: SS
COUNTY OF MONTGOMERY :

ON THE _____ DAY OF _____, A.D., 201_, BEFORE ME, THE SUBSCRIBER, A NOTARY PUBLIC OF THE COMMONWEALTH OF PENNSYLVANIA, PERSONALLY APPEARED _____, WHO ACKNOWLEDGED HIMSELF TO BE THE PRESIDENT OF _____, WHICH IS THE GENERAL PARTNER OF _____ L.P. A PENNSYLVANIA LIMITED PARTNERSHIP, AND THAT AS SUCH, BEING AUTHORIZED TO DO SO, EXECUTED THE FOREGOING PLAN BY SIGNING THE NAME OF THE SAID LIMITED PARTNERSHIP BY HIMSELF AS PRESIDENT OF THE GENERAL PARTNER ON BEHALF OF THE LIMITED PARTNERSHIP AN OWNER OF THE LAND SHOWN HEREON. ALL NECESSARY APPROVALS OF THIS PLAN HAVE BEEN OBTAINED AND IS ENDORSED THEREON AND THAT THE SAID LIMITED PARTNERSHIP DESIRE THAT THIS PLAN BE DULY RECORDED.

_____
NOTARY PUBLIC MY COMMISSION EXPIRES

I, _____, ACKNOWLEDGE MYSELF TO BE THE PRESIDENT OF _____, WHICH IS THE GENERAL PARTNER OF _____, L.P., A PENNSYLVANIA LIMITED PARTNERSHIP, AND THAT AS SUCH, BEING AUTHORIZED TO DO SO, HEREBY CERTIFY THAT THE LIMITED PARTNERSHIP IS THE OWNER OF THE LAND HEREIN DESCRIBED AND THAT THERE ARE NO SUITS PENDING AFFECTING THE TITLE OF THE SAME AND THAT I DO HEREBY ADOPT THIS PLAN AND DESIRE THAT SAME TO BE RECORDED. I, ON BEHALF OF EACH OF THE LIMITED PARTNERSHIP, AND ITS SUCCESSORS AND ASSIGNS, DO FURTHER SAVE THE TOWNSHIP HARMLESS AND INDEMNIFY THE TOWNSHIP OF WHITEMARSH AGAINST ANY LIABILITY OR LOSS RESULTING FROM THE SUBDIVISION OR DEVELOPMENT REPRESENTED BY THIS PLAN FOR WHATEVER REASON, PRESENT OR FUTURE.

_____, L.P.
BY: _____ INC., ITS GENERAL PARTNER

BY: _____
_____ - PRESIDENT

_____, L.P.
BY: _____ INC., ITS GENERAL PARTNER

BY: _____
_____ - PRESIDENT

ATTEST:_____

TOWNSHIP APPROVAL CERTIFICATION

THIS SUBDIVISION AND/OR LAND DEVELOPMENT PLAN WAS APPROVED BY RESOLUTION (#2018-10) OF THE BOARD OF THE SUPERVISORS OF THE TOWNSHIP OF WHITEMARSH THIS _____ DAY OF _____, 20_____.

_____ _____
(CHAIRMAN) (SECRETARY)

TOWNSHIP ENGINEER'S REVIEW

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

_____
(TOWNSHIP ENGINEER)

NOTES:

N/L GEOPEDIOR ASSOCIATES
BLOCK 47, UNIT 37

1. BOUNDARY AND TOPOGRAPHY PERFORMED BY METZ ENGINEERING IN 2015.
2. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
3. THE ULTIMATE RIGHT-OF-WAY FOR THE EXISTING ROADS ARE HEREBY OFFERED FOR DEDICATION TO WHITEMARSH TOWNSHIP.
4. ALL LOTS SHALL BE SERVED BY PUBLIC SEWER AND WATER.
5. ALL WATER MAINS ARE HEREBY OFFERED FOR DEDICATION TO AMBLER WATER COMPANY. CONSTRUCTION OF THE WATER LINE SHALL BE IN ACCORDANCE WITH CURRENT WHITEMARSH TOWNSHIP AUTHORITY STANDARDS AND SPECIFICATIONS OR AS SHOWN HEREON.
6. ALL SANITARY SEWER MAINS ARE HEREBY OFFERED FOR DEDICATION TO AMBLER BOROUGH. ALL MATERIALS USED AND CONSTRUCTION METHODS EMPLOYED SHALL BE IN ACCORDANCE WITH THE WHITEMARSH TOWNSHIP AUTHORITY STANDARDS AND SPECIFICATIONS FOR SANITARY SEWER FACILITIES. SANITARY SEWERS SHALL BE DEDICATED TO AMBLER BOROUGH AT THE COMPLETION OF THE 18 MONTH MAINTENANCE PERIOD. NO WATER HEATER BLOWOFFS OR HEATER OR AIR CONDITIONER CONDENSER CONDENSATE LINES MAY BE CONNECTED TO THE SANITARY SEWER.
7. PERMANENT CONCRETE MONUMENTS SHALL BE PLACED AT ALL PROPERTY CORNERS NOT EXISTING AND AT ULTIMATE RIGHT-OF-WAY AS INDICATED ON THE PLAN BY THE SYMBOL ■. ALL LOT CORNERS SHALL BE PERMANENTLY MARKED WITH IRON PINS OF AT LEAST ⅝"-8" DIAMETER THAT HAVE AN IDENTIFYING TOP STRUCTURE. MONUMENTS WILL BE PLACED UPON COMPLETION OF FINAL GRADING, AND FLUSH TO GROUND WITH TOPS IDENTIFYING THEIR FUNCTION.
8. EASEMENTS SHALL NOT BE PLANTED WITH TREES OR SHRUBS OR BUILT UPON. STORM DRAINAGE AND ENVIRONMENTAL PROTECTION EASEMENTS SHALL NOT BE CONSTRUCTED UPON OR FILLED IN WITH EARTH OR DEBRIS.
9. ALL UTILITY SERVICES ARE TO BE UNDERGROUND.
10. THE DEVELOPER SHALL INSTALL ALL REQUIRED STREET AND REGULATORY SIGNS.
11. THE DWELLINGS SHOWN ON THESE PLANS ARE SUBJECT TO ALL TOWNSHIP ZONING AND SUBDIVISION ORDINANCE REQUIREMENTS. INDIVIDUAL HOUSING UNITS AS DEPICTED ON THE CONSTRUCTION DRAWINGS ARE APPROXIMATE ONLY. ACTUAL HOUSE LOCATIONS AND ELEVATIONS SHALL BE DETERMINED WHEN APPLICATION FOR THE INDIVIDUAL BUILDING PERMIT IS MADE.
12. AN OWNERS ASSOCIATION WILL OWN AND MAINTAIN THE COMMON AREAS, ALL REMAINING OPEN AREAS AND THE INDIVIDUAL STORM PIPES AND INLETS OUTSIDE OF THE TOWNSHIP RIGHTS OF WAY. OWNERS ASSOCIATION DOCUMENTATION SHALL INCLUDE A LAND PRESERVATION/PROTECTION AGREEMENT, DEED RESTRICTION OR OTHER ENFORCEABLE INSTRUMENT THAT ENSURES AND DEFINES MAINTENANCE OF THE SWALES, BASINS AND OTHER PERMANENT BMPS AS NOTED ON THE PCSM PLANS AND PERPETUAL PROTECTION AND MAINTENANCE (INCLUDING THE BIORETENTION BASINS) OF THE COMMON AREAS AND SHALL BE RECORDED. REFER TO OPEN SPACE PLAN & PCSM PLANS WITHIN THIS PLAN SET FOR ADDITIONAL INFORMATION.
13. STRUCTURES, INCLUDING BUT NOT LIMITED TO MAILBOXES, FENCES AND POLES, SHALL NOT BE ERECTED WITHIN STREET RIGHTS OF WAY.
14. NO STRUCTURE, FENCE, PLANTING OR OTHER STRUCTURE SHALL BE MAINTAINED BETWEEN A PLANE OF TWO (2) FEET ABOVE THE CURB LEVEL AND A PLANE SEVEN (7) FEET ABOVE CURB LEVEL SO AS TO INTERFERE WITH TRAFFIC VISIBILITY ACROSS THE CORNER WITH THAT PART OF THE REQUIRED FRONT YARD WHICH IS WITHIN THE CLEAR SIGHT TRIANGLE.
15. SITE BMPs SHALL BE OWNED AND MAINTAINED IN PERPETUITY BY PROPERTY OWNER, A BLANKET ACCESS EASEMENT SHALL BE PROVIDED TO THE TOWNSHIP FOR FOR THE PURPOSE OF ACCESS TO THE DETENTION FACILITIES ON AN ANNUAL BASIS. REFER TO PCSM PLAN FOR ADDITIONAL INFORMATION RELATING TO SITE BMPs.
16. THE SITE IS NOT LOCATED WITHIN ANY FLOODPLAIN, BASED ON FLOOD ELEVATION DATA AND FEMA INSURANCE MAP.
17. PERMANENT REMOVAL OF TOPSOIL FROM LAND WITHIN THE TOWNSHIP IS PROHIBITED.
18. THE COMMON OPEN SPACE IS SUBJECT TO PERMANENT CONSERVATION EASEMENTS PROHIBITING FUTURE DEVELOPMENT AND DEFINING THE RANGE OF PERMITTED ACTIVITIES CONSISTENT WITH Z.O. SECTION 116-275 AS EXECUTED BETWEEN TOWNSHIP AND APPLICANT.
19. OFF-STREET LOADING FACILITIES ARE NOT REQUIRED FOR THIS DEVELOPMENT.
20. IMPROVEMENTS TO BUTLER PIKE TO BE AS REQUIRED BY THE MONTGOMERY COUNTY DEPARTMENT OF ROADS AND BRIDGES. IMPROVEMENTS TO SKIPPACK PIKE TO BE AS REQUIRED BY PENNDOT. PERMITS ARE REQUIRED FROM EACH ENTITY PRIOR TO CONSTRUCTION.
21. FINAL PLANS ARE PROPOSED TO BE SUBMITTED WITHIN THREE YEARS OF THE GRANTING OF PRELIMINARY APPROVAL OF THESE PLANS.
22. TOWNHOME UNITS WILL HAVE EITHER 3 OR 4 BEDROOMS. EXACT NUMBER IS NOT KNOWN AT THIS TIME.

SALDO WAIVERS REQUESTED:

1. 105-21(B)(1)(n)- (Partial Waiver). Requires plans to show existing features within 500' of the site.
2. 105-32(B) private street shall have a right-of-way width and a horizontal and vertical alignment consistent with the requirements for public streets; 105-33B(1). Minimum centerline radii- 150' & 105-33C. Minimum tangent between curves - 100'
3. 105-47 (A), 56(G) & 73- Sidewalks shall be provided where required (Partial Waiver)
4. 105-38(F)-prohibition of perpendicular parking on public or private streets
5. 105-53(D)-dedication of land in the amount of 10% of the total site area for park & rec uses or pay a fee-in-lieu of dedication.
6. Resolution 2004-8.II.D.(8) Requires emergency spillway to be 3.0 feet lower than the spillway crest.
7. Resolution 2004-8.II.D.(12) Requires inlet pipes into a basin to be 6 inches above the floor.
8. Resolution 2004-8.II.E.2.(g)(iv) Requires a minimum diameter of 18" for storm pipe.

STOP–CALL BEFORE YOU DIG!

LOCATION OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE–GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA. ONE CALL SYSTEM THREE DAYS PRIOR TO EXCAVATION. REFERENCE PENNSYLVANIA ACT 287 AS AMENDED BY ACT 181 (2006).
TELE. #: 1-800-242-1776 OR 811.
WORK LOCATION NO.: 20172041435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!

CONDITIONAL USE APPROVAL

A conditional use approval was granted for this project on Novemeber 21, 2019 conditioned on the following conditions:

1. That within 90 days of the date of issuance of the certificate of occupancy for the 58th home, there be an evaluation of the traffic signal timing at the intersection of Butler and Skippack Pikes to determine whether the signal is operating in accordance with the traffic signal permit and whether any timing changes are required to accommodate the proposed development.
2. That the Applicant shall provide access to the development from both Butler and Skippack Pikes.
3. That any land development approval of this project shall Include a requirement of compliance with the Montgomery County-initiated Act 167 Stormwater Management Study that was approved by the Pennsylvania Department of Environmental Protection In July 2015 as to any stormwater released, directly or Indirectly, to Whitpain Township from the Property.
4. That the rate and volume of stormwater shall be no more than predevelopment with respect to stormwater released to Whitpain Township from the Property.
5. That the Applicant develop Its proposed townhome units In substantial accordance with the architectural features shown on the three (3) renderings **depicting** townhome units that the Applicant presented at the Hearing, which are attached hereto as Exhibit "A" and Incorporated herein by reference.
6. To the extent not restricted by existing easements and/or other restrictions, that the Applicant Install pedestrian walkways (which shall Include concrete sidewalks and/or macadam paths) on the full frontages of Its property along Butler and Skippack Pikes.
7. That the Applicant provide a defined and reasonably level open or green space, exclusive of the stormwater management facilities for recreational facilities suitable to residents of this development, The open space allocation/basin shall be designed to the satisfaction of the Township Engineer.
8. That the Applicant use Its good faith, commercially reasonable efforts to design and build townhome units which contain energy-efficient features, such as LED lights, energy efficient windows, and lower VOE (volatile organic compound) paints and stains.
9. That the Applicant offer solar panels as an option to Its homebuyers where the orientation of the townhome and other characteristics make solar panels feasible.
10. That the Applicant shall develop the Property In substantial compliance with the exhibits, plans, and testimony submitted to the Board of Supervisors at the Hearing.
11. That the Applicant shall Install one (1) electric car charging station In the Water Tower Office Complex.

SITE STATISTICS

GROSS TRACT AREA:
BLOCK 47, UNIT 3 - 27,585 S.F.
BLOCK 47, UNIT 4 - 40,893 S.F.
BLOCK 47, UNIT 5 - 424,074 S.F.
BLOCK 47, UNIT 7 - 173,337 S.F.
TOTAL - 665,889 S.F.(15.2867 ACRES)
LESS ULTIMATE RIGHT-OF-WAY - 19,137 S.F. (0.4393 ACRES)
NET TRACT AREA - 646,752 S.F. (14.8474 ACRES)

PARKING REQUIREMENTS:

USE: RESIDENTIAL - PROPOSED TOWNHOMES - 58 UNITS
REQUIRED - 2 SPACES/UNIT= 116 SPACES REQUIRED
PROPOSED - 4 SPACES/UNIT (2 IN GARAGE/2 IN DRIVEWAY)
X 58 UNITS - 232 SPACES
PARKING LOT - 45 SPACES
TOTAL PROVIDED - 277 SPACES

IMPERVIOUS SURFACE

PROPOSED BUILDINGS - 117,067 S.F.
PROPOSED ROADWAYS - 90,560 S.F.
PROPOSED DRIVEWAYS - 32,867 S.F.
PROPOSED MACADAM PATH - 9,090 S.F.
PROPOSED EXPANSION OF
ADJOINING PARKING LOT - 1,083 S.F. (NET)
TOTAL - 250,667 S.F.(5.7545 ACRES)

ZONING:

VC-4 - VILLAGE COMMERCIAL

AREA = 14.8474 acres (NET)	*REQUIRED*	*PROPOSED*
PROPOSED USE - TOWNHOMES		
MAX. BUILDING FOOTPRINT (TH)	8,000 S.F.	8,000 S.F.
MAX. BUILDING HEIGHT (3 STORIES)	42'	42'
MAX. FRONT FACADE WIDTH	75'	32'
MAX. BUILDING COVERAGE	40%	18.7%
MAX. IMPERVIOUS COVERAGE - 65% (75% WITH SHARED PARKING)		39.0%
MIN. VEGETATED OPEN SPACE	35%	61.0%
MIN. LOT WIDTH @ B.S.L.	100'	412'
MIN. STREET FRONTAGE	50'	412'
MIN. BUILDING SEPARATION	25'	60'
MIN. FRONT YARD		
MIN. 50%, MAX. 90% LOCATED 10' FROM R.O.W.		N/A
MIN. SIDE/REAR YARD (ADJ. TO RESIDENTIAL)	45'	45'

DENSITY CALCULATIONS

MAXIMUM DENSITY 8 UNITS PER ACRE
14.8474 ACRES X 8 UNITS/ACRE - 118 UNITS PERMITTED
PROPOSED NUMBER OF UNITS - 58

PARK/RECREATION LAND DEDICATION

S.A.L.D.O. SECTION 105-53(D) REQUIRED - 10% OF TOTAL SITE AREA - 14.8474 ACRES X .10 = 1.4847 ACRES
PROPOSED PARK/RECREATION LAND - 0 ACRES*

*FEE IN LIEU OF IS OFFERED

OWNERS OF RECORD:

BLOCK 47, UNIT 3
ARGOS FINANCIAL ASSOCIATES & ADELPHI LAND ASSOCIATES
PO BOX 736
FORT WASHINGTON, PA 19034-1903
TMP 650001375009
D.B. 5602 PG. 0653
LATITUDE 40.1375
LONGITUDE 75.24557

BLOCK 47, UNIT 4
ARGOS FINANCIAL ASSOCIATES
PO BOX 736
FORT WASHINGTON, PA 19034-0736
TMP 650001372012
D.B. 4825 PG 1431
LATITUDE 40.1375
LONGITUDE 75.24557

BLOCK 47, UNIT 5
ADELPHI LAND ASSOCIATES
PO BOX 736
FORT WASHINGTON, PA 19034-736
TMP 650010735009
D.B. 4725 PG. 1830

BLOCK 47, UNIT 7
ARGOS FINANCIAL ASSOCIATES & POLERGODDOM GROUP LTD.
PO BOX 736
FORT WASHINGTON, PA 19034-736
TMP 650010723003
D.B. 4825 PG. 01431

APPLICANT:

SPARTAN ORGANIZATION
P.O. BOX 736
FORT WASHINGTON, PA 19034-0736
215) 643-5800

SITE ADDRESS

BLOCK 047 UNIT 005
12 SKIPPACK PIKE
BLUE BELL, PA 19422

BLOCK 047 UNIT 004
6130 BUTLER PIKE
BLUE BELL, PA 19422

BLOCK 047 UNIT 003
6132 BUTLER PIKE
BLUE BELL, PA 19422

60 30 0 60 120
SCALE: 1" = 60'

PROJECT DESCRIPTION

THIS PROJECT ENTAILS THE SUBDIVISION AND CONSTRUCTION OF FIFTY-EIGHT (58) NEW TOWNHOUSE UNITS ALONG WITH ASSOCIATED INFRASTRUCTURE. EXISTING DWELLING WILL BE RETAINED.

"LONGFIELD FARM"

PRELIMINARY PLAN – NOT TO BE RECORDED

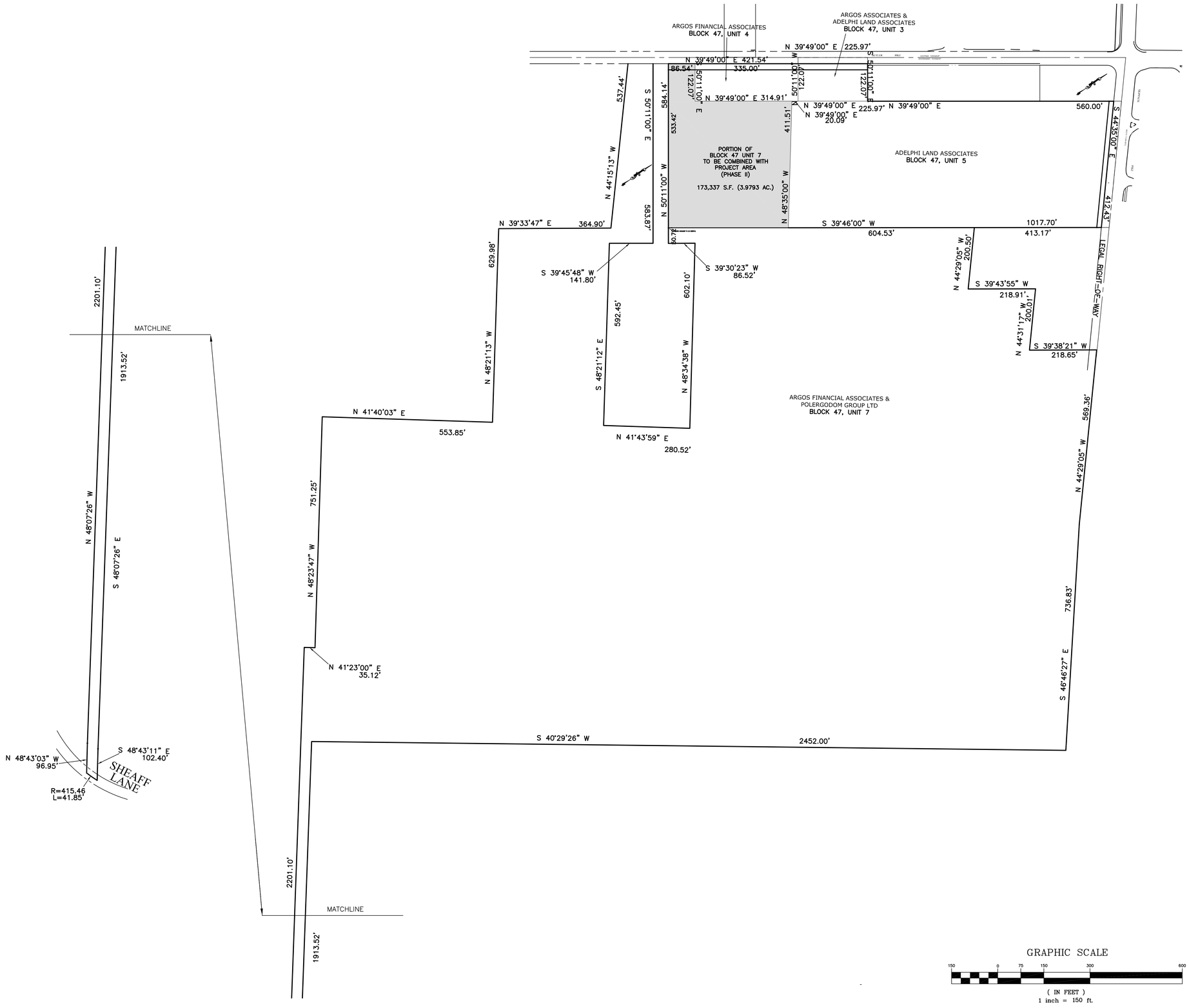
REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

LAND DEVELOPMENT PLAN

PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17–02
DRAWN BY: RFI	FILE NAME: 17–02BASE
SCALE: 1" = 60'	SHEET: 1 OF 30

Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215–541–4626
215–541–4023(fax)
E-Mail: Info@EAMCM.com
INCORPORATED



SITE STATISTICS

GROSS TRACT AREA:
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LAND ASSOCIATES
PO BOX 736
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TMP 650001372012
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LATITUDE 40.1375
LONGITUDE 75.24557

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PO BOX 736
FORT WASHINGTON, PA 19034-736
TMP 650010735009
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BLOCK 47, UNIT 7
ARGOS FINANCIAL ASSOCIATES &
POLERGODOM GROUP LTD.
PO BOX 736
FORT WASHINGTON, PA 19034-736
TMP 650010723003
D.B. 4825 PG. 01431

NOTE:
THIS PLAN IS BASED ON DEEDS OF RECORD SUPPLEMENTED BY FIELD SURVEY PERFORMED BY METZ ENGINEERS DATED 1/9/14 LAST REVISED 3/17/14.

APPLICANT:

SPARTAN ORGANIZATION
P.O. BOX 736
FORT WASHINGTON, PA 19034-0736
215) 643-5800

"LONGFIELD FARM"

GRAPHIC SCALE
150 0 75 150 300 600
(IN FEET)
1 inch = 150 ft.

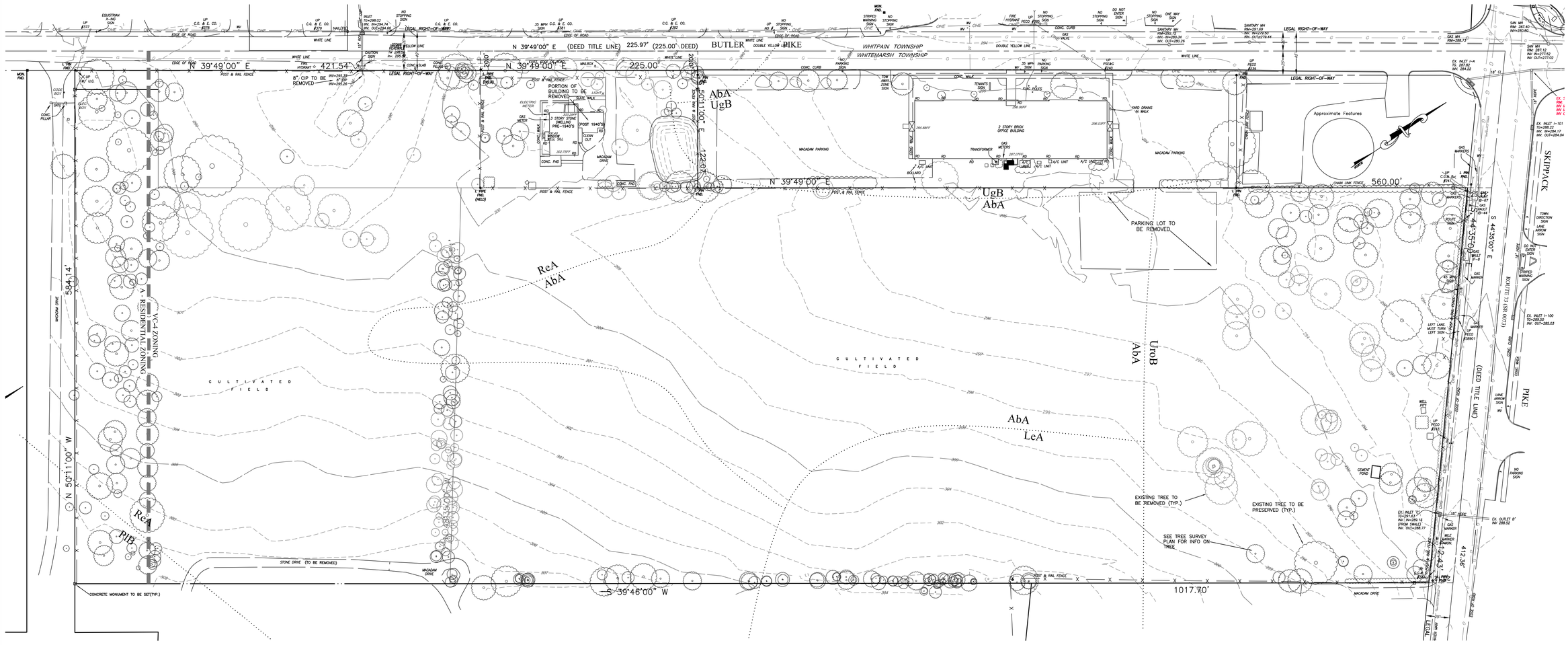
REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

OVERALL PROPERTY PLAN

PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17-02
DRAWN BY: RFI	FILE NAME: 17-02BASE
SCALE: 1" = 150'	SHEET: 2 OF 30

Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Rick Eberhardt Mientus INCORPORATED
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215-541-4626
215-541-4023(Fax)
E-Mail: Info@REANDM.com



LEGEND

EXISTING STORM SEWER	
PROPOSED STORM SEWER	
EXISTING SANITARY SEWER	
PROPOSED SANITARY SEWER	
PROPOSED SANITARY SEWER FORCE MAIN	FM
EXISTING WATER LINE	W
PROPOSED WATER LINE	W
EXISTING CONTOUR	644
PROPOSED CONTOUR	650
EXISTING CURB LINE	
PROPOSED CURB LINE	
POSITIVE DRAINAGE INDICATOR	
EXISTING ELEV	(333.68) OR 333.68
PROPOSED ELEV.	
EXISTING TREE LINE	
PROPOSED TREE LINE	
EXISTING GAS LINE	G
PROP. GAS LINE	G
EXISTING OVERHEAD ELEC.	OE
EXISTING UNDERGROUND ELEC.	
PROP. ELECTRIC	E
PROP. ROOF DRAIN	RD
PROP. WATER LATERAL	wL
PROP. SEWER LATERAL	SL

NRCS-USDA SOIL SURVEY SOURCE:
websoilsurvey.nrcs.usda.gov., accessed 6-4-19

SOIL LEGEND

AbA ABBOTTSTOWN SILT LOAM, 0-3% SLOPES;

LeA LAWRENCEVILLE SILT LOAM 0-3% SLOPES; MODERATELY ERODED

PIB PENN LANSDALE COMPLEX 3-8% SLOPES, MODERATELY ERODED

ReA READINGTON SILT LOAM 0-3% SLOPES; MODERATELY ERODED

UgB URBAN LAND, 0-8% SLOPES; MODERATELY ERODED

UroB URBAN LAND-LAWRENCEVILLE COMPLEX; 0-8% SLOPES; MODERATELY ERODED

50 25 0 50 100
SCALE: 1" = 50'

NOTE:
1. SEE SHEET 4 FOR AERIAL PHOTOGRAPH OF SITE.
2. THERE ARE NO EXISTING SLOPES ON SITE WHICH EXCEED 8%.

STOP-CALL BEFORE YOU DIG!
LOCATION OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND OBSERVATIONS. THE ACCURACY OF UNDERGROUND UTILITIES LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA. ONE CALL SYSTEM THREE DAYS PRIOR TO EXCAVATION. REFERENCE PENNSYLVANIA ACT 287 AS AMENDED BY ACT 181 (2006).
TOLL FREE: 1-800-242-1776 OR 811
WORK LOCATION NO.: 20172041435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 CALL BEFORE YOU DIG!

"LONGFIELD FARM"

PRELIMINARY PLAN - NOT TO BE RECORDED

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

EXISTING RESOURCES AND SITE ANALYSIS PLAN
PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17-02
DRAWN BY: RFI	FILE NAME: 17-02BASE
SCALE: 1" = 50'	SHEET: 3 OF 30

Irick Eberhardt Mientus INCORPORATED
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Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215-541-4626
215-541-4023(Fax)
E-Mail: info@IEANDM.com

"LONGFIELD FARM"

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

AERIAL PHOTO PLAN

PREPARED FOR

SPARTAN ORGANIZATION

SITUATE

WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17-02
DRAWN BY: RFI	FILE NAME: 17-02BASE
SCALE: 1" = NTS	SHEET: 4 OF 30

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Land Planning • Engineering • Landscape Architecture • Land Surveying
Eberhardt Mientus INCORPORATED
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215-541-4626
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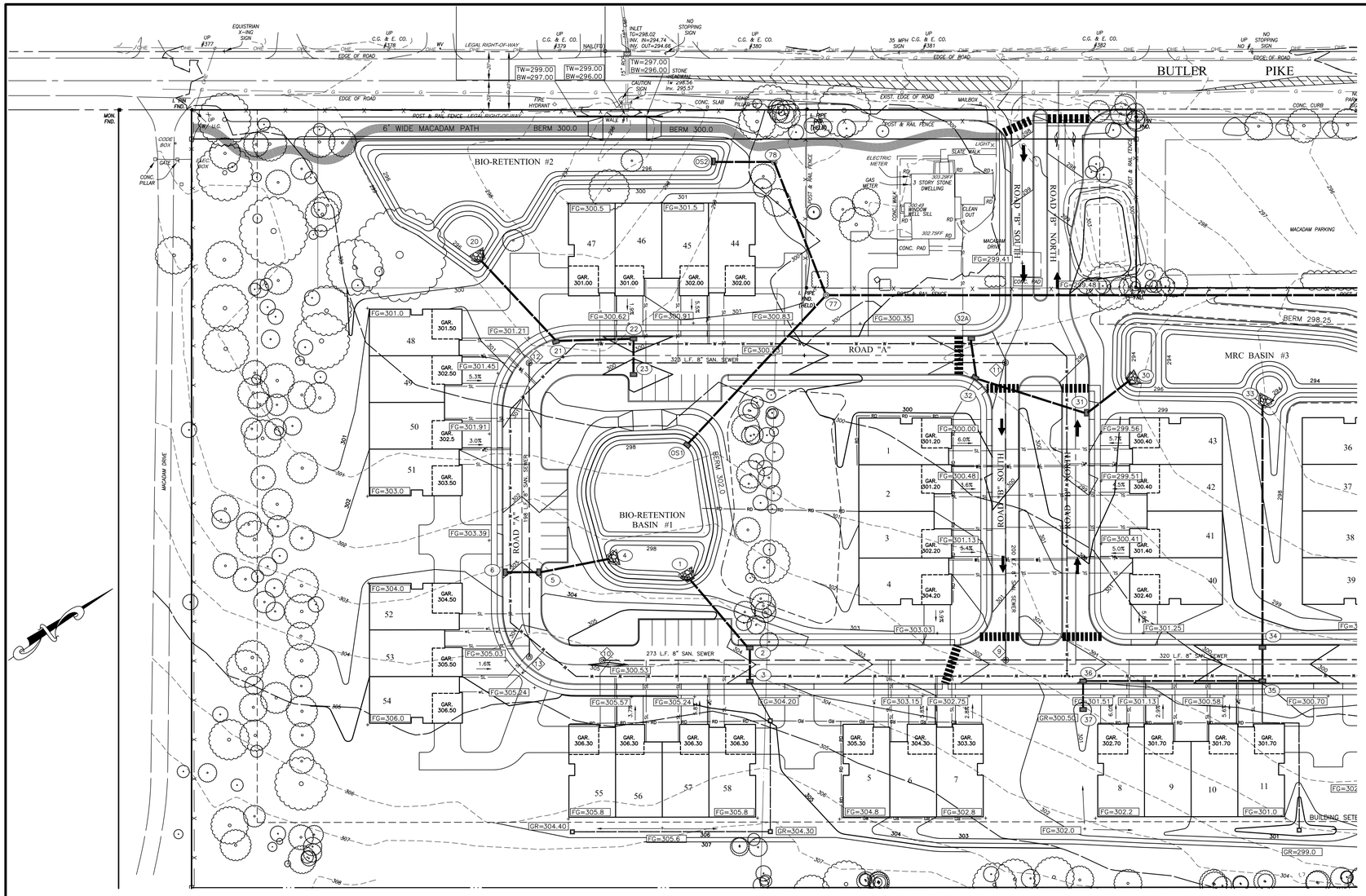

GENERAL CONSTRUCTION NOTES

1. AREAS WHICH ARE TO BE FILLED SHALL BE COMPACTED TO A MINIMUM DENSITY OF 100 % MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED AASHTO COMPACTION TEST, T-180-74 (ASTM D-15570 IN THE BUILDING AND PAVED AREAS AND 85% IN OTHER AREAS.
2. DURING EXCAVATION FOR FOOTINGS, IF ANY UNSUITABLE SOIL IS UNCOVERED, THE CONTRACTOR SHALL REMOVE IT AND DEEPEN FOOTINGS AS NECESSARY TO BUILD ON CLEAN VIRGIN SOIL.
3. UNDERGROUND FACILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND PLANS OF OTHERS AND THEREFORE THEIR ELEVATION AND LOCATION MUST BE CONSIDERED APPROXIMATE ONLY. THE VERIFICATION OF EACH FACILITY SHOWN OR NOT SHOWN, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. ALL MATERIALS AND METHODS OF CONSTRUCTION FOR WATER SERVICE SHALL BE BUILT TO THE SPECIFICATIONS OF AMBLER WATER COMPANY. SANITARY SEWER MATERIALS USED AND CONSTRUCTION METHODS EMPLOYED SHALL BE IN ACCORDANCE WITH THE WHITEMARSH TOWNSHIP AUTHORITY STANDARDS AND SPECIFICATIONS FOR SANITARY SEWER FACILITIES. ALL WATERLINES WILL BE DEDICATED TO AMBLER WATER COMPANY. SANITARY SEWERS WILL BE DEDICATED TO THE WHITEMARSH TOWNSHIP AUTHORITY AT THE COMPLETION OF THE 18 MONTH MAINTENANCE PERIOD. NO WATER HEATER BLOWOFFS OR HEATER OR AIR CONDITIONER CONDENSER CONDENSATE LINES MAY BE CONNECTED TO THE SANITARY SEWER.
5. CONTRACTOR TO VERIFY LOCATION AND FLOW LINE OF EXISTING UTILITIES PRIOR TO INSTALLATION OF PLUMBING. ALL SERVICES TO BE CONNECTED IN ACCORDANCE WITH LOCAL CODES AND/OR UTILITY COMPANIES REQUIREMENT.
6. PAVEMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH PENNDOT SPECIFICATIONS PUBLICATION 408.
7. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE LOCAL AUTHORITY OR GOVERNING AGENCY OF THE BEGINNING DATE OF CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SEE THAT NO WORK IS DONE WITHOUT THE PROPER INSPECTIONS BY THE LOCAL AUTHORITY OR GOVERNING AGENCY.
8. CONTRACTOR TO NOTIFY ENGINEER AS SOON AS POSSIBLE IF CONDITIONS ON THE GROUND DIFFER FROM THOSE SHOWN ON THE PLAN.
9. ALL OTHER AREAS OTHER THEN PAVED AREAS SHALL HAVE A MINIMUM DEPTH OF SIX (6") OF TOPSOIL. PRIOR TO SEEDING, THE SURFACE SHALL BE SCARIFIED AND CLEARED OF ALL TRASH, DEBRIS, ROCKS AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.
10. SEEDING AND MULCHING SHALL BE IN ACCORDANCE WITH PENNDOT PUBLICATION 408.
11. THE FIRST SIX (6") INCHES OF TOPSOIL STRIPPED FROM THE SITE SHALL BE STOCKPILED FOR A UNIFORM REDISTRIBUTION OF 6 INCHES IN LAWN AREAS.
12. PROVIDE A MINIMUM TEN (10') FEET HORIZONTAL SEPARATION FROM ANY SANITARY MAIN OR LATERAL AND ALL PROPOSED WATER MAINS AND LATERALS AND LANDSCAPING. THE TEN (10') FOOT SEPARATION FOR LANDSCAPING SHALL BE MEASURED FROM THE CENTERLINE OF THE TRUNK.
13. A MINIMUM OF 20 L.F. OF SIX (6") INCH THICK CONCRETE ENCASEMENT SHALL BE PROVIDED WHEN LESS THAN EIGHTEEN (18") INCHES VERTICAL CLEARANCE IS PROVIDED WITH ANY UTILITY. THIS ALSO APPLIES TO SANITARY LATERALS.
14. SUMP PUMP AND ROOF DRAINS SHALL BE CONNECTED INTO STORMWATER INLETS OR UNDERDRAIN WHEREVER PRACTICAL AS REQUIRED BY THE TOWNSHIP ENGINEER, OTHERWISE THEY SHALL DISCHARGE IN TO THE NEAREST SWALE. IN NO CASE MAY THESE DRAINS BE DIRECTED TOWARDS ANY NEIGHBORING PROPERTY. DISCHARGE POINT SHALL BE TO UNDISTURBED, STABLE GROUND AND INSTALLATION SHALL MINIMIZE REMOVAL OR DISTURBANCE OF EXISTING VEGETATION.
15. ALL STORM SEWER GRATES SHALL BE BICYCLE PROOF.
16. SANITARY SEWER SERVICE IS DESIGNED FOR FIRST FLOOR SERVICE.
17. THRUST BLOCKS SHALL BE PROVIDED AT ALL VERTICAL AND HORIZONTAL BENDS.
18. IT IS THE INTENT OF THE WATER MAIN DESIGN TO GRADUALLY DEFLECT THE WATER MAIN UNDER AND/OR OVER UTILITY CONFLICTS UNLESS A BEND IS CLEARLY LABELED. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE 2.5 DEGREES PER PIPE JOINT.
19. WATER MAINS SHALL HAVE A MINIMUM OF FOUR (4) FEET OF COVER INCLUDING WATER SERVICES AND LATERALS.
20. STORM SEWER INLET OFFSETS ARE TO CURB LINE FOR TYPE "C", EDGE OF PAVEMENT FOR TYPE "S" AND TO CENTER OF TYPE "M" INLETS.
21. STORM PIPE AND SANITARY PIPE LENGTHS ARE THE HORIZONTAL DISTANCE BETWEEN THE OUTSIDE OF THE STRUCTURES.
22. PROPOSED DRIVES SHALL BE POSTED FOR A SPEED LIMIT OF 15 MPH.
23. NO UNSUITABLE MATERIAL IS TO BE USED IN ANY PORTION OF THE ROADWAY CONSTRUCTION. REMOVE ANY SUBGRADE THAT CANNOT BE PROPERLY COMPACTED AND THAT IS UNSUITABLE MATERIAL. UNDERCUTTING AND OR SUBGRADE STABILIZATION MAY BE REQUIRED.
24. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE ANY DEBRIS AND FLUSH OUT ALL EXISTING AND PROPOSED STORM DRAINAGE FACILITIES WITHIN THE PROJECT LIMITS AT THE COMPLETION OF CONSTRUCTION.
25. ANY DAMAGED OR SUBSTANDARD CURB WITHIN THE LIMITS OF WORK SHALL BE REPLACED AS NECESSARY.
26. ALL DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE PRE-CONSTRUCTION MEETING.
27. SAFETY GRATES SHALL BE PROVIDED FOR THE ENDWALLS IN ACCORDANCE WITH THE DETAIL ON THE DETAIL SHEETS.
28. GRADING SHOWN HEREON IS SCHEMATIC WITH REGARD TO FINAL UNIT SIZE AND LOCATION ON EACH LOT. FINAL GRADING SHALL BE COMPLETED TO DIVERT WATER TO THE STREET INSTEAD OF ONTO ANOTHER PROPERTY. REFER TO THE PCSM PLAN AND REPORT FOR EXPECTED DRAINAGE AREAS TO EACH INLET AND INTO THE BASIN.
29. BASINS SHALL BE USED FOR INFILTRATION. REFER TO PCSM PLAN AND REPORT AND STAGING OF EARTHMOVING ACTIVITIES FOR SPECIFICATIONS AND MAINTENANCE DURING AND AFTER CONSTRUCTION. IF BEDROCK OR GROUNDWATER IS ENCOUNTERED DURING THE EXCAVATION OF THE INFILTRATION BASIN, THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE DESIGN ENGINEER FOR SUITABLE OPTIONS REGARDING INFILTRATION.
30. POST LAMPS TO BE PROVIDED AT EACH DWELLING UNIT, LOCATED 3-5 FEET BEHIND EDGE OF PAVING ON ACCESS DRIVE.
31. ROOF LEADERS SHALL NOT BE CONNECTED INTO SUMP PUMP LINES.
32. NO ROOF DRAINS SHALL DISCHARGE DIRECTLY TO STREETS, STORM SEWERS, OR ROADSIDE SWALES WITHOUT APPROVAL OF THE TOWNSHIP ENGINEER. ONLY WHERE TOPOGRAPHY CONDITIONS PROHIBIT, SHOULD ROOF DRAINS DISCHARGE DIRECTLY TO THESE FEATURES. ROOF DRAINS SHALL DISCHARGE TO INFILTRATION AREAS OR VEGETATIVE BMPS TO THE MAXIMUM EXTENT PRACTICABLE. ROOF DRAINS MAY BE DISCHARGED TO LAWNS AND SUBSEQUENTLY TO DRAINAGE SWALES IN LOW DENSITY RESIDENTIAL AREAS.
33. ALL PROPOSED STRUCTURES, INCLUDING, BUT NOT LIMITED TO MAILBOXES, FENCES AND POLES, SHALL NOT BE ERECTED WITHIN STREET ULTIMATE RIGHTS OF WAY.
35. PERMANENT REMOVAL OF TOPSOIL FROM LAND WITHIN THE TOWNSHIP IS PROHIBITED.
36. INDIVIDUAL CURBSIDE TRASH PICKUP WILL BE PROVIDED FOR ALL UNITS.
37. EDGES OF GRADING SLOPES SHALL BE A MINIMUM OF FIVE FEET FROM PROPERTY LINES OR RIGHT-OF-WAY LINES.

LEGEND

EXISTING STORM SEWER	
PROPOSED STORM SEWER	
EXISTING SANITARY SEWER	
PROPOSED SANITARY SEWER	
PROPOSED SANITARY SEWER FORCE MAIN	FM
EXISTING WATER LINE	W
PROPOSED WATER LINE	W
EXISTING CONTOUR	644
PROPOSED CONTOUR	650
EXISTING CURB LINE	
PROPOSED CURB LINE	
POSITIVE DRAINAGE INDICATOR	
EXISTING ELEV	(333.68) OR 333.68
PROPOSED ELEV.	334.50
EXISTING TREE LINE	
PROPOSED TREE LINE	
EXISTING GAS LINE	G
PROP. GAS LINE	G
EXISTING OVERHEAD ELEC.	OE
EXISTING UNDERGROUND ELEC.	
PROP. ELECTRIC	E
PROP. ROOF DRAIN	RD
PROP. WATER LATERAL	WL
PROP. SEWER LATERAL	SL

STOP–CALL BEFORE YOU DIG!

LOCATION OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE–GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PENNSYLVANIA ONE CALL SYSTEM, INC. THREE DAYS PRIOR TO EXCAVATION. REFERENCE PENNSYLVANIA ACT 287 AS AMENDED BY ACT 181 (2008).
TELE. #: 1–800–242–1776 OR 811.
WORK LOCATION NO.: 20170841435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!

SCALE: 1" = 40'

"LONGFIELD FARM"

PRELIMINARY PLAN – NOT TO BE RECORDED

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

SITE IMPROVEMENT PLAN

PREPARED FOR

SPARTAN ORGANIZATION

SITUATE

WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17–02
DRAWN BY: RFI	FILE NAME: 17–02BASE
SCALE: 1" = 40'	SHEET: 5 OF 30

Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Eberhardt Mientus INCORPORATED
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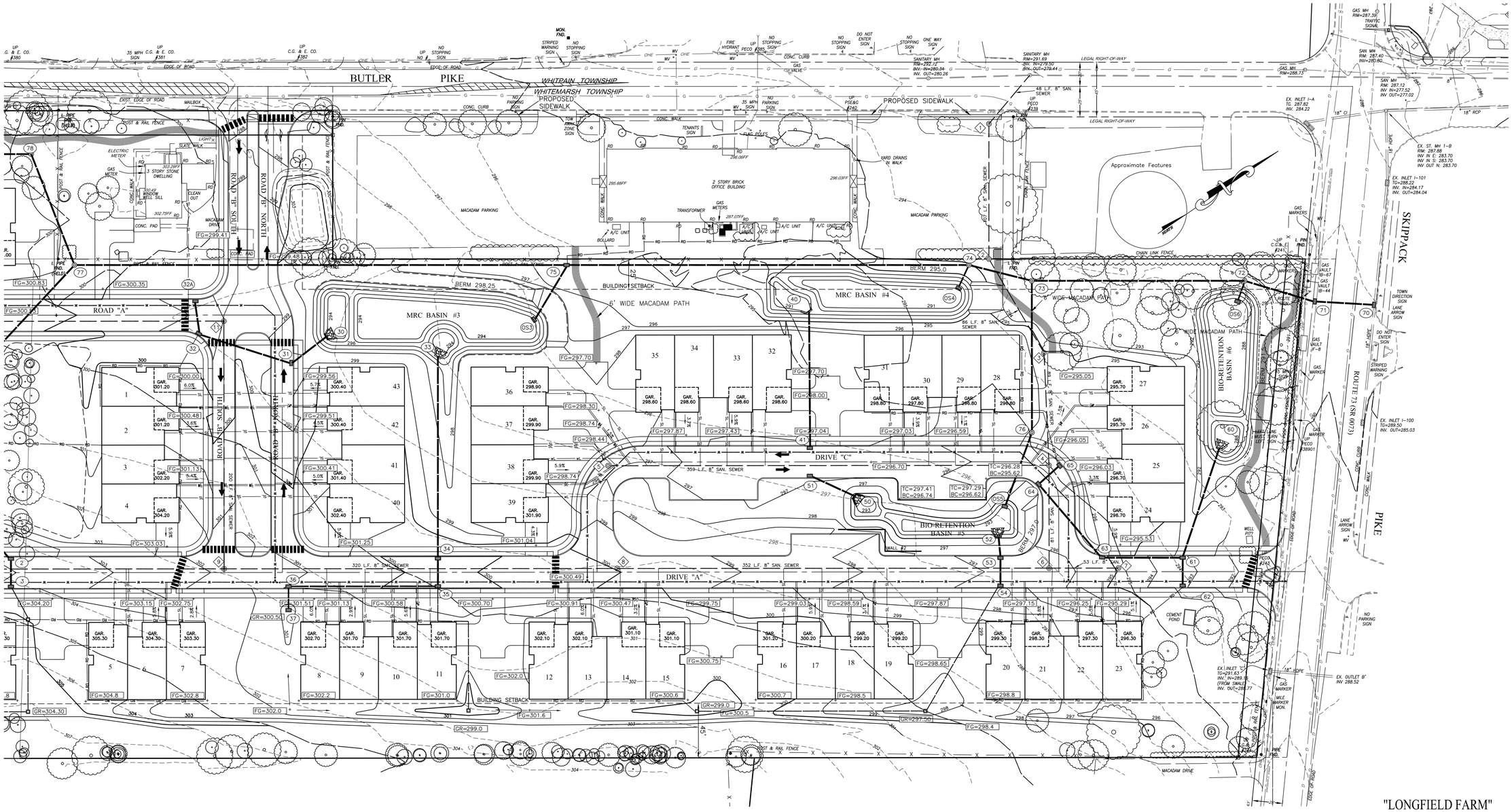
2771 Geryville Pike
Pennsburg, PA 18073
215–541–4626
215–541–4023(Fax)
E–Mail: Info@E&NDM.com



"LONGFIELD FARM"

PRELIMINARY PLAN – NOT TO BE RECORDED

LEGEND

EXISTING STORM SEWER	
PROPOSED STORM SEWER	
EXISTING SANITARY SEWER	
PROPOSED SANITARY SEWER	
PROPOSED SANITARY SEWER FORCE MAIN	FM
EXISTING WATER LINE	W
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PROP. ROOF DRAIN	RD
PROP. WATER LATERAL	wL
PROP. SEWER LATERAL	SL

40 20 0 40 80

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TOLL F.: 1-800-242-1776 OR 811.

WORK LOCATION NO.: 20170941435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

SITE IMPROVEMENT PLAN

PREPARED FOR

SPARTAN ORGANIZATION

SITUATE

WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17–02
DRAWN BY: RFI	FILE NAME: 17–02BASE
SCALE: 1" = 40'	SHEET: 6 OF 30

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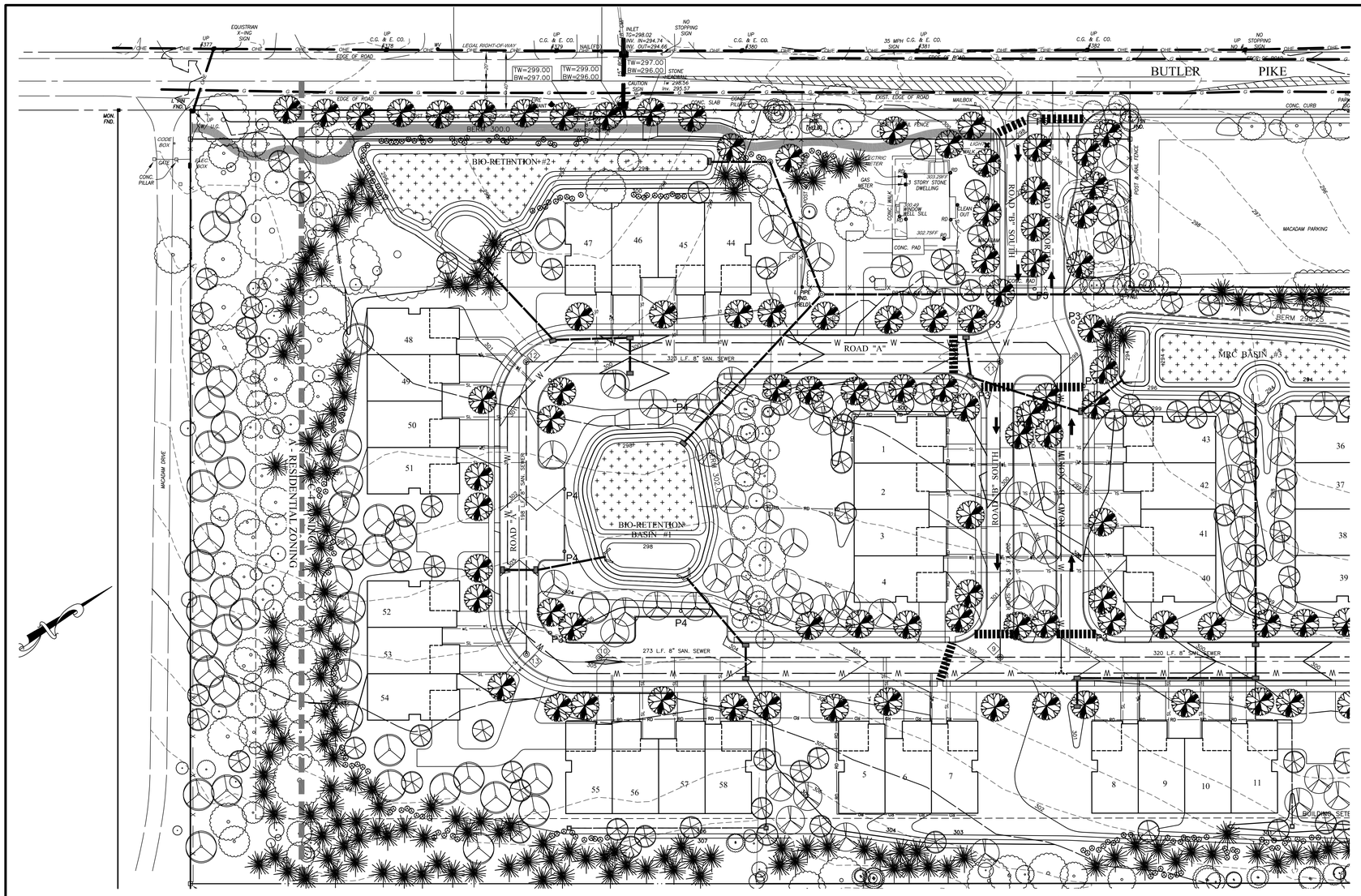

PLANTING SCHEDULE

SYMBOL		BOTANICAL NAME	NATIVE	COMMON NAME	SIZE	ROOT	QUANTITY SPEC.	QUANTITY TOTAL	REMARKS
STREET TREE	ARA	Acer rubrum 'Autumn Flame"	*	Autumn Flame Red Maple	3" Min. Cal.	B & B			LIMB UP STREET TREES TO A MIN. OF 6'-8" ABOVE ADJACENT GROUND.
	AS	Acer Saccharum	*	Sugar Maple	3" Min. Cal.	B & B			
PARKING LOT TREE	ARA	Acer rubrum 'Autumn Flame"	*	Autumn Flame Red Maple	3" Min. Cal.	B & B			LIMB UP STREET TREES TO A MIN. OF 6'-8" ABOVE ADJACENT GROUND.
	AS	Acer Saccharum	*	Sugar Maple	3" Min. Cal.	B & B			
	PA	Platanus acerifolia 'Bloodgood'	*	Bloodgood London Planetree	3" Min. Cal.	B & B			
	ZS	Zelcova serrata 'Green Vase'		Green Vase Zelcova	3" Min. Cal.	B & B			
CLASS B BUFFER EVERGREEN TREE	AC	Abies concolor		White Fir	Min. 10'	B & B			
	NS	Picea abies		Norway Spruce	Min. 10'	B & B			
	SS	Picea omorika		Serbian Spruce	Min. 10'	B & B			
	PP	Picea pungens		Colorado Spruce	Min. 10'	B & B			
	PM	Pseudotsuga menziesii(taxifolia)		Douglas Fir	Min. 10'	B & B			
	TP	Thuja Plicata x standishii 'Green Giant'		Green Giant Arborvitae	14–16'	B & B			
CLASS B BUFFER EVERGREEN SHRUB	IG	Ilex glabra	*	Inkberry	24–30"	B & B			SHRUBS SHALL BE CHOSEN FROM THIS APPROVED LIST AND PLANTED IN GROUPINGS OF LIKE SPECIES. SPACE SHRUBS ON 3–4' CENTERS IN BEDS 12" WITH 3" SHREDDED BARK MULCH
	MP	Myrica pennsylvanica	*	Northern Bayberry	24–30"	B & B			
	PM	Pinus mugo var. mugo		Dwarf Mugo Pine	24–30"	B & B			
	BS	Buxus sempervirens		Common Boxwood	24–30"	B & B			
	CO	Chamaecypris obtusa 'Nana'		Dwarf Hinoki Falsecypress	24–30"	B & B			
	LF	Leucothoe fontanesiana	*	Drooping Leucothoe	24–30"	B & B			
BASIN SHRUB		Aronia Arbutifolia	*	Red Chokeberry	18" HT	B & B			SHRUBS SHALL BE CHOSEN FROM THIS APPROVED LIST AND PLANTED IN GROUPINGS OF LIKE SPECIES. SPACE SHRUBS ON 3–4' CENTERS IN BEDS 12" WITH 3" SHREDDED BARK MULCH
		Cornus Racemosa	*	Grey Dogwood	18" HT	B & B			
		Cornus sericea	*	Redosier Dogwood	18" HT	B & B			
		Ilex verticillata	*	Winterberry	18" HT	B & B			
		Salix Purpurea "Streamco"		Streamco Willow	18" HT	B & B			
		Salix X. Cottetti		Bankers Willow	18" HT	B & B			
ORNAMENTAL GRASS		Acorus Calamus	*	Sweet Flag	No. 2 Cont.	B & B			
		Cortaderia Sellona Pumila		Pampass Grass	No. 2 Cont.	B & B			
		Miscanthus Sinensis Gracillimus		Maiden Grass	No. 2 Cont.	B & B			
REPLACEMENT TREE SHADE TREE	AS	Acer Saccharum	*	Sugar Maple	3" Min. Cal.	B & B			
	ASC	Acer Saccharum 'Columnare'	*	Columnar Sugar Maple	3" Min. Cal.	B & B			
	AR	Acer rubrum	*	Red Maple	3" Min. Cal.	B & B			
	ARC	Acer rubrum 'Columnare'	*	Columnar Red Maple	3" Min. Cal.	B & B			
	PA	Platanus acerifolia 'Bloodgood'	*	Bloodgood London Planetree	3" Min. Cal.	B & B			
	QP	Quercus phellos	*	Willow Oak	3" Min. Cal.	B & B			
	TD	Taxodium distichum	*	Common Baldcypress	3" Min. Cal.	B & B			
REPLACEMENT TREE FLOWERING TREE	SB	Amelanchier canadensis	*	Shadblow Serviceberry	8–10'	B & B			
	BN	Betula nigra	*	River Birch	8–10'	B & B			
	CK	Cornus kousa		Kousa Dogwood	8–10'	B & B			
	OA	Oxydendron arboreum	*	Sourwood	8–10'	B & B			
REPLACEMENT TREE EVERGREEN TREE	NS	Picea abies		Norway Spruce	Min. 10'	B & B			
	PS	Pinus strobus	*	White Pine	Min. 10'	B & B			
	TP	Thuja Plicata x standishii 'Green Giant'		Green Giant Arborvitae	14–16'	B & B			
REPLACEMENT SHRUB	SJ	Spiraea japonica 'Gold Mound		'Gold Mound' Spirea	24" MIN.	B & B			SHRUBS SHALL BE CHOSEN FROM THIS APPROVED LIST AND PLANTED IN GROUPINGS OF LIKE SPECIES. SPACE SHRUBS ON 3–4' CENTERS IN BEDS 12" WITH 3" SHREDDED BARK MULCH
	VD	Viburnum dentatum	*	Arrowwood Viburnum	24" MIN.	B & B			
	CS	Cornus sericea	*	Redosier Dogwood	24" MIN.	B & B			
	VT	Viburnum trilobum	*	American Cranberry Viburnum	24" MIN.	B & B			

NOTE: For deciduous, evergreen trees & shrubs with a native species option, 50% must be native and are considered a permanent BMP for Postconstruction stormwater management. refer to PCSM Plans.

*Indicates Native Species

NOTES:
1. ALL BEDS SHALL HAVE A MINIMUM OF THREE (3) INCHES OF SHREDDED HARDWOOD MULCH (OR EQUAL).
2. DEER PROTECTION SHALL BE PROVIDED FOR ALL DECIDUOUS TREES AND SHALL BE REMOVED AT THE END OF THE GUARANTEE PERIOD.
3. DO NOT CUT LEADER OF DECIDUOUS TREE.
4. NO SHADE TREE SHOULD BE PLANTED CLOSER THAN 5 FEET FROM SIDEWALKS, 10 FEET FROM UNDERGROUND UTILITIES AND 15 FEET FROM OVERHEAD UTILITIES.
5. NO PLANTS, EXCEPT GROUND COVER SHALL BE PLANTED LESS THAN TWO (2) FEET FROM A STRUCTURE, WALK OR CURBLINE.
6. ALL PLANTS SHALL BE CERTIFIED DISEASE AND PEST FREE.
7. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF EIGHTEEN (18) MONTHS IN THE SAME MANNER AS OTHER REQUIRED IMPROVEMENTS, ACCORDING TO SECTION 154-56C OF THE WHITEMARSH TOWNSHIP SUBDIVISION AND LAND DEVELOPMENT ORDINANCE.
8. PROTECTIVE FENCING SHALL BE PLACED AROUND TREES ON THE PROPERTY TO BE PRESERVED AS SHOWN PRIOR TO CONSTRUCTION. STREET TREES AND OTHER REQUIRED PLANT MATERIAL SHALL NOT BE PLANTED UNTIL THE FINISHED GRADING HAS BEEN COMPLETED.
9. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD WITH THE WHITEMARSH TOWNSHIP SHADE TREE COMMISSION PRIOR TO THE START OF CONSTRUCTION.

PROPOSED AMENDED SOILS

PLANTING SCHEDULE

SYMBOL		BOTANICAL NAME	NATIVE	COMMON NAME	SIZE	ROOT	QUANTITY SPEC.	QUANTITY TOTAL	REMARKS
GROUNDCOVER		Vinca minor		Periwinkle	1 gallon	pots			PLANT IN BEDS OF LIKE SPECIES
		Pachysandra terminalis		Japanese Pachysandra	1 gallon	pots			
PLUGS		Elymus riparius		Riverbank Wildrye					SUPPLEMENT AS REQUIRED WITH ERNMX-126 OR APPROVED EQUAL
		Puccinellia distans, 'Fults'		Alkaligrass, 'Fults'					
		Agrostis stolonifera		Creeping Bentgrass					
		Panicum clandestinum		Deertongue, 'Tioga'					
		Poa palustris		Fowl Bluegrass					
		Carex vulpinoidea		Fox Sedge					
		Juncus effusus		Soft Rush					
		Carex scoparia		Blunt Broom Sedge,					
		Juncus tenuis		Path Rush,					

LEGEND

EXISTING STORM SEWER	
PROPOSED STORM SEWER	
EXISTING SANITARY SEWER	
PROPOSED SANITARY SEWER	
PROPOSED SANITARY SEWER FORCE MAIN	FM
EXISTING WATER LINE	W
PROPOSED WATER LINE	W
EXISTING CONTOUR	644
PROPOSED CONTOUR	650
EXISTING CURB LINE	
PROPOSED CURB LINE	
POSITIVE DRAINAGE INDICATOR	
EXISTING ELEV	(333.68) OR 333.68
PROPOSED ELEV.	334.50
EXISTING TREE LINE	
PROPOSED TREE LINE	
EXISTING GAS LINE	G
PROP. GAS LINE	G
EXISTING OVERHEAD ELEC.	OE
EXISTING UNDERGROUND ELEC.	E
PROP. ELECTRIC	E
PROP. ROOF DRAIN	RD
PROP. WATER LATERAL	wL
PROP. SEWER LATERAL	SL

Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Lumens Per Lamp	Light Loss Factor	Wattage
	P3	14	PEMCO	CARL3-15W3K-CA-TYPE III	CARLSBAD 3 POST TOP LUMINAIRE W/ CLEAR ACRYLIC LENS	SAMSUNG 351B 35PCS	1	1913	0.95	15
	P4	10	PEMCO	CARL3-15W3K-CA-TYPE IV	CARLSBAD 3 POST TOP LUMINAIRE W/ CLEAR ACRYLIC LENS	SAMSUNG 351B 35PCS	1	1848	0.95	15
	P5	3	PEMCO	CARL3-15W3K-CA-TYPE V	CARLSBAD 3 POST TOP LUMINAIRE W/ CLEAR ACRYLIC LENS	SAMSUNG 351B 35PCS	1	2389	0.95	15

Lighting Notes:
1. LUMINAIRES ARE MOUNTED ON 12' POLE WITH THE CENTER OF THE LIGHT AT 14'
2. CALCULATIONS ARE ESTIMATIONS BASED ON INFORMATION PROVIDED AND MAY VARY WITH ACTUAL CONDITIONS

40 20 0 40 80
SCALE: 1" = 40'

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TOLL-FREE 1-800-242-1776 OR 811.
WORK LOCATION NO.: 20170941435

"LONGFIELD FARM"

PRELIMINARY PLAN – NOT TO BE RECORDED

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

LANDSCAPING & LIGHTING PLAN

PREPARED FOR

SPARTAN ORGANIZATION

SITUATE

WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019
MANAGER: RFI
JOB NUMB.: 17–02
DRAWN BY: RFI
FILE NAME: 17–02BASE
SCALE: 1" = 40'
SHEET: 7 OF 30

Irick Eberhardt Mientus INCORPORATED
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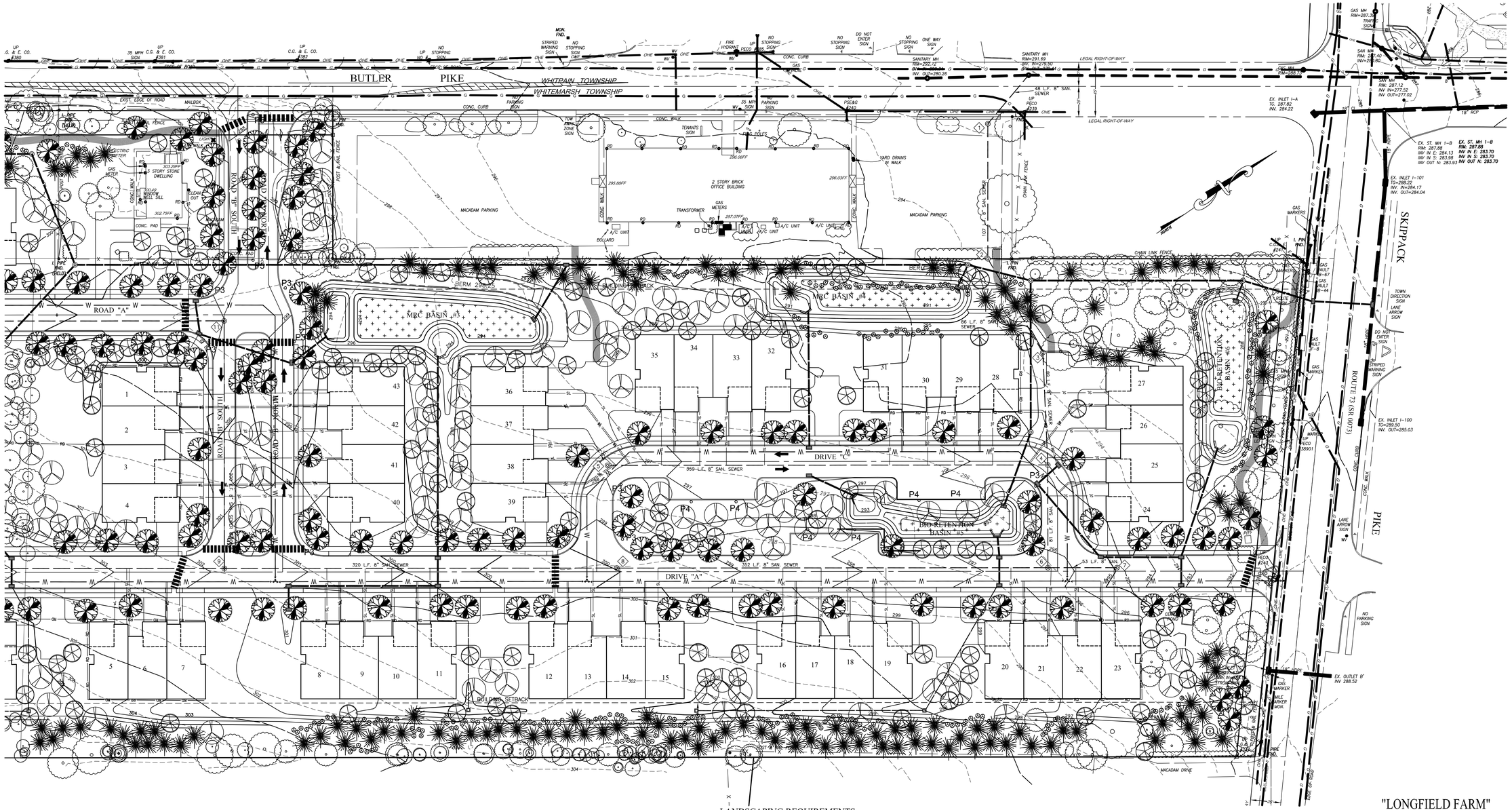

LANDSCAPING REQUIREMENTS

S.A.L.D.O. SECTION 105-39(A)
REQUIRED - ONE 3" CALIPER TREE FOR EVERY TWO PARKING SPACES
45 PARKING SPACES PROPOSED - 23 TREES REQUIRED
PROPOSED - 23 TREES
S.A.L.D.O. SECTION 105-48(B) - STREET TREES
REQUIRED - SHADE TREES AT INTERVALS OF NOT MORE THAN 45' (OR PLANTED IN AN INFORMAL ARRANGEMENT)
6065 L.F. STREET FRONTAGE - 135 TREES REQUIRED
PROPOSED - 135 SHADE TREES
Z.O. 116-291C
REQUIRED - CLASS B BUFFER ENTIRE PERIMETER
PROPOSED - OPTION 3 - 1 EVERGREEN TREE PER 15 FEET AND 1 EVERGREEN SHRUB PER 8 FEET INFORMALLY ARRANGED
3853 L.F. BUFFER REQUIRED - 257 EVERGREEN TREES AND 482 EVERGREEN SHRUBS
CHAPTER 55 - TREE PROTECTION STANDARDS
55-4.B(6)(a) - REPLACEMENT TREES
EVERY TREE WITH A DBH GREATER THAN 6" SHALL BE REPLACED WITH MINIMUM 3" CALIPER TREES HAVING A TOTAL CALIPER EQUAL THE DBH OF TREES REMOVED.
1576 TOTAL CALIPER INCHES TO BE REMOVED - 525 TREES REQUIRED.
RESOLUTION 2004-8 II.D(19) - LANDSCAPING - STORMWATER MANAGEMENT FACILITIES SHALL BE PROPERLY SCREENED

TREE REPLACEMENT REQUIREMENTS

TOTAL REPLACEMENT TREES REQUIRED - 525
PERMITTED SUBSTITUTIONS PER SALDO 22.8(6)(f)
ORNAMENTAL OR EVERGREEN TREES - 30% (177 TREES) AT 1:1
TOTAL TREES PERMITTED - 157
PROPOSED - 157 (157 TREE EQUIVALENT)
SHRUBS - 20% (105 TREES) AT 6:1
TOTAL SHRUBS PERMITTED - 630
PROPOSED - 630 (105 TREE EQUIVALENT)
PROPOSED REPLACEMENT TREES (3" CAL.) - 263
TOTAL EQUIVALENT TREES PROPOSED - 525

40 20 0 40 80
SCALE: 1" = 40'

LEGEND

EXISTING STORM SEWER		EXISTING GAS LINE	G G
PROPOSED STORM SEWER		PROP. GAS LINE	G G
EXISTING SANITARY SEWER		EXISTING OVERHEAD ELEC.	OE OE
PROPOSED SANITARY SEWER		EXISTING UNDERGROUND ELEC.	E E
PROPOSED SANITARY SEWER FORCE MAIN	FM	PROP. ELECTRIC	E
EXISTING WATER LINE	W W	PROP. ROOF DRAIN	RD
PROPOSED WATER LINE	W W	PROP. WATER LATERAL	wL
EXISTING CONTOUR	644	PROP. SEWER LATERAL	SL
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EXISTING TREE LINE			
PROPOSED TREE LINE			

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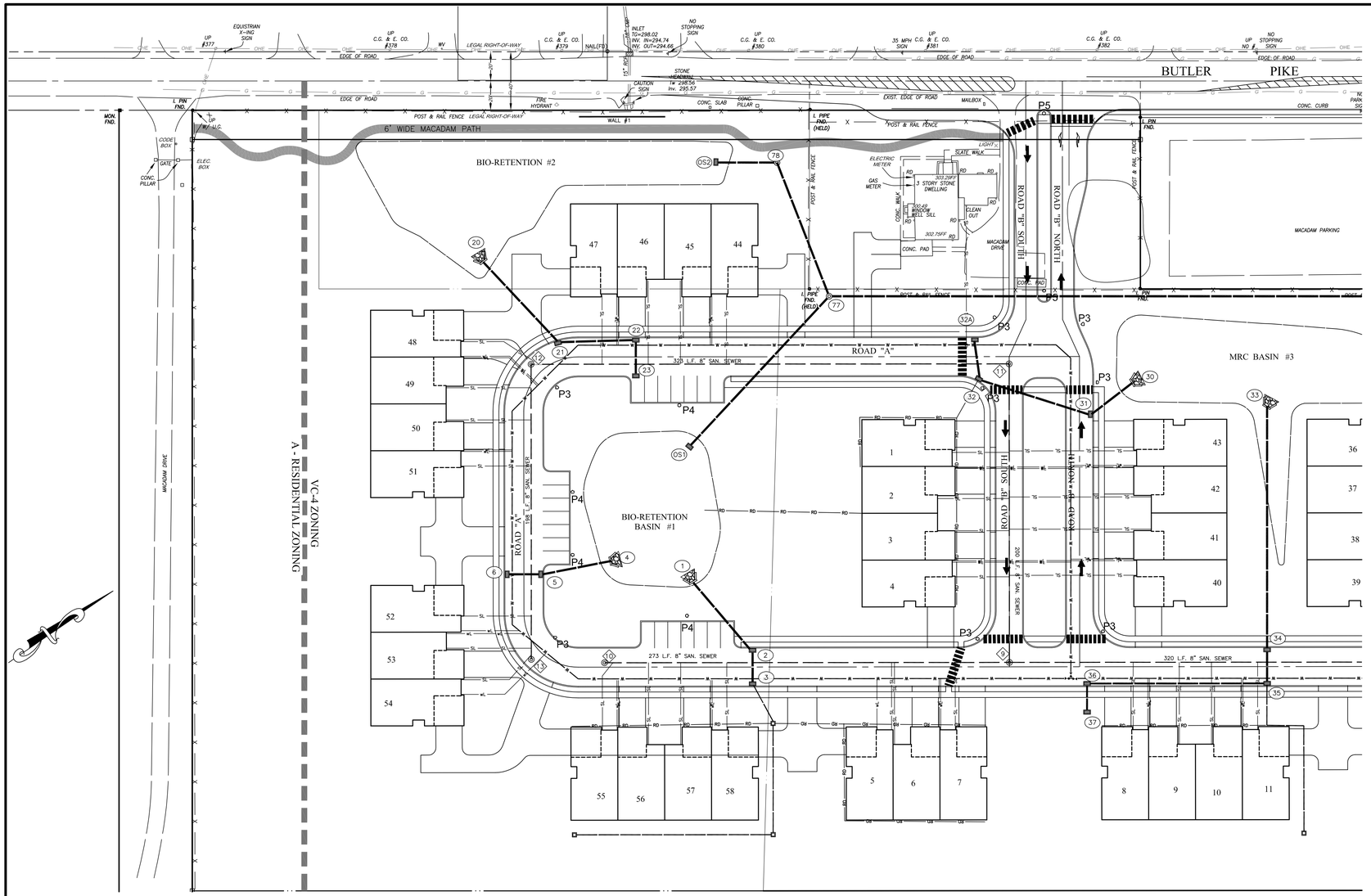
REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

LANDSCAPING & LIGHTING PLAN

PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17–02
DRAWN BY: RFI	FILE NAME: 17–02BASE
SCALE: 1" = 40'	SHEET: 8 OF 30

Irick Eberhardt Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Gerseville Pike
Pennsburg, PA 18073
215–541–4626
215–541–4023(Fax)
E–Mail: Info@IEANDM.com



NOTES:

1. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
2. ALL UNITS SHALL BE SERVED BY PUBLIC SEWER AND WATER.
3. ALL UTILITY MAINS ARE HEREBY OFFERED FOR DEDICATION TO WHITEMARSH TOWNSHIP AUTHORITY AND AMBLER WATER COMPANY CONSTRUCTION OF THESE UTILITIES SHALL BE IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS HEREON.
4. EASEMENTS SHALL NOT BE PLANTED WITH TREES OR SHRUBS OR BUILT UPON. STORM DRAINAGE AND ENVIRONMENTAL PROTECTION EASEMENTS SHALL NOT BE CONSTRUCTED UPON OR FILLED IN WITH EARTH OR DEBRIS.
5. ALL UTILITY SERVICES ARE TO BE UNDERGROUND.
6. SANITARY SEWERS SHALL BE DEDICATED TO WHITEMARSH TOWNSHIP AUTHORITY. AT THE COMPLETION OF THE 18 MONTH MAINTENANCE PERIOD. NO WATER HEATER BLOWOFFS OR HEATER OR AIR CONDITIONER CONDENSER LINES MAY BE CONNECTED TO THE SANITARY SEWER.
7. WATERTIGHT LIDS SHALL BE PROVIDED FOR ANY SANITARY MANHOLES IN LAWN AREA. SEE STANDARD DETAIL S8.
8. ALL STREETS SHALL BE POSTED WITH A MAXIMUM SPEED LIMIT OF 15 MPH.

LEGEND

- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY SEWER FORCE MAIN — FM —
- EXISTING WATER LINE — W —
- PROPOSED WATER LINE — W —
- EXISTING CONTOUR 644
- PROPOSED CONTOUR 650
- EXISTING CURB LINE
- PROPOSED CURB LINE
- POSITIVE DRAINAGE INDICATOR — K —
- EXISTING ELEV (333.68) OR 333.68
- PROPOSED ELEV. 334.50
- EXISTING TREE LINE
- PROPOSED TREE LINE
- EXISTING GAS LINE — G — G —
- PROP. GAS LINE — G — G —
- EXISTING OVERHEAD ELEC. — OE — OE —
- EXISTING UNDERGROUND ELEC.
- PROP. ELECTRIC — E —
- PROP. ROOF DRAIN — RD —
- PROP. WATER LATERAL — wL —
- PROP. SEWER LATERAL — SL —

Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Lumens Per Lamp	Light Loss Factor	Wattage
	P3	14	PEMCO	CARL3-15W3K-CA-TYPE III	CARLSBAD 3 POST TOP LUMINAIRE W/ CLEAR ACRYLIC LENS	SAMSUNG 351B 35PCS	1	1913	0.95	15
	P4	10	PEMCO	CARL3-15W3K-CA-TYPE IV	CARLSBAD 3 POST TOP LUMINAIRE W/ CLEAR ACRYLIC LENS	SAMSUNG 351B 35PCS	1	1848	0.95	15
	P5	3	PEMCO	CARL3-15W3K-CA-TYPE V	CARLSBAD 3 POST TOP LUMINAIRE W/ CLEAR ACRYLIC LENS	SAMSUNG 351B 35PCS	1	2389	0.95	15

Lighting Notes:
1. LUMINAIRES ARE MOUNTED ON 12' POLE WITH THE CENTER OF THE LIGHT AT 14'
2. CALCULATIONS ARE ESTIMATIONS BASED ON INFORMATION PROVIDED AND MAY VARY WITH ACTUAL CONDITIONS

40 20 0 40 80
SCALE: 1" = 40'

STOP–CALL BEFORE YOU DIG!

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TELE. #: 1-800-242-1776 OR 811.
WORK LOCATION NO.: 20170641435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!

"LONGFIELD FARM"

PRELIMINARY PLAN – NOT TO BE RECORDED

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

PLAN OF UTILITIES

PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019
MANAGER: RFI
JOB NUMB.: 17–02
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FILE NAME: 17–02BASE
SCALE: 1" = 40'
SHEET: 9 OF 30

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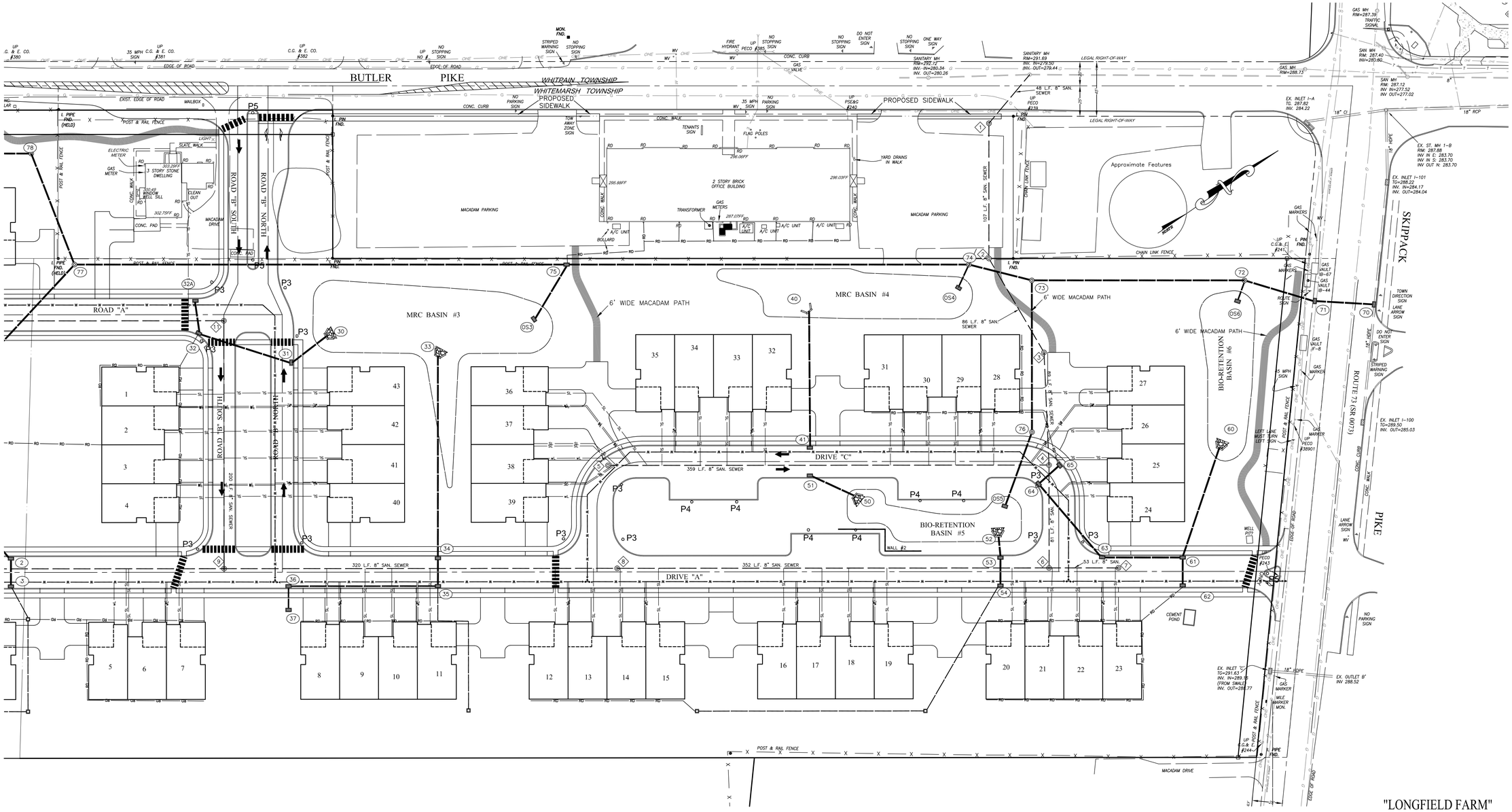

"LONGFIELD FARM"

PRELIMINARY PLAN – NOT TO BE RECORDED

LEGEND

EXISTING STORM SEWER	
PROPOSED STORM SEWER	
EXISTING SANITARY SEWER	
PROPOSED SANITARY SEWER	
PROPOSED SANITARY SEWER FORCE MAIN	FM
EXISTING WATER LINE	W
PROPOSED WATER LINE	W
EXISTING CONTOUR	644
PROPOSED CONTOUR	650
EXISTING CURB LINE	
PROPOSED CURB LINE	
POSITIVE DRAINAGE INDICATOR	X
EXISTING ELEV	(333.68) OR 333.68
PROPOSED ELEV.	334.50
EXISTING TREE LINE	
PROPOSED TREE LINE	
EXISTING GAS LINE	G
PROP. GAS LINE	G
EXISTING OVERHEAD ELEC.	OE
EXISTING UNDERGROUND ELEC.	
PROP. ELECTRIC	E
PROP. ROOF DRAIN	RD
PROP. WATER LATERAL	wL
PROP. SEWER LATERAL	SL

NOTES:

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40 20 0 40 80

SCALE: 1" = 40'

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TEL. #: 1-800-242-1776 OR 811.
WORK LOCATION NO.: 20170841435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!

REVISION DATE:	DESCRIPTION:
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PLAN OF UTILITIES

PREPARED FOR

SPARTAN ORGANIZATION

SITUATE

WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17–02
DRAWN BY: RFI	FILE NAME: 17–02BASE
SCALE: 1" = 40'	SHEET: 10 OF 30

Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
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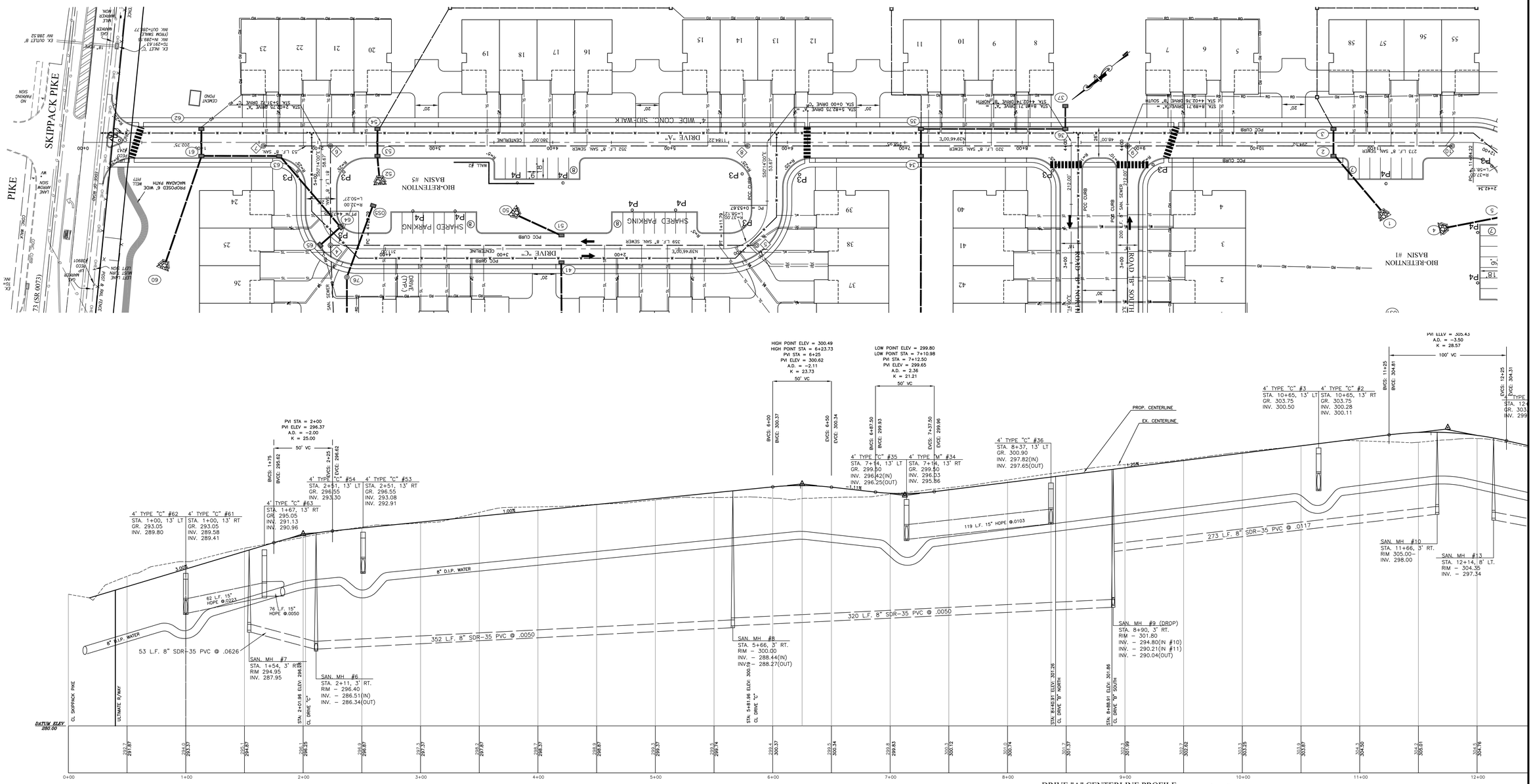

DRIVE "A" CENTERLINE PROFILE

SCALE: 1" = 40'(HORIZ.)
1" = 4'(VERT.)

"LONGFIELD FARM"

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

ROADWAY PROFILES

PREPARED FOR DRIVE "A" STA. 0+00 TO 11+50

SPARTAN ORGANIZATION

SITUATE

WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019

MANAGER: RFI | JOB NUMB.: 17-02

DRAWN BY: RFI | FILE NAME: 17-02BASE

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215-541-4023(Fax)
E-Mail: Info@EANDM.com
INCORPORATED

40 20 0 40 80

SCALE: 1" = 40'

LEGEND

EXISTING STORM SEWER	
PROPOSED STORM SEWER	
EXISTING SANITARY SEWER	
PROPOSED SANITARY SEWER	
PROPOSED SANITARY SEWER FORCE MAIN	FM
EXISTING WATER LINE	W
PROPOSED WATER LINE	W
EXISTING CONTOUR	644
PROPOSED CONTOUR	650
EXISTING CURB LINE	
PROPOSED CURB LINE	
POSITIVE DRAINAGE INDICATOR	X
EXISTING ELEV	(333.68) OR 333.68
PROPOSED ELEV.	334.50
EXISTING TREE LINE	
PROPOSED TREE LINE	
EXISTING GAS LINE	G
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TOLL-FREE NUMBER IS 1-800-242-1776 OR 811.

WORK LOCATION NO.: 20170941435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!

STOP–CALL BEFORE YOU DIG!

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TOLL F. 1-800-242-1776 OR 811.

WORK LOCATION NO.: 20170941435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!

LEGEND

EXISTING STORM SEWER	
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EXISTING SANITARY SEWER	
PROPOSED SANITARY SEWER	
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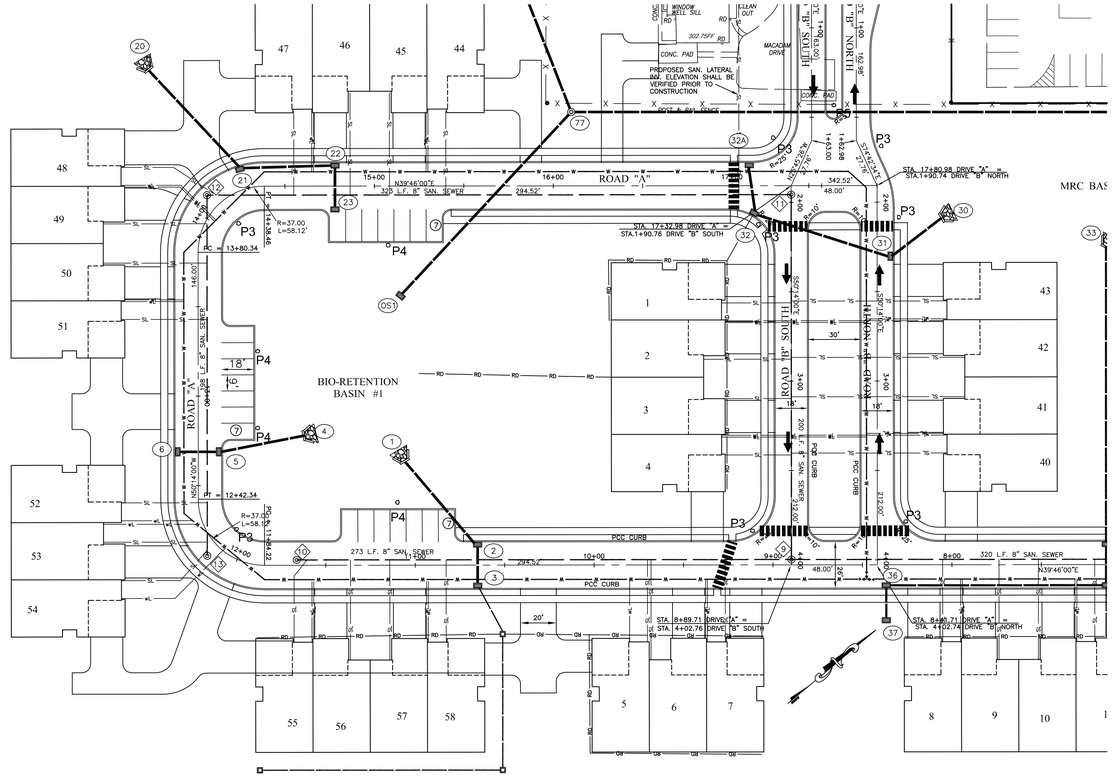


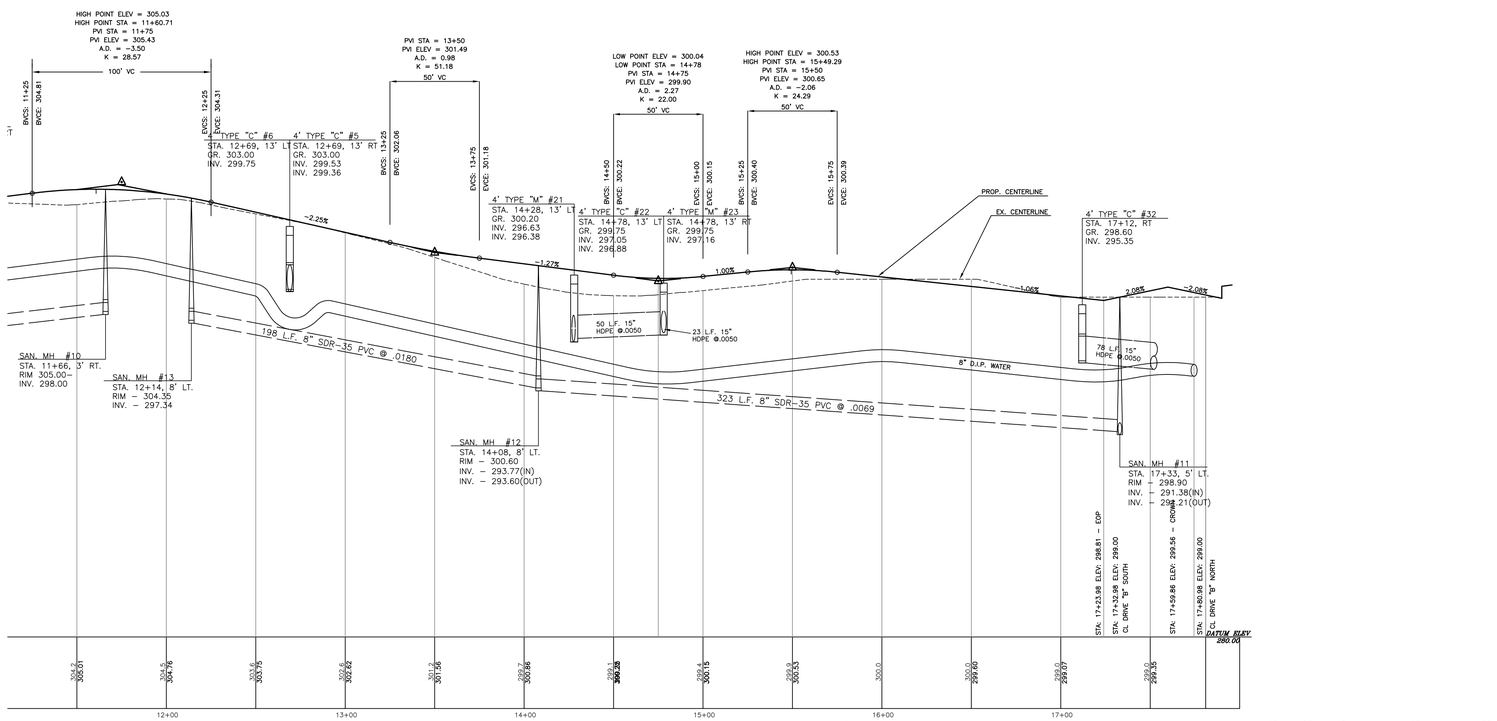
ADDITIONAL WATER NOTES:

GENERAL NOTES

1) ALL VALVES AND FIRE HYDRANTS ARE TO OPEN LEFT/RIGHT
2) ALL DIRECTIONAL CHANGE FITTINGS REQUIRE RETAINING GLANDS (MEGA-LUG OR EQUAL) AND FIELD-LOK GASKETS IN SINK HOLE PRONE AREAS WITH THE PROPER SQUARE FOOTAGE OF CONCRETE BLOCKING.
3) ALL PERMANENT BLOW-OFFS ARE TO BE BLOCKED WITH A STEEL RAIL AND THE PROPER SQUARE FOOTAGE OF CONCRETE BLOCKING. (SEE DETAIL SHEET)
4) 3/4" M.A.V./CL2 ASSEMBLIES (SEE DETAIL SHEET) ARE REQUIRED OF ALL WATER MAIN EXTENSIONS. THE EXACT QUANTITY AND LOCATION WILL BE DETERMINED AT THE PROJECT SITE BY THE ASSIGNED AMBLER WATER COMPANY INSPECTOR.
5) WHEN THE WORKING PRESSURE OF THE MAIN EXCEEDS 100 P.S.I, PRESSURE REDUCING VALVES ARE REQUIRED ON THE AFFECTED SERVICES. PRESSURE REDUCING VALVES ARE NOT SUPPLIED, OWNED, OR MAINTAINED BY AMBLER WATER COMPANY
6) ALL THRUST BLOCK VALUES ARE DETERMINED ACCORDING TO THE INTENDED WORKING PRESSURE OF THE PROPOSED MAIN. WHEN PRESSURES ARE IN EXCESS OF 200 PSI, AMBLER WATER COMPANY WILL PROVIDE SPECIFIC REQUIREMENTS.
7) THESE PLANS WERE PREPARED FROM INFORMATION OBTAINED FROM PLANS PROVIDED BY: IRICK EBERHARDT & MIENTUS, INC. SHEETS 1-29. LATEST REVISION DATE: JUNE 12, 2019
8) EASEMENT RIGHTS SHALL INCLUDE AN ADDITIONAL TEN (L0) FOOT WIDE TEMPORARY EASEMENT ON ALL SIDES DURING CONSTRUCTION.
9) AN ADDITIONAL TEN (10) FOOT WIDE EASEMENT IS GRANTED FOR EACH WATER SERVICE THAT IS OR WILL BE CONNECTED TO THE WATER MAIN.
10) A LENGTH EQUIVALENT TO TWO COMPLETE LENGTHS OF PIPE UPSTREAM AND DOWNSTREAM OF DIRECTIONAL CHANGE FITTINGS REQUIRE FIELD-LOK GASKETS IN SINK HOLE PRONE AREAS.
11) FIELD CHANGES WILL BE MADE AT THE DISCRETION OF THE AMBLER WATER COMPANY REPRESENTATIVE OR AMBLER WATER COMPANY CONSTRUCTION SUPERVISOR.
12) AMBLER WATER COMPANY RESERVES THE RIGHT TO INSTALL A SAMPLING STATION(S) ON THIS MAIN EXTENSION SO IT MAY COLLECT REQUIRED OPERATIONAL AND COMPLIANCE SAMPLES UNDER DEP REGULATIONS.

GENERAL CONSTRUCTION NOTES:

1. THE PROPOSED WATER AND SEWER CONSTRUCTION SHALL CONFORM TO THE STANDARD TECHNICAL SPECIFICATIONS FOR WATER DISTRIBUTION SYSTEMS, AMBLER WATER COMPANY AND WHITEMARSH TOWNSHIP AUTHORITY.
2. A MINIMUM OF 20 L.F. OF SIX (6") INCH THICK CONCRETE ENCASEMENT SHALL BE PROVIDED WHEN LESS THAN EIGHTEEN (18") INCHES VERTICAL CLEARANCE IS PROVIDED WITH ANY UTILITY. THIS ALSO APPLIES TO SANITARY LATERALS.
3. IT IS THE INTENT OF THE WATER MAIN DESIGN TO GRADUALLY DEFLECT THE WATER MAIN UNDER AND/OR OVER UTILITY CONFLICTS UNLESS A BEND IS CLEARLY LABELED, THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE 2.5 DEGREES PER PIPE JOINT.
4. STORM SEWER INLET OFFSETS ARE TO CURB LINE FOR TYPE "C", EDGE OF PAVEMENT FOR TYPE "S" AND TO CENTER OF TYPE "M" INLETS.
5. STORM PIPE AND SANITARY PIPE LENGTHS ARE THE HORIZONTAL DISTANCE BETWEEN THE OUTSIDE OF THE STRUCTURES.
6. WHEREVER POSSIBLE, WATER AND SEWER LATERALS SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 18" UNDER STORM SEWERS (SEE ITEM 2 ABOVE). NO SERVICES SHALL BE LOCATED UNDER INLETS. NO LANDSCAPING PLANTINGS SHALL BE ALLOWED WITHIN UTILITY AND STORM SEWER EASEMENTS.
7. A MINIMUM OF 10 FEET SHALL BE MAINTAINED BETWEEN LANDSCAPING TREES AND SHRUBS AND ALL WATER AND SEWER LATERALS AND FIRE HYDRANTS.
8. PROPOSED STREETS SHALL BE POSTED FOR A SPEED LIMIT OF 15 MPH.
9. NO UNSUITABLE MATERIAL IS TO BE USED IN ANY PORTION OF THE ROADWAY CONSTRUCTION. REMOVE ANY SUBGRADE THAT CANNOT BE PROPERLY COMPACTED AND THAT IS UNSUITABLE MATERIAL. UNDERCUTTING AND OR SUBGRADE STABILIZATION MAY BE REQUIRED.
10. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE ANY DEBRIS AND FLUSH OUT ALL EXISTING AND PROPOSED STORM DRAINAGE FACILITIES WITHIN THE PROJECT LIMITS AT THE COMPLETION OF CONSTRUCTION.
11. ANY DAMAGED OR SUBSTANDARD CURB WITHIN THE LIMITS OF WORK SHALL BE REPLACED AS NECESSARY.
12. ALL DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE PRECONSTRUCTION MEETING.
13. SAFETY GRATES SHALL BE PROVIDED FOR THE ENDWALLS IN ACCORDANCE WITH THE DETAIL ON THE DETAIL SHEETS.
14. NO ROOF DRAINS SHALL DISCHARGE DIRECTLY TO STREETS, STORM SEWERS, OR ROADSIDE SWALES WITHOUT APPROVAL OF THE TOWNSHIP ENGINEER. ONLY WHERE TOPOGRAPHY CONDITIONS PROHIBIT, SHOULD ROOF DRAINS DISCHARGE DIRECTLY TO THESE FEATURES. ROOF DRAINS SHALL DISCHARGE TO INFILTRATION AREAS OR VEGETATIVE BMP'S TO THE MAXIMUM EXTENT PRACTICABLE. ROOF DRAINS MAY BE DISCHARGED TO LAWNS AND SUBSEQUENTLY TO DRAINAGE SWALES IN LOW DENSITY RESIDENTIAL AREAS.
15. REFER TO THE PCSM PLAN AND REPORT FOR EXPECTED DRAINAGE AREAS TO EACH INLET AND INTO THE BASIN.
16. WATER MAINS A SANITARY SEWER LINES SHALL HAVE A MINIMUM OF FOUR (4) FEET OF COVER INCLUDING WATER SERVICES AND LATERALS.
17. BASINS SHALL BE USED FOR INFILTRATION. REFER TO PCSM PLAN AND REPORT AND STAGING OF EARTHMOVING ACTIVITIES FOR SPECIFICATIONS AND MAINTENANCE DURING AND AFTER CONSTRUCTION. IF BEDROCK OR GROUNDWATER IS ENCOUNTERED DURING THE EXCAVATION OF THE INFILTRATION BASINS, THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE DESIGN ENGINEER FOR SUITABLE OPTIONS REGARDING INFILTRATION.



DRIVE "A" CENTERLINE PROFILE

SCALE: 1" = 40'(HORIZ.) 1" = 4'(VERT.)

40 20 0 40 80

SCALE: 1" = 40'

"LONGFIELD FARM"

REVISION DATE:	DESCRIPTION:
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ROADWAY PROFILES

PREPARED FOR DRIVE "A" STA.11+50 TO TERMINUS

SPARTAN ORGANIZATION

SITUATE

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TELL A-1-800-242-1776 OR 811.

WORK LOCATION NO.: 20170941435

PENNSYLVANIA ONE CALL SYSTEM, INC. STOP-CALL BEFORE YOU DIG!

LEGEND

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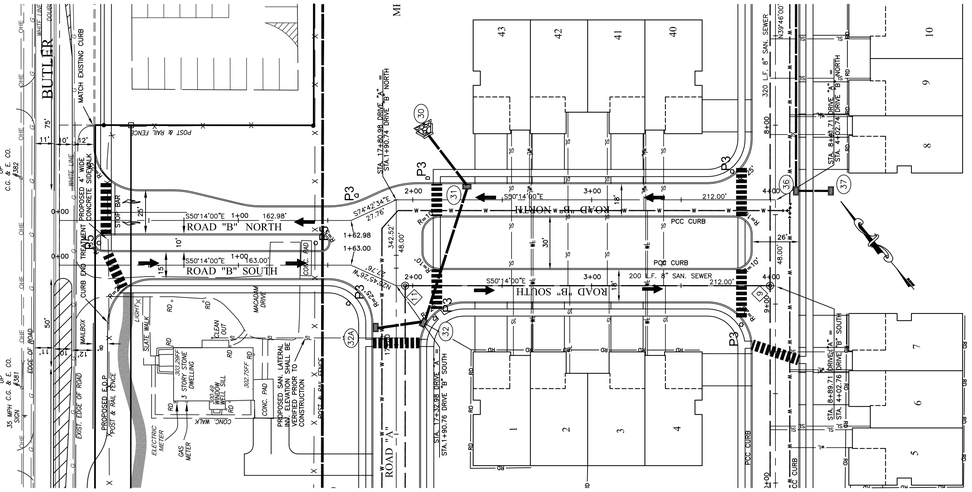
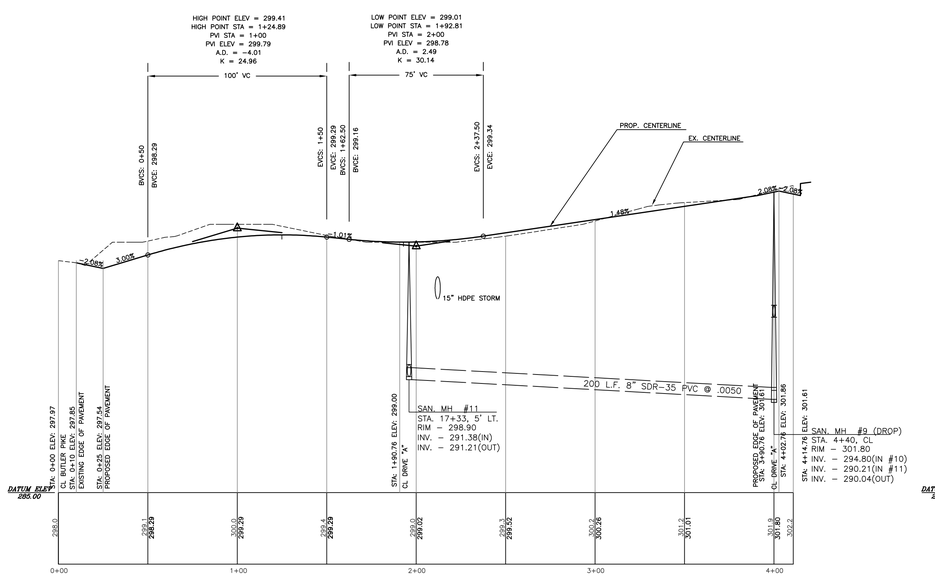
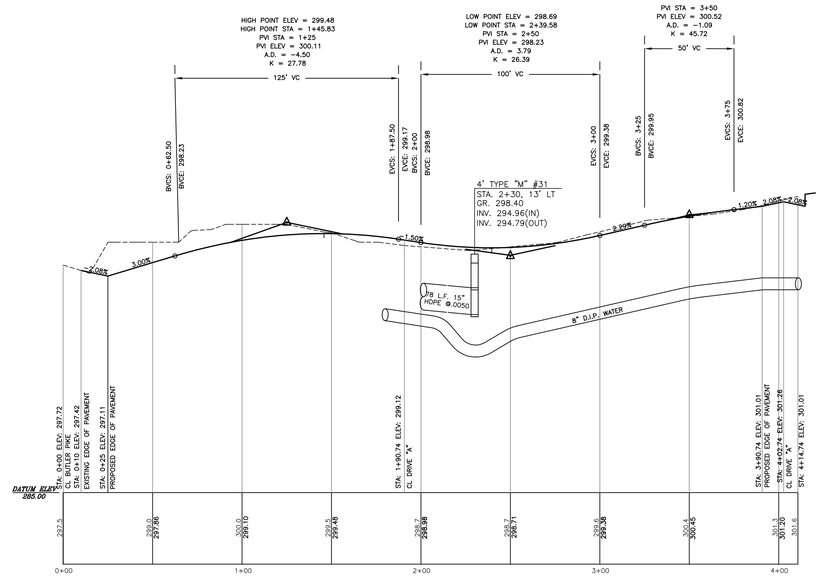




DRIVE "B" SOUTH CENTERLINE PROFILE SCALE: 1" = 40'(HORIZ.) 1" = 4'(VERT.)



DRIVE "B" NORTH CENTERLINE PROFILE SCALE: 1" = 40'(HORIZ.) 1" = 4'(VERT.)

ADDITIONAL WATER NOTES:

GENERAL NOTES

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2) ALL DIRECTIONAL CHANGE FITTINGS REQUIRE RETAINING GLANDS (MEGA-LUG OR EQUAL) AND FIELD-LOK GASKETS IN SINK HOLE PRONE AREAS WITH THE PROPER SQUARE FOOTAGE OF CONCRETE BLOCKING.
3) ALL PERMANENT BLOW-OFFS ARE TO BE BLOCKED WITH A STEEL RAIL AND THE PROPER SQUARE FOOTAGE OF CONCRETE BLOCKING. (SEE DETAIl SHEET)
4) 3/4" M.A.V./CL2 ASSEMBLIES (SEE DETAIL SHEET) ARE REQUIRED OF ALL WATER MAIN EXTENSIONS. THE EXACT QUANTITY AND LOCATION WILL BE DETERMINED AT THE PROJECT SITE BY THE ASSIGNED AMBLER WATER COMPANY INSPECTOR.
5) WHEN THE WORKING PRESSURE OF THE MAIN EXCEEDS 100 P.S.I, PRESSURE REDUCING VALVES ARE REQUIRED ON THE AFFECTED SERVICES. PRESSURE REDUCING VALVES ARE NOT SUPPLIED, OWNED, OR MAINTAINED BY AMBLER WATER COMPANY
6) ALL THRUST BLOCK VALUES ARE DETERMINED ACCORDING TO THE INTENDED WORKING PRESSURE OF THE PROPOSED MAIN. WHEN PRESSURES ARE IN EXCESS OF 200 PSI, AMBLER WATER COMPANY WILL PROVIDE SPECIFIC REQUIREMENTS.
7) THESE PLANS WERE PREPARED FROM INFORMATION OBTAINED FROM PLANS PROVIDED BY: IRICK EBERHARDT & MIENTUS, INC. SHEETS 1-29. LATEST REVISION DATE: JUNE 12, 2019
8) EASEMENT RIGHTS SHALL INCLUDE AN ADDITIONAL TEN (L0) FOOT WIDE TEMPORARY EASEMENT ON ALL SIDES DURING CONSTRUCTION.
9) AN ADDITIONAL TEN (10) FOOT WIDE EASEMENT IS GRANTED FOR EACH WATER SERVICE THAT IS OR WILL BE CONNECTED TO THE WATER MAIN.
10) A LENGTH EQUIVALENT TO TWO COMPLETE LENGTHS OF PIPE UPSTREAM AND DOWNSTREAM OF DIRECTIONAL CHANGE FITTINGS REQUIRE FIELD-LOK GASKETS IN SINK HOLE PRONE AREAS.
11) FIELD CHANGES WILL BE MADE AT THE DISCRETION OF THE AMBLER WATER COMPANY REPRESENTATIVE OR AMBLER WATER COMPANY CONSTRUCTION SUPERVISOR.
12) AMBLER WATER COMPANY RESERVES THE RIGHT TO INSTALL A SAMPLING STATION(S) ON THIS MAIN EXTENSION SO IT MAY COLLECT REQUIRED OPERATIONAL AND COMPLIANCE SAMPLES UNDER DEP REGULATIONS.

GENERAL CONSTRUCTION NOTES:

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2. A MINIMUM OF 20 L.F. OF SIX (6") INCH THICK CONCRETE ENCASEMENT SHALL BE PROVIDED WHEN LESS THAN EIGHTEEN (18") INCHES VERTICAL CLEARANCE IS PROVIDED WITH ANY UTILITY. THIS ALSO APPLIES TO SANITARY LATERALS.
3. IT IS THE INTENT OF THE WATER MAIN DESIGN TO GRADUALLY DEFLECT THE WATER MAIN UNDER AND/OR OVER UTILITY CONFLICTS UNLESS A BEND IS CLEARLY LABELED. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE 2.5 DEGREES PER PIPE JOINT.
4. STORM SEWER INLET OFFSETS ARE TO CURB LINE FOR TYPE "C", EDGE OF PAVEMENT FOR TYPE "S" AND TO CENTER OF TYPE 'M' INLETS.
5. STORM PIPE AND SANITARY PIPE LENGTHS ARE THE HORIZONTAL DISTANCE BETWEEN THE OUTSIDE OF THE STRUCTURES.
6. WHEREVER POSSIBLE, WATER AND SEWER LATERALS SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 18" UNDER STORM SEWERS (SEE ITEM 2 ABOVE). NO SERVICES SHALL BE LOCATED UNDER INLETS. NO LANDSCAPING PLANTINGS SHALL BE ALLOWED WITHIN UTILITY AND STORM SEWER EASEMENTS.
7. A MINIMUM OF 10 FEET SHALL BE MAINTAINED BETWEEN LANDSCAPING TREES AND SHRUBS AND ALL WATER AND SEWER LATERALS AND FIRE HYDRANTS.
8. PROPOSED STREETS SHALL BE POSTED FOR A SPEED LIMIT OF 15 MPH.
9. NO UNSUITABLE MATERIAL IS TO BE USED IN ANY PORTION OF THE ROADWAY CONSTRUCTION. REMOVE ANY SUBGRADE THAT CANNOT BE PROPERLY COMPACTED AND THAT IS UNSUITABLE MATERIAL. UNDERCUTTING AND OR SUBGRADE STABILIZATION MAY BE REQUIRED.
10. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE ANY DEBRIS AND FLUSH OUT ALL EXISTING AND PROPOSED STORM DRAINAGE FACILITIES WITHIN THE PROJECT LIMITS AT THE COMPLETION OF CONSTRUCTION.
11. ANY DAMAGED OR SUBSTANDARD CURB WITHIN THE LIMITS OF WORK SHALL BE REPLACED AS NECESSARY.
12. ALL DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE PRECONSTRUCTION MEETING.
13. SAFETY GRATES SHALL BE PROVIDED FOR THE ENDWALLS IN ACCORDANCE WITH THE DETAIL ON THE DETAIL SHEETS.
14. NO ROOF DRAINS SHALL DISCHARGE DIRECTLY TO STREETS, STORM SEWERS, OR ROADSIDE SWALES WITHOUT APPROVAL OF THE TOWNSHIP ENGINEER. ONLY WHERE TOPOGRAPHY CONDITIONS PROHIBIT, SHOULD ROOF DRAINS DISCHARGE DIRECTLY TO THESE FEATURES. ROOF DRAINS SHALL DISCHARGE TO INFILTRATION AREAS OR VEGETATIVE BMP'S TO THE MAXIMUM EXTENT PRACTICABLE. ROOF DRAINS MAY BE DISCHARGED TO LAWNS AND SUBSEQUENTLY TO DRAINAGE SWALES IN LOW DENSITY RESIDENTIAL AREAS.
15. REFER TO THE PCSM PLAN AND REPORT FOR EXPECTED DRAINAGE AREAS TO EACH INLET AND INTO THE BASIN.
16. WATER MAINS A SANITARY SEWER LINES SHALL HAVE A MINIMUM OF FOUR (4) FEET OF COVER INCLUDING WATER SERVICES AND LATERALS.
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40 20 0 40 80

SCALE: 1" = 40'

"LONGFIELD FARM"

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

ROADWAY PROFILES

PREPARED FOR DRIVE "B"

SPARTAN ORGANIZATION

SITUATE

WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17-02
DRAWN BY: RFI	FILE NAME: 17-02BASE
SCALE: 1" = 40'	SHEET: 13 OF 30

Irick Eberhardt Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215-541-4626
215-541-4023(Fax)
E-Mail: Info@IEANDM.com

STOP–CALL BEFORE YOU DIG!

LOCATION OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE BEGINNING WORK. CALL PENNSYLVANIA ONE CALL SYSTEM THREE DAYS PRIOR TO EXCAVATION. (REFERENCE PENNSYLVANIA ACT 287 AS AMENDED BY ACT 181 (2006).

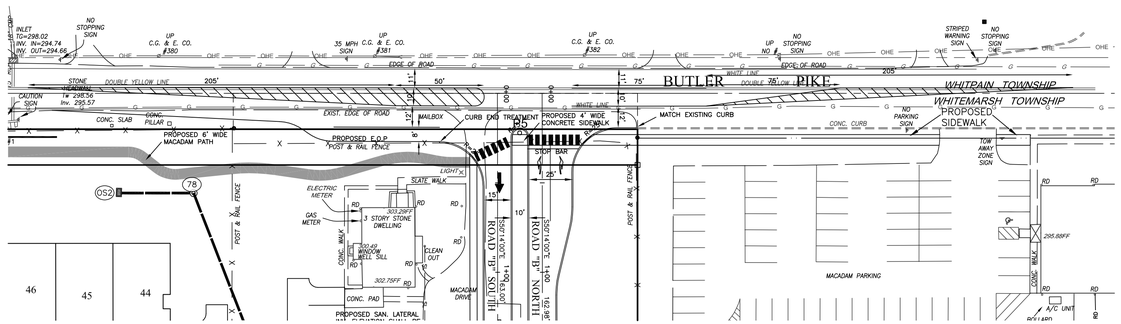
TOLL F. 1-800-242-1776 OR 811.

WORK LOCATION NO.: 20170941435

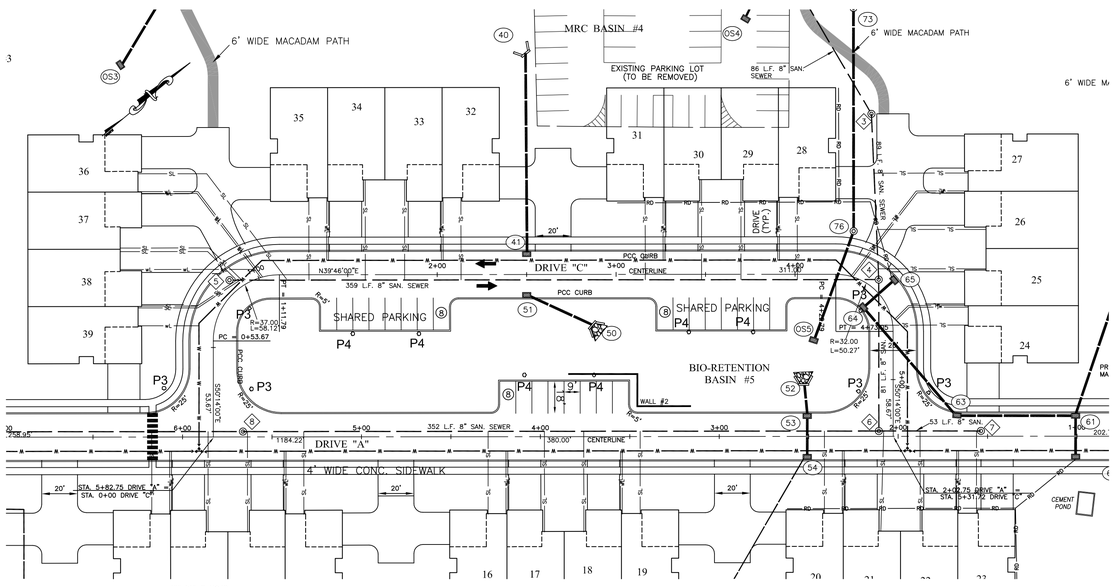
PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!

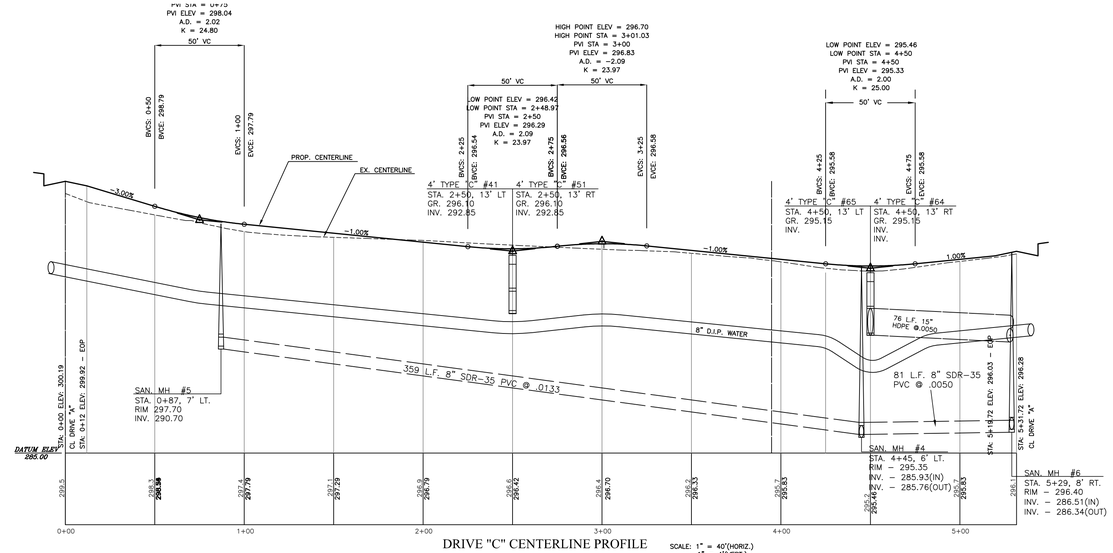
LEGEND

EXISTING STORM SEWER	
PROPOSED STORM SEWER	
EXISTING SANITARY SEWER	
PROPOSED SANITARY SEWER	
PROPOSED SANITARY SEWER FORCE MAIN	FM
EXISTING WATER LINE	W
PROPOSED WATER LINE	W
EXISTING CONTOUR	644
PROPOSED CONTOUR	650
EXISTING CURB LINE	
PROPOSED CURB LINE	
POSITIVE DRAINAGE INDICATOR	
EXISTING ELEV	(333.68) OR 333.68
PROPOSED ELEV.	334.50
EXISTING TREE LINE	
PROPOSED TREE LINE	
EXISTING GAS LINE	G
PROP. GAS LINE	G
EXISTING OVERHEAD ELEC.	OE
EXISTING UNDERGROUND ELEC.	
PROP. ELECTRIC	E
PROP. ROOF DRAIN	RD
PROP. WATER LATERAL	wL
PROP. SEWER LATERAL	SL



BUTLER PIKE IMPROVEMENTS SCALE: 1" = 40'





DRIVE "C" CENTERLINE PROFILE SCALE: 1" = 40'(HORIZ.) 1" = 4'(VERT.)

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40 20 0 40 80

SCALE: 1" = 40'

"LONGFIELD FARM"

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

ROADWAY PROFILES

PREPARED FOR DRIVE "C"

SPARTAN ORGANIZATION

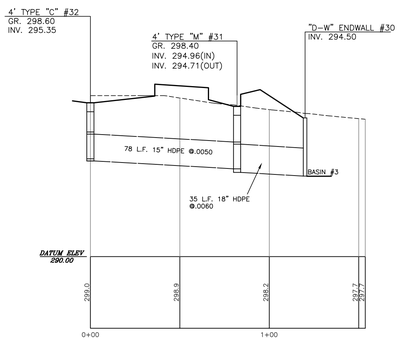
SITUATE

WHITEMARSH TOWNSHIP

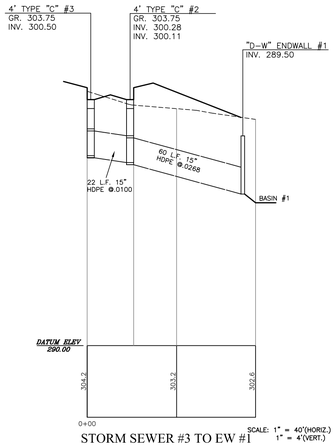
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17–02
DRAWN BY: RFI	FILE NAME: 17–02BASE
SCALE: 1" = 40'	SHEET: 14 OF 30

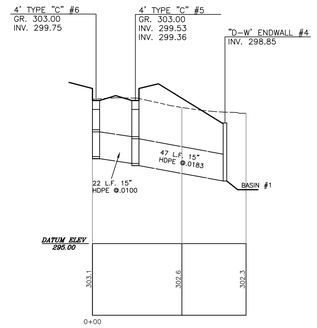
Irick Eberhardt Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215-541-4626
215-541-4023(Fax)
E-Mail: Info@IEANDM.com



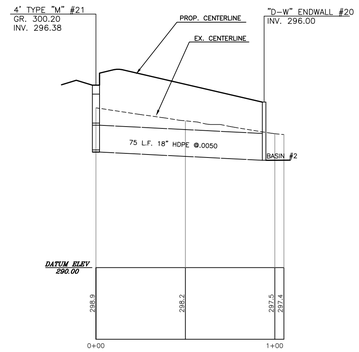
STORM SEWER #32 TO EW #30 SCALE: 1" = 40'(HORIZ.) 1" = 4'(VERT.)



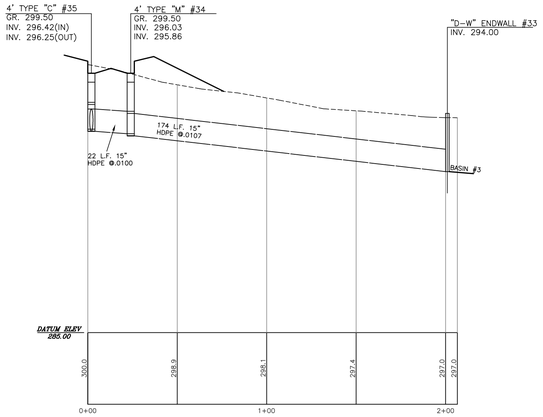
STORM SEWER #3 TO EW #1 SCALE: 1" = 40'(HORIZ.) 1" = 4'(VERT.)



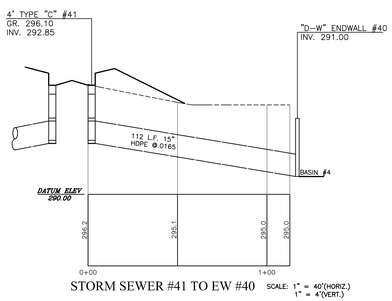
STORM SEWER #6 TO EW #4 SCALE: 1" = 40'(HORIZ.) 1" = 4'(VERT.)



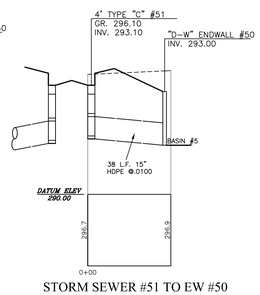
STORM SEWER #21 TO EW #20
SCALE: 1" = 40'(HORIZ.) 1" = 4'(VERT.)



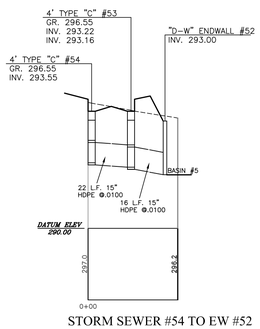
STORM SEWER #35 TO EW #33 SCALE: 1" = 40'(HORIZ.) 1" = 4'(VERT.)



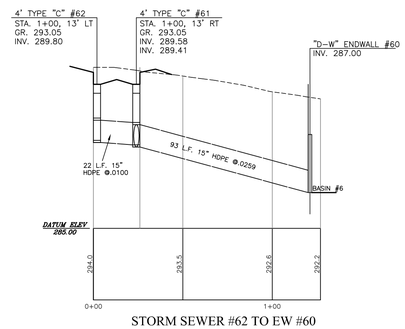
STORM SEWER #41 TO EW #40 SCALE: 1" = 40'(HORIZ.) 1" = 4'(VERT.)



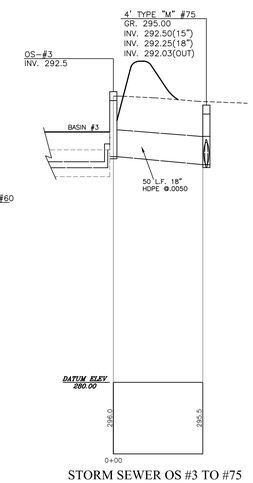
STORM SEWER #51 TO EW #50
SCALE: 1" = 40'(HORIZ.) 1" = 4'(VERT.)



STORM SEWER #54 TO EW #52
SCALE: 1" = 40'(HORIZ.) 1" = 4'(VERT.)



STORM SEWER #62 TO EW #60
SCALE: 1" = 40'(HORIZ.) 1" = 4'(VERT.)



STORM SEWER OS #3 TO #75
SCALE: 1" = 40'(HORIZ.) 1" = 4'(VERT.)

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14. NO ROOF DRAINS SHALL DISCHARGE DIRECTLY TO STREETS, STORM SEWERS, OR ROADSIDE SWALES WITHOUT APPROVAL OF THE TOWNSHIP ENGINEER. ONLY WHERE TOPOGRAPHY CONDITIONS PROHIBIT, SHOULD ROOF DRAINS DISCHARGE DIRECTLY TO THESE FEATURES. ROOF DRAINS SHALL DISCHARGE TO INFILTRATION AREAS OR VEGETATIVE BMP'S TO THE MAXIMUM EXTENT PRACTICABLE. ROOF DRAINS MAY BE DISCHARGED TO LAWNS AND SUBSEQUENTLY TO DRAINAGE SWALES IN LOW DENSITY RESIDENTIAL AREAS.
15. REFER TO THE PCSM PLAN AND REPORT FOR EXPECTED DRAINAGE AREAS TO EACH INLET AND INTO THE BASIN.
16. WATER MAINS A SANITARY SEWER LINES SHALL HAVE A MINIMUM OF FOUR (4) FEET OF COVER INCLUDING WATER SERVICES AND LATERALS.
17. BASINS SHALL BE USED FOR INFILTRATION. REFER TO PCSM PLAN AND REPORT AND STAGING OF EARTHMOVING ACTIVITIES FOR SPECIFICATIONS AND MAINTENANCE DURING AND AFTER CONSTRUCTION. IF BEDROCK OR GROUNDWATER IS ENCOUNTERED DURING THE EXCAVATION OF THE INFILTRATION BASINS, THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE DESIGN ENGINEER FOR SUITABLE OPTIONS REGARDING INFILTRATION.

40 20 0 40 80
SCALE: 1" = 40'

STOP—CALL BEFORE YOU DIG!
LOCATION OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES PRIOR TO CONSTRUCTION. PENNSYLVANIA ONE CALL SYSTEM THREE DAYS PRIOR TO EXCAVATION. REFERENCE PENNSYLVANIA ACT 287 AS AMENDED BY ACT 181 (2006).
TOLL-FREE 1-800-242-1776 OR 811.
WORK LOCATION NO.: 20170941435

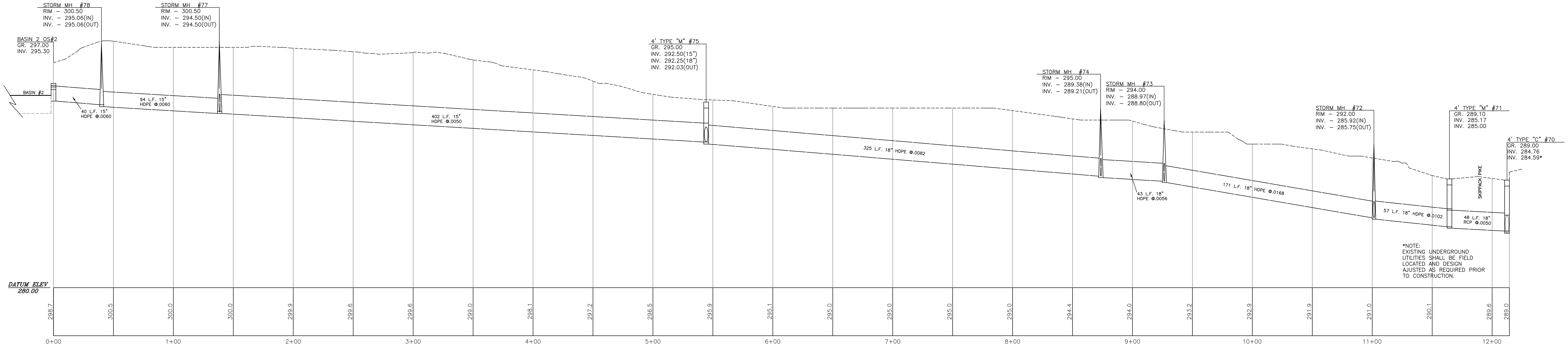
"LONGFIELD FARM"

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

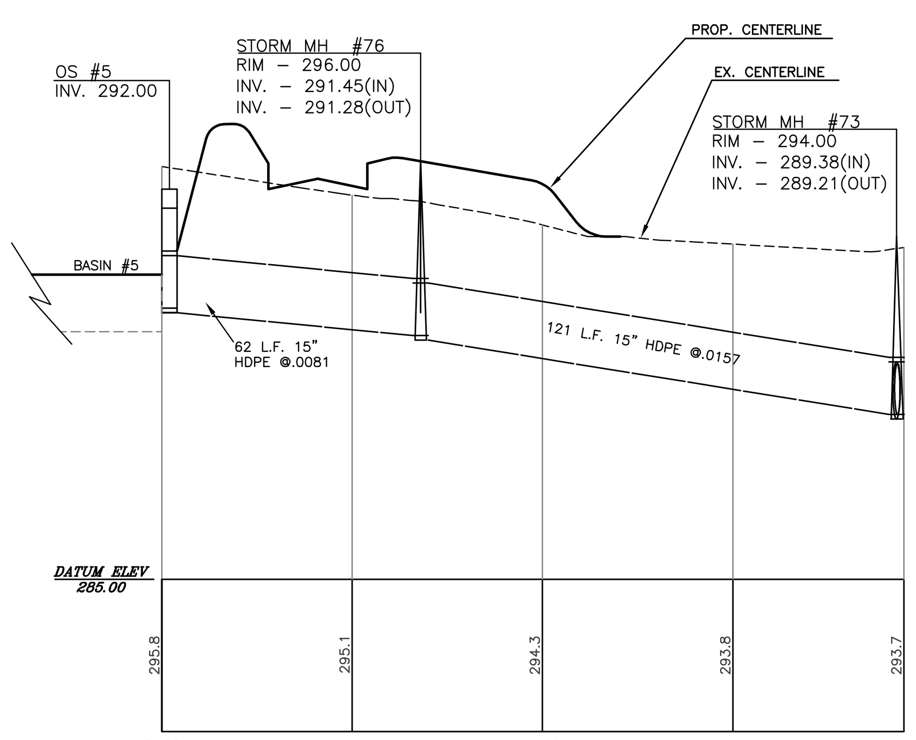
ROADWAY PROFILES
PREPARED FOR OFFROAD PROFILES
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17–02
DRAWN BY: RFI	FILE NAME: 17–02BASE
SCALE: 1" = 40'	SHEET: 15 OF 30

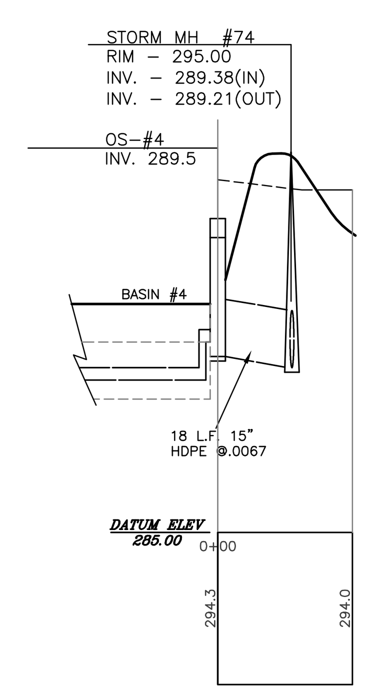
Irick Eberhardt & Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215-541-4626
215-541-4023(Fax)
E-Mail: Info@IEANDM.com



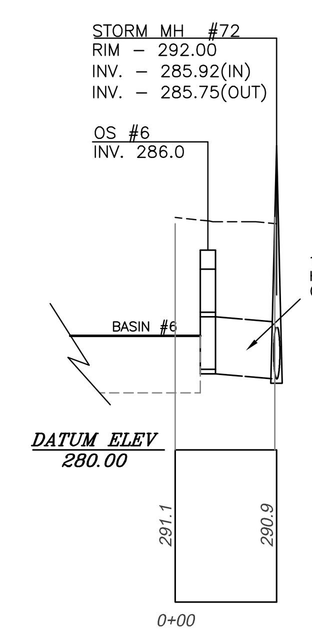
STORM SEWER OS-2 TO INLET #70
SCALE: 1" = 40'(HORIZ.)
1" = 4'(VERT.)



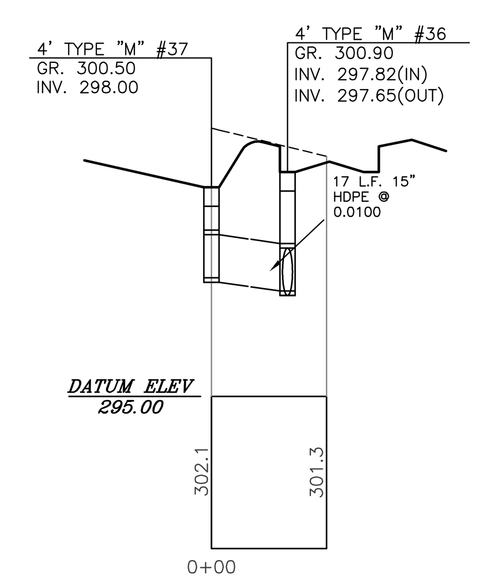
STORM SEWER OS #5 TO MH #73
SCALE: 1" = 40'(HORIZ.)
1" = 4'(VERT.)



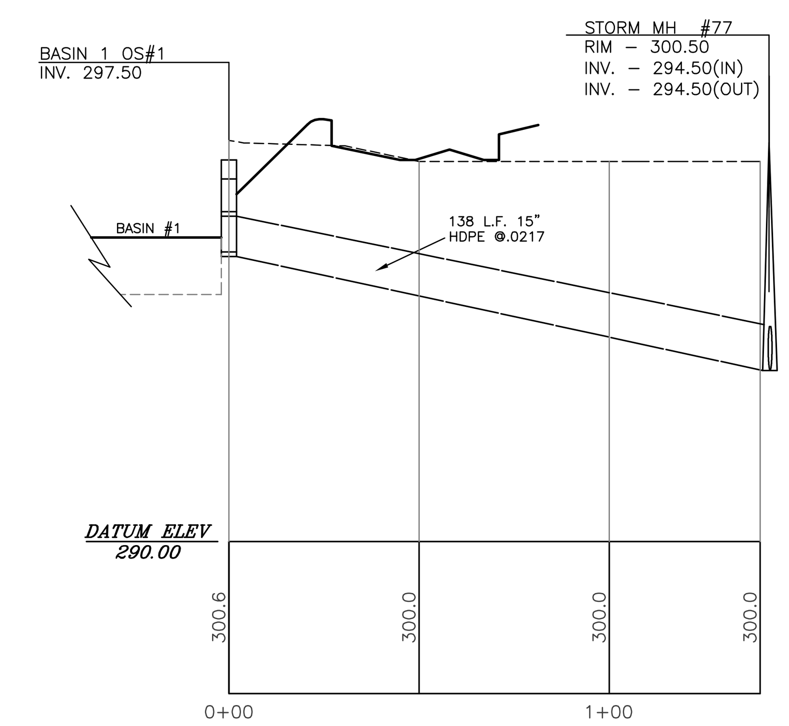
STORM SEWER OS #4 TO MH #74
SCALE: 1" = 40'(HORIZ.)
1" = 4'(VERT.)



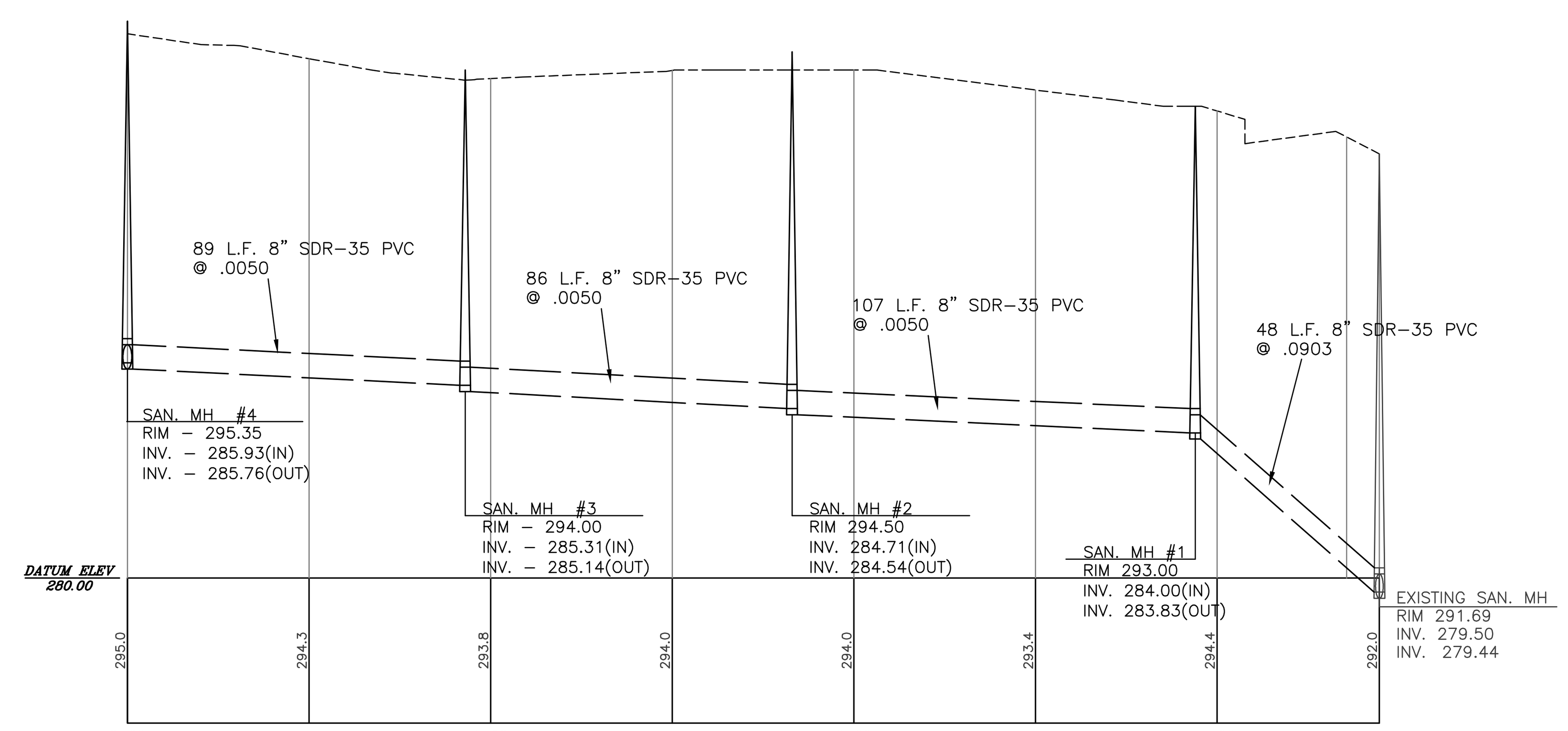
STORM SEWER OS #6 TO MH #72
SCALE: 1" = 40'(HORIZ.)
1" = 4'(VERT.)



STORM SEWER INLET #37 TO #36
SCALE: 1" = 40'(HORIZ.)
1" = 4'(VERT.)



STORM SEWER OS 1 TO MH #77
SCALE: 1" = 40'(HORIZ.)
1" = 4'(VERT.)



SANITARY SEWER #4 TO EXISTING SCALE: 1" = 40'(HORIZ.)
1" = 4'(VERT.)

ADDITIONAL WATER NOTES:
GENERAL NOTES
1) ALL VALVES AND FIRE HYDRANTS ARE TO OPEN LEFT/RIGHT
2) ALL DIRECTIONAL CHANGE FITTINGS REQUIRE RETAINING GLANDS (MEGA-LUG OR EQUAL) AND FIELD-LOK GASKETS IN SINK HOLE PRONE AREAS WITH THE PROPER SQUARE FOOTAGE OF CONCRETE BLOCKING.
3) ALL PERMANENT BLOW-OFFS ARE TO BE BLOCKED WITH A STEEL RAIL AND THE PROPER SQUARE FOOTAGE OF CONCRETE BLOCKING. (SEE DETAII SHEET)
4) 3/4" M.A.V./CL2 ASSEMBLIES (SEE DETAIL SHEET) ARE REQUIRED OF ALL WATER MAIN EXTENSIONS. THE EXACT QUANTITY AND LOCATION WILL BE DETERMINED AT THE PROJECT SITE BY THE ASSIGNED AMBLER WATER COMPANY INSPECTOR.
5) WHEN THE WORKING PRESSURE OF THE MAIN EXCEEDS 100 P.S.I, PRESSURE REDUCING VALVES ARE REQUIRED ON THE AFFECTED SERVICES. PRESSURE REDUCING VALVES ARE NOT SUPPLIED, OWNED, OR MAINTAINED BY AMBLER WATER COMPANY
6) ALL THRUST BLOCK VALUES ARE DETERMINED ACCORDING TO THE INTENDED WORKING PRESSURE OF THE PROPOSED MAIN. WHEN PRESSURES ARE IN EXCESS OF 200 PSI, AMBLER WATER COMPANY WILL PROVIDE SPECIFIC REQUIREMENTS.
7) THESE PLANS WERE PREPARED FROM INFORMATION OBTAINED FROM PLANS PROVIDED BY: IRICK EBERHARDT & MIENTUS, INC. SHEETS 1-29. LATEST REVISION DATE: JUNE 12, 2019
8) EASEMENT RIGHTS SHALL INCLUDE AN ADDITIONAL TEN (L0) FOOT WIDE TEMPORARY EASEMENT ON ALL SIDES DURING CONSTRUCTION.
9) AN ADDITIONAL TEN (10) FOOT WIDE EASEMENT IS GRANTED FOR EACH WATER SERVICE THAT IS OR WILL BE CONNECTED TO THE WATER MAIN.
10) A LENGTH EQUIVALENT TO TWO COMPLETE LENGTHS OF PIPE UPSTREAM AND DOWNSTREAM OF DIRECTIONAL CHANGE FITTINGS REQUIRE FIELD-LOK GASKETS IN SINK HOLE PRONE AREAS.
11) FIELD CHANGES WILL BE MADE AT THE DISCRETION OF THE AMBLER WATER COMPANY REPRESENTATIVE OR AMBLER WATER COMPANY CONSTRUCTION SUPERVISOR.
12) AMBLER WATER COMPANY RESERVES THE RIGHT TO INSTALL A SAMPLING STATION(S) ON THIS MAIN EXTENSION SO IT MAY COLLECT REQUIRED OPERATIONAL AND COMPLIANCE SAMPLES UNDER DEP REGULATIONS.

GENERAL CONSTRUCTION NOTES:
1. THE PROPOSED WATER AND SEWER CONSTRUCTION SHALL CONFORM TO THE STANDARD TECHNICAL SPECIFICATIONS FOR WATER DISTRIBUTION SYSTEMS, AMBLER WATER COMPANY AND WHITEMARSH TOWNSHIP AUTHORITY.
2. A MINIMUM OF 20 L.F. OF SIX (6") INCH THICK CONCRETE ENCASEMENT SHALL BE PROVIDED WHEN LESS THAN EIGHTEEN (18") INCHES VERTICAL CLEARANCE IS PROVIDED WITH ANY UTILITY. THIS ALSO APPLIES TO SANITARY LATERALS.
3. IT IS THE INTENT OF THE WATER MAIN DESIGN TO GRADUALLY DEFLECT THE WATER MAIN UNDER AND/OR OVER UTILITY CONFLICTS UNLESS A BEND IS CLEARLY LABELED. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE 2.5 DEGREES PER PIPE JOINT.
4. STORM SEWER INLET OFFSETS ARE TO CURB LINE FOR TYPE "C", EDGE OF PAVEMENT FOR TYPE "S" AND TO CENTER OF TYPE 'M' INLETS.
5. STORM PIPE AND SANITARY PIPE LENGTHS ARE THE HORIZONTAL DISTANCE BETWEEN THE OUTSIDE OF THE STRUCTURES.
6. WHEREVER POSSIBLE, WATER AND SEWER LATERALS SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 18" UNDER STORM SEWERS (SEE ITEM 2 ABOVE). NO SERVICES SHALL BE LOCATED UNDER INLETS. NO LANDSCAPING PLANTINGS SHALL BE ALLOWED WITHIN UTILITY AND STORM SEWER EASEMENTS.
7. A MINIMUM OF 10 FEET SHALL BE MAINTAINED BETWEEN LANDSCAPING TREES AND SHRUBS AND ALL WATER AND SEWER LATERALS AND FIRE HYDRANTS.
8. PROPOSED STREETS SHALL BE POSTED FOR A SPEED LIMIT OF 15 MPH.
9. NO UNSUITABLE MATERIAL IS TO BE USED IN ANY PORTION OF THE ROADWAY CONSTRUCTION. REMOVE ANY SUBGRADE THAT CANNOT BE PROPERLY COMPACTED AND THAT IS UNSUITABLE MATERIAL. UNDERCUTTING AND OR SUBGRADE STABILIZATION MAY BE REQUIRED.
10. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE ANY DEBRIS AND FLUSH OUT ALL EXISTING AND PROPOSED STORM DRAINAGE FACILITIES WITHIN THE PROJECT LIMITS AT THE COMPLETION OF CONSTRUCTION.
11. ANY DAMAGED OR SUBSTANDARD CURB WITHIN THE LIMITS OF WORK SHALL BE REPLACED AS NECESSARY.
12. ALL DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE PRECONSTRUCTION MEETING.
13. SAFETY GRATES SHALL BE PROVIDED FOR THE ENDWALLS IN ACCORDANCE WITH THE DETAIL ON THE DETAIL SHEETS.
14. NO ROOF DRAINS SHALL DISCHARGE DIRECTLY TO STREETS, STORM SEWERS, OR ROADSIDE SWALES WITHOUT APPROVAL OF THE TOWNSHIP ENGINEER. ONLY WHERE TOPOGRAPHY CONDITIONS PROHIBIT, SHOULD ROOF DRAINS DISCHARGE DIRECTLY TO THESE FEATURES. ROOF DRAINS SHALL DISCHARGE TO INFILTRATION AREAS OR VEGETATIVE BMP'S TO THE MAXIMUM EXTENT PRACTICABLE. ROOF DRAINS MAY BE DISCHARGED TO LAWNS AND SUBSEQUENTLY TO DRAINAGE SWALES IN LOW DENSITY RESIDENTIAL AREAS.
15. REFER TO THE PCSM PLAN AND REPORT FOR EXPECTED DRAINAGE AREAS TO EACH INLET AND INTO THE BASIN.
16. WATER MAINS A SANITARY SEWER LINES SHALL HAVE A MINIMUM OF FOUR (4) FEET OF COVER INCLUDING WATER SERVICES AND LATERALS.
17. BASINS SHALL BE USED FOR INFILTRATION. REFER TO PCSM PLAN AND REPORT AND STAGING OF EARTHMOVING ACTIVITIES FOR SPECIFICATIONS AND MAINTENANCE DURING AND AFTER CONSTRUCTION. IF BEDROCK OR GROUNDWATER IS ENCOUNTERED DURING THE EXCAVATION OF THE INFILTRATION BASINS, THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE DESIGN ENGINEER FOR SUITABLE OPTIONS REGARDING INFILTRATION.

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TELE. #: 1–800–242–1776 OR 811.
WORK LOCATION NO.: 20170941435

40 20 0 40 80
SCALE: 1" = 40'

"LONGFIELD FARM"

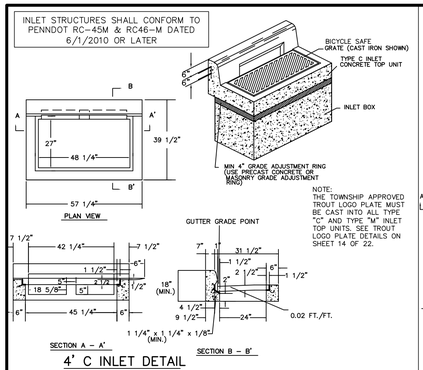
REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

ROADWAY PROFILES
PREPARED FOR OFFROAD PROFILES
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17–02
DRAWN BY: RFI	FILE NAME: 17–02BASE
SCALE: 1" = 40'	SHEET: 16 OF 30

Irick Eberhardt & Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215–541–4626
215–541–4023(Fax)
E–Mail: Info@IEANDM.com

INLET STRUCTURES SHALL CONFORM TO PENNDOT RC-45M & RC46-M DATED 6/1/2010 OR LATER



NOTE:
THE TOWNSHIP APPROVED TROUT LOGO PLATE MUST BE CAST INTO ALL TYPE "C" AND TYPE "M" INLET TOP UNITS. SEE TROUT LOGO PLATE DETAILS ON SHEET 14 OF 22.

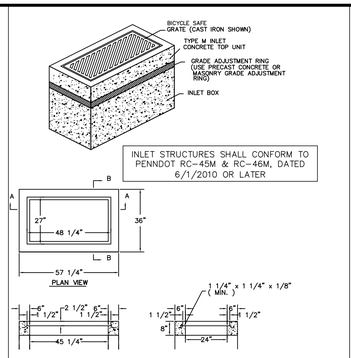
4' C INLET DETAIL

NTS

NOTES:

1. CONSTRUCT IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408 , SECTION 605 , FOR INLET ASSEMBLIES.
2. FLOW CHANNELS MUST BE INSTALLED IN ALL INLETS AFTER CONSTRUCTION.
3. REFER TO P.A. DOT (RC) STANDARDS, PUB #72 FOR ANY ADDITIONAL NOTES AND DETAILS.

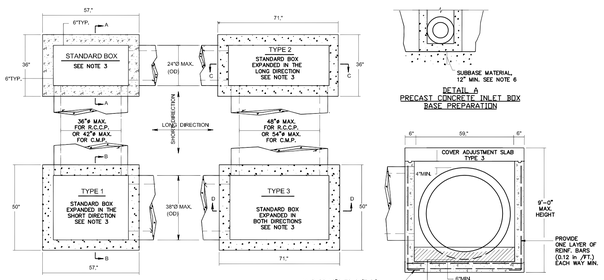
INLET STRUCTURES SHALL CONFORM TO PENNDOT RC-45M & RC-46M, DATED 6/1/2010 OR LATER



4' M INLET DETAIL

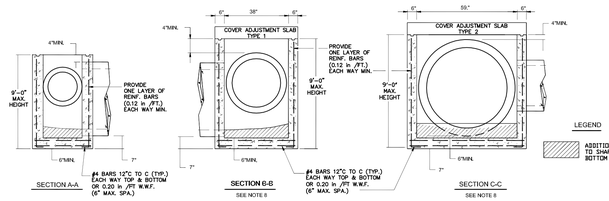
NOTES:

1. CONSTRUCT IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408 , SECTION 605 , FOR INLET ASSEMBLIES.
2. FLOW CHANNELS MUST BE INSTALLED IN ALL INLETS AFTER CONSTRUCTION.
3. REFER TO P.A. DOT (RC) STANDARDS, PUB #72 FOR ANY ADDITIONAL NOTES OR DETAILS.



PRECAST CONCRETE INLET BOXES

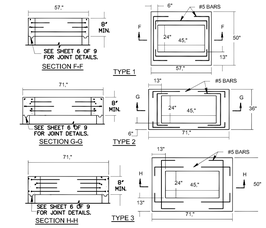
DETAIL A
PRECAST CONCRETE INLET BOX BASE PREPARATION



INLET BOXES SHALL CONFORM TO PENNDOT RC-46M, DATED 6/1/2010 OR LATER

NOTES

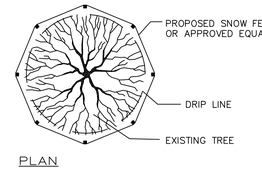
1. CONSTRUCT INLET BOXES IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408, SECTION 714.
2. ONLY PRECAST INLET BOXES SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15 SHALL BE PERMITTED. FOR A BULLETIN 15 LISTING, SUBMIT A 22" x 36" REPRODUCIBLE SHOP DRAWING TO THE BUREAU OF CONSTRUCTION AND MATERIALS, MATERIALS AND TESTING DIVISION FOR REVIEW AND APPROVAL. USE CLASS AA CEMENT CONC. FOR PRECAST BOXES.
3. PROVIDE STANDARD INLET BOXES AND COVER ADJUSTMENT SLABS WITH A 24" x 45 1/4" OPENING TO ACCOMMODATE STANDARD TOP COMPONENTS.
4. INLETS THAT EXCEED THE MAXIMUM HEIGHT SHOWN SHALL REQUIRE SPECIAL DETAILS AND DESIGN FOR THE INLET WALLS AND BASE. CONSTRUCT INLETS THAT EXCEED 5 FEET IN HEIGHT WITH STEPS SIMILAR TO MANHOLES.SEE RC-39.
5. LOCATE PIPE OR PIPES, AS INDICATED, WITH THE INLET BOTTOM SHAPED TO CHANNEL THE FLOW TOWARD THE OUTLET PIPE.
6. PLACE SUBBASE MATERIAL MEETING THE REQUIREMENTS OF PUBLICATION 408, SECTION 350.2, IN 4 INCH LAYERS, COMPACTED TO A DENSITY SATISFACTORY TO THE ENGINEER AND INCIDENTAL TO THE INLET PAY ITEM.
7. FOR PIPE DIAMETERS LARGER THAN 48" R.C.C.P. OR 54" C.M.P., USE A MODIFIED INLET BOX, SHEET 8 OF 9.
8. FOR PIPE DIAMETERS LARGER THAN 48" R.C.C.P. OR 54" C.M.P. IN THE LONG DIRECTION OR LARGER THAN 30" IN THE SHORT DIRECTION, A SPECIAL DETAIL AND DESIGN IS REQUIRED.
9. INLET BOXES THAT ARE NOT MONOLITHIC SHALL HAVE CONSTRUCTION JOINTS AS REQUIRED. SEE SHEET 6 OF 9.
10. FOR INLETS OTHER THAN AS SHOWN ON THE STANDARDS, PROVIDE REINFORCEMENT BASED ON HS25 LOADING AND IN ACCORDANCE WITH 408 SPECIFICATIONS.



SEE PENNDOT RC-46M FOR ADDITIONAL NOTES AND SPECIFICATIONS REGARDING INLET ASSEMBLIES, SLABS & BOXES, DATED 6/1/2010 OR LATER

LEGEND

ADDITIONAL CONCRETE TO SHAPE THE BOTTOM

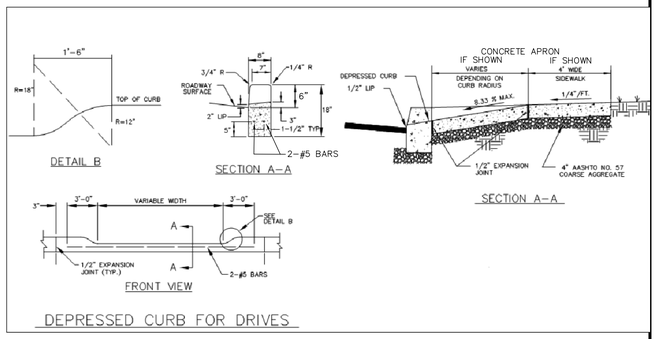


NOTES:

1. PROPOSED SNOW FENCE SHALL BE ADEQUATELY SECURED WHEN INSTALLING AND IN A MANNER ACCEPTABLE TO THE TOWNSHIP ENGINEER.
2. SNOW FENCE SHALL BE ERECTED A MINIMUM OF ONE FOOT OUTSIDE THE DRIPLINE ON ALL SIDES OF INDIVIDUAL TREES, TREE MASSES, OR WOODLANDS PRIOR TO MAJOR CLEARING OR CONSTRUCTION.
3. FENCE SHALL BE PLACED AT LOCATIONS DEEMED NECESSARY BY TOWNSHIP ENGINEER AT TIME OF CONSTRUCTION.

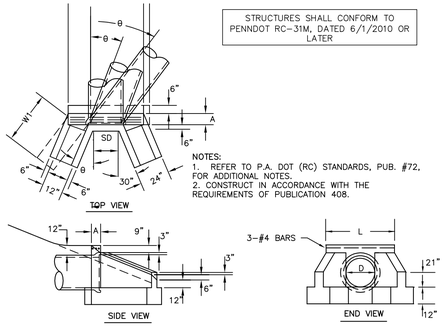
TREE PROTECTION DETAIL

NO SCALE



DEPRESSED CURB FOR DRIVES

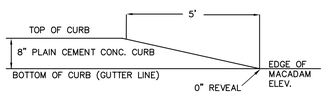
STRUCTURES SHALL CONFORM TO PENNDOT RC-31M, DATED 6/1/2010 OR LATER



NOTES:

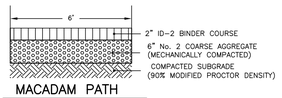
1. REFER TO P.A. DOT (RC) STANDARDS, PUB. #72, FOR ADDITIONAL NOTES.
2. CONSTRUCT IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408.

TYPE DW ENDWALL DETAIL



CURB END TREATMENT DETAIL

NTS



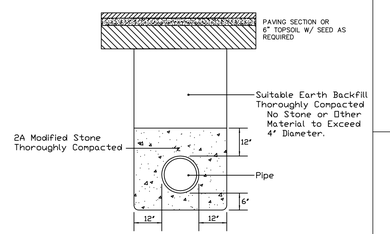
MACADAM PATH

TRAIL ALTERNATE (SUBJECT TO TOWNSHIP APPROVAL):
DRIVING SURFACE AGGREGATE (DSA)

1. SUBGRADE PER PUBLICATION 408, SECTION 210. DSA MUST NOT BE PLACED ON SOFT, MUDDY, OR FROZEN AREAS.

2. 6" (150 mm) MINIMUM–8" MAXIMUM DEPTH (UNCOMPACTED). COMPACT DSA TO BETWEEN 95–100% OF THE MAXIMUM DRY–MASS DENSITY (ACCORDING TO PTM NO. 106, METHOD B).

3. DSA MATERIAL SHALL BE IN CONFORMANCE WITH PENNDOT PUBLICATION 447, SECTION 400

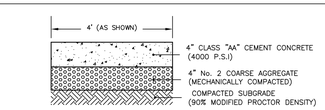


TRENCH RESTORATION DETAIL
IN PRIVATE ROADS AND COMMON AREAS
N.T.S.

1. TRENCH RESTORATION IS FOR INTERNAL STREETS AND COMMON AREAS OWNED AND MAINTAINED BY HOMEOWNERS ASSOCIATION.

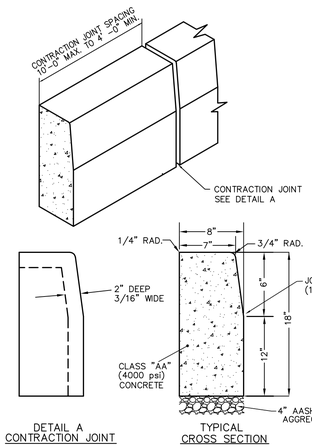
2. SANITARY SHALL BE BEDDED IN 2B STONE IN CONFIGURATION NOTED.

3. WATER MAIN IS LAID ON A DIRT MAT.



CONCRETE SIDEWALK

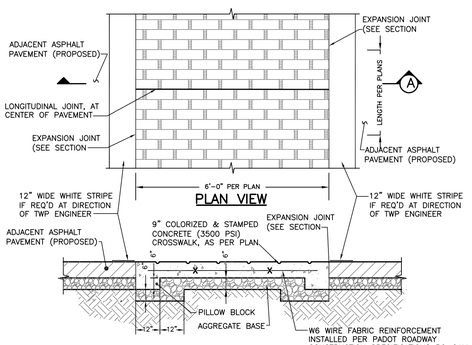
NOTE:
1. PROVIDE SCORED CONTRACTION JOINT TO FORM SQUARE BLOCKS.
2. INSTALL PREMOLDED EXPANSION JOINT EVERY FOURTH BLOCK.



PLAIN CONCRETE CURB DETAIL

NTS

NOTES:
1. REFER TO PADOT STANDARDS, PUB. #72, DWG. RC-64, SHEET 1 OF 1 FOR ADDITIONAL NOTES.
2. CONSTRUCT IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408, SECTION 630.
3. PROVIDE 1/2" PREMOLDED EXPANSION MATERIAL EVERY 50 FEET ALONG STRAIGHT RUNS AND 10 FEET ALONG RADII.
4. FLEXIBLE FORMS SHALL BE USED ON ALL CURBLINE HAVING A RADIUS OF LESS THAN 150'.
5. THE ADDITION OF WATER TO CERTIFIED CONCRETE MIXES FOR THE CONSTRUCTION OF SIDEWALK AND CURB SHALL BE AT THE SOLE RISK OF THE CONTRACTOR AND DEVELOPER, AND WILL NOT BE CONSIDERED AN ACCEPTABLE PRACTICE, IN THE EVENT THAT WATER IS ADDED TO IMPROVE THE CONSISTENCY OF CONCRETE MIXES, THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY NECESSARY TESTING REQUIRED BY THE TOWNSHIP TO VERIFY THAT THE REQUIRED COMPRESSIVE STRENGTH IS ACHIEVED. REQUIRED TESTING MAY INCLUDE, BUT NOT BE LIMITED TO TEST CYLINDERS, AIR ENTRAPMENT, SCHMIDT HAMMER TEST, ETC. IF TESTING INDICATES THAT THE COMMPRESSIVE STRENGTH OR ANY STANDARD PARAMETER OF THE CERTIFIED MIX IS NOT MET (AS ESTABLISHED BY THE MANUFACTURER), THEN THE CONCRETE SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF THE CONTRACTOR AND/OR DEVELOPER.



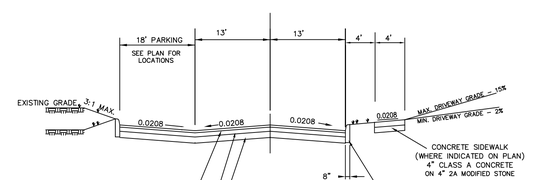
SECTION A
ADJACENT ASPHALT PAVEMENT

NOTES:

1. ALL CONCRETE PAVEMENT JOINTS SHALL BE CONSTRUCTED PER PADOT 408 SPECS., LATEST REVISION.
2. CROSSWALKS CONSTRUCTED BETWEEN ASPHALT PAVEMENTS SHALL CONSTRUCT A "PILLOW BLOCK" ADJACENT TO PROPOSED ASPHALT PAVEMENTS, AS SHOWN IN THE DETAILS ABOVE.
3. MANUFACTURER'S MIXING AND INSTALLATION INSTRUCTIONS FOR COLORIZED CONCRETE SHALL BE FOLLOWED.
4. CONCRETE COLOR TO BE AS APPROVED BY THE TOWNSHIP PRIOR TO INSTALLATION.
5. COLORED CONCRETE TO BE CURED IN THE MATCHING COLOR.
6. CROSSWALK CONCRETE SHALL EXTEND A MINIMUM OF 12" UNDER PROPOSED ADJACENT ASPHALT PAVEMENTS.

COLORIZED & STAMPED CONCRETE CROSSWALK

NO SCALE



TYPICAL ROAD SECTION

N.T.S.

NOTE:
1. REFER TO PENNDOT PUB. 408 FOR CONCRETE SPECS.
2. *U-DRAIN SHALL BE INSTALLED AS NECESSARY AT THE DISCRETION OF THE TOWNSHIP ENGINEER AT THE TIME OF CONSTRUCTION.
3. SEE PLAN VIEW FOR LOCATION AND EXTENT OF PROPOSED SIDEWALK.

DRIVEWAYS
1. SHALL NOT EXCEED 15%.
2. MINIMUM WIDTH OF 10 FT.
3. CONSTRUCT IN ACCORDANCE WITH WHITEMARSH TOWNSHIP DRIVEWAY SPECIFICATIONS.
4. DRIVEWAY SECTION:
   2" ID-2 BITUMINOUS SURFACE COURSE
   6" 2A MODIFIED STONE

SHOP DRAWINGS FOR ALL STRUCTURES AND MATERIALS TO BE USED FOR CONSTRUCTION OF ALL IMPROVEMENTS SHALL BE SUBMITTED PRIOR TO CONSTRUCTION

"LONGFIELD FARM"

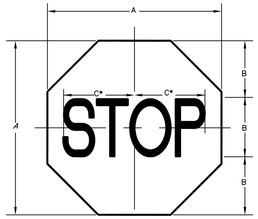
REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

CONSTRUCTION DETAILS

PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17–02
DRAWN BY: RFI	FILE NAME: 17–02BASE
SCALE: 1" = 50'	SHEET: 17 OF 30

Erick Eberhardt Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215–541–4626
215–541–4023(Fax)
E-Mail: info@EEMCM.com



COLOR: LEGEND AND BORDER BLACK (NONREFLECTORIZED)
BACKGROUND RED (REFLECTORIZED)

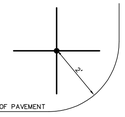
SIGN SIZE	DIMENSIONS A	B	C	SERIES	BORDER	BLANK STD
24x24	24	8	10	C	5/8	B1-24
30x30	30	10	12 1/2	C	3/4	B1-30
36x36	36	12	15	C	7/8	B1-36
48x48	48	16	20	C	1 1/4	B1-48

*REDUCE SPACING 40%

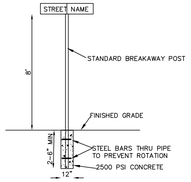
R1-1 'STOP' SIGN DETAIL

NTS

NOTES:
1. REFER TO PA. DOT PUB. 68 : OFFICIAL TRAFFIC-CONTROL DEVICES -TITLE 67, CHAPTER 211 -SECTION 211.52 FOR ADDITIONAL NOTES.
2. ALL ABOVE DIMENSIONS ARE IN INCHES



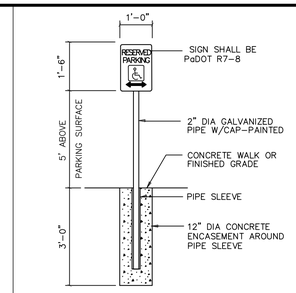
TOP VIEW



NOTES:
1. STREET SIGN SHALL CONFORM TO AND BE INSTALLED IN ACCEPTANCE WITH THE TOWNSHIPS STANDARDS AND SPECIFICATIONS.
2. SIGN SHALL BE PROVIDED WITH EMBOSSED 6" HEIGHT WHITE LETTERS ON A GREEN BACKGROUND.

STREET SIGN DETAIL

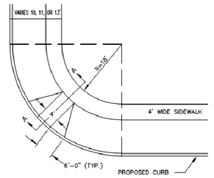
NTS



HANDICAPPED PARKING SIGN DETAIL

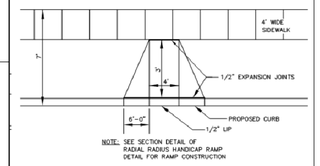
NTS

1. PROVIDE ONE SIGN AT EACH HANDICAPPED STALL.



PLAN

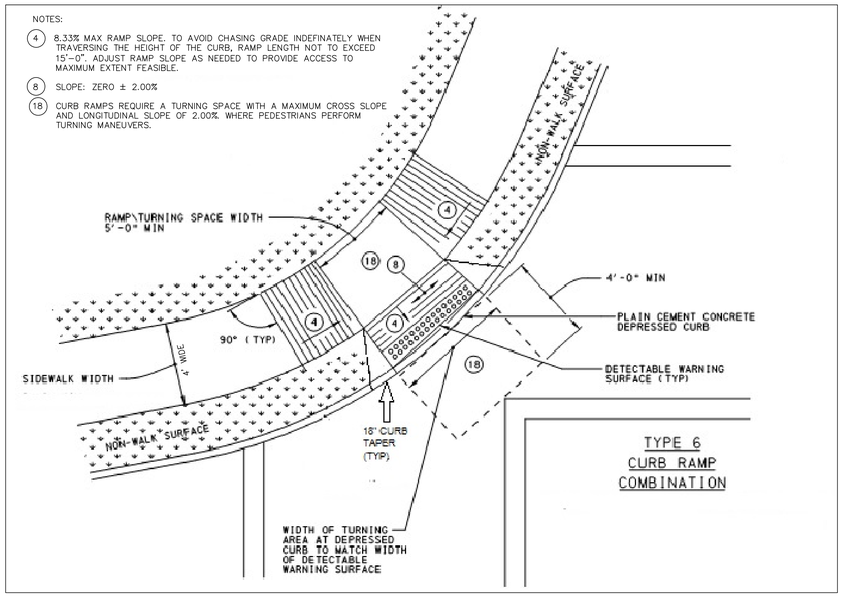
RADIAL RADIUS HANDICAP RAMP



NOTE: SEE SECTION DETAIL OF RADIAL RADIUS HANDICAP RAMP DETAIL FOR RAMP CONSTRUCTION

PERPENDICULAR HANDICAP RAMP

NOTES:
4. 8.33% MAX RAMP SLOPE. TO AVOID CHASING GRADE INDEFINATELY WHEN TRAVERSING THE HEIGHT OF THE CURB, RAMP LENGTH NOT TO EXCEED 15'-0". ADJUST RAMP SLOPE AS NEEDED TO PROVIDE ACCESS TO MAXIMUM EXTENT FEASIBLE.
8. SLOPE: ZERO ± 2.00%
18. CURB RAMPS REQUIRE A TURNING SPACE WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS.

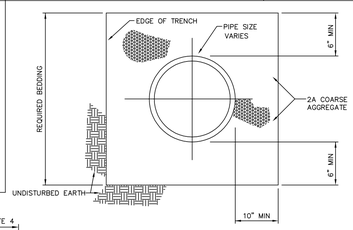


ALL PAVEMENT MARKINGS SHALL BE HOT THERMOPLASTIC ON BITUMINOUS PAVEMENT, INCLUDING LONG AND SHORT LINES AND PAVEMENT MARKING LEGENDS.

STOP BAR DETAIL

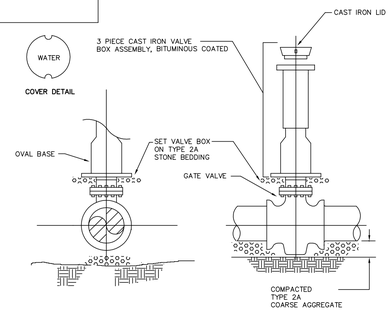
NOT TO SCALE

NOTES:
1. STOP LINES ARE SOLID WHITE LINES THAT COMPLETELY TRAVERSE EACH TRAFFIC LANE. AT AN INTERSECTION WITH A STOP SIGN, THE STOP BAR SHOULD BE PLACED AT A LOCATION NO LESS THAT 4-FEET, OR MORE THAN 30-FEET FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY TO ENSURE MAXIMUM SIGHT DISTANCE TO VEHICLES ON THE CROSSING ROUTE. WHEN USED ON MULTI-LANE APPROACH TO A SIGNALIZED INTERSECTION, THE STOP BAR MAY BE STAGGERED TO ASSIST TURNING VEHICLES AND TO IMPROVE SIGHT DISTANCE FOR MOTORIST DESIRING TO MAKE A TURN ON RED.
2. LOCATE STOP BAR AT A MINIMUM OF 4-FEET IN ADVANCE OF AND PARALLEL TO THE CROSSWALK LINES UNLESS OTHERWISE NOTED.



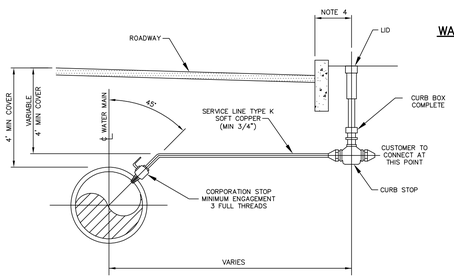
WATER PIPE BEDDING DETAIL

N.T.S.



STANDARD GATE VALVE AND VALVE BOX

N.T.S.



NOTES:
1. FOR STANDARD 3/4" CONNECTION, PROVIDE A TAPPED COUPLING WITH THREADED INSERT OR DOUBLE STRAPPED SADDLE CLAMP.
2. DO NOT PLACE CURB STOP IN PAVED AREAS.
3. ALL SERVICE CONNECTIONS SHALL BE LOCATED AT THE MIDPOINT BETWEEN SIDE LOT LINES OR AS DIRECTED BY A AQUA PA FIELD REPRESENTATIVE.
4. WHERE SIDEWALK PARALLELS ROADWAY, THE CURB BOX SHALL BE PLACED BETWEEN THE CURB AND SIDEWALK. ALL OTHER LOCATIONS, CURB BOX TO BE PLACED AS DIRECTED BY A AQUA PA FIELD REPRESENTATIVE.

STANDARD SERVICE CONNECTION

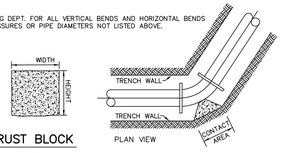
(NTS)

MINIMUM THRUST BLOCK AREAS REQUIRED

(SQUARE FEET OF CONTACT SURFACE AREA ALONG TRENCH WALL)

	HYDRANTS, TEES & BLOW-OFFS			90° BENDS			45° BENDS			11 1/4° & 22 1/2° BENDS		
PIPE DIAMETER	100 P.S.I.	150 P.S.I.	200 P.S.I.	100 P.S.I.	150 P.S.I.	200 P.S.I.	100 P.S.I.	150 P.S.I.	200 P.S.I.	100 P.S.I.	150 P.S.I.	200 P.S.I.
6"	3	4	5	3	5	6	2	3	4	1	2	2
8"	4	6	8	6	8	11	3	5	6	2	3	3
12"	9	13	17	12	18	24	7	10	13	4	5	7
16"	15	23	30	21	32	43	12	17	23	6	9	12
24"	36	54	72	48	72	96	26	39	52	13	20	26

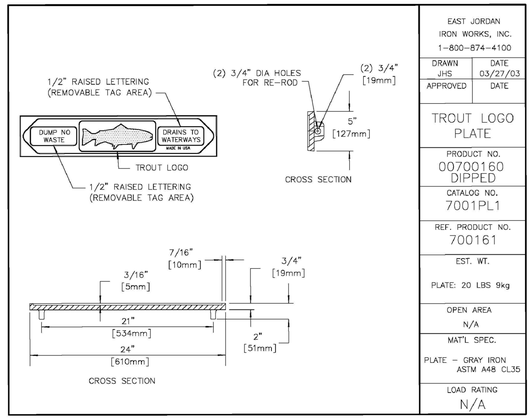
NOTE:
REFER TO ENGINEERING DEPT. FOR ALL VERTICAL BENDS AND HORIZONTAL BENDS HAVING ANGLES, PRESSURES OR PIPE DIAMETERS NOT LISTED ABOVE.



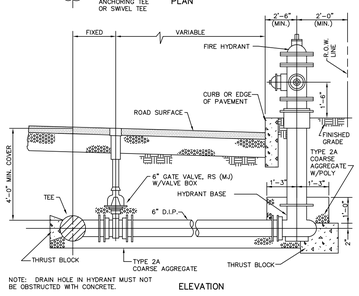
THRUST BLOCK

N.T.S.

PLAN VIEW



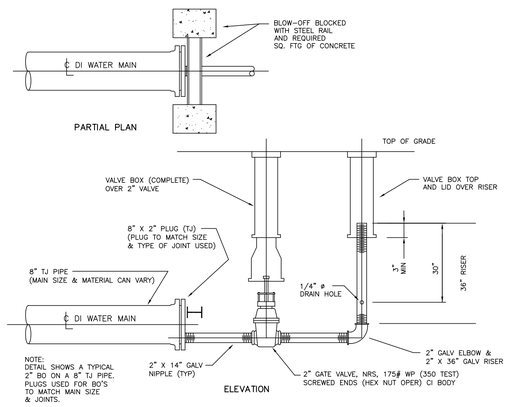
EAST JORDAN IRON WORKS, INC. 1-800-874-4100	
DRAWN JHS	DATE 03/27/03
APPROVED	DATE
TROUT LOGO PLATE	
PRODUCT NO. 00700160 DIPPED	
CATALOG NO. 7001PL1	
REF. PRODUCT NO. 700161	
EST. WT. PLATE: 20 LBS 9kg	
OPEN AREA N/A	
MAT'L SPEC. PLATE - GRAY IRON ASTM A48 CL35	
LOAD RATING N/A	



NOTE: DRAIN HOLE IN HYDRANT MUST NOT BE OBSTRUCTED WITH CONCRETE.

FIRE HYDRANT

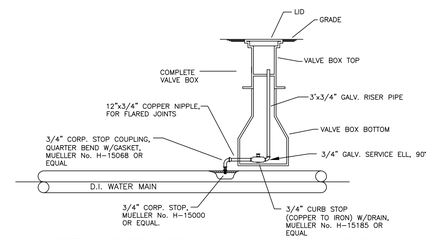
N.T.S.



NOTE:
DETAIL SHOWS A TYPICAL 2" BO ON A 8" TJ PIPE. PLUGS USED FOR BO'S TO MATCH MAIN SIZE & JOINTS.

STANDARD 2" BLOW-OFF

N.T.S.



DETAIL OF STANDARD 3/4" M.A.V. & CL2 ASSEMBLY

N.T.S.

SHOP DRAWINGS FOR ALL STRUCTURES AND MATERIALS TO BE USED FOR CONSTRUCTION OF ALL IMPROVEMENTS SHALL BE SUBMITTED PRIOR TO CONSTRUCTION

"LONGFIELD FARM"

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

CONSTRUCITON DETAILS

PREPARED FOR

SPARTAN ORGANIZATION

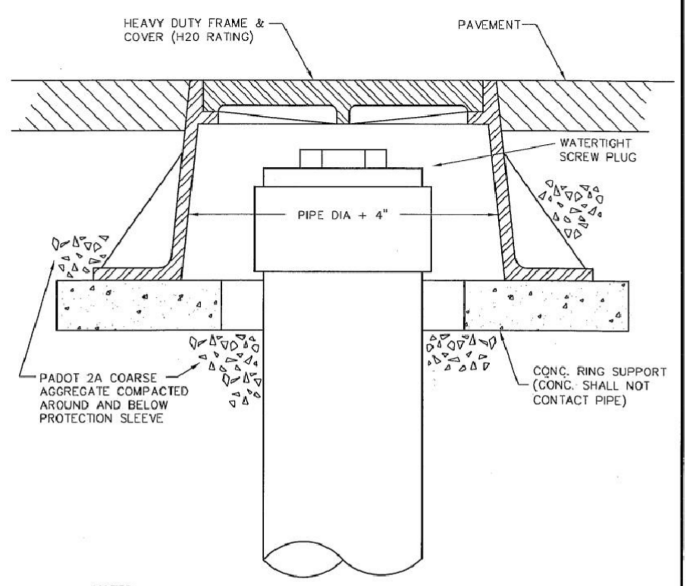
SITUATE

WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17-02
DRAWN BY: RFI	FILE NAME: 17-02BASE
SCALE: 1" = 50'	SHEET: 18 OF 30

Rick Eberhardt Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215-541-4626
215-541-4023(Fax)
E-Mail: Info@REANDM.com



NOTES:

1. FRAME AND COVER SHALL BE NEENAH FOUNDRY COMPANY MODEL R-1976 OR APPROVED EQUAL
2. CLEAN-OUT PROTECTION SLEEVES ARE TO BE INSTALLED FOR CLEAN-OUTS LOCATED IN PAVED AREAS, OR LESS THAN 3 FEET FROM A PAVED AREA.

WHITEMARSH TOWNSHIP AUTHORITY
DSG. BY: MLK | CKD. BY: | DATE: 3-20-10 | SCALE: NONE | REVISION | DATE
CLEANOUT PROTECTION SLEEVE (FOR USE IN OR NEAR PAVED AREAS)
STANDARD DETAIL S12

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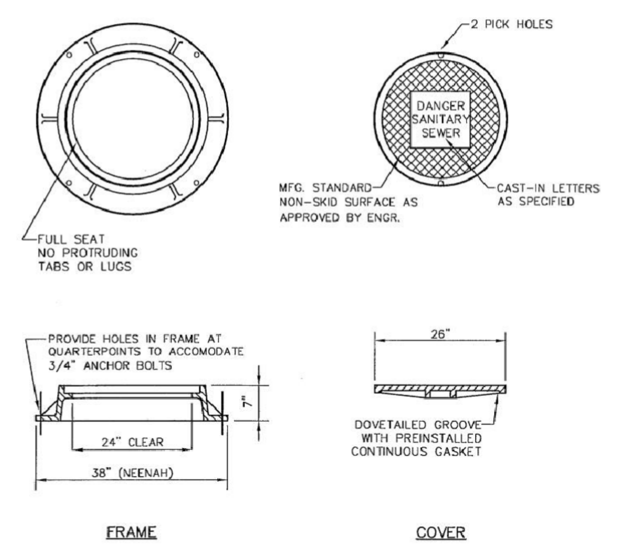

NOTES:

1. ALL MATERIALS TO BE GRAY CAST IRON ASTM A-48.
2. FRAME AND COVER SHALL BE FOR HEAVY DUTY TRAFFIC, AASHTO HS-20.
3. PROVIDE FOUR (4) ANCHOR BOLTS, 3/4" DIA. MINIMUM.
4. THE FOLLOWING MANUFACTURER'S STANDARD CASTING, OR APPROVED EQUAL, SHALL BE USED. NEENAH FOUNDRY CO. ——— PATTERN R-1642.

WHITEMARSH TOWNSHIP AUTHORITY
DSG. BY: MLK | CKD. BY: | DATE: 3-20-10 | SCALE: NONE | REVISION | DATE
STANDARD MANHOLE FRAME AND COVER
STANDARD DETAIL S7

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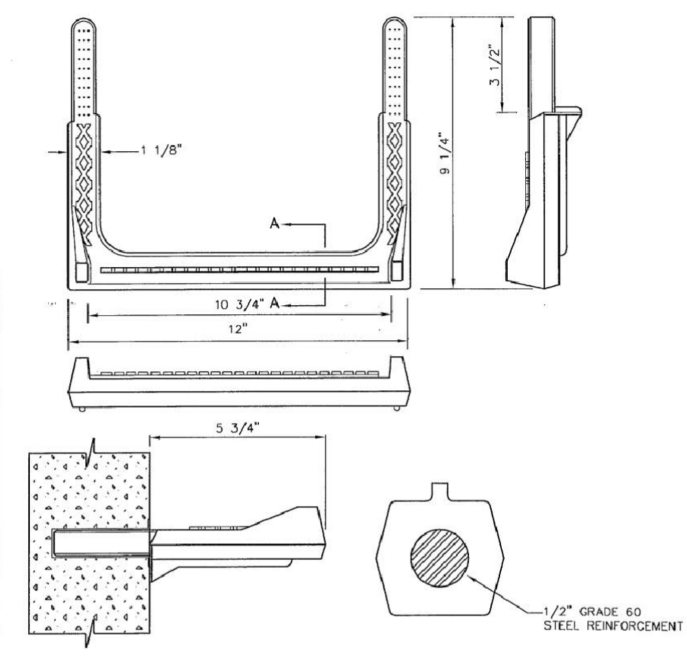

SPECIFICATIONS

STEPS TO BE FABRICATED FROM COPOLYMER POLYPROPYLENE PLASTIC.

WHITEMARSH TOWNSHIP AUTHORITY
DSG. BY: MLK | CKD. BY: | DATE: 3-20-10 | SCALE: NONE | REVISION | DATE
POLYPROPYLENE MANHOLE STEP
STANDARD DETAIL S5

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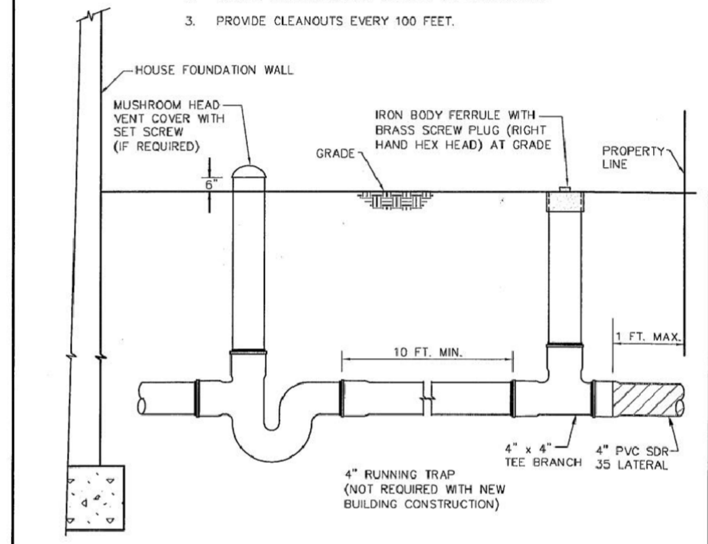
NOTES:

1. BUILDING SEWER FROM RIGHT-OF-WAY TO BUILDING PLUMBING SYSTEM SHALL CONFORM TO THE UNIFORM CONSTRUCTION CODE ADOPTED BY TOWNSHIP
2. LOCATE CLEANOUTS AND VENTS IN UNPAVED AREAS.
3. PROVIDE CLEANOUTS EVERY 100 FEET.



WHITEMARSH TOWNSHIP AUTHORITY
DSG. BY: MLK | CKD. BY: | DATE: 3-20-10 | SCALE: NONE | REVISION | DATE
TYPICAL SERVICE CONNECTION AT BUILDING FOR PVC LATERAL
STANDARD DETAIL S11

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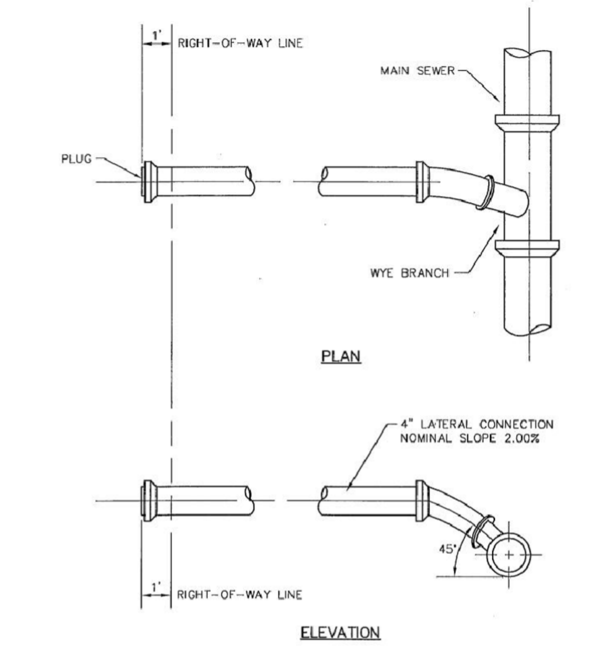

NOTE:

PROVIDE 6" LATERAL CONNECTION WHEN SERVICING COMMERCIAL BUILDINGS AND MULTI-FAMILY DWELLING UNITS.

WHITEMARSH TOWNSHIP AUTHORITY
DSG. BY: MLK | CKD. BY: | DATE: 3-20-10 | SCALE: NONE | REVISION | DATE
LATERAL CONNECTION SHALLOW SEWER
STANDARD DETAIL S9

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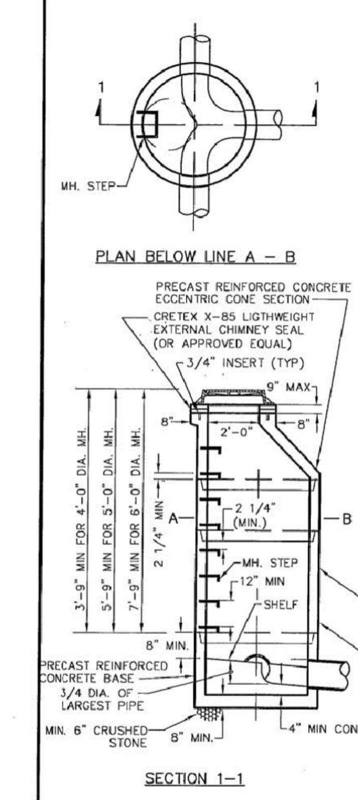

NOTES:

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 5' DIA. AND 6' DIA. BASE, REDUCTION IN DIAMETER TO 4' SHALL START AT THE FIRST JOINT ABOVE THE UPPERMOST PIPE CONNECTION TO WALL, WHERE DEPTH IS SUFFICIENT.
5. ALL MANHOLE FRAMES SHALL BE BOLTED TO THE CONE SECTION OR CONCRETE SLAB WITH (4)-3/4" DIA. BOLTS WITH WASHERS 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, COAL TAR EPOXY, OR APPROVED EQUAL.
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. GASKET SHALL BE A-LOK CONNECTOR, OR APPROVED EQUAL. GROUT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
13. 4' DIA. MANHOLE – 8" TO 16" PIPES
5' DIA. MANHOLE – 18" TO 27" PIPES
6' DIA. MANHOLE – 30" TO 48" PIPES

WHITEMARSH TOWNSHIP AUTHORITY
DSG. BY: MLK | CKD. BY: | DATE: 3-20-10 | SCALE: NONE | REVISION | DATE
TYPE "A" STANDARD MANHOLE
STANDARD DETAIL S1

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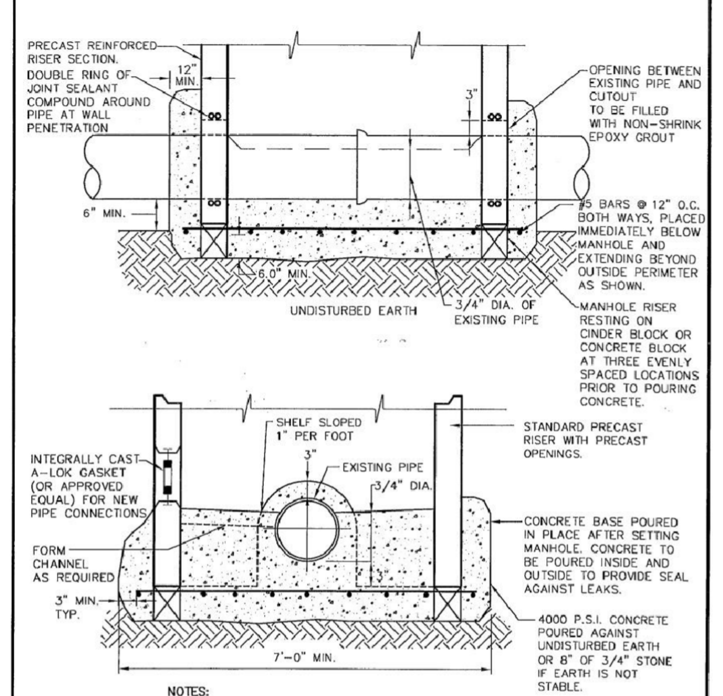

NOTES:

1. EXISTING PIPE TO REMAIN UNTIL SATISFACTORY COMPLETION OF MANHOLE TESTING.
2. REMOVE CROWN OF EXISTING PIPE FLUSH WITH CONCRETE SHELF.

WHITEMARSH TOWNSHIP AUTHORITY
DSG. BY: MLK | CKD. BY: | DATE: 3-20-10 | SCALE: NONE | REVISION | DATE
DOGHOUSE MANHOLE CONSTRUCTION
STANDARD DETAIL S3

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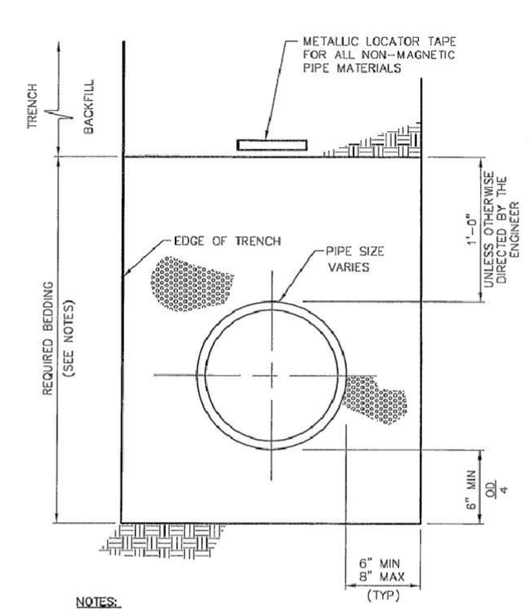

NOTES:

1. AASHTO NO. 8 COARSE AGGREGATE FOR PVC PIPE.
2. PADOT 2A COARSE AGGREGATE FOR DUCTILE IRON PIPE.
3. SCREENINGS OR TYPE B #3 FINE AGGREGATE FOR COPPER PIPE.

WHITEMARSH TOWNSHIP AUTHORITY
DSG. BY: MLK | CKD. BY: | DATE: 3-20-10 | SCALE: NONE | REVISION | DATE
STANDARD PIPE BEDDING
STANDARD DETAIL M1

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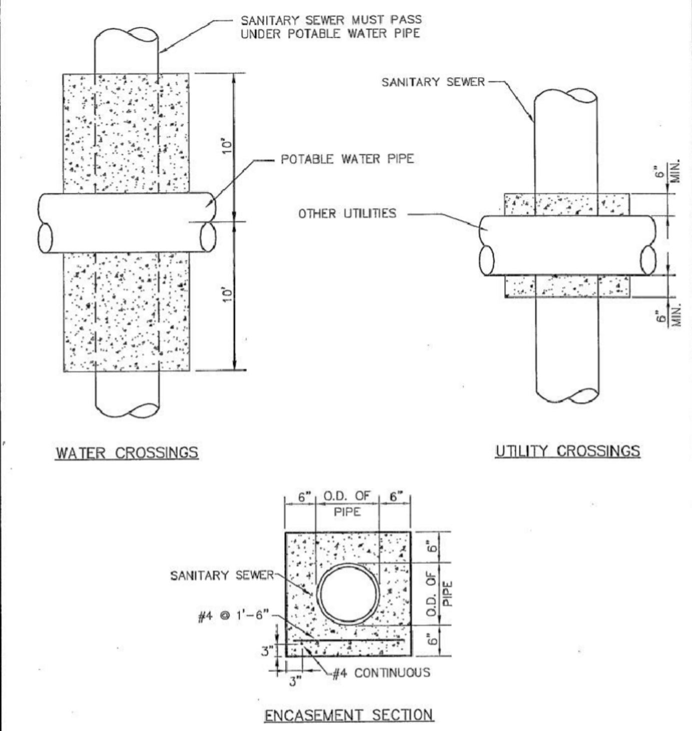

NOTE:

PROVIDE REINFORCEMENT AT UTILITY CROSSINGS OR AS DIRECTED BY AUTHORITY'S ENGINEER.

WHITEMARSH TOWNSHIP AUTHORITY
DSG. BY: MLK | CKD. BY: | DATE: 3-20-10 | SCALE: NONE | REVISION | DATE
CONCRETE ENCASEMENT
STANDARD DETAIL M2

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BEARING SURFACE REQUIRED – Sq. Ft. FOR PRESSURES LESS THAN 100 P.S.I.

Degree of bend or deflection

PIPE SIZE	3"					4"					6"					8"				
TYPE OF BEARING MATERIAL AND ALLOWABLE LOADS	D.E.	90°	45°	22.5°	11.25°	D.E.	90°	45°	22.5°	11.25°	D.E.	90°	45°	22.5°	11.25°	D.E.	90°	45°	22.5°	11.25°
SOFT CLAY (1,000#/SF)	1.8	2.6	1.4	1.0	1.0	2.7	3.8	2.1	1.1	1.0	5.6	7.9	4.3	2.2	1.1	9.6	13.6	7.4	3.8	1.9
SILT (1,500#/SF)	1.2	1.7	1.0	1.0	1.0	1.8	2.6	1.4	1.0	1.0	3.7	5.3	2.9	2.2	1.0	6.4	9.1	4.9	2.5	1.3
SANDY SILT (3,000#/SF)	1.0	1.0	1.0	1.0	1.0	1.0	1.3	1.0	1.0	1.0	1.9	2.6	1.4	1.1	1.0	3.2	4.5	2.5	1.3	1.0
SAND (4,000#/SF)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.4	2.0	1.1	1.0	1.0	2.4	3.4	1.8	1.0	1.0
SANDY CLAY (6,000#/SF)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.3	1.0	1.0	1.0	1.6	2.3	1.2	1.0	1.0
HARD CLAY (9,000#/SF)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.5	1.0	1.0	1.0
PIPE SIZE	10"					12"					14"					16"				
TYPE OF BEARING MATERIAL AND ALLOWABLE LOADS	D.E.	90°	45°	22.5°	11.25°	D.E.	90°	45°	22.5°	11.25°	D.E.	90°	45°	22.5°	11.25°	D.E.	90°	45°	22.5°	11.25°
SOFT CLAY (1,000#/SF)	14.5	20.5	11.1	5.7	2.8	20.5	29.0	15.7	8.0	4.0	27.6	39.0	21.1	10.8	5.4	35.7	50.4	27.3	13.9	7.0
SILT (1,500#/SF)	9.7	13.7	7.4	3.8	1.9	13.7	19.3	10.5	5.3	2.7	18.4	26.0	14.1	7.2	3.6	23.8	33.6	18.2	9.3	4.7
SANDY SILT (3,000#/SF)	4.8	6.8	3.7	1.9	1.0	6.8	9.7	5.2	2.7	1.3	9.2	13.0	7.0	3.6	1.8	11.9	16.8	9.1	4.6	2.3
SAND (4,000#/SF)	3.6	5.1	2.8	1.4	1.0	5.1	7.3	3.9	2.0	1.0	6.9	9.7	5.3	2.7	1.4	8.9	12.6	6.8	3.5	1.7
SANDY CLAY (6,000#/SF)	2.4	3.4	1.9	1.0	1.0	3.4	4.8	2.6	1.3	1.0	4.6	6.5	3.5	1.8	1.0	5.9	8.4	4.5	2.3	1.2
HARD CLAY (9,000#/SF)	1.6	2.3	1.2	1.0	1.0	2.3	3.2	1.7	1.0	1.0	3.1	4.3	2.3	1.2	1.0	4.0	5.6	3.0	1.5	1.0

MIN. SQUARE FEET OF BEARING SURFACE REQUIRED FOR HORIZONTAL THRUST BLOCKING AND VERTICAL THRUST DOWNWARD.

NOTES:

1. THIS CHART HAS BEEN DEVELOPED FOR D.I.P. WITH A 100 PSI WORKING PRESSURE. A 50% SURGE PRESSURE INCREASE AND 1.5 SAFETY FACTOR. CASE SPECIFIC CALCULATIONS ARE REQUIRED WHERE THE WORKING PRESSURE EXCEEDS 100 PSI AND/ OR SURGE PRESSURE EXCEEDS 50% OF WORKING PRESSURE.
2. D.E. = DEAD END
3. MIN. THRUST BLOCK AREA IS 1.0 SQ. FEET.
4. MEGALUG RESTRAINT SHALL BE INSTALLED AT ALL FITTINGS.

WHITEMARSH TOWNSHIP AUTHORITY
DSG. BY: MLK | CKD. BY: | DATE: 3-20-10 | SCALE: NONE | REVISION | DATE
HORIZONTAL & VERTICAL DOWNWARD THRUST BLOCK BEARING SURFACE AREAS
STANDARD DETAIL M6

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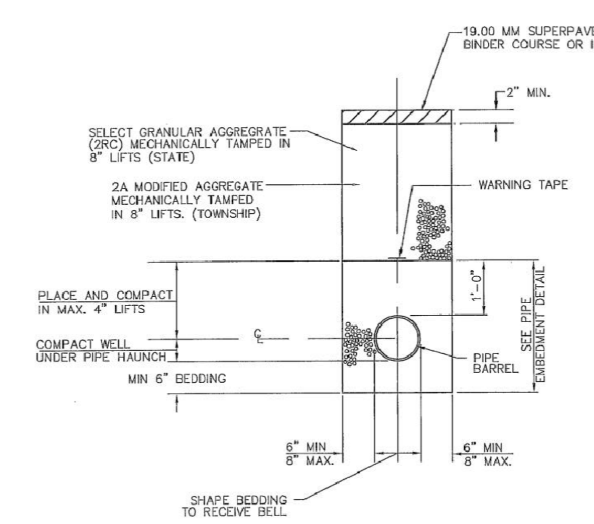

NOTES:

1. SPECIAL CONDITIONS OF THE HIGHWAY OCCUPANCY PERMIT MAY SUPERSEDE THIS DETAIL
2. CONTRACTOR TO MAINTAIN TEMPORARY PAVING UNTIL PREMANENT PAVING IS COMPLETED.

WHITEMARSH TOWNSHIP AUTHORITY
DSG. BY: MLK | CKD. BY: | DATE: 3-20-10 | SCALE: NONE | REVISION | DATE
TEMPORARY PAVEMENT FOR TOWNSHIP ROAD AND STATE HIGHWAY
STANDARD DETAIL TR3

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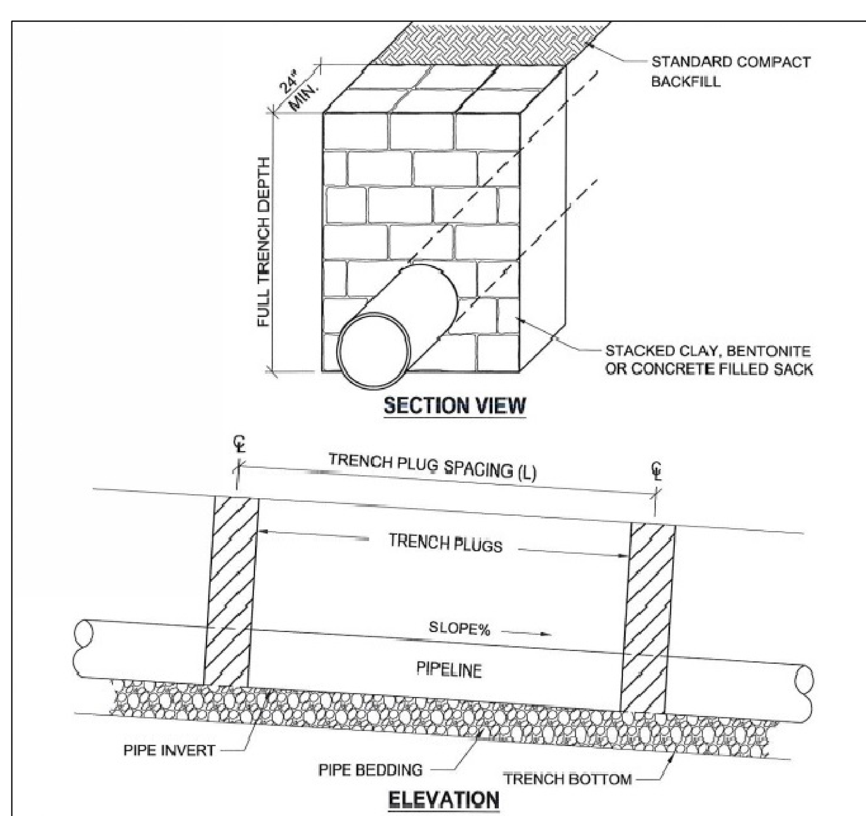
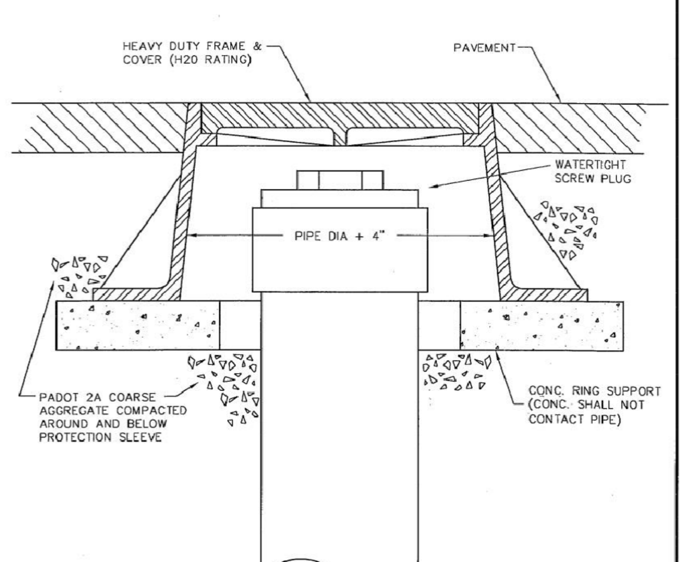


MAXIMUM SPACING AND MATERIAL FOR TRENCH PLUGS

TRENCH SLOPE (%)	SPACING L (FT)	PLUG MATERIAL
< 5	1,000	* CLAY, BENTONITE, OR CONCRETE FILLED SACK
5 - 15	500	* CLAY, BENTONITE, OR CONCRETE FILLED SACK
15 - 25	300	* CLAY, BENTONITE, OR CONCRETE FILLED SACK
25 - 35	200	* CLAY, BENTONITE, OR CONCRETE FILLED SACK
35 - 100	100	* CLAY, BENTONITE, OR CONCRETE FILLED SACK
> 100	50	CEMENT FILLED BAGS (WETTED) OR MORTARED STONE

* TOPSOIL MAY NOT BE USED TO FILL SACKS.

TRENCH PLUG DETAIL
NTS



NOTES:

1. FRAME AND COVER SHALL BE NEENAH FOUNDRY COMPANY MODEL R-1976 OR APPROVED EQUAL
2. CLEAN-OUT PROTECTION SLEEVES ARE TO BE INSTALLED FOR CLEAN-OUTS LOCATED IN PAVED AREAS, OR LESS THAN 3 FEET FROM A PAVED AREA.

WHITEMARSH TOWNSHIP AUTHORITY
DSG. BY: MLK | CKD. BY: | DATE: 3-20-10 | SCALE: NONE | REVISION | DATE
CLEANOUT PROTECTION SLEEVE (FOR USE IN OR NEAR PAVED AREAS)
STANDARD DETAIL S12

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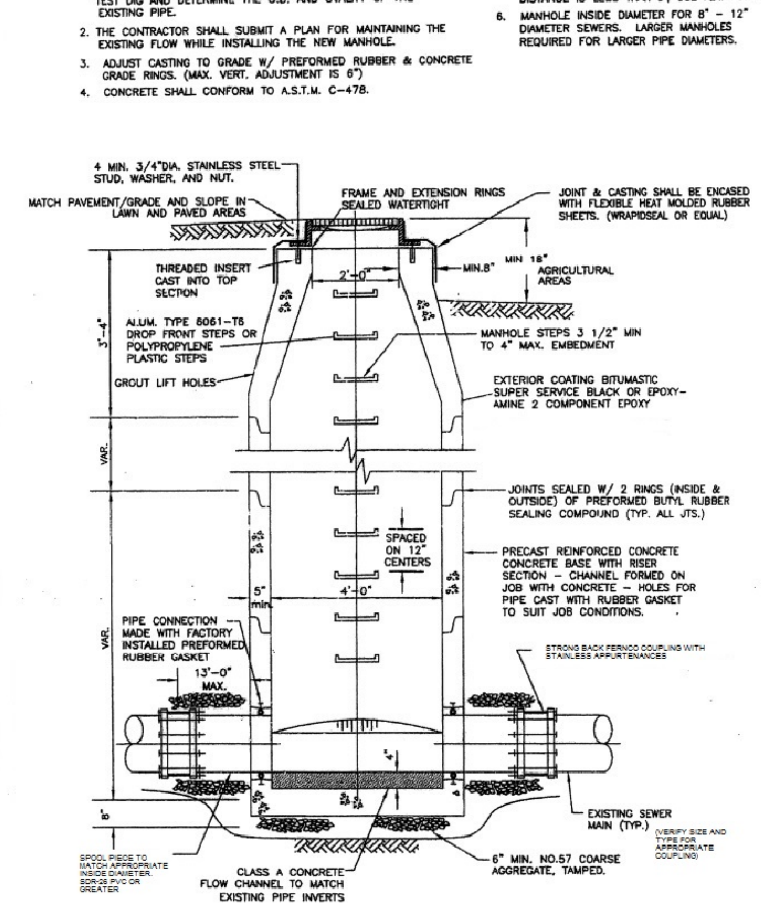
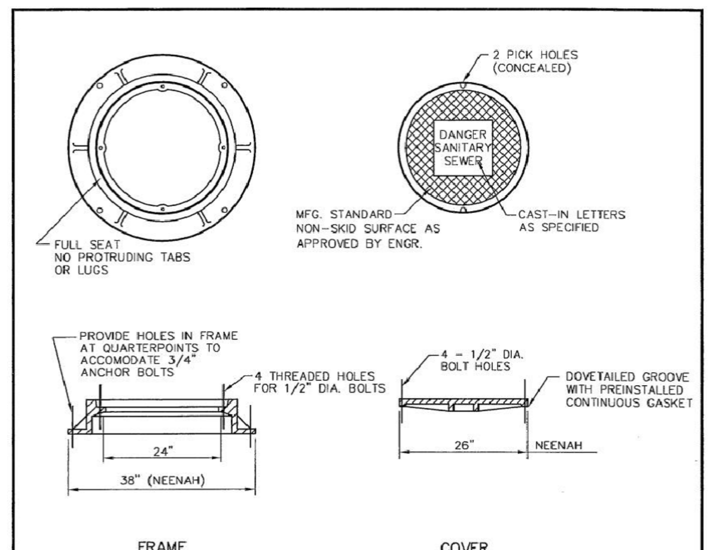
NOTES:

1. PRIOR TO INSTALLATION OF MANHOLE THE CONTRACTOR SHALL TEST DIG AND DETERMINE THE O.D. AND OVALITY OF THE EXISTING PIPE.
2. THE CONTRACTOR SHALL SUBMIT A PLAN FOR MAINTAINING THE EXISTING FLOW WHILE INSTALLING THE NEW MANHOLE.
3. ADJUST CASTING TO GRADE W/ PREFORMED RUBBER & CONCRETE GRADE RINGS. (MAX. VERT. ADJUSTMENT IS 6")
4. CONCRETE SHALL CONFORM TO A.S.T.M. C-478.
5. FOR MANHOLE WHERE RIM TO INVERT DISTANCE IS LESS THAN 5', USE FLAT TOP.
6. MANHOLE INSIDE DIAMETER FOR 8" - 12" DIAMETER SEWERS. LARGER MANHOLES REQUIRED FOR LARGER PIPE DIAMETERS.



INSERTION OF A PRECAST CONCRETE MANHOLE INTO AN EXISTING SEWER MAIN



NOTES:

1. ALL MATERIALS TO BE GRAY CAST IRON ASTM A-48.
2. FRAME AND COVER SHALL BE FOR HEAVY DUTY TRAFFIC, AASHTO HS-20.
3. BOLT COVER TO FRAME WITH FOUR (4) 1/2" COUNTERSUNK STAINLESS STEEL BOLTS WHICH MAKE A SEAL WITH A RUBBER "O" RING GASKET.
4. PROVIDE FOUR (4) STAINLESS STEEL ANCHOR BOLTS, 3/4" DIA. MINIMUM.
5. THE FOLLOWING MANUFACTURER'S STANDARD CASTING, OR APPROVED EQUAL, SHALL BE USED. NEENAH FOUNDRY CO. ——— PATTERN R-1916-F1.

WHITEMARSH TOWNSHIP AUTHORITY
DSG. BY: MLK | CKD. BY: | DATE: 3-20-10 | SCALE: NONE | REVISION | DATE
WATERTIGHT MANHOLE FRAME AND COVER
STANDARD DETAIL S8

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SHOP DRAWINGS FOR ALL STRUCTURES AND MATERIALS TO BE USED FOR CONSTRUCTION OF ALL IMPROVEMENTS SHALL BE SUBMITTED PRIOR TO CONSTRUCTION

"LONGFIELD FARM"

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

CONSTRUCTION DETAILS

PREPARED FOR

SPARTAN ORGANIZATION

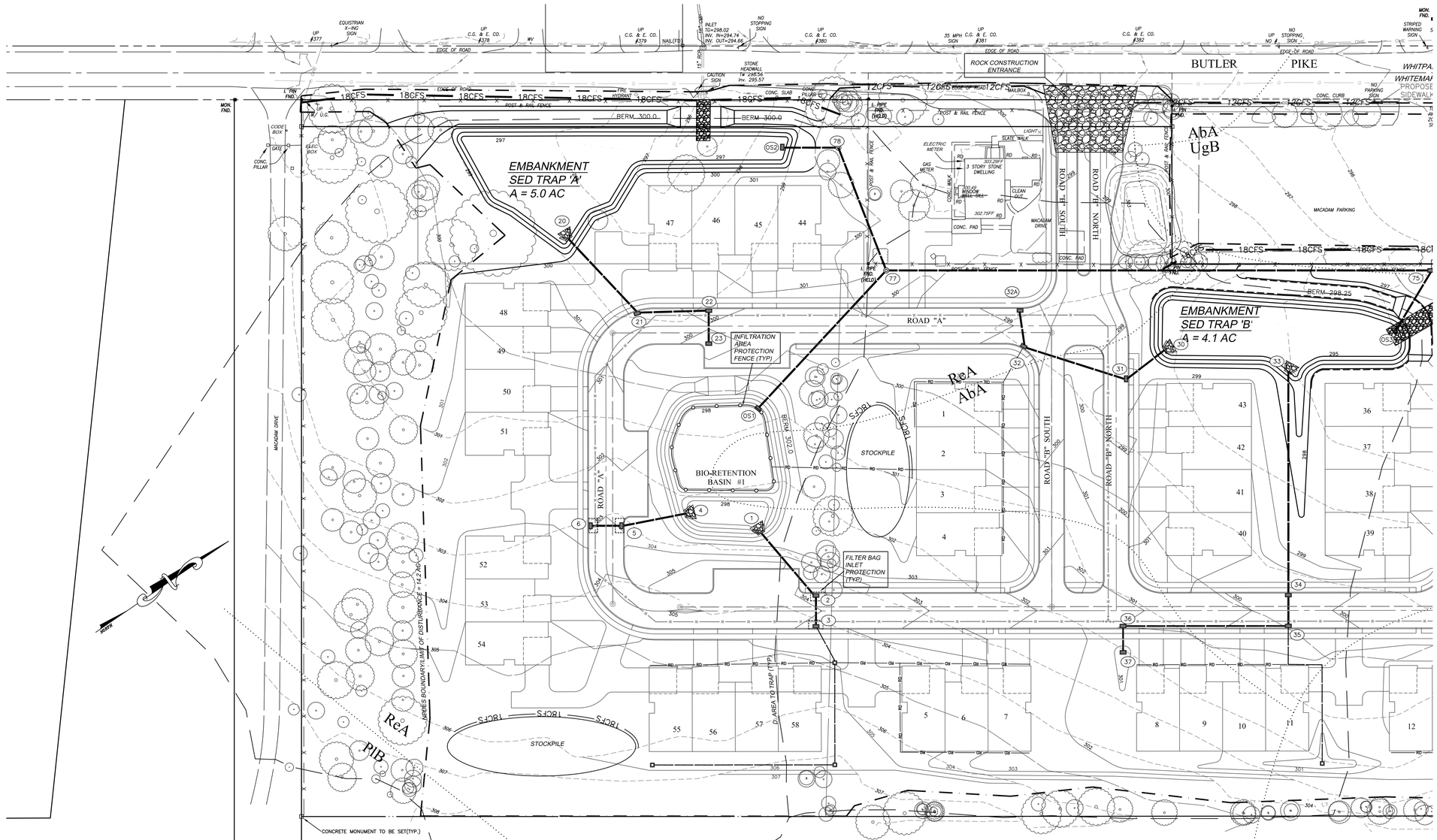
SITUATE

WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019
MANAGER: RFI | JOB NUMB.: 17-02
DRAWN BY: RFI | FILE NAME: 17-02BASE
SCALE: 1" = 50' | SHEET: 19 OF 30

Irick Eberhardt & Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215-541-4626
215-541-4023(Fax)
E-Mail: Info@IEANDM.com



EROSION CONTROL NOTES:

1. WHENEVER SEDIMENTATION IS CAUSED BY AN EARTH DISTURBANCE ACTIVITY, IT SHALL BE THE RESPONSIBILITY OF THE PERSON CAUSING SUCH SEDIMENTATION TO REMOVE IT FROM ALL AFFECTED SURFACES, DRAINAGE SYSTEMS AND WATERCOURSES, ON-SITE AND OFF-SITE, AND TO REPAIR ANY DAMAGE AT THEIR EXPENSE IMMEDIATELY.

2. ALL EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE IN PLACE AND FUNCTIONING PRIOR TO ANY EARTH DISTURBANCE ACTIVITIES.

3. EDGE OF SLOPES SHALL BE 5.0 FEET FROM PROPERTY LINES OR RIGHT OF WAY LINES (EXCEPT AS SHOWN HEREON, DUE TO SITE CONSTRAINTS).

4. DURING THE PERIOD OF LAND DISTURBANCE, RUNOFF SHALL BE CONTROLLED PRIOR TO ENTERING ANY PROPOSED INFILTRATION AREA, AREAS PROPOSED FOR INFILTRATION BMPs SHALL BE PROTECTED FROM SEDIMENTATION AND COMPACTION DURING THE CONSTRUCTION PHASE, SO AS TO MAINTAIN THEIR MAXIMUM INFILTRATION CAPACITY.

5. PLANS FOR EARTH DISTURBANCE ACTIVITY, BEARING THE STAMP OF APPROVAL OF THE TOWNSHIP ENGINEER, SHALL BE MAINTAINED AT THE SITE DURING THE PROGRESS OF GRADING WORK AND UNTIL THE WORK HAS BEEN COMPLETED.

6. THE PERMIT HOLDER WILL NOTIFY THE TOWNSHIP ENGINEER IN ORDER TO OBTAIN INSPECTIONS AT LEAST 48 HOURS BEFORE THE INSPECTION IS TO BE MADE FOR, INITIAL INSPECTION, ROUGH GRADING, DRAINAGE FACILITIES, BMPS, SPECIAL STRUCTURES AND FINAL INSPECTIONS.

NRCS-USDA SOIL SURVEY SOURCE:
websoilsurvey.nrcs.usda.gov., accessed 6-4-19

SOIL LEGEND

AbA	ABBOTTSTOWN SILT LOAM, 0-3% SLOPES;
LeA	LAWRENCEVILLE SILT LOAM 0-3% SLOPES; MODERATELY ERODED
PlB	PENN LANSDALE COMPLEX 3-8% SLOPES, MODERATELY ERODED
ReA	READINGTON SILT LOAM 0-3% SLOPES; MODERATELY ERODED
UgB	URBAN LAND, 0-8% SLOPES; MODERATELY ERODED
UroB	URBAN LAND-LAWRENCEVILLE COMPLEX; 0-8% SLOPES; MODERATELY ERODED

LEGEND

EXISTING STORM SEWER
PROPOSED STORM SEWER
EXISTING SANITARY SEWER
PROPOSED SANITARY SEWER
PROPOSED SANITARY SEWER FORCE MAIN — FM
EXISTING WATER LINE — W
PROPOSED WATER LINE — W
EXISTING CONTOUR — 644
PROPOSED CONTOUR — 650
EXISTING CURB LINE
PROPOSED CURB LINE
POSITIVE DRAINAGE INDICATOR
EXISTING ELEV — (333.68) OR 333.68
PROPOSED ELEV. — 334.50
EXISTING TREE LINE
PROPOSED TREE LINE
EXISTING GAS LINE — G
PROP. GAS LINE — G
EXISTING OVERHEAD ELEC. — OE
EXISTING UNDERGROUND ELEC.
PROP. ELECTRIC — E
PROP. ROOF DRAIN — RD
PROP. WATER LATERAL — wL
PROP. SEWER LATERAL — SL
SOIL LINE — AbB / DoB
LIMIT OF DISTURBANCE
NPDES BOUNDARY
18" SILT FENCE — 18"SF
12" COMPOST FILTER SOCK (CFS) — 12CFS
18" COMPOST FILTER SOCK (CFS) — 18CFS
24" COMPOST FILTER SOCK (CFS) — 24CFS
32" COMPOST FILTER SOCK (CFS) — 32CFS
TOPSOIL STOCKPILE — TOPSOIL STOCKPILE
FILTER BAG @ INLET
EROSION CONTROL LINER
CONSTRUCTION ENTRANCE
TREE PROTECTION FENCE

STOP-CALL BEFORE YOU DIG!

LOCATION OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA. ONE CALL SYSTEM THREE (3) WORK DAYS PRIOR TO COMMENCEMENT PENNSYLVANIA ACT 287 AS AMENDED BY ACT 181 (2004).
TELE. #: 1-800-242-1776, OR 811.
WORK LOCATION NO.: 20170941435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!

"LONGFIELD FARM"

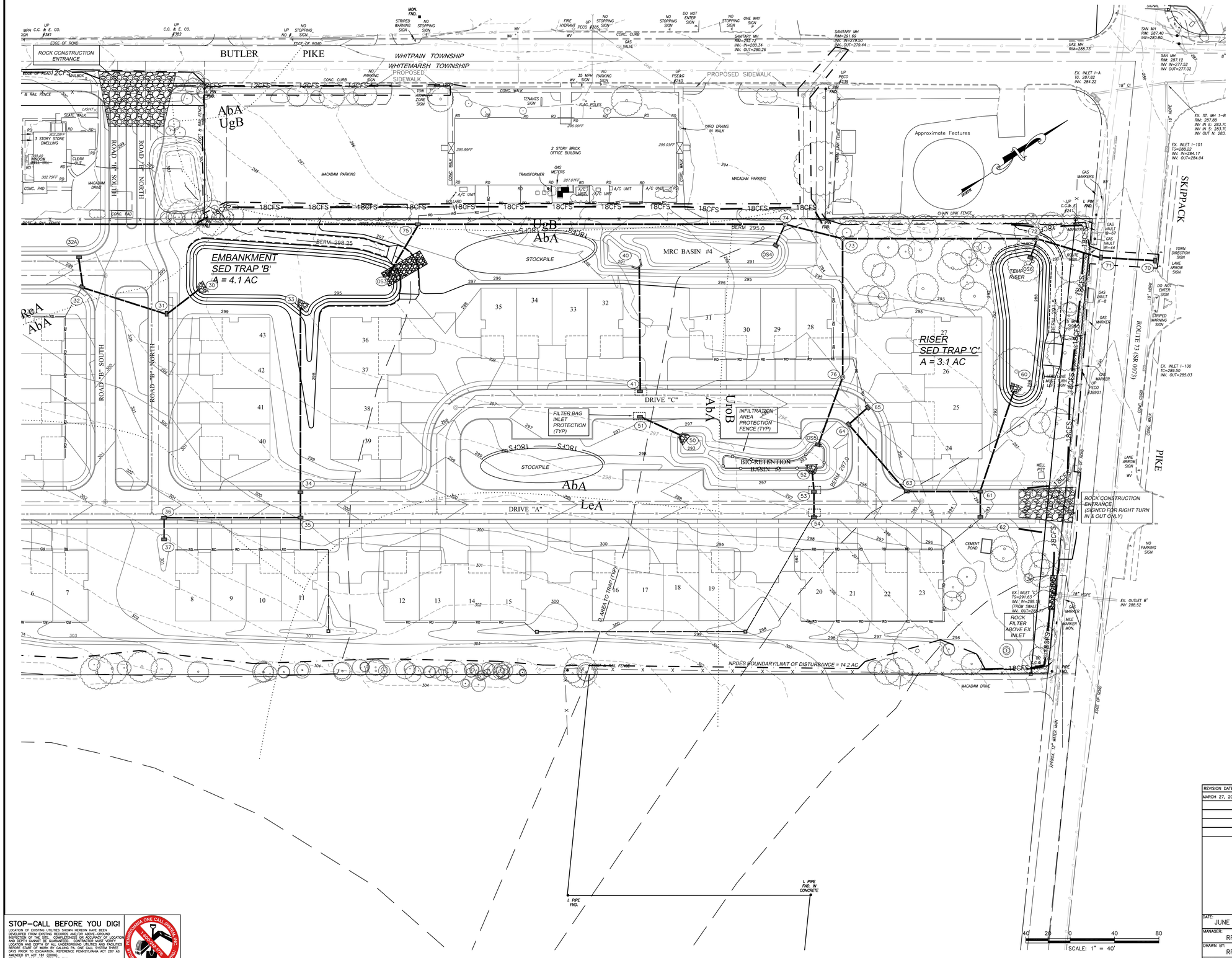
REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

EROSION CONTROL PLAN

PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17-02
DRAWN BY: RFI	FILE NAME: 17-02BASE
SCALE: 1" = 40'	SHEET: 20 OF 30

Irick Eberhardt Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215-541-4626
215-541-4023(Fax)
E-Mail: Info@IEMZM.com



LEGEND

- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY SEWER FORCE MAIN — FM
- EXISTING WATER LINE — W
- PROPOSED WATER LINE — W
- EXISTING CONTOUR — 444
- PROPOSED CONTOUR — 650
- EXISTING CURB LINE
- PROPOSED CURB LINE
- POSITIVE DRAINAGE INDICATOR
- EXISTING ELEV — (333.68) OR 333.68
- PROPOSED ELEV. — 334.50
- EXISTING TREE LINE
- PROPOSED TREE LINE
- EXISTING GAS LINE — G
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- EXISTING UNDERGROUND ELEC.
- PROP. ELECTRIC — E
- PROP. ROOF DRAIN — RD
- PROP. WATER LATERAL — wL
- PROP. SEWER LATERAL — SL
- SOIL LINE — AbB / DoB
- LIMIT OF DISTURBANCE
- NPDES BOUNDARY
- 18" SILT FENCE — 18"SF
- 12" COMPOST FILTER SOCK (CFS) — 12CFS
- 18" COMPOST FILTER SOCK (CFS) — 18CFS
- 24" COMPOST FILTER SOCK (CFS) — 24CFS
- 32" COMPOST FILTER SOCK (CFS) — 32CFS
- TOPSOIL STOCKPILE — TOPSOIL STOCKPILE
- FILTER BAG @ INLET
- EROSION CONTROL LINER
- CONSTRUCTION ENTRANCE
- TREE PROTECTION FENCE

NRCS–USDA SOIL SURVEY SOURCE:
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PlB PENN LANSDALE COMPLEX 3–8% SLOPES, MODERATELY ERODED

ReA READINGTON SILT LOAM 0–3% SLOPES; MODERATELY ERODED

UgB URBAN LAND, 0–8% SLOPES; MODERATELY ERODED

UroB URBAN LAND–LAWRENCEVILLE COMPLEX; 0–8% SLOPES; MODERATELY ERODED

"LONGFIELD FARM"

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

EROSION CONTROL PLAN

PREPARED FOR

SPARTAN ORGANIZATION

SITUATE

WHITEMARSH TOWNSHIP

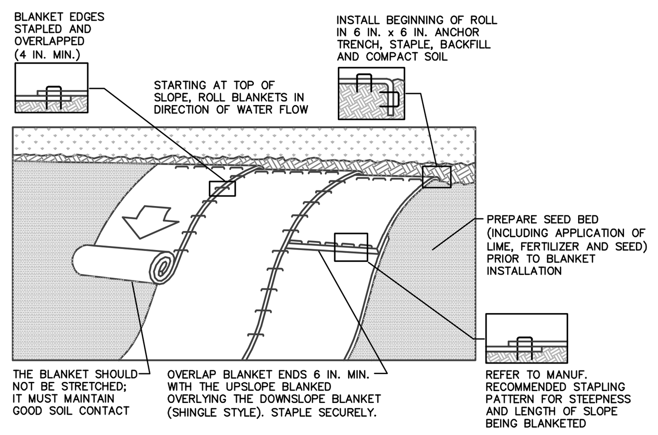
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17–02
DRAWN BY: RFI	FILE NAME: 17–02BASE
SCALE: 1" = 40'	SHEET: 21 OF 30

Irick Eberhardt Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215–541–4626
215–541–4023(Fax)
E–Mail: Info@IEMZM.com

STOP–CALL BEFORE YOU DIG!
LOCATION OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN OBTAINED FROM AVAILABLE RECORDS AND MAY NOT HAVE BEEN VERIFIED BY INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA. ONE CALL SYSTEM THREE BUSINESS DAYS PRIOR TO EXCAVATION. REFERENCE PENNSYLVANIA ACT 287 AS AMENDED BY ACT 181 (2006).
TEL. #: 1–800–242–1776 OR 811.
WORK LOCATION NO.: 20170941435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!



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.

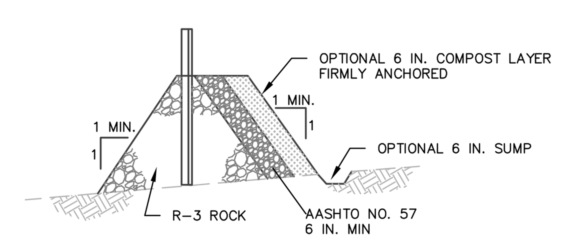
SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.

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.

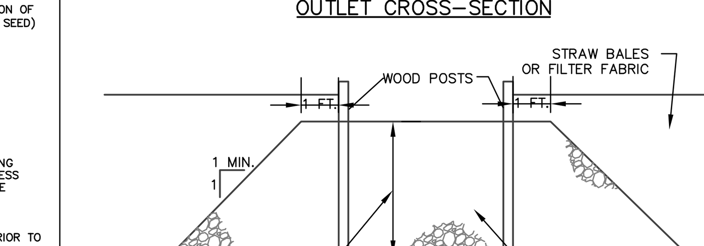
THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

MAINTENANCE:
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



OUTLET CROSS-SECTION

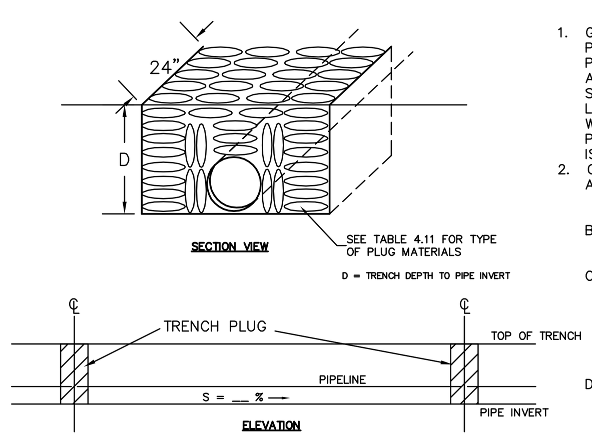


UP-SLOPE FACE

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

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

STANDARD CONSTRUCTION DETAIL #4-6
ROCK FILTER OUTLET
NOT TO SCALE



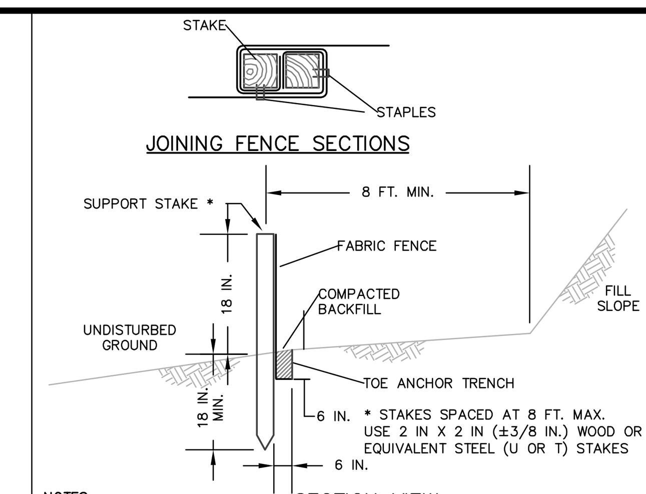
TRENCH PLUG DETAIL

TABLE 4.11 REQUIRED SPACING (L) AND MATERIALS FOR TRENCH PLUGS

TRENCH SLOPES (%)	L (feet)	PLUG MATERIAL
0 – 5	--	NONE
5 – 15	500	EARTH FILLED SACKS
15 – 25	300	EARTH FILLED SACKS
25 – 35	200	EARTH FILLED SACKS
35 – 100	100	EARTH FILLED SACKS
OVER 100	50	CEMENT FILLED BAGS, (WETTED), OR MORTARED STONE

UTILITY LINE TRENCH EXCAVATION:

1. GENERAL – EXPOSED TRENCH EXCAVATIONS HAVE HIGH POTENTIAL FOR ACCELERATED EROSION AND SEDIMENT POLLUTION. SINCE THESE EXCAVATIONS ARE USUALLY LOCATED AT LOWER ELEVATIONS ALONG OR ACROSS EARTH DISTURBANCE SITES, OPEN TRENCHES SERVE TO CONCENTRATE SEDIMENT LADEN RUNOFF AND CONVEY IT TO SITE BOUNDARIES OR WATERWAYS. THE MOST IMPORTANT EROSION AND SEDIMENT POLLUTION CONTROL CONSIDERATION FOR TRENCH CONSTRUCTION IS THE LIMITING AND SPECIFIC SCHEDULING OF WORK ACTIVITIES.
2. CONSTRUCTION REQUIREMENTS –
   A. LIMIT ADVANCE CLEARING AND GRUBBING OPERATIONS TO A DISTANCE EQUAL TO TWO TIMES THE LENGTH OF PIPE INSTALLATION THAT CAN BE COMPLETED IN ONE DAY.
   B. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT, PLUG INSTALLATION AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY.
   C. TRENCH PLUGS WILL BE SPACED AND CONSTRUCTED OF THE MATERIALS SHOWN IN ACCORDANCE WITH THE TRENCH PLUG DETAIL AND TABLE.
   (1) AT ALL CROSSINGS OF WATERS OF THE COMMONWEALTH, TRENCH PLUGS WILL BE INSTALLED AT THE BANKS AFTER TRENCH EXCAVATION. THE PLUGS MAY BE TEMPORARILY REMOVED WHEN PLACING THE PIPE, BUT THEN REPLACED.
   D. WATER WHICH ACCUMULATES IN THE OPEN TRENCH WILL BE COMPLETELY REMOVED BY PUMPING BEFORE PIPE PLACEMENT AND/OR BACKFILLING BEGINS. ALL WATER MUST BE PUMPED THROUGH A STILLING BASIN.
   E. ON THE DAY FOLLOWING PIPE PLACEMENT AND TRENCH BACKFILLING, THE DISTURBED AREA WILL BE GRADED TO ORIGINAL CONTOURS AND APPROPRIATE TEMPORARY EROSION AND SEDIMENT POLLUTION CONTROL MEASURES/FACILITIES WILL BE INSTALLED. SEEDING AND MULCHING OF ALL DISTURBED AREAS WILL BE DONE AT THE END OF EACH WEEK.
   F. THE WETLANDS AREA SHALL BE DELINEATED AND PROTECTED BY SILT FENCE. EQUIPMENT AND MATERIALS MAY NOT BE STORED WITHIN THE WETLAND AREA.
   G. ALL EXCAVATED TRENCH MATERIAL SHOULD BE LOCATED ON THE UPHILL SIDE OF THE TRENCH WHEREVER APPLICABLE.
3. EXCEPTIONS – IN CERTAIN CASES TRENCHES CANNOT BE BACKFILLED UNTIL THE PIPE IS HYDROSTATICALLY TESTED, OR ANCHORS AND OTHER PERMANENT FEATURES ARE INSTALLED. IN THESE CASES, ALL OF THE REQUIREMENTS LISTED UNDER ITEM 2 WILL REMAIN IN EFFECT WITH THE FOLLOWING EXCEPTIONS:
   A. DAILY BACKFILLING OF THE TRENCH MAY BE DELAYED FOR SIX DAYS. ALL PRESSURE TESTING AND THE COMPLETE BACKFILLING OF THE OPEN TRENCH MUST BE COMPLETED BY THE SEVENTH WORKING DAY.
   B. IF DAILY BACKFILLING IS DELAYED, THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS, APPROPRIATE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES/FACILITIES WILL BE INSTALLED, AND THE AREAS SEEDED AND MULCHED WITHIN THE NEXT TWO CALENDAR DAYS.



SECTION VIEW

NOTES:
FABRIC SHALL HAVE THE MINIMUM PROPERTIES AS SHOWN IN TABLE 4.3 OF THE PA DEP EROSION CONTROL MANUAL.

FABRIC WIDTH SHALL BE 30 IN. MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (U OR T) STAKES.

SILT FENCE SHALL BE PLACED AT LEVEL EXISTING GRADE. BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.

MAINTENANCE:
SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF THE ABOVE GROUND HEIGHT OF THE FENCE.

ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET (STANDARD CONSTRUCTION DETAIL # 4-6).

FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.

STANDARD CONSTRUCTION DETAIL #4-7
STANDARD SILT FENCE (18" HIGH)
NOT TO SCALE

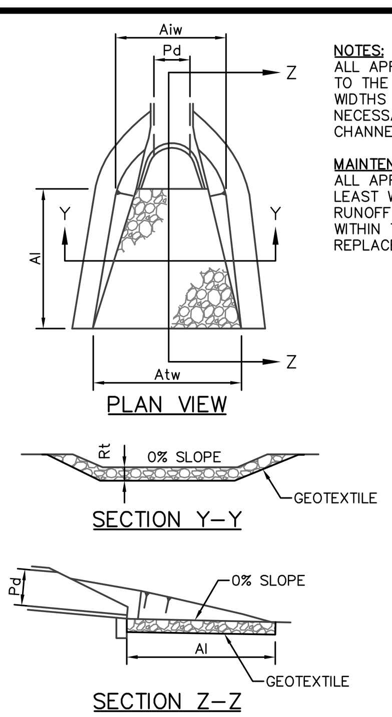
TOPSOIL SPECIFICATION

TOPSOIL SHALL CONSIST OF FRIABLE SURFACE SOIL REASONABLY FREE OF GRASS, ROOTS, WEEDS, STICKS, STONES, OR OTHER FOREIGN MATERIALS.

THE TOPSOIL SHALL CONSIST OF SANDY LOAM, WITH SOIL PARTICLES WITHIN THE FOLLOWING PERCENTAGES: CLAY; 0–25; SILT; 25–50; SAND; 50–70; DECOMPOSED ORGANIC MATTER; 5–10. THE CLAY CONTENT IS OPTIONAL.

THE SOIL SHALL HAVE A SOIL ACIDITY RANGE BETWEEN A PH 5.0 TO PH 7.0. THE SOIL SALINITY SHALL NOT EXCEED 3 MILLIMHOS PER CENTIMETER AT 250C (AS DESCRIBED BY USDA CIRCULAR NO. 982).

SHOULD EXISTING SITE SOILS NOT MEET THESE SPECIFICATIONS, ADDITIONAL COMPOST, LIME, ETC. SHALL BE ADDED BASED ON THE RECOMMENDATION OF THE PENN STATE EXTENSION REQUIREMENTS.

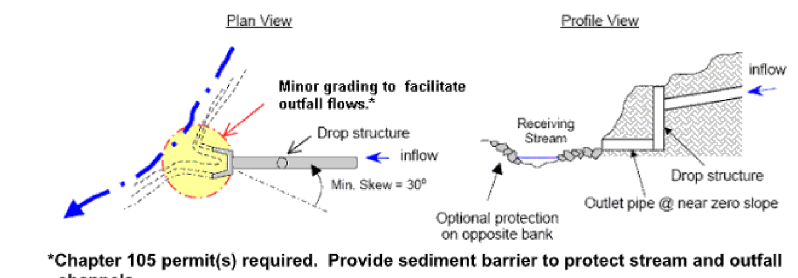


NOTES:
ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.

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

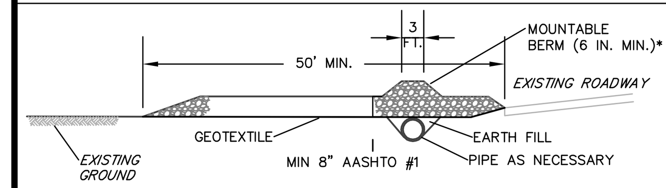
OUTLET NO.	PIPE DIA Pd (IN)	RIPRAP SIZE R-_	RIPRAP THICK. Rt (IN)	APRON LENGTH Al (FT)	APRON INITIAL WIDTH Aiw (FT)	APRON TERMINAL WIDTH Atw (FT)
EW 1	15	4	18	6	4	10
EW 4	15	4	18	6	4	10
EW 20	18	4	18	8	4.5	12.5
EW 30	18	4	18	8	4.5	12.5
EW 33	15	4	18	6	4	10
EW 40	15	4	18	6	4	10
EW 50	15	4	18	6	4	10
EW 52	15	4	18	6	4	10
EW 60	15	4	18	6	4	10

PROPER OUTFALL ORIENTATION TO RECEIVING STREAM

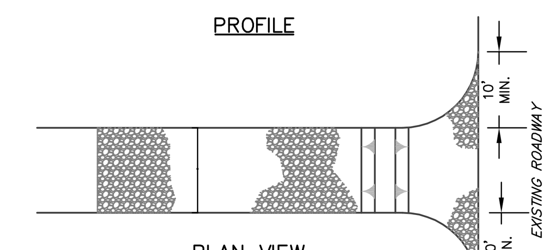


*Chapter 105 permit(s) required. Provide sediment barrier to protect stream and outfall channels.

STANDARD CONSTRUCTION DETAIL #9-1
RIPRAP APRON AT PIPE OUTLET
WITH FLARED END SECTION OR ENDWALL
NOT TO SCALE



PROFILE



PLAN VIEW

* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

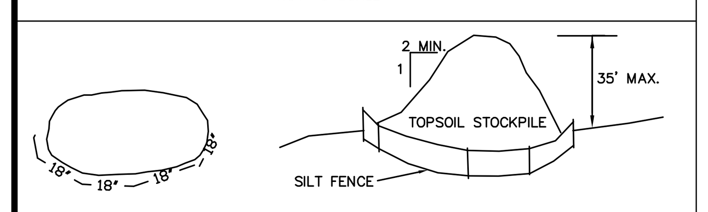
NOTES:
REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.

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.

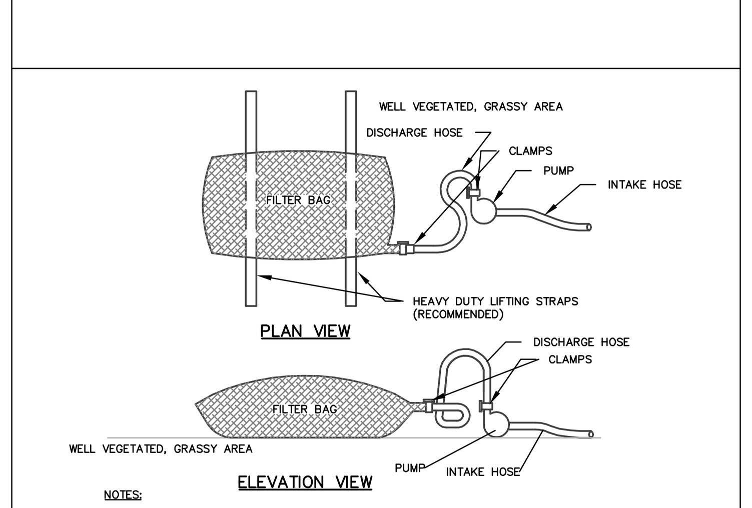
MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE 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



TOPSOIL STOCKPILE DETAIL

NOTES:
1. SILT FENCE MUST BE PLACED AROUND THE PERIMETER OF ALL STOCKPILES.
2. IMMEDIATELY APPLY TEMPORARY SEEDING TO ALL STOCKPILES WHICH WILL REMAIN IN PLACE 20 DAYS OR MORE.



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

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

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

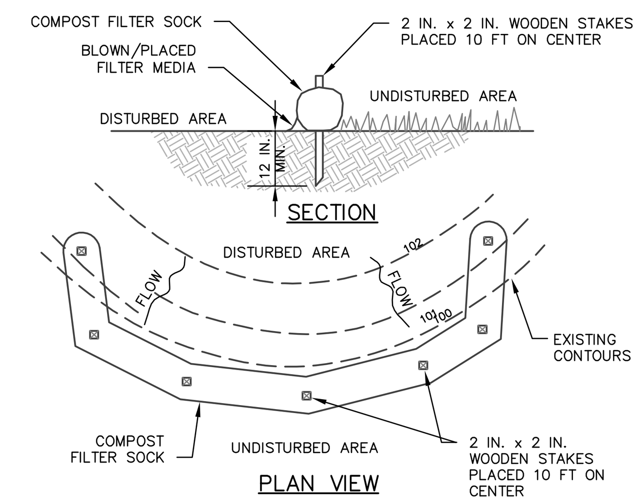
NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

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

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

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

STANDARD CONSTRUCTION DETAIL #3-16
PUMPED WATER FILTER BAG
NOT TO SCALE



NOTES:
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.

MAINTENANCE:
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

STABILIZATION METHODS AND STANDARDS

VEGETATIVE STABILIZATION
ALL DISTURBED AREAS THAT HAVE NOT OTHERWISE BEEN STABILIZED AND HAVE SIGNIFICANT POTENTIAL FOR EROSION SHOULD BE STABILIZED WITH VEGETATION. THIS INCLUDES GRADED AREAS WHERE IT IS ANTICIPATED THAT FUTURE EARTHMOVING WILL TAKE PLACE WITHIN THE COMING YEAR.

UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE OR ANY STAGE OR PHASE OF AN ACTIVITY WHERE A CESSATION OF EARTH DISTURBANCE EXCEEDS 4 DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION PENDING FUTURE EARTH DISTURBANCE ACTIVITIES.

AREAS THAT WILL BE SUBJECT TO EARTHMOVING WITHIN 12 MONTHS MAY BE STABILIZED WITH TEMPORARY SEED MIXTURES, PREDOMINANTLY ANNUAL GRASSES. ALL OTHERS SHOULD BE STABILIZED WITH PERMANENT SEED MIXTURES - PREDOMINANTLY PERENNIAL GRASSES.

WHEN FINAL GRADE IS ACHIEVED DURING NON-GERMINATING MONTHS, THE AREA SHOULD BE MULCHED UNTIL THE BEGINNING OF THE NEXT PLANTING SEASON. HOWEVER, THE AREA WILL NOT BE CONSIDERED STABILIZED UNTIL A MINIMUM UNIFORM 70% VEGETATIVE COVER OF EROSION RESISTANT PERENNIAL SPECIES HAS BEEN ACHIEVED.

STRAW AND HAY MULCH SHOULD BE ANCHORED OR TACKIFIED IMMEDIATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. THIS MAY BE COMPLETED BY USING A TRACTOR DRWN IMPLEMENT TO 'CRIMP' THE STRAW OR HAY INTO THE SOIL (3"+/-) AND IS LIMITED TO SLOPES NO STEEPER THAN 3:1. (DO NOT USE TRACK MACHINARY). POLYMERIC AND GUM TACKIFIERS, MIXED AND APPLIED ACCORDING TO MANUFACTURERES RECOMMENDATIONS MAY ALSO BE USED. REFER TO VEGETATIVE STABILIZATION NOTES HEREON.

CRITICAL AREAS: ERODIBLE SOILS, AREAS WITHIN 50 FEET OF A SURFACE WATER, ETC. - SHOULD BE BLANKETED.
TEMPORARY EROSION CONTROL BMPS THAT WERE INSTALLED FOR THE EARTHMOVING PHASE OF THE PROJECT MUST REMAIN IN PLACE AND BE MAINTAINED IN WORKING ORDER UNTIL PERMANENT STABILIZATION IS ACHIEVED.

AS DISTURBED AREAS WITHIN A PROJECT APPROACH FINAL GRADE, PREPARATIONS SHOULD BE MADE FOR SEEDING AND MULCHING TO BEGIN (I.E. ANTICIPATE THE COMPLETION DATE AND SCHEDULE THE SEEDER). IN NO CASE SHOULD AN AREA EXCEEDING 15,000 SQUARE FEET, WHICH IS TO BE STABILIZED BY VEGETATION, REACH FINAL GRADE WITHOUT BEING SEEDED AND MULCHED. WAITING UNTIL EARTHMOVING IS COMPLETED BEFORE MAKING PREPARAT IONS FOR SEEDING AND MULCHING IS NOT ACCEPTABLE.

BEFORE THE SEEDING BEGINS, TOPSOIL SHOULD BE APPLIED AND ANY REQUIRED SOIL AMENDMENTS WORKED INTO THE SOIL TO A DEPTH OF 4 TO 6 INCHES. IF COMPOST IS TO BE ADDED TO THE TOPSOIL, IT SHOULD BE WORKED INTO THE SOIL WITH THE OTHER SOIL AMENDMENTS UNLESS IT IS BEING APPLIED AS AN EROSION CONTROL BMP.

TOPSOIL APPLICATION (FOR NON-AMENDED SOIL AREAS)
GRADED AREAS SHOULD BE SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES TO PERMIT BONDING OF THE TOPSOIL TO THE SURFACE AREAS AND TO PROVIDE A ROUGHENED SURFACE TO PREVENT TOPSOIL FROM SLIDING DOWN SLOPE.

TOPSOIL SHOULD BE UNIFORMLY DISTRIBUTE ACROSS THE DISTURBED AREA TO A DEPTH OF 4 TO 8 INCHES MINIMUM-2 INCHES ON FILL OUTSLOPES. REFER TO TOPSOIL SPECIFICATIONS

GENERAL
1. UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE OR ANY STAGE OR PHASE OF AN ACTIVITY WHERE A CESSATION OF EARTH DISTURBANCE EXCEEDS 4 DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION PENDING FUTURE EARTH DISTURBANCE ACTIVITIES. AREAS THAT WILL BE SUBJECT TO EARTHMOVING WITHIN 12 MONTHS MAY BE STABILIZED WITH TEMPORARY SEED MIXTURES, PREDOMINANTLY ANNUAL GRASSES. ALL OTHERS SHOULD BE STABILIZED WITH PERMANENT SEED MIXTURES-PREDOMINANTLY PERENNIAL GRASSES.

AS SOON AS SLOPES, CHANNELS, DITCHES AND OTHER DISTURBED AREAS REACH FINAL GRADE THEY MUST BE STABILIZED OR IN COMPLIANCE WITH THE APPLICABLE DETAIL AND SPECIFICATIONS FOR ITEMS SUCH AS EROSION CONTROL BLANKETS OR NETTING.

UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY IN A SPECIAL PROTECTION WATERSHED (HQ OR EV), THAT PORTION OF THE PROJECT SITE TRIBUTARY TO THE SPECIAL PROTECTION WATERS MUST BE IMMEDIATELY STABILIZED. IN ALL OTHER WATERSHED, CESSATION OF ACTIVITY FOR AT LEAST 4 DAYS REQUIRES TEMPORARY STABILIZATION. THIS IS NOT A SPECIAL PROTECTION WATERSHED

BLANKETING IS REQUIRED ON ALL 3:1 OR STEEPER SLOPES

CONTRACTOR SHALL REFER TO EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, DEP 'CHAPTER 11-STABILIZATION METHODS AND STANDARDS' (PORTIONS ARE INCLUDED WITHIN THE PROJECT PCSM & EROSION CONTROL NARRATIVES) FOR ADDITIONAL INFORMATION REGARDING SITE STABILIZATION , TOPSOIL APPLICATION, SOIL AMENDMENTS, OTHER RECOMMENDED SEED MIXTURES, MULCHING AND COMPOST MATERIAL.

SEEDING SPECIFICATIONS

1. SOIL PREPARATION
   A. FINAL GRADE LAWN AREAS REMOVING ANY ROCKS, STUMPS, AND DEBRIS

   B. TEMPORARY FERTILIZATION:
   APPLY AGRICULTURAL LIMESTONE AT THE RATE OF 1 TON/ACRE
   APPLY FERTILIZER AT 500 LBS 10–10–10/ACRE

   C. PERMANENT FERTILIZATION:
   APPLY AGRICULTURAL LIMESTONE AT THE RATE OF 6 TON/ACRE*
   APPLY FERTILIZER AT 1000 LBS 10–10–20/ACRE*
   *(OR AS PER SOIL TEST)

   D. TILL IN TO A DEPTH OF 4 INCHES

2. APPLY SEED AT THE FOLLOWING RATES:
   A. TEMPORARY SEEDING;
   ANNUAL RYE GRASS (40 LBS/ACRE)

   B. PERMANENT SEEDING:
   LAWN AREA SEED MIXTURE:
   LOFTS TRI-PLEX GENERAL MIX(OR APPROVED EQUAL)
   CONTAINS:
   60% BARON KENTUCKY BLUEGRASS
   20% JAMESTOWN II CHEWINGS FESCUE
   20% PALMER II PERENNIAL RYEGRASS

   RATE: 5 LBS. PER 1,000 S.F.

   RECOMMENDED SEEDING DATES:
   3/15 TO 6/15 OR 8/16 TO 10/15

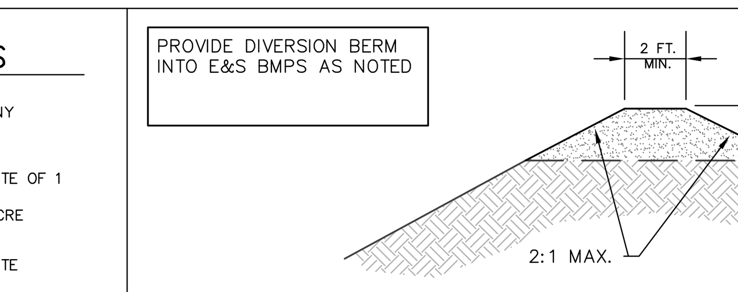
3. APPLY MULCH AT THE FOLLOWING RATES:
HAY OR STRAW (3 TONS/ACRE-TEMPORARY & PERMANENT) W/ ANCHORING AS NOTED IN STABILIZATION NOTES. STEEP SLOPES (≥3:1)-NETTING MUST BE USED TO HOLD MULCH IN PLACE. REFER TO STABILIZATION METHODS AND STANDARDS.

TOPSOIL, SEEDING & STABILIZATION SPECS

Mulch Application Rates

Mulch Type	Application Rate (Min.) Per Acre	Per 1,000 sq. ft.	Per 1,000 sq. yd.	Notes
Straw	3 tons	140 lb.	1,240 lb.	Either wheat or oat straw, free of weeds, not chopped or finely broken
Hay	3 tons	140 lb.	1,240 lb.	Timothy, mixed clover and timothy or other native forage grasses
Wood Chips	4 - 6 tons	185 - 275 lb.	1,650 - 2,500 lb.	May prevent germination of grasses and legumes
Hydromulch	1 ton	47 lb.	415	See limitations above

PROVIDE DIVERSION BERM INTO E&S BMPS AS NOTED



SECTION VIEW

NOTES:

TEMPORARY BERMS SHALL BE PLACED, MAINTAINED, AND ADJUSTED CONTINUOUSLY UNTIL 90% VEGETATIVE GROWTH IS ESTABLISHED ON THE EXTERIOR SLOPES WITH PERMANENT STORM DRAINAGE FACILITIES FUNCTIONING.

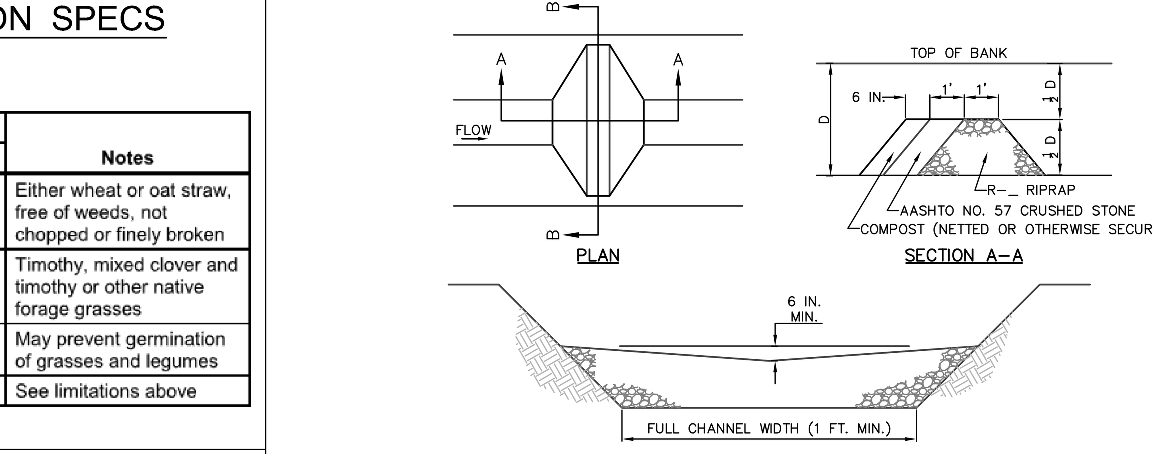
BERMS SHALL OUTLET TO SLOPE PIPES, CHANNELS, OR OTHER APPROVED MEANS OF CONVEYING RUNOFF TO A SEDIMENT TRAP, SEDIMENT BASIN, OR COLLECTOR CHANNEL.

CHANNEL BEHIND BERM SHALL HAVE POSITIVE GRADE TO OUTLET AND AN APPROPRIATE PROTECTIVE LINING.

BERM SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE.

AN ACCEPTABLE ALTERNATIVE TO TOP-OF-SLOPE BERM IS TO CONTINUOUSLY GRADE THE TOP OF FILL TO DIRECT RUNOFF AWAY FROM THE FILLSLOPE TO A COLLECTOR CHANNEL, SEDIMENT TRAP, OR SEDIMENT BASIN.

STANDARD CONSTRUCTION DETAIL #6-4
TOP OF SLOPE/DIVERSION BERM
NOT TO SCALE



ROCK FILTER NO.	LOCATION	D (FT)	RIPRAP SIZE (R-_)

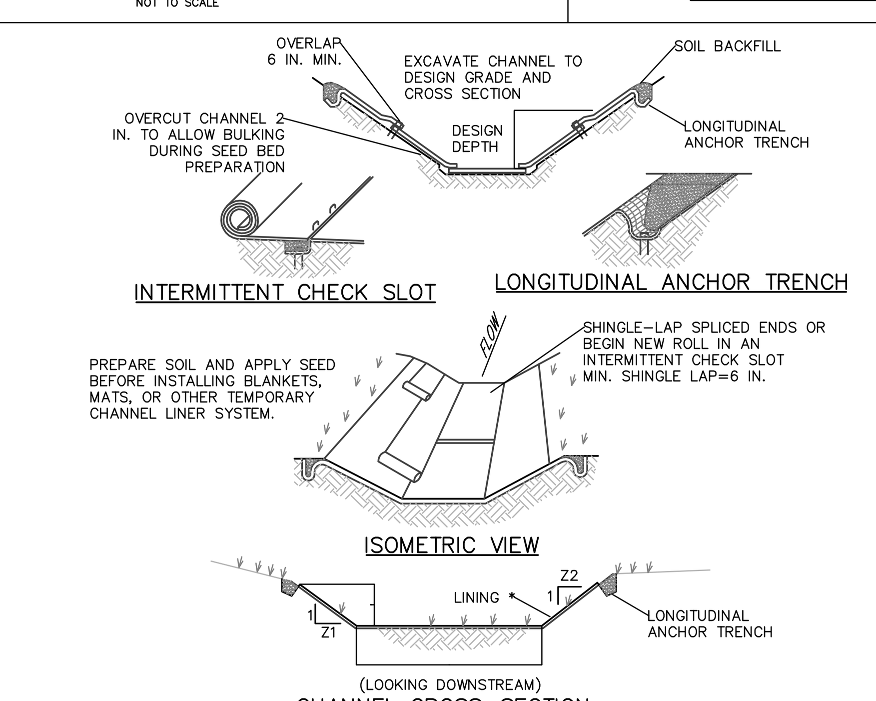
FOR D ≥ 3 FT. – USE R-4
FOR D ≥ 2 FT. TO D < 3 FT. – USE R-3
NOT APPLICABLE FOR D < 2 FT.

NOTES:

SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE HEIGHT OF THE FILTERS.

IMMEDIATELY UPON STABILIZATION OF EACH CHANNEL, REMOVE ACCUMULATED SEDIMENT, REMOVE ROCK FILTER, AND STABILIZE DISTURBED AREAS.

STANDARD CONSTRUCTION DETAIL #4-14
ROCK FILTER
NOT TO SCALE



CHANNEL CROSS-SECTION

* SEE MANUFACTURER'S LINING INSTALLATION DETAIL FOR STAPLE PATTERNS, VEGETATIVE STABILIZATION FOR SOIL AMENDMENTS, SEED MIXTURES AND MULCHING INFORMATION

CHANNEL NO.	STATIONS	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	LINING *

NOTES:
ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF CHANNEL IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.

CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT ANY LOCATION.
SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO CHANNEL WITHOUT FURTHER DAMAGE. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

NO MORE THAN ONE THIRD OF THE SHOOT (GRASS LEAF) SHALL BE REMOVED IN ANY MOWING. GRASS HEIGHT SHALL BE MAINTAINED BETWEEN 2 AND 3 INCHES UNLESS OTHERWISE SPECIFIED. EXCESS VEGETATION SHALL BE REMOVED FROM PERMANENT CHANNELS TO ENSURE SUFFICIENT CHANNEL CAPACITY.

STANDARD CONSTRUCTION DETAIL #6-1
VEGETATED CHANNEL

SOIL LIMITATIONS

SOURCE: websoilsurvey.nrcs.usda.gov., accessed 6-4-19

	SOIL	SOIL GROUP	RESERVOIR AREA	EMBANKMENTS	HOME BUILDING	STREETS/PARKING LOTS	LAWNS/LANDSCAPING
AbA	ABBOTTSTOWN SILT LOAM 0-3% SLOPES;	D	SOMEWHAT LIMITED DUE TO SEEPAGE & DEPTH TO BEDROCK	VERY LIMITED DUE TO DEPTH OF SATURATION ZONE, PIPING, DUSTY & PONDING	VERY LIMITED DUE TO SATURATION ZONE. BEDROCK, PONDING	VERY LIMITED DUE TO DEPTH TO CEMENTED PAN, FROST, LOW STRENGTH, BEDROCK & DEPTH TO SATURATION ZONE	VERY LIMITED DUE TO SATURATION ZONE. BEDROCK, DUSTY, GRAVEL & LOW EXCHANGE CAPACITY
LeA	LAWRENCEVILLE SILT LOAM 0-3% SLOPES; MODERATELY ERODED	C	SOMEWHAT LIMITED DUE TO SEEPAGE & DEPTH TO BEDROCK	SOMEWHAT LIMITED DUE TO DEPTH TO SATURATION ZONE, DUSTY & THIN LAYER	VERY LIMITED DUE TO DEPTH TO SATURATION, ZONE, BEDROCK & PONDING.	VERY LIMITED DUE TO DEPTH TO CEMENTED PAN, LOW STRENGTH, FROST, BEDROCK & SATURATION ZONE	VERY LIMITED DUE TO DEPTH TO BEDROCK, GRAVEL, DUSTY, DRAUGHTY, LOW EXCHANGE CAPACITY & SATURATION ZONE.
PIB	PENN LANSDALE COMPLEX 3-8% SLOPES, MODERATELY ERODED	B	VERY LIMITED DUE TO SLOPE, SEEPAGE & DEPTH TO BEDROCK	SOMEWHAT LIMITED DUE TO THIN LAYER, PIPING, DUSTY & SEEPAGE	VERY LIMITED DUE TO DEPTH TO BEDROCK, SLOPE & SATURATION ZONE.	VERY LIMITED DUE TO LOW STRENGTH, SLOPE, FROST, BEDROCK & SATURATION ZONE	VERY LIMITED DUE TO DEPTH TO BEDROCK, SLOPE, GRAVEL, DUSTY, DRAUGHTY, LOW EXCHANGE CAPACITY & SATURATION ZONE.
ReA	READINGTON SILT LOAM 0-3% SLOPES; MODERATELY ERODED	C	SOMEWHAT LIMITED DUE TO SEEPAGE & DEPTH TO BEDROCK	SOMEWHAT LIMITED DUE TO DEPTH TO SATURATION ZONE, DUSTY & THIN LAYER	VERY LIMITED DUE TO DEPTH TO SATURATION, ZONE, BEDROCK & PONDING.	VERY LIMITED DUE TO DEPTH TO CEMENTED PAN, LOW STRENGTH, FROST, BEDROCK & SATURATION ZONE	VERY LIMITED DUE TO DEPTH TO BEDROCK, GRAVEL, DUSTY, DRAUGHTY, LOW EXCHANGE CAPACITY & SATURATION ZONE.
UgB	URBAN LAND, 0-8% SLOPES; MODERATELY ERODED	NONE	VERY LIMITED DUE TO SEEPAGE, DEPTH TO BEDROCK & SLOPE	SOMEWHAT LIMITED DUE TO THIN LAYER & PIPING	SOMEWHAT LIMITED DUE TO DEPTH TO BEDROCK	SOMEWHAT LIMITED DUE TO DEPTH TO BEDROCK & FROST	SOMEWHAT LIMITED DUE TO DEPTH TO BEDROCK
UroB	URBAN LAND-LAWRENCEVILLE COMPLEX; 0-8% SLOPES; MODERATELY ERODED	C	VERY LIMITED DUE TO SEEPAGE, DEPTH TO BEDROCK & SLOPE	SOMEWHAT LIMITED DUE TO THIN LAYER & PIPING	SOMEWHAT LIMITED DUE TO DEPTH TO BEDROCK	SOMEWHAT LIMITED DUE TO DEPTH TO BEDROCK & FROST	SOMEWHAT LIMITED DUE TO DEPTH TO BEDROCK

SOIL LIMITATIONS AND RESOLUTIONS

CONTRACTOR IS DIRECTED TO REVIEW THE PCSM NARRATIVE WHICH CONTAINS THE STORMWATER INFILTRATION EVALUATION REPORT FOR THIS PROJECT. TEST LOCATIONS ARE SHOWN ON THE PCSM PLAN.

1. SITE SOILS ARE SUSCEPTIBLE TO CAVING OF CUT BANKS. IT IS IMPERATIVE THAT APPROPRIATE PRECAUTIONS BE TAKEN TO SAFEGUARD WORKERS DURING ALL TRENCHING AND EXCAVATION OPERATIONS. ALL APPLICABLE OSHA STANDARDS AND REGULATIONS MUST BE IMPLEMENTED AT ALL TIMES.

2. SITE SOILS ARE CORROSIVE TO CONCRETE AND UNCOATED STEEL. SUITABLE PRECAUTIONS SHOULD BE TAKEN TO PROTECT ALL UNDERGROUND PIPES, CONDUITS, AND STORAGE TANKS.

3. SITE SOILS ARE INDICATED TO HAVE LOW STRENGTH OVER THE MAJORITY OF THE SITE AREA. PRECAUTIONS SHOULD BE TAKEN TO PREVENT SLOPE FAILURES DUE TO IMPROPER CONSTRUCTION PRACTICES SUCH AS OVER-STEEPENING AND OVERLOADING OF SLOPES, REMOVAL OF LATERAL SUPPORT, AND FAILURE TO PREVENT SATURATION OF SLOPES. ALSO, ROAD FILL MATERIAL MAY NEED TO BE IMPORTED IN AREAS WHERE SOILS HAVE LOW STRENGTH. TO AVOID ENDANGERING REGULATED WATERS OR PUBLIC TRANSPORTATION FACILITIES, A MINIMUM SETBACK SHOULD BE MAINTAINED ACCORDING TO TABLE 16.1, UNLESS IT CAN BE SHOWN THAT PROPOSED CUTS AND FILLS DO NOT POSE A HAZARD TO PUBLIC SAFETY OR TO SURFACE WATERS.

TABLE 16.1
RECOMMENDED MINIMUM SETBACKS FOR FILL PLACEMENT IN THE VICINITY OF REGULATED WATERS, HIGHWAYS, RAILROADS, AND OTHER PUBLIC TRANSPORTATION FACILITIES*

HEIGHT OF FILL (FT)	MINIMUM SETBACK (FT)
< 10	10
10 - 25	25
25 - 50	50
> 50	1 FT OF SETBACK PER FT OF HEIGHT

* GREATER SETBACK DISTANCES MIGHT BE NEEDED IF SOIL/BEDROCK, RUNOFF, OR GROUNDWATER CONDITIONS ARE SUCH THAT A SIGNIFICANT THREAT TO PUBLIC HEALTH AND SAFETY IS POSED OR IN SPECIAL PROTECTION WATERSHEDS.
LESSER SETBACKS MAY BE CONSIDERED BY THE DEPARTMENT IN CASES WHERE SPECIAL SLOPE STABILITY MEASURES ARE UNDERTAKEN OR IT CAN BE SHOWN THAT THE DESIRED LONG-TERM SAFETY FACTOR IS PROVIDED.

4. PER USDA MAPPING, SITE SOILS ARE POOR SOURCES OF TOPSOIL, ON-SITE SOILS MAY BE TOO WET. SOIL TESTS ARE STRONGLY RECOMMENDED TO DETERMINE THE PROPER APPLICATION OF SOIL AMENDMENTS TO PROMOTE THE GROWTH OF THE DESIRED VEGETATION. MAXIMUM CLAY CONTENT IN 'NATIVE MATERIAL' SHALL BE LESS THAN 10%

5. SITE SOILS ARE SUSCEPTIBLE TO FROST ACTION. PRECAUTIONS ARE NEEDED TO PREVENT DAMAGE, ESPECIALLY TO ROADWAYS, THIS INCLUDES ADEQUATE DRAINAGE THROUGH STONE SUBBASE AND U-DRAIN.

6. SUMP PUMP AND FOOTER DRAINS SHALL BE PROVIDED AS NECESSARY AND SHALL CONNECT DIRECTLY TO STORM SEWER OR BASINS AS NOTED..
ROOF LEADERS SHALL DRAIN OVERLAND AND SHALL NOT BE INTERCONNECTED WITH SUMP PUMP DRAINS.

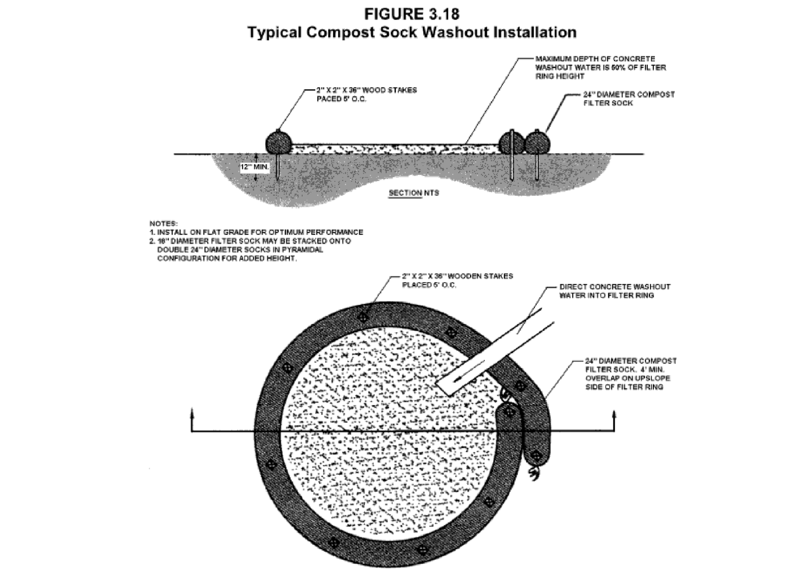
7. CONSTRUCTION EQUIPMENT TRAFFIC SHALL BE MINIMIZED DURING INSTALLATION OF INFILTRATION BASINS AND BERMS, PARTICULARLY IN THE POOLING AREA UPHILL OF THE BERMS TO MAINTAIN NATURAL INFILTRATION RATES.

8. URBAN LAND SOILS SHALL BE USED FOR FILL MATERIAL IN DRIVEWAYS AND EMBANKMENT.

9. REFER TO BERM CONSTRUCTION NOTES FOR THE ACCEPTABLE SOILS FOR BERM EMBANKMENT AND CORE TO LIMIT SEEPAGE AND PIPING.

10. UmrB-URBAN LAND-DUFFIELD SOIL AREAS HAVE THE POTENTIAL FOR SINKHOLES, NONE WERE OBSERVED DURING INFILTRATION TESTING.

FIGURE 3.18
Typical Compost Sock Washout Installation



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

CONCRETE WASHOUT DETAIL & SPECIFICATIONS

CONCRETE WASHOUT - FOR ANY PROJECT ON WHICH CONCRETE WILL BE POURED OR OTHERWISE FORMED ON SITE, A SUITABLE WASHOUT FACILITY MUST BE PROVIDED FOR THE CLEANING OF CHUTES, MIXERS, AND HOPPERS OF THE DELIVERY VEHICLES UNLESS SUCH A FACILITY WILL BE USED AT THE SOURCE OF THE CONCRETE. UNDER NO CIRCUMSTANCES MAY WASH WATER FROM THESE VEHICLES BE ALLOWED TO ENTER ANY SURFACE WATERS. PROPER SIGNAGE SHALL BE PROVIDED TO DRIVERS SO THAT THEY ARE AWARE OF THE PRESENCE OF WASHOUT FACILITIES.

WASHOUT FACILITIES SHOULD NOT BE PLACED WITHIN 50 FEET OF STORM DRAINS, OPEN DITCHES OR SURFACE WATERS. THEY SHOULD BE IN A CONVENIENT LOCATION FOR THE TRUCKS, PREFERABLY NEAR THE PLACE WHERE THE CONCRETE IS BEING POURED, BUT FAR ENOUGH FROM OTHER VEHICULAR TRAFFIC TO MINIMIZE THE POTENTIAL FOR ACCIDENTAL DAMAGE OR SPILLS. WHEREVER POSSIBLE, THEY SHOULD BE LOCATED ON SLOPES NOT EXCEEDING A 2 % GRADE. ADDITIONAL INFORMATION ON WASHOUTS MAY BE OBTAINED FROM EPA'S STORMWATER WEBSITE AT:
HTTP://CFPUB.EPA.GOV/NPDES/STORMWATER/MENUOFBMPS/INDEX.CFM?ACTION=BROWSE&RBUTTON=DETAIL&BMP=117&MINMEASURE=4.

MAINTENANCE
WASHWATER IS NOT ALLOWED TO LEAVE THE WASHOUT FACILITY OVERLAND, IT MUST BE EVAPORATED OR RECYLED FOR REUSE AND SOLID DISPOSED OR RECYCLED.
ALL CONCRETE WASHOUT FACILITIES SHOULD BE INSPECTED DAILY AND MAINTAINED IN ACCORDANCE WITH RECOMMENDATIONS NOTED IN 'EPA-SWM BMP-CONCRETE WASHOUT' DOCUMENT'.
DAMAGED OR LEAKING WASHOUTS SHOULD BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY.
ACCUMULATED MATERIALS SHOULD BE REMOVED WHEN THEY REACH 75 % CAPACITY.
IMPERIVOUS PLASTIC LINERS SHOULD BE REPLACED WITH EACH CLEANING OF THE WASHOUT FACILITY.

"LONGFIELD FARM"

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

EROSION CONTROL DETAILS
PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17-02
DRAWN BY: RFI	FILE NAME: 17-02BASE
SCALE: 1" = 50'	SHEET: 22 OF 30

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STAGING OF EARTHMOVING SEQUENCE(PRELIMINARY)

TRACT AREA = 14.2 ACRES; MAXIMUM EARTH DISTURBANCE = 14.2 AC (618,552 s.f.).; NPDES BOUNDARY = 15.0 ACRES

1. THE APPLICANT (PERMITTEE) OR ASSIGNS (CO-PERMITTEE) SHALL BE RESPONSIBLE FOR THE PROPER CONSTRUCTION, STABILIZATION AND MAINTENANCE OF ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROLS FOR ALL PROPOSED CONSTRUCTION ACTIVITIES ASSOCIATED WITH THE PUBLIC IMPROVEMENTS FOR THIS SITE.

2. A LICENSED PROFESSIONAL OR A DESIGNEE SHALL BE PRESENT ONSITE AND BE RESPONSIBLE DURING CRITICAL STAGES OF IMPLEMENTATION OF THE APPROVED PCSM PLAN. THE CRITICAL STAGES MAY INCLUDED THE INSTALLATION OF UNDERGROUND TREATMENT OR STORAGE BMPS, STRUCTURALLY ENGINEERED BMPS, OR OTHER BMPS DEEMED APPROPRIATE BY THE DEPARTMENT OR THE CONSERVATION DISTRICT. CRITICAL STAGE OVERSIGHT/INSTALLATION OF STRUCTURAL BMPS IS PROVIDED WITHIN THE SEQUENCE FOR THIS PROJECT.

A. GENERAL NOTES:

REVIEW STANDARD E&S NOTES ON DETAIL PLANS FOR THIS PROJECT. REFER TO STABILIZATION METHODS AND STANDARDS.

AS DISTURBED AREAS WITHIN A PROJECT APPROACH FINAL GRADE, PREPARATIONS SHOULD BE MADE FOR SEEDING AND MULCHING TO BEGIN (I.E. ANTICIPATE THE COMPLETION DATE AND SCHEDULE THE SEEDER). IN NO CASE SHOULD AN AREA EXCEEDING 15,000 SQUARE FEET, WHICH IS TO BE STABILIZED BY VEGETATION, REACH FINAL GRADE WITHOUT BEING SEEDED AND MULCHED. WAITING UNTIL EARTHMOVING IS COMPLETED BEFORE MAKING PREPARATIONS FOR SEEDING AND MULCHING IS NOT ACCEPTABLE. REVIEW SEEDING SPECIFICATIONS AND VEGETATIVE STABILIZATION SPECS AND NOTES HEREON.

PRIOR TO ANY SITE ACTIVITY, A PRECONSTRUCTION MEETING IS TO BE HELD WITH THE COUNTY CONSERVATION DISTRICT, THE CONTRACTOR, THE DEVELOPER, DESIGNATED LICENSED PROFESSIONAL AND ALL OTHER APPROPRIATE AGENCIES OR PERSONNEL FOR THE PROJECT.

REFER TO EXISTING FEATURES PLAN FOR DEMOLITION, RELOCATION AND REMOVAL REQUIREMENTS OF EXISTING SITE IMPROVEMENTS.

REFER TO PCSM/LANDSCAPING PLAN FOR EXTENT OF TREE PROTECTION FENCING.

TEMPORARY VEGETATION AND MULCHING SHALL BE USED TO PROTECT EXPOSED CRITICAL AREAS DURING DEVELOPMENT. EROSION CONTROL BLANKETS SHALL BE PROVIDED IN STEEPLY SLOPING AREAS AS NOTED BELOW.

AREAS OF STEEP SLOPE 3:1 AND GREATER SHOULD BE GRADED AND IMMEDIATELY PROTECTED WITH SILT FENCE OR COMPOST FILTER SOCK AS NOTED. STABILIZATION THROUGH HYDROSEEDING AND/OR NETTING SHALL BE DONE AS SOON AS FINAL GRADES ARE ESTABLISHED. MULCHING SHALL BE PROVIDED ON TOP OF HYDROSEEDING.

ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING STAGING OF EARTHMOVING ACTIVITIES. PHASES MAY PROCEED SIMULTANEOUSLY OR IN A DIFFERENT ORDER PROVIDED APPROPRIATE E & S CONTROLS ARE INSTALLED AND FUNCTIONING FOR E&S PROTECTION WITHIN THE WORK AREA.

ANY SIGNIFICANT CHANGES TO THE STAGING MUST BE SUBMITTED TO AND APPROVED BY THE COUNTY CONSERVATION DISTRICT.

ALL TREES CLEARED, CHIPPED MATERIAL, AND STUMPS ARE TO BE HAULED OFFSITE OR DEPOSITED IN NON-DEVELOPMENT AREAS. STUMPS ARE TO BE REMOVED IN A MANNER TO MINIMIZE EARTH DISTURBANCE. STUMPS SHOULD NOT BE REMOVED IN A MANNER THAT THEY ARE ROLLED OR PUSHED, RESULTING IN ADDITIONAL EARTH DISTURBANCE.

THE EXISTING GROUND COVER WILL BE REMOVED IN STAGES WITHIN THE PROPOSED CONSTRUCTION AREA, GIVING THE CONTRACTOR ROOM TO WORK, BUT ALSO MAINTAINING A SEDIMENT BARRIER WHEREVER POSSIBLE BETWEEN THE CONSTRUCTION AND NATURAL DRAINAGEWAYS. THE INTENT OF THE EROSION CONTROL PLAN IS TO MINIMIZE THE AMOUNT OF SEDIMENT REACHING THE NATURAL DRAINAGEWAYS BY RESTRICTING THE AMOUNT OF NATURAL COVER DISTURBED AT ANY ONE TIME AND BY STABILIZING THE WORK AREA AS THE CONSTRUCTION PROCEEDS.

UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE OR ANY STAGE OR PHASE OF AN ACTIVITY WHERE A CESSATION OF EARTH DISTURBANCE EXCEEDS 4 DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION PENDING FUTURE EARTH DISTURBANCE ACTIVITIES.

TOPSOIL PILES SHALL BE PROTECTED AS REQUIRED WITH 18" SILT FENCE (OR 12" SILT SOCK) ALONG DOWNSLOPE SIDE OF PILE AND SHALL BE LOCATED WITHIN AREAS OF EXPECTED SITE/LOT DISTURBANCE.

SEED AND MULCH EARTHEN CUT AND FILL SLOPES AS THEY ARE BROUGHT TO GRADE AS WORK PROGRESSES. MULCH IS TO BE PROTECTED WITH JUTE MATTING, OR SIMILAR ANCHORING MATERIAL IN LOCATIONS OF SLOPES GREATER THAN 3:1 OR WHERE WARRANTED BASED ON FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER TO STABILIZE PROBLEM AREAS. ALL MATERIAL SHALL BE PLACED AS RECOMMENDED BY THE MANUFACTURER.

STRAW AND HAY MULCH SHOULD BE ANCHORED OR TACKIFIED IMMEDIATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. THIS MAY BE COMPLETED BY USING A TRACTOR DRAWN IMPLEMENT TO 'CRIMP' THE STRAW OR HAY INTO THE SOIL (3"+/-) AND IS LIMITED TO SLOPES NO STEEPER THAN 3:1. (DO NOT USE TRACK MACHINERY). POLYMERIC AND GUM TACKIFIERS, MIXED AND APPLIED ACCORDING TO MANUFACTURERES RECOMMENDATIONS MAY ALSO BE USED. NETTING SHOULD BE USED ON SLOPES OF 8 % OR STEEPER.

ANY BORROW AREAS REQUIRED FOR CONSTRUCTION OF IMPROVEMENTS WITHIN A PARTICULAR PHASE INCLUDING SEDIMENT TRAP/DETENTION BASIN BERMS SHOULD BE LOCATED WITHIN PROPOSED DISTURBED AREAS. THESE BORROW AREAS MAY BE OUTSIDE OF THE PHASE AREA, PROVIDED ADEQUATE EROSION CONTROL PROTECTION IS PROVIDED FOR THE BORROW AREA AND HAUL ROAD.

WATER PUMPED FROM WORK AREAS SHALL BE TREATED FOR SEDIMENT REMOVAL PRIOR TO DISCHARGING TO A SURFACE WATER.

ADDITIONAL CLAY MATERIAL SHALL BE ADDED AS NECESSARY TO IMPROVE THE STABILITY OF THE NATIVE SOIL FOR BASIN BERMS AND KEY TRENCH.

THE USE OF MASTIC (OR EQUIVALENT) SHOULD BE PROVIDED AT ALL JOINTS IN ALL INLETS WITHIN GRASSED AREAS AND PCSM BMP AREAS TO PREVENT SOLID FROM WASHING INTO THE STORM SEWER OR INFILTRATION AREA THROUGH UNSEALED JOINTS IN THE BOX AND TOP.

ALL MAINTENANCE INSPECTIONS SHOULD BE LOGGED ONTO DEP FORM 3150-FM-BWEW0083, DATED 2/2012 AND KEPT ON-SITE AT ALL TIMES. REFER TO NOTE 16 OF THE STANDARD E & S NOTES.

FINAL UNIT GRADING (SEE GRADING PLANS) SHALL CONFORM TO THE GRADING AND DRAINAGE PATTERNS (SEE DRAINAGE AREA PLANS) SHOWN ON THE PLANS AND SHALL MINIMIZE VEGETATION REMOVAL WHEREVER POSSIBLE. LIMIT OF DISTURBANCE PROVIDED ON THE EROSION CONTROL PLANS SHOULD BE CONSIDERED THE MAXIMUM VEGETATION REMOVAL.

REFER TO THE PCSM SEQUENCE WHEN INSTALLING/CONVERTING THE PCSM BMPs (BASIN, INFILTRATION BERMS, LANDSCAPING CREDITED TO PCSM).

**AS SOON AS SLOPES, CHANNELS, DITCHES AND OTHER DISTURBED AREAS REACH FINAL GRADE, THEY MUST BE STABILIZED. REFER TO DEP E&S POLLUTION CONTROL PROGRAM MANUAL (INCLUDED IN APPENDIX 'A' OF THE EROSION CONTROL NARRATIVE FOR THIS PROJECT.

TYPICAL ROAD CONSTRUCTION SEQUENCE :

1. INITIALLY BOX TO CURB (SEE ROAD CROSS SECTION) AND TO SUBGRADE DURING 'B. EARTHMOVING SEQUENCE'.
2. INSTALL STORM SEWER, WATER AND SANITARY SEWER AND OTHER UTILITIES AS NECESSARY WITHIN ROADBED/DRIVE, INCLUDING SERVICE LATERALS OR CONDUIT FOR OTHER FUTURE UTILITY CONNECTIONS. SERVICE LATERALS SHALL BE STUBBED AT THE RIGHT OF WAY.
3. INSTALL CURB.
4. INSTALL STONE SUBBASE.
5. INSTALL BINDER COURSE.
6. INSTALL REMAINDER OF SERVICE UTILITIES: GAS, ELECTRIC, CABLE, TELEPHONE, ETC. THAT MAY BE LOCATED OUTSIDE OF ROADBED.
7. INSTALL WEARING COURSE.

REFER TO THE PCSM NARRATIVE AND PCSM PLANS BY IRICK, EBERHARDT & MIENTUS, INC. FOR DRAINAGE AREAS, ADDITIONAL SPECIFICATIONS AND OPERATION AND MAINTENANCE OF SITE BMPS.

REFER TO THE PCSM NARRATIVE AND PLANS FOR WATER QUALITY AND ANTI-DEGRADATION ANALYSIS.

REFER TO THE EROSION CONTROL PLANS, BY IRICK, EBERHARDT & MIENTUS, INC. FOR ADDITIONAL SPECIFICATIONS AND OPERATION AND MAINTENANCE OF SITE E&S BMPS.

B. EARTHMOVING SEQUENCE

REVIEW GENERAL NOTES ABOVE

NOTE: SITE CLEARING AND GRUBBING SHOULD BE DONE ONLY IN THOSE AREAS WHERE SUITABLE E&S BMPS HAVE BEEN INSTALLED AND ARE FUNCTIONING. IF NECESSARY, PROGRESSIVE CLEARING AND GRUBBING, BEGINNING IN THE LOCATION OF THE BMPS AND SUPPORT AREAS, MAY BE USED AS LONG AS THE INSTALLATION OF BMPS KEEPS PACE WITH THE CLEARING AND GRUBBING.

1. INSTALL ROCK CONSTRUCTION ENTRANCE AT BUTLER PIKE AND SKIPPACK PIKE AND EROSION CONTROL FENCING (COMPOST FILTER SOCK, SILT FENCE, ETC) AS DELINEATED ON THE EROSION CONTROL PLAN. SKIPPACK PIKE CONSTRUCTION ACCESS SHALL BE SIGNED FOR 'RIGHT TURN IN AND OUT ONLY'.

-INSTALL TREE PROTECTION ALONG THE WOODLAND, PARTICULARLY WHERE SPECIMEN TREES ARE TO BE SAVED.

REMOVE EXISTING IMPROVEMENTS AS NOTED ON EXISTING FEATURES PLAN IN ACCORDANCE WITH STANDARD E&S NOTE 10.

2. PROVIDE STAKEOUT OF LIMIT OF DISTURBANCE FOR THE SITE

-REMOVE BRUSH AND TREES AS NECESSARY WITHIN LIMIT OF DISTURBANCE, STAGING AND LOADING AREA MUST BE LOCATED WITHIN THE LIMIT OF DISTURBANCE IN NON-WOODED AREAS TO AVOID NON-ESSENTIAL TREE REMOVAL. PROTECT STAGING AND LOADING AREAS WITH WOOD CHIP BERMS OR CFS.

INITIAL SEQUENCE (REFER TO INITIAL EROSION CONTROL PLAN)

1. INSTALL CONSTRUCTION ENTRANCE AT BUTLER PIKE AND SKIPPACK PIKE AND COMPOST FILTER SOCK AS NOTED ON 'INITIAL EROSION CONTROL PLAN'.
   -INSTALL ORANGE CONSTRUCTION FENCE AROUND BASIN INFILTRATION AREAS AND TREE PROTECTION FENCE.
2. INSTALL A CONSTRUCTION ENTRANCE AND TEMPORARY STONE PARKING AND STAGING AREA WITHIN THE SITE, WITH ACCESS TO CONSTRUCTION ENTRANCES.
3. LOCATE AND REMOVE ALL TREES (NOTED ON THE EXISTING FEATURES/DEMO PLAN AND LANDSCAPING PLAN) AND BRUSH ON THE SITE TO STUMPS. CHIP TREES ON SITE AND SPREAD 6" OVER ENTIRE OPEN SPACE AREA.

   CRITICAL STAGE OVERSIGHT BY LICENSED PROFESSIONAL REQUIRED FOR CONSTRUCTION OF SEDIMENT TRAPS 'A'-'C' TO VERIFY SUBGRADE ELEV & EXTENT, OUTLET STRUCTURE CONFIGURATION
7. INSTALL AND STABILIZE SED TRAP 'A' & 'B' WITH EMBANKMENT STONE OUTLET. SPILLWAY AND OUTLET PIPES SHALL NOT BE CONSTRUCTED AT THIS TIME.
8. INSTALL AND STABILIZE SED TRAP 'C' WITH STORM SEWER CONNCECTION TO EXISTING STORM IN SKIPPACK PIKE.
9. ROUGH GRADE SITE, INSTALL UTILITIES AND CONNECTIONS TO THE EXISTING WATER AND SEWER LINES IN BUTLER PIKE AND SKIPPACK PIKE.

CRITICAL STAGE OVERSIGHT BY LICENSED PROFESSIONAL REQUIRED FOR CONSTRUCTION OF RAIN GARDEN TO VERIFY FINAL SUBGRADE ELEV & EXTENT, OUTLET STRUCTURE CONFIGURATION AND BEDDING MATERIAL AND ELEVATION.

10. COMPLETE AND STABILIZE BASINS #1, #4 & #5 CONNECTING TO COMPLETED STORM SEWER.

STAGING OF EARTHMOVING SEQUENCE-CONTINUED

C. COMPLETION SEQUENCE

1. BEGIN CONSTRUCTION FOR EACH TOWNHOUSE BUILDING. SEE 'D. BUILDING CONSTRUCTION SEQUENCE' BELOW. NOTE, LOT CONSTRUCTION WITHIN THE SITE MAY BEGIN PROVIDED ROAD ACCESS IS STABILIZED TO STONE SUBBASE TO THE UNIT AND ADEQUATE EROSION CONTROL FACILITIES ARE IN PLACE.

2. AS BUILDINGS AND YARD AREAS ARE COMPLETED, PROVIDE FINAL LANDSCAPING, GRADING AND STABILIZATION ALONG DRIVE AND BUILDING AREA.

-FINAL GRADING SHALL BE IN COMPLIANCE WITH 'TOPSOIL, SEEDING AND STABILIZATION SPECIFICATIONS' HEREIN STRAW AND HAY MULCH SHOULD BE ANCHORED OR TACKIFIED IMMEDITATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. THIS MAY BE COMPLETED BY USING A TRACTOR DRWN IMPLEMENT TO 'CRIMP' THE STRAW OR HAY INTO THE SOIL (3"+/-) AND IS LIMITED TO SLOPES NO STEEPER THAN 3:1. (DO NOT USE TRACK MACHINERY). POLYMERIC AND GUM TACKIFIERS, MIXED AND APPLIED ACCORDING TO MANUFACTURERES RECOMMENDATIONS MAY ALSO BE USED. REFER TO VEGETATIVE STABILIZATION NOTES HEREON.

3. PAVE DRIVES AND PARKING SPACES WITH WEARING COURSE. THIS MAY BE DONE IN SECTIONS AS DELINEATED UNDER THE SEQUENCE.

4. REMOVE OR CONVERT THE APPROPRIATE TEMPORARY EROSION CONTROL FACILITIES WHEN THE CONTRIBUTING DISTURBED AREAS HAVE ACHIEVED FINAL STABILIZATION. FINISH GRADE AND STABILIZE THE AREAS DISTURBED BY E & S FACILITY REMOVAL.

-REFER TO THE 'SEDIMENT BASIN CONVERSION NOTES' FOR ADDITIONAL DETAILS

-THE MONTGOMERY COUNTY CONSERVATION DISTRICT SHALL BE CONTACTED PRIOR TO CONVERSION OR REMOVAL OF PRIMARY E & S BMPS. THE DISTRICT MAY REQUIRE A SITE INSPECTION PRIOR TO THE CONVERSION OR REMOVAL OF SUCH FACILITIES.
-A VEGETATIVE AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OVER THE ENTIRE DISTURBED AREA . ROADWAYS AND PARKING AREAS SHOULD AT LEAST HAVE A CLEAN SUBBASE IN PLACE.

5. WITHIN 30 DAYS AFTER THE COMPLETION OF EARTH DISTURBANCE ACTIVITIES AUTHORIZED BY THE NPDES PERMIT, INCLUDING THE PERMANENT STABILIZATION OF THE SITE AND PROPER INSTALLATION OF PCSM BMPS IN ACCORDANCE WITH THE APPROVED PCSM PLAN, OR UPON SUBMISSION OF THE NOTICE OF TERMINATION (NOT) IF SOONER, THE PERMITTEE SHALL FILE WITH THE DEPARTMENT OR AUTHORIZED CONSERVATION DISTRICT A STATEMENT SIGNED BY A LICENSED PROFESSIONAL AND BY THE PERMITTEE CERTIFYING THAT WORK HAS BEEN PERFORMED IN ACORDANCE WITH THE TERMS AND CONDITIONS OF THIS PERMIT AND THE APPROVED E & S AND PCSM PLANS. COMPLETION CERTIFCATES ARE NEEDED TO ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE PERMIT AND THE APPROVED E & S AND PSCM PLANS.

D. BUILDING CONSTRUCTION SEQUENCE

1. GENERAL

FINAL BUILDING GRADING (SEE GRADING PLANS) SHALL CONFORM TO THE GRADING AND DRAINAGE PATTERNS SHOWN ON THE PLANS. LIMIT OF DISTURBANCE PROVIDED ON THE EROSION CONTROL PLANS SHOULD BE CONSIDERED THE MAXIMUM VEGETATION REMOVAL.

REVIEW STANDARD E & S PLAN NOTES.

REVIEW 'A. GENERAL NOTES' IN THE SEQUENCE. COMPOST FILTER SOCKS SHALL REMAIN IN PLACE UNTIL ALL BUILDING AND ASSOCIATED GRADING IS COMPLETED AND STABILIZED.

ALL DEVICES MUST BE SIZED, DESIGNED, STABILIZED AND INSTALLED IN ACCORDANCE WITH THE DEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL.

2. ON-LOT CONSTRUCTION PROCEDURES:

A. EACH TOWNHOUSE BUILDING SHALL BE PROVIDED WITH A STONED CONSTRUCTION ENTRANCE TO KEEP DIRT FROM BEING TRACKED ONTO THE COMPLETED ROADS.

-ADDTIONAL ON-LOT CONTROLS MAY INCLUDE COMPOST FILTER SOCKS ON THE DOWNSLOPE OF THE LOT AREA DISTURBANCE TO PREVENT SEDIMENT LADEN FLOW FROM ENTERING COMPLETED AND OCCUPIED LOTS. FOLLOW GUIDANCE PROVIDED IN STANDARD DETAILS #10-1, #10-2 OR #10-3 FOR ON-LOT E & S BMPS.

B. COMPLETE UNIT CONSTRUCTION, INCLUDING UTILITY CONNECTIONS FROM INSTALLED UTILITY STUBS.

C. LAWN AREAS SHALL BE SEEDED OR SODDED AS SOON AS PRACTICAL WITH A PERMANENT PERENNIAL GRASS. COMPLETE INSTALLATION AND STABILIZATION OF REQUIRED LANDSCAPING.

-STRAW AND HAY MULCH SHOULD BE ANCHORED OR TACKIFIED IMMEDIATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. THIS MAY BE COMPLETED BY USING A TRACTOR DRWN IMPLEMENT TO 'CRIMP' THE STRAW OR HAY INTO THE SOIL (3"+/-) AND IS LIMITED TO SLOPES NO STEEPER THAN 3:1. (DO NOT USE TRACK MACHINARY). POLYMERIC AND GUM TACKIFIERS, MIXED AND APPLIED ACCORDING TO MANUFACTURERES RECOMMENDATIONS MAY ALSO BE USED. REFER TO VEGETATIVE STABILIZATION NOTES HEREON.

D. LAWNS SHALL BE MAINTAINED ON A REGULAR BASIS AND REPAIRED, RESEEDED AND MULCHED UNTIL STABILIZATION IS ACHIEVED.

E. REMOVE ROCK CONSTRUCTION ENTRANCE AND FINISH PAVE DRIVEWAY, ONCE UNIT IS SUBSTANTIALLY COMPLETE AND LAWN IS STABILIZED. .

F. COMPLETE INSTALLATION OF STREET TREES, OTHER LANDSCAPING AND PEDESTRIAN PATH THROUGHOUT THE DEVELOPMENT AREA.

3. UTILITY LINE TRENCH EXCAVATION

FOR SANITARY, WATER, & OTHER SERVICE MAINS AND LATERALS

A. LIMIT DAILY TRENCH EXCAVATION TO THE LENGTH OF PIPE PLACEMENT, PLUG INSTALLATION AND BACKFILLING THAT CAN BE COMPLETED THE SAME DAY. NO TRENCHES MAY BE LEFT OPEN AT THE END OF THE DAY.

B. TRENCH PLUGS WILL BE PLACED IN ACCORDANCE WITH AND CONSTRUCTED OF MATERIALS SHOWN IN THE DETAIL.

C. WATER WHICH ACCUMULATES IN THE OPEN TRENCH WILL BE COMPLETELY REMOVED BY PUMPING BEFORE PIPE PLACEMENT AND/ OR BACKFILLING BEGINS. SEDIMENT LADEN WATER MUST BE FILTERED THROUGH A DESILTING DEVICE BEFORE BEING RELEASED. (SEE DETAIL SHEET)

D. ON THE DAY FOLLOWING PIPE PLACEMENT AND TRENCH BACKFILLING, THE DISTURBED AREA WILL BE GRADED TO FINAL CONTOURS AND APPROPRIATE TEMPORARY EROSION AND SEDIMENT POLLUTION CONTROL MEASURES/FACILITIES WILL BE INSTALLED. SEEDING AND MULCHING OF ALL DISTURBED AREAS WILL BE DONE AT THE END OF EACH WEEK.

4. SEDIMENT TRAP CONVERSION NOTES

CRITICAL STAGE OVERSIGHT BY LICENSED PROFESSIONAL REQUIRED FOR CONVERSION OF SEDIMENT TRAPS 'A' 'B' & 'C' TO FINAL PERMANENT CONDITION TO VERIFY FINAL SUBGRADE ELEV & EXTENT, OUTLET STRUCTURE CONFIGURATION

A. WHEN THE TRIBUTARY AREA TO THE SEDIMENT TRAP HAS BEEN STABILIZED (< 1.0 ACRES OF TOTAL SITE DISTURBANCE REMAINING), COMPLETE CONVERSION TO PERMANENT BASIN AS SHOWN ON THE PCSM PLAN AND STABILIZE, INCLUDING BUT NOT LIMITED TO:

-CONTACT DESIGNATED LICENSED PROFESSIONAL FOR OVERSIGHT PRIOR TO BEGINNING BASIN CONVERSION TO DETERMINE EXTENT OF GRADING MODIFICATIONS, INCLUDING FOREBAYS, DEPENDENT UPON TYPE AND EXTENT OF EXISTING VEGETATION WITHIN THE BASIN

-REMOVE ACCUMULATED SEDIMENT FROM SEDIMENT TRAPS AND DISPOSE OF ON-SITE.

-BIORETENTION BASINS, GRADE TO FINAL FLOOR ELEVATIONS, INSTALL OUTLET STRUTURE AND PIPES AND FOREBAY CONFIGURATION (IF NECESSARY).

- LANDSCAPE AND BASIN BOTTOM SPEC. IN THE COMPLETED BASINS.

-FINAL GRADING SHALL BE IN COMPLIANCE WITH 'TOPSOIL, SEEDING AND STABILIZATION SPECIFICATIONS' ON SHEET 20 AND/OR BIORETENTION CONSTRUCTION NOTES ON SHEET 25.

5. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENTATION CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE CONTROLS MUST BE STABILIZED IMMEDIATELY. THE DEVELOPMENT SHALL BE CONSIDERED TO BE PERMANENTLY STABILIZED WHEN ALL PERMANENT CONTROL MEASURES/FACILITIES HAVE BEEN COMPLETED AND ARE OPERATIONAL, TEMPORARY CONTROL MEASURES/FACILITIES HAVE BEEN REMOVED AND UNIFORM EROSION RESISTANT PERENNIAL VEGETATION ESTABLISHED TO THE POINT WHERE THE SURFACE SOIL IS CAPABLE OF RESISTING EROSION DURING RUNOFF EVENTS. THE STANDARD FOR THIS VEGETATIVE COVER WILL BE UNIFORM COVERAGE OR DENSITY OF 70 %-ACROSS THE DISTURBED AREA.

-PERMANENTLY STABILIZE ALL AREAS DISTURBED BY THE TEMPORARY CONTROLS REMOVAL PROCESS.

6. ANY OFF SITE AREA USED TO DISPOSE OF SPOIL MATERIAL MUST HAVE AN E&SPC PLAN APPROVED BY THE CONSERVATION DISTRICT.

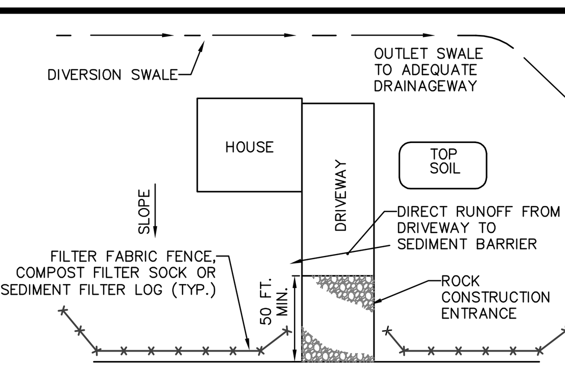
TEMPORARY CONTROL MEASURES

1. SILT FENCE/COMPOST FILTER SOCK BARRIERS SHALL BE PROVIDED TO RETARD RUNOFF AND COLLECT SEDIMENT.
2. TEMPORARY SEEDING OF TOPSOIL STOCKPILE AND BARE EARTH SHALL BE PROVIDED FOR AREAS WHICH WILL REMAIN UNSTABILIZED FOR MORE THAN 96 HOURS.
3. TEMPORARY STONE BALLAST TIRE CLEANERS SHALL BE PROVIDED AT CONSTRUCTION ENTRANCES FOR EACH LOT.
4. SHOULD WORK BE EXTENDED INTO WINTER MONTHS, AND IF TEMPORARY SEEDING IS NOT FEASIBLE, EROSION MAY BE CONTROLLED BY PLACING STRAW MULCH OVER DISTURBED AREAS. THIS MULCH WILL BE MAINTAINED UNTIL WEATHER CONDITIONS PERMIT SEEDING.
5. SEDIMENT BASIN TO SETTLE THE SEDIMENT OUT OF STORMWATER RUNOFF.

PERMANENT CONTROL MEASURES

PERMANENT CONTROL MEASURES WHICH ARE DESIGNED TO CONTROL SEDIMENT AND EROSION AND RUNOFF FROM THE SITE ARE AS FOLLOWS:

1. PAVED STREETS, DRIVEWAYS, INLETS AND STORM SEWER PIPES.
2. ALL LAWN AREAS SHALL BE ADEQUATELY SEEDED AND STABILIZED TO PROVIDE PERMANENT CONTROL OF EROSION AFTER COMPLETION OF CONSTRUCTION. STABILIZATION MEANS 70 % OF A SQUARE FOOT IS COVERED WITH GRASS.
3. PERMANENT STORMWATER BIORETENTION BASIN, INFILTRATION BERM & RAIN GARDEN SHALL CONTROL THE RATE OF DISCHARGE FROM THE SITE AT BETTER THAN PRE-DEVELOPED CONDITIONS.

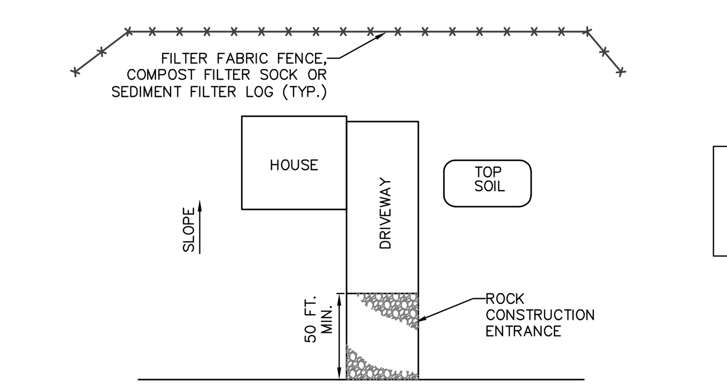


PLAN VIEW

NOTES:

THE UPSLOPE DIVERSION CHANNEL SHOULD BE INSTALLED WHEREVER THE LOT EXTENDS MORE THAN 150 FEET ABOVE THE ROADWAY OR WHERE RUNOFF FORM AREAS ABOVE THE LOT IS NOT OTHERWISE DIVERTED AWAY FROM THE LOT. THE CHANNEL SHOULD BE PROPERLY SIZED AND PROVIDED WITH A SUITABLE PROTECTIVE LINING. THE DESIGNER AND/OR CONTRACTOR MUST EXERCISE CAUTION TO PROTECT ALL DOWNSTREAM PROPERTY OWNERS WHEN SELECTING A DISCHARGE POINT FOR THIS CHANNEL.

STANDARD CONSTRUCTION DETAIL #10-1
TYPICAL ON-LOT BMPs FOR LOT ABOVE ROADWAY
NOT TO SCALE



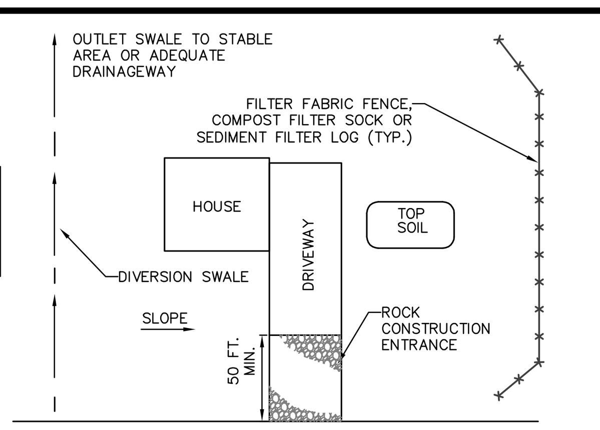
PLAN VIEW

NOTES:

THE AREA DOWNSLOPE OF THE FILTER FENCE/COMPOST SOCK BARRIER/SEDIMENT FILTER LOG MAY NOT BE UNDER DEVELOPMENT OR OTHERWISE DISTURBED.

STANDARD CONSTRUCTION DETAIL #10-2
TYPICAL ON-LOT BMPs FOR LOT BELOW ROADWAY
NOT TO SCALE

REFER TO CONCRETE WASHOUT FACILITY DETAIL AND SPECIFICATIONS FOR ANY WASHOUT FACILITIES TO BE USED IN BUILDING CONSTRUCTION.



PLAN VIEW

NOTES:

THE AREA DOWNSLOPE OF THE FILTER FENCE/COMPOST SOCK BARRIER/SEDIMENT FILTER LOG MAY NOT BE UNDER DEVELOPMENT OR OTHERWISE DISTURBED.

THE UPSLOPE DIVERSION CHANNEL SHOULD BE INSTALLED WHEREVER RUNOFF FROM AREAS ABOVE THE LOT ARE NOT OTHERWISE DIVERTED AWAY FROM THE LOT. THE CHANNEL SHOULD BE PROPERLY SIZED AND PROVIDED WITH A SUITABLE PROTECTIVE LINING. THE DESIGNER AND/OR CONTRACTOR MUST EXERCISE CAUTION TO PROTECT ALL DOWNSTREAM PROPERTY OWNERS WHEN SELECTING A DISCHARGE POINT FOR THIS CHANNEL.

IN AREAS WHERE SLOPE IS AT AN OBLIQUE ANGLE TO THE ROADWAY, BMPS SHALL BE ADJUSTED ACCORDINGLY.

DIVERSION CHANNEL MAY OUTLET TO ROADSIDE DITCH OR STORM SEWER SYSTEM, BUT NOT ONTO STREET OR ROADWAY.

STANDARD CONSTRUCTION DETAIL #10-3
TYPICAL ON-LOT BMPs FOR LOT
ALONG ASCENDING OR DESCENDING ROADWAY
NOT TO SCALE

Dust Control Standards

1. No person shall engage in any cutting, sawing, grinding, wrecking, smashing, or mechanically breaking of construction materials -without the use of at least one of the following:

   a. Grinders, saws, or other power tools equipped with Dust Collection/ Extraction Systems, in accordance with manufacturer recommendations, or

   b. Adequately wetted construction materials or structure surfaces, weather permitting (e.g. > 32 Degrees Fahrenheit at source of dust emission).

2. Debris generated from construction and demolition must be adequately wetted and covered before being transported from the site.

3. Construction materials that are stored on site must be adequately wetted and covered when possible to prevent dust emissions.

4. Roadways on the site, and all vehicle access points to the site, must be adequately wetted and swept of materials that will give rise to dust emissions.

5. Sufficient drainage must be provided to prevent the uncontrolled discharge of water or other liquid applied to the site for dust control.

STANDARD E&S PLAN NOTES

1. ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.

2. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCTION MEETING.

3. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.

4. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.

5. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.

6. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.

7. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.

8. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAPS(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER.

9. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT.

10. 102.4(b)(5)(xi): 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.

-SILT FENCE AND OTHER NON-ORGANIC E&S DEVICES/MATERIALS SHOULD BE REMOVED TO APPROPRIATE LANDFILL OR RECYCLED.
-ORGANIC MATERIAL SUCH AS SEDIMENT, TOPSOIL, CHIPPED MATERIAL MAY BE LOST ON SITE, GRADED AND STABILIZED, BUT SHOULD NOT BE USED AS FILL MATERIAL.
-ROCK AND OTHER MATERIAL FROM CONSTRUCTION ENTRANCES MAY BE USED ON-SITE AS FILL MATERIAL WHERE APPROPRIATE
-COMPOST FILTER SOCKS MAY BE OPENED AND DISPERSED ON-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. VEHICLES AND EQUIPMENT MAY NEITHER ENTER DIRECTLY NOR EXIT DIRECTLY FROM THE SITE EXCEPT AT THE ROCK CONSTRUCTION ENTRANCE AT DEKALB PIKE

15. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED. INSPECTION REPORT DOCUMENT CAN BE FOUND AT http://www.elibrary.dep.state.pa.us/dsweb/View/Collection-10694 OR APPENDIX A OF THE E&S NARRATIVE.

16. 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.

17. SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEPT INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.

18. ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS.

19. 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.

20. 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.

21. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.

22. 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.

23. FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.

24. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.

25. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.

26. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.

27. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN 1 YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.

28. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70 % VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS.

29. E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT.

30. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPS.

31. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPS MUST BE REMOVED OR CONVERTED TO PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE BMPS SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON.

32. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT TO SCHEDULE A FINAL INSPECTION.

33. THE NPDES BOUNDARY IS EQUAL TO THE LIMITS OF DISTURBANCE FOR THE SITE, AND ANY OFF-SITE AREAS WITHIN THE LIMITS OF DISTURBANCE THAT ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL. OFF-SITE FACILITIES SUCH AS: UTILITIES AND ROADWAY IMPROVEMENTS.

34. IF THE SITE WILL NEED TO HAVE FILL IMPORTED FROM AN OFF SITE LOCATION, THE RESPONSIBILITY FOR PERFORMING ENVIRONMENTAL DUE DILIGENCE AND THE DETERMINATION OF CLEAN FILL WILL IN MOST CASES RESIDE WITH THE OPERATOR. IF THE SITE WILL HAVE EXCESS FILL THAT WILL NEED TO BE EXPORTED TO AN OFF SITE LOCATION, THE RESPONSIBILITY OF CLEAN FILL DETERMINATION AND ENVIRONMENTAL DUE DILIGENCE RESTS IN THE APPLICANT. THIS INFORMATION SHOULD BE COMPLETED PRIOR TO SUBMITTING A PERMIT APPLICATION. IF ALL CUT AND FILL MATERIALS WILL BE USED ON THE SITE, A CLEAN FILL DETERMINATION IS NOT REQUIRED BY THE OPERATOR UNLESS THERE IS A BELIEF THAT A SPILL OR RELEASE OF A REGULATED SUBSTANCE OCCURRED ON SITE. CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE.) ENVIRONMENTAL DUE DILIGENCE IS DEFINED AS: INVESTIGATIVE TECHNIQUES, INCLUDING BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ALL FILL MATERIAL MUST BE USED IN ACCORDANCE WITH THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL", DOCUMENT NUMBER 258-2182-773. A COPY OF THIS POLICY IS AVAILABLE ONLINE AT WWW.DEPWEB.STATE.PA.US. REFER TO "TECHNICAL GUIDANCE DOCUMENT" #258-2182-773.

35. 102.4(b)(5)(v):THE PROJECT'S RECEIVING WATERCOURSE IS THE PROPHECY CREEK & WISSAHICKON CREEK , AND THE CHAPTER 93 CLASSIFICATION DESIGNATED USE IS TSF, MF; EXISTING USE: TSF, MF.

36. FAILURE TO CORRECTLY INSTALL E&S BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE, OR FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S BMPS MAY RESULT IN ADMINISTRATIVE, CIVIL, AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE PENNSYLVANIA CLEAN STREAMS LAW. THE CLEAN STREAMS LAW PROVIDES FOR UP TO $10,000 PER DAY IN CIVIL PENALTIES, UP TO $10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO $25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION.

ADDITIONAL NOTES

1. CONCRETE WASH WATER SHALL BE HANDLED IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS. IN NO CASE SHALL IT BE ALLOWED TO ENTER ANY SURFACE WATERS OR GROUNDWATER SYSTEMS.

2. ALL CHANNELS SHALL BE KEPT FREE OF OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO FILL, ROCKS, LEAVES, WOODY DEBRIS, ACCUMULATED SEDIMENT, EXCESS VEGETATION, AND CONSTRUCTION MATERIAL/WASTES.

3. CHANNELS HAVING RIPRAP, RENO MATTRESS, OR GABION LININGS MUST BE SUFFICIENTLY OVER-EXCAVATED SO THAT THE DESIGN DIMENSIONS WILL BE PROVIDED AFTER PLACEMENT OF THE PROTECTIVE LINING.

4. SEDIMENT BASINS AND/OR TRAPS SHALL BE KEPT FREE OF ALL CONSTRUCTION WASTE, WASH WATER, AND OTHER DEBRIS HAVING POTENTIAL TO CLOG THE BASIN/TRAP OUTLET STRUCTURES AND/OR POLLUTE THE SURFACE WATERS.

5. ANY DAMAGE THAT OCCURS IN WHOLE OR IN PART AS A RESULT OF BASIN OR TRAP DISCHARGE SHALL BE IMMEDIATELY REPAIRED BY THE PERMITTEE IN A PERMANENT MANNER SATISFACTORY TO THE MUNICIPALITY, LOCAL CONSERVATION DISTRICT, AND THE OWNER OF THE DAMAGED PROPERTY.

6. UPON REQUEST, THE APPLICANT OR HIS CONTRACTOR SHALL PROVIDE AN AS-BUILT (RECORD DRAWING) FOR ANY SEDIMENT BASIN OR TRAP TO THE MUNICIPAL INSPECTOR, LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT.

7. EROSION CONTROL BLANKETING SHALL BE INSTALLED ON ALL SLOPES 3H:1V OR STEEPER WITHIN 50 FEET OF A SURFACE WATER AND ON ALL OTHER DISTURBED AREAS SPECIFIED ON THE PLAN MAPS AND/OR DETAIL SHEETS.

8. FILL MATERIAL FOR EMBANKMENTS SHALL BE FREE OF ROOTS, OR OTHER WOODY VEGETATION, ORGANIC MATERIAL, LARGE STONES, AND OTHER OBJECTIONABLE MATERIALS. THE EMBANKMENT SHALL BE COMPACTED IN MAXIMUM 8" LAYERED LIFTS AT 95 % DENSITY.

9. 102.4(b)(5)(xv) THERE ARE NO EXISTING/PROPOSED RIPARIAN FOREST BUFFERS OR WETLANDS THAT ARE IMPACTED BY THIS DEVELOPMENT, EITHER WITHIN OR OUTSIDE THE LIMIT OF DISTURBANCE FOR THE PROJECT.

10. AN ANTI-DEGRADATION ANALYSIS IS NOT REQUIRED FOR THIS DEVELOPMENT AS THE SITE DOES NOT DRAIN INTO A SPECIAL PROTECTION WATERSHED (HQ OR EV).

11. 102.4(b)(5)(xii) THERE ARE NO NATURALLY OCCURRING GEOLOGIC FORMATIONS OR SOIL CONDITIONS THAT HAVE POTENTIAL TO CAUSE POLLUTION DURING EARTHMOVING ACTIVITIES BEYOND THE 'NORMAL' SCOPE OF POTENTIAL SEDIMENT POLLUTANTS CAUSED BY DISTURBANCE OF INTACT SOILS. STANDARD EROSION CONTROL FACILITIES AND MATERIALS WILL BE ADEQUATE TO PROVIDE THE NECESSARY CONTROLS TO MINIMIZE EROSION.

"LONGFIELD FARM"

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

EROSION CONTROL DETAILS
PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17-02
DRAWN BY: 32	FILE NAME: 17-02BASE
SCALE: 1" = 50'	SHEET: 23 OF 30

Irick Eberhardt & Mientus
INCORPORATED
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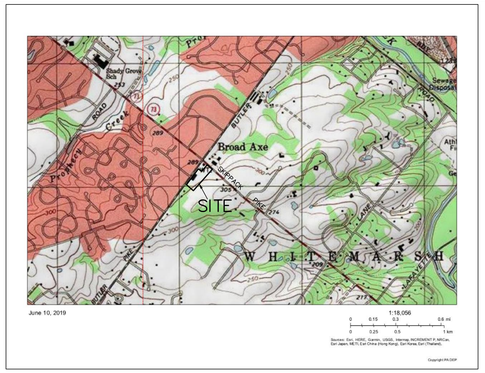
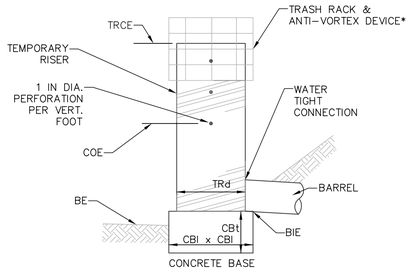


USGS LOCATION MAP (AMBLER QUAD)



* SEE STANDARD CONSTRUCTION DETAIL #7-5, TRASH RACK AND ANTI-VORTEX DEVICE
** LOWEST HOLE AT SEDIMENT CLEAN-OUT ELEVATION

TRAP NO.	TEMPORARY RISER				CONCRETE BASE			BARREL
	DIA TRd (IN)	CREST ELEV TRCE (FT)	MAT'L	CLEAN OUT ELEV. COE (FT)	LENGTH CBl (IN)	WIDTH CBw (IN)	THICK. CBt (IN)	INLET ELEV BIE (FT)
C	24	290.0	CMP	289.0	36	36	6	286.0

NOTES:

A MINIMUM OF 2-#8 REBAR SHALL BE PLACED AT RIGHT ANGLES AND PROJECTING THROUGH SIDES OF RISER TO ANCHOR IT TO CONCRETE BASE. REBAR SHALL PROJECT A MINIMUM OF 1/4 RISER DIAMETER BEYOND OUTSIDE OF RISER.

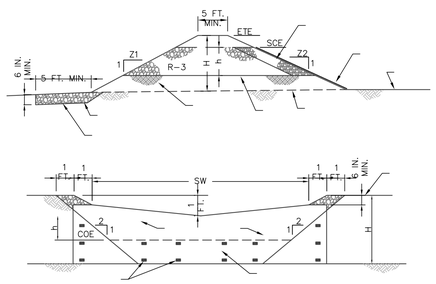
CONCRETE BASE SHALL BE POURED IN SUCH A MANNER SO AS TO INSURE THAT CONCRETE FILLS BOTTOM OF RISER TO INVERT OF THE OUTLET PIPE TO PREVENT RISER FROM BREAKING AWAY FROM THE BASE. MINIMUM BASE WIDTH EQUALS 2 TIMES RISER DIAMETER.

EMBEDDED SECTION OF ALUMINUM OR ALUMINIZED PIPE SHALL BE PAINTED WITH ZINC CHROMATE OR EQUIVALENT.

CLOGGED OR DAMAGED SPILLWAYS SHALL BE REPAIRED IMMEDIATELY. TRASH AND OTHER DEBRIS SHALL BE REMOVED FROM THE BASIN AND RISER.

STANDARD CONSTRUCTION DETAIL #8-3
SEDIMENT TRAP TEMPORARY RISER

NOT TO SCALE



TRAP NO.	Z1 (FT)	Z2 (FT)	H (FT)	h (FT)	EMBANK. TOP ELEV. ETE (FT)	SPILLWAY CREST ELEV. SCE (FT)	CLEAN OUT ELEV. COE (FT)	BOTTOM ELEV. BE (FT)	SPILLWAY WIDTH SW (FT)
A	3	3	3.0	1.0	300.0	299.0	298.0	297.0	10.0
B	3	3	3.0	1.0	298.0	297.0	296.0	295.0	8.0

NOTES

EMBANKMENT OUTLET SHALL BE COMPOSED ENTIRELY OF ROCK ABOVE CLEAN OUT ELEVATION (COE); MAIN BODY R-3 OR LARGER – R-4 TO BE USED FOR DRAINAGE AREAS GREATER THAN 3.0 ACRES. INSIDE FACE AASHTO # 57 STONE OR SMALLER. A 6 IN. THICK LAYER OF COMPOST, COMPOST SOCK, OR CLEAN SAND SHALL BE INSTALLED ON TOP OF THE AASHTO #57 STONE AND SECURELY ANCHORED IN HQ WATERSHEDS. 24 IN. DIAMETER COMPOST SOCK(S) SHALL BE USED IN PLACE OF FILTER FABRIC AND AASHTO #57 STONE IN EV WATERSHEDS.

FILL MATERIAL FOR THE EMBANKMENTS SHALL BE FREE OF ROOTS, OR OTHER WOODY VEGETATION, ORGANIC MATERIAL, LARGE STONES, AND OTHER OBJECTIONABLE MATERIALS. THE EMBANKMENT SHALL BE COMPACTED IN LAYERED LIFTS OF NOT MORE THAN 9 IN., THE MAXIMUM ROCK SIZE SHALL BE NO GREATER THAN 6 IN. UPON COMPLETION, THE EMBANKMENT SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED ACCORDING TO THE SPECIFICATIONS OF THE E&S PLAN DRAWINGS.

ALL SEDIMENT TRAPS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT.

ACCESS FOR SEDIMENT REMOVAL AND OTHER REQUIRED MAINTENANCE ACTIVITIES SHALL BE PROVIDED.

A CLEAN OUT STAKE SHALL BE PLACED NEAR THE CENTER OF EACH TRAP. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED THE CLEAN OUT ELEVATION ON THE STAKE AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS. DISPOSE OF MATERIALS REMOVED FROM THE TRAP IN THE MANNER DESCRIBED IN THE E&S PLAN.

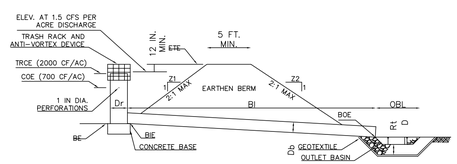
CHECK EMBANKMENTS, SPILLWAYS, AND OUTLETS FOR EROSION, PIPING AND SETTLEMENT. CLOGGED OR DAMAGED SPILLWAYS AND/OR EMBANKMENTS SHALL BE IMMEDIATELY RESTORED TO THE DESIGN SPECIFICATIONS.

DISPLACED RIPRAP WITHIN THE SPILLWAY OR OUTLET PROTECTION SHALL BE REPLACED IMMEDIATELY.

ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISTURBED AREAS INSIDE THE TRAP SHALL BE STABILIZED BEFORE CONVERSION TO A STORMWATER MANAGEMENT FACILITY. TO ASSIST IN REMOVING SEDIMENT, WHICH MAY BE SATURATED, A DEVICE SUCH AS IS SHOWN IN STANDARD CONSTRUCTION DETAIL #7-18 MAY BE USED TO DEWATER THE SEDIMENT PRIOR TO ITS REMOVAL.

STANDARD CONSTRUCTION DETAIL #8-1
EMBANKMENT SEDIMENT TRAP

NOT TO SCALE



TRAP NO.	Z1 (FT)	Z2 (FT)	RISER				BARREL					EMBANKMENT		CLEAN OUT ELEV COE (FT)	BOTTOM ELEV BE (FT)
			MAT'L	DIA Dr (IN)	CREST ELEV RCE (FT)	BOT PERF ELEV (FT)	MAT'L	DIA Bd (IN)	INLET ELEV BIE (FT)	LENGTH Bl (FT)	OUTLET ELEV BOE (FT)	TOP ELEV ETE (FT)	TOP WIDTH Etw (FT)		
C	3	3	CMP	24	290.0	289.0	RCP	15	286.0	25	285.87	291.5	10.0	289.0	288.0

TRAP NO.	CONCRETE BASE			OUTLET BASIN				
	LENGTH CBl (IN)	WIDTH CBw (IN)	THICK. CBt (IN)	RIPRAP SIZE (R-__)	ROCK THICK R1 (IN)	DEPTH D (IN)	WIDTH OBW (FT)	LENGTH OBL (FT)
C	36	36	6	NA	RELEASES TO INLET			

NOTES:

SEE DETAIL #8-3 TEMPORARY RISER FOR DETAILS OF THE TEMPORARY RISER CONSTRUCTION.

FILL MATERIAL FOR THE EMBANKMENTS SHALL BE FREE OF ROOTS, OR OTHER WOODY VEGETATION, ORGANIC MATERIAL, LARGE STONES, AND OTHER OBJECTIONABLE MATERIALS. THE EMBANKMENT SHALL BE COMPACTED IN LAYERED LIFTS OF NOT MORE THAN 6 TO 9 IN. THE MAXIMUM ROCK SIZE SHALL BE NO GREATER THAN 2/3 THE LIFT THICKNESS.

UPON COMPLETION, THE EMBANKMENT SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED ACCORDING TO THE SPECIFICATIONS OF THE E&S PLAN DRAWINGS.

ALL SEDIMENT TRAPS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT.

ACCESS FOR SEDIMENT REMOVAL AND OTHER REQUIRED MAINTENANCE ACTIVITIES SHALL BE PROVIDED.

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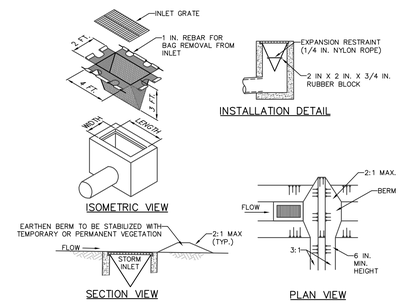
CHECK EMBANKMENTS, SPILLWAYS, AND OUTLETS FOR EROSION, PIPING AND SETTLEMENT. CLOGGED OR DAMAGED SPILLWAYS AND/OR EMBANKMENTS SHALL BE IMMEDIATELY RESTORED TO THE DESIGN SPECIFICATIONS.
DISPLACED RIPRAP WITHIN THE OUTLET PROTECTION SHALL BE REPLACED IMMEDIATELY.

ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISTURBED AREAS INSIDE THE TRAP SHALL BE STABILIZED BEFORE CONVERSION TO A STORMWATER MANAGEMENT FACILITY. TO ASSIST IN REMOVING SEDIMENT, WHICH MAY BE SATURATED, A DEVICE SUCH AS IS SHOWN IN STANDARD CONSTRUCTION DETAIL #7-18 MAY BE USED TO DEWATER THE SEDIMENT PRIOR TO ITS REMOVAL.

STANDARD CONSTRUCTION DETAIL #8-2
BARREL/RISER SEDIMENT TRAP

NOT TO SCALE



NOTES:

MAXIMUM DRAINAGE AREA = 1/2 ACRE.

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

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

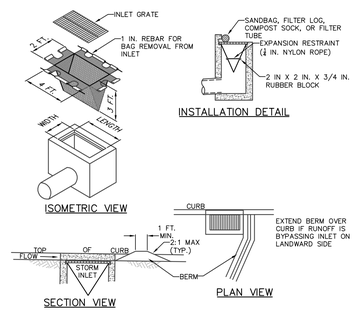
AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS., A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES NOT PASSING A NO. 40 SIEVE.

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

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

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

NOT TO SCALE



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

"LONGFIELD FARM"

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

EROSION CONTROL DETAILS
PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17-02
DRAWN BY: RFI	FILE NAME: 17-02BASE
SCALE: 1" = 50'	SHEET: 24 OF 30

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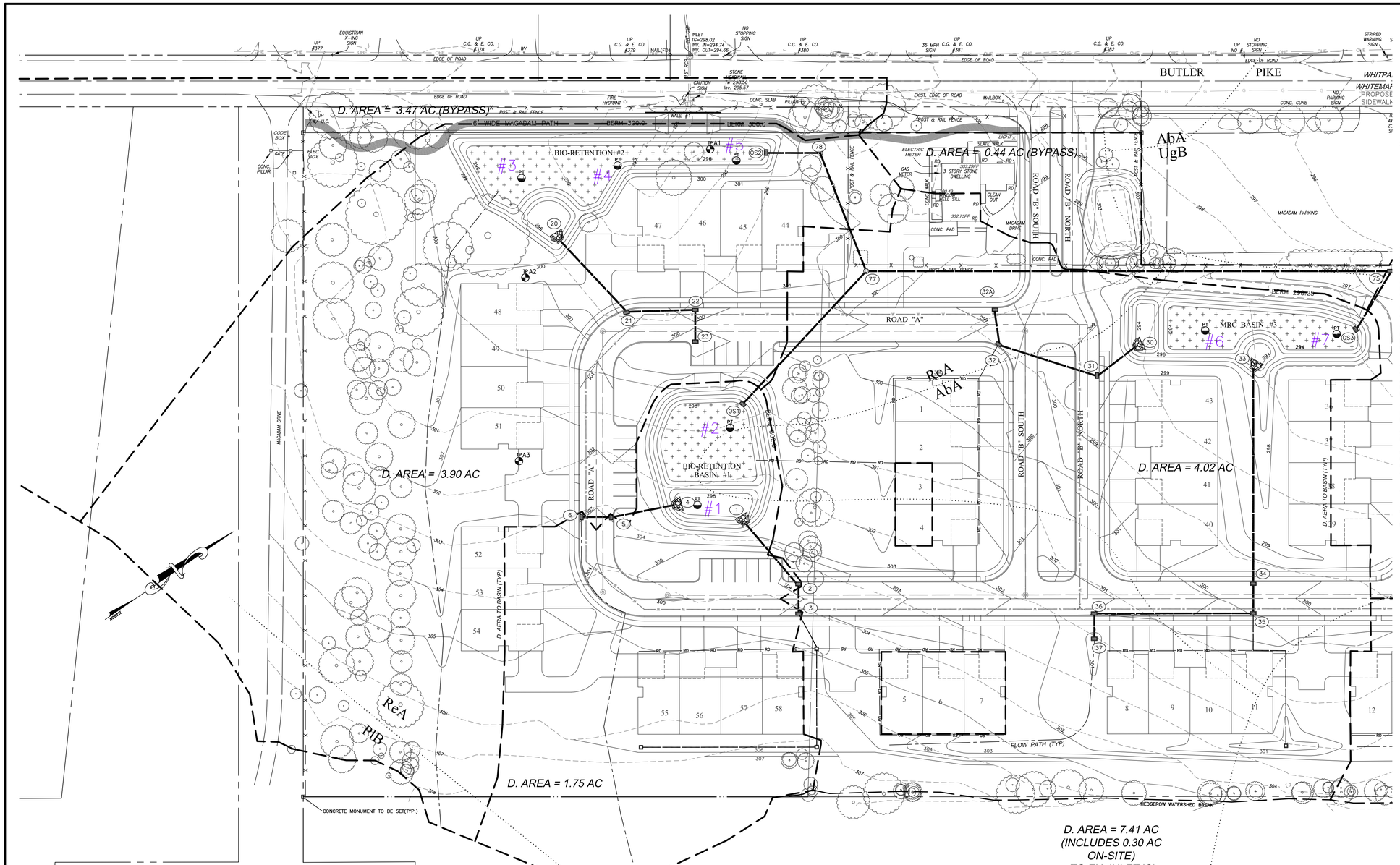

IF THE OPERATOR WILL BE STORING, USING OR TRANSPORTING HAZARDOUS WASTES AND MATERIALS, FUELS, CHEMICALS, OR SOLVENTS ONTO, ON, OR FROM THE PROJECT SITE DURING CONSTRUCTION, A PREPAREDNESS, PREVENTATION AND CONTINGENCY (PPC) PLAN MUST BE PREPARED BY THE OPERATOR AND AVAILABLE AT THE SITE AT ALL TIMES. "GUIDELINES FOR THE DEVELOPMENT AND IMPLEMENTATION OF ENVIRONMENTAL EMERGENCY RESPONSE PLANS" (DOCUMENT #400-2200-001) CAN BE FOUND AT WWW.DEPWEB.STATE.PA.US <HTTP://WWW.DEPWEB.STATE.PA.US>.

GENERAL PCSM NOTES

1. STREET TREES SHALL BE OF THE SPECIES AS NOTED ON THE PCSM PLANS AND ARE CONSIDERED PART OF THE PCSM (POST CONSTRUCTION STORMWATER MANAGEMENT) FOR THIS SITE.

2. AN OWNERS ASSOCIATION WILL OWN AND MAINTAIN THE FOLLOWING:

A. THE COMMON AREA
B. THE BASINS WITHIN THE COMMON AREA
C. INDIVIDUAL STORM PIPES AND INLETS WITHIN THE DEVELOPMENT
D. SWALES AND WATER QUALITY AREAS
E. LANDSCAPING IS CONSIDERED TO BE A PERMANENT BMP (SEE PCSM PLAN AND DETAIL SHEETS, LANDSCAPING PLANS)

HOMEOWNERS ASSOCIATION DOCUMENTATION SHALL INCLUDE A LAND PRESERVATION/PROTECTION AGREEMENT, DEED RESTRICTION OR OTHER ENFORCEABLE INSTRUMENT THAT ENSURES AND DEFINES MAINTENANCE OF THE SWALES, BASINS AND OTHER PERMANENT BMPS AS NOTED ON THE PCSM PLANS AND PERPETUAL PROTECTION AND MAINTENANCE (INCLUDING THE BIORETENTION BASINS AND BASINS) OF THE OPEN SPACE AND SHALL BE RECORDED IN CONFORMANCE WITH NDPES PERMIT APPROVAL REQUIREMENTS.

3. IT SHALL BE UNLAWFUL TO ALTER OR REMOVE ANY PERMANENT STORMWATER BMP REQUIRED BY AN APPROVED BMP OPERATIONS AND MAINTENANCE PLAN (a.k.a. PCSM PLANS), OR ALLOW THE PROPERTY TO REMAIN IN A CONDITION WHICH DOES NOT CONFORM TO AN APPROVED BMP OPERATIONS AND MAINTENANCE PLAN, UNLESS AND EXCEPTION IS GRANTED IN WRITING BY THE TOWNSHIP.

4. A PRIVATE OWNERS ASSOCIATION SHALL HAVE OWNERSHIP AND THE RESPONSIBILITY FOR THE PERPETUAL MAINTENANCE OF THE BIORETENTION BASINS INCLUDING OUTLET STRUCTURE AND PIPES WHICH ARE LOCATED WITHIN THE DEVELOPMENT AND OUTSIDE OF THE PUBLIC ROAD RIGHT OF WAYS.

NO CHANGES SHALL BE MADE TO THE STRUCTURES, PIPES OR FINISH GRADING WITHOUT PRIOR WRITTEN APPROVAL FROM THE TOWNSHIP.

THE PROPERTY OWNER SHALL PROVIDE A BLANKET STORMWATER ACCESS EASEMENT TO THE TOWNSHIP FOR THE PURPOSE OF ACCESS TO THE DETENTION BASIN FACILITIES ON AN ANNUAL BASIS. ALL COSTS AND EXPENSES ASSOCIATED WITH SAID INSPECTION SHALL BE PAID TO THE TOWNSHIP BY THE OWNER IN PERPETUITY. IF, IN THE JUDGMENT OF THE TOWNSHIP ENGINEER, THE OWNER HAS FAILED TO MAINTAIN THE DETENTION FACILITIES IN SUCH A MANNER AS TO ENSURE THEIR PROPER FUNCTIONING, THE TOWNSHIP, AFTER PROVIDING A WRITTEN NOTICE, SHALL HAVE THE RIGHT O ENTER UPON THE LANDS OF THE OWNER AND TO MAKE ANY REPAIRS AN MAY BE NECESSARY TO THE BASIN 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 PLACES AGAINST THE PROPERTY IF THE OWNER FAILS TO REMIT PAYMENT WITHIN SIXTY (60) DAYS.

THE TOWNSHIP HAS THE RIGHT TO ENTER THE LOT TO PERFORM ANDY REQUIRED MAINTENANCE WHICH HAS NOT BEEN PROPERLY PERFORMED OR CARRIED OUT IN A TIMELY MANNER. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE COST OF ANY MAINTENANCE WHICH IS PERFORMED BY THE TOWNSHIP.

5. THIS PLAN TO BE USED IN CONJUNCTION WITH THE PCSM DETAIL PLANS AND THE PCSM NARRATIVE PREPARED FOR THIS SITE BY THIS OFFICE.

6. NPDES 'MANAGED AREA' FOR THIS DEVELOPMENT IS NET TRACT BOUNDARY. PRELIMINARY VOLUME CONTROL REQUIREMENTS ARE MET WITH THE PERMANENT BMPS: BIORETENTION BASINS AND MRC BASINS PROVIDED ON SITE. DETENTION AND RATE CONTROL FOR STORMS ABOVE THE 2-YEAR EVENT (10,50 & 100) ARE PROVIDED WITHIN THE BASINS PER TOWNSHIP STORMWATER REGULATIONS.

-ROOF DRAIN LEADERS SYSTEMS MUST BE PROVIDED AS SHOWN TO DIRECT ROOF AREAS TO SPECIFIC INLETS AND BASINS AS NOTED HEREON.

7. STORMWATER DETENTION/RETENTION FACILITIES SHALL BE IN PLACE AND FUNCTIONING PRIOR TO THE CREATION OF ANY IMPERVIOUS AREA.

8. 90% OF THE DISTURBED AREA FOR THE DEVELOPMENT SHALL BE CONTROLLED BY A PCSM BMP.

STORMWATER BMP ACKNOWLEDGEMENT

I, _____, AS LANDOWNER, DO HEREBY ACKNOWLEDGE THAT THE STORMWATER BMP'S (BASIN, SWALES, STORM SEWER, RIP-RAP, ETC.) ARE PERMANENT FIXTURES AND CANNOT BE ALTERED OR REMOVED WITHOUT THE APPROVAL OF THE TOWNSHIP.

NRCS-USDA SOIL SURVEY SOURCE:
websoilsurvey.nrcs.usda.gov., accessed 6-4-19

SOIL LEGEND

AbA ABBOTTSTOWN SILT LOAM, 0-3% SLOPES;
LeA LAWRENCEVILLE SILT LOAM 0-3% SLOPES; MODERATELY ERODED
PlB PENN LANSDALE COMPLEX 3-8% SLOPES, MODERATELY ERODED
ReA READINGTON SILT LOAM 0-3% SLOPES; MODERATELY ERODED
UgB URBAN LAND, 0-8% SLOPES; MODERATELY ERODED
UroB URBAN LAND-LAWRENCEVILLE COMPLEX; 0-8% SLOPES; MODERATELY ERODED

GEOLOGIST CERTIFICATION

I CERTIFY THAT THE PROPOSED FACILITY IS NOT UNDERLAIN BY LIMESTONE

_____ 20__ _____
PROFESSIONAL GEOLOGIST

LEGEND

EXISTING STORM SEWER
PROPOSED STORM SEWER
EXISTING SANITARY SEWER
PROPOSED SANITARY SEWER
PROPOSED SANITARY SEWER FORCE MAIN — FM
EXISTING WATER LINE — W
PROPOSED WATER LINE — W
EXISTING CONTOUR — 844
PROPOSED CONTOUR — 850
EXISTING CURB LINE
PROPOSED CURB LINE
POSITIVE DRAINAGE INDICATOR
EXISTING ELEV (333.68) OR 333.68
PROPOSED ELEV. 334.50
EXISTING TREE LINE
PROPOSED TREE LINE
EXISTING GAS LINE — G
PROP. GAS LINE — G
EXISTING OVERHEAD ELEC. — OE
EXISTING UNDERGROUND ELEC.
PROP. ELECTRIC — E
PROP. ROOF DRAIN — RD
PROP. WATER LATERAL — wL
PROP. SEWER LATERAL — SL
SOIL LINE — AbB DoB
LIMIT OF DISTURBANCE
NPDES BOUNDARY
INFILTRATION TEST LOCATION — TP
BASIN TREE
BASIN SHRUB
ORNAMENTAL GRASS
STREET SHADE TREE

The following table summarizes these results:

Test Pit #	Pit Depth (in)	Depth to Redoximorphic Features/ Mottling (in)	Depth to Fill Material (in)	Depth to Water (in)	Depth to Rock (in)	Test Depth (in)	Average Infiltration Results (in/hr)
A1	108	36+	0-21	105*, Seeps 84+	NE	24	0.25
						72	1.50
A2	90	12+	0-26	90*, Seeps 84	NE	28	2.00
						60	0.00
A3	98	18+	NE	93*	NE	66	1.00
B1	86	27-36	NE	NE	NE	60	2.38
B2	84	32-44	NE	NE	NE	60	10.00
C1	90	12+	NE	75*	NE	12	0.00
						24	0.00
C2	90	8+	NE	71*, Seeps 74+	NE	13	0.00
						48	0.00

NE - Not Encountered
+ Redox features extend to soil lacking sufficient fines, rock, or the bottom of test pit
* Depth of water at the end of the permeability testing
* The infiltration test results do not include any design safety factor

40 20 0 40 80
SCALE: 1" = 40'

STOP-CALL BEFORE YOU DIG!
LOCATION OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA. ONE CALL SYSTEM THREE BUSINESS DAYS IN ADVANCE. REFERENCE PENNSYLVANIA ACT 287 AS AMENDED BY ACT 121006.
TOLL-FREE NO.: 1-800-242-1776 OR 811.
WORK LOCATION NO.: 20170941435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!

"LONGFIELD FARM"

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

PCSM PLAN

PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17-02
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SCALE: 1" = 40'	SHEET: 25 OF 30

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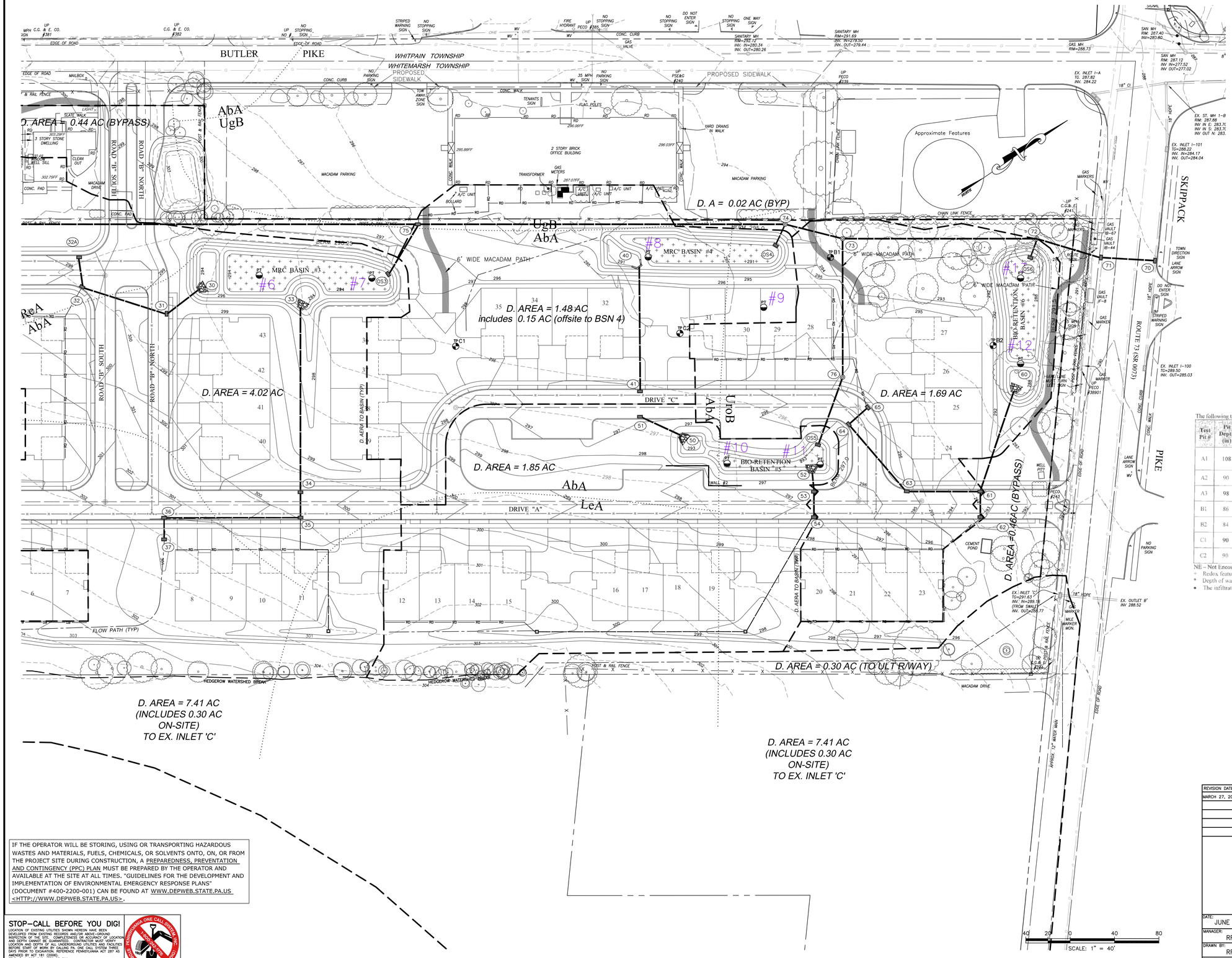

LEGEND

- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY SEWER FORCE MAIN — FM
- EXISTING WATER LINE — W
- PROPOSED WATER LINE — W
- EXISTING CONTOUR — 644
- PROPOSED CONTOUR — 650
- EXISTING CURB LINE
- PROPOSED CURB LINE
- POSITIVE DRAINAGE INDICATOR
- EXISTING ELEV — (333.68) OR 333.68
- PROPOSED ELEV. — 334.50
- EXISTING TREE LINE
- PROPOSED TREE LINE
- EXISTING GAS LINE — G
- PROP. GAS LINE — G
- EXISTING OVERHEAD ELEC. — OE
- EXISTING UNDERGROUND ELEC.
- PROP. ELECTRIC — E
- PROP. ROOF DRAIN — RD
- PROP. WATER LATERAL — wL
- PROP. SEWER LATERAL — SL
- SOIL LINE — AbB / DoB
- LIMIT OF DISTURBANCE
- NPDES BOUNDARY
- INFILTRATION TEST LOCATION — TP
- BASIN TREE
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A1	108	36+	0-21	105*, Seeps 84+	NE	24	0.25
						72	1.50
A2	90	12+	0-26	90*, Seeps 84	NE	28	2.00
						60	0.00
A3	98	18+	NE	93*	NE	66	1.00
B1	86	27-36	NE	NE	NE	60	2.38
B2	84	32-44	NE	NE	NE	60	10.00
C1	90	12+	NE	75*	NE	12	0.00
						24	0.00
C2	90	8+	NE	71*, Seeps 74+	NE	13	0.00
						48	0.00

NE – Not Encountered
+ Redox features extend to soil lacking sufficient fines, rock, or the bottom of test pit
* Depth of water at the end of the permeability testing
* The infiltration test results do not include any design safety factor

NRCS–USDA SOIL SURVEY SOURCE:
websoilsurvey.nrcs.usda.gov., accessed 6–4–19

SOIL LEGEND

AbA ABBOTTSTOWN SILT LOAM, 0–3% SLOPES;

LeA LAWRENCEVILLE SILT LOAM 0–3% SLOPES; MODERATELY ERODED

PlB PENN LANSDALE COMPLEX 3–8% SLOPES, MODERATELY ERODED

ReA READINGTON SILT LOAM 0–3% SLOPES; MODERATELY ERODED

UgB URBAN LAND, 0–8% SLOPES; MODERATELY ERODED

UroB URBAN LAND–LAWRENCEVILLE COMPLEX; 0–8% SLOPES; MODERATELY ERODED

IF THE OPERATOR WILL BE STORING, USING OR TRANSPORTING HAZARDOUS WASTES AND MATERIALS, FUELS, CHEMICALS, OR SOLVENTS ONTO, ON, OR FROM THE PROJECT SITE DURING CONSTRUCTION, A PREPAREDNESS, PREVENTATION AND CONTINGENCY (PPC) PLAN MUST BE PREPARED BY THE OPERATOR AND AVAILABLE AT THE SITE AT ALL TIMES. "GUIDELINES FOR THE DEVELOPMENT AND IMPLEMENTATION OF ENVIRONMENTAL EMERGENCY RESPONSE PLANS" (DOCUMENT #400-2200-001) CAN BE FOUND AT WWW.DEPWEB.STATE.PA.US <HTTP://WWW.DEPWEB.STATE.PA.US>.

STOP–CALL BEFORE YOU DIG!
LOCATION OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING REPORTS AND OR ACCEPTED RECORD DRAWINGS OF THE UTILITY COMPANIES. THE ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL SYSTEM THREE DAYS PRIOR TO EXCAVATION. REFERENCE PENNSYLVANIA ACT 287 AS AMENDED BY ACT 181 (2006).
TOLL-FREE: 1-800-242-1776 OR 811.
WORK LOCATION NO.: 20170941435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!

"LONGFIELD FARM"

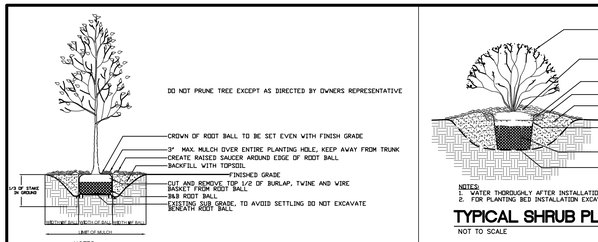
REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

PCSM PLAN

PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019
MANAGER: RFI
JOB NUMB.: 17–02
DRAWN BY: RFI
FILE NAME: 17–02BASE
SCALE: 1" = 40'
SHEET: 26 OF 30

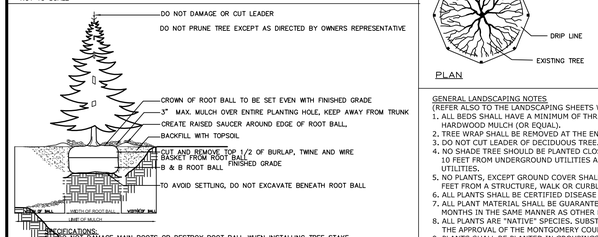
Irick Eberhardt Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Gerville Pike
Pennsburg, PA 18073
215–541–4626
215–541–4023(Fax)
E–Mail: Info@IEMCM.com



NOTES:
1. DO NOT DAMAGE MAIN ROOTS OR ROOT BALL WHEN INSTALLING TREE STAKE.
2. WATER THOROUGHLY AFTER INSTALLATION.
3. REMOVE STAKES TWO YEARS OR LESS AFTER INSTALLATION.
4. CONTRACTOR IS NOT TO USE TREE WRAP.

TYPICAL DECIDUOUS TREE PLANTING DETAIL

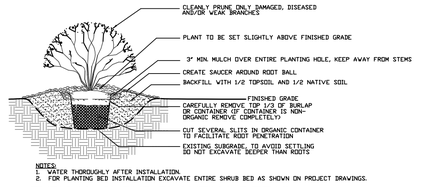
NOT TO SCALE



NOTES:
1. DO NOT DAMAGE MAIN ROOTS OR DESTROY ROOT BALL WHEN INSTALLING TREE STAKE.
2. WATER THOROUGHLY AFTER INSTALLATION.
3. REMOVE STAKES TWO YEARS OR LESS AFTER INSTALLATION.

TYPICAL EVERGREEN TREE PLANTING DETAIL

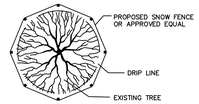
NOT TO SCALE



NOTES:
1. WATER THOROUGHLY AFTER INSTALLATION.
2. FOR PLANTING BED INSTALLATION EXCAVATE ENTIRE SHRUB BED AS SHOWN ON PROJECT DRAWINGS.

TYPICAL SHRUB PLANTING DETAIL

NOT TO SCALE

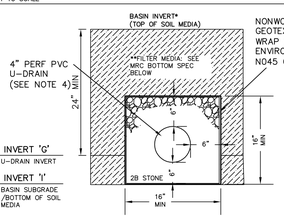


NOTES:
1. PROPOSED SNOW FENCE SHALL BE ADEQUATELY SECURED WHEN INSTALLING AND IN A MANNER ACCEPTABLE TO THE TOWNSHIP ENGINEER.
2. SNOW FENCE SHALL BE ERECTED A MINIMUM OF ONE FOOT OUTSIDE THE DRIPLINE ON ALL SIDES OF INDIVIDUAL TREES, TREE MASSES, OR WOODLANDS PRIOR TO MAJOR CLEARING OR CONSTRUCTION.
3. FENCE SHALL BE PLACED AT LOCATIONS DEEMED NECESSARY BY TOWNSHIP ENGINEER AT TIME OF CONSTRUCTION.

TREE PROTECTION DETAIL

NO SCALE

GENERAL LANDSCAPING NOTES
(REFER ALSO TO THE LANDSCAPING SHEETS WITHIN THIS PLAN SET)
1. ALL BEDS SHALL HAVE A MINIMUM OF THREE (3) INCHES OF SHREDDED HARDWOOD MULCH (OR EQUAL).
2. TREE WRAP SHALL BE REMOVED AT THE END OF THE GUARANTEE PERIOD.
3. DO NOT CUT LEADER OF DECIDUOUS TREE.
4. NO SHADE TREE SHOULD BE PLANTED CLOSER THAN 5 FEET FROM SIDEWALKS, 10 FEET FROM UNDERGROUND UTILITIES AND 15 FEET FROM OVERHEAD UTILITIES.
5. NO PLANTS, EXCEPT GROUND COVER SHALL BE PLANTED LESS THAN TWO (2) FEET FROM A STRUCTURE, WALK OR CURBLINE.
6. ALL PLANTS SHALL BE CERTIFIED DISEASE AND PEST FREE.
7. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF EIGHTEEN (18) MONTHS IN THE SAME MANNER AS OTHER REQUIRED IMPROVEMENTS.
8. ALL PLANTS ARE "NATIVE" SPECIES. SUBSTITUTIONS PERMITTED ONLY WITH THE APPROVAL OF THE MONTGOMERY COUNTY CONSERVATION DISTRICT
9. PLANTS SHALL BE PLANTED IN GROUPINGS OF "LIKE" SPECIES.
10. STREET TREES SHALL BE PLANTED A MINIMUM OF 5' FROM THE ULTIMATE RIGHT-OF-WAY AND OUTSIDE OF EASEMENTS.
11. ALL STREET TREES SHALL BE A MINIMUM OF 2 1/2" CALIPER MEASURED 12" ABOVE THE BALL OF THE TREE.



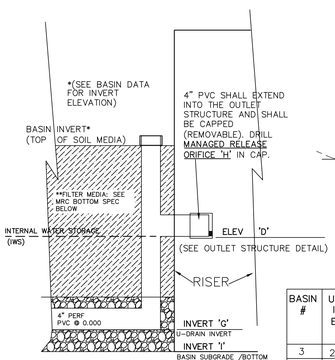
MRC UNDERDRAIN DETAIL

NTS

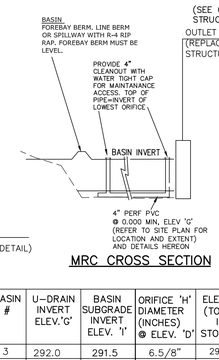
NOTE:
1. PVC SHALL EXTEND INTO THE OUTLET STRUCTURE AND SHALL BE CAPPED (REMOVABLE), DRILL WEEPHOLE IN CAP AS NOTED, AT ELEV 'D'.
2. 24" DEPTH (ABOVE UNDERDRAIN INVERT) IS REQUIRED OF FILTER MEDIA WITHIN THE 'SLOW RELEASE' AREA OF THE BASIN, REFER TO PCSM PLANS FOR EXTENT.
3. BASIN INVERT (FLOOR) SHALL BE LEVEL OVER FILTER MEDIA (0.0 % SLOPE)
4. U-DRAIN PVC LATERAL SHALL HAVE A MINIMUM INFILTRATION RATE OF 10 GPM PER LINER FOOT OF PIPE AND BE IN CONFORMANCE WITH PENNDOT PUBLICATION 408, SECTION 610-UNDERDRAIN AND PAVEMENT BASE DRAIN.
5. MAXIMUM LATERAL SPACING = 10 FEET, EACH LATERAL SHALL HAVE CLEAN-OUTS ACCESSIBLE FROM THE SURFACE AT END POINTS AND INTERSECTIONS, INCLUDING AT CENTRAL COLLECTOR PIPE.
6. SEED WITH ERNST-183 (SUPPLEMENTED WITH ANNUAL OATS) OR APPROVED SEED MIX. SURFACE OF ALL BASINS MUST BE AT LEAST 75 % COVERED BY VEGETATION AND MAINTAINED ACCORDINGLY.

MRC BOTTOM SPEC & EXTENT

**10% NATIVE SOIL MATERIAL (<5% CLAY & % SILT, WEED FREE, AGGREGATE SIZE ≤1/2". NATIVE SOIL SHALL BE TESTED PRIOR TO USING TO DETERMINE ADEQUATE COMPONENTS OF MATERIALS); 60% SAND(WASHED SHARP SAND-ASTMC-33, INCREASE TO 70 % FOR NON-USABLE NATIVE SOILS); 30 % ORGANIC (COMPOST, LEAF LITTER, DOUBLE SHREDDED HARDWOOD MULCH > 1" OR GREATER SIZE). PRE-MIXED MATERIAL SHOULD PROVIDE SOIL ANALYSIS TEST RESULTS FOR VERIFICATION OF %.

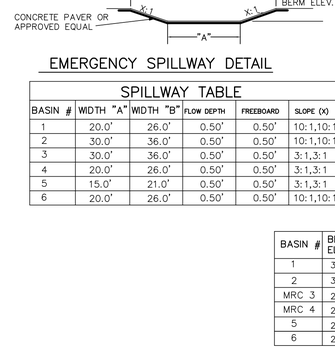


MRC OUTLET STRUCTURE CROSS SECTION



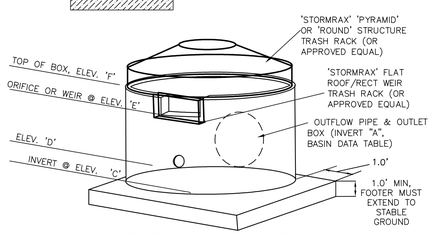
MRC CROSS SECTION

BASIN #	U-DRAIN INVERT ELEV.'G'	BASIN SUBGRADE INVERT ELEV. 'I'	ORIFICE 'H' DIAMETER (INCHES) @ ELEV. 'D'	ELEV. 'D' (TOP OF IWS STORAGE)
3	292.0	291.5	6.5/8"	293.0
4	289.0	288.5	1/2"	290.0



EMERGENCY SPILLWAY DETAIL

SPILLWAY TABLE					
BASIN #	WIDTH "A"	WIDTH "B"	FLOW DEPTH	FREEBOARD	SLOPE (X)
1	20.0'	26.0'	0.50'	0.50'	10:1,10:1
2	30.0'	36.0'	0.50'	0.50'	10:1,10:1
3	30.0'	36.0'	0.50'	0.50'	3:1,3:1
4	20.0'	26.0'	0.50'	0.50'	3:1,3:1
5	15.0'	21.0'	0.50'	0.50'	3:1,3:1
6	20.0'	26.0'	0.50'	0.50'	10:1,10:1

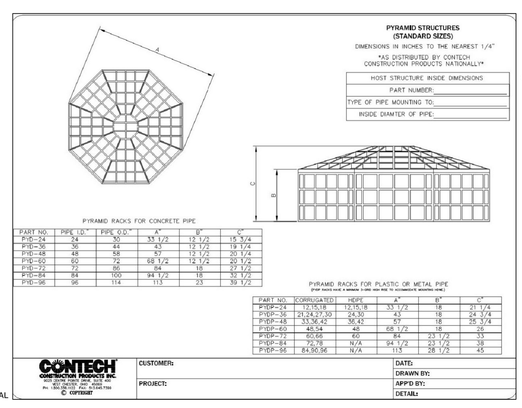


OUTLET STRUCTURE DETAIL

NOT TO SCALE

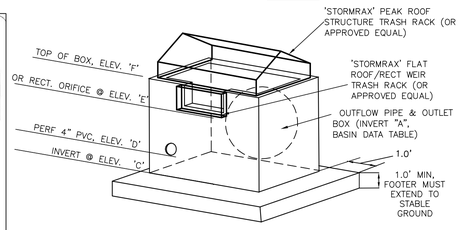
OUTLET STRUCTURE TABLE							
BASIN #	DIAMETER	ELEV. 'C'	ELEV. 'D'	ELEV. 'E'	ELEV. 'F'	2-YEAR WSEL	1.2"/2-HR STORM WSEL
1	2.0'	297.5	NA	3"∅ , 298.5	300.75		
2	1.5'	295.3	NA	3"x 24", 296.5	296.80		
MRC 4	2.0'	289.5	290.0	3"∅ , 291.5	293.40		
5	2.0'	292.0	NA	3"∅ , 293.5	295.00		

NOTE:
1. TYPE 'M' INLET BOX-MODIFIED AS SHOWN. ALL OUTLET STRUCTURE JOINTS AND PIPE PENETRATIONS MUST HAVE A WATERTIGHT SEAL.
2. REFER TO MRC OUTLET STRUCTURE DETAIL FOR MANAGED RELEASE ORIFICE 'H' AT ELEV. 'D' AND ADDITIONAL DETAILS FOR MRC BASINS.
3. 1.2"/2-HR STORM MUST BE RELEASED THROUGH MANAGED RELEASE ORIFICE ONLY (WSEL<ELEV. 'E' OR 'F').



PART NO.	PIPE I.D.*	PIPE O.D.*	A*	B*	C*
PYP-24	24	30	33 1/2	12 1/2	15 3/4
PYP-36	36	44	43	12 1/2	19 1/4
PYP-48	48	58	57	12 1/2	20 1/4
PYP-60	60	72	68 1/2	12 1/2	20 1/2
PYP-72	72	86	84	18	27 1/2
PYP-84	84	100	94 1/2	18	32 1/2
PYP-96	96	114	113	23	39 1/2

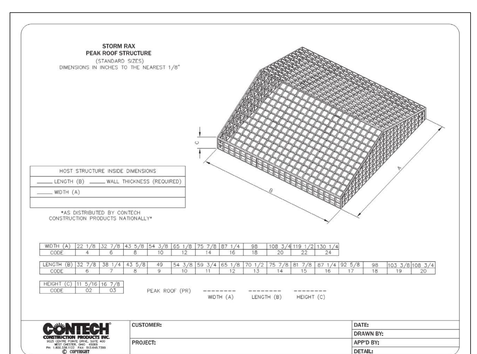
PART NO.	CORRUGATED	HDPE	A*	B*	C*
PYCP-24	12/15.18	12/15.18	33 1/2	18	21 1/4
PYCP-36	21,24,27,30	24,30	43	18	24 3/4
PYCP-48	33,36,42	36,42	57	18	25 3/4
PYCP-60	48,54	48	68 1/2	18	26
PYCP-72	60,66	60	84	23 1/2	33
PYCP-84	72,78	N/A	94 1/2	23 1/2	38
PYCP-96	84,90,96	N/A	113	28 1/2	45



OUTLET STRUCTURE DETAIL

OUTLET STRUCTURE TABLE				
BASIN #	ELEV. 'C'	ELEV. 'D'	ELEV. 'E'	ELEV. 'F'
MRC 3	292.5	293.0	6"x 36", 294.5	295.50
6	286.0	NA	3"x 18", 288.75	289.75

NOTE:
1. TYPE 'M' INLET BOX-MODIFIED AS SHOWN. ALL OUTLET STRUCTURE JOINTS AND PIPE PENETRATIONS MUST HAVE A WATERTIGHT SEAL.
2. REFER TO MRC OUTLET STRUCTURE DETAIL FOR MANAGED RELEASE ORIFICE 'H' AT ELEV. 'D' AND ADDITIONAL DETAILS FOR MRC BASINS.
3. 1.2"/2-HR STORM MUST BE RELEASED THROUGH MANAGED RELEASE ORIFICE ONLY (WSEL<ELEV. 'E' OR 'F').



BASIN MAINTENANCE
1. REGULARLY INSPECT AREAS BEHIND THE BERM TO ENSURE THEY ARE INFILTRATING (OR DRAINING WITH RESPECT TO BASIN B2); MONITOR DRAWDOWN TIME AFTER MAJOR STORM EVENTS.
2. CATCH BASINS AND INLETS (UNGRADIENT OF BASINS) SHOULD BE INSPECTED AND CLEANED AT LEAST TWO TIMES PER YEAR AND AFTER RUNOFF EVENTS.
3. TWICE DURING GROWING SEASON, INSPECT THE VEGETATION ALONG THE SURFACE OF THE BIORETENTION BASIN OR DETENTION BASIN SHOULD BE MAINTAINED IN GOOD CONDITION, AND ANY BARE SPOTS REVEGETATED AS SOON AS POSSIBLE.
4. VEHICLES SHOULD NOT BE PARKED OR DRIVEN ON BASIN FLOORS OR FOREBAYS, AND CARE SHOULD BE TAKEN TO AVOID EXCESSIVE COMPACTION BY MOWERS.
5. INSPECT THE BASIN AFTER RUNOFF EVENTS AND MAKE SURE THAT RUNOFF DRAINS DOWN WITHIN 72 HOURS. MOSQUITO'S SHOULD NOT BE A PROBLEM IF THE WATER DRAINS IN 72 HOURS. MOSQUITOES REQUIRE A CONSIDERABLY LONG BREEDING PERIOD WITH RELATIVELY STATIC WATER LEVELS. IF INFILTRATION IS NOT COMPLETE WITHIN 72 HOURS, REFER TO 'NON-ROUTINE MAINTENANCE'.
6. ANNUALLY INSPECT FOR ACCUMULATION OF SEDIMENT, DAMAGE TO OUTLET CONTROL STRUCTURES, EROSION CONTROL MEASURES, SIGNS OF WATER CONTAMINATION/SPILLS, AND SLOPE STABILITY IN THE BERMS AND REPAIR IMMEDIATELY.
7. MOW ONLY AS APPROPRIATE FOR VEGETATIVE COVER SPECIES.
8. EVERY 2-3 YEARS-REMOVE ACCUMULATED SEDIMENT FROM BASIN AS REQUIRED. RESTORE ORIGINAL CROSS SECTION AND INFILTRATION RATE. PROPERLY DISPOSE OF SEDIMENT FROM REENTERING THE BASIN.
9. ANNUALLY REMOVED REMOVE ACCUMULATED TRASH AND DEBRIS.
10. TWICE DURING THE GROWING SEASON,REMOVE INVASIVE PLANTS AS NEEDED.
11. INSPECT FOR SIGNS OF FLOW CHANNELIZATION; RESTORE LEVEL GRADIENT IMMEDIATELY AFTER DEFICIENCIES ARE OBSERVED.

BIO-RETENTION BASIN-GENERAL CONSTRUCTION CONSIDERATIONS:

1. THE SLOPE OF THE BIORETENTION BASIN BOTTOM SHOULD BE LEVEL. A LEVEL BOTTOM ASSURES EVEN WATER DISTRIBUTION AND INFILTRATION.
2. BIORETENTION BASIN FLOORS ARE SAND AND PLANTED WITH TOPSOIL ISLANDS OF PLANTINGS NOTED.
3. USE OF FERTILIZER SHOULD BE AVOIDED.
4. THE SURFACE SHOULD BE COMPACTED AS LITTLE AS POSSIBLE TO ALLOW FOR SURFACE PERCOLATION THROUGH THE SOIL SUBGRADELAYER.

BASIN-GENERAL CONSTRUCTION CONSIDERATIONS:-

1. INSTALL/CONVERT THE INFILTRATION BMPS (MRC & BIO-RETENTION BASINS) DURING THE FINAL PHASES OF SITE CONSTRUCTION TO PREVENT SEDIMENTATION AND/OR DAMAGE FROM CONSTRUCTION ACTIVITY. AFTER INSTALLATION OR FINAL CONVERSION TO AN MRC BASIN, PREVENT SEDIMENT-LADEN WATER FROM ENTERING THE FACILITY.

2. INSTALL AND MAINTAIN PROPER E&S BMPS DURING CONSTRUCTION.

3 .EXCAVATION TO BASIN SUBGRADE SHALL BE COMPLETED WITH THE LIGHTEST EQUIPMENT POSSIBLE OR COMPLETED FROM THE EXTERIOR OF THE INFILTRATION AREA AND SHALL NOT BE COMPACTED. SCARIFY SUBGRADE WORKING FROM INTERIOR TO EXTERIOR OF INFILTRATION AREA.
-THE MRC OR BIO-RETENTION BOTTOM (INFILTRATION AREA) SHOULD BE UN-COMPACTED, FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT THE SUBGRADE.

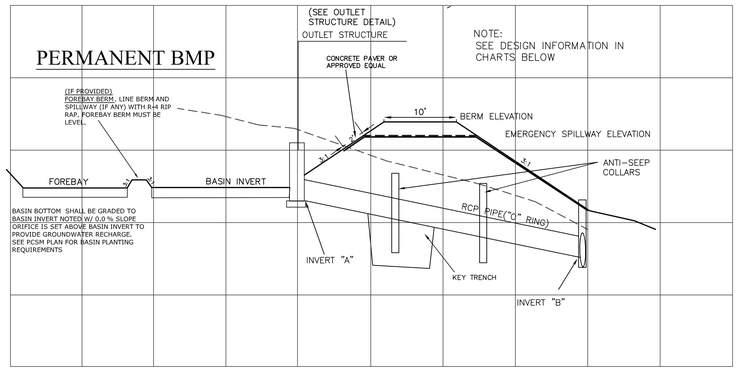
4. THE INFILTRATION AREA SUBGRADE OF THE BIO-RETENTION AND MRC BASIN BOTTOM SHOULD BE LEVEL. A LEVEL BOTTOM ASSURES EVEN WATER DISTRIBUTION AND INFILTRATION.

5. INSTALL OUTLET CONTROL STRUCTURES, SPILLWAY, PIPE BEDDING, UNDERDRAIN PIPING WITH AGGREGATE ENVELOPE, CLEANOUTS, ETC.

6. PLACE SOIL MEDIA GENTLY, DO NOT COMPACT SOIL MEDIA OR THE BASIN SUBGRADE. PLACEMENT OF SOIL MEDIA SHOULD BE DONE FROM OUTSIDE THE BMP INFILTRATION AREA FOOTPRINT TO AVOID COMPACTION BY CONSTRUCTION EQUIPMENT. EQUIPMENT SHOULD NEVER DRIVE OVER PLACED SOIL MEDIA WITHOUT CONSTRUCTION MATTING TO PREVENT COMPACTION.

7. SEED AND STABILIZE DISTURBED AREAS. VEGETATE WITH NATIVE PLANTINGS AS INDICATED ON PCSM PLANS & DETAIL SHEET 36

8. MAINTAIN INLET PROTECTION AND OTHER E&S CONTROLS WITHIN EACH BASIN WATERSHED UNTIL THE CONTRIBUTING SITE AREA IS FULLY STABILIZED.



TYPICAL BIO-RETENTION (& DETENTION) BASIN BERM CROSS SECTION

BASIN DATA

BASIN #	BERM ELEVATION	SPILLWAY ELEVATION	OUTFALL PIPE	INVERT "A"	INVERT "B"	BASIN INVERT	COLLAR QUANTITY	FOREBAY BERM EL.	FOREBAY BRM WDTH	VOLUME @ SPILLWAY ELEV. (CF)^
1	302.0	301.0	138 LF 15" RCP @ 0.0217	297.5	294.50	298.0	2	299.0	4.0	18,625
2	300.0	299.0	40 LF 15" RCP @ 0.0060	295.3	295.06	296.0	1	297.0	4.0	27,665
MRC 3	298.25	297.25	50 LF 18" RCP @ 0.0050	292.5	292.25	294.0	2	295.0	4.0	24,557
MRC 4	295.0	294.0	18 LF 15" RCP @ 0.0067	289.5	289.38	291.0	2	292.0	4.0	14,671
5	297.0	296.0	62 LF 18" RCP @ 0.0081	292.0	291.45	293.0	2	294.0	4.0	6,924
6	291.5	290.5	16 LF 15" RCP @ 0.0050	286.0	285.92	288.0	1	289.0	4.0	11,071

NOTE:
BASIN #3 & 4 ARE MRC BASINS.
BASINS #1, #2, #5 & #6 ARE BIORETENTION BASINS.
BASIN #1, #3 & #6 SHALL BE USED AS SEDIMENT TRAPS DURING SITE CONSTRUCTION. REFER TO STANDARD E & S DETAIL SHEETS.

BERM CONSTRUCTION NOTES:

1. SITE PREPARATION– THE TOPSOIL SHALL BE STRIPPED TO REMOVE THE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL. AREAS UNDER THE EMBANKMENT AND ANY STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED TO A DEPTH OF TWO (2) FEET PRIOR TO ANY PLACEMENT AND COMPACTION OF EARTHEN FILL.

2. KEY TRENCH– A CUT-OFF TRENCH WILL BE EXCAVATED ALONG THE CENTERLINE DAM ON EARTH FILL EMBANKMENTS. THE MINIMUM DEPTH SHALL BE THREE (3) FEET. THE CUT-OFF TRENCH SHALL EXTEND UP BOTH ABUTMENTS TO THE RISER CREST ELEVATION. THE MINIMUM BOTTOM WIDTH SHALL BE 8 FEET BUT WIDE ENOUGH TO PERMIT OPERATION OF COMPACTION EQUIPMENT. THE SIDE SLOPES SHALL BE NO STEEPER THAN 1:1. COMPACTION REQUIREMENTS SHALL BE THE SAME AS THOSE FOR THE EMBANKMENT. THE TRENCH SHALL BE KEPT FREE FROM STANDING WATER DURING THE BACKFILLING OPERATIONS. SOILS ACCEPTABLE FOR KEY TRENCH SHALL BE LIMITED TO CL OR ML SOILS

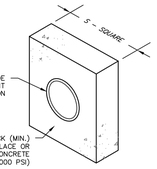
3. EMBANKMENT– THE FILL MATERIAL SHALL BE TAKEN FROM SELECTED BORROW AREAS AND MODIFIED AS NECESSARY. SOILS ACCEPTABLE FOR BERM CONSTRUCTION SHOULD BE LIMITED TO GC, GM, SC, SM, CL OR ML (PER ASTM D-2487). 'NATIVE MATERIAL' SHALL HAVE A CLAY CONTENT OF LESS THAN 10%. IT SHALL BE FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS OR OTHER OBJECTIONABLE MATERIAL. AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. THE FILL MATERIAL SHOULD CONTAIN SUFFICIENT MOISTURE SO THAT IT CAN BE FORMED BY HAND INTO A BALL WITHOUT CRUMBLING. IF WATER CAN BE SQUEEZED OUT OF THE BALL, IT IS TOO WET FOR PROPER COMPACTION. FILL MATERIAL WILL BE PLACED IN 6 TO 8 INCH LAYERS AND SHALL BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. ALL BASIN EMBANKMENTS SHALL BE COMPACTED BY SHEEPSFOOT OR PAD ROLLER. THE LOOSED LIFT THICKNESS SHOULD BE 9" OR LESS, DEPENDING ON ROLLER SIZE, AND THE MAXIMUM PARTICLE SIZE IS 6" OR LESS – 2/3 LIFT THICKNESS. FIVE (5) PASSED OF THE COMPACTION EQUIPMENT OVER THE ENTIRE SURFACE OF EACH LIFT IS REQUIRED. EMBANKMENT COMPACTION TO VISIBLE NONMOVEMENT IS ALSO REQUIRED. FILL MATERIAL MUST BE COMPACTED TO A MINIMUM OF 95% OF MODIFIED PROCTOR DENSITY AS ESTABLISHED BY ASTM D-1557. COMPACTION TESTING BY A CERTIFIED SOILS ENGINEER/GEOLOGIST MUST BE COMPLETED AS DIRECTED BY THE TOWNSHIP ENGINEER TO VERIFY ADEQUATE COMPACTION HAS BEEN ACHIEVED.

4. BASIN FLOOR– CONSTRUCTION EQUIPMENT WITHIN BASIN FLOOR SHALL BE MINIMIZED AND/OR APPROPRIATE EQUIPMENT SHALL BE USED.

NON-ROUTINE MAINTENANCE
THE MOST COMMON NON-ROUTINE MAINTENANCE PROBLEM INVOLVES STANDING WATER. IF WATER REMAINS ON THE SURFACE FOR MORE THAN 72 HOURS AFTER THE END OF A STORM, ADJUSTMENTS TO THE GRADING MAY BE NEEDED OR UNDERDRAIN REPAIRS MAY BE NEEDED. THE SURFACE OF THE FILTER BED SHOULD ALSO BE CHECKED FOR ACCUMULATED SEDIMENT OR A FINE CRUST THAT BUILDS UP AFTER THE FIRST SEVERAL STORM EVENTS. THERE ARE SEVERAL METHODS THAT CAN BE USED TO REHABILITATE THE FILTER (TRY THE EASIEST THINGS FIRST, AS LISTED BELOW):

1. REMOVE ACCUMULATED SEDIMENT AND TILL 2 TO 3 INCHES OF SAND INTO THE UPPER 8 TO 12 INCHES OF SOIL.

2. REMOVE AND REPLACE SOME OR ALL OF THE SOIL MEDIA.



BASIN OR TRAP NO.	PIPE SIZE (IN)	S (IN)	NO. OF COLLARS	RISER TO FIRST COLLAR 'X' (FT)	COLLAR SPACING (FT)
1	15	60	2	18	18
2	15	60	2	18	18
3	18	72	2	18	18
4	15	60	2	18	18
5	18	72	2	18	18
6	15	60	2	10	10

NOTES:
1. ALL COLLARS SHALL BE INSTALLED SO AS TO BE WATERTIGHT.
2. COLLAR SIZE AND SPACING SHALL BE AS INDICATED WITHIN TABLE.
3. COLLAR/ OUTLET PIPE TO BE FRAMED AND POURED AROUND BASIN OUTLET PIPE

STANDARD CONSTRUCTION DETAIL #7-16
CONCRETE ANTI-SEEP COLLAR FOR PERMANENT BASINS OR TRAPS

NOT TO SCALE

PCSM NOTES:
1. IN ACCORDANCE WITH CHAPTER 102, SECTION 102.8.(K), LICENSED PROFESSIONAL OVERSIGHT AND INSPECTION OF CRITICAL STAGES MUST BE PROVIDED FOR THE FOLLOWING STAGES:

A. EXCAVATION AND INSTALLATION BASINS.

B. FINAL CONVERSION TO PERMANENT CONDITION SED TRAPS TO BASINS.

THE CONTRACTOR MUST CONTACT THE APPROPRIATE PROFESSIONAL(S) AT LEAST 48-HOURS PRIOR TO THE INSTALLATION/CONSTRUCTION OF THE ITEMS NOTED ABOVE. ABSENCE OF OVERSIGHT AND INSPECTION AT THE CRITICAL STAGES BY THE APPROPRIATE PROFESSIONAL WILL IMPACT FINAL CERTIFICATION OF THE NOTICE OF TERMINATION (NOT) BY SAID PROFESSIONAL AT NPDES PERMIT CLOSEOUT.

2. THE NPDES PERMITTEE/CO-PERMITEE SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND OPERATION OF THE EROSION CONTROL & PCSM BMPS DURING CONSTRUCTION AND UNTIL FINAL STABILIZATION/REMOVAL OF ALL SAID FACILITIES. LONG-TERM O & M RESPONSIBILITY OF SAID FACILITIES. MUST BE IDENTIFIED IN THE NOTICE OF TERMINATION (NOT).

3. LONG TERM OPERATION AND MAINTENANCE OF THE PCSM BMP'S SHALL BE BY:

LONGFIELD FARM COMMUNITY ASSOCIATION

4. CHAPTER 102, SECTION 102.8.(m)(2), THE NPDES PERMITTEE OR CO-PERMITTEE SHALL RECORD AN INSTRUMENT WITH THE RECORDER OF DEEDS WHICH WILL ASSURE DISCLOSURE OF THE PCSM BMPS AND THE RELATED OBLIGATIONS IN THE ORDINARY COURSE OF A TITLE SEARCH OF THE SUBJECT

PCSM PLAN NOTES

1. 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.

2. 102.8(f)(11): 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.

-ORGANIC MATERIAL SUCH AS SEDIMENT REMOVED FROM PERMANENT BMPS MAY BE LOST ON SITE, GRADED AND STABILIZED.
-GRASS CLIPPINGS, LEAF MULCH, BRANCHES AND CLIPPINGS CAN BE CHIPPED AND MULCHED ON SITE.

3. 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.

4. 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.

5. VEHICLES AND EQUIPMENT MAY NEITHER ENTER DIRECTLY NOR EXIT DIRECTLY FROM THE SITE EXCEPT AT THE EXISTING ENTRANCE AT BUTLER PIKE.

6. 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.

7. 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.

8. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.

9. 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.

10. FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.

11. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.

12. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.

13. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.

14. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70 % VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS.

15. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPS MUST BE REMOVED OR CONVERTED TO PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE BMPS SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON.

16. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT TO SCHEDULE A FINAL INSPECTION.

17. THE NPDES BOUNDARY IS EQUAL TO THE LIMITS OF DISTURBANCE FOR THE SITE, AND ANY OFF-SITE AREAS WITHIN THE LIMITS OF DISTURBANCE THAT ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL. OFF-SITE FACILITIES SUCH AS: UTILITIES AND ROADWAY IMPROVEMENTS.

18. IF THE SITE WILL NEED TO HAVE FILL IMPORTED FROM AN OFF SITE LOCATION, THE RESPONSIBILITY FOR PERFORMING ENVIRONMENTAL DUE DILIGENCE AND THE DETERMINATION OF CLEAN FILL WILL IN MOST CASES RESIDE WITH THE OPERATOR. IF THE SITE WILL HAVE EXCESS FILL THAT WILL NEED TO BE EXPORTED TO AN OFF SITE LOCATION, THE RESPONSIBILITY OF CLEAN FILL DETERMINATION AND ENVIRONMENTAL DUE DILIGENCE RESTS IN THE APPLICANT. THIS INFORMATION SHOULD BE COMPLETED PRIOR TO SUBMITTING A PERMIT APPLICATION. IF ALL CUT AND FILL MATERIALS WILL BE USED ON THE SITE, A CLEAN FILL DETERMINATION IS NOT REQUIRED BY THE OPERATOR UNLESS THERE IS A BELIEF THAT A SPILL OR RELEASE OF A REGULATED SUBSTANCE OCCURRED ON SITE. CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE.) ENVIRONMENTAL DUE DILIGENCE IS DEFINED AS: INVESTIGATIVE TECHNIQUES, INCLUDING BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ALL FILL MATERIAL MUST BE USED IN ACCORDANCE WITH THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL", DOCUMENT NUMBER 258-2182-773. A COPY OF THIS POLICY IS AVAILABLE ONLINE AT WWW.DEPWEB.STATE.PA.US. REFER TO "TECHNICAL GUIDANCE DOCUMENT" #258-2182-773.

19. 102.8(f)(5): THE PROJECT'S RECEIVING WATERCOURSE IS THE PROPHECY CREEK & WISSAHICKON CREEK , AND THE CHAPTER 93 CLASSIFICATION DESIGNATED USE IS TSF, MF; EXISTING USE: TSF, MF .

20. FAILURE TO CORRECTLY INSTALL E&S BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE, OR FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S BMPS MAY RESULT IN ADMINISTRATIVE, CIVIL, AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE PENNSYLVANIA CLEAN STREAMS LAW. THE CLEAN STREAMS LAW PROVIDES FOR UP TO $10,000 PER DAY IN CIVIL PENALTIES, UP TO $10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO $25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION.

ADDITIONAL NOTES

1. ALL CHANNELS SHALL BE KEPT FREE OF OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO FILL, ROCKS, LEAVES, WOODY DEBRIS, ACCUMULATED SEDIMENT, EXCESS VEGETATION, AND CONSTRUCTION MATERIAL/WASTES.

2. UNDERGROUND UTILITIES CUTTING THROUGH ANY ACTIVE CHANNEL SHALL BE IMMEDIATELY BACKFILLED AND THE CHANNEL RESTORED TO ITS ORIGINAL CROSS-SECTION AND PROTECTIVE LINING. ANY BASE FLOW WITHIN THE CHANNEL SHALL BE CONVEYED PAST THE WORK AREA IN THE MANNER DESCRIBED IN THIS PLAN UNTIL SUCH RESTORATION IS COMPLETE.

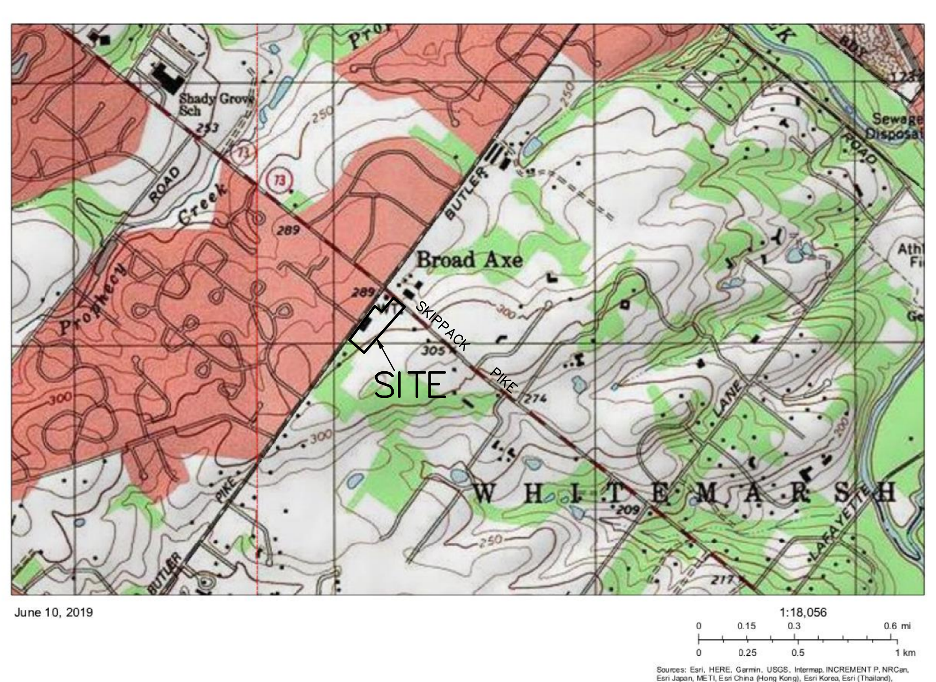
3. CHANNELS HAVING RIPRAP, RENO MATTRESS, OR GABION LININGS MUST BE SUFFICIENTLY OVER-EXCAVATED SO THAT THE DESIGN DIMENSIONS WILL BE PROVIDED AFTER PLACEMENT OF THE PROTECTIVE LINING.

4. FILL MATERIAL FOR EMBANKMENTS SHALL BE FREE OF ROOTS, OR OTHER WOODY VEGETATION, ORGANIC MATERIAL, LARGE STONES, AND OTHER OBJECTIONABLE MATERIALS. THE EMBANKMENT SHALL BE COMPACTED IN MAXIMUM 8" LAYERED LIFTS AT 95% DENSITY.

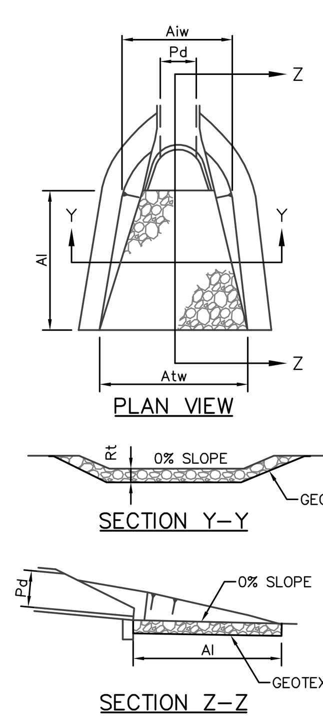
5. 102.8(f)(14): THERE ARE NO EXISTING/PROPOSED RIPARIAN FOREST BUFFERS OR WETLANDS THAT ARE IMPACTED BY THIS DEVELOPMENT, EITHER WITHIN OR OUTSIDE THE LIMIT OF DISTURBANCE FOR THE PROJECT.

6. AN ANTI-DEGRADATION ANALYSIS IS NOT REQUIRED FOR THIS DEVELOPMENT AS THE SITE DOES NOT DRAIN INTO A SPECIAL PROTECTION WATERSHED (HQ OR EV).

7. 102.8(f)(12): THERE ARE NO NATURALLY OCCURRING GEOLOGIC FORMATIONS OR SOIL CONDITIONS THAT HAVE POTENTIAL TO CAUSE POLLUTION DURING EARTHMOVING ACTIVITIES BEYOND THE 'NORMAL' SCOPE OF POTENTIAL SEDIMENT POLLUTANTS CAUSED BY DISTURBANCE OF INTACT SOILS. STANDARD EROSION CONTROL FACILITIES AND MATERIALS WILL BE ADEQUATE TO PROVIDE THE NECESSARY CONTROLS TO MINIMIZE EROSION.



USGS LOCATION MAP (AMBLER QUAD)

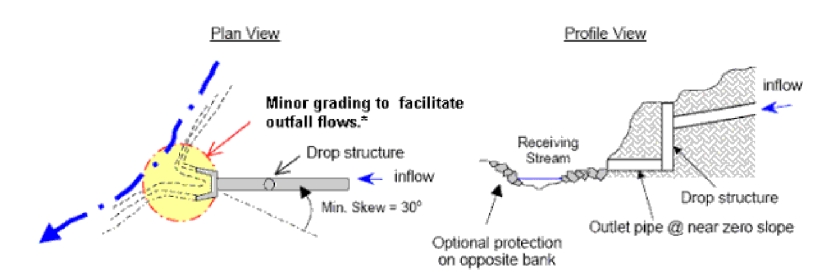


NOTES:
ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.

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

OUTLET NO.	PIPE DIA Pd (IN)	RIPRAP SIZE R-_	RIPRAP THICK. Rt (IN)	APRON LENGTH Al (FT)	APRON INITIAL WIDTH Aiw (FT)	APRON TERMINAL WIDTH Atw (FT)
EW 1	15	4	18	6	4	10
EW 4	15	4	18	6	4	10
EW 20	18	4	18	8	4.5	12.5
EW 30	18	4	18	8	4.5	12.5
EW 33	15	4	18	6	4	10
EW 40	15	4	18	6	4	10
EW 50	15	4	18	6	4	10
EW 52	15	4	18	6	4	10
EW 60	15	4	18	6	4	10

PROPER OUTFALL ORIENTATION TO RECEIVING STREAM



***Chapter 105 permit(s) required. Provide sediment barrier to protect stream and outfall channels.**

STANDARD CONSTRUCTION DETAIL #9-1
RIPRAP APRON AT PIPE OUTLET
WITH FLARED END SECTION OR ENDWALL
NOT TO SCALE

Unified Soil Classification (USC) System (from ASTM D 2487)

Major Divisions			Group Symbol	Typical Names
Course-Grained Soils More than 50% retained on the 0.075 mm (No. 200) sieve	**Gravels** 50% or more of course fraction retained on the 4.75 mm (No. 4) sieve	Clean Gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		Gravels with Fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	Sands 50% or more of course fraction passes the 4.75 (No. 4) sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly graded sands and gravelly sands, little or no fines
		Sands with Fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
Fine-Grained Soils More than 50% passes the 0.075 mm (No. 200) sieve	**Silts and Clays** Liquid Limit 50% or less		ML	Inorganic silts, very fine sands, rock four, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly/sandy/silty/lean clays
			OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays Liquid Limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
			CH	Inorganic clays or high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
Highly Organic Soils			PT	Peat, muck, and other highly organic soils

Prefix: G = Gravel, S = Sand, M = Silt, C = Clay, O = Organic
Suffix: W = Well Graded, P = Poorly Graded, M = Silty, L = Clay, LL < 50%, H = Clay, LL > 50%

SEEDING SPECIFICATIONS

1. SOIL PREPARATION
   A. FINAL GRADE LAWN AREAS REMOVING ANY ROCKS, STUMPS, AND DEBRIS

   B. TEMPORARY FERTILIZATION:
   APPLY AGRICULTURAL LIMESTONE AT THE RATE OF 1 TON/ACRE
   APPLY FERTILIZER AT 500 LBS 10-10-10/ACRE

   C. PERMANENT FERTILIZATION:
   APPLY AGRICULTURAL LIMESTONE AT THE RATE OF 6 TON/ACRE*
   APPLY FERTILIZER AT 1000 LBS 10-10-20/ACRE*
   *(OR AS PER SOIL TEST)

   D. TILL IN TO A DEPTH OF 4 INCHES

2. APPLY SEED AT THE FOLLOWING RATES:
   A. TEMPORARY SEEDING;
   ANNUAL RYE GRASS (40 LBS/ACRE)

   B. PERMANENT SEEDING:
   LAWN AREA SEED MIXTURE:
   LOFTS TRI-PLEX GENERAL MIX(OR APPROVED EQUAL)
   CONTAINS:
   60% BARON KENTUCKY BLUEGRASS
   20% JAMESTOWN II CHEWINGS FESCUE
   20% PALMER II PERENNIAL RYEGRASS

   RATE: 5 LBS. PER 1,000 S.F.

   RECOMMENDED SEEDING DATES:
   3/15 TO 6/15 OR 8/16 TO 10/15

3. APPLY MULCH AT THE FOLLOWING RATES:
   HAY OR STRAW (3 TONS/ACRE-TEMPORARY & PERMANENT)
   (STEEP SLOPES (>3:1), NETTING MUST BE USED TO HOLD MULCH IN PLACE)

TOPSOIL APPLICATION

GRADED AREAS SHOULD BE SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES TO PERMIT BONDING OF THE TOPSOIL TO THE SURFACE AREAS AND TO PROVIDE A ROUGHENED SURFACE TO PREVENT TOPSOIL FROM SLIDING DOWN SLOPE.

TOPSOIL SHOULD BE UNIFORMLY DISTRIBUTE ACROSS THE DISTURBED AREA TO A DEPTH OF 4 TO 8 INCHES MINIMUM-2 INCHES ON FILL OUTSLOPES.

GENERAL

1. ANY DISTURBED AREA ON WHICH ACTIVITY HAS CEASED AND WHICH WILL REMAIN EXPOSED MUST BE SEEDED AND MULCHED IMMEDIATELY. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE RECOMMENDED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN 1 YEAR MAY BE SEEDED AND MULCHED WITH A QUICK GROWING TEMPORARY SEEDING MIXTURE AND MULCH. DISTURBED AREAS WHICH ARE EITHER AT FINISHED GRADE OR WILL NOT BE REDISTURBED WITHIN 1 YEAR MUST BE SEEDED AND MULCHED WITH A PERMANENT SEED MIXTURE AND MULCH.

2. AS SOON AS SLOPES, CHANNELS, DITCHES AND OTHER DISTURBED AREAS REACH FINAL GRADE THEY MUST BE STABILIZED OR IN COMPLIANCE WITH THE APPLICABLE DETAIL AND SPECIFICATIONS FOR ITEMS SUCH AS EROSION CONTROL BLANKETS OR NETTING.

3. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY IN A SPECIAL PROTECTION WATERSHED (HQ OR EV), THAT PORTION OF THE PROJECT SITE TRIBUTARY TO THE SPECIAL PROTECTION WATERS MUST BE IMMEDIATELY STABILIZED. IN ALL OTHER WATERSHED, CESSATION OF ACTIVITY FOR AT LEAST 4 DAYS REQUIRES TEMPORARY STABILIZATION.

4. CONTRACTOR SHALL REFER TO EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, DEP 'CHAPTER 11-STABILIZATION METHODS AND STANDARDS' (PORTIONS ARE INCLUDED WITHIN THE PROJECT PCSM & EROSION CONTROL NARRATIVES) FOR ADDITIONAL INFORMATION REGARDING SITE STABILIZATION , TOPSOIL APPLICATION, SOIL AMENDMENTS, OTHER RECOMMENDED SEED MIXTURES, MULCHING AND COMPOST MATERIAL.

SOIL LIMITATIONS

SOURCE: websoilsurvey.nrcs.usda.gov., accessed 6-4-19

	SOIL	SOIL GROUP	RESERVOIR AREA	EMBANKMENTS	HOME BUILDING	STREETS/PARKING LOTS	LAWNS/LANDSCAPING
AbA	ABBOTTSTOWN SILT LOAM 0-3% SLOPES;	D	SOMEWHAT LIMITED DUE TO SEEPAGE & DEPTH TO BEDROCK	VERY LIMITED DUE TO DEPTH OF SATURATION ZONE, PIPING, DUSTY & PONDING	VERY LIMITED DUE TO SATURATION ZONE. BEDROCK, PONDING	VERY LIMITED DUE TO DEPTH TO CEMENTED PAN, FROST, LOW STRENGTH, BEDROCK & DEPTH TO SATURATION ZONE	VERY LIMITED DUE TO SATURATION ZONE. BEDROCK, DUSTY, GRAVEL & LOW EXCHANGE CAPACITY
LeA	LAWRENCEVILLE SILT LOAM 0-3% SLOPES; MODERATELY ERODED	C	SOMEWHAT LIMITED DUE TO SEEPAGE & DEPTH TO BEDROCK	SOMEWHAT LIMITED DUE TO DEPTH TO SATURATION ZONE, DUSTY & THIN LAYER	VERY LIMITED DUE TO DEPTH TO SATURATION, ZONE, BEDROCK & PONDING.	VERY LIMITED DUE TO DEPTH TO CEMENTED PAN, LOW STRENGTH, FROST, BEDROCK & SATURATION ZONE	VERY LIMITED DUE TO DEPTH TO BEDROCK, GRAVEL, DUSTY, DRAUGHTY, LOW EXCHANGE CAPACITY & SATURATION ZONE.
PIB	PENN LANSDALE COMPLEX 3-8% SLOPES, MODERATELY ERODED	B	VERY LIMITED DUE TO SLOPE, SEEPAGE & DEPTH TO BEDROCK	SOMEWHAT LIMITED DUE TO THIN LAYER, PIPING, DUSTY & SEEPAGE	VERY LIMITED DUE TO DEPTH TO BEDROCK, SLOPE & SATURATION ZONE.	VERY LIMITED DUE TO LOW STRENGTH, SLOPE, FROST, BEDROCK & SATURATION ZONE	VERY LIMITED DUE TO DEPTH TO BEDROCK, SLOPE, GRAVEL, DUSTY, DRAUGHTY, LOW EXCHANGE CAPACITY & SATURATION ZONE.
ReA	READINGTON SILT LOAM 0-3% SLOPES; MODERATELY ERODED	C	SOMEWHAT LIMITED DUE TO SEEPAGE & DEPTH TO BEDROCK	SOMEWHAT LIMITED DUE TO DEPTH TO SATURATION ZONE, DUSTY & THIN LAYER	VERY LIMITED DUE TO DEPTH TO SATURATION, ZONE, BEDROCK & PONDING.	VERY LIMITED DUE TO DEPTH TO CEMENTED PAN, LOW STRENGTH, FROST, BEDROCK & SATURATION ZONE	VERY LIMITED DUE TO DEPTH TO BEDROCK, GRAVEL, DUSTY, DRAUGHTY, LOW EXCHANGE CAPACITY & SATURATION ZONE.
UgB	URBAN LAND, 0-8% SLOPES; MODERATELY ERODED	NONE	VERY LIMITED DUE TO SEEPAGE, DEPTH TO BEDROCK & SLOPE	SOMEWHAT LIMITED DUE TO THIN LAYER & PIPING	SOMEWHAT LIMITED DUE TO DEPTH TO BEDROCK	SOMEWHAT LIMITED DUE TO DEPTH TO BEDROCK & FROST	SOMEWHAT LIMITED DUE TO DEPTH TO BEDROCK
UroB	URBAN LAND-LAWRENCEVILLE COMPLEX; 0-8% SLOPES; MODERATELY ERODED	C	VERY LIMITED DUE TO SEEPAGE, DEPTH TO BEDROCK & SLOPE	SOMEWHAT LIMITED DUE TO THIN LAYER & PIPING	SOMEWHAT LIMITED DUE TO DEPTH TO BEDROCK	SOMEWHAT LIMITED DUE TO DEPTH TO BEDROCK & FROST	SOMEWHAT LIMITED DUE TO DEPTH TO BEDROCK

SOIL LIMITATIONS AND RESOLUTIONS

CONTRACTOR IS DIRECTED TO REVIEW THE PCSM NARRATIVE WHICH CONTAINS THE STORMWATER INFILTRATION EVALUATION REPORT FOR THIS PROJECT. TEST LOCATIONS ARE SHOWN ON THE PCSM PLAN.

1. SITE SOILS ARE SUSCEPTIBLE TO CAVING OF CUT BANKS. IT IS IMPERATIVE THAT APPROPRIATE PRECAUTIONS BE TAKEN TO SAFEGUARD WORKERS DURING ALL TRENCHING AND EXCAVATION OPERATIONS. ALL APPLICABLE OSHA STANDARDS AND REGULATIONS MUST BE IMPLEMENTED AT ALL TIMES.

2. SITE SOILS ARE CORROSIVE TO CONCRETE AND UNCOATED STEEL. SUITABLE PRECAUTIONS SHOULD BE TAKEN TO PROTECT ALL UNDERGROUND PIPES, CONDUITS, AND STORAGE TANKS.

3. SITE SOILS ARE INDICATED TO HAVE LOW STRENGTH OVER THE MAJORITY OF THE SITE AREA. PRECAUTIONS SHOULD BE TAKEN TO PREVENT SLOPE FAILURES DUE TO IMPROPER CONSTRUCTION PRACTICES SUCH AS OVER-STEEPENING AND OVERLOADING OF SLOPES, REMOVAL OF LATERAL SUPPORT, AND FAILURE TO PREVENT SATURATION OF SLOPES. ALSO, ROAD FILL MATERIAL MAY NEED TO BE IMPORTED IN AREAS WHERE SOILS HAVE LOW STRENGTH. TO AVOID ENDANGERING REGULATED WATERS OR PUBLIC TRANSPORTATION FACILITIES, A MINIMUM SETBACK SHOULD BE MAINTAINED ACCORDING TO TABLE 16.1, UNLESS IT CAN BE SHOWN THAT PROPOSED CUTS AND FILLS DO NOT POSE A HAZARD TO PUBLIC SAFETY OR TO SURFACE WATERS.

TABLE 16.1
RECOMMENDED MINIMUM SETBACKS FOR FILL PLACEMENT IN THE VICINITY OF REGULATED WATERS, HIGHWAYS, RAILROADS, AND OTHER PUBLIC TRANSPORTATION FACILITIES*

HEIGHT OF FILL (FT)	MINIMUM SETBACK (FT)
< 10	10
10 - 25	25
25 - 50	50
> 50	1 FT OF SETBACK PER FT OF HEIGHT

* GREATER SETBACK DISTANCES MIGHT BE NEEDED IF SOIL/BEDROCK, RUNOFF, OR GROUNDWATER CONDITIONS ARE SUCH THAT A SIGNIFICANT THREAT TO PUBLIC HEALTH AND SAFETY IS POSED OR IN SPECIAL PROTECTION WATERSHEDS.
LESSER SETBACKS MAY BE CONSIDERED BY THE DEPARTMENT IN CASES WHERE SPECIAL SLOPE STABILITY MEASURES ARE UNDERTAKEN OR IT CAN BE SHOWN THAT THE DESIRED LONG-TERM SAFETY FACTOR IS PROVIDED.

4. PER USDA MAPPING, SITE SOILS ARE POOR SOURCES OF TOPSOIL, ON-SITE SOILS MAY BE TOO WET. SOIL TESTS ARE STRONGLY RECOMMENDED TO DETERMINE THE PROPER APPLICATION OF SOIL AMENDMENTS TO PROMOTE THE GROWTH OF THE DESIRED VEGETATION. MAXIMUM CLAY CONTENT IN 'NATIVE MATERIAL' SHALL BE LESS THAN 10 %

5. SITE SOILS ARE SUSCEPTIBLE TO FROST ACTION. PRECAUTIONS ARE NEEDED TO PREVENT DAMAGE, ESPECIALLY TO ROADWAYS, THIS INCLUDES ADEQUATE DRAINAGE THROUGH STONE SUBBASE AND U-DRAIN.

6. SUMP PUMP AND FOOTER DRAINS SHALL BE PROVIDED AS NECESSARY AND SHALL CONNECT DIRECTLY TO STORM SEWER OR BASINS AS NOTED..
ROOF LEADERS SHALL DRAIN OVERLAND AND SHALL NOT BE INTERCONNECTED WITH SUMP PUMP DRAINS.

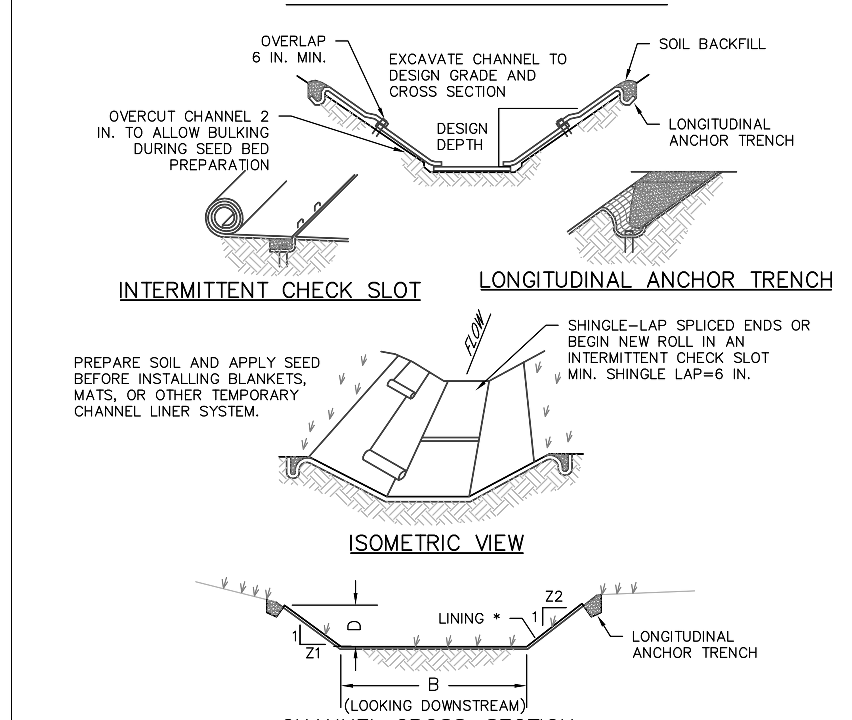
7. CONSTRUCTION EQUIPMENT TRAFFIC SHALL BE MINIMIZED DURING INSTALLATION OF INFILTRATION BASINS AND BERMS, PARTICULARLY IN THE POOLING AREA UPHILL OF THE BERMS TO MAINTAIN NATURAL INFILTRATION RATES.

8. URBAN LAND SOILS SHALL BE USED FOR FILL MATERIAL IN DRIVEWAYS AND EMBANKMENT.

9. REFER TO BERM CONSTRUCTION NOTES FOR THE ACCEPTABLE SOILS FOR BERM EMBANKMENT AND CORE TO LIMIT SEEPAGE AND PIPING.

10. UmrB-URBAN LAND-DUFFIELD SOIL AREAS HAVE THE POTENTIAL FOR SINKHOLES, NONE WERE OBSERVED DURING INFILTRATION TESTING.

PERMANENT BMP



* SEE MANUFACTURER'S LINING INSTALLATION DETAIL FOR STAPLE PATTERNS, VEGETATIVE STABILIZATION FOR SOIL AMENDMENTS, SEED MIXTURES AND MULCHING INFORMATION

CHANNEL NO.	STATIONS	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	LINING *

NOTES:

ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF CHANNEL IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.

CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT ANY LOCATION.
SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO CHANNEL WITHOUT FURTHER DAMAGE. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

NO MORE THAN ONE THIRD OF THE SHOOT (GRASS LEAF) SHALL BE REMOVED IN ANY MOWING. GRASS HEIGHT SHALL BE MAINTAINED BETWEEN 2 AND 3 INCHES UNLESS OTHERWISE SPECIFIED. EXCESS VEGETATION SHALL BE REMOVED FROM PERMANENT CHANNELS TO ENSURE SUFFICIENT CHANNEL CAPACITY.

STANDARD CONSTRUCTION DETAIL #6-1
VEGETATED CHANNEL
NOT TO SCALE

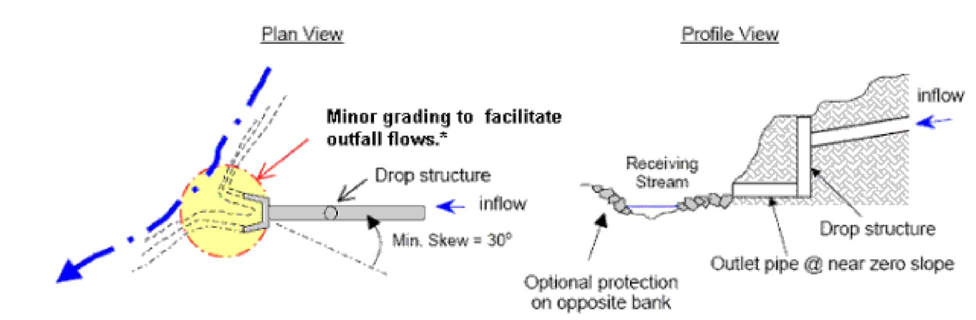
	PIPE DIA Pd (IN)	RIPRAP SIZE R-_	RIPRAP THICK. Rt (IN)	APRON LENGTH Al (FT)	APRON INITIAL WIDTH Aiw (FT)	APRON TERMINAL WIDTH Atw (FT)

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

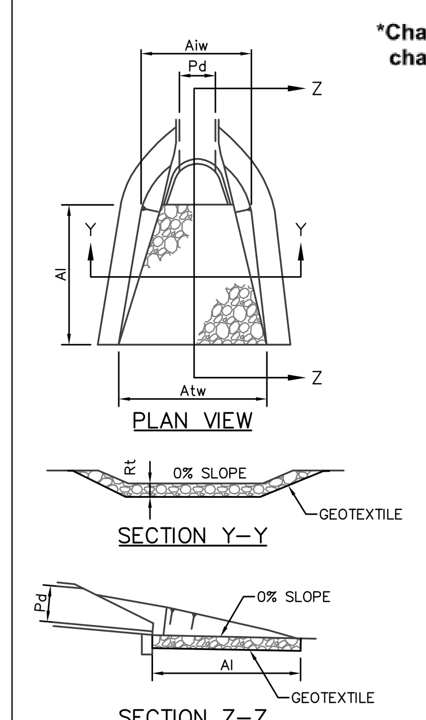
ALL APRONS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT. DISPLACED RIPRAP WITHIN THE APRON SHALL BE REPLACED IMMEDIATELY.

STANDARD CONSTRUCTION DETAIL #9-1
RIPRAP APRON AT PIPE OUTLET
WITH FLARED END SECTION OR ENDWALL
NOT TO SCALE

PROPER OUTFALL ORIENTATION TO RECEIVING STREAM



***Chapter 105 permit(s) required. Provide sediment barrier to protect stream and outfall channels.**



"LONGFIELD FARM"

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

PCSM DETAILS
PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17-02
DRAWN BY: RFI	FILE NAME: 17-02BASE
SCALE: 1" = 50'	SHEET: 28 OF 30

Irick Eberhardt Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
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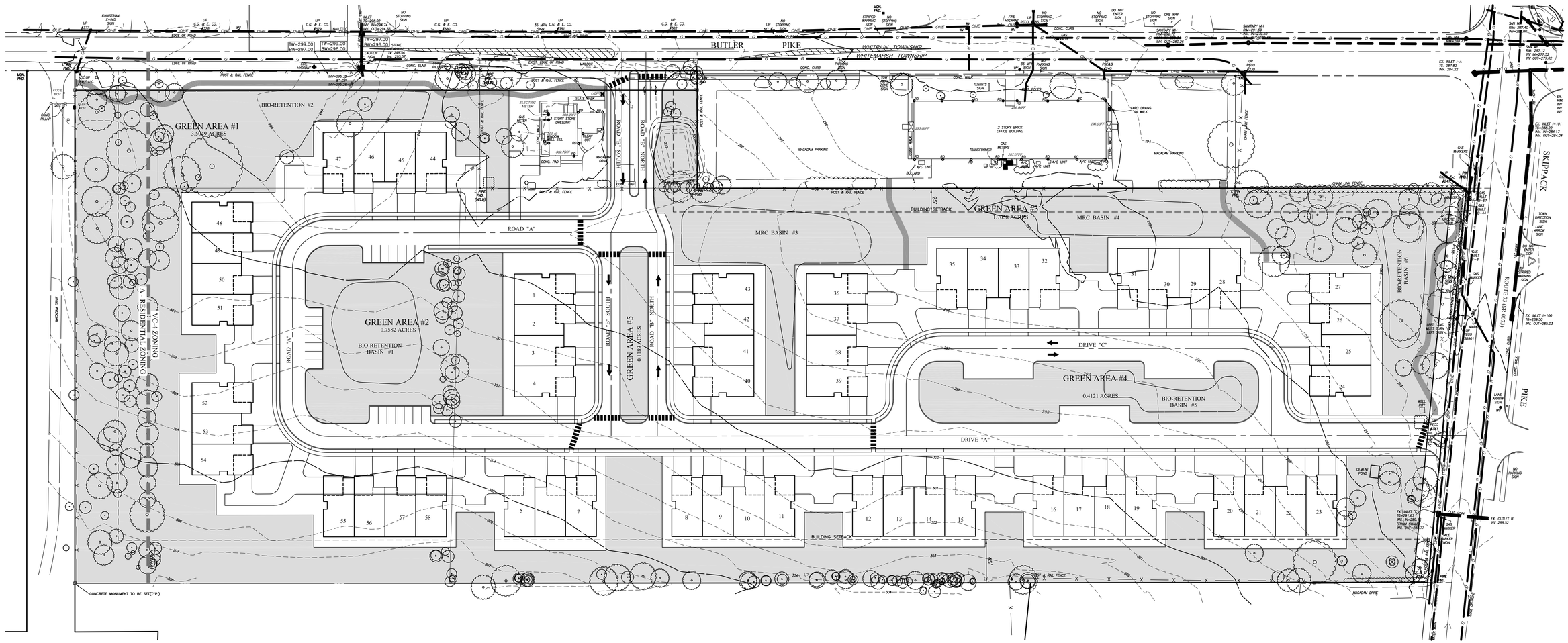
215-541-4023(Fax)
E-Mail: Info@IEANDM.com



LEGEND

EXISTING STORM SEWER	
PROPOSED STORM SEWER	
EXISTING SANITARY SEWER	
PROPOSED SANITARY SEWER	
PROPOSED SANITARY SEWER FORCE MAIN	FM
EXISTING WATER LINE	W
PROPOSED WATER LINE	W
EXISTING CONTOUR	644
PROPOSED CONTOUR	650
EXISTING CURB LINE	
PROPOSED CURB LINE	
POSITIVE DRAINAGE INDICATOR	
EXISTING ELEV	(333.68) OR 333.68
PROPOSED ELEV.	
EXISTING TREE LINE	
PROPOSED TREE LINE	
EXISTING GAS LINE	G
PROP. GAS LINE	G
EXISTING OVERHEAD ELEC.	OE
EXISTING UNDERGROUND ELEC.	£
PROP. ELECTRIC	E
PROP. ROOF DRAIN	RD
PROP. WATER LATERAL	wL
PROP. SEWER LATERAL	SL

COMMON OPEN SPACE/GREEN AREA

STOP–CALL BEFORE YOU DIG!

LOCATION OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATIONS OF ALL UTILITIES AND ALL OBSTRUCTIONS OF ALL FACILITIES BEFORE START OF WORK BY CALLING PA. ONE CALL SYSTEM THREE DAYS PRIOR TO EXCAVATION. REFERENCE PENNSYLVANIA ACT 287 AS AMENDED BY ACT 181 (2006).

TELL-A-LINE: 1-800-242-1776 OR 811.

WORK LOCATION NO.: 20172061435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 ALL PARTIES TO CALL BEFORE YOU DIG

MAINTENANCE REQUIREMENTS

NATURAL AREA

An area of natural vegetation undisturbed during, or replanted. Such areas may contain pathways. Meadows shall be maintained as such and not left to become weed infested. Maintenance may be minimal, but shall prevent the proliferation of weeds and undesirable plants such as honeysuckle and poison ivy, dead trees and brush shall be removed, and streams shall be kept in free-flowing condition. Trails shall be maintained with weekly mowing of a 4' strip along each side of trail as required.

STORMWATER MANAGEMENT AREA

An area designed to manage stormwater runoff from the developed portion of a project through design of various drainage facilities meeting the performance requirements of the Whitemarsh Township Subdivision Ordinance, as amended.

LANDSCAPED MANAGEMENT AREA

Parking lot landscaping, and foundation plantings shall be kept neat and weed-free. Trees and shrubs shall be pruned to maintain a natural growth habit. Lawn areas shall be mowed on a weekly basis as required.

NOTES:

1. A OWNERS ASSOCIATION WILL OWN AND MAINTAIN ANY LAND NOT SPECIFICALLY DEEDED/OWNED BY AN INDIVIDUAL. ALL REMAINING OPEN AREAS AND ANY IMPROVEMENTS ON THE LAND WILL BE MAINTAINED BY THE OWNERS ASSOCIATION. DOCUMENTATION SHALL INCLUDE A LAND PRESERVATION/PROTECTION AGREEMENT, DEED RESTRICTION OR OTHER ENFORCEABLE INSTRUMENT THAT ENSURES AND DEFINES MAINTENANCE OF THE SWALES, BASINS AND OTHER PERMANENT BMPS AS NOTED ON THE PCSM PLANS AND PERPETUAL PROTECTION AND MAINTENANCE (INCLUDING THE BIORETENTION BASINS) OF THE OPEN SPACE AND SHALL BE RECORDED. REFER TO PCSM PLANS WITHIN THIS PLAN SET FOR ADDITIONAL INFORMATION.
2. SITE STORMWATER BMPs SHALL BE OWNED AND MAINTAINED IN PERPETUITY BY THE OWNERS ASSOCIATION. A BLANKET ACCESS EASEMENT SHALL BE PROVIDED TO THE TOWNSHIP FOR FOR THE PURPOSE OF ACCESS TO THE STORMWATER BMPs ON AN ANNUAL BASIS. REFER TO PCSM PLAN FOR ADDITIONAL INFORMATION RELATING TO SITE STORMWATER BMPs.
3. THE COMMON OPEN SPACE IS SUBJECT TO PERMANENT CONSERVATION EASEMENTS PROHIBITING FUTURE DEVELOPMENT AND DEFINING THE RANGE OF PERMITTED ACTIVITIES CONSISTENT WITH Z.O. SECTION 116-275 AS EXECUTED BETWEEN TOWNSHIP AND APPLICANT.

REVISION DATE:	DESCRIPTION:

OPEN SPACE MANAGEMENT PLAN

PREPARED FOR

SPARTAN ORGANIZATION

SITUATE

WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17–02
DRAWN BY: RFI	FILE NAME: 17–02BASE
SCALE: 1" = 50'	SHEET: 29 OF 30

Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
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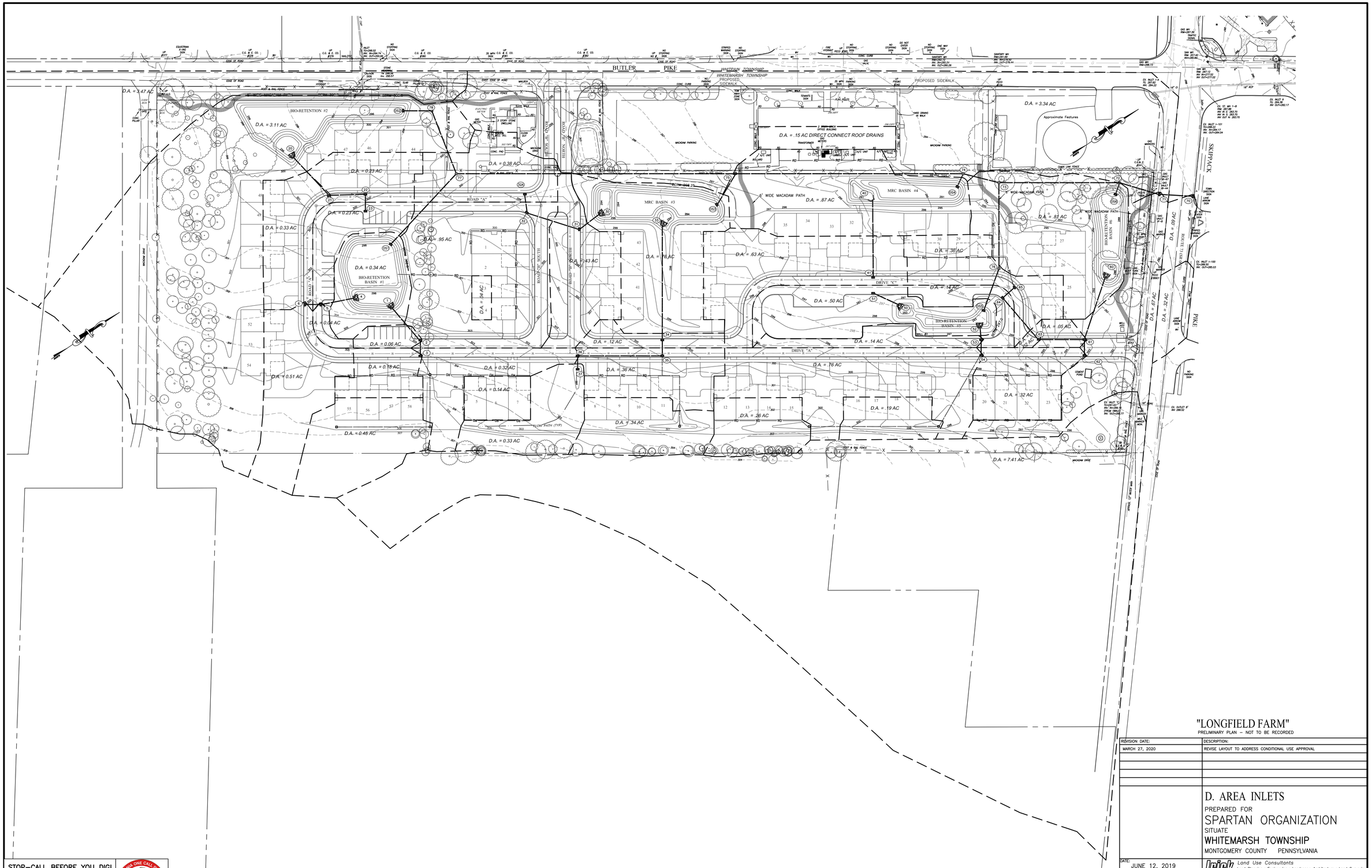
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215–541–4526
215–541–4023(Fax)
E-Mail: info@IEMGM.com



"LONGFIELD FARM"

PRELIMINARY PLAN – NOT TO BE RECORDED

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

D. AREA INLETS

PREPARED FOR

SPARTAN ORGANIZATION

SITUATE

WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17–02
DRAWN BY: RFI	FILE NAME: 17–02BASE
SCALE: 1" = 60'	SHEET: 30 OF 30

Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215–541–4626
215–541–4023(Fax)
E-Mail: Info@EBMCM.com

STOP–CALL BEFORE YOU DIG!

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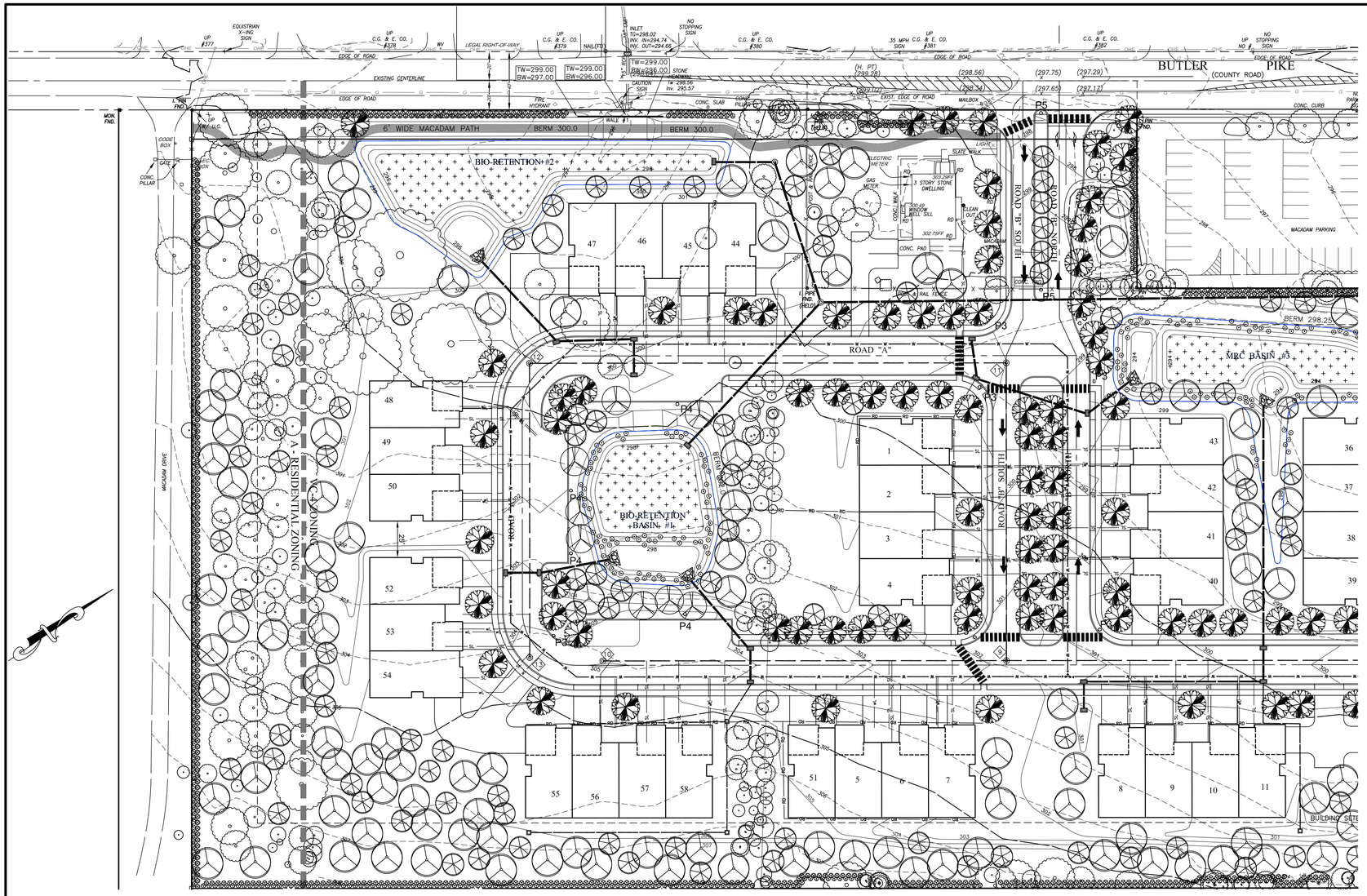
TELE. #: 1–800–242–1776 OR 811.

WORK LOCATION NO.: 20170941435



PLANTING SCHEDULE

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	Size
STREET TREE	20	Acer rubrum	Red Maple "Red Sunset"	3" Caliper Min.
	10	Acer saccharum	Sugar Maple "Bonfire"	3" Caliper Min.
	10	Gleditsia triacanthos inermis	Honeylocust	3" Caliper Min.
	20	Nyssa sylvatica	Black Gum	3" Caliper Min.
	10	Ostrya virginiana	American Hophornbeam	3" Caliper Min.
	15	Quercus bicolor	Swamp White Oak	3" Caliper Min.
	20	Quercus imbricaria	Shingle Oak	3" Caliper Min.
	15	Quercus phellos	Willow Oak	3" Caliper Min.
	15	Ulmus americana	American Elm cv. Valley Forge	3" Caliper Min.
	Total 135			
PARKING LOT TREE	3	Acer saccharum	Sugar Maple "Bonfire"	3" Caliper Min.
	4	Acer rubrum	Red Maple "Red Sunset"	3" Caliper Min.
	5	Nyssa sylvatica	Black Gum	3" Caliper Min.
	3	Ostrya virginiana	American Hophornbeam	3" Caliper Min.
	3	Quercus bicolor	Swamp White Oak	3" Caliper Min.
	5	Quercus phellos	Willow Oak	3" Caliper Min.
	Total 23			
REPLACEMENT TREE SHADE TREE	10	Acer saccharum	Sugar Maple "Bonfire"	3" Caliper Min.
	10	Acer rubrum	Red Maple "Red Sunset"	3" Caliper Min.
	10	Betula nigra	River Birch	3" Caliper Min.
	5	Carya glabra	Pignut Hickory	3" Caliper Min.
	5	Carya ovata	Shagbark Hickory	3" Caliper Min.
	5	Gymnocladus dioicus	Kentucky Coffeetree	3" Caliper Min.
	10	Liquidambar styraciflua	Sweetgum	3" Caliper Min.
	10	Nyssa sylvatica	Black Gum	3" Caliper Min.
	15	Ostrya virginiana	American Hophornbeam	3" Caliper Min.
	15	Quercus alba	White Oak	3" Caliper Min.
	10	Quercus bicolor	Swamp White Oak	3" Caliper Min.
	15	Quercus imbricaria	Shingle Oak	3" Caliper Min.
	5	Quercus coccinea	Scarlet Oak	3" Caliper Min.
	15	Quercus palustris	Pin Oak	3" Caliper Min.
	10	Quercus phellos	Willow Oak	3" Caliper Min.
	10	Sassafras albidum	Sassafras	3" Caliper Min.
	5	Ulmus americana	American Elm cv. Valley Forge	3" Caliper Min.
	Total 165			
REPLACEMENT TREE ORNAMENTAL TREE	10	Acer ginnala	Paperbark Maple	3" Caliper Min.
	20	Amelanchier canadensis	Shadblow	3" Caliper Min.
	20	Carpinus caroliniana	Ironwood	3" Caliper Min.
	20	Cercis canadensis	Redbud	3" Caliper Min.
	10	Cladastrus lutea	Yellowwood	3" Caliper Min.
	30	Cornus florida	Flowering Dogwood "Appalachain Spring"	3" Caliper Min.
	30	Cornus mas	Cornelian Cherry Dogwood	3" Caliper Min.
	18	Crataegus viridis	Winter King Hawthorne	3" Caliper Min.
	18	Halesia carolina	Silverbell	3" Caliper Min.
	22	Magnolia virginiana	Sweetbay Magnolia	3" Caliper Min.
	Total 198			
REPLACEMENT SHRUB	25	Aesculus parviflora	Bottlebrush Buckeye	24-36" Ht.
	30	Aronia arbutifolia	Red Chokeberry	24-36" Ht.
	30	Aronia melanocarpa	Black Chokeberry	24-36" Ht.
	20	Alnus rugosa	Speckled Alder	24-36" Ht.
	20	Cornus sericia	Redtwig Dogwood	24-36" Ht.
	20	Hamamelis virginiana	Witch Hazel	24-36" Ht.
	20	Hydrangea quercifolia	Oakleaf Hydrangea	24-36" Ht.
	30	Hypericum patulum	Hypericum	24-36" Ht.
	36	Ilex verticillata	Winterberry Holly	24-36" Ht.
	20	Itea virginiana	Sweetspire	24-36" Ht.
	20	Myrica pennsylvanica	Northern Bayberry	24-36" Ht.
	40	Physocarpus opulifolius	Ninebark	24-36" Ht.
	20	Rhus glabra	Smooth Sumac (not dwarf)	24-36" Ht.
	20	Sambucus canadensis	Elderberry	24-36" Ht.
	25	Vaccinium corymbosum	Highbush Blueberry	24-36" Ht.
	20	Viburnum trilobum	American Cranberrybush Viburnum	24-36" Ht.
	Total 396			
BUFFER HEDGEROW	120	Abelia grandiflora	Glossy abelia	24-36" Ht.
	100	Aesculus parviflora	Bottlebrush Buckeye	24-36" Ht.
	100	Aronia arbutifoliaRed	Chokeberry	24-36" Ht.
	100	Aronia melanocarpa	Black Chokeberry	24-36" Ht.
	110	Callicarpa americana	Beautyberry	24-36" Ht.
	100	Clethera alnifolia	Summersweet	24-36" Ht.
	115	Ilex crenataGreen	Luster Holly	24-36" Ht.
	120	Ilex verticillata	Winterberry Holly	24-36" Ht.
	100	Itea virginiana	Sweetspire	24-36" Ht.
	100	Myrica pennsylvanica	Northern Bayberry	24-36" Ht.
	120	Physocarpus opulifolius	Ninebark	24-36" Ht.
	100	Viburnum trilobum	American Cranberrybush Viburnum	24-36" Ht.
	Total 1285			

NOTES:
1. ALL BEDS SHALL HAVE A MINIMUM OF THREE (3) INCHES OF SHREDDED HARDWOOD MULCH (OR EQUAL).
2. DEER PROTECTION SHALL BE PROVIDED FOR ALL DECIDUOUS TREES AND SHALL BE REMOVED AT THE END OF THE GUARANTEE PERIOD.
3. DO NOT CUT LEADER OF DECIDUOUS TREE.
4. NO SHADE TREE SHOULD BE PLANTED CLOSER THAN 5 FEET FROM SIDEWALKS, 10 FEET FROM UNDERGROUND UTILITIES AND 15 FEET FROM OVERHEAD UTILITIES.
5. NO PLANTS, EXCEPT GROUND COVER SHALL BE PLANTED LESS THAN TWO (2) FEET FROM A STRUCTURE, WALK OR CURBLINE.
6. ALL PLANTS SHALL BE CERTIFIED DISEASE AND PEST FREE.
7. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF EIGHTEEN (18) MONTHS IN THE SAME MANNER AS OTHER REQUIRED IMPROVEMENTS, ACCORDING TO SECTION 154-56C OF THE WHITEMARSH TOWNSHIP SUBDIVISION AND LAND DEVELOPMENT ORDINANCE.
8. PROTECTIVE FENCING SHALL BE PLACED AROUND TREES ON THE PROPERTY TO BE PRESERVED AS SHOWN PRIOR TO CONSTRUCTION. STREET TREES AND OTHER REQUIRED PLANT MATERIAL SHALL NOT BE PLANTED UNTIL THE FINISHED GRADING HAS BEEN COMPLETED.
9. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD WITH THE WHITEMARSH TOWNSHIP SHADE TREE COMMISSION PRIOR TO THE START OF CONSTRUCTION.

PROPOSED AMENDED SOILS

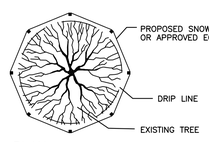
LEGEND

EXISTING STORM SEWER
PROPOSED STORM SEWER
EXISTING SANITARY SEWER
PROPOSED SANITARY SEWER
PROPOSED SANITARY SEWER FORCE MAIN — FM —
EXISTING WATER LINE — W — W —
PROPOSED WATER LINE — W — W —
EXISTING CONTOUR 644
PROPOSED CONTOUR 650
EXISTING CURB LINE
PROPOSED CURB LINE
POSITIVE DRAINAGE INDICATOR
EXISTING ELEV (333.68) OR 333.68
PROPOSED ELEV. 334.50
EXISTING TREE LINE
PROPOSED TREE LINE

EXISTING GAS LINE — G — G —
PROP. GAS LINE — G — G —
EXISTING OVERHEAD ELEC. — OE — OE —
EXISTING UNDERGROUND ELEC. — E — E —
PROP. ELECTRIC — E —
PROP. ROOF DRAIN — RD —
PROP. WATER LATERAL — wL —
PROP. SEWER LATERAL — SL —

SEED MIX		ACRES	SEEDING RATE
ERNMX-180	Rain Garden Mix		20 lbs/acres
Secale cereale	Grain Rye	14	30 lbs/acre

Note: The Grain Rye shall be seeded over the entire disturbed area and may be mixed with the other seed mixes



PLAN

NOTES:
1. PROPOSED SNOW FENCE SHALL BE ADEQUATELY SECURED WHEN INSTALLING AND IN A MANNER ACCEPTABLE TO THE TOWNSHIP ENGINEER.
2. SNOW FENCE SHALL BE ERECTED A MINIMUM OF ONE FOOT OUTSIDE THE DRIPLINE ON ALL SIDES OF INDIVIDUAL TREES, TREE MASSES, OR WOODLANDS PRIOR TO MAJOR CLEARING OR CONSTRUCTION.
3. FENCE SHALL BE PLACED AT LOCATIONS DEEMED NECESSARY BY TOWNSHIP ENGINEER AT TIME OF CONSTRUCTION.

TREE PROTECTION DETAIL

NO SCALE

Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Lumens Per Lamp	Light Loss Factor	Wattage
	P3	14	PEMCO	CARL3-15W3K-CA-TYPE III	CARLSBAD 3 POST TOP LUMINAIRE W/ CLEAR ACRYLIC LENS	SAMSUNG 351B 35PCS	1	1913	0.95	15
	P4	10	PEMCO	CARL3-15W3K-CA-TYPE IV	CARLSBAD 3 POST TOP LUMINAIRE W/ CLEAR ACRYLIC LENS	SAMSUNG 351B 35PCS	1	1848	0.95	15
	P5	3	PEMCO	CARL3-15W3K-CA-TYPE V	CARLSBAD 3 POST TOP LUMINAIRE W/ CLEAR ACRYLIC LENS	SAMSUNG 351B 35PCS	1	2389	0.95	15

Lighting Notes:
1. LUMINAIRES ARE MOUNTED ON 12' POLE WITH THE CENTER OF THE LIGHT AT 14'
2. CALCULATIONS ARE ESTIMATIONS BASED ON INFORMATION PROVIDED AND MAY VARY WITH ACTUAL CONDITIONS

40 20 0 40 80
SCALE: 1" = 40'

STOP–CALL BEFORE YOU DIG!
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TOLL-FREE NUMBER: 1-800-242-1776 OR 811.
WORK LOCATION NO.: 20170941435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 CALL BEFORE YOU DIG!

"LONGFIELD FARM"

PRELIMINARY PLAN – NOT TO BE RECORDED

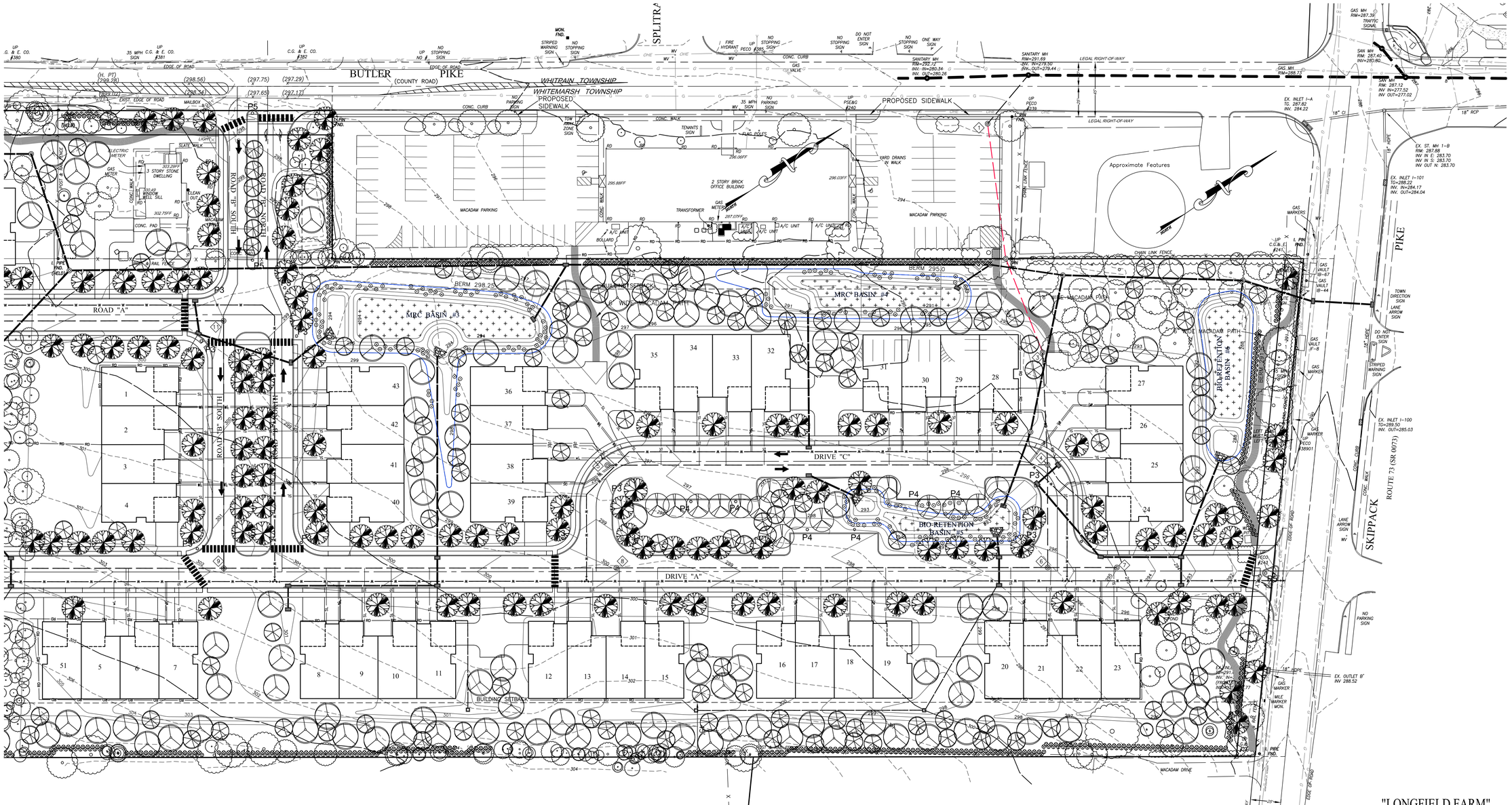
REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL
JULY 21, 2020	REVISE TO ADDRESS CONCERNS RAISED BY TOWNSHIP ENGINEER LETTER (6/16/20)
JULY 23, 2020	PROVIDE ORNAMENTAL REPLACEMENT

LANDSCAPING & LIGHTING PLAN

PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019
MANAGER: RFI
JOB NUMB.: 17–02
DRAWN BY: RFI
FILE NAME: 17–02BASE
SCALE: 1" = 40'
SHEET: 7 OF 30

Irick Eberhardt Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215–541–4626
215–541–4023(Fax)
E–Mail: Info@IEANDM.com



LANDSCAPING REQUIREMENTS

S.A.L.D.O. SECTION 105-39(A)
- REQUIRED - ONE 3" CALIPER TREE FOR EVERY TWO PARKING SPACES
  - 45 PARKING SPACES PROPOSED - 23 TREES REQUIRED
- PROPOSED - 23 TREES

S.A.L.D.O. SECTION 105-48(B) - STREET TREES
- REQUIRED - SHADE TREES AT INTERVALS OF NOT MORE THAN 45' (OR PLANTED IN AN INFORMAL ARRANGEMENT)
  - 6065 L.F. STREET FRONTAGE - 135 TREES REQUIRED
- PROPOSED - 135 SHADE TREES

Z.O. 116-291C
- REQUIRED - CLASS B BUFFER ENTIRE PERIMETER
- PROPOSED - OPTION 5 - HEDGEROW ON PROPERTY LINE (3-FOOT CENTERS)
  - 3853 L.F. BUFFER REQUIRED - 1285 SHRUBS

CHAPTER 55 - TREE PROTECTION STANDARDS

55-4.B(6)(a) - REPLACEMENT TREES
- EVERY TREE WITH A DBH GREATER THAN 6" SHALL BE REPLACED WITH MINIMUM 3" CALIPER TREES HAVING A TOTAL CALIPER EQUAL THE DBH OF TREES REMOVED.
  - 1576 TOTAL CALIPER INCHES TO BE REMOVED - 525 TREES REQUIRED.

RESOLUTION 2004-8 II.D(19) - LANDSCAPING - STORMWATER MANAGEMENT FACILITIES SHALL BE PROPERLY SCREENED

TREE REPLACEMENT REQUIREMENTS

TOTAL REPLACEMENT TREES REQUIRED - 330
PERMITTED SUBSTITUTIONS PER SALDO 55-4.B(6)(f)
ORNAMENTAL OR EVERGREEN TREES - 30% (99 TREES) AT 2:1
- TOTAL TREES PERMITTED - 198
- PROPOSED - 198 (99 TREE EQUIVALENT)

SHRUBS - 20% (66 TREES) AT 6:1
- TOTAL SHRUBS PERMITTED - 396
- PROPOSED - 396 (66 TREE EQUIVALENT)

PROPOSED REPLACEMENT TREES (3" CAL.) - 165
TOTAL EQUIVALENT TREES PROPOSED - 330

LEGEND

EXISTING STORM SEWER	
PROPOSED STORM SEWER	
EXISTING SANITARY SEWER	
PROPOSED SANITARY SEWER	
PROPOSED SANITARY SEWER FORCE MAIN	FM
EXISTING WATER LINE	W
PROPOSED WATER LINE	W
EXISTING CONTOUR	644
PROPOSED CONTOUR	650
EXISTING CURB LINE	
PROPOSED CURB LINE	
POSITIVE DRAINAGE INDICATOR	
EXISTING ELEV	(333.68) OR 333.68
PROPOSED ELEV.	334.50
EXISTING TREE LINE	
PROPOSED TREE LINE	
EXISTING GAS LINE	G
PROP. GAS LINE	G
EXISTING OVERHEAD ELEC.	OE
EXISTING UNDERGROUND ELEC.	E
PROP. ELECTRIC	E
PROP. ROOF DRAIN	RD
PROP. WATER LATERAL	wL
PROP. SEWER LATERAL	SL

40 20 0 40 80
SCALE: 1" = 40'

STOP–CALL BEFORE YOU DIG!
LOCATION OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION OF UNDERGROUND UTILITIES CANNOT BE GUARANTEED. THE LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA. ONE CALL SYSTEM THREE DAYS PRIOR TO EXCAVATION. REFERENCE PENNSYLVANIA ACT 287 AS AMENDED BY ACT 181 (2006).
TELE. #: 1-800-242-1776 OR 811.
WORK LOCATION NO.: 20170941435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!

"LONGFIELD FARM"

PRELIMINARY PLAN – NOT TO BE RECORDED

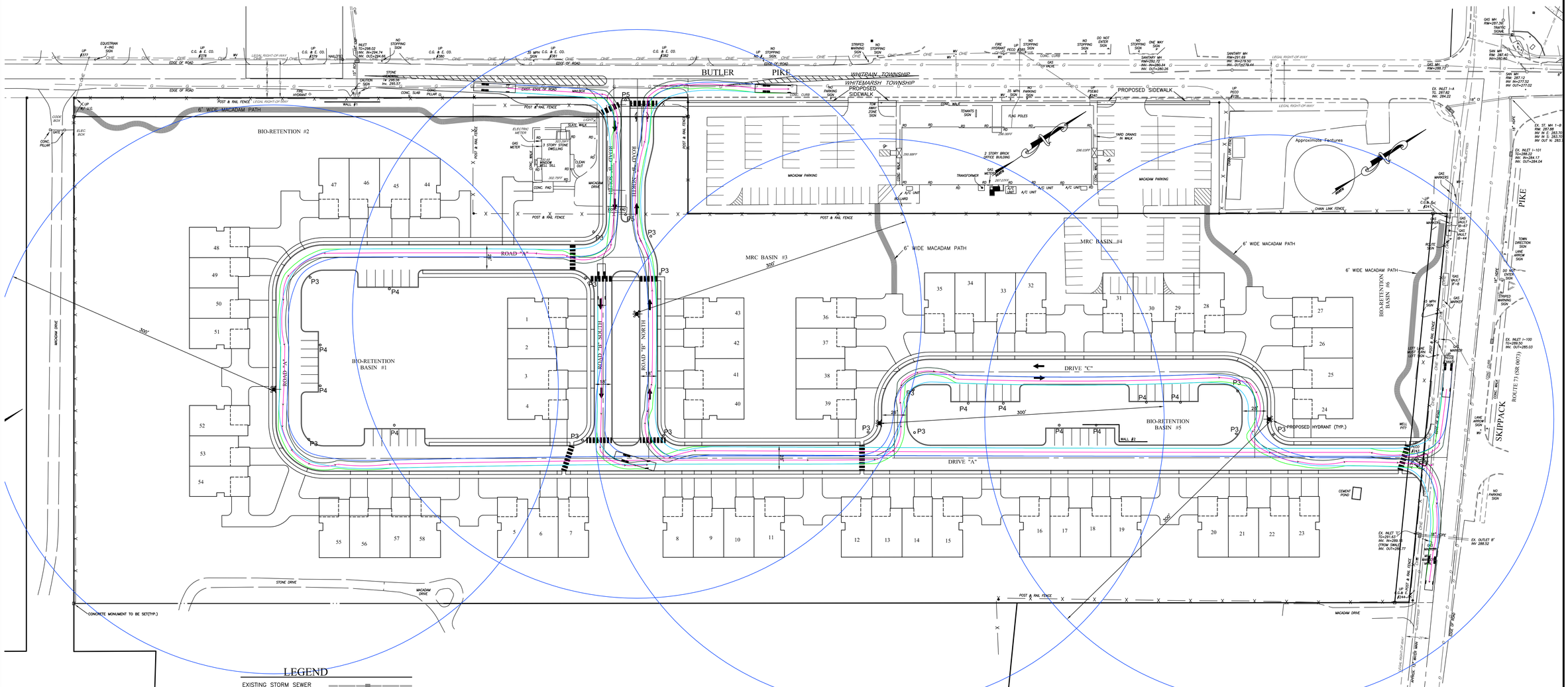
REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL
JULY 21, 2020	REVISE TO ADDRESS CONCERNS RAISED BY TOWNSHIP ENGINEER LETTER (6/16/20)
JULY 23, 2020	PROVIDE ORNAMENTAL REPLACEMENT

LANDSCAPING & LIGHTING PLAN

PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17–02
DRAWN BY: RFI	FILE NAME: 17–02BASE
SCALE: 1" = 40'	SHEET: 8 OF 30

Irick Eberhardt Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Gerpville Pike
Pennsburg, PA 18073
215–541–4626
215–541–4023(Fax)
E–Mail: Info@IEANDM.com

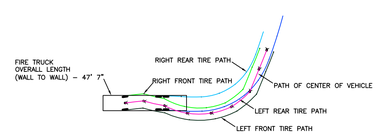


"LONGFIELD FARM"

PRELIMINARY PLAN – NOT TO BE RECORDED

LEGEND

EXISTING STORM SEWER	
PROPOSED STORM SEWER	
EXISTING SANITARY SEWER	
PROPOSED SANITARY SEWER	
PROPOSED SANITARY SEWER FORCE MAIN	FM
EXISTING WATER LINE	W
PROPOSED WATER LINE	W
EXISTING CONTOUR	644
PROPOSED CONTOUR	650
EXISTING CURB LINE	
PROPOSED CURB LINE	
POSITIVE DRAINAGE INDICATOR	
EXISTING ELEV	(333.68) OR 333.68
PROPOSED ELEV.	
EXISTING TREE LINE	
PROPOSED TREE LINE	
EXISTING GAS LINE	G
PROP. GAS LINE	G
EXISTING OVERHEAD ELEC.	OE
EXISTING UNDERGROUND ELEC.	E
PROP. ELECTRIC	E
PROP. ROOF DRAIN	RD
PROP. WATER LATERAL	wL
PROP. SEWER LATERAL	SL



TYPICAL VEHICLE PATH - FIRE TRUCK

VEHICLE ANALYZED
FIRE TRUCK – 48.25' OVERALL LENGTH

50 25 0 50 100

SCALE: 1" = 50'

STOP–CALL BEFORE YOU DIG!

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TOLL #: 1–800–242–1776 OR 811.
WORK LOCATION NO.: 20170941435

PENNSYLVANIA ONE CALL SYSTEM, INC. PROTECT YOURSELF CALL BEFORE YOU DIG!

REVISION DATE:	DESCRIPTION:

AUTOTURN & HYDRANT EXHIBIT

PREPARED FOR

SPARTAN ORGANIZATION

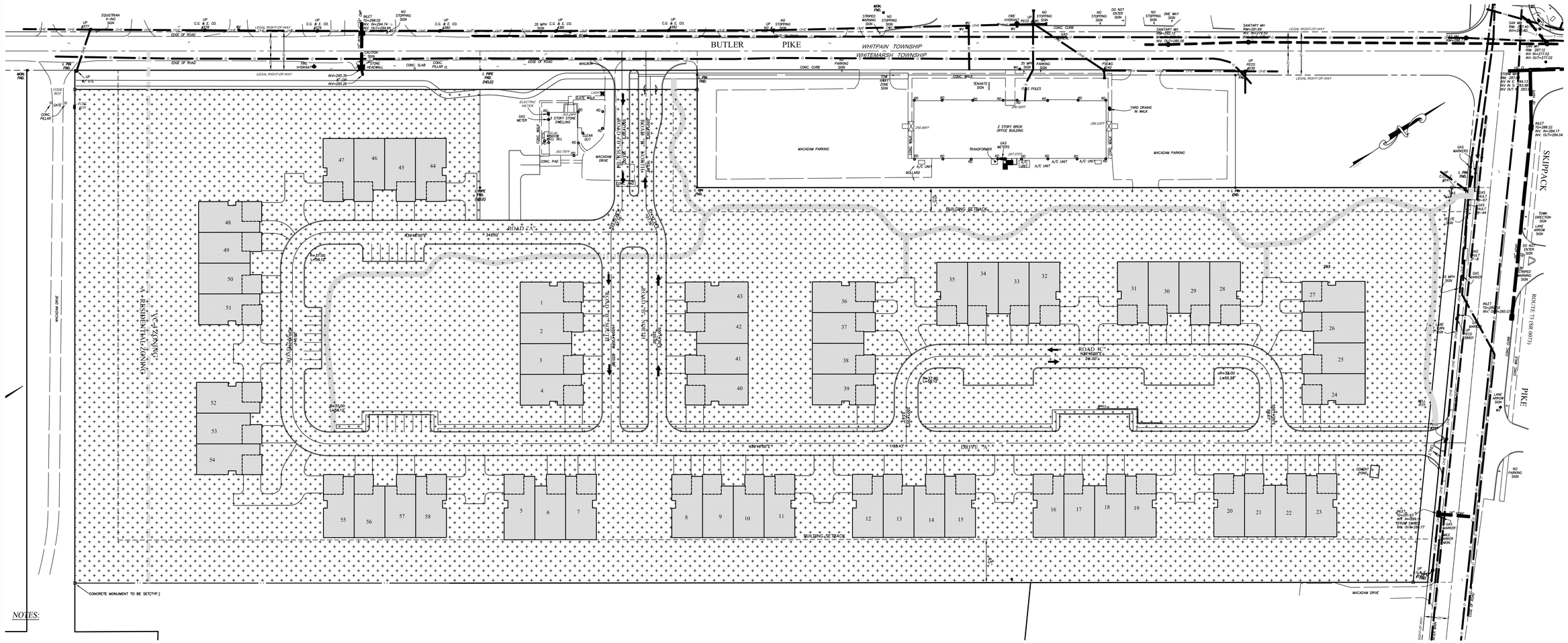
SITUATE

WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY PENNSYLVANIA

DATE: MARCH 28, 2020	
MANAGER: RFI	JOB NUMB.: 17–02
DRAWN BY: RFI	FILE NAME: 17–02BASE
SCALE: 1" = 50'	SHEET: 1 OF 1

Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Irick Eberhardt Mientus INCORPORATED
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215–541–4626
215–541–4023(Fax)
E–Mail: info@IEANDM.com



NOTES:

LEGEND

EXISTING STORM SEWER	
PROPOSED STORM SEWER	
EXISTING SANITARY SEWER	
PROPOSED SANITARY SEWER	
PROPOSED SANITARY SEWER FORCE MAIN	FM
EXISTING WATER LINE	W
PROPOSED WATER LINE	W
EXISTING CONTOUR	644
PROPOSED CONTOUR	650
EXISTING CURB LINE	
PROPOSED CURB LINE	
POSITIVE DRAINAGE INDICATOR	
EXISTING ELEV	(333.68) OR 333.68
PROPOSED ELEV.	334.50
EXISTING TREE LINE	
PROPOSED TREE LINE	
EXISTING GAS LINE	G
PROP. GAS LINE	G
EXISTING OVERHEAD ELEC.	OE
EXISTING UNDERGROUND ELEC.	
PROP. ELECTRIC	E
PROP. ROOF DRAIN	RD
PROP. WATER LATERAL	wL
PROP. SEWER LATERAL	SL

COMMON FACILITIES

TOWNHOME UNITS

NOTES:

1. A OWNERS ASSOCIATION WILL OWN AND MAINTAIN ANY LAND NOT SPECIFICALLY DEEDED/OWNED BY AN INDIVIDUAL. ALL REMAINING OPEN AREAS AND ANY IMPROVEMENTS ON THE LAND WILL BE MAINTAINED BY THE OWNERS ASSOCIATION. DOCUMENTATION SHALL INCLUDE A LAND PRESERVATION/PROTECTION AGREEMENT, DEED RESTRICTION OR OTHER ENFORCEABLE INSTRUMENT THAT ENSURES AND DEFINES MAINTENANCE OF THE SWALES, BASINS AND OTHER PERMANENT BMPS AS NOTED ON THE PCSM PLANS AND PERPETUAL PROTECTION AND MAINTENANCE (INCLUDING THE BIORETENTION BASINS) OF THE OPEN SPACE AND SHALL BE RECORDED. REFER TO PCSM PLANS WITHIN THIS PLAN SET FOR ADDITIONAL INFORMATION.

2. SITE STORMWATER BMPs (BIORETENTION BASIN, RAIN GARDEN, RETENTIVE BERM, WATER QUALITY AREAS 'A' & 'B') SHALL BE OWNED AND MAINTAINED IN PERPETUITY BY THE OWNERS ASSOCIATION. A BLANKET ACCESS EASEMENT SHALL BE PROVIDED TO THE TOWNSHIP FOR FOR THE PURPOSE OF ACCESS TO THE STORMWATER BMPs ON AN ANNUAL BASIS. REFER TO PCSM PLAN FOR ADDITIONAL INFORMATION RELATING TO SITE STORMWATER BMPs.

3. THE COMMON OPEN SPACE IS SUBJECT TO PERMANENT CONSERVATION EASEMENTS PROHIBITING FUTURE DEVELOPMENT AND DEFINING THE RANGE OF PERMITTED ACTIVITIES CONSISTENT WITH Z.O. SECTION 116-275 AS EXECUTED BETWEEN TOWNSHIP AND APPLICANT.

50 25 0 50 100

SCALE: 1" = 50'

"LONGFIELD FARM"

REVISION DATE	DESCRIPTION

PLANNED COMMUNITY
PREPARED FOR COMMON FACILITIES PLAN
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
DRAWN: RFI	FILE NAME: 17-02
CHECKED: RFI	FILE NO: 17-02BASE
SCALE: 1" = 50'	SHEET: 1 OF 1

Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215-541-4626
215-541-4023(fax)
E-Mail: info@EANDM.com

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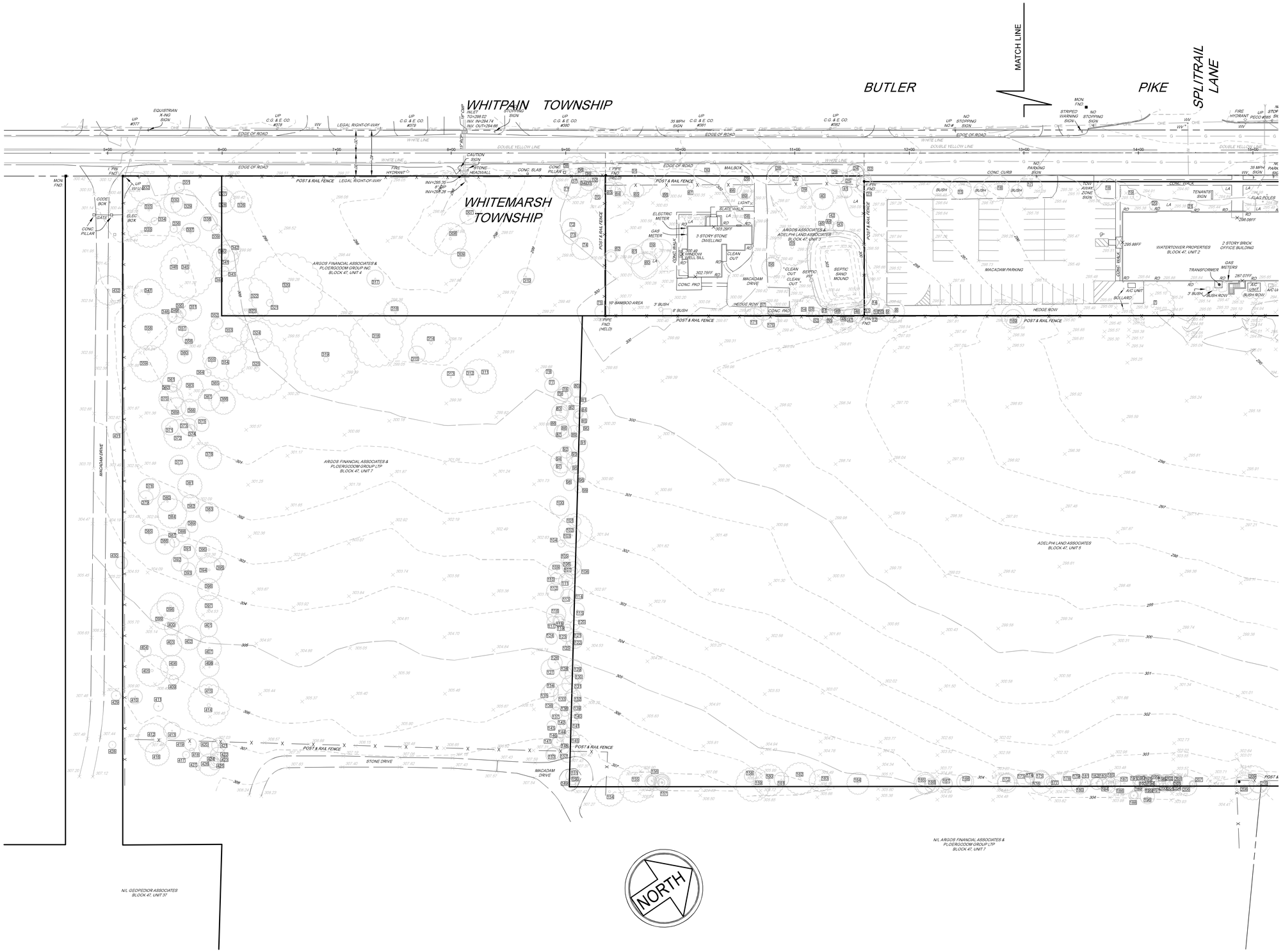
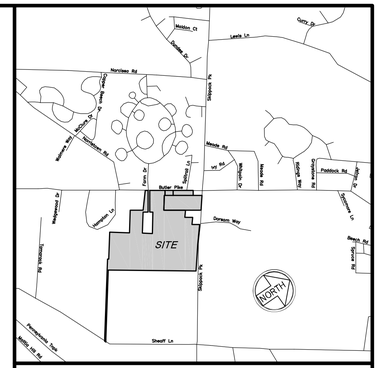
TELL–A–1–800–242–1776 OR 811.

WORK LOCATION NO.: 20170941430

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!





LOCATION MAP 1"=2000'

LEGEND

412	EXISTING 2 FT CONTOUR
400	EXISTING 10 FT CONTOUR
400	EXISTING SPOT ELEVATION
LA	EXISTING LANDSCAPED AREA
	EXISTING STORM SEWER
S	EXISTING SANITARY SEWER
W	EXISTING WATER
X	EXISTING FENCE
T	EXISTING TELEPHONE
OHW	EXISTING OVERHEAD WIRES
E	EXISTING ELECTRIC
C	EXISTING CABLE
G	EXISTING GAS
	EXISTING UTILITY POLE
	EXISTING I. PIN/ I. PIPE
	EXISTING MONUMENT
	PROPOSED UTILITY POLE
	EXISTING I. PIN/ I. PIPE
	EXISTING MONUMENT

40 20 0 40 80 120

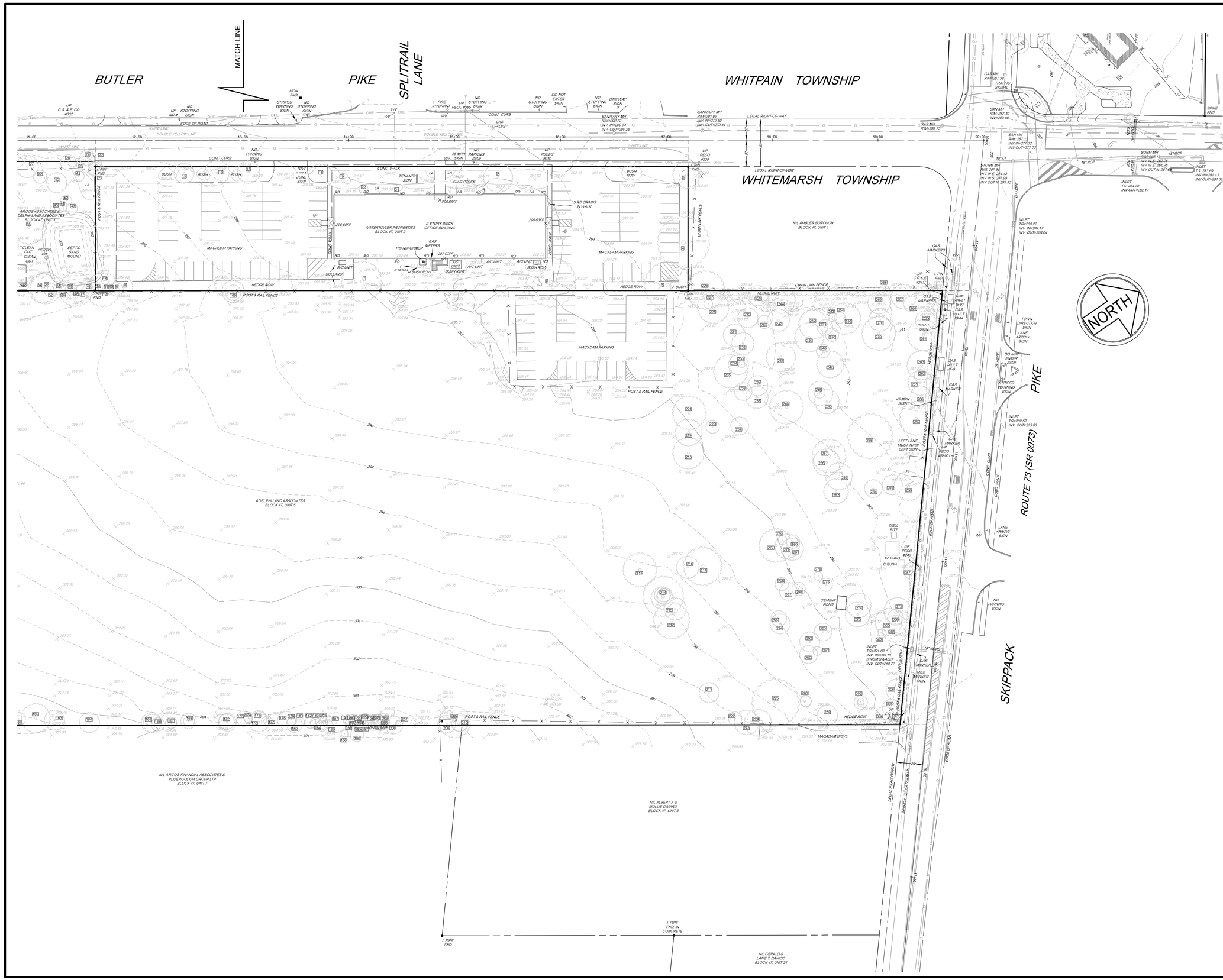
SCALE IN FEET

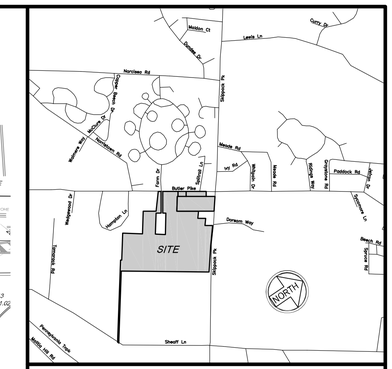
No.	REVISIONS	DATE
2.	TREE SURVEY ISSUE	06-10-19
1.	ADDITIONAL TOPOGRAPHY	03-17-14
—	DATE OF ISSUE	01-09-14

TREE SURVEY
OF
LONGFIELD FARM
LAND SITUATE
WHITEMARSH TWP., MONTGOMERY CO. PA.

PROJECT MANAGER: MRF
PROJECT NUMBER: M7648
REFERENCE NUMBER:
SCALE: 1"=40'
M7648base.dwg
PLAN SHEET NUMBER: 1 of 3

Metz Engineers
410 Derstine Ave., PO Box 647, Lansdale PA 19446-0608
Civil Engineers & Land Surveyors
(215) 855-3111





LOCATION MAP 1"=2000'

LEGEND

412	EXISTING 2 FT CONTOUR
400	EXISTING 10 FT CONTOUR
449.0	EXISTING SPOT ELEVATION
LA	EXISTING LANDSCAPED AREA
D	EXISTING STORM SEWER
S	EXISTING SANITARY SEWER
W	EXISTING WATER
X	EXISTING FENCE
T	EXISTING TELEPHONE
OHW	EXISTING OVERHEAD WIRES
E	EXISTING ELECTRIC
C	EXISTING CABLE
G	EXISTING GAS
#	EXISTING UTILITY POLE
	EXISTING I. PIN/ I. PIPE
	EXISTING MONUMENT
	PROPOSED UTILITY POLE
	EXISTING I. PIN/ I. PIPE
	EXISTING MONUMENT

40 20 0 40 80 120

SCALE IN FEET

No.	REVISIONS	DATE
2.	TREE SURVEY ISSUE	06-10-19
1.	ADDITIONAL TOPOGRAPHY	03-17-14
——	DATE OF ISSUE	01-09-14

TREE SURVEY
OF
LONGFIELD FARM
LAND SITUATE
WHITEMARSH TWP., MONTGOMERY CO. PA.

PROJECT MANAGER: MRF
PROJECT NUMBER: M7648
REFERENCE NUMBER:
SCALE: 1"=40'
M7648base.dwg
PLAN SHEET NUMBER: 2 of 3

Metz Engineers
410 Derstine Ave., PO Box 647, Lansdale PA 19446-0608
Civil Engineers & Land Surveyors
(215) 855-3111

TREE POINT & SIZE TABLE

PLAN #	SURVEY #	SIZE (IN)
1	372	6
2	376	26
3	420	24
4	427	46
5	461	42
6	515	44
7	607	36
8	646	18
9	647	12
10	648	8
11	649	8
12	650	30
13	654	6
14	655	6
15	688	18
16	698	22
17	707	20
18	774	22
19	777	6
20	783	8
21	801	6
22	850	12
23	851	12 & 14 TWIN
24	852	14
25	853	14
26	856	14
27	860	20
28	861	18
29	865	8
30	867	22
31	870	34
32	873	12 & 8 TWIN
33	874	4
34	875	12
35	876	14
36	877	8
37	878	34
38	880	6
39	882	12
40	883	18
41	884	10
42	889	10
43	890	10
44	891	8
45	892	8
46	913	14
47	914	12
48	915	30
49	916	10
50	917	12
51	918	10
52	919	6 & 12 TWIN
53	920	28
54	921	26
55	925	30
56	926	16
57	953	16
58	956	8
59	1013	18
60	1014	22
61	1015	16
62	1016	10 & 8 TWIN
63	1049	10
64	1050	12
65	1051	12
66	1052	8
67	1053	6
68	1088	14
69	1089	12
70	1101	10
71	1102	24
72	1104	16
73	1105	12
74	1106	18
75	1110	12
76	1124	8
77	1125	12
78	1126	10 & 12 TWIN
79	1127	12
80	1128	14
81	1129	6
82	1130	8
83	1131	10 & 14 TWIN
84	1132	6 & 8 TWIN
85	1133	12
86	1134	18
87	1135	12
88	1136	12
89	1137	10
90	1138	6

PLAN #	SURVEY #	SIZE (IN)
109	1157	14
110	1158	10
111	1159	12
112	1160	14
113	1161	12
114	1162	12
115	1163	12
116	1164	16
117	1165	10
118	1166	8 & 10 TWIN
119	1167	6
120	1168	8
121	1169	12
122	1170	14
123	1171	12
124	1172	10
125	1173	8
126	1174	12
127	1175	16
128	1176	10
129	1177	12
130	1179	16
131	1180	14
132	1181	12
133	1182	20
134	1183	12
135	1184	14
136	1185	6
137	1186	10
138	1187	8
139	1188	12
140	1189	8
141	1190	10
142	1191	6
143	1192	8
144	1193	4 & 8 TWIN
145	1194	14
146	1195	6
147	1196	10 & 8 TWIN
148	1197	8
149	1225	10
150	1226	6 & 8 TWIN
151	1227	10
152	1228	12
153	1229	10 & 12 TWIN
154	1230	24
155	1231	30
156	1232	8, 8 & 12 TRI.
157	1233	14 TO 6 MULTI.
158	1234	10
159	1235	28
160	1236	26
161	1237	12
162	1238	26
163	1239	18
164	1240	18
165	1241	16 & 8 TWIN
166	1242	12
167	1243	10 & 10 TWIN
168	1244	10 & 14 TWIN
169	1245	14 & 20 TWIN
170	1246	14
171	1247	16
172	1380	14 & 16 TWIN
173	1381	14
174	1382	8 & 8 TWIN
175	1383	14
176	1384	18
177	1385	6 & 10 TWIN
178	1386	16
179	1387	10
180	1388	14
181	1389	8
182	1390	10 & 10 TWIN
183	1391	10
184	1392	10
185	1393	8
186	1394	8
187	1395	18
188	1396	6 & 8 TWIN
189	1397	8
190	1398	12
191	1399	8
192	1400	8
193	1401	10
194	1402	8
195	1403	6 & 8 TWIN
196	1404	12
197	1405	6 & 6 TWIN
198	1406	10

PLAN #	SURVEY #	SIZE (IN)
217	1579	34
218	1580	28
219	1581	24
220	1582	12
221	1583	30
222	1592	12
223	1593	22
224	1594	24
225	1595	42
226	1615	34
227	1616	8
228	1617	28
229	1618	18
230	1619	18
231	1620	20
232	1621	20
233	1622	6
234	1623	18
235	1624	30
236	1625	16
237	1626	16
238	1627	20
239	1628	18
240	1629	30
241	1630	26
242	1631	20
243	1632	12
244	1633	24
245	1665	22
246	1666	10 & 22 TWIN
247	1667	24
248	1668	12
249	1669	26
250	1670	12
251	1671	14
252	1672	26
253	1673	8
254	1674	10
255	1675	28
256	1686	24
257	1687	30
258	1688	40
259	1689	30
260	1690	18
261	1691	22
262	1692	12
263	1693	26
264	1694	28
265	1695	18
266	1696	14
267	1697	22
268	1698	10
269	1699	20
270	1700	20
271	1701	30
272	1777	24
273	1778	22
274	1779	22
275	1788	12
276	1789	8
277	1790	30
278	1791	8
279	1792	22
280	1793	12
281	1794	20
282	1795	22
283	1796	24
284	1797	16
285	1798	18
286	1799	26
287	1800	16
288	1818	10 & 10 TWIN
289	1819	18
290	1820	16
291	1821	8
292	1822	18
293	1823	16
294	1824	18
295	1825	14
296	1826	12
297	1827	16
298	1828	12
299	1829	14
300	1830	24
301	1831	24
302	1832	6 & 8 TWIN
303	1841	12 to 6 MULTI.
304	1842	16
305	1843	16
306	1844	20

PLAN #	SURVEY #	SIZE (IN)
325	2356	50 MULTI.
326	2357	18
327	2358	18
328	2359	20
329	2360	22
330	2361	16
331	2362	8
332	2363	34
333	2364	6 MULTI.
334	2365	6
335	2366	36
336	2367	6
337	2368	16
338	2369	14
339	2370	8
340	2371	10
341	2372	10 & 12 TWIN
342	2373	18
343	2374	8
344	2375	6
345	2376	20 & 24 TWIN
346	2377	6
347	2378	24
348	2379	8
349	2380	12
350	2381	8
351	2382	18
352	2383	10
353	2384	32
354	2385	36
355	2386	10
356	2387	10
357	2388	10
358	2389	30
359	2390	30
360	2391	12
361	2392	16
362	2393	6
363	2394	22
364	2395	6
365	2396	8
366	2397	20
367	2398	18
368	2399	14
369	2400	16
370	2401	20
371	2402	14
372	2403	24
373	2404	14
374	2405	6
375	2406	12
376	2407	20
377	2408	16
378	2409	8 & 10 TWIN
379	2410	12
380	2411	16
381	2412	20
382	2413	14
383	2414	16
384	2415	24
385	2416	16
386	2417	16
387	2418	8
388	2419	12
389	2420	10
390	2421	22
391	2422	12
392	2423	14
393	2424	12
394	2425	12 & 12 TWIN
395	2426	10
396	2427	18
397	2428	22
398	2429	22
399	2430	8, 8 & 8 TRI.
400	2431	12
401	2432	14
402	2433	20
403	2434	18
404	2435	10
405	2436	26
406	2437	20
407	2438	20
408	2439	16
409	2440	8
410	2441	12
411	2442	8
412	2443	24
413	2444	14
414	2445	16 & 18 TWIN

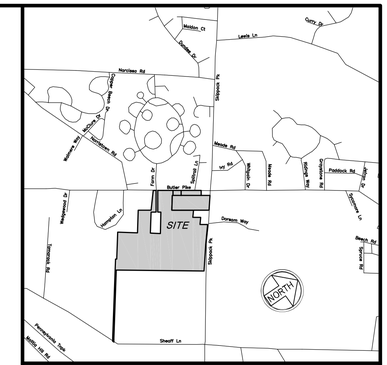
TREE POINT & SIZE TABLE

PLAN #	SURVEY #	SIZE (IN)
91	1139	12
92	1140	10
93	1141	10
94	1142	18
95	1143	14
96	1144	10
97	1145	12
98	1146	10
99	1147	6
100	1148	16
101	1149	8
102	1150	28
103	1151	14
104	1152	6
105	1153	14
106	1154	16
107	1155	14
108	1156	6

PLAN #	SURVEY #	SIZE (IN)
199	1407	10
200	1408	14
201	1409	10
202	1410	12
203	1411	12
204	1412	10
205	1413	8 & 14 TWIN
206	1414	16
207	1415	4, 6 & 6 TRI.
208	1416	16
209	1417	28
210	1418	14 & 16 TWIN
211	1573	18
212	1574	32
213	1575	20
214	1576	36 to 12 MULTI.
215	1577	30
216	1578	20

PLAN #	SURVEY #	SIZE (IN)
307	2338	14
308	2339	26
309	2340	16
310	2341	14
311	2342	12 & 16 TWIN
312	2343	14
313	2344	16
314	2345	14 & 18 TWIN
315	2346	14
316	2347	20
317	2348	14
318	2349	44
319	2350	52
320	2351	22, 22 & 24 TRI.
321	2352	6
322	2353	14 & 22 TWIN
323	2354	8
324	2355	12 & 14 TWIN

PLAN #	SURVEY #	SIZE (IN)
415	2446	16
416	2447	20
417	2448	6
418	2449	4
419	2450	10
420	2451	16
421	2452	12
422	2453	12
423	2454	12
424	2455	8
425	2456	10
426	2457	18
427	2458	4
428	2477	6
429	2478	8
430	2485	10
431	2492	10
432	2497	24



LOCATION MAP 1"=2000'

200 100 0 200 400 600

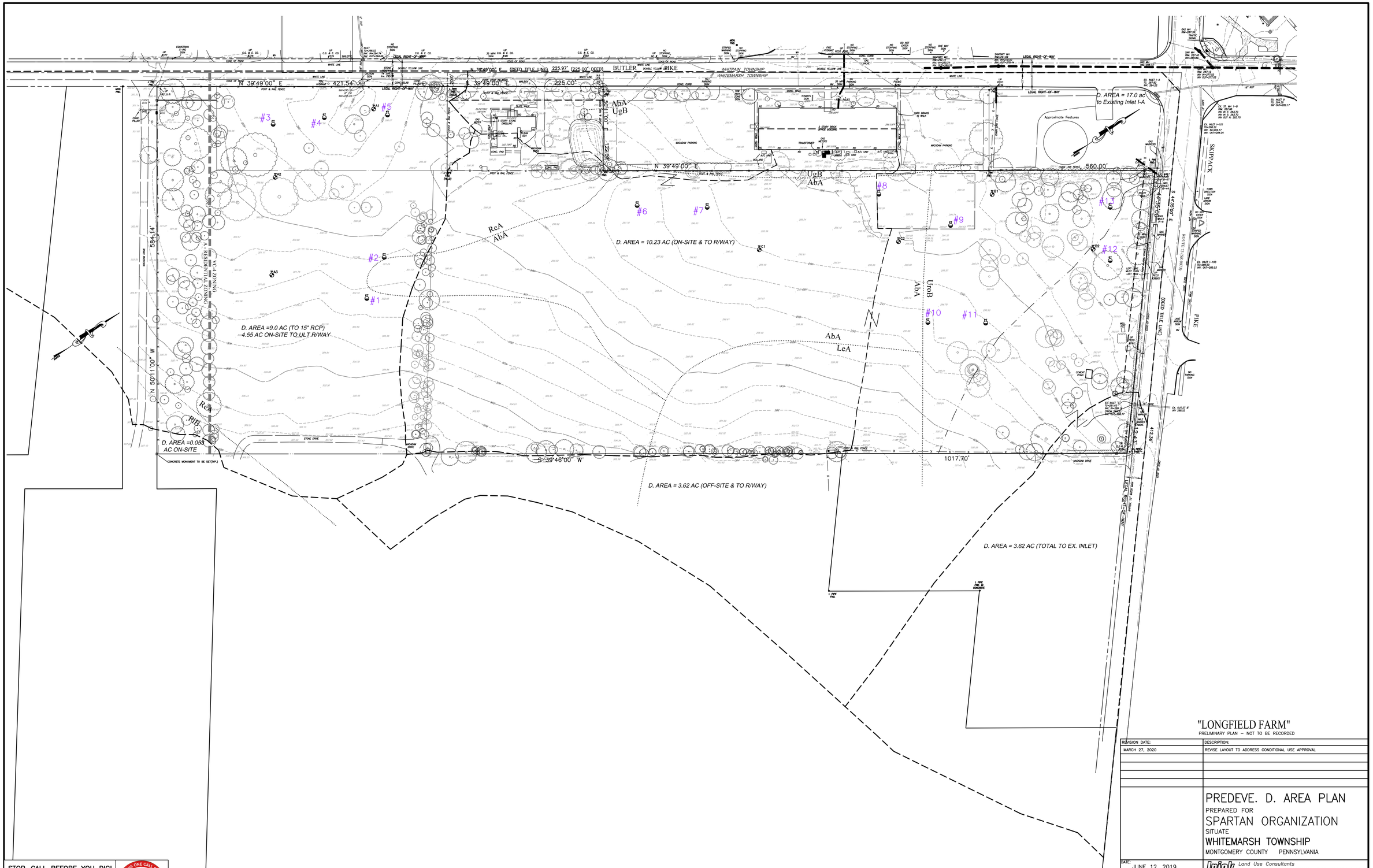
SCALE IN FEET

No.	REVISIONS	DATE
1.	TREE SURVEY ISSUE	06-10-19
—	DATE OF ISSUE	03-17-14

TREE SURVEY TABLE
DEED PLOT
OF
LONGFIELD FARM
LAND SITUATE
WHITEMARSH TWP., MONTGOMERY CO. PA.

PROJECT MANAGER: MRF
PROJECT NUMBER: M7648
REFERENCE NUMBER:
SCALE: 1"=200'
M7648base.dwg
PLAN SHEET NUMBER: 3 of 3

Metz Engineers
410 Derstine Ave., PO Box 647, Lansdale PA 19446-0608
Civil Engineers & Land Surveyors
(215) 855-3111



"LONGFIELD FARM"

PRELIMINARY PLAN – NOT TO BE RECORDED

REVISION DATE:	DESCRIPTION:
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

PREDEVE. D. AREA PLAN

PREPARED FOR

SPARTAN ORGANIZATION

SITUATE

WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
MANAGER: RFI	JOB NUMB.: 17-02
DRAWN BY: RFI	FILE NAME: 17-02BASE
SCALE: 1" = 60'	SHEET: 1 OF 1

Irick Eberhardt Mientus INCORPORATED

Land Use Consultants

Land Planning • Engineering • Landscape Architecture • Land Surveying

Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215-541-4626
215-541-4023(Fax)
E-Mail: Info@IEMDM.com

60 30 0 60 120

SCALE: 1" = 60'

STOP–CALL BEFORE YOU DIG!

LOCATION OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE–GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING THE ONE CALL SYSTEM THREE DAYS PRIOR TO EXCAVATION. REFERENCE PENNSYLVANIA ACT 287 AS AMENDED BY ACT 181 (2008).

TELE.#: 1-800-242-1776 OR 811.

WORK LOCATION NO.: 20170841435

PENNSYLVANIA ONE CALL SYSTEM, INC. 1-800-242-1776 STOP-CALL BEFORE YOU DIG!

PHOTO "A"

PHOTO "B"

PHOTO "C"

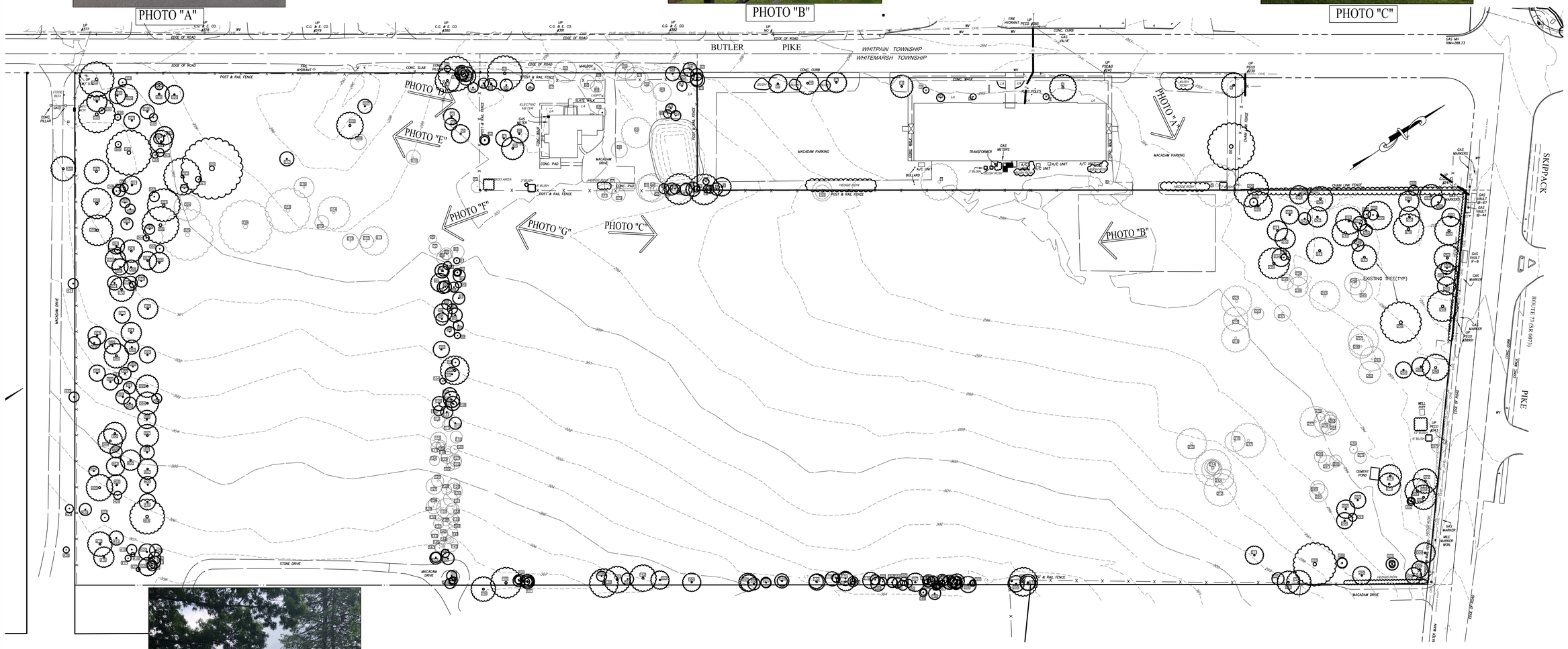


PHOTO "D"

PHOTO "E"

PHOTO "F"

PHOTO "G"

"LONGFIELD FARM"

REVISION DATE	DESCRIPTION

VIEWSHED EXHIBIT

PREPARED FOR

SPARTAN ORGANIZATION

SITUATE

WHITEMARSH TOWNSHIP

MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
DRAWN BY: RFI	JOB / FILE #: 17-02
CHECKED BY: RFI	FILE NAME: 17-02BASE
SCALE: 1" = 50'	SHEET: 1 OF 1

Irick Eberhardt Mientus
Land Use Consultants
• Site Planning • Engineering • Landscape Architecture • Land Surveying
Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215-541-4626
215-541-4023(fax)
E-Mail: info@IEANDM.com

3 UNIT BUILDING GROUPING

Longfield Estates

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12/17/18

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4 UNIT BUILDING GROUPING

Longfield Estates

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ARCHITECTS

12/17/18

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EXTERIOR UNIT SIDE ELEVATION

Longfield Estates

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REVIEWS

- Zoning Ordinance Compliance Review Letter – dated 6/16/2020
- Gilmore & Associates, Inc. (Township Engineer) Review Letter – dated 6/16/2020
- Heinrich & Klein Associates, Inc. Traffic Engineering Review Letter – dated 6/18/2020
- Heinrich & Klein Associates, Inc. Traffic Engineering Review Letter – dated 2/11/2019
- Responses to Traffic Engineering Review Comments – dated 4/24/2020
- Whitemarsh Township Fire Marshall Review memo – dated 4/28/2020
- Montgomery County Planning Commission Review Letter – dated 6/17/2020
- Arborist Memo – dated 7/23/2020
- Landscape Replacement Memo – dated 7/23/2020
- Shade Tree Commission Memo – dated 8/5/2020
- Whitpain Township Review Letter – dated 8/19/2020
- Whitpain Township McMahon Review Letter – dated 8/20/2020

Whitemarsh TOWNSHIP

616 GERMANTOWN PIKE - LAFAYETTE HILL, PA 19444-1821
TEL: 610-825-3535 FAX: 610-825-9416
www.whitemarshtwp.org

BOARD of SUPERVISORS

Laura Boyle Nester – Chair
Fran McCusker – Vice Chair
Michael Drossner
Vincent Manuele
Jacy Toll

Richard L. Mellor, Jr.
Township Manager

June 16, 2020

Argos Associates/Adelphi Land Associates/Polergodom Group, Ltd.
c/o Robert Downs, V.P. Business Development & General Counsel
P.O. Box 785
Fort Washington, PA 19034

RE: S/LD #02-19 Longfield Farm, Butler Pike/Skippack Pike
Revised Preliminary Plan Review
Zoning Ordinance Compliance Review Letter

Dear Mr. Downs:

Please accept this as a review of the Zoning Ordinance Compliance issues for your above referenced Land Development plans for 58 townhomes in the VC-4 District, prepared by Irick, Eberhardt & Mientus, Inc.; our review is based upon a 30-sheet plan set dated June 12, 2019, and last revised March 27, 2020. Although the original preliminary plan set was submitted in June 2019, that set was not reviewed at the request of the applicant. The applicant revised the plans to address comments which were raised during the conditional use hearings and decision required for the townhome use in the VC-4 District (compliance with certain conditions associated with the conditional use approval referenced below, are discussed under certain comments in this review).

The development tract consists of three parcels (Block 47, Units 3, 4 and 5) and a portion of a fourth parcel (Block 47, Unit 7); said portion is to be combined with the other three parcels as part of the development process. An existing pre-1940's house is being retained on Block 47, Unit 3 (addressed as 6132 Butler Pike); a post-1940's addition is being removed in order to allow the entry road from Butler Pike to be placed as proposed.

In addition to the submitted plan set and other pertinent documents, also considered in this review, is the following:

- Conditional Use approval by the Board of Supervisors granted on November 21, 2019

The following are the Zoning Ordinance compliance comments for this proposal, with associated Zoning Ordinance Sections noted.

1. §116-18. The plans show features which are located outside of the boundary lines of the subject property, including the following: asphalt paths, roof drains and sanitary sewer piping. The plans cannot be approved until all structures and/or uses for the lot(s) are located entirely within the property boundaries or easements or some other agreement is established to permit the encroachments.

2. §116-21. Clear sight distance must be provided at or near the intersection of any two roads, or at any curve in any road, in order to assure a full and unobstructed view in all directions at such crossings or curves. As defined by Section 105-5, clear sight triangles shall include the area bounded by any two intersecting street lines, defined as the Ultimate Right-of-Way line, and a straight line drawn between points on each such line 50 feet from the intersection of said lines or extensions thereof. Clear Sight Triangles must be shown at all street intersections, and must be shown on and coordinated with the Landscaping & Lighting Plans.

3. §116-28.A.(2) The applicant shall furnish a letter from the appropriate authority indicating the availability and supply of water for the proposed project to the Zoning Officer.

4. §116-29. The applicant must obtain the approval of the Whitemarsh Township Authority with regard to proposed sanitary sewer facilities.

5. §116-37. §116-290.B. The plans must be revised in order to demonstrate compliance with Condition #6 of the Conditional Use Decision, which states that the Applicant shall install pedestrian walkways along the full frontage of its property along Butler and Skippack Pikes. On Skippack Pike, west of the access road, a macadam path is proposed; no walkway is shown east of the access road. We note that partial waiver of sidewalk requirements from pertinent sections of Chapter 105, Subdivision and Land Development, have been requested. The Township Solicitor will need to determine if said waiver request is inconsistent with the conditional use decision.

6. §116-37. §116-290.B. The plans must be revised in order to demonstrate compliance with Condition #7 of the Conditional Use Decision, which states that the Applicant shall provide a defined and reasonably level open or green space, exclusive of the stormwater management facilities. It is not clear, based on the location of the various stormwater management facilities and landscaping, if such a space has been provided.

7. §116-37. §116-290.B. The plans must be revised in order to demonstrate compliance with Condition #11 of the Conditional Use Decision, which states that the Applicant shall install one (1) electric car charging station in the Water Tower Office Complex.

8. §116-184.D.(5) This section of the ordinance requires in pertinent part, that for an office building, the provisions for required off-street parking facilities are one parking space for each 200 square feet of gross floor area. The applicant shall submit parking calculations for the existing office building on the adjacent property which demonstrates that adequate parking will be available after removal of the existing parking facilities as noted on the plans.

9. §116-184.G. 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. Please note that the Fire Marshal initially noted that certain information necessary for his review, was not provided. The applicant submitted an Autoturn & Hydrant Exhibit on April 27, 2020; the Fire Marshal issued a revised review via memo on April 28th, which is enclosed with this letter.

10. §116-207.1. §116-208. §116-209. §116-210. These sections of the ordinance describe signs which are permitted in the districts on which the subject property is located. The plans must be revised to include details for all proposed signs to be installed as part of the design, in order to demonstrate compliance with these sections of the ordinance, unless any signage will be handled separately subsequent to approval of the development.

11. §116-37. §116-291.B.(1) Architectural plans must be submitted to demonstrate compliance with the requirements of this section of the ordinance. In addition, compliance must be demonstrated with Condition #5 of the Conditional Use Decision which requires that architectural features of the proposed townhomes be in substantial accordance with those shown on renderings presented during the Conditional Use public hearings.

12. §116-291.D. This section of the ordinance establishes requirements for lighting in the Village Commercial (VC) District. The plans must be revised to demonstrate compliance with the requirements of this section of the ordinance. The only lighting information noted on Sheets 9 and 10 include a table of fixture types and their locations shown. Additional technical and fixture height information is required by this section of the ordinance.

13. §116-292.A. This section of the ordinance requires that all conditional uses shall have either a shared driveway with an adjacent property or shared parking or both. It was confirmed during the conditional use public hearings that the applicant is proposing to share parking with the adjacent Watertower Tower Office Complex. The Record Plan must be revised to reflect this and show the spaces to be shared, and any easements must be shown and/or noted and provided for review and approval. There are 16 spaces in the townhome development proposed for sharing with the office building; similarly, easements for the use of those must be provided. In addition, detail must be provided to indicate how the shared parking spaces

on both properties will be signed, indicating their shared availability.

14. §116-292.B. §116-292.C. This section of the ordinance requires that for any conditional use, all required landscaping and buffers must include deciduous trees with a minimum of 2.5 inches in caliper and evergreen trees planted at a size of six to eight feet in height. Additionally, at least one tree of 2.5 inches minimum caliper shall be provided for every five parking spaces in single bays. The tree planting schedule must be revised in order to demonstrate compliance with the requirements of this section of the ordinance, as well as the compliance that it shows with the requirements of the Subdivision and Land Development Ordinance and with Chapter 55, Tree Protection Standards. The landscape plans require review by the Township Shade Tree Commission with their recommendation, prior to any plan approval.

15. §116-294.8. The Zoning Data Table indicates that impervious coverage is permitted to be 75% with shared parking. That is only applicable if there is also a shared driveway or optional public space requirements are met. Since neither of these criteria are met, the impervious coverage limit is 65%; this table must be corrected.

16. §116-294.9. The Open Space/Green Area Requirements Table indicates the minimum green vegetated open space to be 25%, where the Zoning Data Table indicates the same to be 35%. The latter is correct; the Open Space/Green Area Requirements Table must be corrected.

Additional Comment

17. We note that an owners' association will be responsible for the stormwater management facilities, the open space, and all other common areas. The plans note that there will be a conservation easement for the open space and other applicable legal instruments to assure perpetual maintenance of these various facilities. Any easements and legal instruments proposed must be submitted for review and approval by the Township Solicitor.

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

Encls.: Fire Marshal Memo dated April 28, 2020

cc: Richard L. Mellor, Jr., Township Manager
Robert A. Sztubinski, B.C.O., Director of Building and Codes
Nick Weaver, Fire Marshal
Sean P. Kilkenny, Esq., Township Solicitor
James Hersh, P.E., Township Engineer
Estelle Eberhardt, P.E., Irick, Eberhardt, Mientus, Inc., Applicant's Engineer
Richard Collier, Jr., FAICP, Land*Concepts* Group, Applicant's Land Planner

GILMORE & ASSOCIATES, INC.
ENGINEERING & CONSULTING SERVICES

June 16, 2020

Mr. Richard L. Mellor, Jr., Township Manager
Whitemarsh Township Municipal Building
616 Germantown Pike
Lafayette Hill, PA 19444

RE: Longfield Farm
Whitemarsh Township, Montgomery County, Pennsylvania
SLD #02-19
Our Project Number 2020-01207

Dear Mr. Mellor:

As requested, we have reviewed plans for the above referenced Land Development, prepared by Irick, Eberhardt & Mientus, Inc., dated June 12, 2019, and last revised March 27, 2020. The following comments are offered for your consideration:

The applicant is requesting waivers and/or relief from the requirements of the following sections of the ordinance:

	Section	Description
1.	105-21(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. An aerial photo has been included in the plan set which shows the required features.
2.	105-32(B)	The applicant is requesting a waiver from the requirements of this section of the ordinance which requires that private streets shall have a right-of-way width and a horizontal and vertical alignment consistent with the requirements for public streets. We have no objection to the granting of this waiver, since the private streets will be owned and maintained by a Homeowner's Association.

	Section	Description

3. 105-33(B)(1) The applicant is requesting a waiver from the requirements of this section of the ordinance which requires that the minimum center-line radius for horizontal curves for local streets and courts shall be 150 feet, in order to allow a minimum radius of 32 feet. The granting of any waiver should be conditioned that the applicant must submit plans using truck turning templates showing that the required turning radii are provided for emergency vehicle access and that the plans be revised to demonstrate compliance with the American Association of State Highway and Transportation Officials (AASHTO) design standards contained in the "AASHTO Green Book", as summarized in the following table:

Posted Speed	Minimum Centerline Radius
10 MPH	18 feet
15 MPH	47 feet

4. 105-33(C) The applicant is requesting a waiver from the requirements of this section of the ordinance which requires a minimum tangent of 100 feet between horizontal curves. We have no objection to the granting of this waiver.

5. 105-38(F) The applicant is requesting a waiver from the requirements of this section of the ordinance in order to permit perpendicular parking along streets. We have no objection to the granting of this waiver.

6. 105-47(A)
105-56(G)
105-73 The applicant is requesting a waiver from the requirements of this section of the ordinance which requires that sidewalks shall be provided in all subdivisions and land developments in accordance with § 105-30, 105-47, and 105-73 of the Whitemarsh Township Code.

7. 105-53(D) The applicant is requesting a waiver from the requirements of this section of the ordinance which requires the dedication of land suitable for park and recreational use to the Township or payment of a fee in lieu of dedication. The applicant has indicated that they will offer a fee in lieu of dedication.

8. II(D)(8) The applicant is requesting partial relief from the requirements of this section of the resolution which requires that the upstream edge of the emergency spillway shall be a minimum of three (3) feet below the spillway crest elevation. We have no objection to the granting of this relief.

9. II(D)(12) The applicant is requesting relief from the requirements of this section of the resolution which requires that the invert of the inlet pipe(s) into a basin shall be a minimum of six (6) inches above the basin floor. We have no objection to the granting of this relief.

10. II(E)(2)(g)(iv) The applicant is requesting relief from the requirements of this section of the resolution which requires that the minimum diameter of all storm drainage pipes shall be eighteen (18) inches or equivalent thereto. We have no objection to the granting of this relief.

SUBDIVISION AND LAND DEVELOPMENT ORDINANCE

	Section	Description
11.	105-21(B)(1)(o)	The plans must be revised to more clearly indicate which features adjacent to the existing 3-story dwelling are to be removed.
12.	105-21(B)(1)(e)[6]	The plans must be revised to list the size of units, in bedrooms, if known.
13.	105-21(B)(1)(m)	The plans must be revised to show the location of Splitrail Lane.
14.	105-21(B)(1)(o)	This section of the ordinance requires preliminary plans to show the proposed layout. The plans must be revised to address the following: • The plans must be revised to provide the name of all proposed streets. • The Record plan must be revised to provide description of the project in sufficient detail to identify the common areas and each condominium unit. The Record plan should contain a description of the location, size and boundaries of each unit and the common areas. • The plans must be revised to show rights-of-way and/or easements for all proposed drainage facilities, utilities or other purposes for the proposed layout. • The plans must be revised to show all proposed fire hydrants, subject to approval of the Fire Marshal. • The plans must be revised to show all proposed gas mains and services, if any.
15.	105-21(B)(7)	The Existing Resource and Site Analysis Plan must be revised to indicate existing vegetation to be removed or preserved.
16.	105-21(B)(10)(a)	The applicant shall submit a letter from the appropriate municipal authority indicating the availability of public sanitary sewer facilities.
17.	105-21(B)(10)(b)	The applicant shall submit a letter from the appropriate municipal authority indicating the availability of central water supply.
18.	105-21(B)(12)	A map showing the location of the proposed subdivision within its neighborhood context shall be submitted. For tracts under 100 acres in area, such maps shall be at a scale not less than one-inch equals 200 feet, and shall show the relationship of the subject tract to natural and man-made features existing within 1,000 feet of the tract boundaries. The site context map must show all features required by this section of the ordinance.
19.	105-21(B)(13)	The Existing Resources and Site Analysis Plan (ERSAP) must be revised to show all features required by this section of the ordinance, both on the proposed development tract and within 500 feet of the tract boundaries.

	Section	Description
20.	105-21(B)(15)	A Preliminary Resource Impact and Conservation Plan (the "Preliminary Impact Plan") shall be prepared to categorize the impacts of the proposed activities and physical alterations on those resources shown on the ERSAP.
21.	105-21(B)(16)(j)	This section of the ordinance states that, If the tract abuts another municipality, the applicant shall submit information concerning the location and conceptual design of streets, layout and size of lots and provisions of public improvements on land subject to the applicant's control within the adjoining municipalities. The design of public improvements shall provide for a smooth, practical transition where specifications vary between municipalities. Evidence of approval of this information by appropriate officials of the adjoining municipalities shall also be submitted.
22.	105-21(B)(16)(n)	The plans must be revised to include signature blocks for the Board of Supervisors and the County Planning Commission.
23.	105-21(B)(17)(e)	A community association document must be provided in order to demonstrate compliance with the requirements of this section of the ordinance.
24.	105-21(B)(18)	The applicant shall submit a 'Preliminary Common Open Space Ownership and Management Plan' consistent with the requirements of this section of the ordinance.
25.	105-21.1(K)(2)	Within the North Transportation Service area an impact fee in the amount of Two Thousand Eight Hundred and Twenty-Five Dollars ($2,825.00) per anticipated peak hour trip must be provided by the applicant. Based on data documented within the latest edition of the ITE Trip Generation Manual, the proposed development will generate 36 PM peak hour trips. Therefore, the traffic impact fee totals $101,700.00 ($2,825.00 x 36 peak hour trips).
26.	105-28(I)	This section of the ordinance requires the applicant to obtain a Highway Occupancy Permit from the Pennsylvania Department of Transportation for the proposed work within the right of way of Skippack Pike (SR 0073). The Highway Occupancy Permit Application Plans must be submitted to the Township for review prior to submission to PennDOT. In addition, the Township Engineer should be notified of all meetings with PennDOT and must be copied on all correspondence. The plans must also be revised to indicate the source or plan reference used to determine the Right-of-way width for Skippack Pike (SR 0073).

	Section	Description

27. 105-28(J) This section of the ordinance requires the applicant to obtain a Highway Occupancy Permit from the Montgomery County Roads and Bridges Department for the proposed work within the right of way of Butler Pike. The Highway Occupancy Permit Application Plans must be submitted to the Township for review prior to submission to the county. In addition, the Township Engineer should be notified of all meetings with the County and must be copied on all correspondence. Butler Pike should be labeled on the plans as a County Road.

28. 105-29(C) 105-30(A) As defined by Section 105-29(C) and 105-30(A), streets within and 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
Roads A, B, C	Local Street	56 feet	36 feet	Required	Required	Required
Butler Pike	Arterial	*	*	Required	Required	Required
Skippack Pike	Arterial	*	*	Required	Required	Required

* As recommended by PADOT or the Montgomery County Roads & Bridges Dept.
**Parking limitations, restricting parking on one side, shall be required for all cartways less than 36 feet, and no parking shall be permitted on all cartways of less than 30 feet.

A waiver must be requested in order to permit the following:

- To allow proposed Roads A, B, C to have a right-of-way and cartway width of 26 feet, where 36 feet is required.
- To not required curbing along Butler and Skippack Pikes.

29. 105-30(A) The plans must be revised to show parking restriction signs in order to demonstrate compliance with the requirements of this section of the ordinance, which states that parking limitations, restricting parking on both sides shall be required for all cartways less than 30 feet wide.

30. 105-33(A) This section of the ordinance requires that whenever local street lines are deflected in excess of 5°, connection shall be made by horizontal curves. All other streets shall not have angle points in the alignment. The plans must be revised to demonstrate compliance with the requirements of this section of the ordinance for Road “B” at the intersection with Road “A”, near Butler Pike.

31. 105-35(C) No structure, fence, planting or other structure shall be maintained between a plane two feet above the curb level and a plane seven feet above curb level so as to interfere with traffic visibility across the corner with that part of the required front yard which is within the clear sight triangle. Sight triangles must be shown on the drawings at all intersections. As defined by Section 105-5, clear sight triangles shall include the area bounded by any two intersecting street lines and a straight line drawn between points on each such line 50 feet from the intersection of said lines or extensions thereof.

	Section	Description
32.	105-35(E)	This section of the ordinance requires that 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. The plans must be revised to show the location of Splittrail Lane to demonstrate compliance with the requirements of this section of the ordinance.
33.	105-36(C)	This section of the ordinance requires that private driveways, where provided, shall be located not less than 40 feet from the intersection and shall provide access to the street of lower classification when a corner lot is bounded by streets of two different classifications as defined herein. The driveways for Units 40 & 4 appear to require revision in order to demonstrate compliance with the requirements of this section of the ordinance.
34.	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.
35.	105-38(A), 105-38(E)	This section of the ordinance requires that two-way aisles for parking spaces having a 90-degree angle of parking must have a minimum parking stall width of 9 ft x 18 ft. The site improvement plans must be revised to include dimensions and show striping for parking areas, in order to demonstrate compliance with the requirements of this section of the ordinance.
36.	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.
37.	105-38(U), 105-47(E), 105-71	All common parking areas and sidewalks shall be adequately lighted during after-dark operating hours. The Landscape & Lighting Plan must be revised to indicate that adequate levels of illumination will be provided.
38.	105-38(V)	All artificial lighting used to illuminate any parking space or spaces shall be so arranged that no direct rays from such lighting shall fall upon any neighboring property or streets, nor shall any high brightness surface of the luminaries be visible from neighboring residential property or from a public street. The Landscape & Lighting Plan must be revised to demonstrate compliance with the requirements of this section of the ordinance.

	Section	Description

39. 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

40. 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 Planting Schedule Table must be revised to include quantities for each tree type.

41. 105-40 Required off street loading facilities, if necessary, 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.

42. 105-45 The plans show that pedestrian trails, roof drain piping and a portion of the proposed sanitary sewer system will traverse the Watertower Properties. Easements must be provided for these features, as approved by the Township Solicitor and recorded at the Recorder of Deeds for Montgomery County.

43. 105-45 It is our understanding that the applicant is proposing to provide a shared parking arrangement between the subject property, and the adjacent 'Watertower Properties'. The shared parking arrangement must be noted on the record plan, and any necessary easements shown.

44. 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.

45. 105-47(D) The plans must be revised to clearly indicate that ADA accessible ramps and crosswalks are provided at all street crossings.

46. 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 both sides of new streets and along one or both sides of any existing street within the proposed land development. The Planting Schedule Table must be revised to include quantities for each tree type.

	Section	Description
47.	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 must submit plans using truck turning templates showing that the required turning radii are provided for access to each building.
48.	105-50(E)	The plans must be revised to include a constructible construction detail for proposed residential driveways.
49.	150-50(F)	The plans must be revised to indicate whether garbage and trash collection is to be provided for individual lots, or whether communal outdoor collection stations will be provided.
50.	105-52	Buffer yards are required between land developments and along existing streets to soften visual impact, to screen glare, and to create a visual barrier between conflicting land uses. The plans must be revised to provide a table detailing the buffer yard requirements, in accordance with Section 105-52.B as well as the actual buffers provided. All landscaping plans are subject to the review and approval of the Shade Tree Commission.
51.	105-56(A)(1)	The plans appear to show proposed streets having a width of 26 feet. The width of streets has been established to ensure adequate movement of traffic in times of greater parking loads. 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 32 feet on local streets and 26 feet on courts. Cartways fewer than 30 feet shall be restricted to prohibit parking on both sides. The applicant is advised that the Board of Supervisors has sole discretion in determining the applicability of these reduced standards.
52.	105-70(A)	The plans must be revised to call for street signs to be constructed at street intersections, having thereon the names of the intersecting streets.
53.	105-70(C)	The plans must be revised to show all proposed warning and regulatory to be erected along streets; including but not limited to stop and parking restriction signs.
54.	105-73(C)	The plan should be revised to call for a 6' wide asphalt path connecting the sidewalk termination near Lot #43 to the existing parking area on the adjacent 'Watertower Properties', to provide convenient access for shared parking.
55.	105-73	The plans must be revised in order to demonstrate compliance with the requirements of this section of the ordinance and Condition #6 of the Conditional Use Decision, which require that the applicant install pedestrian walkways on the full frontage of Skippack Pike.

	Section	Description
56.	105-76(B)	Water mains shall be designed with adequate capacity and appropriately spaced fire hydrants for fire-fighting purposes pursuant to the specifications of the Middle Department Association of Fire Underwriters Review, and approval by the Township Engineer and the Township Fire Marshal is required in order to ensure that adequate fire protection is provided. The applicant must obtain a letter of approval from the Township Fire Marshal.
57.	105-78	The applicant must obtain the approval of the Whitemarsh Township Authority with regard to proposed sanitary sewerage facilities.
58.	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.
59.	105-83(E)	No removal of a tree shall be permitted unless the applicant obtains a recommendation from the Shade Tree Commission based on a tree survey and removal plan submitted in accordance with Chapter 55 of the Whitemarsh Township Code.
60.	105-89	The developer shall enter into a written agreement with the Township in the manner and form approved by 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.

CHAPTER 55 - TREE PROTECTION STANDARDS

	Section	Description
61.	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.
62.	55-4(A)(4)	The tree survey plan shall be reviewed by the Shade Tree Commission in a public meeting.

	Section	Description
63.	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, and a tree protection fence detail must be provided. Street trees and other required plant material shall not be planted until the finished grading of the land development has been completed.
64.	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.
65.	55-4(B)(6)(a)	This section of the ordinance requires that every tree determined to be living and healthy, with a DBH of 6 inches or greater and which is designated to be removed or which is destroyed, shall be replaced with one or more new shade trees of a type approved by the Township with a trunk diameter of not less than 3 inches in caliper. The total caliper of replacement trees, measured at 6 inches above the ground line, shall equal or exceed the DBH of the tree removed.
66.	55-4(B)(6)(a)	The Existing Resource and Site Analysis Plan must be revised to include the type and caliper of existing trees and shrubs and an indication of existing trees proposed to be removed and those to be preserved.

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

	Section	Description
67.	58-4(B)(2)(o)	The plans must be revised to show the size, location and construction details of all proposed impervious ground cover. At a minimum, the following must be addressed: • The Trench Restoration Detail, Sheet 17 of 30, must be revised to indicate that thoroughly compacted 2A modified stone is to be used as backfill where paving is required. • Perpendicular curb ramps are preferred over diagonal curb ramps. Sheet 18 must be revised to eliminate the Type 6 Curb Ramps detail, and perpendicular curb ramp details should be added.

	Section	Description
68.	58-4(B)(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, the following must be addressed: • The PCSM & Erosion Control Plans must be revised to include completed data tables for all construction details.
69.	58-4(B)(3)	Plans and written procedures for minimizing erosion and sedimentation in conformity with any regulations adopted pursuant to this chapter. At a minimum, the following must be addressed: • The Erosion Control Plans must be revised to call for filter bags at all proposed stormwater inlets. • Compost Filter Sock, or similar measure, must be provided between the Proposed Road 'B' and the 'Watertower Properties'. • It appears that additional Compost Filter Sock may be required along stormwater pipe run MH73 to MH72. • The Stormwater Management Report must be revised to include calculations for sizing of Compost Filter Sock. • The Limit of Disturbance must be revised to extend around the proposed sidewalk on the 'Watertower Properties'
70.	58-4(B)(4)	The applicant must submit plans and supporting calculations detailing proposed stormwater drainage and stormwater management systems required by regulations adopted pursuant to this chapter. At a minimum, the following must be addressed: • The stormwater management report and/or PCSM Plan must be revised to indicate whether the drainage area of 1.750 Ac for 'Bio ret Basin #1 inflow" includes the roof area of Units 3 through 7. • Page 9 of the stormwater management report must be revised to make Orifice [B] active, and eliminate Weir [B]. • The 'Basin Data' table on Plan Sheet 27 must be revised to indicate that the Outfall Pipe for Basin #5 is 15" Ø, in order to be consistent with the stormwater management report and Plan Sheet 16.
71.	58-4(B)(5)	The applicant must submit plans and supporting documentation verifying compliance with the tree preservation, protection and replacement requirements of the Whitemarsh Township Code.
72.	58-4(D)(1)	Since the limit of disturbance is greater than one acre, the applicant must obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Pennsylvania Department of Environmental Protection. Once obtained, a copy must be submitted to the Township.

	Section	Description
73.	58-8(H)	All easements must be documented in the form of an easement agreement, approved by the Township Solicitor and recorded at the Recorder of Deeds for Montgomery County.
74.	58-11(H)(1)	The property owner shall sign an operations and maintenance agreement with the Township addressing stormwater BMPs that are to be privately owned.
75.	58-11(G)(3)	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.

RESOLUTION 2004-8:

	Section	Description
76.	I(B)(4)(e)	Temporary vegetation and mulching shall be used to protect exposed critical areas during development. The plans and supporting documents must be revised to include design calculations for channel capacity and lining.
77.	I(B)(4)(j)	All lots shall be graded to provide proper drainage away from buildings, and all land within a project area shall be graded to drain and dispose of surface water without ponding. At a minimum, the following must be addressed: • Proposed grading between Units 58 and 5 must be revised to direct runoff away from Unit 5. • A proposed contour line representing elevation 303 must be added between Units 51 and 52.
78.	I(C)(1)(b)	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.
79.	II(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
80.	II(A)(12)	The applicant must include a narrative and/or calculation which address the effect of the proposed work on the existing drainage systems on Butler Pike and Skippack Pike. No stormwater runoff or natural drainage shall be so diverted as to overload existing drainage systems or create flooding or the need for additional drainage structures on other private properties or public lands.
81.	II(B)(17)	The stormwater management report must include an inlet drainage area map outlining the extent of each inlet drainage area, shall indicate the stormwater runoff anticipated at each proposed inlet, and show the Tc paths.
82.	II(C)(2)	The increased runoff from the proposed development must be controlled by permanent runoff control measures. All runoff control measures shall be evaluated for their effectiveness during the one-hundred-year storm. The stormwater management calculations indicate that the "Storm Sewer within Skippack Pike (S.R. 0073) is the 10-year frequency event", which must be revised in order to demonstrate compliance with the requirements of this section of the ordinance.
83.	II(C)(6), II(E)(2)(g)(i)	All stormwater collection pipes, inlets, and swales shall be designed to handle the peak flow rate for the one-hundred-year storm. The following comments related to the inlet/outlet control evaluation must be addressed: • The Storm Sewer Tabulation indicates that the HGL at Structures 5, 2, 31, 37, OS5, MH76, OS2, OS1, MH78, MH77, OS3, MH75, OS4, MH74, MH73, OS6, MH72, 71, ex I, 70, ex 101, ex1A, ex MH1, exINL-9, ex MH2, ex INI-3, ex INL-8, ex MH-4, ex In I-7, OS-1, ex MH1, and ex-MH-5 is higher than the ground elevation, which must be revised.
84.	II(D)(8)	It appears that the emergency spillway for Basin #5 will discharge stormwater during the 100-year design storm. Page 40 of the stormwater management report indicates that the maximum elevation will be at elevation 296.07, where the spillway elevation is at elevation 296.00.
85.	II(D)(13)	Energy dissipaters and/or level spreaders shall be installed at points where pipes or drainage ways drain to or from basins. Energy dissipaters shall comply with criteria in the Erosion and Sediment Control Manual, published by the Pennsylvania Department of Environmental Protection or the Engineering Field Manual for Conservation Practices, SCS. Energy dissipating device calculations shall be submitted to the Township for review.

	Section	Description
86.	II(D)(19)	Disturbed areas resulting from the detention/retention basin construction shall be planted with appropriate cover vegetation. Specialized plantings suitable for wet conditions should be planted in portions of the basins which will retain water or contain soils under saturated conditions. Landscaping design should reduce overall maintenance requirements for the basin. The choice of cover vegetation must be approved by the Township and will be based upon the intended use of the basin, maintenance requirements, structural integrity of the berm area and conforming with surrounding landscaping.
87.	II(D)(20)	Fencing shall be provided around the perimeter of all detention/retention basins capable of holding water to a depth of four feet of more at any point in accordance with the requirements of section 116-31.1(C) of the Whitemarsh Township Zoning Ordinance.
88.	II(F)(3)(d)(4)[e][7]	Infiltration rates shall not be used in computing the storage volume of the infiltration systems.
89.	II(F)(3)(d)(4)[g]	The stormwater management report must be revised to include a calculation verifying that any infiltration BMP is capable of completely infiltrating the impounded water within 96 hours.
90.	II(F)(3)(d)(4)[j]	Infiltration BMPs shall not be constructed nor receive runoff until the entire contributory drainage area to the infiltration BMP has received final stabilization. Item #10 in the Earth Moving Section of the Construction Sequence must be revised accordingly.

ADDITIONAL COMMENTS

91. The plans appear to show topographic features which suggest that the existing 3-story dwelling may be served by an on-site septic system. Adequate notes should be added to the plans to indicate proper decommissioning of the on-site septic system, if applicable.

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,

James J. Hersh, P.E.
Township Engineer
Gilmore & Associates, Inc.

c: Mr. Sean Halbom – Assistant Township Manager
Mr. Charles L. Guttenplan, AICP - Director of Planning and Zoning
Mr. Sean Kilkenny, Esq.; The Law Offices of Sean Kilkenny, LLC – Township Solicitor
Mr. Robert A. Sztubinski, B.C.O.; Director of Building & Codes
Mr. Robert Downs, Esq. – Spartan Organization
Mr. Robert Irick, RLA; Irick Eberhardt & Mientus, Inc.
Ms. Estelle Eberhardt, PE; Irick Eberhardt & Mientus, Inc.

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HEINRICH & KLEIN ASSOCIATES, INC.

TRAFFIC ENGINEERING & PLANNING
1134 Heinrich Lane • Ambler, Pennsylvania 19002
215-793-4177 • FAX 215-793-4179

June 18, 2020

Krista L. Heinrich, P.E., LEED AP, CME, CBLP
Gilmore & Associates, Inc.
65 East Butler, Suite 100
New Britain, PA 18901

Re: Longfield Farms – Spartan Organization, Inc.
Butler Pike & Skippack Pike (PA Route 73)
Whitemarsh Township, Montgomery County

Dear Ms. Heinrich:

As requested, I have completed a second Traffic Engineering Review of Longfield Farms, a 58-unit townhouse community proposed to be developed on a property situated along the east side of Butler Pike south of Skippack Pike (PA Route 73) in Whitemarsh Township, Montgomery County, PA. It is proposed to provide access to the townhouse community via a roadway that will intersect Butler Pike at a point approximately 1,000 south of Skippack Pike (PA Route 73), and a right-turn entry/right-turn exit only driveway that will intersect Skippack Pike (PA Route 73) at a point approximately 400 feet east of Butler Pike. A Transportation Impact Assessment (TIA) was prepared by Pennoni Associates, Inc., last revised April, 2020. A Proposed Site Plan for the proposed development is included in the TIA. My comments are as follows:

1. **Original Comment:** The TIS presents a calculation of the potential trip generation for the proposed development using the average trips rates rather than the fitted curve equations. Use of the fitted curve equations yields daily traffic generation of about 400 trips per day (total inbound and outbound), 28 morning peak hour trips (7 inbound and 21 outbound) and 36 afternoon peak hour trips (23 inbound and 13 outbound). The TIS should be revised to reflect these trip generation estimates; although, it is noted that these revised number of trips is not likely to change the findings and conclusions of the study.
   Response: *Please note that since this revised report will also be used to support the PennDOT Highway Occupancy Permit for the proposed driveway to Skippack Pike (SR 0073), we have re-titled the report as a Traffic Impact Assessment (TIA) in accordance with PennDOT's definition due to the low traffic generation of the proposed development. The revised TIA reflects the revised trip generation*

calculations as requested, and this modification does not change the findings and conclusions of our evaluation.
New Comment: Satisfied.

2. **Original Comment:** The Traffic Impact Fee calculation for a development situated in the North Transportation Service Area is estimated to be $101,700.00 (i.e., 36 PM peak hour trips X $2,825.00 per PM peak hour trip = $101,700.00).
Response: *Noted*
New Comment: Satisfied, subject to receipt of the Traffic Impact Fee at the appropriate time.

3. **Original Comment:** Please confirm the number of proposed access locations. The TIS evaluates two points of access – full movement via Butler Pike and right turn exit only via Skippack Pike (PA Route 73). The Sketch Plan included in the TIS indicates access only via one full movement access via Butler Pike.
Response: *The number of proposed access locations considered in the TIA is correct, and reflects the number and configuration of site access driveways as shown on the latest plan for the proposed development (prepared by Irick, Eberhardt & Mientus, LLC, dated 3/27/20). Since the original traffic evaluation, the access to Skippack Pike (SR 0073) has been revised to allow both right-turns in and right-turns out.*
New Comment: Satisfied.

4. **Original Comment:** Please provide the HCM 6th Edition Synchro summary worksheets, and revise Table 2 accordingly including LOS, delay and 95th% back of queue results. Indicate available/proposed vehicle storage lengths for comparison with calculated 95th% back of queue lengths. Revise the volume/capacity analysis in compliance with various default values published in PennDOT Publication 46 including saturation flow and lost time adjustment at signalized intersections, and saturation flow and critical and follow-up headways at unsignalized intersections. The Peak Hour Factor (PHF) should be calculated for the entire intersection during each peak hour, instead of by individual movement. The heavy vehicle percentage should be applied to each individual movement instead of by approach or for the entire intersection. Please also include a copy of the Traffic Signal Permit Plans for the signalized intersections.
Response: *The revised TIA includes the requested HCM 6th Edition reports. The analyses have been revised as requested, and the existing traffic signal permit plans are included in Appendix C.*
New Comment: Satisfied, but please include the Lanes, Volumes and Timings print-out page for the signalized intersections analyses.

5. **Original Comment:** The Site Plan included in the TIS does not indicate available or required sight distances for site access. Expand the Driveway Sight Distance section to include a discussion of the available and desirable/minimum sight distances for both access locations in accordance with PennDOT guidelines.
Response: *The required and available sight distance values for each proposed site access driveway are included in the revised TIA (Table 3).*

New Comment: For the purposes of the TIA, the sight distance analysis is satisfied. The available and required sight distances should also be indicated on the Site Plan at each driveway location.

6. **Original Comment:** The Auxiliary Turn Lane Warrant Evaluation section indicates that widening of Butler Pike for a separate left turn lane 75 feet long may be warranted. The turn lane warrant analysis worksheets should be included in the TIS. Please provide a sketch of how the turn lane widening would be accomplished.
   Response: *The requested worksheets are included in Appendix H of the revised TIA. The proposed left-turn lane design for Butler Pike is shown on the most recently submitted site plans for the project (prepared by Irick, Eberhardt & Mientus, LLC, dated 3/27/20).*
   New Comment: Please also provide turn lane warrant analysis worksheets for right turn entry via the proposed Skippack Pike access driveway.

7. **Original Comment:** Provide a discussion of the driveway dimensions for proposed access to/from the site. Right turn corner radii of at least 25 feet should be provided at the Butler Pike access, subject to the requirements of the appropriate design vehicle. Larger right turn exit corner radii may be required for the Skippack {Pike (PA Route 732) access. The discussion should include recommendations to prevent left turn and right turn entry movements and left turn exit movement at the Skippack Pike (PA Route 73) access.
   Response: *The requested information is included in the revised TIA. In addition, a separate narrative describing the proposed access driveway configurations has been included. The proposed access driveway design for Skippack Pike (SR 0073), which includes a channelized island to prevent left-turn movements to and from Skippack Pike, is shown on the most recently submitted site plans for the project. (prepared by Irick, Eberhardt & Mientus, LLC, dated 3/27/20).*
   New Comment: Dimensions need to be added to the turn lanes and access driveways. For the Butler Pike driveway, a left-turn lane 11 feet wide will require approach/departure transition tapers 385 feet long (11 feet X 35 mph). Instead of the approach/departure transition taper north of the driveway, it is suggested that the entire length to the left turn lane on the northbound approach to Skippack Pike (PA Route 73) be striped with a 2-way center left turn lane. Instead of the short right turn deceleration lane shown on the plan, it is suggested that a 50 foot right-turn entry radius or a 35 foot right-turn entry radius with a 100 foot long taper be used. For the Skippack Pike driveway, the corner radii must be increased to at least 35 feet so as to accommodate a raised concrete island at least 100 square feet in size. For both driveways, a signage plan should be provided; and, a turning template diagram should be provided to ensure that the dimensions will safely accommodate the appropriate design vehicle.

8. **Original Comment:** The TIS should include a discussion of proposed pedestrian improvements within and adjacent to the site. Sidewalk shall be constructed along both frontages of the site. Include a sidewalk extension northward along Butler Pike to connect to the existing sidewalk in front of the Watertower Building. Investigate construction of sidewalk from the site extending westward across the frontage of

the watertower property along Skippack Pike (PA Route 73) to the signalized intersection with Butler Pike to gain access to the pedestrian facilities at the signalized intersection. All pedestrian facilities should be designed and constructed to be ADA compliant with nighttime illumination at site access for improved visibility.

Response: *A discussion of the proposed pedestrian improvements is included in the revised TIA. The applicant is proposed to construct pedestrian facilities throughout the project property and along the Butler Pike and Skippack Pike frontage of the project property. The applicant has investigated the possibility of extending the pedestrian facilities to the intersection of Skippack Pike and Butler Pike, however, the applicant does not control the property on the southeastern corner of the intersection. Additionally, the applicant has determined that the construction of pedestrian facilities on the corner property is not practical or feasible due to the presence of both above ground utilities and below-ground utilities with associated easements.*

New Comment: Investigation of the Watertower property at the corner of Skippack Pike and Butler Pike appears to confirm the potential difficulty of extending sidewalk to the corner of the intersection to connect with the existing pedestrian facilities at the corner of the intersection, particularly along Butler Pike. There may be a better opportunity to provide a sidewalk/trail along Skippack Pike from the project property to the intersection. Please provide additional details (or survey if available) as to the specific nature and location of the above ground and below ground utilities/easements that would prevent construction of pedestrians facilities to connect to the corner of the intersection of Skippack Pike and Butler Pike.

If you should have any questions, or wish to discuss these comments in greater detail, please call me at your convenience.

Sincerely,

Andreas Heinrich, P.E., P.T.O.E.
Principal

AH:rh

HEINRICH & KLEIN ASSOCIATES, INC.

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1134 Heinrich Lane • Ambler, Pennsylvania 19002
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February 11, 2019

Krista L. Heinrich, P.E., LEED AP, Township Engineer
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444

Re: Longfield Farms – Spartan Organization, Inc.
Butler Pike & Skippack Pike (PA Route 73)
Whitemarsh Township, Montgomery County

Dear Ms. Heinrich:

As requested, I have completed a Traffic Engineering Review of Longfield Farms, a 58-unit townhouse community proposed to be developed on a property situated along the east side of Butler Pike south of Skippack Pike (PA Route 73) in Whitemarsh Township, Montgomery County, PA. It is proposed to develop 58 new townhouses. It is proposed to provide access to the townhouse community via a roadway that will intersect Butler Pike at a point approximately 1,000 south of Skippack Pike (PA Route 73), and possibly a right turn exit only driveway that will intersect Skippack Pike (PA Route 73) at a point approximately 400 feet east of Butler Pike. A Transportation Impact Study (TIS) was prepared by Pennoni Associates, Inc., dated January, 2019. A Concept Plan for the proposed development is included in the TIS. My comments are as follows:

1. The TIS presents a calculation of the potential trip generation for the proposed development using the average trips rates rather than the fitted curve equations. Use of the fitted curve equations yields daily traffic generation of about 400 trips per day (total inbound and outbound), 28 morning peak hour trips (7 inbound and 21 outbound) and 36 afternoon peak hour trips (23 inbound and 13 outbound). The TIS should be revised to reflect these trip generation estimates; although, it is noted that these revised number of trips is not likely to change the findings and conclusions of the study.

2. The Traffic Impact Fee calculation for a development situated in the North Transportation Service Area is estimated to be $101,700.00 (i.e., 36 PM peak hour trips X $2,825.00 per PM peak hour trip = $101,700.00).

3. Please confirm the number of proposed access locations. The TIS evaluates two points of access – full movement via Butler Pike and right turn exit only via Skippack Pike (PA Route 73). The Sketch Plan included in the TIS indicates access only via one full movement access via Butler Pike.

4. Please provide the HCM 6th Edition Synchro summary worksheets, and revise Table 2 accordingly including LOS, delay and 95th% back queue results. Indicate available/proposed vehicle storage lengths for comparison with calculated 95th% back of queue lengths. Revise the volume/capacity analysis in compliance with various default values published in PennDOT Publication 46 including saturation flow and lost time adjustment at signalized intersections, and saturation flow and critical and follow-up headways at unsignalized intersections. The Peak Hour Factor (PHF) should be calculated for the entire intersection during each peak hour, instead of by individual movement. The heavy vehicle percentage should be applied to each individual movement instead of by approach or for the entire intersection. Please also include a copy of the Traffic Signal Permit Plans for the signalized intersections.

5. The Site Plan includes in the TIS does not indicate available or required sight distances for site access. Expand the Driveway Sight Distance section to include a discussion of the available and desirable/minimum sight distances for both access locations in accordance with PennDOT guidelines.

6. The Auxiliary Turn Lane Warrant Evaluation section indicates that widening of Butler Pike for a separate left turn lane 75 feet long may be warranted. The turn lane warrant analysis worksheets should be included in the TIS. Please provide a sketch of how the turn lane widening would be accomplished.

7. Provide a discussion of the driveway dimensions for proposed access to/from the site. Right turn corner radii of at least 25 feet should be provided at the Butler Pike access, subject to the requirements of the appropriate design vehicle. Larger right turn exit corner radii may be required for the Skippack {Pike (PA Route 732) access. The discussion should include recommendations to prevent left turn and right turn entry movements and left turn exit movement at the Skippack Pike (PA Route 73) access.

8. The TIS should include a discussion of proposed pedestrian improvements within and adjacent to the site. Sidewalk shall be constructed along both frontages of the site. Include a sidewalk extension northward along Butler Pike to connect to the existing sidewalk in front of the Watertower Building. Investigate construction of sidewalk from the site extending westward across the frontage of the watertower property along Skippack Pike (PA Route 73) to the signalized intersection with Butler Pike to gain access to the pedestrian facilities at the signalized intersection. All pedestrian facilities should be designed and constructed to be ADA compliant with nighttime illumination at site access for improved visibility.

If you should have any questions, or wish to discuss these comments in greater detail, please call me at your convenience.

Sincerely,

Andreas Heinrich, P.E., P.T.O.E.
Principal

AH:rh

3100 Horizon Drive
Suite 200
King of Prussia, PA 19406
T: 610-277-2402
F: 610-277-7449

www.pennoni.com

April 24, 2020

SPAR18001

Robert W. Downs, Esq.
Spartan Organization, Inc.
PO Box 736
Fort Washington, PA 19034

RE: Longfield Farm, Butler Pike & Skippack Pike (SR 0073)
Whitemarsh Township, Montgomery County, PA
Responses to Traffic Engineering Review Comments

Dear Mr. Downs:

We have outlined our responses to the Township's Traffic Engineering review letter from Heinrich & Klein Associates, Inc., dated February 11, 2019:

1. **The TIS presents a calculation of the potential trip generation for the proposed development using the average trips rates rather than the fitted curve equations. Use of the fitted curve equations yields daily traffic generation of about 400 trips per day (total inbound and outbound), 28 morning peak hour trips (7 inbound and 21 outbound) and 36 afternoon peak hour trips (23 inbound and 13 outbound). The TIS should be revised to reflect these trip generation estimates; although, it is noted that these revised number of trips is not likely to change the findings and conclusions of the study.**

   Please note that since this revised report will also be used to support the PennDOT Highway Occupancy Permit for the proposed driveway to Skippack Pike (SR 0073), we have re-titled the report as a 'Traffic Impact Assessment (TIA)' in accordance with PennDOT's definition due to the low traffic generation of the proposed development. The revised TIA reflects the revised trip generation calculations as requested, and this modification does not change the findings and conclusions of our evaluation.

2. **The Traffic Impact Fee calculation for a development situated in the North Transportation Service Area is estimated to be $101,700.00 (i.e., 36 PM peak hour trips X $2,825.00 per PM peak hour trip = $101,700.00).**

   Noted.

3. **Please confirm the number of proposed access locations. The TIS evaluates two points of access - full movement via Butler Pike and right turn exit only via Skippack Pike (PA Route 73). The Sketch Plan included in the TIS indicates access only via one full movement access via Butler Pike.**

   The number of proposed access locations considered in the TIA is correct, and reflects the number and configuration of site access driveways as shown on the latest site plan for the proposed development (prepared by Irick, Eberhardt, & Mientus, LLC, dated 3/27/20). Since the original traffic

evaluation, the access to Skippack Pike (SR 0073) has been revised to allow both right-turns in and right-turns out.

4. **Please provide the HCM 6th Edition Synchro summary worksheets, and revise Table 2 accordingly including LOS, delay and 95th% back queue results. Indicate available/proposed vehicle storage lengths for comparison with calculated 95th% back of queue lengths. Revise the volume/capacity analysis in compliance with various default values published in PennDOT Publication 46 including saturation flow and lost time adjustment at signalized intersections, and saturation flow and critical and follow-up headways at unsignalized intersections. The Peak Hour Factor (PHF) should be calculated for the entire intersection during each peak hour, instead of by individual movement. The heavy vehicle percentage should be applied to each individual movement instead of by approach or for the entire intersection. Please also include a copy of the Traffic Signal Permit Plans for the signalized intersections.**

   The revised TIA includes the requested HCM 6th Edition reports. The analyses have been revised as requested, and the existing traffic signal permit plans are included in Appendix C.

5. **The Site Plan included in the TIS does not indicate available or required sight distances for site access. Expand the Driveway Sight Distance section to include a discussion of the available and desirable/minimum sight distances for both access locations in accordance with PennDOT guidelines.**

   The required and available sight distance values for each proposed site access driveway are included in the revised TIA (Table 3).

6. **The Auxiliary Turn Lane Warrant Evaluation section indicates that widening of Butler Pike for a separate left turn lane 75 feet long may be warranted. The turn lane warrant analysis worksheets should be included in the TIS. Please provide a sketch of how the turn lane widening would be accomplished.**

   The requested worksheets are included in Appendix H of the revised TIA. The proposed left-turn lane design for Butler Pike is shown on the most recently submitted site plans for the project (prepared by Irick, Eberhardt, & Mientus, LLC, dated 3/27/20).

7. **Provide a discussion of the driveway dimensions for proposed access to/from the site. Right turn corner radii of at least 25 feet should be provided at the Butler Pike access, subject to the requirements of the appropriate design vehicle. Larger right turn exit corner radii may be required for the Skippack {Pike (PA Route 732) access. The discussion should include recommendations to prevent left turn and right turn entry movements and left turn exit movement at the Skippack Pike (PA Route 73) access.**

   The requested information is included in the revised TIA. In addition, a separate narrative describing the proposed access driveway configurations has been included. The proposed access driveway design for Skippack Pike (SR 0073), which includes a channelized island to prevent left-turn movements to and from Skippack Pike, is shown on the most recently submitted site plans for the project (prepared by Irick, Eberhardt, & Mientus, LLC, dated 3/27/20).

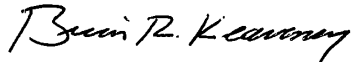
8. **The TIS should include a discussion of proposed pedestrian improvements within and adjacent to the site. Sidewalk shall be constructed along both frontages of the site. Include a sidewalk extension northward along Butler Pike to connect to the existing sidewalk in front of the Watertower Building. Investigate construction of sidewalk from the site extending westward across the frontage of the Watertower property along Skippack Pike (PA Route 73) to the signalized intersection with Butler Pike to gain access to the pedestrian facilities at the signalized intersection. All pedestrian facilities should be designed and constructed to be ADA compliant with nighttime illumination at site access for improved visibility.**

   A discussion of the proposed pedestrian improvements is included in the revised TIA. The applicant is proposing to construct pedestrian facilities throughout the project property and along the Butler Pike and Skippack Pike frontage of the project property. The applicant has investigated the possibility of extending the pedestrian facilities to the intersection of Skippack Pike and Butler Pike, however, the applicant does not control the property on the southeastern corner of the intersection. Additionally, the applicant has determined that the construction of pedestrian facilities on the corner property is not practical or feasible due to the presence of both above ground utilities and below-ground utilities with associated easements.

If you have any questions, or require additional information, please do not hesitate to contact me.

Very truly yours,

PENNONI ASSOCIATES INC.



Brian R. Keaveney, PE, PTOE
Transportation Division

cc: Richard Collier, Jr, PP, FAICP, ASLA, LandConcepts Group, LLC
Robert F. Irick, RLA, ASLA, Irick Eberhardt & Mientus, LLC
Estelle T. Eberhardt, PE, Irick Eberhardt & Mientus, LLC
Caroline A. Edwards, Esq.

WHITEMARSH TOWNSHIP

To: Charlie L. Guttenplan, Director of Planning & Zoning/Zoning Officer

From: NICHOLAS W. WEAVER, FIRE MARSHAL

Subject: **SLD #02-19 Longfield Farm Butler & Skippack Pikes Resubmission**

Date: April 28, 2020

cc:

This application is approved after receiving their resubmission of additional requested items.

Nicholas W. Weaver
Fire Marshal
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2614
Email: nweaver@whitemarshtwp.org

MONTGOMERY COUNTY
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NORRISTOWN, PA 19404-0311
610-278-3722
FAX: 610-278-3941 • TDD: 610-631-1211
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JOHN S. COVER, AICP
INTERIM EXECUTIVE DIRECTOR

June 17, 2020

Mr. Charles L. Guttenplan, AICP
Director of Planning and Zoning
Whitemarsh Township
616 Germantown Pike
Lafayette Hill, Pennsylvania 19444

Re: MCPC #19-0024-003
Plan Name: Longfield Farm
(4 tax parcels combined into 1 lot/ 58 dwelling units/ comprising 15.24 acres)
Situate: Skippack Pike (south)/ Butler Pike (east)
Whitemarsh Township

Dear Mr. Guttenplan:

We have reviewed the above-referenced subdivision and land development plan in accordance with Section 502 of Act 247, "The Pennsylvania Municipalities Planning Code," as you requested on February 25, 2020. We forward this letter as a report of our review.

BACKGROUND

The applicant, Argos Associates ("Argos") a Pennsylvania limited partnership, Adelphi Land Associates ("Adelphi") a Florida limited partnership, and Polergodom Group, Ltd. a Pennsylvania limited partnership have submitted a land development/subdivsion plan with Whitemarsh Township, seeking preliminary approval for the construction of a 58-unit townhouse community on a 15.24-acre (14.87 acres net) development tract.

The development tract consists of 4 (four) tax parcels which include: Tax Parcel (T.P.) #65-00-01375-00-9, T.P. #65-00-01372-01-2, T.P. #65-00-10735-00-9, and T.P. # 65-00-10723-00-3, which comprise +/- 15.24 acres located at the southwest corner of Skippack Pike (State Rd. #73) and Butler Pike (a Montgomery County road) in Whitemarsh Township. The development tract borders Whitpain Township immediately to the west and the existing conditions appear to show it to be agricultural lands surrounded in part by an evergreen forested buffer.

Bordering the tract to the southeast, the applicant owns the 87.6-acre Act 319 – Preferential Assessed property, which is part of the Karamoor Estate and Winery. The development tract consists of four tax parcels: Block 47, Unit 3 (27,585 SF); Block 47, Unit 4 (40,893 SF); Block 47, Unit 5 (9.73 acres); and Block 47, Unit 7 (3.99 acres), which are situated in the VC-4 Village Commercial Zoning District. The largest of the tax parcels (#65-00-10735-

00-9) is a 10.22-acre parcel which is preferential assessed farmland (Act 319 land). A small portion of the tract (86 ft. X 528 ft.) located south of the development footprint is in the A - Residential Zoning District.

The VC - Village Commercial Zoning District, 116-290.B - Use regulations permit townhomes by Conditional Use approval with a permitted maximum density of 8 units per acre, which could potentially yield on the applicant's site 118 units.The plan provides for 7.25 acres or +/- 48.5 % of the site in green area, with the 5 bioretention basin areas included in the total green area calculation, while the minimum Green Area Requirement is 25%, or 3.7 acres. The applicant is seeking a waiver from the township's Subdivision and Land Development Ordinance, Section 105-53(D) which requires that 10% or 1.48 acres of the 14.85 acre tract be protected as Open Space/Recreation Land.

The site plan proposes to build the 58 townhouses within 15 buildings, with 7 buildings in the northern section arranged around Green Area #2 of the development tract near the Skippack Pike access point, and 8 buildings in the southern section arranged surrounding Green Area #4, near the Butler Pike access point. The major portion of the tract appears to have previously served as agricultural fields. It is bordered in part by a dense evergreen forested buffer along Skippack Pike.The proposal includes the preservation of a 3-story stone, circa 1875 farmhouse and an existing 10,300 sq. ft. parking lot, which serves a 2-story brick office building on Butler Pike.

In a decision dated November 11, 2019, the Whitemarsh Board of Supervisors gave Conditional Use approval for this development, subject to eleven (11) conditions. The Conditional Use requires a shared parking arrangement between the Water Tower Office building and the residential community, with the office parking lot providing 94 "shared-parking" spaces for the residents of the townhouse community.The townhouse development provides 16 parking spaces surrounding Green Area #4 as the designated "shared-parking" for the Water Tower office building. A dedicated pathway connecting these areas and an instrument to dedicate these spaces in perpetuity will be executed.

The site plan shows the demolition of an asphalt parking lot (+/-10,000 sq. ft.) on the development tract and the preservation of a 3-story stone dwelling near the Butler Pike access point to the townhouse development. The plan proposes a private interior street network with the principal street being +/- 1200 ft. and connecting to Skippack Pike. The proposal for access as shown in the plan will require the approval of two new access points, which consist of a full-movement driveway at Butler Pike (Montgomery County roadway), and a right-turn entrance/right-turn exit driveway (no-left turns in or no-left turns out) to Skippack Pike, (State Road 73).

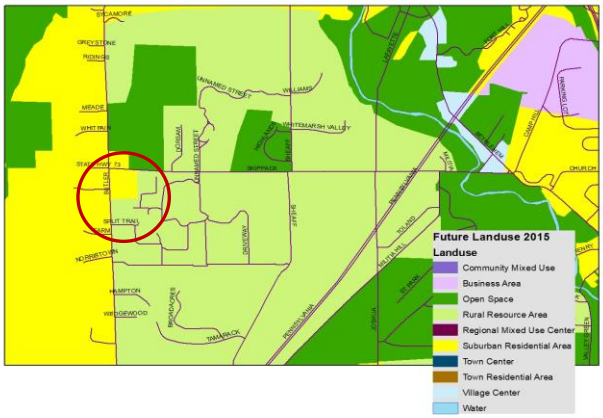
The consultant's letter accompanying the submission requests 8 waivers from the township's Subdivision and Land Development Ordinance for the proposal. The requested waivers do not include the required justifications for the relief request. Waivers include:

- A waiver from Section 105-47.(A), 56.(G)&73. Sidewalks shall be provided where required (partial waivers).
- A waiver for park/recreation land dedication-Section 105-53(D). Relief from providing an amount of 10% of the total site area for parks and open space. A total of 1.847 is required for dedication.

The Planning Commission provided both sketch plan review comments to the township in a letter dated March 3, 2019, and Conditional Use review comments in a letter dated August 9, 2019. Several of our concerns and issues raised in this letter remain outstanding and are discussed in detail below.

CONSISTENCY WITH THE COUNTY & TOWNSHIP COMPREHENSIVE PLANS

The townhouse residential development shown in the development plan is consistent with the 'Future Land Use Map' of the ***MONTCO* 2040***: A Shared Vision*, The Comprehensive Plan for Montgomery County. The map (shown below) designates this area (red oval) as 'Suburban-Residential' with the Rural Resource Area surrounding it in Whitemarsh Township, while the surrounding area in Whitpain Township is designated as



Future Land Use Map- MONTCO 2040

Suburban-Residential. A walkable, pedestrian-oriented townhouse community will support the incremental development of a small, suburban village area that has emerged at the Butler Pike and Skippack Pike intersection. This vision is the result of both Whitpain and Whitemarsh Townships working toward a shared land use goals for this area.

The townhouse community proposal appears inconsistent with the township's Future Land Use Map, 2019 as shown in the Whitemarsh Township Future Land Use Plan Update, 2019. According to the map, this area is designated as 'Conservation District Residential', which supports residential development in large lots of 1-5 acres per dwelling. However, the proposal is consistent with the underlying Village Commercial-4 Zoning District and the sub-district's legislative intent.

RECOMMENDATION

The Montgomery County Planning Commission (MCPC) generally supports the 58-unit townhouse development for this site; however we cannot support approval of the project as submitted. Our chief concern is the proposed stormwater drainage plan which fails to address a long-standing drainage and flooding problem along Butler Pike that both the applicant and the township have been informed about. We are concerned that these problems may be exacerbated with the placement of the 100-year storm event spillway along the pathway. The applicant's drainage plan relies upon this pipe to receive the spillway discharges from Bioretention Basin # 2 which would be directed to an outfall which has significant flooding during large storm events, and which discharges onto a homeowner's property across the street in Whitpain Township. We strongly recommend the township ensure that the applicant submits a revised drainage plan that shows an alternative for this

stormwater design and that the revised plan is submitted for review to the Montgomery County Roads and Bridges Department.

Notwithstanding this issue, we believe the preliminary plan proposal is a well-designed townhouse community, and we have identified several issues first outlined in the Conditional Use review letter of March 8, 2019 which are outstanding issues. We are providing several suggested improvements and recommendations that we believe could assist in the township in advancing its future land use vision and help make this development a more walkable, pedestrian-oriented, attractive community. The development tract is at key crossroads in this area of the county and is surrounded by restaurants, banks, other commercial destinations. Immediately opposite the tract is a CVS drugstore, a well- designed, context sensitive development with sidewalks along the frontage and connected to the intersection. We believe these assets along with the other commercial destinations are too important an opportunity not to build out the sidewalk network in this area of the township.

Our most significant new comments and recommendations are related to roadway and transportation issues; specifically, how this development provides the township with an opportunity to build a more resilient, interconnected roadway network in this area. We recommend the township ensure that the entry boulevard from Butler Pike be extended and constructed at this time. Furthermore, a cross-access easement should be recorded with the record plan to ensure street connectivity between this development and the potential development of the adjacent undeveloped AD-Attached Dwelling zoned lands. If this property is developed, the interconnection will assist the township in mitigating congestion at the Butler Pike and Skippack Pack intersection. The interconnection would assist the township in the future, should it need a Highway Occupancy Permit from PENNDOT for developments along Skippack Pike. This is discussed in greater detail below. In addition, we recommend the applicant widen Butler Pike to the legal right-of-way, and that it be consistent with the 45-foot right-of-way all along Butler Pike, up to the Skippack Pike intersection. We recommend the township ensure the roadway widening and the applicant's record plan dedicates to the county the ultimate right-of-way along the parcel's frontage. Our comments are as follows:

REVIEW COMMENT

1. Establish Street Connection with the Adjacent Undeveloped Attached Dwelling Zoned Parcel

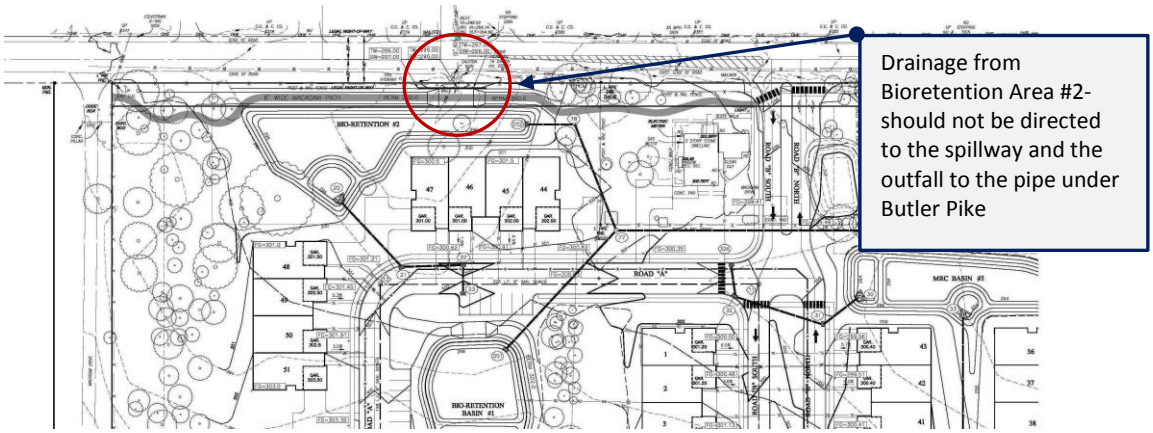
We recommend the township consider extending the roadway connection, the boulevard with the landscape median, which takes access from the Butler Pike, to the adjacent +/- 87-acre, undeveloped parcel (Tax Parcel #65-00-10723-00-3,). This parcel which lies to the east of the development is owned by the applicant and includes a 12.3-acre area which has AD-Attached Dwelling zoning, with roadway frontage along Skippack Pike. The boulevard driveway is aligned in a manner which provides a good opportunity for a direct connection to the adjacent undeveloped parcel. We believe this connection and roadway extension should be constructed at this time. It could be achieved by extending the driveway through the 60-foot wide open space area between Townhouse Units #7 and #8 to the property boundary. The adjacent tract may be developed in the future and we believe establishing a street connection to the property boundary supports building a street network and interconnectivity in this area. It will assist the township in reducing congestion at the Butler/Skippack Pikes intersection which has benefits for motorists, pedestrians, and cyclists. Creating street interconnections will assist the township in its High Occupancy Permit process with PENNDOT in future developments that may arise along Skippack Pike. We believe the development should include this improvement so that residents are aware of this future connection. If it is not constructed now, the street would be more difficult to construct due to

opposition by the residents. At a minimum, we recommend that a cross-access easement be recorded with the final record plan to ensure street interconnection in the future to the undeveloped parcel.

2. Stormwater Impacts from Bioretention Basin #2

The County owns and maintains Butler Pike in this area and there is a longstanding drainage problem on a homeowner's residence at 1051 Butler Pike, immediately opposite the proposed Bioretention Basin #2. It has literally created a swamp in the back yard that has been an ongoing problem for the county for many years. The plan shows a spillway for the 100-year storm event along the macadam pathway along Butler Pike. It is our understanding that the county Roads and Bridges Department does not want the stormwater flow from the 100-year spillway to be directed and permitted to discharge into the pipe at Butler Pike. The MCPC strongly recommends the township not approve the proposed drainage plan and that they suggest the applicant redesign the stormwater approach. We recommend that the applicant provide the revised plan to the county's Roads and Bridges Department and contact Susan Guisinger-Colon, the county engineer, for further information at SMGuisinger-Colon@mccormicktaylor.com

Headwall of pipe on the right at caution marker/ drainage outfall at 1051 Butler Pike on the left



Bioretention Basin #2 at Butler Pike

3. Transportation Issues - Butler & Skippack Pikes

A. *Butler & Skippack Pike Roadway - Vision Improvements Project*
We recommend the township consider how this project can contribute to the improvement of the area around the Butler and Skippack Pike intersection. As noted in the Conditional Use findings, the Butler Pike and Skippack Pike Intersection is rated 'E', meaning that the intersection and roadway 'Level-Of-Service' (LOS) are operating at or near capacity, with unstable flow Volume/Capacity ratio.91 to 0.99. The findings state that this development will not change the level of service rating. This development is adjacent to the intersection of Butler and Skippack Pike, as identified in *Montco 2040*: The Comprehensive Plan of Montgomery County, as a 'Vision Roadway Project (Project #33, in the Vision Roadway Map, pg. 97). This designation means that its improvement is a high priority project that does not currently have dedicated funding.

In the past several years the county has partnered with Whitpain Township for improvements with the addition of turning lanes for south-bound Butler Pike traffic. The intersection needs additional improvements which merit consideration by Whitemarsh Township when assessing the needed roadway widening and the applicant's sidewalk waiver request. The township can better position itself to receive funding for this project by taking proactive measures now. We recommend the applicant widen Butler Pike to the legal right-of-way and that it be consistent with the 45-foot right-of-way all along Butler Pike up to the Skippack Pike intersection. We recommend the township ensure the roadway widening and that the applicant's record plan dedicates to the county the ultimate right-of-way along the parcel's frontage.

Other measures to consider include the previously recommended establishment of a street connection to adjacent undeveloped tract and ensuring a context-sensitive design with accommodation for sidewalks, bike lanes, and other appropriate infrastructure. We recommend the township ensure that the final site plan includes a note of dedication, offering right-of-way dedication along Butler Pike to Montgomery County and the right-of-way along the Skippack Pike frontage to the Commonwealth of Pennsylvania.

B. *Butler Pike - County Roadway Facility*
The plan should provide widening along Butler Pike with an improved shoulder along the parcel's roadway frontage. Butler Pike is a county roadway facility which is heavily traveled with an estimated 10,150 vehicles per day in this area, as documented by DVRPC Traffic Counts- *https://www.dvrpc.org/traffic/* . The sketch plan

shows that the applicant's tract has approximately +/- 640 feet of frontage along Butler Pike and it appears to be only +/- 25 feet wide along the frontage while the roadway width in front of the Watertower Office building and parking lots is +/- 40 feet wide. We recommend the plan be revised to include the roadway widening as an improvement. Butler Pike should be widened to the legal right-of-way and should be consistent with the 45-foot right-of-way all along Butler Pike up to the Skippack Pike intersection. We recommend the township ensure the widening of this roadway and the applicant's record plan dedicates to the county the ultimate right-of-way along the parcel's frontage.

C. *Coordination with County Roads and Bridges.* The site plan proposes access from Butler Pike with all turning movements permitted and a separated, left turn lane in for south-bound traffic. The Montgomery County Roads and Bridges Department will need to approve a Highway Occupancy Permit for the proposed Butler Pike access. The applicant should coordinate with Susan Guisinger-Colon, the County Roads and Bridges Engineer as soon as possible if they have not done so already. SMGuisinger-Colon@mccormicktaylor.com

4. Open Space Issues

A. *Need for Usable, Centrally Located, Green-Open Space Areas*
In the Planning Commission's Conditional Use review letter of August 2019, we expressed the need for well-designed, centrally-located green open space areas where children, parents and community resident can mingle, play games and have passive recreation opportunities. The development plan does not provide a well-located public green space or a usable open space area that is easily accessible and can be enjoyed by townhouse residents. The lots surrounding these homes are too small for outdoor play activities. There are two specific areas that we suggest may provide an opportunity for an attractive, central gathering/open space area.

- Green Area #2 could serve as an appropriate setting for a well-designed community space, however what is shown in the plan needs more design development prior to final plan approvals. The space is represented on Site Plan Sheet #1, by a large circular area noted as 'Recreation Area'. This area is undefined and appears to be squeezed into a small linear space, hidden by a wall of trees and other vegetation lying in the backyards of the townhouses #1 - #4. We recommend the applicant provide additional design for this area in the final plan that includes an attractive, well-arranged open green area framed by flowering trees, pathways and other amenities area needed to support an attractive passive recreation space.
- Green Area #4 is surrounded by 16 'shared parking spaces' designated for use by the Water Tower office tenants along with Bioretention Basin #5. The plan shows this area with scattered clusters of trees and shrubs arranged in a 'forest-like arrangement', without any open green area for passive recreation activities. This area should be given additional design development to create a usable green community space with shade trees or flowering trees arranged to frame a community green that can serve as a community space for the twenty-seven townhouse dwellings (Units #12--#39) surrounding the green area.

B. *Green Areas Standards in the Code for Townhouse Developments.* We recommend the township examine its townhouse open space regulations and consider provisions which would provide for a common open space area designed as a plaza, village green, or landscaped courtyard to serve as an amenity for future townhouse developments. The open space requirement stated in the Conditional Use findings #7 requires only that,

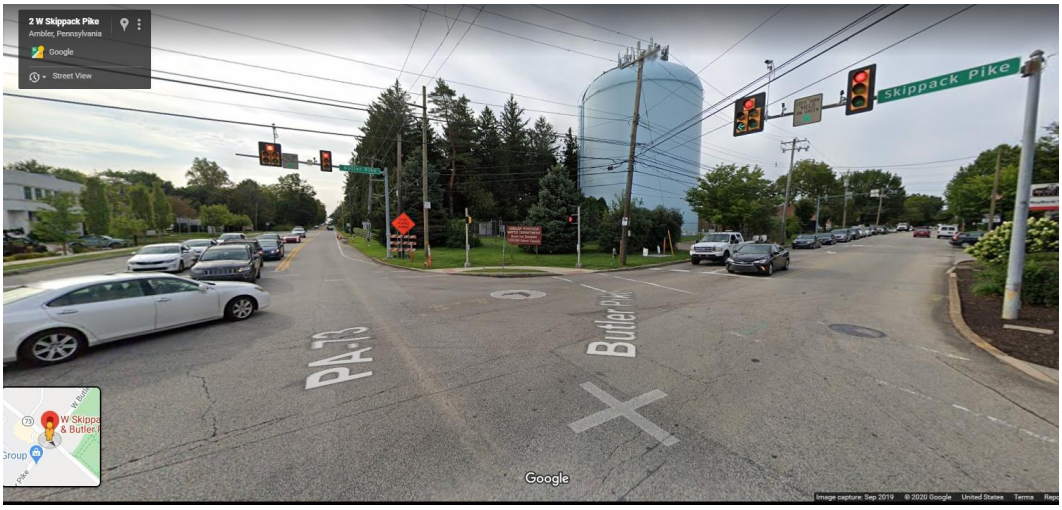
". . . the Applicant provide a defined and reasonably level open or green space, exclusive of the stormwater management facilities for recreational facilities suitable to the residents of this development", and that it be designed to the Township's Engineers satisfaction. While the requirements may be addressed by the plan, we believe more guidance is needed in the township's code to help to produce an effective open space areas which are accessible, convenient and attractive spaces for residents. They should be large enough to support community gatherings and provide places for play and for residents to mingle. We recommend the township consult the MCPC publication on best practices for townhouse developments. ***https://www.montcopa.org/DocumentCenter/View/19028/Building-Better-Townhouse-communities_Final-webversion .***

5. Pedestrian & Bike Mobility Issues

A. Sidewalks along Skippack Pike

One of the township's stated land use goals for the Village Commercial District is to, "Require all new development to include sidewalks or side path connection to surrounding mixed-use/commercial centers, recreation facilities and neighborhoods." The plan does not provide sidewalks to the intersection shown below or the continuation of sidewalks east of the site's Skippack Pike access point. This 120-foot roadway frontage should include sidewalk improvements to provide for safe, pedestrian movement along this roadway now and in the future.

We recommend the township consider the Village Commercial Zoning District's intent and goals, and the Future Land Use Map, 2028 in its evaluation of the applicant's partial waiver request from the requirement to provide sidewalks along the development's roadway frontage. We strongly recommend that the sidewalks at this intersection be constructed with the development of this property and not leave a missing link in providing safe pedestrian connections to the intersection. The township should work with the Ambler Borough Water Department on necessary improvements to address the missing sidewalk connection and continue to improve pedestrian mobility and access at this intersection.



B. Bike Mobility

Skippack Pike is identified by the county's *Bike Montco : The Bicycle Plan for Montgomery County* as a 'Principal Arterial' route between Butler Pike and the City of Philadelphia and the nearby Wissahickon Valley Park (See Section 'F'- pg. 71- Planned Bicycle Network). The plan formally adopted by the county commissioners in June 2018, seeks to improve bicycle and pedestrian mobility with a county-wide network of safe routes. The plan includes new bicycle lanes, trail standards, bike-friendly roadway design, and improved street crossing design. We recommend that the township consult the plan to ensure that the applicant's improvements along the parcel's roadway frontage do not reduce the shoulder width below a minimum of 5 ft. in the eastbound lane of Germantown Pike. The plan can be consulted for further details at the website found below.
www.montcopa.org/bikemontco

6. Landscape Plan

A. Greater Species Diversity Is Needed in the Selection of Shade Tree Species
The landscape plan submission proposes only one tree species, Autumn Flame Red Maple (Acer rubrum 'Autumn Flame', be planted over a broad area to fulfill both the street tree requirements along the community's interior roadways and surface parking, both interior and the guest parking spaces. In total the Autumn Flame Red Maple is proposed to be planted in 134 locations. Reliance on only one species is an unsustainable arboricultural practice and could do harm to the environment. There is consistent, strong evidence that strategically increasing plant diversity increases the long term stability of tree populations, promotes pollinators, and minimizes the impact of a devastating pest and or fungal disease. We recommend that greater diversity be introduced in the proposed planting. At minimum, three to four additional tree species should be provided so that no one tree species represents no more than 25% of the total planting throughout the development. We recommend the applicant consider one of the following species be planted provide greater diversity: Bald cypress (*Taxodium distichum*), Zelkova (*Zelkova serrata*), and Swamp white oak (*Quercus bicolor*).

B. Landscape Plan Submission Requirements
The applicant's landscape plan, plant schedule and its graphic plan representation of what species are proposed to be planted is deficient and does not address the requirements of Section 105-21.B.(7)d. Preliminary Landscape Plan submission requirements. It requires a Landscape and Grading Plan showing: "Proposed planting schedule indicating the locations, species and sizes of plantings as required by § 105-39, 104-48 and 105-52." Due to a lack of information and a generalized presentation of the planting improvements, we are unable to adequately assess the landscape plan. For example, the plan gives one graphic symbol in several instances for multiple species of evergreen trees and one symbol for flowering and shade trees. We recommend the township examine this submission carefully and perhaps consider adding requirements to its preliminary plan submission requirements that would ensure greater clarity and detail for landscape plan submissions at Preliminary Plan.

7. **Environmental Issue**

Mound area near entrance at Butler Pike
The site plan shows an area immediately north of the Butler Pike entrance that appears to be a raised mound that may be associated with a sewage drainage facility for the nearby residence. The township should assess and determine whether this raised mound is a former on-lot sewage absorption area and whether it should be removed in the development of the site.

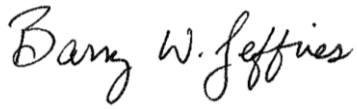
CONCLUSION

The Montgomery County Planning Commission continues to support the land development of the parcel as a 58-unit townhouse community; however as discussed above we cannot support the site development plan due to the potential adverse impacts on the county-owned and maintained roadway facilities from the stormwater drainage discharge from Bioretention Basin #2. We recommend the township consider and assess this and other review comments outlined above to your satisfaction and ensure the proposed plan complies with your appropriate municipal land use regulations and other appropriate regulations prior to granting approval.

Please note that the review comments and recommendations contained in this report are advisory to the municipality and final disposition for the approval of any proposal will be made by the municipality. Please be aware that the MCPC #19-0024-003 has been set aside for the applicant's plan. If any subsequent plans are submitted for final recording, this MCPC number should appear on the applicant sheets within the plans in the box reserved for the seal of this agency.

Should the governing body approve a final plat of this proposal, the applicant must present the plan to our office for seal and signature prior to recording with the Recorder of Deeds office. A paper copy bearing the municipal seal and signature of approval must be supplied for our files.

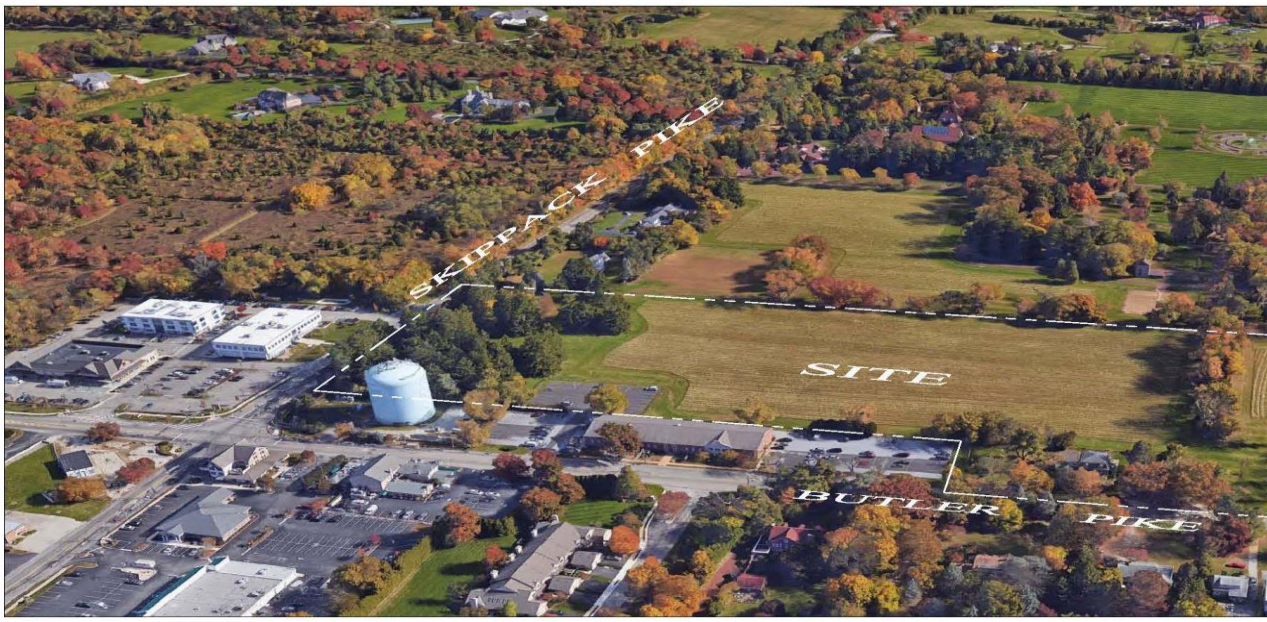
Sincerely,



Barry W Jeffries, ASLA, Senior Design Planner
bjeffrie@montcopa.org - 610-278-3444

c: Robert Dambman, Chrm., Borough Planning Commission
James Hersh, PE, Township Engineer
David Sander, Esq., Township Solicitor
Susan M. Guisinger-Colon, PE, LEED AP, Montgomery County Roads and Bridges Engineer
Tom Bonner, Director, Assets & Infrastructure, Montgomery County
Fran Hanney, P.E., Senior Manager, Transportation Services Division, Penn-DOT- District #6-
Roman M. Pronczak, Whitpain Township Manager

Attachments: 1) Aerial Site View
2) Annotated Site Plan
3) Site Plan

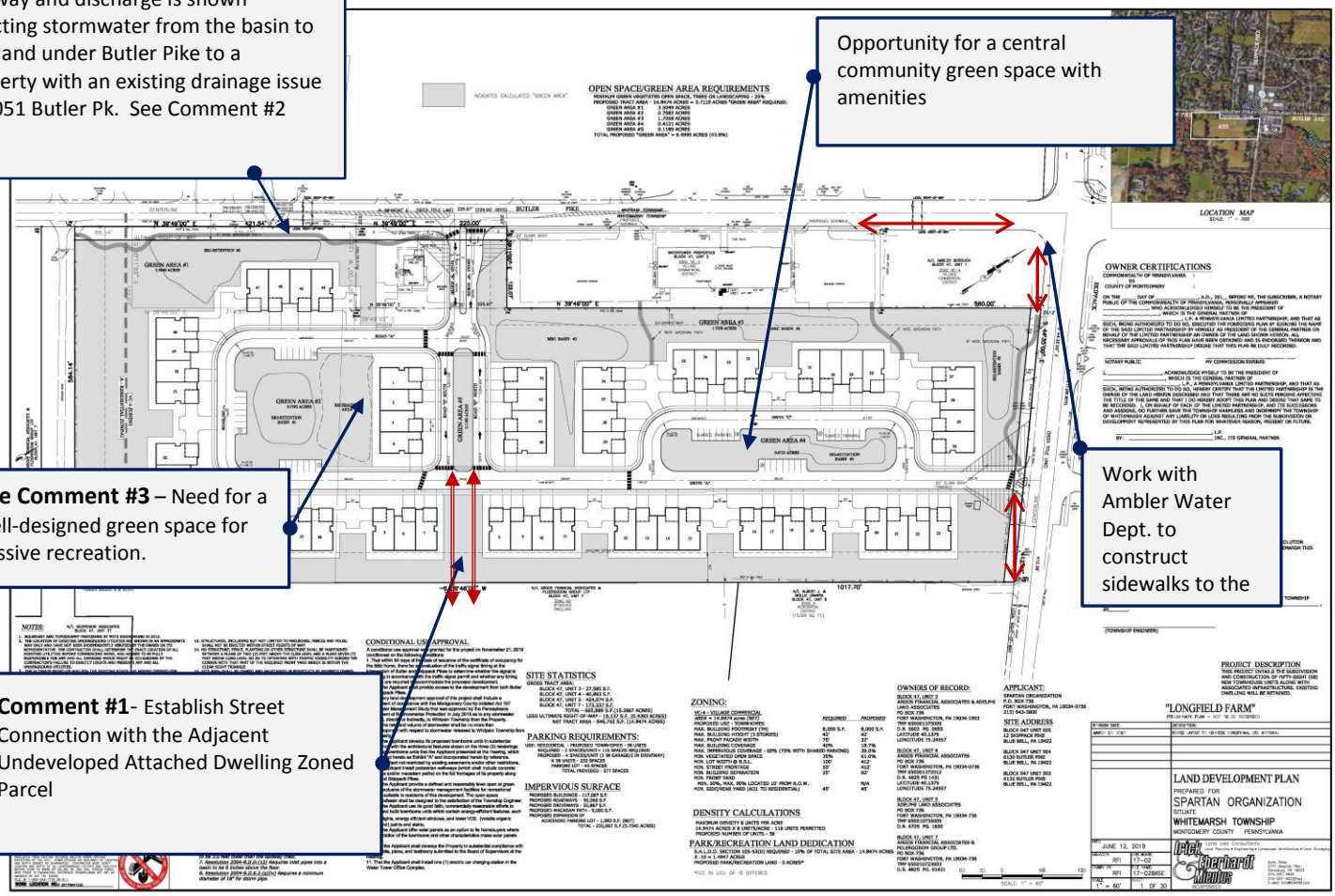


Aerial View of Site

Safe Pedestrian Access Needed – Construct sidewalks

Bioretention Area #2- Drainage Plan Modification is Needed: 100 yr. Flood spillway and discharge is shown directing stormwater from the basin to pipe and under Butler Pike to a property with an existing drainage issue at 1051 Butler Pk. See Comment #2

Opportunity for a central community green space with amenities



See Comment #3 – Need for a well-designed green space for passive recreation.

Work with Ambler Water Dept. to construct sidewalks to the

Comment #1- Establish Street Connection with the Adjacent Undeveloped Attached Dwelling Zoned Parcel

PROPERTY KEY MAP
NOT TO SCALE

INDICATES CALCULATED "GREEN AREA"

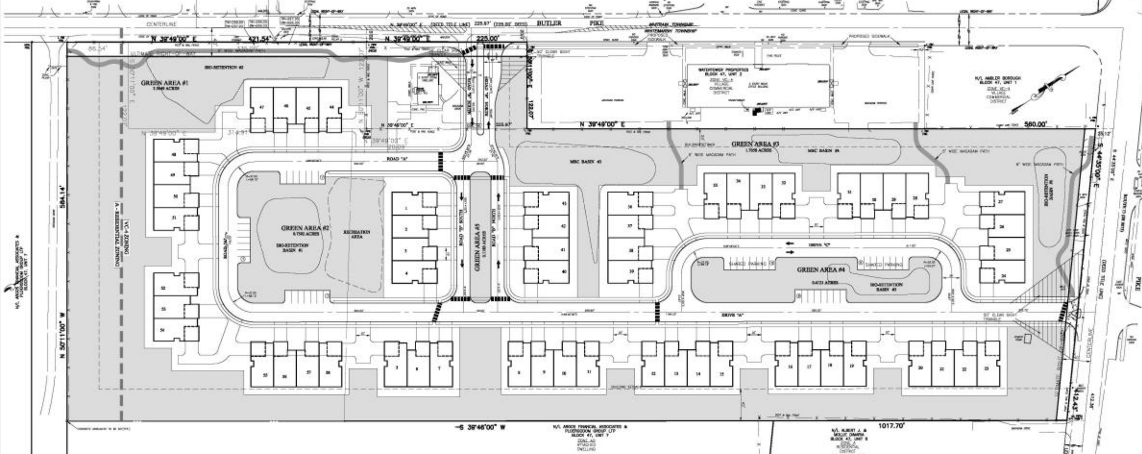
OPEN SPACE/GREEN AREA REQUIREMENTS

MINIMUM GREEN VEGETATED OPEN SPACE, TREES OR LANDSCAPING - 25%
PROPOSED TRACT AREA - 14.8474 ACRES = 3.7119 ACRES "GREEN AREA" REQUIRED.

GREEN AREA #1	3.5049 ACRES
GREEN AREA #2	0.7582 ACRES
GREEN AREA #3	1.7058 ACRES
GREEN AREA #4	0.4121 ACRES
GREEN AREA #5	0.1189 ACRES

TOTAL PROPOSED "GREEN AREA" = 6.4999 ACRES (43.8%)

LOCATION MAP
SCALE: 1" = 800'



NOTES:

1. BOUNDARY AND TOPOGRAPHY PERFORMED BY MITZ ENGINEERING IN 2015.
2. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
3. THE ULTIMATE RIGHT-OF-WAY FOR THE EXISTING ROADS ARE HEREBY OFFERED FOR DEDICATION TO WHITEMARSH TOWNSHIP.
4. ALL LOTS SHALL BE SERVED BY PUBLIC SEWER AND WATER.
5. ALL WATER MAINS ARE HEREBY OFFERED FOR DEDICATION TO AMBLER WATER COMPANY. CONSTRUCTION OF THE WATER LINE SHALL BE IN ACCORDANCE WITH CURRENT WHITEMARSH TOWNSHIP AUTHORITY STANDARDS AND SPECIFICATIONS OR AS SHOWN HEREON.
6. ALL SANITARY SEWER MAINS ARE HEREBY OFFERED FOR DEDICATION TO AMBLER BOROUGH. ALL MATERIALS USED AND CONSTRUCTION METHODS EMPLOYED SHALL BE IN ACCORDANCE WITH THE WHITEMARSH TOWNSHIP AUTHORITY STANDARDS AND SPECIFICATIONS FOR SANITARY SEWER FACILITIES. SANITARY SEWERS SHALL BE DEDICATED TO AMBLER BOROUGH AT THE COMPLETION OF THE 18 MONTH MAINTENANCE PERIOD. NO WATER HEATER BLOWOFFS OR HEATER OR AIR CONDITIONER CONDENSER CONDENSATE LINES MAY BE CONNECTED TO THE SANITARY SEWER.
7. PERMANENT CONCRETE MONUMENTS SHALL BE PLACED AT ALL PROPERTY CORNERS NOT EXISTING AND AT ULTIMATE RIGHT-OF-WAY AS INDICATED ON THE PLAN BY THE SYMBOL . ALL LOT CORNERS SHALL BE PERMANENTLY MARKED WITH IRON PINS OF AT LEAST 5/8" DIAMETER THAT HAVE AN IDENTIFYING TOP STRUCTURE. MONUMENTS WILL BE PLACED UPON COMPLETION OF FINAL GRADING, AND FLUSH TO GROUND WITH TOPS IDENTIFYING THEIR FUNCTION.
8. EASEMENTS SHALL NOT BE PLANTED WITH TREES OR SHRUBS OR BUILT UPON. STORM DRAINAGE AND ENVIRONMENTAL PROTECTION EASEMENTS SHALL NOT BE CONSTRUCTED UPON OR FILLED IN WITH EARTH OR DEBRIS.
9. ALL UTILITY SERVICES ARE TO BE UNDERGROUND.
10. THE DEVELOPER SHALL INSTALL ALL REQUIRED STREET AND REGULATORY SIGNS.
11. THE DWELLINGS SHOWN ON THESE PLANS ARE SUBJECT TO ALL TOWNSHIP ZONING AND SUBDIVISION ORDINANCE REQUIREMENTS. INDIVIDUAL HOUSING UNITS AS DEPICTED ON THE CONSTRUCTION DRAWINGS ARE APPROXIMATE ONLY. ACTUAL HOUSE LOCATIONS AND ELEVATIONS SHALL BE DETERMINED WHEN APPLICATION FOR THE INDIVIDUAL BUILDING PERMIT IS MADE.
12. AN OWNERS ASSOCIATION WILL OWN AND MAINTAIN THE COMMON AREAS, ALL REMAINING OPEN AREAS AND THE INDIVIDUAL STORM PIPES AND INLETS OUTSIDE OF THE TOWNSHIP RIGHTS OF WAY. OWNERS ASSOCIATION DOCUMENTATION SHALL INCLUDE A LAND PRESERVATION/PROTECTION AGREEMENT, DEED RESTRICTION OR OTHER ENFORCEABLE INSTRUMENT THAT ENSURES AND DEFINES MAINTENANCE OF THE SWALES, BASINS AND OTHER PERMANENT BMPS AS NOTED ON THE PCSM PLANS AND PERPETUAL PROTECTION AND MAINTENANCE (INCLUDING THE BIORETENTION BASINS) OF THE COMMON AREAS AND SHALL BE RECORDED. REFER TO OPEN SPACE PLAN & PCSM PLANS WITHIN THIS PLAN SET FOR ADDITIONAL INFORMATION.
13. STRUCTURES, INCLUDING BUT NOT LIMITED TO MAILBOXES, FENCES AND POLES, SHALL NOT BE ERECTED WITHIN STREET RIGHTS OF WAY.
14. NO STRUCTURE, FENCE, PLANTING OR OTHER STRUCTURE SHALL BE MAINTAINED BETWEEN A PLANE OF TWO (2) FEET ABOVE THE CURB LEVEL AND A PLANE SEVEN (7) FEET ABOVE CURB LEVEL SO AS TO INTERFERE WITH TRAFFIC VISIBILITY ACROSS THE CORNER WITH THAT PART OF THE REQUIRED FRONT YARD WHICH IS WITHIN THE CLEAR SIGHT TRIANGLE.
15. SITE BMPs SHALL BE OWNED AND MAINTAINED IN PERPETUITY BY PROPERTY OWNER. A BLANKET ACCESS EASEMENT SHALL BE PROVIDED TO THE TOWNSHIP FOR FOR THE PURPOSE OF ACCESS TO THE DETENTION FACILITIES ON AN ANNUAL BASIS. REFER TO PCSM PLAN FOR ADDITIONAL INFORMATION RELATING TO SITE BMPs.
16. THE SITE IS NOT LOCATED WITHIN ANY FLOODPLAIN, BASED ON FLOOD ELEVATION DATA AND FEMA INSURANCE MAP.
17. PERMANENT REMOVAL OF TOPSOIL FROM LAND WITHIN THE TOWNSHIP IS PROHIBITED.
18. THE COMMON OPEN SPACE IS SUBJECT TO PERMANENT CONSERVATION EASEMENTS PROHIBITING FUTURE DEVELOPMENT AND DEFINING THE RANGE OF PERMITTED ACTIVITIES CONSISTENT WITH Z.O. SECTION 116-270 AS EXECUTED BETWEEN TOWNSHIP AND APPLICANT.
19. OFF-STREET LOADING FACILITIES ARE NOT REQUIRED FOR THIS DEVELOPMENT.
20. IMPROVEMENTS TO BUTLER PIKE TO BE AS REQUIRED BY THE MONTGOMERY COUNTY DEPARTMENT OF ROADS AND BRIDGES. IMPROVEMENTS TO SKIPPACK PIKE TO BE AS REQUIRED BY PENNDOT. PERMITS ARE REQUIRED FROM EACH ENTITY PRIOR TO CONSTRUCTION.
21. FINAL PLANS ARE PROPOSED TO BE SUBMITTED WITHIN THREE YEARS OF THE GRANTING OF PRELIMINARY APPROVAL OF THESE PLANS.
22. TOWNHOME UNITS WILL HAVE EITHER 3 OR 4 BEDROOMS. EXACT NUMBER IS NOT KNOWN AT THIS TIME.

STOP–CALL BEFORE YOU DIG!

LOCATION OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN DEVELOPED FROM EXISTING RECORDS AND/OR ABOVE-GROUND INSPECTION OF THE SITE. COMPLETENESS OR ACCURACY OF LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK BY CALLING PA ONE CALL SYSTEM THREE DAYS PRIOR TO EXCAVATION. REFERENCE PENNSYLVANIA ACT 287 AS AMENDED BY ACT 181 (2006).
TEL. # 1-800-242-1776 OR 811
WORK LOCATION NO.: 20170841420

SALDO WAIVERS REQUESTED:

1. 105-21(B)(1)(c)- (Partial Waiver). Requires plans to show existing features within 500' of the site.
2. 105-32(B) private street shall have a right-of-way width and a horizontal and vertical alignment consistent with the requirements for public streets; 105-33B(1). Minimum centerline radii- 150' & 105-33C. Minimum tangent between curves - 100'
3. 105-47 (A), 56(G) & 73- Sidewalks shall be provided where required (Partial Waiver)
4. 105-38(F)-prohibition of perpendicular parking on public or private streets
5. 105-53(D)-dedication of land in the amount of 10% of the total site area for park & rec uses or pay a fee-in-lieu of dedication.
6. Resolution 2004-8.II.D.(8) Requires emergency spillway to be 3.0 feet lower than the spillway crest.
7. Resolution 2004-8.II.D.(12) Requires inlet pipes into a basin to be 6 inches above the floor.
8. Resolution 2004-8.II.E.3.(g)(iv) Requires a minimum diameter of 18" for storm pipe.

CONDITIONAL USE APPROVAL

A conditional use approval was granted for this project on November 21, 2019 conditioned on the following conditions:
1. That within 90 days of the date of issuance of the certificate of occupancy for the 58th home, there be an evaluation of the traffic signal timing at the intersection of Butler and Skippack Pikes to determine whether the signal is operating in accordance with the traffic signal permit and whether any timing changes are required to accommodate the proposed development.
2. That the Applicant shall provide access to the development from both Butler and Skippack Pikes.
3. That any land development approval of this project shall include a requirement of compliance with the Montgomery County-initiated Act 167 Stormwater Management Study that was approved by the Pennsylvania Department of Environmental Protection in July 2015 as to any stormwater released, directly or indirectly, to Whitpain Township from the Property.
4. That the rate and volume of stormwater shall be no more than predevelopment with respect to stormwater released to Whitpain Township from the Property.
5. That the Applicant develop its proposed townhome units in substantial accordance with the architectural features shown on the three (3) renderings depicting townhome units that the Applicant presented at the Hearing, which are attached hereto as Exhibit "A" and incorporated herein by reference.
6. To the extent not restricted by existing easements and/or other restrictions, that the Applicant install pedestrian walkways (which shall include concrete sidewalks and/or macadam paths) on the full frontages of its property along Butler and Skippack Pikes.
7. That the Applicant provide a defined and reasonably level open or green space, exclusive of the stormwater management facilities for recreational facilities suitable to residents of this development. The open space allocation/basin shall be designed to the satisfaction of the Township Engineer.
8. That the Applicant use its good faith, commercially reasonable efforts to design and build townhome units which contain energy-efficient features, such as LED lights, energy efficient windows, and lower VOC (volatile organic compound) paints and stains.
9. That the Applicant offer solar panels as an option to its homebuyers where the orientation of the townhome and other characteristics make solar panels feasible.
10. That the Applicant shall develop the Property in substantial compliance with the exhibits, plans, and testimony submitted to the Board of Supervisors at the Hearing.
11. That the Applicant shall install one (1) electric car charging station in the Water Tower Office Complex.

SITE STATISTICS

GROSS TRACT AREA:
BLOCK 47, UNIT 3 - 27,585 S.F.
BLOCK 47, UNIT 4 - 40,893 S.F.
BLOCK 47, UNIT 5 - 424,074 S.F.
BLOCK 47, UNIT 7 - 173,337 S.F.
TOTAL - 665,889 S.F.(15.2867 ACRES)
LESS ULTIMATE RIGHT-OF-WAY - 19,137 S.F. (0.4393 ACRES)
NET TRACT AREA - 646,752 S.F. (14.8474 ACRES)

PARKING REQUIREMENTS:

USE: RESIDENTIAL - PROPOSED TOWNHOMES - 58 UNITS
REQUIRED - 2 SPACES/UNIT = 116 SPACES REQUIRED
PROPOSED - 4 SPACES/UNIT (2 IN GARAGE/2 IN DRIVEWAY)
X 58 UNITS - 232 SPACES
PARKING LOT - 45 SPACES
TOTAL PROVIDED - 277 SPACES

IMPERVIOUS SURFACE

PROPOSED BUILDINGS - 117,067 S.F.
PROPOSED ROADWAYS - 90,560 S.F.
PROPOSED DRIVEWAYS - 32,867 S.F.
PROPOSED MACADAM PATH - 9,090 S.F.
PROPOSED EXPANSION OF
ADJOINING PARKING LOT - 1,083 S.F. (NET)
TOTAL - 250,667 S.F.(5.7545 ACRES)

ZONING:

VC-4 - VILLAGE COMMERCIAL
AREA = 14.8474 acres (NET)
PROPOSED USE - TOWNHOMES

	REQUIRED	PROPOSED
MAX. BUILDING FOOTPRINT (TH)	8,000 S.F.	8,000 S.F.
MAX. BUILDING HEIGHT (3 STORIES)	42'	42'
MAX. FRONT FACADE WIDTH	75'	32'
MAX. BUILDING COVERAGE	40%	18.7%
MAX. IMPERVIOUS COVERAGE - 65% (75% WITH SHARED PARKING)		39.0%
MIN. VEGETATED OPEN SPACE	35%	61.0%
MIN. LOT WIDTH @ B.S.L.	100'	412'
MIN. STREET FRONTAGE	50'	412'
MIN. BUILDING SEPARATION	25'	60'
MIN. FRONT YARD		
MIN. 50%, MAX. 90% LOCATED 10' FROM R.O.W.		N/A
MIN. SIDE/REAR YARD (ADJ. TO RESIDENTIAL)	45'	45'

DENSITY CALCULATIONS

MAXIMUM DENSITY 8 UNITS PER ACRE
14.8474 ACRES X 8 UNITS/ACRE - 118 UNITS PERMITTED
PROPOSED NUMBER OF UNITS - 58

PARK/RECREATION LAND DEDICATION

S.A.L.D.O. SECTION 105-53(D) REQUIRED - 10% OF TOTAL SITE AREA - 14.8474 ACRES X .10 = 1.4847 ACRES
PROPOSED PARK/RECREATION LAND - 0 ACRES*

*FEE IN LIEU OF IS OFFERED

OWNERS OF RECORD:

BLOCK 47, UNIT 3
ARGOS FINANCIAL ASSOCIATES & ADELPHI LAND ASSOCIATES
PO BOX 736
FORT WASHINGTON, PA 19034-1903
TMP 650001375009
D.B. 5602 PG. 0653
LATITUDE 40.1375
LONGITUDE 75.24557

BLOCK 47, UNIT 4
ARGOS FINANCIAL ASSOCIATES
PO BOX 736
FORT WASHINGTON, PA 19034-0736
TMP 650001372012
D.B. 4825 PG 1431
LATITUDE 40.1375
LONGITUDE 75.24557

BLOCK 47, UNIT 5
ADELPHI LAND ASSOCIATES
PO BOX 736
FORT WASHINGTON, PA 19034-736
TMP 650010735009
D.B. 4725 PG. 1850

BLOCK 47, UNIT 7
ARGOS FINANCIAL ASSOCIATES & POLERGODOM GROUP LTD.
PO BOX 736
FORT WASHINGTON, PA 19034-736
TMP 650010723003
D.B. 4825 PG. 01431

APPLICANT:

SPARTAN ORGANIZATION
P.O. BOX 736
FORT WASHINGTON, PA 19034-0736
215) 643-5800

SITE ADDRESS

BLOCK 047 UNIT 005
12 SKIPPACK PIKE
BLUE BELL, PA 19422

BLOCK 047 UNIT 004
6130 BUTLER PIKE
BLUE BELL, PA 19422

BLOCK 047 UNIT 003
6132 BUTLER PIKE
BLUE BELL, PA 19422

60 30 0 60 120
SCALE: 1" = 60'

OWNER CERTIFICATIONS

COMMONWEALTH OF PENNSYLVANIA :
: SS
COUNTY OF MONTGOMERY :

ON THE _____ DAY OF _____________, A.D., 201_, BEFORE ME, THE SUBSCRIBER, A NOTARY PUBLIC OF THE COMMONWEALTH OF PENNSYLVANIA, PERSONALLY APPEARED _____________, WHO ACKNOWLEDGED HIMSELF TO BE THE PRESIDENT OF _____________, WHICH IS THE GENERAL PARTNER OF _____________, L.P. A PENNSYLVANIA LIMITED PARTNERSHIP, AND THAT AS SUCH, BEING AUTHORIZED TO DO SO, EXECUTED THE FOREGOING PLAN BY SIGNING THE NAME OF THE SAID LIMITED PARTNERSHIP BY HIMSELF AS PRESIDENT OF THE GENERAL PARTNER ON BEHALF OF THE LIMITED PARTNERSHIP AN OWNER OF THE LAND SHOWN HEREON. ALL NECESSARY APPROVALS OF THIS PLAN HAVE BEEN OBTAINED AND IS ENDORSED THEREON AND THAT THE SAID LIMITED PARTNERSHIP DESIRE THAT THIS PLAN BE DULY RECORDED.

NOTARY PUBLIC MY COMMISSION EXPIRES

I, _____________, ACKNOWLEDGE MYSELF TO BE THE PRESIDENT OF _____________, WHICH IS THE GENERAL PARTNER OF _____________, L.P., A PENNSYLVANIA LIMITED PARTNERSHIP, AND THAT AS SUCH, BEING AUTHORIZED TO DO SO, HEREBY CERTIFY THAT THE LIMITED PARTNERSHIP IS THE OWNER OF THE LAND HEREIN DESCRIBED AND THAT THERE ARE NO SUITS PENDING AFFECTING THE TITLE OF THE SAME AND THAT I DO HEREBY ADOPT THIS PLAN AND DESIRE THAT SAME TO BE RECORDED. I, ON BEHALF OF EACH OF THE LIMITED PARTNERSHIP, AND ITS SUCCESSORS AND ASSIGNS, DO FURTHER SAVE THE TOWNSHIP HARMLESS AND INDEMNIFY THE TOWNSHIP OF WHITEMARSH AGAINST ANY LIABILITY OR LOSS RESULTING FROM THE SUBDIVISION OR DEVELOPMENT REPRESENTED BY THIS PLAN FOR WHATEVER REASON, PRESENT OR FUTURE.

BY: _____________, L.P.
_____________ INC., ITS GENERAL PARTNER

BY: _____________ - PRESIDENT

BY: _____________, L.P.
_____________ INC., ITS GENERAL PARTNER

BY: _____________ - PRESIDENT

ATTEST: _____________

TOWNSHIP APPROVAL CERTIFICATION

THIS SUBDIVISION AND/OR LAND DEVELOPMENT PLAN WAS APPROVED BY RESOLUTION (#2018-10) OF THE BOARD OF THE SUPERVISORS OF THE TOWNSHIP OF WHITEMARSH THIS _____ DAY OF _____________, 20_____.

(CHAIRMAN) (SECRETARY)

TOWNSHIP ENGINEER'S REVIEW

THIS SUBDIVISION AND/OR LAND DEVELOPMENT PLAN WAS REVIEWED BY THE TOWNSHIP ENGINEER FOR THE TOWNSHIP OF WHITEMARSH THIS _______ DAY OF _____________, 20_______.

(TOWNSHIP ENGINEER)

PROJECT DESCRIPTION

THIS PROJECT DETAILS THE SUBDIVISION AND CONSTRUCTION OF FIFTY-EIGHT (58) NEW TOWNHOUSE UNITS ALONG WITH ASSOCIATED INFRASTRUCTURE. EXISTING DWELLING WILL BE RETAINED.

"LONGFIELD FARM"

PRELIMINARY PLAN – NOT TO BE RECORDED

REVISION DATE	DESCRIPTION
MARCH 27, 2020	REVISE LAYOUT TO ADDRESS CONDITIONAL USE APPROVAL

LAND DEVELOPMENT PLAN
PREPARED FOR
SPARTAN ORGANIZATION
SITUATE
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE:	JUNE 12, 2019
DESIGNED: RFI	JOB NUMB: 17-02
DRAWN BY: RFI	FILE NAME: 17-02BASE
SCALE: 1" = 60'	SHEET: 1 OF 30

Irick Eberhardt & Mientus INCORPORATED
Land Use Consultants
Land Planning • Engineering • Landscape Architecture • Land Surveying

ROCKWELL ASSOCIATES
URBAN FORESTRY • ARBORICULTURE • CONSULTING

LONGFIELD FARM

To: Sean Halbom, MP, Assistant Township Manager - Whitemarsh Township

616 Germantown Pike

Lafayette Hill, PA 19444

From: John Hosbach, Consulting Arborist

Date: July 23, 2020

Reference: Tree Review

Dear Sean,

The Proposed Longfield Farm development, located along Butler Pike, has submitted the required tree removal/preservation plan along with the intended landscape improvements.

The subject applicant is removing a total of 139 subject trees within proposed development. During two previous site visits and also a final inspection today, I verified and observed a total of 85 trees that are dead, dying declined beyond repair and or failing from numerous tribulations such as standing water, decay diseases, lack of previous care, age and both abiotic / biotic factors. These were observed with the applicant's planner, Rick Collier. An additional 54 trees are being removed that were deemed healthy and structurally sound. These are being removed obviously for the proposed development improvements. The remaining 223 trees will remain protected on site.

The applicant is removing 38.4% of the total trees. 14.9% of these trees are rated as healthy. In discussions with the applicant regarding a subject heritage silver maple (51.5"), the applicant has modified improvements to maintain this tree in the landscape. All other trees within the project are protected with TPF.

Removing > than 50 Of total tree count	No – 38.4%
Tree protection fence noted	Yes
Use of natives	Large percentage of the plant palate is native
Utilization of property to ensure that that use of shade trees is maximized	Yes – the applicant is proposing open space, recreation, trails and possible tot-lot in the future.
Diversity mix	A very balanced diversity species mix is being utilized.

The applicant is proposing the utilization of both shade trees, ornamental, evergreen and the use of shrubs to meet the requirements. As noted in the table above, the applicant has designated open space zones for multi-use applications. This will reduce the areas where canopy trees can be planted.

The applicant is proposing the use of the following to capture the 990 inches of trees loss (excluding dead/dying/diseased trees).

Shade Tree Replacements (3”) at 1:1 = 165
(30%) Ornamental or Evergreen at 2:1 = 99
(20%) Shrubs at 6:1 (396/6) = 66

This equates to the 330 replacements trees with the utilization, if granted, of ornamental / evergreen / shrub substitution.

The subject landscape utilizes a broad range of natives with a small palate of non-natives. The landscape action plan will most certainly provide a very balanced multi-level (large canopy/sub canopy and shrub layer). I believe this plan is very well suited for the site as it relates to the species.

John Rockwell Hosbach Jr., Urban Forester
Registered Consulting Arborist #483, ISA Certified Arborist PD-0372
ISA Tree Risk Assessment Qualified, ASCA Qualified Tree and Plant Appraiser

MEMO TO: John Hosbach, Rockwell Associates

FROM: Rick Collier, FAICP, ASLA
David Cavanaugh, RLA, ASLA
Land*Concepts*

DATE: July 23, 2020

Re: Longfield Farm Landscape Plan

Cc: Sean Halbom, Assistant Manager Whitemarsh Township

Land*Concepts* and Irick Eberthard & Mientus have prepared an updated Landscape Plan for the proposed development at Longfield Farm. This revised plan is the result of site visits including two with you, an updated tree inventory (May and June 2020), and a slightly revised layout of the units and stormwater pipes to maximize tree protection.

The total number of trees on site is 362. Of those, 85 (23.5%) are in poor/declined condition based on the site analysis with you. The number of trees being removed that are healthy is 54 (14.9% of all trees). We are only removing 38.4 % with >61% of them in decline or dead.

The submission includes the tree replacement analysis which we submitted to the Township and you on June 26, 2020. That reflects the shifts of units and infrastructure to reduce, wherever possible, tree removal, including a heritage tree (Silver Maple 52”). The result was a loss of 990 caliper inches or 330 replacement trees per Chapter 55-4. B(6)(a). They are met as follows with replacement trees and tree equivalents per Chapter 55-4. B(6)(f).

Tree Replacements (3”) at 1:1 = 165
Ornamental or Evergreen (30%) at 2:1 (189/2) = 99
Shrubs (20%) at 6:1 (396/6) = 66
Total = 330 trees/tree equivalents

The second part included with this submission is a revised Landscape Plan (Sheet 7 and 8 of 30, revised 7/23/20) with updated numbers on all of the required landscape components – street trees per SALDO Section 105-48(B), parking lot trees per SALDO Section 105-39(A), basin landscaping, and tree replacement per Chapter 55. Buffers (Class B, Option 5) per Zoning Section 116-291C are provided to the extent required. The code requirements for all landscape categories are met, including the full complement of replacement trees. Further, the replacement trees utilize the provisions of allowing understory trees, shrubs and perennials at the approved ratios per the SALDO.

Additionally, predominantly native plant materials are proposed. We have allowed for appropriate horticulture, including growth/form, layering (shade trees, flowering/understory trees, shrubs, ground layer), and seasonal interest to achieve a high quality landscape with high habitat value.

Copies of the revised plans have been sent in hard copy by mail and electronically as pdf files to your office and the Township offices. We are anticipating being at the STC meeting scheduled for August 4, 2020.

WHITEMARSH TOWNSHIP

To: Charlie Guttenplan, AICP, Director of Planning and Zoning

From: SEAN HALBOM, ASST. TOWNSHIP MANAGER

Subject: **Summary of Longfield Presentation at August 4, 2020 STC Meeting**

Date: August 5, 2020

cc: Richard L. Mellor, Jr., Township Manager; Krista Heinrich, PE, Township Engineer; John Hosbach, Township Arborist.

Rick Collier and Bob Irick presented on behalf of the applicant for Longfield Farms. Their plans required no waivers; however, they were seeking the STC's permission to utilize species substitutions per §-55-4B6(f)-1 and §B6(f)-2.

Present at the meeting were three members of the Shade Tree Commission; David D'Amore, Christian Fassbender, and Patrice Turenne. Following a presentation by the applicant, public comment, and board comment, the commission voted unanimously (3-0) to approve the plans with conditions. The motion was:

"To accept the plans as submitted but with the addition of twenty (20) canopy trees, which must be a native species, planted throughout the site assuming these changes do not impact the applicant's conditional use status."

The Shade Tree Commission granted the applicant autonomy to plant those additional shade trees at appropriate locations throughout the site. It was clarified that STC's approval is conditional based upon the addition of the twenty canopy trees and – were the applicant unable to add all twenty canopy trees – they would need to return to the Shade Tree Commission for further discussion.

Feel free to reach out to me with questions,

Sean Halbom, MPA
Assistant Township Manager
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2604
Email: shalbom@whitemarshtwp.org

WHITPAIN TOWNSHIP
MONTGOMERY COUNTY
COMMONWEALTH OF PENNSYLVANIA

960 WENTZ ROAD
BLUE BELL, PA 19422-1835
(610) 277-2400
FAX: (610) 277-2209

August 19, 2020

Whitemarsh Township
616 Germantown Pike
Lafayette Hill, PA 19444-1821

Attn: Richard L. Mellor, Jr., Township Manager

Re: Land Development Plan Review
Longfield Farm, Butler Pike and Skippack Pike
Plans & Reports Prepared by Irick, Eberhardt & Mientus, Inc. and Land Concepts, LLC
Plans Sheets 1 of 30 through 30 of 30 and PCSM Report
Plans and Report Dated June 12, 2019 & Last Revised March 27, 2020

Dear Mr. Mellor:

As included in the conditions of approval for the Longfield Farm Conditional Use relief granted on November 21st, 2019, several conditions were approved and made part of the Decision and Order related to potential stormwater and traffic impacts to the Whitpain Township community. The purpose of this letter is to review the plans and reports for compliance with these conditions. Please note that the traffic impacts from the proposed development have been reviewed by the Township's Traffic Engineer, McMahon Associates, on behalf of Whitpain Township. Their review letter is attached with this letter.

According to the preliminary plans, the proposed residential development will consist of fifty-eight (58) townhomes with access provided via a full movement access along Butler Pike and a right-in/right-out-only access along Skippack Pike (S.R. 0073). The development proposes multiple housing units and roadways within the 4.55-acre pre-development drainage area that currently flows towards Butler Pike and Whitpain Township. Two proposed stormwater basin facilities are proposed to manage the runoff within this drainage area before the runoff is ultimately discharged towards Skippack Pike. Based on a review of the plans and design reports, the proposed stormwater management system for the development will reduce the overall drainage area that flows towards Butler Pike and Whitpain Township.

The following is a summary of review comments of plans and information received to-date for the subject applications:

1. The PCSM Plans and Report shall be in compliance with the Wissahickon Creek Watershed Act 167 Plan as adopted and included in Chapter 125 of the Stormwater Management Code of Whitpain Township.

2. The PCSM Report shall be updated to include the post-development bypass flows to the existing Butler Pike cross pipe and compare it to the pre-development flows to the existing cross pipe.

3. The PCSM report shall detail the existing condition of the cross pipe in Butler Pike.

4. On the PCSM Plan (sheet 25 of 30), the design for bio-retention basin #2 discharges the emergency spillway towards Butler Pike (near 1051 Butler Pike) and through the existing cross pipe in Butler Pike. As stated in the MCPC review letter, the County is recommending that the emergency spillway for bio-retention basin #2 not be allowed to discharge towards Butler Pike and through the existing cross pipe in Butler Pike. Whitpain Township concurs with this recommendation. If the design remains as proposed, at a minimum, the applicant must show that the cross pipe is able to convey the anticipated runoff flows from the emergency spillway without surcharging.

5. On the PCSM Plan (sheet 25 of 30), for the design of bio-retention basin #2, the plans show that a portion of the berm, spillway and a retaining wall are proposed to be constructed between the ultimate right of way and legal right of way of Butler Pike. Whitpain Township does not permit private land development improvements within the ultimate right of way of a dedicated street. The applicant shall verify that these improvements will be permitted by the Montgomery County Department of Assets and Infrastructure.

The above comments represent review completed to date. Additional comments, if any, will be forwarded upon receipt of revised plans and information. Should you require any additional information or wish to arrange a meeting to discuss these items, please contact me at your convenience.

Sincerely,

James E. Blanch, P.E.
Township Engineer

cc: Roman M. Pronczak, P.E., Twp. Manager
Michael Clarke, Esq., Rudolph Clarke, LLC, Twp. Solicitor
Alexander Glassman, Esq., Rudolph Clarke, LLC, Twp. Solicitor
E. Van Rieker, AICP, Township Planning Consultant
Casey Moore, P.E., Township Traffic Engineer, McMahon Associates
Robert Downs, Esq., Argos Associates/Adelphi Land Associates/Polergodom Group, Ltd., P.O. Box 785, Fort Washington, PA 19034

McMAHON ASSOCIATES, INC.
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FOUNDER
Joseph W. McMahon, P.E.

August 20, 2020

Mr. Roman M. Pronczak, P.E.
Township Manager
Whitpain Township
960 Wentz Road
Blue Bell, PA 19422

RE: **Traffic Engineering Review #1**
Proposed Longfield Farms Residential Subdivision
Whitemarsh Township, Montgomery County, PA
McMahon Project No. 820623.11

Dear Roman:

As requested by the Township Engineer, Jim Blanch, McMahon Associates, Inc. (McMahon) has completed a traffic engineering review for the proposed Longfield Estates residential development located in the southeast quadrant of the intersection of Skippack Pike (S.R. 0073) and Butler Pike in Whitemarsh Township, Montgomery County. According to the preliminary plans, the proposed residential development will consist of fifty-eight (58) townhomes with access provided via a full-movement access along Butler Pike and a right-in/right-out-only access along Skippack Pike (S.R. 0073).

The following documents were reviewed in preparation of our comments:

- Traffic Impact Study for Longfield Farms, prepared by Pennoni Associates, Inc., last revised April 2020.
- Preliminary Plans: Longfield Farms (38 Sheets), prepared by Irick Eberhardt & Mientus, LLC, last revised March 27, 2020.
- Whitemarsh Township Zoning Ordinance Compliance Letter, prepared by Whitemarsh Township's Director of Planning and Zoning/Zoning Officer, dated June 16, 2020.
- Whitemarsh Township Engineer Review Letter, prepared by Gilmore & Associates, Inc., dated June 16, 2020.
- Whitemarsh Township Traffic Engineer Review Letter #2, prepared by Heinrich & Klein Associates, Inc., dated June 18, 2020.
- Response to Whitemarsh Township Traffic Engineer Review Letter #1, prepared by Pennoni Associates, Inc., dated April 24, 2020.
- Whitemarsh Township Traffic Engineer Review Letter #1, prepared by Heinrich & Klein Associates, Inc., dated February 11, 2019.
- Whitemarsh Township Fire Marshall Review Letter, dated April 28, 2020.
- Montgomery County Planning Commission Review Letter, dated June 17, 2020.

Based on our review of the above-listed document(s), McMahon offers the following comments for consideration by Whitpain Township and further action by the applicant as the project progresses. **Please note that our review is focused on traffic-related issues apparent to us at this time, as well as any issues noted in the Whitemarsh Township review letters that would impact the Whitpain Township community.**

RELEVANT REVIEW COMMENTS BY OTHERS

McMahon highlights the following comments that were contained in the various Whitemarsh Township review letters and the review letter from the Montgomery County Planning Commission **that we concur with and support be completed**, as they have the potential to impact the Whitpain Township community unless properly addressed.

1. Reference is made to the November 21, 2019 Conditional Use Approval by the Board of Supervisors of Whitemarsh Township by the Township's Director of Planning and Zoning, where it is noted that the applicant shall install sidewalks along their full site frontage of Butler Pike and Skippack Pike (S.R. 0073). The review notes that the plan is not in compliance with this requirement along Skippack Pike (S.R. 0073) to the east of their access and is requesting a waiver from this requirement. The Montgomery County Planning Commission review letter also notes that sidewalks should also be provided along the entire site frontage and that Whitemarsh Township coordinate with the Ambler Borough Water Department to connect the sidewalks to the intersection of Butler Pike and Skippack Pike (S.R. 0073). The Heinrich & Klein review letter notes that a sidewalk connection appears to be feasible along Skippack Pike (S.R. 0073).

2. In order to provide for bicycle lanes along Skippack Pike (S.R. 0073), the Montgomery County Planning Commission review letter recommends that the existing 5-foot shoulder in the eastbound direction of travel along Skippack Pike (S.R. 0073) be maintained.

3. According to Whitemarsh Township's Director of Planning and Zoning the conditional use for this parcel requires either a shared driveway or shared parking with an adjacent property or both, and it is noted during the conditional use public hearing that the applicant was proposing shared parking with the Watertower Tower Office Complex. McMahon notes that the location of the sixteen (16) parking spaces labeled on Sheet 2 as shared are not located in an area that would be clear to anyone that they are not exclusively for townhome units 24 to 39 and separates these spaces from the adjacent office complex. It is also not clear how employees of the office or visitors would know to utilize these spaces based on their location and may not feel comfortable using them as their accessibility requires users to walk along driveways for the townhome units. It is our opinion that these spaces and their location do not satisfy the intent of the Whitemarsh Township ordinance to promote shared parking between these two land uses.

4. McMahon concurs with the projected trip generation characteristics as presented in the study for the proposed fifty-eight (58) townhomes. The study indicates that the residential development will generate approximately 28 and 36 total peak hour trips (entering and exiting) during the weekday morning and afternoon peak hours, respectively. It is noted that the study does not indicate the daily trip generation for the site, which is anticipated to be 398.

5. As noted by Heinrich & Klein Associates, Inc., the traffic study's analyses worksheets do not provide sufficient information to verify the signal timings and/or phases utilized at the intersection of Butler Pike and Skippack Pike (S.R. 0073) or the lane widths, grades, etc. information for all of the study area intersections. The applicant's engineer should provide this information and the corresponding Synchro files for review. Whitpain Township has some concern with the development impacts to the signalized intersection of Butler Pike and Skippack Pike (S.R. 0073) based upon the existing queuing and operational issues. It is also noted that no improvements to this intersection are recommended or referenced in the study.

6. The Heinrich & Klein review letters note that a separate left-turn lane is warranted along Butler Pike for the proposed full-movement access. The letter recommends that given the required storage length, taper and transition for this turn lane a center, two-way left-turn lane be provided along Butler Pike between the site access and the signalized left-turn lane for the southbound approach of Butler Pike. We concur with this recommendation given that Splitrail Lane, the office buildings and Phil's Tavern is located between these two intersections. McMahon recommends that the land development project pursue this improvement and that the plans be updated to illustrate it and the existing striping along the entire length of Butler Pike between the signalized intersection of Skippack Pike (S.R. 0073) and the proposed full-movement access for the site.

7. The Montgomery County Planning Commission review letter notes that the adjacent parcel to the east along Skippack Pike (S.R. 0073) is also owned by the same applicant, and are therefore recommending that the internal boulevard that connects to the full-movement access along Butler Pike be planned for in the site layout so that a future connection to the adjacent parcel can be easily provided. Currently there are several basins and green areas which may need to be modified for such future connection to occur. An internalized connection may reduce future impacts to the signalized intersection of Butler Pike and Skippack Pike (S.R. 0073) when this adjacent parcel is then redeveloped. McMahon is also in support of this recommendation.

8. The Montgomery County Planning Commission review letter notes a longstanding stormwater issue along Butler Pike that may be exacerbated with the connection of proposed Bioretention Basin #2 to the existing stormwater pipe that flows under Butler Pike and onto the Whitpain Township parcel at 1051 Butler Pike. The County's Road and Bridges Department is recommending that this basin <u>not</u> be permitted to discharge into this basin. The Whitpain Township Engineer is reviewing the stormwater report and may comment on this. Absent any review of our own on the detailed report, we would agree with the County's recommendation that the basin should not be permitted to discharge to this pipe given the potential negative impacts to any Whitpain Township resident.

9. McMahon concurs with the Montgomery County Planning Commission review letter which notes that there are some operational issues associated with the signalized intersection of Butler Pike and Skippack Pike (S.R. 0073), which merit consideration by Whitemarsh Township. As previously noted, no physical or signal improvements have been proposed in the study for this intersection. We note that Whitpain Township completed the installation of a southbound right-turn lane within the past year, which is noted as an improvement in the Whitemarsh Act 209 study, and is currently

upgrading some of the signal technology components through a CMAQ grant project at the intersection. Additional physical improvements contained within the Whitpain Act 209 Capital Improvement Plan for this intersection include the following:

- Installation of a northbound right-turn lane along Butler Pike;
- Installation of a westbound and eastbound right-turn lane along Skippack Pike (S.R. 0073); and
- Installation of an additional travel lane along both the eastbound and westbound approaches of Skippack Pike (S.R. 0073).

It is noted that Whitemarsh Township has an Act 209 Transportation Impact Fee and this site has been assessed $101,700. Due to the location of the development, functioning of the intersection, and capital improvement needs determined for the intersection, **we recommend that Whitemarsh Township and the applicant consider implementing additional improvements identified for the intersection on the Whitemarsh side of Butler Pike in order to improve operations.**

ADDITIONAL REVIEW COMMENTS

1. The access and roadway widening along the site frontage of Butler Pike will require a Highway Occupancy Permit from Montgomery County Roads and Bridges. Whitpain Township should be copied on plans, studies and other materials and included in all meetings given that Butler Pike is the boundary between Townships and that the stormwater management impacts to the Whitpain Township resident located at 1051 Butler Pike.

2. The September 2019 turning movement counts conducted by McMahon for Whitpain Township indicate higher volumes along the northbound approach of Butler Pike than presented in the study from December 2018. The applicant's engineer and Whitemarsh Township traffic engineer should consider this in the evaluation, and the potential effects of a detour for traffic that may normally have used Stenton Avenue.

3. The Transportation Impact Assessment should reference the CMAQ project S.R. 0073, SEC MWT (MPMS 114116) that is being worked on by McMahon on behalf of Whitpain Township to provide for an interconnected signal system along the Skippack Pike (S.R. 0073) corridor. Please coordinate with McMahon on any recommended improvements associated with the signalized intersection of Butler Pike and Skippack Pike (S.R. 0073) to ensure that they are incorporated into this future project. It is understood that primary maintenance and ownership of this signal is under Whitemarsh Township's jurisdiction.

4. It is not clear how the site trip distribution was determined as no details are provided in the report. Based upon McMahon's review of a standard cordon distribution, the distribution appears to be overestimated for traffic to/from the south along Butler Pike and underestimate traffic to/from the north along Butler Pike, as well as both directions of Skippack Pike (S.R. 0073). We recommend that the applicant's traffic engineer revise the site trip distribution to 12% to/from the south via Butler Pike, 23% to/from the north via Butler Pike, 28% to/from east via Skippack Pike (S.R. 0073), and 25% to/from west via Skippack Pike (S.R. 0073).

5. Based upon a review of the level of service and 95th percentile queues provided in Table 2 of the Transportation Impact Assessment, it appears that the signal timings were modified from existing to without-development conditions at the intersection of Butler Pike and Skippack Pike (S.R. 0073). The level-of-service and delays along the northbound approach of Butler Pike are also shown to improve slightly from without-to with-development conditions, which may also indicate signal timing modifications. The signal timings, however, cannot be verified as the worksheets documenting this information are not provided in the study for review.

6. A review of the levels of service and queues anticipated for the signalized intersection of Butler Pike and Skippack Pike was performed based on Table 2 in the Transportation Impact Assessment for the eastbound approach of Skippack Pike (S.R. 0073). There is a significant increase in the delay and queue from without- to with-development conditions during the weekday afternoon peak hour, and no improvements proposed. The study notes that the delay will increase from LOS D (46.4 seconds per vehicle) to LOS E (65.2 seconds per vehicles) for the eastbound Skippack Pike (S.R. 0073) through lane and the queue will then increase from 375 feet to 475 feet. It is noted that the eastbound approach of Skippack Pike (S.R. 0073) has been the subject of an extensive study that is on-going by Whitpain Township at the request of the residents of the Broad Axe neighborhood who live along Meade Road, Ivy Lane and Whitpain Drive to address cut-through traffic issues that are a result of delays and long queues along this approach. Any signal timing modifications that will further degrade operations along the eastbound and southbound approaches to the intersection and result in an increase in cut-through traffic in this neighborhood is not recommended or supported by McMahon or Whitpain Township. Additional physical, capacity-adding improvements may be necessary.

7. A review of the levels of service and queues anticipated for the signalized intersection of Butler Pike and Skippack Pike was performed based on Table 2 in the Transportation Impact Assessment for the northbound approach of Butler Pike. As noted above, the table indicates a slight decrease in the delay (88.2 to 76.6 seconds per vehicle) and queue (925 to 900 feet) for the shared through/right-turn lane. McMahon notes that this queue has an adverse impact on the ability of the residents who live along Splitrail Lane, whose near side edge is located approximately 485 feet south of the stop bar for the signal, to access Butler Pike. The distance from the stop bar to the near edge of the site access is approximately 860 feet, which indicates that the access will also be blocked by this peak period queue potentially impacting the ability of the new residents to enter and exit their access.

8. **Pedestrian Activity** – Between Skippack Pike and the proposed Butler Pike access for the new site, there exists and office building owned by Wintertower Properties with parking lots on either side of it located on the east side of Butler Pike. Phil's Tavern and the closed Broad Axe Tavern are located on the west side of Butler Pike. It is our understanding that Phil's Tavern may have an overflow parking agreement with the property owner of the office building on the Whitemarsh side of Butler Pike; however, there are no defined/striped pedestrian crossing areas, sidewalk or signage in this area. It is evident to us that the new residential development and macadam pathway connections to the parking lots for the office building along Butler Pike may likely draw more people to cross Butler Pike to Phil's Tavern, the Broad Axe Tavern (if revived to another restaurant) or the shopping center located further to the west behind these restaurants. The current traffic

generators combined with the new development will potentially then introduce more mid-block crossing activity in this area. First, it is important that the sidewalk system then be completed along the Skippack Pike and Butler Pike property frontages to the signalized intersection corner on the water company property. Furthermore, and with the design of the center lane on Butler Pike from the Skippack Pike intersection southerly and beyond the new full-movement site access for the proposed development, it is recommended that a mid-block pedestrian crossing, complete with a concrete refuge island, be considered possibly somewhere between the Phil's Tavern access and Splitrail Lane, and be designed with high definition pavement markings and signage, in the area where no left-turn lane is needed. The specific location should be worked out between the Townships, County and PennDOT, as necessary.

9. **Skippack Pike Access & Internal Site Traffic Calming Considerations** – The design of the Skippack Pike access is not deterrent enough for prohibited vehicular left turns into or out of the site as shown on the plans provided. We recommend that the design of the throat of this access be flared onto the open lands on either side to make the concrete channelization (porkchop) larger to help restrict prohibited turns from the right-in/right-out design, as well as prohibiting through movements of Skippack Pike. If the internal roads were designed with more traffic calming in mind, and not to be inviting as a convenient cut-through street, we may suggest that left-turns from Skippack Pike into the site be considered to help relieve the intersection at Butler Pike. However, the introduction of that movement to be a permitted movement at the access would likely require widening for a separate westbound left-turn lane on Skippack Pike at the access. As the site is currently designed, and without traffic calming measures provided along its internal straight-away roads, we note there may be times when the northbound traffic on Butler Pike is queued in the morning, may then cut-through this development to continue eastbound on Skippack Pike.

We trust that this review letter responds to your request, and satisfactorily addresses the traffic issues at this time as related to the proposed residential development in Whitemarsh Township. Additional comments may be issued upon future submissions of the plans and studies. If the Township has any questions, or requires further clarification, please feel free to contact me, or Casey A. Moore, P.E., Principal-in-Charge.

Sincerely,

Sandy A. Koza

Sandy A. Koza, P.E., PTOE
Project Manager

SAK/SRM

cc: Jim Blanch, P.E., Whitpain Township Engineer
Dave Mrochko, Whitpain Township Assistant Manager
Richard L. Mellor, Jr., Whitemarsh Township Manager
Charles L. Guttenplan, AICP, Whitemarsh Township Director of Planning and Zoning

James J. Hersh, P.E., Gilmore & Associates, Inc.
Andreas Heinrich, P.E., PTOE, Heinrich & Klein Associates, Inc.
Brian Keaveney, P.E., PTOE, Pennoni Associates Inc.
Robert F. Irick, Irick Eberhardt & Mientus, LLC
Barry W. Jeffries, ASLA, Montgomery County Planning Commission

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SUPPORTING DOCUMENTS

- Preliminary Postconstruction Stormwater (PCSM) Management
  & Erosion Control Narrative – dated 6/12/2019; last revised 3/27/2020
- Traffic Impact Assessment – dated January 2019; last revised April 2020
- Residential Development Proposed Vehicular Access Configuration Memo
- Pennsylvania Department of Conservation & Natural Resources (PNDI Receipt)
- Section 105-21 B. (15) Preliminary Resource Impact & Conservation Plan
- Submission of Preliminary Studies & Reports Pursuant to SLDO 105-21 (B)(17)

PRELIMINARY
POSTCONSTRUCTION STORMWATER (PCSM) MANAGEMENT & EROSION CONTROL NARRATIVE

prepared for

'Longield Farm'

Prepared for

Spartan Organization

located in
Whitemarsh Township
Montgomery County
Pennsylvania

June 12, 2019
March 27, 2020

Prepared by

Irick Eberhardt & Mientus INCORPORATED

LAND USE CONSULTANTS

Suite Three
2771 Geryville Pike
Pennsburg, PA 18073
215-541-4626

(17-02 swm)

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- BASIN INFLOW AND ROUTING DATA
- TIME OF CONCENTRATION COMPUTATIONS
- BASIN DATA
- WATERSHED 'A' & 'B'-SUMMARY REPORTS 1-100 YR STORMS (w/ infiltration)

APPENDIX B

-PENNS TRAIL ENVIRONMENTAL, LLC, INFILTRATION STUDY

APPENDIX C

-STORM SEWER COMPUTATIONS

APPENDIX D

-PRELIMINARY EROSION CONTROL DATA-SED TRAPS
-RIP-RAP DESIGN

I. INTRODUCTION

This 14.8-acre site is located on the southern side of the intersection of Butler Pike (County Road) and Skippack Pike (S.R. 0073) in Whitemarsh Township, Montgomery County, Pennsylvania. The development is comprised of three (3) parcels as noted on the land development plans. An existing residential home is located along the frontage of Butler Pike with associated driveway and parking. The remainder of the property is lawn, brush and trees. The properties are mild-moderately sloping from the rear of the property to both public streets.

The applicant proposes to develop the properties into fifty-eight (58) townhouse units within 15 buildings and the existing single family dwelling will remain. All will be serviced by public water and sewer. The development is proposed to have driveway access to Butler Pike and limited access to Skippack Pike.

Four (4) bio-retention basins and two (2) MRC (Managed Release Concept) Basins are proposed as part of the public improvements to control the additional runoff from the development of the site. The basins are expected to provide additional infiltration/water quality areas within the site.

This report details the Whitemarsh Townshp Ordinance stormwater analysis required to verify and control the additional runoff from the on-site development and existing impervious surfaces within the watershed. Refer to the PCSM Plans and Detail sheets within the Longfield Farm plan set.

II. PRELIMINARY STORMWATER DESIGN

Thre are 2 Watersheds for this project. Watershed 'A' flows to Butler Pike and an existing 15" storm pipe in DeKalb Pike. This currently has a 9.0 acre watershed, with 4.55 acres of the watershed within the development property. The dividing line to Watershed B' bisects the property near the existing single family home on the Longfield tract.

Watershed 'B' flows to overland to Butler Pike and Skippack Pike and contains 10.23 acres on-site area. This runoff is captured by existing storm sewer within Skippack Pike and at the intersection with Butler Pike.

As discussed with Montgomery County Roads and Bridges, Whitemarsh Township and PennDOT, the existing 15" cross pipe in Butler Pike within the frontage of this site creates drainage issues for the downstream property owners. As part of the solution, the 2 basins proposed within Watershed A will be discharged to the storm sewer system within Skippack Pike, subject to approvals from all agencies.

A significant amount of off-site water contributes to Watershed 'B' and to an existing storm inlet and swale in Skippack Pike. This offsite area will drain into the existing inlets without impacting the stormwater management for the site.

WHITEMARSH STORMWATER ANALYSIS

Interior storm sewer and swales will be designed to accommodate the 100-year frequency Rational storm (NOAA Precip and Intensity for the site) on any facilities draining to the basins. Storm sewer within Skippack Pike (S.R. 0073) is 10-year frequency event.

The proposed stormwater management is required to reduce the postdeveloped SCS 1, 2, 5, 10, 25, 50 and 100-year stormwater runoff to release the predeveloped rate for that year storm per Whitemarsh Township Chapter 58 & Resolution 2004-8. Preliminary design is provided here for maximum capture, infiltration and to minimize rate in conformance with the township ordinance. Basins will be designed for maximum groundwater replenishment where possible and based on the infiltration study completed by Penn's Trail Environmental, LLC (see Appendix B). The infiltration study found variable rates of infiltration, and some limiting zones, although some of the redox features are not limiting but areas of slow pearmeable water table.

The SCS Method was utilized in the preliminary basin design. As required by Chapter 58 & Resolution 2004-8, basins were analyzed with infiltration rates and without infiltration to determine maximum volume in this preliminary analysis.

In addition, stormwater design should incorporate Water Quality and Infiltration volume:

Water Quality Volume requirements (resolution 2004-8.II.F.(3)c.(1)

Volume of additional stormwater to be captured, stored and treated on site

$WQ = [(0.17)(Rv)(A)]$, A = project area in acres, $Rv = [0.05+0.009(I)]$, I=% impervious

Infiltration Volume requirements (resolution 2004-8.II.F.(4)(d.)(4)

Volume of runoff to be infiltrated at a site

Rev = [(S)(Rv)(A)]/12, A = project area in acres, Rv = [0.05+0.009(I)], I=% impervious
S is dependent on Hydrologic soil group

WATERSHED 'A'

The data in this report reflects the preliminary analysis and routing with infiltration as a component. Additional summary sheets for the analysis without infiltration is included in Appendix A for the purposes of checking for maximum volume.

A. Predeveloped Watershed(on site)

Existing Conditions: Watershed A				
Cover type/condition	**Soil type**	**Area (sf)**	**Area (acres)**	**CN**
Meadow	B	0		58
meadow	C	198198	4.55	71
Meadow	D	0		78
pervious path	B	0		61
pervious path	C	0		74
pervious path	D	0		80
woods	B	0		55
woods	C	0		70
woods	D	0		77
Lawn	B	0		61
Lawn	C	0		74
Lawn (offsite)	D	0		80
Impervious		0		98
Managed areaTotal:		396396	4.55	71
20% of existing *disturbed* impervious shall be counted as 'meadow' in good condition, ex. *disturbed* Impervious total 0.0 ac				

Time of concentration = 18.0 min (See Appendix A)

Predeveloped SCS Flows:

FREQUENCY	(Hyd No. 1) **Q (cfs)**
1	2.9
2	4.8
5	7.9
10	10.8
25	15.2
50	19.1
100	23.4

Req WQv = 0.28 ac-ft (12015 cf)
Req Rev = 0.018 ac-ft (766 cf)

B. Postdeveloped

All watersheds assume a 10x12 impervious patio for each unit in the SWM analysis.

1. Bioretention Basin #1

A = 1.75 acres

Runoff Coefficients :

A	CN	Soil Group
0.75 acres (impervious)	98	C
1.00 acres (lawn)	74	C
1.75 acres	84	

Time of concentration = 16.2 min (See Appendix A)

Postdeveloped Basin SCS inflows:

FREQUENCY	(Hyd No. 2) Q (cfs)	Vol(cf)
1	2.9	
2	3.9	11253
5	5.8	
10	7.0	
25	9.0	
50	10.7	
100	12.5	

a. *Basin #1 Routing*

1. Outlet Structure

See Appendix A & Plans for details
Infiltration 2.7 in/hr, ave of tests in the area*0.5

2. Basin routing

Frequency (years)	WSEL (feet)	(Hyd No. 3) Basin Outflow* (cfs)	Vol* (cf)
1	298.74	0.08	
2	299.01	0.15	1447
5	299.44	0.21	
10	299.82	0.26	
25	300.34	0.31	
50	300.76	0.47	
100	300.97	2.6	

*flow through Outlet structure
Volume provided = 18625 cu. ft. at elevation 301.0

Prel Volume loss for the 2 year 24 hour storm is computed at 11253-1447 = 9806 cf

3. Emergency Spillway- Basin 1

The emergency spillway must pass the 100-year frequency postdeveloped storm. SCS 24 hour storm Q_{100}= 12.5 cfs
$Q=CLH^{3/2}$
C= 3.1
H = 0.50'
L = 20.0'at elev. 301.0 with 0.5' of freeboard to the berm at elev. 302.0
Q_{cap}= 22 cfs

2. Bioretention Basin #2

A = 3.90 acres

Runoff Coefficients :

A	CN	Soil Grp
1.4 acres (impervious)	98	C
2.5 acres (lawn)	74	C
3.9 acres	83	

Time of concentration = 10.0 min (See Appendix A)

Postdeveloped Basin SCS inflows:

FREQUENCY	(Hyd No. 5) Comb Q (cfs)	Vol(cf)
1	7.7	
2	10.5	23,714
5	14.9	
10	18.6	
25	24.0	
50	28.7	
100	33.6	

a. *Bioretention Basin #2 Routing*

1. Outlet Structure
See Appendix A & Plans for details
Infiltration 0.40 in/hr, ave of tests in the area*0.5

2. Basin routing

Frequency (years)	WSEL (feet)	(Hyd No. 6) Basin Outflow* (cfs)	Vol* (cf)
1	296.77	4.2	
2	297.02	5.3	18244
5	297.37	6.4	
10	297.68	7.0	

25	298.13	8.2
50	298.50	8.6
100	298.90	8.9

*flow through Outlet structure
Volume provided = 27,665 cu. ft. at elevation 299.0

Prel. Volume loss for the 2 year 24 hour storm is computed at 23714-18244 = 5470 cf

3. Emergency Spillway- Basin 2

The emergency spillway must pass the 100-year frequency postdeveloped storm. SCS 24 hour storm Q_{100}= 33.6 cfs

$Q=CLH^{3/2}$
C= 3.1
H = 0.50'
L = 30.0'at elev. 299.0 with 0.5' of freeboard to the berm at elev. 300.0
Q_{cap}= 33 cfs

Watershed A summary

Total volume for WQ = 18625 + 27665 = 46290 cf > Req WQv = 0.28 ac-ft (12015 cf)

Total estimated infilt. loss = 9806+5470 = 15276 cf > Req Rev = 0.018 ac-ft (766 cf)

Preliminary analysis indicates township requirements can likely be met on site for this watershed with the 2 basins proposed. The proposed permanent stormwater management features (BMPs) proposed for this development will significantly reduce the runoff rate for the entire watershed. The infiltration capacity of each of the on-site BMPs will reduce the runoff volume as required by township ordinances.

WATERSHED 'B'

Predeveloped Watershed(on site)

Existing Conditions: Watershed B (on-site)				
Cover type/condition	**Soil type**	**Area (sf)**	**Area (acres)**	**CN**
Meadow	B	0		58
meadow	C	282269	6.48	71
Meadow	D	154202	3.54	78
pervious path	B	0		61
pervious path	C	0		74
pervious path	D	0		80
woods	B	0		55
woods	C	0		70
woods	D	0		77
Lawn	B	0		61
Lawn	C	0		74
Lawn	D	0		80
Impervious		9148	0.21	98
Managed areaTotal:		445619	10.23	74
20% of existing *disturbed* impervious shall be counted as 'meadow' in good condition, ex. *disturbed* Impervious total 0.26 ac				

Time of concentration = 16.6 min (See Appendix A)

Predeveloped SCS Flows:

FREQUENCY	Q (cfs) (Hyd No. 7)
1	8.9
2	13.9
5	21.9
10	29.2
25	40.1
50	49.7
100	60.2

Req WQ v = 0.78 ac-ft (33979 cf)
Req Rev = 0.042 ac-ft (1832 cf)

C. *Postdeveloped*

1. MRC Basin #3

A = 4.02 acres

Runoff Coefficients :

A	CN	Soil Grp
1.72 acres (impervious)	98	
1.20 acres (lawn)	74	C
1.10 acres (lawn)	80	D
4.02 acres	86	

Time of concentration = 14.9 min (See Appendix A)

Postdeveloped Basin SCS inflows:

FREQUENCY	Q (cfs) (Hyd No. 9)	Vol(cf)
1	7.7	
2	10.3	27797
5	14.3	
10	17.6	
25	22.4	
50	26.5	
100	30.8	

a. *MRC Basin #3 Routing*

1. Outlet Structure

See Appendix A & Plans for details
Infiltration 0.00 in/hr, therefore MRC design will be used.

2. Basin #3 routing

Frequency (years)	WSEL (feet)	(Hyd No. 10) Basin Outflow (cfs)	Vol (cf)
1	295.10	4.2	
2	295.40	5.8	25263
5	295.74	9.6	
10	295.97	12.3	
50	296.66	15.4	
100	297.05	16.5	

6" of storage is provided under the first orifice. Managed release orifice will be used to drain and incourage groundwater recharge.

Volume provided = 24557 cu. ft. at elevation 297.25

Prel Volume loss is not expected for this area of poor infiltration rates.

3. Emergency Spillway- Basin 3

The emergency spillway must pass the 100-year frequency postdeveloped storm. SCS 24 hour storm Q_{100}= 30.8 cfs
$Q=CLH^{3/2}$
C= 3.1
H = 0.50'
L = 30.0'at elev. 297.25 with 0.5' of freeboard to the berm at elev. 298.25
Q_{cap}= 33 cfs

2. *MRC Basin #4*

A = 1.48 acres

Runoff Coefficients :

A	CN	Soil Grp
0.61 acres (impervious)	98	
0.87 acres (lawn)	80	D
1.48 acres	87	

Time of concentration = 15.0 min (See Appendix A)

Postdeveloped Basin SCS inflows:

FREQUENCY	(Hyd No. 11) Q (cfs)	Vol(cf)
1	3.0	
2	3.9	10669
5	5.4	
10	6.6	
25	8.4	
50	9.9	
100	11.5	

a. *MRC Basin #4 Routing*

1. Outlet Structure

See Appendix A & Plans for details
Infiltration 0.0 in/hr, therefore MRC design will be used.

2. Basin routing

Frequency (years)	**WSEL** (feet)	(Hyd No. 12) **Basin Outflow*** (cfs)	**Vol*** (cf)
1	292.09	0.17	
2	292.47	0.23	8510
5	293.02	0.29	
10	293.42	0.43	
25	293.63	2.6	
50	293.76	5.2	
100	293.90	7.8	

*flow through Outlet structure. Managed release orifice will be used to drain and incourage groundwater recharge.

Volume provided = 14671 cu. ft. at elevation 294.0

3. Emergency Spillway- Basin 4

The emergency spillway must pass the 100-year frequency postdeveloped storm. SCS 24 hour storm Q_{100}= 11.5 cfs

$Q=CLH^{3/2}$
C= 3.1
H = 0.50'
L = 20.0'at elev. 294.0 with 0.5' of freeboard to the berm at elev. 295.0
Q_{cap}= 22 cfs

3. Bioretention Basin #5

A = 1.85 acres

Runoff Coefficients :

A	CN	Soil Grp
0.95 acres (impervious)	98	
0.60 acres (lawn)	74	C
0.30 acres (lawn)	80	D
1.85 acres	87	

Time of concentration = 16.0 min (See Appendix A)

Postdeveloped Basin SCS inflows:

FREQUENCY	(Hyd No. 13) Q (cfs)	Vol(cf)
1	3.6	
2	4.7	13502
5	6.5	
10	7.9	
25	10.1	
50	11.9	
100	13.8	

a. *Basin #5 Routing*

1. Outlet Structure

See Appendix A & Plans for details
Infiltration 1.6 in/hr, ave of tests in the area*0.5

2. Basin routing

Frequency (years)	WSEL (feet)	(Hyd No. 14) Basin Outflow* (cfs)	Vol* (cf)
1	295.15	1.5	
2	295.28	3.3	9545
5	295.40	5.7	
10	295.49	7.3	
25	295.62	9.1	
50	295.83	9.8	
100	296.0	11.2	

*flow through Outlet structure

Volume provided = 6924 cu. ft. at elevation 296.0

Prel. Volume loss for the 2 year 24 hour storm is computed at 13502-9545 = 3957 cf

3. Emergency Spillway- Basin 5

The emergency spillway must pass the 100-year frequency postdeveloped storm. SCS 24 hour storm Q_{100}= 13.8 cfs

$Q=CLH^{3/2}$
C= 3.1
H = 0.50'
L = 15.0'at elev. 296.0 with 0.5' of freeboard to the berm at elev. 297.0
Q_{cap}= 16.4 cfs

4. Bioretention Basin #6

A = 1.69 acres

Runoff Coefficients :

A	CN	Soil Grp
1.01 acres (impervious)	98	
0.68 acres (lawn)	74	C
0.00 acres (lawn)	80	D
1.69 acres	88	

Time of concentration = 14.9 min (See Appendix A)

Postdeveloped Basin SCS inflows:

FREQUENCY	Q (cfs) (Hyd No. 15)	Vol(cf)
1	3.6	
2	4.7	12693
5	6.4	
10	7.8	
25	9.8	
50	11.5	
100	13.3	

a. *Basin #6 Routing*

1. Outlet Structure

See Appendix A & Plans for details
Infiltration 3.9 in/hr, ave of tests in the area*0.5

2. Basin routing

Frequency (years)	WSEL (feet)	Basin Outflow* (cfs) (Hyd No. 16)	Vol* (cf)
1	289.04	0.7	
2	289.29	1.2	3454
5	289.70	1.6	
10	289.93	3.7	
25	290.09	6.8	
50	290.18	9.0	
100	290.29	10.6	

*flow through Outlet structure
Volume provided = 11071 cu. ft. at elevation 290.5

Prel. Volume loss for the 2 year 24 hour storm is computed at 12693-3454 = 9239 cf

3. Emergency Spillway- Basin 6

The emergency spillway must pass the 100-year frequency postdeveloped storm. SCS 24 hour storm Q_{100}= 13.3 cfs

$Q=CLH^{3/2}$
C= 3.1
H = 0.50'
L = 20.0'at elev. 290.5 with 0.5' of freeboard to the berm at elev. 291.50

Q_{cap}= 22 cfs

5. Postdeveloped Watershed B bypass

A = 0.88 acres

Runoff Coefficients :

A	CN	Soil Grp
0.20 acres (impervious)	98	
0.68 acres (lawn)	74	C
0.00 acres (lawn)	80	D
0.88 acres	79	

Time of concentration = 14.6 min (See Appendix A)

Postdeveloped SCS bypass flows:

FREQUENCY	(Hyd No. 17) Q (cfs)
1	1.1
2	1.6
5	2.4
10	3.1
25	4.2
50	5.1
100	6.0

5. Postdeveloped Watershed B Summary

Postdeveloped combined flows:

FREQUENCY	(Hyd #18) Combined Q (cfs)	(Hyd #7) Predeve Q(cfs)
1	7.1	8.9
2	11.5	13.9
5	19.0	21.9
10	25.1	29.2
25	33.9	48.1
50	42.2	49.7
100	50.3	60.2

Total volume for WQ = 24557 +14671+6924 +11071 =57223 cf > Req WQ v = 0.78 ac-ft (33979 cf)

Total estimated infilt. loss = 0+0+3957+9239 = 13196 cf > Req Rev = 0.042 ac-ft (1832 cf)

Analysis indicates township requirements can likely be met on site for this watershed with the 4 basins proposed. The proposed permanent stormwater management features (BMPs) proposed for this development will significantly reduce the runoff rate for the entire watershed. The infiltration capacity of each of the on-site BMPs will reduce the runoff volume as required by township ordinances.

6. Postdeveloped Watershed A/B Summary

Since Watershed A basins are diverted to Watershed B, a summary of the 2 was checked for rate control.

Postdeveloped combined flows:

	(Hyd #19) Combined A/B	(Hyd #8) Predeve A/B
FREQUENCY	**Q (cfs)**	**Q(cfs)**
1	10.8	11.8
2	16.8	18.6
5	25.5	29.8
10	32.3	39.9
25	42.1	55.1
50	50.5	68.7
100	59.4	83.4

Refer to Appendix A for inflow and routing summations. Detailed 2-yr analysis is provided to confirm watershed data in this report, with just the summary report for the 1-100 year storms.

III. PRELIMINARY EROSION CONTROL DESIGN

The installation of public improvements and construction of the building is expected to disturb *14.2 acres*. The limit of disturbance is defined within the erosion control plans and is minimized to that area necessary for installation of public improvements and the townhouses.

During construction of the primary area to be disturbed, three (3) sediment traps will provide the majority of sediment control for the site. In areas outside of the watershed to the traps, compost filter socks will provide control.

Existing public streets will be protected by the following Erosion Control BMPs: rock construction entrances and compost filter socks.

Refer to Appendix C for sed trap sizing.

APPENDIX A

- TOWNSHIP ANALYSIS, SCS 2 YR-24-HOUR STORM)
- BASIN INFLOW AND ROUTING DATA
- TIME OF CONCENTRATION COMPUTATIONS
- BASIN DATA
- WATERSHED ‘A’ & ‘B’-SUMMARY REPORTS 1-100 YR STORMS

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Hydrograph Report

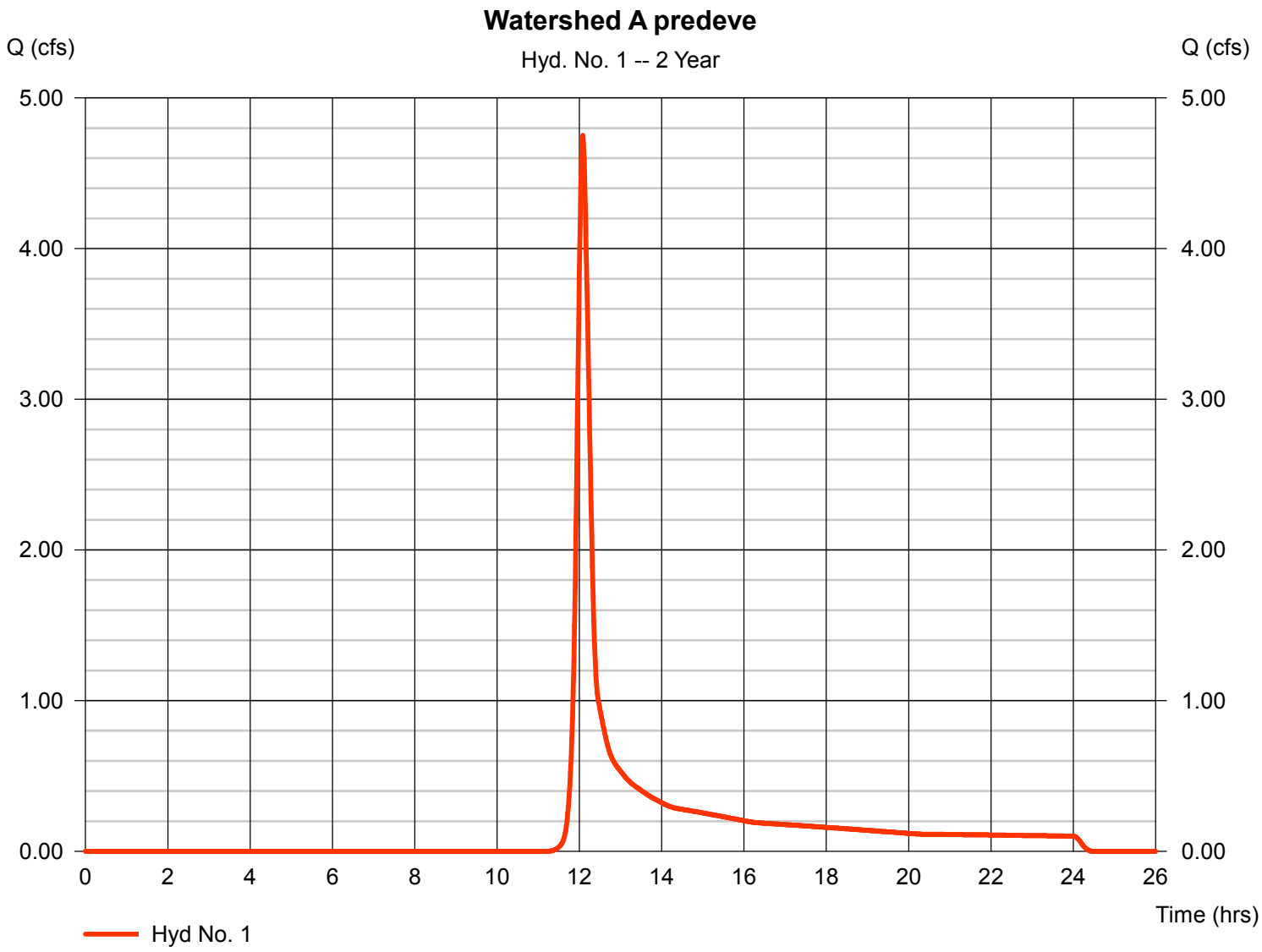
Hydraflow Hydrographs by Intelisolve v9.24 — Thursday, Apr 2, 2020

Hyd. No. 1

Watershed A predeve

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.750 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.08 hrs
Time interval	=	1 min	Hyd. volume	=	15,130 cuft
Drainage area	=	4.550 ac	Curve number	=	71*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	18.00 min
Total precip.	=	3.28 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(4.550 x 71)] / 4.550



TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve v9.24

Hyd. No. 1

Watershed A predeve

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	100.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.20		0.00		0.00		
Land slope (%)	=	1.80		0.00		0.00		
Travel Time (min)	**=**	**14.88**	**+**	**0.00**	**+**	**0.00**	**=**	**14.88**
Shallow Concentrated Flow								
Flow length (ft)	=	403.00		0.00		0.00		
Watercourse slope (%)	=	1.80		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	2.16		0.00		0.00		
Travel Time (min)	**=**	**3.10**	**+**	**0.00**	**+**	**0.00**	**=**	**3.10**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 18.00 min

Hydrograph Report

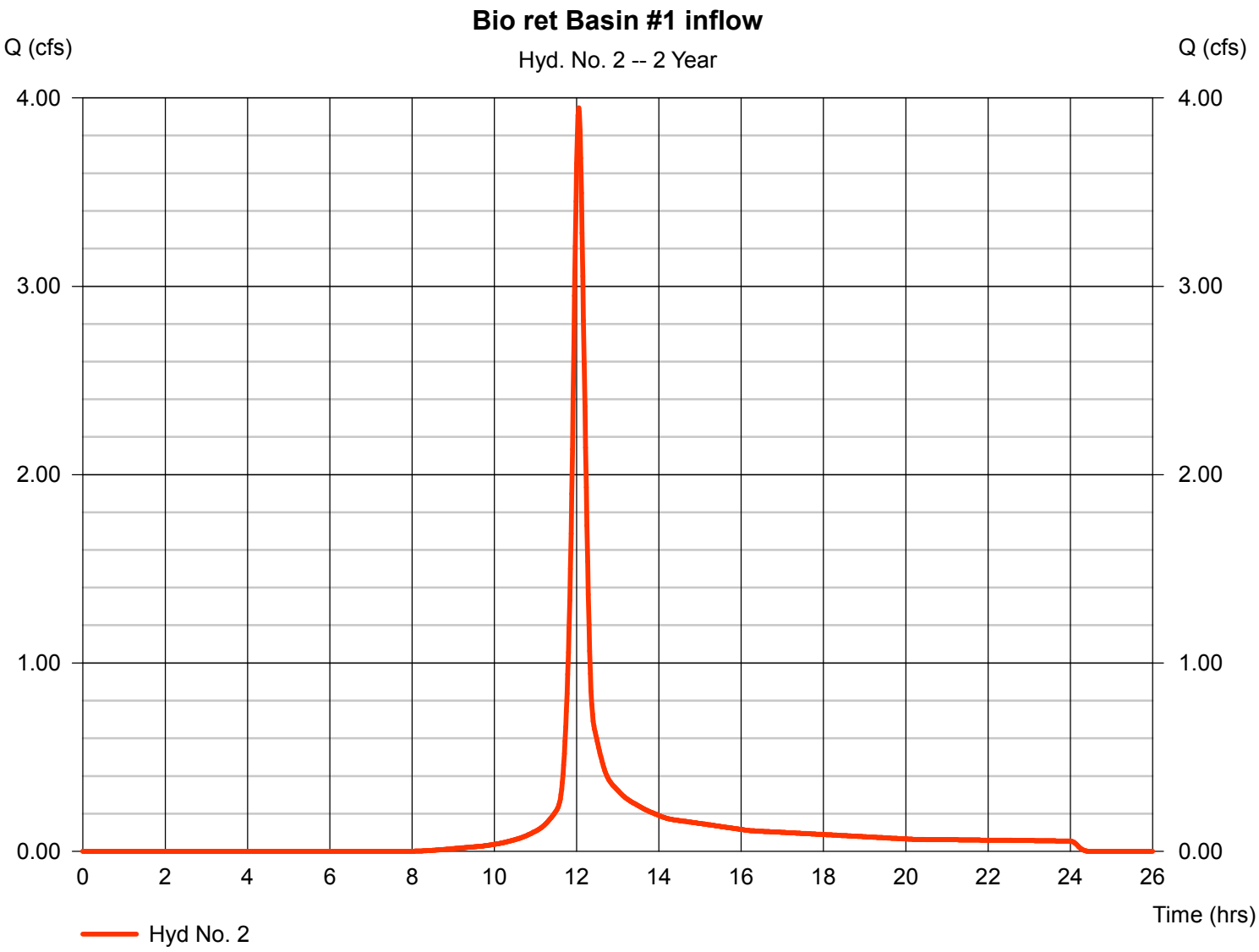
Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 2

Bio ret Basin #1 inflow

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.947 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.05 hrs
Time interval	=	1 min	Hyd. volume	=	11,253 cuft
Drainage area	=	1.750 ac	Curve number	=	84*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	16.20 min
Total precip.	=	3.28 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.750 x 98) + (1.000 x 74)] / 1.750



TR55 Tc Worksheet

Hydraflow Hydrographs by Intelisolve v9.24

Hyd. No. 2

Bio ret Basin #1 inflow

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	100.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.20		0.00		0.00		
Land slope (%)	=	1.80		0.00		0.00		
Travel Time (min)	**=**	**14.88**	**+**	**0.00**	**+**	**0.00**	**=**	**14.88**
Shallow Concentrated Flow								
Flow length (ft)	=	100.00		90.00		0.00		
Watercourse slope (%)	=	1.80		2.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	2.16		2.87		0.00		
Travel Time (min)	**=**	**0.77**	**+**	**0.52**	**+**	**0.00**	**=**	**1.29**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 16.20 min

Hydrograph Report

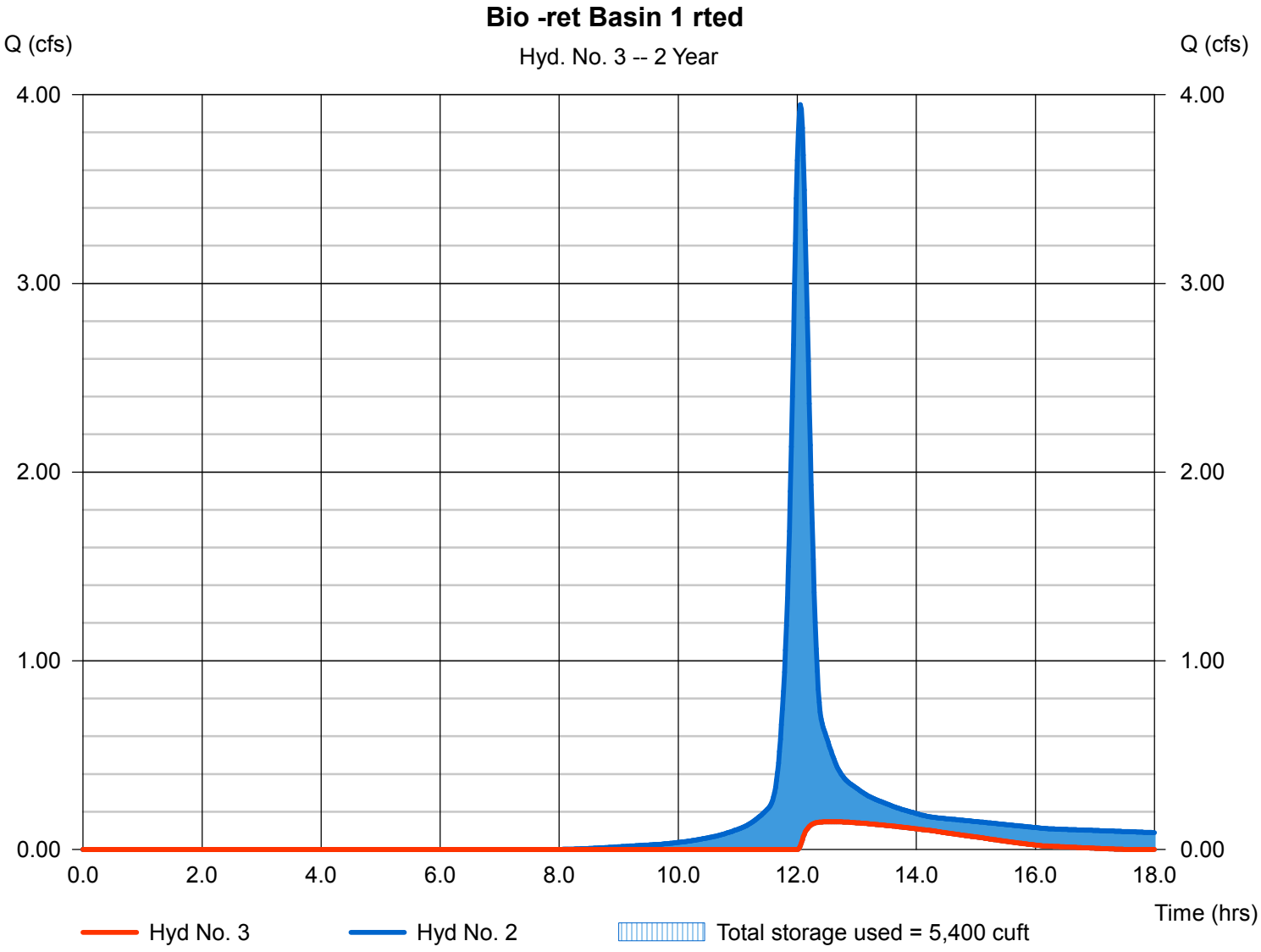
Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 3

Bio -ret Basin 1 rted

Hydrograph type	=	Reservoir	Peak discharge	=	0.147 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.58 hrs
Time interval	=	1 min	Hyd. volume	=	1,447 cuft
Inflow hyd. No.	=	2 - Bio ret Basin #1 inflow	Max. Elevation	=	299.01 ft
Reservoir name	=	Bio-retention Basin #1	Max. Storage	=	5,400 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Pond No. 2 - Bio-retention Basin #1

Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 298.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	298.00	4,898	0	0
1.00	299.00	5,736	5,317	5,317
2.00	300.00	6,638	6,187	11,504
3.00	301.00	7,604	7,121	18,625

Culvert / Orifice Structures

		[A]	[B]	[C]	[PrfRsr]
Rise (in)	=	15.00	3.00	0.00	0.00
Span (in)	=	15.00	3.00	0.00	0.00
No. Barrels	=	1	1	0	0
Invert El. (ft)	=	297.50	298.50	0.00	0.00
Length (ft)	=	138.00	0.00	0.00	0.00
Slope (%)	=	2.18	0.00	0.00	n/a
N-Value	=	.013	.013	.013	n/a
Orifice Coeff.	=	0.60	0.60	0.60	0.60
Multi-Stage	=	n/a	Yes	No	No

Weir Structures

		[A]	[B]	[C]	[D]
Crest Len (ft)	=	6.28	20.00	0.00	0.00
Crest El. (ft)	=	300.75	301.00	0.00	0.00
Weir Coeff.	=	3.33	2.60	3.33	3.33
Weir Type	=	Riser	Broad	---	---
Multi-Stage	=	Yes	No	No	No

Exfil.(in/hr) = 2.700 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	298.00	0.00	0.00	---	---	0.00	0.00	---	---	0.000	---	0.000
1.00	5,317	299.00	1.13 ic	0.14 ic	---	---	0.00	0.00	---	---	0.358	---	0.503
2.00	11,504	300.00	1.13 ic	0.28 ic	---	---	0.00	0.00	---	---	0.415	---	0.692
3.00	18,625	301.00	2.99 ic	0.36 ic	---	---	2.61	0.00	---	---	0.475	---	3.453

Hydrograph Report

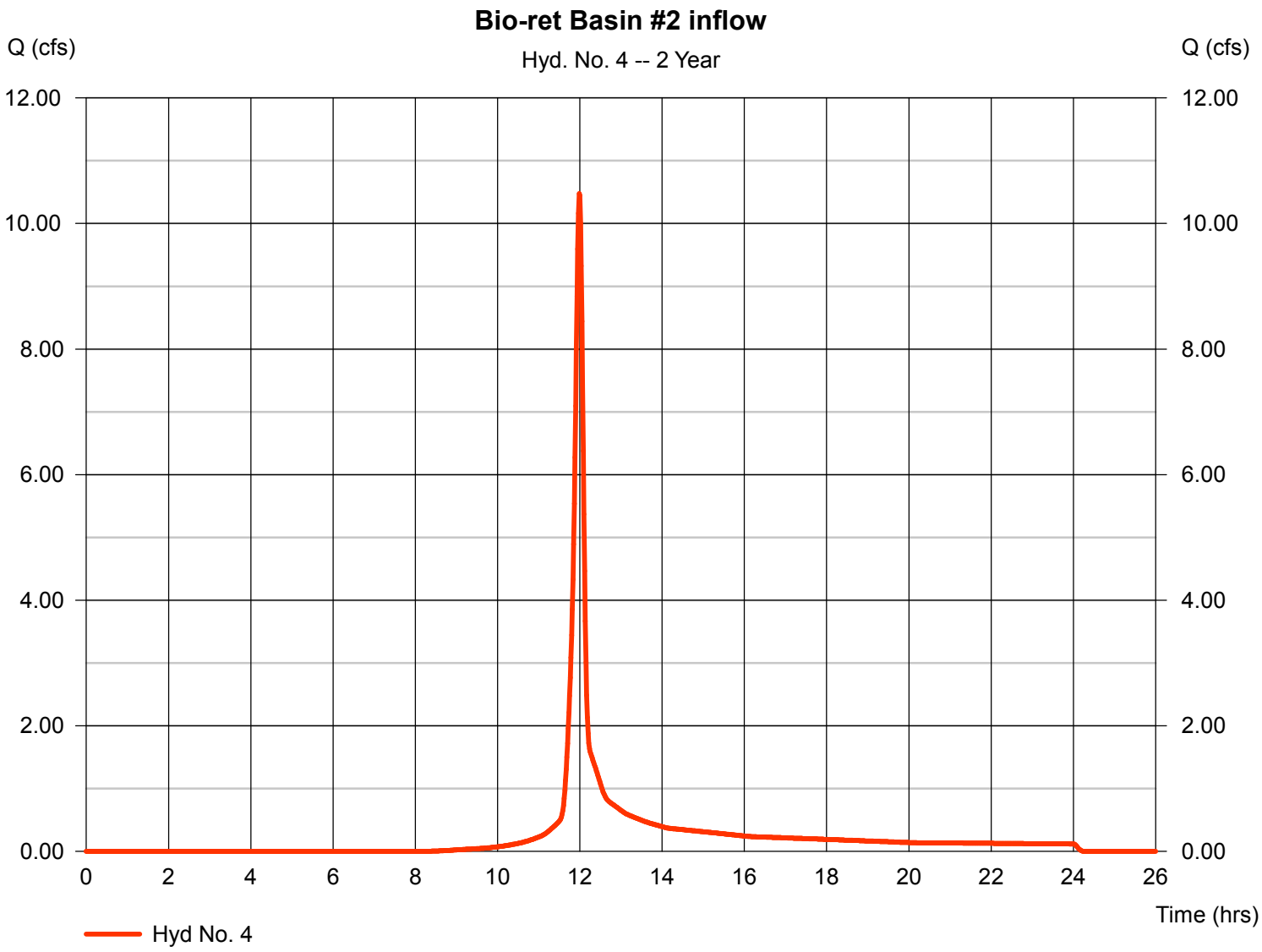
Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 4

Bio-ret Basin #2 inflow

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.48 cfs
Storm frequency	=	2 yrs	Time to peak	=	11.98 hrs
Time interval	=	1 min	Hyd. volume	=	23,714 cuft
Drainage area	=	3.900 ac	Curve number	=	83*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	10.00 min
Total precip.	=	3.28 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(2.500 x 74) + (1.400 x 98)] / 3.900



Hydrograph Report

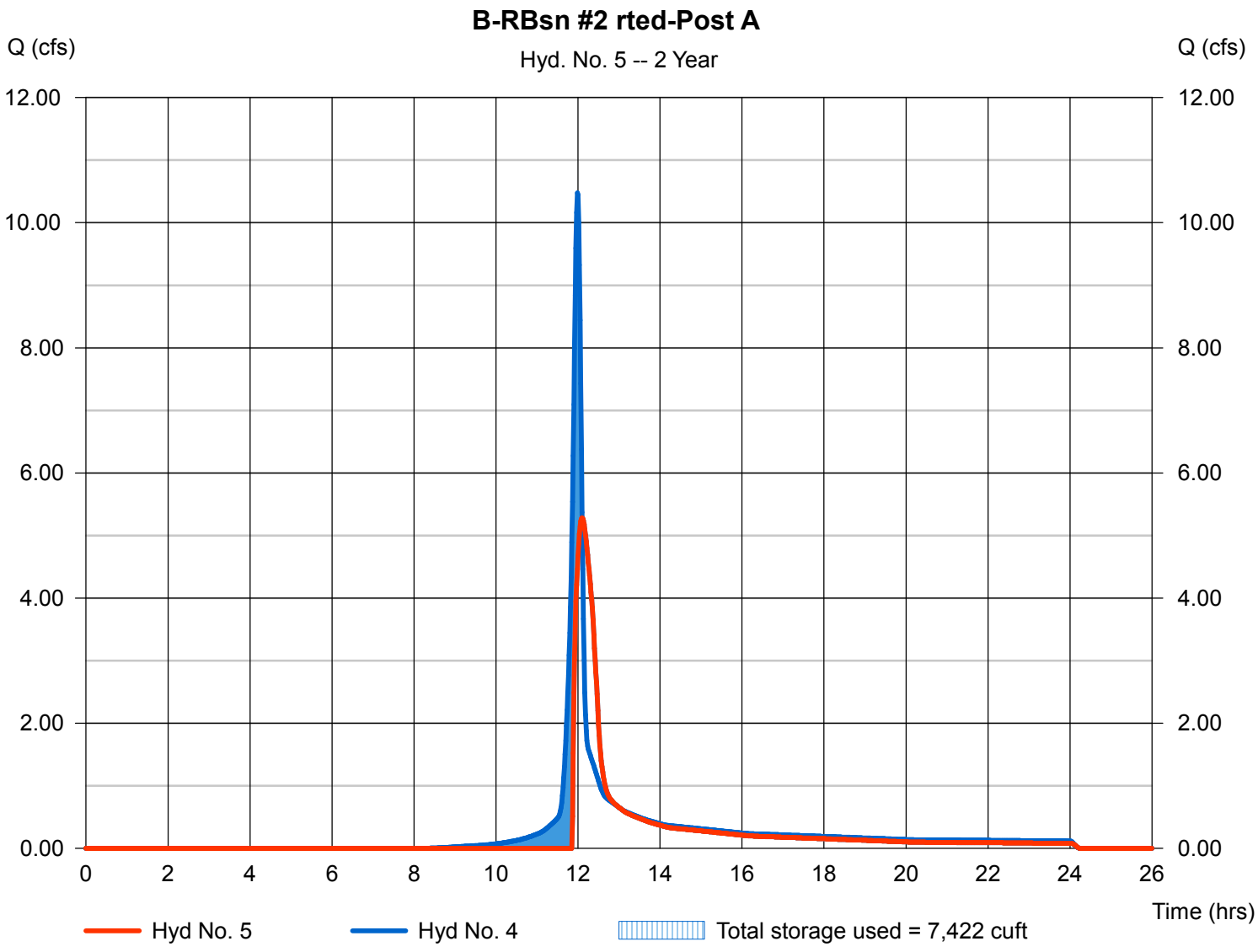
Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 5

B-RBsn #2 rted-Post A

Hydrograph type	=	Reservoir	Peak discharge	=	5.282 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.10 hrs
Time interval	=	1 min	Hyd. volume	=	18,244 cuft
Inflow hyd. No.	=	4 - Bio-ret Basin #2 inflow	Max. Elevation	=	297.02 ft
Reservoir name	=	Bio-retention Basin #2	Max. Storage	=	7,422 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Pond No. 1 - Bio-retention Basin #2

Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 296.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	296.00	6,266	0	0
1.00	297.00	8,254	7,260	7,260
2.00	298.00	10,271	9,263	16,523
3.00	299.00	12,014	11,143	27,665
4.00	300.00	19,104	15,559	43,224

Culvert / Orifice Structures

		[A]	[B]	[C]	[PrfRsr]
Rise (in)	=	15.00	Inactive	0.00	0.00
Span (in)	=	15.00	24.00	0.00	0.00
No. Barrels	=	1	1	0	0
Invert El. (ft)	=	295.30	296.50	0.00	0.00
Length (ft)	=	40.00	0.00	0.00	0.00
Slope (%)	=	0.60	0.00	0.00	n/a
N-Value	=	.013	.013	.013	n/a
Orifice Coeff.	=	0.60	0.60	0.60	0.60
Multi-Stage	=	n/a	Yes	No	No

Weir Structures

		[A]	[B]	[C]	[D]
Crest Len (ft)	=	4.70	24.00	30.00	0.00
Crest El. (ft)	=	296.80	296.50	299.00	0.00
Weir Coeff.	=	3.33	3.33	2.60	3.33
Weir Type	=	Riser	Rect	Broad	---
Multi-Stage	=	Yes	Yes	No	No

Exfil.(in/hr) = 0.400 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	296.00	0.00	0.00	---	---	0.00	0.00	0.00	---	0.000	---	0.000
1.00	7,260	297.00	5.24 oc	0.00	---	---	0.34 s	4.87 s	0.00	---	0.076	---	5.288
2.00	16,523	298.00	8.23 oc	0.00	---	---	1.09 s	7.12 s	0.00	---	0.095	---	8.297
3.00	27,665	299.00	10.36 ic	0.00	---	---	1.38 s	8.13 s	0.00	---	0.111	---	9.622
4.00	43,224	300.00	11.93 ic	0.00	---	---	1.62 s	9.11 s	78.00	---	0.177	---	88.91

Hydrograph Report

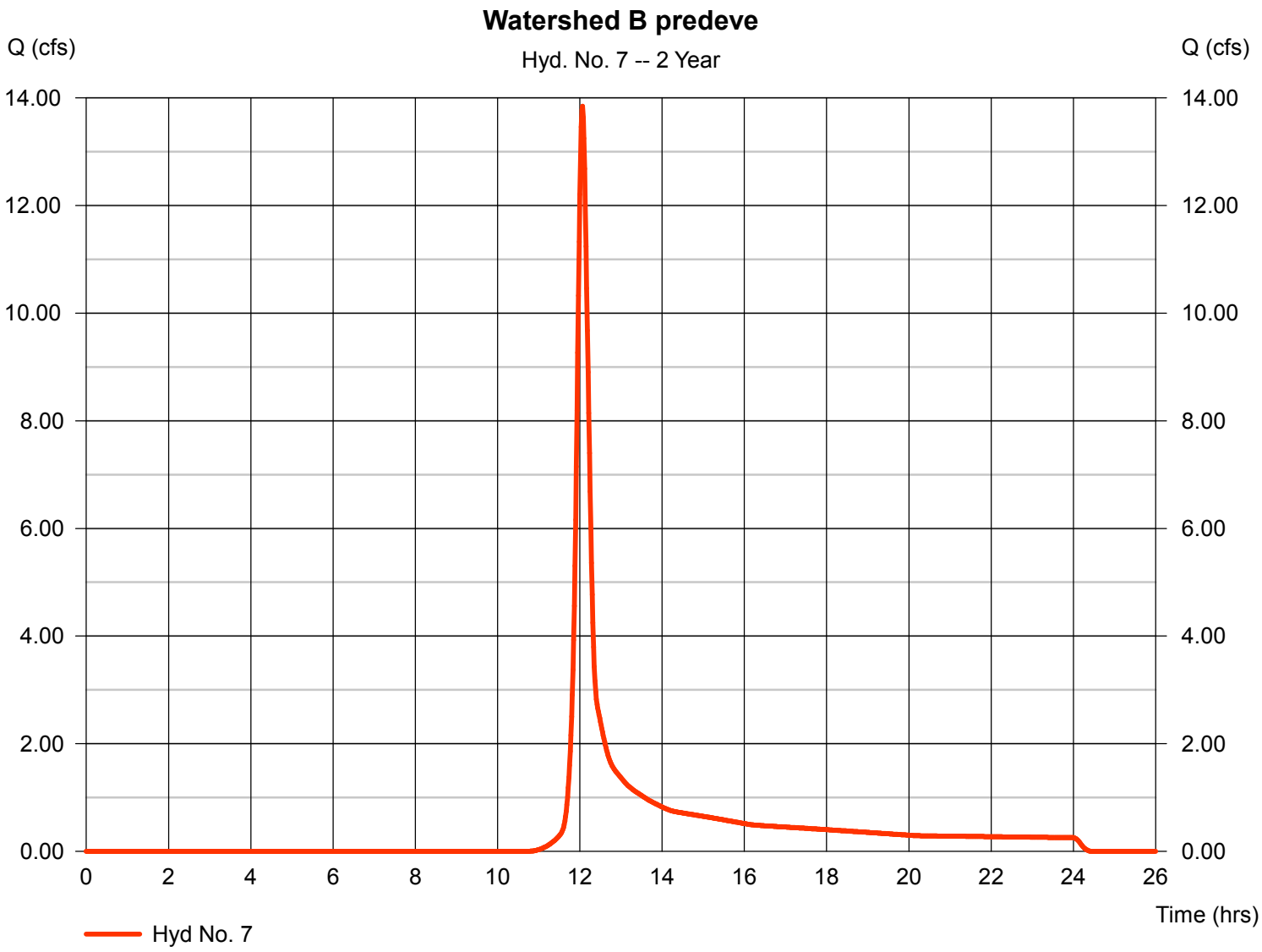
Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 7

Watershed B predeve

Hydrograph type	=	SCS Runoff	Peak discharge	=	13.85 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.07 hrs
Time interval	=	1 min	Hyd. volume	=	41,004 cuft
Drainage area	=	10.230 ac	Curve number	=	74*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	16.60 min
Total precip.	=	3.28 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(6.480 x 71) + (3.540 x 78) + (0.210 x 98)] / 10.230



TR55 Tc Worksheet

Hyd. No. 7

Watershed B predeve

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	100.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.20		0.00		0.00		
Land slope (%)	=	2.20		0.00		0.00		
Travel Time (min)	**=**	**13.74**	**+**	**0.00**	**+**	**0.00**	**=**	**13.74**
Shallow Concentrated Flow								
Flow length (ft)	=	404.00		0.00		0.00		
Watercourse slope (%)	=	2.20		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	2.39		0.00		0.00		
Travel Time (min)	**=**	**2.81**	**+**	**0.00**	**+**	**0.00**	**=**	**2.81**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 16.60 min

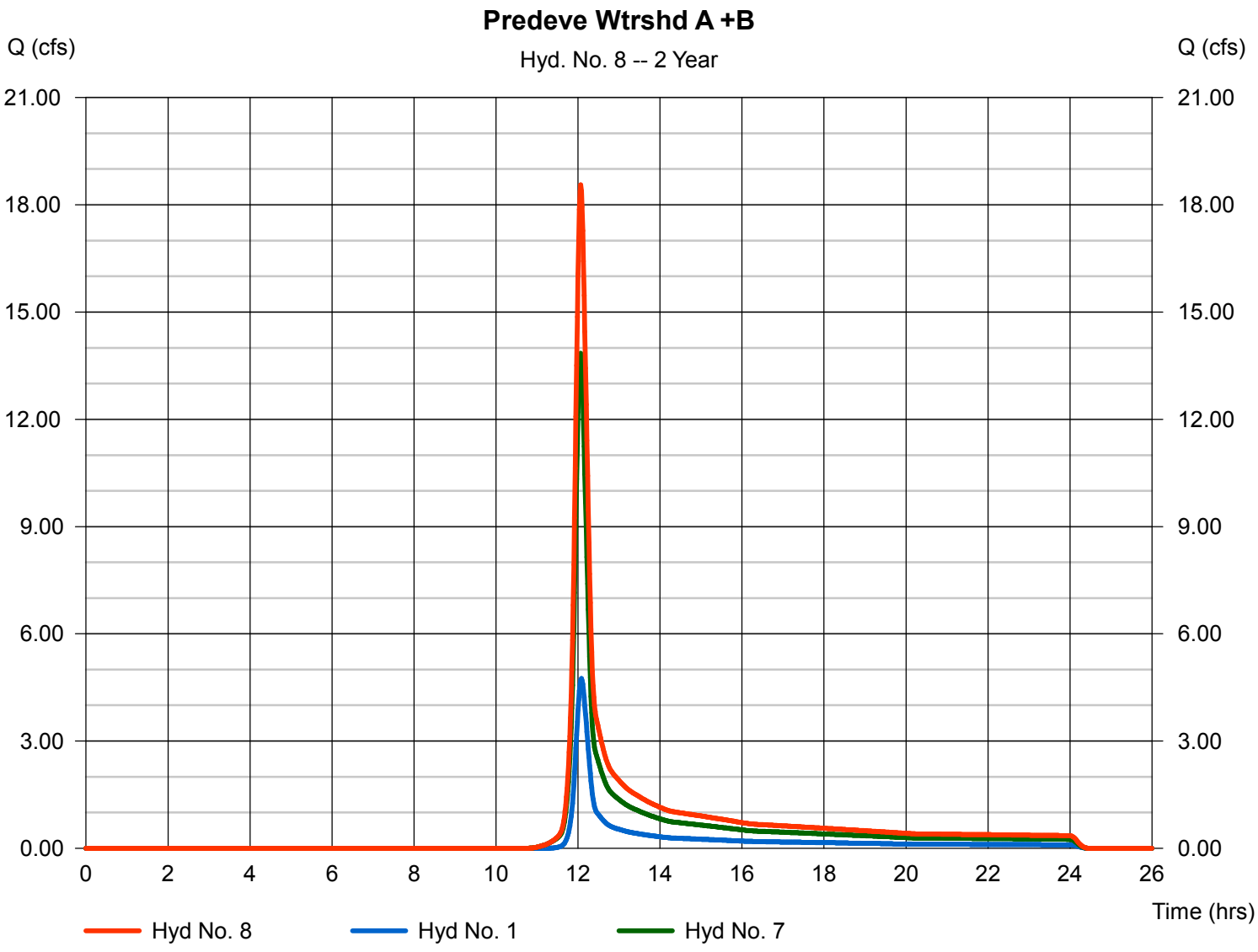
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 8

Predeve Wtrshd A +B

Hydrograph type	= Combine	Peak discharge	= 18.56 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 1 min	Hyd. volume	= 56,134 cuft
Inflow hyds.	= 1, 7	Contrib. drain. area	= 14.780 ac



Hydrograph Report

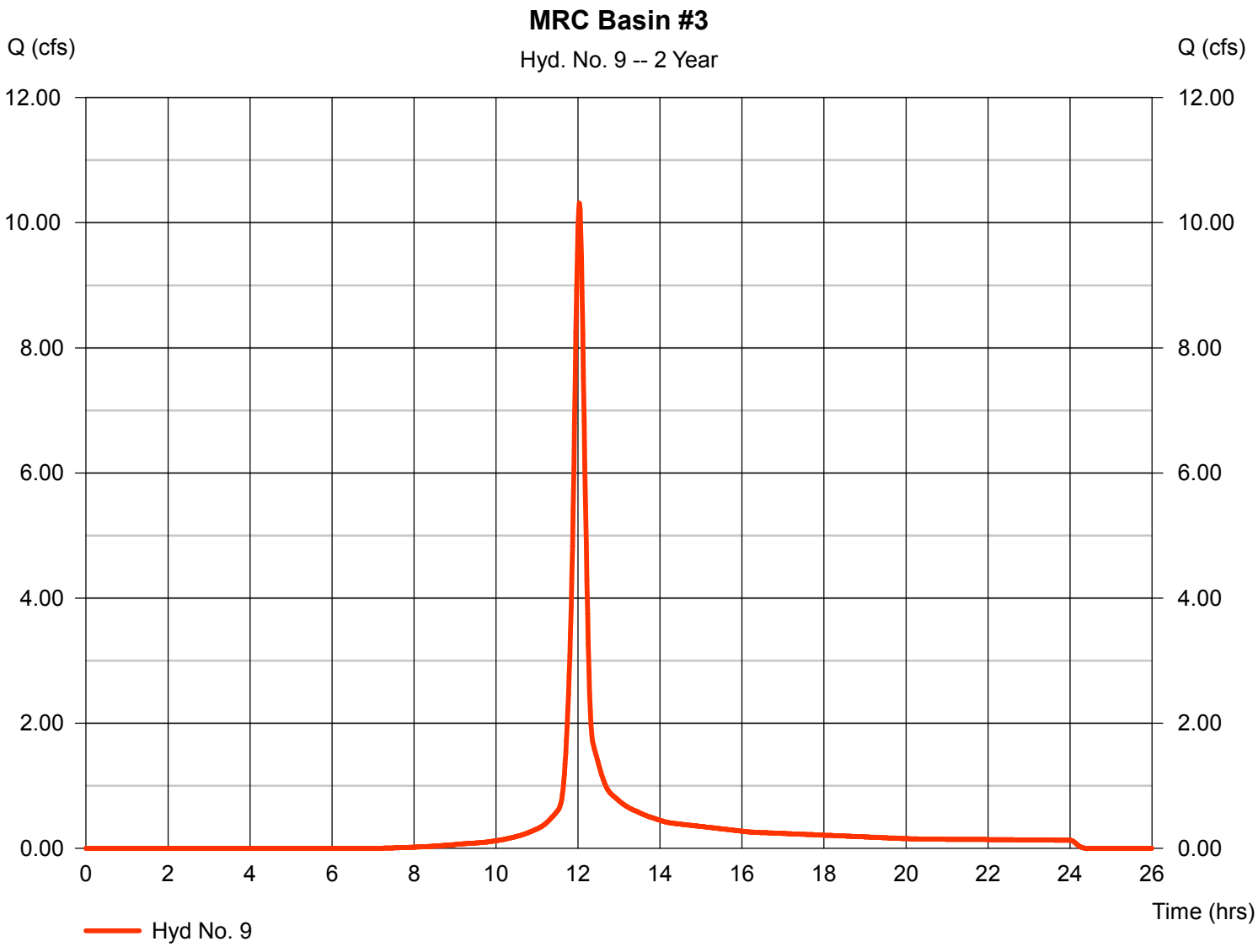
Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 9

MRC Basin #3

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.31 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.03 hrs
Time interval	=	1 min	Hyd. volume	=	27,797 cuft
Drainage area	=	4.020 ac	Curve number	=	86*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	14.90 min
Total precip.	=	3.28 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.200 x 74) + (1.100 x 80) + (1.720 x 98)] / 4.020



TR55 Tc Worksheet

Hyd. No. 9

MRC Basin #3

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	100.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.20		0.00		0.00		
Land slope (%)	=	2.50		0.00		0.00		
Travel Time (min)	**=**	**13.05**	**+**	**0.00**	**+**	**0.00**	**=**	**13.05**
Shallow Concentrated Flow								
Flow length (ft)	=	120.00		150.00		0.00		
Watercourse slope (%)	=	2.70		1.25		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	2.65		2.27		0.00		
Travel Time (min)	**=**	**0.75**	**+**	**1.10**	**+**	**0.00**	**=**	**1.85**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 14.90 min

Hydrograph Report

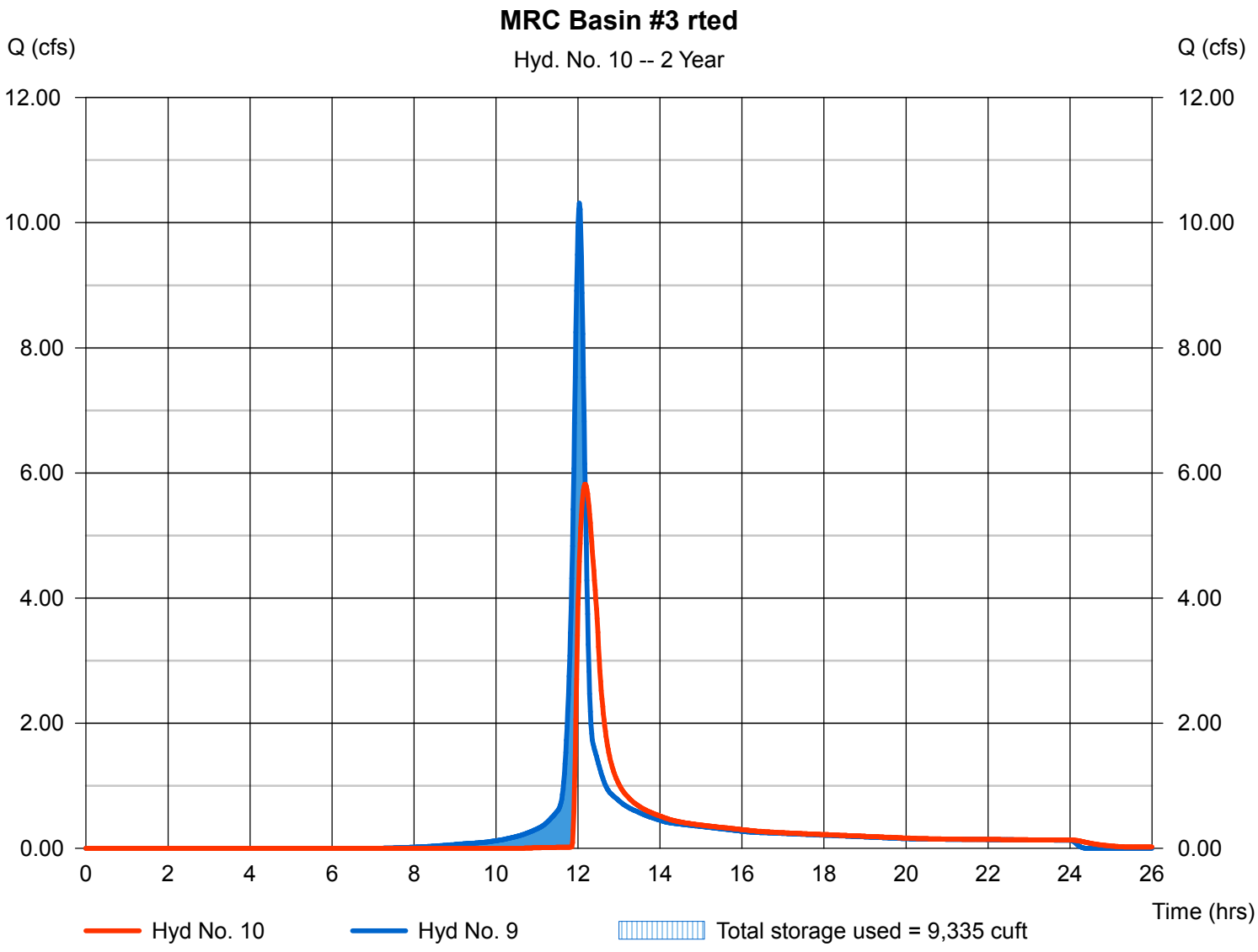
Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 10

MRC Basin #3 rted

Hydrograph type	=	Reservoir	Peak discharge	=	5.816 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.18 hrs
Time interval	=	1 min	Hyd. volume	=	25,263 cuft
Inflow hyd. No.	=	9 - MRC Basin #3	Max. Elevation	=	295.40 ft
Reservoir name	=	MRC Basin #3	Max. Storage	=	9,335 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.24 — Thursday, Apr 2, 2020

Pond No. 3 - MRC Basin #3

Pond Data

Pond storage is based on user-defined values.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	291.50	n/a	0	0
0.25	291.75	n/a	141	141
0.50	292.00	n/a	140	281
0.75	292.25	n/a	141	422
1.00	292.50	n/a	141	563
1.25	292.75	n/a	138	701
1.50	293.00	n/a	143	844
1.70	293.20	n/a	225	1,069
1.90	293.40	n/a	225	1,294
2.10	293.60	n/a	226	1,520
2.30	293.80	n/a	225	1,745
2.50	294.00	n/a	225	1,970
3.00	294.50	n/a	2,148	4,118
3.50	295.00	n/a	2,694	6,812
4.00	295.50	n/a	3,199	10,011
4.50	296.00	n/a	3,662	13,673
5.00	296.50	n/a	4,070	17,743
5.50	297.00	n/a	4,421	22,164
6.50	298.00	n/a	9,572	31,736

Culvert / Orifice Structures

		[A]	[B]	[C]	[PrfRsr]
Rise (in)	=	18.00	0.81	6.00	0.00
Span (in)	=	18.00	0.81	36.00	0.00
No. Barrels	=	1	1	1	0
Invert El. (ft)	=	292.50	293.00	294.50	0.00
Length (ft)	=	50.00	0.00	0.00	0.00
Slope (%)	=	0.50	0.00	0.00	n/a
N-Value	=	.013	.013	.013	n/a
Orifice Coeff.	=	0.60	0.60	0.60	0.60
Multi-Stage	=	n/a	Yes	Yes	No

Weir Structures

		[A]	[B]	[C]	[D]
Crest Len (ft)	=	7.40	30.00	0.00	0.00
Crest El. (ft)	=	295.50	297.25	0.00	0.00
Weir Coeff.	=	3.33	2.60	3.33	3.33
Weir Type	=	Riser	Broad	---	---
Multi-Stage	=	Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	291.50	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.25	141	291.75	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.50	281	292.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.75	422	292.25	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
1.00	563	292.50	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
1.25	701	292.75	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
1.50	844	293.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
1.70	1,069	293.20	0.01 ic	0.01 ic	0.00	---	0.00	0.00	---	---	---	---	0.007
1.90	1,294	293.40	0.01 ic	0.01 ic	0.00	---	0.00	0.00	---	---	---	---	0.010
2.10	1,520	293.60	0.01 ic	0.01 ic	0.00	---	0.00	0.00	---	---	---	---	0.013
2.30	1,745	293.80	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	---	---	0.015
2.50	1,970	294.00	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	---	---	0.017
3.00	4,118	294.50	0.02 ic	0.02 ic	0.00	---	0.00	0.00	---	---	---	---	0.021
3.50	6,812	295.00	3.63 oc	0.02 ic	3.61 ic	---	0.00	0.00	---	---	---	---	3.632
4.00	10,011	295.50	6.27 oc	0.02 ic	6.25 ic	---	0.00	0.00	---	---	---	---	6.274
4.50	13,673	296.00	12.57 oc	0.01 ic	4.35 ic	---	8.21 s	0.00	---	---	---	---	12.56
5.00	17,743	296.50	14.85 oc	0.01 ic	2.45 ic	---	12.39 s	0.00	---	---	---	---	14.84
5.50	22,164	297.00	16.35 oc	0.00 ic	1.68 ic	---	14.66 s	0.00	---	---	---	---	16.35
6.50	31,736	298.00	18.50 ic	0.00 ic	1.00 ic	---	17.46 s	50.66	---	---	---	---	69.13

Hydrograph Report

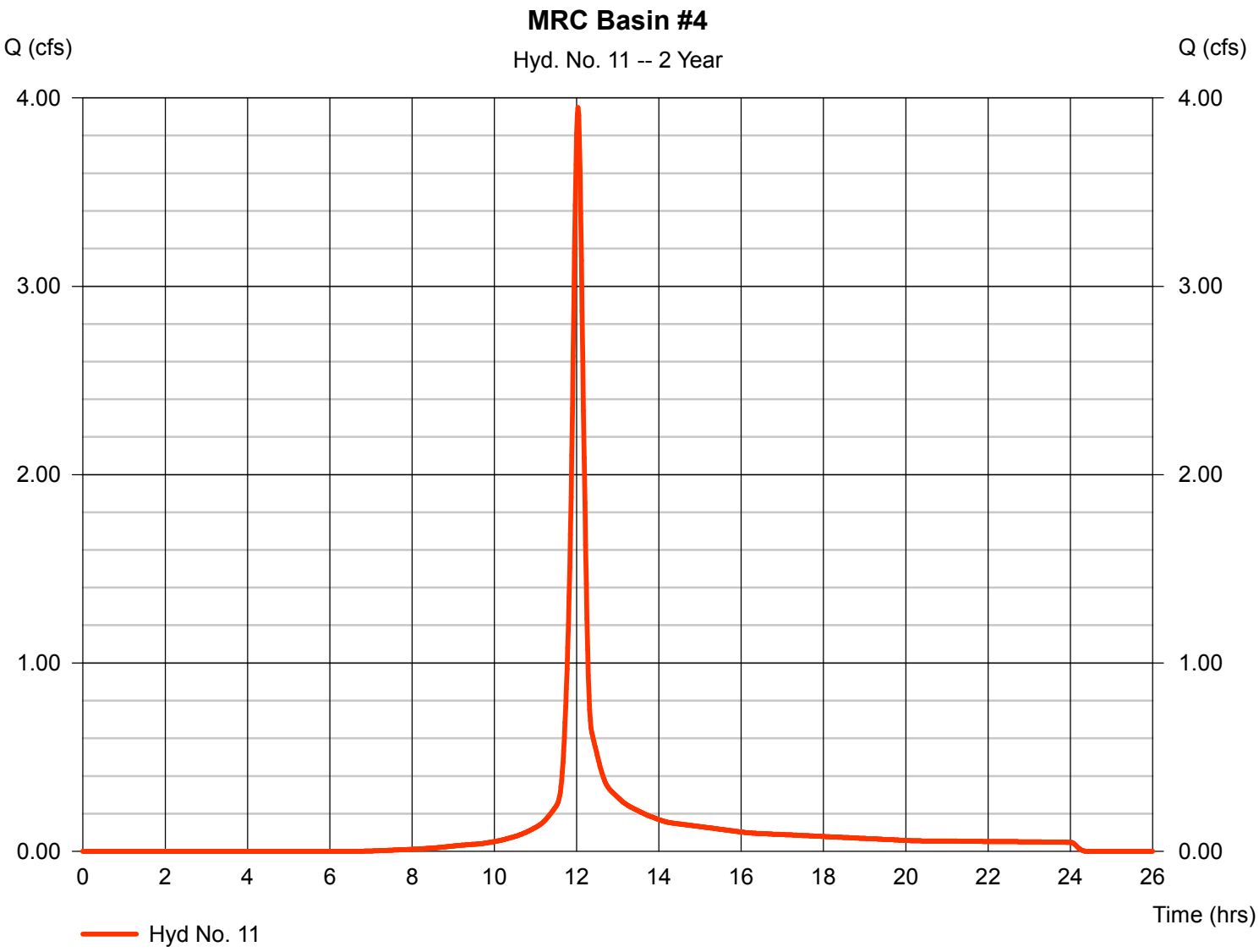
Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 11

MRC Basin #4

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.948 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.03 hrs
Time interval	=	1 min	Hyd. volume	=	10,669 cuft
Drainage area	=	1.480 ac	Curve number	=	87*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.28 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = + (0.870 x 80) + (0.610 x 98)] / 1.480



TR55 Tc Worksheet

Hyd. No. 11

MRC Basin #4

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	100.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.20		0.00		0.00		
Land slope (%)	=	2.00		0.00		0.00		
Travel Time (min)	**=**	**14.27**	**+**	**0.00**	**+**	**0.00**	**=**	**14.27**
Shallow Concentrated Flow								
Flow length (ft)	=	100.00		0.00		0.00		
Watercourse slope (%)	=	2.00		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	2.28		0.00		0.00		
Travel Time (min)	**=**	**0.73**	**+**	**0.00**	**+**	**0.00**	**=**	**0.73**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 15.00 min

Hydrograph Report

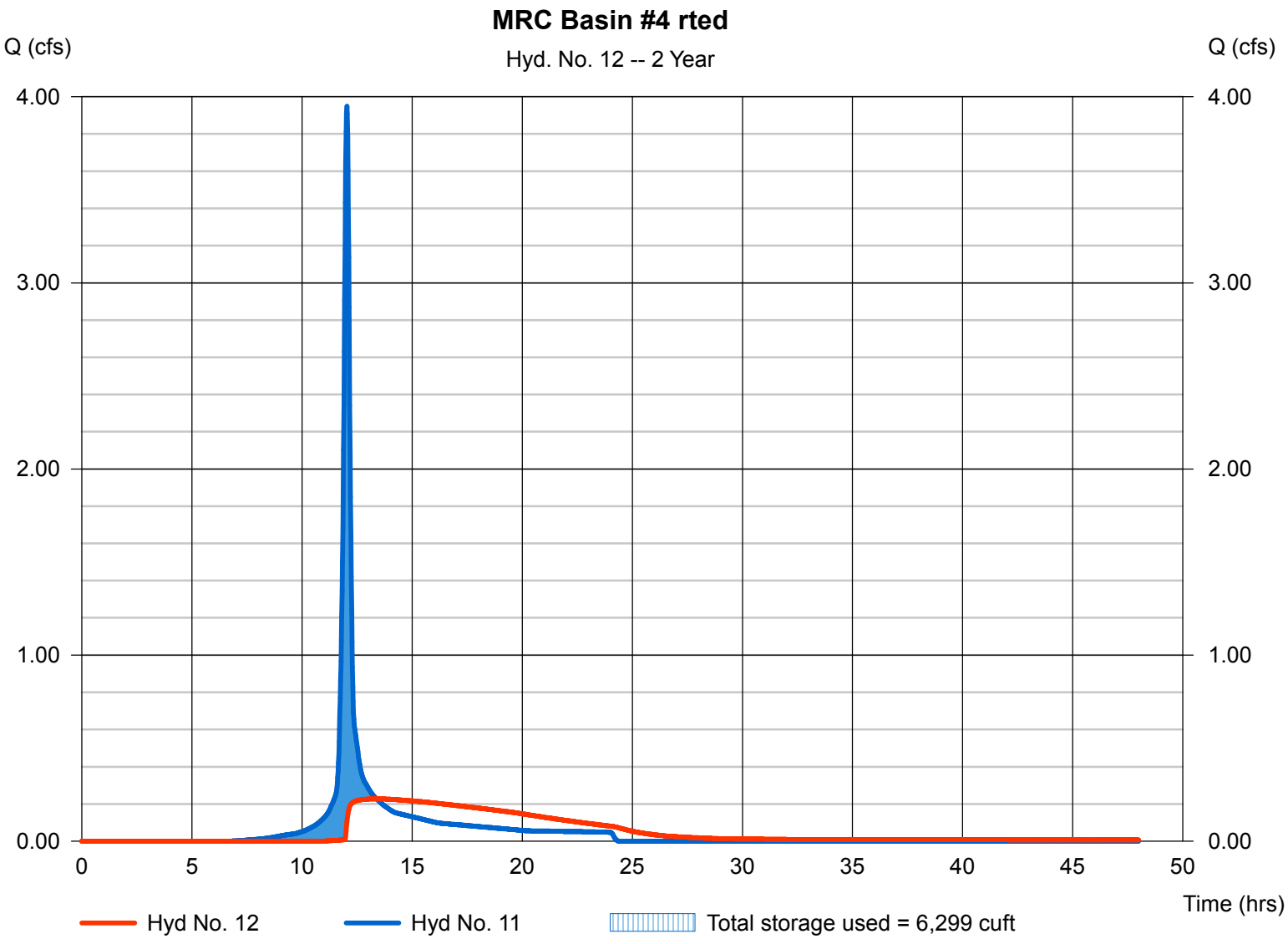
Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 12

MRC Basin #4 rted

Hydrograph type	=	Reservoir	Peak discharge	=	0.227 cfs
Storm frequency	=	2 yrs	Time to peak	=	13.38 hrs
Time interval	=	1 min	Hyd. volume	=	8,510 cuft
Inflow hyd. No.	=	11 - MRC Basin #4	Max. Elevation	=	292.47 ft
Reservoir name	=	MRC Basin #4	Max. Storage	=	6,299 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.24 — Thursday, Apr 2, 2020

Pond No. 4 - MRC Basin #4

Pond Data

Pond storage is based on user-defined values.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	288.50	n/a	0	0
0.25	288.75	n/a	86	86
0.50	289.00	n/a	87	173
0.75	289.25	n/a	86	259
1.00	289.50	n/a	87	346
1.25	289.75	n/a	86	432
1.50	290.00	n/a	87	519
1.70	290.20	n/a	138	657
1.90	290.40	n/a	138	795
2.10	290.60	n/a	138	933
2.30	290.80	n/a	139	1,072
2.50	291.00	n/a	138	1,210
3.00	291.50	n/a	1,354	2,564
3.50	292.00	n/a	1,756	4,320
4.00	292.50	n/a	2,118	6,438
4.50	293.00	n/a	2,442	8,880
5.00	293.50	n/a	2,749	11,629
5.50	294.00	n/a	3,042	14,671
6.50	295.00	n/a	6,989	21,660

Culvert / Orifice Structures

		[A]	[B]	[C]	[PrfRsr]
Rise (in)	=	15.00	0.50	3.00	0.00
Span (in)	=	15.00	0.50	3.00	0.00
No. Barrels	=	1	1	1	0
Invert El. (ft)	=	289.50	290.00	291.50	0.00
Length (ft)	=	18.00	0.00	0.00	0.00
Slope (%)	=	0.67	0.00	0.00	n/a
N-Value	=	.013	.013	.013	n/a
Orifice Coeff.	=	0.60	0.60	0.60	0.60
Multi-Stage	=	n/a	Yes	Yes	No

Weir Structures

		[A]	[B]	[C]	[D]
Crest Len (ft)	=	6.28	20.00	0.00	0.00
Crest El. (ft)	=	293.40	294.00	0.00	0.00
Weir Coeff.	=	3.33	2.60	3.33	3.33
Weir Type	=	Riser	Broad	---	---
Multi-Stage	=	Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	288.50	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.25	86	288.75	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.50	173	289.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.75	259	289.25	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
1.00	346	289.50	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
1.25	432	289.75	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
1.50	519	290.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
1.70	657	290.20	0.00 ic	0.00 ic	0.00	---	0.00	0.00	---	---	---	---	0.003
1.90	795	290.40	0.00 ic	0.00 ic	0.00	---	0.00	0.00	---	---	---	---	0.004
2.10	933	290.60	0.01 ic	0.00 ic	0.00	---	0.00	0.00	---	---	---	---	0.005
2.30	1,072	290.80	0.01 ic	0.01 ic	0.00	---	0.00	0.00	---	---	---	---	0.006
2.50	1,210	291.00	0.01 ic	0.01 ic	0.00	---	0.00	0.00	---	---	---	---	0.006
3.00	2,564	291.50	0.01 ic	0.01 ic	0.00	---	0.00	0.00	---	---	---	---	0.008
3.50	4,320	292.00	0.16 ic	0.01 ic	0.14 ic	---	0.00	0.00	---	---	---	---	0.154
4.00	6,438	292.50	0.24 ic	0.01 ic	0.22 ic	---	0.00	0.00	---	---	---	---	0.231
4.50	8,880	293.00	0.29 ic	0.01 ic	0.28 ic	---	0.00	0.00	---	---	---	---	0.288
5.00	11,629	293.50	1.00 oc	0.01 ic	0.32 ic	---	0.66	0.00	---	---	---	---	0.997
5.50	14,671	294.00	9.97 ic	0.01 ic	0.24 ic	---	9.72	0.00	---	---	---	---	9.966
6.50	21,660	295.00	12.98 ic	0.00 ic	0.05 ic	---	12.92 s	52.00	---	---	---	---	64.97

Hydrograph Report

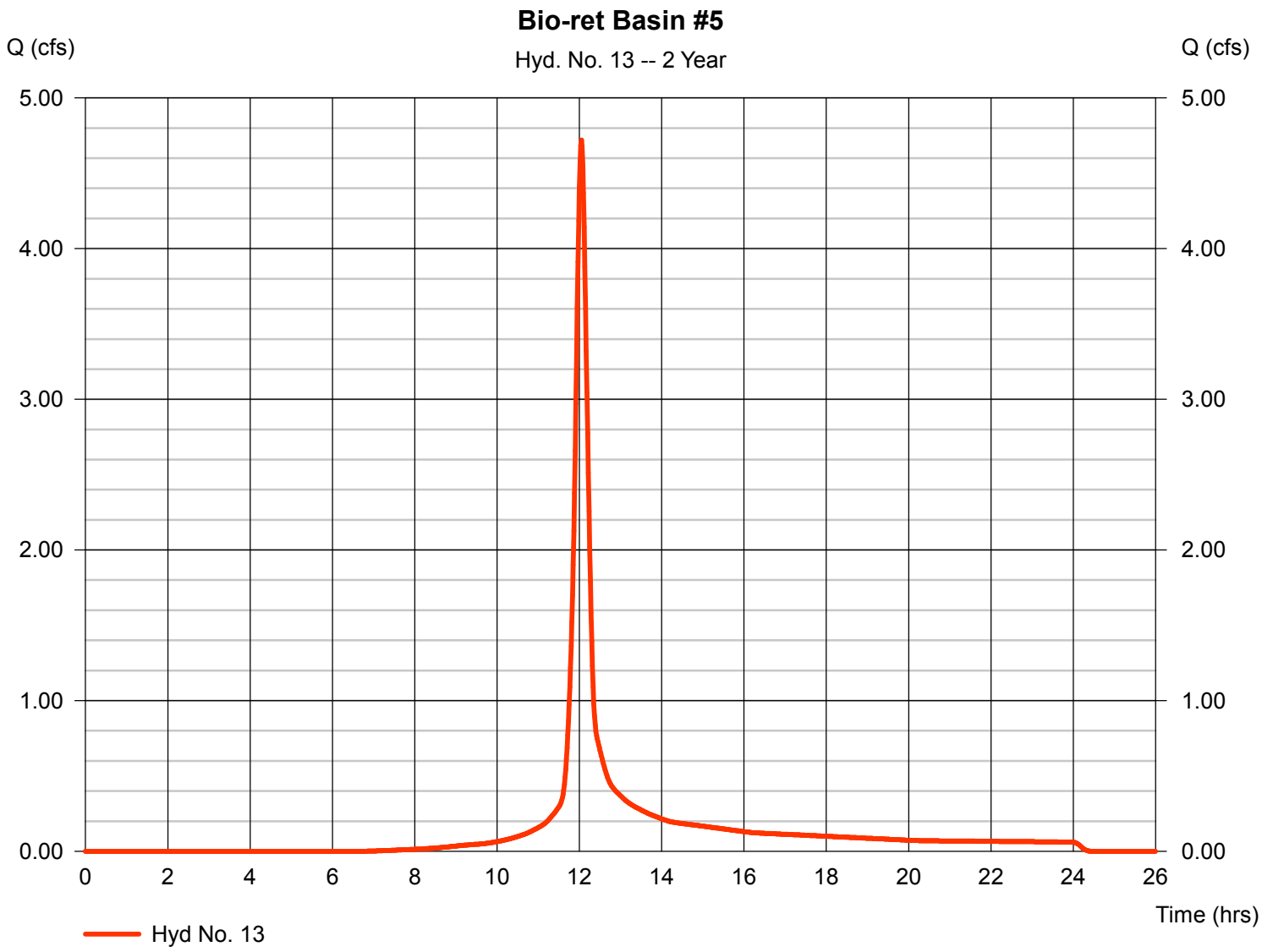
Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 13

Bio-ret Basin #5

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.720 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.05 hrs
Time interval	=	1 min	Hyd. volume	=	13,502 cuft
Drainage area	=	1.850 ac	Curve number	=	87*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	16.00 min
Total precip.	=	3.28 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.600 x 74) + (0.300 x 80) + (0.950 x 98)] / 1.850



TR55 Tc Worksheet

Hyd. No. 13

Bio-ret Basin #5

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	100.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.20		3.20		0.00		
Land slope (%)	=	2.00		0.00		0.00		
Travel Time (min)	**=**	**14.27**	**+**	**0.00**	**+**	**0.00**	**=**	**14.27**
Shallow Concentrated Flow								
Flow length (ft)	=	210.00		0.00		0.00		
Watercourse slope (%)	=	1.00		0.00		0.00		
Surface description	=	Paved		Paved		Paved		
Average velocity (ft/s)	=	2.03		0.00		0.00		
Travel Time (min)	**=**	**1.72**	**+**	**0.00**	**+**	**0.00**	**=**	**1.72**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 16.00 min

Hydrograph Report

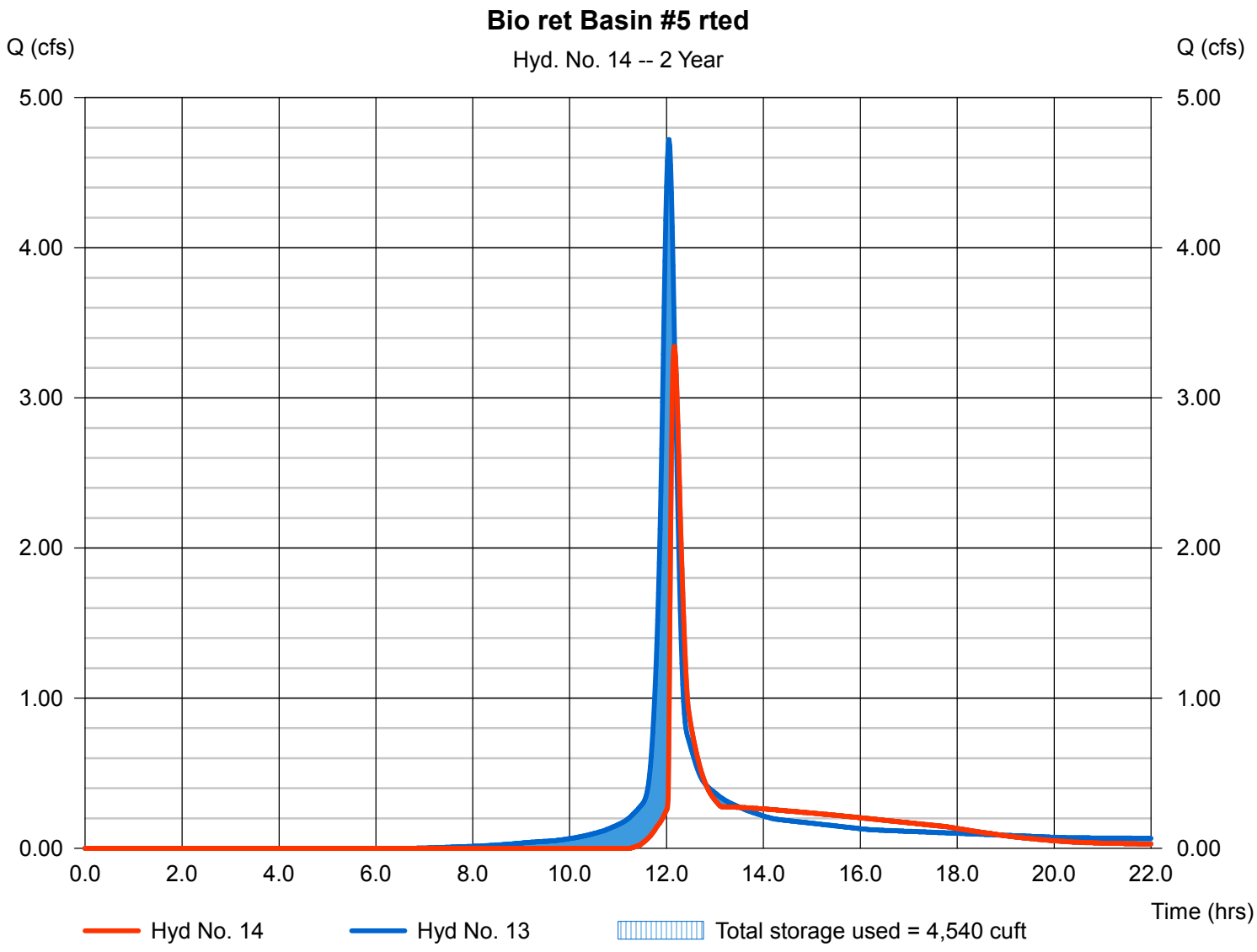
Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 14

Bio ret Basin #5 rted

Hydrograph type	=	Reservoir	Peak discharge	=	3.342 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.17 hrs
Time interval	=	1 min	Hyd. volume	=	9,545 cuft
Inflow hyd. No.	=	13 - Bio-ret Basin #5	Max. Elevation	=	295.28 ft
Reservoir name	=	Bio-retention Basin #5	Max. Storage	=	4,540 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Pond No. 5 - Bio-retention Basin #5

Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 293.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	293.00	933	0	0
1.00	294.00	1,788	1,361	1,361
2.00	295.00	2,766	2,277	3,638
3.00	296.00	3,807	3,287	6,924
4.00	297.00	4,794	4,301	11,225

Culvert / Orifice Structures

		[A]	[B]	[C]	[PrfRsr]
Rise (in)	=	15.00	3.00	0.00	0.00
Span (in)	=	15.00	3.00	0.00	0.00
No. Barrels	=	1	1	0	0
Invert El. (ft)	=	292.00	293.50	0.00	0.00
Length (ft)	=	62.00	0.00	0.00	0.00
Slope (%)	=	0.81	0.00	0.00	n/a
N-Value	=	.013	.013	.013	n/a
Orifice Coeff.	=	0.60	0.60	0.60	0.60
Multi-Stage	=	n/a	Yes	No	No

Weir Structures

		[A]	[B]	[C]	[D]
Crest Len (ft)	=	6.28	15.00	0.00	0.00
Crest El. (ft)	=	295.00	296.00	0.00	0.00
Weir Coeff.	=	3.33	2.60	3.33	3.33
Weir Type	=	Riser	Broad	---	---
Multi-Stage	=	Yes	No	No	No

Exfil.(in/hr) = 1.600 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	293.00	0.00	0.00	---	---	0.00	0.00	---	---	0.000	---	0.000
1.00	1,361	294.00	3.58 ic	0.14 ic	---	---	0.00	0.00	---	---	0.066	---	0.211
2.00	3,638	295.00	3.58 ic	0.28 ic	---	---	0.00	0.00	---	---	0.102	---	0.380
3.00	6,924	296.00	10.21 oc	0.08 ic	---	---	10.13 s	0.00	---	---	0.141	---	10.35
4.00	11,225	297.00	11.84 oc	0.03 ic	---	---	11.79 s	39.00	---	---	0.178	---	51.00

Hydrograph Report

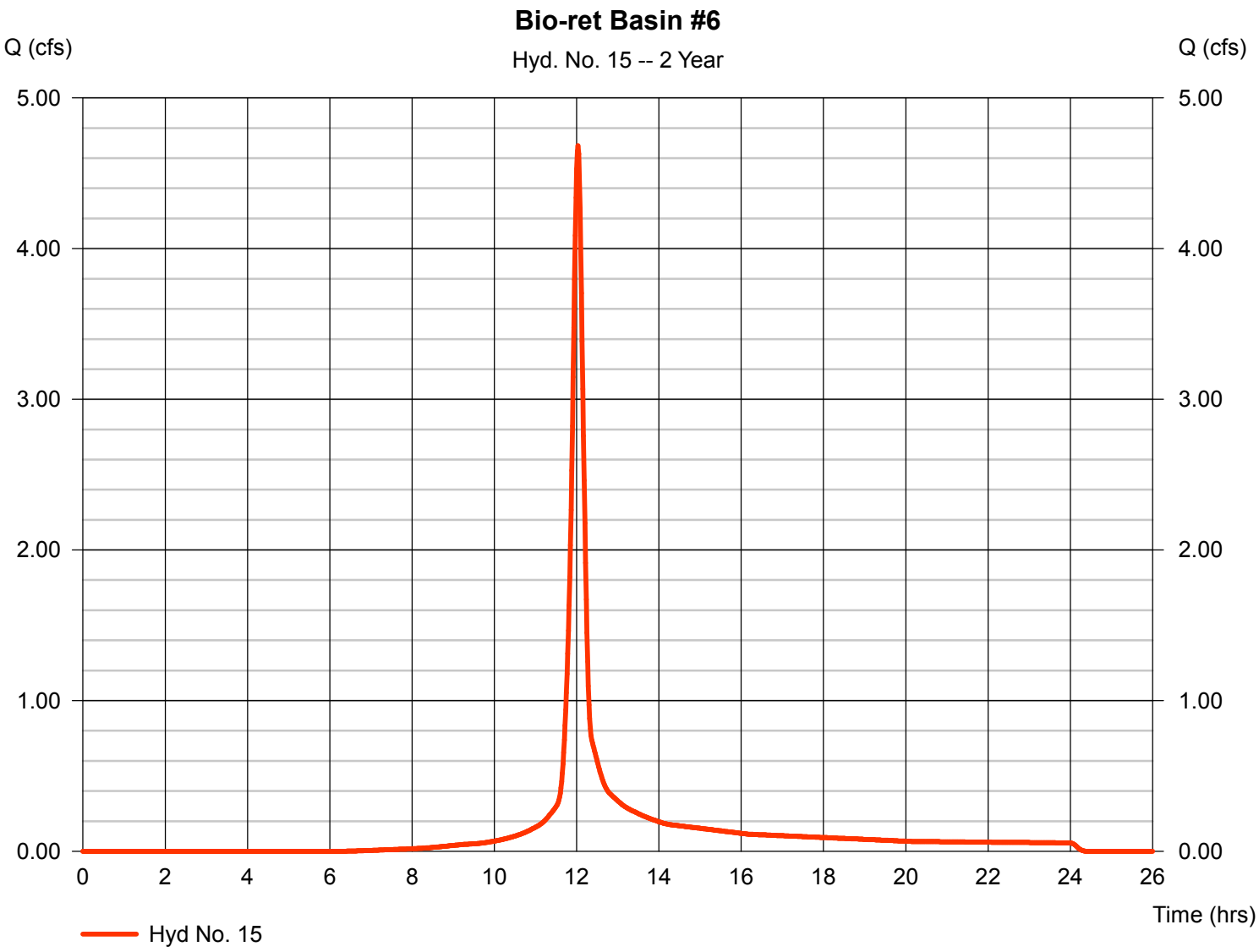
Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 15

Bio-ret Basin #6

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.682 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.03 hrs
Time interval	=	1 min	Hyd. volume	=	12,693 cuft
Drainage area	=	1.690 ac	Curve number	=	88*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	14.90 min
Total precip.	=	3.28 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.680 x 74) + (1.010 x 98)] / 1.690



TR55 Tc Worksheet

Hyd. No. 15

Bio-ret Basin #6

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	100.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.20		0.00		0.00		
Land slope (%)	=	2.00		0.00		0.00		
Travel Time (min)	**=**	**14.27**	**+**	**0.00**	**+**	**0.00**	**=**	**14.27**
Shallow Concentrated Flow								
Flow length (ft)	=	90.00		0.00		0.00		
Watercourse slope (%)	=	2.00		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	2.28		0.00		0.00		
Travel Time (min)	**=**	**0.66**	**+**	**0.00**	**+**	**0.00**	**=**	**0.66**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 14.90 min

Hydrograph Report

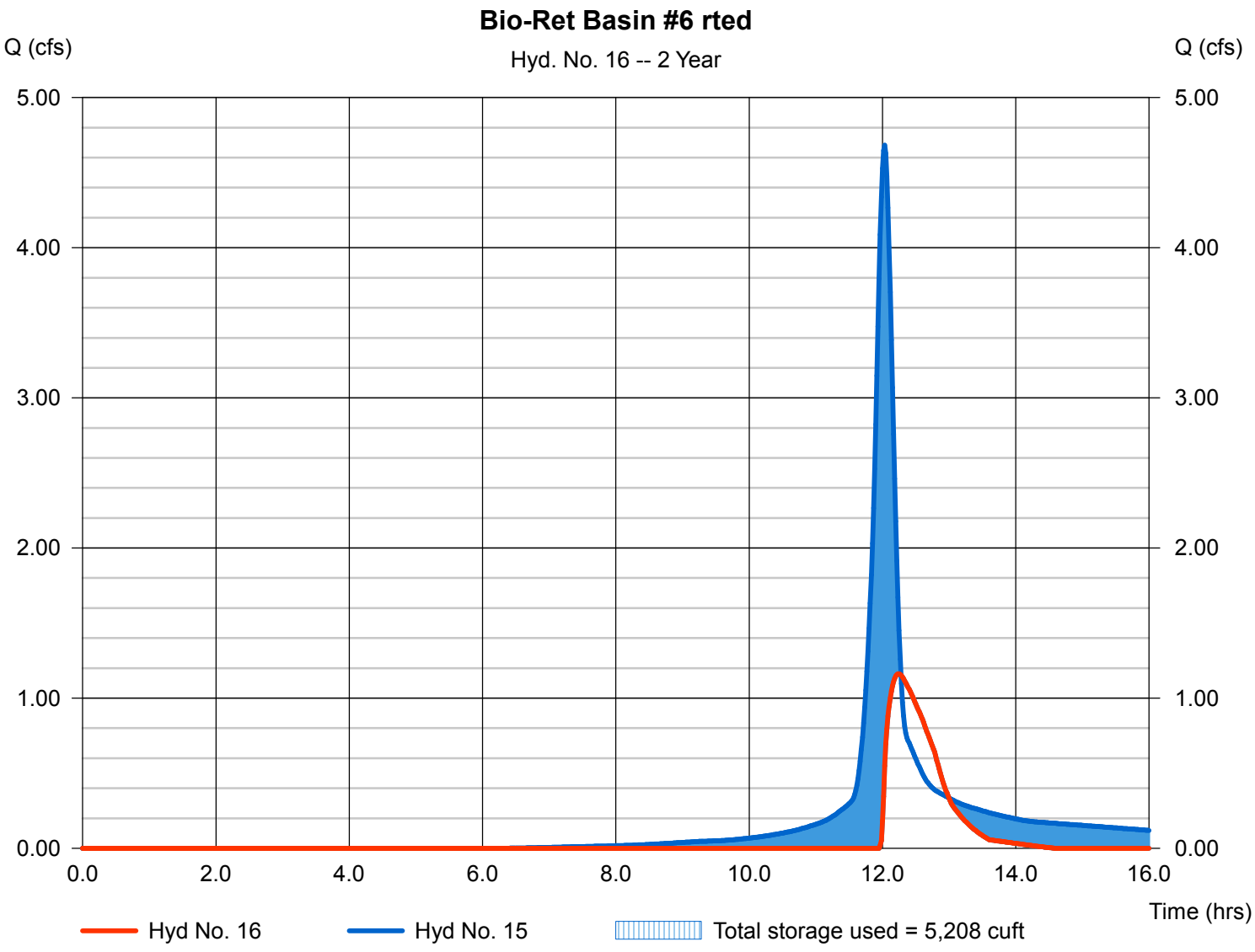
Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 16

Bio-Ret Basin #6 rted

Hydrograph type	=	Reservoir	Peak discharge	=	1.161 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.25 hrs
Time interval	=	1 min	Hyd. volume	=	3,454 cuft
Inflow hyd. No.	=	15 - Bio-ret Basin #6	Max. Elevation	=	289.29 ft
Reservoir name	=	Bio-retention Basin #6	Max. Storage	=	5,208 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Pond No. 6 - Bio-retention Basin #6

Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 288.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	288.00	3,717	0	0
1.00	289.00	4,068	3,893	3,893
2.00	290.00	5,020	4,544	8,437
2.50	290.50	5,518	2,635	11,071

Culvert / Orifice Structures

		[A]	[B]	[C]	[PrfRsr]
Rise (in)	=	15.00	3.00	0.00	0.00
Span (in)	=	15.00	18.00	0.00	0.00
No. Barrels	=	1	1	0	0
Invert El. (ft)	=	286.00	288.75	0.00	0.00
Length (ft)	=	16.00	0.00	0.00	0.00
Slope (%)	=	0.50	0.00	0.00	n/a
N-Value	=	.013	.013	.013	n/a
Orifice Coeff.	=	0.60	0.60	0.60	0.60
Multi-Stage	=	n/a	Yes	No	No

Weir Structures

		[A]	[B]	[C]	[D]
Crest Len (ft)	=	7.40	20.00	0.00	0.00
Crest El. (ft)	=	289.75	290.50	0.00	0.00
Weir Coeff.	=	3.33	2.60	3.33	3.33
Weir Type	=	Riser	Broad	---	---
Multi-Stage	=	Yes	No	No	No

Exfil.(in/hr) = 3.900 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	288.00	0.00	0.00	---	---	0.00	0.00	---	---	0.000	---	0.000
1.00	3,893	289.00	6.56 oc	0.64 ic	---	---	0.00	0.00	---	---	0.367	---	1.006
2.00	8,437	290.00	6.56 oc	1.92 ic	---	---	3.08	0.00	---	---	0.453	---	5.449
2.50	11,071	290.50	11.35 ic	0.77 ic	---	---	10.58 s	0.00	---	---	0.498	---	11.85

Hydrograph Report

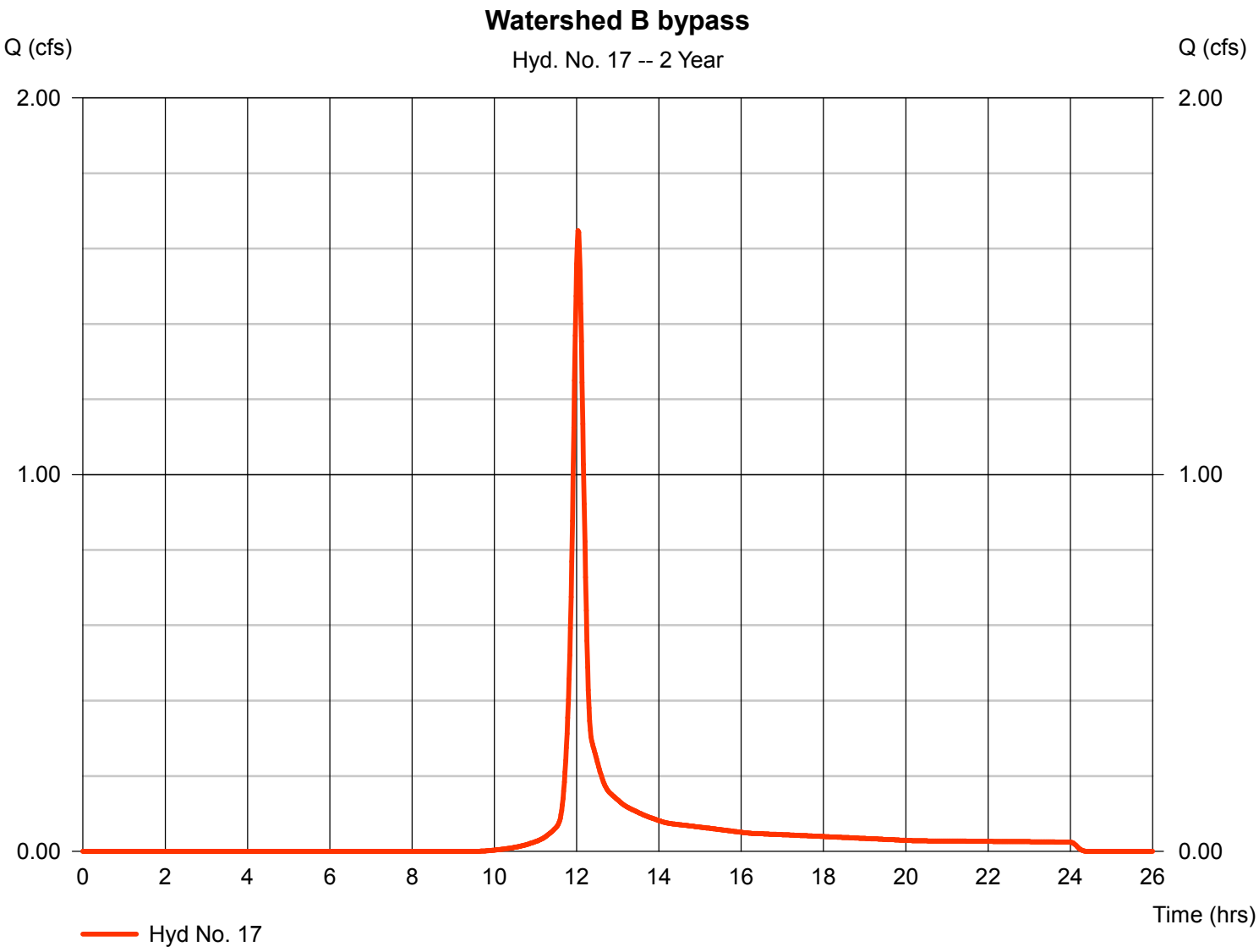
Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 17

Watershed B bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.647 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.03 hrs
Time interval	=	1 min	Hyd. volume	=	4,463 cuft
Drainage area	=	0.880 ac	Curve number	=	79*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	14.60 min
Total precip.	=	3.28 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.680 x 74) + (0.200 x 98)] / 0.880



TR55 Tc Worksheet

Hyd. No. 17

Watershed B bypass

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	100.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	3.20		0.00		0.00		
Land slope (%)	=	2.00		0.00		0.00		
Travel Time (min)	**=**	**14.27**	**+**	**0.00**	**+**	**0.00**	**=**	**14.27**
Shallow Concentrated Flow								
Flow length (ft)	=	50.00		0.00		0.00		
Watercourse slope (%)	=	2.00		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	2.28		0.00		0.00		
Travel Time (min)	**=**	**0.37**	**+**	**0.00**	**+**	**0.00**	**=**	**0.37**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	0.00		0.00		0.00		
Flow length (ft)	=	0.0		0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 14.60 min

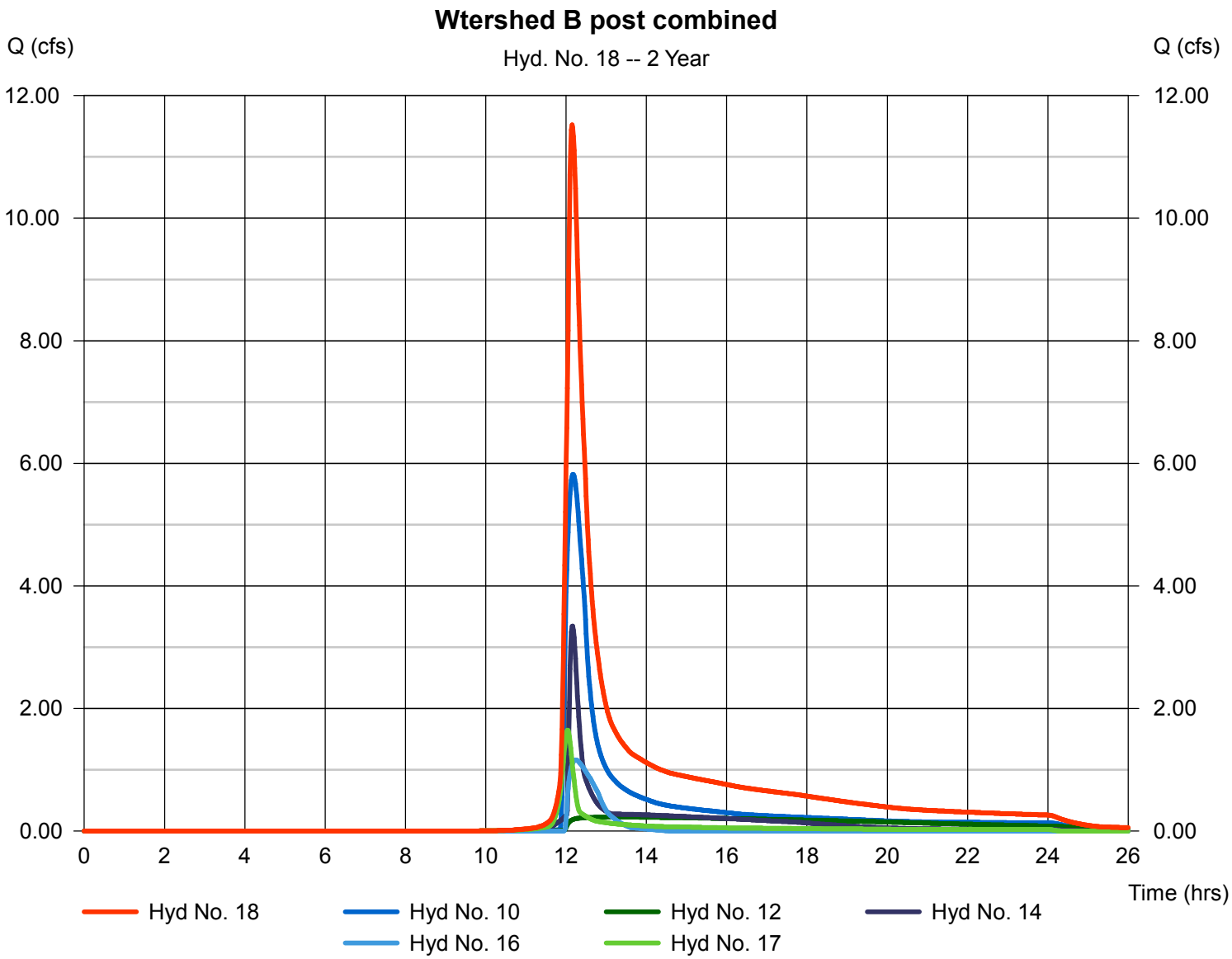
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 18

Wtershed B post combined

Hydrograph type	=	Combine	Peak discharge	=	11.52 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.15 hrs
Time interval	=	1 min	Hyd. volume	=	51,235 cuft
Inflow hyds.	=	10, 12, 14, 16, 17	Contrib. drain. area	=	0.880 ac



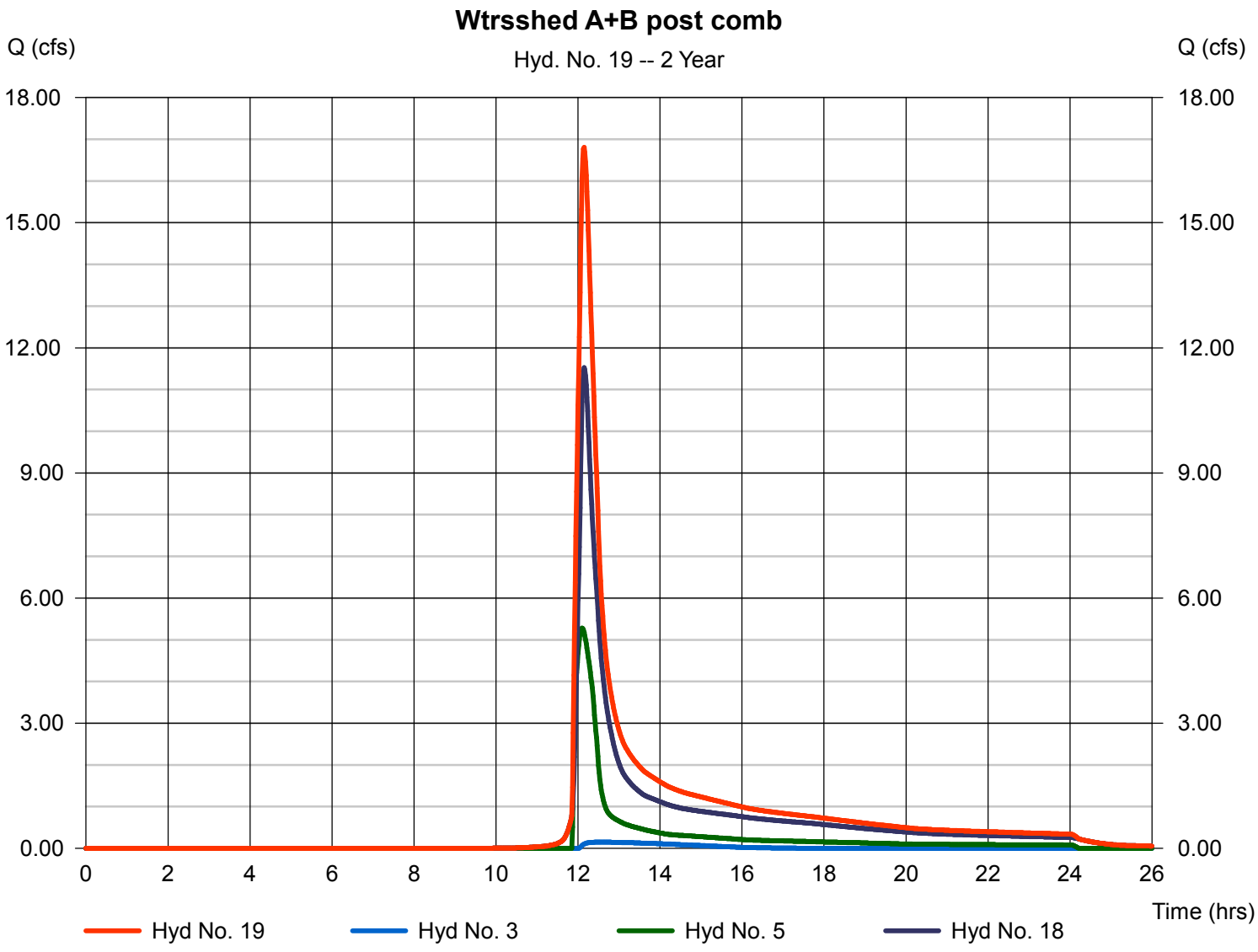
Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.24 Thursday, Apr 2, 2020

Hyd. No. 19

Wtrsshed A+B post comb

Hydrograph type	= Combine	Peak discharge	= 16.81 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.15 hrs
Time interval	= 1 min	Hyd. volume	= 70,927 cuft
Inflow hyds.	= 3, 5, 18	Contrib. drain. area	= 0.000 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	46.3893	11.7000	0.8593	--------
2	62.2618	12.9000	0.8798	--------
3	0.0000	0.0000	0.0000	--------
5	61.7772	12.5000	0.8280	--------
10	62.3668	12.2000	0.8003	--------
25	56.5622	11.2000	0.7437	--------
50	51.6553	10.3000	0.7011	--------
100	46.5080	9.2000	0.6574	--------

File name: 17-02 NOAA intensities.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.13	3.30	2.76	2.38	2.10	1.88	1.71	1.56	1.44	1.34	1.26	1.18
2	4.92	3.96	3.33	2.88	2.54	2.28	2.07	1.90	1.75	1.63	1.52	1.43
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	5.78	4.69	3.97	3.46	3.07	2.77	2.53	2.33	2.16	2.01	1.89	1.78
10	6.40	5.22	4.43	3.87	3.45	3.12	2.85	2.63	2.45	2.29	2.15	2.03
25	7.13	5.84	4.99	4.38	3.92	3.56	3.27	3.03	2.83	2.65	2.50	2.37
50	7.63	6.26	5.36	4.73	4.25	3.87	3.57	3.31	3.10	2.92	2.76	2.62
100	8.13	6.67	5.73	5.06	4.56	4.17	3.85	3.59	3.37	3.18	3.02	2.87

Tc = time in minutes. Values may exceed 60.

Precip. file name: 17-02 NOAA PPF.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.72	3.28	0.00	4.12	4.82	5.83	6.69	7.61
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Custom	1.20	1.75	0.00	2.80	3.90	5.25	6.00	7.10

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.24

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	2.883	1	725	9,877	------	------	------	Watershed A predeve
2	SCS Runoff	2.900	1	723	8,292	------	------	------	Bio ret Basin #1 inflow
3	Reservoir	0.078	1	759	545	2	298.74	3,939	Bio -ret Basin 1 rted
4	SCS Runoff	7.662	1	720	17,338	------	------	------	Bio-ret Basin #2 inflow
5	Reservoir	4.180	1	726	11,944	4	296.77	5,562	B-RBsn #2 rted-Post A
7	SCS Runoff	8.965	1	724	27,665	------	------	------	Watershed B predeve
8	Combine	11.80	1	724	37,542	1, 7	------	------	Predeve Wtrshd A +B
9	SCS Runoff	7.737	1	722	20,800	------	------	------	MRC Basin #3
10	Reservoir	4.266	1	731	18,276	9	295.10	7,424	MRC Basin #3 rted
11	SCS Runoff	2.990	1	722	8,043	------	------	------	MRC Basin #4
12	Reservoir	0.170	1	809	5,914	11	292.09	4,687	MRC Basin #4 rted
13	SCS Runoff	3.570	1	723	10,180	------	------	------	Bio-ret Basin #5
14	Reservoir	1.535	1	735	6,560	13	295.15	4,124	Bio ret Basin #5 rted
15	SCS Runoff	3.578	1	722	9,641	------	------	------	Bio-ret Basin #6
16	Reservoir	0.731	1	735	1,633	15	289.04	4,085	Bio-Ret Basin #6 rted
17	SCS Runoff	1.148	1	723	3,156	------	------	------	Watershed B bypass
18	Combine	7.066	1	733	35,540	10, 12, 14, 16, 17	------	------	Wtershed B post combined
19	Combine	10.78	1	731	48,029	3, 5, 18	------	------	Wtrsshed A+B post comb
21	Mod. Rational	1.529	1	16	4,404	------	------	------	Bio basin #1
22	Reservoir	0.072	1	61	192	21	298.72	3,843	Bio Basin #1 rted
23	Mod. Rational	4.399	1	10	7,919	------	------	------	Bio Basin #2
24	Reservoir	3.563	1	32	4,165	23	296.68	4,943	Bio Basin #2 rted
25	Mod. Rational	3.772	1	15	10,186	------	------	------	MRC Basin #3
26	Reservoir	3.160	1	47	8,883	25	294.96	6,572	MRC Basin #3 rted
27	Mod. Rational	1.410	1	15	3,808	------	------	------	MRC Basin #4
28	Reservoir	0.114	1	59	2,226	27	291.82	3,702	MRC Basin #4 rted
29	Mod. Rational	1.712	1	16	4,930	------	------	------	Bio Basin #5
30	Reservoir	0.745	1	56	3,009	29	295.07	3,867	Bio Basin #5 rted
31	Mod. Rational	1.732	1	15	4,677	------	------	------	Bio-Basin #6
32	Reservoir	0.475	1	53	621	31	288.95	3,706	Bio Basin #6 rted

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.24

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	4.750	1	725	15,130	------	------	------	Watershed A predeve
2	SCS Runoff	3.947	1	723	11,253	------	------	------	Bio ret Basin #1 inflow
3	Reservoir	0.147	1	755	1,447	2	299.01	5,400	Bio -ret Basin 1 rted
4	SCS Runoff	10.48	1	719	23,714	------	------	------	Bio-ret Basin #2 inflow
5	Reservoir	5.282	1	726	18,244	4	297.02	7,422	B-RBsn #2 rted-Post A
7	SCS Runoff	13.85	1	724	41,004	------	------	------	Watershed B predeve
8	Combine	18.56	1	724	56,134	1, 7	------	------	Predeve Wtrshd A +B
9	SCS Runoff	10.31	1	722	27,797	------	------	------	MRC Basin #3
10	Reservoir	5.816	1	731	25,263	9	295.40	9,335	MRC Basin #3 rted
11	SCS Runoff	3.948	1	722	10,669	------	------	------	MRC Basin #4
12	Reservoir	0.227	1	803	8,510	11	292.47	6,299	MRC Basin #4 rted
13	SCS Runoff	4.720	1	723	13,502	------	------	------	Bio-ret Basin #5
14	Reservoir	3.342	1	730	9,545	13	295.28	4,540	Bio ret Basin #5 rted
15	SCS Runoff	4.682	1	722	12,693	------	------	------	Bio-ret Basin #6
16	Reservoir	1.161	1	735	3,454	15	289.29	5,208	Bio-Ret Basin #6 rted
17	SCS Runoff	1.647	1	722	4,463	------	------	------	Watershed B bypass
18	Combine	11.52	1	729	51,235	10, 12, 14, 16, 17	------	------	Wtershed B post combined
19	Combine	16.81	1	729	70,927	3, 5, 18	------	------	Wtrsshed A+B post comb
21	Mod. Rational	1.855	1	16	5,342	------	------	------	Bio basin #1
22	Reservoir	0.116	1	60	450	21	298.87	4,614	Bio Basin #1 rted
23	Mod. Rational	5.335	1	10	9,603	------	------	------	Bio Basin #2
24	Reservoir	4.150	1	32	5,832	23	296.76	5,523	Bio Basin #2 rted
25	Mod. Rational	4.576	1	15	12,356	------	------	------	MRC Basin #3
26	Reservoir	3.947	1	47	11,051	25	295.05	7,105	MRC Basin #3 rted
27	Mod. Rational	1.711	1	15	4,619	------	------	------	MRC Basin #4
28	Reservoir	0.159	1	59	3,000	27	292.03	4,437	MRC Basin #4 rted
29	Mod. Rational	2.076	1	16	5,980	------	------	------	Bio Basin #5
30	Reservoir	1.604	1	51	4,023	29	295.15	4,143	Bio Basin #5 rted
31	Mod. Rational	2.101	1	15	5,674	------	------	------	Bio-Basin #6
32	Reservoir	0.787	1	52	1,355	31	289.07	4,202	Bio Basin #6 rted

Hydrograph Summary Report

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Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	7.901	1	725	24,115	------	------	------	Watershed A predeve
2	SCS Runoff	5.572	1	723	15,933	------	------	------	Bio ret Basin #1 inflow
3	Reservoir	0.213	1	760	3,171	2	299.44	8,016	Bio -ret Basin 1 rted
4	SCS Runoff	14.86	1	719	33,845	------	------	------	Bio-ret Basin #2 inflow
5	Reservoir	6.449	1	727	28,240	4	297.37	10,666	B-RBsn #2 rted-Post A
7	SCS Runoff	21.91	1	723	63,352	------	------	------	Watershed B predeve
8	Combine	29.79	1	724	87,467	1, 7	------	------	Predeve Wtrshd A +B
9	SCS Runoff	14.26	1	722	38,747	------	------	------	MRC Basin #3
10	Reservoir	9.645	1	729	36,207	9	295.74	11,756	MRC Basin #3 rted
11	SCS Runoff	5.409	1	722	14,758	------	------	------	MRC Basin #4
12	Reservoir	0.290	1	807	12,536	11	293.02	8,979	MRC Basin #4 rted
13	SCS Runoff	6.473	1	723	18,678	------	------	------	Bio-ret Basin #5
14	Reservoir	5.668	1	727	14,245	13	295.40	4,963	Bio ret Basin #5 rted
15	SCS Runoff	6.356	1	722	17,426	------	------	------	Bio-ret Basin #6
16	Reservoir	1.639	1	735	6,446	15	289.70	7,067	Bio-Ret Basin #6 rted
17	SCS Runoff	2.449	1	722	6,585	------	------	------	Watershed B bypass
18	Combine	18.89	1	727	76,019	10, 12, 14, 16, 17	------	------	Wtershed B post combined
19	Combine	25.51	1	727	107,429	3, 5, 18	------	------	Wtrsshed A+B post comb
21	Mod. Rational	2.289	1	16	6,593	------	------	------	Bio basin #1
22	Reservoir	0.155	1	60	829	21	299.05	5,655	Bio Basin #1 rted
23	Mod. Rational	6.482	1	10	11,667	------	------	------	Bio Basin #2
24	Reservoir	4.744	1	33	7,871	23	296.89	6,426	Bio Basin #2 rted
25	Mod. Rational	5.635	1	15	15,215	------	------	------	MRC Basin #3
26	Reservoir	4.773	1	47	13,909	25	295.18	7,987	MRC Basin #3 rted
27	Mod. Rational	2.107	1	15	5,688	------	------	------	MRC Basin #4
28	Reservoir	0.198	1	59	4,031	27	292.26	5,419	MRC Basin #4 rted
29	Mod. Rational	2.563	1	16	7,381	------	------	------	Bio Basin #5
30	Reservoir	2.358	1	49	5,398	29	295.21	4,335	Bio Basin #5 rted
31	Mod. Rational	2.588	1	15	6,987	------	------	------	Bio-Basin #6
32	Reservoir	1.063	1	52	2,378	31	289.22	4,906	Bio Basin #6 rted

Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.24

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	10.77	1	724	32,354	------	------	------	Watershed A predeve
2	SCS Runoff	6.950	1	723	19,979	------	------	------	Bio ret Basin #1 inflow
3	Reservoir	0.258	1	764	4,861	2	299.82	10,364	Bio -ret Basin 1 rted
4	SCS Runoff	18.59	1	719	42,637	------	------	------	Bio-ret Basin #2 inflow
5	Reservoir	7.047	1	727	36,906	4	297.68	13,569	B-RBsn #2 rted-Post A
7	SCS Runoff	29.17	1	723	83,528	------	------	------	Watershed B predeve
8	Combine	39.85	1	724	115,882	1, 7	------	------	Predeve Wtrshd A +B
9	SCS Runoff	17.58	1	722	48,146	------	------	------	MRC Basin #3
10	Reservoir	12.28	1	728	45,602	9	295.97	13,411	MRC Basin #3 rted
11	SCS Runoff	6.634	1	722	18,256	------	------	------	MRC Basin #4
12	Reservoir	0.428	1	785	15,981	11	293.42	11,196	MRC Basin #4 rted
13	SCS Runoff	7.944	1	723	23,105	------	------	------	Bio-ret Basin #5
14	Reservoir	7.321	1	726	18,294	13	295.49	5,231	Bio ret Basin #5 rted
15	SCS Runoff	7.755	1	722	21,461	------	------	------	Bio-ret Basin #6
16	Reservoir	3.691	1	731	9,185	15	289.93	8,095	Bio-Ret Basin #6 rted
17	SCS Runoff	3.144	1	722	8,457	------	------	------	Watershed B bypass
18	Combine	25.07	1	728	97,519	10, 12, 14, 16, 17	------	------	Wtershed B post combined
19	Combine	32.33	1	728	139,286	3, 5, 18	------	------	Wtrsshed A+B post comb
21	Mod. Rational	2.600	1	16	7,487	------	------	------	Bio basin #1
22	Reservoir	0.176	1	61	1,123	21	299.18	6,430	Bio Basin #1 rted
23	Mod. Rational	7.301	1	10	13,141	------	------	------	Bio Basin #2
24	Reservoir	5.156	1	33	9,325	23	296.99	7,160	Bio Basin #2 rted
25	Mod. Rational	6.391	1	15	17,256	------	------	------	MRC Basin #3
26	Reservoir	5.345	1	47	15,948	25	295.29	8,694	MRC Basin #3 rted
27	Mod. Rational	2.389	1	15	6,451	------	------	------	MRC Basin #4
28	Reservoir	0.222	1	59	4,770	27	292.43	6,126	MRC Basin #4 rted
29	Mod. Rational	2.910	1	16	8,381	------	------	------	Bio Basin #5
30	Reservoir	2.765	1	48	6,384	29	295.24	4,419	Bio Basin #5 rted
31	Mod. Rational	2.935	1	15	7,924	------	------	------	Bio-Basin #6
32	Reservoir	1.230	1	52	3,129	31	289.34	5,440	Bio Basin #6 rted

Hydrograph Summary Report

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Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	15.18	1	724	45,107	------	------	------	Watershed A predeve
2	SCS Runoff	8.954	1	723	25,970	------	------	------	Bio ret Basin #1 inflow
3	Reservoir	0.309	1	771	7,537	2	300.34	13,916	Bio -ret Basin 1 rted
4	SCS Runoff	24.02	1	719	55,692	------	------	------	Bio-ret Basin #2 inflow
5	Reservoir	8.195	1	735	49,777	4	298.13	17,908	B-RBsn #2 rted-Post A
7	SCS Runoff	40.12	1	723	114,393	------	------	------	Watershed B predeve
8	Combine	55.14	1	723	159,500	1, 7	------	------	Predeve Wtrshd A +B
9	SCS Runoff	22.38	1	722	61,990	------	------	------	MRC Basin #3
10	Reservoir	14.18	1	729	59,441	9	296.32	16,270	MRC Basin #3 rted
11	SCS Runoff	8.401	1	722	23,395	------	------	------	MRC Basin #4
12	Reservoir	2.628	1	735	21,096	11	293.63	12,406	MRC Basin #4 rted
13	SCS Runoff	10.07	1	723	29,610	------	------	------	Bio-ret Basin #5
14	Reservoir	9.110	1	726	24,277	13	295.62	5,671	Bio ret Basin #5 rted
15	SCS Runoff	9.770	1	722	27,375	------	------	------	Bio-ret Basin #6
16	Reservoir	6.772	1	728	13,381	15	290.09	8,884	Bio-Ret Basin #6 rted
17	SCS Runoff	4.171	1	722	11,271	------	------	------	Watershed B bypass
18	Combine	33.85	1	728	129,465	10, 12, 14, 16, 17	------	------	Wtershed B post combined
19	Combine	42.13	1	728	186,779	3, 5, 18	------	------	Wtrsshed A+B post comb
21	Mod. Rational	3.010	1	16	8,669	------	------	------	Bio basin #1
22	Reservoir	0.201	1	61	1,539	21	299.35	7,480	Bio Basin #1 rted
23	Mod. Rational	8.330	1	10	14,995	------	------	------	Bio Basin #2
24	Reservoir	5.600	1	33	11,154	23	297.10	8,159	Bio Basin #2 rted
25	Mod. Rational	7.384	1	15	19,937	------	------	------	MRC Basin #3
26	Reservoir	6.071	1	48	18,628	25	295.45	9,705	MRC Basin #3 rted
27	Mod. Rational	2.760	1	15	7,453	------	------	------	MRC Basin #4
28	Reservoir	0.247	1	59	5,744	27	292.63	7,062	MRC Basin #4 rted
29	Mod. Rational	3.370	1	16	9,705	------	------	------	Bio Basin #5
30	Reservoir	3.244	1	48	7,692	29	295.27	4,520	Bio Basin #5 rted
31	Mod. Rational	3.391	1	15	9,155	------	------	------	Bio-Basin #6
32	Reservoir	1.430	1	52	4,132	31	289.50	6,175	Bio Basin #6 rted

Hydrograph Summary Report

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Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	19.10	1	724	56,563	------	------	------	Watershed A predeve
2	SCS Runoff	10.66	1	723	31,169	------	------	------	Bio ret Basin #1 inflow
3	Reservoir	0.478	1	766	10,116	2	300.76	16,893	Bio -ret Basin 1 rted
4	SCS Runoff	28.65	1	719	67,046	------	------	------	Bio-ret Basin #2 inflow
5	Reservoir	8.613	1	723	60,977	4	298.50	22,061	B-RBsn #2 rted-Post A
7	SCS Runoff	49.73	1	723	141,866	------	------	------	Watershed B predeve
8	Combine	68.67	1	723	198,429	1, 7	------	------	Predeve Wtrshd A +B
9	SCS Runoff	26.46	1	722	73,957	------	------	------	MRC Basin #3
10	Reservoir	15.37	1	730	71,404	9	296.66	19,172	MRC Basin #3 rted
11	SCS Runoff	9.900	1	722	27,829	------	------	------	MRC Basin #4
12	Reservoir	5.214	1	731	25,512	11	293.78	13,317	MRC Basin #4 rted
13	SCS Runoff	11.87	1	723	35,221	------	------	------	Bio-ret Basin #5
14	Reservoir	9.816	1	727	29,467	13	295.83	6,355	Bio ret Basin #5 rted
15	SCS Runoff	11.48	1	722	32,469	------	------	------	Bio-ret Basin #6
16	Reservoir	8.978	1	726	17,097	15	290.18	9,404	Bio-Ret Basin #6 rted
17	SCS Runoff	5.059	1	722	13,741	------	------	------	Watershed B bypass
18	Combine	42.17	1	728	157,221	10, 12, 14, 16, 17	------	------	Wtershed B post combined
19	Combine	50.49	1	728	228,314	3, 5, 18	------	------	Wtrsshed A+B post comb
21	Mod. Rational	3.308	1	16	9,526	------	------	------	Bio basin #1
22	Reservoir	0.218	1	61	1,855	21	299.47	8,251	Bio Basin #1 rted
23	Mod. Rational	9.056	1	10	16,300	------	------	------	Bio Basin #2
24	Reservoir	5.832	1	33	12,444	23	297.18	8,922	Bio Basin #2 rted
25	Mod. Rational	8.100	1	15	21,871	------	------	------	MRC Basin #3
26	Reservoir	6.841	1	47	20,560	25	295.56	10,422	MRC Basin #3 rted
27	Mod. Rational	3.028	1	15	8,176	------	------	------	MRC Basin #4
28	Reservoir	0.263	1	59	6,448	27	292.77	7,741	MRC Basin #4 rted
29	Mod. Rational	3.703	1	16	10,664	------	------	------	Bio Basin #5
30	Reservoir	3.581	1	48	8,642	29	295.29	4,590	Bio Basin #5 rted
31	Mod. Rational	3.720	1	15	10,043	------	------	------	Bio-Basin #6
32	Reservoir	1.562	1	52	4,862	31	289.62	6,726	Bio Basin #6 rted

Hydrograph Summary Report

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Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	23.39	1	724	69,272	------	------	------	Watershed A predeve
2	SCS Runoff	12.49	1	723	36,800	------	------	------	Bio ret Basin #1 inflow
3	Reservoir	2.552	1	739	14,410	2	300.97	18,409	Bio -ret Basin 1 rted
4	SCS Runoff	33.60	1	719	79,361	------	------	------	Bio-ret Basin #2 inflow
5	Reservoir	8.924	1	739	73,127	4	298.90	26,530	B-RBsn #2 rted-Post A
7	SCS Runoff	60.20	1	723	172,144	------	------	------	Watershed B predeve
8	Combine	83.42	1	723	241,416	1, 7	------	------	Predeve Wtrshd A +B
9	SCS Runoff	30.82	1	722	86,882	------	------	------	MRC Basin #3
10	Reservoir	16.45	1	731	84,326	9	297.05	22,584	MRC Basin #3 rted
11	SCS Runoff	11.50	1	722	32,613	------	------	------	MRC Basin #4
12	Reservoir	7.816	1	728	30,279	11	293.90	14,084	MRC Basin #4 rted
13	SCS Runoff	13.79	1	723	41,276	------	------	------	Bio-ret Basin #5
14	Reservoir	11.21	1	728	35,098	13	296.07	7,225	Bio ret Basin #5 rted
15	SCS Runoff	13.30	1	722	37,958	------	------	------	Bio-ret Basin #6
16	Reservoir	10.58	1	726	21,209	15	290.29	9,969	Bio-Ret Basin #6 rted
17	SCS Runoff	6.013	1	722	16,438	------	------	------	Watershed B bypass
18	Combine	50.33	1	727	187,351	10, 12, 14, 16, 17	------	------	Wtershed B post combined
19	Combine	59.45	1	727	274,888	3, 5, 18	------	------	Wtrsshed A+B post comb
21	Mod. Rational	3.601	1	16	10,372	------	------	------	Bio basin #1
22	Reservoir	0.233	1	61	2,178	21	299.60	9,019	Bio Basin #1 rted
23	Mod. Rational	9.758	1	10	17,564	------	------	------	Bio Basin #2
24	Reservoir	6.054	1	34	13,692	23	297.27	9,709	Bio Basin #2 rted
25	Mod. Rational	8.806	1	15	23,776	------	------	------	MRC Basin #3
26	Reservoir	7.909	1	47	22,464	25	295.63	10,940	MRC Basin #3 rted
27	Mod. Rational	3.292	1	15	8,888	------	------	------	MRC Basin #4
28	Reservoir	0.278	1	59	7,142	27	292.90	8,413	MRC Basin #4 rted
29	Mod. Rational	4.032	1	16	11,612	------	------	------	Bio Basin #5
30	Reservoir	3.915	1	48	9,581	29	295.31	4,654	Bio Basin #5 rted
31	Mod. Rational	4.044	1	15	10,918	------	------	------	Bio-Basin #6
32	Reservoir	1.793	1	52	5,595	31	289.74	7,260	Bio Basin #6 rted

APPENDIX B

PENN'S TRAIL ENVIRONMENTAL, LLC
INFILTRATION STUDY

Penn's Trail Environmental, LLC
21 East Lincoln Ave - Suite 160
Hatfield, PA 19440
Phone: (215) 362-4610
e-mail: climbert@pennstrail.com

Spartan Organization
P.O. Box 736
Fort Washington, PA

December 10, 2019

RE: Stormwater Infiltration Report
Butler Pike Tract
Whitemarsh Twp., Montgomery Co., PA
PTE #4241

Dear Mr. Robert Downs;

Penn's Trail Environmental, LLC has performed a subsurface soil and permeability investigation on the referenced parcel. The intent of this investigation was to evaluate the subsurface soil profile and determine the permeability characteristics of the areas indicated for proposed stormwater disposal via infiltration. Test excavations were developed with a backhoe and described in accordance with United States Department of Agriculture-Natural Resource Conservation Service (USDA-NRCS) methodology. In-situ permeability testing was conducted using the Double Ring Infiltrometer (DRI) method as described by ASTM-D3385-09 standards.

Current regulation requires that stormwater control be designed for this proposed new land development project. Permeability testing is required to determine if infiltrative capacity of the subsoil is present. Test locations were positioned throughout this site at the direction of the project engineer. Depth of testing was determined by final constructed grade of the stormwater facilities or adjusted for shallow bedrock or groundwater encountered in test excavations. A backhoe was required for excavation of the test probes and establishment of the double rings.

A soil profile description was developed at the test point and includes information such as texture, structure, soil depth, and indication (or lack thereof) of a seasonal high water table or restricted drainage as would be indicated by redoximorphic features.

Redox features often occur when infiltrating water encounters a slowly permeable layer as it moves downward through the soil profile. These features do not indicate a true water table or zone that is saturated for prolonged periods by regional groundwater at this site. Regional groundwater was encountered and should be used as the most limiting design factor.

Pre-development USDA-NRCS soil mapping at this site, or more specifically the test locations, were mapped as a combination of shale and loess-based soil series, for instance Lawrenceville and Reaville. The Lawrenceville series consists of deep and very deep, moderately well drained soils formed in silty transported materials. Slopes range from 0 to 15 percent. Permeability is moderately slow with medium runoff. Diagnostic horizons and features recognized in this pedon are an ochric epipedon from the surface of the soil to a depth of about 13 inches (Ap and BA horizons); an argillic horizon from 13 inches to a depth of about 25 inches (Bt1 and Bt2 horizons) and a fragipan from 25 inches to a depth of about 44 inches (Bx1 and Bx2 horizons).

The Reaville series consists of moderately deep, moderately well and somewhat poorly drained soils formed in residuum weathered from red Triassic, interbedded shale, siltstone, and fine-grained sandstone. Slopes range from 0 to 15 percent. Saturated hydraulic conductivity is moderately low and surface runoff is medium to slow. Diagnostic horizons and features recognized in this pedon are an ochric epipedon from the surface of the soil to 9 inches (Ap horizon and an argillic horizon from 9 to 15 inches (Bt horizon).

The deep to very deep soils derived primarily from loess overlaying Stockton sandstone are more accurately classified as Duncannon (well drained loess overlaying sandstone), Lawrenceville and Chalfont (moderately well drained and somewhat poorly drained, respectively, of loess overlaying sandstone. While deviation from published mapping was encountered at this site, this investigation was not conducted for the purpose of disputing current mapping or as a re-mapping effort.

Soil profiles of backhoe excavated test pits were developed to a depth at or near final constructed grade of proposed stormwater control facilities. The most restrictive barriers from the point of infiltration to contacting the base flow groundwater table were determined. The most common of these barriers in our region include restrictive soil horizons, varying lithology, fracturing of the bedrock or insufficient fracturing of the bedrock, and encountering groundwater among other factors. Our field observations, as reported on the attached soil profile data sheets, indicate that bedrock was encountered in some pits from a depth ranging between sixty-six (66) in TP 13 and one hundred and ten (110) in TP 12. Please refer the table below for all bedrock depths observed. Redoximorphic features were noted in some test pits throughout the argillic and fragic horizon and at depths as shallow as nine (9) inches as encountered in Test Pit 6. Subsequent detailed testing more accurately predicts the ability of the soil to efficiently infiltrate stormwater and has been attached.

Testing sought to identify zones that would potentially allow the infiltration of stormwater. The testing protocol used considers regional construction practices, the likelihood of "silting in" during and following construction and the subsurface characteristics of the soil and geology. The determination at this site was that bedrock and groundwater present the most restrictive condition to establish installation depth for infiltration of stormwater. The double rings were established at a level with sufficient residual subsoil above groundwater and bedrock to seat and seal the rings permitting unsaturated flow through the soil to the water table.

The recommended acceptable range for subsurface disposal of stormwater is 0.10 inches per hour to 10.0 inches per hour according to current BMP guidance. Surface basins where additional storage is economical can have much slower rates and still provide some infiltration. Our office recommends that the design engineer assume zero infiltration for any stormwater area which achieves less than 0.10 inches per hour.

There are various means to arrive at an infiltrative rate for the substratum following testing. Our method is to average the last four stabilized readings as established in the PA BMP Manual. Another is to use the "last" reading as is common for percolation testing for wastewater disposal. Averaging more accurately reflects what would likely occur during a rain (soil saturation) event.

Testing was conducted at discreet locations selected by the project engineer using double ring infiltrometers. Data sheets containing the information recorded for the soil profile descriptions and double ring infiltrometers have been included as attachments to this report. A table summarizing the field data can be found below:

Test Location	Depth of Test Pit Inches	Depth to Water Inches	Depth to Rock Inches	Depth of Testing Inches	Infiltration Rate Inches per hour
1	84	---	---	54	8.22
2	84	---	---	54	2.88
3	55	55	---	30	2.40

4	75	75	---	12	0.00
5	88	88	---	24	0.06
6	84	72	---	30	0.00
7	82	72	---	24	0.00
8	102	---	---	72	0.01
9	DRI and Profile not run/read due to inundation of water				
10	102	---	102	12	0.62
11	90	---	---	48	5.92
12	110	---	110	60	11.33
13	66	---	66	36	4.31

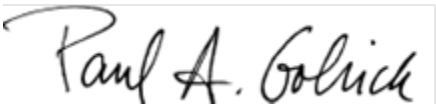
The soil encountered demonstrated acceptable infiltration rates. Subsurface conditions may change following construction and resultant redirection of surface water following development. Results suggest that the average infiltration rate at the tested locations are within the recommended guidelines, with the exception of test locations 4 through 9, after the safety factor.

Stormwater control devices can include subsurface facilities that allow the design engineer flexibility in reducing velocity containing and disposing of stormwater on this site due to the clayey composition of the soil at this site. Surface features such as vegetated swales and berms can be employed to reduce overland flow and retain water in-situ thus extending contact time and providing for additional infiltration.

Our findings are a result of testing conducted in a specific location and condition. Should evidence contrary to the findings in this report be discovered prior to, during, or after construction of the stormwater control devices, our office must be notified immediately so our recommendations can be reviewed and revised if necessary. Penn's Trail Environmental, LLC expresses no guarantee that the soil conditions following excavation will be identical to those encountered during this investigation. We recommend that caution is exercised during construction to minimize compaction, or other disturbance in those areas intended for use as infiltration areas.

Please review the enclosed information and if any questions arise do not hesitate to contact our office.

Sincerely,
Penn's Trail Environmental, LLC



Paul Golrick P.G./CL
Soil Scientist

Penn's Trail Environmental, LLC
21 East Lincoln Ave - Suite 160
Hatfield, PA 19440
ph. (215) 362-4610
fax (215) 362-4620

Date: 12/5/19 Pit # 1 PTE # 4241
Project: Spartan Organization
Location: Butler Pike
Whitemarsh Twp., Montgomery Co., PA
Soil Series: Lawrenceville

Horizon	Depth (In.)	Color	Redox Features	Texture	Structure	Consistence	Boundary
Ap	0-10	10YR 3/4		silt loam	weak med sbk	friable	abrupt smooth
Bt1	10-24	10YR 5/4		silt loam	weak med sbk	friable	clear wavy
Bt2	24-45	7.5YR 5/4	common faint	silt loam	mod med abk	friable	abrupt wavy
2C	45-84	7.5YR 4/6		channery loamy sand	single grain	very friable	

Soil Scientist: Paul A. Golrick, PG

Notes:

EPIPEDON
Ochric

SUBSURFACE HORIZON(S)
Argillic

SOIL ORDER
Alfisol

DRAINAGE CLASS
Moderately well drained

LANDFORM
Upland

POSITION
Backslope

PARENT MATERIAL
Loess
Residuum

BEDROCK LITHOLOGY
Sandstone

REDOX FEATURES
Abundance
Few ..... <2%
Common.. 2-20%
Many.....>20%
Contrast
faint
hue & chroma of matrix and redox are closely related.
distinct
matrix & redox features vary 1-2 units of hue and several units of chroma & value.
prominent
Matrix & redox features vary several units in hue, value, & chroma.

COARSE FRAGMENTS (% of profile)

15-35%	35-65%	>65%
gravelly	very gravelly	extremely gravelly
channery	very channery	extremely channery
cobbly	very cobbly	extremely cobbly
flaggy	very flaggy	extremely flaggy
stony	very stony	extremely stony

BOUNDARY
Distinctness
abrupt...<1" (thick) *gradual*...2.5-5"
clear.....1-2.5" *diffuse*.....>5
Topography
smooth - boundary is nearly level
wavy - pockets with width greater than depth
irregular - pockets with depth greater than width

STRUCTURE
Grade
Structureless - No observable aggregation or arrangement of lines of weakness.
Weak - Poorly formed, indistinct peds barely observable in place.
Moderate - Well-formed, distinct peds moderately durable & evident in place.
Strong - Durable peds evident in undisturbed soil & become separated when disturbed.

Type
pl - platy
pr - prismatic
cpr - columnar
gr - granular
abk - angular blocky
sbk - subangular blocky

Penn's Trail Environmental, LLC
21 East Lincoln Ave - Suite 160
Hatfield, PA 19440
ph. (215) 362-4610
fax (215) 362-4620

Date: 12/5/19 Pit # 2 PTE # 4241
Project: Spartan Organization
Location: Butler Pike
Whitemarsh Twp., Montgomery Co., PA
Soil Series: Duncannon

Horizon	Depth (In.)	Color	Redox Features	Texture	Structure	Consistence	Boundary
Ap	0-14	7.5YR 3/4		silt loam	weak med sbk	friable	abrupt smooth
Bt	14-41	7.5YR 5/6		silt loam	weak coarse sbk	friable	clear wavy
2C	41-84	10YR 4/6		sandy loam	massive/ single grain	very friable	

Soil Scientist: Paul A. Golrick, PG

Notes:

EPIPEDON
Ochric

SUBSURFACE HORIZON(S)
Argillic

SOIL ORDER
Alfisol

DRAINAGE CLASS
Well Drained

LANDFORM
Upland

POSITION
Backslope

PARENT MATERIAL
Loess
Residuum

BEDROCK LITHOLOGY
Sandstone

REDOX FEATURES
Abundance
Few ..... <2%
Common.. 2-20%
Many.....>20%
Contrast
faint
hue & chroma of matrix and redox are closely related.
distinct
matrix & redox features vary 1-2 units of hue and several units of chroma & value.
prominent
Matrix & redox features vary several units in hue, value, & chroma.

STRUCTURE
Grade
Structureless - No observable aggregation or arrangement of lines of weakness.
Weak - Poorly formed, indistinct peds barely observable in place.
Moderate - Well-formed, distinct peds moderately durable & evident in place.
Strong - Durable peds evident in undisturbed soil & become separated when disturbed.

COARSE FRAGMENTS (% of profile)

15-35%	35-65%	>65%
gravelly	very gravelly	extremely gravelly
channery	very channery	extremely channery
cobbly	very cobbly	extremely cobbly
flaggy	very flaggy	extremely flaggy
stony	very stony	extremely stony

BOUNDARY
Distinctness
abrupt...<1" (thick) *gradual*...2.5-5"
clear.....1-2.5" *diffuse*.....>5
Topography
smooth - boundary is nearly level
wavy - pockets with width greater than depth
irregular - pockets with depth greater than width

Type
pl - platy
pr - prismatic
cpr - columnar
gr - granular
abk - angular blocky
sbk - subangular blocky

Penn's Trail Environmental, LLC
21 East Lincoln Ave - Suite 160
Hatfield, PA 19440
ph. (215) 362-4610
fax (215) 362-4620

Date: 12/5/19 Pit # 3 PTE # 4241
Project: Spartan Organization
Location: Butler Pike
Whitemarsh Twp., Montgomery Co., PA
Soil Series: Urbanland

Horizon	Depth (In.)	Color	Redox Features	Texture	Structure	Consistence	Boundary
Fill	0-18	5YR 4/3		channery silt loam	mod med pl	firm	abrupt smooth
C	18-49	10YR 5/3	many prominent	loam	massive	friable	abrupt wavy
Cg	49-55	10YR 6/2	few distinct	sandy loam	massive/ single grain	very friable	

Soil Scientist: Paul A. Golrick, PG

Notes: Water at 55"

EPIPEDON
Ochric

SUBSURFACE HORIZON(S)
Paralithic
Gleyed

SOIL ORDER
Alfisol

DRAINAGE CLASS
Moderately well drained

LANDFORM
Upland

POSITION
Backslope

PARENT MATERIAL
Fill
Residuum

BEDROCK LITHOLOGY
Sandstone

REDOX FEATURES
Abundance
Few ..... <2%
Common.. 2-20%
Many.....>20%
Contrast
faint
hue & chroma of matrix and redox are closely related.
distinct
matrix & redox features vary 1-2 units of hue and several units of chroma & value.
prominent
Matrix & redox features vary several units in hue, value, & chroma.

COARSE FRAGMENTS (% of profile)

15-35%	35-65%	>65%
gravelly	very gravelly	extremely gravelly
channery	very channery	extremely channery
cobbly	very cobbly	extremely cobbly
flaggy	very flaggy	extremely flaggy
stony	very stony	extremely stony

BOUNDARY
Distinctness
abrupt...<1" (thick) *gradual*...2.5-5"
clear.....1-2.5" *diffuse*.....>5
Topography
smooth - boundary is nearly level
wavy - pockets with width greater than depth
irregular - pockets with depth greater than width

STRUCTURE
Grade
Structureless - No observable aggregation or arrangement of lines of weakness.
Weak - Poorly formed, indistinct peds barely observable in place.
Moderate - Well-formed, distinct peds moderately durable & evident in place.
Strong - Durable peds evident in undisturbed soil & become separated when disturbed.

Type
pl - platy
pr - prismatic
cpr - columnar
gr - granular
abk - angular blocky
sbk - subangular blocky

Penn's Trail Environmental, LLC
21 East Lincoln Ave - Suite 160
Hatfield, PA 19440
ph. (215) 362-4610
fax (215) 362-4620

Date: 12/5/19 Pit # 4 PTE # 4241
Project: Spartan Organization
Location: Butler Pike
Whitemarsh Twp., Montgomery Co., PA
Soil Series: Lawrenceville

Horizon	Depth (In.)	Color	Redox Features	Texture	Structure	Consistence	Boundary
Fill	0-35	10YR 3/3		channery silt loam	weak coarse sbk	friable	abrupt smooth
Btxg	35-75	10YR 7/2	many prominent	clay loam	weak coarse pl/ weak coarse sbk	firm	

Soil Scientist: Paul A. Golrick, PG

Notes: Water at 75"

EPIPEDON
Ochric

SUBSURFACE HORIZON(S)
Fragipan/Gleyed

SOIL ORDER
Alfisol

DRAINAGE CLASS
Moderately well drained

LANDFORM
Upland

POSITION
Backslope

PARENT MATERIAL
Loess
Residuum

BEDROCK LITHOLOGY
Sandstone

REDOX FEATURES
Abundance
Few ..... <2%
Common.. 2-20%
Many.....>20%
Contrast
faint
hue & chroma of matrix and redox are closely related.
distinct
matrix & redox features vary 1-2 units of hue and several units of chroma & value.
prominent
Matrix & redox features vary several units in hue, value, & chroma.

COARSE FRAGMENTS (% of profile)

15-35%	35-65%	>65%
gravelly	very gravelly	extremely gravelly
channery	very channery	extremely channery
cobbly	very cobbly	extremely cobbly
flaggy	very flaggy	extremely flaggy
stony	very stony	extremely stony

BOUNDARY
Distinctness
abrupt...<1" (thick) *gradual*...2.5-5"
clear.....1-2.5" *diffuse*.....>5
Topography
smooth - boundary is nearly level
wavy - pockets with width greater than depth
irregular - pockets with depth greater than width

STRUCTURE
Grade
Structureless - No observable aggregation or arrangement of lines of weakness.
Weak - Poorly formed, indistinct peds barely observable in place.
Moderate - Well-formed, distinct peds moderately durable & evident in place.
Strong - Durable peds evident in undisturbed soil & become separated when disturbed.

Type
pl - platy
pr - prismatic
cpr - columnar
gr - granular
abk - angular blocky
sbk - subangular blocky

Penn's Trail Environmental, LLC
21 East Lincoln Ave - Suite 160
Hatfield, PA 19440
ph. (215) 362-4610
fax (215) 362-4620

Date: 12/5/19 Pit # 5 PTE # 4241
Project: Spartan Organization
Location: Butler Pike
Whitemarsh Twp., Montgomery Co., PA
Soil Series: Urban-Lansdale

Horizon	Depth (In.)	Color	Redox Features	Texture	Structure	Consistence	Boundary
Fill	0-19	5YR 4/4		channery silt loam	weak coarse abk	friable	clear irregular
Ab	19-30	10YR 3/3		silt loam	weak med gr	very friable	clear wavy
Bt	30-46	10YR 5/4		loam	weak med sbk	friable	clear wavy
C	46-88	10YR 6/4		sandy loam	massive	very friable	

Soil Scientist: Paul A. Golrick, PG

Notes: Water at 88"

EPIPEDON
Fill

SUBSURFACE HORIZON(S)
Buried
Argillic

SOIL ORDER
Alfisol

DRAINAGE CLASS
Well Drained

LANDFORM
Upland

POSITION
Backslope

PARENT MATERIAL
Fill
Residuum

BEDROCK LITHOLOGY
Sandstone

REDOX FEATURES
Abundance
Few ..... <2%
Common.. 2-20%
Many.....>20%
Contrast
faint
hue & chroma of matrix and redox are closely related.
distinct
matrix & redox features vary 1-2 units of hue and several units of chroma & value.
prominent
Matrix & redox features vary several units in hue, value, & chroma.

COARSE FRAGMENTS (% of profile)

15-35%	35-65%	>65%
gravelly	very gravelly	extremely gravelly
channery	very channery	extremely channery
cobbly	very cobbly	extremely cobbly
flaggy	very flaggy	extremely flaggy
stony	very stony	extremely stony

BOUNDARY
Distinctness
abrupt...<1" (thick) *gradual*...2.5-5"
clear.....1-2.5" *diffuse*.....>5
Topography
smooth - boundary is nearly level
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irregular - pockets with depth greater than width

STRUCTURE
Grade
Structureless - No observable aggregation or arrangement of lines of weakness.
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Type
pl - platy
pr - prismatic
cpr - columnar
gr - granular
abk - angular blocky
sbk - subangular blocky

Penn's Trail Environmental, LLC
21 East Lincoln Ave - Suite 160
Hatfield, PA 19440
ph. (215) 362-4610
fax (215) 362-4620

Date: 12/5/19 Pit # 6 PTE # 4241
Project: Spartan Organization
Location: Butler Pike
Whitemarsh Twp., Montgomery Co., PA
Soil Series: Chalfont

Horizon	Depth (In.)	Color	Redox Features	Texture	Structure	Consistence	Boundary
Ap	0-9	10YR 4/3		silt loam	mod med sbk	friable	abrupt smooth
Bt	9-19	10YR 5/4	many prominent	silt loam	mod med sbk	friable	clear wavy
Btx	19-69	10YR 5/4	many prominent	silty clay loam	mod coarse pr/ mod med abk	friable	clear wavy
2C	69-84	2.5YR 4/4	many prominent	sandy loam	massive/ weak med sbk	firm	gradual wavy

Soil Scientist: Paul A. Golrick, PG

Notes: Water at 72"

EPIPEDON
Ochric

SUBSURFACE HORIZON(S)
Argillic
Fragipan

SOIL ORDER
Alfisol

DRAINAGE CLASS
Somewhat poorly drained

LANDFORM
Upland

POSITION
Backslope

PARENT MATERIAL
Loess
Residuum

BEDROCK LITHOLOGY
Sandstone

REDOX FEATURES
Abundance
Few ..... <2%
Common.. 2-20%
Many.....>20%
Contrast
faint
hue & chroma of matrix and redox are closely related.
distinct
matrix & redox features vary 1-2 units of hue and several units of chroma & value.
prominent
Matrix & redox features vary several units in hue, value, & chroma.

COARSE FRAGMENTS (% of profile)

15-35%	35-65%	>65%
gravelly	very gravelly	extremely gravelly
channery	very channery	extremely channery
cobbly	very cobbly	extremely cobbly
flaggy	very flaggy	extremely flaggy
stony	very stony	extremely stony

BOUNDARY
Distinctness
abrupt...<1" (thick) *gradual*...2.5-5"
clear.....1-2.5" *diffuse*.....>5
Topography
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STRUCTURE
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Type
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cpr - columnar
gr - granular
abk - angular blocky
sbk - subangular blocky

Penn's Trail Environmental, LLC
21 East Lincoln Ave - Suite 160
Hatfield, PA 19440
ph. (215) 362-4610
fax (215) 362-4620

Date: 12/5/19 Pit # 7 PTE # 4241
Project: Spartan Organization
Location: Butler Pike
Whitemarsh Twp., Montgomery Co., PA
Soil Series: Chalfont

Horizon	Depth (In.)	Color	Redox Features	Texture	Structure	Consistence	Boundary
Ap	0-10	10YR 4/3		silt loam	mod med gr	friable	abrupt smooth
Bt	10-19	10YR 6/4	many prominent	silt loam	weak med sbk	friable	clear wavy
Btx	19-72	7.5YR 5/6	many prominent	silty clay loam	mod coarse pr/ mod med abk	firm	abrupt wavy
2Cg	72-82	7.5YR 7/2	many prominent	sandy loam	massive/ single grain	very friable	

Soil Scientist: Paul A. Golrick, PG

Notes: Water at 72"

EPIPEDON
Ochric

SUBSURFACE HORIZON(S)
Argillic

SOIL ORDER
Alfisol

DRAINAGE CLASS
Well Drained

LANDFORM
Upland

POSITION
Backslope

PARENT MATERIAL
Loess
Residuum

BEDROCK LITHOLOGY
Sandstone

REDOX FEATURES
Abundance
Few ..... <2%
Common.. 2-20%
Many.....>20%
Contrast
faint
hue & chroma of matrix and redox are closely related.
distinct
matrix & redox features vary 1-2 units of hue and several units of chroma & value.
prominent
Matrix & redox features vary several units in hue, value, & chroma.

COARSE FRAGMENTS (% of profile)

15-35%	35-65%	>65%
gravelly	very gravelly	extremely gravelly
channery	very channery	extremely channery
cobbly	very cobbly	extremely cobbly
flaggy	very flaggy	extremely flaggy
stony	very stony	extremely stony

BOUNDARY
Distinctness
abrupt...<1" (thick) *gradual*...2.5-5"
clear.....1-2.5" *diffuse*.....>5
Topography
smooth - boundary is nearly level
wavy - pockets with width greater than depth
irregular - pockets with depth greater than width

STRUCTURE
Grade
Structureless - No observable aggregation or arrangement of lines of weakness.
Weak - Poorly formed, indistinct peds barely observable in place.
Moderate - Well-formed, distinct peds moderately durable & evident in place.
Strong - Durable peds evident in undisturbed soil & become separated when disturbed.

Type
pl - platy
pr - prismatic
cpr - columnar
gr - granular
abk - angular blocky
sbk - subangular blocky

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Hatfield, PA 19440
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Date: 12/5/19 Pit # 8 PTE # 4241
Project: Spartan Organization
Location: Butler Pike
Whitemarsh Twp., Montgomery Co., PA
Soil Series: Duncannon

Horizon	Depth (In.)	Color	Redox Features	Texture	Structure	Consistence	Boundary
Ap	0-13	10YR 3/4		silt loam	mod med abk	friable	abrupt smooth
Bt1	13-36	10YR 6/4		silt loam	mod med abk	friable	clear wavy
Bt2	36-72	10YR 5/6		silt loam	weak med abk	friable	abrupt wavy
2C	72-102	2.5YR 4/4		sandy loam	massive/ single grain	very friable	

Soil Scientist: Paul A. Golrick, PG

Notes:

EPIPEDON
Ochric

SUBSURFACE HORIZON(S)
Argillic

SOIL ORDER
Alfisol

DRAINAGE CLASS
Well Drained

LANDFORM
Upland

POSITION
Backslope

PARENT MATERIAL
Loess
Residuum

BEDROCK LITHOLOGY
Sandstone

REDOX FEATURES
Abundance
Few ..... <2%
Common.. 2-20%
Many.....>20%
Contrast
faint
hue & chroma of matrix and redox are closely related.
distinct
matrix & redox features vary 1-2 units of hue and several units of chroma & value.
prominent
Matrix & redox features vary several units in hue, value, & chroma.

STRUCTURE
Grade
Structureless - No observable aggregation or arrangement of lines of weakness.
Weak - Poorly formed, indistinct peds barely observable in place.
Moderate - Well-formed, distinct peds moderately durable & evident in place.
Strong - Durable peds evident in undisturbed soil & become separated when disturbed.

COARSE FRAGMENTS (% of profile)

15-35%	**35-65%**	**>65%**
gravelly	very gravelly	extremely gravelly
channery	very channery	extremely channery
cobbly	very cobbly	extremely cobbly
flaggy	very flaggy	extremely flaggy
stony	very stony	extremely stony

BOUNDARY
Distinctness
abrupt...<1" (thick) *gradual*...2.5-5"
clear.....1-2.5" *diffuse*.....>5
Topography
smooth - boundary is nearly level
wavy - pockets with width greater than depth
irregular - pockets with depth greater than width

Type
pl - platy
pr - prismatic
cpr - columnar
gr - granular
abk - angular blocky
sbk - subangular blocky

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Date: 12/5/19 Pit # 10 PTE # 4241
Project: Spartan Organization
Location: Butler Pike
Whitemarsh Twp., Montgomery Co., PA
Soil Series: Chalfont

Horizon	Depth (In.)	Color	Redox Features	Texture	Structure	Consistence	Boundary
Ap	0-13	10YR 3/3		silt loam	weak med sbk/ mod med gr	friable	abrupt smooth
Bt1	13-28	10YR 5/6	many prominent	silt loam	mod fine sbk	friable	clear smooth
Bt2	28-47	7.5YR 5/4	many prominent	silt loam	mod med sbk	friable	clear smooth
2BC	47-69	5YR 4/6		channery sandy loam	weak coarse sbk	friable	gradual smooth
2C	69-102	Variegated		loamy sand	massive/ single grain	very friable	
2R	102+			grey sandstone			

Soil Scientist: Paul A. Golrick, PG

Notes:

EPIPEDON
Ochric

SUBSURFACE HORIZON(S)
Argillic

SOIL ORDER
Alfisol

DRAINAGE CLASS
Somewhat poorly drained

LANDFORM
Upland

POSITION
Backslope

PARENT MATERIAL
Loess
Residuum

BEDROCK LITHOLOGY
Sandstone

REDOX FEATURES
Abundance
Few ..... <2%
Common.. 2-20%
Many.....>20%
Contrast
faint
hue & chroma of matrix and redox are closely related.
distinct
matrix & redox features vary 1-2 units of hue and several units of chroma & value.
prominent
Matrix & redox features vary several units in hue, value, & chroma.

COARSE FRAGMENTS (% of profile)

15-35%	35-65%	>65%
gravelly	very gravelly	extremely gravelly
channery	very channery	extremely channery
cobbly	very cobbly	extremely cobbly
flaggy	very flaggy	extremely flaggy
stony	very stony	extremely stony

BOUNDARY
Distinctness
abrupt...<1" (thick) *gradual*...2.5-5"
clear.....1-2.5" *diffuse*.....>5
Topography
smooth - boundary is nearly level
wavy - pockets with width greater than depth
irregular - pockets with depth greater than width

STRUCTURE
Grade
Structureless - No observable aggregation or arrangement of lines of weakness.
Weak - Poorly formed, indistinct peds barely observable in place.
Moderate - Well-formed, distinct peds moderately durable & evident in place.
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Type
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Date: 12/5/19 Pit # 11 PTE # 4241
Project: Spartan Organization
Location: Butler Pike
Whitemarsh Twp., Montgomery Co., PA
Soil Series: Duncannon

Horizon	Depth (In.)	Color	Redox Features	Texture	Structure	Consistence	Boundary
Ap	0-10	10YR 3/4		silt loam	mod med sbk/ gr	friable	abrupt smooth
Bt1	10-25	10YR 5/4		silt loam	mod med abk	friable	clear smooth
Bt2	25-43	7.5YR 5/4		silt loam	weak med sbk	friable	clear wavy
2C	43-90	10YR 6/4		sandy loam	massive/ single grain	very friable	

Soil Scientist: Paul A. Golrick, PG

Notes:

EPIPEDON
Ochric

SUBSURFACE HORIZON(S)
Argillic

SOIL ORDER
Alfisol

DRAINAGE CLASS
Well Drained

LANDFORM
Upland

POSITION
Backslope

PARENT MATERIAL
Loess
Residuum

BEDROCK LITHOLOGY
Sandstone

REDOX FEATURES
Abundance
Few ..... <2%
Common.. 2-20%
Many.....>20%
Contrast
faint
hue & chroma of matrix and redox are closely related.
distinct
matrix & redox features vary 1-2 units of hue and several units of chroma & value.
prominent
Matrix & redox features vary several units in hue, value, & chroma.

COARSE FRAGMENTS (% of profile)

15-35%	35-65%	>65%
gravelly	very gravelly	extremely gravelly
channery	very channery	extremely channery
cobbly	very cobbly	extremely cobbly
flaggy	very flaggy	extremely flaggy
stony	very stony	extremely stony

BOUNDARY
Distinctness
abrupt...<1" (thick) *gradual*...2.5-5"
clear.....1-2.5" *diffuse*.....>5
Topography
smooth - boundary is nearly level
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STRUCTURE
Grade
Structureless - No observable aggregation or arrangement of lines of weakness.
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gr - granular
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sbk - subangular blocky

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Date: 12/5/19 Pit # 12 PTE # 4241
Project: Spartan Organization
Location: Butler Pike
Whitemarsh Twp., Montgomery Co., PA
Soil Series: Duncannon

Horizon	Depth (In.)	Color	Redox Features	Texture	Structure	Consistence	Boundary
Ap	0-12	10YR 3/4		silt loam	mod med sbk	friable	abrupt smooth
Bt1	12-27	10YR 5/6		silt loam	mod med gr	friable	clear smooth
Bt2	27-40	10YR 3/4		silt loam	mod med abk	friable	clear wavy
2C	40-110	Variegated		very channery sandy loam	mod med sbk	very friable	
2R	110+			sandstone bedrock			

Soil Scientist: Paul A. Golrick, PG

Notes:

EPIPEDON
Ochric

SUBSURFACE HORIZON(S)
Argillic

SOIL ORDER
Alfisol

DRAINAGE CLASS
Well Drained

LANDFORM
Upland

POSITION
Backslope

PARENT MATERIAL
Loess
Residuum

BEDROCK LITHOLOGY
Sandstone

REDOX FEATURES
Abundance
Few ..... <2%
Common.. 2-20%
Many.....>20%
Contrast
faint
hue & chroma of matrix and redox are closely related.
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Matrix & redox features vary several units in hue, value, & chroma.

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BOUNDARY
Distinctness
abrupt...<1" (thick) *gradual*...2.5-5"
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sbk - subangular blocky

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Date: 12/5/19 Pit # 13 PTE # 4241
Project: Spartan Organization
Location: Butler Pike
Whitemarsh Twp., Montgomery Co., PA
Soil Series: Duncannon

Horizon	Depth (In.)	Color	Redox Features	Texture	Structure	Consistence	Boundary
Ap	0-11	10YR 3/4		silt loam	weak coarse sbk	friable	abrupt smooth
Bt1	11-24	10YR 5/4		silt loam	weak med sbk	friable	clear wavy
Bt2	24-41	10YR 4/3		silt loam	mod med sbk	friable	clear wavy
2C	41-66	7.5YR	common distinct	loamy sand	massive/ single grain	very friable	gradual wavy
2R	66+			purple conglomeratic	sandstone		

Soil Scientist: Paul A. Golrick, PG

Notes:

EPIPEDON
Ochric

SUBSURFACE HORIZON(S)
Argillic

SOIL ORDER
Alfisol

DRAINAGE CLASS
Well Drained

LANDFORM
Upland

POSITION
Backslope

PARENT MATERIAL
Loess
Residuum

BEDROCK LITHOLOGY
Sandstone

REDOX FEATURES
Abundance
Few ..... <2%
Common.. 2-20%
Many.....>20%
Contrast
faint
hue & chroma of matrix and redox are closely related.
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matrix & redox features vary 1-2 units of hue and several units of chroma & value.
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15-35%	35-65%	>65%
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flaggy	very flaggy	extremely flaggy
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BOUNDARY
Distinctness
abrupt...<1" (thick) *gradual*...2.5-5"
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Type
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Double Ring Infiltrometer Data Reporting Sheet

Job Name:	***Spartan Organization***	Job #	**4241**
Location:	Butler Pike	Date:	12/5/2019
Township:	*Whitemarsh*	Ring #:	1
County:	*Montgomery*	Technician:	Penn's Trail Environmental
Witness:	---	Tax Parcel:	
Water Temp:	40 °F	Weather:	overcast 40°F
Test Depth:	54 inches	pH:	6.9

Time (hr:min)	**Interval (min.)**	**Inner Ring Drop (in.)**	**Inner Ring Volume change (ml)**	**Outer Ring Drop (in.)**	**Outer Ring Volume Change (ml)**	**Rate (ml/min)**	**Infiltration rate (in/hr)**
9:30 AM			fill		fill		
10:00 AM	30	6	2,800	6	4,900	93.33	12.08
10:30 AM	30	6	2,800	6	4,900	93.33	12.08
10:40 AM	10	2 1/8	980	1 7/8	1,540	98.00	12.69
10:50 AM	10	1 4/8	700	1 3/8	1,090	70.00	9.06
11:00 AM	10	1 3/8	640	1 2/8	1,000	64.00	8.29
11:10 AM	10	1 3/8	610	1 2/8	980	61.00	7.90
11:20 AM	10	1 2/8	590	1	830	59.00	7.64
Average			635.00		975.00	73.25	8.22

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Double Ring Infiltrometer Data Reporting Sheet

Job Name:	***Spartan Organization***	Job #	**4241**
Location:	Butler Pike	Date:	12/5/2019
Township:	*Whitemarsh*	Ring #:	2
County:	*Montgomery*	Technician:	Penn's Trail Environmental
Witness:	---	Tax Parcel:	
Water Temp:	40 °F	Weather:	overcast 40°F
Test Depth:	54 inches	pH:	6.9

Time (hr:min)	**Interval (min.)**	**Inner Ring Drop (in.)**	**Inner Ring Volume change (ml)**	**Outer Ring Drop (in.)**	**Outer Ring Volume Change (ml)**	**Rate (ml/min)**	**Infiltration rate (in/hr)**
12:12 PM			fill		fill		
12:42 PM	30	6	2,800	6	4,900	93.33	12.08
1:12 PM	30	6	2,800	6	4,900	93.33	12.08
1:42 PM	30	2 1/8	1,000	2 1/8	1,720	33.33	4.32
2:12 PM	30	1 5/8	730	1 3/8	1,120	24.33	3.15
2:42 PM	30	1 4/8	680	1 2/8	1,010	22.67	2.93
3:12 PM	30	1 3/8	650	1 1/8	920	21.67	2.81
3:42 PM	30	1 3/8	610	1	830	20.33	2.63
Average			667.50		970.00	25.50	2.88

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Double Ring Infiltrometer Data Reporting Sheet

Job Name:	***Spartan Organization***	Job #	**4241**
Location:	Butler Pike	Date:	12/5/2019
Township:	*Whitemarsh*	Ring #:	3
County:	*Montgomery*	Technician:	Penn's Trail Environmental
Witness:	---	Tax Parcel:	
Water Temp:	40 °F	Weather:	overcast 40°F
Test Depth:	30 inches	pH:	6.9

Time (hr:min)	Interval (min.)	Inner Ring Drop (in.)	Inner Ring Volume change (ml)	Outer Ring Drop (in.)	Outer Ring Volume Change (ml)	Rate (ml/min)	Infiltration rate (in/hr)
12:11 PM			fill		fill		
12:41 PM	30	1 1/8	540	1 2/8	1,000	18.00	2.33
1:11 PM	30	1 5/8	730	1 3/8	1,120	24.33	3.15
1:41 PM	30	1 3/8	620	1 1/8	970	20.67	2.68
2:11 PM	30	1 2/8	570	1	810	19.00	2.46
2:41 PM	30	1 1/8	520	7/8	730	17.33	2.24
3:11 PM	30	1 1/8	510	1 1/8	880	17.00	2.20
Average			555.00		847.50	18.50	2.40

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Double Ring Infiltrometer Data Reporting Sheet

Job Name:	***Spartan Organization***	Job #	**4241**
Location:	Butler Pike	Date:	12/5/2019
Township:	*Whitemarsh*	Ring #:	4
County:	*Montgomery*	Technician:	Penn's Trail Environmental
Witness:	---	Tax Parcel:	
Water Temp:	40 °F	Weather:	overcast 40°F
Test Depth:	12 inches	pH:	6.9

Time (hr:min)	**Interval (min.)**	**Inner Ring Drop (in.)**	**Inner Ring Volume change (ml)**	**Outer Ring Drop (in.)**	**Outer Ring Volume Change (ml)**	**Rate (ml/min)**	**Infiltration rate (in/hr)**
11:40 AM			fill		fill		
12:10 PM	30	0	0	1/8	60	0.00	0.00
12:40 PM	30	0	0	1/8	70	0.00	0.00
1:10 PM	30	0	0	1/8	60	0.00	0.00
1:40 PM	30	0	0	0	10	0.00	0.00
2:10 PM	30	0	0	0	30	0.00	0.00
2:40 PM	30	0	0	0	0	0.00	0.00
Average			0.00		25.00	0.00	0.00

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Double Ring Infiltrometer Data Reporting Sheet

Job Name:	***Spartan Organization***	Job #	**4241**
Location:	Butler Pike	Date:	12/5/2019
Township:	*Whitemarsh*	Ring #:	5
County:	*Montgomery*	Technician:	Penn's Trail Environmental
Witness:	---	Tax Parcel:	
Water Temp:	40 °F	Weather:	overcast 40°F
Test Depth:	24 inches	pH:	6.9

Time (hr:min)	Interval (min.)	Inner Ring Drop (in.)	Inner Ring Volume change (ml)	Outer Ring Drop (in.)	Outer Ring Volume Change (ml)	Rate (ml/min)	Infiltration rate (in/hr)
11:36 AM			fill		fill		
12:06 PM	30	0	0	1/8	90	0.00	0.00
12:36 PM	30	0	0	1/8	120	0.00	0.00
1:06 PM	30	0	20	1/8	110	0.67	0.09
1:36 PM	30	0	0	1/8	60	0.00	0.00
2:06 PM	30	1/8	40	1/8	90	1.33	0.17
2:36 PM	30	0	0	1/8	100	0.00	0.00
Average			15.00		90.00	0.50	0.06

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Double Ring Infiltrometer Data Reporting Sheet

Job Name:	***Spartan Organization***	Job #	**4241**
Location:	Butler Pike	Date:	12/5/2019
Township:	*Whitemarsh*	Ring #:	6
County:	*Montgomery*	Technician:	Penn's Trail Environmental
Witness:	---	Tax Parcel:	
Water Temp:	40 °F	Weather:	overcast 40°F
Test Depth:	30 inches	pH:	6.9

Time (hr:min)	**Interval (min.)**	**Inner Ring Drop (in.)**	**Inner Ring Volume change (ml)**	**Outer Ring Drop (in.)**	**Outer Ring Volume Change (ml)**	**Rate (ml/min)**	**Infiltration rate (in/hr)**
11:10 AM			fill		fill		
11:40 AM	30	1/8	40	0	0	1.33	0.17
12:10 PM	30	1/8	30	0	0	1.00	0.13
12:40 PM	30	0	0	0	0	0.00	0.00
1:10 PM	30	0	0	0	0	0.00	0.00
1:40 PM	30	0	0	0	0	0.00	0.00
2:10 PM	30	0	0	0	0	0.00	0.00
Average			0.00		0.00	0.00	0.00

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Double Ring Infiltrometer Data Reporting Sheet

Job Name:	***Spartan Organization***	Job #	**4241**
Location:	Butler Pike	Date:	12/5/2019
Township:	*Whitemarsh*	Ring #:	7
County:	*Montgomery*	Technician:	Penn's Trail Environmental
Witness:	---	Tax Parcel:	
Water Temp:	40 °F	Weather:	overcast 40°F
Test Depth:	24 inches	pH:	6.9

Time (hr:min)	**Interval (min.)**	**Inner Ring Drop (in.)**	**Inner Ring Volume change (ml)**	**Outer Ring Drop (in.)**	**Outer Ring Volume Change (ml)**	**Rate (ml/min)**	**Infiltration rate (in/hr)**
11:05 AM			fill		fill		
11:35 AM	30	0	0	0	0	0.00	0.00
12:05 PM	30	0	0	0	0	0.00	0.00
12:35 PM	30	0	0	0	0	0.00	0.00
1:05 PM	30	0	0	0	0	0.00	0.00
1:35 PM	30	0	0	0	0	0.00	0.00
2:05 PM	30	0	0	0	0	0.00	0.00
Average			0.00		0.00	0.00	0.00

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Double Ring Infiltrometer Data Reporting Sheet

Job Name:	***Spartan Organization***	Job #	**4241**
Location:	Butler Pike	Date:	12/5/2019
Township:	*Whitemarsh*	Ring #:	8
County:	*Montgomery*	Technician:	Penn's Trail Environmental
Witness:	---	Tax Parcel:	
Water Temp:	40 °F	Weather:	overcast 40°F
Test Depth:	72 inches	pH:	6.9

Time (hr:min)	**Interval (min.)**	**Inner Ring Drop (in.)**	**Inner Ring Volume change (ml)**	**Outer Ring Drop (in.)**	**Outer Ring Volume Change (ml)**	**Rate (ml/min)**	**Infiltration rate (in/hr)**
9:30 AM			fill		fill		
10:00 AM	30	1/8	80	0	0	2.67	0.35
10:30 AM	30	0	0	0	0	0.00	0.00
11:00 AM	30	0	10	0	0	0.33	0.04
11:30 AM	30	0	0	0	0	0.00	0.00
12:00 PM	30	0	0	0	0	0.00	0.00
12:30 PM	30	0	0	0	0	0.00	0.00
Average			2.50		0.00	0.08	0.01

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Double Ring Infiltrometer Data Reporting Sheet

Job Name:	***Spartan Organization***	Job #	**4241**
Location:	Butler Pike	Date:	12/5/2019
Township:	*Whitemarsh*	Ring #:	9
County:	*Montgomery*	Technician:	Penn's Trail Environmental
Witness:	---	Tax Parcel:	
Water Temp:		Weather:	overcast 40°F
Test Depth:		pH:	6.9

Time (hr:min)	Interval (min.)	Inner Ring Drop (in.)	Inner Ring Volume change (ml)	Outer Ring Drop (in.)	Outer Ring Volume Change (ml)	Rate (ml/min)	Infiltration rate (in/hr)
	DRI not run due to water inudation						

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Double Ring Infiltrometer Data Reporting Sheet

Job Name:	***Spartan Organization***	Job #	**4241**
Location:	Butler Pike	Date:	12/5/2019
Township:	*Whitemarsh*	Ring #:	10
County:	*Montgomery*	Technician:	Penn's Trail Environmental
Witness:	---	Tax Parcel:	
Water Temp:	40 °F	Weather:	overcast 40°F
Test Depth:	12 inches	pH:	6.9

Time (hr:min)	Interval (min.)	Inner Ring Drop (in.)	Inner Ring Volume change (ml)	Outer Ring Drop (in.)	Outer Ring Volume Change (ml)	Rate (ml/min)	Infiltration rate (in/hr)
11:04 AM			fill		fill		
11:34 AM	30	2/8	120	0	0	4.00	0.52
12:04 PM	30	3/8	160	2/8	160	5.33	0.69
12:34 PM	30	2/8	140	0	0	4.67	0.60
1:04 PM	30	3/8	170	1/8	90	5.67	0.73
1:34 PM	30	2/8	130	1/8	70	4.33	0.56
2:04 PM	30	2/8	130	1/8	60	4.33	0.56
Average			142.50		55.00	4.75	0.62

Penn's Trail Environmental, LLC
21 E. Lincoln Ave.-Suite 160
Hatfield, PA 19440

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Double Ring Infiltrometer Data Reporting Sheet

Job Name:	***Spartan Organization***	Job #	**4241**
Location:	Butler Pike	Date:	12/5/2019
Township:	*Whitemarsh*	Ring #:	11
County:	*Montgomery*	Technician:	Penn's Trail Environmental
Witness:	---	Tax Parcel:	
Water Temp:	40 °F	Weather:	overcast 40°F
Test Depth:	48 inches	pH:	6.9

Time (hr:min)	**Interval (min.)**	**Inner Ring Drop (in.)**	**Inner Ring Volume change (ml)**	**Outer Ring Drop (in.)**	**Outer Ring Volume Change (ml)**	**Rate (ml/min)**	**Infiltration rate (in/hr)**
10:33 AM			fill		fill		
11:03 AM	30	3 7/8	1,790	2	1,640	59.67	7.73
11:33 AM	30	3 2/8	1,530	1 6/8	1,420	51.00	6.60
11:43 AM	10	1 1/8	520	5/8	470	52.00	6.73
11:53 AM	10	1	470	5/8	490	47.00	6.09
12:03 PM	10	7/8	420	4/8	410	42.00	5.44
12:13 PM	10	7/8	420	4/8	440	42.00	5.44
Average			457.50		452.50	45.75	5.92

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Double Ring Infiltrometer Data Reporting Sheet

Job Name:	***Spartan Organization***	Job #	**4241**
Location:	Butler Pike	Date:	12/5/2019
Township:	*Whitemarsh*	Ring #:	12
County:	*Montgomery*	Technician:	Penn's Trail Environmental
Witness:	---	Tax Parcel:	
Water Temp:	40 °F	Weather:	overcast 40°F
Test Depth:	60 inches	pH:	6.9

Time (hr:min)	**Interval (min.)**	**Inner Ring Drop (in.)**	**Inner Ring Volume change (ml)**	**Outer Ring Drop (in.)**	**Outer Ring Volume Change (ml)**	**Rate (ml/min)**	**Infiltration rate (in/hr)**
10:32 AM			fill		fill		
11:02 AM	30	6	2,800	6	4,900	93.33	12.08
11:32 AM	30	6	2,800	6	4,900	93.33	12.08
11:42 AM	10	2	900	1	830	90.00	11.65
11:52 AM	10	2	900	1 2/8	1,000	90.00	11.65
12:02 PM	10	1 7/8	870	1 1/8	950	87.00	11.26
12:12 PM	10	1 6/8	830	7/8	750	83.00	10.75
Average			875.00		882.50	87.50	11.33

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Double Ring Infiltrometer Data Reporting Sheet

Job Name:	***Spartan Organization***	Job #	**4241**
Location:	Butler Pike	Date:	12/5/2019
Township:	*Whitemarsh*	Ring #:	13
County:	*Montgomery*	Technician:	Penn's Trail Environmental
Witness:	---	Tax Parcel:	
Water Temp:	40 °F	Weather:	overcast 40°F
Test Depth:	36 inches	pH:	6.9

Time (hr:min)	Interval (min.)	Inner Ring Drop (in.)	Inner Ring Volume change (ml)	Outer Ring Drop (in.)	Outer Ring Volume Change (ml)	Rate (ml/min)	Infiltration rate (in/hr)
10:31 AM			fill		fill		
11:01 AM	30	2 5/8	1,190	2 3/8	2,000	39.67	5.14
11:31 AM	30	2 3/8	1,110	2	1,680	37.00	4.79
11:41 AM	10	7/8	400	6/8	640	40.00	5.18
11:51 AM	10	5/8	310	6/8	660	31.00	4.01
12:01 PM	10	6/8	320	6/8	620	32.00	4.14
12:11 PM	10	5/8	300	6/8	570	30.00	3.88
Average			332.50		622.50	33.25	4.31

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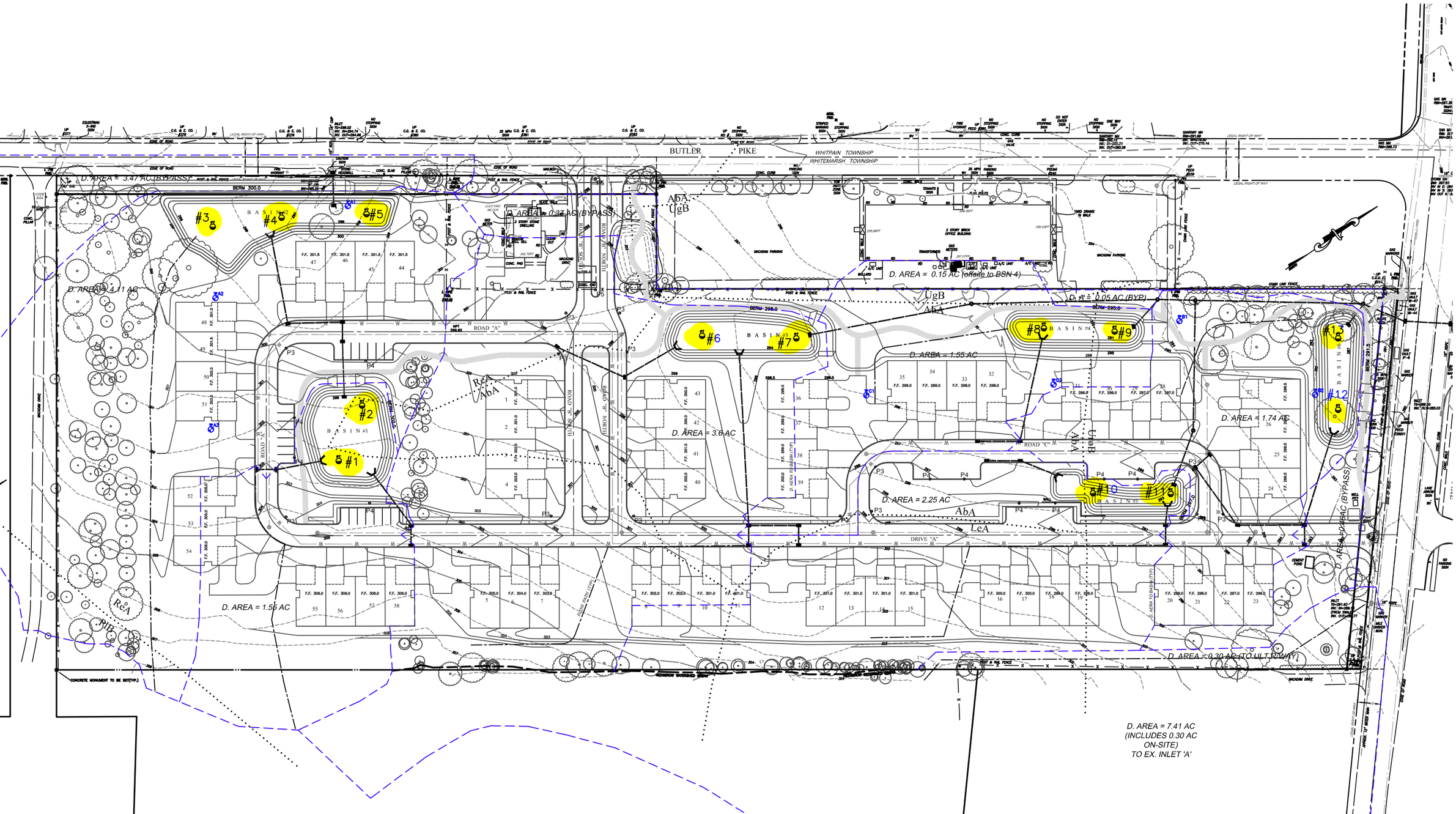

BUTLER PIKE
WHITPAIN TOWNSHIP
WHITEMARSH TOWNSHIP
D. AREA = 3.47 AC (BYPASS)
D. AREA = 0.37 AC (BYPASS)
D. AREA = 0.15 AC (offsite to BSN 4)
D. AREA = 0.05 AC (BYP)
D. AREA = 4.11 AC
D. AREA = 3.6 AC
D. AREA = 1.55 AC
D. AREA = 2.25 AC
D. AREA = 1.74 AC
D. AREA = 0.30 AC (TO ULTIMAY)
D. AREA = 7.41 AC
(INCLUDES 0.30 AC
ON-SITE)
TO EX. INLET 'A'
BASIN #1
BASIN #2
BASIN #3
BASIN #4
ROAD "A"
ROAD "B" SOUTH
ROAD "B" NORTH
ROAD "C"
DRIVE "A"
BERM 300.0
BERM 298.0
BERM 295.0
2 STORY BRICK OFFICE BUILDING
3 STORY STONE DWELLING
CONCRETE MONUMENT TO BE SET(TYP.)

APPENDIX C

-STORM SEWER COMPUTATIONS

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
52	51	22	0.51	0.51	0.78	0.40	0.40	5.0	5.0	5.4	2.15	6.46	3.40	15	1.00	299.53	299.75	300.23	300.34	303.00	303.00	6-5
51	End	47	0.00	0.51	0.00	0.00	0.40	5.0	5.1	5.4	2.14	8.73	3.46	15	1.83	298.50	299.36	299.18	299.95	291.63	303.00	5-EW4
50	49	22	0.18	0.18	0.87	0.16	0.16	5.0	5.0	5.4	0.84	6.46	3.03	15	1.00	300.28	300.50	300.61	300.87	303.75	303.75	3-2
49	End	60	0.00	0.18	0.00	0.00	0.16	5.0	5.1	5.4	0.84	10.58	1.79	15	2.68	298.50	300.11	299.53	300.48	291.63	303.75	2-EW1
48	47	22	0.23	0.23	0.77	0.18	0.18	5.0	5.0	5.4	0.96	4.57	0.94	15	0.50	297.05	297.16	298.07	298.07	299.75	299.75	23-22
47	46	50	0.23	0.46	0.85	0.20	0.37	5.0	5.1	5.4	2.00	4.57	1.69	15	0.50	296.63	296.88	297.94	297.98	300.20	299.75	22-21
46	End	75	0.33	0.79	0.84	0.28	0.65	5.0	5.2	5.3	3.46	7.47	1.97	18	0.51	296.00	296.38	297.75	297.83	291.63	300.20	21-EW20
45	44	78	0.95	0.95	0.74	0.70	0.70	5.0	5.0	5.4	3.79	4.57	3.09	15	0.50	294.96	295.35	297.12	297.39	298.40	298.60	32-31
44	End	35	0.43	1.38	0.78	0.34	1.04	5.0	5.3	5.3	5.53	8.13	3.13	18	0.60	294.50	294.71	296.86	296.96	291.63	298.40	31-EW30
43	42	17	0.33	0.33	0.35	0.12	0.12	5.0	5.0	5.4	0.62	0.00	0.51	15	-3.35	297.82	297.25	299.07	299.07	0.00	300.50	37-36
42	41	119	0.32	0.65	0.65	0.21	0.32	5.0	5.1	5.4	1.74	6.57	2.91	15	1.03	296.42	297.65	297.16	298.18	299.50	0.00	36-35
41	40	22	0.36	1.01	0.75	0.27	0.59	5.0	5.5	5.3	3.13	6.46	3.09	15	1.00	296.03	296.25	297.13	297.12	299.50	299.50	35-34
40	End	174	0.12	1.13	0.92	0.11	0.70	5.0	5.5	5.3	3.70	6.68	4.09	15	1.07	294.00	295.86	295.00	296.63	296.50	299.50	34-EW33
39	End	112	0.63	0.63	0.83	0.52	0.52	5.0	5.0	5.4	2.82	8.30	3.85	15	1.65	291.00	292.85	291.78	293.52	293.50	296.10	41-EW40
38	End	38	0.50	0.50	0.83	0.42	0.42	5.0	5.0	5.4	2.24	4.68	3.53	15	0.53	293.00	293.20	293.69	293.80	296.25	296.10	51-EW50
37	36	22	0.76	0.76	0.77	0.59	0.59	5.0	5.0	5.4	3.16	6.31	2.97	15	0.95	293.34	293.55	294.47	294.48	296.55	296.55	54-53
36	End	16	0.14	0.90	0.92	0.13	0.71	5.0	5.1	5.4	3.84	6.66	4.37	15	1.06	293.00	293.17	293.91	293.95	296.25	296.55	53-EW52
35	34	22	0.36	0.36	0.85	0.31	0.31	5.0	5.0	5.4	1.65	4.96	2.42	15	0.59	291.77	291.90	292.52	292.52	295.15	295.15	65--64
34	33	76	0.14	0.50	0.89	0.12	0.43	5.0	5.1	5.4	2.31	5.08	3.41	15	0.62	291.13	291.60	291.90	292.21	295.05	295.15	64-63
33	31	62	0.02	0.52	0.95	0.02	0.45	5.0	5.3	5.3	2.39	9.63	2.99	15	2.23	289.58	290.96	290.71	291.58	293.05	295.05	63-61
32	31	22	0.32	0.32	0.88	0.28	0.28	5.0	5.0	5.4	1.52	6.46	1.44	15	1.00	289.58	289.80	290.71	290.71	293.05	293.05	62-61
31	End	93	0.00	0.84	0.00	0.00	0.73	5.0	5.5	5.3	3.84	10.40	4.38	15	2.59	287.00	289.41	287.91	290.19	290.50	293.05	61-EW60
30	End	50	2.12	2.12	0.40	0.85	0.85	5.0	5.0	5.4	4.57	7.43	3.43	18	0.50	288.52	288.77	289.68	289.75	290.50	291.63	EX inl C-EW 'B'

17-02 Longfield Farms | Number of lines: 52 | Run Date: 04-02-2020

NOTES: Intensity = 45.68 / (Inlet time + 10.90) ^ 0.77; Return period = 10 Yrs. ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
29	28	62	0.00	0.00	0.00	0.00	0.00	49.0	49.0	0.0	2.70	6.08	2.20	15	0.89	291.45	292.00	332.60	332.71	296.00	295.25	OS5-MH76
28	19	121	0.00	0.00	0.00	0.00	0.00	0.0	49.2	0.0	2.70	8.09	2.20	15	1.57	289.38	291.28	332.36	332.57	294.00	296.00	MH76-MH73
27	25	40	0.00	0.00	0.00	0.00	0.00	35.0	35.0	0.0	5.10	5.00	4.16	15	0.60	295.06	295.30	340.72	340.97	300.50	297.00	OS2-MH78
26	24	138	0.00	0.00	0.00	0.00	0.00	61.0	61.0	0.0	0.18	9.52	0.15	15	2.17	294.50	297.50	340.18	340.18	300.50	300.75	OS1-MH77
25	24	94	0.00	0.00	0.00	0.00	0.00	1.0	35.1	0.0	5.10	4.98	4.16	15	0.60	294.50	295.06	339.91	340.50	300.50	300.50	MH78-MH77
24	22	402	0.00	0.00	0.00	0.00	0.00	1.0	61.5	0.0	5.28	4.55	4.30	15	0.50	292.50	294.50	336.97	339.66	295.50	300.50	MH77-MH75
23	22	50	0.00	0.00	0.00	0.00	0.00	47.0	47.0	0.0	5.30	7.43	3.00	18	0.50	292.25	292.50	337.12	337.25	295.50	295.50	OS3- MH75
22	20	325	0.00	0.00	0.00	0.00	0.00	1.0	62.8	0.0	10.58	9.48	5.99	18	0.82	289.38	292.03	332.91	336.21	295.00	295.50	MH75-MH74
21	20	18	0.00	0.00	0.00	0.00	0.00	59.0	59.0	0.0	0.22	4.57	0.18	15	0.50	289.41	289.50	333.47	333.47	295.00	293.25	0S4-MH74
20	19	43	0.00	0.00	0.00	0.00	0.00	1.0	63.9	0.0	10.80	7.85	6.11	18	0.56	288.97	289.21	331.86	332.31	294.00	295.00	MH74-MH73
19	17	171	0.00	0.00	0.00	0.00	0.00	1.0	64.0	0.0	13.50	13.63	7.64	18	1.68	285.92	288.80	327.80	330.62	292.00	294.00	MH73-MH72
18	17	16	0.00	0.00	0.00	0.00	0.00	50.0	50.0	0.0	1.50	4.57	1.22	15	0.50	285.92	286.00	328.68	328.69	292.00	289.50	OS6-MH72
17	16	57	0.00	0.00	0.00	0.00	0.00	5.0	64.6	0.0	15.00	10.59	8.49	18	1.02	285.17	285.75	325.30	326.46	289.10	292.00	MH72-71
16	14	48	0.67	0.67	0.76	0.51	0.51	5.0	64.8	1.6	15.82	7.43	8.95	18	0.50	284.76	285.00	323.46	324.55	288.86	289.10	71-70
15	14	96	0.11	0.11	0.85	0.09	0.09	5.0	5.0	5.4	0.50	7.03	0.29	18	0.45	284.60	285.03	324.71	324.71	288.86	289.50	ex I- 100-70
14	13	97	0.09	0.87	0.80	0.07	0.67	5.0	64.9	1.6	16.09	6.99	9.11	18	0.44	284.17	284.60	319.21	321.48	288.22	288.86	70-ex I-101
13	11	55	0.14	1.01	0.86	0.12	0.80	5.0	65.3	1.6	16.28	8.26	9.21	18	0.62	283.70	284.04	317.19	318.52	287.88	288.22	ex 101-ex MH 1B
12	11	56	3.34	3.34	0.66	2.20	2.20	16.6	16.6	3.5	7.79	10.12	4.41	18	0.93	283.70	284.22	318.21	318.52	287.88	287.82	ex 1A-ex MH 1B
11	9	115	0.30	4.65	0.74	0.22	3.22	5.0	65.5	1.6	20.17	12.84	11.42	18	1.50	281.98	283.70	310.22	314.46	285.13	287.88	ex MH1-B-ex MH-
10	9	14	0.16	0.16	0.90	0.14	0.14	5.0	5.0	5.4	0.78	9.52	0.40	15 x 24 e	0.64	282.08	282.17	312.24	312.24	285.13	284.38	ex INL-9 - ex MH-
9	8	63	0.00	4.81	0.00	0.00	3.37	5.0	65.8	1.6	20.38	12.20	11.54	18	1.35	281.13	281.98	305.73	308.11	283.69	285.13	ex MH2-ex INL(M
8	7	111	0.01	4.82	0.95	0.01	3.38	5.0	66.0	1.6	20.39	10.31	11.54	18	0.96	279.95	281.02	300.51	304.70	282.54	283.69	ex IN I-3- INL I-8

17-02 Longfield Farms | Number of lines: 52 | Run Date: 04-02-2020

NOTES: Intensity = 45.68 / (Inlet time + 10.90) ^ 0.77; Return period = 10 Yrs. ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
7	6	93	0.06	4.88	0.95	0.06	3.43	5.0	66.4	1.6	20.46	10.04	11.58	18	0.91	279.06	279.91	295.93	299.46	281.71	282.54	ex INL-8-MH-4
6	2	52	0.00	4.88	0.00	0.00	3.43	5.0	66.7	1.6	20.44	16.08	11.57	18	2.35	277.84	279.06	291.88	293.85	282.24	281.71	ex MH-4-MH-5
5	2	57	0.13	0.13	0.81	0.11	0.11	5.0	5.0	5.4	0.57	2.98	0.72	12	0.70	277.84	278.24	293.95	293.96	282.24	281.47	ex In I-7 - ex MH-
4	3	38	0.00	0.00	0.00	0.00	0.00	5.0	5.0	0.0	6.20	7.43	3.51	18	0.50	274.57	274.76	284.83	284.96	280.14	280.04	OS-1-ex MH1
3	1	110	0.00	0.00	0.00	0.00	0.00	5.0	5.1	0.0	6.20	7.43	3.51	18	0.50	274.02	274.57	284.28	284.67	277.77	280.14	ex MH1-INL6
2	1	152	0.00	5.01	0.00	0.00	3.54	5.0	66.9	1.6	20.60	16.65	11.66	18	2.51	274.02	277.84	284.28	290.13	277.77	282.24	ex-MH-5 - INL-6
1	End	88	0.23	5.24	0.92	0.21	3.75	5.0	67.4	1.6	27.10	16.18	15.34	18	2.37	271.93	274.02	273.43	279.29	274.24	277.77	ex IN I-6 - ex PIP

17-02 Longfield Farms | Number of lines: 52 | Run Date: 04-02-2020

NOTES: Intensity = 45.68 / (Inlet time + 10.90) ^ 0.77; Return period = 10 Yrs. ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp line No
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
52	6	2.15	0.00	1.55	0.59	Grate	0.0	0.00	0.00	3.00	2.00	0.022	2.00	0.050	0.020	0.013	0.20	7.00	0.20	7.00	0.0	51
51	5	0.00	0.59	0.58	0.02	Grate	0.0	0.00	0.00	3.00	2.00	0.022	2.00	0.050	0.020	0.013	0.13	3.65	0.13	3.65	0.0	Off
50	3	0.84	0.00	0.73	0.11	Grate	0.0	0.00	0.00	3.00	2.00	0.012	2.00	0.050	0.020	0.013	0.16	5.20	0.16	5.20	0.0	49
49	2	0.00	0.11	0.11	0.00	Grate	0.0	0.00	0.00	3.00	2.00	0.012	2.00	0.050	0.020	0.013	0.08	1.62	0.08	1.62	0.0	Off
48	23	0.96	0.00	0.96	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.13	3.36	0.13	3.36	0.0	Off
47	22	1.05	0.00	1.05	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.14	3.80	0.14	3.80	0.0	Off
46	21	1.50	0.00	1.10	0.40	Grate	0.0	0.00	0.00	3.00	2.00	0.005	2.00	0.050	0.020	0.013	0.23	8.30	0.23	8.30	0.0	Off
45	32	3.79	0.00	2.19	1.60	Grate	0.0	0.00	0.00	3.00	2.00	0.010	2.00	0.050	0.020	0.013	0.27	10.55	0.27	10.55	0.0	44
44	31	1.81	1.60	3.41	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.30	11.87	0.30	11.87	0.0	Off
43	37	0.62	0.00	0.62	0.00	Grate	0.0	0.00	4.40	4.00	2.00	Sag	2.00	0.050	0.020	0.000	0.09	1.75	0.09	1.75	0.0	Off
42	36	1.12	0.00	0.96	0.16	Grate	0.0	0.00	0.00	4.00	2.00	0.013	2.00	0.050	0.020	0.013	0.18	5.90	0.18	5.90	0.0	41
41	35	1.46	0.16	1.62	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.18	6.06	0.18	6.06	0.0	Off
40	34	0.60	0.00	0.54	0.05	Grate	0.0	0.00	0.00	3.00	2.00	0.010	2.00	0.050	0.020	0.013	0.15	4.55	0.15	4.55	0.0	Off
39	41	2.82	0.00	2.82	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.26	10.10	0.26	10.10	0.0	Off
38	51	2.24	0.00	2.24	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.22	8.23	0.22	8.23	0.0	Off
37	54	3.16	0.00	1.93	1.23	Grate	0.0	0.00	0.00	3.00	2.00	0.010	2.00	0.050	0.020	0.013	0.26	9.80	0.26	9.80	0.0	36
36	53	0.69	1.23	1.35	0.57	Grate	0.0	0.00	0.00	3.00	2.00	0.010	2.00	0.050	0.020	0.013	0.22	7.95	0.22	7.95	0.0	Off
35	65	1.65	0.00	1.65	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.18	6.17	0.18	6.17	0.0	Off
34	64	0.67	0.00	0.67	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.10	2.03	0.10	2.03	0.0	Off
33	63	0.10	0.00	0.10	0.00	Grate	0.0	0.00	0.00	3.00	2.00	0.025	2.00	0.050	0.020	0.013	0.07	1.36	0.07	1.36	0.0	31
32	62	1.52	0.00	1.24	0.28	Grate	0.0	0.00	0.00	3.00	2.00	0.029	2.00	0.050	0.020	0.013	0.17	5.60	0.17	5.60	0.0	31
31	61	0.00	0.28	0.28	0.00	Grate	0.0	0.00	0.00	3.00	2.00	0.029	2.00	0.050	0.020	0.013	0.10	1.92	0.10	1.92	0.0	Off
30	ex. INLET 'C'	4.57	0.00	4.57	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.36	15.09	0.36	15.09	0.0	Off

17-02 Longfield Farms | Number of lines: 52 | Run Date: 04-02-2020

NOTES: Inlet N-Values = 0.013 ; Intensity = 45.68 / (Inlet time + 10.90) ^ 0.77; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp line No
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
29	OS5	2.70*	0.00	2.70	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.25	9.73	0.25	9.73	0.0	Off
28	MH76	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
27	OS2	5.10*	0.00	5.10	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.39	16.45	0.39	16.45	0.0	Off
26	OS1	0.18*	0.00	0.18	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.04	0.84	0.04	0.84	0.0	Off
25	MH78	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
24	MH77	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
23	OS3	5.30*	0.00	5.30	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.40	16.96	0.40	16.96	0.0	Off
22	MH75	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
21	OS4	0.22*	0.00	0.22	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.05	0.96	0.05	0.96	0.0	Off
20	MH74	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
19	MH73	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
18	OS6	1.50*	0.00	1.50	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.17	5.60	0.17	5.60	0.0	Off
17	MH72	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
16	71	2.75	0.00	1.80	0.95	Grate	0.0	0.00	0.00	3.00	2.00	0.015	2.00	0.050	0.020	0.013	0.23	8.50	0.23	8.50	0.0	14
15	ex INL-100	0.50	0.00	0.50	0.00	Grate	0.0	0.00	0.00	3.00	2.00	0.012	14.00	0.042	0.042	0.013	0.13	3.17	0.13	3.17	0.0	14
14	70	0.39	0.95	1.07	0.27	Grate	0.0	0.00	0.00	3.00	2.00	0.015	2.00	0.050	0.020	0.013	0.18	6.20	0.18	6.20	0.0	13
13	ex INL-101	0.65	0.27	0.92	0.00	Grate	0.0	0.00	0.00	3.00	2.00	0.002	14.00	0.039	0.039	0.013	0.23	5.77	0.23	5.77	0.0	11
12	ex INL 1-A	7.79	0.00	7.79	0.00	Grate	0.0	0.00	4.40	3.00	2.00	Sag	2.00	0.050	0.020	0.000	0.52	22.80	0.52	22.80	0.0	Off
11	ex ST MH 1B	1.20	0.00	0.00	1.20	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
10	ex INL-9	0.78	0.00	0.70	0.07	Grate	0.0	0.00	0.00	3.00	2.00	0.019	2.00	0.050	0.020	0.013	0.15	4.40	0.15	4.40	0.0	9
9	ex MH-2	0.00	0.07	0.00	0.07	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
8	ex INL (MH-3)	0.05	0.00	0.05	0.00	Grate	0.0	0.00	0.00	3.00	2.00	0.012	2.00	0.050	0.020	0.013	0.06	1.20	0.06	1.20	0.0	7
7	ex INL-8	0.31	0.00	0.31	0.00	Grate	0.0	0.00	0.00	3.00	2.00	0.012	2.00	0.050	0.020	0.013	0.12	2.85	0.12	2.85	0.0	6

17-02 Longfield Farms | Number of lines: 52 | Run Date: 04-02-2020

NOTES: Inlet N-Values = 0.013 ; Intensity = 45.68 / (Inlet time + 10.90) ^ 0.77; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp line No
							Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
6	ex MH-4	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
5	ex INL-7	0.57	0.00	0.57	0.00	Grate	0.0	0.00	4.40	3.88	2.00	Sag	2.00	0.050	0.020	0.000	0.08	1.66	0.08	1.66	0.0	Off
4	ex OS1	6.20*	0.00	6.20	0.00	Hdwl	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
3	ex MH-1	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
2	ex MH-5	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off
1	ex INL I-6	1.14	0.00	1.14	0.00	Grate	0.0	0.00	0.55	1.00	2.00	Sag	2.00	0.050	0.020	0.000	0.18	5.97	0.18	5.97	0.0	Off

17-02 Longfield Farms | Number of lines: 52 | Run Date: 04-02-2020

NOTES: Inlet N-Values = 0.013 ; Intensity = 45.68 / (Inlet time + 10.90) ^ 0.77; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

APPENDIX D

SEDIMENT TRAPS
RIP-RAP CHART

STANDARD E & S WORKSHEET #19
Sediment Trap Design Data

PROJECT NAME: 17-02 Longfield Farm
LOCATION: Whitemarsh Twp
PREPARED BY: ET Eberhardt **DATE:**
CHECKED BY: **DATE:**

TRAP NUMBER	A	B
DRAINAGE AREA (5 ACRES MAX) (AC)	5.0	4.1
REQUIRED CAPACITY (2,000 CF/AC) (CF) CAPACITY PROVIDED AT ELEVATION **h** (CF)	10000	8200
SOIL TYPES IN DRAINAGE AREA	SILT LOAM	SILT LOAM
REQUIRED SURFACE AREA (5,300 x AC)[1] (SQ. FT)	NA	NA
* AVERAGE BOTTOM LENGTH (FT)		
* AVERAGE BOTTOM WIDTH (FT)		
* AVERAGE TRAP LENGTH AT ELEVATION **h** (FT)		
* AVERAGE TRAP WIDTH AT ELEVATION **h** (FT)		
SURFACE AREA AT ELEVATION **h** (SQ FT)		
BOTTOM ELEVATION (FT)	297.0	295.0
CLEAN-OUT ELEVATION-**COE** (@ 700 CF/AC)[2] (FT)	298.0	296.0
TOP OF EMBANKMENT ELEVATION[3] (FT)	300.0	298.0
EMBANKMENT HEIGHT (FT) **H**	3.0	3.0
CREST OF SPILLWAY ELEVATION[4] (FT) **h+COE**	299.0	297.0
FLOW LENGTH AT ELEVATION **h** (FT)		
FLOW LENGTH/WIDTH RATIO AT ELEV. **h**[5] (2:1 MIN)	NA	NA

1 If sandy clays, silty clays, silty clay loams, clay loams, or clays predominate soil types.
2 Minimum 12" above bottom of trap
3 Minimum 12" above elevation at which 1.5 cfs/acre discharge capacity is provided.
4 Minimum 24" above bottom of trap
5 4:1 Flow Length:Width ratio required for HQ and EV watersheds.

EMBANKMENT SPILLWAYS

OUTLET WIDTH (2 x # ACRES MIN.)1 (FT)	10	8
SPILLWAY HEIGHT h (FT)	2.0	2.0
OUTLET SIDE SLOPES (2H:1V MAX.)	3:1	3:1
SPILLWAY OUTSIDE SLOPE Z1 (2 MIN.)	3	3
SPILLWAY INSIDE SLOPE Z2 (2 MIN.)	3	3

1 6 x # Acres Min. if not discharging directly to a waterway

RISER PIPE SPILLWAYS

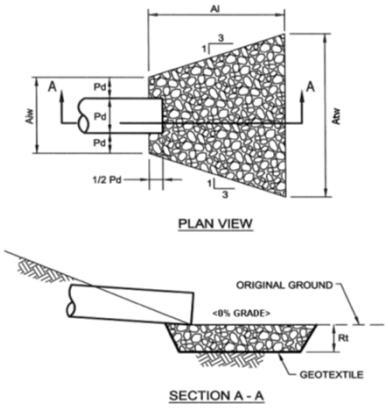
Dr (RISER DIAMETER, 8" MIN.) (IN)		
Db (BARREL DIAMETER, 6" MIN.) (IN)		
SPILLWAY CAPACITY WITH 12" FREEBOARD(CFS)		
BARREL OUTLET ELEVATION (FT)		
MAX WATER SURFACE ELEVATION (@ 1.5 CFS/AC. DISCHARGE) (FT)		

OUTLET BASIN

LENGTH (6 Db)	(FT)	na	na
WIDTH (3 Db)	(FT)		
DEPTH (Db)	(FT)		
RIPRAP PROTECTION	(R-Size, R-3 min., d50 = 3")		

STANDARD E&S WORKSHEET # 20
Riprap Apron Outlet Protection

PROJECT NAME: 17-02 Longfield Farm
LOCATION: Whitemarsh
PREPARED BY: ET Eberhardt **DATE:**
CHECKED BY: **DATE:**



OUTLET NO.	PIPE DIA. Do (in.)	TAILWATER CONDITION (Max or Min)	MANNINGS 'n' FOR PIPE	PIPE SLOPE (ft/ft)	100-YR Q (CFS)	PARTIAL V* (FPS)	RIPRAP SIZE (R-_)	RIPRAP THICK Rt (in)	RIPRAP LENGTH Al(ft)	INITIAL WIDTH Aiw(ft)	TERMINAL WIDTH (ft) Atw*
1	15	MAX	0.012	0.0268	1.1	5.7	4	18	6	3.8	9.8
4	15	MAX	0.012	0.0183	2.9	6.4	4	18	6	3.8	9.8
20	18	MAX	0.012	0.0051	4.6	4.4	4	18	8	4.5	12.5
30	18	MAX	0.012	0.0060	7.4	5.2	4	18	8	4.5	12.5
33	15	MAX	0.012	0.017	4.9	7.0	4	18	6	3.8	9.8
40	15	MAX	0.012	0.0165	3.8	6.6	4	18	6	3.8	9.8
50	15	MAX	0.012	0.0259	6.5	7.1	4	18	6	3.8	9.8
52	15	MAX	0.012	0.0106	5.2	6.0	4	18	6	3.8	9.8
60	15	MAX	0.012	0.025	5.1	8.3	4	18	6	3.8	9.8

*:The anticipated velocity (V) should not exceed the maximum permissible shown in Table 6.6
for the proposed riprap protection. Adjust for less than full pipe flow. Use Manning's equation to calculate velocity for pipe slopes > 0.05 ft/ft.
Rip-rap size: Use a minimum of R-4 as recommended by conservation district

TABLE 6.6
Riprap Gradation, Filter Blanket Requirements, Maximum Velocities

Class Size, No / Rock size (inches)	R-8	R-7	R-6	R-5	R-4	R-3
42	100					
30		100				
24	15-50		100			
18		15-50		100		
15	0-15					
12		0-15	15-50		100	
9				15-50		
6			0-15		15-50	100
4				0-15		
3					0-15	15-50
2						0-15
Placement Thickness	63	45	36	27	18	9
Filter Stone(1)	AASHTO #1	AASHTO #1	AASHTO #1	AASHTO #1	AASHTO #1	AASHTO #1
Vmax (ft/sec)	17.0	14.5	13.0	11.5	9.0	6.5

Adapted from PennDOT Pub. 408, Section 703.2(c), Table C
(1) This is a general standard. Soil conditions at each site should be analyzed to determine actual filter size.
A suitable woven or non-woven geotextile underlayment, used according to the manufacturer's recommendations,
may be substituted for the filter stone for gradients < 10%.

Transportation Impact Assessment

Longfield Farms
Whitemarsh Township
Montgomery County, PA

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SPARX18001

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SUMMARY

Pennoni has prepared this document to summarize the trip generation and traffic operations associated with a proposed residential development to be located on the southeastern quadrant of Skippack Pike (SR 0073) & Butler Pike, in Whitemarsh Township, Montgomery County PA. As shown on the proposed site plan, the project consists of developing fifty-eight (58) residential units. To identify the impacts of the proposed site plan, Pennoni analyzed traffic operations at the following intersections:

- Skippack Pike (SR 0073) & Butler Pike
- Butler Pike & Broad Axe Tavern Driveway
- Butler Pike & Phil's Tavern Driveway
- Butler Pike & Splitrail Lane
- Butler Pike & Norristown Road (SR 3001)

This analysis includes:

- Evaluation of Existing Conditions;
- Forecast of 2022 (Opening Year) background conditions with expected regional background growth and other known area projects, but without the proposed development;
- AM peak hour & PM peak hour trip generation estimates for the proposed development;
- Trip Distribution to the local roadway network;
- Forecast of 2022 (Opening Year) conditions with the proposed development;
- Detailed evaluation of peak hour traffic conditions using the methodology prescribed in the Highway Capacity Manual (2010, where applicable) for existing and future conditions;

The location of the proposed project is shown in Figure S1. The anticipated weekday morning and afternoon peak hour vehicular trip generation based upon the proposed site use and size is shown in Table S1.

Figure S1: Site Location
(Source: Google Earth)

TABLE S1: PROPOSED TRIP GENERATION SUMMARY

Use	Size	ITE LU Code (1)	Trip Type	AM Peak Hour Trips			PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
Residential	58 Units	220 – Multi-Family Housing (Low-Rise)	**Site Trips**	7	21	28	23	13	36
			Pass-by Trips	0	0	0	0	0	0
			Internal Trips	0	0	0	0	0	0
			External Trips	**7**	**21**	**28**	**23**	**13**	**36**

(1) ITE Trip Generation Manual, 10th Edition, using Fitted Curve Equation as directed by Whitemarsh Township

In summary, the impact of the proposed development results in an increase of less than 10 seconds in overall average delay at each study area intersection, and the study intersections under the 'build' condition with the proposed development operate at the same Level of Service as under the 'no-build' condition without the proposed development. Therefore, no improvements to the roadway network are required.

INTRODUCTION

Pennoni has prepared this document to summarize the vehicular trip generation and traffic operations impact associated with a proposed residential development to be located on the southeastern quadrant of Skippack Pike (SR 0073) & Butler Pike, in Whitemarsh Township, Montgomery County PA. As shown on the proposed site plan, the project consists of developing fifty-eight (58) residential units.

The proposed development of the Longfield Farms Residential Development will require the approval of two (2) new access points, which will consist of a full-movement unsignalized driveway on Butler Pike (County Roadway), and a right-turn entrance/right-turn exit driveway (no left-turns in, no left-turns out) to Skippack Pike (SR 0073). Figure 1 shows the location of the property in relation to the surrounding area. Figure 2 shows the current concept plan for the proposed development.

Scope of Study

As outlined by the Pennsylvania Department of Transportation (PennDOT) criteria and Whitemarsh Township Ordinance, a Transportation Impact Assessment is required for the proposed development, which evaluates the study area listed below. The study area intersections, design years, and technical methodology required are included in this report.

Study Area

The study area that was evaluated for this Transportation Impact Assessment includes the following intersections:

1. Skippack Pike (SR 0073) & Butler Pike
2. Butler Pike & Broad Axe Tavern Driveway
3. Butler Pike & Phil's Tavern Driveway
4. Butler Pike & Splitrail Lane
5. Butler Pike & Norristown Road (SR 3001)

Figure 1: Site Location
(Source: Google Earth)

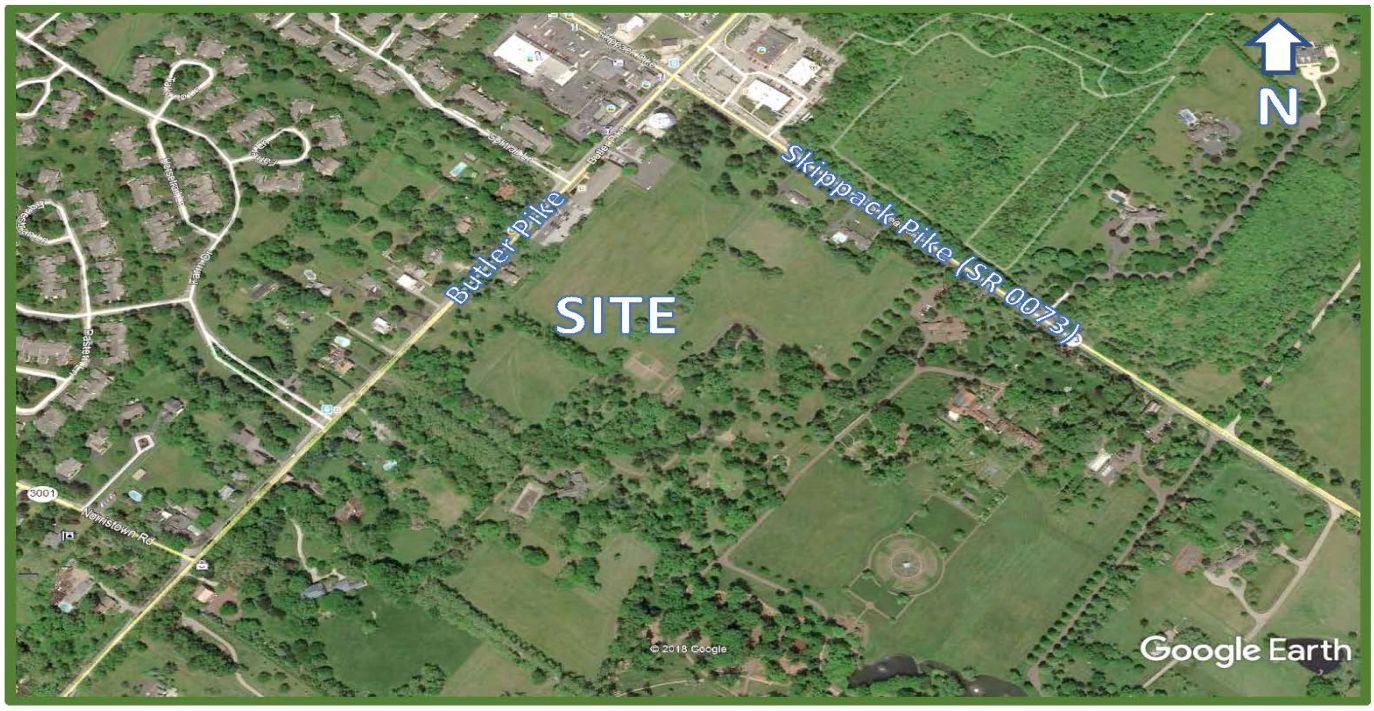
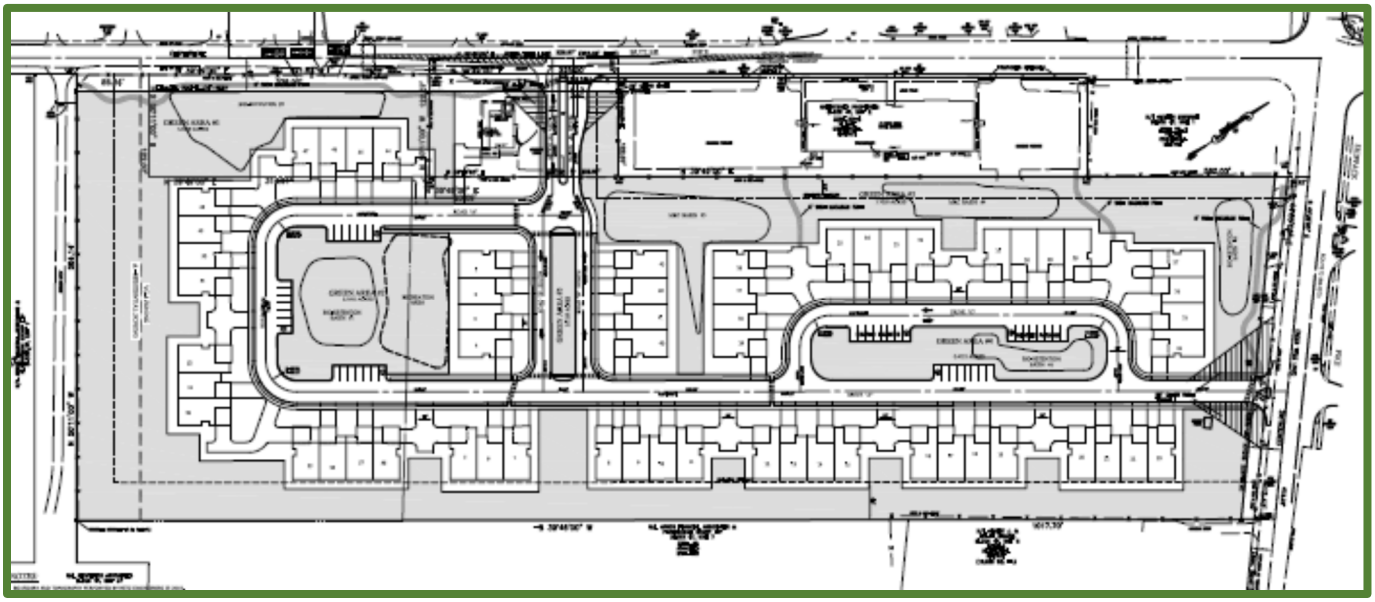


Figure 2: Proposed Site Plan



Study Methodology

The analysis included:

- Obtaining current turning movement counts at the subject intersections, including AM Peak and PM Peak weekday counts;
- Reviewing local traffic activities with the anticipated build-out year of 2022 to develop future traffic forecasts and long-term conditions.
- Estimating AM peak hour, and PM peak hour trips generated by the proposed project.
- Documenting the anticipated trip distribution and operational conditions at the proposed site driveways.

Comprehensive & Transportation Plans

According to the Township website, Whitemarsh Township is currently in the process of updating the Township Comprehensive Plan. We would note that the proposed development is aligned with the goals of the Township, which include implementing development that will limit the amount of new traffic to be generated on the adjacent roadway network.

In addition, we would note that Whitemarsh Township has adopted a Transportation Impact Fee Ordinance, in accordance with PA Act 209 of 1990, and has established two (2) separate Transportation Service Areas. The proposed development is in the northern Transportation Service Area, where it appears that the latest approved Fee is $2,825.00 per new PM Peak Hour trip.

Planned Improvements

There are no known planned improvements to the roadway network in the study area vicinity.

EXISTING CONDITIONS

The Longfield Farms site is located on the southeastern quadrant of the intersection of Skippack Pike (SR 0073) and Butler Pike, in Whitemarsh Township, Montgomery County, Pennsylvania. The street network near the site is described below:

- *Skippack Pike (SR 0073),* within the study area, provides one lane in each direction and is predominantly oriented in an east-west direction. The roadway is posted at 45 mph. There is no parking along either side of the roadway, and existing sidewalks are located on the south side of the roadway, east of Butler Pike, for a length of approximately 560' (along the Broad Axe Tavern and adjacent shopping center) and on the north side of the roadway, west of Butler Pike for a length of approximately 415' (along an office building and its associated parking lot). The intersection of Skippack Pike & Butler Pike is signalized and provides auxiliary (left-turn) lanes on each approach, and a westbound right-turn lane, and a recently constructed southbound right-turn lane.

- *Butler Pike (County Road),* within the study area, provides one lane in each direction and is predominantly oriented in a north-south direction. The roadway is posted at 35 mph. There is no parking on either side of the roadway, and existing sidewalks are located on the east side of the roadway south of Skippack Pike, for a length of approximately 215' along the subject property (along the frontage of the existing office building), and also on the east side of the roadway north of Skippack Pike, for a length of approximately 395' (along the CVS and adjacent office building parking lot).

- *Norristown Road (SR 3001),* within the study area, provides one lane in each direction and is predominantly oriented in an east-west direction. The roadway is posted at 40 mph. Norristown Road intersects Butler Pike at a 3-leg intersection south of Skippack Pike, which is controlled by a traffic signal.

Existing Traffic Volumes

To assess the existing traffic patterns, Pennoni obtained turning movement counts on Thursday December 20, 2018 during the AM peak period from 7:00 to 9:00 AM and during the PM peak period from 4:00 to 6:00 PM at the primary study intersections. Historic data was utilized for the Broad Axe Tavern and Phil's Tavern driveways along Butler Pike.

The peak hours were determined to start at 7:45 AM and 4:45 PM. The count data is included in Appendix A and the summary of the intersection traffic movement counts during the AM and PM peak hours are shown in Figure 3.

Public Transportation

There are several SEPTA bus routes that serve Whitemarsh Township, although the routes currently do not provide service near the site. It appears that the closest transit service is provided by Septa Bus Routes 27 and 97, which provide service to the south of the site along Germantown Pike and Ridge Pike.

Existing Traffic Operations

INTERSECTION LEVEL OF SERVICE CRITERIA

Based on the Highway Capacity Manual methodologies for intersection and roadways, Pennoni utilized the Level of Service (LOS) grades for intersection to measure the performance of the transportation facilities. LOS is a measure of vehicle operator delay with the overall driving experience through a facility. Performance is quantified with designations of LOS 'A' through 'F' based on the average control delay (given in seconds per vehicle) per lane group and the overall intersection. These LOS designations describe the performance of the intersection from the motorist's perspective, with LOS 'A' representing free flowing conditions and LOS 'F' representing congested conditions. Delay is the additional travel time experienced by a driver, passenger, or pedestrian. Control delay results when a traffic control device (such as a traffic signal) causes a lane group to reduce speed or to stop; it is measured in comparison with an uncontrolled condition.

A summary of the LOS criteria is shown in Appendix B. For rural conditions, a LOS "C" is preferred. For urban conditions, average delay at LOS "D" standards are considered acceptable.

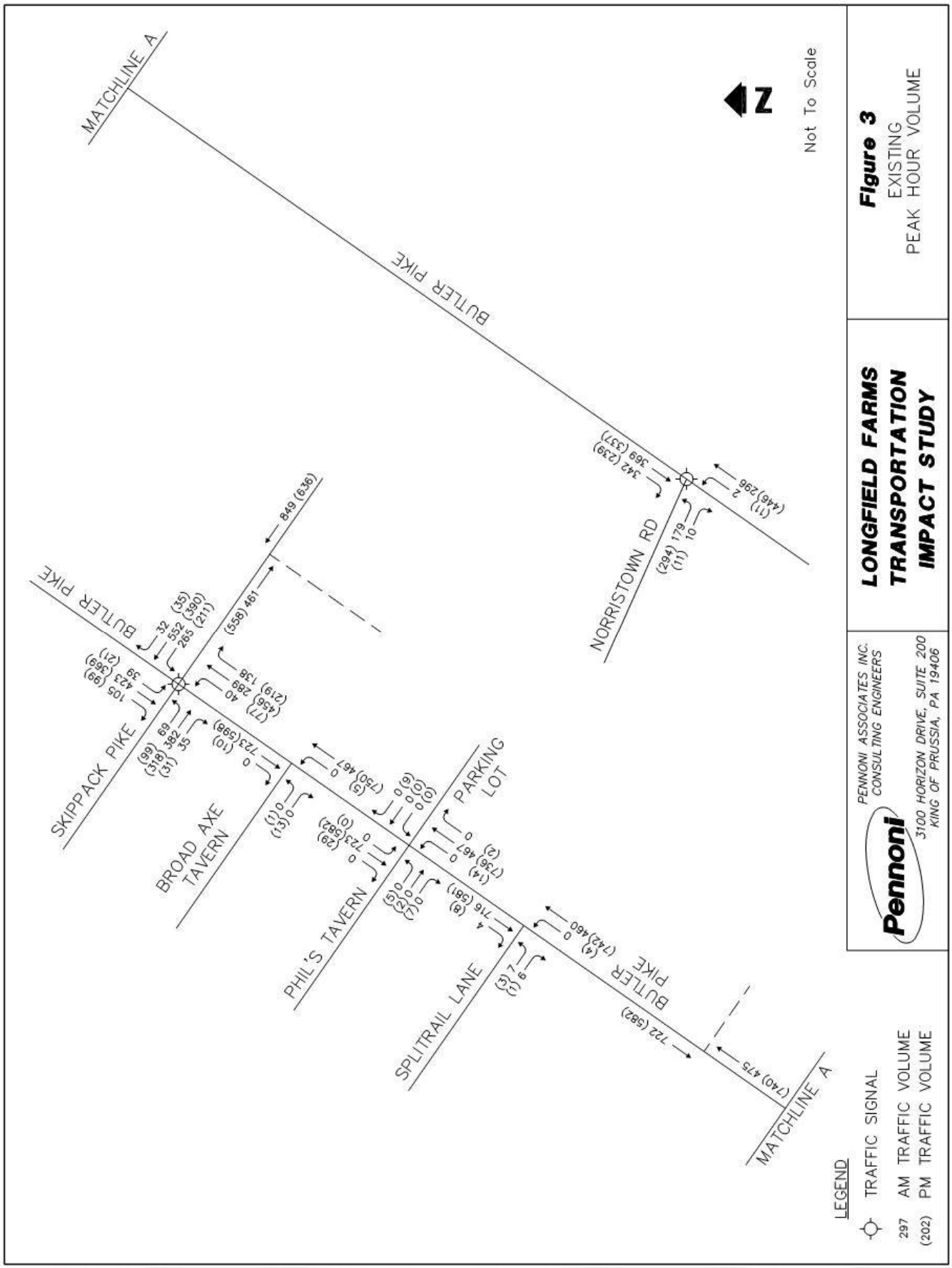
EXISTING LEVELS OF SERVICE (LOS)

In order to evaluate the existing weekday AM and PM peak hour operational conditions at the key study area intersections, the existing lane configurations and existing traffic signal phasing and timing were used. The existing traffic signal plans for the key study area intersections are included in Appendix C.

The LOS by lane group, approach, and overall grade for each of the study intersections for the weekday AM and PM peak hours for the existing conditions are shown on Table 2.

Under existing conditions, the intersection of Skippack Pike (SR 0073) and Butler Pike operates at an overall LOS 'D' during the morning peak hour and an overall LOS 'E' during the afternoon peak hour, and the intersection of Butler Pike & Norristown Road operates at a LOS 'B' during both peak hours.

The overall Existing Conditions Synchro calculation worksheets are in Appendix E.


MATCHLINE A
BUTLER PIKE
NORRISTOWN RD
SKIPPACK PIKE
BROAD AXE TAVERN
PHIL'S TAVERN
PARKING LOT
SPLITRAIL LANE
BUTLER PIKE
MATCHLINE A
N
Not To Scale
LEGEND
TRAFFIC SIGNAL
297 AM TRAFFIC VOLUME
(202) PM TRAFFIC VOLUME
Figure 3
EXISTING
PEAK HOUR VOLUME
LONGFIELD FARMS
TRANSPORTATION
IMPACT STUDY
PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
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KING OF PRUSSIA, PA 19406
Pennoni

FUTURE BACKGROUND CONDITIONS WITHOUT SITE DEVELOPMENT ('No-Build')

Future 2022 traffic volume (or "Background") scenarios represent the future traffic conditions in the study area, without the development of the proposed site. The 2022 background conditions are used as a 'baseline' for comparison with the build-out analysis with the site.

Background Growth & Other Area Development Projects

An evaluation of opening year traffic conditions must account for the traffic volume increases that are expected to occur throughout the region over this period. Typically, this calculation will include both regionally expected growth, as well as other specifically known development projects within the area that will increase traffic volumes on the study area roadways.

Based upon information received from Whitemarsh Township, there is only one other pending development project in the immediate area that will impact traffic volumes on Skippack Pike (SR 0073) or Butler Pike near the proposed development. This project is located on the northwest corner of the intersection of Skippack Pike (SR 0073) & Butler Pike in Whitpain Township (known as 1 & 11 Skippack Pike). This development will include retail and restaurant uses that will have different traffic characteristics and peak use times than the proposed Longfield Farm residential development in Whitemarsh. The additional traffic that will be generated by this development has been included in the year 2022 background traffic volume for this study. Specific information regarding this project is included in Appendix D.

Additionally, to account for traffic volume increases from other regional growth, the existing traffic volumes were increased by an annual growth factor of 0.57% based on the latest information provided by the PENNDOT Bureau of Planning and Research. Therefore, traffic volumes were developed for a 2022 opening year using a 1.023% growth rate (0.57% per year for 4 years).

'No-Build' Condition Traffic Volumes

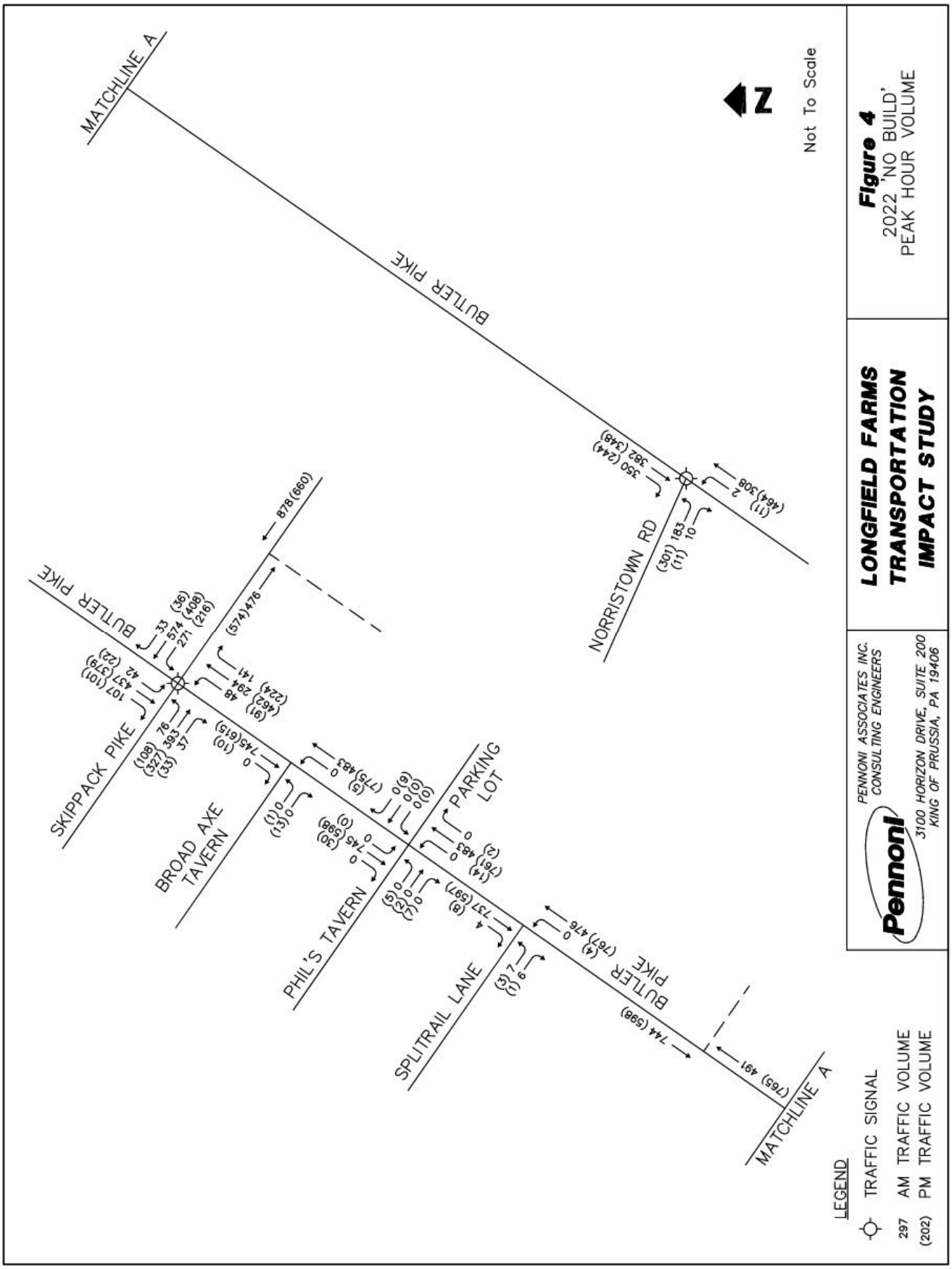
To quantify changes in the site access, the site trips are not included in the short-term or long-term background traffic volumes. Traffic volumes are summarized in Figure 4 for the 2022 conditions without the site for the AM peak hour and PM peak hour conditions.

'No-Build' Condition Traffic Operations

Existing peak hour factors and heavy vehicle percentages were utilized for the analysis.

FUTURE LEVEL OF SERVICE WITHOUT SITE DEVELOPMENT

The LOS by lane group, approach, and overall grade for the study intersection for the weekday AM and PM peak hours for the 2022 'no-build' conditions (without the site) are shown on Table 2. The analyses indicate that the intersection of Skippack Pike (SR 0073) and Butler Pike will operate at a LOS 'D' during both the morning and afternoon peak hours with optimized traffic signal timing. The intersection of Butler Pike & Norristown Road is expected to operate at a LOS 'B' during both peak hours. The Synchro calculation worksheets for the Background 2022 Conditions Without the proposed development are in Appendix F.


MATCHLINE A
BUTLER PIKE
NORRISTOWN RD
SKIPPACK PIKE
BROAD AXE TAVERN
PHIL'S TAVERN
SPLITRAIL LANE
PARKING LOT
BUTLER PIKE
MATCHLINE A
Not To Scale
LEGEND
TRAFFIC SIGNAL
297 AM TRAFFIC VOLUME
(202) PM TRAFFIC VOLUME
Figure 4
2022 'NO BUILD'
PEAK HOUR VOLUME
LONGFIELD FARMS
TRANSPORTATION
IMPACT STUDY
PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3100 HORIZON DRIVE, SUITE 200
KING OF PRUSSIA, PA 19406

SITE TRAFFIC

Site Trip Generation

The Institute of Transportation Engineers (ITE) *Trip Generation (10th Edition)* Manual was utilized to calculate the peak hour vehicular traffic anticipated to be generated by the proposed development, as summarized below in **Table 1**.

INTERNAL AND PASS-BY TRIPS

As the proposed development is residential in nature, no internal or pass-by trips were considered as part of the proposed trip generation calculations.

TABLE 1: PROPOSED TRIP GENERATION SUMMARY

Use	Size	ITE LU Code (1)	Trip Type	AM Peak Hour Trips			PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
Residential	58 Units	220 – Multi-Family Housing (Low-Rise)	**Site Trips**	7	21	28	23	13	36
			Pass-by Trips	0	0	0	0	0	0
			Internal Trips	0	0	0	0	0	0
			External Trips	**7**	**21**	**28**	**23**	**13**	**36**

(1) ITE Trip Generation Manual, 10th Edition, using Fitted Curve Equation as directed by Whitemarsh Township

Access Driveway Configuration

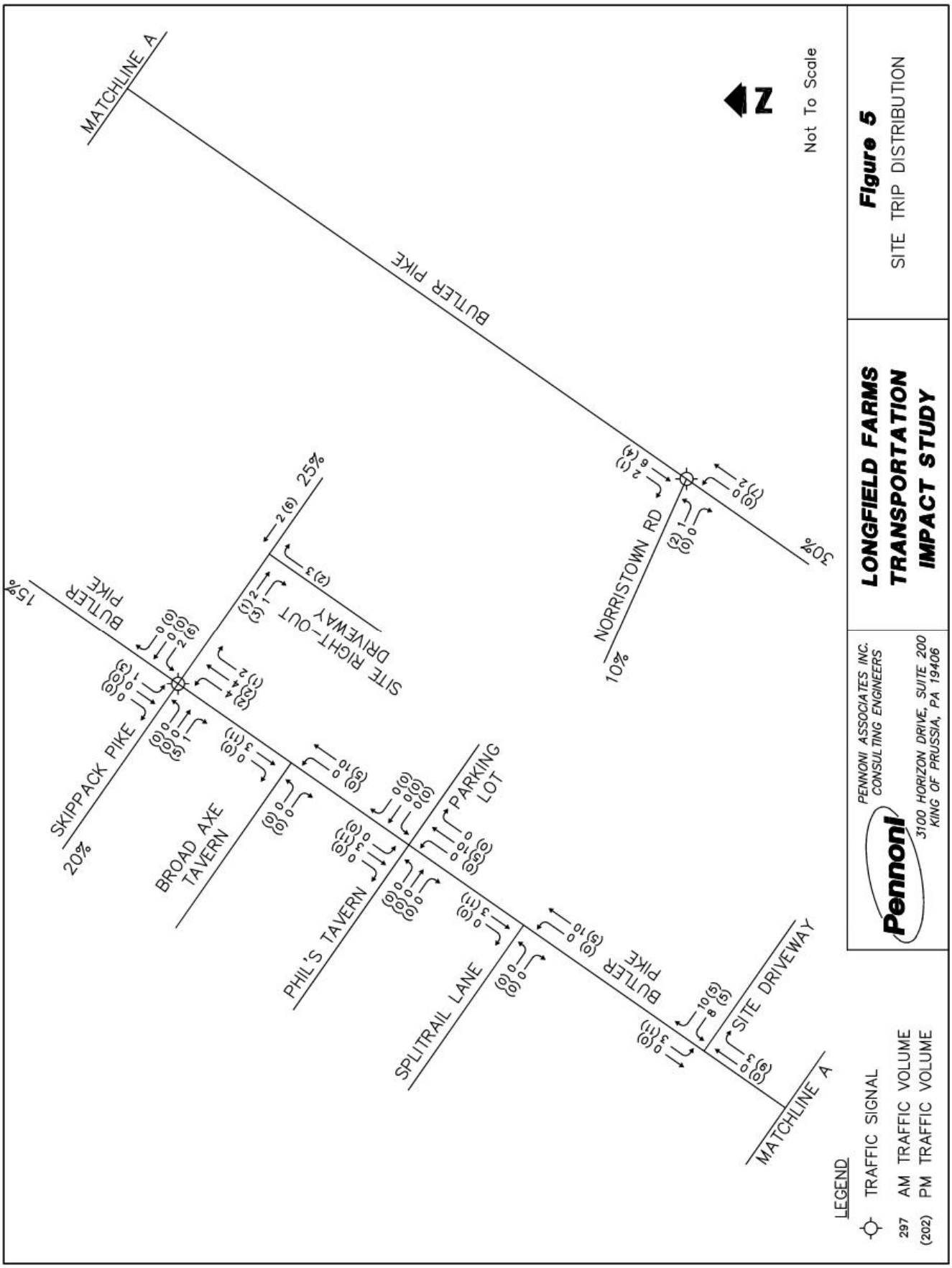
The proposed development of the Longfield Farms Residential Development will require the approval of two (2) new access points, which will consist of a full-movement unsignalized driveway on Butler Pike (County Roadway), and a right-turn entrance/right-turn exit driveway (no left-turns in, no left-turns out) to Skippack Pike (SR 0073). The geometry of each driveway will utilize 25' minimum corner radii, which will enable access for all conventional vehicles including school buses and delivery trucks. The final design of each driveway will be subject to permits from the owners of each roadway. The Butler Pike driveway will require a permit from Montgomery County, and the Skippack Pike driveway will require a permit from PennDOT.

Site Trip Distribution

The anticipated trips to be generated by the site (as shown in Table 1) were assigned to the roadway network in accordance with the following trip distribution percentages for the morning and afternoon peak hours:

- 60% via Butler Pike to the north
- 40% via Butler Pike to the south

Site trips were then assigned to the study area intersections and the proposed access driveways to Butler Pike and Skippack Pike based on these existing traffic patterns in the area, which are depicted on **Figure 5**.


MATCHLINE A
BUTLER PIKE
N
Not To Scale
Figure 5
SITE TRIP DISTRIBUTION
LONGFIELD FARMS
TRANSPORTATION
IMPACT STUDY
PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
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KING OF PRUSSIA, PA 19406
Pennoni
30%
NORRISTOWN RD
10%
SITE RIGHT-OUT DRIVEWAY
25%
15%
BUTLER PIKE
SKIPPACK PIKE
20%
BROAD AXE TAVERN
PHIL'S TAVERN
PARKING LOT
SPLITRAIL LANE
BUTLER PIKE
SITE DRIVEWAY
MATCHLINE A
LEGEND
TRAFFIC SIGNAL
297 AM TRAFFIC VOLUME
(202) PM TRAFFIC VOLUME

FUTURE CONDITIONS WITH PROPOSED SITE DEVELOPMENT ('Build')

The traffic volumes for the future condition with the proposed development were calculated as a combination of:

- Background traffic and other area project traffic ('No Build') without the site development (**Figure 4**), and;
- Site Traffic added to the network associated with the proposed site development project (**Figure 5**).

'Build' Condition Traffic Volumes

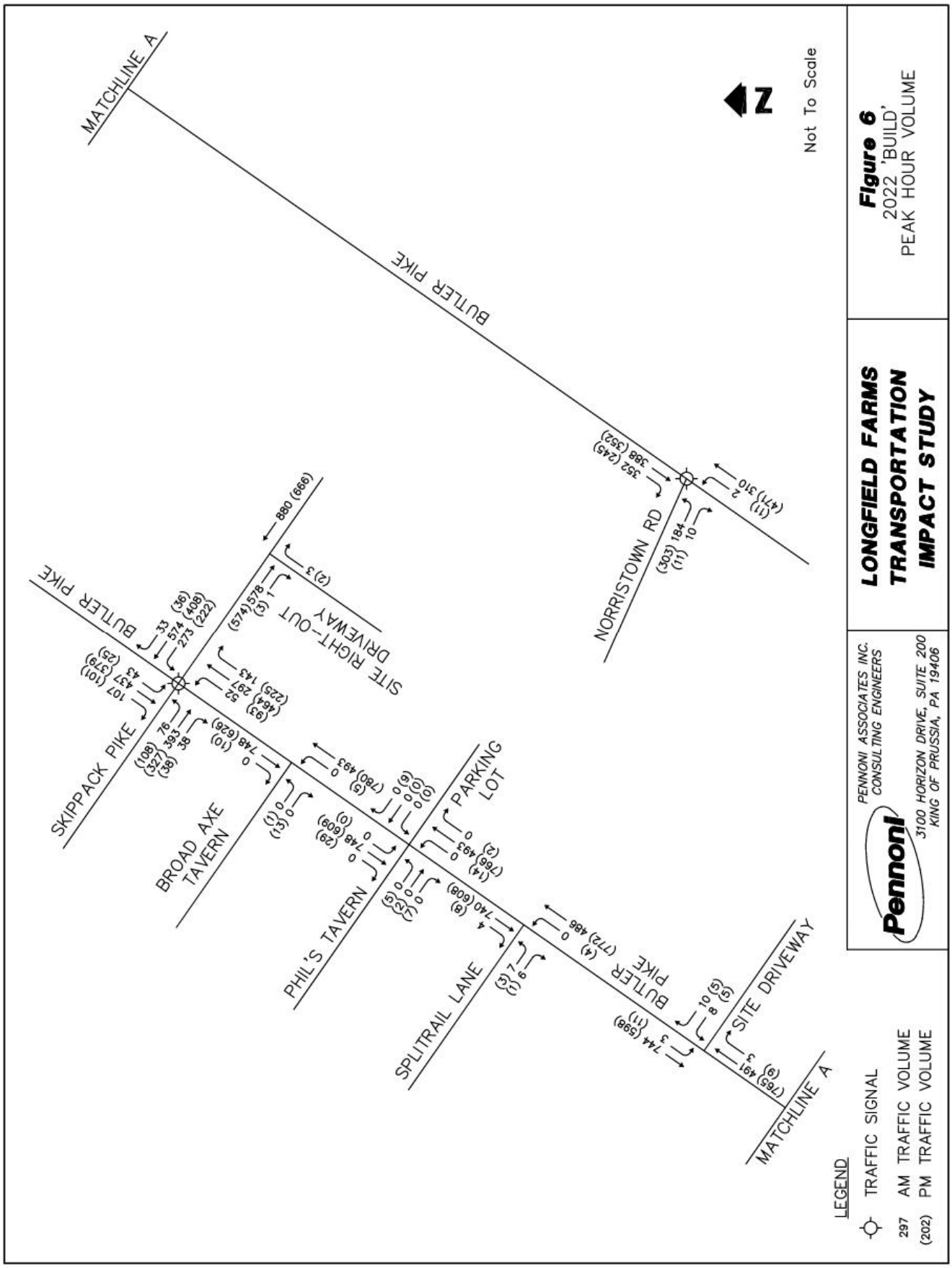
The 2022 background traffic volumes were combined with the site traffic to determine the total anticipated 2022 traffic volumes with the proposed development. Total peak hour turning volumes are summarized in **Figure 6.**

'Build' Condition Traffic Operations

The LOS by lane group, approach, and overall grade for each of the study intersections for the weekday AM and PM peak hours for future conditions with the development of the site are shown on **Table 2.**

The study area intersections will continue to operate at the same overall LOS grades as the 2022 'No-build' background conditions in both the morning and afternoon peak hours, with a maximum increase in overall delay of 2.3 seconds at the intersection of Skippack & Butler Pikes. The proposed left-turn movement exiting the site driveway to Butler Pike is expected to operate at a LOS 'D' during the morning and afternoon peak hours, while the right-turn exiting movement will operate at a LOS 'B' during the morning peak hour and a LOS 'C' during the afternoon peak hour, without the need for signalization. The proposed right-turn exit-only driveway to Skippack Pike (SR 0073) is expected to operate at a LOS 'B' during both the morning and afternoon peak hours.

The Synchro calculation worksheets are in **Appendix G.**


MATCHLINE A
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LONGFIELD FARMS
TRANSPORTATION
IMPACT STUDY
Figure 6
2022 'BUILD'
PEAK HOUR VOLUME

Table 2
Summary of Operational Analyses

Intersection	Approach	Existing Conditions		Opening Year (2022) Without Development		Design Year (2022) With Development	
		AM	PM	AM	PM	AM	PM
Skippack Pike (EB/WB) & Butler Pike (EB/WB)	EB L	C (23.8) 75/200	C (26.7) 100/200	C (23.7) 50/200	C (26.2) 100/200	C (24.0) 50/200	C (31.7) 100/200
	EB T/R	D (35.7) 450	D (39.3) 425	D (46.4) 400	D (44.8) 375	D (47.3) 425	E (65.2) 475
	WB L	C (23.7) 225/165	C (25.8) 200/165	D (42.1) 225/165	D (43.9) 225/165	D (45.1) 250/165	E (60.6) 275/165
	WB T	C (31.4) 525	C (34.6) 425	D (51.4) 550	D (49.0) 425	D (52.5) 550	D (53.2) 475
	WB R	B (18.7) 25/350	C (25.1) 50/350	B (18.7) 25/350	C (26.2) 50/350	B (18.9) 25/350	C (28.6) 50/350
	NB L	D (38.2) 50/290	C (33.2) 100/290	C (24.0) 50/290	C (20.2) 75/290	C (24.0) 50/290	C (20.4) 75/290
	NB T/R	E (72.7) 625	F (146.1) 1,350	D (47.8) 425	F (88.2) 925	D (48.6) 425	F (76.6) 900
	SB L	D (38.8) 50/125	D (41.0) 25/125	C (24.1) 50/125	C (26.6) 25/125	C (24.2) 50/125	C (28.8) 25/125
	SB T	E (66.6) 600	D (45.8) 475	D (46,7) 425	C (28.5) 325	D (47.0) 425	C (28.4) 350
	SB R	D (38.3) 150/125	D (36.0) 125/125	C (24.4) 100/125	C (22.4) 100/125	C (24.5) 100/125	C (22.7) 100/125
Overall Intersection		**D (45.2)**	**E (68.3)**	**D (44.6)**	**D (52.1)**	**D (45.5)**	**D (54.3)**
Skippack Pike (EB/WB) & Site Driveway (NB)	EB T/R	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0
	WB T	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0
	NB R	N/A	N/A	N/A	N/A	B (12.5) 0	B (12.5) 0
Overall Intersection		**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**
Butler Pike (NB/SB) & Broad Axe Tavern Driveway (EB)	NB L/T	A (0.0) 0	A (8.9) 0	A (0.0) 0	A (8.9) 0	A (0.0) 0	A (9.0) 0
	SB T/R	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0
	EB L/R	A (0.0) 0	B (13.5) 25	A (0.0) 0	B (13.7) 25	A (0.0) 0	B (13.9) 25
Overall Intersection		**A (0.0)**	**A (0.2)**	**A (0.0)**	**A (0.2)**	**A (0.0)**	**A (0.2)**

A (8.5) - Level of Service (Avg. Delay in seconds)
100/200 – 95% Queue/Auxiliary Lane Storage Length (if applicable, in feet)
*Based upon Synchro V10 model, HCM 6th Edition Methodology

Table 2
Summary of Operational Analyses (continued)

Intersection	Approach	Existing Conditions		Opening Year (2022) Without Development		Opening Year (2022) With Development	
		AM	PM	AM	PM	AM	PM
Butler Pike (NB/SB) & Phil's Tavern Driveway (EB)/Parking Lot Driveway (WB)	NB L/T	A (0.0) 0	A (8.9) 0	A (0.0) 0	A (8.9) 0	A (0.0) 0	A (9.0) 25
	SB L/T/R	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0
	EB L/T/R	A (0.0) 0	D (26.4) 25	A (0.0) 0	D (28.4) 25	A (0.0) 0	D (29.5) 25
	WB L/T/R	A (0.0) 0	B (13.8) 25	A (0.0) 0	B (14.6) 25	A (0.0) 0	B (14.8) 25
Overall Intersection		**A (0.0)**	**A (0.5)**	**A (0.0)**	**A (0.5)**	**A (0.0)**	**A (0.5)**
Butler Pike (NB/SB) & Splitrail Lane (EB)	NB L/T	A (0.0) 0	A (8.7) 0	A (0.0) 0	A (8.8) 0	A (0.0) 0	B (11.0) 0
	SB T/R	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0/0	A (0.0) 0/0
	EB L/R	C (20.3) 25	D (25.1) 25	C (21.1) 25	D (26.5) 25	C (21.4) 25	D (27.3) 25
Overall Intersection		**A (0.2)**	**A (0.1)**	**A (0.2)**	**A (0.1)**	**A (0.2)**	**A (0.4)**
Butler Pike (NB/SB) & Site Driveway (WB)	NB T/R	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0
	SB T/L	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (8.5) 0	A (9.6) 0
	WB L	N/A	N/A	N/A	N/A	D (28.0) 25	D (33.9) 25
	WB R	N/A	N/A	N/A	N/A	B (11.7) 25	C (15.0) 25
Overall Intersection		**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.3)**	**A (0.2)**
Butler Pike (NB/SB) & Norristown Road (EB)	NB L/T	A (5.3) 75	A (9.3) 175	A (5.5) 75	B (10.0) 175	A (5.6) 75	B (10.6) 175
	SB T/R	B (11.6) 250	B (12.9) 250	B (13.9) 250	B (15.0) 250	B (14.3) 250	B (16.4) 275
	EB L/R	C (29.0) 150	C (34.3) 250	C (29.7) 125	C (28.9) 175	C (29.8) 125	C (30.0) 225
Overall Intersection		**B (12.8)**	**B (16.6)**	**B (14.3)**	**B (16.5)**	**B (14.5)**	**B (17.5)**

A (8.5) - Level of Service (Avg. Delay in seconds)
100/200 – 95% Queue/Auxiliary Lane Storage Length (if applicable, in feet)
*Based upon Synchro V10 model, HCM 6th Edition Methodology

As shown in Table 2, the anticipated impact of the site generated traffic on the adjacent roadway network is minimal, with all study area intersections functioning at the same overall Level of Service with or without the proposed development.

Driveway Sight Distance

As shown on the proposed site plan for the development, the required safe sight distance values outlined by Montgomery County and PennDOT criteria for the posted speed along Butler Pike will be provided for both site driveways.

Table 3
Site Access Driveway Sight Distance

Site Driveway	Direction	Speed Limit	Desirable Sight Distance	Minimum Safe Stopping Sight Distance	Available Sight Distance
Butler Pike	Entering Left-turn	35 MPH	300'	260'	1,000'+
	Exiting, looking left	35 MPH	440'	260'	440'*
	Exiting, looking right	35 MPH	350'	260'	800'+
Skippack Pike (SR 0073)	Exiting, looking left	45 MPH	635'	383'	420'**

*Will be provided with removal of trees as part of final design
**Measured to intersection with Skippack Pike

Auxiliary Turn Lane Warrant Evaluation

A preliminary review of the need for Auxiliary Turn Lanes (right-turn, left-turn) using PennDOT criteria for the proposed intersection of the site driveway with Butler Pike indicates that a separate right turn lane is **not warranted,** but that a 75' left-turn lane for traffic entering the proposed site driveway **may be warranted**. As Butler Pike is a Montgomery County owned roadway, it is our understanding that any new access driveway will require a County Roadway Occupancy Permit, and we will further coordinate the design of this intersection with both Whitemarsh Township and Montgomery County. The detailed analysis worksheets are contained in **Appendix H**.

Traffic Signal Warrant Evaluation

The expected traffic volume at the proposed site access driveway to Butler Pike falls well below the threshold for the consideration of the installation of a traffic signal. The proposed right-turn exit-only driveway to Skippack Pike (SR 0073) will not require signalization.

Pedestrian Network Connectivity

The proposed development will include an internal trail network that will facilitate pedestrian circulation throughout the property and will connect to the adjacent office building property as well as both Butler Pike and Skippack Pike. The pedestrian network will extend along the property frontage of both Butler Pike and Skippack Pike (SR 0073). The pedestrian network will be ADA compliant.

CONCLUSIONS

The report reviews overall intersection performance as well as locations where site traffic changes intersection performance grades. The impact of the proposed Longfield Farms residential development results in an increase in overall intersection delay of less than 10 seconds at each intersection analyzed in this study, and each will operate at the same overall Level of Service (LOS) with or without the proposed site development. We offer the following summary and conclusions regarding the proposed development and adjacent roadway network:

- The proposed site is anticipated to generate 28 new trips (combined entering/exiting) during the weekday AM peak hour, and 36 new trips (combined entering/exiting) during the weekday PM peak hour;

- As noted above and in Table 2, the impact of the proposed development on the adjacent signalized intersections of Skippack Pike & Butler Pike, and Butler Pike and Norristown Road, is minor, and within the allowable impact range where PennDOT would not require mitigation;

- The proposed site driveways will provide adequate sight distance for entering and exiting traffic to and from Butler Pike and Skippack Pike;

- The proposed access driveways to Butler Pike and Skippack Pike will operate at acceptable overall Levels of Service during both the weekday AM and PM peak hours;

- The anticipated maximum queue on the northbound approach of Butler Pike, extending from Skippack Pike, will at times extend to the proposed main (southern) access driveway of the site, which is as similar condition that would exist without any development of the site;

APPENDIX A

INTERSECTION TRAFFIC COUNTS

LONGFIELD FARMS
TRANSPORTATION IMPACT STUDY
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

Pennoni

TRI-STATE TRAFFIC DATA

www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Montgomery County, PA
Skippack Pike & Butler Pike
Thursday, December 20, 2018
Location: 40.139007, -75.244196

Count Name: Skippack Pike-Butler Pike
Site Code:
Start Date: 12/20/2018
Page No: 1

Turning Movement Data

Start Time	Skippack Pike Eastbound							Skippack Pike Westbound							Butler Pike Northbound							Butler Pike Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:00 AM	15	114	4	1	0	0	134	40	118	5	3	0	0	166	10	46	35	0	0	0	91	10	103	13	6	0	0	132	523
7:15 AM	20	110	5	0	0	1	135	49	123	9	2	0	0	183	11	68	40	1	0	0	120	13	103	11	9	0	0	136	574
7:30 AM	20	108	8	0	0	0	136	80	129	6	2	0	0	217	9	72	30	0	0	0	111	6	124	7	9	0	0	146	610
7:45 AM	16	87	5	0	0	0	108	61	140	5	3	0	0	209	6	66	32	2	0	0	106	9	113	9	11	0	0	142	565
Hourly Total	71	419	22	1	0	1	513	230	510	25	10	0	0	775	36	252	137	3	0	0	428	38	443	40	35	0	0	556	2272
8:00 AM	21	95	8	2	0	0	126	47	131	5	2	0	0	185	11	94	45	4	0	0	154	10	93	35	2	0	1	140	605
8:15 AM	12	92	6	6	0	0	116	77	152	5	4	0	0	238	14	57	23	2	0	0	96	14	93	29	3	0	0	139	589
8:30 AM	13	95	12	1	0	0	121	66	128	9	4	0	0	207	8	53	34	1	0	0	96	9	124	21	7	0	0	161	585
8:45 AM	11	80	18	0	0	0	109	74	139	4	1	0	1	218	12	57	29	3	0	0	101	12	97	22	4	0	0	135	563
Hourly Total	57	362	44	9	0	0	472	264	550	23	11	0	1	848	45	261	131	10	0	0	447	45	407	107	16	0	1	575	2342
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	9	85	12	1	0	0	107	42	106	5	7	0	0	160	20	110	56	4	0	0	190	7	80	14	4	0	0	105	562
4:15 PM	24	85	8	0	0	0	117	51	87	6	4	0	0	148	23	103	47	1	0	0	174	10	84	10	4	0	0	108	547
4:30 PM	16	69	6	0	0	0	91	35	100	3	4	0	0	142	24	119	43	4	0	0	190	6	86	20	4	0	0	116	539
4:45 PM	30	82	5	1	0	0	118	25	50	6	2	0	0	83	22	116	57	5	0	0	200	11	93	19	7	0	0	130	531
Hourly Total	79	321	31	2	0	0	433	153	343	20	17	0	0	533	89	448	203	14	0	0	754	34	343	63	19	0	0	459	2179
5:00 PM	21	93	4	1	0	0	119	59	114	2	10	0	0	185	17	122	50	6	0	0	195	3	89	26	0	0	0	118	617
5:15 PM	15	67	11	1	0	1	94	66	111	0	8	0	0	185	22	112	47	10	0	0	191	5	95	22	2	0	0	124	594
5:30 PM	33	76	8	0	0	2	117	61	115	1	6	0	0	183	16	106	41	3	0	0	166	2	92	23	0	0	0	117	583
5:45 PM	23	65	7	0	0	0	95	37	75	5	7	0	0	124	19	116	33	1	0	0	169	7	72	11	1	0	0	91	479
Hourly Total	92	301	30	2	0	3	425	223	415	8	31	0	0	677	74	456	171	20	0	0	721	17	348	82	3	0	0	450	2273
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	299	1403	127	14	0	4	1843	870	1818	76	69	0	1	2833	244	1417	642	47	0	0	2350	134	1541	292	73	0	1	2040	9066
Approach %	16.2	76.1	6.9	0.8	0.0	-	-	30.7	64.2	2.7	2.4	0.0	-	-	10.4	60.3	27.3	2.0	0.0	-	-	6.6	75.5	14.3	3.6	0.0	-	-	-
Total %	3.3	15.5	1.4	0.2	0.0	-	20.3	9.6	20.1	0.8	0.8	0.0	-	31.2	2.7	15.6	7.1	0.5	0.0	-	25.9	1.5	17.0	3.2	0.8	0.0	-	22.5	-
Lights	292	1357	121	14	0	-	1784	854	1766	76	69	0	-	2765	230	1385	630	47	0	-	2292	130	1504	282	73	0	-	1989	8830
% Lights	97.7	96.7	95.3	100.0	-	-	96.8	98.2	97.1	100.0	100.0	-	-	97.6	94.3	97.7	98.1	100.0	-	-	97.5	97.0	97.6	96.6	100.0	-	-	97.5	97.4
Buses	3	10	2	0	0	-	15	6	19	0	0	0	-	25	1	12	6	0	0	-	19	1	12	4	0	0	-	17	76
% Buses	1.0	0.7	1.6	0.0	-	-	0.8	0.7	1.0	0.0	0.0	-	-	0.9	0.4	0.8	0.9	0.0	-	-	0.8	0.7	0.8	1.4	0.0	-	-	0.8	0.8
Trucks	4	36	4	0	0	-	44	10	33	0	0	0	-	43	13	20	6	0	0	-	39	3	25	6	0	0	-	34	160
% Trucks	1.3	2.6	3.1	0.0	-	-	2.4	1.1	1.8	0.0	0.0	-	-	1.5	5.3	1.4	0.9	0.0	-	-	1.7	2.2	1.6	2.1	0.0	-	-	1.7	1.8
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	4	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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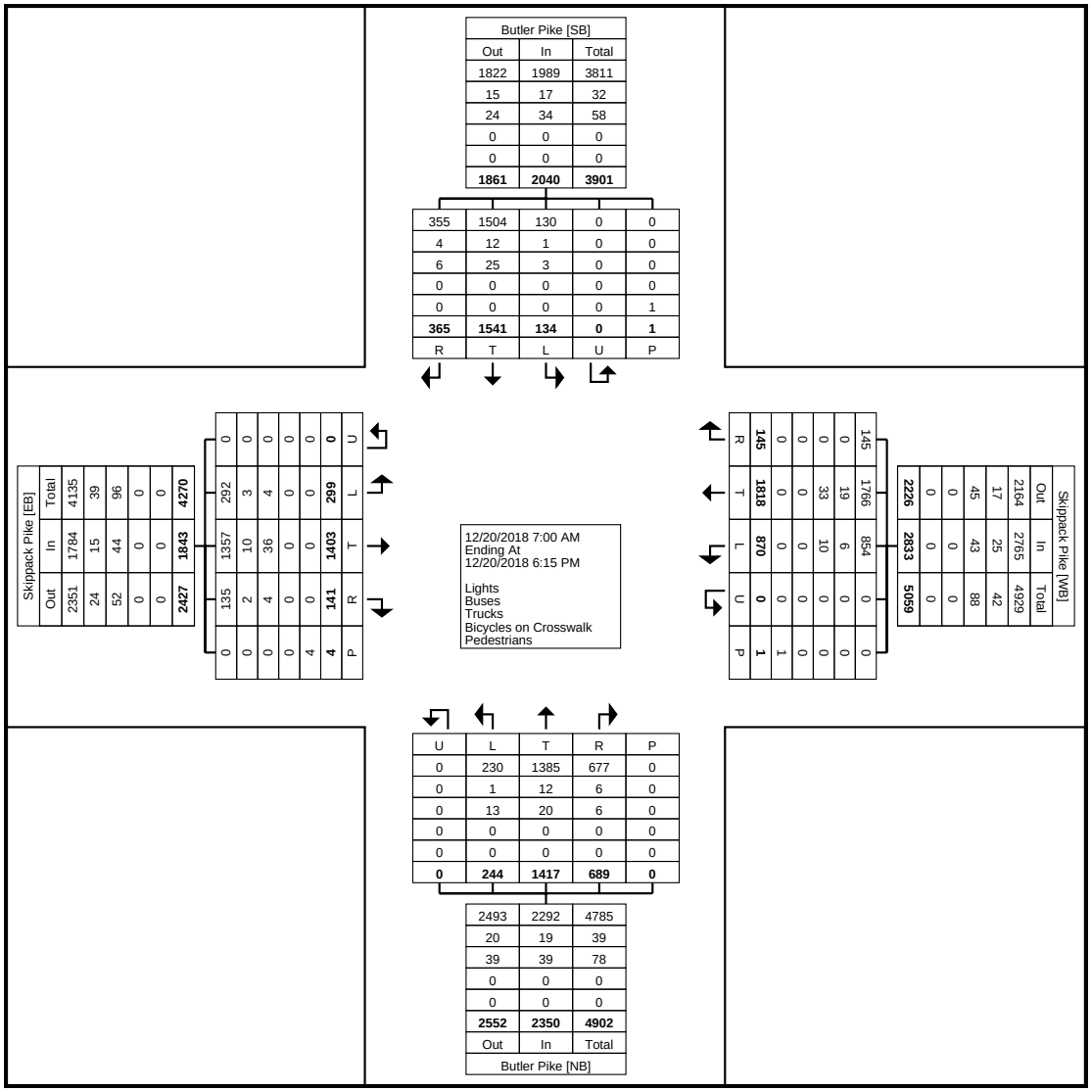
Montgomery County, PA
Skippack Pike & Butler Pike
Thursday, December 20, 2018
Location: 40.139007, -75.244196

Count Name: Skippack Pike-Butler Pike
Site Code:
Start Date: 12/20/2018
Page No: 2



Turning Movement Data Plot

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Montgomery County, PA
Skippack Pike & Butler Pike
Thursday, December 20, 2018
Location: 40.139007, -75.244196

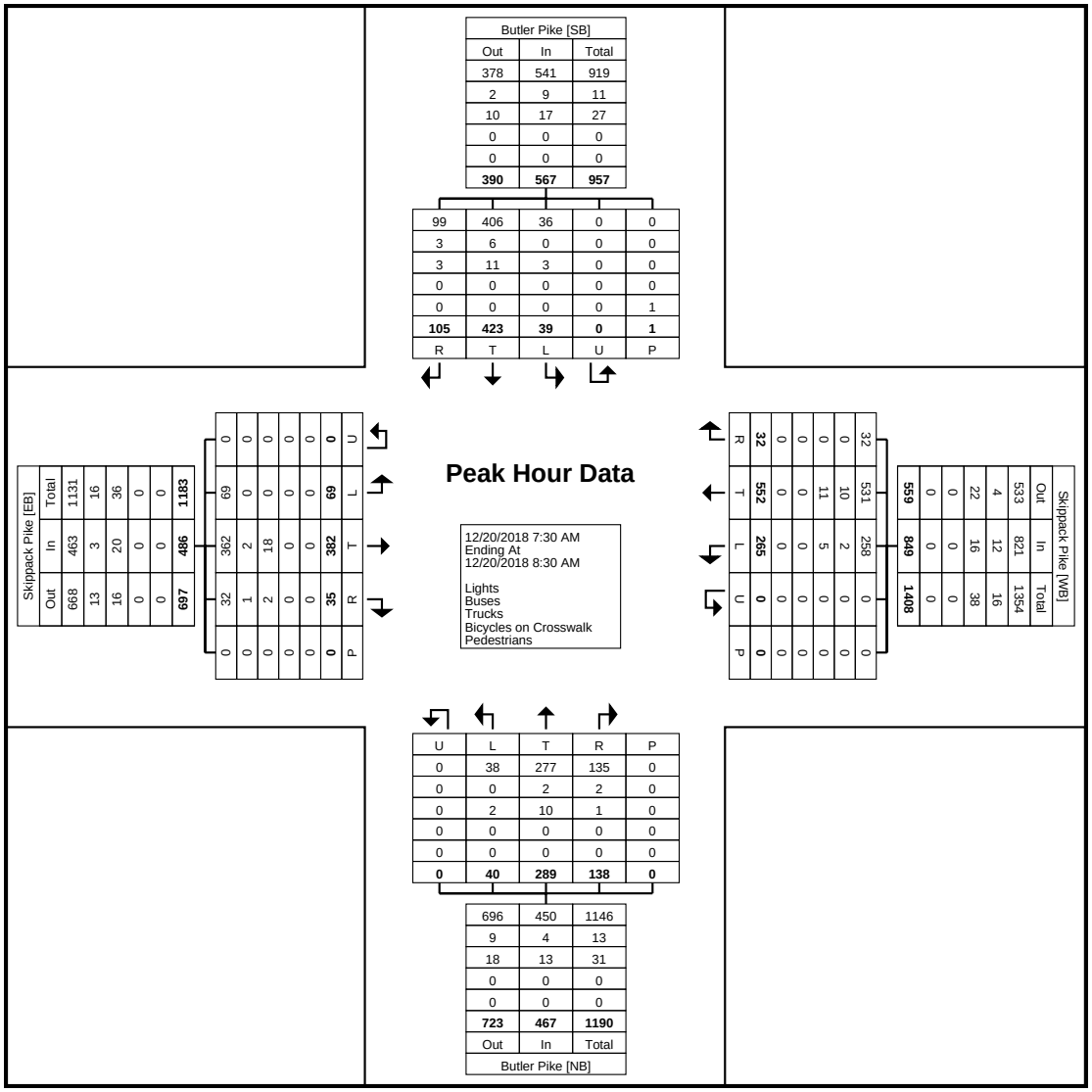
Count Name: Skippack Pike-Butler Pike
Site Code:
Start Date: 12/20/2018

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Skippack Pike Eastbound							Skippack Pike Westbound							Butler Pike Northbound							Butler Pike Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:30 AM	20	108	8	0	0	0	136	80	129	6	2	0	0	217	9	72	30	0	0	0	111	6	124	7	9	0	0	146	610
7:45 AM	16	87	5	0	0	0	108	61	140	5	3	0	0	209	6	66	32	2	0	0	106	9	113	9	11	0	0	142	565
8:00 AM	21	95	8	2	0	0	126	47	131	5	2	0	0	185	11	94	45	4	0	0	154	10	93	35	2	0	1	140	605
8:15 AM	12	92	6	6	0	0	116	77	152	5	4	0	0	238	14	57	23	2	0	0	96	14	93	29	3	0	0	139	589
Total	69	382	27	8	0	0	486	265	552	21	11	0	0	849	40	289	130	8	0	0	467	39	423	80	25	0	1	567	2369
Approach %	14.2	78.6	5.6	1.6	0.0	-	-	31.2	65.0	2.5	1.3	0.0	-	-	8.6	61.9	27.8	1.7	0.0	-	-	6.9	74.6	14.1	4.4	0.0	-	-	-
Total %	2.9	16.1	1.1	0.3	0.0	-	20.5	11.2	23.3	0.9	0.5	0.0	-	35.8	1.7	12.2	5.5	0.3	0.0	-	19.7	1.6	17.9	3.4	1.1	0.0	-	23.9	-
PHF	0.821	0.884	0.844	0.333	0.000	-	0.893	0.828	0.908	0.875	0.688	0.000	-	0.892	0.714	0.769	0.722	0.500	0.000	-	0.758	0.696	0.853	0.571	0.568	0.000	-	0.971	0.971
Lights	69	362	24	8	0	-	463	258	531	21	11	0	-	821	38	277	127	8	0	-	450	36	406	74	25	0	-	541	2275
% Lights	100.0	94.8	88.9	100.0	-	-	95.3	97.4	96.2	100.0	100.0	-	-	96.7	95.0	95.8	97.7	100.0	-	-	96.4	92.3	96.0	92.5	100.0	-	-	95.4	96.0
Buses	0	2	1	0	0	-	3	2	10	0	0	0	-	12	0	2	2	0	0	-	4	0	6	3	0	0	-	9	28
% Buses	0.0	0.5	3.7	0.0	-	-	0.6	0.8	1.8	0.0	0.0	-	-	1.4	0.0	0.7	1.5	0.0	-	-	0.9	0.0	1.4	3.8	0.0	-	-	1.6	1.2
Trucks	0	18	2	0	0	-	20	5	11	0	0	0	-	16	2	10	1	0	0	-	13	3	11	3	0	0	-	17	66
% Trucks	0.0	4.7	7.4	0.0	-	-	4.1	1.9	2.0	0.0	0.0	-	-	1.9	5.0	3.5	0.8	0.0	-	-	2.8	7.7	2.6	3.8	0.0	-	-	3.0	2.8
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Montgomery County, PA
Skippack Pike & Butler Pike
Thursday, December 20, 2018
Location: 40.139007, -75.244196

Count Name: Skippack Pike-Butler Pike
Site Code:
Start Date: 12/20/2018
Page No: 4



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

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Montgomery County, PA
Skippack Pike & Butler Pike
Thursday, December 20, 2018
Location: 40.139007, -75.244196

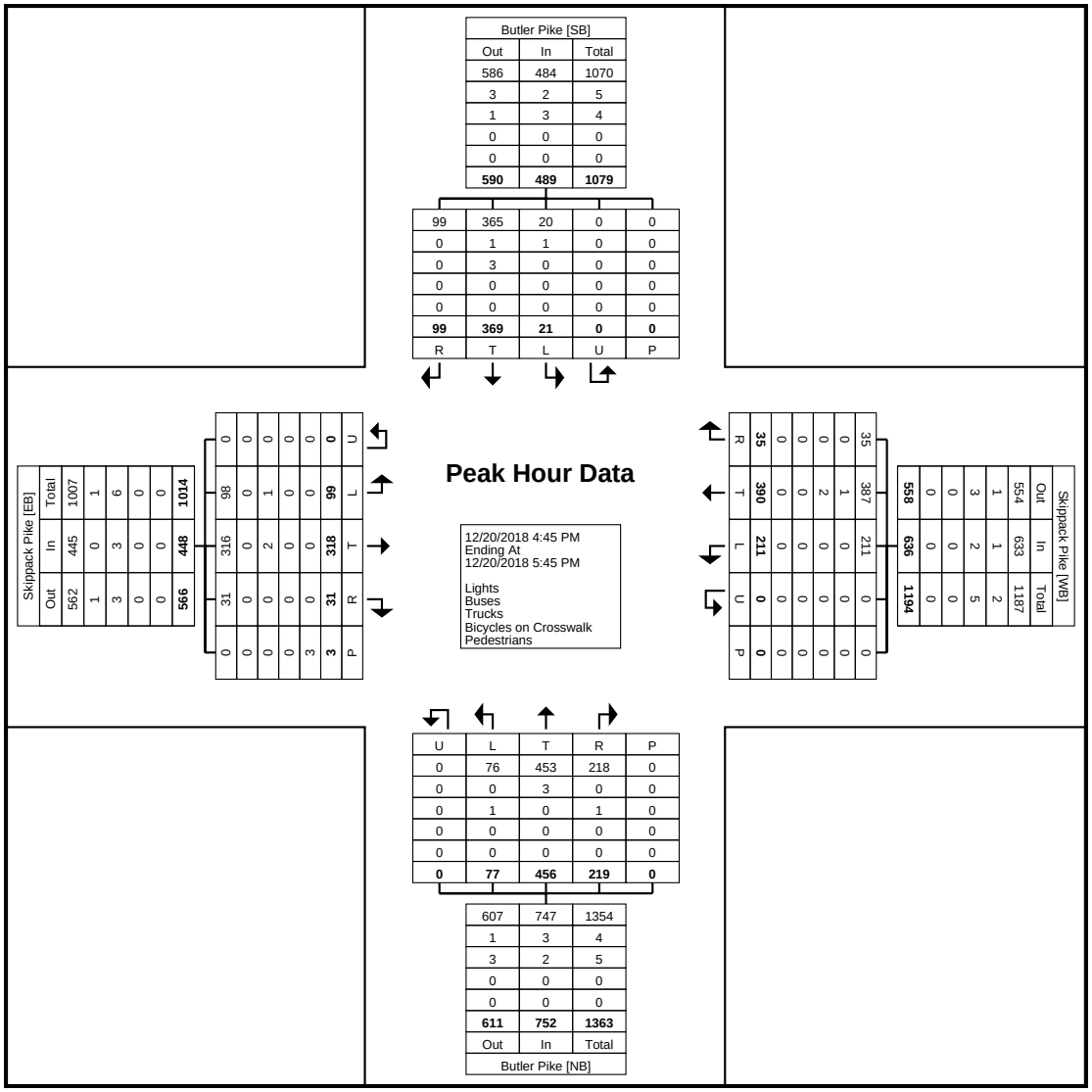
Count Name: Skippack Pike-Butler Pike
Site Code:
Start Date: 12/20/2018

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Skippack Pike Eastbound							Skippack Pike Westbound							Butler Pike Northbound							Butler Pike Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
4:45 PM	30	82	5	1	0	0	118	25	50	6	2	0	0	83	22	116	57	5	0	0	200	11	93	19	7	0	0	130	531
5:00 PM	21	93	4	1	0	0	119	59	114	2	10	0	0	185	17	122	50	6	0	0	195	3	89	26	0	0	0	118	617
5:15 PM	15	67	11	1	0	1	94	66	111	0	8	0	0	185	22	112	47	10	0	0	191	5	95	22	2	0	0	124	594
5:30 PM	33	76	8	0	0	2	117	61	115	1	6	0	0	183	16	106	41	3	0	0	166	2	92	23	0	0	0	117	583
Total	99	318	28	3	0	3	448	211	390	9	26	0	0	636	77	456	195	24	0	0	752	21	369	90	9	0	0	489	2325
Approach %	22.1	71.0	6.3	0.7	0.0	-	-	33.2	61.3	1.4	4.1	0.0	-	-	10.2	60.6	25.9	3.2	0.0	-	-	4.3	75.5	18.4	1.8	0.0	-	-	-
Total %	4.3	13.7	1.2	0.1	0.0	-	19.3	9.1	16.8	0.4	1.1	0.0	-	27.4	3.3	19.6	8.4	1.0	0.0	-	32.3	0.9	15.9	3.9	0.4	0.0	-	21.0	-
PHF	0.750	0.855	0.636	0.750	0.000	-	0.941	0.799	0.848	0.375	0.650	0.000	-	0.859	0.875	0.934	0.855	0.600	0.000	-	0.940	0.477	0.971	0.865	0.321	0.000	-	0.940	0.942
Lights	98	316	28	3	0	-	445	211	387	9	26	0	-	633	76	453	194	24	0	-	747	20	365	90	9	0	-	484	2309
% Lights	99.0	99.4	100.0	100.0	-	-	99.3	100.0	99.2	100.0	100.0	-	-	99.5	98.7	99.3	99.5	100.0	-	-	99.3	95.2	98.9	100.0	100.0	-	-	99.0	99.3
Buses	0	0	0	0	0	-	0	0	1	0	0	0	-	1	0	3	0	0	0	-	3	1	1	0	0	0	-	2	6
% Buses	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	0.0	-	-	0.2	0.0	0.7	0.0	0.0	-	-	0.4	4.8	0.3	0.0	0.0	-	-	0.4	0.3
Trucks	1	2	0	0	0	-	3	0	2	0	0	0	-	2	1	0	1	0	0	-	2	0	3	0	0	0	-	3	10
% Trucks	1.0	0.6	0.0	0.0	-	-	0.7	0.0	0.5	0.0	0.0	-	-	0.3	1.3	0.0	0.5	0.0	-	-	0.3	0.0	0.8	0.0	0.0	-	-	0.6	0.4
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	-	3	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Montgomery County, PA
Skippack Pike & Butler Pike
Thursday, December 20, 2018
Location: 40.139007, -75.244196

Count Name: Skippack Pike-Butler Pike
Site Code:
Start Date: 12/20/2018
Page No: 6



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

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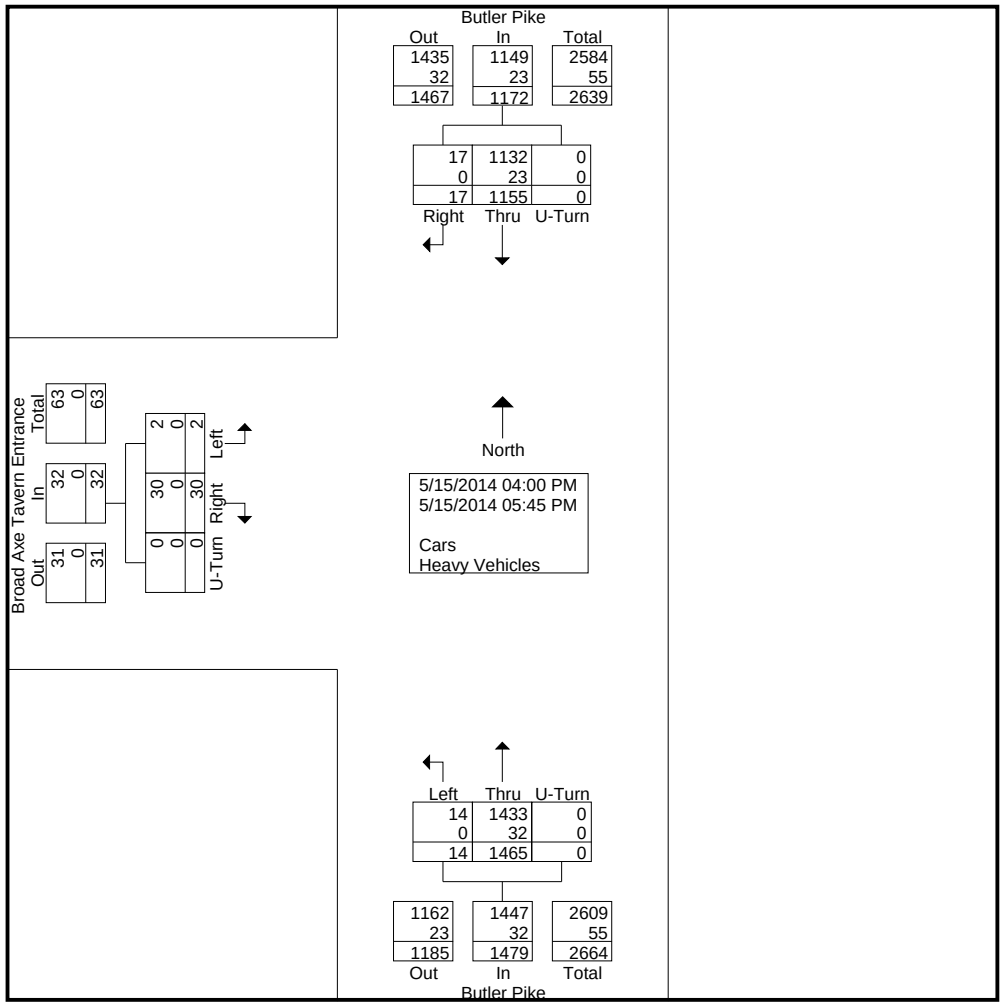
Location: Montgomery County, PA
Intersection: Butler Pike/Bord Axe Tav.
Date: Thursday, May 15, 2014
Counter: MIO PB

File Name : BK 0515 - 2
Site Code : 02
Start Date : 5/15/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Butler Pike Southbound				Butler Pike Northbound				Broad Axe Tavern Entrance Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
04:00 PM	1	124	0	125	195	1	0	196	2	1	0	3	324
04:15 PM	2	139	0	141	178	4	0	182	8	0	0	8	331
04:30 PM	0	136	0	136	167	1	0	168	3	0	0	3	307
04:45 PM	2	139	0	141	200	2	0	202	2	0	0	2	345
Total	5	538	0	543	740	8	0	748	15	1	0	16	1307
05:00 PM	2	149	0	151	168	0	0	168	4	1	0	5	324
05:15 PM	2	145	0	147	188	2	0	190	2	0	0	2	339
05:30 PM	4	165	0	169	193	1	0	194	5	0	0	5	368
05:45 PM	4	158	0	162	176	3	0	179	4	0	0	4	345
Total	12	617	0	629	725	6	0	731	15	1	0	16	1376
Grand Total	17	1155	0	1172	1465	14	0	1479	30	2	0	32	2683
Apprch %	1.5	98.5	0		99.1	0.9	0		93.8	6.2	0		
Total %	0.6	43	0	43.7	54.6	0.5	0	55.1	1.1	0.1	0	1.2	
Cars	17	1132	0	1149	1433	14	0	1447	30	2	0	32	2628
% Cars	100	98	0	98	97.8	100	0	97.8	100	100	0	100	98
Heavy Vehicles	0	23	0	23	32	0	0	32	0	0	0	0	55
% Heavy Vehicles	0	2	0	2	2.2	0	0	2.2	0	0	0	0	2



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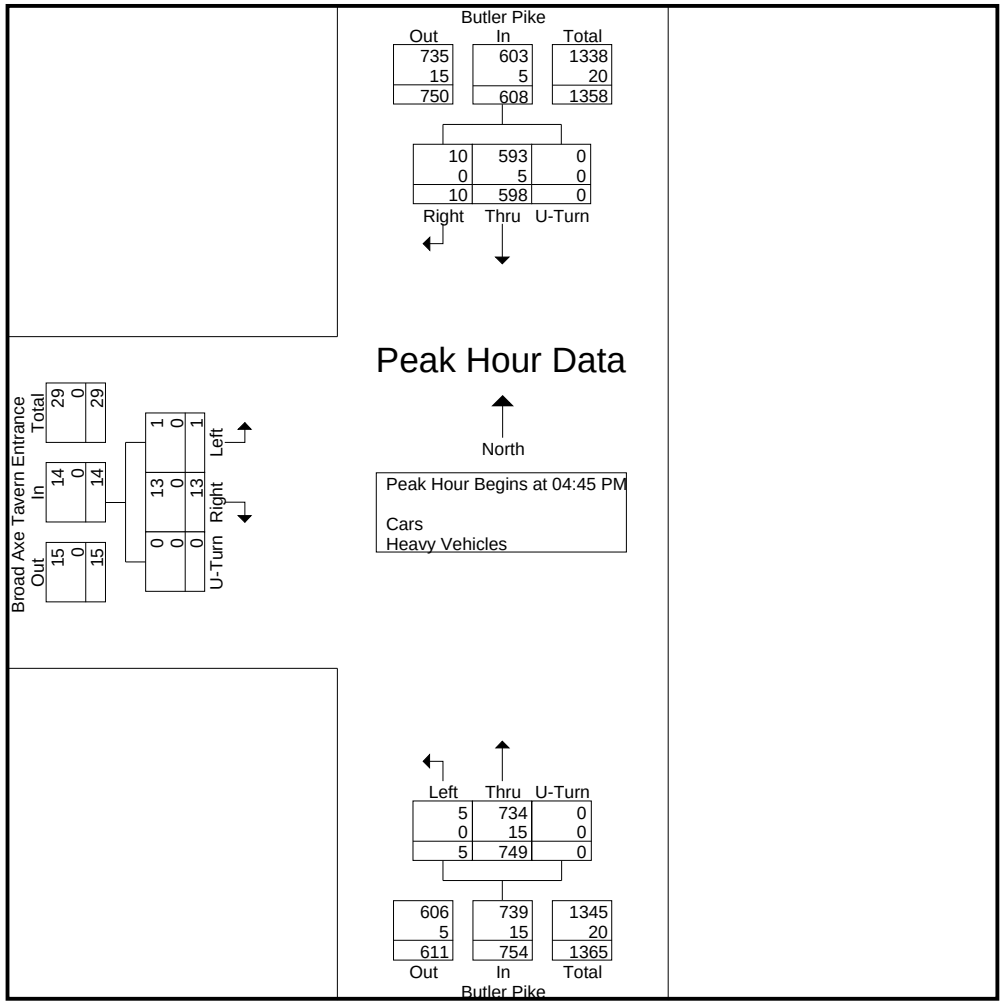
610 466-1469
TSTData.com

File Name : BK 0515 - 2
Site Code : 02
Start Date : 5/15/2014
Page No : 2

	Butler Pike Southbound				Butler Pike Northbound				Broad Axe Tavern Entrance Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	2	139	0	141	**200**	**2**	0	**202**	2	0	0	2	345
05:00 PM	2	149	0	151	168	0	0	168	4	**1**	0	**5**	324
05:15 PM	2	145	0	147	188	2	0	190	2	0	0	2	339
05:30 PM	**4**	**165**	0	**169**	193	1	0	194	**5**	0	0	5	**368**
Total Volume	10	598	0	608	749	5	0	754	13	1	0	14	1376
% App. Total	1.6	98.4	0		99.3	0.7	0		92.9	7.1	0		
PHF	.625	.906	.000	.899	.936	.625	.000	.933	.650	.250	.000	.700	.935
Cars	10	593	0	603	734	5	0	739	13	1	0	14	1356
% Cars	100	99.2	0	99.2	98.0	100	0	98.0	100	100	0	100	98.5
Heavy Vehicles	0	5	0	5	15	0	0	15	0	0	0	0	20
% Heavy Vehicles	0	0.8	0	0.8	2.0	0	0	2.0	0	0	0	0	1.5



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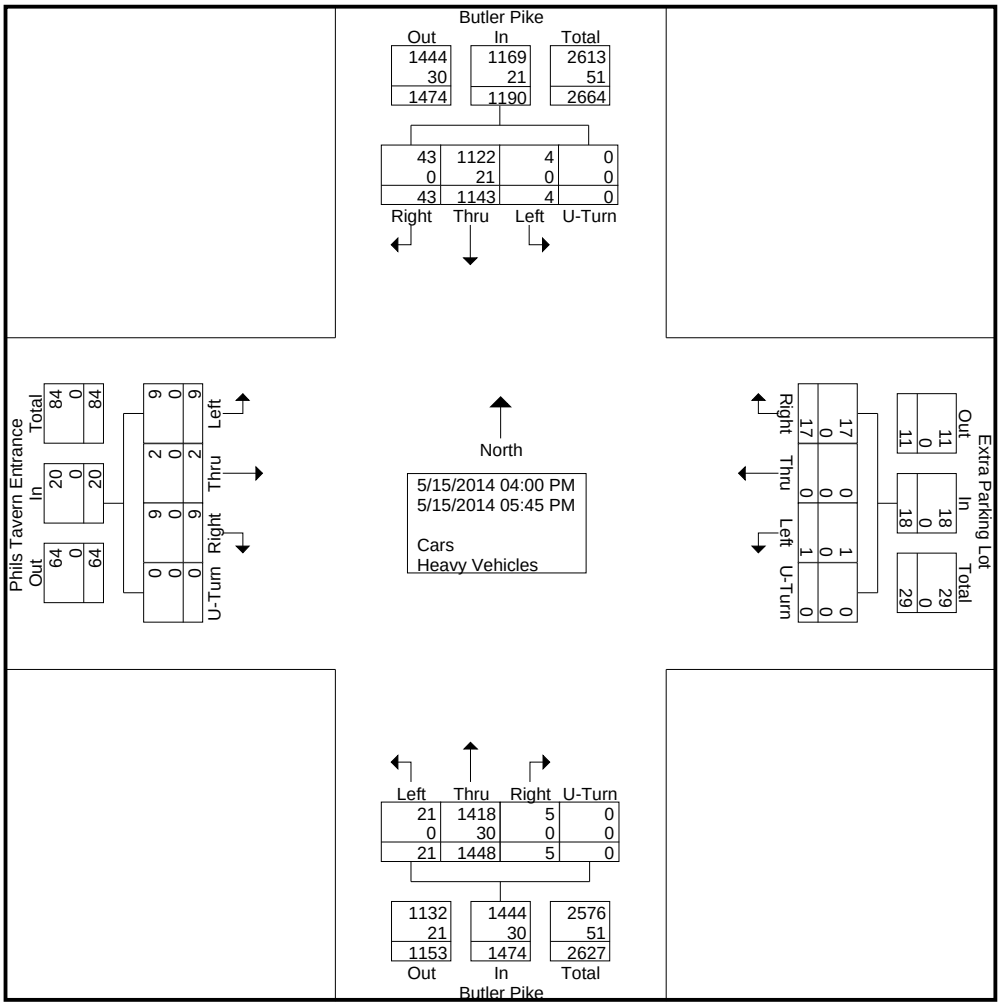
610 466-1469
TSTData.com

Location: Montgomery County, PA
Intersection: Butler PIke/Phil's Tavern
Date: Thursday, May 15, 2014
Counter: MIO PB

File Name : BK 0515 - 3
Site Code : 03
Start Date : 5/15/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Butler Pike Southbound					Extra Parking Lot Westbound					Butler Pike Northbound					Phils Tavern Entrance Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	1	131	1	0	133	1	0	0	0	1	1	207	1	0	209	0	0	0	0	0	343
04:15 PM	7	139	2	0	148	3	0	0	0	3	0	171	2	0	173	0	0	3	0	3	327
04:30 PM	3	143	1	0	147	2	0	1	0	3	0	167	3	0	170	1	0	0	0	1	321
04:45 PM	3	132	0	0	135	2	0	0	0	2	2	205	1	0	208	1	0	1	0	2	347
Total	14	545	4	0	563	8	0	1	0	9	3	750	7	0	760	2	0	4	0	6	1338
05:00 PM	4	141	0	0	145	3	0	0	0	3	1	146	1	0	148	3	0	1	0	4	300
05:15 PM	13	140	0	0	153	2	0	0	0	2	1	185	0	0	186	1	0	2	0	3	344
05:30 PM	5	172	0	0	177	2	0	0	0	2	0	175	8	0	183	0	0	1	0	1	363
05:45 PM	7	145	0	0	152	2	0	0	0	2	0	192	5	0	197	3	2	1	0	6	357
Total	29	598	0	0	627	9	0	0	0	9	2	698	14	0	714	7	2	5	0	14	1364
Grand Total	43	1143	4	0	1190	17	0	1	0	18	5	1448	21	0	1474	9	2	9	0	20	2702
Apprch %	3.6	96.1	0.3	0		94.4	0	5.6	0		0.3	98.2	1.4	0		45	10	45	0		
Total %	1.6	42.3	0.1	0	44	0.6	0	0	0	0.7	0.2	53.6	0.8	0	54.6	0.3	0.1	0.3	0	0.7	
Cars	43	1122	4	0	1169	17	0	1	0	18	5	1418	21	0	1444	9	2	9	0	20	2651
% Cars	100	98.2	100	0	98.2	100	0	100	0	100	100	97.9	100	0	98	100	100	100	0	100	98.1
Heavy Vehicles	0	21	0	0	21	0	0	0	0	0	0	30	0	0	30	0	0	0	0	0	51
% Heavy Vehicles	0	1.8	0	0	1.8	0	0	0	0	0	0	2.1	0	0	2	0	0	0	0	0	1.9



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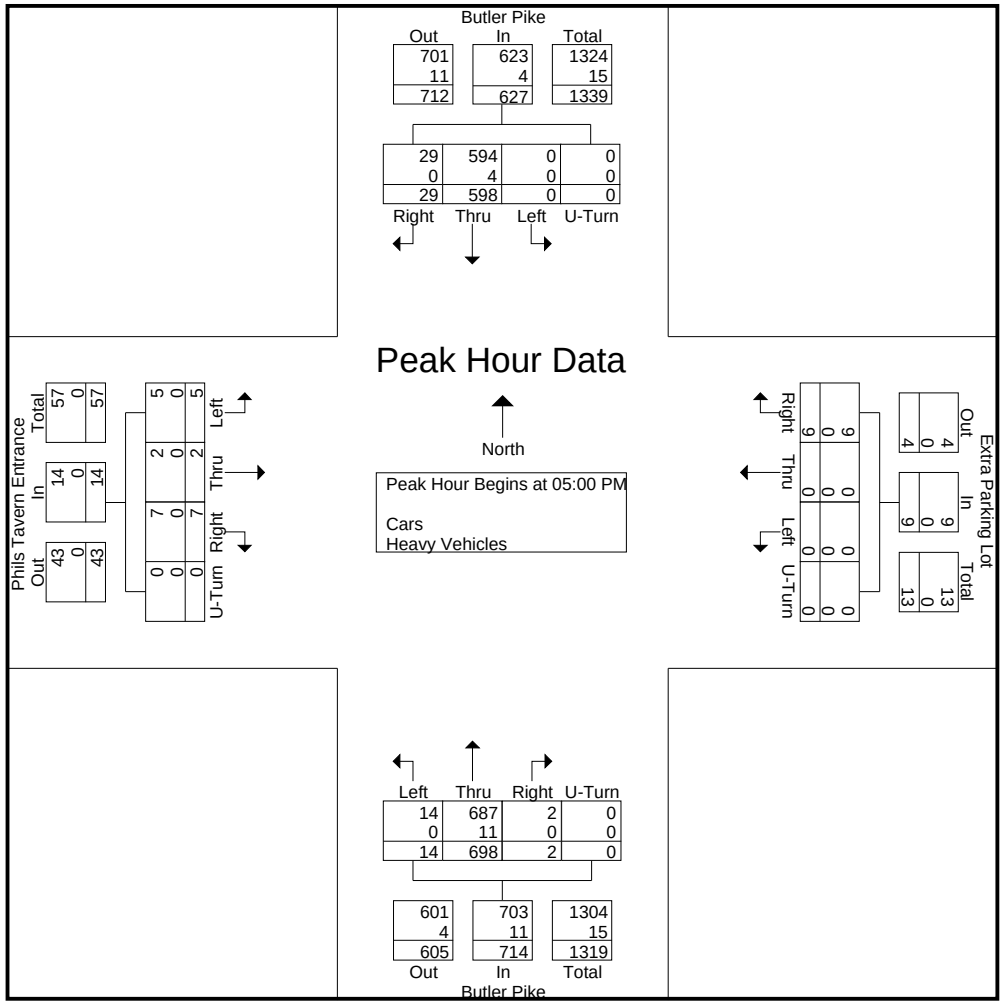
File Name : BK 0515 - 3
Site Code : 03
Start Date : 5/15/2014
Page No : 2

	Butler Pike Southbound					Extra Parking Lot Westbound					Butler Pike Northbound					Phils Tavern Entrance Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	4	141	0	0	145	**3**	0	0	0	**3**	**1**	146	1	0	148	**3**	0	1	0	4	300
05:15 PM	**13**	140	0	0	153	2	0	0	0	2	1	185	0	0	186	1	0	**2**	0	3	344
05:30 PM	5	**172**	0	0	**177**	2	0	0	0	2	0	175	**8**	0	183	0	0	1	0	1	**363**
05:45 PM	7	145	0	0	152	2	0	0	0	2	0	**192**	5	0	**197**	3	**2**	1	0	**6**	357
Total Volume	29	598	0	0	627	9	0	0	0	9	2	698	14	0	714	7	2	5	0	14	1364
% App. Total	4.6	95.4	0	0		100	0	0	0		0.3	97.8	2	0		50	14.3	35.7	0		
PHF	.558	.869	.000	.000	.886	.750	.000	.000	.000	.750	.500	.909	.438	.000	.906	.583	.250	.625	.000	.583	.939
Cars	29	594	0	0	623	9	0	0	0	9	2	687	14	0	703	7	2	5	0	14	1349
% Cars	100	99.3	0	0	99.4	100	0	0	0	100	100	98.4	100	0	98.5	100	100	100	0	100	98.9
Heavy Vehicles	0	4	0	0	4	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	15
% Heavy Vehicles	0	0.7	0	0	0.6	0	0	0	0	0	0	1.6	0	0	1.5	0	0	0	0	0	1.1



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Montgomery County, PA
Butler Pike & Split Rail Lane
Thursday, December 20, 2018
Location: 40.137777, -75.245447

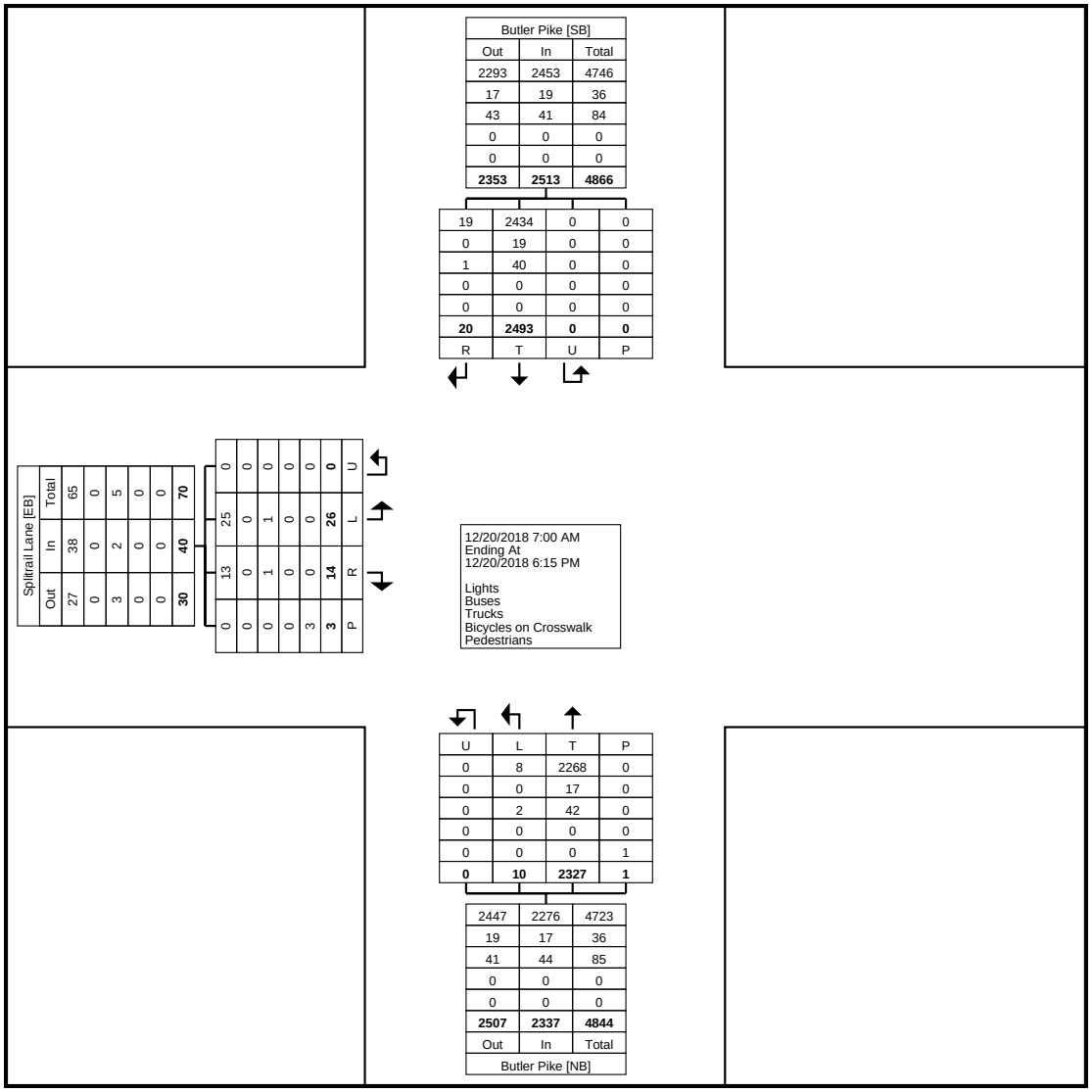
Count Name: Butler Pike-Spiltrail Lane
Site Code:
Start Date: 12/20/2018

Turning Movement Data

Start Time	Splitrail Lane Eastbound					Butler Pike Northbound					Butler Pike Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	4	0	0	0	4	1	93	0	0	94	147	0	0	0	147	245
7:15 AM	1	2	0	1	3	0	113	0	0	113	155	1	0	0	156	272
7:30 AM	4	0	0	0	4	0	112	0	0	112	206	1	0	0	207	323
7:45 AM	1	4	0	0	5	0	117	0	0	117	181	1	0	0	182	304
Hourly Total	10	6	0	1	16	1	435	0	0	436	689	3	0	0	692	1144
8:00 AM	1	2	0	0	3	0	145	0	0	145	144	2	0	0	146	294
8:15 AM	1	0	0	0	1	0	97	0	0	97	185	0	0	0	185	283
8:30 AM	1	0	0	0	1	1	97	0	0	98	205	0	0	0	205	304
8:45 AM	2	3	0	0	5	0	100	0	0	100	183	0	0	0	183	288
Hourly Total	5	5	0	0	10	1	439	0	0	440	717	2	0	0	719	1169
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	2	1	0	0	3	0	180	0	0	180	133	2	0	0	135	318
4:15 PM	2	0	0	0	2	2	184	0	0	186	143	2	0	0	145	333
4:30 PM	2	0	0	1	2	1	188	0	1	189	125	2	0	0	127	318
4:45 PM	0	1	0	1	1	0	200	0	0	200	118	2	0	0	120	321
Hourly Total	6	2	0	2	8	3	752	0	1	755	519	8	0	0	527	1290
5:00 PM	0	0	0	0	0	2	197	0	0	199	152	5	0	0	157	356
5:15 PM	3	0	0	0	3	1	180	0	0	181	159	0	0	0	159	343
5:30 PM	0	0	0	0	0	1	165	0	0	166	152	1	0	0	153	319
5:45 PM	2	1	0	0	3	1	159	0	0	160	105	1	0	0	106	269
Hourly Total	5	1	0	0	6	5	701	0	0	706	568	7	0	0	575	1287
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	26	14	0	3	40	10	2327	0	1	2337	2493	20	0	0	2513	4890
Approach %	65.0	35.0	0.0	-	-	0.4	99.6	0.0	-	-	99.2	0.8	0.0	-	-	-
Total %	0.5	0.3	0.0	-	0.8	0.2	47.6	0.0	-	47.8	51.0	0.4	0.0	-	51.4	-
Lights	25	13	0	-	38	8	2268	0	-	2276	2434	19	0	-	2453	4767
% Lights	96.2	92.9	-	-	95.0	80.0	97.5	-	-	97.4	97.6	95.0	-	-	97.6	97.5
Buses	0	0	0	-	0	0	17	0	-	17	19	0	0	-	19	36
% Buses	0.0	0.0	-	-	0.0	0.0	0.7	-	-	0.7	0.8	0.0	-	-	0.8	0.7
Trucks	1	1	0	-	2	2	42	0	-	44	40	1	0	-	41	87
% Trucks	3.8	7.1	-	-	5.0	20.0	1.8	-	-	1.9	1.6	5.0	-	-	1.6	1.8
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	3	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	-

Montgomery County, PA
Butler Pike & Split Rail Lane
Thursday, December 20, 2018
Location: 40.137777, -75.245447

Count Name: Butler Pike-Spiltrail Lane
Site Code:
Start Date: 12/20/2018
Page No: 2



Turning Movement Data Plot

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Montgomery County, PA
Butler Pike & Split Rail Lane
Thursday, December 20, 2018
Location: 40.137777, -75.245447

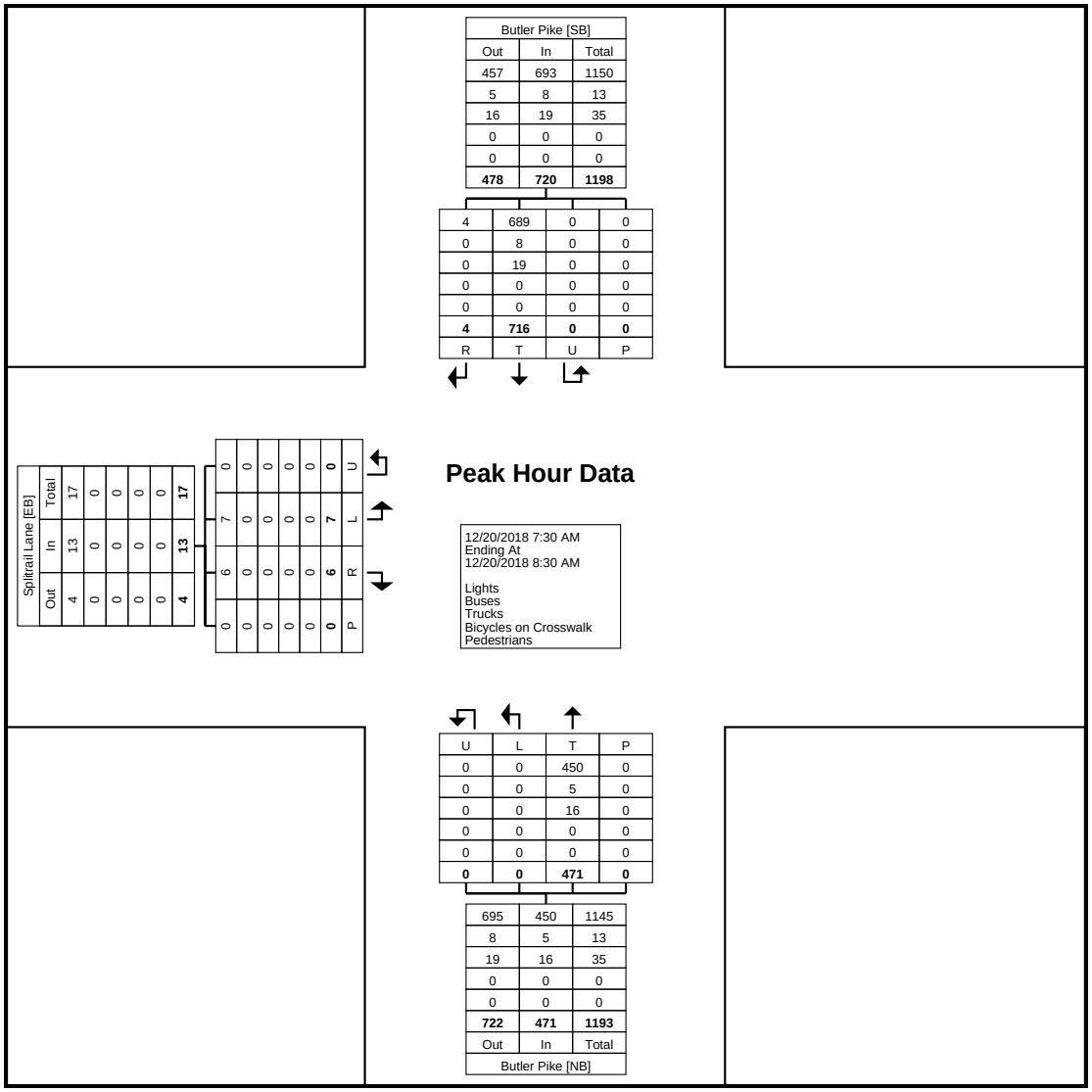
Count Name: Butler Pike-Spiltrail Lane
Site Code:
Start Date: 12/20/2018

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Splitrail Lane Eastbound					Butler Pike Northbound					Butler Pike Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:30 AM	4	0	0	0	4	0	112	0	0	112	206	1	0	0	207	323
7:45 AM	1	4	0	0	5	0	117	0	0	117	181	1	0	0	182	304
8:00 AM	1	2	0	0	3	0	145	0	0	145	144	2	0	0	146	294
8:15 AM	1	0	0	0	1	0	97	0	0	97	185	0	0	0	185	283
Total	7	6	0	0	13	0	471	0	0	471	716	4	0	0	720	1204
Approach %	53.8	46.2	0.0	-	-	0.0	100.0	0.0	-	-	99.4	0.6	0.0	-	-	-
Total %	0.6	0.5	0.0	-	1.1	0.0	39.1	0.0	-	39.1	59.5	0.3	0.0	-	59.8	-
PHF	0.438	0.375	0.000	-	0.650	0.000	0.812	0.000	-	0.812	0.869	0.500	0.000	-	0.870	0.932
Lights	7	6	0	-	13	0	450	0	-	450	689	4	0	-	693	1156
% Lights	100.0	100.0	-	-	100.0	-	95.5	-	-	95.5	96.2	100.0	-	-	96.3	96.0
Buses	0	0	0	-	0	0	5	0	-	5	8	0	0	-	8	13
% Buses	0.0	0.0	-	-	0.0	-	1.1	-	-	1.1	1.1	0.0	-	-	1.1	1.1
Trucks	0	0	0	-	0	0	16	0	-	16	19	0	0	-	19	35
% Trucks	0.0	0.0	-	-	0.0	-	3.4	-	-	3.4	2.7	0.0	-	-	2.6	2.9
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Montgomery County, PA
Butler Pike & Split Rail Lane
Thursday, December 20, 2018
Location: 40.137777, -75.245447

Count Name: Butler Pike-Spiltrail Lane
Site Code:
Start Date: 12/20/2018
Page No: 4



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

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Montgomery County, PA
Butler Pike & Split Rail Lane
Thursday, December 20, 2018
Location: 40.137777, -75.245447

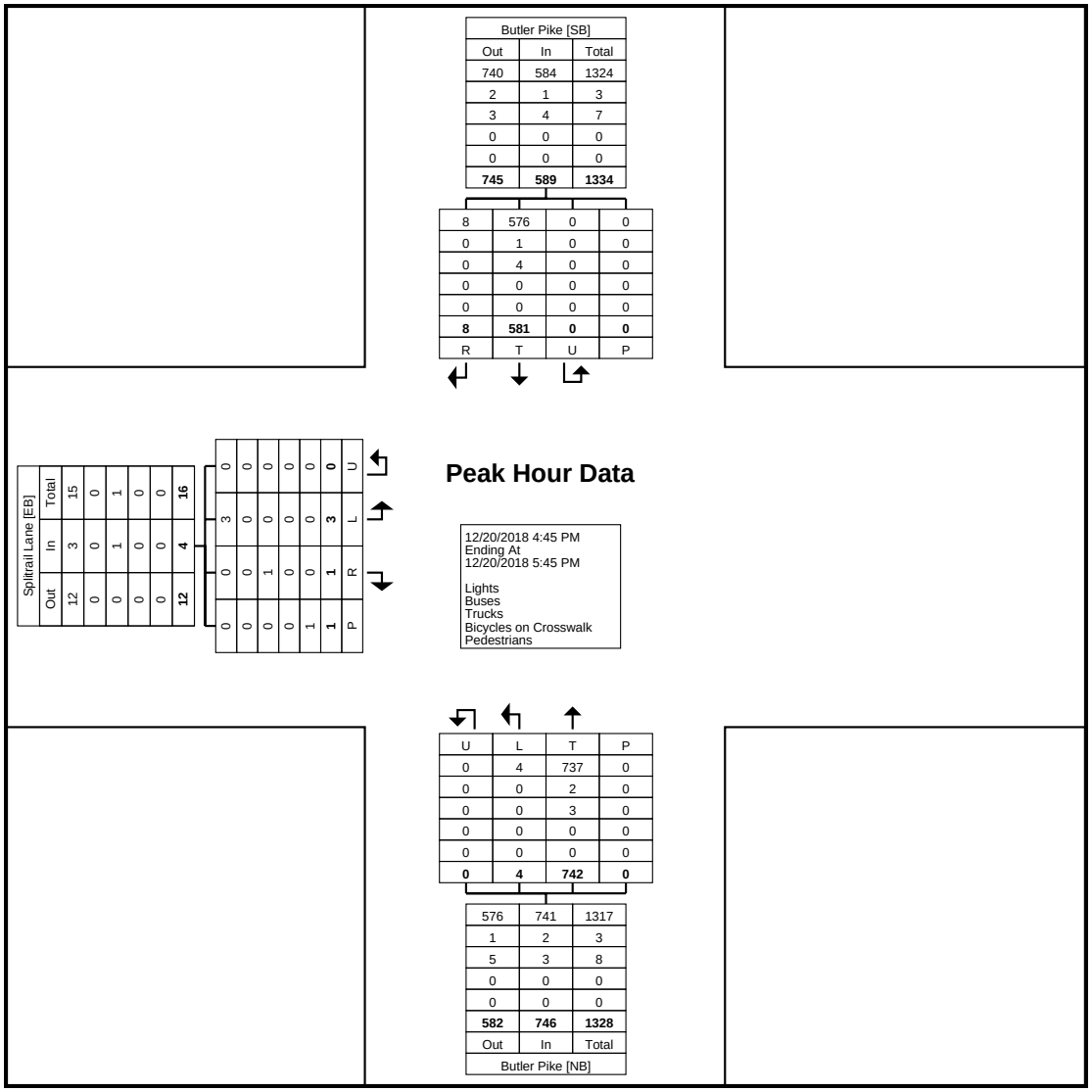
Count Name: Butler Pike-Spiltrail Lane
Site Code:
Start Date: 12/20/2018

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Splitrail Lane Eastbound					Butler Pike Northbound					Butler Pike Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:45 PM	0	1	0	1	1	0	200	0	0	200	118	2	0	0	120	321
5:00 PM	0	0	0	0	0	2	197	0	0	199	152	5	0	0	157	356
5:15 PM	3	0	0	0	3	1	180	0	0	181	159	0	0	0	159	343
5:30 PM	0	0	0	0	0	1	165	0	0	166	152	1	0	0	153	319
Total	3	1	0	1	4	4	742	0	0	746	581	8	0	0	589	1339
Approach %	75.0	25.0	0.0	-	-	0.5	99.5	0.0	-	-	98.6	1.4	0.0	-	-	-
Total %	0.2	0.1	0.0	-	0.3	0.3	55.4	0.0	-	55.7	43.4	0.6	0.0	-	44.0	-
PHF	0.250	0.250	0.000	-	0.333	0.500	0.928	0.000	-	0.933	0.914	0.400	0.000	-	0.926	0.940
Lights	3	0	0	-	3	4	737	0	-	741	576	8	0	-	584	1328
% Lights	100.0	0.0	-	-	75.0	100.0	99.3	-	-	99.3	99.1	100.0	-	-	99.2	99.2
Buses	0	0	0	-	0	0	2	0	-	2	1	0	0	-	1	3
% Buses	0.0	0.0	-	-	0.0	0.0	0.3	-	-	0.3	0.2	0.0	-	-	0.2	0.2
Trucks	0	1	0	-	1	0	3	0	-	3	4	0	0	-	4	8
% Trucks	0.0	100.0	-	-	25.0	0.0	0.4	-	-	0.4	0.7	0.0	-	-	0.7	0.6
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-

Montgomery County, PA
Butler Pike & Split Rail Lane
Thursday, December 20, 2018
Location: 40.137777, -75.245447

Count Name: Butler Pike-Spiltrail Lane
Site Code:
Start Date: 12/20/2018
Page No: 6



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

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Montgomery County, PA
Butler Pike & Norristown Rd
Thursday, December 20, 2018
Location: 40.139007, -75.244196

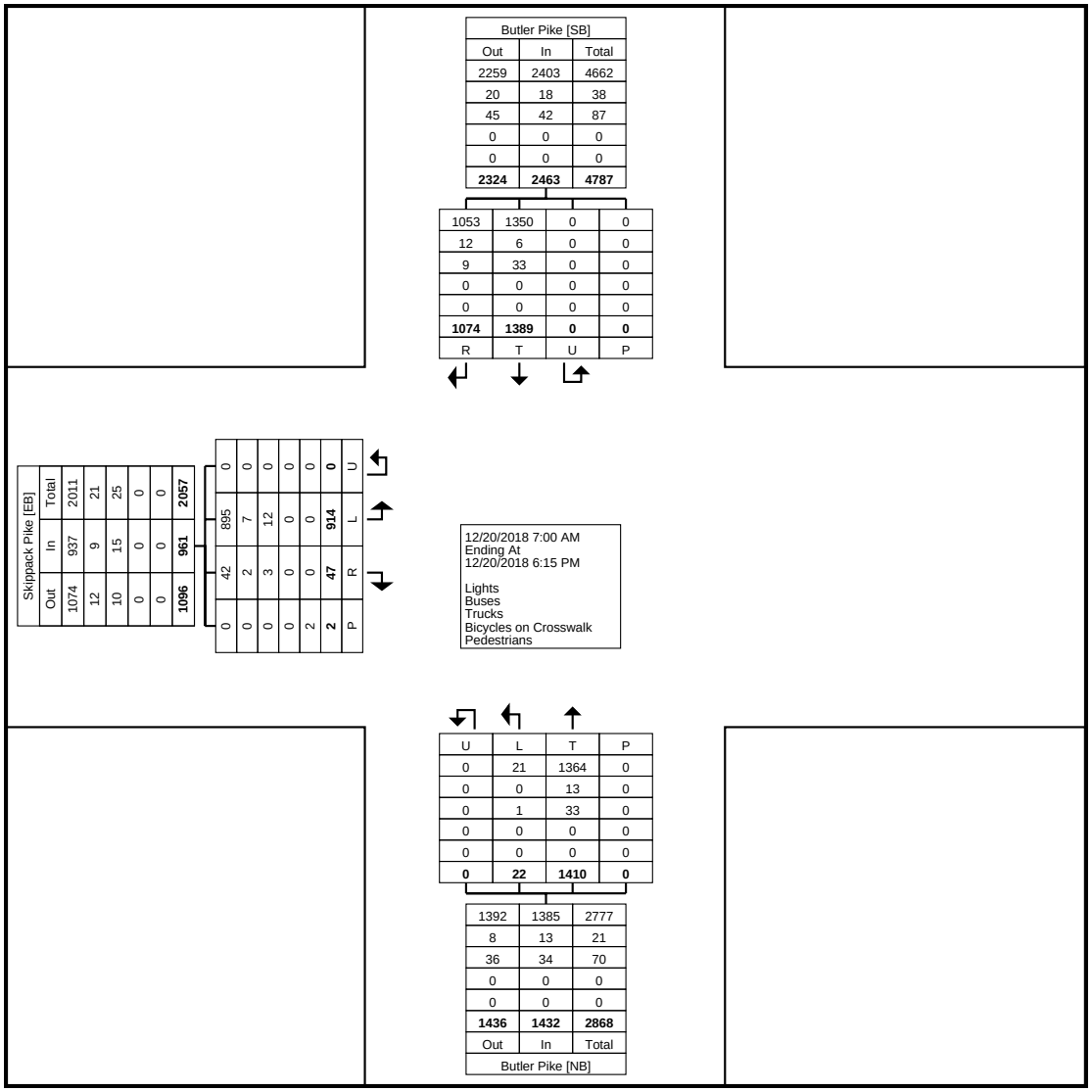
Count Name: Butler Pike-Norristown Rd
Site Code:
Start Date: 12/20/2018
Page No: 1

Turning Movement Data

Start Time	Skippack Pike Eastbound						Butler Pike Northbound					Butler Pike Southbound						
	Left	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:00 AM	34	3	0	0	0	37	0	56	0	0	56	91	45	7	0	0	143	236
7:15 AM	49	3	0	0	1	52	1	61	0	0	62	92	53	4	0	0	149	263
7:30 AM	46	5	0	0	0	51	0	68	0	0	68	98	88	7	0	0	193	312
7:45 AM	45	3	0	0	0	48	0	71	0	0	71	108	72	6	0	0	186	305
Hourly Total	174	14	0	0	1	188	1	256	0	0	257	389	258	24	0	0	671	1116
8:00 AM	55	1	0	0	0	56	1	93	0	0	94	76	71	6	0	0	153	303
8:15 AM	33	0	1	0	0	34	1	64	0	0	65	87	90	2	0	0	179	278
8:30 AM	38	2	0	0	0	40	3	58	0	0	61	117	77	8	0	0	202	303
8:45 AM	41	8	0	0	0	49	1	60	0	0	61	94	80	4	0	0	178	288
Hourly Total	167	11	1	0	0	179	6	275	0	0	281	374	318	20	0	0	712	1172
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	69	4	1	0	1	74	1	115	0	0	116	77	49	11	0	0	137	327
4:15 PM	77	4	0	0	0	81	0	105	0	0	105	73	52	9	0	0	134	320
4:30 PM	73	0	0	0	0	73	1	117	0	0	118	73	47	4	0	0	124	315
4:45 PM	82	3	0	0	0	85	1	108	0	0	109	80	35	3	0	0	118	312
Hourly Total	301	11	1	0	1	313	3	445	0	0	448	303	183	27	0	0	513	1274
5:00 PM	77	3	0	0	0	80	3	140	0	0	143	81	55	10	0	0	146	369
5:15 PM	70	3	0	0	0	73	5	99	0	0	104	91	63	6	0	0	160	337
5:30 PM	65	2	0	0	0	67	2	99	0	0	101	85	63	4	0	0	152	320
5:45 PM	60	1	0	0	0	61	2	96	0	0	98	66	41	2	0	0	109	268
Hourly Total	272	9	0	0	0	281	12	434	0	0	446	323	222	22	0	0	567	1294
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	914	45	2	0	2	961	22	1410	0	0	1432	1389	981	93	0	0	2463	4856
Approach %	95.1	4.7	0.2	0.0	-	-	1.5	98.5	0.0	-	-	56.4	39.8	3.8	0.0	-	-	-
Total %	18.8	0.9	0.0	0.0	-	19.8	0.5	29.0	0.0	-	29.5	28.6	20.2	1.9	0.0	-	50.7	-
Lights	895	41	1	0	-	937	21	1364	0	-	1385	1350	964	89	0	-	2403	4725
% Lights	97.9	91.1	50.0	-	-	97.5	95.5	96.7	-	-	96.7	97.2	98.3	95.7	-	-	97.6	97.3
Buses	7	2	0	0	-	9	0	13	0	-	13	6	11	1	0	-	18	40
% Buses	0.8	4.4	0.0	-	-	0.9	0.0	0.9	-	-	0.9	0.4	1.1	1.1	-	-	0.7	0.8
Trucks	12	2	1	0	-	15	1	33	0	-	34	33	6	3	0	-	42	91
% Trucks	1.3	4.4	50.0	-	-	1.6	4.5	2.3	-	-	2.4	2.4	0.6	3.2	-	-	1.7	1.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Montgomery County, PA
Butler Pike & Norristown Rd
Thursday, December 20, 2018
Location: 40.139007, -75.244196

Count Name: Butler Pike-Norristown Rd
Site Code:
Start Date: 12/20/2018
Page No: 2



Turning Movement Data Plot

www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Montgomery County, PA
Butler Pike & Norristown Rd
Thursday, December 20, 2018
Location: 40.139007, -75.244196

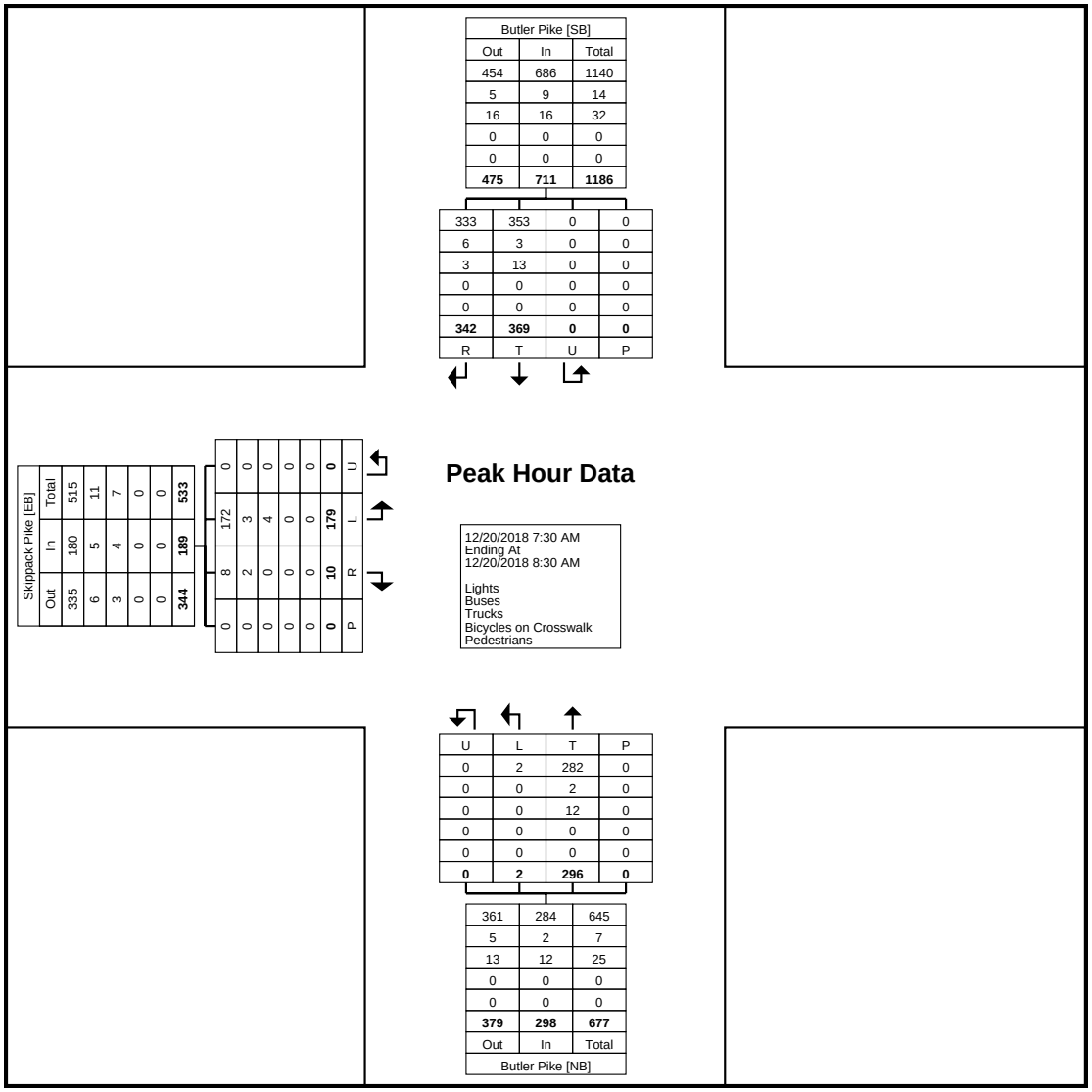
Count Name: Butler Pike-Norristown Rd
Site Code:
Start Date: 12/20/2018

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Skippack Pike Eastbound						Butler Pike Northbound					Butler Pike Southbound						
	Left	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:30 AM	46	5	0	0	0	51	0	68	0	0	68	98	88	7	0	0	193	312
7:45 AM	45	3	0	0	0	48	0	71	0	0	71	108	72	6	0	0	186	305
8:00 AM	55	1	0	0	0	56	1	93	0	0	94	76	71	6	0	0	153	303
8:15 AM	33	0	1	0	0	34	1	64	0	0	65	87	90	2	0	0	179	278
Total	179	9	1	0	0	189	2	296	0	0	298	369	321	21	0	0	711	1198
Approach %	94.7	4.8	0.5	0.0	-	-	0.7	99.3	0.0	-	-	51.9	45.1	3.0	0.0	-	-	-
Total %	14.9	0.8	0.1	0.0	-	15.8	0.2	24.7	0.0	-	24.9	30.8	26.8	1.8	0.0	-	59.3	-
PHF	0.814	0.450	0.250	0.000	-	0.844	0.500	0.796	0.000	-	0.793	0.854	0.892	0.750	0.000	-	0.921	0.960
Lights	172	7	1	0	-	180	2	282	0	-	284	353	314	19	0	-	686	1150
% Lights	96.1	77.8	100.0	-	-	95.2	100.0	95.3	-	-	95.3	95.7	97.8	90.5	-	-	96.5	96.0
Buses	3	2	0	0	-	5	0	2	0	-	2	3	5	1	0	-	9	16
% Buses	1.7	22.2	0.0	-	-	2.6	0.0	0.7	-	-	0.7	0.8	1.6	4.8	-	-	1.3	1.3
Trucks	4	0	0	0	-	4	0	12	0	-	12	13	2	1	0	-	16	32
% Trucks	2.2	0.0	0.0	-	-	2.1	0.0	4.1	-	-	4.0	3.5	0.6	4.8	-	-	2.3	2.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Montgomery County, PA
Butler Pike & Norristown Rd
Thursday, December 20, 2018
Location: 40.139007, -75.244196

Count Name: Butler Pike-Norristown Rd
Site Code:
Start Date: 12/20/2018
Page No: 4



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

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184 Baker Rd

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Montgomery County, PA
Butler Pike & Norristown Rd
Thursday, December 20, 2018
Location: 40.139007, -75.244196

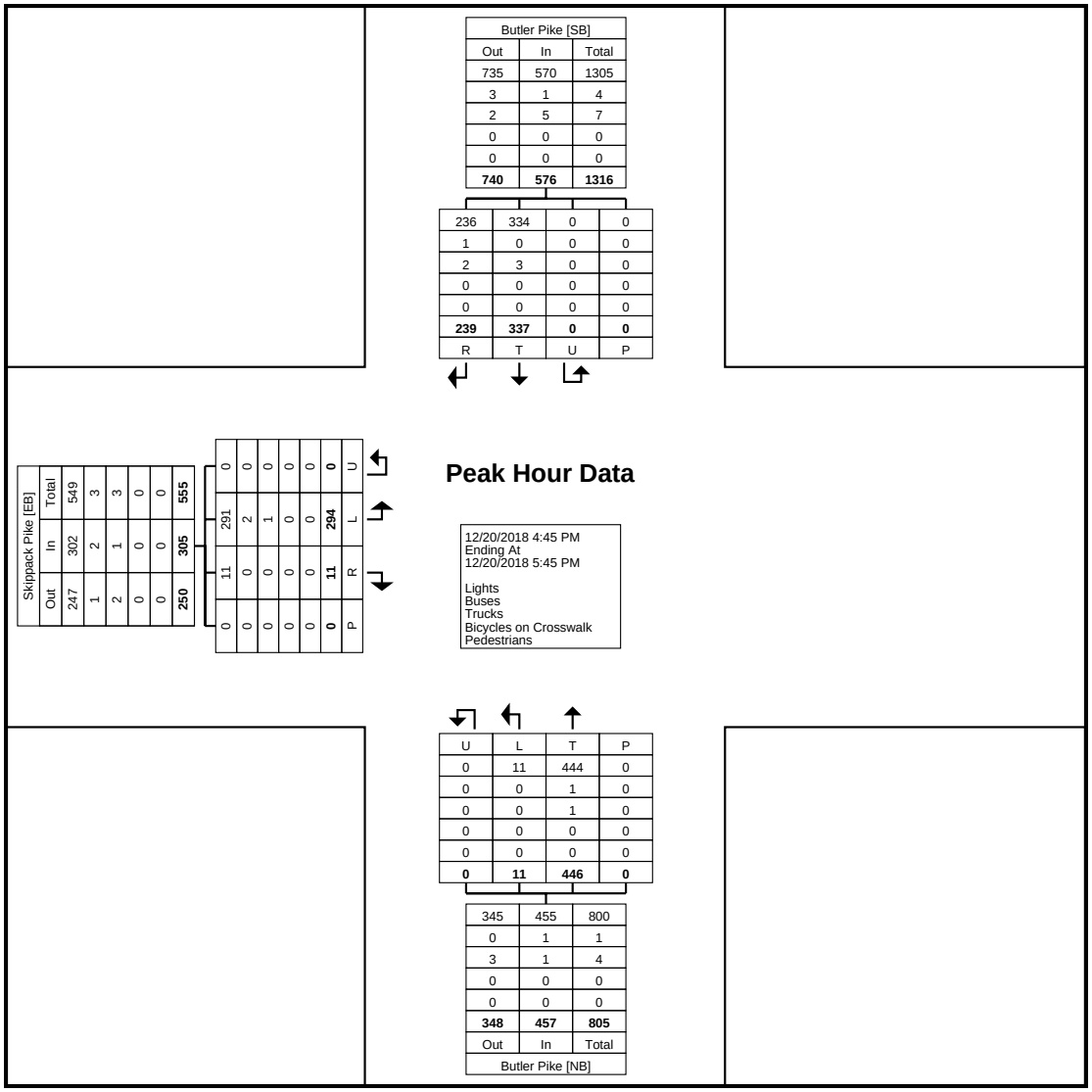
Count Name: Butler Pike-Norristown Rd
Site Code:
Start Date: 12/20/2018

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Skippack Pike Eastbound						Butler Pike Northbound					Butler Pike Southbound						
	Left	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
4:45 PM	82	3	0	0	0	85	1	108	0	0	109	80	35	3	0	0	118	312
5:00 PM	77	3	0	0	0	80	3	140	0	0	143	81	55	10	0	0	146	369
5:15 PM	70	3	0	0	0	73	5	99	0	0	104	91	63	6	0	0	160	337
5:30 PM	65	2	0	0	0	67	2	99	0	0	101	85	63	4	0	0	152	320
Total	294	11	0	0	0	305	11	446	0	0	457	337	216	23	0	0	576	1338
Approach %	96.4	3.6	0.0	0.0	-	-	2.4	97.6	0.0	-	-	58.5	37.5	4.0	0.0	-	-	-
Total %	22.0	0.8	0.0	0.0	-	22.8	0.8	33.3	0.0	-	34.2	25.2	16.1	1.7	0.0	-	43.0	-
PHF	0.896	0.917	0.000	0.000	-	0.897	0.550	0.796	0.000	-	0.799	0.926	0.857	0.575	0.000	-	0.900	0.907
Lights	291	11	0	0	-	302	11	444	0	-	455	334	214	22	0	-	570	1327
% Lights	99.0	100.0	-	-	-	99.0	100.0	99.6	-	-	99.6	99.1	99.1	95.7	-	-	99.0	99.2
Buses	2	0	0	0	-	2	0	1	0	-	1	0	1	0	0	-	1	4
% Buses	0.7	0.0	-	-	-	0.7	0.0	0.2	-	-	0.2	0.0	0.5	0.0	-	-	0.2	0.3
Trucks	1	0	0	0	-	1	0	1	0	-	1	3	1	1	0	-	5	7
% Trucks	0.3	0.0	-	-	-	0.3	0.0	0.2	-	-	0.2	0.9	0.5	4.3	-	-	0.9	0.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Montgomery County, PA
Butler Pike & Norristown Rd
Thursday, December 20, 2018
Location: 40.139007, -75.244196

Count Name: Butler Pike-Norristown Rd
Site Code:
Start Date: 12/20/2018
Page No: 6



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

APPENDIX B

LEVEL OF SERVICE DESCRIPTONS

LONGFIELD FARMS
TRANSPORTATION IMPACT STUDY
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

Pennoni

LEVEL OF SERVICE

Level of Service is a term used to describe vehicle operator satisfaction with the driving experience. Research has determined that operator satisfaction is based primarily on travel speed and delay. In urban environments these factors, travel speed and delay, are primarily controlled by the operation of intersections.

By utilizing models to simulate the flow of traffic at intersections, the average delay experienced by vehicles can be estimated. These models consider such factors as traffic volumes, roadway geometry, traffic control, and driver behavior. The Levels of Service designations are based on a comparison of the average delays calculated by the models with perceived acceptable delays.

The following tables illustrate the guidelines used for designating Levels of Service at intersections:

Level of Service Criteria
for Signalized Intersections[1]

Level of Service	Control Delay (seconds per vehicle)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

[1] Exhibit 16-2, Level of Service from Control Delay (HCM2000)

Level of Service Criteria
for Unsignalized Intersections[2]

Level of Service	Control Delay (seconds per vehicle)
a	≤ 10
b	> 10 and ≤ 15
c	> 15 and ≤ 25
d	> 25 and ≤ 35
e	> 35 and ≤ 50
f	> 50

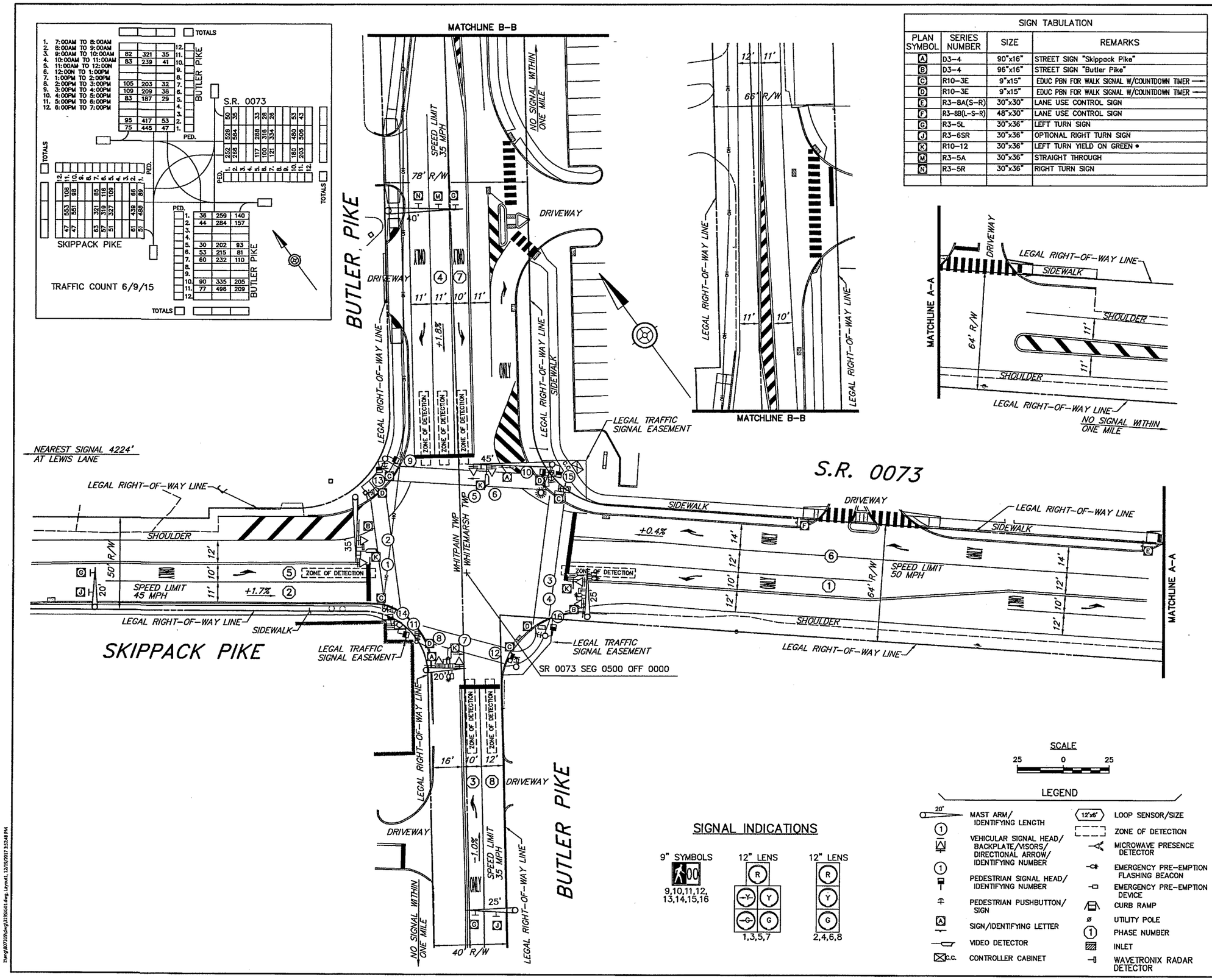
[2] Exhibit 17-2, Level of Service from Control Delay (HCM2000)

APPENDIX C

EXISTING TRAFFIC SIGNAL PLANS

LONGFIELD FARMS
TRANSPORTATION IMPACT STUDY
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

Pennoni



SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	D3-4	90"x16"	STREET SIGN "Skippack Pike"
B	D3-4	96"x16"	STREET SIGN "Butler Pike"
C	R10-3E	9"x15"	EDUC PBN FOR WALK SIGNAL W/COUNTDOWN TIMER
D	R10-3E	9"x15"	EDUC PBN FOR WALK SIGNAL W/COUNTDOWN TIMER
E	R3-8A(S-R)	30"x30"	LANE USE CONTROL SIGN
F	R3-8B(L-S-R)	48"x30"	LANE USE CONTROL SIGN
G	R3-5L	30"x36"	LEFT TURN SIGN
J	R3-6SR	30"x36"	OPTIONAL RIGHT TURN SIGN
K	R10-12	30"x36"	LEFT TURN YIELD ON GREEN •
M	R3-5A	30"x36"	STRAIGHT THROUGH
N	R3-5R	30"x36"	RIGHT TURN SIGN

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.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: WHITEMARSH/WHITPAIN TOWNSHIPS
INTERSECTION: SKIPPACK PIKE (S.R. 0073) AND BUTLER PIKE

REVIEWED:

DATE

MUNICIPAL OFFICIAL DATE

RECOMMENDED:

MARK L. KRAY 3/31/88

WERNER J. EICHORN 3/31/88
DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	NEW DRAWING/ADDED PRE-EMPTION	PAI	11/28/00	MLK	11/28/00	LRB	11/28/00
2	REVISED MST/PRE-EMPT. OP.	MCM		DLA	4/30/10	ABP	5/3/10
3	WIDEN NE CORNERS,ADD CURB RAMPS, WAVETRONIX,VIDEO DET.,NEW CC & SHS	TPD		DLA	12/13/11	ABP	12/16/11
4	WIDEN & INSTALL NEW SIGNAL EQUIPMENT & ADA RAMPS ON NW CORNER, ADD SB RT LANE	MCM		KPL	12/20/17	TLA	12/21/17
5							
6							
7							
8							

SHEET 2 OF 3 PERMIT # 64-0682 FILE # 0682

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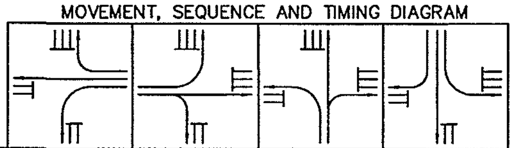
EMERGENCY PRE-EMPTION PHASING

MOVEMENT, SEQUENCE AND TIMING DIAGRAM



PHASE	6			2			8			4		
SIGNALS \ INTERVAL	31	32	33	34	35	36	37	38	39	40	41	42
1	G/G	Yⓑ	Rⓐ	R	R	R	R	R	R	R	R	R
2	G	Yⓐ	Rⓐ	R	R	R	R	R	R	R	R	R
3	R	R	R	G/G	Yⓑ	Rⓐ	R	R	R	R	R	R
4	R	R	R	G	Yⓐ	Rⓐ	R	R	R	R	R	R
5	R	R	R	R	R	R	G/G	Y	R	R	R	R
6	R	R	R	R	R	R	G	Y	R	R	R	R
7	R	R	R	R	R	R	R	R	R	G/G	Y	R
8	R	R	R	R	R	R	R	R	R	G	Y	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	H	H	H	H	H	H	H	H	H	H	H	H
15,16	H	H	H	H	H	H	H	H	H	H	H	H
FIXED TIME	*	5	2	*	5	2	*	4	2	*	4	2

* FOR DURATION OF PRE-EMPTION

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.

ⓐ SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION.

ⓑ SIGNAL TO INDICATE G/Y WHEN RETURNING TO NORMAL OPERATION.

EMERGENCY PRE-EMPTION NOTES:

- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE EASTBOUND & WESTHBOUND APPROACHES OF SKIPPACK PIKE AND THE NORTHBOUND & SOUTHBOUND APPROACHES OF BUTLER PIKE 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.

  LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.
- 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-EMPTED PHASE SHALL FOLLOW.
- 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 SIGNALS HAVE BEEN ACTUATED BY 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 12 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.

CLEARVIEW 3-W
8" UPPER CASE
6" LOWER CASE LETTERS

SIGN A
90"

16" | **Skippack Pike** | 3" / 8" / 5"

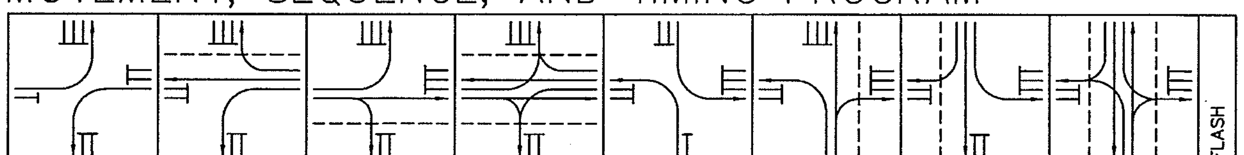
CLEARVIEW 3-W
10.6" UPPER CASE
8" LOWER CASE LETTERS

SIGN B*
96"

16" | **Butler Pike** | 2" / 10.67" / 3.33"

NOTE:
STREET SIGNS TO HAVE GREEN BACKGROUND WITH WHITE LETTERS AND BORDER

MOVEMENT, SEQUENCE, AND TIMING PROGRAM



PHASE	1+5			1+6				2+5				2+6				3+7			3+8				4+7				4+8				FLASH
SIGNALS \ INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
1	R/G	R/Y①	R①	G/G	G/G	Y③	R④	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
2	R	R	R	G	G	Y④	R④	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
3	R/G	R/Y②	Y②	R	R	R	R	G/G	G/G	Y③	R④	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
4	R	R	R	R	R	R	R	G	G	Y④	R④	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
5	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R/G	R/Y⑤	R⑤	G/G	G/G	Y⑦	R⑧	R	R	R	R	G	G	Y	R	R
6	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y⑧	R⑧	R	R	R	R	G	G	Y	R	R
7	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R/G	R/Y⑥	R⑥	R	R	R	R	G/G	G/G	Y⑦	R⑧	G	G	Y	R	R
8	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y⑧	R⑧	G	G	Y	R	R
9,10	H	H	H	M	FH⑪	H⑪	H⑪	H	H	H	H	M	FH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	OFF
11,12	H	H	H	H	H	H	H	M	FH⑪	H⑪	H⑪	M	FH	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	OFF
13,14	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH⑫	H⑫	H⑫	M	FH	H	H	OFF
15,16	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	M	FH⑫	H⑫	H⑫	H	H	H	H	M	FH	H	H	OFF

INTERVAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
FIXED		5	2			5	2			5	2			5	2		4	2			4	2			4	2			4	2
MINIMUM	3			3				3				15				3			3				3				3			
PASSAGE	3			3				3				**				3			3				3				3			
MAXIMUM 1	7			17				7				53				7			7				7				38			
MAXIMUM 2	8			15				8				52				7			7				7				50			
MAXIMUM 3	7			7				7				52				7			7				7				28			
PEDESTRIAN*				⑨				⑨				7	23						⑩				⑩				7	20		
MEMORY	NL			NL				NL				MN				NL			NL				NL				NL			

OPERATIONAL NOTES:

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

① R/G IF FOLLOWED BY PHASE 1+6

② R/G IF FOLLOWED BY PHASE 2+5

③ G/Y IF FOLLOWED BY PHASE 2+6

④ G IF FOLLOWED BY PHASE 2+6

⑤ R/G IF FOLLOWED BY PHASE 3+8

⑥ R/G IF FOLLOWED BY PHASE 4+7

⑦ G/Y IF FOLLOWED BY PHASE 4+8

⑧ G IF FOLLOWED BY PHASE 4+8

⑨ TIMING TO BE AS SHOWN IN PHASE 2+6. IT MAY TIME OUT IN THIS PHASE OR MAY BE COMPLETED IN PHASE 2+6

⑩ TIMING TO BE AS SHOWN IN PHASE 4+8. IT MAY TIME OUT IN THIS PHASE OR MAY BE COMPLETED IN PHASE 4+8

⑪ M IF FOLLOWED BY PHASE 2+6

⑫ M IF FOLLOWED BY PHASE 4+8

- SIGNAL TO DWELL IN PHASE 2+6, UNTIL ACTUATED BY PHASE 3, 4, 7, OR 8.
- MAX 1: 06:00 TO 09:30 MON-FRI
  MAX 2: 14:30 TO 19:00 MON-FRI
  MAX 3: TO OPERATE ALL OTHER TIMES
- PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL.
- THIS SIGNAL TO BE EQUIPED WITH ACCESSIBLE PEDESTRIAN SIGNALS ACTIVATED BY PUSHBUTTON 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
- SPEED BOUNDARY: 27-100 MPH

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 <u>TRAFFIC SIGNAL STANDARDS</u> TC-8800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY

MUNICIPALITY: WHITEMARSH/WHITPAIN TOWNSHIPS

INTERSECTION: SKIPPACK PIKE (S.R. 0073) AND BUTLER PIKE

REVIEWED:

DATE

MUNICIPAL OFFICIAL DATE

RECOMMENDED:

MARK L. KRAY 3/31/88

WERNER J. EICHORN 3/31/88
DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DES./REVW.	DATE	REVW.	DATE	RECOM.	DATE
1	NEW DRAWING/ADDED PRE-EMPTION	PAI	11/28/00	MLK	11/28/00	LRB	11/28/00
2	REVISED MST/PRE-EMPT. OP.	MCM		DLA	4/30/10	ABP	5/3/10
3	WIDEN NE CORNERS,ADD CURB RAMPS, WAVETRONIX,VIDEO DET.,NEW CC & SH'S	TPD		DLA	12/13/11	ABP	12/16/11
4	WIDEN & INSTALL NEW SIGNAL EQUIPMENT & ADA RAMPS ON NW CORNER, ADD SB RT LANE	MCM		KPL	12/20/17	DLA	12/21/17
5							
6							
7							
8							

SHEET 3 OF 3 | PERMIT # 64-0682 | FILE # 0682

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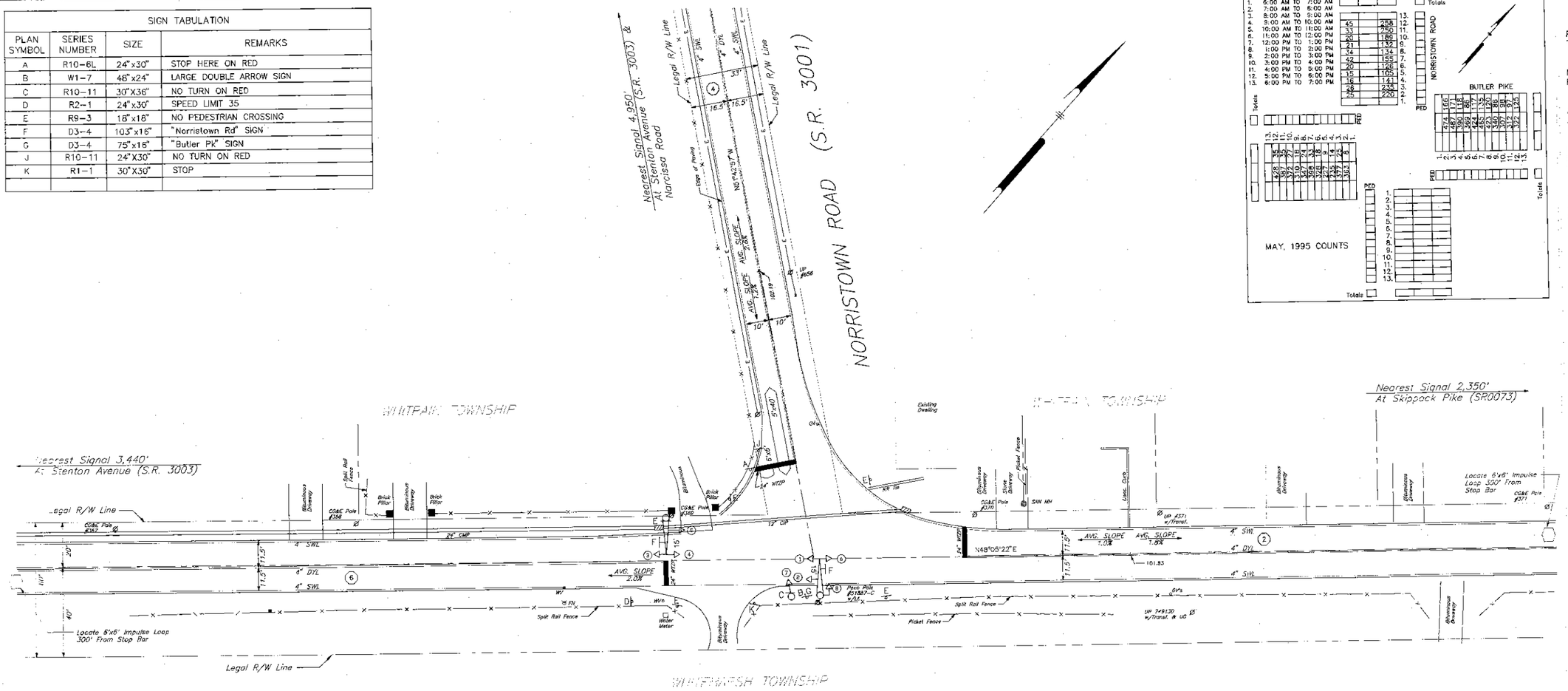
SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R10-6L	24"x30"	STOP HERE ON RED
B	W1-7	48"x24"	LARGE DOUBLE ARROW SIGN
C	R10-11	30"X36"	NO TURN ON RED
D	R2-1	24"x30"	SPEED LIMIT 35
E	R9-3	18"x18"	NO PEDESTRIAN CROSSING
F	D3-4	103"x16"	"Norristown Rd" SIGN
G	D3-4	75"x16"	"Butler Pk" SIGN
J	R10-11	24"X30"	NO TURN ON RED
K	R1-1	30"X30"	STOP



GENERAL NOTES

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PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONS THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOL PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATIO UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS ACT 38, PREVENTION OF DAMAGE TO UNDERGROUND UTIL EFFECTIVE DATE DECEMBER 12, 1991.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLA CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT T UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PER ANY CHANGES IN INTERSECTION GEOMETRY REGARDING S

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS TH OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MU OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORD TRAFFIC SIGNAL STANDARDS TC-7800 SERIES.

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

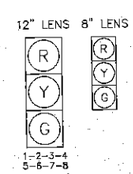
PHASE	2+6				4								EMERGENCY FLASHING
INTERVAL / SIGNALS	1	2	3		4	5	6						
1-2-3	G	Y	R		R	R	R						Y
4-5-6	G	Y	R		R	R	R						Y
7-8	R	R	R		G	Y	R						R

FIXED		5	2			5	2						
MINIMUM	10				3								
SEC./ACT.	3												
MAX. INITIAL	20												
PASSAGE	5				5								
TO REDUCE	10												
BEFORE RED.	15												
MIN. GAP	3												
MAX. 1	35				15								
MAX. 2	40				20								
MEMORY	MR				NL								

- MAX. 2 SHALL OPERATE MON.-FRI. 7:00 A.M. TO 9:00 A.M. & 3:00 P.M. TO 6:00 P.M.
- MAX. 1 SHALL OPERATE AT ALL OTHER TIMES

SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS _____
SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS & LOUVERS _____

SIGNAL INDICATIONS



25 0 25

LEGEND

- 20' MAST ARM/ IDENTIFYING LENGTH
- VEHICULAR SIGNAL HEAD/ BACKPLATE/VISORS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER
- PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER
- PEDESTRIAN PUSHBUTTON/ SIGN
- SIGN/IDENTIFYING LETTER
- 12'x6' LOOP SENSOR/SIZE
- MICROWAVE DETECTOR
- EMERGENCY PREEMPTION DEVICE
- CURB CUT RAMP
- UTILITY POLE
- PHASE NUMBER

95142

PENNSYLVANIA DEPARTMENT OF TRANSP
ENGINEERING DISTRICT 6-

COUNTY: MONTGOMERY
MUNICIPALITY: WHITPAIN/WHITEMARSH
INTERSECTION: BUTLER PIKE AND NORRISTOWN ROAD (S.R. 3

REVIEWED:

MUNICIPAL OFFICIAL

RECOMMENDED: Marla L. Krayt
Douglas Mor
DISTRICT TRAFFIC ENGINEER

NO.	REVISION	DES./ REVW.	DATE	REVW.	
1	New drwg.	nv	2/4/97	MR	

SHEET 2 OF 2 | PERMIT # 64-2608 | FILE

APPENDIX D

OTHER AREA PROJECTS

LONGFIELD FARMS
TRANSPORTATION IMPACT STUDY
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

Pennoni

TABLE 1

TRAFFIC GENERATION CHARACTERISTICS
1 & 11 SKIPPACK PIKE COMMERCIAL DEVELOPMENT
WHITPAIN TOWNSHIP, MONTGOMERY COUNTY, PA

Description	Daily	Weekday AM Peak Hour			Weekday PM Peak Hour			Saturday Midday Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
TRIP RATES[1]										
Retail (900 SF)[2]	37.75	0.58	0.36	0.94	1.83	1.98	3.81	2.34	2.16	4.50
Restaurants (6,525 SF)[2][3]	112.18	5.47	4.47	9.94	6.06	3.71	9.77	5.71	5.48	11.19
TRAFFIC VOLUMES										
Retail (900 SF)	34	1	0	1	2	2	4	2	2	4
Restaurants (6,525 SF)	732	36	29	65	40	24	64	37	36	73
PASS-BY TRIPS	- 242	- 11	- 11	- 22	- 14	- 14	- 28	- 12	- 12	- 24
TOTAL NEW TRIPS	524	26	18	44	28	12	40	27	26	53

(1) *Trip Generation Manual, 10th Edition, Institution of Transportation Engineers, Washington, D.C., 2016 (Land Use Codes 820 and 932).*
(2) *Trips per 1,000 square feet (SF) of floor space.*
(3) *One or more restaurants may not be open for business during the morning peak period. Thus trip generation estimates may be overestimated for the morning peak hour.*

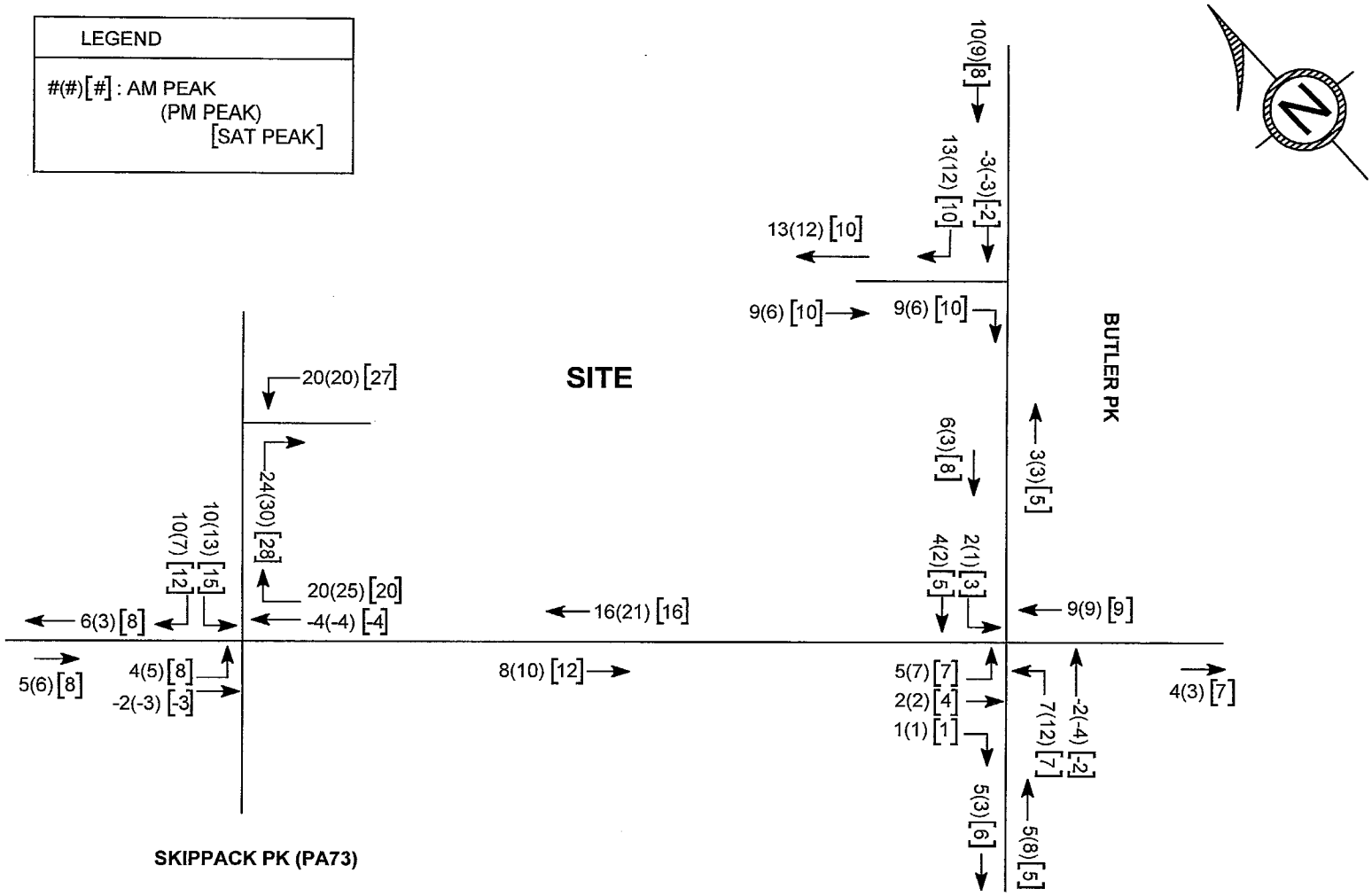


FIGURE 4
DEVEPOLMENT GENERATED TRAFFIC

1 & 11 SKIPPACK PIKE COMMERCIAL DEVELOPMENT
WHITPAIN TOWNSHIP, PA

APPENDIX E

SYNCHRO ANALYSIS WORKSHEETS

EXISTING CONDITIONS

LONGFIELD FARMS
TRANSPORTATION IMPACT STUDY
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

Pennoni

HCM 6th Signalized Intersection Summary
1: Butler Pike & Skippack Pike (73)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	382	35	265	552	32	40	289	138	39	423	105
Future Volume (veh/h)	69	382	35	265	552	32	40	289	138	39	423	105
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	1764	1707	1707	1758	1744	1857	1766	1780	1780	1665	1722	1665
Adj Flow Rate, veh/h	71	394	36	273	569	33	41	298	142	40	436	108
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	5	5	3	4	1	5	4	4	8	4	8
Cap, veh/h	314	633	58	442	839	757	139	319	152	127	482	395
Arrive On Green	0.04	0.41	0.41	0.11	0.48	0.48	0.03	0.28	0.28	0.03	0.28	0.28
Sat Flow, veh/h	1680	1541	141	1674	1744	1574	1682	1140	543	1586	1722	1411
Grp Volume(v), veh/h	71	0	430	273	569	33	41	0	440	40	436	108
Grp Sat Flow(s),veh/h/ln	1680	0	1682	1674	1744	1574	1682	0	1683	1586	1722	1411
Q Serve(g_s), s	3.3	0.0	27.3	12.1	33.9	1.5	2.3	0.0	34.5	2.4	33.0	8.1
Cycle Q Clear(g_c), s	3.3	0.0	27.3	12.1	33.9	1.5	2.3	0.0	34.5	2.4	33.0	8.1
Prop In Lane	1.00		0.08	1.00		1.00	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	314	0	691	442	839	757	139	0	470	127	482	395
V/C Ratio(X)	0.23	0.00	0.62	0.62	0.68	0.04	0.30	0.00	0.94	0.31	0.91	0.27
Avail Cap(c_a), veh/h	327	0	691	475	839	757	183	0	486	169	497	407
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	0.0	31.5	21.6	27.0	18.6	37.0	0.0	47.5	37.4	46.9	37.9
Incr Delay (d2), s/veh	0.4	0.0	4.2	2.2	4.4	0.1	1.2	0.0	25.3	1.4	19.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.3	0.0	17.1	8.2	20.5	1.0	1.8	0.0	24.4	1.8	23.3	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.8	0.0	35.7	23.7	31.4	18.7	38.2	0.0	72.7	38.8	66.6	38.3
LnGrp LOS	C	A	D	C	C	B	D	A	E	D	E	D
Approach Vol, veh/h		501			875			481			584	
Approach Delay, s/veh		34.0			28.5			69.8			59.5	
Approach LOS		C			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.4	61.5	9.4	42.8	11.9	71.0	9.4	42.8
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	17.0	53.0	7.0	38.0	6.0	64.0	7.0	38.0
Max Q Clear Time (g_c+I1), s	14.1	29.3	4.3	35.0	5.3	35.9	4.4	36.5
Green Ext Time (p_c), s	0.3	1.5	0.0	0.7	0.0	2.2	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	45.2
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	6	0	460	716	4
Future Vol, veh/h	7	6	0	460	716	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	1	100	5	4	0
Mvmt Flow	8	6	0	495	770	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1267	772	774	0	-	0
Stage 1	772	-	-	-	-	-
Stage 2	495	-	-	-	-	-
Critical Hdwy	6.4	6.21	5.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	3.1	-	-	-
Pot Cap-1 Maneuver	188	401	531	-	-	-
Stage 1	459	-	-	-	-	-
Stage 2	617	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	188	401	531	-	-	-
Mov Cap-2 Maneuver	188	-	-	-	-	-
Stage 1	459	-	-	-	-	-
Stage 2	617	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	531	-	249	-	-
HCM Lane V/C Ratio	-	-	0.056	-	-
HCM Control Delay (s)	0	-	20.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 6th Signalized Intersection Summary
8: Butler Pike & Norristown Road

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	179	10	2	296	369	342
Future Volume (veh/h)	179	10	2	296	369	342
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1794	1794	1803	1803	1738	1738
Adj Flow Rate, veh/h	186	10	2	308	384	356
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	5	5	4	4
Cap, veh/h	254	14	58	1164	537	498
Arrive On Green	0.16	0.16	0.65	0.65	0.65	0.65
Sat Flow, veh/h	1554	84	2	1799	830	770
Grp Volume(v), veh/h	197	0	310	0	0	740
Grp Sat Flow(s),veh/h/ln	1646	0	1801	0	0	1600
Q Serve(g_s), s	7.2	0.0	0.0	0.0	0.0	19.2
Cycle Q Clear(g_c), s	7.2	0.0	4.6	0.0	0.0	19.2
Prop In Lane	0.94	0.05	0.01			0.48
Lane Grp Cap(c), veh/h	269	0	1222	0	0	1035
V/C Ratio(X)	0.73	0.00	0.25	0.00	0.00	0.71
Avail Cap(c_a), veh/h	545	0	1222	0	0	1035
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	25.2	0.0	4.8	0.0	0.0	7.3
Incr Delay (d2), s/veh	3.8	0.0	0.5	0.0	0.0	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.1	0.0	2.4	0.0	0.0	9.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	29.0	0.0	5.3	0.0	0.0	11.6
LnGrp LOS	C	A	A	A	A	B
Approach Vol, veh/h	197			310	740	
Approach Delay, s/veh	29.0			5.3	11.6	
Approach LOS	C			A	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		47.0		16.4		47.0
Change Period (Y+Rc), s		7.0		7.0		7.0
Max Green Setting (Gmax), s		40.0		20.0		40.0
Max Q Clear Time (g_c+I1), s		21.2		9.2		6.6
Green Ext Time (p_c), s		3.3		0.5		1.1

Intersection Summary	
HCM 6th Ctrl Delay	12.8
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
1: Butler Pike & Skippack Pike (73)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	99	318	31	211	390	35	77	456	219	21	369	99
Future Volume (veh/h)	99	318	31	211	390	35	77	456	219	21	369	99
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	1764	1764	1764	1786	1786	1857	1823	1823	1823	1707	1764	1764
Adj Flow Rate, veh/h	105	338	33	224	415	37	82	485	233	22	393	105
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	5	1	1
Cap, veh/h	372	596	58	430	752	662	255	409	197	83	569	482
Arrive On Green	0.06	0.38	0.38	0.10	0.42	0.42	0.05	0.35	0.35	0.02	0.32	0.32
Sat Flow, veh/h	1680	1581	154	1701	1786	1574	1736	1163	559	1626	1764	1495
Grp Volume(v), veh/h	105	0	371	224	415	37	82	0	718	22	393	105
Grp Sat Flow(s),veh/h/ln	1680	0	1736	1701	1786	1574	1736	0	1722	1626	1764	1495
Q Serve(g_s), s	5.5	0.0	24.5	11.2	25.4	2.0	4.4	0.0	51.0	1.3	28.2	7.4
Cycle Q Clear(g_c), s	5.5	0.0	24.5	11.2	25.4	2.0	4.4	0.0	51.0	1.3	28.2	7.4
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	372	0	655	430	752	662	255	0	606	83	569	482
V/C Ratio(X)	0.28	0.00	0.57	0.52	0.55	0.06	0.32	0.00	1.18	0.27	0.69	0.22
Avail Cap(c_a), veh/h	372	0	655	449	752	662	264	0	606	139	621	526
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.3	0.0	35.8	24.8	31.7	24.9	32.4	0.0	47.0	39.3	42.8	35.8
Incr Delay (d2), s/veh	0.4	0.0	3.5	1.0	2.9	0.2	0.7	0.0	99.1	1.7	2.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.0	0.0	16.2	7.9	16.6	1.4	3.5	0.0	54.0	1.0	18.5	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.7	0.0	39.3	25.8	34.6	25.1	33.2	0.0	146.1	41.0	45.8	36.0
LnGrp LOS	C	A	D	C	C	C	C	A	F	D	D	D
Approach Vol, veh/h		476			676			800			520	
Approach Delay, s/veh		36.5			31.2			134.5			43.6	
Approach LOS		D			C			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.3	60.7	12.2	51.7	14.0	67.0	7.9	56.0
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	15.0	52.0	7.0	50.0	7.0	60.0	7.0	50.0
Max Q Clear Time (g_c+I1), s	13.2	26.5	6.4	30.2	7.5	27.4	3.3	53.0
Green Ext Time (p_c), s	0.1	1.3	0.0	1.7	0.0	1.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	68.3
HCM 6th LOS	E

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	13	5	749	598	10
Future Vol, veh/h	1	13	5	749	598	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	2	1	1
Mvmt Flow	1	14	5	805	643	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1062	649	654	0	-	0
Stage 1	649	-	-	-	-	-
Stage 2	413	-	-	-	-	-
Critical Hdwy	6.615	6.215	4.115	-	-	-
Critical Hdwy Stg 1	5.415	-	-	-	-	-
Critical Hdwy Stg 2	5.815	-	-	-	-	-
Follow-up Hdwy	3.5095	3.3095	2.2095	-	-	-
Pot Cap-1 Maneuver	234	471	937	-	-	-
Stage 1	522	-	-	-	-	-
Stage 2	639	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	232	471	937	-	-	-
Mov Cap-2 Maneuver	232	-	-	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	639	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.5	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	937	-	439	-	-
HCM Lane V/C Ratio	0.006	-	0.034	-	-
HCM Control Delay (s)	8.9	0	13.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	2	7	0	0	9	14	698	2	0	598	29
Future Vol, veh/h	5	2	7	0	0	9	14	698	2	0	598	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	5	2	7	0	0	10	15	743	2	0	636	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1431	1427	652	1430	1441	744	667	0	0	745	0	0
Stage 1	652	652	-	774	774	-	-	-	-	-	-	-
Stage 2	779	775	-	656	667	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	113	136	471	113	134	418	932	-	-	872	-	-
Stage 1	460	467	-	394	411	-	-	-	-	-	-	-
Stage 2	392	411	-	458	460	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	108	132	471	108	130	418	932	-	-	872	-	-
Mov Cap-2 Maneuver	108	132	-	108	130	-	-	-	-	-	-	-
Stage 1	448	467	-	383	400	-	-	-	-	-	-	-
Stage 2	373	400	-	449	460	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.4	13.8	0.2	0
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	932	-	-	183	418	872	-	-
HCM Lane V/C Ratio	0.016	-	-	0.081	0.023	-	-	-
HCM Control Delay (s)	8.9	-	-	26.4	13.8	0	-	-
HCM Lane LOS	A	-	-	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	1	4	742	581	8
Future Vol, veh/h	3	1	4	742	581	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	0	1	1	0
Mvmt Flow	3	1	4	789	618	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1420	623	627	0	-	0
Stage 1	623	-	-	-	-	-
Stage 2	797	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	152	488	965	-	-	-
Stage 1	539	-	-	-	-	-
Stage 2	447	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	151	488	965	-	-	-
Mov Cap-2 Maneuver	151	-	-	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	447	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.1	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	965	-	183	-	-
HCM Lane V/C Ratio	0.004	-	0.023	-	-
HCM Control Delay (s)	8.7	0	25.1	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th Signalized Intersection Summary
8: Butler Pike & Norristown Road

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	294	11	11	446	337	239
Future Volume (veh/h)	294	11	11	446	337	239
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1794	1794	1860	1860	1780	1780
Adj Flow Rate, veh/h	323	12	12	490	370	263
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	1	1	1	1
Cap, veh/h	389	14	62	1074	570	405
Arrive On Green	0.24	0.24	0.59	0.59	0.59	0.59
Sat Flow, veh/h	1623	60	15	1826	968	688
Grp Volume(v), veh/h	336	0	502	0	0	633
Grp Sat Flow(s),veh/h/ln	1688	0	1841	0	0	1656
Q Serve(g_s), s	13.2	0.0	0.0	0.0	0.0	17.7
Cycle Q Clear(g_c), s	13.2	0.0	10.6	0.0	0.0	17.7
Prop In Lane	0.96	0.04	0.02			0.42
Lane Grp Cap(c), veh/h	404	0	1136	0	0	975
V/C Ratio(X)	0.83	0.00	0.44	0.00	0.00	0.65
Avail Cap(c_a), veh/h	509	0	1136	0	0	975
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	25.2	0.0	8.1	0.0	0.0	9.6
Incr Delay (d2), s/veh	9.1	0.0	1.2	0.0	0.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.7	0.0	6.7	0.0	0.0	9.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.3	0.0	9.3	0.0	0.0	12.9
LnGrp LOS	C	A	A	A	A	B
Approach Vol, veh/h	336			502	633	
Approach Delay, s/veh	34.3			9.3	12.9	
Approach LOS	C			A	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		47.0		22.7		47.0
Change Period (Y+Rc), s		7.0		7.0		7.0
Max Green Setting (Gmax), s		40.0		20.0		40.0
Max Q Clear Time (g_c+I1), s		19.7		15.2		12.6
Green Ext Time (p_c), s		2.7		0.5		2.0

Intersection Summary	
HCM 6th Ctrl Delay	16.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

APPENDIX F

SYNCHRO ANALYSIS WORKSHEETS

FUTURE 2022 CONDITIONS

WITHOUT SITE DEVELOPMENT

('NO-BUILD')

LONGFIELD FARMS
TRANSPORTATION IMPACT STUDY
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

Pennoni

HCM 6th Signalized Intersection Summary
1: Butler Pike & Skippack Pike (73)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	393	37	271	574	33	48	294	141	42	437	107
Future Volume (veh/h)	76	393	37	271	574	33	48	294	141	42	437	107
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	1764	1707	1707	1758	1744	1857	1766	1780	1780	1665	1722	1665
Adj Flow Rate, veh/h	78	405	38	279	592	34	49	303	145	43	451	110
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	5	5	3	4	1	5	4	4	8	4	8
Cap, veh/h	203	469	44	323	629	568	186	336	161	177	503	413
Arrive On Green	0.06	0.30	0.30	0.11	0.36	0.36	0.04	0.30	0.30	0.04	0.29	0.29
Sat Flow, veh/h	1680	1537	144	1674	1744	1574	1682	1138	545	1586	1722	1411
Grp Volume(v), veh/h	78	0	443	279	592	34	49	0	448	43	451	110
Grp Sat Flow(s),veh/h/ln	1680	0	1682	1674	1744	1574	1682	0	1682	1586	1722	1411
Q Serve(g_s), s	2.8	0.0	22.0	10.0	29.1	1.2	1.8	0.0	22.6	1.7	22.2	5.3
Cycle Q Clear(g_c), s	2.8	0.0	22.0	10.0	29.1	1.2	1.8	0.0	22.6	1.7	22.2	5.3
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	203	0	513	323	629	568	186	0	497	177	503	413
V/C Ratio(X)	0.38	0.00	0.86	0.86	0.94	0.06	0.26	0.00	0.90	0.24	0.90	0.27
Avail Cap(c_a), veh/h	240	0	513	323	629	568	268	0	532	260	544	446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.5	0.0	29.0	21.5	27.4	18.5	23.2	0.0	30.0	23.4	30.0	24.0
Incr Delay (d2), s/veh	1.2	0.0	17.4	20.6	24.0	0.2	0.7	0.0	17.8	0.7	16.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.9	0.0	15.9	9.0	21.2	0.8	1.3	0.0	16.6	1.1	16.5	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.7	0.0	46.4	42.1	51.4	18.7	24.0	0.0	47.8	24.1	46.7	24.4
LnGrp LOS	C	A	D	D	D	B	C	A	D	C	D	C
Approach Vol, veh/h		521			905			497			604	
Approach Delay, s/veh		43.0			47.3			45.4			41.0	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	33.0	8.7	30.9	11.1	37.9	8.4	31.1
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	9.0	26.0	7.0	27.0	6.0	29.0	7.0	27.0
Max Q Clear Time (g_c+I1), s	12.0	24.0	3.8	24.2	4.8	31.1	3.7	24.6
Green Ext Time (p_c), s	0.0	0.4	0.0	0.6	0.0	0.0	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	44.6
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	483	745	0
Future Vol, veh/h	0	0	0	483	745	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	525	810	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1073	810	810	0	-	0
Stage 1	810	-	-	-	-	-
Stage 2	263	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	229	379	814	-	-	-
Stage 1	436	-	-	-	-	-
Stage 2	758	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	229	379	814	-	-	-
Mov Cap-2 Maneuver	229	-	-	-	-	-
Stage 1	436	-	-	-	-	-
Stage 2	758	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	814	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	483	0	0	745	0
Future Vol, veh/h	0	0	0	0	0	0	0	483	0	0	745	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	525	0	0	810	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	810	1335	1335	525	-	0	0	525	0	0
Stage 1	-	-	-	525	525	-	-	-	-	-	-	-
Stage 2	-	-	-	810	810	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	7.12	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	380	131	154	552	0	-	-	1042	-	0
Stage 1	0	0	-	536	529	-	0	-	-	-	-	0
Stage 2	0	0	-	374	393	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	-	380	131	154	552	-	-	-	1042	-	-
Mov Cap-2 Maneuver	-	-	-	131	154	-	-	-	-	-	-	-
Stage 1	-	-	-	536	529	-	-	-	-	-	-	-
Stage 2	-	-	-	374	393	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	-	1042	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	6	0	476	737	4
Future Vol, veh/h	7	6	0	476	737	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	1	100	5	4	0
Mvmt Flow	8	6	0	512	792	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1306	794	796	0	-	0
Stage 1	794	-	-	-	-	-
Stage 2	512	-	-	-	-	-
Critical Hdwy	6.4	6.21	5.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	3.1	-	-	-
Pot Cap-1 Maneuver	178	390	519	-	-	-
Stage 1	449	-	-	-	-	-
Stage 2	606	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	178	390	519	-	-	-
Mov Cap-2 Maneuver	178	-	-	-	-	-
Stage 1	449	-	-	-	-	-
Stage 2	606	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	519	-	238	-	-
HCM Lane V/C Ratio	-	-	0.059	-	-
HCM Control Delay (s)	0	-	21.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 6th Signalized Intersection Summary
8: Butler Pike & Norristown Road

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	183	10	2	308	382	350
Future Volume (veh/h)	183	10	2	308	382	350
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1794	1794	1803	1803	1738	1738
Adj Flow Rate, veh/h	191	10	2	321	398	365
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	5	5	4	4
Cap, veh/h	258	14	68	1100	511	468
Arrive On Green	0.17	0.17	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1556	81	2	1798	835	766
Grp Volume(v), veh/h	202	0	323	0	0	763
Grp Sat Flow(s),veh/h/ln	1646	0	1800	0	0	1600
Q Serve(g_s), s	6.3	0.0	0.0	0.0	0.0	19.1
Cycle Q Clear(g_c), s	6.3	0.0	4.6	0.0	0.0	19.1
Prop In Lane	0.95	0.05	0.01			0.48
Lane Grp Cap(c), veh/h	273	0	1169	0	0	979
V/C Ratio(X)	0.74	0.00	0.28	0.00	0.00	0.78
Avail Cap(c_a), veh/h	305	0	1169	0	0	979
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	21.4	0.0	5.0	0.0	0.0	7.8
Incr Delay (d2), s/veh	8.3	0.0	0.6	0.0	0.0	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.9	0.0	2.3	0.0	0.0	9.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	29.7	0.0	5.5	0.0	0.0	13.9
LnGrp LOS	C	A	A	A	A	B
Approach Vol, veh/h	202			323	763	
Approach Delay, s/veh	29.7			5.5	13.9	
Approach LOS	C			A	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		39.0		14.9		39.0
Change Period (Y+Rc), s		7.0		7.0		7.0
Max Green Setting (Gmax), s		32.0		9.0		32.0
Max Q Clear Time (g_c+I1), s		21.1		8.3		6.6
Green Ext Time (p_c), s		2.8		0.0		1.1

Intersection Summary	
HCM 6th Ctrl Delay	14.3
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
1: Butler Pike & Skippack Pike (73)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	327	33	216	408	36	91	462	224	22	379	101
Future Volume (veh/h)	108	327	33	216	408	36	91	462	224	22	379	101
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	1764	1764	1764	1786	1786	1857	1823	1823	1823	1707	1764	1764
Adj Flow Rate, veh/h	115	348	35	230	434	38	97	491	238	23	403	107
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	5	1	1
Cap, veh/h	252	444	45	288	513	452	329	455	221	112	627	532
Arrive On Green	0.07	0.28	0.28	0.08	0.29	0.29	0.06	0.39	0.39	0.02	0.36	0.36
Sat Flow, veh/h	1680	1577	159	1701	1786	1574	1736	1160	562	1626	1764	1495
Grp Volume(v), veh/h	115	0	383	230	434	38	97	0	729	23	403	107
Grp Sat Flow(s),veh/h/ln	1680	0	1735	1701	1786	1574	1736	0	1722	1626	1764	1495
Q Serve(g_s), s	4.7	0.0	20.2	8.0	22.7	1.8	3.4	0.0	39.0	0.9	19.0	4.9
Cycle Q Clear(g_c), s	4.7	0.0	20.2	8.0	22.7	1.8	3.4	0.0	39.0	0.9	19.0	4.9
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.33	1.00		1.00
Lane Grp Cap(c), veh/h	252	0	489	288	513	452	329	0	676	112	627	532
V/C Ratio(X)	0.46	0.00	0.78	0.80	0.85	0.08	0.29	0.00	1.08	0.21	0.64	0.20
Avail Cap(c_a), veh/h	261	0	489	288	513	452	363	0	676	203	692	586
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	0.0	32.9	29.3	33.3	25.9	19.7	0.0	30.2	25.7	26.7	22.2
Incr Delay (d2), s/veh	1.3	0.0	11.9	14.6	15.7	0.4	0.5	0.0	58.0	0.9	1.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.3	0.0	14.7	8.4	16.9	1.2	2.4	0.0	36.4	0.6	12.6	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.2	0.0	44.8	43.9	49.0	26.2	20.2	0.0	88.2	26.6	28.5	22.4
LnGrp LOS	C	A	D	D	D	C	C	A	F	C	C	C
Approach Vol, veh/h		498			702			826			533	
Approach Delay, s/veh		40.5			46.1			80.2			27.2	
Approach LOS		D			D			F			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	34.0	11.1	40.4	13.4	34.6	7.4	44.0
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	7.0	27.0	7.0	38.0	7.0	27.0	7.0	38.0
Max Q Clear Time (g_c+I1), s	10.0	22.2	5.4	21.0	6.7	24.7	2.9	41.0
Green Ext Time (p_c), s	0.0	0.6	0.0	1.7	0.0	0.4	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	52.1
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	13	5	775	615	10
Future Vol, veh/h	1	13	5	775	615	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	2	1	1
Mvmt Flow	1	14	5	833	661	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1094	667	672	0	-	0
Stage 1	667	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Critical Hdwy	6.615	6.215	4.115	-	-	-
Critical Hdwy Stg 1	5.415	-	-	-	-	-
Critical Hdwy Stg 2	5.815	-	-	-	-	-
Follow-up Hdwy	3.5095	3.3095	2.2095	-	-	-
Pot Cap-1 Maneuver	223	460	922	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	221	460	922	-	-	-
Mov Cap-2 Maneuver	221	-	-	-	-	-
Stage 1	507	-	-	-	-	-
Stage 2	629	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.7	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	922	-	427	-	-
HCM Lane V/C Ratio	0.006	-	0.035	-	-
HCM Control Delay (s)	8.9	0	13.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	2	7	0	0	9	14	761	2	0	598	30
Future Vol, veh/h	5	2	7	0	0	9	14	761	2	0	598	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	5	2	7	0	0	10	15	810	2	0	636	32

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1498	1494	652	1498	1509	811	668	0	0	812	0	0
Stage 1	652	652	-	841	841	-	-	-	-	-	-	-
Stage 2	846	842	-	657	668	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	102	124	471	102	122	383	931	-	-	823	-	-
Stage 1	460	467	-	362	383	-	-	-	-	-	-	-
Stage 2	360	383	-	457	459	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	97	120	471	97	118	383	931	-	-	823	-	-
Mov Cap-2 Maneuver	97	120	-	97	118	-	-	-	-	-	-	-
Stage 1	447	467	-	352	372	-	-	-	-	-	-	-
Stage 2	341	372	-	448	459	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.4	14.6	0.2	0
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	931	-	-	169	383	823	-	-
HCM Lane V/C Ratio	0.016	-	-	0.088	0.025	-	-	-
HCM Control Delay (s)	8.9	-	-	28.4	14.6	0	-	-
HCM Lane LOS	A	-	-	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	1	4	767	597	8
Future Vol, veh/h	3	1	4	767	597	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	0	1	1	0
Mvmt Flow	3	1	4	816	635	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1464	640	644	0	-	0
Stage 1	640	-	-	-	-	-
Stage 2	824	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	143	477	951	-	-	-
Stage 1	529	-	-	-	-	-
Stage 2	434	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	142	477	951	-	-	-
Mov Cap-2 Maneuver	142	-	-	-	-	-
Stage 1	525	-	-	-	-	-
Stage 2	434	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.5	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	951	-	172	-	-
HCM Lane V/C Ratio	0.004	-	0.025	-	-
HCM Control Delay (s)	8.8	0	26.5	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 6th Signalized Intersection Summary
8: Butler Pike & Norristown Road

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	301	11	11	464	348	244
Future Volume (veh/h)	301	11	11	464	348	244
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1794	1794	1860	1860	1780	1780
Adj Flow Rate, veh/h	331	12	12	510	382	268
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	1	1	1	1
Cap, veh/h	406	15	72	988	527	370
Arrive On Green	0.25	0.25	0.54	0.54	0.54	0.54
Sat Flow, veh/h	1625	59	15	1827	974	683
Grp Volume(v), veh/h	344	0	522	0	0	650
Grp Sat Flow(s),veh/h/ln	1689	0	1842	0	0	1657
Q Serve(g_s), s	11.0	0.0	0.0	0.0	0.0	17.0
Cycle Q Clear(g_c), s	11.0	0.0	10.3	0.0	0.0	17.0
Prop In Lane	0.96	0.03	0.02			0.41
Lane Grp Cap(c), veh/h	422	0	1060	0	0	896
V/C Ratio(X)	0.82	0.00	0.49	0.00	0.00	0.73
Avail Cap(c_a), veh/h	501	0	1060	0	0	896
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	20.3	0.0	8.4	0.0	0.0	9.9
Incr Delay (d2), s/veh	8.7	0.0	1.6	0.0	0.0	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.3	0.0	6.4	0.0	0.0	9.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	28.9	0.0	10.0	0.0	0.0	15.0
LnGrp LOS	C	A	B	A	A	B
Approach Vol, veh/h	344			522	650	
Approach Delay, s/veh	28.9			10.0	15.0	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		37.0		20.3		37.0
Change Period (Y+Rc), s		7.0		7.0		7.0
Max Green Setting (Gmax), s		30.0		16.0		30.0
Max Q Clear Time (g_c+I1), s		19.0		13.0		12.3
Green Ext Time (p_c), s		2.2		0.4		1.9

Intersection Summary	
HCM 6th Ctrl Delay	16.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

APPENDIX G

SYNCHRO ANALYSIS WORKSHEETS

FUTURE 2022 CONDITIONS

WITH SITE DEVELOPMENT

('BUILD')

LONGFIELD FARMS
TRANSPORTATION IMPACT STUDY
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

Pennoni

HCM 6th Signalized Intersection Summary
1: Butler Pike & Skippack Pike (73)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	393	38	273	574	33	52	297	143	43	437	107
Future Volume (veh/h)	76	393	38	273	574	33	52	297	143	43	437	107
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	1764	1707	1707	1758	1744	1857	1766	1780	1780	1665	1722	1665
Adj Flow Rate, veh/h	78	405	39	281	592	34	54	306	147	44	451	110
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	5	5	3	4	1	5	4	4	8	4	8
Cap, veh/h	201	466	45	320	626	565	190	338	162	177	503	412
Arrive On Green	0.06	0.30	0.30	0.11	0.36	0.36	0.04	0.30	0.30	0.04	0.29	0.29
Sat Flow, veh/h	1680	1533	148	1674	1744	1574	1682	1136	546	1586	1722	1411
Grp Volume(v), veh/h	78	0	444	281	592	34	54	0	453	44	451	110
Grp Sat Flow(s),veh/h/ln	1680	0	1681	1674	1744	1574	1682	0	1682	1586	1722	1411
Q Serve(g_s), s	2.8	0.0	22.2	10.0	29.3	1.3	2.0	0.0	23.0	1.7	22.3	5.3
Cycle Q Clear(g_c), s	2.8	0.0	22.2	10.0	29.3	1.3	2.0	0.0	23.0	1.7	22.3	5.3
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	201	0	511	320	626	565	190	0	500	177	503	412
V/C Ratio(X)	0.39	0.00	0.87	0.88	0.95	0.06	0.28	0.00	0.91	0.25	0.90	0.27
Avail Cap(c_a), veh/h	237	0	511	320	626	565	267	0	530	258	542	445
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.7	0.0	29.3	22.0	27.7	18.7	23.2	0.0	30.0	23.5	30.2	24.2
Incr Delay (d2), s/veh	1.2	0.0	18.0	23.2	24.8	0.2	0.8	0.0	18.6	0.7	16.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.9	0.0	16.2	9.4	21.5	0.9	1.4	0.0	17.0	1.2	16.6	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.0	0.0	47.3	45.1	52.5	18.9	24.0	0.0	48.6	24.2	47.0	24.5
LnGrp LOS	C	A	D	D	D	B	C	A	D	C	D	C
Approach Vol, veh/h		522			907			507			605	
Approach Delay, s/veh		43.8			48.9			46.0			41.3	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	33.0	8.9	31.0	11.1	37.9	8.5	31.4
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	9.0	26.0	7.0	27.0	6.0	29.0	7.0	27.0
Max Q Clear Time (g_c+I1), s	12.0	24.2	4.0	24.3	4.8	31.3	3.7	25.0
Green Ext Time (p_c), s	0.0	0.3	0.0	0.6	0.0	0.0	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	45.5
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	492	748	0
Future Vol, veh/h	0	0	0	492	748	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	535	813	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1081	813	813	0	-	0
Stage 1	813	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	226	377	812	-	-	-
Stage 1	435	-	-	-	-	-
Stage 2	753	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	226	377	812	-	-	-
Mov Cap-2 Maneuver	226	-	-	-	-	-
Stage 1	435	-	-	-	-	-
Stage 2	753	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	812	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	492	0	0	748	0
Future Vol, veh/h	0	0	0	0	0	0	0	492	0	0	748	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	535	0	0	813	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	813	1348	1348	535	-	0	0	535	0	0
Stage 1	-	-	-	535	535	-	-	-	-	-	-	-
Stage 2	-	-	-	813	813	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	7.12	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	378	128	151	545	0	-	-	1033	-	0
Stage 1	0	0	-	529	524	-	0	-	-	-	-	0
Stage 2	0	0	-	372	392	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	-	378	128	151	545	-	-	-	1033	-	-
Mov Cap-2 Maneuver	-	-	-	128	151	-	-	-	-	-	-	-
Stage 1	-	-	-	529	524	-	-	-	-	-	-	-
Stage 2	-	-	-	372	392	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	-	1033	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	6	0	485	740	4
Future Vol, veh/h	7	6	0	485	740	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	1	100	5	4	0
Mvmt Flow	8	6	0	522	796	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1320	798	800	0	-	0
Stage 1	798	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Critical Hdwy	6.4	6.21	5.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	3.1	-	-	-
Pot Cap-1 Maneuver	175	388	517	-	-	-
Stage 1	447	-	-	-	-	-
Stage 2	599	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	175	388	517	-	-	-
Mov Cap-2 Maneuver	175	-	-	-	-	-
Stage 1	447	-	-	-	-	-
Stage 2	599	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	517	-	234	-	-
HCM Lane V/C Ratio	-	-	0.06	-	-
HCM Control Delay (s)	0	-	21.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	9	491	3	3	744
Future Vol, veh/h	8	9	491	3	3	744
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	10	534	3	3	809

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1351	536	0	0	537	0
Stage 1	536	-	-	-	-	-
Stage 2	815	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	166	545	-	-	1031	-
Stage 1	587	-	-	-	-	-
Stage 2	435	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	165	545	-	-	1031	-
Mov Cap-2 Maneuver	165	-	-	-	-	-
Stage 1	587	-	-	-	-	-
Stage 2	433	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	165	545	1031	-
HCM Lane V/C Ratio	-	-	0.053	0.018	0.003	-
HCM Control Delay (s)	-	-	28	11.7	8.5	0
HCM Lane LOS	-	-	D	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	0	-

HCM 6th Signalized Intersection Summary
8: Butler Pike & Norristown Road

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	184	10	2	310	388	352
Future Volume (veh/h)	184	10	2	310	388	352
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1794	1794	1803	1803	1738	1738
Adj Flow Rate, veh/h	192	10	2	323	404	367
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	5	5	4	4
Cap, veh/h	259	13	68	1100	513	466
Arrive On Green	0.17	0.17	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1557	81	2	1798	839	762
Grp Volume(v), veh/h	203	0	325	0	0	771
Grp Sat Flow(s),veh/h/ln	1646	0	1800	0	0	1601
Q Serve(g_s), s	6.3	0.0	0.0	0.0	0.0	19.5
Cycle Q Clear(g_c), s	6.3	0.0	4.6	0.0	0.0	19.5
Prop In Lane	0.95	0.05	0.01			0.48
Lane Grp Cap(c), veh/h	274	0	1168	0	0	979
V/C Ratio(X)	0.74	0.00	0.28	0.00	0.00	0.79
Avail Cap(c_a), veh/h	305	0	1168	0	0	979
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	21.4	0.0	5.0	0.0	0.0	7.9
Incr Delay (d2), s/veh	8.4	0.0	0.6	0.0	0.0	6.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.0	0.0	2.3	0.0	0.0	9.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	29.8	0.0	5.6	0.0	0.0	14.3
LnGrp LOS	C	A	A	A	A	B
Approach Vol, veh/h	203			325	771	
Approach Delay, s/veh	29.8			5.6	14.3	
Approach LOS	C			A	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		39.0		15.0		39.0
Change Period (Y+Rc), s		7.0		7.0		7.0
Max Green Setting (Gmax), s		32.0		9.0		32.0
Max Q Clear Time (g_c+I1), s		21.5		8.3		6.6
Green Ext Time (p_c), s		2.8		0.0		1.1

Intersection Summary	
HCM 6th Ctrl Delay	14.5
HCM 6th LOS	B

HCM 6th Signalized Intersection Summary
1: Butler Pike & Skippack Pike (73)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	327	38	222	408	36	94	464	225	25	379	101
Future Volume (veh/h)	108	327	38	222	408	36	94	464	225	25	379	101
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	1764	1707	1707	1758	1744	1857	1766	1780	1780	1665	1722	1665
Adj Flow Rate, veh/h	115	348	40	236	434	38	100	494	239	27	403	107
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	5	5	3	4	1	5	4	4	8	4	8
Cap, veh/h	225	384	44	264	508	459	340	475	230	105	662	543
Arrive On Green	0.06	0.26	0.26	0.10	0.29	0.29	0.06	0.42	0.42	0.03	0.38	0.38
Sat Flow, veh/h	1680	1504	173	1674	1744	1574	1682	1133	548	1586	1722	1411
Grp Volume(v), veh/h	115	0	388	236	434	38	100	0	733	27	403	107
Grp Sat Flow(s),veh/h/ln	1680	0	1676	1674	1744	1574	1682	0	1682	1586	1722	1411
Q Serve(g_s), s	5.5	0.0	24.6	11.0	25.8	1.9	3.8	0.0	46.0	1.1	20.6	5.5
Cycle Q Clear(g_c), s	5.5	0.0	24.6	11.0	25.8	1.9	3.8	0.0	46.0	1.1	20.6	5.5
Prop In Lane	1.00		0.10	1.00		1.00	1.00		0.33	1.00		1.00
Lane Grp Cap(c), veh/h	225	0	428	264	508	459	340	0	705	105	662	543
V/C Ratio(X)	0.51	0.00	0.91	0.89	0.85	0.08	0.29	0.00	1.04	0.26	0.61	0.20
Avail Cap(c_a), veh/h	225	0	428	264	508	459	362	0	705	181	722	591
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.8	0.0	39.6	30.8	36.7	28.2	19.9	0.0	31.9	27.6	27.1	22.5
Incr Delay (d2), s/veh	1.9	0.0	25.5	29.7	16.5	0.4	0.5	0.0	44.7	1.3	1.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.0	0.0	18.5	10.7	18.4	1.4	2.7	0.0	35.9	0.8	13.3	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.7	0.0	65.2	60.6	53.2	28.6	20.4	0.0	76.6	28.8	28.4	22.7
LnGrp LOS	C	A	E	E	D	C	C	A	F	C	C	C
Approach Vol, veh/h		503			708			833			537	
Approach Delay, s/veh		57.5			54.3			69.9			27.3	
Approach LOS		E			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	34.0	11.6	47.2	13.0	38.0	7.8	51.0
Change Period (Y+Rc), s	7.0	7.0	6.0	6.0	7.0	7.0	6.0	6.0
Max Green Setting (Gmax), s	10.0	27.0	7.0	45.0	6.0	31.0	7.0	45.0
Max Q Clear Time (g_c+I1), s	13.0	26.6	5.8	22.6	7.5	27.8	3.1	48.0
Green Ext Time (p_c), s	0.0	0.1	0.0	1.8	0.0	0.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	54.3
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	13	5	781	625	10
Future Vol, veh/h	1	13	5	781	625	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	14	5	840	672	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1108	678	683	0	-	0
Stage 1	678	-	-	-	-	-
Stage 2	430	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	218	451	908	-	-	-
Stage 1	503	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	216	451	908	-	-	-
Mov Cap-2 Maneuver	216	-	-	-	-	-
Stage 1	498	-	-	-	-	-
Stage 2	625	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	908	-	418	-	-
HCM Lane V/C Ratio	0.006	-	0.036	-	-
HCM Control Delay (s)	9	0	13.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	2	7	0	0	9	14	767	2	0	608	30
Future Vol, veh/h	5	2	7	0	0	9	14	767	2	0	608	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	2	7	0	0	10	15	816	2	0	647	32

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1515	1511	663	1515	1526	817	679	0	0	818	0	0
Stage 1	663	663	-	847	847	-	-	-	-	-	-	-
Stage 2	852	848	-	668	679	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	98	120	461	98	118	376	913	-	-	810	-	-
Stage 1	450	459	-	357	378	-	-	-	-	-	-	-
Stage 2	354	378	-	448	451	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	93	116	461	93	114	376	913	-	-	810	-	-
Mov Cap-2 Maneuver	93	116	-	93	114	-	-	-	-	-	-	-
Stage 1	437	459	-	346	367	-	-	-	-	-	-	-
Stage 2	335	367	-	439	451	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29.5	14.8	0.2	0
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	913	-	-	162	376	810	-	-
HCM Lane V/C Ratio	0.016	-	-	0.092	0.025	-	-	-
HCM Control Delay (s)	9	-	-	29.5	14.8	0	-	-
HCM Lane LOS	A	-	-	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	1	4	773	607	8
Future Vol, veh/h	3	1	4	773	607	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	100	5	4	0
Mvmt Flow	3	1	4	822	646	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1481	651	655	0	-	0
Stage 1	651	-	-	-	-	-
Stage 2	830	-	-	-	-	-
Critical Hdwy	6.4	6.21	5.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	3.1	-	-	-
Pot Cap-1 Maneuver	139	470	601	-	-	-
Stage 1	523	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	137	470	601	-	-	-
Mov Cap-2 Maneuver	137	-	-	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	432	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.3	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	601	-	166	-	-
HCM Lane V/C Ratio	0.007	-	0.026	-	-
HCM Control Delay (s)	11	0	27.3	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	6	765	9	10	598
Future Vol, veh/h	5	6	765	9	10	598
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	7	832	10	11	650

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1509	837	0	0	842	0
Stage 1	837	-	-	-	-	-
Stage 2	672	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	133	367	-	-	794	-
Stage 1	425	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	130	367	-	-	794	-
Mov Cap-2 Maneuver	130	-	-	-	-	-
Stage 1	425	-	-	-	-	-
Stage 2	497	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.6	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	130	367	794	-
HCM Lane V/C Ratio	-	-	0.042	0.018	0.014	-
HCM Control Delay (s)	-	-	33.9	15	9.6	0
HCM Lane LOS	-	-	D	C	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	0	-

HCM 6th Signalized Intersection Summary
8: Butler Pike & Norristown Road

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	303	11	11	471	352	245
Future Volume (veh/h)	303	11	11	471	352	245
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1794	1794	1803	1803	1738	1738
Adj Flow Rate, veh/h	333	12	12	518	387	269
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	5	5	4	4
Cap, veh/h	404	15	71	952	513	357
Arrive On Green	0.25	0.25	0.54	0.54	0.54	0.54
Sat Flow, veh/h	1587	57	14	1772	955	664
Grp Volume(v), veh/h	346	0	530	0	0	656
Grp Sat Flow(s),veh/h/ln	1649	0	1786	0	0	1619
Q Serve(g_s), s	11.4	0.0	0.0	0.0	0.0	18.2
Cycle Q Clear(g_c), s	11.4	0.0	11.1	0.0	0.0	18.2
Prop In Lane	0.96	0.03	0.02			0.41
Lane Grp Cap(c), veh/h	420	0	1023	0	0	870
V/C Ratio(X)	0.82	0.00	0.52	0.00	0.00	0.75
Avail Cap(c_a), veh/h	486	0	1023	0	0	870
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	20.3	0.0	8.8	0.0	0.0	10.4
Incr Delay (d2), s/veh	9.8	0.0	1.9	0.0	0.0	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.5	0.0	6.8	0.0	0.0	10.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	30.0	0.0	10.6	0.0	0.0	16.4
LnGrp LOS	C	A	B	A	A	B
Approach Vol, veh/h	346			530	656	
Approach Delay, s/veh	30.0			10.6	16.4	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		37.0		20.7		37.0
Change Period (Y+Rc), s		7.0		7.0		7.0
Max Green Setting (Gmax), s		30.0		16.0		30.0
Max Q Clear Time (g_c+I1), s		20.2		13.4		13.1
Green Ext Time (p_c), s		2.1		0.3		1.9

Intersection Summary	
HCM 6th Ctrl Delay	17.5
HCM 6th LOS	B

APPENDIX H

AUXILIARY LANE WARRANT ANALYSIS

LONGFIELD FARMS
TRANSPORTATION IMPACT STUDY
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

Pennoni

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	Analysis Date:	4/23/2020
County:	Montgomery County	Conducted By:	ML
PennDOT Engineering District:	6	Checked By:	BK
		Agency/Company Name:	Pennoni

Intersection & Approach Description: Butler Pike & Proposed Site Access Driveway

Analysis Period:	2022 Build	Number of Approach Lanes:	1
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	3	0.0%	3
	Through	-	744	5.0%	763
	Right	Yes		2.0%	0
Opposing	Left	Yes	0	0.0%	0
	Through	-	491	5.0%	504
	Right	Yes	3	2.0%	4

Advancing Volume:	766
Opposing Volume:	508
Left Turn Volume:	3
% Left Turns in Advancing Volume:	0.39%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	491	5.0%	N/A
	Right	-	3	2.0%	N/A

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

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 1**

Warrant Met?: **No**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	3
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	40
Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

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

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

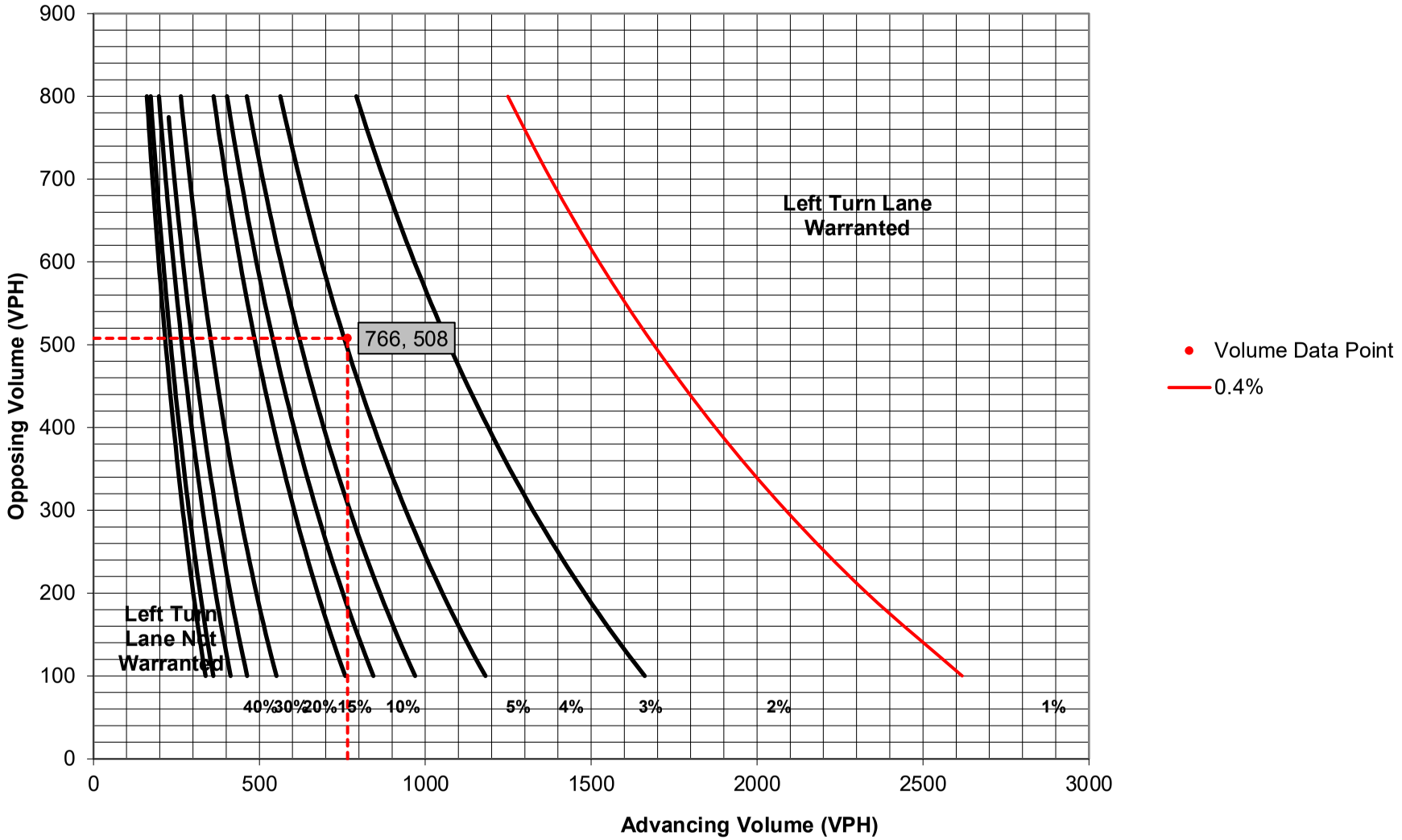
Additional Findings:

N/A

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways (speeds to 35 mph, unsignalized and signalized intersections)

(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	Analysis Date:	4/23/2020
County:	Montgomery County	Conducted By:	ML
PennDOT Engineering District:	6	Checked By:	BK
		Agency/Company Name:	Pennoni

Intersection & Approach Description: Butler Pike & Proposed Site Access Driveway

Analysis Period:	2022 Build	Number of Approach Lanes:	1
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	3	0.0%	N/A
	Through	-	744	5.0%	N/A
	Right	Yes		2.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	491	5.0%	N/A
	Right	Yes	3	2.0%	N/A

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

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	491	5.0%	504
	Right	-	3	2.0%	4

Advancing Volume:	508
Right Turn Volume:	4

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 9**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	4
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	40

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

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

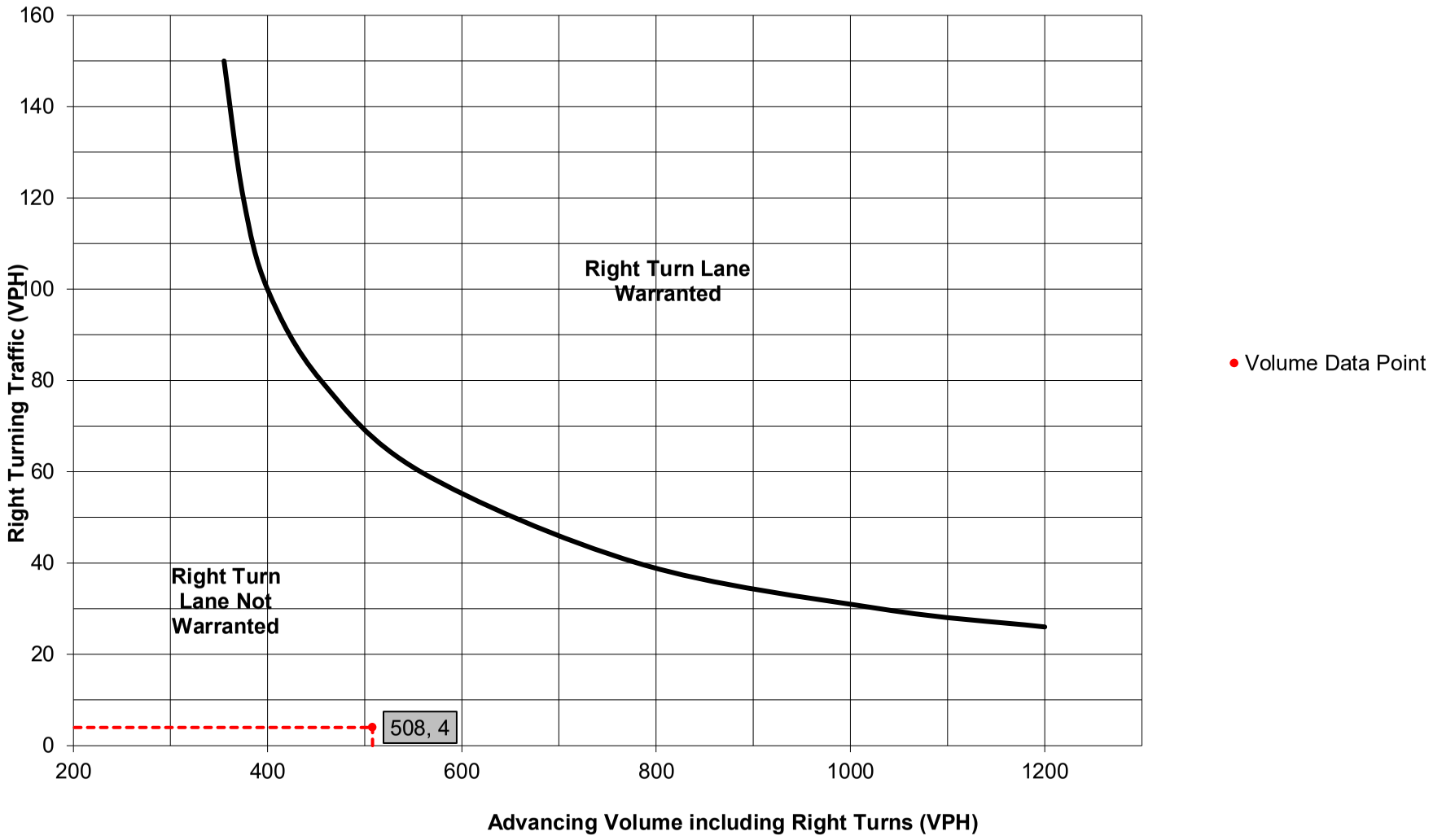
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

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



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	Analysis Date:	4/23/2020
County:	Montgomery County	Conducted By:	ML
PennDOT Engineering District:	6	Checked By:	BK
		Agency/Company Name:	Pennoni

Intersection & Approach Description: Butler Pike & Proposed Site Access Driveway

Analysis Period:	2022 Build	Number of Approach Lanes:	1
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	11	0.0%	11
	Through	-	598	5.0%	613
	Right	Yes		2.0%	0
Opposing	Left	Yes	0	0.0%	0
	Through	-	765	5.0%	785
	Right	Yes	9	2.0%	10

Advancing Volume:	624
Opposing Volume:	795
Left Turn Volume:	11
% Left Turns in Advancing Volume:	1.76%

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	N/A
	Through	-	765	5.0%	N/A
	Right	-	9	2.0%	N/A

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

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 1**

Warrant Met?: **Yes**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	11
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	40

Average # of Vehicles/Cycle: 1.0

PennDOT Publication 46, Exhibit 11-6

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

Left Turn Lane Storage Length, Condition A:	75	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Left Turn Lane Storage Length:	75	Feet

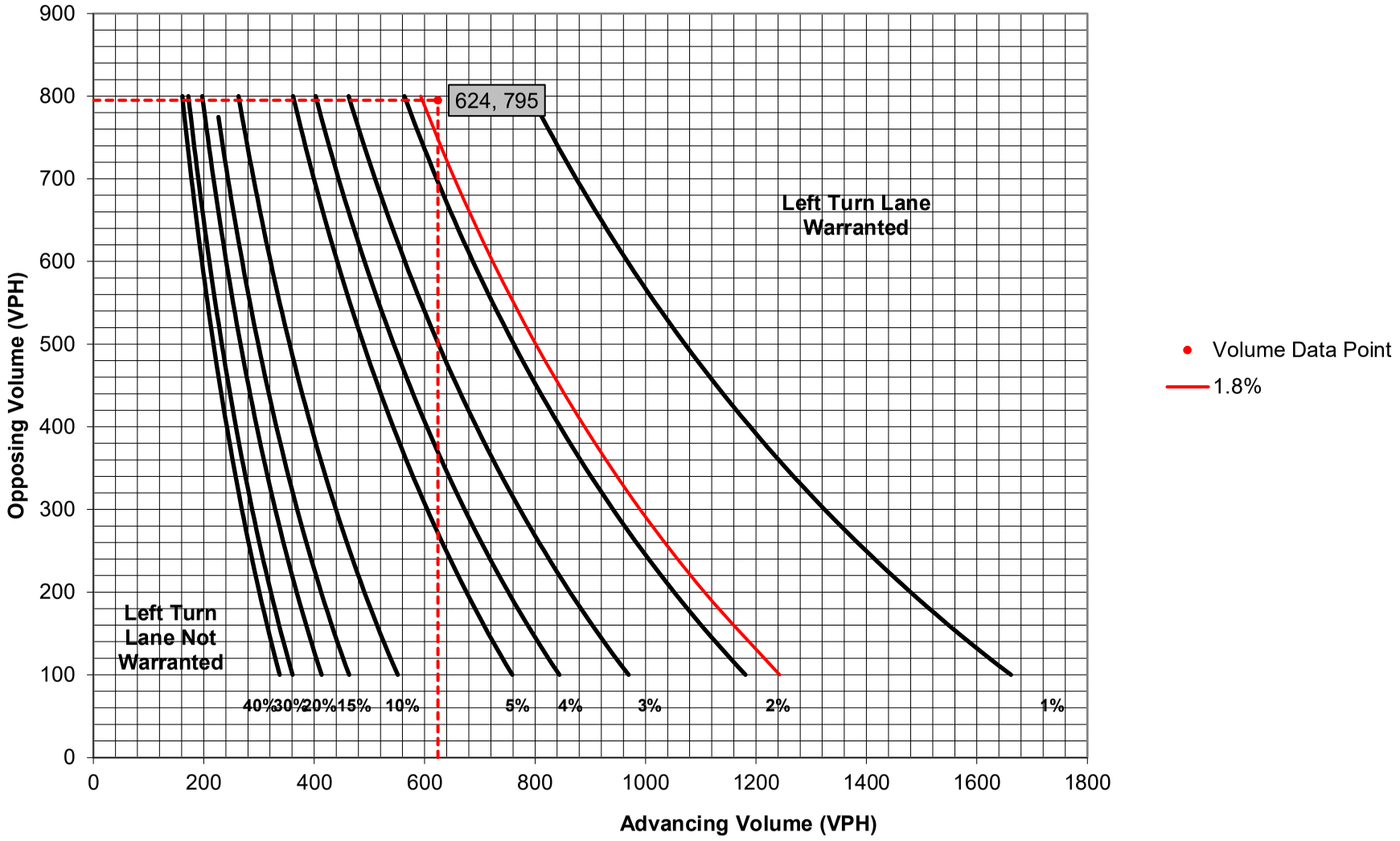
Additional Findings:

N/A

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways (speeds to 35 mph, unsignalized and signalized intersections)

(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitemarsh Township	Analysis Date:	4/23/2020
County:	Montgomery County	Conducted By:	ML
PennDOT Engineering District:	6	Checked By:	BK
		Agency/Company Name:	Pennoni

Intersection & Approach Description: Butler Pike & Proposed Site Access Driveway

Analysis Period:	2022 Build	Number of Approach Lanes:	1
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		Type of Analysis
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	11	0.0%	N/A
	Through	-	598	5.0%	N/A
	Right	Yes		2.0%	N/A
Opposing	Left	Yes	0	0.0%	N/A
	Through	-	765	5.0%	N/A
	Right	Yes	9	2.0%	N/A

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

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	0	0.0%	0
	Through	-	765	5.0%	785
	Right	-	9	2.0%	10

Advancing Volume:	795
Right Turn Volume:	10

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: **N/A**

Warrant Met?: **N/A**

Right Turn Lane Warrant Findings

Applicable Warrant Figure: **Figure 9**

Warrant Met?: **No**

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	10
Cycles Per Hour (Assumed):	Known
Cycles Per Hour (If Known):	40
Average # of Vehicles/Cycle:	N/A

PennDOT Publication 46, Exhibit 11-6

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

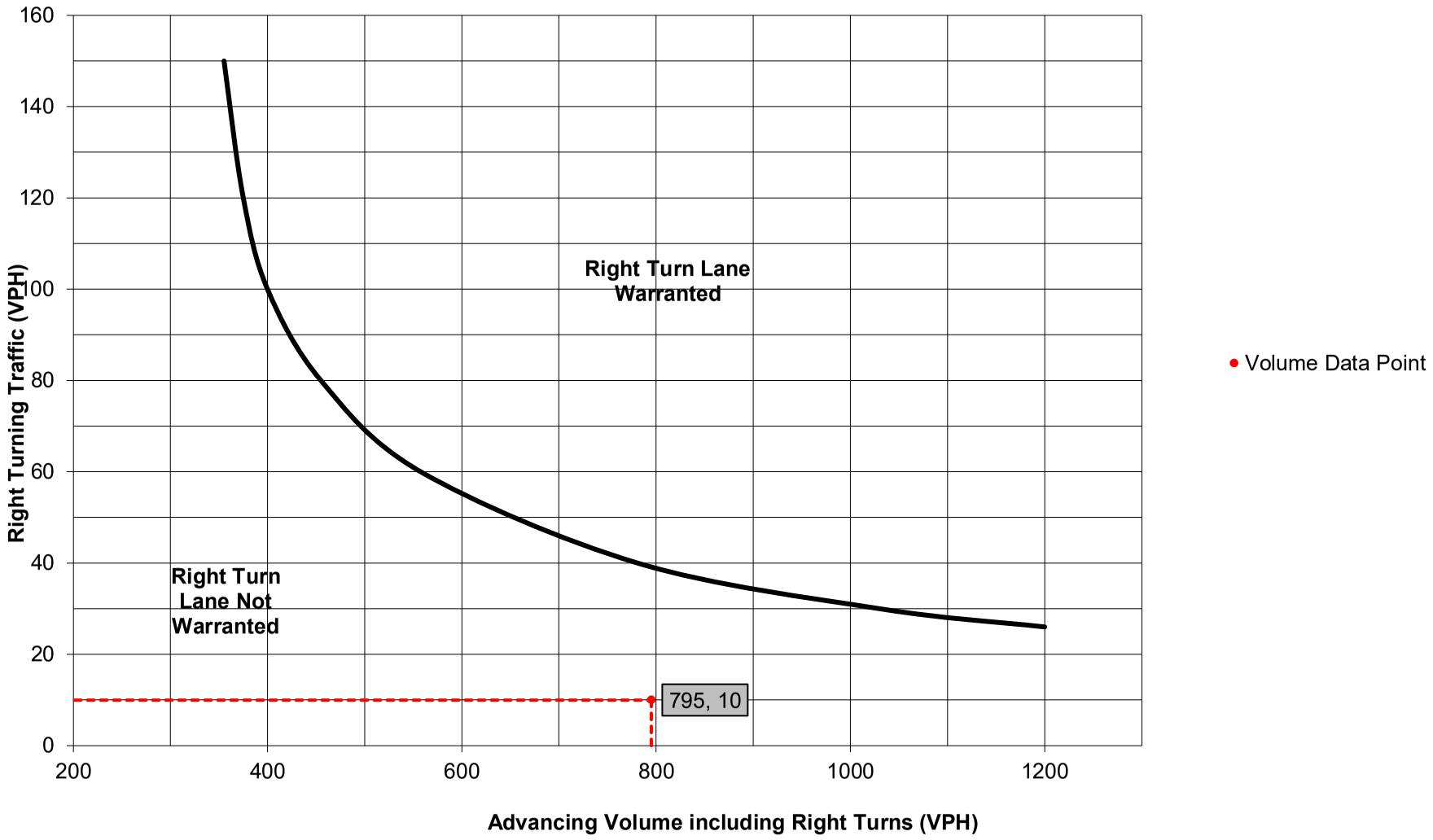
Right Turn Lane Storage Length, Condition A:	N/A	Feet
Condition B:	N/A	Feet
Condition C:	N/A	Feet
Required Right Turn Lane Storage Length:	N/A	Feet

Additional Findings:

N/A

Additional Comments / Justifications:

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



3100 Horizon Drive
Suite 200
King of Prussia, PA 19406
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www.pennoni.com

Longfield Farm Residential Development
Proposed Vehicular Access Configuration

Summary

Vehicular access to the proposed development will be provided by two driveways, one to Butler Pike (Butler Pike is owned by Montgomery County) and one to Skippack Pike (Skippack Pike is owned by the Pennsylvania Department of Transportation, designated as State Route 0073).

The driveway to Butler Pike will allow all movements to and from Butler Pike without restrictions. The driveway to Skippack Pike will be limited to only allow right-turns entering the development from Skippack Pike, and right-turns exiting the development to Skippack Pike. Left turns into and out of the development will be restricted at the Skippack Pike driveway.

The proposed site driveways will provide adequate sight distance for entering and exiting traffic to and from Butler Pike and Skippack Pike, and both driveways will operate at acceptable overall Levels of Service during both the weekday AM and PM peak hours.

The final design of each driveway will be subject to permits from the owners of each roadway. The Butler Pike driveway will require a permit from Montgomery County, and the Skippack Pike driveway will require a permit from PennDOT.

Based upon preliminary reviews, coordination, and discussions to date, the Township, County, and PennDOT have all concurred in concept with the proposed driveway locations and configurations. The Township has requested that a left-turn lane be constructed on Butler Pike, the County has requested that the shoulder areas be improved on Butler Pike, and PennDOT has indicated that they concur with the proposed right-in/right-out access configuration to Skippack Pike.

Butler Pike Access

Butler Pike (*County Road*), within the study area, provides one lane in each direction and is predominantly oriented in a north-south direction. The roadway is posted at 35 mph. There is no parking on either side of the roadway, and existing sidewalks are located on the east side of the roadway south of Skippack Pike, for a length of approximately 215’ along the subject property (along the frontage of the existing office building), and also on the east side of the roadway north of Skippack Pike, for a length of approximately 395’ (along the CVS and adjacent office building parking lot).

The driveway to Butler Pike will allow all movements to and from Butler Pike without restrictions. The driveway geometry will utilize 25’ minimum corner radii, which will enable access for all conventional vehicles including school buses and delivery trucks.

A review of the need for Auxiliary Turn Lanes (exclusive right-turn or left-turn lanes) using PennDOT criteria for the proposed intersection of the site driveway with Butler Pike indicates that a 75’ left-turn lane for southbound Butler Pike traffic entering the proposed site driveway may be warranted, but that a separate right-turn deceleration lane for northbound Butler Pike traffic entering the site is not warranted. As such, a left-turn lane will be provided for southbound Butler Pike traffic. In addition, even though a full-width right-turn/deceleration lane is not required in the northbound direction, the applicant will provide an improved 8’

shoulder on the east side of Butler Pike, south of the site driveway, in response to preliminary comments from both the Township and Montgomery County.

Skippack Pike (SR 0073)

Skippack Pike (*SR 0073*), within the study area, provides one lane in each direction and is predominantly oriented in an east-west direction. The roadway is posted at 45 mph west of Butler Pike, and 50 mph east of Butler Pike. There is no parking along either side of the roadway, and existing sidewalks are located on the south side of the roadway, east of Butler Pike, for a length of approximately 560' (along the Broad Axe Tavern and adjacent shopping center) and on the north side of the roadway, west of Butler Pike for a length of approximately 415' (along an office building and its associated parking lot).

The driveway to Skippack Pike will be limited to only allow right-turns entering the development from Skippack Pike, and right-turns exiting the development to Skippack Pike. Left turns into and out of the development will be restricted at the Skippack Pike driveway. The driveway geometry will utilize 25' minimum corner radii, which will enable access for all conventional vehicles including school buses and delivery trucks. Additionally, the driveway will include a raised concrete island that will assist in preventing left-turns entering from Skippack Pike, and left-turns exiting to Skippack Pike.

1. PROJECT INFORMATION

Project Name: **Spartan - Longfield**
Date of Review: **6/10/2019 11:24:44 AM**
Project Category: **Development, Residential, Subdivision containing more than 2 lots and/or 2 single-family units**
Project Area: **14.34 acres**
County(s): **Montgomery**
Township/Municipality(s): **WHITEMARSH; WHITPAIN**
ZIP Code: **19002; 19422**
Quadrangle Name(s): **AMBLER**
Watersheds HUC 8: **Schuylkill**
Watersheds HUC 12: **Upper Wissahickon Creek**
Decimal Degrees: **40.136767, -75.245017**
Degrees Minutes Seconds: **40° 8' 12.3604" N, 75° 14' 42.602" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate no known impacts to threatened and endangered species and/or special concern species and resources within the project area. Therefore, based on the information you provided, no further coordination is required with the jurisdictional agencies. This response does not reflect potential agency concerns regarding impacts to other ecological resources, such as wetlands.

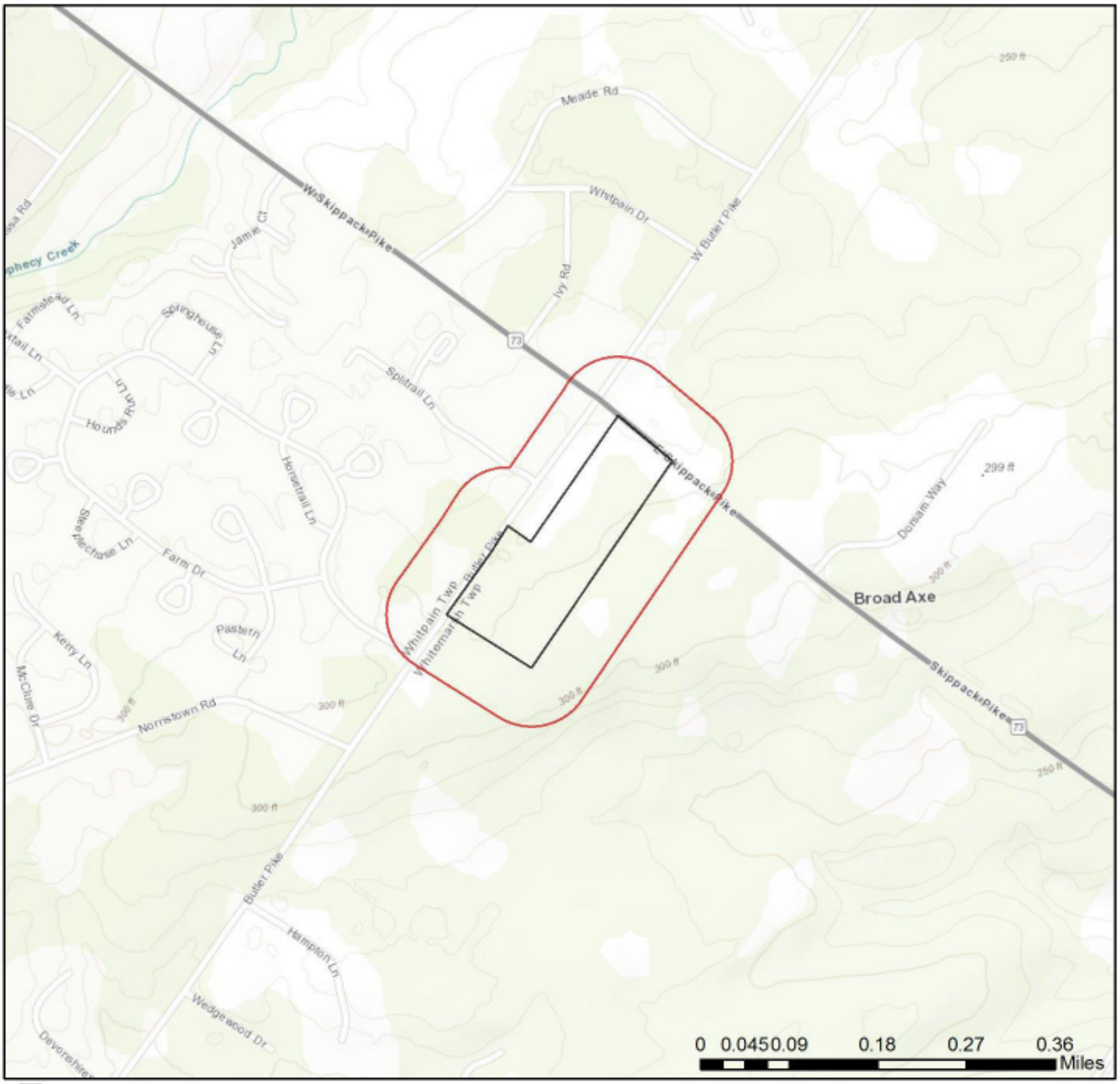
Spartan - Longfield

Project Boundary

Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Spartan - Longfield



Project Boundary

Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS,

RESPONSE TO QUESTION(S) ASKED

Q1: The proposed project is in the range of the Indiana bat. Describe how the project will affect bat habitat (forests, woodlots and trees) and indicate what measures will be taken in consideration of this. Round acreages up to the nearest acre (e.g., 0.2 acres = 1 acre).
Your answer is: No forests, woodlots or trees will be affected by the project.

Q2: Is tree removal, tree cutting or forest clearing of 40 acres or more necessary to implement all aspects of this project?
Your answer is: No

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission
RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources
RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission
RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service
RESPONSE:

No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq. is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at https://conservationexplorer.dcnr.pa.gov/content/resources.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov

U.S. Fish and Wildlife Service
Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
NO Faxes Please

PA Fish and Boat Commission
Division of Environmental Services
595 E. Rolling Ridge Dr., Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name: ROBERT IRICK
Company/Business Name: IRICK EBERHARDT & MENTUS
Address: 2771 GERYVILLE PIKE
City, State, Zip: PENNSBURG, PA 18073
Phone: (215) 541-4626 Fax: ( )
Email: RIRICK@IEANDM.COM

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

applicant/project proponent signature

6/10/19
date

Section 105-21 B. (15) Preliminary Resource Impact and Conservation Plan

(a) Delineation of areas left undisturbed

[1] Proposed areas to be left undisturbed are those along the periphery of the 14.8-acre tract. Those areas will be private open space with no site improvements other than planting of the landscape buffers required by code. See Sheets 1 and 27 of the plan set. It is noted that other and larger areas will be green and open space, but will be disturbed by grading and restored. These include Green Areas #1, 2, 3, 4, and 5 on the plan and accounts for 7.08 acres (47.7% of the site). Combined with the periphery areas outside the numbered green areas, it will be over 50% of the site. These parcels are not designated in the Township Open Space Plan (2006) for public open space.

[2] The open areas of the plan are partially included for stormwater management as noted in the Preliminary Studies and Reports (Section 105-21 B. (17) included in the submission and the Preliminary Postconstruction Stormwater (PCSM) Management & Erosion Control Narrative submitted with this application.

(b) Analysis of how resources will be protected.

[1] Limits of disturbance are set on the plans to be the minimal area disturbed for the roads, buildings, parking, sidewalks, trails and stormwater management basins which require some grading. The site is very flat and the amount of grading to construct this plan is minimal. Areas beyond the limits of disturbance will remain green and enhanced with landscaping, including buffers.

[2] The areas preserved are the site periphery to include existing trees which number over 200. Soils are not shown as prime farmland in the Township Comprehensive Plan (2003) or Township Open Space Plan (2006). There are no prime farmland soils, woodlands, (medium or steep) slopes, wetlands, streams to preserve on this site. The Existing Resources and Site Analysis Plan (ERSAP) is provided in the submission (Sheet 3). Views into the site will be screened by the periphery buffers required in the code. The exception is the entrance from Butler Pike which by design has an open vista with iconic well building as a visual backdrop.

[3] The preliminary design indicated 5 bio-infiltration basins and 1 detention basin. These have been selected based on on-site infiltration testing and study (DelVal Soil & Environment study). Maximum infiltration is sought. The SCS Method was used. See Preliminary Postconstruction Stormwater (PCSM) Management & Erosion Control Narrative submitted with this application. Open, landscaped areas of the site will also permit infiltration.

[4] The plans submitted show the natural contours at 1-foot contour intervals and there are only gentle slopes. A tree inventory of the site was completed and is included in the submission. (These sheets supplement the Preliminary Land Development Plan set submitted.) The total number of tree identified was 324 with 94 proposed for removal. Replacement trees are included in the Landscape Plan submitted.

[5] Limits of site disturbance are shown on the plans submitted.

[6] There are no historic structures on the site. The existing home to the right (west) of the Butler Pike entrance includes an original part built prior to 1940 and is being retained as stipulated in the Township code. It is incorporated into the proposed townhome community with an access drive and parking from the internal street pattern.

[7] The center of the site has few trees, and there is direct access to sunlight. Very few of the proposed buildings are north facing. In fact, most of the units (~50 of the 58) face southeast, southwest, and west which maximizes solar gain.

(c) Location of structures and alignment of infrastructure

[1] Building areas are identified for the best development areas avoiding the open spaces around the periphery and over 200 existing trees. The design is organized to create interior green courts to supplement the peripheral open space. The reason is so units do not back on each other but on green spaces enhancing the outdoor living environment and views. The road pattern is set to support this design intent and efficient to minimize impervious cover and stormwater management demands. Full vehicular access is provided from Butler Pike and a right turn in and out on Skippack Pike accounting for vehicle volumes and safe turns. The grades support the road system with minimal grading. No roads cross through or fragment environmentally sensitive areas (no wetlands, no waterways, no steep slopes).

[2] Stormwater has been addressed above and in the submitted plans and reports. Public water will be supplied by Ambler Water Department and Wastewater by the Whitemarsh Township Authority. Each has been contacted and affirmed capacity as noted in the Preliminary Studies and Reports (Section 105-21 B (17).

(d) A waiver has not been requested.

SUBMISSION OF PRELIMINARY STUDIES AND REPORTS PURSUANT TO SLDO 105-21(B)(17)

Longfield Farm – Preliminary Plan Application to Whitemarsh Township

Application Of Argos Financial Associates, Adelphi Land Associates and Polergodom Group Ltd.

TAX PARCELS:

6500013750009 (BLOCK 47 UNIT 3)
650001372012 (BLOCK 47 UNIT 4)
650010735009 (BLOCK 47 UNIT 5) AND
650010723003 (BLOCK 47 UNIT 7)

105-21(B)(17)

(a) Sewer and Water Feasibility Report

See attached.

(b) Groundwater protection and replenishment study.

See attached.

(c) Erosion and Sedimentation Control Plan.

See Erosion Control Plan dated June 12, 2019, Sheets 18 & 19 of 27 of preliminary plan set.

(d) Traffic impact study in accordance with §105-21B(9).

See attached.

(e) Community association document.

See attached draft planned community declaration and bylaws.

See attached Planned Community Common Facilities Plan. A larger copy of the plan is included with the preliminary plan set.

(a) Sewer and Water Feasibility Report

SEWER AND WATER FEASIBILITY REPORT

The subject properties will be served by public sanitary sewer and public water.

Public sanitary sewer service: The subject properties are in the approved service area of Whitemarsh Township Authority, PO Box 447, 462 Germantown Pike, Suite 1, Lafayette Hill, PA 19444.

Public water service: The subject properties are in the approved service area of Ambler Borough, and will be serviced by the Ambler Water Department, Ambler Borough Hall, 131 Rosemary Avenue, Ambler PA 19002.

Whitemarsh Township Authority and Ambler Water Department have been contacted and have confirmed that service is available for the subject properties.

From: Kyle Detweiler <kdetweiler@whitemarshauthority.org>
To: Dave <landconcepts@aol.com>
Cc: Martin Kepner <MKEPNER@carrollengineering.com>; amason@carrollengineering.com <amason@carrollengineering.com>
Sent: Tue, Jun 11, 2019 2:10 pm
Subject: Re: Longfield Farm

Hi Dave,

The parcel you referenced is within the Authority's jurisdiction and sanitary sewer service is available.

Please note that this does not omit the need for a future capacity/will-serve letter when the total number of EDU's in question is formally calculated.

Regards,

Kyle Detweiler, MBA
Director of Finance
kdetweiler@whitemarshauthority.org
Office: 484-344-5230
Cell: 215-266-1014
Fax: 484-368-3927
462 Germantown Pike, Suite 1
P.O. Box 447
Lafayette Hill, PA 19444
http://www.whitemarshauthority.org

(b) Groundwater protection and replenishment study.

Section 105-21 B (17) (b) Groundwater protection and replenishment study

No groundwater is proposed to be withdrawn or used for this project. Groundwater levels will not be reduced by this project.

Stormwater infiltration testing indicates areas of the site that are viable for Bio-retention/Infiltration Basins. Groundwater recharge and replenishment is expected to occur within the basins. Groundwater protection will be provided through the use of amended soils within these basins and other water quality devices throughout the site. Refer to "Preliminary Postconstruction Stormwater Management (PCSM) and Erosion Control Narrative" prepared by Irick, Eberhardt & Mientus and made part of this submission.

The net result of the project on groundwater will be a positive one with no withdrawal and the expectation of recharge and replenishment from the stormwater system. The latter is preliminary design includes with five (5) bio-retention basins and one (1) detention basin (see report referenced above).

(c) Erosion and Sedimentation Control Plan.

See Erosion Control Plan dated June 12, 2019, Sheets 18 & 19 of 27 of preliminary plan set.

(d) Traffic impact study in accordance with §105-21B(9).

Transportation Impact Study

Longfield Farms
Whitemarsh Township
Montgomery County, PA

Prepared For:

Spartan Organization, Inc.
PO Box 736
Fort Washington, PA 19034

Submitted By:

Pennoni Associates Inc.
3100 Horizon Drive
Suite 200
King of Prussia, PA 19406

Brian R. Keaveney, PE, PTOE
PENNSYLVANIA P.E. NO. 053079E

SPARX18001

January, 2019

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SUMMARY

Pennoni has prepared this document to summarize the trip generation and traffic operations associated with a proposed residential development to be located on the southeastern quadrant of Skippack Pike (SR 0073) & Butler Pike, in Whitemarsh Township, Montgomery County PA. As shown on the proposed site plan, the project consists of developing **fifty-eight (58) residential units**. To identify the impacts of the proposed site plan, Pennoni analyzed traffic operations at the following intersections:

- Skippack Pike (SR 0073) & Butler Pike
- Butler Pike & Broad Axe Tavern Driveway
- Butler Pike & Phil's Tavern Driveway
- Butler Pike & Splitrail Lane
- Butler Pike & Norristown Road (SR 3001)

This analysis includes:

- Evaluation of 2018 Existing Conditions;
- Forecast of 2020 (Opening Year) background conditions with expected regional background growth;
- AM peak hour & PM peak hour trip generation estimates;
- Trip Distribution to the local roadway network;
- Peak hour traffic conditions using Synchro, following the methodology prescribed in the Highway Capacity Manual (2010, where applicable) for existing and future conditions;

The subject development is shown in **Figure S1** with the proposed site use, density, and anticipated trip generation is shown in **Table S1.**

Figure S1: Site Location
(Source: Google Earth)

TABLE S1: PROPOSED TRIP GENERATION SUMMARY

Use	Size	ITE LU Code (1)	Trip Type	AM Peak Hour Trips			PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
Residential	58 Units	220 – Multi-Family Housing (Low-Rise)	**Site Trips**	6	22	28	20	12	32
			Pass-by Trips	0	0	0	0	0	0
			Internal Trips	0	0	0	0	0	0
			External Trips	**6**	**22**	**28**	**20**	**12**	**32**

(1) ITE Trip Generation Manual, 10th Edition

In summary, the impact of the proposed development results in an increase of less than 10 seconds in overall average delay at each study area intersection, and the study intersections under the 'build' condition with the proposed development operate at the same Level of Service as under the 'no-build' condition without the proposed development. Therefore, no improvements are required.

INTRODUCTION

Pennoni has prepared this document to summarize the vehicular trip generation and traffic operations impact associated with a proposed residential development to be located on the southeastern quadrant of Skippack Pike (SR 0073) & Butler Pike, in Whitemarsh Township, Montgomery County PA. As shown on the proposed site plan, the project consists of developing **fifty-eight (58) residential units**.

The proposed development of the Longfield Farms Residential Development will require the approval of two (2) new access points, which will consist of a full-movement unsignalized driveway on Butler Pike (County Roadway), and a right-turn exit-only driveway to Skippack Pike (SR 0073).

Figure 1 shows the location of the property in relation to the surrounding area. **Figure 2** shows the current concept plan for the proposed development.

Scope of Study

As outlined by the Pennsylvania Department of Transportation (PennDOT) criteria and Whitemarsh Township Ordinance, a Transportation Impact Analysis is required for the proposed development, which evaluates the study area listed below. The study area intersections, design years, and technical methodology required are included in this report.

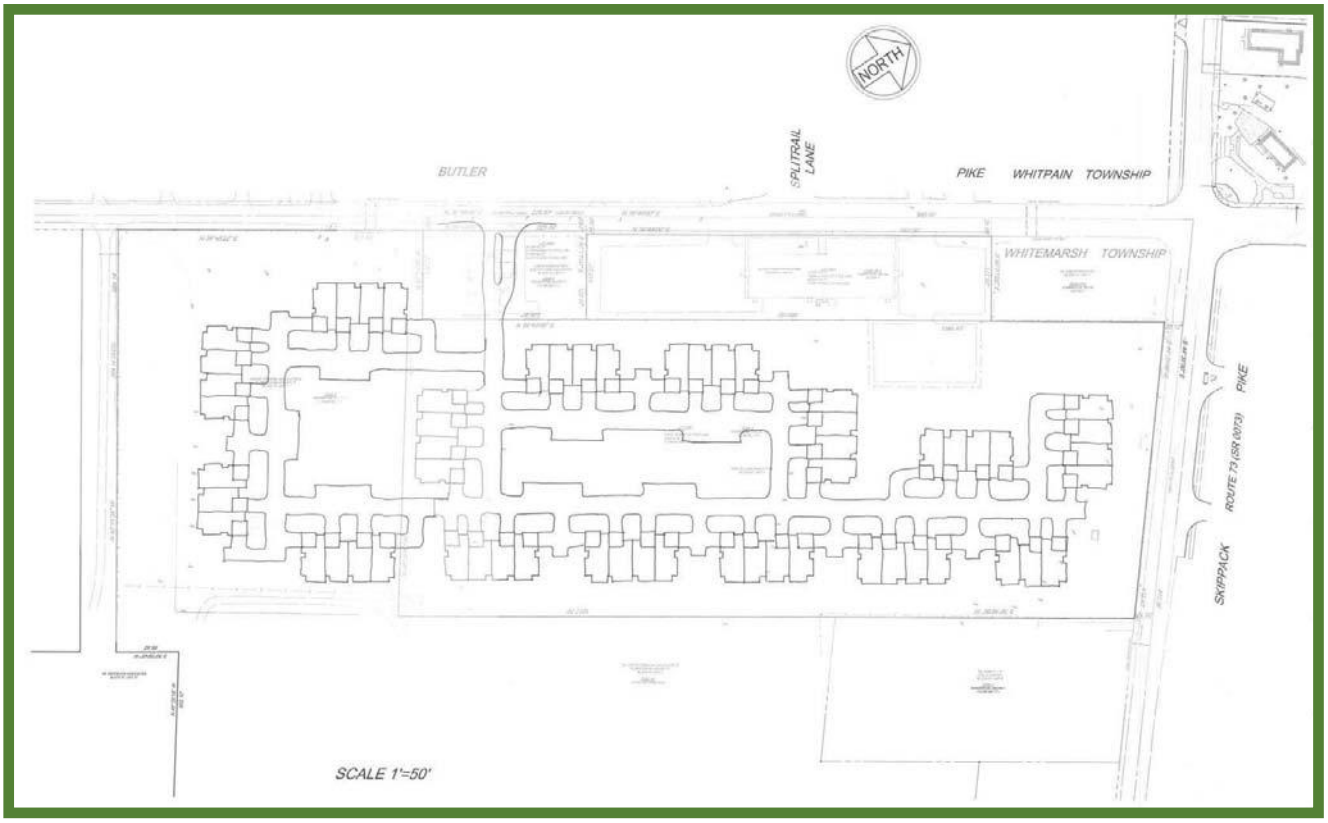
Study Area

The study area that was evaluated for this Transportation Impact Analysis includes the following intersections:

1. Skippack Pike (SR 0073) & Butler Pike
2. Butler Pike & Broad Axe Tavern Driveway
3. Butler Pike & Phil's Tavern Driveway
4. Butler Pike & Splitrail Lane
5. Butler Pike & Norristown Road (SR 3001)

Figure 1: Site Location
(Source: Google Earth)

Figure 2: Proposed Site Plan



Study Methodology

The analysis included:

- Obtaining current (2018) turning movement counts at the subject intersections, including AM Peak and PM Peak weekday counts;
- Reviewing local traffic activities with the anticipated build-out year of 2020 to develop future traffic forecasts and long-term conditions.
- Estimating AM peak hour, and PM peak hour trips generated by the proposed project.
- Documenting the anticipated trip distribution and operational conditions at the proposed site driveways.

Comprehensive & Transportation Plans

According to the Township website, Whitemarsh Township is currently in the process of updating the Township Comprehensive Plan, which is anticipated to be complete in 2019. We would note that the proposed development is aligned with the goals of the Township, which include implementing development that will limit the amount of new traffic to be generated on the adjacent roadway network.

In addition, we would note that Whitemarsh Township has adopted a Transportation Impact Fee Ordinance, in accordance with PA Act 209 of 1990, and has established two (2) separate Transportation Service Areas. The proposed development is in the northern Transportation Service Area, where it appears that the latest approved Fee is $2,825.00 per new PM Peak Hour trip.

Planned Improvements

There are no known planned improvements in the study area vicinity.

EXISTING CONDITIONS

The Longfield Farms site is located on the southeastern quadrant of the intersection of Skippack Pike (SR 0073) and Butler Pike, in Whitemarsh Township, Montgomery County, Pennsylvania. The street network near the site is described below:

- *Skippack Pike (SR 0073),* within the study area, provides one lane in each direction and is predominantly oriented in an east-west direction. The roadway is posted at 45 mph west of Butler Pike, and 50 mph east of Butler Pike. There is no parking along either side of the roadway, and existing sidewalks are located on the south side of the roadway, east of Butler Pike, for a length of approximately 560' (along the Broad Axe Tavern and adjacent shopping center) and on the north side of the roadway, west of Butler Pike for a length of approximately 415' (along an office building and its associated parking lot). The intersection of Skippack Pike & Butler Pike is signalized and provides auxiliary (left-turn) lanes on each approach, and a westbound right-turn lane, and a recently constructed southbound right-turn lane.

- *Butler Pike (County Road),* within the study area, provides one lane in each direction and is predominantly oriented in a north-south direction. The roadway is posted at 35 mph. There is no parking on either side of the roadway, and existing sidewalks are located on the east side of the roadway south of Skippack Pike, for a length of approximately 215' along the subject property (along the frontage of the existing office building), and also on the east side of the roadway north of Skippack Pike, for a length of approximately 395' (along the CVS and adjacent office building parking lot).

- *Norristown Road (SR 3001),* within the study area, provides one lane in each direction and is predominantly oriented in an east-west direction. The roadway is posted at 40 mph. Norristown Road intersects Butler Pike at a 3-leg intersection south of Skippack Pike, which is controlled by a traffic signal.

Existing Traffic Volumes

To assess the existing traffic patterns, Pennoni obtained turning movement counts on Thursday December 20, 2018 during the AM peak period from 7:00 to 9:00 AM and during the PM peak period from 4:00 to 6:00 PM at the primary study intersections. Historic data was utilized for the Broad Axe Tavern and Phil's Tavern driveways along Butler Pike.

The peak hours were determined to start at 7:45 AM and 4:45 PM. The count data is included in **Appendix A** and the summary of the intersection traffic movement counts during the AM and PM peak hours are shown in **Figure 3**.

Public Transportation

There are several SEPTA bus routes that serve Whitemarsh Township, although the routes currently do not provide service near the site. It appears that the closest transit service is provided by Septa Bus Routes 27 and 97, which provide service to the south of the site along Germantown Pike and Ridge Pike.

Existing Traffic Operations

INTERSECTION LEVEL OF SERVICE CRITERIA

Based on the Highway Capacity Manual methodologies for intersection and roadways, Pennoni utilized the Level of Service (LOS) grades for intersection to measure the performance of the transportation facilities. LOS is a measure of vehicle operator delay with the overall driving experience through a facility. Performance is quantified with designations of LOS 'A' through 'F' based on the average control delay (given in seconds per vehicle) per lane group and the overall intersection. These LOS designations describe the performance of the intersection from the motorist's perspective, with LOS 'A' representing free flowing conditions and LOS 'F' representing congested conditions. Delay is the additional travel time experienced by a driver, passenger, or pedestrian. Control delay results when a traffic control device (such as a traffic signal) causes a lane group to reduce speed or to stop; it is measured in comparison with an uncontrolled condition.

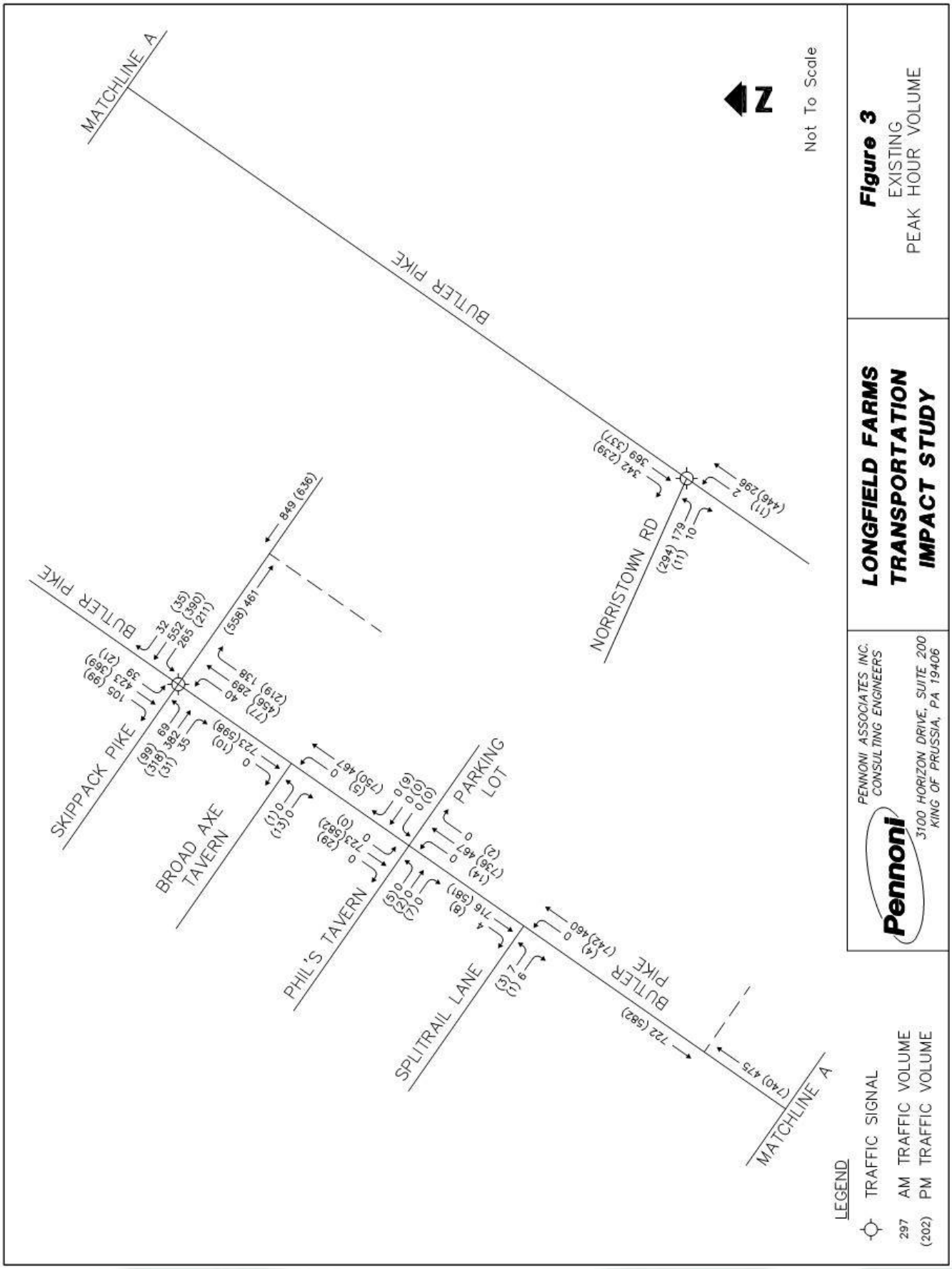
A summary of the LOS criteria is shown in **Appendix B**. For rural conditions, a LOS "C" is preferred. For urban conditions, average delay at LOS "D" standards are considered acceptable.

EXISTING LEVELS OF SERVICE (LOS)

The LOS by lane group, approach, and overall grade for each of the study intersections for the weekday AM and PM peak hours for the existing conditions are shown on **Table 2**.

Under existing conditions, the intersection of Skippack Pike (SR 0073) and Butler Pike operates at an overall LOS 'D' during both the morning and afternoon peak hours, and the intersection of Butler Pike & Norristown Road operates at a LOS 'B' during both peak hours.

The overall 2018 Existing Conditions Synchro calculation worksheets are in **Appendix C.**


MATCHLINE A
BUTLER PIKE
NORRISTOWN RD
SKIPPACK PIKE
BROAD AXE TAVERN
PHIL'S TAVERN
PARKING LOT
SPLITRAIL LANE
BUTLER PIKE
MATCHLINE A
Not To Scale
LEGEND
TRAFFIC SIGNAL
297 AM TRAFFIC VOLUME
(202) PM TRAFFIC VOLUME
Figure 3
EXISTING
PEAK HOUR VOLUME
LONGFIELD FARMS
TRANSPORTATION
IMPACT STUDY
PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3100 HORIZON DRIVE, SUITE 200
KING OF PRUSSIA, PA 19406
Pennoni

FUTURE BACKGROUND CONDITIONS WITHOUT SITE DEVELOPMENT ('No-Build')

Future 2020 traffic volume (or "Background") scenarios represent the future traffic conditions in the study area, without the development of the proposed site. The 2020 background conditions are used as a 'baseline' for comparison with the build-out analysis with the site.

Background Growth

An evaluation of opening year traffic conditions must account for the traffic volume increases that are expected to occur throughout the region over this period. Typically, this calculation will include both regionally expected growth, as well as other specifically known development projects within the area that will increase traffic volumes on the study area roadways.

Based upon information received from both PennDOT and Whitemarsh Township, there are no other pending development projects in the immediate area that will impact traffic volumes on Skippack Pike (SR 0072) or Butler Pike near the proposed development. As such, to account for traffic volume increases from other regional growth, the existing traffic volumes were increased by an annual growth factor of 0.58% based on information supplied by the PENNDOT Bureau of Planning and Research. Therefore, traffic volumes were developed for a 2020 opening year using a 1.012% growth rate (0.58% per year for 2 years).

'No-Build' Condition Traffic Volumes

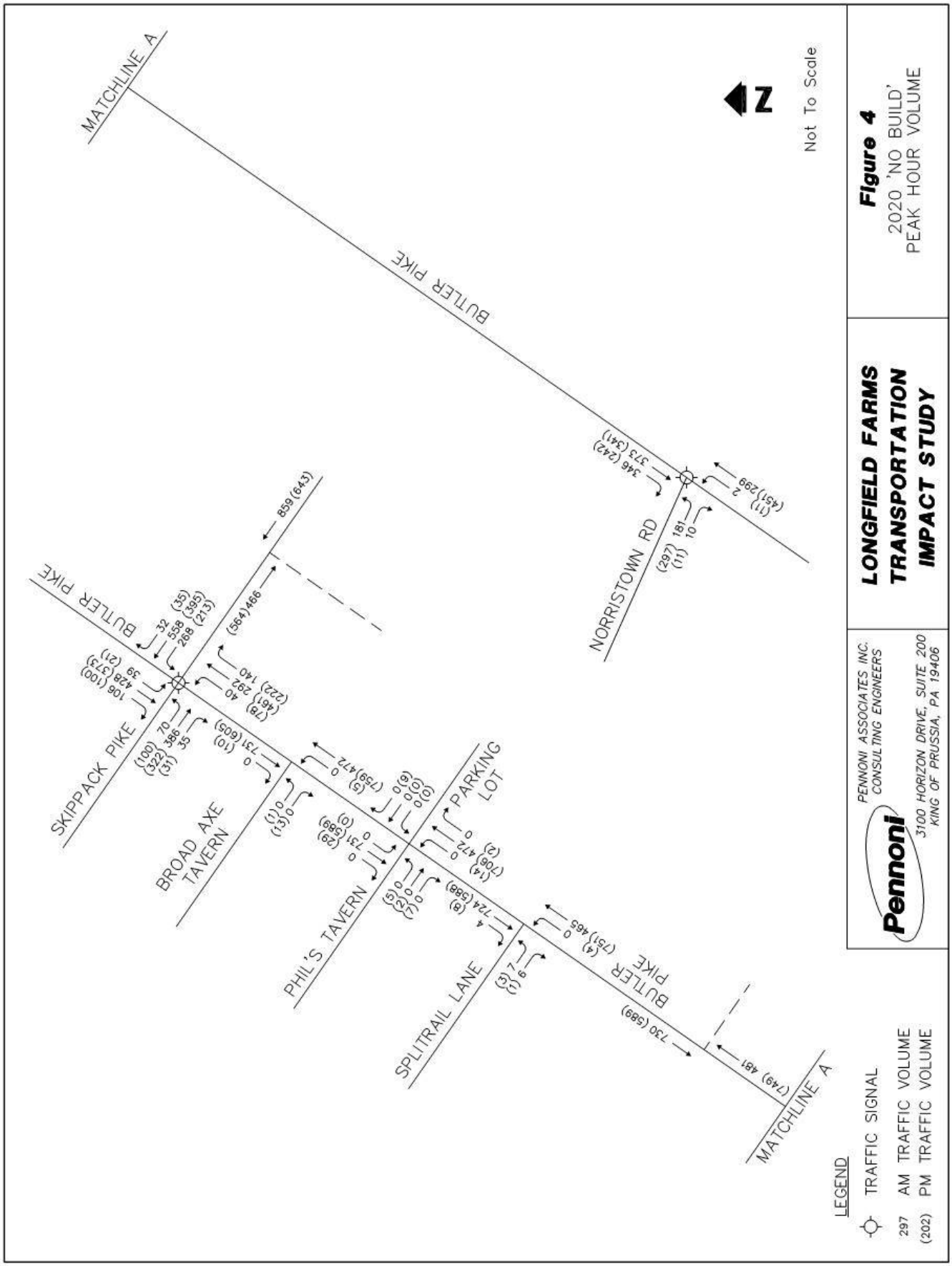
To quantify changes in the site access, the site trips are not included in the short-term or long-term background traffic volumes. Traffic volumes are summarized in **Figure 4** for the 2020 conditions without the site for the AM peak hour and PM peak hour conditions.

'No-Build' Condition Traffic Operations

Existing peak hour factors were utilized for the analysis. Heavy vehicle percentages were taken from existing counts.

FUTURE LEVEL OF SERVICE WITHOUT SITE DEVELOPMENT

The LOS by lane group, approach, and overall grade for the study intersection for the weekday AM and PM peak hours for the 2020 'no-build' conditions (without the site) are shown on **Table 2**. The analyses indicate that the intersection of Skippack Pike (SR 0073) and Butler Pike will operate at a LOS 'E' during both the morning and afternoon peak hours. The intersection of Butler Pike & Norristown Road is expected to operate at a LOS 'C' during both peak hours. The Synchro calculation worksheets for the Background 2019 Conditions Without the Site are in **Appendix D**.


MATCHLINE A
BUTLER PIKE
Not To Scale
Figure 4
2020 'NO BUILD'
PEAK HOUR VOLUME
LONGFIELD FARMS
TRANSPORTATION
IMPACT STUDY
PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3100 HORIZON DRIVE, SUITE 200
KING OF PRUSSIA, PA 19406
NORRISTOWN RD
SKIPPACK PIKE
BROAD AXE TAVERN
PHIL'S TAVERN
PARKING LOT
SPLITRAIL LANE
LEGEND
TRAFFIC SIGNAL
297 AM TRAFFIC VOLUME
(202) PM TRAFFIC VOLUME

SITE TRAFFIC

Site Trip Generation

Pennoni utilized Institute of Transportation Engineers (ITE) *Trip Generation (10th Edition)* Manual for trip generation calculations for the site, based on the proposed development, as summarized below in **Table 1**.

INTERNAL AND PASS-BY TRIPS

As the proposed development is residential in nature, no internal or pass-by trips were considered as part of the proposed trip generation calculations.

TABLE 1: PROPOSED TRIP GENERATION SUMMARY

Use	Size	ITE LU Code (1)	Trip Type	AM Peak Hour Trips			PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
Residential	58 Units	220 – Multi-Family Housing (Low-Rise)	**Site Trips**	6	22	28	20	12	32
			Pass-by Trips	0	0	0	0	0	0
			Internal Trips	0	0	0	0	0	0
			External Trips	**6**	**22**	**28**	**20**	**12**	**32**

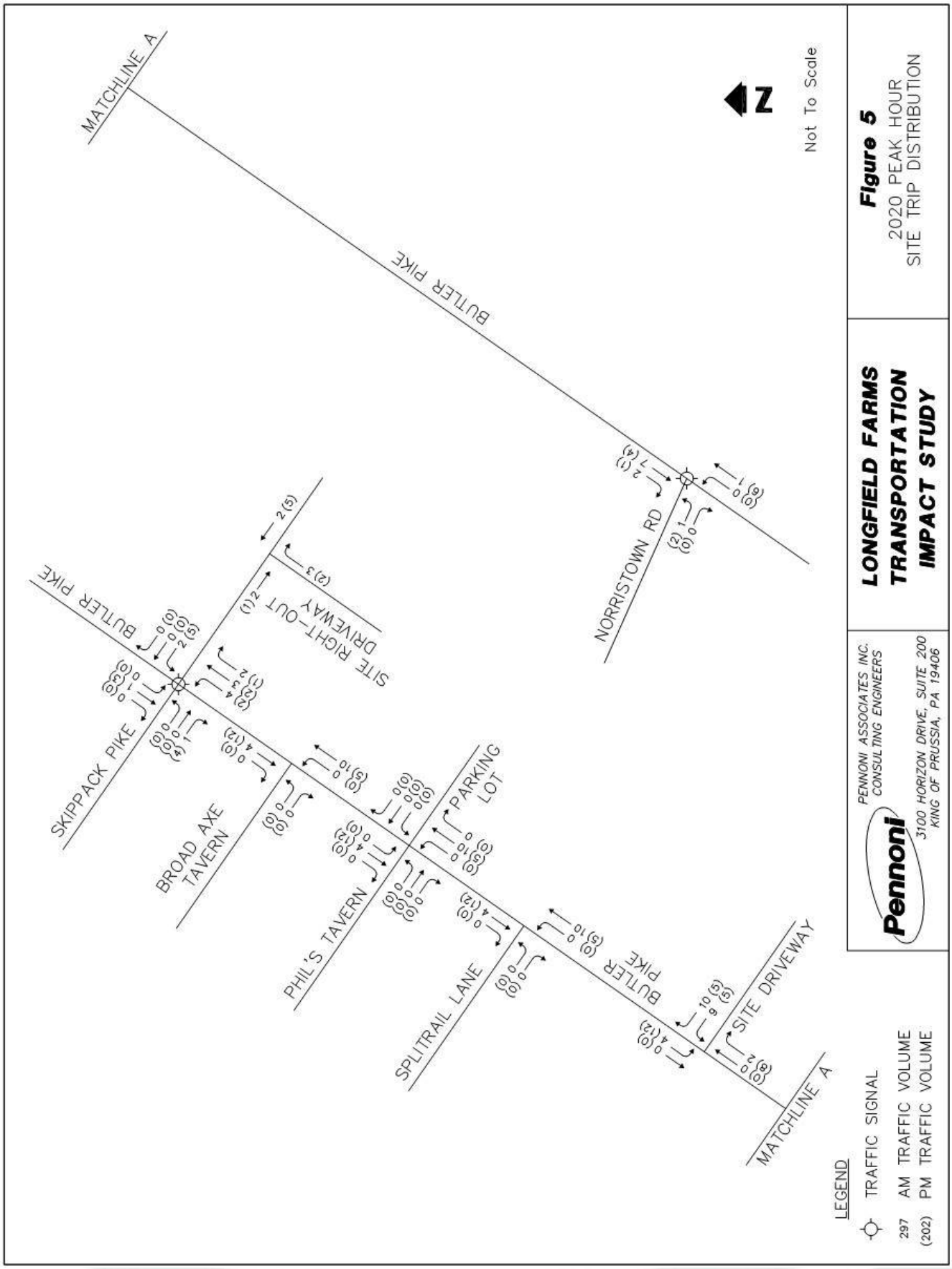
(1) ITE Trip Generation Manual, 10th Edition

Site Trip Distribution

The anticipated trips to be generated by the site (as shown in Table 1) were assigned to the roadway network in accordance with the following trip distribution percentages for the morning and afternoon peak hours:

- 60% via Butler Pike to the north
- 40% via Butler Pike to the south

Site trips were then assigned to the study area intersections and the proposed access driveways to Butler Pike and Skippack Pike based on these existing traffic patterns in the area, which are depicted on **Figure 5**.


MATCHLINE A
BUTLER PIKE
NORRISTOWN RD
SITE RIGHT-OUT DRIVEWAY
SKIPPACK PIKE
BROAD AXE TAVERN
PHIL'S TAVERN
PARKING LOT
SPLITRAIL LANE
SITE DRIVEWAY
Not To Scale
LEGEND
TRAFFIC SIGNAL
297 AM TRAFFIC VOLUME
(202) PM TRAFFIC VOLUME
Figure 5
2020 PEAK HOUR
SITE TRIP DISTRIBUTION
LONGFIELD FARMS
TRANSPORTATION
IMPACT STUDY
PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS
3100 HORIZON DRIVE, SUITE 200
KING OF PRUSSIA, PA 19406
Pennoni

FUTURE CONDITIONS WITH PROPOSED SITE DEVELOPMENT ('Build')

The traffic volumes for the site-build-out conditions with the site were developed as a combination of:

- Background traffic ('No Build') without the site development (**Figure 4**), and;
- Site Traffic added to the network associated with the proposed site development project (**Figure 5**).

'Build' Condition Traffic Volumes

The 2020 background traffic volumes were combined with the site traffic to determine total 2020 traffic volumes. Total peak hour turning volumes are summarized in **Figure 6.**

'Build' Condition Traffic Operations

The LOS by lane group, approach, and overall grade for each of the study intersections for the weekday AM and PM peak hours for future conditions with the development of the site are shown on **Table 2.**

The study area intersections will continue to operate at the same overall LOS grades as the 2020 'No-build' background conditions in both the morning and afternoon peak hours. The proposed site driveway to Butler Pike is expected to operate at a LOS 'C' during the morning peak hour, and a 'D' during the afternoon peak hour, without the need for signalization. The proposed right-turn exit-only driveway to Skippack Pike (SR 0073) is expected to operate at a LOS 'B' during both the morning and afternoon peak hours.

The Synchro calculation worksheets are in **Appendix E.**

Table 2
Summary of Operational Analyses

Intersection	Approach	Existing Conditions (2018)		Opening Year (2020) Without Development		Design Year (2020) With Development	
		AM	PM	AM	PM	AM	PM
Skippack Pike (EB/WB) & Butler Pike (EB/WB)	EB L	C (27.3) 40/65	D (44.7) 76/101	C (27.7) 40/65	D (49.6) 78/103	C (27.7) 40/65	D (46.6) 77/102
	EB T/R	E (65.2) 418/604	E (67.4) 365/508	E (67.8) 425/615	E (72.4) 373/527	E (68.4) 425/615	E (74.6) 381/542
	WB L	E (60.5) 203/327	F (83.5) 167/277	E (65.2) 212/336	F (98.9) 196/303	E (66.3) 215/340	F (99.5) 208/315
	WB T	D (49.1) 505/717	D (54.0) 384/481	D (49.4) 506/716	E (56.7) 395/494	D (49.4) 506/716	D (54.7) 391/489
	WB R	A (0.1) 0/0	A (0.3) 0/0	A (0.1) 0/0	A (0.3) 0/0	A (0.1) 0/0	A (0.3) 0/0
	NB L	C (29.2) 30/46	C (20.3) 41/71	C (30.1) 31/47	B (19.8) 41/71	C (31.0) 34/51	C (20.5) 43/73
	NB T/R	E (73.7) 493/524	E (67.6) 661/943	E (75.8) 507/567	E (66.1) 664/948	E (78.5) 522/579	E (71.5) 715/966
	SB L	C (34.5) 30/46	C (25.0) 20/22	D (35.5) 31/46	C (24.5) 20/22	D (35.5) 31/46	C (25.0) 20/22
	SB T	E (57.1) 420/523	C (34.3) 255/355	E (58.3) 432/545	C (33.6) 256/355	E (58.4) 433/548	C (34.6) 262/363
	SB R	A (5.6) 0/0	A (3.2) 0/25	A (5.8) 0/0	A (3.3) 0/25	A (5.8) 0/0	A (0.5) 0/0
Overall Intersection*		**D (54.6)**	**D (54.7)**	**E (56.2)**	**E (57.2)**	**E (57.1)**	**E (58.7)**
Skippack Pike (EB/WB) & Site Driveway (NB)	EB T	A (0.0) 0/0	A (0.0) 0/0	A (0.0) 0/0	A (0.0) 0/0	A (0.0) 0/0	A (0.0) 0/0
	WB T	A (0.0) 0/0	A (0.0) 0/0	A (0.0) 0/0	A (0.0) 0/0	A (0.0) 0/0	A (0.0) 0/0
	NB R	N/A	N/A	N/A	N/A	B (11.6) 0	B (12.8) 0
Overall Intersection		**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**
Butler Pike (NB/SB) & Broad Axe Tavern Driveway (EB)	NB L/T	A (0.0) 0/0	A (0.2) 0	A (0.0) 0/0	A (0.2) 1	A (0.0) 0/0	A (0.2) 1
	SB T/R	A (0.0) 0/0	A (0.0) 0	A (0.0) 0/0	A (0.0) 0	A (0.0) 0/0	A (0.0) 0
	EB L/R	A (0.0) 0/0	B (14.8) 5	A (0.0) 0/0	B (14.9) 5	A (0.0) 0/0	C (15.1) 5
Overall Intersection		**A (0.0)**	**A (0.3)**	**A (0.0)**	**A (0.3)**	**A (0.0)**	**A (0.3)**

Table 2
Summary of Operational Analyses (continued)

Intersection	Approach	Existing Conditions (2018)		Opening Year (2020) Without Development		Opening Year (2020) With Development	
		AM	PM	AM	PM	AM	PM
Butler Pike (NB/SB) & Phil's Tavern Driveway (EB)/Parking Lot Driveway (WB)	NB L/T	A (0.0) 0/0	A (0.4) 3	A (0.0) 0/0	A (1.1) 3	A (0.0) 0/0	A (1.1) 3
	SB L/T/R	A (0.0) 0/0	A (0.0) 0	A (0.0) 0/0	A (0.0) 0	A (0.0) 0/0	A (0.0) 0
	EB L/T/R	A (0.0) 0/0	E (35.9) 23	A (0.0) 0/0	E (36.7) 24	A (0.0) 0/0	E (38.1) 24
	WB L/T/R	A (0.0) 0/0	B (14.2) 2	A (0.0) 0/0	B (14.3) 2	A (0.0) 0/0	B (14.4) 2
Overall Intersection		**A (0.0)**	**A (0.9)**	**A (0.0)**	**A (0.9)**	**A (0.0)**	**A (1.0)**
Butler Pike (NB/SB) & Splitrail Lane (EB)	NB L/T	A (0.0) 0/0	A (0.1) 1	A (0.0) 0/0	A (0.1) 1	A (0.0) 0/0	A (0.1) 1
	SB T/R	A (0.0) 0/0	A (0.0) 0/0	A (0.0) 0/0	A (0.0) 0/0	A (0.0) 0/0	A (0.0) 0/0
	EB L/R	C (24.7) 17	D (28.1) 9	C (24.7) 17	D (28.5) 9	D (25.3) 17	D (29.3) 10
Overall Intersection		**A (0.5)**	**A (0.4)**	**A (0.5)**	**A (0.4)**	**A (0.5)**	**A (0.4)**
Butler Pike (NB/SB) & Site Driveway (WB)	NB T/R	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0
	SB T/L	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0	A (0.0) 0
	WB L/R	N/A	N/A	N/A	N/A	C (18.5) 9	D (26.4) 7
Overall Intersection		**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.0)**	**A (0.3)**	**A (0.2)**
Butler Pike (NB/SB) & Norristown Road (EB)	NB L/T	A (8.1) 78/106	B (14.5) 165/227	A (8.2) 79/108	B (14.7) 168/230	A (8.2) 80/108	B (14.9) 173/234
	SB T/R	B (13.9) 215/316	B (14.3) 167/295	B (14.2) 221/324	B (14.6) 172/302	B (14.7) 227/334	B (14.8) 177/308
	EB L/R	D (44.0) 102/156	D (39.7) 139/237	D (44.5) 103/157	D (39.9) 140/252	D (44.7) 104/158	D (40.1) 141/254
Overall Intersection		**B (17.5)**	**B (19.9)**	**B (17.8)**	**C (20.1)**	**B (18.1)**	**C (20.3)**

A (8.5) - Level of Service (Avg. Delay in seconds)
100/200 – 50% Queue/95% Queue (feet)
*Based upon Synchro V10 model

As shown above, the anticipated impact of the site generated traffic on the adjacent roadway network is minimal, with all study area intersections functioning at the same overall Level of Service with or without the proposed development.

Driveway Sight Distance

As shown on the proposed site plan for the development, the required safe sight distance values outlined by Montgomery County and PennDOT criteria for the posted speed along Butler Pike will be provided for both site driveways.

Auxiliary Turn Lane Warrant Evaluation

A preliminary review of the need for Auxiliary Turn Lanes (right-turn, left-turn) using PennDOT criteria for the proposed intersection of the site driveway with Butler Pike indicates that a separate right turn lane is **not warranted,** but that a 75' left-turn lane for traffic entering the proposed site driveway **may be warranted**. As Butler Pike is a Montgomery County owned roadway, it is our understanding that any new access driveway will require a County Roadway Occupancy Permit, and we will further coordinate the design of this intersection with both Whitemarsh Township and Montgomery County.

Traffic Signal Warrant Evaluation

The expected traffic volume at the proposed site access driveway to Butler Pike falls well below the threshold for the consideration of the installation of a traffic signal. The proposed right-turn exit-only driveway to Skippack Pike (SR 0073) will not require signalization.

CONCLUSIONS

The report reviews overall intersection performance as well as locations where site traffic changes intersection performance grades. The impact of the proposed Longfield Farms residential development results in an increase in overall intersection delay of less than 10 seconds at each intersection analyzed in this study, and each will operate at the same overall Level of Service (LOS) with or without the proposed site development. We offer the following summary and conclusions regarding the proposed development and adjacent roadway network:

- The proposed site is anticipated to generate **28 new trips** (combined entering/exiting) during the weekday AM peak hour, and **32 new trips** (combined entering/exiting) during the weekday PM peak hour;

- As noted above and in **Table 2**, the impact of the proposed development on the adjacent signalized intersections of Skippack Pike & Butler Pike, and Butler Pike and Norristown Road, is minor, and within the allowable impact range where PennDOT would not require mitigation;

- The proposed site driveways will provide adequate sight distance for entering and exiting traffic to and from Butler Pike and Skippack Pike;

- The proposed access driveways to Butler Pike and Skippack Pike will operate at acceptable overall Levels of Service during both the weekday AM and PM peak hours;

- The anticipated maximum queue on the northbound approach of Butler Pike, extending from Skippack Pike, will at times extend to the proposed main (southern) access driveway of the site, which is as similar condition that would exist without any development of the site;

APPENDIX A

INTERSECTION TRAFFIC COUNTS

LONGFIELD FARMS
TRANSPORTATION IMPACT STUDY
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

Pennoni

www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Montgomery County, PA
Skippack Pike & Butler Pike
Thursday, December 20, 2018
Location: 40.139007, -75.244196

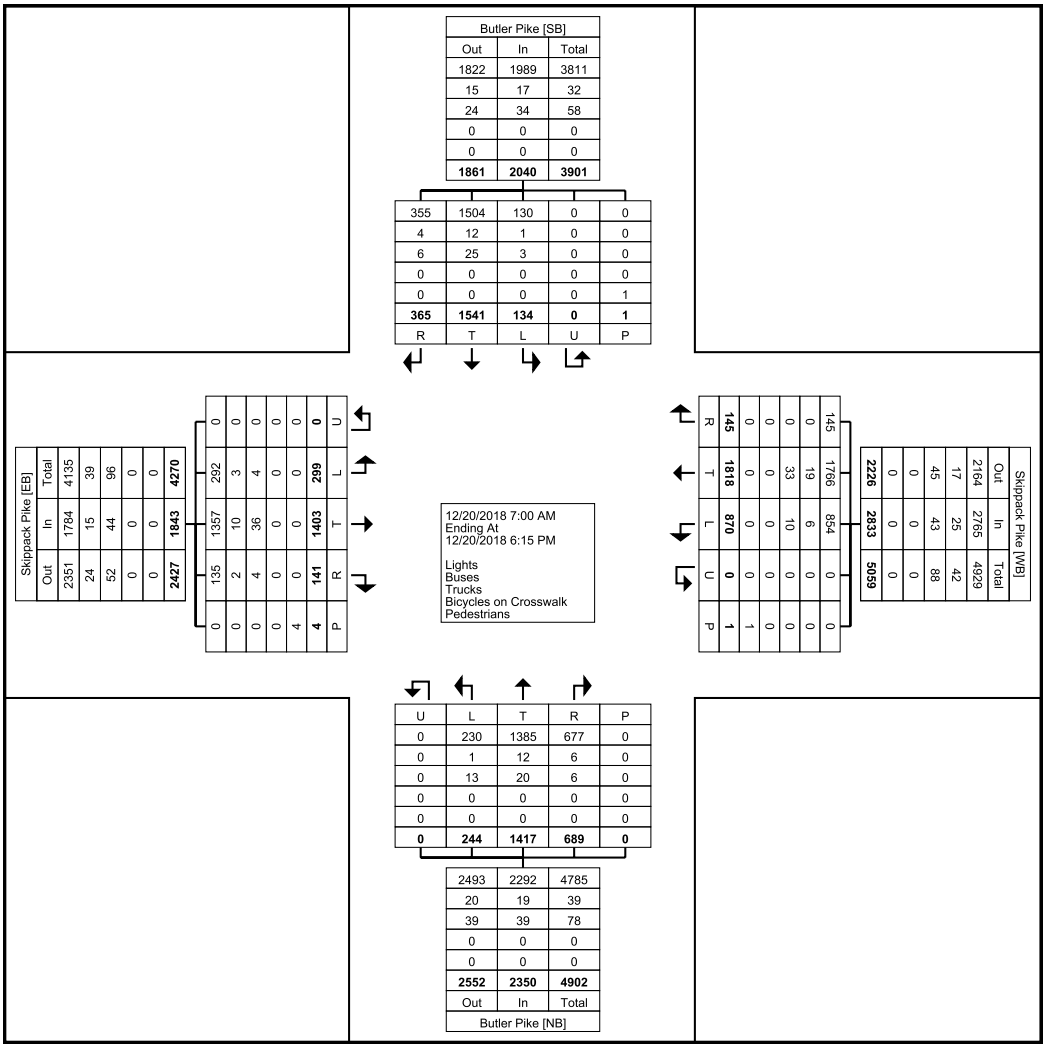
Count Name: Skippack Pike-Butler Pike
Site Code:
Start Date: 12/20/2018
Page No: 1

Turning Movement Data

Start Time	Skippack Pike Eastbound							Skippack Pike Westbound							Butler Pike Northbound							Butler Pike Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:00 AM	15	114	4	1	0	0	134	40	118	5	3	0	0	166	10	46	35	0	0	0	91	10	103	13	6	0	0	132	523
7:15 AM	20	110	5	0	0	1	135	49	123	9	2	0	0	183	11	68	40	1	0	0	120	13	103	11	9	0	0	136	574
7:30 AM	20	108	8	0	0	0	136	80	129	6	2	0	0	217	9	72	30	0	0	0	111	6	124	7	9	0	0	146	610
7:45 AM	16	87	5	0	0	0	108	61	140	5	3	0	0	209	6	66	32	2	0	0	106	9	113	9	11	0	0	142	565
Hourly Total	71	419	22	1	0	1	513	230	510	25	10	0	0	775	36	252	137	3	0	0	428	38	443	40	35	0	0	556	2272
8:00 AM	21	95	8	2	0	0	126	47	131	5	2	0	0	185	11	94	45	4	0	0	154	10	93	35	2	0	1	140	605
8:15 AM	12	92	6	6	0	0	116	77	152	5	4	0	0	238	14	57	23	2	0	0	96	14	93	29	3	0	0	139	589
8:30 AM	13	95	12	1	0	0	121	66	128	9	4	0	0	207	8	53	34	1	0	0	96	9	124	21	7	0	0	161	585
8:45 AM	11	80	18	0	0	0	109	74	139	4	1	0	1	218	12	57	29	3	0	0	101	12	97	22	4	0	0	135	563
Hourly Total	57	362	44	9	0	0	472	264	550	23	11	0	1	848	45	261	131	10	0	0	447	45	407	107	16	0	1	575	2342
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	9	85	12	1	0	0	107	42	106	5	7	0	0	160	20	110	56	4	0	0	190	7	80	14	4	0	0	105	562
4:15 PM	24	85	8	0	0	0	117	51	87	6	4	0	0	148	23	103	47	1	0	0	174	10	84	10	4	0	0	108	547
4:30 PM	16	69	6	0	0	0	91	35	100	3	4	0	0	142	24	119	43	4	0	0	190	6	86	20	4	0	0	116	539
4:45 PM	30	82	5	1	0	0	118	25	50	6	2	0	0	83	22	116	57	5	0	0	200	11	93	19	7	0	0	130	531
Hourly Total	79	321	31	2	0	0	433	153	343	20	17	0	0	533	89	448	203	14	0	0	754	34	343	63	19	0	0	459	2179
5:00 PM	21	93	4	1	0	0	119	59	114	2	10	0	0	185	17	122	50	6	0	0	195	3	89	26	0	0	0	118	617
5:15 PM	15	67	11	1	0	1	94	66	111	0	8	0	0	185	22	112	47	10	0	0	191	5	95	22	2	0	0	124	594
5:30 PM	33	76	8	0	0	2	117	61	115	1	6	0	0	183	16	106	41	3	0	0	166	2	92	23	0	0	0	117	583
5:45 PM	23	65	7	0	0	0	95	37	75	5	7	0	0	124	19	116	33	1	0	0	169	7	72	11	1	0	0	91	479
Hourly Total	92	301	30	2	0	3	425	223	415	8	31	0	0	677	74	456	171	20	0	0	721	17	348	82	3	0	0	450	2273
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	299	1403	127	14	0	4	1843	870	1818	76	69	0	1	2833	244	1417	642	47	0	0	2350	134	1541	292	73	0	1	2040	9066
Approach %	16.2	76.1	6.9	0.8	0.0	-	-	30.7	64.2	2.7	2.4	0.0	-	-	10.4	60.3	27.3	2.0	0.0	-	-	6.6	75.5	14.3	3.6	0.0	-	-	-
Total %	3.3	15.5	1.4	0.2	0.0	-	20.3	9.6	20.1	0.8	0.8	0.0	-	31.2	2.7	15.6	7.1	0.5	0.0	-	25.9	1.5	17.0	3.2	0.8	0.0	-	22.5	-
Lights	292	1357	121	14	0	-	1784	854	1766	76	69	0	-	2765	230	1385	630	47	0	-	2292	130	1504	282	73	0	-	1989	8830
% Lights	97.7	96.7	95.3	100.0	-	-	96.8	98.2	97.1	100.0	100.0	-	-	97.6	94.3	97.7	98.1	100.0	-	-	97.5	97.0	97.6	96.6	100.0	-	-	97.5	97.4
Buses	3	10	2	0	0	-	15	6	19	0	0	0	-	25	1	12	6	0	0	-	19	1	12	4	0	0	-	17	76
% Buses	1.0	0.7	1.6	0.0	-	-	0.8	0.7	1.0	0.0	0.0	-	-	0.9	0.4	0.8	0.9	0.0	-	-	0.8	0.7	0.8	1.4	0.0	-	-	0.8	0.8
Trucks	4	36	4	0	0	-	44	10	33	0	0	0	-	43	13	20	6	0	0	-	39	3	25	6	0	0	-	34	160
% Trucks	1.3	2.6	3.1	0.0	-	-	2.4	1.1	1.8	0.0	0.0	-	-	1.5	5.3	1.4	0.9	0.0	-	-	1.7	2.2	1.6	2.1	0.0	-	-	1.7	1.8
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	4	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Montgomery County, PA
Skippack Pike & Butler Pike
Thursday, December 20, 2018
Location: 40.139007, -75.244196

Count Name: Skippack Pike-Butler Pike
Site Code:
Start Date: 12/20/2018
Page No: 2



Turning Movement Data Plot

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610-466-1469
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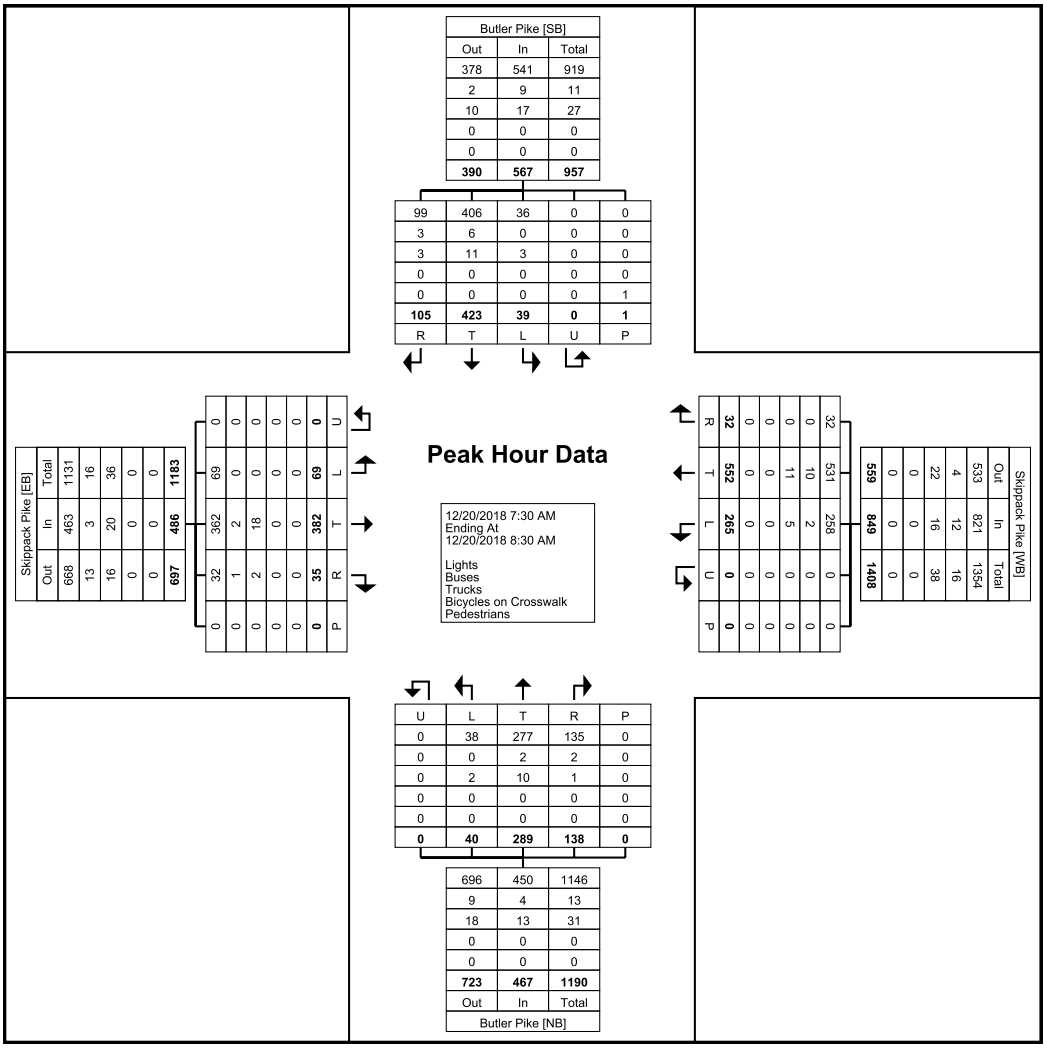
Montgomery County, PA
Skippack Pike & Butler Pike
Thursday, December 20, 2018
Location: 40.139007, -75.244196

Count Name: Skippack Pike-Butler Pike
Site Code:
Start Date: 12/20/2018

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Skippack Pike Eastbound							Skippack Pike Westbound							Butler Pike Northbound							Butler Pike Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:30 AM	20	108	8	0	0	0	136	80	129	6	2	0	0	217	9	72	30	0	0	0	111	6	124	7	9	0	0	146	610
7:45 AM	16	87	5	0	0	0	108	61	140	5	3	0	0	209	6	66	32	2	0	0	106	9	113	9	11	0	0	142	565
8:00 AM	21	95	8	2	0	0	126	47	131	5	2	0	0	185	11	94	45	4	0	0	154	10	93	35	2	0	1	140	605
8:15 AM	12	92	6	6	0	0	116	77	152	5	4	0	0	238	14	57	23	2	0	0	96	14	93	29	3	0	0	139	589
Total	69	382	27	8	0	0	486	265	552	21	11	0	0	849	40	289	130	8	0	0	467	39	423	80	25	0	1	567	2369
Approach %	14.2	78.6	5.6	1.6	0.0	-	-	31.2	65.0	2.5	1.3	0.0	-	-	8.6	61.9	27.8	1.7	0.0	-	-	6.9	74.6	14.1	4.4	0.0	-	-	-
Total %	2.9	16.1	1.1	0.3	0.0	-	20.5	11.2	23.3	0.9	0.5	0.0	-	35.8	1.7	12.2	5.5	0.3	0.0	-	19.7	1.6	17.9	3.4	1.1	0.0	-	23.9	-
PHF	0.821	0.684	0.844	0.333	0.000	-	0.893	0.828	0.908	0.875	0.688	0.000	-	0.892	0.714	0.769	0.722	0.500	0.000	-	0.758	0.696	0.853	0.571	0.568	0.000	-	0.971	0.971
Lights	69	362	24	8	0	-	463	258	531	21	11	0	-	821	38	277	127	8	0	-	450	36	406	74	25	0	-	541	2275
% Lights	100.0	94.8	88.9	100.0	-	-	95.3	97.4	96.2	100.0	100.0	-	-	96.7	95.0	95.8	97.7	100.0	-	-	96.4	92.3	96.0	92.5	100.0	-	-	95.4	96.0
Buses	0	2	1	0	0	-	3	2	10	0	0	0	-	12	0	2	2	0	0	-	4	0	6	3	0	0	-	9	28
% Buses	0.0	0.5	3.7	0.0	-	-	0.6	0.8	1.8	0.0	0.0	-	-	1.4	0.0	0.7	1.5	0.0	-	-	0.9	0.0	1.4	3.8	0.0	-	-	1.6	1.2
Trucks	0	18	2	0	0	-	20	5	11	0	0	0	-	16	2	10	1	0	0	-	13	3	11	3	0	0	-	17	66
% Trucks	0.0	4.7	7.4	0.0	-	-	4.1	1.9	2.0	0.0	0.0	-	-	1.9	5.0	3.5	0.8	0.0	-	-	2.8	7.7	2.6	3.8	0.0	-	-	3.0	2.8
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



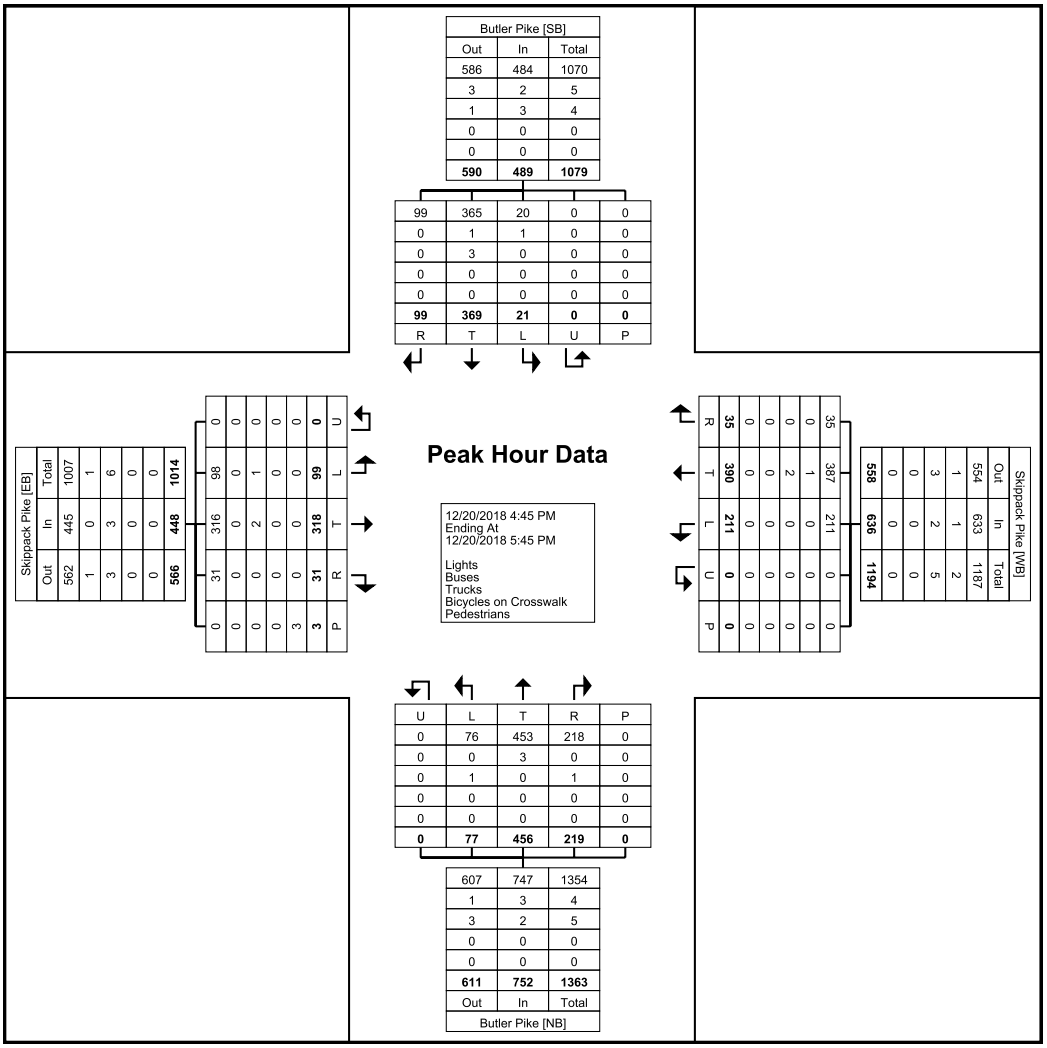
Turning Movement Peak Hour Data Plot (7:30 AM)

Montgomery County, PA
Skippack Pike & Butler Pike
Thursday, December 20, 2018
Location: 40.139007, -75.244196

Count Name: Skippack Pike-Butler Pike
Site Code:
Start Date: 12/20/2018

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Skippack Pike Eastbound							Skippack Pike Westbound							Butler Pike Northbound							Butler Pike Southbound							
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
4:45 PM	30	82	5	1	0	0	118	25	50	6	2	0	0	83	22	116	57	5	0	0	200	11	93	19	7	0	0	130	531
5:00 PM	21	93	4	1	0	0	119	59	114	2	10	0	0	185	17	122	50	6	0	0	195	3	89	26	0	0	0	118	617
5:15 PM	15	67	11	1	0	1	94	66	111	0	8	0	0	185	22	112	47	10	0	0	191	5	95	22	2	0	0	124	594
5:30 PM	33	76	8	0	0	2	117	61	115	1	6	0	0	183	16	106	41	3	0	0	166	2	92	23	0	0	0	117	583
Total	99	318	28	3	0	3	448	211	390	9	26	0	0	636	77	456	195	24	0	0	752	21	369	90	9	0	0	489	2325
Approach %	22.1	71.0	6.3	0.7	0.0	-	-	33.2	61.3	1.4	4.1	0.0	-	-	10.2	60.6	25.9	3.2	0.0	-	-	4.3	75.5	18.4	1.8	0.0	-	-	-
Total %	4.3	13.7	1.2	0.1	0.0	-	19.3	9.1	16.8	0.4	1.1	0.0	-	27.4	3.3	19.6	8.4	1.0	0.0	-	32.3	0.9	15.9	3.9	0.4	0.0	-	21.0	-
PHF	0.750	0.855	0.636	0.750	0.000	-	0.941	0.799	0.848	0.375	0.650	0.000	-	0.859	0.875	0.934	0.855	0.600	0.000	-	0.940	0.477	0.971	0.865	0.321	0.000	-	0.940	0.942
Lights	98	316	28	3	0	-	445	211	387	9	26	0	-	633	76	453	194	24	0	-	747	20	365	90	9	0	-	484	2309
% Lights	99.0	99.4	100.0	100.0	-	-	99.3	100.0	99.2	100.0	100.0	-	-	99.5	98.7	99.3	99.5	100.0	-	-	99.3	95.2	98.9	100.0	100.0	-	-	99.0	99.3
Buses	0	0	0	0	0	-	0	0	1	0	0	0	-	1	0	3	0	0	0	-	3	1	1	0	0	0	-	2	6
% Buses	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	0.0	-	-	0.2	0.0	0.7	0.0	0.0	-	-	0.4	4.8	0.3	0.0	0.0	-	-	0.4	0.3
Trucks	1	2	0	0	0	-	3	0	2	0	0	0	-	2	1	0	1	0	0	-	2	0	3	0	0	0	-	3	10
% Trucks	1.0	0.6	0.0	0.0	-	-	0.7	0.0	0.5	0.0	0.0	-	-	0.3	1.3	0.0	0.5	0.0	-	-	0.3	0.0	0.8	0.0	0.0	-	-	0.6	0.4
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	-	3	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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

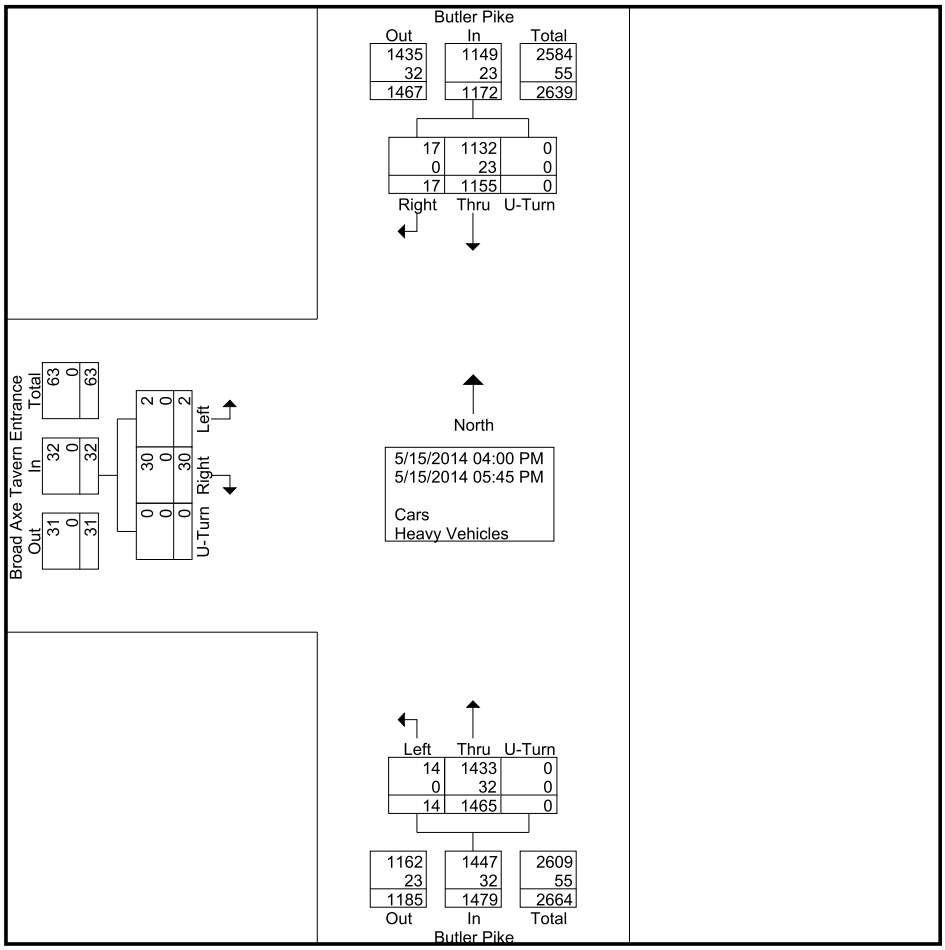
Tri-State Traffic Data, Inc.
610 466-1469
TSTData.com

Location: Montgomery County, PA
Intersection: Butler Pike/Bord Axe Tav.
Date: Thursday, May 15, 2014
Counter: MIO PB

File Name : BK 0515 - 2
Site Code : 02
Start Date : 5/15/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

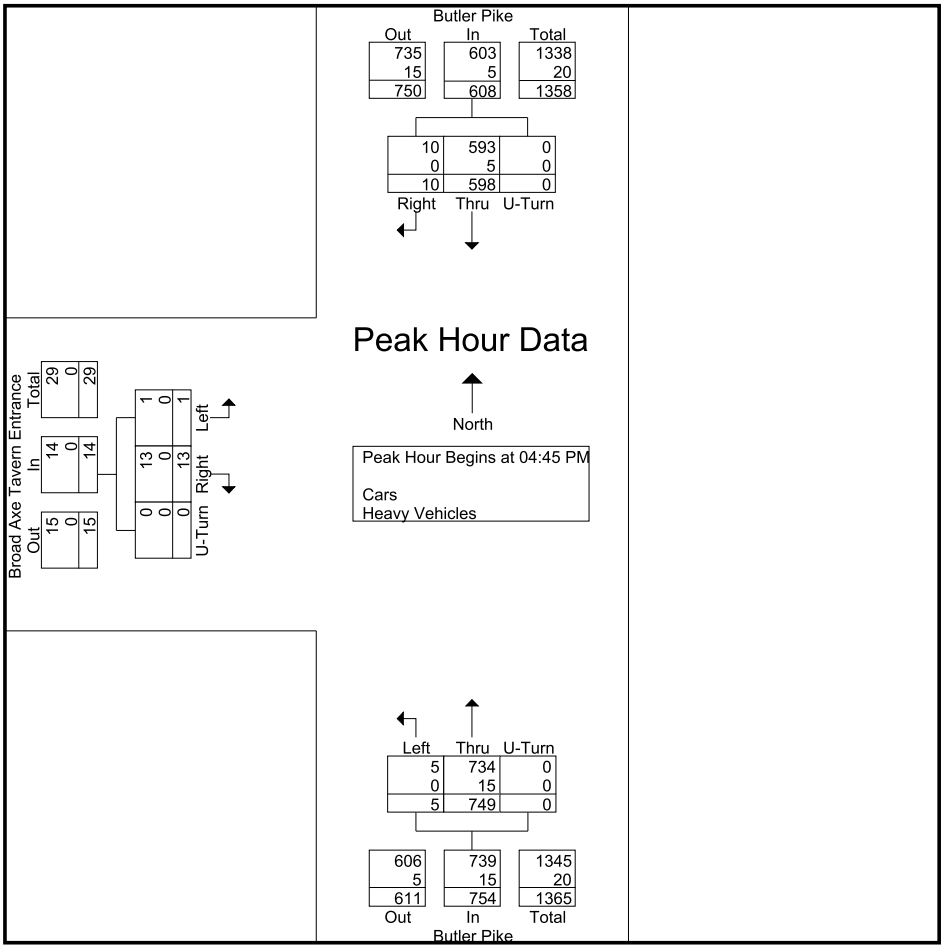
	Butler Pike Southbound				Butler Pike Northbound				Broad Axe Tavern Entrance Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
04:00 PM	1	124	0	125	195	1	0	196	2	1	0	3	324
04:15 PM	2	139	0	141	178	4	0	182	8	0	0	8	331
04:30 PM	0	136	0	136	167	1	0	168	3	0	0	3	307
04:45 PM	2	139	0	141	200	2	0	202	2	0	0	2	345
Total	5	538	0	543	740	8	0	748	15	1	0	16	1307
05:00 PM	2	149	0	151	168	0	0	168	4	1	0	5	324
05:15 PM	2	145	0	147	188	2	0	190	2	0	0	2	339
05:30 PM	4	165	0	169	193	1	0	194	5	0	0	5	368
05:45 PM	4	158	0	162	176	3	0	179	4	0	0	4	345
Total	12	617	0	629	725	6	0	731	15	1	0	16	1376
Grand Total	17	1155	0	1172	1465	14	0	1479	30	2	0	32	2683
Apprch %	1.5	98.5	0		99.1	0.9	0		93.8	6.2	0		
Total %	0.6	43	0	43.7	54.6	0.5	0	55.1	1.1	0.1	0	1.2	
Cars	17	1132	0	1149	1433	14	0	1447	30	2	0	32	2628
% Cars	100	98	0	98	97.8	100	0	97.8	100	100	0	100	98
Heavy Vehicles	0	23	0	23	32	0	0	32	0	0	0	0	55
% Heavy Vehicles	0	2	0	2	2.2	0	0	2.2	0	0	0	0	2



Tri-State Traffic Data, Inc.
610 466-1469
TSTData.com

File Name : BK 0515 - 2
Site Code : 02
Start Date : 5/15/2014
Page No : 2

	Butler Pike Southbound				Butler Pike Northbound				Broad Axe Tavern Entrance Eastbound				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	2	139	0	141	**200**	**2**	0	**202**	2	0	0	2	345
05:00 PM	2	149	0	151	168	0	0	168	4	**1**	0	**5**	324
05:15 PM	2	145	0	147	188	2	0	190	2	0	0	2	339
05:30 PM	**4**	**165**	0	**169**	193	1	0	194	**5**	0	0	5	**368**
Total Volume	10	598	0	608	749	5	0	754	13	1	0	14	1376
% App. Total	1.6	98.4	0		99.3	0.7	0		92.9	7.1	0		
PHF	.625	.906	.000	.899	.936	.625	.000	.933	.650	.250	.000	.700	.935
Cars	10	593	0	603	734	5	0	739	13	1	0	14	1356
% Cars	100	99.2	0	99.2	98.0	100	0	98.0	100	100	0	100	98.5
Heavy Vehicles	0	5	0	5	15	0	0	15	0	0	0	0	20
% Heavy Vehicles	0	0.8	0	0.8	2.0	0	0	2.0	0	0	0	0	1.5



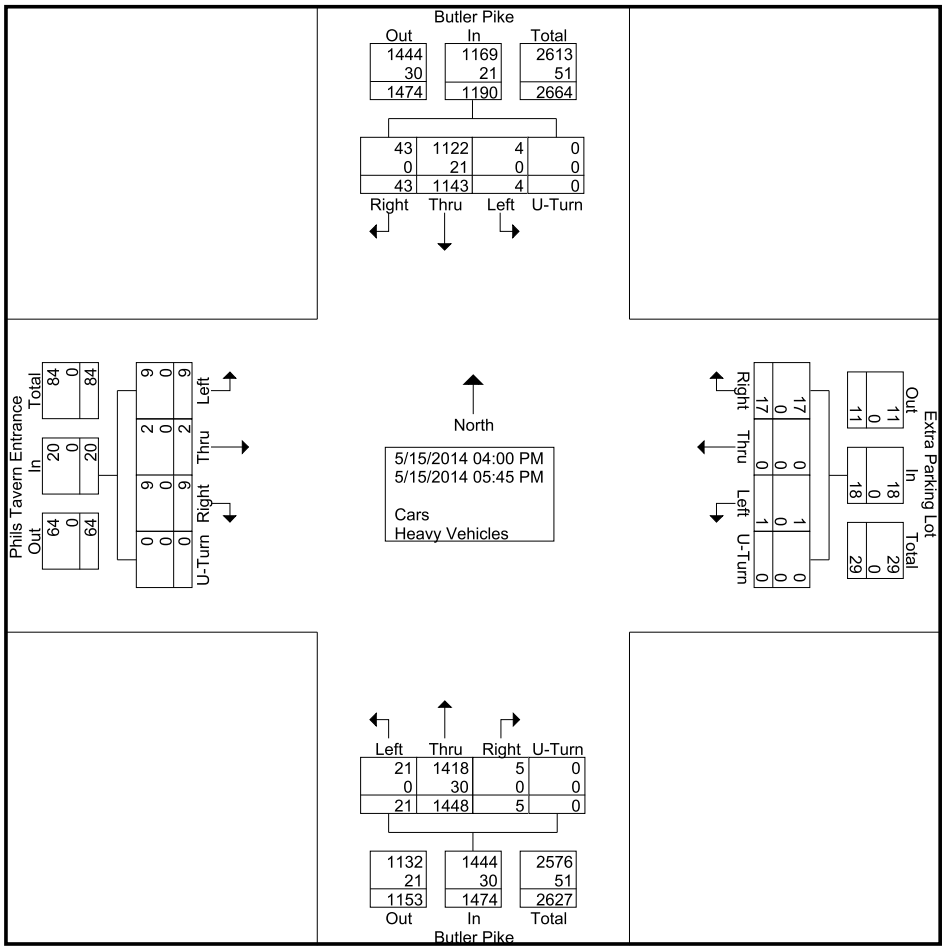
Tri-State Traffic Data, Inc.
610 466-1469
TSTData.com

Location: Montgomery County, PA
Intersection: Butler PIke/Phil's Tavern
Date: Thursday, May 15, 2014
Counter: MIO PB

File Name : BK 0515 - 3
Site Code : 03
Start Date : 5/15/2014
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Butler Pike Southbound					Extra Parking Lot Westbound					Butler Pike Northbound					Phils Tavern Entrance Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
04:00 PM	1	131	1	0	133	1	0	0	0	1	1	207	1	0	209	0	0	0	0	0	343
04:15 PM	7	139	2	0	148	3	0	0	0	3	0	171	2	0	173	0	0	3	0	3	327
04:30 PM	3	143	1	0	147	2	0	1	0	3	0	167	3	0	170	1	0	0	0	1	321
04:45 PM	3	132	0	0	135	2	0	0	0	2	2	205	1	0	208	1	0	1	0	2	347
Total	14	545	4	0	563	8	0	1	0	9	3	750	7	0	760	2	0	4	0	6	1338
05:00 PM	4	141	0	0	145	3	0	0	0	3	1	146	1	0	148	3	0	1	0	4	300
05:15 PM	13	140	0	0	153	2	0	0	0	2	1	185	0	0	186	1	0	2	0	3	344
05:30 PM	5	172	0	0	177	2	0	0	0	2	0	175	8	0	183	0	0	1	0	1	363
05:45 PM	7	145	0	0	152	2	0	0	0	2	0	192	5	0	197	3	2	1	0	6	357
Total	29	598	0	0	627	9	0	0	0	9	2	698	14	0	714	7	2	5	0	14	1364
Grand Total	43	1143	4	0	1190	17	0	1	0	18	5	1448	21	0	1474	9	2	9	0	20	2702
Apprch %	3.6	96.1	0.3	0		94.4	0	5.6	0		0.3	98.2	1.4	0		45	10	45	0		
Total %	1.6	42.3	0.1	0	44	0.6	0	0	0	0.7	0.2	53.6	0.8	0	54.6	0.3	0.1	0.3	0	0.7	
Cars	43	1122	4	0	1169	17	0	1	0	18	5	1418	21	0	1444	9	2	9	0	20	2651
% Cars	100	98.2	100	0	98.2	100	0	100	0	100	100	97.9	100	0	98	100	100	100	0	100	98.1
Heavy Vehicles	0	21	0	0	21	0	0	0	0	0	0	30	0	0	30	0	0	0	0	0	51
% Heavy Vehicles	0	1.8	0	0	1.8	0	0	0	0	0	0	2.1	0	0	2	0	0	0	0	0	1.9



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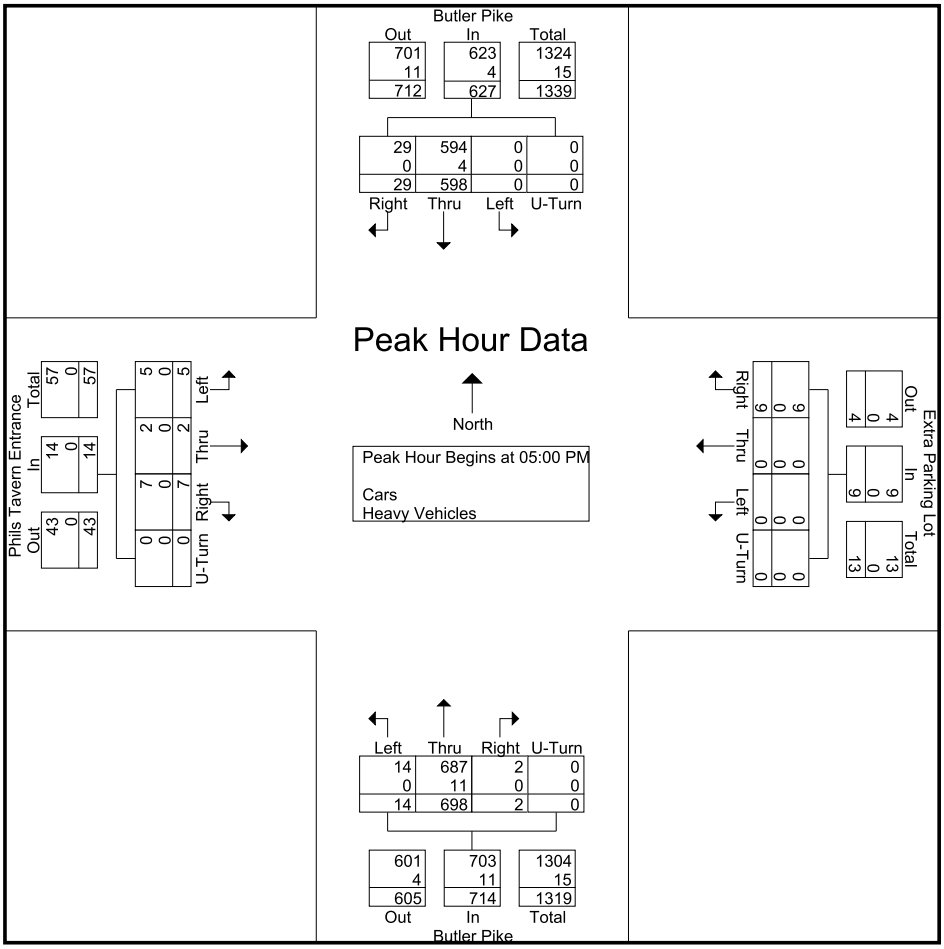
610 466-1469
TSTData.com

File Name : BK 0515 - 3
Site Code : 03
Start Date : 5/15/2014
Page No : 2

	Butler Pike Southbound					Extra Parking Lot Westbound					Butler Pike Northbound					Phils Tavern Entrance Eastbound					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	4	141	0	0	145	**3**	0	0	0	**3**	**1**	146	1	0	148	**3**	0	1	0	4	300
05:15 PM	**13**	140	0	0	153	2	0	0	0	2	1	185	0	0	186	1	0	**2**	0	3	344
05:30 PM	5	**172**	0	0	**177**	2	0	0	0	2	0	175	**8**	0	183	0	0	1	0	1	**363**
05:45 PM	7	145	0	0	152	2	0	0	0	2	0	**192**	5	0	**197**	3	**2**	1	0	**6**	357
Total Volume	29	598	0	0	627	9	0	0	0	9	2	698	14	0	714	7	2	5	0	14	1364
% App. Total	4.6	95.4	0	0		100	0	0	0		0.3	97.8	2	0		50	14.3	35.7	0		
PHF	.558	.869	.000	.000	.886	.750	.000	.000	.000	.750	.500	.909	.438	.000	.906	.583	.250	.625	.000	.583	.939
Cars	29	594	0	0	623	9	0	0	0	9	2	687	14	0	703	7	2	5	0	14	1349
% Cars	100	99.3	0	0	99.4	100	0	0	0	100	100	98.4	100	0	98.5	100	100	100	0	100	98.9
Heavy Vehicles	0	4	0	0	4	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	15
% Heavy Vehicles	0	0.7	0	0	0.6	0	0	0	0	0	0	1.6	0	0	1.5	0	0	0	0	0	1.1



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Montgomery County, PA
Butler Pike & Split Rail Lane
Thursday, December 20, 2018
Location: 40.137777, -75.245447

Count Name: Butler Pike-Spiltrail Lane
Site Code:
Start Date: 12/20/2018

Turning Movement Data

Start Time	Splitrail Lane Eastbound					Butler Pike Northbound					Butler Pike Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	4	0	0	0	4	1	93	0	0	94	147	0	0	0	147	245
7:15 AM	1	2	0	1	3	0	113	0	0	113	155	1	0	0	156	272
7:30 AM	4	0	0	0	4	0	112	0	0	112	206	1	0	0	207	323
7:45 AM	1	4	0	0	5	0	117	0	0	117	181	1	0	0	182	304
Hourly Total	10	6	0	1	16	1	435	0	0	436	689	3	0	0	692	1144
8:00 AM	1	2	0	0	3	0	145	0	0	145	144	2	0	0	146	294
8:15 AM	1	0	0	0	1	0	97	0	0	97	185	0	0	0	185	283
8:30 AM	1	0	0	0	1	1	97	0	0	98	205	0	0	0	205	304
8:45 AM	2	3	0	0	5	0	100	0	0	100	183	0	0	0	183	288
Hourly Total	5	5	0	0	10	1	439	0	0	440	717	2	0	0	719	1169
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	2	1	0	0	3	0	180	0	0	180	133	2	0	0	135	318
4:15 PM	2	0	0	0	2	2	184	0	0	186	143	2	0	0	145	333
4:30 PM	2	0	0	1	2	1	188	0	1	189	125	2	0	0	127	318
4:45 PM	0	1	0	1	1	0	200	0	0	200	118	2	0	0	120	321
Hourly Total	6	2	0	2	8	3	752	0	1	755	519	8	0	0	527	1290
5:00 PM	0	0	0	0	0	2	197	0	0	199	152	5	0	0	157	356
5:15 PM	3	0	0	0	3	1	180	0	0	181	159	0	0	0	159	343
5:30 PM	0	0	0	0	0	1	165	0	0	166	152	1	0	0	153	319
5:45 PM	2	1	0	0	3	1	159	0	0	160	105	1	0	0	106	269
Hourly Total	5	1	0	0	6	5	701	0	0	706	568	7	0	0	575	1287
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	26	14	0	3	40	10	2327	0	1	2337	2493	20	0	0	2513	4890
Approach %	65.0	35.0	0.0	-	-	0.4	99.6	0.0	-	-	99.2	0.8	0.0	-	-	-
Total %	0.5	0.3	0.0	-	0.8	0.2	47.6	0.0	-	47.8	51.0	0.4	0.0	-	51.4	-
Lights	25	13	0	-	38	8	2268	0	-	2276	2434	19	0	-	2453	4767
% Lights	96.2	92.9	-	-	95.0	80.0	97.5	-	-	97.4	97.6	95.0	-	-	97.6	97.5
Buses	0	0	0	-	0	0	17	0	-	17	19	0	0	-	19	36
% Buses	0.0	0.0	-	-	0.0	0.0	0.7	-	-	0.7	0.8	0.0	-	-	0.8	0.7
Trucks	1	1	0	-	2	2	42	0	-	44	40	1	0	-	41	87
% Trucks	3.8	7.1	-	-	5.0	20.0	1.8	-	-	1.9	1.6	5.0	-	-	1.6	1.8
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	3	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	-

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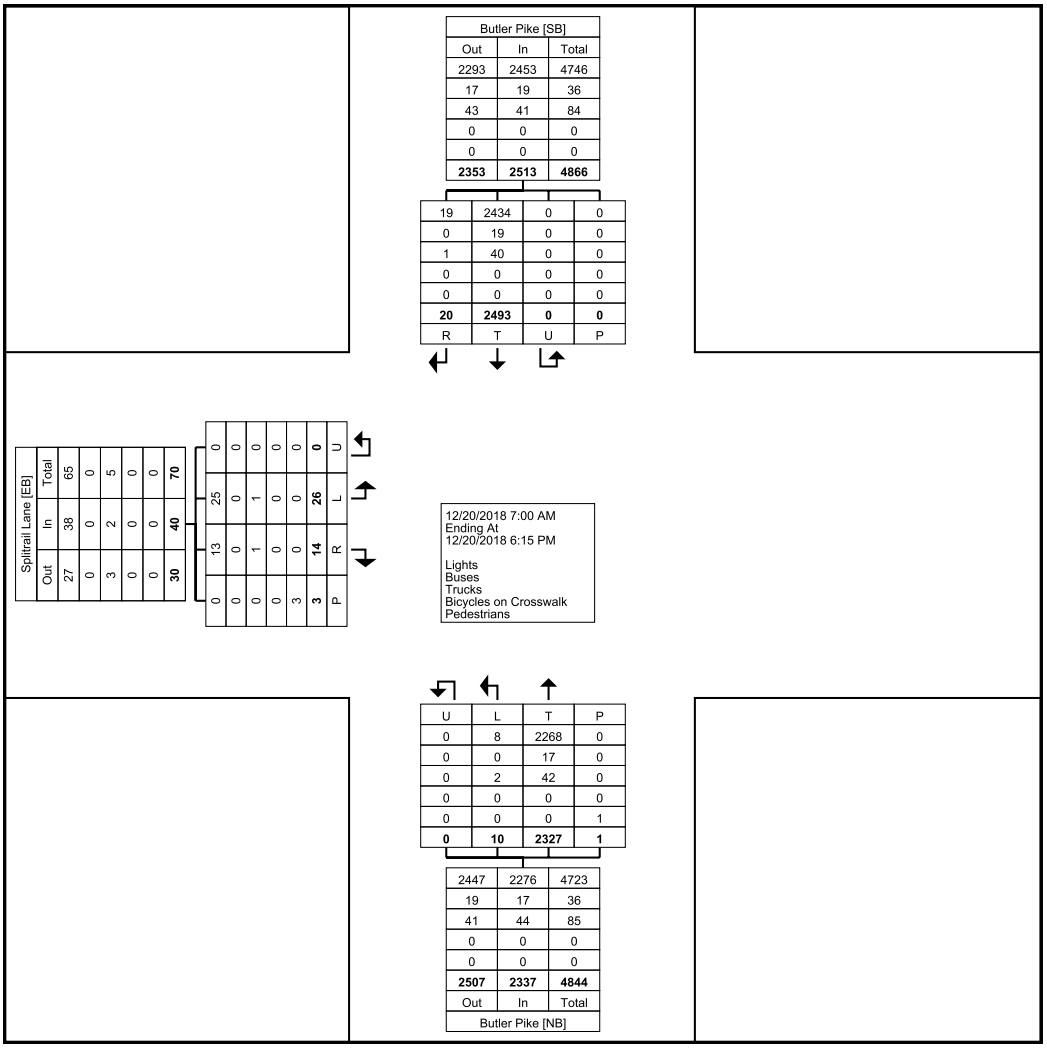
Montgomery County, PA
Butler Pike & Split Rail Lane
Thursday, December 20, 2018
Location: 40.137777, -75.245447

Count Name: Butler Pike-Spiltrail Lane
Site Code:
Start Date: 12/20/2018



Turning Movement Data Plot

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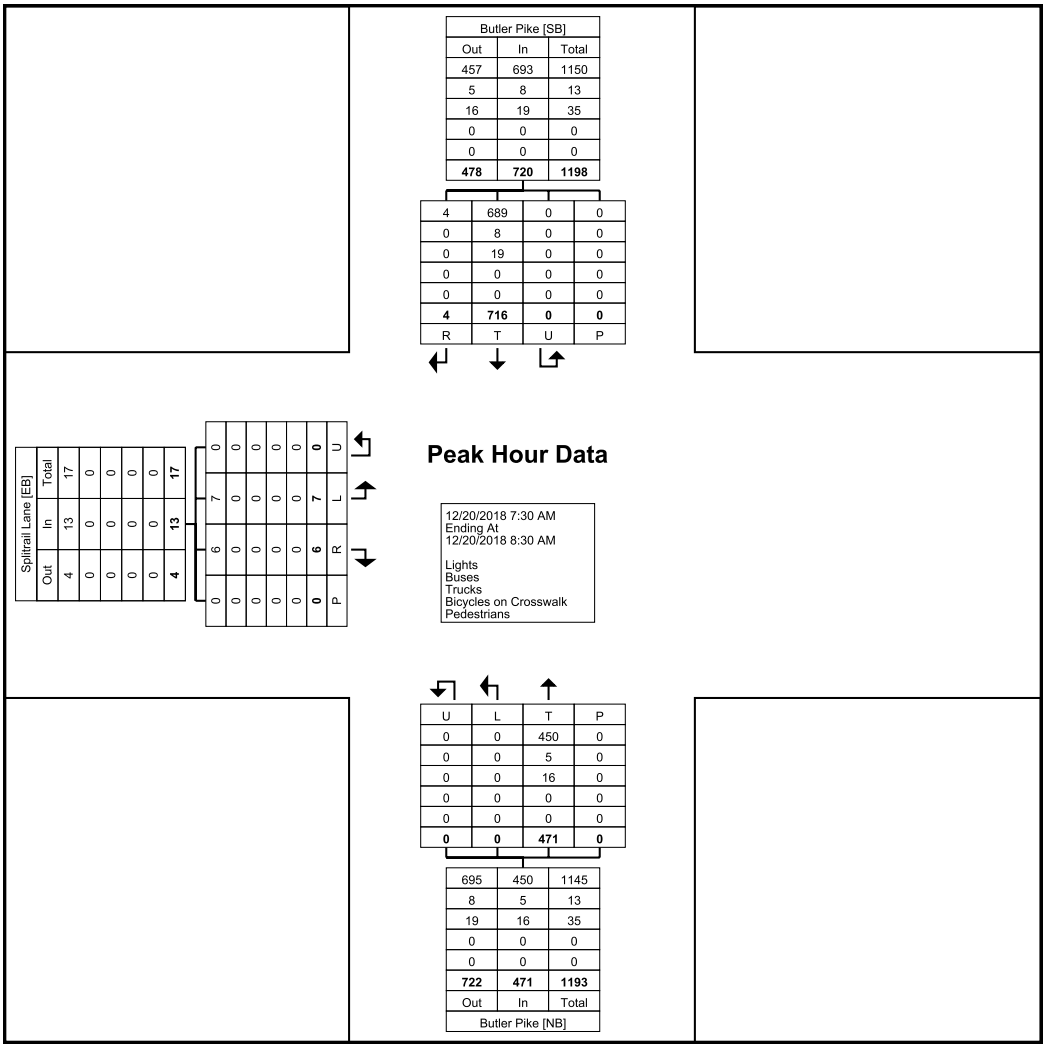
Montgomery County, PA
Butler Pike & Split Rail Lane
Thursday, December 20, 2018
Location: 40.137777, -75.245447

Count Name: Butler Pike-Spiltrail Lane
Site Code:
Start Date: 12/20/2018

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Splitrail Lane Eastbound					Butler Pike Northbound					Butler Pike Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:30 AM	4	0	0	0	4	0	112	0	0	112	206	1	0	0	207	323
7:45 AM	1	4	0	0	5	0	117	0	0	117	181	1	0	0	182	304
8:00 AM	1	2	0	0	3	0	145	0	0	145	144	2	0	0	146	294
8:15 AM	1	0	0	0	1	0	97	0	0	97	185	0	0	0	185	283
Total	7	6	0	0	13	0	471	0	0	471	716	4	0	0	720	1204
Approach %	53.8	46.2	0.0	-	-	0.0	100.0	0.0	-	-	99.4	0.6	0.0	-	-	-
Total %	0.6	0.5	0.0	-	1.1	0.0	39.1	0.0	-	39.1	59.5	0.3	0.0	-	59.8	-
PHF	0.438	0.375	0.000	-	0.650	0.000	0.812	0.000	-	0.812	0.869	0.500	0.000	-	0.870	0.932
Lights	7	6	0	-	13	0	450	0	-	450	689	4	0	-	693	1156
% Lights	100.0	100.0	-	-	100.0	-	95.5	-	-	95.5	96.2	100.0	-	-	96.3	96.0
Buses	0	0	0	-	0	0	5	0	-	5	8	0	0	-	8	13
% Buses	0.0	0.0	-	-	0.0	-	1.1	-	-	1.1	1.1	0.0	-	-	1.1	1.1
Trucks	0	0	0	-	0	0	16	0	-	16	19	0	0	-	19	35
% Trucks	0.0	0.0	-	-	0.0	-	3.4	-	-	3.4	2.7	0.0	-	-	2.6	2.9
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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

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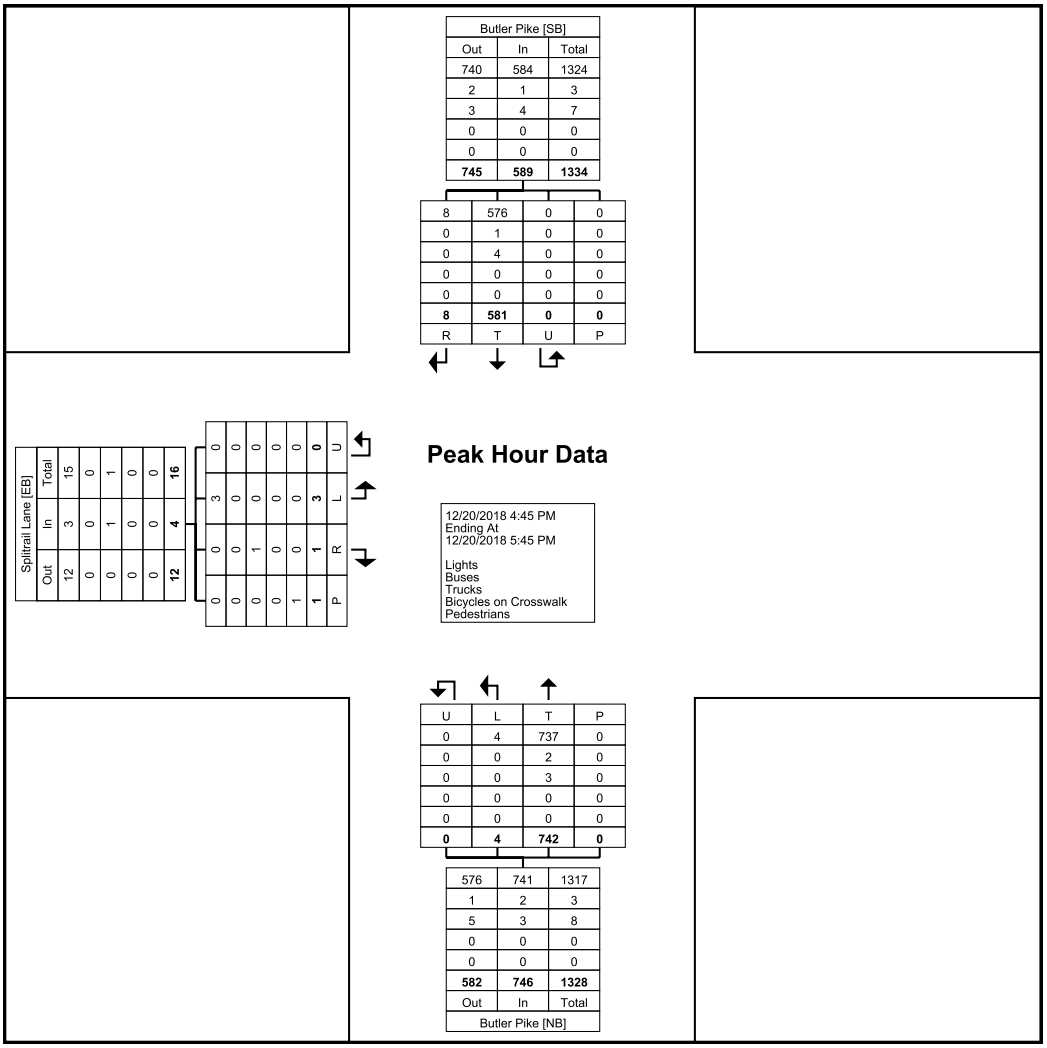
Montgomery County, PA
Butler Pike & Split Rail Lane
Thursday, December 20, 2018
Location: 40.137777, -75.245447

Count Name: Butler Pike-Spiltrail Lane
Site Code:
Start Date: 12/20/2018

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Splitrail Lane Eastbound					Butler Pike Northbound					Butler Pike Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:45 PM	0	1	0	1	1	0	200	0	0	200	118	2	0	0	120	321
5:00 PM	0	0	0	0	0	2	197	0	0	199	152	5	0	0	157	356
5:15 PM	3	0	0	0	3	1	180	0	0	181	159	0	0	0	159	343
5:30 PM	0	0	0	0	0	1	165	0	0	166	152	1	0	0	153	319
Total	3	1	0	1	4	4	742	0	0	746	581	8	0	0	589	1339
Approach %	75.0	25.0	0.0	-	-	0.5	99.5	0.0	-	-	98.6	1.4	0.0	-	-	-
Total %	0.2	0.1	0.0	-	0.3	0.3	55.4	0.0	-	55.7	43.4	0.6	0.0	-	44.0	-
PHF	0.250	0.250	0.000	-	0.333	0.500	0.928	0.000	-	0.933	0.914	0.400	0.000	-	0.926	0.940
Lights	3	0	0	-	3	4	737	0	-	741	576	8	0	-	584	1328
% Lights	100.0	0.0	-	-	75.0	100.0	99.3	-	-	99.3	99.1	100.0	-	-	99.2	99.2
Buses	0	0	0	-	0	0	2	0	-	2	1	0	0	-	1	3
% Buses	0.0	0.0	-	-	0.0	0.0	0.3	-	-	0.3	0.2	0.0	-	-	0.2	0.2
Trucks	0	1	0	-	1	0	3	0	-	3	4	0	0	-	4	8
% Trucks	0.0	100.0	-	-	25.0	0.0	0.4	-	-	0.4	0.7	0.0	-	-	0.7	0.6
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-



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

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Montgomery County, PA
Butler Pike & Norristown Rd
Thursday, December 20, 2018
Location: 40.139007, -75.244196

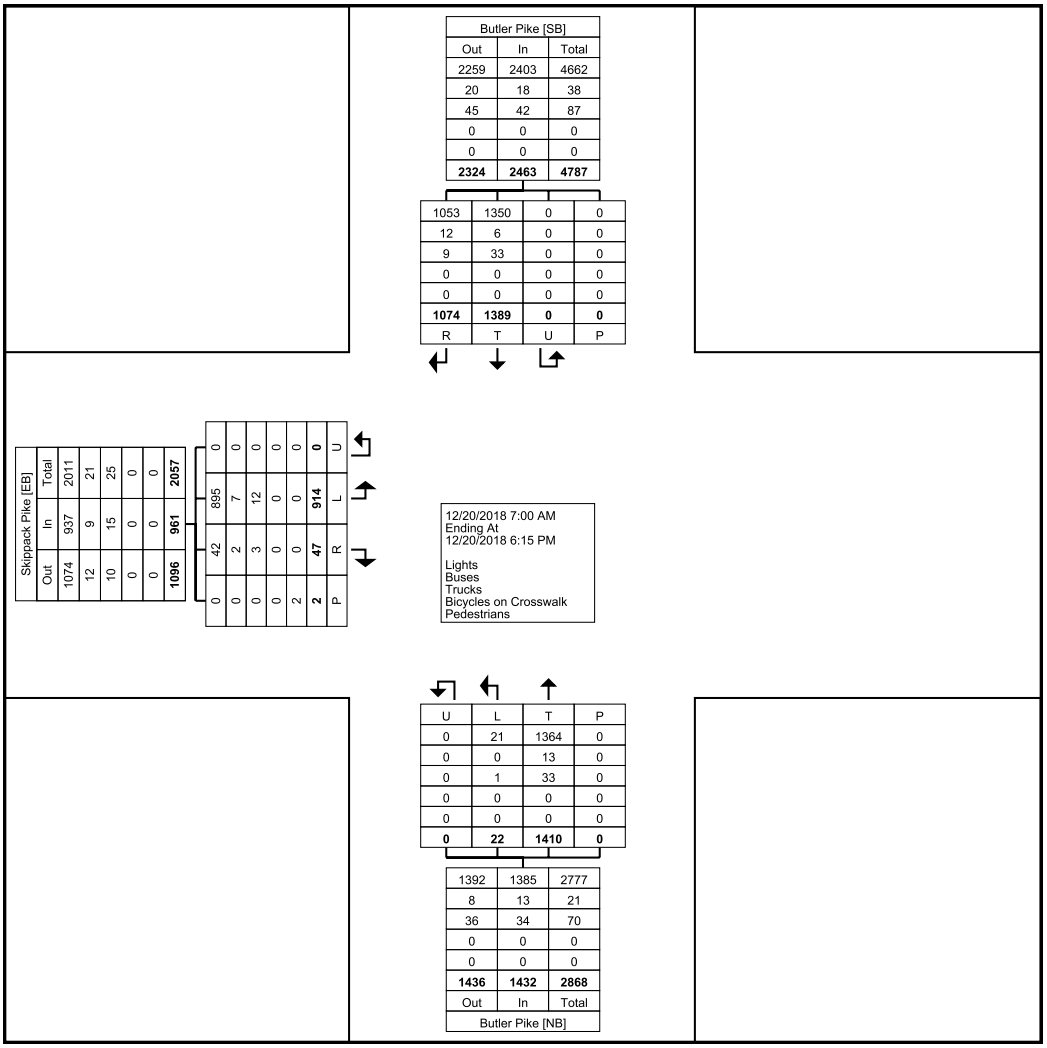
Count Name: Butler Pike-Norristown Rd
Site Code:
Start Date: 12/20/2018
Page No: 1

Turning Movement Data

Start Time	Skippack Pike Eastbound						Butler Pike Northbound					Butler Pike Southbound						
	Left	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:00 AM	34	3	0	0	0	37	0	56	0	0	56	91	45	7	0	0	143	236
7:15 AM	49	3	0	0	1	52	1	61	0	0	62	92	53	4	0	0	149	263
7:30 AM	46	5	0	0	0	51	0	68	0	0	68	98	88	7	0	0	193	312
7:45 AM	45	3	0	0	0	48	0	71	0	0	71	108	72	6	0	0	186	305
Hourly Total	174	14	0	0	1	188	1	256	0	0	257	389	258	24	0	0	671	1116
8:00 AM	55	1	0	0	0	56	1	93	0	0	94	76	71	6	0	0	153	303
8:15 AM	33	0	1	0	0	34	1	64	0	0	65	87	90	2	0	0	179	278
8:30 AM	38	2	0	0	0	40	3	58	0	0	61	117	77	8	0	0	202	303
8:45 AM	41	8	0	0	0	49	1	60	0	0	61	94	80	4	0	0	178	288
Hourly Total	167	11	1	0	0	179	6	275	0	0	281	374	318	20	0	0	712	1172
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	69	4	1	0	1	74	1	115	0	0	116	77	49	11	0	0	137	327
4:15 PM	77	4	0	0	0	81	0	105	0	0	105	73	52	9	0	0	134	320
4:30 PM	73	0	0	0	0	73	1	117	0	0	118	73	47	4	0	0	124	315
4:45 PM	82	3	0	0	0	85	1	108	0	0	109	80	35	3	0	0	118	312
Hourly Total	301	11	1	0	1	313	3	445	0	0	448	303	183	27	0	0	513	1274
5:00 PM	77	3	0	0	0	80	3	140	0	0	143	81	55	10	0	0	146	369
5:15 PM	70	3	0	0	0	73	5	99	0	0	104	91	63	6	0	0	160	337
5:30 PM	65	2	0	0	0	67	2	99	0	0	101	85	63	4	0	0	152	320
5:45 PM	60	1	0	0	0	61	2	96	0	0	98	66	41	2	0	0	109	268
Hourly Total	272	9	0	0	0	281	12	434	0	0	446	323	222	22	0	0	567	1294
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	914	45	2	0	2	961	22	1410	0	0	1432	1389	981	93	0	0	2463	4856
Approach %	95.1	4.7	0.2	0.0	-	-	1.5	98.5	0.0	-	-	56.4	39.8	3.8	0.0	-	-	-
Total %	18.8	0.9	0.0	0.0	-	19.8	0.5	29.0	0.0	-	29.5	28.6	20.2	1.9	0.0	-	50.7	-
Lights	895	41	1	0	-	937	21	1364	0	-	1385	1350	964	89	0	-	2403	4725
% Lights	97.9	91.1	50.0	-	-	97.5	95.5	96.7	-	-	96.7	97.2	98.3	95.7	-	-	97.6	97.3
Buses	7	2	0	0	-	9	0	13	0	-	13	6	11	1	0	-	18	40
% Buses	0.8	4.4	0.0	-	-	0.9	0.0	0.9	-	-	0.9	0.4	1.1	1.1	-	-	0.7	0.8
Trucks	12	2	1	0	-	15	1	33	0	-	34	33	6	3	0	-	42	91
% Trucks	1.3	4.4	50.0	-	-	1.6	4.5	2.3	-	-	2.4	2.4	0.6	3.2	-	-	1.7	1.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Montgomery County, PA
Butler Pike & Norristown Rd
Thursday, December 20, 2018
Location: 40.139007, -75.244196

Count Name: Butler Pike-Norristown Rd
Site Code:
Start Date: 12/20/2018
Page No: 2



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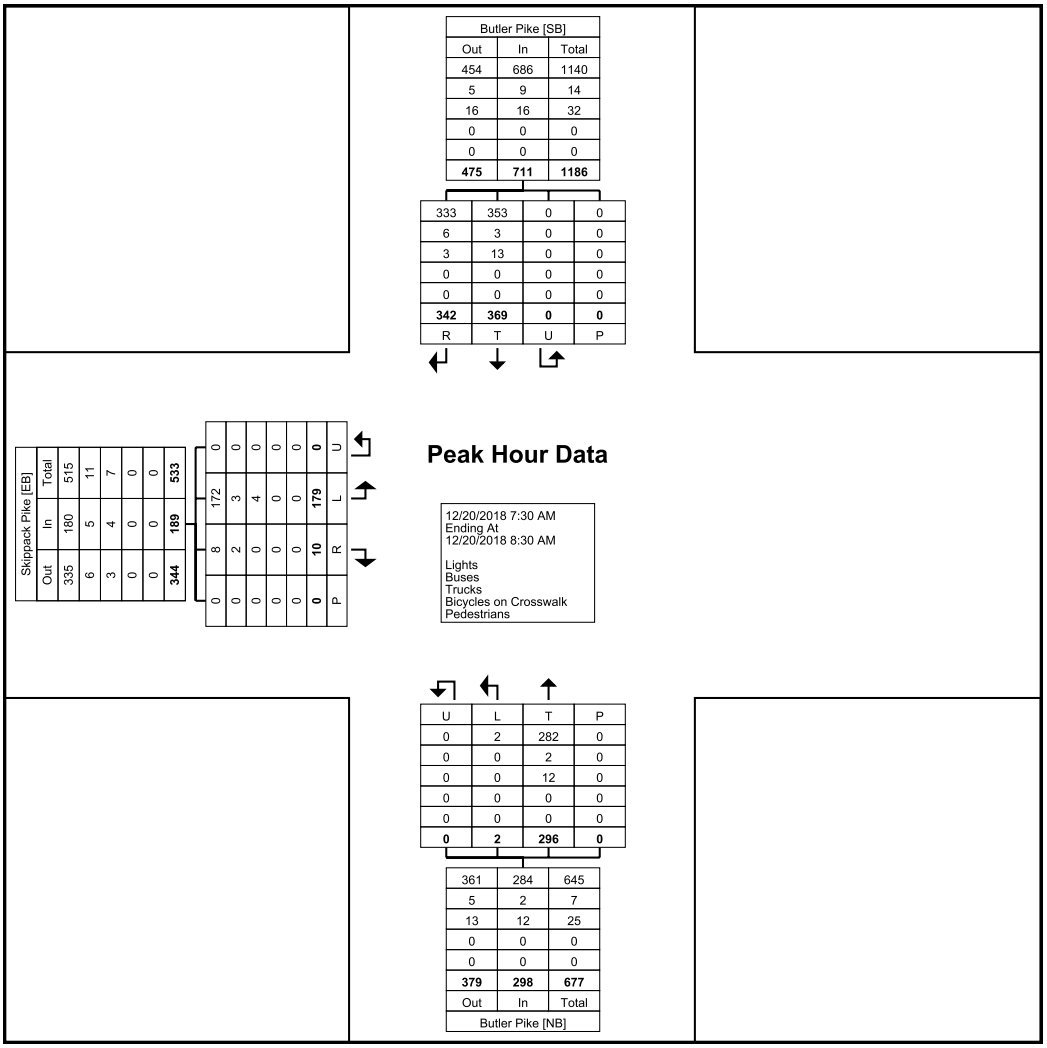
Butler Pike & Norristown Rd
Thursday, December 20, 2018
Location: 40.139007, -75.244196

Count Name: Butler Pike-Norristown Rd
Site Code:
Start Date: 12/20/2018

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Skippack Pike Eastbound						Butler Pike Northbound					Butler Pike Southbound						
	Left	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
7:30 AM	46	5	0	0	0	51	0	68	0	0	68	98	88	7	0	0	193	312
7:45 AM	45	3	0	0	0	48	0	71	0	0	71	108	72	6	0	0	186	305
8:00 AM	55	1	0	0	0	56	1	93	0	0	94	76	71	6	0	0	153	303
8:15 AM	33	0	1	0	0	34	1	64	0	0	65	87	90	2	0	0	179	278
Total	179	9	1	0	0	189	2	296	0	0	298	369	321	21	0	0	711	1198
Approach %	94.7	4.8	0.5	0.0	-	-	0.7	99.3	0.0	-	-	51.9	45.1	3.0	0.0	-	-	-
Total %	14.9	0.8	0.1	0.0	-	15.8	0.2	24.7	0.0	-	24.9	30.8	26.8	1.8	0.0	-	59.3	-
PHF	0.814	0.450	0.250	0.000	-	0.844	0.500	0.796	0.000	-	0.793	0.854	0.892	0.750	0.000	-	0.921	0.960
Lights	172	7	1	0	-	180	2	282	0	-	284	353	314	19	0	-	686	1150
% Lights	96.1	77.8	100.0	-	-	95.2	100.0	95.3	-	-	95.3	95.7	97.8	90.5	-	-	96.5	96.0
Buses	3	2	0	0	-	5	0	2	0	-	2	3	5	1	0	-	9	16
% Buses	1.7	22.2	0.0	-	-	2.6	0.0	0.7	-	-	0.7	0.8	1.6	4.8	-	-	1.3	1.3
Trucks	4	0	0	0	-	4	0	12	0	-	12	13	2	1	0	-	16	32
% Trucks	2.2	0.0	0.0	-	-	2.1	0.0	4.1	-	-	4.0	3.5	0.6	4.8	-	-	2.3	2.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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

www.TSTData.com
184 Baker Rd

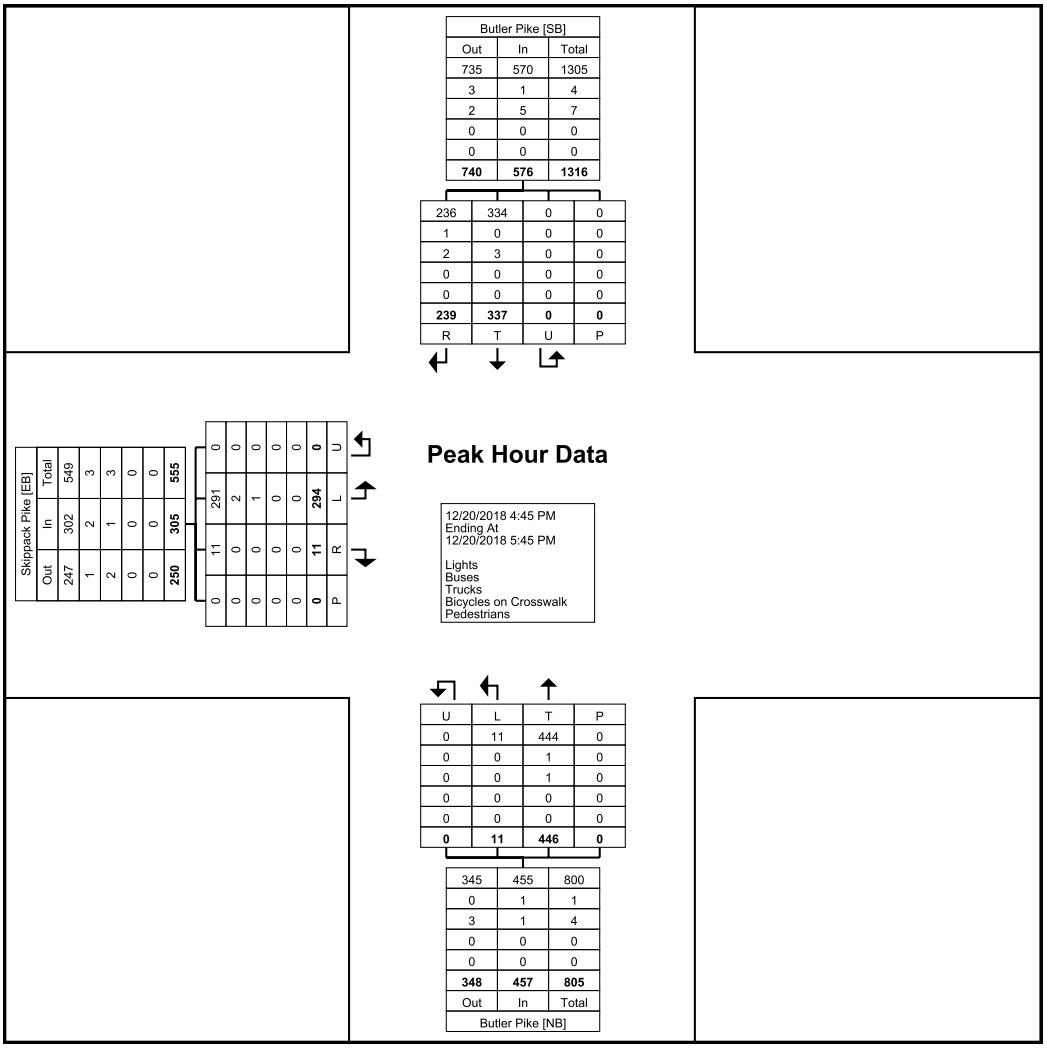
Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Montgomery County, PA
Butler Pike & Norristown Rd
Thursday, December 20, 2018
Location: 40.139007, -75.244196

Count Name: Butler Pike-Norristown Rd
Site Code:
Start Date: 12/20/2018

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Skippack Pike Eastbound						Butler Pike Northbound					Butler Pike Southbound						
	Left	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Int. Total
4:45 PM	82	3	0	0	0	85	1	108	0	0	109	80	35	3	0	0	118	312
5:00 PM	77	3	0	0	0	80	3	140	0	0	143	81	55	10	0	0	146	369
5:15 PM	70	3	0	0	0	73	5	99	0	0	104	91	63	6	0	0	160	337
5:30 PM	65	2	0	0	0	67	2	99	0	0	101	85	63	4	0	0	152	320
Total	294	11	0	0	0	305	11	446	0	0	457	337	216	23	0	0	576	1338
Approach %	96.4	3.6	0.0	0.0	-	-	2.4	97.6	0.0	-	-	58.5	37.5	4.0	0.0	-	-	-
Total %	22.0	0.8	0.0	0.0	-	22.8	0.8	33.3	0.0	-	34.2	25.2	16.1	1.7	0.0	-	43.0	-
PHF	0.896	0.917	0.000	0.000	-	0.897	0.550	0.796	0.000	-	0.799	0.926	0.857	0.575	0.000	-	0.900	0.907
Lights	291	11	0	0	-	302	11	444	0	-	455	334	214	22	0	-	570	1327
% Lights	99.0	100.0	-	-	-	99.0	100.0	99.6	-	-	99.6	99.1	99.1	95.7	-	-	99.0	99.2
Buses	2	0	0	0	-	2	0	1	0	-	1	0	1	0	0	-	1	4
% Buses	0.7	0.0	-	-	-	0.7	0.0	0.2	-	-	0.2	0.0	0.5	0.0	-	-	0.2	0.3
Trucks	1	0	0	0	-	1	0	1	0	-	1	3	1	1	0	-	5	7
% Trucks	0.3	0.0	-	-	-	0.3	0.0	0.2	-	-	0.2	0.9	0.5	4.3	-	-	0.9	0.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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

APPENDIX B

LEVEL OF SERVICE DESCRIPTONS

LONGFIELD FARMS
TRANSPORTATION IMPACT STUDY
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

Pennoni

LEVEL OF SERVICE

Level of Service is a term used to describe vehicle operator satisfaction with the driving experience. Research has determined that operator satisfaction is based primarily on travel speed and delay. In urban environments these factors, travel speed and delay, are primarily controlled by the operation of intersections.

By utilizing models to simulate the flow of traffic at intersections, the average delay experienced by vehicles can be estimated. These models consider such factors as traffic volumes, roadway geometry, traffic control, and driver behavior. The Levels of Service designations are based on a comparison of the average delays calculated by the models with perceived acceptable delays.

The following tables illustrate the guidelines used for designating Levels of Service at intersections:

Level of Service Criteria
for Signalized Intersections[1]

Level of Service	Control Delay (seconds per vehicle)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

[1] Exhibit 16-2, Level of Service from Control Delay (HCM2000)

Level of Service Criteria
for Unsignalized Intersections[2]

Level of Service	Control Delay (seconds per vehicle)
a	≤ 10
b	> 10 and ≤ 15
c	> 15 and ≤ 25
d	> 25 and ≤ 35
e	> 35 and ≤ 50
f	> 50

[2] Exhibit 17-2, Level of Service from Control Delay (HCM2000)

APPENDIX C

SYNCHRO ANALYSIS WORKSHEETS

2018 EXISTING CONDITIONS

LONGFIELD FARMS
TRANSPORTATION IMPACT STUDY
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

Pennoni

Lanes, Volumes, Timings
1: Butler Pike & Skippack Pike (73)

01/14/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	382	35	265	552	32	40	289	138	39	423	105
Future Volume (vph)	69	382	35	265	552	32	40	289	138	39	423	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			0%			-1%			2%	
Storage Length (ft)	150		0	150		335	270		0	150		75
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987				0.850		0.949				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1769	1759	0	1752	1827	1599	1728	1754	0	1655	1809	1480
Flt Permitted	0.204			0.141			0.162			0.090		
Satd. Flow (perm)	380	1759	0	260	1827	1599	295	1754	0	157	1809	1480
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				125		20				187
Link Speed (mph)		45			50			35			35	
Link Distance (ft)		998			325			151			1000	
Travel Time (s)		15.1			4.4			2.9			19.5	
Peak Hour Factor	0.82	0.88	0.84	0.83	0.91	0.88	0.71	0.77	0.72	0.70	0.85	0.57
Heavy Vehicles (%)	1%	5%	11%	3%	4%	1%	5%	4%	2%	8%	4%	8%
Adj. Flow (vph)	84	434	42	319	607	36	56	375	192	56	498	184
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	476	0	319	607	36	56	567	0	56	498	184
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1		1	1	1
Detector Template						Right						Right
Leading Detector (ft)	40	40		40	40	20	40	40		40	40	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	40	40		40	40	20	40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	3.0		3.0	3.0	3.0

Lanes, Volumes, Timings
1: Butler Pike & Skippack Pike (73)

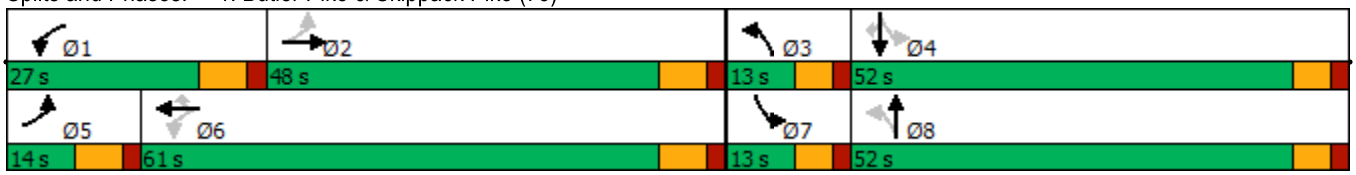
01/14/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	14.0	33.0		14.0	33.0	33.0	13.0	33.0		13.0	33.0	33.0
Total Split (s)	14.0	48.0		27.0	61.0	61.0	13.0	52.0		13.0	52.0	52.0
Total Split (%)	10.0%	34.3%		19.3%	43.6%	43.6%	9.3%	37.1%		9.3%	37.1%	37.1%
Maximum Green (s)	7.0	41.0		20.0	54.0	54.0	7.0	46.0		7.0	46.0	46.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0		7.0	7.0	7.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.0			19.0	19.0		20.0			20.0	20.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	48.1	41.2		68.1	54.3	54.3	49.8	44.3		49.8	44.3	44.3
Actuated g/C Ratio	0.35	0.30		0.50	0.40	0.40	0.37	0.33		0.37	0.33	0.33
v/c Ratio	0.41	0.89		0.91	0.83	0.05	0.31	0.97		0.42	0.84	0.30
Control Delay	27.3	65.2		60.5	49.1	0.1	29.2	73.7		34.5	57.1	5.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	27.3	65.2		60.5	49.1	0.1	29.2	73.7		34.5	57.1	5.6
LOS	C	E		E	D	A	C	E		C	E	A
Approach Delay		59.5			51.1			69.7			42.6	
Approach LOS		E			D			E			D	
Queue Length 50th (ft)	40	418		203	505	0	30	493		30	420	0
Queue Length 95th (ft)	65	#604		#327	#717	0	46	#524		46	523	0
Internal Link Dist (ft)		918			245			71			920	
Turn Bay Length (ft)	150			150		335	270			150		75
Base Capacity (vph)	207	537		351	730	714	182	610		135	616	627
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.41	0.89		0.91	0.83	0.05	0.31	0.93		0.41	0.81	0.29

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 135.6
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 54.6 — Intersection LOS: D
Intersection Capacity Utilization 85.5% — ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Butler Pike & Skippack Pike (73)



Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	535	736	0
Future Vol, veh/h	0	0	0	535	736	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	582	800	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1091	800	800	0	-	0
Stage 1	800	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	223	384	821	-	-	-
Stage 1	441	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	223	384	821	-	-	-
Mov Cap-2 Maneuver	223	-	-	-	-	-
Stage 1	441	-	-	-	-	-
Stage 2	734	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	821	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	535	0	0	736	0
Future Vol, veh/h	0	0	0	0	0	0	0	535	0	0	736	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	582	0	0	800	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	800	1382	1382	582	-	0	0	582	0	0
Stage 1	-	-	-	582	582	-	-	-	-	-	-	-
Stage 2	-	-	-	800	800	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	7.12	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	385	121	144	513	0	-	-	992	-	0
Stage 1	0	0	-	499	499	-	0	-	-	-	-	0
Stage 2	0	0	-	379	397	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	-	385	121	144	513	-	-	-	992	-	-
Mov Cap-2 Maneuver	-	-	-	121	144	-	-	-	-	-	-	-
Stage 1	-	-	-	499	499	-	-	-	-	-	-	-
Stage 2	-	-	-	379	397	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	-	992	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	6	0	476	724	4
Future Vol, veh/h	7	6	0	476	724	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	44	38	25	81	87	50
Heavy Vehicles, %	0	1	100	5	4	0
Mvmt Flow	16	16	0	588	832	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1424	836	840	0	-	0
Stage 1	836	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Critical Hdwy	6.4	6.21	5.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	3.1	-	-	-
Pot Cap-1 Maneuver	151	369	496	-	-	-
Stage 1	429	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	151	369	496	-	-	-
Mov Cap-2 Maneuver	151	-	-	-	-	-
Stage 1	429	-	-	-	-	-
Stage 2	559	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	496	-	214	-	-
HCM Lane V/C Ratio	-	-	0.148	-	-
HCM Control Delay (s)	0	-	24.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	179	10	2	296	369	342
Future Volume (vph)	179	10	2	296	369	342
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	12	12	12	12
Grade (%)	1%			-2%	1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.988				0.937	
Flt Protected	0.957			0.999		
Satd. Flow (prot)	1620	0	0	1880	1746	0
Flt Permitted	0.957			0.993		
Satd. Flow (perm)	1620	0	0	1869	1746	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6				106	
Link Speed (mph)	40			35	35	
Link Distance (ft)	1012			1032	1353	
Travel Time (s)	17.3			20.1	26.4	
Peak Hour Factor	0.81	0.45	0.50	0.80	0.85	0.89
Heavy Vehicles (%)	1%	23%	0%	2%	1%	2%
Adj. Flow (vph)	221	22	4	370	434	384
Shared Lane Traffic (%)						
Lane Group Flow (vph)	243	0	0	374	818	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	10			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.10	1.10	0.99	0.99	1.01	1.01
Turning Speed (mph)	15	9	15			9
Number of Detectors	1		1	1	1	
Detector Template			Left			
Leading Detector (ft)	40		20	40	40	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	40		20	40	40	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			6	2	
Permitted Phases			6			
Detector Phase	4		6	6	2	
Switch Phase						
Minimum Initial (s)	3.0		10.0	10.0	10.0	
Minimum Split (s)	10.0		17.0	17.0	17.0	
Total Split (s)	23.0		52.0	52.0	52.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Split (%)	30.7%		69.3%	69.3%	69.3%	
Maximum Green (s)	16.0		45.0	45.0	45.0	
Yellow Time (s)	5.0		5.0	5.0	5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	7.0			7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		Max	Max	Max	
Act Effct Green (s)	14.2			45.0	45.0	
Actuated g/C Ratio	0.19			0.61	0.61	
v/c Ratio	0.76			0.33	0.73	
Control Delay	44.0			8.1	13.9	
Queue Delay	0.0			0.0	0.0	
Total Delay	44.0			8.1	13.9	
LOS	D			A	B	
Approach Delay	44.0			8.1	13.9	
Approach LOS	D			A	B	
Queue Length 50th (ft)	102			78	215	
Queue Length 95th (ft)	156			106	316	
Internal Link Dist (ft)	932			952	1273	
Turn Bay Length (ft)						
Base Capacity (vph)	358			1148	1114	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.68			0.33	0.73	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 73.3
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 17.5 Intersection LOS: B
Intersection Capacity Utilization 62.5% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 8: Butler Pike & Norristown Road

Lanes, Volumes, Timings
1: Butler Pike & Skippack Pike (73)

01/14/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	318	31	211	390	35	77	456	219	21	369	99
Future Volume (vph)	99	318	31	211	390	35	77	456	219	21	369	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			0%			-1%			2%	
Storage Length (ft)	150		0	150		335	270		0	150		75
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983				0.850		0.949				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1769	1831	0	1787	1881	1599	1796	1794	0	1702	1862	1583
Flt Permitted	0.240			0.145			0.371			0.072		
Satd. Flow (perm)	447	1831	0	273	1881	1599	701	1794	0	129	1862	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				125		23				132
Link Speed (mph)		45			50			35			35	
Link Distance (ft)		998			325			151			1000	
Travel Time (s)		15.1			4.4			2.9			19.5	
Peak Hour Factor	0.75	0.86	0.64	0.80	0.85	0.65	0.88	0.93	0.86	0.48	0.97	0.87
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	5%	1%	1%
Adj. Flow (vph)	132	370	48	264	459	54	88	490	255	44	380	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	132	418	0	264	459	54	88	745	0	44	380	114
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1		1	1	1
Detector Template						Right						Right
Leading Detector (ft)	40	40		40	40	20	40	40		40	40	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	40	40		40	40	20	40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	3.0		3.0	3.0	3.0

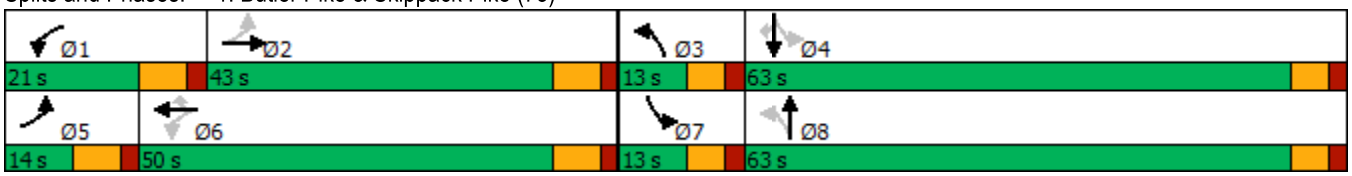
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	14.0	33.0		14.0	33.0	33.0	13.0	33.0		13.0	33.0	33.0
Total Split (s)	14.0	43.0		21.0	50.0	50.0	13.0	63.0		13.0	63.0	63.0
Total Split (%)	10.0%	30.7%		15.0%	35.7%	35.7%	9.3%	45.0%		9.3%	45.0%	45.0%
Maximum Green (s)	7.0	36.0		14.0	43.0	43.0	7.0	57.0		7.0	57.0	57.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0		7.0	7.0	7.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.0			19.0	19.0		20.0			20.0	20.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	43.1	36.1		57.1	43.1	43.1	62.6	57.1		61.1	54.4	54.4
Actuated g/C Ratio	0.31	0.26		0.42	0.31	0.31	0.46	0.42		0.44	0.40	0.40
v/c Ratio	0.64	0.87		0.99	0.78	0.09	0.24	0.98		0.33	0.52	0.16
Control Delay	44.7	67.4		83.5	54.0	0.3	20.3	67.6		25.0	34.3	3.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	44.7	67.4		83.5	54.0	0.3	20.3	67.6		25.0	34.3	3.2
LOS	D	E		F	D	A	C	E		C	C	A
Approach Delay		61.9			60.3			62.6			27.0	
Approach LOS		E			E			E			C	
Queue Length 50th (ft)	76	365		~167	384	0	41	~661		20	255	0
Queue Length 95th (ft)	101	#508		#277	481	0	71	#943		22	355	25
Internal Link Dist (ft)		918			245			71			920	
Turn Bay Length (ft)	150			150		335	270			150		75
Base Capacity (vph)	207	483		267	589	586	375	759		137	773	734
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.64	0.87		0.99	0.78	0.09	0.23	0.98		0.32	0.49	0.16

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 137.4	
Natural Cycle: 115	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 54.7	Intersection LOS: D
Intersection Capacity Utilization 92.6%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Butler Pike & Skippack Pike (73)



Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	13	5	749	598	10
Future Vol, veh/h	1	13	5	749	598	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	65	63	94	91	63
Heavy Vehicles, %	1	1	1	2	1	1
Mvmt Flow	4	20	8	797	657	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1080	665	673	0	-	0
Stage 1	665	-	-	-	-	-
Stage 2	415	-	-	-	-	-
Critical Hdwy	6.615	6.215	4.115	-	-	-
Critical Hdwy Stg 1	5.415	-	-	-	-	-
Critical Hdwy Stg 2	5.815	-	-	-	-	-
Follow-up Hdwy	3.5095	3.3095	2.2095	-	-	-
Pot Cap-1 Maneuver	228	461	922	-	-	-
Stage 1	513	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	224	461	922	-	-	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	505	-	-	-	-	-
Stage 2	638	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.8	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	922	-	392	-	-
HCM Lane V/C Ratio	0.009	-	0.061	-	-
HCM Control Delay (s)	8.9	0.1	14.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	2	7	0	0	9	14	698	2	0	598	29
Future Vol, veh/h	5	2	7	0	0	9	14	698	2	0	598	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	25	59	92	92	75	44	91	50	92	87	56
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	8	8	12	0	0	12	32	767	4	0	687	52

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1552	1548	713	1556	1572	769	739	0	0	771	0	0
Stage 1	713	713	-	833	833	-	-	-	-	-	-	-
Stage 2	839	835	-	723	739	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	93	115	435	93	111	404	876	-	-	853	-	-
Stage 1	426	438	-	366	386	-	-	-	-	-	-	-
Stage 2	363	386	-	421	427	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	86	108	435	81	104	404	876	-	-	853	-	-
Mov Cap-2 Maneuver	86	108	-	81	104	-	-	-	-	-	-	-
Stage 1	399	438	-	343	361	-	-	-	-	-	-	-
Stage 2	330	361	-	402	427	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	35.9	14.2	0.4	0
HCM LOS	E	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	876	-	-	144	404	853	-	-
HCM Lane V/C Ratio	0.036	-	-	0.193	0.03	-	-	-
HCM Control Delay (s)	9.3	-	-	35.9	14.2	0	-	-
HCM Lane LOS	A	-	-	E	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	1	4	742	581	8
Future Vol, veh/h	3	1	4	742	581	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	25	50	93	92	40
Heavy Vehicles, %	0	1	0	1	1	0
Mvmt Flow	12	4	8	798	632	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1456	642	652	0	-	0
Stage 1	642	-	-	-	-	-
Stage 2	814	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	144	476	944	-	-	-
Stage 1	528	-	-	-	-	-
Stage 2	439	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	142	476	944	-	-	-
Mov Cap-2 Maneuver	142	-	-	-	-	-
Stage 1	520	-	-	-	-	-
Stage 2	439	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.1	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	944	-	172	-	-
HCM Lane V/C Ratio	0.008	-	0.093	-	-
HCM Control Delay (s)	8.8	0	28.1	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	294	11	11	446	337	239
Future Volume (vph)	294	11	11	446	337	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	12	12	12	12
Grade (%)	1%			-2%	1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.941	
Flt Protected	0.954			0.998		
Satd. Flow (prot)	1646	0	0	1879	1754	0
Flt Permitted	0.954			0.970		
Satd. Flow (perm)	1646	0	0	1826	1754	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2				77	
Link Speed (mph)	40			35	35	
Link Distance (ft)	1012			1032	1353	
Travel Time (s)	17.3			20.1	26.4	
Peak Hour Factor	0.90	0.92	0.55	0.80	0.93	0.86
Heavy Vehicles (%)	1%	23%	0%	2%	1%	2%
Adj. Flow (vph)	327	12	20	558	362	278
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	0	0	578	640	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	10			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.10	1.10	0.99	0.99	1.01	1.01
Turning Speed (mph)	15	9	15			9
Number of Detectors	1		1	1	1	
Detector Template			Left			
Leading Detector (ft)	40		20	40	40	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	40		20	40	40	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			6	2	
Permitted Phases			6			
Detector Phase	4		6	6	2	
Switch Phase						
Minimum Initial (s)	3.0		10.0	10.0	10.0	
Minimum Split (s)	10.0		17.0	17.0	17.0	
Total Split (s)	29.0		46.0	46.0	46.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Split (%)	38.7%		61.3%	61.3%	61.3%	
Maximum Green (s)	22.0		39.0	39.0	39.0	
Yellow Time (s)	5.0		5.0	5.0	5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	7.0			7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		Max	Max	Max	
Act Effct Green (s)	18.4			39.1	39.1	
Actuated g/C Ratio	0.26			0.55	0.55	
v/c Ratio	0.80			0.58	0.64	
Control Delay	39.7			14.5	14.3	
Queue Delay	0.0			0.0	0.0	
Total Delay	39.7			14.5	14.3	
LOS	D			B	B	
Approach Delay	39.7			14.5	14.3	
Approach LOS	D			B	B	
Queue Length 50th (ft)	139			165	167	
Queue Length 95th (ft)	#237			227	295	
Internal Link Dist (ft)	932			952	1273	
Turn Bay Length (ft)						
Base Capacity (vph)	508			998	993	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.67			0.58	0.64	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 71.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 19.9 Intersection LOS: B
Intersection Capacity Utilization 61.0% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Butler Pike & Norristown Road

APPENDIX D

SYNCHRO ANALYSIS WORKSHEETS

FUTURE 2020 CONDITIONS

WITHOUT SITE DEVELOPMENT

('NO-BUILD')

LONGFIELD FARMS
TRANSPORTATION IMPACT STUDY
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

Pennoni

Lanes, Volumes, Timings
1: Butler Pike & Skippack Pike (73)

01/14/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	386	35	268	558	32	40	292	140	39	428	106
Future Volume (vph)	70	386	35	268	558	32	40	292	140	39	428	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			0%			-1%			2%	
Storage Length (ft)	150		0	150		335	270		0	150		75
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987				0.850		0.949				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1769	1759	0	1752	1827	1599	1728	1754	0	1655	1809	1480
Flt Permitted	0.198			0.132			0.156			0.089		
Satd. Flow (perm)	369	1759	0	243	1827	1599	284	1754	0	155	1809	1480
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				125		19				187
Link Speed (mph)		45			50			35			35	
Link Distance (ft)		998			325			151			1000	
Travel Time (s)		15.1			4.4			2.9			19.5	
Peak Hour Factor	0.82	0.88	0.84	0.83	0.91	0.88	0.71	0.77	0.72	0.70	0.85	0.57
Heavy Vehicles (%)	1%	5%	11%	3%	4%	1%	5%	4%	2%	8%	4%	8%
Adj. Flow (vph)	85	439	42	323	613	36	56	379	194	56	504	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	481	0	323	613	36	56	573	0	56	504	186
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1		1	1	1
Detector Template						Right						Right
Leading Detector (ft)	40	40		40	40	20	40	40		40	40	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	40	40		40	40	20	40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	3.0		3.0	3.0	3.0

Lanes, Volumes, Timings
1: Butler Pike & Skippack Pike (73)

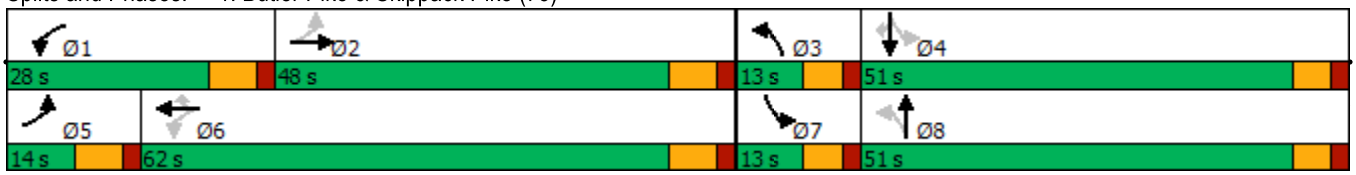
01/14/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	14.0	33.0		14.0	33.0	33.0	13.0	33.0		13.0	33.0	33.0
Total Split (s)	14.0	48.0		28.0	62.0	62.0	13.0	51.0		13.0	51.0	51.0
Total Split (%)	10.0%	34.3%		20.0%	44.3%	44.3%	9.3%	36.4%		9.3%	36.4%	36.4%
Maximum Green (s)	7.0	41.0		21.0	55.0	55.0	7.0	45.0		7.0	45.0	45.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0		7.0	7.0	7.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.0			19.0	19.0		20.0			20.0	20.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	48.3	41.5		69.0	55.1	55.1	50.6	45.1		50.6	45.1	45.1
Actuated g/C Ratio	0.35	0.30		0.50	0.40	0.40	0.37	0.33		0.37	0.33	0.33
v/c Ratio	0.43	0.90		0.93	0.84	0.05	0.32	0.97		0.43	0.85	0.30
Control Delay	27.7	67.8		65.2	49.4	0.1	30.1	75.8		35.5	58.3	5.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	27.7	67.8		65.2	49.4	0.1	30.1	75.8		35.5	58.3	5.8
LOS	C	E		E	D	A	C	E		D	E	A
Approach Delay		61.7			52.8			71.7			43.5	
Approach LOS		E			D			E			D	
Queue Length 50th (ft)	40	425		212	506	0	31	507		31	432	0
Queue Length 95th (ft)	65	#615		#336	#716	0	47	#567		46	#545	0
Internal Link Dist (ft)		918			245			71			920	
Turn Bay Length (ft)	150			150		335	270			150		75
Base Capacity (vph)	201	533		353	733	716	178	588		133	594	611
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.42	0.90		0.92	0.84	0.05	0.31	0.97		0.42	0.85	0.30

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 137.3
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 56.2 — Intersection LOS: E
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.

Splits and Phases: 1: Butler Pike & Skippack Pike (73)



Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	535	736	0
Future Vol, veh/h	0	0	0	535	736	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	582	800	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1091	800	800	0	-	0
Stage 1	800	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	223	384	821	-	-	-
Stage 1	441	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	223	384	821	-	-	-
Mov Cap-2 Maneuver	223	-	-	-	-	-
Stage 1	441	-	-	-	-	-
Stage 2	734	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	821	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	535	0	0	736	0
Future Vol, veh/h	0	0	0	0	0	0	0	535	0	0	736	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	582	0	0	800	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	800	1382	1382	582	-	0	0	582	0	0
Stage 1	-	-	-	582	582	-	-	-	-	-	-	-
Stage 2	-	-	-	800	800	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	7.12	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	385	121	144	513	0	-	-	992	-	0
Stage 1	0	0	-	499	499	-	0	-	-	-	-	0
Stage 2	0	0	-	379	397	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	-	385	121	144	513	-	-	-	992	-	-
Mov Cap-2 Maneuver	-	-	-	121	144	-	-	-	-	-	-	-
Stage 1	-	-	-	499	499	-	-	-	-	-	-	-
Stage 2	-	-	-	379	397	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	-	992	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	6	0	476	724	4
Future Vol, veh/h	7	6	0	476	724	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	44	38	25	81	87	50
Heavy Vehicles, %	0	1	100	5	4	0
Mvmt Flow	16	16	0	588	832	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1424	836	840	0	-	0
Stage 1	836	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Critical Hdwy	6.4	6.21	5.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	3.1	-	-	-
Pot Cap-1 Maneuver	151	369	496	-	-	-
Stage 1	429	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	151	369	496	-	-	-
Mov Cap-2 Maneuver	151	-	-	-	-	-
Stage 1	429	-	-	-	-	-
Stage 2	559	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	496	-	214	-	-
HCM Lane V/C Ratio	-	-	0.148	-	-
HCM Control Delay (s)	0	-	24.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	181	10	2	299	373	346
Future Volume (vph)	181	10	2	299	373	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	12	12	12	12
Grade (%)	1%			-2%	1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.988				0.937	
Flt Protected	0.956			0.999		
Satd. Flow (prot)	1618	0	0	1880	1746	0
Flt Permitted	0.956			0.993		
Satd. Flow (perm)	1618	0	0	1869	1746	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6				106	
Link Speed (mph)	40			35	35	
Link Distance (ft)	1012			1032	1353	
Travel Time (s)	17.3			20.1	26.4	
Peak Hour Factor	0.81	0.45	0.50	0.80	0.85	0.89
Heavy Vehicles (%)	1%	23%	0%	2%	1%	2%
Adj. Flow (vph)	223	22	4	374	439	389
Shared Lane Traffic (%)						
Lane Group Flow (vph)	245	0	0	378	828	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	10			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.10	1.10	0.99	0.99	1.01	1.01
Turning Speed (mph)	15	9	15			9
Number of Detectors	1		1	1	1	
Detector Template			Left			
Leading Detector (ft)	40		20	40	40	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	40		20	40	40	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			6	2	
Permitted Phases			6			
Detector Phase	4		6	6	2	
Switch Phase						
Minimum Initial (s)	3.0		10.0	10.0	10.0	
Minimum Split (s)	10.0		17.0	17.0	17.0	
Total Split (s)	23.0		52.0	52.0	52.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Split (%)	30.7%		69.3%	69.3%	69.3%	
Maximum Green (s)	16.0		45.0	45.0	45.0	
Yellow Time (s)	5.0		5.0	5.0	5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	7.0			7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		Max	Max	Max	
Act Effct Green (s)	14.3			45.0	45.0	
Actuated g/C Ratio	0.20			0.61	0.61	
v/c Ratio	0.77			0.33	0.74	
Control Delay	44.5			8.2	14.2	
Queue Delay	0.0			0.0	0.0	
Total Delay	44.5			8.2	14.2	
LOS	D			A	B	
Approach Delay	44.5			8.2	14.2	
Approach LOS	D			A	B	
Queue Length 50th (ft)	103			79	221	
Queue Length 95th (ft)	157			108	324	
Internal Link Dist (ft)	932			952	1273	
Turn Bay Length (ft)						
Base Capacity (vph)	357			1147	1113	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.69			0.33	0.74	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 73.3
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 17.8 Intersection LOS: B
Intersection Capacity Utilization 63.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 8: Butler Pike & Norristown Road

Lanes, Volumes, Timings
1: Butler Pike & Skippack Pike (73)

01/14/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	322	31	213	395	35	78	461	222	21	373	100
Future Volume (vph)	100	322	31	213	395	35	78	461	222	21	373	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			0%			-1%			2%	
Storage Length (ft)	150		0	150		335	270		0	150		75
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983				0.850		0.949				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1769	1831	0	1787	1881	1599	1796	1794	0	1702	1862	1583
Flt Permitted	0.219			0.128			0.371			0.071		
Satd. Flow (perm)	408	1831	0	241	1881	1599	701	1794	0	127	1862	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				125		23				132
Link Speed (mph)		45			50			35			35	
Link Distance (ft)		998			325			151			1000	
Travel Time (s)		15.1			4.4			2.9			19.5	
Peak Hour Factor	0.75	0.86	0.64	0.80	0.85	0.65	0.88	0.93	0.86	0.48	0.97	0.87
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	5%	1%	1%
Adj. Flow (vph)	133	374	48	266	465	54	89	496	258	44	385	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	133	422	0	266	465	54	89	754	0	44	385	115
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1		1	1	1
Detector Template						Right						Right
Leading Detector (ft)	40	40		40	40	20	40	40		40	40	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	40	40		40	40	20	40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	3.0		3.0	3.0	3.0

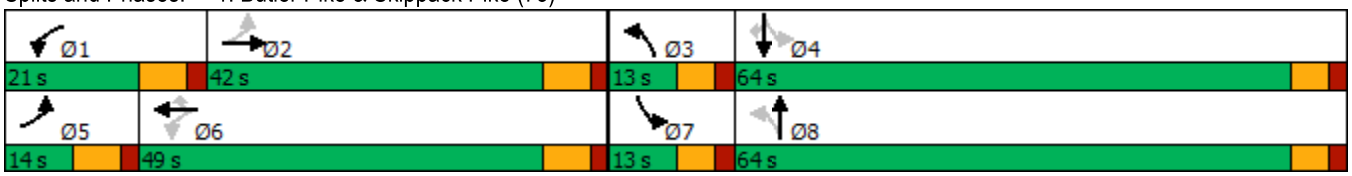
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	14.0	33.0		14.0	33.0	33.0	13.0	33.0		13.0	33.0	33.0
Total Split (s)	14.0	42.0		21.0	49.0	49.0	13.0	64.0		13.0	64.0	64.0
Total Split (%)	10.0%	30.0%		15.0%	35.0%	35.0%	9.3%	45.7%		9.3%	45.7%	45.7%
Maximum Green (s)	7.0	35.0		14.0	42.0	42.0	7.0	58.0		7.0	58.0	58.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0		7.0	7.0	7.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.0			19.0	19.0		20.0			20.0	20.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	42.1	35.1		56.1	42.1	42.1	63.5	58.0		62.0	55.3	55.3
Actuated g/C Ratio	0.31	0.26		0.41	0.31	0.31	0.46	0.42		0.45	0.40	0.40
v/c Ratio	0.69	0.90		1.04	0.81	0.09	0.23	0.98		0.33	0.51	0.16
Control Delay	49.6	72.4		98.9	56.7	0.3	19.8	66.1		24.5	33.6	3.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	49.6	72.4		98.9	56.7	0.3	19.8	66.1		24.5	33.6	3.3
LOS	D	E		F	E	A	B	E		C	C	A
Approach Delay		66.9			67.1			61.2			26.5	
Approach LOS		E			E			E			C	
Queue Length 50th (ft)	78	373		~196	395	0	41	664		20	256	0
Queue Length 95th (ft)	103	#527		#303	494	0	71	#948		22	355	25
Internal Link Dist (ft)		918			245			71			920	
Turn Bay Length (ft)	150			150		335	270			150		75
Base Capacity (vph)	194	470		256	576	576	380	772		137	787	746
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.69	0.90		1.04	0.81	0.09	0.23	0.98		0.32	0.49	0.15

Intersection Summary	
Area Type: Other	
Cycle Length: 140	
Actuated Cycle Length: 137.3	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.04	
Intersection Signal Delay: 57.2	Intersection LOS: E
Intersection Capacity Utilization 93.4%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Butler Pike & Skippack Pike (73)



Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	13	5	758	605	10
Future Vol, veh/h	1	13	5	758	605	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	65	63	94	91	63
Heavy Vehicles, %	1	1	1	2	1	1
Mvmt Flow	4	20	8	806	665	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1092	673	681	0	-	0
Stage 1	673	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Critical Hdwy	6.615	6.215	4.115	-	-	-
Critical Hdwy Stg 1	5.415	-	-	-	-	-
Critical Hdwy Stg 2	5.815	-	-	-	-	-
Follow-up Hdwy	3.5095	3.3095	2.2095	-	-	-
Pot Cap-1 Maneuver	224	456	915	-	-	-
Stage 1	508	-	-	-	-	-
Stage 2	635	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	220	456	915	-	-	-
Mov Cap-2 Maneuver	220	-	-	-	-	-
Stage 1	500	-	-	-	-	-
Stage 2	635	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.9	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	915	-	387	-	-
HCM Lane V/C Ratio	0.009	-	0.062	-	-
HCM Control Delay (s)	9	0.1	14.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	2	7	0	0	9	14	706	2	0	605	29
Future Vol, veh/h	5	2	7	0	0	9	14	706	2	0	605	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	25	59	92	92	75	44	91	50	92	87	56
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	8	8	12	0	0	12	32	776	4	0	695	52

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1569	1565	721	1573	1589	778	747	0	0	780	0	0
Stage 1	721	721	-	842	842	-	-	-	-	-	-	-
Stage 2	848	844	-	731	747	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	91	113	431	90	109	400	870	-	-	846	-	-
Stage 1	422	435	-	362	383	-	-	-	-	-	-	-
Stage 2	359	382	-	416	423	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	84	106	431	78	102	400	870	-	-	846	-	-
Mov Cap-2 Maneuver	84	106	-	78	102	-	-	-	-	-	-	-
Stage 1	395	435	-	338	358	-	-	-	-	-	-	-
Stage 2	326	357	-	397	423	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	36.7	14.3	0.4	0
HCM LOS	E	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	870	-	-	141	400	846	-	-
HCM Lane V/C Ratio	0.037	-	-	0.197	0.03	-	-	-
HCM Control Delay (s)	9.3	-	-	36.7	14.3	0	-	-
HCM Lane LOS	A	-	-	E	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	1	4	751	588	8
Future Vol, veh/h	3	1	4	751	588	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	25	50	93	92	40
Heavy Vehicles, %	0	1	0	1	1	0
Mvmt Flow	12	4	8	808	639	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1473	649	659	0	-	0
Stage 1	649	-	-	-	-	-
Stage 2	824	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	141	472	939	-	-	-
Stage 1	524	-	-	-	-	-
Stage 2	434	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	139	472	939	-	-	-
Mov Cap-2 Maneuver	139	-	-	-	-	-
Stage 1	516	-	-	-	-	-
Stage 2	434	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.5	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	939	-	169	-	-
HCM Lane V/C Ratio	0.009	-	0.095	-	-
HCM Control Delay (s)	8.9	0	28.5	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	297	11	11	451	341	242
Future Volume (vph)	297	11	11	451	341	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	12	12	12	12
Grade (%)	1%			-2%	1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.941	
Flt Protected	0.954			0.998		
Satd. Flow (prot)	1646	0	0	1879	1754	0
Flt Permitted	0.954			0.970		
Satd. Flow (perm)	1646	0	0	1826	1754	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2				77	
Link Speed (mph)	40			35	35	
Link Distance (ft)	1012			1032	1353	
Travel Time (s)	17.3			20.1	26.4	
Peak Hour Factor	0.90	0.92	0.55	0.80	0.93	0.86
Heavy Vehicles (%)	1%	23%	0%	2%	1%	2%
Adj. Flow (vph)	330	12	20	564	367	281
Shared Lane Traffic (%)						
Lane Group Flow (vph)	342	0	0	584	648	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	10			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.10	1.10	0.99	0.99	1.01	1.01
Turning Speed (mph)	15	9	15			9
Number of Detectors	1		1	1	1	
Detector Template			Left			
Leading Detector (ft)	40		20	40	40	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	40		20	40	40	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			6	2	
Permitted Phases			6			
Detector Phase	4		6	6	2	
Switch Phase						
Minimum Initial (s)	3.0		10.0	10.0	10.0	
Minimum Split (s)	10.0		17.0	17.0	17.0	
Total Split (s)	29.0		46.0	46.0	46.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Split (%)	38.7%		61.3%	61.3%	61.3%	
Maximum Green (s)	22.0		39.0	39.0	39.0	
Yellow Time (s)	5.0		5.0	5.0	5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	7.0			7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		Max	Max	Max	
Act Effct Green (s)	18.5			39.1	39.1	
Actuated g/C Ratio	0.26			0.55	0.55	
v/c Ratio	0.80			0.59	0.65	
Control Delay	39.9			14.7	14.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	39.9			14.7	14.6	
LOS	D			B	B	
Approach Delay	39.9			14.7	14.6	
Approach LOS	D			B	B	
Queue Length 50th (ft)	140			168	172	
Queue Length 95th (ft)	#252			230	302	
Internal Link Dist (ft)	932			952	1273	
Turn Bay Length (ft)						
Base Capacity (vph)	508			996	992	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.67			0.59	0.65	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 71.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 20.1 Intersection LOS: C
Intersection Capacity Utilization 61.5% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Butler Pike & Norristown Road

APPENDIX E

SYNCHRO ANALYSIS WORKSHEETS

FUTURE 2020 CONDITIONS

WITH SITE DEVELOPMENT

('BUILD')

LONGFIELD FARMS
TRANSPORTATION IMPACT STUDY
WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PA

Pennoni

Lanes, Volumes, Timings
1: Butler Pike & Skippack Pike (73)

01/14/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	386	36	270	558	32	44	295	142	39	429	106
Future Volume (vph)	70	386	36	270	558	32	44	295	142	39	429	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			0%			-1%			2%	
Storage Length (ft)	150		0	150		335	270		0	150		75
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987				0.850		0.949				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1769	1759	0	1752	1827	1599	1728	1754	0	1655	1809	1480
Flt Permitted	0.198			0.130			0.155			0.089		
Satd. Flow (perm)	369	1759	0	240	1827	1599	282	1754	0	155	1809	1480
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				125		19				187
Link Speed (mph)		45			50			35			35	
Link Distance (ft)		998			325			151			1000	
Travel Time (s)		15.1			4.4			2.9			19.5	
Peak Hour Factor	0.82	0.88	0.84	0.83	0.91	0.88	0.71	0.77	0.72	0.70	0.85	0.57
Heavy Vehicles (%)	1%	5%	11%	3%	4%	1%	5%	4%	2%	8%	4%	8%
Adj. Flow (vph)	85	439	43	325	613	36	62	383	197	56	505	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	482	0	325	613	36	62	580	0	56	505	186
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1		1	1	1
Detector Template						Right						Right
Leading Detector (ft)	40	40		40	40	20	40	40		40	40	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	40	40		40	40	20	40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	3.0		3.0	3.0	3.0

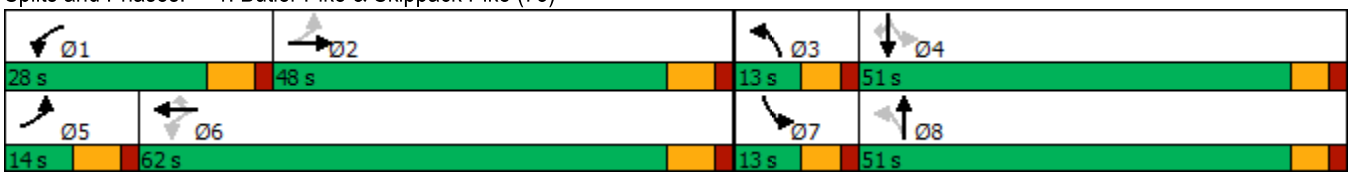
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	14.0	33.0		14.0	33.0	33.0	13.0	33.0		13.0	33.0	33.0
Total Split (s)	14.0	48.0		28.0	62.0	62.0	13.0	51.0		13.0	51.0	51.0
Total Split (%)	10.0%	34.3%		20.0%	44.3%	44.3%	9.3%	36.4%		9.3%	36.4%	36.4%
Maximum Green (s)	7.0	41.0		21.0	55.0	55.0	7.0	45.0		7.0	45.0	45.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0		7.0	7.0	7.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.0			19.0	19.0		20.0			20.0	20.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	48.2	41.3		69.0	55.1	55.1	50.6	45.1		50.6	45.1	45.1
Actuated g/C Ratio	0.35	0.30		0.50	0.40	0.40	0.37	0.33		0.37	0.33	0.33
v/c Ratio	0.43	0.91		0.93	0.84	0.05	0.35	0.99		0.43	0.85	0.30
Control Delay	27.7	68.4		66.3	49.4	0.1	31.0	78.5		35.5	58.4	5.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	27.7	68.4		66.3	49.4	0.1	31.0	78.5		35.5	58.4	5.8
LOS	C	E		E	D	A	C	E		D	E	A
Approach Delay		62.3			53.2			73.9			43.6	
Approach LOS		E			D			E			D	
Queue Length 50th (ft)	40	425		215	506	0	34	~522		31	433	0
Queue Length 95th (ft)	65	#615		#340	#716	0	51	#579		46	#548	0
Internal Link Dist (ft)		918			245			71			920	
Turn Bay Length (ft)	150			150		335	270			150		75
Base Capacity (vph)	201	531		352	733	716	178	588		133	594	611
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.42	0.91		0.92	0.84	0.05	0.35	0.99		0.42	0.85	0.30

Intersection Summary	
Area Type:	Other
Cycle Length: 140	
Actuated Cycle Length: 137.3	
Natural Cycle: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 57.1	Intersection LOS: E
Intersection Capacity Utilization 86.6%	ICU Level of Service E
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Butler Pike & Skippack Pike (73)



Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑		↱
Traffic Vol, veh/h	468	0	0	861	0	3
Future Vol, veh/h	468	0	0	861	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	92	92	91	92	92
Heavy Vehicles, %	5	2	2	4	2	2
Mvmt Flow	532	0	0	946	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	532
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	-	0	547
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	547
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	547	-	-
HCM Lane V/C Ratio	0.006	-	-
HCM Control Delay (s)	11.6	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	535	736	0
Future Vol, veh/h	0	0	0	535	736	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	582	800	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1091	800	800	0	-	0
Stage 1	800	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	223	384	821	-	-	-
Stage 1	441	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	223	384	821	-	-	-
Mov Cap-2 Maneuver	223	-	-	-	-	-
Stage 1	441	-	-	-	-	-
Stage 2	734	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	821	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	535	0	0	736	0
Future Vol, veh/h	0	0	0	0	0	0	0	535	0	0	736	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	582	0	0	800	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	800	1382	1382	582	-	0	0	582	0	0
Stage 1	-	-	-	582	582	-	-	-	-	-	-	-
Stage 2	-	-	-	800	800	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	7.12	6.52	6.22	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	3.518	4.018	3.318	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	385	121	144	513	0	-	-	992	-	0
Stage 1	0	0	-	499	499	-	0	-	-	-	-	0
Stage 2	0	0	-	379	397	-	0	-	-	-	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	-	385	121	144	513	-	-	-	992	-	-
Mov Cap-2 Maneuver	-	-	-	121	144	-	-	-	-	-	-	-
Stage 1	-	-	-	499	499	-	-	-	-	-	-	-
Stage 2	-	-	-	379	397	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	-	992	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	6	0	489	728	4
Future Vol, veh/h	7	6	0	489	728	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	44	38	25	81	87	50
Heavy Vehicles, %	0	1	100	5	4	0
Mvmt Flow	16	16	0	604	837	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1445	841	845	0	-	0
Stage 1	841	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Critical Hdwy	6.4	6.21	5.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	3.1	-	-	-
Pot Cap-1 Maneuver	147	366	494	-	-	-
Stage 1	426	-	-	-	-	-
Stage 2	550	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	147	366	494	-	-	-
Mov Cap-2 Maneuver	147	-	-	-	-	-
Stage 1	426	-	-	-	-	-
Stage 2	550	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.3	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	494	-	209	-	-
HCM Lane V/C Ratio	-	-	0.152	-	-
HCM Control Delay (s)	0	-	25.3	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	13	476	2	4	730
Future Vol, veh/h	9	13	476	2	4	730
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	14	517	2	4	793

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1319	518	0	0	519	0
Stage 1	518	-	-	-	-	-
Stage 2	801	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	173	558	-	-	1047	-
Stage 1	598	-	-	-	-	-
Stage 2	442	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	172	558	-	-	1047	-
Mov Cap-2 Maneuver	172	-	-	-	-	-
Stage 1	594	-	-	-	-	-
Stage 2	442	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	291	1047	-
HCM Lane V/C Ratio	-	-	0.082	0.004	-
HCM Control Delay (s)	-	-	18.5	8.5	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	182	10	2	301	380	348
Future Volume (vph)	182	10	2	301	380	348
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	12	12	12	12
Grade (%)	1%			-2%	1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.988				0.937	
Flt Protected	0.956			0.999		
Satd. Flow (prot)	1619	0	0	1880	1746	0
Flt Permitted	0.956			0.993		
Satd. Flow (perm)	1619	0	0	1869	1746	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6				105	
Link Speed (mph)	40			35	35	
Link Distance (ft)	1012			1032	1353	
Travel Time (s)	17.3			20.1	26.4	
Peak Hour Factor	0.81	0.45	0.50	0.80	0.85	0.89
Heavy Vehicles (%)	1%	23%	0%	2%	1%	2%
Adj. Flow (vph)	225	22	4	376	447	391
Shared Lane Traffic (%)						
Lane Group Flow (vph)	247	0	0	380	838	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	10			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.10	1.10	0.99	0.99	1.01	1.01
Turning Speed (mph)	15	9	15			9
Number of Detectors	1		1	1	1	
Detector Template			Left			
Leading Detector (ft)	40		20	40	40	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	40		20	40	40	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			6	2	
Permitted Phases			6			
Detector Phase	4		6	6	2	
Switch Phase						
Minimum Initial (s)	3.0		10.0	10.0	10.0	
Minimum Split (s)	10.0		17.0	17.0	17.0	
Total Split (s)	23.0		52.0	52.0	52.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Split (%)	30.7%		69.3%	69.3%	69.3%	
Maximum Green (s)	16.0		45.0	45.0	45.0	
Yellow Time (s)	5.0		5.0	5.0	5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	7.0			7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		Max	Max	Max	
Act Effct Green (s)	14.3			45.1	45.1	
Actuated g/C Ratio	0.19			0.61	0.61	
v/c Ratio	0.77			0.33	0.75	
Control Delay	44.7			8.2	14.7	
Queue Delay	0.0			0.0	0.0	
Total Delay	44.7			8.2	14.7	
LOS	D			A	B	
Approach Delay	44.7			8.2	14.7	
Approach LOS	D			A	B	
Queue Length 50th (ft)	104			80	227	
Queue Length 95th (ft)	158			108	334	
Internal Link Dist (ft)	932			952	1273	
Turn Bay Length (ft)						
Base Capacity (vph)	358			1147	1112	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.69			0.33	0.75	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 73.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 18.1 Intersection LOS: B
Intersection Capacity Utilization 63.6% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 8: Butler Pike & Norristown Road

Lanes, Volumes, Timings
1: Butler Pike & Skippack Pike (73)

01/14/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	322	35	218	395	35	80	463	223	21	376	100
Future Volume (vph)	100	322	35	218	395	35	80	463	223	21	376	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			0%			-1%			2%	
Storage Length (ft)	150		0	150		335	270		0	150		75
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981				0.850		0.949				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1769	1827	0	1787	1881	1599	1796	1794	0	1702	1862	1583
Flt Permitted	0.237			0.118			0.363			0.072		
Satd. Flow (perm)	441	1827	0	222	1881	1599	686	1794	0	129	1862	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				125		23				187
Link Speed (mph)		45			50			35			35	
Link Distance (ft)		998			325			151			1000	
Travel Time (s)		15.1			4.4			2.9			19.5	
Peak Hour Factor	0.75	0.86	0.64	0.80	0.85	0.65	0.88	0.93	0.86	0.48	0.97	0.87
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	1%	1%	5%	1%	1%
Adj. Flow (vph)	133	374	55	273	465	54	91	498	259	44	388	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	133	429	0	273	465	54	91	757	0	44	388	115
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.00	1.00	1.00	0.99	0.99	0.99	1.01	1.01	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1	1	1	1		1	1	1
Detector Template						Right						Right
Leading Detector (ft)	40	40		40	40	20	40	40		40	40	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	40	40		40	40	20	40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0	15.0	3.0	3.0		3.0	3.0	3.0

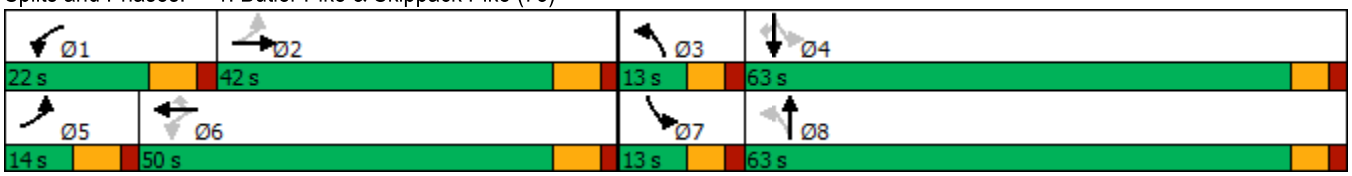
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	14.0	33.0		14.0	33.0	33.0	13.0	33.0		13.0	33.0	33.0
Total Split (s)	14.0	42.0		22.0	50.0	50.0	13.0	63.0		13.0	63.0	63.0
Total Split (%)	10.0%	30.0%		15.7%	35.7%	35.7%	9.3%	45.0%		9.3%	45.0%	45.0%
Maximum Green (s)	7.0	35.0		15.0	43.0	43.0	7.0	57.0		7.0	57.0	57.0
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0		7.0	7.0	7.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Max		None	Max	Max	None	None		None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		19.0			19.0	19.0		20.0			20.0	20.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	42.1	35.1		57.1	43.1	43.1	62.6	57.1		61.0	54.4	54.4
Actuated g/C Ratio	0.31	0.26		0.42	0.31	0.31	0.46	0.42		0.44	0.40	0.40
v/c Ratio	0.66	0.91		1.04	0.79	0.09	0.25	1.00		0.33	0.53	0.16
Control Delay	46.6	74.6		99.5	54.7	0.3	20.5	71.5		25.0	34.6	0.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	46.6	74.6		99.5	54.7	0.3	20.5	71.5		25.0	34.6	0.5
LOS	D	E		F	D	A	C	E		C	C	A
Approach Delay		68.0			66.4			66.0			26.7	
Approach LOS		E			E			E			C	
Queue Length 50th (ft)	77	381		~208	391	0	43	~715		20	262	0
Queue Length 95th (ft)	102	#542		#315	489	0	73	#966		22	363	0
Internal Link Dist (ft)		918			245			71			920	
Turn Bay Length (ft)	150			150		335	270			150		75
Base Capacity (vph)	202	469		263	589	586	369	759		137	773	767
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.66	0.91		1.04	0.79	0.09	0.25	1.00		0.32	0.50	0.15

Intersection Summary	
Area Type: Other	
Cycle Length: 140	
Actuated Cycle Length: 137.4	
Natural Cycle: 135	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.04	
Intersection Signal Delay: 58.7	Intersection LOS: E
Intersection Capacity Utilization 94.1%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Butler Pike & Skippack Pike (73)



Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑		↱
Traffic Vol, veh/h	565	0	0	648	0	2
Future Vol, veh/h	565	0	0	648	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	92	92	85	92	92
Heavy Vehicles, %	1	2	2	1	2	2
Mvmt Flow	657	0	0	762	0	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	657
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	-	0	465
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	465
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	465	-	-
HCM Lane V/C Ratio	0.005	-	-
HCM Control Delay (s)	12.8	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	13	5	765	617	10
Future Vol, veh/h	1	13	5	765	617	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	65	63	94	91	63
Heavy Vehicles, %	1	1	1	2	1	1
Mvmt Flow	4	20	8	814	678	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1109	686	694	0	-	0
Stage 1	686	-	-	-	-	-
Stage 2	423	-	-	-	-	-
Critical Hdwy	6.615	6.215	4.115	-	-	-
Critical Hdwy Stg 1	5.415	-	-	-	-	-
Critical Hdwy Stg 2	5.815	-	-	-	-	-
Follow-up Hdwy	3.5095	3.3095	2.2095	-	-	-
Pot Cap-1 Maneuver	219	449	905	-	-	-
Stage 1	501	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	215	449	905	-	-	-
Mov Cap-2 Maneuver	215	-	-	-	-	-
Stage 1	493	-	-	-	-	-
Stage 2	632	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.1	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	905	-	380	-	-
HCM Lane V/C Ratio	0.009	-	0.063	-	-
HCM Control Delay (s)	9	0.1	15.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	2	7	0	0	9	14	713	2	0	617	29
Future Vol, veh/h	5	2	7	0	0	9	14	713	2	0	617	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	25	59	92	92	75	44	91	50	92	87	56
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	1	0
Mvmt Flow	8	8	12	0	0	12	32	784	4	0	709	52

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1591	1587	735	1595	1611	786	761	0	0	788	0	0
Stage 1	735	735	-	850	850	-	-	-	-	-	-	-
Stage 2	856	852	-	745	761	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	88	109	423	87	105	395	860	-	-	840	-	-
Stage 1	414	428	-	358	380	-	-	-	-	-	-	-
Stage 2	355	379	-	409	417	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	81	102	423	76	98	395	860	-	-	840	-	-
Mov Cap-2 Maneuver	81	102	-	76	98	-	-	-	-	-	-	-
Stage 1	387	428	-	334	355	-	-	-	-	-	-	-
Stage 2	321	354	-	390	417	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.1	14.4	0.4	0
HCM LOS	E	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	860	-	-	136	395	840	-	-
HCM Lane V/C Ratio	0.037	-	-	0.204	0.03	-	-	-
HCM Control Delay (s)	9.3	-	-	38.1	14.4	0	-	-
HCM Lane LOS	A	-	-	E	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	1	4	758	600	8
Future Vol, veh/h	3	1	4	758	600	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	25	50	93	92	40
Heavy Vehicles, %	0	1	0	1	1	0
Mvmt Flow	12	4	8	815	652	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1493	662	672	0	-	0
Stage 1	662	-	-	-	-	-
Stage 2	831	-	-	-	-	-
Critical Hdwy	6.4	6.21	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.2	-	-	-
Pot Cap-1 Maneuver	137	464	928	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	431	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	135	464	928	-	-	-
Mov Cap-2 Maneuver	135	-	-	-	-	-
Stage 1	509	-	-	-	-	-
Stage 2	431	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.3	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	928	-	164	-	-
HCM Lane V/C Ratio	0.009	-	0.098	-	-
HCM Control Delay (s)	8.9	0	29.3	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	7	758	0	0	600
Future Vol, veh/h	5	7	758	0	0	600
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	81	92	92	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	8	936	0	0	690

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1626	936	0	0	936	0
Stage 1	936	-	-	-	-	-
Stage 2	690	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	112	321	-	-	732	-
Stage 1	382	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	112	321	-	-	732	-
Mov Cap-2 Maneuver	112	-	-	-	-	-
Stage 1	382	-	-	-	-	-
Stage 2	498	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.4	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	181	732	-
HCM Lane V/C Ratio	-	-	0.072	-	-
HCM Control Delay (s)	-	-	26.4	0	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	299	11	11	457	345	243
Future Volume (vph)	299	11	11	457	345	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	12	12	12	12
Grade (%)	1%			-2%	1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.942	
Flt Protected	0.954			0.998		
Satd. Flow (prot)	1646	0	0	1879	1756	0
Flt Permitted	0.954			0.970		
Satd. Flow (perm)	1646	0	0	1826	1756	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2				76	
Link Speed (mph)	40			35	35	
Link Distance (ft)	1012			1032	1353	
Travel Time (s)	17.3			20.1	26.4	
Peak Hour Factor	0.90	0.92	0.55	0.80	0.93	0.86
Heavy Vehicles (%)	1%	23%	0%	2%	1%	2%
Adj. Flow (vph)	332	12	20	571	371	283
Shared Lane Traffic (%)						
Lane Group Flow (vph)	344	0	0	591	654	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	10			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.10	1.10	0.99	0.99	1.01	1.01
Turning Speed (mph)	15	9	15			9
Number of Detectors	1		1	1	1	
Detector Template			Left			
Leading Detector (ft)	40		20	40	40	
Trailing Detector (ft)	0		0	0	0	
Detector 1 Position(ft)	0		0	0	0	
Detector 1 Size(ft)	40		20	40	40	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			6	2	
Permitted Phases			6			
Detector Phase	4		6	6	2	
Switch Phase						
Minimum Initial (s)	3.0		10.0	10.0	10.0	
Minimum Split (s)	10.0		17.0	17.0	17.0	
Total Split (s)	29.0		46.0	46.0	46.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Split (%)	38.7%		61.3%	61.3%	61.3%	
Maximum Green (s)	22.0		39.0	39.0	39.0	
Yellow Time (s)	5.0		5.0	5.0	5.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	7.0			7.0	7.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		Max	Max	Max	
Act Effct Green (s)	18.6			39.1	39.1	
Actuated g/C Ratio	0.26			0.54	0.54	
v/c Ratio	0.80			0.59	0.66	
Control Delay	40.1			14.9	14.8	
Queue Delay	0.0			0.0	0.0	
Total Delay	40.1			14.9	14.8	
LOS	D			B	B	
Approach Delay	40.1			14.9	14.8	
Approach LOS	D			B	B	
Queue Length 50th (ft)	141			173	177	
Queue Length 95th (ft)	#254			234	308	
Internal Link Dist (ft)	932			952	1273	
Turn Bay Length (ft)						
Base Capacity (vph)	507			995	991	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.68			0.59	0.66	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 71.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 20.3 Intersection LOS: C
Intersection Capacity Utilization 61.9% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 8: Butler Pike & Norristown Road

(e) Community association document.

DECLARATION OF PLANNED COMMUNITY

LONGFIELD FARM, A PLANNED COMMUNITY
Whitemarsh Township
Montgomery County
Commonwealth of Pennsylvania

THIS DECLARATION, made this _____ day of _____, 20____, by LEGAL OWNER, a [entity type] ("Declarant"), the legal owner of the real estate herein described.

W I T N E S S E T H:

ARTICLE I
SUBMISSION

1.1 Name; County; Description. LEGAL OWNER, legal owner of the Real Estate described in Exhibit "A" attached hereto (the "Land") located in Whitemarsh Township, Montgomery County, Pennsylvania, does hereby submit said Land, together with the Buildings and improvements thereon erected and the easements, rights and appurtenances thereunto belonging (collectively, the "Property") to the provisions of the Pennsylvania Uniform Planned Community Act, 68 Pa. C.S.A. Section 5101, et seq. (the "Act"), as amended, and Declarant hereby creates a planned community, to be known as Longfield Farm, a planned community (the "Community").

1.2 Easements and Licenses. Included among the easements, rights and appurtenances referred to in Section 1.1 above are the recorded easements, licenses, restrictions, etc., as are more specifically set forth upon Exhibit "D" attached hereto and incorporated herein as fully as though set forth at length hereat, and the Property is hereby submitted to the Act in accordance with same. The Property is also subject to all easements depicted on the Approved Plans for Longfield Farm, as defined hereinbelow, and the easements set forth in this Declaration.

1.3 Submission of Dedication Facilities; Release of Dedication Facilities Upon Dedication. Declarant, as the legal owner of the Property, does hereby submit the Dedication Facilities, together with the improvements thereon erected or to be erected and the easements, rights and appurtenances thereunto belonging to the Act, and to this Declaration; subject to Declarant's reservation of rights to dedicate the Dedication Facilities to the appropriate governmental entities as set forth in Article XXII. It is further provided that upon the recordation of an instrument with the Montgomery County Recorder of Deeds dedicating any portion of the Dedication Facilities to Whitemarsh Township, other appropriate governmental entity, utility company or other third party, such recording shall act to automatically release that portion of the Dedication Facilities from the provisions of the Act and this Declaration.

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ARTICLE II
DEFINITIONS

2.1. The following terms when used herein or in the Declaration Plan shall have the meanings set forth below:

a. "Approved Plans" shall mean the final subdivision and land development plans for the Land approved by the Whitemarsh Township Board of Supervisors and recorded in the Office for the Recording of Deeds for Montgomery County, Pennsylvania on [date] at [recording location], as the same may be amended or revised from time to time.

b. "Association" or "Community Association" shall mean the Longfield Farm Community Association, Inc., its successors and assigns, organized or to be organized as a nonprofit corporation under the laws of the Commonwealth of Pennsylvania.

c. "Board" or "Executive Board" shall mean the Executive Board of the Association, elected in accordance with the Bylaws of the Association.

d. "Bylaws" shall mean the Bylaws of the Association, which have been or shall be adopted by the Board, as such Bylaws may be amended from time to time.

e. "Common Assessment" shall mean the charge against each Owner and the Owner's Unit, representing a portion of the total costs to the Association of maintaining, improving, repairing, replacing, managing and operating the Common Facilities or any portion of the Property which is the responsibility of the Association. The funds raised by such charges shall be placed in the appropriate fund (operating, reserve, paid-in capital or other) as determined by the Executive Board. The Executive Board may create categories of assessments, and certain categories of assessments may be assessed against fewer than all of the Units, pursuant to the authority under Section 5208(a) of the Act permitting allocation formulas to take into account unusual attributes.

f. "Common Expenses" shall mean the actual and estimated costs of any or all of the following: maintenance, management, operation, repair and replacement of the Common Facilities (including unpaid Special Assessments), including those costs not paid by the Owner responsible for payment; costs of compensation paid by the Association to Manager, accountants, attorneys and other employees; the costs of all landscaping and other services benefiting the Common Facilities; the costs of casualty and liability insurance, workmen's compensation insurance, and other insurance covering the Property or the officers and directors of the Association; the costs of bonding of the members of the management body; taxes paid by the Association, if any; amounts paid by the Association for discharge(s) of any lien(s) or encumbrance(s) levied against the Common Facilities, or portions thereof; and the costs of any other item or items designated by, or in accordance with other expenses incurred by the Association for any reason whatsoever in connection with the Common Facilities for the benefit of all of the Owners.

g. "Common Facilities" shall mean and refer to all portions of the Property

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located outside the boundaries of a Unit, and any and all improvements located therein and thereon, including but not limited to the private roads, sidewalks, stormwater basins, swales, piping and appurtenances, street trees and other plantings, and signage, as depicted on the Declaration Plan. The real estate comprising the Common Facilities is described in the legal description attached to and incorporated in this Declaration as Exhibit "C".

h. "Community" shall mean the residential community to be known as "Longfield Farm, a Planned Community", as depicted upon the Approved Plans and Declaration Plan, as the same may be amended or revised from time to time.

i. "Declarant" shall mean and refer to Legal Owner, and its successors and assigns, except the purchasers of individual Units for residential use. Any such successor Declarant shall be entitled to all of the Declarant rights, and subject to all of the Declarant obligations, under this Declaration of Planned Community as are set forth in the recorded transfer of declarant rights.

j. "Declaration" shall mean this instrument as it may be amended from time to time.

k. "Declaration Plan" shall mean the plats and plans attached to and recorded with this Declaration as Exhibit "B", and as the same may be amended or revised from time to time.

l. "Dedication Facilities" shall mean the improvements that may be made by the Declarant and easements and real property within which such improvements are located, and which may be offered for dedication to Whitemarsh Township, other appropriate governmental entity, utility company or other third party. The provisions of this Declaration applicable to Common Facilities shall be applicable to any portions of the Dedication Facilities which have been designated as Common Facilities under Section 1.3 above.

m. "Home" shall mean any type of dwelling unit within the Community, to be occupied by a single family. A Home is located within the boundaries of, and is part of, a Unit.

n. "Limited Common Facilities" means portions of the Common Facilities which are allocated by or pursuant to this Declaration for the exclusive use of one or more but fewer than all of the Units.

o. "Limited Common Expenses" means common expenses associated with the maintenance, repair or replacement of a Limited Common Facility, and shall be assessed in equal shares against the Units to which that Limited Common Facility was assigned at the time the expense was incurred.

p. "Manager" shall mean the person, firm or corporation, if any, appointed by the Association hereunder as its agent and delegated certain duties, powers or functions of

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the Association.

q. "Member" shall mean any person or entity who is a Unit Owner.

r. "O&M Plan" shall mean and refer to the Operation and Maintenance Plan for Post-Construction Stormwater Management attached to and incorporated in this Declaration as Exhibit "E".

s. "Operating Fund" shall mean the accounts created for receipts and disbursements of the Association, pursuant to Article XV hereof.

t. "Owner" or "Unit Owner" shall mean the person or persons or other legal entity or entities, including Declarant, holding fee simple interest of record to any Unit which is a part of the Property, including sellers under executory contracts of sale, but excluding those having such interest merely as security for the performance of an obligation.

u. "PCSM BMPs" shall mean the post-construction stormwater management best management practices for the Property approved by Whitemarsh Township as part of the Approved Plans.

v. "Percentage Interest" means each Unit Owner's share of Common Expense Liability appurtenant to each Unit as set forth in Article IV of this Declaration.

w. "Permitted Mortgage" means a first Mortgage to (i) the Declarant; (ii) the Seller of a Unit; (iii) a bank, mortgage service company, insurance company, credit union, pension fund, or like institutional investor or lender; and/or (iv) any individual.

x. "Permitted Mortgagee" means the holder of a Permitted Mortgage who has registered its name, address, and the Unit for which it holds a permitted mortgage, in writing with the Association.

y. "Person" shall mean a natural individual or any other entity with the legal right to hold title to real property.

z. "Property" shall mean that certain parcel of land described in the legal description attached hereto as Exhibit "A", including the improvements located thereon and therein.

aa. "Special Assessments" shall mean a charge against a particular Owner and the Owner's Unit, equal to the cost incurred by the Association for corrective action performed pursuant to the provisions of this Declaration, plus interest thereon as provided for in this Declaration, or shall mean a charge against all Owners for Common Expenses in excess of the Common Assessments in a budget year.

bb. "Unit" shall mean a lot in the planned community and all improvements

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thereon, designated for separate ownership, as shown on the Declaration Plan as Units 1-58.

ARTICLE III
UNITS; BOUNDARIES; DEDICATION FACILITIES

3.1. Declaration Plan; Units/Common Facilities. The intended and existing location and dimensions of the structures and improvements comprising the Property, and the location of Units and Common Facilities of the Community are shown on the Declaration Plan, which is incorporated herein by reference as though fully set forth at length hereat. The Declaration Plan shows fully and accurately the extent of any encroachments by or upon any portion of the Community; to the extent feasible, the location and dimensions of all easements serving or burdening any portion of the Community; all other matters customarily shown on land surveys; as well as the location and dimension of the vertical boundaries of each Unit, to the extent those boundaries lie within or coincide with the boundaries of the building in which the Unit is located; the horizontal Unit boundaries, if any; and the identifying number for each Unit shown thereon. All improvements shown on the Declaration Plan within the Units NEED NOT BE BUILT; all other improvements within the Community shown on the Declaration Plan MUST BE BUILT.

3.2. Unit Boundaries. The boundaries of each Unit are situated as shown on the Declaration Plan and defined as that portion of the Property subdivided and designated as a separate lot in accordance with the Approved Plans. All space, fixtures and improvements within the Unit boundaries are part of the Unit.

a. If any fixture or improvement lies partially within and partially outside the boundaries of a Unit, any portion of the fixture or improvement serving only that Unit is a Limited Common Facility allocated solely to that Unit.

b. Any fixtures or improvements designed or designated in the Declaration to serve less than all of the Units, but located outside the Unit boundaries, are Limited Common Facilities allocated exclusively to the Unit or Units.

3.3. Relocation of Unit Boundaries; Subdivision of Units. The Declarant and any Unit Owner or Owners may relocate boundaries between Units upon the approval of the Whitemarsh Township Board of Supervisors. This Declaration shall provide no right to subdivide or convert Units pursuant to Section 5215 of the Act.

3.4. Dedication Facilities. The following improvements shall be made by the Declarant, and shall be offered for dedication to Whitemarsh Township, other appropriate governmental entity, utility company or other third party, as appropriate (the improvements shall be collectively referred to as the "Dedication Facilities"):

a. Roadway Rights-of-Way. Any rights-of-way for Skippack Pike and/or Butler Pike required to be dedicated as shown on the Approved Plans.

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b. Water Lines and Facilities. Water mains, fire hydrants, and water service lines and appurtenant facilities servicing the Community ("Water Facilities") located within the easements under Article VII shall be offered for dedication to [entity]. Declarant shall own the Water Facilities until the improvements are accepted in dedication. That portion of any water line located within a Unit and connecting the Home within the Unit to a water main shall be owned, maintained, repaired and replaced by the Unit Owner. The [entity] shall be responsible for the maintenance of any fire hydrants.

c. Sewer Lines and Facilities. Sewer lines, mains, manholes, and appurtenant facilities servicing the Community, and including all easements required in connection therewith, shall be offered for dedication to [entity].

d. Electric, gas and cable lines. All electric, gas and cable lines and facilities servicing the Community are intended to be owned and maintained by the respective service provider.

3.5. Maximum Number of Units. The maximum number of Units in the Community shall be fifty-eight (58).

ARTICLE IV
ALLOCATION OF COMMON EXPENSE LIABILITIES AND VOTES

4.1. Allocation of Common Expense Liabilities; Votes in Community. Each Unit shall have Percentage Interest of 1.72%, calculated by dividing 1, representing the Unit, by the total number of Units created in the Community, being fifty-eight (58), and multiplying the result by 100. Except for minor variations due to rounding, the total allocation of Percentage Interests shall aggregate 100%. The Percentage Interest assigned to each Unit shall be appurtenant to that Unit. Allocation of Common Expense Liabilities shall occur not later than sixty (60) days following the date of the first sale of a Unit. Each Unit shall be entitled to one (1) vote.

ARTICLE V
COMMON FACILITIES: PRIVATE ROADS; ALTERATION; COVENANT AGAINST PARTITION; WETLANDS; STORMWATER MANAGEMENT BMPS

5.1. Use of Private Roads. Except as their use may otherwise be limited by this Declaration, the Bylaws of the Longfield Farm Community Association or any Rules or Regulations hereinafter promulgated by the Association (hereinafter collectively referred to as "Community Documents"), each Unit Owner, tenant and occupant of a Unit, and the family members, guests, customers, clients, agents and employees of such Unit Owner, tenant and occupant, may use the private roads providing access to the Community from Butler Pike and Skippack Pike in common with all other Unit Owners and tenants or occupants of other Units, and their respective family members, guests, customers, clients, agents and employees, for the purposes of access, ingress and egress to and from Butler Pike and Skippack Pike, without hindering or encroaching upon the lawful rights of the other Unit Owners. THE PRIVATE ROADS ARE NOT OFFERED FOR, AND WILL NOT BE ACCEPTED FOR, DEDICATION BY

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WHITEMARSH TOWNSHIP.

5.2. Alteration of Common Facilities by Unit Owner. The Executive Board shall oversee all maintenance and repairs to the Common Facilities. No Unit Owner shall do any work which would affect or alter any of the Common Facilities, or jeopardize the soundness or safety of the Property, or impair any easement or hereditament therein without the consent of the Board. The Board shall have the responsibility for assuring that the Common Facilities are kept in a state of repair. Each Unit Owner hereby grants to the Association and the Executive Board as well as to their agents, servants and employees, an easement over such lands of the individual Units as are necessary to perform the repairs or maintenance to the Common Facilities as are deemed necessary by the Executive Board.

5.3. Covenant Against Partition. The undivided interest of a Unit in the Common Facilities shall be inseparable from a Unit. Any conveyance, lease, devise or other disposition or mortgage or other encumbrance of any Unit shall extend to include the undivided interest in the Common Facilities, whether or not expressly referred to in the instrument effecting the same. The undivided interests of the Units in the Common Facilities and the fee titles to the respective Units conveyed therewith shall not be separately conveyed, transferred, alienated, or in calmer with its respective Unit, notwithstanding the fact that the description in the instrument of conveyance, transfer, alienation or encumbrance may refer only to the fee title to the Unit. The Common Facilities shall remain undivided and no action for partition or division of any part thereof shall be permitted, unless otherwise provided by law.

5.4. Wooded Portions of Common Facilities. Wooded portions of the Common Facilities shall remain wooded (except in connection with construction by the Declarant in accordance with the Approved Plans). If a tree within the Common Facilities falls into a Unit, the Association shall remove that portion of the tree within the Unit. Other tree removal within the Common Facilities shall be at the Executive Board's sole discretion for the purpose of addressing hazardous conditions, subject to applicable laws, regulations and ordinances.

5.5 Post Construction Stormwater Management Best Management Practices. The O&M Plan attached hereto as Exhibit "E" is incorporated herein by reference as though fully set forth at length. The Property is hereby impressed with and made subject to the terms of the O&M Plan, which shall run with the land and be binding upon and enforceable by subsequent grantees of the Property and/or portions of the Property. All PCSM BMPs within the Property shall be implemented, operated and maintained by the Association in compliance with the O&M Plan. All Owners, by the acceptance of a Deed to a Unit, agree to the Association's aforesaid responsibilities for the PCSM BMPs.

ARTICLE VI
COMMUNITY ASSOCIATION

6.1. The Community Association. The Community Association shall mean the Association of all Unit Owners, which shall be the organization by and through which the

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affairs of the Association are administered by its duly executed Board. Such Community Association shall be known as the Longfield Farm Community Association. The Community Association is the governing body for all of the Unit Owners of the maintenance, repair, replacement, cleaning, sanitation, management, operation and use of the Common Facilities and the making of any additions or improvements thereto, and shall be carried out as provided by the Bylaws of the Community Association, which constitute the governing regulations as adopted pursuant to the Act and this Declaration for the regulation and management of the Property, including such amendments thereto as may be adopted from time to time, and which are incorporated herein and made a part hereof by reference thereto. The Common Expenses incurred or to be incurred for the maintenance, repair, replacement, cleaning, sanitation, management, operation and use of the Common Facilities , and making of any additions thereto shall be assessed by the Community Association as provided for in the Declaration and/or Bylaws, against and collected from the Unit Owners. All Unit Owners upon acceptance of a deed to a Unit shall become members of the Community Association.

Every Unit Owner who shall be a member of the Community Association shall be entitled to all the rights and shall be bound by all of the obligations accompanying membership, provided that any Unit Owner who is holding the interest in a Unit merely as a security for the performance of any obligation shall not be a member.

ARTICLE VII
EASEMENTS

7.1. Utility Easements. The Units and Common Facilities shall be, and are hereby, made subject to blanket easements in favor of the Declarant, the Association, appropriate utility and service companies and governmental agencies or authorities for such utility and service lines and equipment as may be necessary or desirable to serve any portion of the Property. The easements created in this Section 7.1 shall include, without limitation, the rights of the Declarant, the Association or the providing utility or service company, or governmental agency or authority to install, lay, maintain, repair, relocate and replace gas lines, pipes and conduits, electric lines, wires and conduits, cable television lines, wires, conduits and facilities, water mains and pipes, sewer and drain lines, telephone wires and conduits and equipment, and ducts and vents over, under, through, along and on the Units and Common Facilities. Notwithstanding the foregoing provisions of this Section 7.1, unless approved in writing by the Unit Owner or Unit Owners affected thereby, any such easement through a Unit shall be located either in substantially the same location as such facilities or similar facilities existing at the time of first conveyance of the Unit by the Declarant, or so as not to materially interfere with the use or occupancy of the Unit by its occupants, to the extent same is reasonable and practicable. In addition, each Unit Owner shall have an easement in common with all other Unit Owners to use all pipes, wires, ducts, cables, conduits, public utility lines on other Common Facilities serving that Unit and located in any of the other Units. Each Unit shall be subject to an easement in favor of all other Unit Owners to use such pipes, conduits, cables, wires, public utility lines and other Common Facilities serving such other Units and located within such Unit.

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7.2. Structural Support. Each Unit shall have an easement to the extent necessary for structural support over every other Unit and over the Common Facilities, and each Unit and the Common Facilities shall be subject to an easement for structural support in favor of every other Unit.

7.3. Declarant's Easement to Correct Drainage. Declarant reserves a blanket easement on, over and under those portions of each Unit and the Common Facilities not located within a building for the purpose of maintaining and correcting drainage of surface water in order to maintain the reasonable standards of health, safety and appearance. The easement created by this Section 7.3 expressly includes the right to cut any trees, bushes, or shrubbery, to grade the soil, or to take any other action reasonably necessary to achieve this purpose, following which the Declarant shall restore the affected property as closely to its original condition as practicable. This easement shall terminate upon the release of all financial security posted by Declarant with Whitemarsh Township in connection with the development of the Community.

7.4. Easements over Units.

a. Declarant, in favor of itself, its successors and assigns, hereby imposes, creates, reserves, grants and conveys a perpetual easement for the purposes of installing, maintaining, repairing, replacing and using the stormwater management facilities over the areas of the Units as shown on the Declaration Plan and/or Approved Plans.

b. Declarant, in favor of itself, its successors and assigns, hereby imposes, creates, reserves, grants and conveys an easement for the purposes of installing, maintaining, repairing, replacing and using sanitary sewer facilities and public water facilities over the areas of the Units designated as shown on the Declaration Plan and/or Approved Plans.

c. Declarant, in favor of itself, its successors and assigns, hereby imposes, creates, reserves, grants and conveys a perpetual easement over the Property for the purpose of completing construction of all improvements shown on the Approved Plans or as required to fulfill any of its obligations (i) under any agreement with the purchaser of a Unit; (ii) under the Development Agreement and/or Financial Security Agreement between Declarant and Whitemarsh Township; (iii) under any agreement with any other municipal or governmental authority or utility provider; and (iv) as required by any governmental authority, including but not limited to Whitemarsh Township or any other municipal authority or utility provider.

7.5. Association Access. The Association and its Executive Board, officers, agents and employees shall have an easement of access to each Unit as may be necessary for the inspection, maintenance, repair or replacement of any of the Common Facilities accessible therefrom or the making of any additions or improvements thereto; to make repairs to the Common Facilities if such repairs are reasonably necessary for public safety or to prevent damage to another Unit or Units or the Common Facilities or for general maintenance purposes; as well as for the purpose of abating any violation of law, orders, rules or regulations of the Association or of any governmental authorities having jurisdiction thereof.

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7.6. Encroachments. If any portion of the Common Facilities hereafter encroaches upon any Unit, or if any Unit hereafter encroaches upon any other Unit or upon any portion of the Common Facilities, a valid easement is granted to the encroaching Unit or Common Facilities for the encroachment and for the maintenance of the same. This easement shall not relieve a Unit Owner of liability in case of the Unit Owner's willful misconduct, nor relieve the Declarant, or any contractor, subcontractor or materialman or any other person of liability for failure to adhere to the plats and plans.

7.7. Easement for Dedication. The Declarant shall have an easement on the Property for the purpose of completing improvements within any portion of the Property, or any adjoining properties owned by Declarant in connection with the dedication of improvements for Longfield Farm. This easement shall expire upon the expiration of the maintenance period following the acceptance of dedication of the last improvements dedicated at Longfield Farm.

7.8. Easements to Whitemarsh Township. Whitemarsh Township shall have a general easement over all undedicated portions of the Property which are not within a Unit for access to the Common Facilities on the Property.

7.9. Easement to [service providers]. [service providers] shall each have a general easement over all undedicated portions of the Property which are not within a Unit for access to and maintenance of the public water and sanitary sewer facilities, as applicable, on the Property, in accordance with Section 7.1 above.

7.10. Easement to Transfer Declarant. A transfer of Declarant rights pursuant to Section 5304 of the Act shall include, whether or not expressly so stated in the instrument evidencing the transfer, an easement granted by Declarant to the transfer declarant in, over, under and through the area which is described in the Transfer of Declarant Rights, for the purpose of constructing improvements and exercising all rights of the transfer declarant.

7.11. List of Recorded Easements. A list of all recorded easements affecting the Property is attached hereto and incorporated herein as Exhibit "D".

7.12. Easements to Run with the Land. The foregoing easements shall run with the land and inure to the benefit of and be binding upon the Association, each Unit Owner, and each mortgagee, lessee, occupant or other person having an interest in any Unit or in the Common Facilities at the time of reference.

ARTICLE VIII
OWNERSHIP OF UNITS AND USE RESTRICTIONS

8.1. Ownership of Unit. Except as otherwise provided herein or in the Bylaws of the Association, the Units may be sold, conveyed, mortgaged, leased or otherwise dealt with in the same manner as like dealings are conducted with respect to real property and interests therein. Every Unit is and for all purposes shall be a separate parcel of real property and the Owner

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thereof shall have the exclusive ownership and possession thereof subject to the covenants, restrictions, easements, rules, regulations, resolution and decisions contained in this Declaration, the Bylaws, or the Rules and Regulations adopted pursuant thereto. Every written instrument dealing with that Unit shall specifically set forth the name by which the Property is identified and that Unit designation identifying the Unit involved.

8.2. Use Restrictions. All real property within the Property shall be held, used and enjoyed under and subject to the following covenants, conditions, easements and restrictions, subject to the exemption of Declarant in Section 8.3 hereof:.

a. TO BE DETERMINED

b. Reasonable Rules and Regulations, not in conflict with the provisions of this Declaration, concerning the use and enjoyment of the Property, may be promulgated from time to time by the Executive Board. Copies of the then current Rules and Regulations and any amendments thereto shall be furnished to all Owners by the Board promptly after the adoption of such Rules and Regulations or any amendments thereto.

8.3. Declarant Exemption. Declarant or its successors and assigns will undertake the work of constructing Homes and developing all of the Units included within the Property. The completion of that work and sale, rental and other disposal of Homes is essential to the establishment and welfare of the Property as a residential community. As used in this Section and its subparagraphs, the words "its successors and assigns" specifically do not include third party purchasers of Units improved with completed Homes. In order that said work may be completed and the Property be completed and established as a fully occupied residential community as rapidly as possible, no Owner nor the Association shall do anything to interfere with, and nothing in this Declaration shall be understood or construed to:

a. Prevent Declarant, its successors or assigns, or their contractors or subcontractors, from doing on any Unit owned by them whatever they determine to be necessary or advisable in connection with completion of said work, including without limitation, the alteration of its construction plans and designs as Declarant deems advisable in the course of development.

b. Prevent Declarant, its successors or assigns, or their representatives, from erecting, constructing and maintaining on any Unit, or portion thereof, owned or controlled by Declarant, or its successors or assigns, or its or their contractors or subcontractors, such structures as may be reasonably necessary for the conduct of its or their business of completing said work and establishing the Property as a residential community and disposing of the same in Units by sale, lease or otherwise.

c. Prevent Declarant, its successors or assigns, or their contractors or subcontractors, from conducting on any Unit, or any portion thereof, owned or controlled by Declarant, or its successors or assigns, their business of developing, subdividing, grading and constructing Homes and other improvements on the Property as a residential community and

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disposing of Units thereon by sale, lease or otherwise.

d. Prevent Declarant, its successors and assigns and/or their contractors or subcontractors, from maintaining such sign or signs on any Unit owned or controlled by any of them as may be necessary, including but not by way of limitation, safety and Unit identification signs in connection with the sale, lease or other marketing of Units and Homes in the Property.

e. Prevent Declarant, at any time prior to acquisition of title to a Unit by an Owner, from granting additional licenses, reservations and rights-of-way to itself, to utility companies, or to others as may from time to time be reasonably necessary to the proper development and disposal of the Property.

8.4. Leasing. Except as expressly provided in this Section, there shall be no restrictions on the leasing of Units. No transient tenants may be accommodated in any Unit, and no lease shall be for less than a whole Unit, nor for an initial term of less than twelve (12) months. Each lease shall be in writing and shall provide that the terms of the lease shall be subject in all respects to the provisions of the Act, this Declaration, the Bylaws and the rules and regulations of the Association, and that any failure by the lessee to comply with the terms of such documents shall be an event of default under the lease. The Association shall be a third party beneficiary of such covenants in any lease and shall have the right to enforce them.

A Unit Owner shall provide the Board with the name of the tenant, a copy of the lease, and such other information as the Board may reasonably require, within ten (10) days after leasing his Unit. In the event the Owner shall fail to pay any charge or Assessment levied by the Board against a leased Unit, and this failure to pay continues for sixty (60) days, the Board shall have the right, after first giving the Owner written notice, sent by certified mail, return receipt requested, that the Board intends to so proceed, to notify the lessee of the Unit in writing of the amount(s) due and within fifteen (15) days after the date of the notice, the lessee shall pay to the Board the amount(s) of all unpaid charges or Assessments. In no event shall the lessee be responsible to the Board for any amount of unpaid charges or Assessments during any one month in excess of one monthly rental installment. In no event shall the delivery of such notice from the Board to the lessee or payment by the lessee of the sums due from the Owner to the Association give the lessee any right to default under the lease or otherwise fail to perform its obligations under the lease unless the specific provisions of the lease shall so provide. The amounts of unpaid charges or Assessments paid to the Board by the lessee after the nonpayment by the Owner shall be credited against and shall offset the next monthly rental installment due to the Owner following the payment by the lessee of the charges or Assessments to the Board.

8.5. Regulation by Whitemarsh Township. All Owners are hereby placed on notice that the erection and maintenance of any structures, and any uses on a Unit, may be subject to regulation by Whitemarsh Township, and Owners shall be required to comply with all such municipal regulations and receive all required municipal permits prior to commencement of such use or construction.

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ARTICLE IX
MAINTENANCE, REPAIRS AND ALTERATIONS

9.1. General Maintenance Responsibilities. All maintenance, repair and replacement of a Unit, and all improvements within the Unit, shall be the responsibility of the Unit Owner. The Common Facilities shall be maintained, repaired and replaced by the Association. All expenses associated with the maintenance, repair and replacement of a Limited Common Facility shall be borne by the Owner(s) of the Unit(s) to which the Limited Common Facilities are allocated.

9.2. Association's Option to Assume Certain Maintenance Responsibilities. Notwithstanding Section 9.1 above, the Association shall have the right to assume all or a portion of the maintenance responsibilities of the Units, in which event, the maintenance expenses attributable to the Units shall be assessed uniformly and equitably against the Units as Limited Common Expenses. Until such time as the Association may, utilizing proper procedures, assume any such responsibilities, all Unit Owners shall remain fully responsible for the maintenance of all portions of their Units which are not otherwise the responsibility of the Association.

9.3. Alterations of Units, Common Facilities and Controlled Facilities. A Unit Owner:

a. May make any improvements or alterations to the Unit that do not impair the structural integrity or mechanical systems or lessen the support of any portion of the Community, subject to the restrictions and covenants contained in this Declaration or rules and regulations adopted in accordance with this Declaration.

b. May not change the appearance of or make any alterations to the Common Facilities.

9.4. Maintenance of and Repairs to Units; Enforcement by Association.

a. All work and repairs within the Unit shall be the responsibility of the Owner, and the Owner shall keep the portion of the Unit visible from outside the Unit (the "Unit Exterior") in a reasonable, neat and well-appearing condition. The Owner shall be responsible, without limitation, for all replacement, repairs to and maintenance of all portions of the Unit which are not the responsibility of the Association, including but not limited to windows, shutters, gutters, downspouts, porches, decks, patios, lighting, and similar items.

b. The Owner shall be responsible for all work, repairs and replacements to the Unit, including all improvements within the Unit, not expressly the responsibility of the Association under this Declaration. The Owner shall be required to keep the Unit in a reasonable, neat and well-appearing condition.

c. The standards of maintenance and the scheduling of work for which the Association is responsible shall be in the sole discretion of the Association, based upon recommendations of the management company, if any.

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d. In the event that an Owner does not comply with the requirements of this Article IX, the Association shall give the Owner written notice specifying the work required to the Unit, and giving the Owner a thirty day period to perform such work. In the event the work is not performed by the Owner as required, the Association shall have the right, without further notice or permission, to enter the Unit and to perform the work, and to charge the cost of such work to the Owner as an assessment against the Unit.

9.5. Alterations.

a. The Owner of Unit shall maintain the appearance of the exterior of the Home as originally constructed, including but not limited to keeping the original exterior color scheme and materials.

b. Prior to making any alterations to the exterior of the Home or on a Unit, the Owner shall submit a written application to the Executive Board, together with plans and specifications, showing the nature, kind, shape, height, materials, finish, colors and location of the proposed alteration, together with proof of compliance with all applicable codes, laws and ordinances, and shall receive written approval of the proposed alteration from the Executive Board. The application and plans shall be reviewed by the Executive Board, or a committee of the Association appointed by the Executive Board for this purpose. The Executive Board or committee shall render a written decision on the application and communicate it to the applicant. The Executive Board or committee shall be required to deny the application if the proposed alterations would result in a violation of Section 9.5(a) of this Declaration. Nothing herein shall be construed to relieve the Owner of any obligation to obtain all required permits and approvals from Whitemarsh Township and any other applicable regulatory or governmental body or agency prior to making the said alterations. The Executive Board may promulgate rules relating to the review and approval procedures, and relating to the alterations permitted and prohibited within the Community, so long as the rules do not conflict with the provisions of the Declaration.

ARTICLE X
AMENDMENT TO DECLARATION

10.1. Amendment Generally. This Declaration may be amended only by a vote of at least 67% of the Association, except when some greater percentage is required pursuant to this Declaration.

10.2. Before any Conveyance. Prior to the transfer of any Unit by the Declarant to a Unit Owner, the Declarant may amend this Declaration, the Declaration Plan, and the Bylaws in any legal fashion as the Declarant may deem appropriate. After such transfer, the terms of the following subparagraphs shall apply; provided, however, that any of the provisions of this Declaration setting forth other conditions or amendments shall take precedence.

10.3. Notice. Notice of the subject matter of a proposed amendment shall be included in the notice of any meeting of the Executive Board in which a proposed amendment is

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considered, and shall be served upon all Unit Owners in the manner hereinafter provided for service of notice.

10.4. Resolution. An amendment may be prepared by either the Executive Board or by Unit Owners holding an aggregate percentage interest of at least 20% in the Common Facilities. No resolution of the Executive Board adopting a proposed amendment shall be effective unless it has the affirmative vote of at least 67% of the votes in the Association as allocated or any larger majority as this Declaration may be amended to specify or as provided for in the Act.

10.5. Agreement. In the alternative, an amendment may be made by an agreement signed and acknowledged by at least 67% of Association in the manner required for the execution of a deed. Such amendment shall be effective when recorded.

10.6. Requirement for Unanimous Consent or Declarant Joinder. No amendment may create or increase special declarant rights, alter the terms or provisions governing the completion or conveyance or lease of Common Facilities, increase the number or Units or change the boundaries of any Unit, the Common Expense Liability or voting strength in the Association allocated to a Unit, without unanimous consent of all Unit Owners affected. Additionally, no provisions of the Declaration reserving special Declarant rights shall be amended without the express written joinder of the Declarant in such amendment.

10.7. Execution and Recording. A certificate shall be attached to or included with a copy of each amendment, certifying that the amendment was duly adopted, which certificate shall be executed and acknowledged by any officer of the Association designated for that purpose or, in the absence of designation, by the President of the Association. Every amendment to the Declaration must be recorded in the Office for the Recording of Deeds in and for Montgomery County and shall be indexed in the name of the Community in both the grantor and grantee index. An amendment is effective only upon recordation.

10.8. Corrective Amendment. If an amendment to this Declaration is necessary in the judgment of the Executive Board to cure any ambiguity or to correct or supplement any provision of the Declaration that is defective, missing or inconsistent with any other provision thereof or with the Act, or if an amendment is necessary in the judgment of the Executive Board to conform to the requirements of any agency or entity that has established national or regional standards with respect to loans secured by mortgages or deeds of trust on units in planned communities (such as the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation), the Executive Board may, at any time and from time to time, at its discretion, effect an appropriate corrective amendment without the approval of the Unit Owners or the holders of any liens on all or part of the Property upon receipt by the Executive Board of an opinion from independent legal counsel to the effect that the proposed amendment is permitted by the terms of this Section 10.8 and the Act. Each amendment shall be effective upon its recording pursuant to Section 10.7 above.

10.9. Rights of Declarant. No change, modification or amendment which affects the

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rights, privileges or obligations of the Declarant shall be effective without the prior written consent of the Declarant.

ARTICLE XI
TERMINATION AND CONDEMNATION

11.1. Termination. The termination provisions of Section 5220 of the Act shall apply to any termination of the Community, except that in the event of a conflict, the provisions of this Article XI shall control. The Community may be terminated at any time by agreement, in writing, executed or ratified by all of the Unit Owners of Units, in the same manner as a deed, as of the day prior to the date the agreement is recorded. Such termination agreement must be approved by Whitemarsh Township prior to recording, and such approval by Whitemarsh Township shall be attached to and made a part of the recorded termination agreement. The termination agreement shall be null and void and of no force and effect in the absence of such approval by Whitemarsh Township. The termination agreement must specify the date it was first executed or ratified by a Unit Owner. The termination agreement shall become void unless it is recorded on or before the earlier of the expiration of one year from the date it was first executed and ratified by a Unit Owner, or such date as shall be specified in the termination agreement. If, pursuant to a termination agreement, any real estate in the Community is to be sold following termination, the termination agreement shall set forth the terms of the sale. Said termination agreement and all ratifications thereof shall be indexed in the name of the Community in both the grantor index and the grantee index. A termination agreement shall be effective only upon recordation. Notwithstanding the approval of the Unit Owners as hereinabove set forth favoring the termination, termination shall not be permitted unless the intent and purpose of the Association regarding the maintenance and preservation of the Common Facilities can be carried on and fulfilled by a successor entity or Whitemarsh Township gives its approval in writing as hereinabove provided.

11.2. Eminent Domain. Whenever any or all parts of the Common Facilities shall be taken, injured, or destroyed by eminent domain, each Unit Owner shall be entitled to notice thereof by the Executive Board or its designee which shall have the sole and exclusive right to participate in the proceedings incident thereto on behalf of all Unit Owners pursuant to an irrevocable power of attorney which each Unit Owner shall be deemed to have granted to the Executive Board and its designees by the Unit Owner's acceptance of a deed, or conveyance of his Unit. In any proceedings for the determination of damages, such damages shall be determined for such taking, injury or destruction as a whole and not for each Unit Owner's interest herein. After such determination, the portion of the award attributable to the interest of the Association in the Common Facilities taken shall be paid to the Association. The Association shall divide any portion of the award not used for any restoration or repair of the remaining Common Facilities among the Unit Owners in proportion to the Common Expense Liability attributable to the Units before the taking, but any portion of the award attributable to the acquisition of a Limited Common Facility shall be equally divided among the owners of the Units to which that Limited Common Facility was allocated at the time of acquisition.

11.3. Status if Real Estate not Sold. If the real estate constituting the Community is not to

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be sold following termination, title to the Common Facilities, upon termination, vests in the Unit Owners as tenants in common in proportion to their respective interests as defined in Section 5220(f) of the Act, and liens on the Units shift accordingly. While the tenancy in common exists, each Unit Owner and the Owner's successors in interest have an exclusive right to occupancy to the portion of the real estate that formerly constituted the Owner's Unit.

11.4. Community Association. The Executive Board, or its designee, is designated to represent Unit Owners in proceedings, negotiations and agreements arising out of condemnation, destruction or liquidation of the Common Facilities, pursuant to an irrevocable power of attorney which each Unit Owner shall be deemed to have granted to the Executive Board and its designees by the Unit Owner's acceptance of a deed, or conveyance of his Unit. Each Unit Owner shall be deemed to have granted an irrevocable power of attorney to the Executive Board and its designees by the acceptance of a Deed or conveyance of his Unit, of the purpose of appointing an insurance trustee to act on behalf of the Unit Owners to receive insurance proceeds if the Association enters into an insurance trust agreement.

Proceeds from the termination of the Community or destruction or condemnation of the Common Facilities shall be payable to the Association.

ARTICLE XII
RIGHTS OF PERMITTED MORTGAGEES

12.1. Reports and Notices. Upon the specific written request of a Permitted Mortgagee, or its servicer, to the Executive Board, the Permitted Mortgagee shall receive some or all of the following as designated in the request:

a. Copies of budgets, notices of assessment, or any other notices or statements provided under this Declaration by the Executive Board to the Owner of the Unit covered by the permitted mortgage;

b. Any audited or unaudited financial statements of the Association which are prepared for the Association and distributed to the Unit Owners;

c. Copies of notices of meetings of the Unit Owners and the right to be represented at such meetings by a designated representative;

d. Notice of the decision of the Unit Owners to make any material amendment to this Declaration;

e. Notice of substantial damage to any part of the Common Facilities (the repair of which would cost in excess of $10,000.00);

f. Notice of the commencement of any condemnation or eminent domain proceeding with respect to any part of the Property;

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g. Notice of any default by the Owner of a Unit which is subject to the permitted mortgage, where such default is not cured by the Unit Owner within thirty days after the giving of notice by the Association to the Unit Owner of the existence of the default;

h. The right to examine the books and records of the Executive Board at any reasonable time upon twenty-four hours prior notice; or

i. Notice of any decision by the Executive Board to change the type of management of the Community.

The request of a Permitted Mortgagee or its servicer shall specify which of the above items it desires to receive and shall indicate the address to which any notices or documents shall be sent by the Executive Board. The Executive Board need not inquire into the validity of any requests made by a Permitted Mortgagee hereunder. Failure to comply with the requirements set forth above shall in no way invalidate otherwise proper actions of the Association and the Executive Board.

12.2. Taxes, Assessments and Charges. All taxes, assessments and charges which may become liens prior to the first mortgage under the laws of the Commonwealth of Pennsylvania shall relate only to the individual Units and not to the Community as a whole.

12.3. Unit Owners' Priority. No Unit Owner or any other party shall have any priority over any rights of first mortgagees of Units pursuant to their mortgages in the event of a distribution to Unit Owners of insurance proceeds of condemnation awards for losses to or a taking of Units and/or Common Facilities.

ARTICLE XIII
REAL ESTATE TAXES

13.1. Real Estate Taxes. It is understood that real estate taxes are to be separately assessed and taxed to each Unit Owner for his Unit, as provided in the Act. For the year in which this Declaration is first recorded, real estate taxes shall be apportioned between Declarant and each Unit Owner on the basis of the fiscal year of the various taxing authorities. In the event that real estate taxes for any year are not separately assessed against each Unit Owner, but rather are assessed against the Property as a whole, then each Unit Owner shall pay his proportionate share thereof in accordance with his respective percentage interest in the Common Facilities, and, in said event, such taxes shall be a Common Expense. The Executive Board shall have authority to advance Association funds in payment of all or a portion of such taxes pending receipt from the respective Unit Owners of their proportionate share thereof.

13.2. Real Estate Taxes on Common Facilities. Pursuant to Section 5105(b) of the Act, no separate tax shall be imposed against the Common Facilities. The value of a Unit includes that Unit's appurtenant interest in the Common Facilities.

ARTICLE XIV

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MORTGAGES

14.1. Permitted Mortgages. A Unit Owner other than the Declarant may not voluntarily encumber or subject his or its Unit to any lien, other than the lien of a Permitted Mortgage. All such Permitted Mortgages and the obligation secured thereby shall be deemed to provide, generally, that the Permitted Mortgage and the rights and obligations of the parties thereto shall be subject to the applicable terms and conditions of the Act, this Declaration and the Bylaws, and shall be deemed to provide specifically but without limitation, that the Permitted Mortgagee shall have no right (a) to participate in the adjustment of losses with insurers or in the decision as to whether or not or how to repair or restore damage to or destruction of the Common Facilities, (b) to receive or apply the proceeds of insurance to the reduction of mortgage debt or otherwise, except in the event and to the extent of a distribution hereof to Unit Owners upon the happening of either a termination or of insurance proceeds being received in excess of the cost to repair or restoration to the Common Facilities, or (c) to accelerate the mortgage debt or to have any other remedies by virtue of waste or alleged water or other conditions accruing anywhere on the property other than within the affected Unit, and the obligation secured shall be repayable, without penalty, upon the happening of any termination as aforesaid. No Unit Owner shall deliver any mortgage, or any obligation to be secured thereby, unless it has first notified the Executive Board of the name and address of the proposed mortgagee and of the amount of the debt proposed to be so secured. When such a Permitted Mortgage is delivered to the Permitted Mortgagee, the Unit Owners shall simultaneously provide executed or conformed copies to the Executive Board. Upon receipt of such copy of a Permitted Mortgage, the Secretary of the Executive Board shall instruct the insurer of the Property to add the name of the Permitted Mortgagee to the mortgagee loss payable provision of the hazard insurance policy covering the Property and to provide such Permitted Mortgagee with a certificate of insurance showing that the Permitted Mortgagees name has been so added. The Secretary shall maintain a register of such Permitted Mortgages, showing the names and addresses of the Permitted Mortgages and the amounts secured thereby.

14.2. Notice to Mortgagees. The Association shall give Permitted Mortgagees the right, upon written request, to timely written notice of any sixty (60) day delinquency in the payment of an assessment, the lapse, cancellation or material modification of any insurance policy or fidelity bond, or any proposed action requiring the consent of a specified percentage of eligible mortgage holders.

ARTICLE XV
BUDGETS, COMMON EXPENSES: ASSESSMENTS AND ENFORCEMENT

15.1. Budget. The method of preparation of the budget, Common Expenses, assessments and enforcement is set forth in Article V of the Bylaws of the Longfield Farm Association. Anything to the contrary contained therein notwithstanding, the following conditions apply to any budget, Common Expense or assessment adopted by the Executive Board.

15.2. Limitation on Expenditures. All expenses, charges and costs of the maintenance,

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repair or replacement of the Common Facilities, insurance, and any other expenses, charges or costs which the Executive Board may incur or expend pursuant hereto, shall be approved by the Executive Board, and a written memorandum thereof prepared and signed by the Treasurer. There shall be no structural alterations, capital additions to, or capital improvements on, the Common Facilities (other than for purposes of repairing, replacing and restoring portions of the Common Facilities) requiring an expenditure in excess of $20,000.00 without the prior approval of the Unit Owners entitled to cast 66-2/3% of the votes of all Unit Owners.

15.3. Reserves.

a. Reserve for Replacement and Contingencies. Each annual budget for monthly assessments of Common Expenses shall include an amount reasonably considered by the Executive Board to be sufficient as a reserve for replacements and contingencies as set forth in the Bylaws.

b. Reserve Capital Contribution. The Declarant shall collect from each of its grantees who are purchasing a Unit for residential use, at time of settlement, a non-refundable capital improvement fee of [TO BE DETERMINED], and shall remit such amount to the Association. After the initial conveyance from Declarant to an Owner, at each subsequent settlement on a Unit, each Owner acquiring a Unit shall pay to the Association a non-refundable capital improvement fee of a sum equal to up to twelve (12) months' assessment ("Resale Capital Fee"), as determined annually by the Executive Board by Resolution, except that those conveyances identified under Section 5302(12)(iii) and (iv) of the Act shall be exempt from this requirement. Such Resale Capital Fees shall be deposited by the Association into a separate capital account, and shall only be used for the purposes permitted under Section 5302(12) of the Act. The Resale Capital Fees shall not be used to fund or offset the reserve for replacements and contingencies required to be included in the Budget as set forth above. Extraordinary expenditures for new capital improvements or replacement of existing Common Facilities not originally included in the annual budget which may become necessary during the year may be charged first against the Resale Capital Fees, as the Executive Board shall determine. In addition, the Executive Board shall have the right to segregate all or any portion of the Resale Capital Fees for any specific capital improvement, replacement or contingency permitted under Section 5302(12) of the Act, upon such conditions as the Executive Board deems appropriate. Declarant shall not use any portion of the initial capital improvement fee collected by Declarant to defray expenses, reserve contributions or construction costs, or to make up a budget deficit.

c. Operating Reserve. Any unused funds remaining in the Operating Fund at the end of the Association's fiscal year shall be placed in an Operating Reserve for future replacements and contingencies.

15.4. Lien. The Association has a lien on a Unit for any assessment levied against that Unit or charges (including fines, fees, charges, late charges, and interest) imposed against its Unit Owner from the time the assessment or charge becomes due. The costs incurred by the Association in connection with the collection of any sums due to the Association or the enforcement of provisions of the Declaration, including attorney's fees, are enforceable as

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assessments. The Association's lien may be foreclosed in a like manner as a mortgage on real estate. Any such lien on a Unit shall be subordinated to a first mortgage recorded before the assessment or fine became due.

15.5. Confession of Judgment. IN ORDER TO EXPEDITE THE EXECUTIVE BOARD'S COLLECTION OF ANY DELINQUENT ASSESSMENT, EACH UNIT OWNER (BY THE ACCEPTANCE OF THE DEED TO HIS UNIT) SHALL BE DEEMED TO HAVE APPOINTED ANY ONE OR MORE EXECUTIVE BOARD MEMBERS AND THE ASSOCIATION THE ATTORNEY-IN-FACT FOR SUCH UNIT OWNER TO CONFESS A JUDGMENT AGAINST SUCH UNIT OWNER IN ANY COURT OF COMPETENT JURISDICTION IN PENNSYLVANIA, FOR ANY SUCH UNPAID ASSESSMENTS, WHICH APPOINTMENT (BEING FOR SECURITY) SHALL BE IRREVOCABLE; AND FOR SO DOING A COPY OF THIS ARTICLE XV AND SAID DEED, BOTH VERIFIED BY AFFIDAVIT, SHALL BE A SUFFICIENT WARRANT. THE AUTHORITY GRANTED HEREIN TO CONFESS JUDGMENT SHALL NOT BE EXHAUSTED BY AN EXERCISE THEREOF BUT SHALL CONTINUE FROM TIME TO TIME AND AT ALL TIMES UNTIL THE DECLARATION SHALL BE TERMINATED.

ARTICLE XVI
INSURANCE

16.1. Generally. The Executive Board shall acquire and pay for the following insurance:

a. Property insurance on the Common Facilities insuring against all common risks of direct physical loss. The total amount of insurance shall be equal to the replacement value of the insured property, without deduction. Such insurance policy(ies) may, at the option of the Board, contain a deductible provision in an amount determined by the Board.

b. Comprehensive general liability insurance, including medical payments insurance, in an amount determined by the Executive Board but not less than any amount specified in the Declaration covering all occurrences commonly insured against for death, bodily injury, and property damage, arising out of or in connection with the use, ownership or maintenance of the Common Facilities.

c. Such other insurance as the Executive Board deems advisable in the operation, and for the protection, of the Common Facilities.

16.2. Other Provisions.

a. Each Unit Owner and the Executive Board hereby waives and releases any and all claims which he or it may have against any other Unit Owner, the Association, the Executive Board members thereof, the Declarant and the respective employees and agents, for damage to the Common Facilities, caused by fire or other casualty or any act or omission of any such property to the extent that such damage is covered by fire or other form of hazard insurance.

b. If the act or omission of a Unit Owner, or of a member of his family, a

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household pet, guest, occupant or visitor of such Unit Owner, shall cause damage to the Common Facilities, or maintenance, repairs or replacement shall be required which would have otherwise been a Common Expense, then such Unit Owner shall pay for such damage and such maintenance, repairs and replacements, as may be determined by the Executive Board, to the extent such payment is not waived or released under the provisions of subparagraph (a) above.

c. The release or waiver referred to in subparagraph (a) and (b) hereof shall be valid only if such release or waiver does not affect the right of the insured under the applicable insurance policy to recover thereunder. The Unit Owners and the Executive Board, with regard to the insurance carried by each of them, shall use their best efforts to see that their insurance carriers agree that such release or waiver does not affect their rights to recover.

d. If the Executive Board fails within sixty (60) days of an insured loss to initiate a claim for damages recoverable under the property insurance policy(ies) obtained pursuant to the Act, the holder of any permitted mortgage may initiate such a claim on behalf of the Board.

e. The insurance policy or policies obtained by the Association shall conform to the following requirements:

i. Each unit owner is an insured person under the policy with respect to liability arising out of his membership in the Association.

ii. The insurer waives its right to subrogation under the policy against any Unit Owner or member of the Unit Owner's household.

iii. No act or omission by any Unit Owner, unless acting within the scope of authority on behalf of the Association, will void the policy or be a condition to recovery under the policy.

iv. If at the time of a loss under the policy there is other insurance in the name of a Unit Owner covering the same risk covered by the policy, the Association's policy is primary insurance not contributing with the other insurance.

f. Comprehensive public liability and property damage insurance shall be such limits as the Board shall deem desirable provided that such limits shall not be less than One Million Dollars per occurrence, for personal injury and/or property damage, insuring the Association, the Board members, the managing agent, if any, and their respective agents and employees, and the Unit Owners from any liability to the public or to the Unit Owners, their tenants or invitees, relating in any way to the ownership and/or use of the Property or any part thereof.

g. The Board may obtain such other forms of insurance as the Board shall elect, including Board members and officers' liability insurance and such workmen's compensation insurance as may be necessary to comply with applicable laws.

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h. The Board shall obtain a fidelity bond or bonds or insurance to protect against dishonest acts on the part of the Board members, officers, agents, employees, volunteers and all others, who handle, or are responsible for handling, funds of the Association. Such bond(s) or insurance shall name the Association as an obligee or insured and shall be in the amount equal to 150% of the then current Common Expense budget or such higher amount as the Board deems appropriate. Such bond or bonds or insurance shall contain a waiver of defense based upon the exclusion of persons who serve without compensation from the definition of "employee" or other appropriate provisions to assure coverage of such persons. In the alternative, bonds or insurance meeting the aforesaid requirements may be provided by the Manager.

i. Except as otherwise provided in this Declaration, premiums for all insurance obtained or maintained by the Board, fees and expenses of the insurance trustee, if any, and the cost of any appraisal which the Board deems advisable in connection with any insurance, shall be Common Expenses.

j. The Association shall use its best efforts to secure policies providing that the policies cannot be canceled, invalidated or suspended on account of the conduct of any one or more individual Unit Owners or any officer or employee of the Board or managing agent, if any, without a prior demand in writing that the Board or managing agent, if any, as the case may be, cure the defect and without a reasonable period of time thereafter in which to cure the same.

k. Insurance coverage on each Unit, including without limitation the Home and all improvements within the Unit, and including all portions of the Unit designated as Controlled Facilities, and insurance for his personal liability, shall be the responsibility of each such Unit Owner.

l. If there is a shortfall between all insurance proceeds paid and the estimated cost of repair and restoration to the Common Facilities, the cost of such shortfall shall be borne by the Association, and shall be included as a Common Expense to the Association.

ARTICLE XVII
INDEMNIFICATION

17.1. Generally. The Association shall indemnify any person who was or is a party, or is threatened to be made a party to a threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the Board or Association) by reason of the fact that he is or was a Board member, committee member or officer of the Association, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by him in connection with such action, suit or proceeding if he acted in good faith and in a manner he reasonably believed to be in, or not opposed to, the best interests of the Board or committee and the Association, and, with respect to any criminal action or proceeding, had no reasonable cause to believe this conduct was unlawful. The termination of any action, suit or proceeding by

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judgment, order, settlement, conviction, or upon a plea of nolo contendere or its equivalent, shall not, of itself, create a presumption that the person did not act in good faith and in a manner which he reasonably believed to be in, or not opposed to, the best interest of the Board or committee of the Association, and, with respect to any criminal action or proceeding had reasonable cause to believe that his conduct was unlawful.

The Association may indemnify any person who was or is a party, or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the Board to procure a judgment in its favor by reason of the fact that he is or was a member of the Board, a member of a committee, or an officer of the Association, against expenses (including attorneys' fees) actually and reasonably incurred by him in connection with the defense or settlement of such action or suit, if he acted in good faith and in a manner he reasonably believed to be in, or not opposed to, the best interests of the Board or the Association and except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable for negligence or misconduct in the performance of his duty to the Board, committee, or the Association.

To the extent that a Board member, committee member or officer has been successful, on the merits or otherwise, in the defense of any action, suit or proceeding referred to in the foregoing two paragraphs, or in defense of any claim, issue or matter therein, he shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by him in connection therewith.

Any indemnification under the first two paragraphs of this Article shall be made by the Board on behalf of the Association only as authorized in the specific case, upon the determination that indemnification of the Board member, committee member or officer is proper in the circumstances because he meets the applicable standard of conduct set forth in the first two paragraphs of this Article. Such determination shall be made (1) by the Board by a majority vote of a quorum consisting of Board members who are not parties to such action, suit or proceeding, or (2) if such a quorum is not obtainable, or, even if obtainable, if a quorum of disinterested Board members so directs, by independent legal counsel in a written opinion, or (3) by a vote of the Association.

Expenses incurred in defending a civil or criminal action, suit or proceeding may be paid by the Board on behalf of the Association in advance of the final disposition of such action, suit or proceeding, as authorized by the Board in the specific case, upon receipt of an undertaking buyer on behalf of the Board member or officer to repay such an amount, unless it shall ultimately be determined that he is entitled to be indemnified by the Association as authorized in this Article.

The sums necessary to discharge the obligations of the Association under this Article shall be Common Expenses.

The indemnification provided by this Article shall not be deemed exclusive of any other rights to which those seeking indemnification may be entitled under any statute,

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agreement, vote of members of the Association or disinterested members of the Board, or otherwise, both as to action in his official capacity and to act in other capacities while holding such office, and shall continue as to a person who has ceased to be a Board member or an officer.

ARTICLE XVIII
DECLARANT'S RIGHTS

18.1. Control.

a. Until the 60th day after conveyance of 25% of the Units to Unit Owners other than Declarant, Declarant shall have the right to appoint and remove any and all officers and members of the Executive Board. Declarant may not unilaterally remove any members of the Executive Board elected by Unit Owners other than Declarant.

b. Not later than 60 days after conveyance of 25% of the Units to Unit Owners other than Declarant, at least one member and not less than 25% of the members of the Executive Board shall be elected by Unit Owners other than Declarant.

c. Not later than 60 days after the conveyance of 50% of the Units to Unit Owners other than Declarant, not less than 33% of the members of the Executive Board shall be elected by Unit Owners other than Declarant.

d. Not later than the earlier of five (5) years after the date of the first conveyance of a Unit to a Unit Owner other than the Declarant, or sixty (60) days after conveyance of seventy-five percent (75%) of the Units to Unit Owners other than Declarant, or two (2) years after the Declarant, including any successors and assigns of Declarant, have ceased to offer Units for sale in the ordinary course of business, or two (2) years after any development right to add new units was last exercised, whichever shall first occur, all members of the Executive Board shall resign, and the Unit Owners (including Declarant to the extent of Units owned by Declarant) shall elect a new Executive Board, all members of which must be Unit Owners. The Executive Board shall elect officers. The persons elected shall take office upon election.

ARTICLE XIX
COMMON FACILITIES

19.1. Designation of Common Facilities. Declarant does hereby designate as Common Facilities those portions of the Property, including the improvements, defined as Common Facilities in Article II, Section 2.1 hereof. The real estate comprising the Common Facilities is more particularly described in Exhibit "C" attached hereto and made a part hereof.

19.2. Time for Completion of Common Facilities. The Declarant is required to complete the Common Facilities in accordance with the Approved Plans, including the improvements which are a part thereof, not later than the date of conveyance or lease by the Declarant of the last Unit the Declarant reserves the right to include in the Community.

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19.3. Assurance of Completion of Common Facilities. The Declarant hereby guarantees the completion of the Common Facilities. No third-party guarantee, bond, escrow, letter of credit or other mechanism shall be provided to the benefit of the Association by the Declarant to secure such completion.

19.4. Responsibilities for Common Facilities prior to Completion. Until the Common Facilities are substantially completed, the Declarant is solely responsible for any real estate taxes assessed against or allocable to the Common Facilities, and for all other expenses in connection with the Common Facilities or any part thereof. Following substantial completion of the Common Facilities, the Association shall be responsible for all expenses in connection with the portion of portions of the Common Facilities which have been substantially completed.

19.5. Definition of Completion of Common Facilities. Any portion of the Community shall be deemed to be completed upon the recording of a certification of completion executed by an independent registered surveyor, architect or professional engineer stating that the portion of the Community, improvement or facility is substantially completed in accordance with the descriptions set forth in the Declaration and the plats and plans, so as to permit the use of such portion of the Community, improvement or facility for its intended use. By way of example, roads shall be deemed substantially completed upon construction of the binder course.

19.6. Conveyance to Association; Ownership prior to Conveyance. The Declarant shall convey the Common Facilities to the Association not later than the date of conveyance or lease by the Declarant of the last Unit in the Community to an Owner other than a transfer or successor declarant. No conveyance of the Common Facilities, or any portion thereof, shall occur until the Common Facilities (or that portion of the Common Facilities being conveyed) have been completed as defined in Section 19.5 hereof, unless a third party guarantee or other mechanism assuring completion as provided in the Act has been provided by Declarant, as well as Declarant's own guarantee of completion for the benefit of the Association, and a statement that the third-party guarantee and the Declarant's guarantee shall not expire until completion of the Common Facilities. The obligation to convey the Common Facilities to the Association shall be binding upon the Declarant and any successor in interest of the Declarant, whether or not such successor succeeds to any special declarant rights. The Declarant will own the Common Facilities, including the improvements which are part of the Common Facilities, prior to conveyance to the Association.

19.7. Procedure for Conveyance to Association; Title. The Declarant shall convey title to the Common Facilities to the Association by special warranty deed, including all fixtures and facilities located thereon or therein. The Declarant shall convey title to the Association free and clear of all mortgages, liens, encumbrances and title objections except (a) title objections contained in the Owner's title insurance policy issued to Declarant when it acquired title to the Property; (b) easements of record at the time of conveyance and utility easements granted or to be granted for drainage, sewer, water, gas, electricity, telephone and any other necessary utilities, and if such utilities are not installed or easements therefor are not granted or reserved prior to the conveyance of the Common Facilities, such easements shall be granted later by the

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Association at the request of Declarant; (c) this Declaration; (d) the Approved Plans; (e) restrictions required to be imposed under the terms of approval of the Approved Plans; (f) Whitemarsh Township Zoning Ordinance and other applicable governmental statutes, ordinances, rules and regulations; and (g) current real estate taxes, if any, which shall be pro-rated between Declarant and the Association. Subject to Section 19.6 of this Declaration, the conveyance shall occur at Declarant's sole discretion, and approval of the conveyance and/or acceptance of the deed for the Common Facilities by the Association or any Owner shall not be a condition or requirement of such conveyance.

19.8. Consideration. The Common Facilities shall be conveyed by Declarant to the Association for no consideration.

19.9. Effect of Conveyance. Upon conveyance of the Common Facilities to the Association, the Association shall be solely responsible for all management, maintenance, upkeep, repairs and restoration of the Common Facilities, as well as all costs and expenses associated therewith. The costs and expenses of such management, maintenance, etc. will be part of the budget of the Association and will be assessed against all Owners as part of the General Common Assessment in accordance with the Owner's proportionate Common Expense Liability.

ARTICLE XX
NOTICES

20.1. Notices. All notices required to be served upon Unit Owners pursuant to the Act, this Declaration or the Bylaws shall be sufficient if delivered to the Unit or mailed to the Unit Owner at the Unit Mailing address by regular mail, postage prepaid.

ARTICLE XXI
SPECIAL DECLARANT RIGHTS

21.1. Provisions pertaining to Declarant. Notwithstanding any other provisions contained herein or in the Bylaws, for so long as the Declarant or a transfer declarant or successor declarant continues to own any of the Units, the following provisions shall be deemed to be in full force and effect, none of which shall be construed so as to relieve the Declarant of any obligations of a Unit Owner to pay assessments as to each Unit owned by Declarant in accordance with the provisions contained herein or in the Bylaws.

a. The Declarant shall have the right at any time to sell, transfer, or to lease any Units which the Declarant continues to own after this Declaration has been recorded, without regard to any restrictions relating to the sale, transfer, lease, or form of lease contained herein or in the Bylaws, and without the consent or approval of the Executive Board or any other Unit Owner required.

b. The Declarant does not make, and specifically disclaims any intent to have made, any warranty or representation in connection with any Unit, the Common Facilities, the

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Property or any Community Document except as specifically set forth herein or in any agreement of sale for a Unit, and no person shall rely upon any warranty or representation not so specifically made therein.

c. No amendment may be made to the Community Documents without the written consent of the Declarant so long as the Declarant retains the ownership of any Units.

d. The Declarant shall have the right to transact on the Property any business necessary to consummate the sale or leasing of Units in the Community. The Declarant shall have the right to carry on any activities it deems appropriate in the sale and marketing of Units in the Community. The Declarant shall have the right to invite the general public to the Community and to permit parking on the roadway in the Community during such marketing and sales activities.

e. The Declarant shall have the right to locate, relocate and maintain offices and models, including design centers, in the Declarant's Unit or Units, used in connection with the management of or sale or rental of Units owned by the Declarant in the Community. The Declarant shall have the right to locate, relocate and maintain landscaping, fencing, on-site lighting, and other improvements in connection with the offices and models.

f. The Declarant shall have the right to maintain signs within the Declarant's Units, and on the Common Facilities, advertising the sale or lease of Units in the Community owned by the Declarant.

g. The Declarant shall have the right to locate, relocate and maintain a construction compound including but not limited to the storage of equipment and materials, and a construction trailer in the Declarant's Unit or Units, and parking for workers, used in connection with the construction of Homes within Units in the Community and other improvements within the Property.

h. With respect to all Units in the Community which have not been sold to Unit Owners other than Declarant, but for which a Certificate of Occupancy has been issued for use as a residential dwelling unit, the Declarant shall have the same rights and obligations as Unit Owners.

i. Declarant shall have the right to alter or amend the Approved Plans, upon the approval of the Whitemarsh Township Board of Supervisors.

21.2. Successors to Declarant. For purposes of this Article XXI, the term "Declarant" includes each successor of Declarant except the purchasers of individual Units for residential use, and each person to whom Declarant transfers any or all its special declarant rights.

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ARTICLE XXII
GENERAL PROVISIONS

22.1. Severability. If any provisions of this Declaration are determined to be invalid or unenforceable by a court of proper jurisdiction, that determination shall not affect the validity or affect the main provisions hereof or of the Bylaws, all of which shall continue in effect as if such invalid provisions had not been included herein. The provisions determined to be invalid shall be deemed to be amended to an interpretation which is valid and as close as possible to the original intent hereof.

22.2. Dedication of Rights-of-Way and Utilities. The rights-of-way of Butler Pike and Skippack Pike, and the facilities and easements of utilities within the Community, including but not limited to public water and sanitary sewer, are not part of the Common Facilities, except in the event the same are designated as part of the Common Facilities by the Declarant if the appropriate governmental entities fail or refuse to accept dedication of all or any part of the same. Declarant reserves the right to dedicate or convey the right-of-way, the water and sanitary sewer facilities and easements, and utilities and utility easements, including any and all improvements located therein, to Whitemarsh Township, or any other appropriate providing utility or service company or governmental agency or authority. Declarant shall have the right to dedicate said facilities and easements as aforesaid without the consent or approval of the Association, the Executive Board, any Owner, or the holder of any mortgage for any Unit.

22.3. Enforcement. Except as set forth otherwise elsewhere in this Declaration, any Unit Owner, the Declarant, and the Community Association, shall have the right to enforce the provisions of this Declaration, the Bylaws and/or the rules and regulations of the Association by any proceeding at law or in equity, against any person or persons violating or attempting to violate any such provisions, and/or to recover damages. The failure by any Unit Owner, the Declarant or by the Association to enforce any provision of the Declaration, Bylaws or rules shall in no event be deemed a waiver of the right to do so thereafter. The costs and expenses of enforcement (including, without limitation, court costs and attorney's fees) shall be chargeable to the Unit Owner if the court finds that the Unit Owner did violate the provisions of the Declaration, Bylaws and/or rules. The Community Association shall have the right to impose fines for violations. The Declarant's right of enforcement under this Section 22.3 shall terminate when Declarant no longer owns any portion of the Property.

ARTICLE XXIII
WHITEMARSH TOWNSHIP RESTRICTIONS

23.1. Whitemarsh Township Access to Common Facilities. Whitemarsh Township shall have a perpetual easement permitting Whitemarsh Township, its agents, employees, and contractors, to access the Common Facilities for the purpose of maintenance of and repair to the Common Facilities defined in Section 2.1 of this Declaration. This easement shall not impose any obligation of maintenance and repair upon Whitemarsh Township, which maintenance and

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repair shall be the responsibility of the Community Association. Whitemarsh Township shall exercise its rights under this easement in its sole discretion, upon Whitemarsh Township's determination that the Community Association has defaulted in its obligations to properly maintain and/or repair the Common Facilities, and following thirty (30) days' notice by Whitemarsh Township to the Community Association of Whitemarsh Township's intention to exercise its rights as aforesaid. The Community Association shall pay all reasonable costs incurred by Whitemarsh Township in maintaining and repairing the Common Facilities under this Section 23.1.

23.2. Enforceability. The restrictions of this Article XXIII shall be enforceable by Whitemarsh Township. The Declarant shall have the right to enforce the restrictions until the expiration of any maintenance period following the release of all performance security by Whitemarsh Township under the Development and/or Financial Security Agreements.

23.3. Lien. Whitemarsh Township has a lien on each Unit for that Unit's proportionate share of the costs incurred by Whitemarsh Township in exercising its rights to maintain and repair the Common Facilities under this Article XXIII. The costs incurred by Whitemarsh Township in connection with the collection of any sums due to Whitemarsh Township, including attorney's fees, shall be included in the lien. Whitemarsh Township's lien may be foreclosed in a like manner as a mortgage on real estate. Any such lien on a Unit shall be subordinated to a first mortgage recorded before the charge became due.

ARTICLE XXIV
HEADINGS

24.1. Headings. The headings herein are for reference purposes only and shall not affect the meaning or interpretation of this Declaration.

24.2. Effective Date. This Declaration shall become effective when it has been recorded with the Office for the Recording of Deeds in and for the County of Montgomery, Commonwealth of Pennsylvania.

24.3. Binding. This Declaration shall inure to the benefit of and shall be binding upon the Declarant, its successors and assigns, including the purchasers of lots.

IN WITNESS WHEREOF, the Declarant, LEGAL OWNER has hereunto set its hand and seal the day and year first above written.

DECLARANT:
ATTEST: LEGAL OWNER

_____ BY:_____
_____, Member

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COMMONWEALTH OF PENNSYLVANIA :
:
COUNTY OF MONTGOMERY :

ON THIS, the _____ day of _____, 20_____, before me, a Notary Public, the undersigned officer, personally appeared _____, who acknowledged him/herself to be ____ of LEGAL OWNER and that s/he as such Member executed the foregoing Declaration of Planned Community for the purposes therein contained by signing the name of the _____ as _____.

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

_____
NOTARY PUBLIC

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BYLAWS
OF
LONGFIELD FARM COMMUNITY ASSOCIATION, INC.

ARTICLE I
INTRODUCTION

1.1 Applicability. These Bylaws provide for the governance of the Longfield Farm Community Association, Inc. The Real Estate is located in Whitemarsh Township, Montgomery County, Pennsylvania, as more particularly described in the Declaration of Planned Community, and has been or will be submitted to the provisions of the Pennsylvania Uniform Planned Community Act, 68 Pa.C.S.A. Section 5101, et seq. (the "Act") as amended, by the recording of the Declaration of Planned Community in the Office of the Recorder of Deeds in and for Montgomery County, in Norristown, Pennsylvania.

1.2 Definitions. Capitalized terms used herein without definition shall have the meanings specified for such terms in the Declaration to which these Bylaws pertain.

1.3 Compliance. Every Unit Owner and all those entitled to occupy a Unit shall comply with these Bylaws.

1.4 Office. The office of the Community, the Association, and the Executive Board shall be located at the Property or at such other places as may be designated from time to time by the Executive Board.

ARTICLE II
THE ASSOCIATION

2.1 Composition. The Association is or shall be organized as a nonprofit corporation under the laws of the Commonwealth of Pennsylvania. The Association shall consist of all of the Unit Owners acting as a group in accordance with the Act, the Declaration and these Bylaws. The Association shall have the responsibility of administering the Community, establishing the means and methods of collecting assessments and charges, arranging for the management of the Community and performing all of the other acts that may be required or permitted to be performed by the Association pursuant to the Act and the Declaration. Except as to those matters which the Act specifically requires to be performed by the vote of the Association, the foregoing responsibilities shall be performed by the Executive Board or Managing Agent as more particularly set forth in these Bylaws.

2.2 Annual Meetings. The annual meeting of the Association shall be held during the month of _____ each year, or such other date as is determined by the Executive

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Board. At such annual meeting the Executive Board shall be elected by ballot of the Unit Owners in accordance with the requirements of Section 3.4 of these Bylaws (subject to the provisions of the Declaration) and such other business as may properly come before the meeting may be transacted.

2.3 Place of Meetings. Meeting of the Association shall be held at the principal office of the Association or at such other suitable place convenient to the Unit Owners as may be designated by the Executive Board.

2.4 Special Meetings.

a. The President shall call a special meeting of the Association if so directed by resolution of the Executive Board or upon a petition signed and presented to the Secretary by Unit Owners entitled to cast at least 25% of the votes in the Association. The notice of any special meeting shall state the time, place and purpose thereof. Such meeting shall be held within 45 days after receipt by the Secretary of said resolution or petition; provided, however, if the purpose includes the consideration of a capital expenditure, such meeting shall be held within 15 days after receipt by the Secretary of said resolution or petition. No business shall be transacted at a special meeting except as stated in the notice.

b. On a day within 60 days after conveyance 25% of the Units to Unit Owners other than the Declarant, a special meeting of the Association shall be held at which 2 members of the Executive Board designated by the Declarant shall resign, and the Unit Owners, excluding the Declarant as a Unit Owner, shall thereupon elect 2 successor members of the Executive Board to act in the place and stead of the members resigning. If such members are elected at a special meeting of the Association, the term of office shall end on the date of the regular annual meeting of the year in which the term of office would otherwise end.

c. On a day within sixty (60) days preceding the date by which all Declarant-appointed members of the Executive Board must resign pursuant to _____ of the Declaration, a special meeting of the Association shall be held at which all of the members of the Executive Board shall resign and the Unit Owners (including Declarant to the extent of Units owned by Declarant) shall elect a 5 member Executive Board. The two successors receiving the highest number of votes shall serve for 3 years, the two successors receiving the next highest number of votes shall serve for 2 years, and the remaining member shall serve for 1 year.

d. If any meeting required pursuant to subparagraphs a, b and c above can be held on the date of the annual meeting, then such meeting shall be held concurrently with such annual meeting.

2.5 Notice of Meetings. The Secretary shall mail to each Unit Owner a notice of each annual or regularly scheduled meeting of the Association at least ten but not more than sixty days prior to such meeting, and of each special meeting of the Unit Owners at least ten but not more than sixty days prior to such meeting. The notice of any meeting must state the time and place of the meeting and the items on the agenda, including the general nature of any proposed amendment to the Declaration or Bylaws; any budget or assessment changes; and,

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where the Declaration or Bylaws require approval of Unit Owners, any proposal to remove a director or officer.

2.6 Adjournment of Meetings. If at any meeting of the Association a quorum is not present, the Executive Board may adjourn the meeting to a time not less than forty-eight hours after the time the original meeting was called.

2.7 Voting. As set forth in Article IV of the Declaration, each Unit shall be entitled to one (1) vote. Where the ownership of a Unit is in more than one Person, the Person who shall be entitled to cast the vote of such Unit shall be the Person named in a certificate executed by all of the owners of such Unit and filed with the Secretary or, in the absence of such named Person from the meeting, the Person who shall be entitled to cast the vote of such Unit shall be the person owning such Unit is present. If more than one of the multiple Owners are present, then such vote shall be cast only in accordance with their unanimous agreement. There shall be deemed to be unanimous agreement if any one of the multiple owners casts the vote allocated to that Unit without protest being made promptly to the Person presiding over the meeting by any of the other Owners of the Unit. Such certificate shall be valid until revoked by a subsequent certificate similarly executed. Wherever the approval or disapproval of a Unit Owner is required by the Act, the Declaration or these Bylaws, such approval or disapproval shall be made only by the person who would be entitled to cast the vote of such Unit at any meeting of the Association. Except with respect to election of members of the Executive Board, and except where a greater number is required, at a duly convened meeting at which a quorum is present, a majority of the aggregate Percentage Interest in the Community voting in person, by proxy and by absentee ballot at one time ("Majority of the Unit Owners present") is required to adopt decisions at any meeting of the Association. Any specified percentage of the Unit Owners means the Unit Owners owning such Percentage Interests in the aggregate. In all elections for Executive Board members, each Unit Owner shall be entitled to cast for each vacancy to be filled the number of votes allocated to their Unit in the Declaration. Those nominees receiving the greatest number of votes shall be elected and, if nominees are being elected for unequal terms, the nominees receiving the highest number of votes shall be elected to the longest terms. Except as set forth in Section 2.4b above, the Declarant shall have the right at any meeting of the Association to cast the votes to which such Unit or Units owned by the Declarant are entitled. No votes allocated to a Unit owned by the Association may be cast. There shall be no cumulative or class voting.

2.8 Proxies and Absentee Ballots. A vote may be cast in person, proxy or by absentee ballot. If a Unit is owned by more than one Person, each Owner of the Unit may vote or register protest to the casting of votes by the other Owners of the Unit through a duly executed proxy. Such proxy may be granted by any Unit Owner in favor of only another Unit Owner, a Mortgagee or the Declarant. Proxies shall be duly executed in writing, shall be valid only of the particular meeting designated therein and must be filed with Secretary before the appointed time of the meeting. Such proxy shall be deemed revoked only upon actual receipt by the person presiding over the meeting of written notice of revocation from the grantors of the proxy. No proxy shall be valid for a period in excess of one year after the execution thereof. A proxy is void if it is not dated or purports to be revocable without notice.

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2.9 Quorum. Except as otherwise provided in these Bylaws, the presence in person, by proxy or by absentee ballot of Unit Owners of 25% or more of the aggregate Percentage Interests at the commencement of a meeting shall constitute a quorum at all meetings of the Association.

2.10 Conduct of Meeting. The President (or in their absence, any Vice-President) shall preside over all meetings of the Association and the Secretary shall keep the minutes of the meeting and record in a minute book all resolutions adopted at the meeting as well as a record of all transactions occurring thereat. The President may appoint a person to serve as parliamentarian at any meeting of the Association. The then current edition of Robert's Rules of Order shall govern the conduct of all meetings of the Association when not in conflict with the Declaration, these Bylaws or the Act. All votes shall be tallied by tellers appointed by the President.

ARTICLE III
EXECUTIVE BOARD

3.1 Number and Qualification. The affairs of the Association shall be governed by an Executive Board. The Executive Board shall be composed of 5 persons, all of whom shall be Unit Owners (or, when a Unit is owned by a corporation, limited liability company or other legal entity, a designee of the Unit Owner) or designees of the Declarant. The Declarant shall have the right in its sole discretion to replace such directors as may be designated by the Declarant, and to designate their successors.

3.2 Powers and Duties. The Executive Board shall have all of the powers and duties necessary for the administration of the affairs of the Association and may do all such acts and things as are not by the Act, the Declaration or by these Bylaws required to be exercised and done by the Association. The Executive Board shall have the power from time to time to adopt any Rules and Regulations deemed necessary for the benefit and enjoyment of the Community; provided, however, that such Rules and Regulations shall not be in conflict with the Act, the Declaration or these Bylaws. The Executive Board shall delegate to one of its members or to a person employed for such purpose the authority to act on behalf of the Executive Board on such matters relating to the duties of the Managing Agent (as defined in Section 3.3), if any, which may arise between meetings of the Executive Board as the Executive Board deems appropriate.

The following are supplements and restrictions with respect to the duties and powers of the Executive Board.

a. The Executive Board shall keep books with detailed accounts in chronological order of the receipts and expenditures affecting the Property, and the administration of the Community, specifying the expenses of maintenance and repair of the Common Elements and any other expenses incurred. Such books and vouchers evidencing the entries thereupon shall be available for examination by the Unit Owners, their duly authorized agents or attorneys, during general business hours on working days at the times and in the manner set and announced by the Executive Board for the general knowledge of the Unit

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Owners. All books and records shall be kept in accordance with good and accepted accounting practices, and the same shall be inspected at least once each year by an independent accountant retained by the Executive Board who shall not be a resident of the Community or a Unit Owner. The cost of such review shall be a Common Expense.

b. The Executive Board may notify a Mortgagee of any default thereunder by the Unit Owner of the Unit subject to such Mortgage, in the event default continues for a period exceeding thirty days, if such notice is requested by a Mortgagee.

c. The Executive Board may borrow money on behalf of the Community when required in connection with any one instance relating to the operation, care, upkeep and maintenance of the Common Facilities; provided, however, that the unanimous consent of all Unit Owners obtained at a meeting duly called and held for such purpose shall be required to borrow any sum in excess of $20,000.00 for the purpose of making an additional improvement to the Community. Such approval shall not be required to borrow a sum in excess of $20,000.00 for the purpose of maintenance, repair, replacement or restoration of an existing improvement. If any sum borrowed by the Executive Board on behalf of the Community pursuant to the authority contained in this sub-paragraph c is not repaid by the Association, a Unit Owner who pays to the creditor such proportion thereof as the Owner's Percentage Interest bears to the total Percentage Interest in the Community shall be entitled to obtain from the creditor a release of any judgment or other lien which such creditor shall have filed or shall have the right to file against such Unit Owner's Unit.

d. The Executive Board may adopt the annual budget, amendments thereto, and assess Common Expenses, late fees, fines and special assessments.

e. The Executive Board may appoint such committees as are deemed appropriate in the sole discretion of the Board of Directors.

f. The Executive Board may do such other things and acts not inconsistent with the Act, the Declaration or these Bylaws which the Executive Board may be authorized to do by a resolution of the Association.

3.3 Managing Agent. The Executive Board may employ for the Community a "Managing Agent" at a compensation established by the Executive Board.

a. Requirements. The Managing Agent shall be a bona fide business enterprise, unaffiliated with the Declarant, which manages residential communities with common areas and facilities. Such firm shall have a minimum of two years experience in real estate community management and shall employ persons possessing a high level of competence and the technical skills necessary to proper management of the Community. The Managing Agent must be able to advise the Executive Board regarding the administrative operation of the Community and shall employ a personnel expert in the areas of Community insurance, accounting, labor relations and Community regulations.

b. Duties. The Managing Agent shall perform such duties and services as the Executive Board shall authorize, including, but not limited to, all of the duties listed in

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the Act, the Declaration and these Bylaws; provided, however, where a Managing Agent does not have the power to act under the Act, the Declaration or these Bylaws, such duties shall be performed as advisory to the Executive Board. The Executive Board may delegate to the Managing Agent all of the powers granted to the Executive Board by the Act, the Declaration and these Bylaws other than the following powers:

(1) To adopt the annual budget, any amendment thereto, and to assess any common expense;

(2) To adopt, repeal or remand rules and regulations;

(3) To designate signatures on Association Bank Accounts;

(4) To borrow money on behalf of the Association;

(5) To acquire and mortgage Units;

(6) To designate Reserve Common Elements;

(7) To allocated Limited Common Elements.

The Managing Agent shall perform the obligations, duties and services relating to management of the property, the rights of mortgagees and the maintenance of reserve funds in compliance with the provisions of these Bylaws.

c. Standards. The Executive Board shall impose appropriate standards of performance upon the Managing Agent, unless the Managing Agent is instructed otherwise by the Executive Board:

(1) The accrual method of accounting shall be employed;

(2) Two or more persons shall be responsible for handling cash to maintain adequate financial control procedures;

(3) Cash accounts of the Association shall not be commingled with any other accounts;

(4) No remuneration shall be accepted by the Managing Agent from vendors, independent contractors or others providing goods or services to the Association whether in the form of commissions, finders fees, services fees or otherwise; any discounts received shall benefit the Association;

(5) Any financial or other interest which the Managing Agent may have in any firm providing goods or services to the Association, shall be disclosed promptly to the Executive Board; and

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(6) A monthly financial report shall be prepared for the Association disclosing:

a. All income and disbursement activity for the preceding months;

b. The status of all accounts in an "actual" as compared to "projected" (budget) format.

d. Limitations. During the period when persons designated by the Declarant constitutes a majority of the Executive Board, the Executive Board may employ any Managing Agent. Any contract with the Managing Agent must provide that it may be terminated prior to the end of the contract term with cause only, on no more than thirty days written notice; excepting, however, that following the termination of Declarant's control and the election of a new 5 member Executive Board as set forth in Section 2.4(c) hereof, the new Executive Board may terminate the contract with the Managing Agent without cause on no more than ninety (90) days written notice.

3.4 Election and Term of Office.

a. At the annual meeting of the Association, subject to the provisions of the Declaration, the term of office of members of the Executive Board to be elected (except as set forth in Section 2.4(b) and 2.4(c) above) shall be fixed at 3 years. The members of the Executive Board shall hold office until the earlier to occur of the election of their respective successors, of their death, adjudication of incompetency, removal or resignation. An Executive Board member may serve an unlimited number of terms and may succeed themself.

b. Persons qualified to be members of the Executive Board may be nominated for election only as follows:

(1) Any Unit Owner may submit to the Association at least fifteen days before the meeting at which the election is to be held a nominating petition signed by said Unit Owner together with a statement that the person nominated is willing to serve on the Executive Board and a biographical sketch of the nominee. The Association shall mail or hand deliver the submitted items to every Unit Owner along with the notice of such meeting; or

(2) Nominations may be submitted from the floor at the meeting at which the election is held.

3.5 Removal or Resignation of Members of the Executive Board. Except with respect to members designated by Declarant, at any regular or special meeting of the membership of the Association duly called at which a quorum is present, any one or more of the members of the Executive Board may be removed with or without cause by a two-thirds (2/3) vote of all members , and a successor must then and there be elected by the Unit Owners to fill the vacancy thus created. Any Unit Owners proposing the removal of a Board Member shall give notice thereof to the Secretary. Any member whose removal has been proposed by Unit Owners shall be given at least seven days' notice of the time, place and purpose of the

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meeting and shall be given an opportunity to be heard at the meeting. A member of the Executive Board may resign at any time and shall be deemed to have resigned upon transfer of title to that member's Unit.

3.6 Vacancies. Except as set forth in Section 3.1 above with respect to members appointed by the Declarant, vacancies in the Executive Board caused by any reason other than the removal of a member by a vote of the Unit Owners shall be filled by a vote of a majority of the remaining Board members at a special meeting of the Executive Board held for such purpose promptly after the occurrence of any such vacancy, even though the members present at such meeting may constitute less than a quorum. Each person so elected shall be a member of the Executive Board for the remainder of the term of the member being replaced and until a successor shall be elected at an annual meeting of the Association at which such seat is to be filled upon expiration of the term of their predecessor. In the case of multiple vacancies, the member receiving the greatest number of votes shall be elected for the longest term.

3.7 Organization Meeting. The first meeting of the Executive Board following the annual meeting of the Association shall be held thereafter at such time and place as shall be fixed by the President (even if the outgoing President) at the meeting at which such Executive Board shall have been elected, and no notice shall be necessary to the newly elected members of the Executive Board in order legally to constitute such meeting, if a majority of the Executive Board members shall be present at such meeting.

3.8 Regular Meetings. Regular meetings of the Executive Board may be held at such time and place as shall be determined from time to time by a majority of the members, but such meeting shall be held at least once every four months during each fiscal year. Notice of regular meeting of the Executive Board shall be given to each member, by mail, facsimile or electronic mail, at least three business days prior to the day named for such meeting.

3.9 Special Meetings. Special Meetings of the Executive Board may be called by the President on three business days' notice to each member, given by mail, facsimile machine or telegraph, which notice shall state the time, place and purpose of the meeting. Special meeting of the Executive Board shall be called by the President or Secretary in like manner and on like notice on the written request of at least two members of the Executive Board.

3.10 Waiver of Notice. Any member may at any time, in writing, waive notice of any meeting of the Executive Board, and such waiver shall be deemed equivalent to the giving of such notice. Attendance by a member at any meeting of the Executive Board shall constitute a waiver of notice by them of the time, place and purpose of such meeting. If all members are present at any meeting of the Executive Board, no notice shall be required any business may be transacted at such meeting.

3.11 Quorum of the Executive Board. At all meetings of the Executive Board a majority of the members shall constitute a quorum for the transaction of business, and the votes of a majority of the members present at a meeting at which a quorum is present shall constitute the decision of the Executive Board. If at any meeting of the Executive Board there shall be less than a quorum present, a majority of those present may adjourn the meeting from time to time. At any such adjourned meeting at which a quorum is present, any business which might have

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been transacted at the meeting originally called may be transacted without further notice. One or more members of the Executive Board may participate in and be counted for quorum purposes at any meeting by means of conference telephone or similar communication equipment by means of which all persons participating in the meeting can hear each other.

3.12 Fidelity Bonds. As may be required by the Declaration, there shall be obtained fidelity bonds for all officers, members of the Executive Board and employees of the Association, including without limitation the Managing Agent, handling or responsible for Community funds. The premiums on such bonds shall constitute a Common Expense. Fidelity insurance may be provided through the Managing Agent in lieu of the above.

3.13 Compensation. No member of the Executive Board shall receive any compensation from the Association for acting as such, but may be reimbursed for any expenses incurred in the performance of their duties.

3.14 Conduct of Meetings. The President shall preside over all meetings of the Executive Board and the Secretary shall keep a minute book of the Executive Board meeting, recording therein all resolutions adopted by the Executive Board and a record of all transactions and proceedings occurring at such meetings. The then current edition of Robert's Rules of Order shall govern the conduct of the meeting of the Executive Board when not in conflict with the Declaration, these Bylaws or the Act.

3.15 Action Without Meeting. Any action by the Executive Board required or permitted to be taken at any meeting may be taken without meeting if all of the members of the Executive Board shall individually or collectively consent in writing to such action. Any such written consent shall be filed with the minutes of the proceedings of the Executive Board.

3.16 Validity of Contracts With Interested Executive Board Members. No contract or other transaction between the Association and one or more of its Executive Board members or between the Association and any corporation, firm, or association in which one or more of the Executive Board members are directors or officers, or are financially interested, shall be void or violable because such Executive Board member or members are present at any meeting of the Executive Board which authorized or approved the contract or transaction or because their votes are counted, if the circumstances specified in either of the following subparagraphs exists:

a. The fact that an Executive Board member is also such a director or officer or has such financial interest is disclosed or known to the Executive Board and is noted in the minutes thereof, and the Executive Board authorizes, approves or ratifies the contract or transaction in good faith by a vote sufficient for the purpose without counting the vote or votes of such Executive Board member or members; or

b. The contract or transaction is made in good faith and is not unconscionable to the Association at the time it is authorized, approved or ratified.

3.17 Inclusion of Interested Executive Board Members in the Quorum. Any Executive Board member holding such director or officer position or having such financial

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interest in another corporation, firm or association may be counted in determining the presence of a quorum at a meeting of the Executive Board or a committee thereof which authorizes, approves or ratifies a contract or transaction of the type described in Section 3.16 hereof.

ARTICLE IV
OFFICERS

4.1 Designation. The principal officers of the Association shall be the President, the Secretary and the Treasurer, all of whom shall be elected by the Executive Board. In the absence of the President, the Secretary shall act as Vice President. The Executive Board may appoint an assistant treasurer, an assistant secretary and such other officers as in its judgment may be necessary. The President shall be a member of the Executive Board. Any other officers may, but need not be, Unit Owners (or, in the case of a Unit owned by a legal entity such as a corporation or limited liability company, a designee of a Unit Owner) or members of the Executive Board. An officer other than the President may hold more than one office.

4.2 Election of Officers. The officers of the Association shall be elected annually by the Executive Board at the organization meeting of such new Board and shall hold office at the pleasure of the Executive Board.

4.3 Removal of Officers. Upon the affirmative vote of a majority of all members of the Executive Board, any officer may be removed, either with or without cause, and a successor may be elected at any regular meeting of the Executive Board called for such purpose.

4.4 President. The President shall be the chief Executive officer of the Association; preside at all meetings of the Association and of the Executive Board; and have all of the general powers and duties which are incident to the office of president of a corporation organized under the laws of Pennsylvania including without limitation the power to appoint committees from among the Unit Owners from time to time as the President may in their discretion decide is appropriate to assist in the conduct of the affairs of the Association. the President shall cease holding such office at such time as they ceased to be a member of the Executive Board.

4.5 Vice-President. The Vice-President shall take the place of the President and perform the duties of the President whenever the President shall be absent or unable to act. If neither the President nor the Vice-President is able to act, the Executive Board shall appoint some other member of the Executive Board to act in the place of the President, on an interim basis. The Vice-President shall also perform such other duties as shall from time to time be imposed upon them by the Executive Board or by the President. The Vice-President shall cease holding such office at such time as they cease to be a member of the Executive Board.

4.6 Secretary. The Secretary shall keep the minutes of all meetings of the Association and of the Executive Board; have charge of such books and papers as the Executive Board may direct; maintain a register setting forth the place to which all notices to Unit Owners and Permitted Mortgagees hereunder shall be delivered; and, in general, perform all the duties incident to the office of secretary of a corporation organized under the laws of Pennsylvania. The Secretary shall, upon request, provided any Person or cause to provide to any Person

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entitled thereto a written statement or certification of the information required to be provided by the Association pursuant to Sections 5.8 and 5.10 below.

4.7 Treasurer. The Treasurer shall have the responsibility for the safekeeping of Association funds and securities and shall be responsible for keeping full and accurate financial records and books of account showing all receipts and disbursements, and for the preparation of all required financial data; and be responsible for the deposit of all monies in the name of the Executive Board, the Association or the Managing Agent, in such depositories as may from time to time be designated by the Executive Board; and, in general, perform all the duties incident to the office of Treasurer of a corporation organized under the laws of Pennsylvania.

4.8 Execution of Documents. All agreements, contracts, deeds, leases, checks and other instruments of the Association for expenditures or obligations in excess of $500 shall be executed by two officers of the Association. All such instruments for expenditures or obligations of $500 or less may be executed by any one officer of the Association. Notwithstanding the foregoing, the authority to execute all such documents may be delegated to the Managing Agent by the Executive Board.

4.9 Compensation of Officers. No officer who is also a member of the Executive Board shall receive any compensation from the Association for acting as such officer, but may be reimbursed for any out-of-pocket expenses incurred in performing their duties; provided, however, the Secretary and Treasurer may be compensated for their services if the Executive Board determines such compensation to be appropriate.

ARTICLE V
COMMON EXPENSES

5.1 Fiscal Year. The fiscal year of the Association shall be the calendar year unless otherwise determined by the Executive Board; provided, however, that the first fiscal year may begin anytime and end at the end of the calendar year.

5.2 Preparation and Approval of Budget.

5.2.1 On or before the first day of December of each year (or thirty days before the beginning of the fiscal year if the fiscal year is other than the calendar year), the Executive Board shall adopt an annual budget for the Association containing an estimate of the total amount considered necessary to pay the cost of maintenance, management, operation, repair and replacement of the Common Facilities which it is the responsibility of the Executive Board to maintain, repair and replace, and the cost of wages, materials, insurance premiums, services, supplies and other expenses that may be declared to be Common Expenses by the Act, the Declaration, these Bylaws or a resolution of the Association and which will be required during the ensuing fiscal year for the administration, operation, maintenance and repair of the Common Facilities and the rendering to the Unit Owners of all related services. Such budget shall also include such reasonable amounts as the Executive Board considers necessary to provide working capital, a general operating reserve and reserves for contingencies and replacements.

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5.2.2 At least thirty days before the beginning of the fiscal year, the Executive Board shall make the budget available for inspection at the Association office and shall send to each Unit Owner a copy of the budget in a reasonably itemized form which sets forth the amount of the Common Expenses. Such budget shall constitute the basis for determining each Unit Owners' assessments for General Common Expenses and Limited Expenses of the Association and shall automatically take effect at the beginning of the fiscal year for which it is adopted, subject to Section 5.8 below.

5.2.3 The Executive Board shall make reasonable efforts to meet the deadlines set forth above, but compliance with such deadlines shall not be conditions precedent to the effectiveness of any budget.

5.3 Assessment and Payment of Common Expenses.

5.3.1 General Common Expenses. The Executive Board shall calculate the annual assessments for General Common Expenses against each Unit by multiplying (a) the total amount of the estimated funds required for the operation of the Property set forth in the budget adopted by the Executive Board for the fiscal year in question, after deducting any income expected to be received from sources other than Common Expense assessments and the operation of the Limited Common Elements to which the Limited Expenses pertain, if any, by (b) the Percentage Interest (expressed in percentage form) allocated to such Unit. Such assessments shall be deemed to have been adopted and assessed on an annual basis, and shall be due and payable on the first day of each year (unless the Executive Board, in its sole discretion, determines that the annual assessment shall be payable in installments) and shall be a lien against each Unit Owner's Unit as provided in the Act and the Declaration. Any net shortage with regard to General Common Expenses, after application of such reserves as the Executive Board may determine, shall be assessed promptly against the Unit Owners in accordance with their Percentage Interests and shall be payable in one or more monthly assessments, as the Executive Board may determine.

5.3.2 Reserves. The Executive Board shall build up and maintain reasonable reserves for working capital, operations, contingencies and replacements. Extraordinary expenditures not originally included in the annual budget which may become necessary during the year may be charged first against reserves. If the reserves are deemed to be inadequate for any reason, including nonpayment of any Unit Owner's assessments, the Executive Board may at any time levy further assessments for General Common Expense and/or Limited Expense, which shall be assessed against the Unit Owners either according to their respective Percentage Interests with regard to General Common Expenses or in accordance with allocable share of Limited Expense with regard to Limited Expenses (whichever is appropriate), and shall be payable in one or more assessments as the Executive Board may determine.

5.4 Further Assessments. The Executive Board shall serve notice on any or all Unit Owners of any further assessments pursuant to Sections 5.3.1 or 5.3.2 or otherwise as permitted or required by the Act, the Declaration and these Bylaws on any or all Unit Owners by a statement in writing giving the amount and reasons therefor, and such further assessments shall become effective as set forth in the notice. All Unit Owners so assessed shall be obligated

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to pay the amount of such assessments. Such assessment shall, be a lien as of the effective date as set forth in the preceding Sections 5.3.1 and 5.3.2.

5.5 Initial Budget. At or prior to the time the Executive Board determines to begin assessments, the Executive Board shall adopt the budget, as described in this Article, for the period commencing on the date assessments are to begin and ending on the last day of the fiscal year in which such determinations occurs. Assessments shall be levied and become a lien against the Units during such period as provided in Section 5.3 above.

5.6 Effect of Failure to Prepare or Adopt Budget. The failure or delay of the Executive Board to prepare or adopt a budget for any fiscal year shall not constitute a waiver or release in any manner of a Unit Owner's obligation to pay their allocable share of the Common Expenses as herein provided whenever the same shall be determined and, in the absence of any annual budget or adjusted budget, each Unit Owner shall continue to pay an annual assessment at the rate established for the previous fiscal year until notice of the annual assessment which is due more than ten days after such new annual or adjusted budget shall have been delivered.

5.7 Accounts; Annual Financial Statement. All sums collected by the Executive Board with respect to assessments against the Unit Owners or from any other source may be commingled into a single fund. All books and records of the Association shall be kept in accordance with good and accepted accounting practices and the same shall be inspected at least once a year by an independent accountant retained by the Executive Board. Within 90 days of the close of the fiscal year, the Association shall prepare annual financial statements consisting of at least a balance sheet and a statement of revenues and expenses for the Association. The cost of preparing the financial statements shall be a Common Expense. Each Unit Owner, within thirty days following the Owner's written request for same to the Association, shall be entitled to receive a copy of the annual financial statements and, if such financial statements are prepared by an independent certified public accountant or independent public accountant, a copy of the independent accountant's report on the financial statements. The Association may charge a fee not to exceed the cost of producing copies of records other than the financial statements.

5.8 Payment of Common Expenses. Each Unit Owner shall pay the Common Expenses assessed by the Executive Board pursuant to the provisions of this Article V. No Unit Owner may exempt themself from liability for their contribution toward Common Expenses by waiver of the use or enjoyment of any of the Common Facilities or by abandonment of their Unit. No Unit Owner shall be liable for the payment of any part of the Common Expenses assessed against their Unit subsequent to the date of recordation of a conveyance by them in fee of such Unit. The purchaser of a Unit shall be jointly and severally liable with the selling Unit Owner for all unpaid assessments against the latter for their proportionate share of the Common Expenses up to the time of such recordation, without prejudice to the purchaser's right to recover from the selling Unit Owner amounts paid by the purchaser therefor; provided, however, that any such purchaser shall be entitled to a statement setting forth the amount of the unpaid assessments against the selling Unit Owner within five days following a written request therefor to the Executive Board or Managing Agent and such purchaser shall not be liable for, nor shall the Unit conveyed be subject to a lien for, any unpaid assessments in excess of the amount herein set forth; and provided, further, that each Mortgagee who comes into possession

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of a Unit by virtue of foreclosure or by deed or assignment in lieu of foreclosure, or any purchaser at a foreclosure sale, shall take the Unit free of any claims for unpaid assessments or charges against such Unit which accrue prior to the time such Mortgagee comes into possession thereof, except for claims for a pro rata share of such assessments or charges resulting from a pro rata reallocation of such assessments or charges to all Units including the mortgaged Unit.

5.9 Collection of Assessments. The Executive Board or the Managing Agent, at the request of the Executive Board, shall take a prompt action to collect any assessments for Common Expenses due from any Unit Owner which remain unpaid for more than thirty days from the due date for payment hereof. Any assessment not paid within fifteen days after due shall accrue interest at the rate established by the Board at not more than 15% per annum. In addition, the Executive Board shall have the right to establish and assess a late charge for assessments not paid within 15 after the due date.

5.10 Statement of Common Expenses. The Executive Board shall promptly provide any Unit Owner, contract purchaser or Permitted Mortgagee so requesting the same in writing with a written statement for all unpaid assessments for Common Expenses due from such Unit Owner. The Executive Board may impose a reasonable charge for the preparation of such statement to cover the cost of its preparation, to the extent permitted by the Act.

ARTICLE VI
COMPLIANCE AND DEFAULT

6.1 Relief. Each Unit Owner shall be governed by, and shall comply with, all of the terms of the Declaration, these Bylaws, the Rules and Regulations and the Act, as applicable, as any of the same may be amended from time to time. In addition to the remedies provided in the Act and the Declaration, a default by a Unit Owner shall entitle the Association, acting through its Executive Board or through the Managing Agent, to the following relief:

a. Additional Liability. Each Unit Owner shall be liable for the expense of all maintenance, repair or replacement to the Common Facilities rendered necessary by their act, neglect or carelessness or the act, neglect or carelessness of any members of their family, of their employees, agents or licensees, but only to the extent that such expense is not covered by the proceeds of insurance carried by the Executive Board. Such liability shall include any increase in casualty insurance rates occasioned by use or misuse of the Common Facilities or its appurtenances. Nothing contained herein, however, shall be construed as modifying any waiver by any insurance company of its right of subrogation.

b. Costs and Attorney's Fees. In any proceeding arising out of any alleged default or violation by a Unit Owner, in which the Association is seeking to enforce the provisions allegedly violated or from which the Unit Owner has defaulted, the prevailing party shall be entitled to recover the costs of such proceedings and such reasonable attorney's fees as may be determined by the Court; provided, however, that no costs or attorney's fees may be recovered against the Executive Board in any action unless the Court shall first expressly find that the Executive Board acted in bad faith.

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c. No Waiver of Rights. The failure of the Association, the Executive Board or of a Unit Owner to enforce any right, provision, convenient or condition which may be granted by the Declaration, these Bylaws, the Rules and Regulations or the Act shall not constitute a waiver of the right of the Association, the Executive Board or the Unit Owner to enforce such right, provision, covenant or condition in the future. All rights, remedies and privileges granted to the Association, the Executive Board or any Unit Owner pursuant to any term, provision, covenant or condition of the Declaration, these Bylaws, the Rules and Regulations or the Act shall be deemed to be cumulative and the exercise of any one or more thereof shall not be deemed to constitute an election of remedies, nor shall it preclude the party exercising the same from exercising such other privileges as may be granted to such party by the Declaration, these Bylaws, the Rules and Regulations or the Act or at law or in equity.

d. Abating and Enjoining Violations by Unit Owners. The violation of any of the Rules and Regulations adopted by the Executive Board, the breach of any Bylaw contained herein or the breach of any provision of the Declaration or the Act shall give the Executive Board the right, in addition to any other rights: to enjoin, abate or remedy by appropriate legal proceedings, either at law or in equity, the continuance of any such breach.

e. Penalty Assessment. In addition to any of the assessments provided for in Article V, should any Unit Owner violate any of the Rules and Regulations adopted by the Executive Board, or breach any Bylaw therein contained or breach any provisions of the Declaration or the Act enforceable by the Association, then, in that event, the Executive Board in addition to other rights granted to it herein, may upon a majority vote of the Executive Board members present, impose a penalty assessment upon the defaulting Unit Owner in an amount determined by the Executive Board, which may be in the form of a per diem penalty, periodic penalty or one-time penalty charge, as determined in the Board's sole discretion. All Unit Owners so assessed shall be obligated to pay the amount of such assessment within the time set forth in the notice of the penalty assessment, and such penalty assessment shall be a lien as of the effective date as set forth in the preceding sections of these Bylaws.

ARTICLE VII
AMENDMENTS

7.1 Amendments to Bylaws. These Bylaws may be modified or amended by a simple majority of all Unit Owners, except where otherwise expressly set forth herein or in the Act; provided, however, that until the date on which all Declarant-appointed Board members voluntarily resign or are required to resign pursuant to the provisions of the Declaration, Section 2.1, Section 3.1, and this Section 7.1 of the Bylaws may not be amended without the consent in writing of the Declarant. Additionally, if any amendment is necessary in the judgment of the Executive Board to cure any ambiguity or to correct or supplement any provision of these Bylaws that is defective, missing or inconsistent with any other provisions hereof, or with the Act or the Declaration, or if such amendment is necessary to conform to the requirements of the Federal National Mortgage Association or the Federal Home Loan Mortgage Corporation with respect to Community projects, then at any time and from time to time the Executive Board may effect an appropriate corrective amendment without the approval of the Unit Owners or the Owners of any liens on all or part of the Property, upon

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receipt by the Executive Board of an opinion from independent legal counsel to the effect that the proposed amendment is permitted by the terms of this sentence.

7.2 Approval of Mortgagees. These Bylaws contain provisions concerning various rights and interest of Permitted Mortgagees. Such provisions in these Bylaws are to be construed as covenants for the protection of such Permitted Mortgagees on which they may rely in making loans secured by such Mortgages. Accordingly, no amendment or modification of these Bylaws impairing or affecting such rights, priorities, remedies or interests of a Permitted Mortgagee shall be adopted without the prior written consent of such Permitted Mortgagee.

7.3 Amendments to the Association Documents. Amendments to the Declaration, Bylaws and/or Articles of Incorporation of the Association ("Association Documents") shall be approved in accordance with the applicable terms of the documents or the applicable law, as appropriate. Any two officers or Executive Board members of the Association may prepare, execute, certify, record and file, as applicable, amendments to the Association Documents on behalf of the Association.

ARTICLE VIII
MISCELLANEOUS

8.1 Notices. All notices, demands, bills, statements or other communications under these Bylaws shall be in writing and shall be deemed to have been duly given if delivered personally or if sent by registered or certified mail, return receipt requested, postage prepaid (or otherwise as the Act may permit), (i) if to a Unit Owner, at the single address which the Unit Owner shall designate in writing and file with the Secretary or, if no such address is designated, at the address of the Unit of such Unit Owner, or (ii) if the Unit Owners Association, the Executive Board or to the Managing Agent, at the principal office of the Managing Agent or at such other address as shall be designated by notice in writing to the Unit Owners pursuant to this Section. If a Unit is owned by more than one Person, each such Person who so designates a single address in writing to the Secretary shall be entitled to receive all notices hereunder.

8.2 Captions. The captions herein are inserted only as a matter of convenience and for reference, and in no way define, limit or describe the scope of these Bylaws or the intents of any provision thereof.

8.3 Gender. The use of the masculine gender in these Bylaws shall be deemed to include the feminine and neuter genders and the use of the singular shall be deemed to include the plural, and vice versa, whenever the context so requires.

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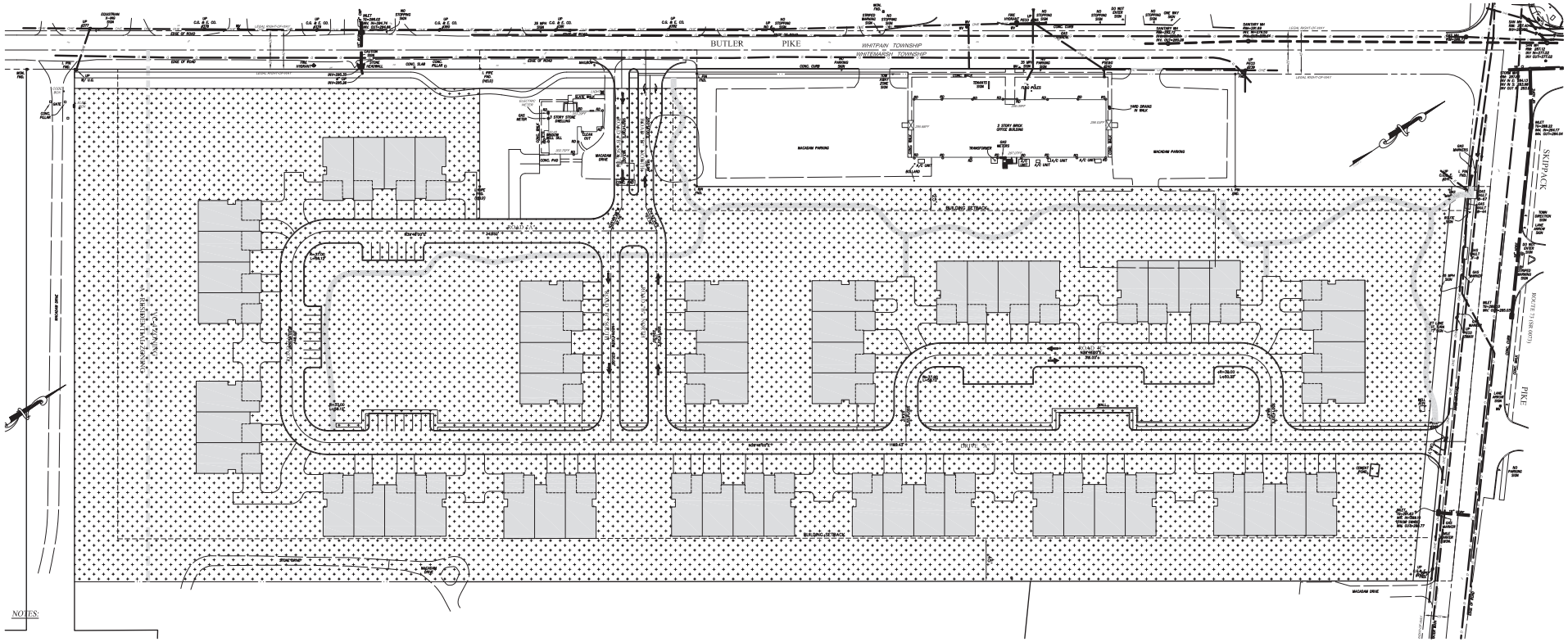

LEGEND

EXISTING STORM SEWER	
PROPOSED STORM SEWER	
EXISTING SANITARY SEWER	
PROPOSED SANITARY SEWER	
PROPOSED SANITARY SEWER FORCE MAIN	FM
EXISTING WATER LINE	
PROPOSED WATER LINE	
EXISTING CONTOUR	644
PROPOSED CONTOUR	650
EXISTING CURB LINE	
PROPOSED CURB LINE	
POSITIVE DRAINAGE INDICATOR	
EXISTING ELEV	(333.68) OR 333.68
PROPOSED ELEV.	334.50
EXISTING TREE LINE	
PROPOSED TREE LINE	
EXISTING GAS LINE	G
PROP. GAS LINE	G
EXISTING OVERHEAD ELEC.	OE
EXISTING UNDERGROUND ELEC.	
PROP. ELECTRIC	E
PROP. ROOF DRAIN	RD
PROP. WATER LATERAL	WL
PROP. SEWER LATERAL	SL

COMMON FACILITIES

TOWNHOME UNITS

STOP–CALL BEFORE YOU DIG!

LOCATION OF EXISTING UTILITIES SHOWN HEREON HAVE BEEN BORROWED FROM SYSTEM RECORDS AND OR ABOVE-GROUND FEATURES. THE ACCURACY OF THE UNDERGROUND UTILITIES LOCATION AND DEPTH CANNOT BE GUARANTEED. CONTRACTOR MUST PERFORM HAND DIGGING TO VERIFY UNDERGROUND UTILITIES AND FACILITIES BEFORE START OF WORK. BY CALLING PA. ONE CALL SYSTEM THREE DAYS PRIOR TO EXCAVATION. REFERENCE PENNSYLVANIA ONE CALL SYSTEM, INC. ACT 187 (1996). REF. P. LYNN-SECTION 28-2603

WORK LOCATION NO.: 20172040426

NOTES:

1. A OWNERS ASSOCIATION WILL OWN AND MAINTAIN ANY LAND NOT SPECIFICALLY DEEDED/OWNED BY AN INDIVIDUAL. ALL REMAINING OPEN AREAS AND ANY IMPROVEMENTS ON THE LAND WILL BE MAINTAINED BY THE OWNERS ASSOCIATION. DOCUMENTATION SHALL INCLUDE A LAND PRESERVATION/PROTECTION AGREEMENT, DEED RESTRICTION OR OTHER ENFORCEABLE INSTRUMENT THAT ENSURES AND DEFINES MAINTENANCE OF THE SWALES, BASINS AND OTHER PERMANENT BMPS AS NOTED ON THE PCSM PLANS AND PERPETUAL PROTECTION AND MAINTENANCE (INCLUDING THE BIORETENTION BASINS) OF THE OPEN SPACE AND SHALL BE RECORDED. REFER TO PCSM PLANS WITHIN THIS PLAN SET FOR ADDITIONAL INFORMATION.

2. SITE STORMWATER BMPs (BIORETENTION BASIN, RAIN GARDEN, RETENTIVE BERM, WATER QUALITY AREAS 'A' & 'B') SHALL BE OWNED AND MAINTAINED IN PERPETUITY BY THE OWNERS ASSOCIATION. A BLANKET ACCESS EASEMENT SHALL BE PROVIDED TO THE TOWNSHIP FOR FOR THE PURPOSE OF ACCESS TO THE STORMWATER BMPs ON AN ANNUAL BASIS. REFER TO PCSM PLAN FOR ADDITIONAL INFORMATION RELATING TO SITE STORMWATER BMPs.

3. THE COMMON OPEN SPACE IS SUBJECT TO PERMANENT CONSERVATION EASEMENTS PROHIBITING FUTURE DEVELOPMENT AND DEFINING THE RANGE OF PERMITTED ACTIVITIES CONSISTENT WITH Z.O. SECTION 116-275 AS EXECUTED BETWEEN TOWNSHIP AND APPLICANT.

50 25 0 50 100

SCALE: 1" = 50'

"LONGFIELD FARM"

REVISIONS	

PLANNED COMMUNITY
PREPARED FOR: COMMON FACILITIES PLAN
SPARTAN ORGANIZATION
SITE:
WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY PENNSYLVANIA

DATE: JUNE 12, 2019	
SCALE: RFI	DRAWING: 17–02
DRAWN BY: RFI	FILE: 17–02BASE
1" = 50'	SHEET 32 OF 32

Land Use Consultants
Land Planners • Engineers • Landscape Architects • Land Surveyors

Irick Eberhardt Mientus

Suite Three
2777 Allentown Blvd
Lansdale, PA 19073
215-541-4026
215-541-4028(Fax)
E-Mail: info@IEMCM.com

POWERPOINT PRESENTATION

Longfield Farm

Board of Supervisors Meeting
Land Development
9/10/2020

Participants in this Meeting

(via zoom)

- Robert Downs, Owner's Representative
- Caroline Edwards, Esquire, Attorney
- Richard Collier, FAICP, Planner
- David Cavanaugh, RLA, Landscape Architect
- Robert Irick, RLA, Landscape Architect
- Estelle Eberhardt, P.E., Engineer
- Brian Keaveney, P.E., Traffic/Transportation

Project Overview

- Townhome community of 58 homes in 3- and 4-unit groups
- Located at corner of Butler & Skippack Pikes with access/egress from both roads
- Site is 15.24 acres
- Project will retain ~44% private open space
- Project stormwater will be managed within the tract and all within Whitemarsh Township
- Refined plan is substantially the same as approved for Conditional Use

"LONGFIELD FARM"

SEPTEMBER 10, 2020

Architecture

3 UNIT BUILDING GROUPING

Longfield Estates

LUCE ARCHITECTS

12/17/18

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4 UNIT BUILDING GROUPING

Longfield Estates

LUCE
ARCHITECTS

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EXTERIOR UNIT SIDE ELEVATION

Longfield Estates

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Plan Updates

- Land Development Plan is substantially the same as granted with Conditional Use approval and all conditions have been met
- Comments from all review letters have been addressed; “Will Comply” with outside agency comments

Key Revisions:

- Project stormwater managed by basins & metered to existing systems in Skippack Pike; no project water will flow under Butler Pike to Whitpain Twp

- Minor shifts in (3) buildings to save more trees, including heritage tree

Plan Updates (continued)

- Landscape Plan revised to be fully Code compliant, including all replacement trees; approved by STC and PC with one acceptable condition of +20 shade trees

- Two level, open spaces preserved in two locations for community recreation as part of the total open space (44%)

Conditions of Approval

- No variances are required
- Waivers requested from Section 105 of the Township Code (Subdivision and Land Development) as noted in the updated Waiver letter dated 9/2/2020
- Unless waived by the BOS, Applicant agrees to make payment of:
  - Park and Recreation Fee in the form of a fee-in-lieu of dedication of land for such uses
  - Traffic Impact Fee

WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA

ORDINANCE NO. _____

AN ORDINANCE OF WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA, AUTHORIZING AND APPROVING THE ACQUISITION OF A CONSERVATION EASEMENT OVER A 27.8213-ACRE PORTION OF MONTGOMERY COUNTY TAX MAP PARCEL NO. 65-00-10609-00-9 KNOWN AS THE "OPEN SPACE PARCEL" OF THE HISTORIC HIGHLANDS MANSION AND GROUNDS; REPEALING ALL INCONSISTENT ORDINANCES OR PARTS THEREOF; PROVIDING A SEVERABILITY CLAUSE; AND PROVIDING AN EFFECTIVE DATE

WHEREAS, the Highlands Historical Society ("HHS") is in the process of obtaining Montgomery County Tax Map Parcel No. 65-00-10609-00-9 (the "Highlands Property") from the Commonwealth of Pennsylvania in order to preserve the historic Highlands Mansion and Grounds; and

WHEREAS, in order to permanently preserve a 27.8213-acre portion of the Highlands Property (the "Open Space Parcel"), HHS is entering into an agreement of sale (the "Agreement of Sale") with Whitemarsh Township (the "Township") to convey a conservation easement (the "Conservation Easement") over the Open Space Parcel to the Township in exchange for Three Million Ten Thousand Dollars ($3,010,000.00) paid by the Township to HHS from the Township's Act 153 open space funds; and

WHEREAS, Section 401(g) of the Township's Home Rule Charter requires that the Board of Supervisors enact an ordinance to purchase, convey, or lease any real property; and

WHEREAS, the Board of Supervisors desires to enact this Ordinance to authorize and approve the acquisition of the Conservation Easement over the Open Space Parcel pursuant to the terms of the Agreement of Sale with HHS for the Conservation Easement;

NOW, THERERORE, be it, and it is hereby **ORDAINED** by the Board of Supervisors of Whitemarsh Township, and it is hereby **ENACTED** and **ORDAINED** by authority of same as follows:

I. The Board of Supervisors of Whitemarsh Township hereby authorizes and approves the acquisition of the Conservation Easement over the Open Space Parcel pursuant to the Agreement of Sale with HHS, and hereby approves the purchase price for the Conservation Easement of Three Million Ten Thousand Dollars ($3,010,000.00) of Act 153 Open Space funds, specifically conditioned on the conveyance of the Highlands Property to HHS by the Commonwealth of Pennsylvania. A true and correct copy of the Conservation Easement is attached hereto as Exhibit "A" and incorporated herein by reference. A true and correct copy of the Agreement of Sale is attached hereto as Exhibit "B" and incorporated herein by reference.

II. The appropriate Township officers and officials are hereby authorized to execute all documents required to obtain the Conservation Easement, including but not limited to, the Agreement of Sale and the Conservation Easement.

III. All ordinance or parts thereof inconsistent with the provisions of this Ordinance are hereby repealed to the extent of the inconsistency.

IV. The provisions of this Ordinance are declared to be severable. If any provision of this Ordinance is determined by a court of competent jurisdiction to be invalid or unconstitutional, such determination shall have no effect on the remaining provisions of this Ordinance.

V. This Ordinance shall go into effect on the date that the Highlands Property is conveyed to HHS, and is conditioned specifically on the final, unappealable conveyance of the Highlands Property to HHS.

ORDAINED and **ENACTED** this 10th day of September, 2020.

ATTEST:	**BOARD OF SUPERVISORS OF WHITEMARSH TOWNSHIP**
_____	_____
Richard L. Mellor, Jr., Manager	By: Laura Boyle Nester, Chair

WHITEMARSH TOWNSHIP
MONTGOMERY COUNTY, PENNSYLVANIA

ORDINANCE NO. _____

AN ORDINANCE OF WHITEMARSH TOWNSHIP, MONTGOMERY COUNTY, PENNSYLVANIA, ADOPTING THE 2015 INTERNATIONAL FIRE CODE, WITH AMENDMENTS, AS THE WHITEMARSH TOWNSHIP FIRE CODE; REPEALING ALL INCONSISTENT ORDINANCES OR PARTS THEREOF; PROVIDING A SEVERABILITY CLAUSE; AND PROVIDING AN EFFECTIVE DATE

WHEREAS, the Board of Supervisors of Whitemarsh Township has enacted the Code of Ordinances of Whitemarsh Township which includes, *inter alia*, provisions governing fire and life safety in Whitemarsh Township; and

WHEREAS, the Board of Supervisors has determined that the adoption of the 2015 International Fire Code, with amendments, as the Township's Fire Code, as recommended by the Township Fire Marshal, is in the best interests of the health, safety, and welfare of the residents of Whitemarsh Township;

NOW, THEREFORE, be it, and it is hereby **ORDAINED** by the Board of Supervisors of Whitemarsh Township, and it is hereby **ENACTED** and **ORDAINED** by authority of same as follows:

I. That a certain document, three (3) copies of which are on file in the office of the Fire Marshal of Whitemarsh Township, being marked and designated as the *International Fire Code*, 2015 edition, including Appendix Chapters B, C, D, E, and F, as published by the International Code Council, be and is hereby adopted as the Fire Code of Whitemarsh Township, regulating and governing the safeguarding of life and property from fire and explosion hazards arising from the storage, handling, and use of hazardous substances, materials, and devices, and from conditions hazardous to life or property in the occupancy of buildings and premises as herein provided; providing for the issuance of permits and collection of fees therefor; and each and all of the regulations, provisions, penalties, conditions and terms of said Fire Code on file in the office of the Fire Marshal are hereby referred to, adopted, and made a part hereof, as if fully set out in full in this Ordinance, with the additions, insertions, deletions, and changes, if any, prescribed in Section II. of this Ordinance.

II. That the following sections of the 2015 edition of the International Fire Code are hereby revised as follows:

A. Section 101.1. – Insert: "Whitemarsh Township, Montgomery County"

B. Section 103.1., "General", is amended to read as follows:

   "The Department of Fire Prevention is established within the jurisdiction and under the direction of the Fire Marshal. The Fire Marshal/Code Official shall be in charge of the operation of this Department and its function shall be the implementation, administration, and enforcement of the provisions of this code."

C. Section 103.2., "Appointment", is deleted and replaced by the following language:

"The Fire Marshal position shall be filled as prescribed in the Code of the Township of Whitemarsh."

D. A new Section 105.1.7., "Fees", is added as follows:

"Fees for fire permits shall be in accordance with a schedule adopted by resolution of the Board of Supervisors."

E. Sections 105.6. and 105.7., Required Permits, are amended to read as follows:

"The Fire Code Official is authorized to issue permits and collect fees as enumerated in Sections 105.6.1. through 105.6.48. and Sections 105.7.1. through 105.7.18. in accordance with the fee schedule adopted by resolution of the Board of Supervisors."

F. Section 109.4. -- Insert: "Summary", "not to exceed $1,000" and "30 days".

G. Section 202 shall have the following definition added:

"FIRE MARSHAL -- The Fire Marshal of Whitemarsh Township, who shall also be the Fire Chief and Fire Official as referred to in this Code."

H. Section 111.4. -- Insert: "$300", "Not to exceed $1,000".

I. Section 503.2.1. are deleted, and the following language substituted:

"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 504.6., and an unobstructed vertical clearance of 14 feet. No access driveway shall be located closer than five feet to a structure."

J. A new Section 507.1.1. is added as follows:

"All water mains shall be of sufficient size to provide at least 1,500 gallons per minute for fire hydrants. A loop system shall be used unless otherwise approved by the Fire Official."

K. A new Section 507.5.7. is added as follows:

"507.5.7. Fire hydrants. Specifications. Fire hydrants shall have National Standard Threads and be approved by the Fire Official. The following criteria shall be required regarding installation:

1. The hard-suction connection shall face the street, access driveway or fire walkway with the side outlets parallel to the cartway or walkway edge.
2. A minimum clearance of 20 inches, measured from the bottom of the lowest outlet to final grade of ground or pavement, shall be provided. In no case shall said clearance be more than 26 inches.
3. Fire hydrants shall be appropriately spaced so as not to exceed 500 feet between hydrants.

4. Fire hydrants required to be located outside a street right-of-way shall not be accepted as public fire hydrants by the Township.
5. Fire hydrants shall be located within five feet of paved streets, access driveways or fire walkways."

L. Section 603.4. & 604.4.1. are deleted and replaced by the following language:

"603.4. Portable heaters. Portable heaters, vented or unvented, in any structure, other than a single-family dwelling, which is used wholly or in part for human habitation, shall be prohibited. Portable heaters shall include, but not be limited to, heaters having a barometrically fed fuel control, with a fuel supply tank located less than 42 inches from the center control, with a fuel supply tank located less than 42 inches from the center of the burner, using gas, kerosene, range oil or No. 1 fuel oil for fuel.

603.4.1. Prohibited locations. Unvented fuel-fired heating equipment shall not be located in or obtain combustion air from any of the following rooms or spaces: sleeping rooms, bathrooms, toilet rooms or storage rooms.

603.4.1.1. Certain sales prohibited. No person shall sell or offer for sale or install a secondhand, previously owned, space heater or portable stove which uses gas, kerosene, range oil or No. 1 fuel oil for fuel.

603.4.1.2. Limited permissible uses of unvented kerosene heaters. Unvented kerosene heaters may be used in an agricultural building or a building under construction. Such heaters shall meet UL Subject 647 and bear the Underwriters' Laboratories, Inc. label, so certifying compliance."

M. Section 5601.2.4. is amended as follows:

"$100,000" shall be changed to "$5,000,000"

N. If any conflict arises between the 2015 International Fire Code (IFC), PA Act 43 of 2017, Ordinance #989, or Ordinance #990, the Act and Ordinances shall supersede the IFC.

O. All geographic limits referred to in certain sections of the 2015 International Fire Code are to comply with the Whitemarsh Township Zoning Code.

III. All ordinances of parts thereof inconsistent with this Ordinance are hereby repealed to the extent of the inconsistency.

IV. The provisions of this Ordinance are declared to be severable. If any provision of this Ordinance is declared by a court of competent jurisdiction to be invalid or unconstitutional, such determination shall have no effect on the remaining provisions of this Ordinance or on the provisions of the Code of Ordinances of Whitemarsh Township.

V. This Ordinance shall become effective the day after its legal adoption.

ENACTED and **ORDAINED** this 10th day of September, 2020.

ATTEST:

_____
Richard L. Mellor, Jr., Secretary

BOARD OF SUPERVISORS OF WHITEMARSH TOWNSHIP

_____
By: Laura Boyle Nester, Chair

WHITEMARSH TOWNSHIP

To: Rick Mellor, Township Manager

From: NICHOLAS W. WEAVER, FIRE MARSHAL

Subject: **Emergency Operation Plan Promulgation**

Date: August 21, 2020

cc:

The Emergency Operations Plan (EOP) for Whitemarsh Township requires a promulgation to adopt and follow it annually. This annual update has the Board reaffirm they follow the applicable state laws, the plan, ICS/NIMS, and the EOP. The EOP is amended frequently with updated information and contacts. Following this promulgation, this will need to be added to the re-organization meetings in July for the Board of Supervisors to review and approve. I have attached a draft of the resolution for your review and submission for the September 10th Board of Supervisor's meeting agenda.

Nicholas W. Weaver
Fire Marshal
616 Germantown Pike
Lafayette Hill, PA 19444
Phone: 610-825-3535 ext. 2614
Email: nweaver@whitemarshtwp.org

RESOLUTION # 2020-

ANNUAL EMERGENCY OPERATION PLAN PROMULGATION

WHEREAS, the Emergency Operation Plan for Whitemarsh Township is developed for response to emergencies and disasters; and

WHEREAS, the Emergency Operations Plan is required to be drafted, maintained, and adopted by Whitemarsh Township pursuant to the Pennsylvania Management Services Code.

NOW, THEREFORE, we, the undersigned Supervisors of Whitemarsh Township, adopt the Emergency Operation Plan of Whitemarsh Township.

RESOLVED, THIS 10th DAY OF September, 2020.

ATTEST:

WHITEMARSH TOWNSHIP
BOARD OF SUPERVISORS

_____

RICHARD L. MELLOR, JR
TOWNSHIP MANAGER

_____

LAURA BOYLE-NESTER, CHAIR
BOARD OF SUPERVISORS

MEMORANDUM

TO: BOARD OF SUPERVISORS OF WHITEMATRSH TOWNSHIP
RICHARD L. MELLOR, JR., MANAGER

FR: SEAN P. KILKENNY, ESQ.

DT: SEPTEMBER 2, 2020

RE: PERSONAL POSSESSION AND PERSONAL USE OF SMALL AMOUNTS OF MARIJUANA AND PERSONAL POSSESSION OF MARIJUANA PARAPHERNALIA

The Board asked us to draft an ordinance providing an alternative for police to cite persons who personally use or possess a small amount of marijuana or possess marijuana paraphernalia.

Authority for Whitemarsh Township to enact such an ordinance comes from the general powers provided to the Board of Supervisors by Section 102 of the Charter, which states:

"*The Township shall have and may exercise any powers and perform any functions not denied by the Constitution of Pennsylvania, the General Assembly of Pennsylvania or this Charter as fully and completely as though they were specifically enumerated in this Charter. The powers of the Township shall be liberally construed in favor of the Township in order to provide the greatest possible powers of self-government allowable in the Commonwealth of Pennsylvania. Any specific mention of powers in this Charter shall not be construed as limiting in any way the general powers of the Township.*"

The proposed ordinance provides the following procedure for citation for a violation of the ordinance:

"*Any person who is found in violation of this section of this Chapter shall be issued a non-traffic summary citation by the police or other authorized law enforcement officer or, alternatively, the officer can obtain the subject's name and address and later send the citation by first-class mail, all to be in accordance with the Pennsylvania Rules of Criminal Procedure.*

In addition, the proposed ordinance provides the following procedure for minors found in personal possession or personal use of a small amount of marijuana or possession of marijuana paraphernalia:

"*Any police officer or other authorized law enforcement officer who observes a violation of this section of this Chapter by a person under 18 years of age shall:*

(1) Temporarily detain the minor and follow all existing procedures for the handling of summary offenses committed by a minor;

(2) Advise the parent or guardian that the minor was found in personal possession of a small amount of marijuana or to have been engaging in personal use of a small amount of marijuana;

(3) Issue a copy of the citation to the parent or guardian advising that he or she is responsible for the payment of the violation fine; and

(4) Provide the parent or guardian with contact information for a local agency where substance abuse educational and treatment programs are available."

The ordinance defines the operative terms "marijuana", marijuana paraphernalia", "personal possession", "personal use", and "small amount". Significantly, a "small amount" of marijuana is defined as, "thirty (30) grams or less of marijuana or eight (8) grams or less of hashish."

Also of significance is that the proposed ordinance does not supersede federal or state law:

"This Chapter shall not be construed to supersede any existing Pennsylvania or Federal law. The Whitemarsh Township police and law enforcement officers retain the authority to enforce any applicable laws, and it is the Board of Supervisors' intent that such law enforcement officers may undertake custodial arrests where there is probable cause to believe that a criminal offense other than personal possession or personal use of a small amount of marijuana or personal possession of marijuana paraphernalia has been or is being committed."

Many other municipalities in Pennsylvania including cities such as Philadelphia, Pittsburgh, Allentown, Lancaster, and Harrisburg, and Montgomery County municipalities such as East Norriton Township and Norristown have enacted ordinances providing for the alternative processing and handling of persons who are in personal possession or are personally using small amounts of marijuana or possessing marijuana paraphernalia. If the Board wishes to proceed with the ordinance, it will need to determine the fines for the respective violations. Here is a chart containing some of the fines imposed by various municipalities for violations of the ordinance:

Municipal reforms [edit]

Jurisdictions in the below table have revised their municipal ordinances to lessen penalties for cannabis offenses. Police still retain the ability to charge individuals under state law, however. In Allentown and part of Bethlehem, police officials have said they will enforce state law only per the directive of Lehigh County District Attorney Jim Martin.[17][18][19]

Municipality	Date	Policy reform
Philadelphia	September 2014	City council voted 13–3 to decriminalize up to 30 grams, punishable by a $25 fine.[20]
Pittsburgh	December 2015	City council voted 7–2 to decriminalize up to 30 grams, punishable by a $25 fine.[21]
Harrisburg	July 2016	City council voted unanimously to decriminalize small amounts, punishable by a $75 fine.[22]
State College	August 2016	City council voted 5–2 to decriminalize up to 30 grams, punishable by a $250 fine.[23]
York	July 2017	City council voted 4–1 to decriminalize up to 30 grams, punishable by a $100 fine.[24]
Erie	January 2018	City council voted unanimously to decriminalize up to 30 grams, punishable by a $25 fine.[25]
Allentown	May 2018	City council voted 4–3 to decriminalize up to 30 grams, punishable by a $25 fine for a first offense.[26]
Bethlehem	June 2018	City council voted 6–0 to decriminalize up to 30 grams, punishable by a $25 fine for a first offense.[19]
Lancaster	September 2018	City council voted 6–1 to decriminalize small amounts, punishable by a $25 fine for a first offense.[27]
Steelton	March 2019	Borough council voted 5-0 to decriminalize up to 30 grams for a first offense, punishable by a $25–$100 fine.[28]

By way of local example, the Municipality of Norristown has imposed a $25 fine for first and second violations of the ordinance and a $75 fine for the third violation. All subsequent offenses are charged in accordance with state and/or federal law.

If the Board wishes to move forward with the proposed ordinance, a motion to advertise the ordinance is required, and the Board should provide direction on the amount of the fines.

WHITEMARSH TOWNSHIP
POLICE DEPARTMENT
616 GERMANTOWN PIKE
LAFAYETTE HILL, PA 19444-1821
BUSINESS: 610-825-6530 • FAX: 610-825-5

CHIEF OF POLICE
Christopher P. Ward

Lt. Jeffrey J. Nowak

Lt. Greg S. Keenan

MEMORANDUM

FROM: **Lt. Greg Keenan #42**

TO: **Township Manager Rick Mellor**
Whitemarsh Township Board of Supervisors

DATE: **8/25/2020**

SUBJECT: **Fire Police Application – Michael Center**

Michael Center has submitted a request to become a Fire Police Officer with the Spring Mill Fire Company. I have checked Mr. Center's driving record and for prior arrests and I have found no problems. I have spoken with Mr. Center and reviewed his application, job requirements, and the legal statutes regarding the duties and authority of a fire police officer.

I found Mr. Center to be qualified for the position of Fire Police Officer and I would recommend that we approve his application and make a positive recommendation to the Board of Supervisors. I believe that Mr. Center will be an asset to the Spring Mill Fire Company and the fire police officers that serve Whitemarsh Township.

Cc: Chief Ward

To: Whitemarsh Township Board of Supervisors
From: Peter Cornog
Date: August 27, 2020
Re: Letter of Resignation

Please be informed that I will be moving from the township and will therefore, regretfully, have to resign my position on the township's Planning Commission. I will move out of the township on September 22, 2020, the effective date of my resignation.
Thank you for the opportunity to have served Whitemarsh Township.